LIBRARIES
UNIVERSITY OF WISCONSIN–MADISON

Species and Subjects: Waterfowl; Predators and Furbearers (part 2).

Leopold, Aldo, 1887-1948
[s.l.]: [s.n.], [s.d.]

https://digital.library.wisc.edu/1711.dl/V24ZV6CYHMAZF8B

http://rightsstatements.org/vocab/InC/1.0/

The copyright for all material in this collection is held by the Aldo Leopold Foundation. Written authorization from the Aldo Leopold Foundation is required prior to reproducing items in the collection for publication or exhibition.

For higher quality digital or print copies please contact the University of Wisconsin Digital Collections Center.

The libraries provide public access to a wide range of material, including online exhibits, digitized collections, archival finding aids, our catalog, online articles, and a growing range of materials in many media.

When possible, we provide rights information in catalog records, finding aids, and other metadata that accompanies collections or items. However, it is always the user's obligation to evaluate copyright and rights issues in light of their own use.

728 State Street | Madison, Wisconsin 53706 | library.wisc.edu

From the bulletin

Ruffed Grouse in New York State

by

A. M. Stoddart.

1918

Common Cats a Menace

With regard to the house cat, as a factor in the decrease of the grouse, the result of the Commission's inquiry indicates that it is a very serious menace, cats being given fourth place of importance by both protectors and sportsmen. One sportsman remarks that tracks in the snow are the best proof of the incredible number of cats in the woods. Several game protectors complain of the depredations of cats left in deserted lumber camps, which have reverted practically to a wild state. New York State's new "cat law" passed in April, 1918, should prove of great value in the elimination of hunting house cats. By the terms of this law, game protectors are required, and all holders of hunting licenses are encouraged to destroy cats at large found hunting birds.

Homicat Folder

"Page" new ways with Partridges" p 54 says male cats more liable to go wild than females. Wild cats dens in haymows, caving creek banks, rabbet holes.

Housecat ✓
Red Fox

St. John, Harold. "Sable Island, with a Catalogue of Its Vascular Plants." Proc. Boston Soc. of Nat. Hist., Vol. 36, No. 1, p. 28:

"In 1882 rabbits were again introduced and the story is almost parallel with the foregoing. They multiplied and became such a nuisance that in 1889, seven cats were brought from Halifax and in 1890, thirty more. While the cats were wintering and fattening on the rabbits, seven red foxes were brought from the mainland and in a single season they made an end of all the rabbits and the cats."

* * * * * * *

Housecat

Feral House Cats in Relation to Wildlife

During November, Paul V. Jones, graduate student in wild game, traveled 2,555 miles on the highways in southern Texas. In this distance he saw 41 cats (one to 62.3 miles), 9 of which were taken.

The contents of 13 stomachs were analyzed during the month. Garbage and carrion, and small rodents such as cottonrats (Sigmodon hispidus texianus), hispid pocket mice (Perognathus hispidus hispidus), and common house mice (Mus musculus) made up the bulk of the food eaten. Three stomachs contained remains of birds. One, from a male cat killed in Colorado County, Texas, by Valgene Lehmann, contained the remains of an Attwater prairie chicken (Tympanuchus cupido attwateri). The others contained remains of a meadowlark (Sturnella magna) and a mourning dove (Zenaidura macroura).

* * * * * *

Cat folder

Note from "Progress Report of the New England Ruffed Grouse Investigation Committee," by Alfred O. Gross, Bowdoin College, Brunswick, Me., Sept.1, 1920.

Kitten found in stomach of a goshawk during 1926-27, New England Flight.

H. B. Marshall, 1178 University Farm, St. Paul, saw a wild female housecat with two kittens 1 1/2 months old in the northeast corner of Wadena County, Minn., in November, 1925. His dogs treed these cats. The kittens were very thin. Marshall knew all the people in the neighborhood and was certain that none of them had missed a cat. He therefore concludes that this represents a case of young reared by wild housecats in the open.

Marshall saw where a horned owl had eaten a kitten which had been missing from his house. He remembers half a dozen other kittens lost, possibly from horned owls.

Cat Folder

Excerpt from "The Heath Hen," by A. O. Gross, page 523.

"The average weight of twenty-five adult cats secured on the island was nine pounds but some of the largest specimens weighed more than twelve pounds and one unusually large one trapped August 4, 1925, weighed eighteen pounds. The majority of the cats killed are in good condition indicating that they are able to secure an abundance of food."

Housecat

Extract from the book "Propagation of Wild Birds"

by Herbert K. Job.

(From Chapter VIII, Control of Vermin, page 108)

Stray Cats. The domestic cat is one of the worst kinds of "vermin" with which one has to deal in increasing birds. The various devices suitable for such animals will usually reap a harvest of felines. It is astonishing how many cats have taken to the woods, and are running wild and raising wild offspring. On the Howell preserve, in a very remote and mountainous section of Connecticut, eleven miles from the nearest large town, Winsted, the keeper, William Whisker, told me he had killed nearly 200 of these semi-wild cats. Many people would be astonished if they knew how many miles their pussy, so quiet and demure in the daytime, had roamed by night, and how much game it had killed in a year".

Errington

S. Dakota

Cats. Most of the cats away from houses are toms. Usually headquarter at abandoned farms but sometimes in brushes on river banks, sometimes in muskrat runs.

Hartley Jackson

Feral Cats. Many tracks in Lawrence County, S.W. Missouri, also in Oneida Co., Wisconsin. 2 miles from occupied dwellings. Never found litters. In S. Wisc. ran cats into den (hole in ground, Rock County) which looked as if it were a cat den.

In southwest Wissouri hunting with coon dogs would tree about 6 cats to 1 coon and about as many possums as cats.

Major Goldman

Cats. Never heard of wildcats preying on house cat but would think it not unlikely.

Bobcat. Has instance of their killing grown deer.

(Housecat Folder)

From THE SURVEY - March, 1924.

One of our hunters in the Colorado District has written the following, which is of interest as showing how rabies may be spread from coyotes to bobcats: "To-day while riding from the Dietz ranch to the head of Cottonwood Creek to follow a poison line down the Creek and back to the ranch, about six miles from camp I was attracted by a barking noise that sounded like a dog going into a hard fight. In some tall timber which had a thick undergrowth I was led by the noise to a point where I got a glimpse of a large coyote and large bobcat having a real battle. I could not shoot either of the animals from the horse I was riding as it was very scary. I dismounted, all the time watching the fight, and then I tied the lines of the bridle to the foreleg of the horse. The bobcat and coyote discovered me by this time and as they ran I shot at the bobcat through the thick timber but did not stop it. In a near-by tree I noticed another bobcat which was not taking part in the fight, but evidently was looking on; I succeeded in shooting this cat, killing it. From all I saw the coyote seemed to be pushing the fight but the cat refused to take a tree. The snow was gone from the ground where the fight occurred and was only to be found in patches. I could tell from the snow that the coyote and bobcat had moved as they fought. This particular coyote had the nerve to take hold of this very large bobcat four or five different times. I could see from the signs that the fight had been on for some little time. One place in the snow showed the full print of the bobcat's body stretched out on its side and from the way the snow was torn up it looked as if the coyote had thrown him. There was plenty of fur from both the bobcat and coyote to be plainly seen."

(Housecat Folder)

From THE SURVEY - February, 1923.

Follows Lion Track Four Days.-- G. E. Holman, leader of predatory-animal control in the Utah district, reports that Hunter Taft struck a lion track on January 23 and followed it for four days. The dogs finally treed the animal near the place where they first strick its track just after it had killed and eaten a bobcat caught in one of Mr. Taft's traps.

Housecat

421 Chemistry Building

October 8, 1928.

Mr. Jean Linsdale,
Musem of Vertebrate Zoology,
University of California,
Berkeley, California.

Dear Mr. Linsdale:

Thanks very much for your letter of October 31 on the house cat question. Your conjectures fit very well with my own and I am obliged to you for your excellent summary of the edition.

I did not know that you were associated with Dr. Grinnel for whom I have a very high regard.

I wish somebody could make a special study of the house cat supplementing the work already done in Massachusetts. With best wishes,

Yours sincerely,

ALDO LEOPOLD,
In Charge, Game Survey.

UNIVERSITY OF CALIFORNIA
MUSEUM OF VERTEBRATE ZOOLOGY

BERKELEY, CALIFORNIA

October 31, 1928.

Mr. Aldo Leopold,
Madison,
Wisconsin.

Dear Mr. Leopold:

Dr. Stephens has forwarded to me a copy of your letter to him in which you request evidence as to the existence of a zone where cats may live independently of human habitations. Unfortunately, I can contribute little of value bearing on this question. Some of the comments which follow may interest you, in this connection.

All the statements concerning cats in the paper in the Wilson Bulletin were based on observations of animals that made their homes at farm houses. My notes and the unpublished part of the report on that work contain several specific instances in which cats were observed carrying and eating birds - usually nestlings. although in the small area reported on in the "Bulletin" I did not see (and probably would not have recognized as such) any cats that were living in the wild, I think that there may have been some such individuals in the vicinity. Farmer boys who trapped for fur animals told me that they caught cats that did not belong to any of their close neighbors. These animals on this area were probably transient. I feel certain that not one cat lived in a "truly wild" state for as long as one year within the limits of the small area where my observations were made in Douglas County, Kansas.

In other parts of Kansas – in Dickinson and Franklin counties – I have known of cats that I feel certain had lived for many months, away from houses. It is my impression, after living in Kansas most of my life, that during many of its winters a cat could easily obtain sufficient food and shelter along the wooded streams. There is one big obstacle. Most of those areas where a cat could manage to winter are pretty closely trapped each season for small fur bearers. The cats are often the first animals to be caught. This, it seems to me is the most important factor, in eastern Kansas, which keeps down the number of cats which take to the woods. I have had no experience there in localities too little settled for the wooded areas to go untrapped.

One characteristic of these "wild house cats" that has impressed me is their exceptionally large size. Whether only the large ones go to the woods, or after going can survive, most of the ones I have seen or have been told about were exceptionally larges.

Possibly all these points have been known by you. They represent a summary of my limited observations in eastern Kansas which bear upon the question you have raised.

Yours respectfully,

Jean Linsdale

File Copy.

421 Chemistry Building

October 17, 1928.

Dr. T. C. Stevens,
Morningside College,
Sioux City, Iowa.

Dear Dr. Stevens:

I was very much interested in the article by Jean M. Linsdale in the September "Wilson Bulletin". On page 170, Mr. Linsdale speaks of the cat as destroying many birds. I wonder, in his intensive study of this area, whether he observed any cats which seemed to be truly wild in the sense of not making their headquarters at any human habitation? Evidently there is a zone terminating somewhere in Iowa where the cats can stay outdoors the year long, and a zone north of that where they ordinarily do not winter outdoors.

The Game Survey is naturally concerned in locating the boundary between these two zones since control measures would have to be governed accordingly. If you think Mr. Linsdale could give any light on this question, I would appreciate your forwarding to him the extra copy of this letter. It might be that the members of the Wilson Club would have evidence pro and con which might be published in the "Bulletin". With kindest regards,

Yours sincerely,

ALDO LEOPOLD,
In Charge, Game Survey.

The Wilson Ornithological Club

FOUNDED, FALL RIVER, MASS., DECEMBER 3, 1888

AFFILIATED SOCIETIES:
THE IOWA ORNITHOLOGISTS' UNION
THE KENTUCKY ORNITHOLOGICAL SOCIETY
THE TENNESSEE ORNITHOLOGICAL SOCIETY

VICE-PRESIDENT
THOMAS H. WHITNEY
ATLANTIC, IOWA

SECRETARY
HOWARD K. GLOYD
KANSAS STATE COLLEGE, MANHATTAN, KANSAS

The Wilson Bulletin

OFFICIAL ORGAN

PRESIDENT, LYNDS JONES, 352 W. COLLEGE ST., OBERLIN, OHIO

COUNCILLORS ALBERT F. GANIER, NASHVILLE, TENN.
P. B. COFFIN, CHICAGO, ILL.
DR. ALFRED LEWY, CHICAGO, ILL
CHRESWELL J. HUNT, CHICAGO, ILL.
CLARENCE BRETSCH, GARY, INDIANA

TREASURER
J. W. STACK
MICHIGAN STATE COLLEGE
E. LANSING, MICH.

EDITOR OF THE BULLETIN
T. C. STEPHENS
MORNINGSIDE COLLEGE, SIOUX CITY, IOWA

Sioux City, Iowa,
October 20, 1928.

Mr. Aldo Leopold,
Madison, Wisc.,

Dear Mr. Leopold: I am very glad to forwardy our letter of the 17th to Dr. Linsdale. This is an interesting problem.

I have just received a very interesting article on the habits and distribution of the Hungarian Partridge in Iowa, which will probably be published about March.

Sincerely yours,

T. C. Stephens

Feb. 1,1929.

Mr. Edwin Forbush,
State Ornithologist,
c/o State Dept. of Agriculture,
Boston, Massachusetts.

Dear Mr. Forbush:

I remember you published the results of a rather thorough study of house cats and I am anxious to obtain a copy of this publication since I am encountering some interesting house-cat problems in my Game Survey.

Could you send me a copy of it or tell me where I can get one? If there is any charge, please bill me.

Yours sincerely,

ALDO LEOPOLD,
In Charge, Game Survey.

DR. ARTHUR W. GILBERT
COMMISSIONER

The Commonwealth of Massachusetts
Department of
Agriculture

State House, Boston February 7, 1929.

Mr. Aldo Leopold,
421 Chemistry Building,
Madison, Wisconsin.

Dear Sir:

Your letter to Mr. Forbush has been referred to me.

His pamphlet on the house cat has been out of print for a number of years. You can possibly secure a copy by writing the Boston Bird Book Company, 162 Boylston Street, Boston, Massachusetts.

Yours truly,

John B. Phair

Director
DIVISION OF ORNITHOLOGY

JBM:EMN

2/13/29. Wrote to publisher asking for copy, or information as to where it can be gotten.

Feb. 1, 1929.

Mr. T. A. Coulson,
Moss Point, Mississippi.

Dear Mr. Coulson:

Possibly you remember our discussion as to a possible reason for the scarcity of wild house cats in the coastal flatwoods?

Since then Mr. H. L. Stoddard has told me that he has encountered a widespread belief among old woodsmen that the bobcat preys on house cats, and also a somewhat less prevalent belief that the grey fox does.

Have you ever encountered any evidence or even any rumor to this effect?

With kindest regards,

Yours sincerely,

ALDO LEOPOLD,
In Charge, Game Survey.

421 Chemistry Building

February 15, 1929.

Mr. ~~Russell~~ Ross Leffler,
c/o Game Commission,
Harrisburg, Pennsylvania.

Dear Mr. Leffler:

Some of my recent work on the Game Survey has confronted me with some questions on the housecat which I am entirely unable to untangle. The principal question is: Under what conditions does the housecat revert to a truly wild or feral condition in the sense of having dens and raising young away from buildings, whether occupied or unoccupied?

Seth Gordon tells me that it is his recollection that the Field Officers of the Pennsylvania Commission sometimes reported cats denning and having young in the open during his incumbency there. If you could conveniently verify this and give me an idea where, when and to what extent it occurs in Pennsylvania, I would greatly appreciate it.

Seth Gordon also told me that at about 1924 in Perry County, Pennsylvania, a weasel was shot carrying a housecat kitten about 4 inches long. I thought I would just mention this as a matter of interest.

Seth thinks that coon hunters tree and kill a good many cats. This obviously occurs to some extent, but any evidence bearing on whether it is a real control of cat population would be very welcome.

Have you ever heard of any wild animals, such as foxes or bobcat preying on housecats or their young?

With kindest regards,

Yours sincerely,

ALDO LEOPOLD,
In Charge, Game Survey.

COPY

File Housecat

COMMONWEALTH OF PENNSYLVANIA

Board of Game Commissioners

Harrisburg, Pa.

February 19, 1929.

Mr. Aldo Leopold,
421 Chemistry Bldg.,
Madison, Wisconsin.

Dear Mr. Leopold:

Your letter of February 15th addressed to Mr. Ross Leffler has been referred to me.

I am sorry that I can give you no personally collected data on reversion of the house cat to conditions sufficiently feral to induce the animals to rear their young in dens away from buildings. I do know, however, that in Pennsylvania and West Virginia house cats are to be found in some numbers in wild timber so far away from villages or occupied dwellings as to lead us to believe that they are, in virtually every sense of the word, wild.

These animals are frequently chased, treed and killed by 'coon hunters. As I recall my own experience in this field we killed from one to five such cats on every night trip. Incidentally, we also ran into a good many skunks.

I could not without special inquiry determine how many house cats' dens have been found in the wilds by our men but I know that a good many have been found.

In your third paragraph you refer to a weasel which was shot carrying a house cat kitten four inches long. I do not know of this particular case and the record was not placed in our mammal notes apparently. I do know, however, that at the farm of Mr. Quincy W. Hershey located near York Springs, Adams County, Penn., a weasel killed one night a house cat kitten at least 11 inches long (measuring tip of nose to tip of tail). The kitten was caught on the back porch and its would-be rescuers came to late to keep the weasel from killing it though they did catch the weasel.

I do not know that either the fox or bob-cat ever preys upon the house cat; but I do know that both Great Horned Owls and Barred Owls which I have had in captivity killed cats upon occasion. A Great Horned Owl which I kept tethered in our back yard caught two half-grown kittens on one night.

I am sorry that this data is of fragmentary nature and if you do not need the material for some time I can, no doubt, get more definite material for you within the coming few weeks.

Very truly yours,
George Miksch Sutton, Chief,
Research and Information.

COPY

Housecat Folio

Moss Point, Miss.,

Feb. 24, 1929.

Mr. Aldo Leopold,

Madison, Wisconsin.

Dear Mr. Leopold:

I have just returned from trapping grounds and did not get your letter until yesterday; consequently my delay in answering. I am reasonably sure that the bobcat does not prey on house cats, and am positive that the grey fox does not. In my experience as a woodsman I have never seen any thing that would lead me to believe that the bob cat or grey fox were enemies of the house cat.

Yours sincerely,

T. A. Coulson.

Housecat folder

Feb. 18, 1929.

Mr. A. M. Stoddart,
Rod and Gun Editor,
New York Sun,
New York, N. Y.

Dear Mr. Stoddart:

I have been reading with interest your bulletin published in 1918, "Ruffed Grouse in New York State", particularly the extract enclosed on housecats. If it is not too much trouble for you to look it up, would you kindly let me know whether any of the answers to your questionnaire indicated instances in which cats had reverted to an entirely wild state, that is instances where they were found denning or having young away from any buildings? If there were such instances, I would appreciate your putting me on the track of them.

Yours truly,

ALDO LEOPOLD,
In Charge, Game Survey.

Replied I did not know

CARLOS AVERY, PRESIDENT GEORGE SHIRAS 3D, VICE-PRESIDENT AUGUSTUS S. HOUGHTON, SEC'Y-TREASURER

American Game Protective Association

Woolworth Building, 233 Broadway
New York City

BOARD OF DIRECTORS

JOHN B. BURNHAM
WILLIAM B. GREELEY
GEO. BIRD GRINNELL
WILLIAM S. HASKELL
RAY P. HOLLAND
AUGUSTUS S. HOUGHTON
WILLIAM B. MERSHON
GEORGE SHIRAS 3D
FREDERIC C. WALCOTT
CARLOS AVERY

ADVISORY COMMITTEE

JOHN C. PHILLIPS
ORNITHOLOGIST AND SPORTSMAN
HENRY FORD
BIRD CONSERVATIONIST
HENRY L. STIMSON
HUNTER AND MOUNTAINEER
HENRY S. GRAVES
FORMER U. S. CHIEF FORESTER
HENRY VAN DYKE
AUTHOR
C. HART MERRIAM
FOUNDER U. S. BIOL. SURVEY
HUGH L. SCOTT
MAJOR GENERAL, U. S. A.
A. K. FISHER
U. S. BIOLOGICAL SURVEY
JOHN E. THAYER
ORNITHOLOGIST
SIR CLIFFORD SIFTON
CANADIAN CONSERVATIONIST
AUSTIN CORBIN
OWNER BLUE MOUNTAIN FOREST PARK
GEORGE P. MCLEAN
JOINT AUTHOR WEEKS-MCLEAN LAW
THEODORE ROOSEVELT
CONSERVATIONIST AND SPORTSMAN
C. B. YANDELL
GAME PROTECTIONIST
E. T. D. CHAMBERS
CANADIAN CONSERVATIONIST
JOHN M. PHILLIPS
NATURALIST, GAME PROTECTIONIST
L. C. SANFORD
ORNITHOLOGIST
SINCLAIR WEEKS
CONSERVATIONIST AND SPORTSMAN
L. J. TABER
MASTER NATIONAL GRANGE

Essex, New York
March 5, 1929

House Cat Folder

Mr. Aldo Leopold
421 Chemistry Bldg.
Madison, Wisconsin

Dear Aldo;

Alexander Stoddart has forwarded me your recent letter to him relative to his bulletin of 1918, "Ruffed grouse in New York State." I got Stoddart to handle this question.

I am very sure that there were no instances given in the reports to the questionnaire where cats were found having their young in dens, though of course this is entirely possible. Once in late Winter I killed two very large and heavily furred male cats on a mountain a considerable distance from human habitation, and judged that both were living in an absolutely wild state and hunting in company. It was as much of a job to kill these cats as it would have been to bag lynx, and if my hound had not treed them, I would not have gotten them. One was killed several hours after the other. I never saw more thickly furred wild animals.

Very sincerely yours,

John B. Burnham

Transplant Elk With Tractor

MONTANA sportsmen who have requested cooperation of the State Fish and Game Department in defraying half the expense in securing carloads of elk from the National Bison Range at Moiese for distribution in suitable areas, have been extending every assistance to make "the plant" successfully. While many states are crying for Montana elk for transplanting, many of these monarchs of the forest have been sold to be butchered for meat and sold to eastern corporations or given to Indians. Those which have been requested by state clubs of sportsmen have been moved in the dead of one of the hardest winters in the history of the state. Sportsmen have demonstrated their sportsmanship.

One of the most interesting incidents of the transfer of a shipment of these elk is explained in the weekly report of Allen T. Holmes, deputy state game warden stationed at Billings, who assisted in unloading and liberating the consignment for the Red Lodge club. They constructed a huge sled, hauled it into the hills with the aid of a caterpillar engine and only three elk were lost.

But let Deputy Holmes tell the story in his own words:

"John L. Corey furnished the sled and caterpillar to haul the elk. The crate was built on a sled, and was made of poles about eight inches at butt, about six inches at top, and eighteen feet long. It was six feet wide and about seven feet deep, with poles beveled off for the floor. Then they had about a foot and one-half of hay in the bottom. The upright pieces were pine and about twelve to fifteen inches through. There were four of these. The poles were spiked at ends and to the upright pieces and the rear end was fixed so that poles could go through when the elk were loaded. We used one-by-twelve-inch boards, eighteen feet long, and nailed them to the poles on the inside so that the elk could not get their feet through the cracks between the poles, four feet high. One cow elk was down in the car when we opened it and she had been tramped quite a bit. The hair on her left side was about half off, and left her skin bare. They showed fight from the start.

"It was four and one-half miles from Red Lodge to the mouth of Nickles creek where we turned the elk loose, and the Red Lodge Rod and Gun Club had 15 bales of timothy hay scattered there but the elk did not stop to look at the hay. They went up on the side of the mountain and stopped and looked around. Then some of them started to brouse and didn't seem to be afraid.

"When we got up with the last load two stood around close to the back end of the sleigh. Then we went up the creek to where one cow was in the snow up to her belly. We got her out on bare ground. The cow that had the hair off her left side was in the creek dead. We pulled her out of the creek and out of the way. Then we put some hay where this other cow could eat it. Another cow in the first load looked as though she had the distemper.

"When we came back to the sleigh one bull was still there, so we threw out the hay in the bottom of the sleigh. He started to eat some of the hay and was standing there when we went out of sight. Outside of the three I have mentioned I think the others will make it all right, after a few days of sunshine and a little rest. They will get over their soreness and excitement from being penned up. The elk did well for wild animals not used to being handled by man, penned up and shipped by rail, then unloaded from the car into a crate on a sleigh, and hauled four and one-half miles by a caterpillar tractor over a snow road one to six feet deep."

MONTANA BEAVER WORTH FORTUNE

OFFICIAL records of the State Department showing the number of beaver trapping permits issued at $10 each, where farmers and stockmen complain of beaver damaging irrigation ditches or flooding meadows, make an interesting tabulation. Before a permit is issued, the Commission insists that the premises be inspected by a game warden. During 1915 and 1916 there are no permits of record as none was required by law. Then during 1919-1920 the fee was waived by law. In 1927 the largest number of permits, 641, was issued. During 1929 the total reached 582. The following table shows the number of permits issued since 1915:

1915	*
1916	*
1917	213
1918	100
1919	*
1920	*
1921	242
1922	244
1923	259
1924	139
1925	562
1926	607
1927	641
1928	613
1929	582

Sportsmen War on Cats

MEMBERS of the Lewis and Clark County Rod and Gun Club, gathered in annual session, have declared war on cats. Alley cats, field cats, farm wanderers, deserted tabbies in town and all other varieties of bird devouring felines are in for a tough time if plans of the Helena organization are worked out. President Cecil V. Wilson has named a committee made up of Shirley Ashby, one of the most enthusiastic sportsmen of the state, as chairman; Dr. Thomas L. Hawkins, and L. B. Tipling, to call on the Helena city council with a view to drawing up an ordinance opening the season on city cats. They will later see the county commissioners and take care of the country cats. This action is in line with national condemnation of the feline enemies of song birds, ground-nesting birds on farms and in the woods, and the club merits the commendation of Montana sportsmen.

The New York City division of the American Society for the Prevention of Cruelty to Animals reports the elimination of 322,279 cats in a period of eighteen months. It would appear that this society is alive to the importance of radically reducing the number of domestic cats in the interest of increasing the bird population.

James Sheldon, writing in this report, says that along the beaches near New York last year a multitude of cats were left behind by vacationists. They became ravenous and actually fought with the fishermen for the fish they brought ashore. They climbed porches at night and entered homes in search of food.

It is the unwanted, homeless, hungry cat that is the menace of bird life in Montana as well as New York. What is true in the environs of Greater New York is equally true in every part of the inhabited United States. The number of birds devoured by the stray and homeless cat is beyond computation. The house cat gone wild and foraging in the country for its own living is by no means a helpless puny animal. Its extraordinary growth and strength indicate an abundant food supply, a great part of which is birds.

One who is keenly interested in the conservation of useful wild life writes the American Game Protective Association urging that cats should be licensed as dogs usually are and the money so obtained should go into the conservation funds for the maintenance of game farms, fish hatcheries and game patrol. He also discounts the claim that a large cat population is necessary to control the increase of rats and mice and he urges that the proper care and storing of foods which are attractive to rodents and the avoidance of scattering loose food around stock or poultry will do more to discourage the breeding of undesirable rodents than can be accomplished by any number of cats.

Systematic and persistent cat elimination campaigns might well be a part of the program of every sportsmen's organization.

OH, SAY, CAN YOU SEE—?

She: "So you kissed that painted creature?"

He: "Yes, I saluted the colors."

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF BIOLOGICAL SURVEY
WASHINGTON, D. C.

ADDRESS REPLY TO
CHIEF, BUREAU OF BIOLOGICAL SURVEY
AND REFER TO

GP - Z

July 19, 1929.

File Housecat Folder

Mr. Aldo Leopold,
In Charge, Game Survey,
421 Chemistry Building,
Madison, Wisconsin.

Dear Mr. Leopold:

Receipt is acknowledged of your letter of July 12 and I want to assure you that I enjoyed reading your report very much indeed and am in a position to understand the tremendous amount of effort which must have gone into its preparation.

Perhaps in my comments relative to bobcats killings house cats I should have explained that I had never witnessed evidence of such an attack personally but I have heard of such instances sufficiently often and from sources sufficiently reliable so that I feel assured of the facts. In my old home in Vermont when I was a youngster bobcats were fairly numerous and I used to hear the woodsmen tell of losing their house cats in this manner. I have often heard of similar instances occurring in sections of Canada where bobcats and bay lynxes are fairly abundant. I think perhaps that an inquiry directed in regions where these animals are reasonably abundant will furnish fresh facts on the subject. In my boyhood I heard these stories quite frequently and came to accept them as facts without having an opportunity to view any evidence personally. I may say that I have no doubt as to this tendency. There is some proof to substantiate the matter in the known fact that many of the half-wild male house cats will attack and kill kittens at sight.

You are quite welcome to make any use of this statement that you wish and I am sorry that I cannot give you definite details.

With best personal wishes, I am

Sincerely yours,

H P Sheldon

H. P. Sheldon,
U. S. Game Conservation Officer.

Quotation from "The Arctic Prairies" by Ernest Thompson Seton, page 13.

"As I walked down the crooked trail along which straggle the cabins, I saw something white in a tree at the far end. Supposing it to be a White-rabbit in a snare, I went near and found, to my surprise, first that it was a dead house-cat, a rare species here; second, under it, eyeing it and me alternately, was a hungry-looking Lynx."

(Passage has reference to the Indian village of Pelican Portage, which is 60 miles north of Athabaska Landing.)

The Winter Status of the Feral Housecat in East Central South Dakota

Paul L. Errington

My generalizations deal with the Sioux River and the Oakwood Lakes of Brookings County, South Dakota, roughly, from 1917 to 1928.

Cat tracks were to be seen along wooded lake shores and stream courses at practically any time throughout the winter months. The cats responsible for these tracks were, almost without exception, old Toms which often frequented brushy tracts as far as three-quarters of a mile from the nearest inhabited human dwellings. Since the community referred to was well settled, three quarters of a mile represented the approximate maximum distance that an animal would be liable to wander from an occupied building.

It was rarely that a Feral Cat shunned human society to the extent that he would not enter a farmyard, although he might be wild enough to whisk under a shed or go bounding through the woods at the first appearance of a man.

Deserted buildings on a river bank usually harbored a variable fauna, among which could be listed Mice, Rats, Squirrels, Cottontails, and Pheasants (in rank surrounding weed patches of Marsh Elder, Ragweeds, Nettles, and Sweet Clover) in addition to transient or resident predators such as Weasels, Skunks, and vagrant House Cats. Sometimes a Red Fox scouted the environs.

Under an old hog house on an untenanted river farm, I caught in three seasons out of four, a total of 6 House Cats, all Toms, 30 Skunks (Mephitis), 1 Weasel, 2 Barn Rats, 1 Fox Squirrel, 20± Cottontails (no count kept), and numerous Mice (Mus and Microtus). From the foregoing it can be readily seen that a vacant farm affords food and shelter to a host of wild

life, not the least of which is the House Cat.

In the hardwood river brush, I have tracked Cats to refuges which include holes in the ground (Rabbit and Skunk dens), cavities behind overhanging root-tangles, hollow trees, and roadside culverts. Summer cottages along a lakeshore, provided that they have holes underneath, prove very acceptable from the standpoint of stray cats. As a whole it might be said that a Feral Cat will prefer a group of ruinous farm buildings, if relatively undisturbed and grown up to weeds, to the more primal native timber environment. I presume that this is true because of retention of semi-domestic feline habits and the great availability of suitable food about places of this description.

I have made it a practice to shoot cats whenever I could, unless they were virtually in somebody's yard. Examination of their stomachs disclosed that very few are mousers to any appreciable degree. The average (if an "average" can be taken) stomach content ran something like this: 1 mouse, part of a Cottontail, part of a Pheasant.

It isn't certain that every Pheasant or game bird eaten by these Cats was necessarily killed by them; however the general unfavorable evidence against the hunting House Cat is sufficiently complete so that there seems to be little chance of unjust accusations in the majority of post-mortem cases.

As to effect of cold upon House Cats, I cannot recall having seen fresh Cat tracks at temperatures lower than ----20° F. In South Dakota ---20° F is cold; ----30° F to ---40° F, extremely cold. At the former temperature the activity of most wild creatures will show a decrease; at the latter, minks cease running and, consequently, one would expect to find no Cats abroad.

Some Cats are out at - 20° F. During a cold snap in the last of December, 1927, when the weather was seldom warmer than - 20° F, I remarked

on consecutive days the track of a large Tom on open lake shore.

This individual had a regular den under the roots of a shoreline Cottonwood tree, though he spent time about a group of occupied farm buildings more than a mile away. I suspect that he visited another farm a half mile in the opposite direction from the Cottonwood, but I didn't investigate. While I had a trap set for his especial reception--which trap, incidentally, was put out of order by drifting snow--I noted that he once stayed in the den for two days without trying to leave.

From childhood on, I have encountered Cats, mainly in town, which were suffering from frozen feet. As nearly as I recollect, these Cats were either kittens or sickly, scrawny, under-sized animals in poor physical condition to withstand exposure. I doubt very much if a healthy, mature Tom-cat, in ordinary game country, would succumb to Eastern South Dakota cold. He might be compelled to go hungry once in a while or to lay up a few successive days under a shed or in a hole somewhere, but he is quite able to take what punishment he would need to. The periods of extreme cold are of relatively short duration in the locality discussed, and there is always to be found a limited amount of food and wholly adequate shelter, natural or artificial, according to the taste or requirements of the Cat.

Madison, Wisconsin
September 11, 1929

Cat folder

September 10, 1929

Professor H. W. Wight
School of Forestry & Conservation
Ann Arbor, Michigan

Dear Wight:

Last spring Stoll of the Detroit News asked us to loan him Sabin to break in the keeper of a private estate near Detroit. We did this and Stoll brought in to me a list of "vermin" which he stated had been taken from less than 2500 acres during the two months ending August 15th. I know very little as to the location or character of these lands but Stoll thought the list was authentic and, if so, it would certainly seem that some manner of vermin control was in order on these premises.

1 fox (red)	75 crows
49 cats	629 Eng. sparrow
139 skunk	18 starling
30 red sq.	2 great horned owl
22 weasel	1 sharp shinned hawk
11 house rat	2 yellow belly woodpecker
10 dogs	41 snapping turtle
2 badgers	34 gar pike
6 mink	56 wood chuck holes gassed

Yours very truly,

P. S. Lovejoy
Game Division

49 | 2500
50 acres per cat

Excerpt from "Fins, Feathers, and Fur," No. 77, Sept. 1929

VAGRANT HOUSE CATS

"The greatest destroyers of birds are our housecats. They destroy our most valuable birds, those that were created for our benefit to destroy noxious weed seeds and all kinds of harmful insects that are a menace to livestock and necessary vegetation."

- - - - - -

Warden Klet's reference to the house cat's destruction of game birds recalls an instance related by Warden Sheridan Greig, of Pine County. His children being pleased with a large black cat that strayed into his place one winter's day several years ago, he let it remain, against his better judgment. Several mornings later the cat was missing and seeing the trail led in the direction which he intended to patrol that day, he followed it to see what the cat would do. Within the first mile that cat had caught and partially eaten two grown partridges. Needless to say, Warden Greig snowshoed that trail until the cat was eliminated; and the trail was seven miles long before the demise took place.

[redacted] Cats

October 12, 1929

Mr. Aldo Leopold
421 Chemistry Building
University of Wisconsin
Madison, Wisconsin

My dear Leopold:

From "Science" of the issue of October 4, 1929, I quote the following for your information:

"Tularemia, newly discovered disease of rabbits, rodents, and men, may also affect cats, muskrats, pigeons, ring-necked pheasants, grouse and quail, it appears from studies reported to the American Public Health Association by Dr. R. G. Green and E. M. Wade, of the University of Minnesota and the State Department of Health. This new disease which has caused much concern in public health circles, is acquired by men who handle infected animals. The fact that many more kinds of animals may have the disease greatly increases the danger to human beings by increasing the possible sources of infection."

L. W. T. WALLER, JR.

GAME SURVEY

CONDUCTED FOR THE

SPORTING ARMS AND AMMUNITION MANUFACTURERS' INSTITUTE

BY ALDO LEOPOLD

421 CHEMISTRY BLDG.

MADISON, WISCONSIN

cat

April 16

Dr L J Cole

Madison

Dear Sir: Dr Cole

I am preparing a book on "Game Management," and also a report on the "Game Survey of the North Central States."

I am lacking the information specified below and would appreciate your filling in the reply blank in so far as you are able. Please return to me in the enclosed envelope. Thanks for your cooperation.

Yours sincerely,

AL

ALDO LEOPOLD
In Charge, Game Survey

Subject: Isolation Periods Domestic Cat - 9 wks.

Question: Can you tell me?

9 wks.

Is minimum breeding age 1 year? -

Reply:

THE UNIVERSITY OF WISCONSIN
COLLEGE OF AGRICULTURE
MADISON
H. L. RUSSELL, DEAN AND DIRECTOR

DEPARTMENT OF GENETICS
L. J. COLE
R. A. BRINK

23 April, 1930

File Housecat

Mr. Aldo Leopold
Game Survey, 421 Chemistry Bldg.

Dear Mr. Leopold:

I just got back a day or two ago from my western trip and am trying to get caught up on accumulated correspondence.

I am returning your slip asking for information on the gestation period and breeding of the domestic cat. Marshall, in his "Physiology of Reproduction", gives the gestation period as nine weeks but I do not know the minimum breeding age and ~~do not~~ seem to have anything here in the office that gives it. I am under the impression, however, that it is, as you suggest, a year. When I have time to get up to Agricultural Library, I will look in some of the cat books and shall see whether I can find a statement on this point, or if you are in a hurry, I would suggest that you might look it up if you happen to be in Agricultural Hall.

Many thanks for the reference to Bergtold's paper. I think I have a copy of this but have not yet had time to look it up. I knew of this paper but did not appreciate that it was the one to which you were making reference.

I have got to go to Washington the last of this week and expect to be back about the 3rd of May. I hope then we may have time to get together occasionally and discuss some things of mutual interest.

Sincerely,

Cole

L. J. Cole
Professor of Genetics

LJC^n

A TWELVE POUND HOUSE CAT) File Housecat

Pa. Game News,
Nov., 1930

One of the largest half-wild domestic cats ever killed in the history of the Game Commission was received at their offices recently. It weighed 12 pounds and measured three feet from tip of head to tip of tail. In coloration the cat is a confused mixture of blacks, browns, grays and whites, somewhat tigerish in appearance. It was shot from a large hemlock tree in Bald Eagle Township, Clinton County, by Mr. Robert Farwell and taken to Division Game Supervisor John B. Ross of Lock Haven, who in turn forwarded it to the Game Commission. The specimen will be mounted.

Housecats

Nov. 1930

Errington

JOHN F. MILLER

AGAIN has taps sounded for an employee of the Game and Fish Department; once more a beloved co-worker has been taken from us.

John F. Miller was born February 27, 1880 in Philadelphia, Pennsylvania. He was a veteran of two wars, having served in the Spanish-American and World War; an injury sustained while in camp at San Antonio prevented service over-seas in the latter war. He was a regular army man, having retired from active duty some eight years ago.

He faithfully and efficiently served the Department for the past seven years in the accounting division and his unselfish spirit of co-operation will be sadly missed by his fellow workers.

He is survived by the widow, Mrs. Louise Miller, one daughter, Ethel, and four boys, Frederick, George, Robert and Alfred. Funeral services were under Masonic auspices and he was buried with military honors at the Fort Snelling Cemetery.

Reviewing House Cats and Birds of Prey

(In printing the various articles which we receive from our contributors we ofttimes find that such articles bring out opposite views expressed by persons who are readers of this magazine. Recently we published an article by Jack Miner, entitled "HOUSE CATS AND BIRDS OF PREY." We now have an article from our friend Dr. A. K. Fisher, Senior Biologist, United States Bureau of Biological Survey.)

IT certainly does not help restoration, I purposely omit conservation, which word has become so warped and distorted through improper usage, to have such papers as "House Cats and Birds of Prey" by Jack Miner broadcasted through the country. This paper is so full of misstatements and errors it would seem to be wronging the public to let it go unnoticed.

When men have outgrown hunting water-fowl for the market, and have become interested in a few species furnishing material for lectures and moving pictures, they rarely are tolerant of species that may interfere even slightly with their hobbies, or are of little pecuniary interest to them.

Education may have had something to do with lessening wholesale slaughter of small birds, but if the Treaty Act with its over-shadowing penalty was not in existence, it is fair to assume that swallows, cedar birds, vireos, kingbirds, robins and other thrushes, still would continue to be for sale in some of the markets and their killing in evidence eleswhere.

Mr. Miner claims that the slow increase of "these cheerful, lovable birds" rarely shot nowadays, is due to their natural enemies keeping them down, which knowledge he says he secured from woods and fields. He further states they are not winter killed because they migrate.

Such thoughtless statements are absurd. Ornithologists know that perils may accompany migration at every step, and those who have made a careful study of the subject estimate that at least fifty percent of the migratory birds—even from extended areas—may be lost in a single trip.

Wind storms, rain, sleet, losing their flightline, or lack of food are among the more important causes leading to their destruction.

In a locality a species may have been abundant before migration and then almost absent for a series of years following, showing that some accident had befallen them.

The cuckoo was abundant about Washington half a dozen years ago and their notes heard in every good sized woodland—since then, a few only have been heard through the entire summer season.

In 1895 a three day sleet storm practically killed all bluebirds in the states between South Carolina and Maine by covering their food and chilling their bodies.

In February, 1897, Mr. Wayne reported thousands of woodcocks being killed in South Carolina by an icy storm.

A protracted cold storm in June, 1903, killed large numbers of adult and young of the martin and other insect-eating birds, and in March, 1904, millions of longspurs were killed in a driving snowstorm in Minnesota. Dr. T. S. Roberts after making careful calculations, estimated that there were 750,000 dead birds on the surface of two frozen lakes about two square miles in area.

Personally I counted two-hundred and fifty-six dead English sparrows under a tree in the Smithsonian grounds in August after a cold thunderstorm.

The above citations are merely samples, and plainly show what is happening to a greater or lesser degree at all times.

It readily can be understood that an individual will become prejudiced against a Cooper hawk or sharp-shinned hawk that molests his chickens or birds, but how anyone with even a vestige of open mind can believe that a marked general diminution in the abundance of bird life is due to inroads of natural enemies is beyond normal comprehension.

Point Pelee fifteen miles from his home is one of the well known flight routes of migrating birds between the United States and Canada which accounts for his seeing all the hawks that pass to and from the eastern United States.

We are greatly in need of many more hawks because through ignorant intolerance toward their enemies, field mice and pine mice have so increased that millions of dollars worth of orchards are destroyed by them annually in the apple sections of eastern United States.

If Mr. Miner thinks there are ten times too many hawks, why are there not ten times too many geese, and why should that fool change be made in the bag limit, impossible of enforcement, when there is not enough food to properly feed the present number of water-fowl?

Where there is a hotel travelers go for shelter and not to see the proprietor or guests—and in the same way migrating birds that depend on trees for rest go there primarily for that purpose and not because other species are present. Mr. Miner's grove is used as any other clump would be, along their routes.

It is hard to understand the mental complex of those professing faith, and who approach the Infinite with full adulation attempting, without a blush, to rearrange in Nature to suit their selfish wishes, those things which have worked in harmony for millions of years. Believing as they profess they do, it would seem too mild an expression to refer to their action as travesty!

Sportsmen and naturalists agree that cats will eat mice, but not if birds are available for food.

In my old home in southern New York cats ate the young from sixteen robins' nests one season, when mice were common in the meadows of adjoining property.

On this point I can not agree with Mr. Miner, but do agree fully with the editorial comment on the cat at the head of the article.

If cats and rats could be eliminated other natural enemies of birds need hardly be considered.

—Dr. A. K. Fisher.

Housecat folder

HOUSE CATS AND BIRDS OF PREY

The following extract is from an article by Jack Miner of Kingsville, Ontario, and is quoted as a matter of interest:

> "The house cat is the natural mouse hunter, but takes birds if he can get them; but these Hawks and Owls are natural bird hunters but will take mice if they cannot get birds. All men that are acquainted with the above mentioned creatures know that this is true. Now don't be led to believe that I am in favor of the house cat. I have not kept one on my premises for over thirty years and I destroy every one that comes on the premises; but the Great Horned Owl is five times more destructive on birds than the cat ever was. Never in my life have I known a cat to climb over fifteen feet high in a tree for the sole purpose of getting a bird's nest, nor have I seen his claw marks around an empty nest that high in a tree; but there is not a bird that can build high enough or low enough to be out of reach of the Great Horned Owl. Yes, it is true the Great Horned Owl will kill Crows now and then and that is the reason the Crows are fighting him and trying to drive him out of the country before he goes to roost; but remember, the Great Horned Owl also kills the Red-tailed Hawk, and a Red-tailed Hawk kills fully five times as many Crows as an Owl does, for the crow is one of the easiest birds for an awkward Red-tailed Hawk to catch. When we are catching Crows here, one of our handicaps is the Red-tailed Hawk coming and disturbing them. I have seen this great favorite of mine dart right under my Crow net after Crows and you can well believe I didn't catch many Crows that morning."

Conservation News Dec. 18, 1930. No. 72

Housecats

TWELVE POUND HOUSE CAT

One of the largest half-wild domestic cats ever killed in the history of the Pennsylvania Game Commission was received at their offices recently. It weighed 12 pounds and measured three feet from tip of head to tip of tail. In coloration the cat is a confused mixture of blacks, browns, grays and whites, somewhat tigerish in appearance. It was shot from a large hemlock tree in Bald Eagle Township, Clinton County, by Mr. Robert Farwell and taken to Division Game Supervisor John B. Ross of Lock Haven, who in turn forwarded it to the Game Commission. The specimen will be mounted.

Game Breeder Jan. 1931

clipp cat folder

TWELVE POUND HOUSE CAT MARAUDER DESTROYED

"The Service Bulletin of the California Fish & Game Department discloses a report from Pennsylvania of a twelve pound semi-wild domestic cat being shot down from a large tree. The cat measured three feet from tip to tip and was tigerish in appearance, showing how rapid reversion to the wild state takes place, increasing weight and size.

The Missouri Game Department reports that every time a hunter kills a semi-wild domestic cat he saves his daily quail bag limit. 1600 persons, receiving pheasant eggs in the state cooperative pheasant egg hatch, report that domestic cats caused more deaths of young pheasants than died from natural causes. Sportsmen are urged to do their part in curbing the depredations caused by house cats running wild.

Farmers who permit cats to roam about their places are keeping away birds which aid materially in destroying insect pests. City dwellers cannot attract birds with bird houses, bird baths and feed pans so long as their greatest natural enemy, the cat, is sneaking, sleeking around, ready to pounce."

du Pont News No. 80, April 15, 1931

This is all very true, as our men at the du Pont Experimental Game Farm at Carney's Point, New Jersey, can well attest. We recently began to suffer losses in our pheasant pen. One or more birds were found dead in our winter pen every day for several days. Fresh tracks of a cat in and about the pen offered the only clue to the reasons for this mortality. Considerable effort was made to trap the cat, but to no avail, until the entire pen was made a trap by slanting a piece of two foot wire from the top of the fence inward, so that a cat getting into the pen would be unable to get out.

It meant the sacrifice of at least one bird more, but it worked. Two cats were trapped in this manner on consecutive days, less than fifteen days after our first loss, having accounted up to that time for nine full grown pheasant breeders.

Refuge Keeper L. D. Rearick killed a large house cat that had 2 rabbit ears, the tail of a chipmunk, and the wing of a grouse in its stomach. The cat weighed 10 pounds.

clipp Housecat

Pa. Game News
Vol. 2, No. 16, July (?) 1931

Housecat

TWELVE-POUND HOUSE CAT

A recent report from an Eastern state reveals that a 12-pound semiwild domestic cat was shot from the top of a large hemlock tree. The cat measured three feet from tip of head to tip of tail. In coloration it is a confused mixture of blacks, browns, grays and whites and the animal was somewhat tigerish in appearance. The specimen will be mounted. This is believed to be a record.

Missouri Game and Fish Department reports that every time a hunter kills a semiwild cat he can easily figure that he has saved his daily bag limit of bobwhite quail. A checkup of the results of the cooperative pheasant egg hatch shows that after the 26,000 eggs had hatched, cats caused more deaths of young pheasants than died of natural causes. The toll taken by predatory animals and hawks was very meager in comparison to the toll taken by cats, the report filed by the 1600 persons who received eggs revealed. Sportsmen are urged to do their part in curbing the depredations caused by the common house cats permitted to run wild.

Farmers who permit cats to roam on their places are keeping away birds which aid materially in destroying insect pests. City dwellers must be content with only empty bird houses if they keep cats, bird authorities point out, as feeding places, houses and baths are not sufficient incentive for birds when their greatest natural enemy, the cat, is about.

More than 300 semiwild house cats have been killed in Southern Butte County by an expert hunter for the Feather River Rod and Gun Club in California, according to reports coming to this office. Stomachs of 100 of these cats were opened and in 99 of them was found bird meat, principally duck and quail. Only one cat was found to have fed on mice.

This gives some idea of the importance of elminating these clever creatures from our game lands.

California Fish + Game
Vol. 17, no. 3, July, 1931, p. 329

File: Cat
Hawks & Owls
Maryland
Predator chapter, text

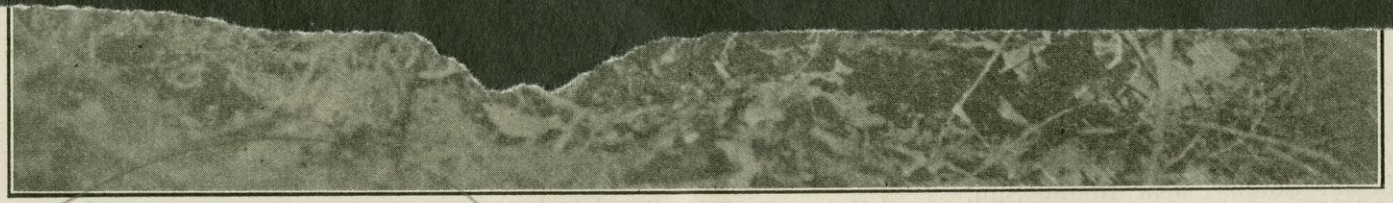
Extract from "Bird-Banding," Vol. III, No. 1, January, 1932.
General Notes, page 33.

AN INTERESTING GREAT HORNED OWL CAPTURE--While returning from tending a duck trap on the Walter P. Chrysler estate at Horn's Point on the Choptank River, Maryland, just after dark on the evening of October 7, 1931, I flushed a Great Horned Owl, which fluttered up in front of my car and flew laboriously down the road. The headlights showed it to be carrying something heavy, something which it could not lift two feet off the ground. I gave chase, and the bird dropped clumsily a hundred yards farther on, to crouch defensively atop the prey it seemed so loath to leave. I stopped the car twenty feet away and turned on my strong spotlight. The owl's attention was riveted by the dazzling beam, and while it stood motionless staring into the glare, I crept up cautiously on the dark side, threw my jacket over it, and pinioned it down. After wrapping the claws in my handkerchief to prevent accidents, and folding the bird safely in my jacket, I stopped to pick up its prey, which, to my surprise (and delight) proved to be a half-grown house cat! The kill evidently had just been made, for the limp body was still warmand quivering.

The owl weighed forty ounces, and from its small size I judged it to be a male. The cat weighed nineteen ounces, almost half as much as its captor.

- -

O. L. Austin, Jr., Bureau of Biological Survey, Cambridge, Maryland.



Game Commission

Game Protector Ralph A. Liphart of Homestead Releasing Cock Ringnecked Pheasant

THE MARAUDING HOUSE CAT

The house cat was not known to the ancient Hebrews, Assyrians and Babylonians, and the **"ailourus"** of the earlier Greeks and Romans, originally translated "cat," is now known to have been a marten cat, a very different animal.

It seems to have been originally a wild species from north or northeast central Africa, first domesticated by the Egyptians, and later crossed with a decidedly different species originally from China. It proved so valuable in clearing the fields of mice and other grain-destroying vermin that the Egyptians came to defy it and developed an extensive cat religion, and the bodies of cats were mummified and preserved religiously.

After the conquest of Egypt this cat was imported into Greece and Rome, replacing their marten cat, and from there gradually spread over Europe generally. And somewhere along the line it was crossed more or less with the European wildcat **(Felis catus)**, a cat having, in contrast to our own wildcat, a striped body and a long ringed tail —so that the present house cat is partly European wildcat, and the present European wildcat partly house cat.

But somewhere along the way—due to changed conditions and man's mismanagement—the house cat has degenerated from a blessing to a very serious predatory pest,—when it is allowed (or forced) to roam at large and support itself in a small game country.

A cat kept at home, day and night, is one thing; a cat roaming the woods and fields at night—and in many cases "dumped out" and forced to go wild and live on small game—is a very different thing. And whatever one's sympathy with the victim of circumstances, that, like other things, must either kill or starve, a cat most emphatically has no place in small game territory, and must be killed if we are to maintain our stock of small game. At present the house cat, in the aggregate, undoubtedly destroys more small game than any other predator in Pennsylvania.

With all these billboards and cigarette ads the great out of doors is gettin' to look like a beauty contest.

The main difference between a sport and a sportsman is the man part of it

This "cent a shell" tax certainly would be taxation without representation.

File Housecat

E. E. Lee will put in some winter hunting for mountain lions in the Chiricahuas where lions are damaging game and livestock quite heavily.

We are pleased to state that all of our hunters are now operating at lower elevations where severe storms are not likely to damage their catch. Last year we had several men snow-bound and considerable time was lost thereby.

We notice that the skins coming in are being very well taken care of and the new stretchers that Mr. Gilchrist designed for us are greatly improving the appearance of the furs as a whole.

We note from the reports received from Denver that you are continuing to turn in stomachs in good shape. Please continue to do this.

Domestic stock and game listed below represent depredations by various predators that were actually found by hunters during the month. No effort is made to show similar reports reaching this office from other sources.

Killed by Lion: 17 deer, 5 calves, 5 sheep.
Killed by Coyote: 4 lambs, 9 sheep, 107 chickens, 8 turkeys, 6 calves, 8 goat kids, 10 goats, 3 deer.
Killed by Bobcats: 4 quail, 70 chickens, 33 turkeys, 1 sheep, 2 lambs.
Killed by Bear: 6 hogs and 1 steer.
Killed by Fox: 4 Persian house cats.
Killed by Eagles: 1 turkey.
Killed by house cats: 1 lamb.

Rodent News:

November finds all of our rodent work getting under good way for the winter. The following report from the various counties has been taken in part from reports submitted by the several assistants in their respective districts.

Yuma County - P. M. Mercer, Assistant in Charge

Gopher control operations were carried on in Yuma, South Gila, North Gila and Mohawk Valleys, poisoned sweet potato bait being used for the most part. Traps were used in the South Gila Valley on some land that had been treated with poison and resulted in almost complete eradication. The acreage that was trapped is fairly isolated from any infested area and should be free from infestation for some time.

Pa. Game News, Dec.(?) 1932

WOULD YOU BELIEVE IT!

An ordinary house cat, eighteen inches high, killing three six weeks old pigs. It happened in Erie County several months ago and the farmer and owner of the pigs accidentally told the story when he brought the pelt of the cat to the environmental exhibit of the Board of Game Commissioners, then on display in that city, and desired to know if a bounty was paid on such an animal. He was disappointed when he was informed that such claims were only paid on the wild cat.

"It was about ten o'clock at night when we heard the pigs squealing," the farmer excitedly informed Trapper Blair Davis at the exhibit. "We ran to the barn, and the animal (we didn't know what it was at the time) was finishing the last of the three young pigs as we approached. It ran out, up a tree, down again and then up a telegraph pole where it stayed until we shot it."

ABOUT 250 SPECIES OF BIRDS OCCUR IN PENNSYLVANIA

Penn. Game News
Vol III no 12 p3
Mar 1933

The Problem of the Vagrant Cat

By T. GILBERT PEARSON

THE NATIONAL ASSOCIATION OF AUDUBON SOCIETIES

Circular No. 18

IT is a widely recognized fact that domestic cats are great destroyers of wild bird-life. Particularly is this true during the spring months when the young birds are leaving the nest. Many people do not observe the destruction which these animals inflict upon the bird population about every town and in the countryside, because the killing is done largely during the hours of darkness and in the early morning. Drivers of motor cars at night frequently see the eyes of marauding cats by the roadside.

Control should be exercised over the cat population and arrangements made for destroying humanely vagrant and unwanted cats, the numbers of which are exceedingly great.

Cats are known to be carriers of disease, their cries at night disturb the slumbers of men and women everywhere, and thousands of sick people are rendered nervous and irritable by Grimalkin's nocturnal serenades.

STATE LAWS FOR KILLING CATS

Legislation has been enacted in the following states to encourage the destruction of bird-hunting cats:

California Fish and Game Laws. "All cats found within the limits of any fish and game refuge shall be considered and classed as predatory animals and subject to all provisions of law relating to the destruction or killing of such animals, and the Board of Fish and Game Commissioners, their deputies and employees are hereby empowered, authorized, and directed to kill all such cats so found within the limits of such fish and game districts; *provided, however,* that the provisions of this section are not applicable to any cat while it is in or at the residence of its owner or upon the grounds of the owner adjacent to such resident."

Conservation Laws of Maryland. "Any person may and it shall be the duty of any deputy game warden or other officer of this state to humanely destroy any cat found hunting or killing any bird or animal protected by law and no action for damages shall be maintained for such killing."

New Jersey Fish and Game Laws. "Any person holding a valid hunting and fishing license may, and it shall be the duty of any Fish and Game Warden or peace officer, to humanely destroy any cat found hunting or killing any bird or animal protected by law or with a dead bird or animal of any species protected by law in its possession; and no action for damages shall be maintained for such killing."

New York Conservation Law. "Any person over the age of twenty-one years, who is the holder of a valid hunting, trapping and fishing license, may, and it shall be the duty of a game protector or other peace officer, to

humanely destroy a cat at large found hunting or killing any bird protected by law or with a dead bird of any species protected by law in its possession; and no action for damages shall be maintained for such killing."

Licensing of Cats by Municipal Authorities

The National Association of Audubon Societies has on numerous occasions called attention to the perfectly natural bird-catching habits of these animals. It financed the publication and distribution of the most complete treatise on the subject that has ever been issued, viz., "The Domestic Cat," by Edward Howe Forbush. For many years we have urged the passage of state laws and municipal ordinances intended to reduce the surplus cat population. The Garden Club of America and many other organizations also have sought to have the stray cat evil mitigated.

The International Cat Society of New York City, formed in 1931, has tried to induce municipal authorities to enact cat license ordinances, and in two years has been successful in three instances. The Audubon Association recently wrote the mayors of four thousand cities and towns on the subject. One hundred and fifty-six answers have been received, about half of which ask for further information. We know of only ten towns in the United States which have adopted cat ordinances. These are: Harrison, Larchmont, and the Village of Roslyn Harbor, New York; Milburn, Montclair, and Pompton Lakes, New Jersey; Seattle, Washington; Grand Rapids, Michigan; Massillon, Ohio; and Maywood, Illinois. Communicating with the authorities of these towns, we found that there has been extremely little observance of the cat license features. People do not want to pay a license on cats, and public sentiment in most places is preventing the enforcement of these measures.

A Suggested Ordinance for the Licensing of Cats

The Cat-License Ordinance prepared and promulgated by the International Cat Society of 101 Park Avenue, New York City, is as follows:

"*Section I—Cats to Be Licensed:* It shall be unlawful to own, harbor or maintain a cat of more than six months of age unless the owner thereof or the person harboring or maintaining the same shall have a valid and subsisting license for such cat.

"*Section II—License Fees:* The annual license fees for cats over six months of age shall be as follows: 1. Each male cat, $1.00; 2. Each female cat, $2.00; provided, that if, accompanying the application for licensing a spayed female cat, there shall be a certificate from a licensed veterinary surgeon that said female cat has been properly spayed, the annual license fee shall be $1.00. Provided, further, that any person keeping or having in his possession cats for breeding purposes, and the selling and exchange of such cats, may obtain a kennel license for the kennelling of cats of five or more in number, and shall pay for such kennel license the sum of $5.00. No license shall be granted for a period exceeding one year, and all licenses shall expire on the day of ———— in each year.

"*Section III—Tags to Be Issued:* A metal tag or tags marked with a number, to correspond with the number of the license, shall be issued with said license and shall be attached to a collar and shall, at all times, be worn by the cat so licensed when at large.

"*Section IV—Unlicensed Cats at Large:* Any person over the age of twenty-one years may, and it shall be the duty of every police officer, to destroy humanely an unlicensed cat at large, and no action for damages shall be maintained for such killing.

"*Section V—Penalties:* Any person violating the provisions of this ordinance shall, upon conviction of such violation, be subject to a fine in an amount not to exceed Ten ($10.00) Dollars:

"*Note:* Where objection is made Section V may be omitted. Also, cost of license may be made optional, to suit the requirements of your municipality."

This would seem to be an excellent ordinance if it could be adopted generally and enforced.

A Suggested Non-License Cat-Reduction Ordinance

Most of the cats disposed of by municipal authorities or Societies for the Prevention of Cruelty to Animals are those which people deliver to them. With this knowledge in mind, the Directors of the National Association of Audubon Societies have prepared a suggested ordinance which avoids the "tax" or "license" feature that has been found objectionable to so many people, and which many mayors, therefore, hesitate to recommend. It provides for the town assuming the responsibility of disposing humanely of cats of which people desire to be relieved. Many individuals, who shrink from the unpleasant experience of killing a cat, will gladly deliver their surplus animals to some humane agent for disposition if such an agency is easily accessible. We believe, therefore, that adoption of the following ordinance by any community would result in an appreciable reduction of the vagrant cat population of the country. The American Game Association and the Izaak Walton League of America join the Audubon Association in recommending the following:

Proposed Ordinance for Control of Vagrant, Diseased and Unwanted Cats

"An Ordinance to Prevent Vagrant or Unidentified Cats from running at large in the Streets or Public Places of the Town of ————, in the County of ————, State of ————, and for the impounding, or disposition of such cats.

"BE IT ORDAINED by the Town Council of the Town of ————, in the County of ————, as follows:

"Section I. No person being the owner or harboring a cat shall permit it to run at large in any of the streets or public places of the Town of ————, in the County of ————, at any time, unless identified as hereinafter provided.

humanely destroy a cat at large found hunting or killing any bird protected by law or with a dead bird of any species protected by law in its possession; and no action for damages shall be maintained for such killing."

Licensing of Cats by Municipal Authorities

The National Association of Audubon Societies has on numerous occasions called attention to the perfectly natural bird-catching habits of these animals. It financed the publication and distribution of the most complete treatise on the subject that has ever been issued, viz., "The Domestic Cat," by Edward Howe Forbush. For many years we have urged the passage of state laws and municipal ordinances intended to reduce the surplus cat population. The Garden Club of America and many other organizations also have sought to have the stray cat evil mitigated.

The International Cat Society of New York City, formed in 1931, has tried to induce municipal authorities to enact cat license ordinances, and in two years has been successful in three instances. The Audubon Association recently wrote the mayors of four thousand cities and towns on the subject. One hundred and fifty-six answers have been received, about half of which ask for further information. We know of only ten towns in the United States which have adopted cat ordinances. These are: Harrison, Larchmont, and the Village of Roslyn Harbor, New York; Milburn, Montclair, and Pompton Lakes, New Jersey; Seattle, Washington; Grand Rapids, Michigan; Massillon, Ohio; and Maywood, Illinois. Communicating with the authorities of these towns, we found that there has been extremely little observance of the cat license features. People do not want to pay a license on cats, and public sentiment in most places is preventing the enforcement of these measures.

A Suggested Ordinance for the Licensing of Cats

The Cat-License Ordinance prepared and promulgated by the International Cat Society of 101 Park Avenue, New York City, is as follows:

"*Section I—Cats to Be Licensed:* It shall be unlawful to own, harbor or maintain a cat of more than six months of age unless the owner thereof or the person harboring or maintaining the same shall have a valid and subsisting license for such cat.

"*Section II—License Fees:* The annual license fees for cats over six months of age shall be as follows: 1. Each male cat, $1.00; 2. Each female cat, $2.00; provided, that if, accompanying the application for licensing a spayed female cat, there shall be a certificate from a licensed veterinary surgeon that said female cat has been properly spayed, the annual license fee shall be $1.00. Provided, further, that any person keeping or having in his possession cats for breeding purposes, and the selling and exchange of such cats, may obtain a kennel license for the kennelling of cats of five or more in number, and shall pay for such kennel license the sum of $5.00. No license shall be granted for a period exceeding one year, and all licenses shall expire on the day of ———— in each year.

"*Section III—Tags to Be Issued:* A metal tag or tags marked with a number, to correspond with the number of the license, shall be issued with said license and shall be attached to a collar and shall, at all times, be worn by the cat so licensed when at large.

"*Section IV—Unlicensed Cats at Large:* Any person over the age of twenty-one years may, and it shall be the duty of every police officer, to destroy humanely an unlicensed cat at large, and no action for damages shall be maintained for such killing.

"*Section V—Penalties:* Any person violating the provisions of this ordinance shall, upon conviction of such violation, be subject to a fine in an amount not to exceed Ten ($10.00) Dollars:

"*Note:* Where objection is made Section V may be omitted. Also, cost of license may be made optional, to suit the requirements of your municipality."

This would seem to be an excellent ordinance if it could be adopted generally and enforced.

A Suggested Non-License Cat-Reduction Ordinance

Most of the cats disposed of by municipal authorities or Societies for the Prevention of Cruelty to Animals are those which people deliver to them. With this knowledge in mind, the Directors of the National Association of Audubon Societies have prepared a suggested ordinance which avoids the "tax" or "license" feature that has been found objectionable to so many people, and which many mayors, therefore, hesitate to recommend. It provides for the town assuming the responsibility of disposing humanely of cats of which people desire to be relieved. Many individuals, who shrink from the unpleasant experience of killing a cat, will gladly deliver their surplus animals to some humane agent for disposition if such an agency is easily accessible. We believe, therefore, that adoption of the following ordinance by any community would result in an appreciable reduction of the vagrant cat population of the country. The American Game Association and the Izaak Walton League of America join the Audubon Association in recommending the following:

Proposed Ordinance for Control of Vagrant, Diseased and Unwanted Cats

"An Ordinance to Prevent Vagrant or Unidentified Cats from running at large in the Streets or Public Places of the Town of ————, in the County of ————, State of ————, and for the impounding, or disposition of such cats.

"BE IT ORDAINED by the Town Council of the Town of ————, in the County of ————, as follows:

"Section I. No person being the owner or harboring a cat shall permit it to run at large in any of the streets or public places of the Town of ————, in the County of ————, at any time, unless identified as hereinafter provided.

"Section II. Any cat shall be deemed to be a vagrant or unidentified cat unless it wears a collar or tag bearing either the owner's name and address, or a registered identification number.

"Section III. Numbered identification tags will be furnished by the Town Clerk at cost.*

"Section IV. Any vagrant or unidentified cat running at large in any of the streets or public places of the Town of ————————, in the County of ————————, shall be taken and impounded by any dog-catcher of said town (or other duly authorized officer), and shall be destroyed or otherwise disposed of humanely at any time not less than forty-eight hours after it has been impounded, unless the owner shall, before its destruction or other disposal, satisfy the Town Clerk of his or her ownership, and shall redeem the same by the payment to the Town Clerk for the use of said town of the sum of one dollar.

"Section V. Any cat wearing a collar or tag bearing either the owner's name and address or a registered identification number, that may be captured by the dog-catcher, or other officer of the town in the discharge of his duty, shall be released or returned to the owner."

We favor the trial of various methods of cat control by the different states and municipalities, believing that to be the most effective way of working out a practical solution of this troublesome problem.

Comments or suggestions on the control of vagrant cats will be welcomed by the National Association of Audubon Societies, 1775 Broadway, New York City.

OFFICERS AND DIRECTORS

T. GILBERT PEARSON, LL.D., *President*

FRANK M. CHAPMAN, SC. D., *Chairman, Board of Directors*

THEODORE S. PALMER, M.D., *1st Vice-Pres.*

FRANK R. OASTLER, M.D., *2nd Vice-Pres.*

WILLIAM P. WHARTON, *Secretary*

ROBERT CUSHMAN MURPHY, D.SC., *Treasurer*

MRS. CARLL TUCKER
MISS HELOISE MEYER
ALEXANDER WETMORE, PH.D.
GEORGE BIRD GRINNELL, PH.D.
DRYDEN KUSER

August 1, 1933

*Montclair, New Jersey, furnishes such tags for 5 cents each.



Cat killed in act of eating a quail by Frank M New, Wanbesa Beech, Dane Co, Feb 1935

Housecat File

Housecat

*Closed season on brant
**Closed season on grouse

ANNUAL TAKE REPORTED IN NEW JERSEY (Rounded to nearest 1000)

Species	Year 1934	1933	1932	1931	1930	1929	1928	1927	1926	1925	1924	
Rabbits	553,000	543,000	550,000	511,000	447,000	470,000	448,000	489,000	467,000	423,000	364,000	Farm Game
Gray Squirrels	115,000	123,000	102,000	104,000	59,000	60,000	- - - -	- - - -	- - - -	- - - -	- - - -	Farm Game
Pheasants	106,000	105,000	104,000	96,000	79,000	77,000	82,000	93,000	76,000	60,000	48,000	Farm Game
Quail	49,000	67,000	77,000	72,000	59,000	57,000	58,000	77,000	68,000	61,000	59,000	Farm Game
Grouse	12,000	10,000	8,000	9,000	3,600	**1,200	4,800	10,000	12,000	10,000	11,000	Forest Game
Woodcock	11,000	12,000	15,000	20,000	12,000	9,000	9,000	10,000	12,000	8,000	9,000	Forest Game
Deer	2,300	1,700	1,600	1,700	1,500	1,300	1,400	1,800	1,700	1,200	1,100	Forest Game
Ducks	43,000	73,000	72,000	51,000	65,000	72,000	64,000	64,000	63,000	81,000	95,000	Waterfowl
Geese & Brant	*750	*1,700	4,200	4,500	3,200	4,600	5,000	7,000	5,000	7,000	5,000	Waterfowl

PREDATORS ((Rounded off to nearest 100)

Cats	10,800	9,600	11,000	10,000?	9,900	10,200	9,300	11,600	11,600	11,000	13,200
Weasels	4,900	4,400	4,200	4,800?	5,200	7,100	6,900	4,700	4,200	3,000	5,000
Red Squirrels	3,100	3,900	3,800	3,000?	2,200	- - -	- - -	- - -	- - -	- - -	- - -
Foxes	1,200	1,300	1,300	1,000?	900	1,000	800	700	800	700	700

FISH (Rounded off to nearest 1000)

Trout	440,000	460,000	404,000	411,000	269,000	300,000	264,000	230,000	206,000	185,000	168,000
Bass	171,000	177,000	160,000	147,000	100,000	104,000	88,000	112,000	112,000	86,000	121,000
Pickerel	194,000	201,000	201,000	233,000	165,000	204,000	178,000	196,000	177,000	135,000	191,000

(Rounded off to nearest 100)

Licenses issued	150,200	137,900	121,800	134,400	202,200	202,000	195,200	189,800	175,700	173,900	159,800

ANNUAL STOCKING IN NEW JERSEY

Species	Year													
	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925	1924	1923	1922
Rabbits	25,000	31,000	22,000	0	21,000	21,000	15,000	15,000	15,000	14,000	11,000	9,000	9,000	2,000
Pheasants	34,000	30,000	22,000	28,000	24,000	31,000	23,000	18,000	26,000	16,000	18,000	17,000	14,000	6,600
Quail	8,000	6,000	3,500	2,100	2,900	700	100	- - -	800	100	36	113	- - -	- - -
Huns	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	431	326	1,029	160	151	- - -
Ducks	45	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	53	- - -	- - -	- - -	- - -
Wild Turkeys	- - -	- - -	- - -	- - -	- - -	- - -	80	- - -	- - -	- - -	- - -	6	10	12
Raccoons	19	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Cost Items Per Bird

Pheasants											$2.10	$2.46		

Huns Reported

No. of bands	- - -	- - -	- - -	- - -	400	421	900	700						

Outdoor Iowa
Jan. 31, 1935

CATS AND MORE CATS

Catfolder

Mr. Walt Jamison, Glenwood, Iowa, has found out how many cats roam over his orchard. Early in the winter he put out five box traps to catch rabbits that were girdling his fruit trees. He says, "In the last two months I have caught and killed 36 cats and there is no question about them not eating the wild birds, as one of them ate too much fat meat (the bait in the trap) and became sick and threw it up together with a cardinal it had just eaten. We had a fine covey of quail that were raised on the place and I have been feeding since they were the size of a sparrow but they have all disappeared. I believe the cats cleaned them up. I know they catch the young squirrels. I never see these cats in the daytime, wouldn't know there was one in the country, but they work all night and take an awful toll of the wildlife".

Think of it, 36 cats caught in this orchard, and Mr. Jamison did not know until he put out the traps that there were any cats around. He recommends a license for cats.

****

Pa. Game News
March, 1935

Clipp Housecat

HOUSE CAT KILLS GREAT HORNED OWL

A Great Horned Owl with a wingspread of four feet fell prey to a plucky house cat at the farm home of Zach Lawhead in Lawrence Township. Mr. Lawhead heard a commotion outside the house and upon investigating discovered the owl, mortally wounded, the cat having found a vital spot with its teeth. It is presumed that the owl, in its hunger, attacked the cat. Great Horned Owls prey often on skunks and the cat, particularly if it was black and white in color, might have been mistaken for one.

House cat Border

HOUSE CATS TURN WILD; PREY ON DESERT RODENTS

Tame cats gone wild have become a problem in Death Valley. These animals, once pets at the Furnace Creek Ranch, multiplied as is the way of cats and spread out into the mesquite thickets adjoining the ranch. Reverting to the primitive, they have become quite wild and to some extent have replaced the native meat-eating animals, particularly the little desert kit fox.

The especial problem involved in these cats gone wild is their liking for native rodents, which, because of abundance of shelter, food, and water, live largely in the mesquite thicket. Cottontail rabbits, wood rats, antelope ground squirrels, and kangaroo rats, as well as Gambel quail, all fall prey to these feral house cats.

"Control of the wild cats" now is being planned by the National Park Service of the Department of the Interior, which has authority over the Death Valley National Monument.

KILL THE STRAY CAT



COUNTY FORESTS

County forests of Wisconsin now total more than 1,500,000 acres with the addition of 302,346.72 acres accepted for entry by the conservation commission at its recent meeting. New entries are: Ashland 3,753.35; Bayfield, 10,612.02; Burnett, 28,007.22; Clark, 9,052.97; Douglas, 25,440; Eau Claire, 1,293; Florence, 10,683.17; Iron, 41,052.59; Jackson, 57,733.97; Juneau, 3,160; Langlade, 400; Lincoln, 3,720; Marinette, 27,552.33; Monroe, 5,360; Oneida, 25,339.57; Polk, 2480; Rusk, 7,800.20; Sawyer, 26,783; Vilas, 5,719; Washburn, 3,817.83; Wood, 2,704.

- - - - -

File Cat
Extinct Horned Owls

Wis Conservation Bull
April 1936

BIRD KILLS CAT

Members of the field force often complain about cats killing birds but Forest Ranger Raymond Pripps, Boulder Junction, has a real complaint about a bird killing a cat. The station cat was near the front porch when a great horned owl swooped down and the cat disappeared over the tree tops and has not been heard from since.

- - - - -

EAGLES

The March Bulletin carried a story of a deer killed by eagles in Vilas county. Dr. E. F. Graves, department veterinarian, recalls seeing an attack on a fawn by an eagle in Alaska.

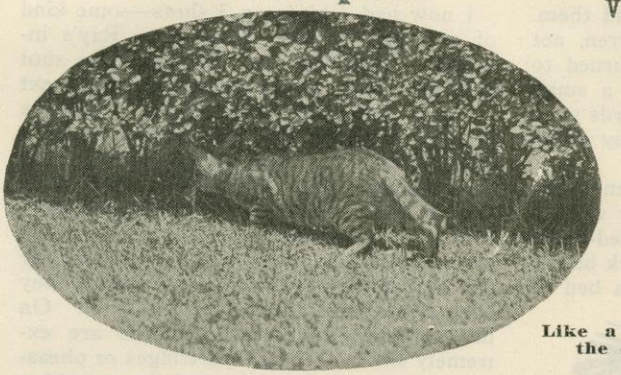
Library of
Aldo Leopold

Vol. 7, No. 9, October, 1936, p. 12

Housecat folder

THE COMMON CAT

By CHAS. F. STAMBAUGH



Like a beast of the jungle the cat stalks its prey.

THE cat has absolutely no protection in Pennsylvania. Many individuals who are more or less interested in the house cat are somewhat perturbed that an animal so apparently harmless and companionable should be denied the smallest measure of protection.

The fact is, that practically all of our forty-eight states today refuse to recognize the cat as personal property; and in Pennsylvania as well as most other states, no action by law can be taken to recover the value of a cat that may have lost its life at the hands of some intentional destroyer. It is virtually "an animal without a country" —a legal outcast.

ORIGIN

The present domesticated cat apparently originated in ancient Egypt, where its existence is evident in the very earliest records. It must have been much admired by the ancients, as elaborate mummy cases in which it was entombed have been found. However, there is nothing in the records to indicate that it was anything but an habitual killer of other forms of animal life—a carnivorous animal. In India we find it mentioned in manuscripts dated at least 2,000 years Before Christ. From Egypt the cat was brought to Europe, whence America received its present stock.

For approximately 4,000 years, then, mankind has endeavored to domesticate and civilize the cat; and how have we succeeded? Well, as educators of this feline animal, we humans are hopeless failures!

INSTINCT

Not long ago the writer watched an abnormally large pet cat sneak noiselessly upon an adult robin, seize the bird in its mouth, and proudly carry the limp form to the door of its mistress. That this cat was well fed was clearly indicated by its excellent physical appearance. Many similar cases of generously fed cats killing birds and rabbits have been reported to the Game Commission.

Practical experience and observation have proven that the old theory that a well fed cat will not destroy wildlife must be discarded. The ancient, irresistible instinct to kill is there, even though the need for food is lacking, and in the thousands of years the cat has associated with civilization, this urge has not been dispelled. He is a prowling, predatory animal, of the same family (Felidae) as the lion, tiger, leopard, puma and other nocturnal feeding relatives. Regardless of how well fed he may be, this inherent desire to kill is ever present, and the cat will constantly seek an opportunity to satisfy it.

Maybe we should not blame the cat itself too severely; one cannot be responsible for his heritage. But we can face the facts and try to control the situation accordingly.

CATS VS. BIRDS

Early this summer a friend of ours had been watching a pair of song sparrows nest in a hedge fence at her home. She saw the four mottled eggs, then later observed the mother bird feeding the four young in the nest. One day she came, practically in tears, and reported that a neighborhood cat had completely torn down the nest and killed all four young birds.

Now, the diet of the song sparrow in the summertime consists of more than fifty percent insects, including various beetles, ants, caterpillars and grasshoppers. The balance of the food is made up of the seeds of noxious weeds.

Any one of these four young song sparrows killed by the cat would have been much more valuable economically to mankind than the cat. Insects offer an increasing menace to human existence, and scientists admit we are fighting a losing battle against their growing hordes. It behooves us, therefore, to give every possible encouragement to birds and other creatures that feed on insects, for without birds, insects would make human life impossible. One of the best ways to encourage birds is to control the cat.

TOO MUCH FREEDOM

It is increasingly apparent that if we are to encourage wild creatures of more aesthetic and economic value, something must be done in the not too distant future to definitely prevent the house cat from continuing to enjoy the freedom of the entire neighborhood in which he lives. He may have some value in destroying rodents, but if given absolute freedom, this value is far offset by the harm done in destroying birdlife. No one wants to see any species of animal life exterminated, and such drastic action is certainly not advocated in the case of the cat. But, in all fairness, it does seem that something should be done to reduce the excessive number of felines now in existence. Many of them are homeless, thrown out of automobiles and farmhouses to shift for themselves.

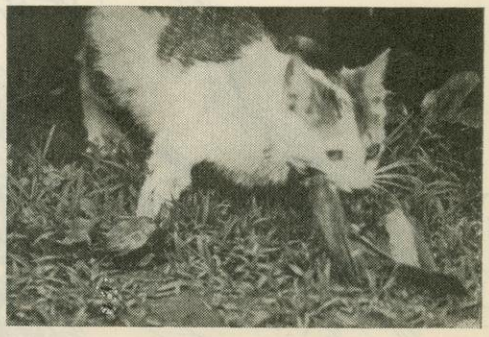
THE CAT ON THE FARM

Even on the farm, the value of the cat in destroying rats and mice is questionable, when one considers the countless hundreds of insects that might have been killed, had not the cat taken its heavy toll of insectivorous birds. The farmer knows only too well the ceaseless battle he must wage against insects, and the birds on his farm are helping every day in this fight by constantly feeding upon these pests. It behooves him, therefore, to give his bird friends every encouragement by either abolishing or controlling their arch-enemy, the cat. He cannot have cats and birds; one class must be eliminated if the other is to progress. Surely he cannot afford to eliminate the birds, so he must do something about the cats.

SELECTION

Is it not possible to select, by a "weeding out" process, the more desirable and attractive breeds of cats, from the standpoint of beauty and charm? And then, with equal vigor, discard in some humane manner the worthless, unattractive, common ones remaining? If this were done, those selected could be owned with sufficient esteem to keep them under proper control, so that the menace to wildlife would be negligible.

The cat will always be a killer; he is no more civilized nor better mannered now than he was for the ancient Egyptians. And if you want more birds—and less insects—you must have less cats. But if, after all this, you must keep a cat, please keep him on your own grounds, under constant control.



Even the well-cared-for house pet will occasionally resort to the wild.

****

FOX NOT GUILTY OF THIS KILLING

Housecat folder

During the month of December, Frank S. Johnson, living two miles northeast of Ida Grove, noticed evidence of the killing of hen pheasants on three different occasions. The killings had taken place near a pheasant feeding station near his farm. In each case the tracks of the predator and the trail of the pheasant as it was dragged led to a den, supposedly that of a fox, located on the banks of the Maple River. The birds were evidently devoured within the den. Johnson set a fox trap inside the entrance to the den and on December 27th the killer was trapped. It proved to be a very large and fierce white male house cat. It appearently had gone wild as many cats have been known to do. The killer was killed and no more pheasants have been found destroyed in that vicinity.

****

Iowa Release Jan 1937

OVER HUNDRED ARRESTED IN

Housecat

Feeney Killed a 10½ # blackcat. Sex? Journal 12/12/38

Extract from "The Life History of the Rufescent Woodchuck" by W. J. Hamilton, Jr.
Ann. Carnegie Museum, Vol. XXIII, July 5, 1934, p. 132:

House Cat

Inside a large woodchuck hole I placed a trap on April 9, 1932. The hole had been somewhat enlarged, but without a noticeable mound at the entrance. The following morning the trap held a large house cat. The animal was a female, carrying three embryos of approximately half time development, and stomach crammed with the remains of a rabbit. Apparently the cat had made this burrow her home for some time, as old rabbit fur was strewn about. She may even have planned for the arrival of the kittens in this burrow.

It is not unlikely that mink, muskrats (near water), squirrels, and other mammals frequently resort to vacated woodchuck burrows. The wirter, however, has no positivedata concerning these forms.

Extract from "A Life History Study of the California Quail, with Recommendations for Conservation and Management," by E. Lowell Sumner. Part II, Calif. Fish & Game, Vol. 21, No. 4, October, 1935, p. 328:

House Cats

Control. Wandering house cats are universally regarded as destructive to bird life, including quail; they can be most effectively controlled by box traps. Numerous reports received by the writer indicate that bobcats and coyotes are important enemies of house cats, as are horned owls, and at least occasionally even eagles. Although the relative importance of these enemies is not yet known, it is evident that some factor is working to prevent the increase of house cats, for otherwise our wild lands would be much more heavily populated with them than is the case.

Cat folder

CAT CATCHES TROUT

Fish Warden Sam Henderson of Westmoreland County reports that while patrolling a stream recently he saw a large house cat adroitly catch a large trout.

based on facts carefully gathered and developed. At this time there is no other organization in the country in possession of as much information relating to wild-fowl conditions in North America as the Biological Survey. The opponents of the present regulations and others who are urging still more drastic restrictions can be in possession of only limited information by comparison. The Biological Survey, however, must be acquainted with all phases of the problem—phases that concern the food resources of wild fowl their migratory habits, and their abundance, and other information that can be developed only from reports of agents of the bureau and other reliable observers widely distributed throughout North America.

"We need sound public sentiment in favor of the observance of the law, and willingness on the part of sportsmen and conservationists to adopt all the restrictions that are necessary to the preservation of the wild fowl," said Mr. Henderson.

BIOLOGISTS TO STUDY WILD LIFE IN FORESTS

Two research specialists have been appointed to positions in the Bureau of Biological Survey, U. S. Department of Agriculture, effective at the beginning of the year, in accordance with cooperative plans to place qualified biologists at various experiment stations of the Forest Service. These scientists will study the relation of wild life to the forests, as authorized by the recently enacted McSweeney-McNary Forestry Research Act.

Thomas D. Burleigh, for the last nine years head of the division of forestry of the Georgia State College of Agriculture and one of the appointees, has been appointed to the position of associate biologist and will be stationed at the Appalachian Forest Experiment Station, Asheville, N. C. He is a graduate of Pennsylvania State College and the University of Washington. He has devoted considerable time to the study of the bird life of Georgia.

Oliver L. Austin, Jr., of New York, a graduate of Wesleyan University and who has done three years' graduation work in Harvard University, has been appointed assistant biologist to carry on studies of wild-life and forest relationships at the Lake State Forest Experiment Station, St. Paul, Minn. He spent the summer of 1925 studying jungle ecology in British Guiana, South America, and has made three trips to Labrador to study the distribution of the vertebrate fauna of the region. On his Labrador trips he did notable work in bird banding, particularly with Arctic terms, in cooperation with the Biological Survey. Two of the terns that were recovered, one in France and another in South Africa, established remarkable flight records, the latter flying the longest distance of any banded bird ever recaptured, as far as any known records show.

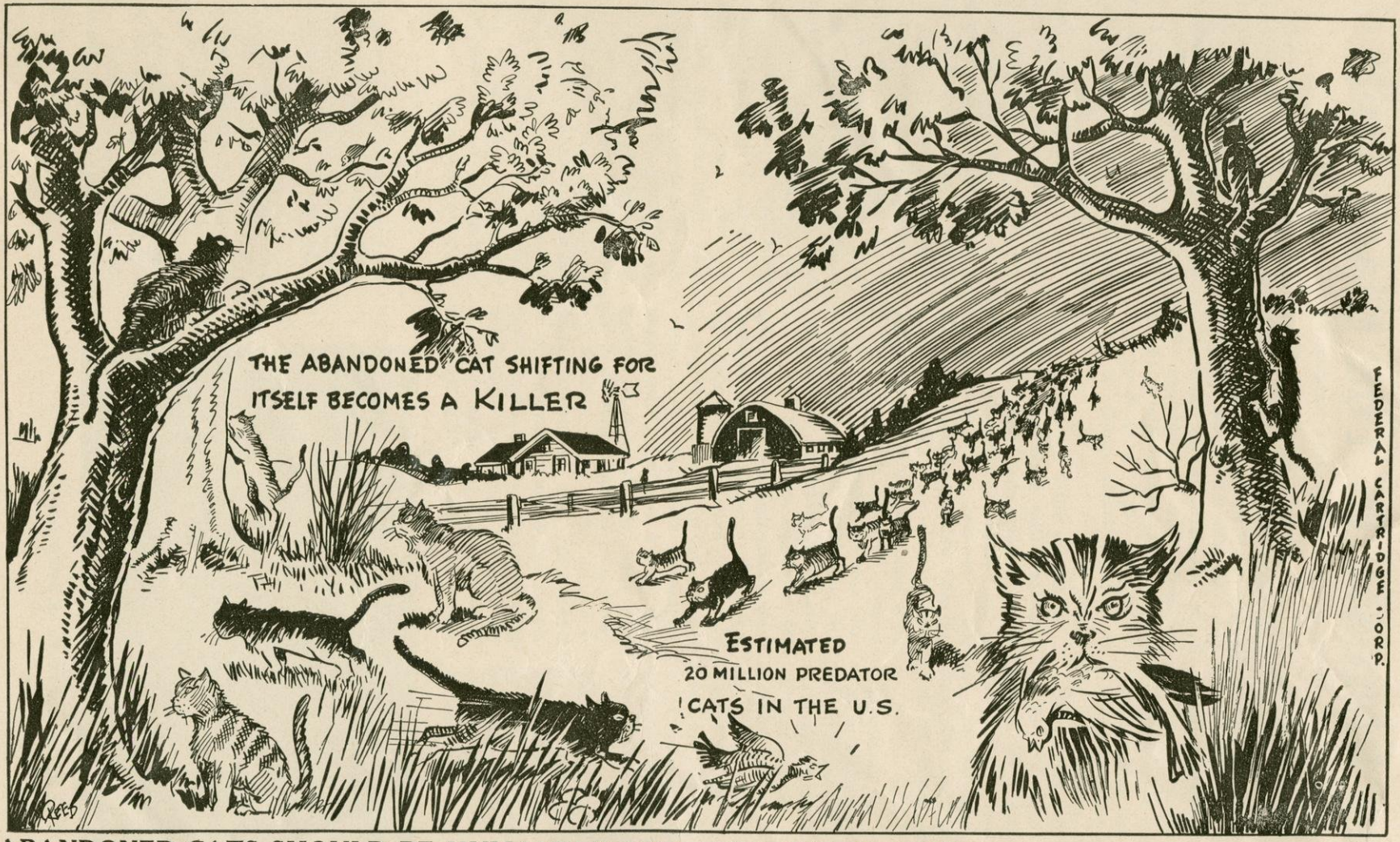
NEW LEAFLET TELLS HOW TO MAKE A CAT TRAP

Vagrant, unowned house cats are a serious menace to song birds, insectiverous birds, and game birds, to rabbits, squirrels, and other small forms of beneficial wild life, and to poultry, and therefore they should be destroyed, says a leaflet just issued by the U. S. Department of Agriculture on how to make a cat trap.

Stray cats—usually hungry, mangy, and diseased—abound in every city, town, and rural community, and are the most common carnivorous mammals in many places far removed from human habitation, says the leaflet. Usually they have been left unfed by their owners and are forced to get a precarious living by hunting and scavenging. As they are abroad mainly at night they are seldom seen and it is not generally realized that they are as numerous as they actually are. The leaflet says that in 18 months more than 50 stray cats were caught in one trap set in only two locations in a city, and that in one city a humane society put to death nearly a million vagrant cats in four years.

Stray cats can be caught in any well-constructed and baited trap. The one described in the new leaflet, devised by the Bureau of Biological Survey, has proved satisfactory and is easily made. It is merely a box with a drop door that is held up by a projecting wire, one end of which is attached to a false floor or treadle. The weight of the cat on the treadle beyond the fulcrum pulls back the wire and releases the door. The leaflet shows, by picture and text, how to make the trap, and it also tells how to bait the trap and how to dispose of the captured cats.

The Leaflet, No. 50-L, "How to Make a Cat Trap," can be obtained free from the Office of Information, Department of Agriculture, Washington, D. C., as long as copies are available for free distribution.



ABANDONED CATS SHOULD BE HUMANELY AND QUICKLY DESTROYED— THEY KILL MANY MILLION OF THE INSECT DESTROYERS EACH YEAR

SENTIMENTALISTS and other well-intentioned persons say that kittens and purring tabbies can do no harm. Farmers, sportsmen and conservationists know better! The cat is a killer by instinct! the roving stray cats take a tremendous toll of quail, partridge, pheasants and song birds!

File housecat

C
O
P
Y

Fish and Wildlife Service
Merchandise Mart
Chicago 54, Illinois

Mr. Roberts Mann
Cook County Forest Preserve District
536 North Harlem Avenue
River Forest, Illinois

Dear Bob:

Your letter in regard to weights of mammals killed three years ago on the Forest Preserve Districts was forwarded to me from Urbana. Fortunately I have with me a copy of these weights, as follows:

#1, 3-2-42
Cat, domestic -- weight, 11.3 lbs; castrated male., very fat, face broad and heavy; black and white, with heavy coat.

#2, 3-2-42
Dog, mongrel plus cross?? weight 42 lbs. male; fat; brown.

#3, 3-2-42
Dog, police; weight 61½ lbs; male; sleek and in good condition but not fat; darl, typically colored.

#4, 3-2-42
Coyote (identification positive, by Goldman, U.S.Nat.Mus.) weight, 30½ lbs; male; good condition.

#5, 3-2-42
Dog, police plus ?? weight, 34 lbs. good condition; dark, obviously crossed with other dog breed (partly decomposed, stomach not saved).

I hope this will provide the information desired by Prof. Leopold. I have copied it directly from our notes. The cat was huge; we talked about it at the time; it seems that free ranging cats reach very large size, since I have run into it on one ortwo other occasions.

Looking forward to seeing you Friday forenoon, I am

Sincerely yours

LEE E. YEAGER
Biologist

LEY


Mt' Lion

Sunday 1/26/09

POST CARD

X25 2035

CORRESPONDENCE

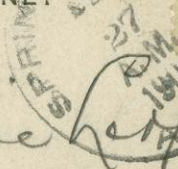
Dear Frederic

Aldo & I have had a good time together. Going after Coyotes today. Start home tomorrow & should reach you Friday Papa

Mamas & Marie's fine letters were good & was favored

ADDRESS ONLY





Frederic Leonard

Burlington

Iowa


M.T. Lion

POST CARD

CORRESPONDENCE

Arrived here O.K.
at 3 P.M. Yesterday.
Aldo looking fine.
Great Country
C.L.

ADDRESS ONLY

Frederic Leopold
Burlington
Iowa
7







A Mountain Lion Hunt in New Mexico

By

Elliott S. Barker

THE Pecos River heads in New Mexico in a great mountainous horseshoe basin about fifty miles long and perhaps thirty across. Massive ranges of timber-clad mountains 9,000 to 13,000 feet in elevation surround the basin, and these, with the innumerable rough canyons that wriggle down from them, constitute some of the best deer country, and therefore the best mountain lion country in the Rockies.

One February not many years ago rumors came to the ears of my old mountaineer friend Fisher and myself that the lions were literally eating up the livestock in the Pecos country, and so, each riding some forty miles in deep snow to get together, we met, and on a Monday morning as clear as a bell and cold as—North Dakota, started an eventful week after the big cats.

Sturdy mountain horses, Jake, an Airedale, and three veteran hounds made up our corps of assistants. By night of the first day we had one lion skin hung up, after a quick chase and some fancy shooting to cut limbs from under him where he lodged in a tree.

EMERY ARNOLD, a ranchman who had contributed a dozen or more colts to the stomachs of these marauders, joined us Tuesday. Wednesday we brought in another big fellow, and when, two days later, Mr. Lloyd, a fat English ranchman, finally persuaded us to come down his way and save the rest of his colts from the "blarsted brutes," not even the stiffness of horses, dogs and men held us back. Lloyd warmed our hearts with hospitality and Scotch rye, and in return we brought him in a dead lion not thirty minutes after we left his house.

A fresh snow had fallen, and in it our quarry had killed a doe not half a mile from the ranch. Dressing his meat carefully as a mountain lion will, he had laid aside the entrails, eaten a meal of inside fat and then covered the carcass with sticks and snow. Some fifty yards up the hill he had bedded on a ledge of rock where, concealed from sight, he could watch his meat through the day. We crossed the track of his drag and it was easy pickings for the dogs to tree him.

I took the kill back to Lloyd's to leave for the day. Talk about a surprised lime-juicer! Thirty minutes, and I was back with a lion—a big male at that! The old man toddled back and forth around my horse and his burden, bulging with admiration and alternately snorting, chuckling and swearing as he felt the animal's soft fur. His first and oft-repeated remark was: "Where in 'ell did you get it?" So enthused was he that, in spite of his excess of abdomen that brought his weight well over 250 pounds, he got out his horse and went with us the rest of the day. Naturally a hunter does not expect such luck to repeat in one day, and so, unless you could call a lynx cat luck, we were luckless for the rest of the day, and the old boy was keenly disappointed.

OF course we spent the night with him, and either because we were tired out or because our host and Fisher swapped stories and drank friendly old Scotch until midnight, we got a late start the next morning. It was Sunday, though, and we did not object to a little rest.

We rode south to Indian Creek and up it to near the head, where we found an old deer carcass abandoned by a huge lion a week or so before. This track was so large that we resolved to get him at all costs. The track was dimmed with new snow and we could not follow it far, but did succeed in getting the general direction, which was into an exceedingly rough patch of country at the head of El Macho Creek.

WE made our way into the main canyon below where we thought the lion would cross it, then followed up the bottom of the canyon where there was deep snow, until between two cliffs we again picked up his track. We went up the canyon a couple of miles to be sure he had not crossed back and then circled southward into the next fork of the canyon and crossed his track still headed south, but apparently not more than three days old, for it now showed to have been made after the light snowfall of Thursday night. The dogs were able to follow the scent very slowly on the north slopes but on the southern exposures where the snow had melted off they would lose it altogether. Progress was slow and at sundown it was evident we would get no lion that day, so we gave up the chase.

In our excitement over this mammoth track we had paid little attention to how far we had traveled and how late it really was. When we at last looked around to

see where we were and what the chances were to get back to Lloyd's that night we decided it could never be done. It was now dark and there was no other ranch in reach. There we were in a rough, trailless country, fifteen miles from the nearest ranch house, nothing to eat for either ourselves, our dogs or our horses, and the air getting biting cold as the night came on. Emery Arnold knew of an old French miner's cabin a couple of miles down the canyon where we might find horse-feed and possibly some grub, although old Fortunat Malluchet, the prospector, never stayed there in winter. He did, however, usually raise a patch of potatoes and also some oats for hay for his burros in the spring. As there was no other choice we went there as quickly as possible, finding plenty of oat hay for our horses.

THERE were several log cabins and a root-cellar which all looked good to us from the outside. With considerable difficulty we broke into one after another of them looking for grub and bedding. All we found was salt, pepper, a little lard and a cellar half full of small Irish potatoes. So we boiled, fried, baked and roasted potatoes for supper, alternately slept and lay awake on our saddle blankets, and then, for variety's sake, ate four kinds of potatoes for breakfast. We also took along fried and baked spuds for our noon lunch.

The horses had fared well and were in good shape. At daylight we were off again after the biggest lion in the hills. Arnold had gotten enough lion hunt (also potatoes!) so he left us and rode home. Back where we had quit the track the frozen snow and ground promised to ruin our hunt. The dogs could do nothing at all. We gave it up and circled for fresher signs.

About nine o'clock Fannie told us she had it on a barren ridge, but the track did not prove to be very fresh. The dogs worked well, however, and in half an hour brought up at the carcass of a 900-pound horse killed by Mr. Lion not more than forty-eight hours before. Evidently only one meal had been eaten by the lion, which had then headed northwest back into the roughest part of Macho Creek. The scent was fresh enough for the dogs to make fair headway, and without losing any time we were off on what looked like a sure thing.

OVER ridge after ridge and across canyon after canyon he led us, always choosing the roughest course, under and over cliffs where it was impossible for the dogs to follow without circling and where it was often necessary for us to go half a mile around to gain a hundred yards headway. Worst of all, as the sun warmed up the south slopes the track seemed to lose its scent entirely, and the hounds could hardly progress at all, and were fast becoming discouraged. Then when they would get into the snow on the north slopes they would give tongue freely and their hopes and ours would be revived.

At last we started up a long, steep and rocky slope facing directly to the south and well dried out. Here all the dogs quit entirely except Fannie, Fisher's veteran, whose patience and perseverance, in spite of her bleeding feet and the failing scent, were almost incredible. We led our horses and tried to help her, but it was a matter for noses only. As she was making little progress—perhaps half a mile an hour—we let her go on while we stopped and ate our potatoes, which, in spite of natural hunger, were not very appetizing.

It was now two o'clock and we realized that our chances as well as our stomachs were slim, but as we started to catch up with Fannie, now a quarter of a mile ahead of us, Fisher remarked:

"I'll stay as long as ol' Fan works like that, if I starve!"

"So will I," I replied, "but we won't starve as long as Malluchet's potatoes last. Besides, we'll kill a grouse or two before night—or else have lion steak for supper!"

"We haven't seen a grouse all day, and ain't likely to in this here Godforsaken country," Fisher reminded me.

"Then it's lion steak!" I said with a show of confidence I hardly felt.

BY the time we caught up with Fannie she had come to the top of the ridge and was bellowing off over the cliff into the canyon below, as the lion had gone down over some cliffs she could not negotiate. We puzzled a while what to do, while Fannie found a way around. We made a bigger detour and soon dropped down into a sort of cave below the cliffs, about as discouraged as two hunters could be. There we stood listening to the half mournful howls and barks of Fannie as she laboriously worked out the course of the lion, track by track. We had waited here for about fifteen minutes when Queen and Red sniffed the air and trotted off around the hill into a patch of timber toward which Fannie was working. Jake was not interested and curled up under a tree to snooze while we waited, wanting to quit but ashamed to while faithful old Fannie still said she would get him.

A yelp and bawl from Red, followed by a bawl and several yelps from Queen, then presently, repeated at a higher tone by both, and some "I-a-comin'" howls from Fannie, with Jake jumping off like a flash, all told us that they had jumped Mr. Lion.

We leaped to our horses, half in doubt, but as we made off toward the scene a long-drawn out bawl from Fannie at a nervously high tone with a note higher at the end, told us as surely as anything could that our game had been jumped. Our pulses quickened and our nerves tightened as we rode recklessly and as fast as we could after the dogs. They led us down hill through better country for a while. Then, as they pressed him closer the big fellow took to the rougher ridges and side draws. But in his first run, which evidently was made while we had worked up the dry slope and eaten our potatoes, he had left the roughest country and could not get back to it, so we were able to ride on his trail, following in the general direction of the dogs.

ON we went for an hour, expecting every minute to tree him, but no such luck. He dodged and doubled and ran and jumped from rock to rock, trying to throw the dogs off. We had over-exerted ourselves in the past thirty hours and were unduly excited. We galloped over rocks and logs and ice and brush that at another time we would have hesitated even to lead our horses over. Once I rounded a point at a gallop, not being able to see far ahead, to find myself on a steep icy slope with a large log lying up and down the hill right ahead and a twenty-foot cliff below. I could not stop my horse quickly, nor turn him lest he slip on the frozen ground and fall, slipping helplessly over the ledge below. In the excitement of the moment I put spurs to him and he leaped the log and luckily caught footing, and after scrambling precariously along for a few dangerously slippery rods was on safe footing once more.

Before I could warn him Fisher had followed me, and as his horse leaped the log his upper feet slipped and he fell to his side. Quick as a flash and as only a veteran horseman can, Fisher slipped from the saddle as the horse went down, but held to the bridle reins, and as his horse caught for a second against a bush he wrapped the reins around a small fir tree and held him from slipping over the cliff. I ran back to help him, and with a rope as an anchor we soon got the horse to his feet and around the hill to safety.

The pony came out limping and Fisher was obliged to take it somewhat slower, but called to me to "Stay with the dogs!" And I tried to.

Half a mile more brought me out upon a sharp ridge 250 yards above a narrow, steep-sided draw, and as I stopped for a second to locate the dogs I saw three of them on the steep slope opposite me. Poor Fannie had fallen a hundred yards behind and was striving painfully to keep up, yelping pitifully and leaving a red trail from her sore and bleeding feet. Before I reached the bottom of the draw they barked "treed," which was, I think, the most welcome report I have ever heard from a pack of dogs.

My horse was all winded and about all in otherwise, so I left him in the draw while I kicked off my spurs and chaps and climbed afoot up the steep, slippery slope. Fisher stopped on the ridge back of me and called that he would watch from there, as he could see the lion.

When within a hundred yards of the tree and just as I saw the lion for the first time and realized how big he was, Fisher called to me to shoot, for the lion was about to jump. I shot, too quickly as usual, but broke a shoulder. The big cat fell a few feet, then caught. I shot again—through the neck but not breaking it. Again he fell and caught on some of the lower branches. I shot again, hitting him in the flank and ranging forward. He quivered and screamed, a blood-curdling squall it was, and turned loose all holds as I shot again—this time straight through the shoulders.

THE dogs pulled and bit him as if taking final vengeance for the long and gruelling chase he had led them. This was by far the largest mountain lion either of us had ever killed and was in every way a fine specimen. The fur was short and thick. Besides being badly shot up, the skin showed the scars of many battles. We skinned him there in the draw and fed the dogs great hunks of the meat, which they devoured ravenously.

THOUGH it was sundown we set out for Arnold's Ranch and, believe me, we had one sweet time getting there out of that wilderness. But though the memories of that night's trip are too painful to relate suffice to say that we got in before midnight and had something besides potatoes to eat for our midnight lunch. And while admitting that we had had enough lion hunting for a while—four big ones in one week was not bad—we promised each other to go again sometime.

Now when I look at this fine specimen of a mountain lion, made into a rug with full head mounted and measuring over eleven feet from tip to tip, I would be willing to start out tomorrow with only a boiled potato in my pocket if I could have that experience over again.

handle sent in came from one of the old tunnels. All the relics found are in an excellent state of preservation. - District 3.

AND THE BLIND GODDESS SMILED

"I called on the Supervisor of the Kaibab National Forest. --- As I recall it now, I beat him to the draw and stopped firing only when both of my guns - or was it all four? - were empty. I rolled the body under a desk and walked out."

The above is from the pen of a fiction writer. - District 4.

LOOKOUT TOWER

Sometime ago, in a review of Thompson Seton's "Lives of Game Animals," mention was made of the playfulness of the cougar. Now comes Paul Fair, of D-5, with a good yarn on this little-known characteristic of the big cat:

"A very interesting instance of this came to my notice not long ago and I thought you might use it.

"Burnett Sanford, now forester for the Sugar Pine Lumber Company, and another man whose name I have forgotten were working several years ago on a timber sale on the Shasta and living with an old mountaineer in his cabin near the sale area.

"One morning in going to their work they noticed the fresh tracks of a cougar in the dust of the road. Coming around a bend in the road they met the lion walking leisurely along. Neither man carried a gun and as the lion stopped, seemingly not alarmed by their appearance, they picked up some rocks and began to throw them at the beast. Much to their surprise this procedure aroused neither fear nor anger, but seemed to awaken a spirit of play. When a rock whizzed by, the lion, instead of dodging, would strike out at it with a spread forepaw, just as a domestic cat will with a ball tossed to it.

"This happened several times until the boys managed to register a direct hit, when with a bound, the big cat went over a bank beside the road and into the brush.

"The old man with whom the boys were staying had a 22 rifle and an old hound which at some time in its career had lost a leg in a bear trap, so when the lion disappeared they went back for these reinforcements. There were only two .22 short cartridges for the rifle, so the boys cut some stout clubs and hurrying back, put the hound on the trail where the lion had left the road. The dog gave tongue and soon treed the lion. The first of the two precious bullets glazed on the sternum and the lion jumped, only to be treed again after a short run, when a more carefully placed shot found its heart. Sanford has the skin of the beast.

"The playfullness displayed by this fully grown cougar was certainly very unusual and something I have never seen in any writings about the animal." -W. S.

A CATTLE SLUMP

President Pyeatt of the D. & R.G.W., in checking over the cattle shipments over his lines became very much concerned recently in the showing of reduced business and began to ask questions among his organization on ways and means of rehabilitating the live stock industry, especially the cattle industry.

Representatives of the system have been gathering data to show the trends, and a meeting has been called by the Chairman of the Agricultural Livestock Development Committee of the Denver Chamber of Commerce to discuss the question. Questions that are being asked are,

1. Now that the upturn seems to have begun, how should it be encouraged and directed.

2. What steps shall be taken toward restocking the range. We have been invited to attend the conference and as the subject relates to the National Forests, we expect to show that the great part of the reduction in cattle has been absorbed by increases in sheep. There seems to be a general impression that large areas of National Forest land are being unutilized because of the reduction in cattle as shown by railroad shipments.

ES Barker Koogler N M

Large Lion, Estimate, 125-150#

Lions, tanned hides, 8' female, 10' male.

10'-2" max prob

Cubs in Feb. 6-6 1/2' (yearlings)

Date Lion Kill per Acre per year.

Vermejo
16) 400,000
30,000 acres

Jemez 34) 800,000
25,000

Guadalupe
11) 200,000
20,000

(Elliott Barker)

Leon Folder Leopold.

I happened to notice a statement in Am National History Vol I page 44 by Hornaday - that it has been definitely established that the Cugar does scream in a manner resembling a woman's cry.

V J M

Game & Fish

Elk Talbot says Barnes says last of the Baldy Herd was killed in Cooley in 81 or 89 (see MWT)

Talbot says elk horns found on Hearst Mt North of Ash Forks 25 miles.

Jaguar look up if I have Talbots story about Jaguar killed in tree (by dogs) by Bacon near Salt River bridge. Also the one killed S. W. of Kaloudike in Galiuros.

Antelope using in Pines around Long Valley 1913 (Talbot) Talbot says ranchers said they had taken to pines 5 yrs before that.

RFP: Am inclined to think this is already on map but might be well to make sure. Ligon knows where this much is - if not, John Kerr does & could give you Twp & range over the phone

AL

R L Heusel
Continental, Ariz

Wm Nicholson
Continental Ariz

Dr C. T. Sorhies
Univ of Ariz.

Mexican leopard trapped just above the Macbeath's ranch in Santa Rita's in Spring 1917 seen by Heusel.

Leo - Just found this in old diary. Another jaguar record that will interest you.

WS

ALBUQUERQUE GAME PROTECTIVE ASSOCIATION

MEMBERSHIP $1.00 PER YEAR

(REPORT VIOLATIONS OF THE GAME LAW TO THE SECRETARY)

....., 192.....

Name Clark Pettit



Address 809 W Tijeras

having paid $1.00 Membership Dues for 192....., is hereby certified to be a member in good standing of this Association.

A. H. Brinton

SECRETARY.

MR. SPORTSMAN:

The Game Protective Association needs you as a member.

Here are the reasons why you should join:

1. You want law enforcement. The way to get it is to join us and work for expert, well paid wardens who mean business.
2. You want more ducks. The way to get them is to join us and work for well-policed refuges, planting of duck feeds and improvement of breeding grounds.
3. You want more quail. Help us study the unsolved problem of how to bring them back.
4. You want more deer and turkey. Help us work for better predatory animal control. Help us decide whether we need more refuges, better refuge enforcement, or a totally closed season.
5. You want better fishing. Help us work for more hatcheries and better rearing ponds.
6. You want a place to shoot and fish. Help us solve the "posted land" problem by keeping the streams open and establishing public shooting grounds.
7. You want good game laws. The only way to get them is to join the G. P. A. and increase the strength of our influence.
8. You want to keep posted as a sportsman. Attend our smokers, give us your ideas, and learn the other fellow's!

YOURS FOR MORE GAME FOR EVERYBODY FOR ALL TIME

ALBUQUERQUE GAME PROTECTIVE ASSOCIATION

(TURN THIS CARD OVER AND SIGN UP NOW)

H - JAGUAR

I have a very good set of records as to where and when and by whom jaguars were seen or killed. I seem to be short, however, of definite information as to whether or no they ever occurred in any part of southeastern New Mexico. I have only one record for the desert country of southwestern Arizona and would be interested to hear of any additional records there.

There has lately arisen a further very interesting question of whether all the animals commonly reported as "jaguars" may not in part be ocelot. This species, as I understand it, is smaller, slimmer, and has solid black spots instead of large clouded black spots. Any information to differentiate ocelot records would be extremely valuable.

I am also particularly interested in the killing habits of these cats - that is, just what size and kind of animals they tackle and just what method they use in killing them.

It is not known whether the Jaguars of Arizona and New Mexico are all "strays" from Mexico or whether they breed here. Does anybody know?

Jaguar reported trapped on Saddle Mt South of Luna — ask Bill or Walter Jones, Reserve.

Ward Shepard

RFP: I think this is on the map, but might be well to make sure. Saddle Mt lies near the Ariz line south of Luna N Mex AZ

Digest of

Mather, W. W. Geological Survey of the State of Ohio. Second Annual Report, Columbus, 1838. 286 pp. (Copy owned by J. A. Lapham)

Cougar

p. 23. Water Cycle in Lake Erie "The rise...was mentioned in the 1st Annual Report (1837?). The effects are disastrous...fine farms are completely inundated...the coast is washing...necessary to make the wharves higher...to raise the streets of towns. A tradition exists that there is a periodical rise and fall of the water through a certain period of years. ...the present rise is higher than has occurred for many years before, for extensive tracts of forest are now said to be overflowed".

pp. 50-52. Table of Water Levels, 1796-1838. Max. fluctuation 6' below 1838 level in 1810 and 1819.

pp. 157-200. Report on Zoology of Ohio by J. P. Kirtland, Nov.1,1838

p. 176. Wolverine "undoubtedly inhabited the northern parts of Ohio in former times, but has long been extinct"
Fisher 2 specimens taken in Ashtabula Co. in 1837, where a few probably still exist.
Marten "Dr. Ward...has taken it in the vicinity of Chillicothe"
Cougar "F. concolor and F. montana. The mountain tiger and the mountain cat. The pioneer hunters blended both these species under the common name of catamount. They both formerly inhabited this state but have now disappeared. Mr. Dorfeuille has in his museum at Cincinnati well prepared specimens of each species that were taken in Ohio".
Lynx. "A lynx was killed in Trumbull County about 10 yrs. since".

p. 177. Varying hare. Rare; sometimes seen in N. E. parts
Elk One killed Ashtabula Co., Oct. 1838
Buffalo 2 killed in Sandy Fork Symme's Cr. in 1800. These were last.

p. 180. Raven "sometimes spends the winter as far north as Lake Erie". Thinks of it as a southern species? Or misprint?

p. 184. Canada grouse. Reported on shores of Erie. Not authenticated.
"Sandhill or whooping crane" 2 killed Coshocton Co. 1837

p. 185. "Bartram's Tatler" "I am informed by Dr. Ward that it is sometimes seen in the Scioto Valley".

p. 208. Canvasback "I know of no reason why it might not be advantageously domesticated."

5/24/14

Notes on Jaguar

Ligon: One killed by hunter n. of Cospers on Blue Bull of 1914. Hide in Clifton (?)

Wylder: 1 killed at Bass Camp 1908 by Jess Chicafoinagee (Supai Indian)

Wylder: 1 killed at Hull Tank about 1914

Seekink: 1 killed in Whetstones 19__ ?

Jaguar Record

Male skin killed by E J Doherty, U.S.B.S., May 11, 1917, Helvetia Ariz (near Rosemont, Santa Rita Division. Inspected in Legoms office. Hollow marks much less extensive than in illustration X mas 1916 National Geographic

Ocelot?



THE DENVER POST
New Year Edition





Kill The Beast

$25.00 REWARD

That Kills Our Game

THE POST wants to save the lives this winter of five thousand of our wonderful mountain sheep, the most picturesque animal in all the mountains, and five thousand of our graceful and friendly deer, and here is how we propose to do it:

All the naturalists and ranchers and government forest rangers, by careful observation, give it as their fixed opinion that each mountain lion in the state kills at least one head of game each week, upon which to live and the mountain lions feed almost entirely upon our mountain sheep and deer, occasionally killing a horse or colt when pressed by hunger and scarcity of their favorite food, the mountain sheep and the deer.

So every time you destroy a mountain lion you are saving the lives of at least fifty mountain sheep or fifty deer.

In order to stimulate the destruction of these animal vermin, this unfair predatory animal that hunts the deer and sheep 365 days and nights each year, that even sometime in its wantonness destroys for pleasure—until further notice, The Post is going to pay a bounty on each mountain lion killed in Colorado, of $25 in cash.

We ask of those good hunters and good sportsmen, who destroy these animals, that they take the mountain lion, as soon after they have killed it, as possible, to the nearest postoffice and make an affidavit as to the circumstances of the killing and swear to it bfeore the post master or the justice of the peace, and send such affidavit to us with the cleaned skull of the lion. If the proof is satisfactory we will immediately send a Post check for $25 and we shall regard it as buying more satisfaction than any other $25 we could possibly expend, because with the destruction of the mountain lion we save fifty head of game, either deer or mountain sheep.

IT IS estimated by the state game warden that deer or mountain sheep are worth at least $50 to the state. They are worth it as food for mankind and worth infinitely more for the joy they give tourists or ranchers, or others in beautifying and enlivening our mountains and valleys and our landscapes, so fifty head of mountain sheep or deer are worth to the state $2,500 and if we can save fifty head a year, by destroying a mountain lion for $25, this $25 paid in bounty by The Post saves the state $2,500 worth of mountain sheep or deer, so you see what great economy and what saving value this bounty given by The Post, has to the state.

And not only that. It saves the lives of fifty of these beautiful, harmless, sweet creatures, typical of our beloved Colorado and of our glorious mountains and forests and valleys and plains.

NOW we want this to be spread all over Colorado. We want hunters everywhere to seek out and destroy these pests, these destroyers of our most beautiful and valuable game. During the winter the lions are more easily tracked and slain than in summer time or autumn because of the tracks they leave in the snow; not only that, but during the winter they are very much more destructive to the mountain sheep and the deer because with their large furry feet, with their soft and stealthy tread, they can approach the deer and sheep easily and silently and run them down in the snow, as the deer and the mountain sheep, with their tiny hoofs, cut thru the crust of the snow, while the mountain lion runs over the top of it on account of the size and the fur on its feet.

WHEREVER you find deer and mountain sheep you find the mountain lion lurking around and preying and feeding upon the herds. With the extermination of the mountain lion there will be fifty times more mountain sheep and deer in this state, in fact almost every hill and mountain would be beautified

(Continued on Next Page.)

STATE'S WINTER SPORTS FAMOUS THRUOUT NATION

WINTER SPORTS ARE FAST BECOMING POPULAR A MONG COLORADO'S OUTDOOR FANS. HERE ARE SOME PICTURES OF A PARTY ON ITS WAY TO A FRO LIC IN THE ROCKY MOUNTAIN NATIONAL PARK.



The upper picture shows the members of the party on their way to Odessa lake for an afternoon sport in skiing. At the bottom is a typical Colorado outdoor girl on skiis snapped on her way across a snow-covered stretch of hillside.

"In spring the young man's fancy lighty turns—"

But this is winter, so why speak of spring?

In winter, to paraphrase the verse of the poet, the young man's fancy—particularly if he is a Colorado young man—turns to thoughts of skiing, tobogganing and kindred sports which are among the most alluring features of life in the eternal hills of the Centennial state during the winter months.

The fame of the annual winter sport carnivals staged by the Colorado Mountain club, the Estes Park Outing club and other organizations of that character has spread far and wide and the yearly hegira to the skiing and tobogganing courses maintained in the Rocky Mountain National park, the Denver Mountain parks, and other sections of the state, includes most of the nationally known experts in all lines of "snow time" athletes.

Starting shortly after Jan. 1, the carnivals "carry on" well into February. They are scheduled so close together that enthusiasts may attend the first, usually staged at Steamboat Springs, and go clear down the list—Hot Sulphur Springs, Grand Lake, the Rocky Mountain National park, Denver Mountain parks, Eldorado Springs and Manitou.

The course at Odessa lake, in the Rocky Mountain National park, is recognized as one of the best in the world. On it is staged the premier carnival of the series, the sport enthusiasts vieing for honors during the daylight hours, and spending the evening swapping yarns around the cheerful log fire in beautiful Fern Lake lodge.

Mayflower hams and bacon are made from selected fancy hogs.—Adv.

VIOLENT DEATHS TOTAL MORE THIS YEAR THAN LAST

June Proves Most Popular Month for Suicides in Denver.

More violent deaths have been recorded at the police surgeon's office at the city hall in 1919 than in 1918, an examination of the records of the office shows. There have been more suicides this year than last.

There were fifty-eight attempted suicides recorded during 1919 up to Dec. 1. The estimated final fgure for 1919 is sixty-four suicide attempts. In 1918 there were but fifty-two attempts at suicide.

There were twenty-four suicides in 1918. Excluding the figures for December, there were twenty-three suicides this year. With an average of two suicides to the month, the final figures for 1919, it is estimated, will exceed those of last year by a slight margin.

The police surgeon has not been kept busier on accident cases in 1919 than in 1918. In 1918 there were 2,095 accident cases handled. With 1,929 accident cases handled during the first eleven months of the year, the final figures for 1919 will not vary greatly from those of the preceding year.

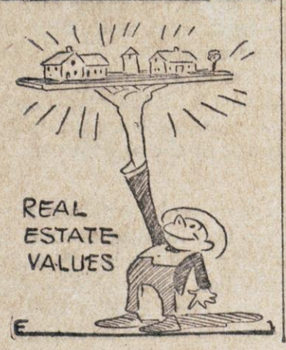
The number of fatal accidents during 1919 will exceed the figures for 1918. Fifty-one accidents terminated fatally in 1918. There had been fifty-seven during the first eleven months of 1919. At this rate, the final figures will show sixty-two fatal accidents for 1919.

The total number of cases treated by the police surgeon during 1919 was no greater than the year before. In 1918 there were 3,647 cases treated. Up to Dec. 1, 1919, there were 3,243. This would bring the total for the year to approximately the same figure as was recorded for 1918.

Of the total number of cases treated, there were 108 deaths in 1918. There were 119 deaths during the first eleven months of 1919. The total number of deaths for the year, at this rate, will be 130.

The police ambulance made 130 more runs in 1919 than the preceding year. In 1918 there were 1,814 runs made by the ambulance.

June proved to be the most popular month for suicides. There were ten attempted, and two successful suicides durng that month.





Kill the Beast That Kills Our Game

(Cont. From Preceding Page.)

and made picturesque and interesting by their constant presence.

Ten mountain lions will kill more game during any one year than all the hunters in Colorado combined, so you see what a tremendous destroyer of game the mountain lion is.

SO TELL this to your neighbors and to your friends and to all hunters everywhere, that in order to preserve the beautiful wild life of Colorado The Post is willing to spend thousands of dollars in destroying the mountain lion that preys upon this game. We want the co-operation of all the ranchers and forest rangers and of all the people and all the miners in Colorado in this crusade of destruction against the foe of our beautiful and harmless wild beings and every time you kill a mountain lion The Post will pay you $25 for it, at least until this offer is withdrawn and due notice will be given in case it should be withdrawn.

For the destruction of the young cub mountain lions, we will give $10 each. The $25 is for the adult lion—over half grown.

Now, all you hunters and trappers and lovers of the wild, lovers of the gentle deer and the picturesque mountain sheep, get your packs ready and your dogs and during the balance of the winter, January, February and March, let's see how many of these pests we can destroy and next year you would be astonished at the rapid increase all over the state of our mountain sheep and deer and other wild life.

Are you with us and will you help us in this fine purpose?

We know you will!

RECUPERATION CAMP LOCATED AT DENVER IS LARGEST IN WORLD

Huge Institution of Government to Be Enlarged This Year—73 Buildings Completed Since May, 1918, and 12 More to Go Up.

The year just passed saw the completion in Denver of the largest government recuperation camp in the world.

The coming year will see substantial enlargement of this already huge institution.

Seventy-three buildings have been completed since May, 1918, when ground was first broken, and since November, 1918, the hospital has had an average of 2,000 patients under treatment.

Before another year is passed twelve additional buildings will have been constructed at a cost of approximately $254,000, bringing the total number of buildings to eighty-five and the total cost to $3,254,000.

In the brief time that the hospital has been in operation, thousands of ex-soldiers whose constitutions had been undermined by the rigors of trench warfare have beeen treated and dischargd improved in health to take their places in civil life.

The patients at the hospital now average about 1,200.

The staff of the hospital has been built up from a few surgeons and nurses to a completely organized unit of several hundred surgeons and nurses.

The 600 acres near Aurora upon which the hospital buildings were constructed presented a scene of desolation when ground was first broken for the erection of the hospital buildings.

Today graded drives and paved sidewalks interlace the great campus, trees have been planted lining the walks; and stretches of graded terraces greet the eye of the patient as he looks out from th sun-lit wards.

The location of the hospital in Denver, possessed of matchless climate, has brought health to many invalid soldiers. It has brought to Denver thousands of men who otherwise probably would have remained ignorant of Denver's existence.

Incidentally the hospital has brought millions of dollars of trade to Denver merchants. Denver is the marketing point for the camp quartermaster.

The location of the hospital in Denver may be the forerunner of the establishment of a new army division with headquarters in Denver. Denver interests are now pushing the project in Washington and hopes are entertained for favorable consideration.

RENDERING PLANT FOR FORT LUPTON

A $10,000 rendering plant will be erected at Fort Lupton within a few weeks.

FREE RED TUBE

WITH EACH TIRE PURCHASED

Pre-Inventory Sale Good Until January 10, 1920

ALL NON-SKID TIRES GUARANTEED 6,000 MILES—FIRST GRADES

28 x 3	Diamond, Goodrich, Montford	$14.95
30 x 3	Goodrich, Montford, Endurance	$14.95
30 x 3½	Goodrich, Firestone, Double Fabric	$18.70
32 x 3½	Firestone, Double Fabric, Goodrich, Montford	$22.85
31 x 375	Goodrich, non-skid only	$20.95
34 x 3½	Kelly-Springfield, Montford	$26.95
31 x 4	Goodrich or Montford	$26.95
32 x 4	Goodyear, Goodrich, Fisk, Montford, United States	$31.85
33 x 4	Goodrich, Fisk, Montford	$31.20
34 x 4	Double Fabric Goodrich, Montford	$31.85
35x4	Federal Traffic Tread	$37.65
35 x 4½	Kokomo, Goodrich, Montford	$34.95
36 x 4—	Racine, Country Road	$45.75
37 x 4½	Racine Country Road	$55.35

We have purchased from the Kelly-Springfield Tire Company the double fabric tires. We guarantee all these tires 6,000 miles. We have customers that have run these tires 8,000 miles.

Send check or money order, or we ship C. O. D. and allow inspection. Order double fabric ribbed best tires.

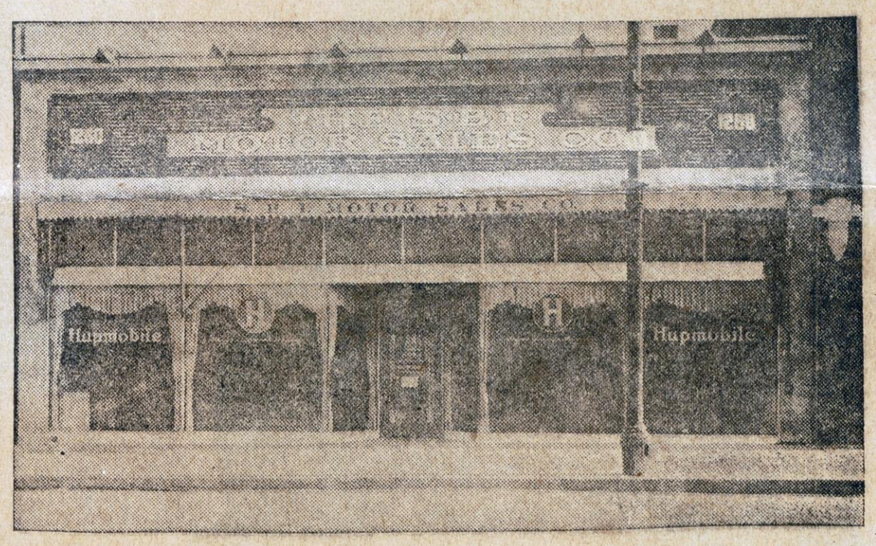
SAVE YOUR MONEY—ORDER YOUR TIRES NOW

THE COLORADO TIRE COMPANY

1547 Tremont Street W. H. Luppold, Manager Denver, Colorado

The Home of the Hupmobile

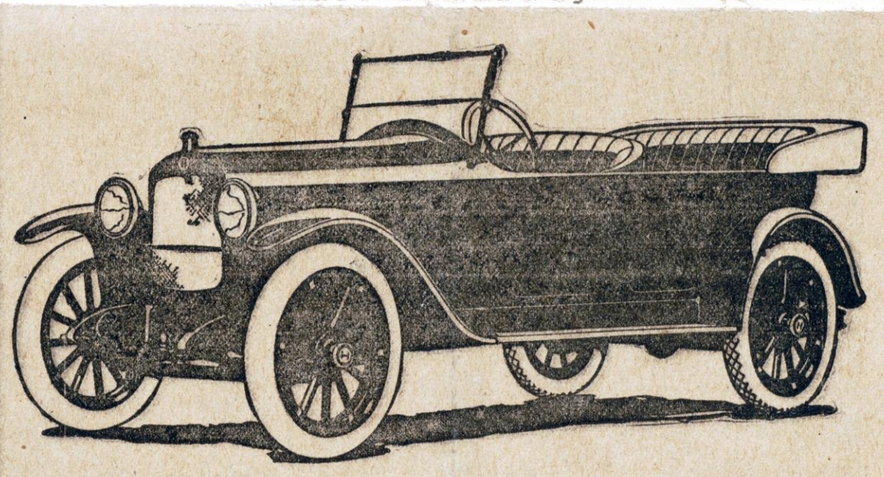
The : Comfort : Car

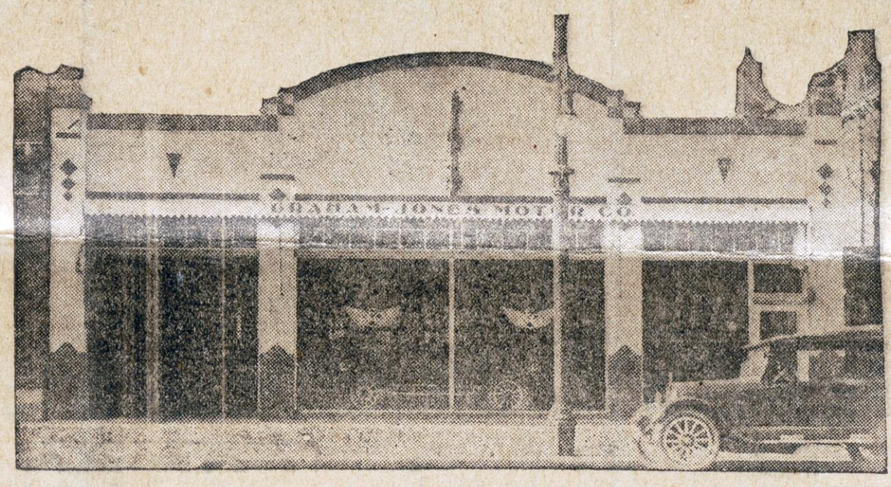


The pride that Hupmobile owners take in their cars and the deep-rooted loyalty they feel for the cars which they own are due entirely to that superb quality that marks Hupmobile performance. It is a car that breeds confidence and inspires loyalty.

S. B. I. Motor Sales Co.

1260 Broadway





See the New Reo Light Six

To that chassis which has always been famous for its Durability has been added the charm of a motor that throttles to a mile an hour and leaps to sixty with perfect ease.

This new Light Six is smooth as velvet at any speed. There is not a grease cup on the entire chassis. Only one place to oil the entire motor mechanism. Only one lever for control. One pedal controls both clutch and service brake.

So simple any woman can drive a Reo with perfect ease and safety.

Immediate delivery on the first few orders received.

Graham-Jones Motor Co.

Distributors for Colorado and Wyoming

1115 Broadway Main 295

Sierra Bulletin 6/11/22

WHAT SAY?

The Ayes Have It

By Will C. Barnes

My own experience covers but one instance in which a mountain lion uttered some of the most piercing, awe-inspiring screams that I have ever listened to, except from some of our alley cats here in Washington. The mountain lion is, of course, the puma, known officially as "felis concolor" or "felis cougar." He is nothing but a great big cat, and why any man who has ever listened to the screams, howls and wails of the ordinary alley cat, especially of the Thomas variety, should doubt that his older and larger relative, the puma or mountain lion, does not indulge in the same sort of vocal atrocities, I am unable to state. In other words, I am thoroughly convinced that the mountain lion does emit screams or cries or howls, or whatever you choose to call them, exactly as does the alley cat and for probably the same general causes. In looking for authority on this subject, I went at once to the person whose observations as to the habits of wild animals in America are probably the most widely respected of any of our present authorities. This is Mr. E. W. Nelson, present chief of the Biological Survey. (Nelson, by the way, was once a cowman on the same Arizona ranges with myself and Potter.) In his wonderfully interesting discussion of "The Larger North American Mammals," published originally in the National Geographic Magazine for November, 1916, I find under the head of "mountain lion (Felis ocugar)," the following statement: "It has a wild screaming cry which is thrillingly impressive.***** In the mountains of Arizona one summer a mountain lion rapidly passed along a series of ridges high above my cabin at dusk, uttering this loud wierd cry popularly supposed to resemble the screams of a terrified woman." As far as I am concerned, this is enough for me. The mountain lions do howl. (This ends the mountain lion controversy.--Ed.)

Service Bulletin 5-8-22

What Say?

Silent "Kats" of the Kaibab: Mountain lions may scream, again they may not, but it would appear that if they do they would make the Kaibab ring since, opinions of experts notwithstanding, there are numerous lions on the Kaibab, and, so far as is of record, no one who is reliable has ever heard one scream, although a captured kitten was heard to make a noise similar to that made by a house cat. This, of course, is not conclusive evidence that mountain lions do not scream, but I have spent most of the past twenty years on the Kaibab and other areas on which lions occur and have never yet heard one scream. It might also be remarked that "Uncle Jim" Owens never has heard a lion scream, and he probably has killed more lions than any other man in the United States.--Benjamin Swapp.

They Scream on Ole Kaniksu: While I have not had the forty years of foothill and mountain life experience that our worthy friend Loring of the San Juan speaks of, yet I have other endowments which may qualify me as an expert witness, one of which is, I am a "Missourian" by birth and a Montanan by naturalization, and with twenty-three years residence therein, I still retain that Missouri instinct of "Show Me." I have been shown to my entire satisfaction that at least one mountain lion did scream. It was the summer of 1907 on the Kaniksu Forest in northern Idaho, while following an old and therefore dim section line through a heavy stand of matured white pine and cedar, with an understory of hemlock, that I was suddenly halted (all except my heart and hair) by the most unearthly scream I had ever heard. This was followed by a dead silence of a few moments duration, in which it seemed that the trees of the forest quivered. This silence was quickly broken by the second scream, which indicated it came from a point just ahead and on the section line I was following. The underbrush obstructing a clear view ahead, I dropped to my knees to detect if possible the "Whirring Wimpers," but lo, it was a she lion with two kittens and a fresh killed deer. During the few seconds I was hesitating to offset two and a half chains to the west, I actually saw the old mother lion open her mouth and actually heard a third unearthly scream, and thus my "Missouri" "Show me" instinct was satisfied.--Glen A Smith, D-1.

Trout Waters of the National Forests

Apache Inspection - 1921

Cleve Miller killed 30 lions since October between Eagle and Blue, Cospers to Grey's Peak. Biological Survey now hunting jaguar.

Prescott Inspection - 1922

Killing Habits. Van Dickson saw a lion kill a big colt. Jumped at him from front, grabbing high on the side of the throat and raking the neck and chest with the hind claws, tearing the jugular vein. Dragged him 60 yards and later returned to feed, eating the heart.

Oldham says alleged leopard in Matazals kills cows by pulling the head down and breaking the neck. Feeds on lungs and never returns for second feed.

Hardy Schell says the one in Matazals invariably tears out a shoulder blade - probably to get at the lights.

Sitgreaves Inspection - 1922

Hoyt says no lions on Sevier or Kaibab until about 1890-95. Then became abundant.

Tonto Inspection - 1923

Wt. of Lions

One extra large one killed by Murphey weighed 140# after entrails removed.

Prescott Inspection - 1922

Jaguar killed by W. H. Smith near Willow Springs, Smith Canyon, about 1895. Oldham got this record.

Prescott Inspection - 1922

Jaguar. Wyatt says one killed 12 miles N. of Wickenburg by Leonard White in 1905, on the Hassayampa, and another 3½ miles N. Crown King on head of Bear Cr. by Jno. Dickie in about 1900.

Prescott Inspection -1922

Jaguar killed by Haskell in Greenback country on Tonto 20 years ago. Schell says John Kline told him this.

Prescott Inspection - 1922

Jaguar. 2 killed by W. R. Morley near Datil P.O. around 25 or 30 years ago, (Oldham). Oscar Redeman of Magdalena said to have the skin.

Prescott Inspection - 1922

Jaguar seen by R. Martin, a fire guard, in head of Little Dry on Gila in 1912, according to Munro.

Prescott Inspection - 1922

Jaguar killed on Sycamore Cr. 5 miles west of Skull Valley by Pete White about 1900, according to Van Dickson and Grant Carter of Skull Valley and Kirkland respectively. Hide seen by Dickson.

LW
file Pred animals
"Jaguar"

Roosevelt Ariz
August 26/22

F. S. D-3
SEP 2 1922
Reference
DISTRICT FORESTER

Aug 8/30

Mr. Aldo Leopold,
Albuquerque, N.M.

Dear Mr. Leopold:

Reference your personal to Mr. Goddard from Prescott 8/10/22, relative Jaguars or Mexican Leopards:

While in Payson this week for the celebration I interviewed Walter Winsor a trapper and who I understand is an author in a small way of hunting stories, who gave me the following data: "That Jack Dunham who had a ranch 30 miles south of Florence, Ariz, treed with hounds and killed a Leopard approximately 7 years ago. Mr. Dunham had the skin mounted and Mr Winsor saw it several times" It was reported within the last year that a Leopard was killed under the Rim northeast of Payson

but Mr. Brisco after investigating the matter came to the conclusion that it was nothing more than a Mountain Lion.

If I hear of anything definite along this line will let you know. By the way Mr. Brisco states that Dunham has disposed of his cattle ranch so he does not know his present location.

Mr. Kirby brought Mrs. Goddard out this moning and their report is that Chief is progressing nicely.

Sincerely

Leo E Anderson

G
Fish & Game

December 8, 1922

MEMORANDUM FOR FILES:

Additional Records of the Northern Limit of Jaguar Occurrence.

During the past field season I have picked up the following records where these big cats have been killed in recent years:

TONTO FOREST:

George Kline and his brothers, who live on Tonto Creek above Roosevelt, killed one in 1917 or 1918 in the region between Tonto Creek and Four Peaks. Former Ranger Sherman is quite sure that they killed more than one although I failed to ask them personally about this.

Earl Bacon told me in October that he and his brother, Grant Bacon, killed one in 1907 or 1908 near the box of the Salt River. They were trapping for coon along the river and a jaguar was treed by their hounds.

CROOK FOREST:

Ranger Chipman tells me that one was killed in 1918 in Harrison Canyon in the south end of the Galiuro Mountains by a Mexican. The name of this man he did not know but it could probably be dug up since it is thought that he resides in the region and several parties saw the pelt which is still believed to be in the region.

M. Talbot.
Grazing Examiner.

THE WHY AND HOW OF MOUNTAIN LION HUNTING IN CALIFORNIA.

By JAY BRUCE, State Mountain Lion Hunter.

The importance of the control of the mountain lion (*Felis concolor*) as an aid in game-conservation can be appreciated when it is realized that the present lion population of California is scientifically estimated to be about 600 lions, and their annual kill of deer 30,000 head. This is over twice the number known to be killed by human hunters. Since does are probably about five times as numerous as bucks, a lion has five chances to kill a doe for one chance to kill a buck. So, naturally, most of the deer killed by lions are the breeding stock of females.

Although deer form their principal food, lions also kill thousands of dollars worth of domestic stock every year, even including full grown cattle. In fact, no animal in California is entirely exempt from the bloodthirsty instincts of these animals. I know definitely of lions having killed and eaten foxes, skunks, coons, porcupines and bobcats. I also have reliable information of several instances where lions have killed and eaten domestic dogs, while two lions now in captivity in the Yosemite Valley killed and ate a cub bear which managed to get into the lions' cage from his own adjoining cage.

The lion problem has been intensified by the establishment of a chain of game refuges where no public hunting is allowed. The breeding stock of deer and other game is fast increasing in these areas, and naturally the lions accumulate there. Since the lion's instinct is to kill at every opportunity, the most damage will be done where deer are most numerous.

In order to meet this condition a high state bounty was advocated. It seemed doubtful, however, whether a $100 bounty would attract enough hunters to confer a benefit anywhere in proportion to the additional cost, as will be shown later. Another method of control considered was the employment of experienced lion hunters on a regular salary, plus the present bounty. As an experiment along this line the writer was employed by the California Fish and Game Commission, on January 1, 1919. This system costs only about $2000 per year, as against the $15,000 by the increased bounty, and lions are killed where there is the most need of killing them. The main object of the plan adopted was to control the lions in game refuges, and then to answer any calls where lions were doing unusual damage. During the last three years I have accounted for ninety lions, as follows: 1919, twenty-six lions; 1920, thirty lions; 1921, thirty-four lions. Most of these were taken in and around game refuges. Since October, 1908, the California Fish and Game Commission has been paying a bounty of $20 for each mountain lion killed. Claims for such bounty are made on blanks furnished by the commission, and every claimant has been requested to furnish the commission with a written statement showing where the lion was killed, why it was killed, the damage done by the

NOTE.—There have been few articles appearing in CALIFORNIA FISH AND GAME of more general interest than the one offered here, written by a man who probably knows more about the habits of the mountain lion than any other Westerner. In bagging 121 lions, Mr. Bruce has traveled on foot over 10,000 miles, hunting, trailing, and studying their habits.—EDITOR.

lion, methods used in taking him, and the sex of the animal. In July, 1917, the bounty on female lions was raised to $30 per head.

The information sent in by claimants for bounty indicates that nearly all of these lions were killed either accidentally or because they were doing damage to stock, and not on account of the bounty. Now if the bounty were raised to $100 per lion, the state would be paying $75 more on an average for each lion now killed under the present bounty, and this would amount to about $15,000 annually.

From the foregoing it might be argued that the present bounty is useless and should be abolished, so let us examine and see what benefit

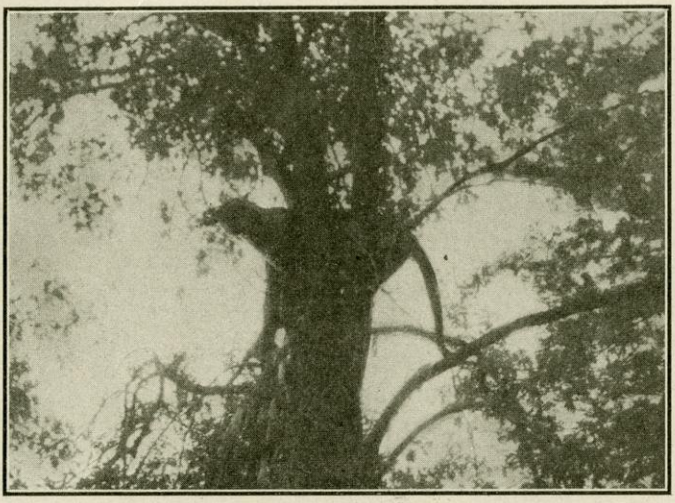


FIG. 51. One hundred and fifty pound male lion treed near Lynchburg ranger's station, Placer County, November 1, 1921.

is derived from this expenditure. It is evident that no situation can be handled intelligently or with efficiency without accurate data as a basis for action. Now on account of the bounty of $20 paid since 1908, the commission has been furnished with the following data:

The number of lions killed during the last thirteen years;

The proportionate number of these killed from year to year under a given condition, which should indicate the comparative lion population;

The damage known to have been done by each lion;

The methods used in taking the animal;

The percentage of each sex killed since 1917.

These data are of immense value in any effort to control the lion, and are now being used to advantage for that purpose by the commission. For instance, we find from an examination of these data that the range of the lion on the western slope of the Sierra Nevada Mountains between Siskiyou County and Kern County, is confined to a straight belt about fifteen miles wide by section lines, and at an elevation between 3000 and 5000 feet above sea level and averaging 4000 feet. The same elevation will apply to the range of the lion in the Coast

Range Mountains. All the country above or below this belt can be eliminated as lion country for all practical hunting purposes.

The lion does not habitually follow some of the deer to the higher mountains in summer and other deer to the foothills in winter, as many people suppose. This lion belt is so well defined in the Sierra that we can draw a straight line through the center of the belt, from a point in Siskiyou County to a point in Kern County, and it would be possible for a hunter to camp along this line and kill approximately every lion on the western slope of the Sierra. Of course a lion will occasionally stray out of this belt temporarily, but he soon returns, for his natural home is there. The lion probably selects this belt because it is the natural home of the deer. The variety of *ceanothus,* commonly



FIG. 52. A large 160-pound male lion which measured 7 feet 3½ inches. Killed near Avery, Calaveras County, in March, 1921. Photograph by L. V. Peterson.

called deer brush, which is the principal food for deer, grows in abundance in this belt between 3000 and 5000 feet elevation. The deer that summer higher winter here, and those that winter below summer here. Most of the deer stay here all the year, so this area is the best all-year range for them. In other words, the maximum deer population is to be found in this area. For this reason the lioness selects some place in this belt when her young are to be born. She usually has two or three kittens, although sometimes only one, and occasionally four, are born in a litter. On account of many females not mating every year, the yearly increase probably averages one kitten for each adult female. The lair is usually located around some bluff or pile of rocks, which furnishes places for shelter and concealment of the kittens when small.

In my experience, the kittens are born in either February, April, August or November. The mother nurses them for about two months, and probably brings them some food in her stomach during that time.

After they are weaned she makes a kill and moves the kittens to it, leaving them to eat it while she goes away hunting. She continues moving the kittens from kill to kill until they are about six months old and weigh about 35 pounds for females and 50 pounds for males, by actual scale weight. They now hunt part of the time with their mother until they are about a year old and weigh about 65 pounds for females and 80 pounds for males. The mother then abandons them. The kittens sometimes continue to hunt together for a few months longer, when they finally separate, selecting different beats, but still in the same belt where conditions are the same as where they were raised.

When fully matured the male weighs from 140 to 160 pounds and measures from 6½ feet to 7½ feet from tip of nose to tip of tail. The female weighs from 90 to 105 pounds and measures from 6 feet to 7 feet from tip to tip. These are actual scale weights and tape measurements.

The adult male accompanies the female only during the mating period and does not help to feed and care for the young. Lions do not make their kills by lying in wait on the limbs of trees and springing from there. In fact, I have never known of a lion climbing a tree except to avoid the dogs. They tirelessly hunt and stalk their quarry on the ground, taking advantage of every cover, and finally rushing from a distance of 40 or 50 feet. This distance is covered in about a second. A 100-pound lion moving at a velocity of 40 feet per second will strike a blow sufficient to prostrate a yearling steer. The heavy muscles of the lion's neck, shoulder and forepaws are tense for the blow, and easily absorb the shock that prostrates his unsuspecting victim, which is then killed by being disemboweled. The liver is eaten first, and then the loins and hams. An examination of probably 100 deer killed by lions showed no evidence of the lion having touched the throat of any of these kills.

I have found the lion to be normally a solitary and invariably a silent animal. I have never heard that hair-raising scream the lion is supposed to utter, and I do not believe it makes any loud sounds, but that the noises usually attributed to it are made by owls and coyotes. On one occasion of which I know, about fifty guests at a mountain resort were listening one evening to the braying of a mule colt, and were told in good faith that they were hearing a mountain lion scream. Every one of these people, including their informant, probably believes to this day that they were hearing a lion.

Some writers have condemned the mountain lion as being cowardly and unwilling to attack in the open, but they lose sight of the fact that the cat family is short-winded and unable to capture its prey by running it down as the dog family does. If the lion should openly approach his prey and challenge it to combat, his intended victim would immediately take to flight, leaving the lion to go hungry. His only means of making a living is to surprise his quarry. In a fight to the death, the mountain lion is more game than the black bear. He will fight with his last breath, when the black bear will quit and cover his head with his paws and bawl like a calf.

The most reliable method of taking lions is trailing with dogs, and the best dogs for this purpose are fox hounds. A hunter requires at least four dogs, which must be highly trained on lions and thoroughly proof on deer and other game, as there are probably a thousand head

of deer and other game combined, for each lion. The dogs are used in pairs, allowing each pair to rest every second day, as a dog uses so much energy in running, baying and wagging his tail during ten or twelve hours of trailing that he needs one day's rest for each day of work. Furthermore, a dog's feet will not stand continuous hunting.

To be successful, lion hunting must be done intensively. Since a lion does most of his prowling at night, the hunter must leave camp early and travel fast, in order to find a fresh trail and have the most hours of daylight to trail the lion down, as a person can neither travel to advantage in the mountains after dark, nor see tracks when necessary to help the dogs. A lion travels a regular beat over about 100 square miles, usually making his round about every four or five days, so as soon as some part of this beat is learned, the hunter has a clue to

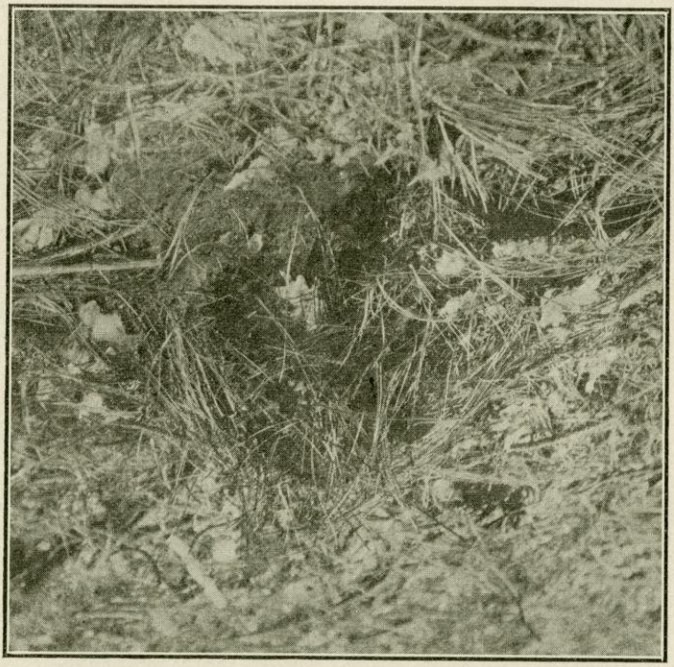


FIG. 53. Mountain lion scratches.

work by. Since the dogs can smell only a reasonably fresh track, the hunter can not depend entirely upon their sense of smell to find the trail, but must always watch the ground carefully for any old signs which would indicate the places where a lion had been traveling.

The signs left by lions are fresh or old kills, dung and tracks, and if a male is traveling a beat the plainest sign will be marks about a quarter to a half mile apart along the beat and apparently made by the lion digging with his forepaws in the dead leaves near the base of a tree or in the rotten wood near an old log (see figure 53). These marks are all alike and can not be mistaken for anything else when once learned; they are made only by the male and are a sure indication to

the hunter of the sex of the animal he is trailing. After some part of the lion's beat has been learned, that part must be hunted first every day, continuing the hunt then from there. If one day is missed and the lion passes, the track may be too old for the dogs when it is found the next day, and this may mean four or five days before the trail is again found fresh enough for the dogs to follow. A dog can not follow any but a very fresh trail on hot and dry ground or in dust, so the hunter must use his eyes to help the dogs past such places. In the cool, damp weather of winter a twenty-four hour trail can usually be successfully followed, while in the hot, dry weather of summer a six-hour trail is found difficult. When snow is on the ground, trailing is

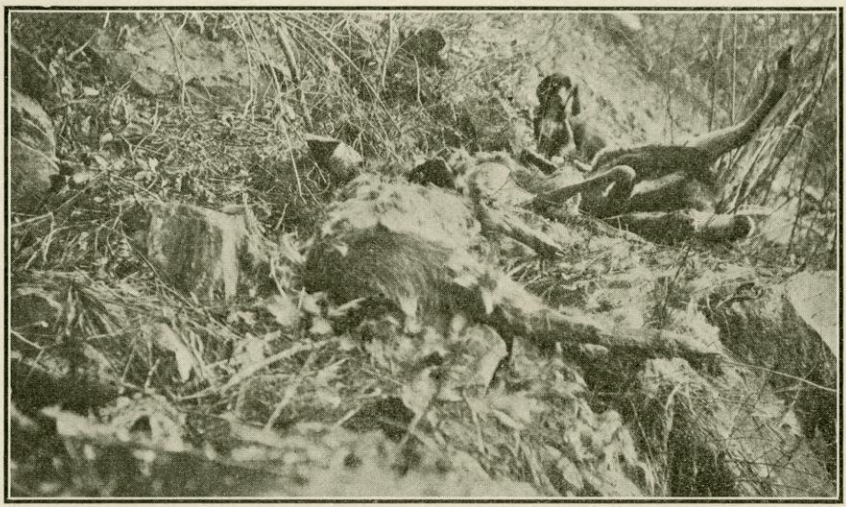


FIG. 54. Doe and fawn killed by mountain lion near Bear River on north fork of Mokelumne River.

easy and a four or five-day-old track should be followed, as a lion may make a kill at any point on his beat and may have returned for a feed, allowing the hunter to get a fresh track at the kill. I estimate that while killing 120 lions I advanced an average of about fifteen miles the day the lion was killed. This distance does not take into account many loops made in looking for tracks when it was necessary to help the dogs. Many times I have trailed a lion this distance each day for three or four days before bagging him. Several times I have advanced twenty-five miles, and once thirty miles, the day I got the lion. Generally the hunter travels on foot over 100 miles for each lion killed. I estimate that on the average trail my dogs will travel about five times the distance advanced. To me it is very interesting to watch a hound on the trail. He rushes along with nose close to the ground, head sweeping from side to side and tail wagging furiously, stopping suddenly as he catches the scent, smelling intensely for a moment to make sure, then throwing up his head and baying loudly as he rushes ahead for a hundred feet or so, then trying again for the scent, and circling until the trail is located. Now another rush ahead, and so on for twelve or fourteen hours, or until the constant baying indicates that

the lion has been routed out of his bed and is making away, with the dogs in close pursuit. The hunter knows when the lion is finally treed, by the changed note in the baying of the dogs and by the fact that the baying comes continually from one place. On arriving at the tree, he can see anywhere from 100 to 160 pounds of cat, standing among the branches, usually about 30 feet above the ground. The lion may be just watching the dogs with interest, or he may be very angry, which is indicated by his constant growling.

At the crack of the gun, out he goes, and even though shot through the heart he may still be able to seriously injure a dog. For this reason it is best to tie the dogs before shooting.

It is quite an exciting experience to see a wounded adult lion on the ground, trying to hold at bay from two to four frantic dogs. Every moment will be full of action, as the dogs attack from different directions and the lion continually turns to meet each attack. All the while he is growling and spitting savagely, his ears flat back, mouth wide open, claws unsheathed and hair and tail standing up. If the dogs crowd him too closely he turns over on his back and fights with his mouth and all four feet at the same time. Now is the time for the hunter to rush into the fray, shove his gun between the frantic dogs and get in a fatal shot.

BLACK BASS SHIPMENT TO MEXICO.

By GEORGE NEALE, Executive Officer, California Fish and Game Commission.

In 1909, at the request of the Mexican government, Mr. Chas. A. Vogelsang, at that time chief deputy of the California Fish and Game Commission, made arrangements for the shipment of black bass to Lake Chapala, Mexico.

The California Fish and Game Commission's distribution car No. 1, in charge of the writer, left Fresno early in December, 1909, with ninety-two cans containing about 1800 adult black bass. Some weighed as much as three pounds. After many delays, Ocotlan, on the shore of Lake Chapala in the Mexican state of Jalisco, was reached. Here the first planting was made. Seventy-two cans were transferred to lighters, which were towed by launches to the south end of the lake, where the fish were liberated. Some of them immediately began feeding on the minnows.

We were then taken to the governor's palace on the shore of Lake Chapala, and were lavishly entertained by Governor Landa. Accompanied by the governor's quartette of guitarists, we returned to Ocotlan after midnight in a terrific blow.

Lake Chapala is a magnificent body of water, larger but not so beautiful as our own Lake Tahoe. It contains a food fish known as the whitefish, which differs from our whitefish in that it is transparent. But it furnishes a fine food for the black bass, which food is most necessary to insure increase. Lake Chapala is also said to contain carp, but we did not see any. This lake should now (eleven years after the planting of these black bass) be an anglers' paradise for those who know how to lure the fish, which are, as Dr. Henshall states, "inch for inch, pound for pound, the gamiest fish that swims."

CALIFORNIA FISH AND GAME

"CONSERVATION OF WILD LIFE THROUGH EDUCATION"

Volume 9 SACRAMENTO, APRIL, 1923 Number 2

CONTENTS.

	Page
RABIES IN A MOUNTAIN LION—*Tracy I. Storer.*	45
CALIFORNIA'S LARGE GAME ANIMALS—Continued—*M. Hall McAllister*	49
SARDINES ABUNDANT NOW—BUT WHAT OF THE FUTURE?—*Elmer Higgins*	50
PENDING FISH AND GAME LEGISLATION	51
EDITORIALS	55
FACTS OF CURRENT INTEREST	72
NOTES FROM THE STATE FISHERIES LABORATORY	73
CONSERVATION IN OTHER STATES	75
UNITED STATES FOREST SERVICE COOPERATION	76
REPORTS	77
Seizures	77
Violations	78
Income and Expenditures	79
Fishery Products	80

RABIES IN A MOUNTAIN LION.

By TRACY I. STORER.

(Contribution from the Museum of Vertebrate Zoology of the University of California.)

It is a general belief among naturalists and well informed laymen that the California Mountain Lion (*Felis oregonensis*) does not ordinarily attack human beings. This belief is strengthened by the experience of many thousands of people who have camped and lived in the range of the mountain lion in this state without being harmed in any way by the species. In fact there is, for California, so far as the writer is aware, only one recorded instance in which a mountain lion has without obvious provocation attacked a human being. This occurred in Quartz Valley, Siskiyou County, on June 19, 1890, when a seven year old boy was set upon and killed by two lions while he was playing among the foothill oaks at some distance from his home.* Children are believed to be slightly more subject to attack by lions than grown persons. Captive mountain lions in Yosemite Valley some years ago were observed to watch children intently even when the latter were at some distance, whereas adult people under similar circumstances aroused little or no interest on the part of the lions. The mountain

*Outdoor Life (Denver, Colorado), vol. xxxvi, no. 2, August, 1915, pp. 162-163.

lion, instead of seeking out people, usually carefully avoids them. Very few people even so much as catch sight of one of the animals.

The above general remarks are given to indicate the ordinary relations between mountain lions and human beings. There is, however, at least one instance in California where a mountain lion, evidently infected with rabies, voluntarily attacked and was responsible for the death of two persons, including one adult. This occurred near Morgan Hill, Santa Clara County, in 1909. So far as known, this case has never been made a matter of record save in the local newspaper. It has seemed desirable to ascertain and record the facts as fully as possible, and for that purpose, the writer, acting in the capacity of compiler, has gathered the available information and herewith presents it to the readers of CALIFORNIA FISH AND GAME.

The first account of this attack appeared in the *Morgan Hill Times* for July 9, 1909 (Vol. XI, No. 8), and the article is reproduced here verbatim with the exception of a final paragraph which was only of local interest.

"The people of Morgan Hill were greatly shocked about four o'clock Tuesday afternoon, [July 5, 1909] when the news reached town that Miss Isola Kennedy had been attacked by a mountain lion on Coyote creek and seriously injured. Dr. J. T. Higgins was summoned and hastened with all speed in his automobile to her assistance. He dressed her wounds as well as was possible with the appliances at hand, and she was brought to her home in town on a cot on a wagon by her father who had also been summoned. It was nearly eight o'clock before they reached home with her as they had to drive very slowly on account of her serious injuries. She was made as comfortable as possible for the night.

"Early Wednesday morning Dr. Higgins assisted by Dr. F. W. Watt, made a thorough examination of the wounds and dressed them. One ear was completely eaten off, the other ear badly lacerated, and a three-cornered cut by the right eye laid the bone bare but left the eye ball uninjured. Her left arm was fearfully mangled from bites and scratches, there being about fifteen deep gashes extending from the shoulder to the wrist and nearly a hundred lacerations from the teeth. The right arm, leg and back were also badly torn. While she is very weak from loss of blood and has suffered great pain, the doctors think she will recover unless blood-poisoning sets in.

"Miss Kennedy had gone out for a drive and picnic on the creek about four miles east of Morgan Hill with Henry Merkle, a ten-year-old boy from Fruitvale, who is visiting the family and Curtis Lane, who is about the same age. These boys with another lad, Earl Willson, were bathing a short distance above the bridge when a lioness attacked the latter boy, striking him with her claws and tearing an ugly wound in the scalp and ear. Miss Kennedy ran to his assistance, when the animal jumped upon her, knocking her down. It then tried to bite her neck, but Miss Kennedy protected her neck as well as she could with her left arm and fought heroically by jabbing the lioness with a hat pin.

"The boys ran to the tents of the Bay Cities Water Company, which are a few yards below the bridge and called Jack Conlan. He grabbed a shot-gun and ran to the relief. He fired two shots into the beast but the shot were too fine to do much injury and the animal clung to Miss Kennedy, gnawing at her arm. Conlan then ran and secured a rifle and shot the animal through the body near the heart, but not until he shot it through the head would it let go its hold. It measured eight feet in length.

"The attack seemed particularly strange as there were a number of persons in the vicinity and several houses are not far distant. It has long been a favorite picnic and camping ground and such a danger was undreamed of."

A request for details in the case sent to Dr. J. T. Higgins, M.D. (now residing in Watsonville), brought the following reply under date of December 20, 1921:

"It is a pleasure for me to endeavor to give you an accurate account of the Isola Kennedy case; inasmuch, as I have read a great deal concerning the attacks of mountain lions on human beings and find that in such cases the animal is generally not in a normal condition, as was verified by this particular case. In talking with

old mountaineers and cattlemen I have learned that dogs and horses bitten or scratched by mountain lions usually die.

"In this particular case Miss Kennedy was walking along the bank of the Coyote Creek, near Morganhill, when she saw the lion leap from the bank and attack some boys bathing in the water. Two of the boys escaped, but the third one was knocked down into the water by the lion and scratched on the scalp. Owing, probably, to the boy being knocked into the water the lion abandoned him and jumped to the bank and attacked her, she having come at this time to where the boys were.

"The lion held one of her arms in its mouth during the entire attack, the severe lacerations of her scalp and face being done by its front claws and those of her legs by the rear feet of the animal. She was knocked to the ground and laid in this position endeavoring to kill the animal by sticking a hatpin into its heart, which she was unable to do on account of the toughness of its skin. After considerable time help came to her and the animal was killed.

"Examination showed the lion to be a female, but the report that she had young was probably erroneous as there was no active mammary gland development and no young were seen in the vicinity.*

"Miss Kennedy through loss of blood was very much weakened, but made an apparently uneventful recovery, the lacerations being nearly healed. She was considered convalescent and had been out riding up to about seven weeks from the time of the injury when she developed hydrophobia and died, being sick about one week. The case was seen by three other competent physicians, who pronounced it hydrophobia.

"An autopsy performed upon Miss Kennedy's remains failed to show pus in any part of the body, even the original wounds being healed and there was at no time during her illness any reason to believe that it was septicemia or tetanus.

"Regarding the boy [Earl Wilson], who was scratched while in the water, wish to say that I made only a temporary dressing, when he returned to his home in Santa Cruz. The cause of his death was pronounced by the attending physician in Santa Cruz as tetanus, but judging from the character of the wound and the treatment it received in my office and the period of incubation I do not believe that it was tetanus, but am thorougly convinced that it was also hydrophobia.

"I believe I am in a better position to have a knowledge of this case than any one else as I was in constant attendance and gave it the closest attention and will be glad to give you any further details you may desire.

"Yours very truly,

(Signed) "J. T. HIGGINS, M.D."

A similar inquiry to Dr. D. A. Beattie brought a letter in which he referred to Dr. Higgins as being able to give the fullest account of the case. The following paragraph from Dr. Beattie's letter is important:

"I will say that as a consultant I saw her more than once, and I also performed the postmortem upon her. But, through the very great negligence of the doctor who took charge of the brain it was not sent to the laboratory until it had become useless. There isn't any question but this was a case of hydrophobia. There were perfectly typical symptoms, and the whole case was a picture of hydrophobia."

It may be said in explanation of Dr. Beattie's closing statement that the early symptoms of rabies (hydrophobia) and tetanus (lockjaw) are somewhat alike, and physicians sometimes have difficulty in distinguishing between the two. There is, however, one difference which marks the courses of the two diseases. A fatal case of tetanus usually terminates soon after the infection is acquired. Rabies, on the other hand, may be very slow in claiming its victim. The rabies infection travels slowly from the point of the bite along the nerves to the brain and then (in the absence of preventive treatment during the intervening time) terminates fatally.

According to the descriptions of the attack furnished above, Miss Kennedy's scalp and facial wounds were caused by the claws of the

*Mr. Conlan also states that the lioness had no kittens.

mountain lion. The lion attempted to bite her neck but she put up her arm and this the lion seized in its mouth. The infection, in a rabid animal, is carried in the saliva and on the teeth, and Miss Kennedy's infection was therefore received in her arm, probably her forearm. The head wounds were harmless from the standpoint of rabies. Had the lion bitten her anywhere on the head she would in all probability have died within a month. As it was, the infection was about seven weeks in travelling along the nerves of her arm and reaching the brain. With our present knowledge of rabies and our facilities for giving the Pasteur anti-rabic treatment, such a case, with early treatment, would stand every chance of escaping a fatal issue.

Rabies was first reported in California in 1898 when there was a small outbreak among the dogs of Los Angeles County. Another small epidemic is on record as occurring at the Soldiers' Home near Los Angeles in 1906. In 1909, the year of the mountain lion attack here described, there was a severe outbreak in several of the counties of southern California, and in the years immediately following there were epidemics in several counties in the San Joaquin Valley, but none in the coast counties so far as can be ascertained. The question of the source of the infection in the mountain lion remains a mystery.

According to the records of the California State Board of Health rabies has been detected in the following animals in California: Horses, mules, cattle, sheep, goats, hogs, domestic cats, dogs, bobcats and coyotes, and once each in the ground squirrel and gray fox. No skunks have been found positive for rabies in California.

The account given above indicates that to the species of animals now known to carry the rabies infection must be added the mountain lion through the occurrence of but one authenticated case would suggest that in this species the infection is rather uncommon. The point to be made here is that any person attacked by a mountain lion in any way should take steps to consult a physician who can determine whether there is any danger of rabies and whether preventive treatment should be started. As first aid treatment wounds made by the teeth of a lion should be cauterized with nitric acid. If the lion is killed its entire head should be packed in ice and sent at once to a county or state health officer with a request that an examination for rabies be made.

In conclusion, then, let it be emphasized that there is extremely little danger of attack from a mountain lion in California. The case here presented is only the second attack, and the first due to rabies, that has come to our attention. With the various epidemics of rabies in different counties of the state, and with the extensive epidemic of this disease among the coyotes of northeastern California, no intimation of rabies infection in mountain lions was obtained. The danger then from mountain lions in California is negligible as compared, for example, with that from the domestic dogs which roam our city streets and country roads.

Berkeley, California, January 29, 1923.

Tonto Inspection - 1923

Jaguar Walter Lazear says was killing calves and yearlings in Cold Sprgs. country, burying the kill like a lion and coming back to it. Set 5 traps around one of these kills but he got the calf out without disturbing one of them. Calf had been pulled down by the jaw, not ridden. Then took after him with dogs but cat would not tree at all and mauled the dogs very badly. Ran him up over the rim. Now using on head of Duke Cr. on Rim - 2 Biol. Survey men and 14 dogs after him. Has heard of others E. of Pleasant Valley but doesn't know where this one came from

9/10/23

Lion attacking Humans

Dr L S Peters says 70 yr old woman was washing dishes at her cabin 4 miles from Pinos Altos in 1908. Her husband was smoking nearby. A she-lion jumped into the cabin and mangled her badly. The husband doused the lion with a bucket of water, causing the lion to duck under the bed, where the husband shot it. Dr. Peter was immediately called to treat the case, and saw the skin of the lion, which was an old suckling female. His theory is she was starved for food and thus impelled the attack.

September 22, 1923.

Mr. C. E. Hulbert,

Pinos Altos, New Mexico.

Dear Hulbert:

Thanks very much for your complete reply of September 17. I also received explanatory notes from Mr. Winn.

The hydrophobia theory, of course, puts a different light on this and the other cases which you mention. At the first opportunity I am going to find out from Dr. Peters whether Mrs. Campbell was treated for hydrophobia. Some time that you get around to it, I would like very much to know whether the two cases mentioned by W. R. Wood had any evidence to indicate hydrophobia.

With kindest regards to yourself and family,

Very sincerely yours,

Aldo Leopold.

Pinos Altos, New Mexico
September 17, 1923

Mr. Aldo Leopold,
Albuquerque, N. M.

Dear Leopold:

I received your letter Friday and intended to answer yesterday but did not stay at home. I let Mr. Watson have your letter too as he wanted it to refer to in getting additional information from Dr. E. B. Robertson who was to come home from Fort Bayard Saturday, and I do not remember just what questions you asked, but will write tonight and again later when I have learned from Mr. Watson what Dr Robertson remembers of the incident.

I have already learned however that the lady was attacked and the animal killed as told you by Dr. Peters but that it was not a lion but a lynx. I have talked to three persons who remember the incident and all are positive of this. Mr. H. B. Hood who was here at the time and who saw the skin of the animal says that it was a lynx as does also Mr. Watson and José Acosta.

The ladies name was Mrs. James L. Campbell She was a Mexican woman. Her husband was Scotch. The time of the year was late summer.

About the time this happened a number of wild animals were killed here in town. Mr. Hatson says as he remembers it there was a coyote, two or three foxes and wild cats. All were suspected of being and some were known to have been afflicted with hydrophobia. While I have not learned whether or not Mrs. Campbell ever showed any symptoms of rabies a horse which was attacked and bitten by a fox afterwards went mad and bit Mr. Frank Bell who went away for treatment for rabies.

Mr. H. B. Hood, an old timer in New Mexico having come to this section of New Mexico in 1874 told me of two other incidents where lynxes had made unprovoked attacks on human beings. In Colfax County on the Cimmaron river a lady walking through the edge of an orchard next to the river bank was attacked by a lynx which jumped on to her from the willows on the river bank. She succeeded in choking it to death but was so badly lacerated and bitten that she died the following day. A man working at a sawmill herd in the Black Range was attacked by a lynx which jumped on to him through an open window as he was asleep on his bed. This man is now living near here. His face is disfigured by scars where he was bitten and scratched.

I do not know whether I have answered your questions or not but if not will write you further after I have seen Mr Watson and get your letter. Mr. Marsh came today and I am going to the sawmills with him and will not have time to write probably for several days, but will do so then in case I learn anything more in regard to this or in case I have not answered all your questions.

Hope that we succeed in financing the interforest ranger meeting and that I see you there.

As ever

C. E. H.

Copy sent Mr. Winn

Albuquerque, New Mexico,
September 11, 1923.

Mr. C. E. Hulbert,
Forest Ranger,
Pinos Altos, New Mexico.

Dear Hulbert:

Dr. L. S. Peters, who was formerly a practicing physician at Fort Bayard, has told me the following story which I quote from my notes:

> "Dr. L. S. Peters says 70-yr. old woman was washing dishes at her cabin 4 miles from Pinos Altos in 1908. Her husband was smoking nearby. A she-lion jumped into the cabin and mangled her badly. The husband doused the lion with a bucket of water, causing the lion to duck under the bed, where the husband shot it. Dr. Peters was immediately called to treat the case, and saw the skin of the lion, which was an old suckling female. His theory is she was starved for food and this impelled the attack."

This is an exceedingly exceptional and interesting case and I would like very much to learn more about it. I would appreciate it very much if you could ascertain by local inquiry the answers to the following additional questions:

(1) What was the name of the woman who was attacked?

(2) What time of year was it?

Mr. C.E.H.

(3) Was the lion poor or fat and is there any other evidence as to extreme hunger?

Thanking you very much for helping me get this information,

Very sincerely yours,

Aldo Leopold

3/3/24

Lions Screaming

In nov 1913 Bloom heard an exceedingly piercing scream above his camp near Gregson Hot Springs Montana. It was answered from across canyon. next morning he found tracks of a lion and where he had satisfied screaming. These tracks were in 1 foot of snow.

In 1916 Malament had similar case in 1" snow on Modoc in California.

DAILY

OFFICIAL CITY PAPER

RATON, NEW MEXICO—SATURDAY, MARCH 15, 1924.

Kills Two Huge Lions

The remarkable kill of two huge mountain lions in two days was made by Louis Smith of the "Poke" Smith ranch near Brilliant this week.

Determined if possible to run down the marauders that had been preying on the ranch horses and cattle for months past, Louis, with two other of the Smith brothers, started out Wednesday morning to trail the lions in the newly fallen snow. The first beast was brought down by Louis late in the afternoon, and was found to weigh 175 pounds and to measure nine feet from tip to tip. The second, also shot by him, was brought in after a day's hunt on Thursday.

The Smith family, who are locally famous hunters, have killed many lions and other predatory beasts in their years of residence on their ranch, but these last they say were of record size. The kills were made in Long's canyon in Colorado, about 15 miles from the ranch home.

In tracking the dangerous beasts the hunters came upon the carcases of two deer and an elk that had been pulled down by the animals.

Doheny too Will Fight

Great Maso... De...

A loss estim... sustained Thurs... temple in Denv... known origin b... torium stage o... the building, v... high. The stag... the fifth floor... flames.

10 Still... Uta...

Castle Gate... bodies still re... the wrecked m... Co. here, wher... last Saturday. ... assigned to ma... it is hoped ma... of the last ... frightful expl... the mine will ... this final effor...

D'An... Mad...

(By ... Rome, Ma... Annunzio, ro... of It...

L N - pls mail Dr Pettet

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF BIOLOGICAL SURVEY

IN REPLY REFER TO

P. O. BOX 765
PHOENIX, ARIZONA

May 15, 1924.

Mr. Aldo Leopold,
Forest Service,
Albuquerque, New Mexico.

Dear Mr. Leopold:

Referring to your letter of May 12th regarding the jaguar caught by Jack Funk.

Jack Fund is a private trapper and hunter who has worked on the Indian Reservation for the past eight or ten years. From the letter he wrote me I take it that he caught the jaguar on Cibecue Creek. However, I am not sure whether it was above the station of Cibecue or below. Therefore, I am unable to give you the location by townships.

I presume you have the records of the two jaguars taken by our men, one in 1918 and one in 1920. The one in 1918 was a male and he was taken on top of the bridge west of Greaterville in the Santa Rita mountains. The one taken in 1920 was a female and was taken within one hundred yards of where the male was taken two years before.

Last year there were two jaguars seen in the Santa Catalina mountains and this spring Mr. [illegible] B. Cary, of Benson, killed either a small jaguar or an ocelot that was in the Rincon Mountains, or rather in the foot hills of the Rincons at the east end.

Hoping this information will be satisfactory and assuring you that I will be glad to furnish any additional information, I am

Sincerely yours,

M. E. MUSGRAVE
Predatory Animal Inspector.

M:K

May 12, 1924.

Mr. M. E. Musgrave,
Box 765,
Phoenix, Arizona.

Dear Mr. Musgrave:

I note a recent article in one of the Arizona newspapers announcing the capture of a jaguar by Jack Funk "near Black River on the Apache Indian Reservation".

I have been collecting jaguar records for many years and would appreciate your giving me the approximate locality by township and range. I would also like to know whether Funk is a Biological Survey employee.

Incidentally, if it is not too much trouble, I would appreciate hearing of any future records or any other recent information which you have stating where, when and by whom jaguars were seen or killed.

With kindest personal regards,

Very sincerely yours,

Arizona Republican April 20-1924

F. S. D-1
RECEIVED
APR 23 1924
REFERRED TO
DISTRIST FORESTER

Trapper Captures Large Jaguar On Indian Reservation

A 300 pound jaguar has been captured by Jack Funk, old time trapper, near Black river on the Apache Indian reservation, according to advices received in the local office of the United States biological survey yesterday.

While other jaguars have been captured in Arizona this is the first time one has been found so far north, according to survey officials who declare that their natural habitat is southern Mexico, Central and South America.

—o—

Mr. Leopold. This may be of interest to you since I believe you made an investigation a few years ago

Leo E Anderson

Where?

May 26, 1924.

Mr. W. R. Morley,

Datil, New Mexico.

Dear Mr. Morley:

In collecting material for my book on Southwestern game I find I have two records of jaguars killed near Datil but I rather suspect that they might both refer to the same animal.

Fred Winn tells me that a ranchman of his acquaintance killed a jaguar 10 or 15 miles north of Datil in 1904 or 1905 and he believes Oscar Reddemann has the skin. From another source (which I can not now recall) I have a record of your killing one about 1895 near Datil.

Can you please indicate on the bottom of this letter whether these are both correct or if not, which one is correct and return in the enclosed addressed envelope.

Thanking you,

Very sincerely yours,

Enclosure-

L. N.

Entered
Jaguar File

Copy

Springerville, Arizona
May 31, 1917.

G
Fish & Game-Apache.

District Forester,
Albuquerque, N. M.

Dear Sir:

Reference is made to the item in the Bulletin of May 26.

During the winter of 1904 or 1905 a Mexican Jaguar was killed in the Datil Mountains about ten or fifteen miles north of Datil, N. M. by a ranchman of my acquaintance. I believe the skin was purchased by Mr. Oscar Redeman of Magdalena, N. M.

Very truly yours,
Frederic Winn
Forest Supervisor.

pounds of reindeer meat to the United States. Five artificial ice plants have been established on the Seward Peninsula to take care of reindeer meat products. The packing plants have a total capacity of 7,500 head a year."

Reports show that the deer feeding operations saved many animals. Warden W. H. Terhune states that during the feeding 300 deer were seen in the vicinity of Sitka on one day, February 12; a total of 287 in Tenakee Inlet on two days, February 13 and 14; and 64 in Gambier Bay, February 27. Many other animals were seen scattered along the beaches singly and in groups. Mr. Terhune reports the snow about three and one-half feet deep in places on the beach, but that the deer were doing fairly well when the weather moderated February 27 and rain began. Feeding was discontinued February 28, as the snow was rapidly settling and the deer could again get about and obtain food.

ECONOMIC INVESTIGATIONS

Dr. W. B. Bell left Washington March 5 to visit field offices through the west and will be absent for several months.

Hunter Dave Crouch killed a female lion on the San Isabel National Forest, Colorado, on February 10, and in tracking her mate was led by his dogs to a cave containing the remains of two lion kittens which had probably been eaten by the old male.

Albert L. Jones, employed as a hunter in the Apache Game Preserve district, Arizona, in February captured 9 lions and 12 bobcats, though he did not have the equipment of most lion hunters, and his dogs were not well trained for the work. Hunter Cleve Miller caught four lions just south of this range.

February is usually the most favorable month for lion hunting in Arizona, and last year's record of 21 lions was broken this year by a catch of 22.

At a rat control demonstration in King County, Washington, Leo K. Couch, leader in rodent control, showed the method of applying calcium dust to rat burrows under poultry plants. On the ranch used for this purpose, 3,500 hens were housed in four buildings - two of them 200 and two 120 feet long - all with concrete foundations and floors. The owner had used every precaution to rat-proof his buildings, but the rodents burrowed under the cement foundations and worked holes in the cement floors and through the dust boxes. Traps and poisons had been used with little success, as the rats had access to grain, mash, eggs, and young and sick poultry, and were causing a loss of $1,000 per year. After the cyanide dust was pumped under the buildings, 163 dead rats were picked up, and doubtless many more were killed. Experimental work will be done with small dusters to apply the cyanide to smaller poultry plants. Where conditions are right to confine the gas, and where trapping and poisoning fail, the cyanide can be used to good account. A few days after the

demonstrations, the owner made the following report to the cooperating County Agent: "By the looks of the rat situation, I hardly think it warrants me in getting an outfit, but I intend to be prepared for future trouble. I have seen only two or three rats since the grand execution although I've been snooping around constantly at night with the flash light. Formerly I saw hundreds. You must have exterminated two or three thousand rats."

By using the rat trapping methods recommended last fall by H. R. Wells, leader in rodent control in South Dakota, one large concern in Sioux Falls dealing in foodstuffs and unable to use poison took 6,400 rats in 90 days. At the present time, the man employed for this work states that rats are very scarce and that very little work is necessary to keep them in check.

The first attempt at organized pocket-gopher control east of the Missouri River was started in February when Mr. Wells began the organization of a cooperative pocket-gopher campaign in Minnehaha County, South Dakota. This project will be started in April with one township and operations will be compulsory on all lands.

Hundreds of letters have been received from cooperators telling of the benefits derived by killing rodent pests in Arizona. The following excerpts are typical:

"The value of killing rodent pests means the difference between success and failure on our ranch. We would have lost at least $5,000 last year if we had not used the poison you sent us."

"We probably saved $500 by poisoning pocket gophers on 146 acres. It is rather hard to estimate but the truth of the matter is that farming without some pocket-gopher control is impossible in the Yuma Valley."

"It is estimated that we saved several thousand dollars worth of crops and vines by using the pocket-gopher poison on our 80 acres."

Good results were obtained in Idaho in poisoning jack rabbits during the winter, especially during the month of January. At the end of February, a total of 20,760 pounds of bait had been used.

Arrangements have been made in Idaho to conduct a ground-squirrel campaign in 29 counties, and 72,000 pounds of poisoned bait have been provided for use on privately owned lands. Provision has also been made for the purchase of 110,000 additional pounds as the season advances, making available a total of 182,000 pounds of poisoned bait for which funds have been provided in the various counties.

James Silver and Morris A. Stewart, of the Eastern District, have recently returned from a trip through New Jersey, New York, western Massachusetts, Connecticut, and Vermont, where a series of conferences with extension officials and others interested in rodent control were held. Interesting information also was obtained relative to the present distribution and economic status of the European hare.

NEW MEXICO HUNTERS' NEWS LETTER

UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Biological Survey and
State of New Mexico through its College of Agriculture
Co-operating.

JUNE, 1924 ALBUQUERQUE, N. M. NUMBER 77

The Hunters' News Letter is issued in the interest of efficiency in predatory animal control and as a medium for conveying news of interest to the field forces and interested co-operators. The News Letter will be send free to those who are interested in the subject it represents.

The excellent work that was accomplished by Government and State hunters in June is a credit to the Service. The work is all the more commendable, considering the fact that the month was extremely hot and dry.

Government and State Hunters are at liberty to conduct their official work in State Game Preserves without permits from the State Game Department. This is a courtesy much appreciated and must be fully respected by all hunters and field men. Such confidence on the part of the State Game Department is a credit to our Service; at the same time, our hunters must have full freedom of their movements in order to accomplish the most efficient work. However, hunters should, so far as possible, keep Forest Rangers and Deputy Game Wardens advised regarding their movements and unnecessary disturbances should be avoided in the Preserves.

PERSONAL MENTION.

Hunter O. E. Royal is to be commended on the efficient way in which he is doing his wolf hunting in the northern part of the state. He trapped five wolves on the Tierra Amarilla Grant during June.

Hunter W. C. Echols struck the wolves of Skeleton Canyon, Hidalgo county, a hard blow by taking three. This is the last of the wolves in the Peloncillo mountains for the present at least. One of the wolves trapped

Lion Folder 1 ...

by Hunter Echols was really three-legged. One of its hind legs was torn off at the hock joint and the stub stuck straight out sideways.

Hunter C. C. Wood is making a good run on the lions of the Animas mountains, Hidalgo county. This is an important point to be guarded on account of the drift coming in from southern ranges.

Hunter J. T. Bowman is still getting better than a coyote a day in the sand country of Chaves and Eddy counties.

Hunter H. L. Leisering of Cliff, N. M., who is a new man in the service, captured one wolf, six coyotes and two cats.

Hunter C. S. Hightower of Mule Creek took a lion this month that was carrying four unborn young.

Early in the month, Hunter Pickens left his old range and moved up to Colfax county, where he has already taken one lion. This is a good start on a difficult assignment, to rid the Sangre de Christo Range of mountain lions.

The lion taken by Hunter Ritchie was trapped. The fact that dogs are sometimes out of condition for the chase does not stop some of our wily old hunters from continuing after the varmints.

Hunters Jim and Sam Young are having their round of difficulties hunting wolves. Sam lately learned that there are no more on his district and the only one Jim has left at present is ranging among the sheep where he can't keep a trap in shape, but we are sure that when Jim's wolf leaves the sheep trails it will be "goodbye Mr. Lobo."

SUGGESTIONS AND INSTRUCTIONS.

The Inspectors are planning to prepare a good supply of foetid scent bait for use during the next fall and winter poisoning campaign. A good quantity of oil will be needed to mix with the scent. For this purpose skunk oil is best, but lion oil can be used. If each hunter will prepare as much as a quart or half gallon of the oil we will be able to prepare all the scent that will be needed. Tin cans with screw tops are best as oil containers. The oil may be kept until the Inspectors have an opportunity to get it or instructions are given for shipping it to the office.

It is suggested that any hunters who desire to take leave should do so in July or August, as these are usually dull months and we want to all be groomed and in good shape, with ample funds for conducting our big drive on predatory animals next fall and winter.

Hunters are requested to use the space on itinerary sheets under

"remarks" for listing livestock damages and the number of predatory and fur bearing animals taken during each week. In order to simplify our office work we are attaching a sample itinerary which illustrates the method of reporting the information required. This is intended also to simplify the report work of hunters.

During the summer months no part need be saved of fur bearers, such as fox, skunk or fur badger. No part of porcupine is necessary at any time. When such animals are taken in summer, mention of the fact on your itinerary report is sufficient.

JUNE REPORT.

During the month 17 Federal and State hunters worked a total of 439 days, taking 88 predatory animals, which were 10 wolves, 6 mountain lions, 12 bobcats and 60 coyotes. In addition to the above, 4 embryo lions were also destroyed.

HONOR ROLL.

(A) O. E. Royal, Tusas, 30 days; 5 wolves.
(B) W. C. Echols, Animas, 30 days; 3 wolves, 3 bobcats.
(C) C. C. Wood, Animas, 30 days; 2 lions, 3 coyotes.
(D) J. T. Bowman, Dexter, 30 days; 32 coyotes.
(E) H. L. Leisering, Cliff, 30 days; 1 wolf, 6 coyotes, 2 bobcats.
(F) Albert Pickens, Cimarron, 30 days; 1 lion, 1 cat.
(G) W. W. Glaze, Fierro, 30 days; 1 wolf, 1 coyote.
(H) J. J. Taylor, Governador, 7 days; 1 lion.
(I) C. S. Hightower, Mule Creek, 30 days; 1 lion—4 embryo lions.
(J) I. L. Ritchie, Rosedale, 30 days; 1 lion.

Very truly yours,

J. STOKLEY LIGON, Inspector,
By E. L. PINEAU, Inspector Assisting.

DR. H. L. KENT, President,
State College of Agriculture.

Leon
Folder

CALIFORNIA FISH AND GAME

"CONSERVATION OF WILD LIFE THROUGH EDUCATION."

Volume 11 SACRAMENTO, JANUARY, 1925 Number 1

CONTENTS.

Page

THE PROBLEM OF MOUNTAIN LION CONTROL IN CALIFORNIA ---- By *Jay Bruce* 1

A BIOLOGICAL AND PHYSIOGRAPHIC SURVEY OF CALIFORNIA LAKES AND STREAMS ---- By *Geo. A. Coleman* 17

A CLOSED SEASON NEEDED FOR FISHER, MARTEN AND WOLVERINE IN CALIFORNIA ---- By *Joseph Dixon* 23

EDITORIAL ---- 26

FACTS OF CURRENT INTEREST ---- 37

HATCHERY NOTES ---- 38

COMMERCIAL FISHERY NOTES ---- 39

CONSERVATION IN OTHER STATES ---- 41

REPORTS—

Violations of Fish and Game Laws ---- 43

Seizures of Fish and Game ---- 43

Statement of Expenditures ---- 44

Statement of Income ---- 45

California Fresh Fishery Products ---- 46

THE PROBLEM OF MOUNTAIN LION CONTROL IN CALIFORNIA.

(With five photographs.)

By JAY BRUCE, State Lion Hunter.

The mountain lion, also called puma, panther, and cougar, is the only predatory animal in California which is apparently of no economic benefit to the human race. Even the wildcat and coyote generally do more good than harm by preying principally upon rats, mice, gophers, ground squirrels and jackrabbits, thus helping to keep these pests under control. Although both wildcats and coyotes, especially the latter, cause considerable losses among sheep on the ranges and also occa-

35981

sionally kill deer under favorable conditions, only a comparatively small number of these animals develop into confirmed killers of stock or deer. Furthermore, both wildcats and coyotes produce furs which are a source of revenue to a considerable number of people who live in the mountains and depend upon trapping as a means of income during the winter months.

On the other hand, the mountain lion is of practically no value as a fur bearer, game animal, or source of food, but is simply a liability

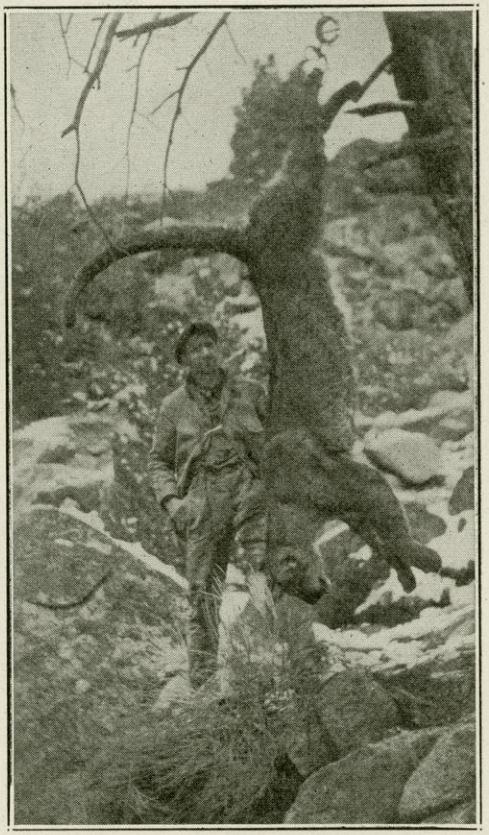


FIG. 1. A 160-pound lion hanging from a digger pine, out of which the lion was shot.

which probably costs the state a thousand dollars a year in deer meat alone to support each member of its lion population, or at the rate of $15,000 to maintain each lion during its natural existence.

INFORMATION SECURED BY PAYMENT OF BOUNTIES.

Practically nothing was definitely known about the lion situation in California prior to October, 1907, when the Fish and Game Commission began paying a bounty of $20 each for the killing of lions. Until then there was no reliable way of securing information. While the bounties

paid on 4350 lions during the last sixteen years have cost the state approximately $96,000, the information secured through this expenditure has alone been worth all it has cost, and the only way such information could have been secured was by the payment of bounties sufficient to encourage persons who killed lions to furnish the information necessary to secure such bounties.

DISTRIBUTION OF LIONS IN CALIFORNIA.

Much can be learned about the lion situation in California by an examination and study of these claims for bounties. For instance, we learn from this source of information that lions do not habitually range from the lower foothills to the crest of the highest mountain ranges, but that their normal range is confined to the areas which produce the varieties of ceanothus commonly called "deer brush," in which deer and stock feed principally. On the western slope of the Sierra Nevada from Fresno County north to Mount Shasta, this area can be described as that lying between 3000 feet and 5000 feet elevation, as measured on the divides between streams. The same elevations will apply to the lion country in the northern Coast Range from Mount St. Helena north to the Oregon line. In the Mount Hamilton range, the Gabilan range, Santa Cruz Mountains and San Lucia range, lions are found where the ridges are at least 3000 feet above sea level, while in the southern Sierra Nevada and mountains south of the Tehachapi the higher edge of the lion's normal range extends in places up to 7500 feet, at which elevation we find the same vegetation as at 5000 feet elevation farther north. A very small percentage of the 4350 lions taken during the last sixteen years have been taken outside of the above described area.

ESTIMATED LION POPULATION OF THE STATE.

By the application of this data it is not only possible to determine the exact areas inhabited by lions, but it is also possible to make a reasonably accurate estimate of the lion population of the state and to determine whether lions are increasing or decreasing from year to year. Mr. J. S. Hunter, assistant executive officer of the Fish and Game Commission, did make such an estimate, based on conditions existing in 1919, when the writer was employed by the Commission to hunt lions. About the same time the writer made an entirely separate and independent estimate, based upon density of population, and allowed an average of one lion to each township in the actual area of distribution. This was in accord with observations made while traveling for some 12,000 miles over the mountains of California hunting and trailing lions, and bagging, up to that time, about 125 lions. According to Mr. Hunter's estimate, the lion population in 1919 was 575 lions, while that made by the writer was 600 lions. It is interesting to note that these two estimates practically agreed, although determined by different methods.

THE INDICATED REDUCTION IN THE LION POPULATION.

In the interval between January 1, 1919, and June 30, 1924, the writer has taken 165 lions, or an average of 30 lions a year. In addi-

tion, a considerable number of lions have been taken by stockmen and others in the mountains, who started their dogs with the writer's trained lion hounds. While hunting for the Commission, it has always been my practice to encourage the killing of lions by these men who are continually riding the ranges in the lion country, and thus, in the course of their regular duties, often have unusual opportunities to take lions, if provided with a trained dog.

Because of this increase in kill, the lion population should have been reduced by at least 100 lions since the last estimate was made. This would bring the population down to about 475 lions at the present time, which, according to area of normal range, should be distributed about as follows: Sierra Nevada ranges, confined to a comparatively straight belt averaging about fifteen miles wide between Tehachapi Mountains and Mount Shasta, 160 lions; northern Coast Range from Mount St. Helena north to the Oregon line, an area lying between elevations of 3000 and 5000 feet, and most numerous in the pine-timbered area between the Sacramento Valley and the Redwood belt, 125 lions; Mount Hamilton and Gabilan range from Mount Hamilton south to northern San Luis Obispo County highest area, 40 lions; Santa Cruz Mountain highest area, 10 lions; San Lucia range from Carmel River south to the northern San Luis Obispo County line, elevations above 3000 feet, 40 lions; southern California from Santa Maria River southerly through San Rafael, Tehachapi, Sierra Madre, San Bernardino and San Jacinto mountains, elevations between 3000 feet and 7500 feet, 100 lions; total, 475 lions.

LIONS IN RELATION TO GAME REFUGES.

Eighteen state game refuges and part of three national parks are situated within the area inhabited by lions. Since the principal object in establishing game refuges is to furnish a harbor of safety during the open season for a sufficient breeding stock of male deer, no hunting, except for predatory animals, is allowed in these areas at any time. Most of these refuges are ideally situated for the purpose intended, but they will never be entirely effective until the U. S. Forest Service can be persuaded to prohibit stock grazing. Deer will accumulate to the limit of food supply in these refuges where they are not harassed at any time of the year, and, as the deer increase, lions are attracted. Because the lion's instinct is to kill at every opportunity, even though fully fed, the most damage will be done where deer are most numerous. Consequently, lions must be eliminated from these refuges if they are to be of any benefit.

Although in the actual area of distribution we find an average of about one lion for each township, and the average game refuge comprises about two or three townships and may harbor only two or three lions continuously, still nine or ten lions may be making most of their kills within the refuge where deer are most numerous. Although lions do not roam at random for great distances while in search of prey, each one does travel a definite beat, which is usually in the form of a loop 25 or 30 miles around and encompasses about 100 square miles. Therefore, lions which range part of the time in the areas which adjoin a game refuge, may be passing through the refuge on every trip around

their beat, which is usually every four or five days, and make most of their kills within the refuge where deer are most numerous. Consequently, in order to eliminate the lions from refuges, it is necessary to hunt these adjoining areas as well as the territory within the boundaries of the refuge.

HOW LIONS CAPTURE DEER.

The lion is a persistent hunter, often traveling 25 or 30 miles over rough country in 10 or 12 hours. When a deer is discovered by the prowling lion, the big cat approaches the quarry by stealthily moving from cover to cover, sometimes waiting for several minutes behind a tree, bush or rock until the deer moves behind another object. The deer is often thus stalked for several hundred feet before the lion approaches within striking distance. Usually when within 40 or 50 feet of his prospective victim, the lion makes a final charge and strikes it down by sheer force of onslaught, then kills it by disembowelment. Every action of a hunting lion is recorded by the tracks made in soft snow, consequently an observing person can accurately read the life history of these animals by trailing them when snow is on the ground. I, myself, have trailed lions for probably a thousand miles under such conditions, but I have never found any evidence that lions lie in wait on the limbs of trees in order to capture prey. However, a lion, while resting after a long trip, will occasionally scent a passing deer and sneak from its bedding place in search of the quarry, but they do not habitually lie in wait, except for a few minutes while making a stalk. Even then, while waiting behind the cover of tree or rock until the deer moves behind some other cover, the lion exhibits its impatience by continually changing the position of its front paws, as is evidenced by the number of tracks made in such places. There is no evidence that it lashes its tail.

By nature, the lion is restless rather than patient. It is not uncommon for a male lion to leave a fresh kill after one feed and make a 25- or 30-mile trip around its beat in search of another victim. Evidence of wanton killing by a lion was discovered when, in March, 1922, while hunting in company with Ed Garrett and Deputy James Poe near the junction of Panther Creek and the North Fork of the Mokelumne River, we found the carcasses of twelve deer that had been killed in as many days by one male lion. Nearly all of these kills were within sight of an old water ditch which the lion had been following for about two miles. This lion's tracks were first discovered by us about eight miles west of Panther Creek and followed to the place where the twelve kills were found. Our camp was then moved to this place and the next day, while trailing this lion twelve miles farther east, we discovered another kill which the lion had also abandoned after taking one feed, as I killed him that evening five miles farther on.

THE LION IN NATURAL HABITAT IS A SILENT ANIMAL.

Although I have several times heard lions in captivity utter sounds which resemble a hoarse whistle, I have never heard this sound uttered by wild lions in their natural habitat. The sound uttered by captive lions resembles more nearly that uttered by a red-tailed hawk and by

no stretch of the imagination could it be described as a "hair-raising, blood-curdling scream." This would more accurately describe the wails of the coyote. While spending more than thirty years in the lion country, hunting lions almost continuously during the last five years in nearly every part of California, trailing down and bagging 196 lions, I have never heard one scream uttered by a lion. In the nature of this big cat, whose very existence depends upon his ability to surprise the wariest animals, silence and stealth are developed to the highest degree.

BREEDING HABITS.

The adult mountain lion is normally a solitary animal and does not travel in bands or even in pairs except during the mating period, which may occur at any time of the year. Unlike most other wild animals, lions do not all breed at the same season. Therefore, the lioness seeks



FIG. 2. A 155-pound lion where picked up at the base of a bluff over which he rolled when shot from a tree.

the mate and when doing so she instinctively follows the prominent ridges which are used principally by the male lion, who, in order to disclose his beat to the lioness, leaves at intervals along his beat, marks made by digging with his forepaws in the leaves near the base of a tree or in rotten wood near an old log. These marks are all alike and, when once learned, can not be mistaken for anything else. When the seeking lioness discovers one of these marks she lingers near, leaving only long enough to make a kill and feed. When the male lion comes by on his next trip, which may be from one to three days later, he discovers by his sense of smell that a mate is near and in turn seeks her. Several times I have trailed a lioness onto a high ridge traveled by the lion and found a maze of tracks there indicating that both lions had spent considerable time searching for each other. Tracks were so numerous that the dogs were confused and it was necessary to circle at a distance of half a mile to find the outgoing trail, which showed that the lion and lioness had left the place together.

MALE LIONS FIGHT TO DEATH OVER MATE.

Occasionally two adult male lions are using the same beat, in which case there may be a battle between the two over a lioness. Conclusive evidence that two male lions battled to the death for the favor of a lioness was discovered by Joseph Dixon, of the California Museum of Vertebrate Zoology, and myself while hunting in Sequoia National Park, January 25, 1924. On that date we bagged a 145-pound male lion which showed evidence of having engaged in a desperate battle a few days previously. (See Fig. 4.) Two toes were missing from the lion's left forepaw and his head, neck and shoulders had been severely bitten and clawed. While we were proceeding along the road from Marble Fork bridge to Colony Mill, later the same day, we found the three-day-old tracks of the wounded lion which were identified by the missing toe marks. We back-tracked this lion for about a mile and a half where we discovered the two-day-old tracks of a smaller male lion.



FIG. 3. Examining tracks of mountain lion in road. Often this proves a useful way of locating lions.

After tracking the latter about one-half mile down the mountain side, we found his dead carcass. Though the dead lion bore severe wounds on his head, neck and one hip, he had apparently died from infection of the terrible lacerations in both front legs. The larger lion had probably intruded after the lioness had accepted the attentions of the smaller one and the latter, although mortally wounded, had apparently been the victor as the larger lion had left the scene of the combat and failed to return, while the lioness had faithfully lingered for two days near her mate's dead body, deserting it only when she heard the hounds approaching.

NUMBER OF KITTENS BORN AT ONE TIME.

The lioness usually gives birth to two or three kittens at a time, although sometimes only one and, occasionally, four are born in a litter. However, because of many females not finding a mate at every period,

the annual increase probably averages about one kitten to each adult female.

LOCATION OF LAIR FOR YOUNG.

Lions have no lair except in the case of the female when the young are to be born. Then it is merely a bed usually at the base of some bluff of rocks or in thick brush which furnishes a hiding place for the kittens while they are small. But the lioness herself seldom enters a den or cave even though such places are available. In Tulare County, in February, 1924, I captured a litter of four kittens not more than ten days old. They were in a bed which the lioness had established between the base of a leaning rock and a laurel bush. The bed was within 100 feet of the entrance of Clough's Cave, which extends for several hundred feet into a limestone dike. There were also a dozen or more smaller caves within a hundred feet, but still the lioness refused to seek the shelter of these caves. When discovered, she stood over the kittens and held three dogs at bay until I approached to within thirty feet. Then she deserted the kittens, fled to a tree and was shot. If these kittens had been older they would surely have sought refuge in some of the numerous caves as was done by three kittens which I captured in Placer County in August, 1923. In the latter instance, the three kittens, upon hearing the hounds, fled to a hiding place in a crack which extended for eight or ten feet back into the face of the bluff of rocks. It was necessary to watch this place for three days before they left their refuge and were cut off from retreat.

DEVELOPMENT AND SIZE OF LIONS.

When lion kittens are about five or six weeks old they weigh from six to eight pounds each and are able to follow the mother for short distances. When about eight weeks old they begin to eat meat and from that time on the mother leads them from one kill to another, leaving the kittens to devour one kill while she hunts for another victim, for the lioness must accept the entire burden of caring for the young. Usually, the kittens accompany the mother until they are about one year old, at which time the male kitten will be as large as its mother.

When fully matured, the male lion weighs from 120 pounds to 160 pounds, the average weight being about 140 pounds, and measures from 6½ feet to 7½ feet from tip of nose to tip of tail. The female weighs from 80 pounds to 105 pounds and measures from 6 feet to 6 feet 8 inches from tip to tip. The skin from a 7-foot lion will measure 9 feet when stretched and that is why we occasionally read of a 9-foot lion. The largest lion of 196 which I, myself, have taken, measured 7 feet, 3½ inches and weighed 160 pounds, but I will concede a possible 7 feet, 6 inches as the maximum length for the California lion.

POSSIBILITY OF ATTACK BY LIONS ON HUMANS.

Although the lion preys upon every other animal in California, so far as I can find, there is no authentic record of a normal mountain lion having voluntarily attacked a human being. I do not believe there is any danger of an attack on an adult human. In the case of the lioness which attacked the school teacher and child near Morgan Hill several

years ago, the lioness was undoubtedy infected with rabies as both of the victims died from that disease. However, I believe there is a possibility of the lion attacking a small child when it is unprotected. All stories of lions having trailed human beings are, in my opinion, misleading. Some of these stories are probably manufactured by persons who wish to give the impression that they have had a narrow escape from some dangerous animal. Other such stories are told in good faith by timid people who believe that as soon as darkness falls in the mountains dangerous wild animals are lurking behind every bush. When such persons are obliged to travel a mountain trail after dark they recall every lion story that they have ever heard; then as some small animal or bird moves in a nearby bush they become panic stricken, imagine they are being followed by mountain lions and are in great danger of being attacked.

Again, such stories are sometimes told by veteran mountaineers, who should know better but are actually ignorant of the habits of the mountain lion. They usually base these stories on the fact that they have found fresh tracks of lions in the morning on trails that they themselves had traveled after darkness on the night before. Upon such discovery, they immediately assume that the lion was following them, watching for an opportunity to attack. In all such instances the lion is merely following his beat.

ACTUAL DANGERS OF LION HUNTING.

While there is some danger connected with lion hunting operations, there is not much chance of being actually injured by the lion, although on one occasion a large male lion which had been twice shot with a small calibre revolver actually did spring out of the tree at me and very nearly landed on my head. Also, I have several times had narrow escapes from injury while defending my dogs when they were fighting a wounded lion. A wounded lion, forced to defend, will fight desperately to the last. In such cases he usually turns over on his back, seizes his enemy with his forepaws, and while holding thus, rakes with his hind feet and bites with his powerful teeth. However, practically all such risks to hunter and dogs can usually be avoided by first tying the dogs and then making a careful shot. Consequently, so far as the lion itself is concerned, there usually need be no danger to the hunter. In fact, there is much greater danger of falling and breaking one's leg while rushing after the dogs over rough brush-covered country. I have been much more impressed with the danger of losing the sight of both eyes from having them pierced by sharp limbs while hurriedly making my way through dense thickets of brush. This danger has been brought home to me by the experience of having injured both eyes in this way and being compelled to stop for several minutes before I could see well enough to continue the chase. Being alone and blinded in rough, unknown country, miles from traveled roads or trails, especially in stormy weather, is not a pleasant situation to contemplate. However, the hunter learns to anticipate and avoid many of these dangers. The danger of accidentally shooting oneself during the chase may be eliminated by not loading the gun until actually ready to shoot the game.

METHODS OF TAKING LIONS.

Although a lion is occasionally seen and shot by deer hunters or stockmen, stalking or still hunting is very seldom successful because the lion himself is a still hunter, and being endowed by nature with the keenest senses of sight, smell and hearing, with paws cushioned to allow him to pass noiselessly over rocks, leaves and earth, the instinct and ability to conceal himself behind the slightest possible cover or to remain motionless to avoid detection and always on the alert to surprise his quarry, it is not surprising that he is seldom seen by humans. In fact, many mountaineers spend a lifetime in lion country and never even get a glimpse of a lion. In all my own hunting experience, I have seen only one lion walking around in the woods, and that one was a 30-pound kitten 300 yards away, and the 149th lion that I had killed. Further-



FIG. 4. After the battle. At the left, a 145-pound survivor; a 104-pound male, killed by the lion at the left, and the 80-pound lioness over whom the males fought. Sequoia National Park, January 25, 1924. Photograph by Joseph Dixon.

more, in every instance that I have investigated when lions were reported seen, I have found that some other animal was mistaken for a lion.

Poisoning. Poison is sometimes used by stockmen and ranchers to rid the range of a stock-killing lion. The usual method is to place strychnine in the flesh of the kills made by the lion. Poisoning is only occasionally successful, as many stock-killing lions will not take a second feed from any kill, and, in the meantime, many valuable fur-bearing animals are destroyed; also valuable stock dogs or hunting dogs are often killed by eating of the poisoned carcass. In my opinion the poisoning method is wholly objectionable from every point of view, and is unnecessary, as, in every case where poisoning is effective in taking a lion, traps can be used with equal success and with less hazard

to other animals. When the traps are removed, the danger to other animals ceases, while it is almost impossible to remove every trace of poison, as was demonstrated in one case by Alonzo A. Davis of Sisquoc, California, who put poison in the carcass of a calf which had been killed by a lion. After securing the lion, Mr. Davis gathered up every piece that he could find of the poisoned bait and thoroughly burned it all. Nevertheless, more than a year later, near the place where the poison was used, he lost two valuable stock dogs which apparently died from eating some fragment of the poisoned bait that had been carried into the brush by rats or mice.

While practically every fur-bearing animal in California will feed on carcasses of dead animals whenever possible, still most of the carcasses of stock killed on the mountain ranges by lions and coyotes are devoured by bear, which fact often causes the bear to be wrongfully accused of killing the stock.

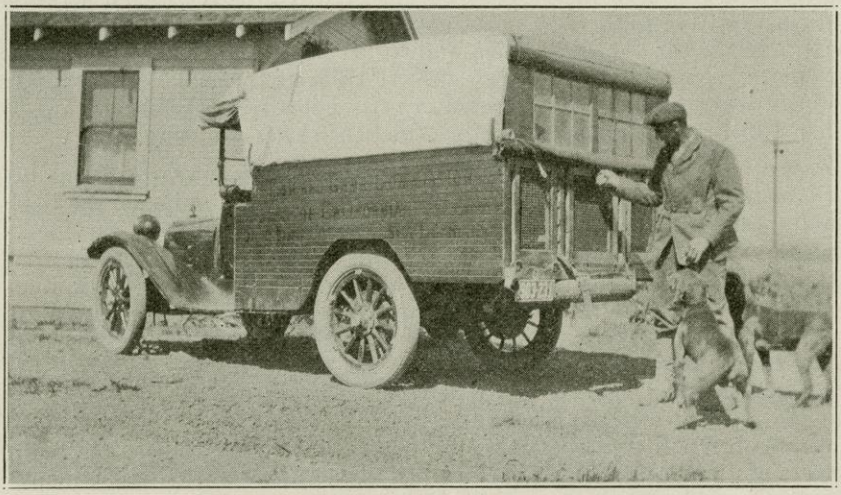


FIG. 5. Loading the dogs preparatory to a trip. Transportation and housing is furnished by a well equipped automobile.

While I was hunting lions in El Dorado County in 1922, in company with Mr. Frank Newbert, we were informed two lions had killed 100 sheep within twenty-five days, at the head of Alder Creek. Mr. Newbert and I arrived at this range about two days after the sheep had been moved out, but a cattle man by the name of Johnson took us to where one lion had killed a sheep about three days before. We could plainly see by the tracks that the lion had killed the sheep and dragged it for about a half mile and hidden it in a thicket of fir saplings. We found the remains of several sheep near this thicket and all of them had been devoured by bears, only the hide and bones remaining. We trailed this lion, which was a very large male, for about a mile and then found the fresh track of a lioness, which we followed until 2 o'clock in the afternoon, when we found where the carcass of a sheep had been dragged across the flat; we then followed the drag for about 200 feet and found the kill in a thicket of fir trees. This sheep had apparently been killed

about 9 o'clock the evening before and two bears had already found the carcass, devoured part of it and then bedded down near by, leaving only when they heard the hound baying on the lion trial. The bears had destroyed the lion tracks and scent around the carcass, and it was necessary to circle at a distance of a hundred feet to again find the lion tracks, which we followed unsuccessfully until dark. Early the next morning we returned to the kill in order to get her fresh tracks, if the lioness had returned to the kill. The lioness had not returned, but two bears had been there and devoured the remains of the sheep. I called Mr. Newbert's attention to the fact that all the evidence around the kill had indicated that the bear had killed the sheep. We then back-tracked the drag for about three hundred feet to the place where the sheep was killed. Then we could plainly see the tracks made by the lioness when she rushed over and struck down the sheep, thus proving the lioness the slayer. This lioness had apparently killed this strong sheep about 9 o'clock in the evening, dragged it to cover, taken a feed, and then left the place with no intention of returning for another feed, for I tracked her for three days and killed her twenty-five miles from this place. During the next few days I tracked the male lion around his beat, which at one place was twenty-five miles from the sheep range. When I killed him he had almost reached the sheep range again.

Trapping. The use of bait or scent to attract lions to traps is usually not effective. While such lures will attract most other animals, the lion usually pays no attention to them but prefers to kill his own food. Finding the lion's own kills and setting traps around them is the better method and that most often used by trappers. However, the most effective method of trapping lions is setting traps on their regular beat. A narrow place in the trail used by the lion should be selected and several traps set at intervals along the trail. A limb or trunk of a sapling should be placed across the trail, about two feet above each trap, to prevent deer from stepping into them. Deer will spring over such an obstruction while lions will pass underneath them. William Mayers of Paskenta, California, trapped eleven lions in this way during two winters. Ten of them were females and one was a half-grown female that was still following its mother. The fact that these eleven lions were all traveling the same beat and were all caught in the same place can be understood by anyone who has studied the habits of animals, for every animal, whether wild or domestic, will follow a known beat or way when traveling over country where they have been before. All these lions were evidently descendants of some lioness that had used this beat regularly and who probably led two or three litters of kittens around this beat while they were growing up. The young lions when grown probably selected their regular beat twelve or fifteen miles away, but every few weeks made a trip back to the range where they were raised, and in doing so traveled over the route which they already knew. Naturally several of these kittens were females, and in turn each led several kittens over the same beat when visiting their old range. Thus in six or seven years three or four generations could be making occasional trips over exactly the same beat. These lions were all caught in the bottom of a canyon, which explains why no adult males were

taken, for the adult male lion habitually travels the tops of the main ridges and well defined spurs.

Trailing with dogs. By far the most reliable method of taking lions is by trailing and treeing them by the aid of trained dogs. Success by this method depends upon the ability of the hunter and dogs to follow the lion's old tracks for many miles. Therefore, the first-class lion dog must be a determined trailer and also a natural treeing dog. Not every dog has these qualifications, for many hounds, while good trailers, never learn to locate a treed lion, but will come back to the hunter when the scent is missed where the lion springs into the tree. Other dogs will locate the treed lion but fail to bark "treed," being content to sit for hours at the base of the tree without making a sound. Consequently the hunter is unable to locate the dog or lion unless conditions are such that he can trail them to the tree. The type of dog required by the professional lion hunter is one that will find tracks two days old and will never quit any lion trail of his own accord until he is completely prostrated. He will work a day-old trail for twenty-five miles over all kinds of country in the summer when the temperature is 95 degrees in the shade or swim swollen stream in the coldest winter weather; then with bruised and bleeding feet run down and tree the lion and hold it treed, or, if the cat jumps out, continue to tree it for twelve or fifteen hours, if necessary, until the hunter arrives. All of these qualifications of a first-class lion dog are combined in many foxhounds or a cross of foxhound and bloodhound, but in no other breed of dogs in existence.

EFFECTIVENESS OF HUNTING WITH DOGS COMPARED TO USE OF TRAPS AND POISON.

As an illustration of the effectiveness of hunting lions with dogs compared to use of traps and poison, I will state a few examples. During January, February, and part of March, 1917, a number of hogs and goats were killed by a large male lion on two ranches a few miles east of Mariposa. On one occasion, nine hogs were killed during one night by this lion, which had consistently avoided traps and poison by refusing to feed twice on any kill. However, I bagged this lion within two hours with the aid of one dog. In August, 1919, near Kinsley, Mariposa County, with four days of hunting, I bagged two stock-killing lions that had evaded traps and poison for two months. A third example was when, in one hour of hunting with the aid of two dogs, I bagged a large male lion which had killed 300 goats for Charles Ralph of Tuolumne. This lion, living continuously on the goat range, had evaded traps, poison and still hunting for a year, and Ralph had appealed for aid. Still another example was in Tulare County where Britton and Loverin of Three Rivers had lost a number of calves and several larger cattle by the depredations of a large male lion. Most of these kills were found but it was noted that the lion had taken only one feed from each. As valuable stock dogs were being used continually on the range, it was deemed inadvisable to use trap or poison. With the aid of three dogs, I bagged this lion and three others within two weeks of hunting.

TRAINING DOGS FOR LION HUNTING.

Most dogs will not pay any attention to the odor of a lion or have any inclination to trail them until after having been present at the killing of one or more lions, for lions are not the natural quarry of the dog family. Indeed, very few dogs will eat the flesh of lions until after they become interested in hunting them. On the other hand, every dog is eager to run deer and rabbits, which are their natural prey.

A dog that will chase deer and other animals is of no use to a lion hunter, for the dog's energy must be entirely conserved for the lion chase. Also, a deer-chasing dog causes the hunter loss of time and energy. Consequently, the first consideration in training the young dog is to prevent him from running deer or other animals than lions. This can be best accomplished by leading the pup with a leash until the trained dogs tree a lion and then turning him loose at the tree when the quarry is shot, thus allowing the dog his first hunting experience on the game which the hunter desires him to trail.

After one or two such experiences, the pup can be turned loose with the trained dogs when a lion's fresh tracks are found. In the meantime, the young dog should be severely punished whenever he pays any attention to the tracks of other game. Under no circumstances should a deer ever be killed when the lion dogs are present or deer meat be had in camp or fed to the dogs. It is not difficult to interest a pup or start a young dog when the hunter uses trained dogs to trail and tree the lions. However, dogs may be trained to hunt lions without the aid of experienced dogs by working when there is several inches of snow on the ground, thus allowing the hunter to trail the lion until it is frightened from its bedding place. Then the young dogs should be turned loose on the lion's fresh tracks and urged to chase the lion until it is treed.

HUNTING REQUIRES FOUR DOGS.

The questing hound, while working out the average lion trail, which is from 18 to 30 hours old when found, will travel about 75 miles in 12 or 14 hours in order to advance 15 miles, the distance traveled by the lion. The feet of the lion-hunting dog are always subject to severe damage from sharp rocks and gravel. Therefore, he requires at least one day of complete rest for each day of work. Consequently, a lion hunter, in order to keep busy, requires at least four hounds, which should be used in pairs, each pair being allowed to rest on alternate days. Two hounds work out the average lion trail more efficiently than a larger number because there is less chance of them following a back trail through crowding or interference with each other.

CARE AND FEEDING OF DOGS.

In order to maintain hunting dogs in the best physical condition, it is necessary to feed and care for them systematically and scientifically. The only way that this can be accomplished is by having the dogs under control at all times by keeping them tied in temporary camp, or in a roomy pen when resting at headquarters, for a hound running loose is continually on the hunt for food and it is impossible for the hunter to properly feed his dog unless he knows just what they have been

eating. My dogs are fed every evening. Fresh raw meat is by far the best food for a working dog and my dogs are fed the lion carcass whenever practicable. But many times lions are killed long distances from camp and it is not practicable to carry the carcass for miles over rough, brushy country. In such cases, the dogs are given one feed from the freshly killed carcass. The hunter must always have plenty of scientifically prepared commercial food for use when meat can not be procured.

After each hunting trip, which is usually from fifteen to twenty days duration, the dogs should be bathed or sprayed with a solution of water and sheep dip to eliminate woodticks and fleas.

TRANSPORTATION AND EQUIPMENT.

In order to carry on the lion hunting operations efficiently and to be able to respond quickly to reports from places where lions were doing damage, it was necessary to have a means of transportation which would be always available at a few minutes notice. This problem was solved by mounting a specially built camping body on a durable automobile chassis. The body was constructed so as to provide a reasonably comfortable shelter for hunter and dogs when on the road or in camp. A gasoline stove is used for cooking and food and utensils are packed in two boxes having special compartments which hold rations for one person for two weeks. These boxes can be slung on to a pack saddle when it is necessary to pack by horse into the lion country. They provide closet and table in camp and are always packed for transportation, which eliminates work and confusion of hurriedly gathering scattered equipment or of transferring articles of food piecemeal from auto to horse or *vice versa*.

EQUIPMENT FOR THE HUNT.

While on the actual hunt, it is advantageous to travel light, so all necessary equipment has been reduced to a minimum of weight. In place of the usual rifle or carbine to shoot the lion, I use a 38–40 revolver with a six-inch barrel, carried in a shoulder holster, which permits the use of both hands to protect the face from brush and to assist in climbing over rocks. Instead of the cumbersome skinning knife, I use a medium sized pocketknife with one skinning blade and one long, narrow blade for skinning feet and toes of lion. This knife, a small round whetstone, light scale, a five-foot steel tape, a compass, and extra cartridges are packed in a waterproof canvas bag. In an army bacon tin are packed a vest pocket camera, extra roll of films, a small vial of iodine, permanganate of potash, waterproof match box, sharp penknife, one yard of adhesive tape, also notebook and pencil for recording data. A lunch is always carried and, in some cases, rations sufficient for two days are carried in the event that it may be necessary to spend one night away from camp. All the above equipment, except revolver, is carried in a leather knapsack and, exclusive of food, weighs ten pounds.

COOPERATION.

After the first two years of hunting operations, which resulted in the taking of fifty-six lions, thereby demonstrating that this work could be done effectively when properly supported, the United States Forest

Service, game protective associations, stockmen, and mountain people generally began to take an interest in the work. Forest rangers and stockmen especially, on account of their riding often over trails in the lion country, are in a particularly favorable position to render assistance by watching for lion tracks and reporting same, and many lions have been taken as a result of following up such reports; also considerable time and expense has been saved through the willingness of stockmen to furnish accommodations for the hunter in their mountain camps, and to furnish, free of charge, their services and the use of their horses to pack equipment for hunting operations.

THE HUNT.

When commencing the actual hunt, I usually establish a base camp near some ranger station or mountain ranch which has telephone communication, then call up every forest ranger and stockman for miles around and inquire whether lion tracks have been noticed and, if so, at what places. I also request that they watch carefully for lion signs and report to me every day. By the use of a map and the information thus secured, it is often possible for me to determine a lion's beat while I am camped miles away and, on the first day of hunting in a country unknown to me, to bag the only lion within an area of 100 square miles. I start from camp at 4 a.m. in summer and 6 a.m. in winter, and quite often I have returned to camp from a twelve- or fifteen-mile hunt during the forenoon, found a telephone message awaiting me, packed up equipment, driven fifteen or twenty miles to the source of the report and bagged one or more lions before nightfall. When I hear of lion tracks being seen several times at certain places, I assume that that particular place is part of the lion's regular beat, and I start the hunt from there each morning until the lion's fresh tracks are found, which is usually within three days—quite often the first day—depending upon when the lion last passed, for a lion usually covers its beat every four or five days.

Because lions usually hunt during the night, it is not desirable for the hunter to follow the same route twice in one day, when it is necessary to return to the home camp each night. Instead, a loop should be followed, as this allows the hunter to cross the lion's beat at two or more places during one day, thus providing several chances to find the lion's fresh tracks. However, the best plan is to hunt across country for a distance of twelve to twenty miles, stopping on alternate nights at the opposite ends of the trip. Thus the beats of several lions may be crossed each day and the hunter can return to the camp nearest when the lion is bagged. Usually, the hunter can secure accommodations at a ranch or stockmen's camp, which eliminates the discomfort of lying out by a campfire. When driving through lion country, I always watch the road carefully and have several times noticed lion tracks in the dusty road, parked the auto, started the dogs on the tracks, and bagged one or more lions, sometimes trailing ten or twelve miles and not returning to the auto until the next day.

After a lion's tracks are found and the chase is on, the hunter must keep as close as possible to the dogs. At all times during the chase he should watch the ground carefully for any sign which would explain the difficulty if the dogs should become confused, for often the lion

will scent a deer and turn off his beat for several hundred feet; then, if the deer escapes, the lion will double back on his own trail and continue his regular route. In such cases, considerable time will be saved by calling the dogs back to where the lion's back track was first noticed and then following a loop until the forward trail is again found. On the average trail followed it is necessary for the hunter to assist the dogs about a dozen times during ten or twelve hours of trailing. Often the lion tracks and scent are obliterated by cattle stampeding over them. Then the dogs are helpless and, if left to their own resources, they will work at such a place for several hours without making any progress. In such cases, the hunter should immediately call off the dogs, take them away for a half mile, if necessary, then follow a loop with a radius of a half mile or so around the place where the lion's tracks were destroyed until the tracks are again found.

Quite often a wise old cat, when hard pressed by the dogs, will run for several hundred feet past the tree he intends to climb, then double back over his own track and spring high into the tree and hide among the branches. This ruse confuses the dogs, who, following the fresh scent on the ground, rush past the treed lion only to come to a bewildering lapse where the lion doubled back. Then the hunter must find the treed lion, and I have twice hunted for three hours before the lion was discovered.

It is usually not difficult to shoot a treed lion, this most often being done at close range. However, it is advisable to tie the dogs whenever practicable, thus preventing them from being struck by the dying lion when it falls from the tree, or from attacking a wounded lion and being killed or injured in the struggle. However, it is not always practicable to tie the dogs as in a case where the dogs are tired and footsore and the lion is treed in a situation such as rough, brushy mountainside or river rim, which would render it difficult to tree the lion again if it should jump out of the tree while the hunter is tying the dogs. Then the hunter should cautiously approach the tree, make a careful shot, and be prepared to defend the dogs in an emergency.

A BIOLOGICAL AND PHYSIOGRAPHIC SURVEY OF CALIFORNIA LAKES AND STREAMS.

Its Purpose, Scope and Significance in Relation to Their Stocking With Native or Introduced Species of Trout and Other Game Fishes.

(With four photographs by the author.)

By GEO. A. COLEMAN.

The Department of Fish Culture of the California Fish and Game Commission, realizing the importance of accurate information concerning the conditions of existence of the trout and other game fishes in our mountain lakes and streams, has inaugurated a survey for the purpose of obtaining first-hand information concerning these conditions. While the investigations will be conducted in a thoroughly scientific manner, the main object is not to make a great collection of the species of aquatic plants, animals and insects occurring in these lakes and streams, many

wives, and oysters, shrimp, and lobsters. "In Japan, the marine fisheries occupy a place of importance comparable to that of no other large nation."

Never have we read over pages of a handbook that seemed to so satisfactorily cover the ground expressed by its title.—*H. C. Bryant.*

LIFE HISTORY NOTES.

THE OPOSSUM REACHES SEQUOIA NATIONAL PARK.

According to a report by Judge Walter Fry of Sequoia National Park, the opossum (*Didelphys virginiana*) is now invading the southern Sierra. Opossums first made their appearance in the Three Rivers District along the Kaweah River in September, 1924. By the twenty-fifth of the month they had extended their range, following the south fork, to the Alles Brothers' ranch some three miles up the south fork, and by the first of October they had moved up the east fork and middle fork of the river to the J. P. Godbey ranch, only a mile from the western boundary of the park.

Supposedly, the animals are the product of stock brought from Missouri and liberated in the district east of Visalia. The invasion may have been augmented by the dry season. One man at Three Rivers killed 26 opossums, of which 3 were adult males, 2 adult females, and 21 were young. The two females were carrying in their pouches 9 and 12 young respectively. The larger male opossum weighed over ten pounds.

THE RETURN OF THE ANTELOPE IN LASSEN COUNTY.

The writer has spent most of his time in Lassen County since 1890 and has closely watched its game. One of the most interesting things observed has been the ability of the pronghorn antelope to survive under adverse conditions.

During the nineties several bands, numbering from 20 to 50, were scattered over the Madeline plains and nearby tablelands in eastern Lassen County. During this period, the last band seen by the writer was a group of about 15 head in the spring of 1897. With the coming of the homesteader and the advance of the sheep industry, antelope almost entirely disappeared. Although I rode the range continuously, no more were seen until late in the fall of 1900, when quite a large band appeared on the range near my ranch. However, within a few days hunters from Susanville and other places were after them and I knew of about ten being killed. The band broke and scattered: three spent the entire winter of 1901 in sight of my house, but disappeared the following spring. From 1901 to 1909 a lone antelope was sometimes seen, then a pair, or sometimes a half dozen. By 1916 bands of 10 to 15 were not uncommon. In the fall of 1918 a herd of 75 appeared and in the fall of 1921 several bands of from 20 to 75 could be found in a day's ride. During the winter of 1924 the writer saw one band of 125 and believes there were 500 or more on this range. During the summer of 1924 the animals became more tame than ever before, scarcely running from an automobile, and could be found in most any of the fields of the large stock ranches. They travel over a wide range, and with the splendid protection given them by Nevada and the interest taken in them, the writer anticipates seeing their former haunts in northeastern California restocked. With a little help the antelope should again become common on the west side of the San Joaquin Valley.—*Will R. Horne, Ravendale, California.*

NOTE.—In connection with the above we fail to understand how the increase of antelope occurred by the splendid protection of Nevada without any sort of an adequate game warden service. We are inclined to believe that the increase of these animals was from the fact that a California warden was appointed to practically adopt them. When Mr. Newbert was appointed in 1911 there were by actual count 13 antelope. So well did the California warden of these animals do his duty that today there are quite a number of large bands of them. These animals are very migratory at certain seasons of the year, hence we believe the wrong construction has been placed on the reason of their protection and increase.—G. N.

MOUNTAIN LION KILLS BOY IN WASHINGTON.

In CALIFORNIA FISH AND GAME for April, 1923, (Vol. 9 pp. 45–48) a complete explanation was given of one of the only instances where a mountain lion has been known to attack a human being in California. It was shown that this lion was afflicted with the dread disease, rabies, as both of his victims apparently died with that disease. With this background attention is now called to an apparently authentic case of the killing of a boy by a mountain lion in the state of Washington near the Canadian line. From two written statements, one by R.

L. Nash, and another by P. Harris, a forest supervisor, sent us by W. L. Finley of Jennings Lodge, Oregon, the following has been gleaned:

James Fehlhaber, 13 years old, of small stature, an orphan, who was living with Mr. R. L. Nash at Okanogan, Washington, left Robert Nash's house at 11.30 a.m., Wednesday, December 17, 1924. When the boy did not return R. L. Nash and a Mr. Kelly started out about 10 o'clock that evening to search for him. The boy was found about 75 feet from the main trail at the base of a cliff. A study of tracks in the snow seemed to show that a mountain lion had come down a steep hillside quartering behind the boy. A leap of about 10 feet from the cover of brush appeared to have been made in striking the boy down. There was blood where he fell. Five feet away more blood was found. Apparently the lion had dragged the body from this point to the base of the cliff. The body was partially eaten and disemboweled. A spot as big as one's hand had been eaten from one thigh, both hands were gone, apparently eaten to the wrists, bones and all. Skin and flesh were eaten clean from the skull, face and neck so that no trace of hair remained. From the position of the boy's gloves his hands were probably bare, so that except for the thigh the lion had eaten only parts not covered by clothing.

When the boy's body was first found the coat, which had been pulled from the body, was placed over the head. When the body was removed an hour later the coat was not seen. The next morning it was found in a lair the lion had been using, about 200 feet from where the body was found. The coat, which was covered with blood, had been torn to shreds. This would indicate that the lion returned to his kill during the absence of Mr. Nash. This was also indicated by the tracks which were superimposed upon those of Mr. Nash.

At first it was thought that a lion killed on January 9th, eight miles east of Winthrop and some twenty miles northwest of the place where the boy was killed, was probably responsible. In view of later evidence, this was apparently another lion. Later in January a lion was killed by Mr. Charles Garratt, a ranger living 10 miles west of Okanogan, who had set a trap for coyotes. This was a young lion in good condition. Mr. F. G. Clifford of Brewster, bought the animal and examined its stomach. Here he found a considerable wad of human hair and small bones of the hand and wrist. The hair resembled closely that of the boy's. The stomach contained other kinds of hair and meat and the human remains were wadded up separately and easily distinguished. Mr. Clifford, however, substantiates his statements with a number of witnesses. Forest Supervisor Harris of the Chelan National Forests states that there is no reason to doubt his account.

Those seeking dependable information have sought authentic instances of the killing of human beings by mountain lions with largely negative results. This is apparently one of the first instances to be recorded, of an attack of this kind. This report should not lead people to believe that the mountain lion is a dangerous animal. It should be remembered that the common domestic dog claims many more victims annually than mountain lions, and one of the safest places to live is in mountain districts where mountain lions are abundant.—*H. C. Bryant, Berkeley, California.*

SOME BANDED BIRDS TAKEN LAST SEASON.

Dr. P. A. Webber of Sacramento, killed a cackling goose in Yolo County with band No. 303,502. On forwarding the band to the Bureau of Biological Survey at Washington it was found that this goose had been banded by O. J. Murie of Alaska during the summer of 1924.

Mr. J. Basileu killed a banded canvasback duck at El Verano, on November 20, 1924. The bird proved to be one banded by Mr. O. H. Jorundson, Stony Hill, Manitoba, Canada. The bird was caught by Mr. Jorundson in a muskrat trap and banded by him about April 25, 1923.—*H. C. Bryant, Berkeley, California.*

ELK IN DEL NORTE COUNTY.

Although it is known that a remnant of the vast herds of Roosevelt elk which formerly inhabited the northwest coast of California remains in Del Norte County, yet a report as to their present status is seldom seen. Mr. Thomas Kring of Orick recently reported that there are in the neighborhood of 100 individuals in the herd. The country where they range is very brushy and heavily timbered and it is very difficult to obtain reliable information as to the exact numbers. Residents of the vicinity believe that the herd is slightly on the increase.—*Earl P. Barnes, Eureka, California.*

4-30-25.

Dear Stokely:

This article of Bruce's furnishes such an excellent outline for the kind of life history I have had in mind for our book that I would suggest that a very good way to frame a beginning for our chapter on lions would be for you to take up his points one by one and write out how they compare with your own observations in New Mexico, adding such information as you may have on points which he does not cover. Both you and Pettit know so much more about lions than I do that this particular chapter could, it seems to me, be worked out without any necessity of conferring with me.

The bulletin on antelope from the Roosevelt Wild Life Experiment Station is almost but not quite in the same class and might similarly be made a starting point for our own chapter on antelope.

A.L.

Dist 1 Bulletin May 1925

BLACKFEET

Lion folder

Mountain Lions and Their Allies

The three large predatory mammals, coyotes, wolves, and lions, offer considerable resistance to that natural tendency of deer and elk to increase rapidly in numbers where given full protection from hunters.

With the violent overthrow of the balance of nature on the North American continent since settlement by the whites first began, a new readjustment has been necessary in both the plant and animal kingdoms.

The coyotes adapted themselves rapidly to these new environmental conditions by staying in either settled or unsettled areas, and living mainly on carrion, rodents, game, and stock. Wolves and mountain lions have a greater ability to kill, and have followed the fast diminishing big game into the more remote localities. Wolves still offer considerable trouble to stockmen in the western states; they live mainly in the more inaccessible timbered areas, and when demands for food are not satisfied locally, they raid near or distant settlements, killing stock of most all sizes and with little regard for amount of meat required for sustenance. The mountain lion has stayed with the big game in its retreat (it only occasionally bothers stock) and now forms one of our biggest negative factors in game protection.

Observations in the South Fork country of the Flathead River by a party killing eleven lions during the winter 1923-24 showed that lion were killing both deer and elk. They traveled consistently, and as opportunity afforded, killed far in excess of food requirements and leaving from one to several deer or elk in the killing areas which were soon visited by coyotes that followed the lions to feast on their kills, and by bear which go to lion-kill areas as soon as they come out of their dens in the spring.

The ability of a medium-sized lion to kill a large, and in excellent condition, six-point bull elk was well demonstrated. Tracks showed that the lion, when possible, maneuvered to an uphill position before jumping the game, which it prefers to chase downhill, in order that he may the more easily secure his position on the back of the animal. The animals were killed by bites on the back of the neck, which in the case of one elk, showed a full set of teeth marks piercing the neck bone on both sides a few inches below the ears. In most cases the lion had torn, with his claws, large strips of hide and meat on either side of the animal, which alone would have meant death to the animal. On one small area of about an acre, a lion had killed five elk by staying on a rock ledge above an elk trail and

Jaguar Folder

Reprinted from JOURNAL OF MAMMALOGY
Vol. 6, No. 2, May, 1925, pp. 122-124

TWO NEW OCELOTS FROM MEXICO

BY E. A. GOLDMAN

In "Notes on the Synonymy and Nomenclature of the Smaller Spotted Cats of Tropical America,"[1] Dr. J. A. Allen fixed the type region of [*Felis*] *pardalis* Linnæus as the state of Vera Cruz, Mexico. To *Felis griffithii* Fischer, regarded as a member of the same group, he assigned an indefinite range in northern Mexico. This name, however, was based on a specimen in the Bullock collection which more probably came from southeastern Mexico, and seems therefore to belong in the synonymy of *F. pardalis pardalis*. Brass,[2] in 1911, published with color descriptions the names *Felis buffoni* and *Felis mexicana* for spotted Mexican cats, presumably ocelots. The name *Felis mexicana* is preoccupied by *Felis mexicana* Desmarest (1820) and *Felis mexicana* Saussure (1860). His descriptions are evidently based on individual color variations of which there are often many in the same locality. *Felis buffoni* Brass and *Felis mexicana* Brass are therefore unidentifiable.

The general range of *Felis pardalis*, transcontinental in tropical Central America, is split in southern Mexico by the great wedge formed by the Mexican highlands. From this point diverging branches extend northward along the Gulf slope to southern Texas, and along the Pacific coast to Sonora. Examination of accumulated material indicates that western and northwestern Mexico are inhabited by the hitherto unrecognized subspecies described below.

Felis pardalis nelsoni subsp. nov.
Nelson's Ocelot.

Type from Manzanillo, Colima, Mexico. No. $\frac{32642}{44565}$, ♂ old, U. S. National Museum (Biological Survey collection), collected by E. W. Nelson, February 11, 1892. Original number, 1862.

General characters.—Similar in general to *Felis pardalis pardalis*, but smaller; color averaging much the same, but black bar across underside of neck usually narrower; skull smaller and differing in details.

Color (type).—Ground color of upper parts (spaces between stripes and spots or within circular black markings) varying from near cinnamon buff to light pinkish buff (Ridgway, 1912), the former tone richest on head and neck, becoming lighter over dorsum and within black circular markings or rosettes on sides,

[1] Bull. Amer. Mus. Nat. Hist., Vol. 41, pp. 341–419, October 3, 1919.
[2] Aus dem Reiche der Pelze, p. 412, April, 1911.

while the latter tone appears mainly in irregular lines between circular black markings mentioned; upper surface striped and spotted with black as usual in the group; lighter element of upper parts passing gradually through pale buff to white, spotted with black, on fore and hind legs, and feet; under parts white, heavily spotted with black mainly across abdomen, the usual broad black bar across throat, and a narrower bar across neck; ears deep black, except usual white spots; tail irregularly spotted or ringed with black, the interspaces pale buffy above, becoming still lighter toward the tip, and dull whitish below.

Skull.—Compared with that of *F. p. pardalis* the skull is considerably smaller throughout; zygomata more squarely spreading, the sides more nearly parallel; teeth decidedly smaller.

Measurements (type).—Total length, 1140, tail vertebræ, 362; hind foot, 166. Average and extremes of 3 adult male topotypes, including type: 1067 (1002–1140); 341 (310–362); 155 (143–166). *Skull* (type): Greatest length (median projection of occiput to front of incisors), 144.1; condylobasal length, 141.4; zygomatic breadth, 96; breadth at constriction behind zygomata, 51.4; interorbital breadth, 25.3; length of nasals (median line), 29.7; greatest breadth of nasals, 18.7; alveolar length of upper incisive toothrow, 13.4; alveolar length (outer side) of upper carnassial, 12.1.

Remarks.—The ocelots of North America diminish progressively in size from south to north, especially along the Pacific coast; *Felis p. mearnsi* of Panama and Costa Rica is strikingly larger than the northern races. Examination of a considerable number of skins from various localities from Panama to northern Mexico reveals a remarkable range of individual variation in general color tone of the lighter elements, and in the size and arrangement of black markings in the pelage. Average geographic differences may be perceptible, but specimens from the same locality may vary from deep tawny to pale gray. *Felis p. nelsoni* includes within its range a long section of the narrow tropical belt between the Sierra Madre and the Pacific coast.

Specimens examined.—19, from localities as follows:

Colima: Armeria, 1; Manzanillo (type locality), 4.

Guerrero: Acapulco, 5 (skins only); Coyuca, 6 (skins only); Omilteme, 1; Papayo, 1.

Oaxaca: Puerto Angel, 1.

Felis pardalis sonoriensis subsp. nov.
Sonora Ocelot

Type from Camoa, Rio Mayo, Sonora, Mexico. No. 96216, ♂ adult, skin and skull, U. S. National Museum (Biological Survey collection), collected by E. A. Goldman, December 3, 1898. Original number, 13268.

General characters.—Most closely allied to *Felis pardalis nelsoni*, but averaging still smaller; general color somewhat paler, the black dorsal markings more widely separated by lighter areas; black cervical stripes usually narrower; skull shorter, more rounded.

Color (type).—General coloration essentially as in the type of *F. p. nelsoni*, but tone of lighter areas above slightly paler, the black markings over dorsum more widely spaced; facial black stripes present in *nelsoni* broken to form chains

of spots; black spots on legs and feet smaller; under side of neck with a narrow black bar as in *nelsoni*.

Skull.—Similar to that of *F. p. nelsoni*, but still smaller, the braincase relatively shorter, more rounded; nasals noticeably narrower; zygomata squarely spreading and teeth small, much as in *nelsoni*.

Measurements (type).—Total length, 980, tail vertebræ, 320; hind foot, 148. An adult male topotype: 1040; 351; 149. *Skull* (type): Greatest length (median projection of occiput to front of incisors), 125.8; condylobasal length, 115.6; zygomatic breadth, 85.8; breadth at constriction behind zygomata, 48.3; interorbital breadth, 24.2; length of nasals (median line), 27.2; greatest breadth of nasals, 17.1; alveolar length of upper incisive toothrow, 13.4; alveolar length (outer side) of upper carnassial, 12.1.

Remarks.—The range of *Felis p. sonoriensis* marks the northern limit, on the west side of the continent, of an apparently intergrading chain of forms extending from South America. The species as a whole, mainly tropical in distribution, here enters the Lower Sonoran life zone, individuals perhaps still reaching sporadically to extreme southern Arizona (recorded from Arizona).

Specimens examined.—4, all from the type locality.

While the North American forms of *Felis pardalis* are imperfectly known those recognizable should apparently stand as follows:

Felis pardalis pardalis Linnæus . . . Mexico (type region, state of Vera Cruz).

Felis pardalis mearnsi Allen . . . . Talamanca, Costa Rica.

Felis pardalis albescens Pucheran . . . . . Arkansas.

Felis pardalis nelsoni Goldman . . . . Manzanillo, Colima, Mexico.

Felis pardalis sonoriensis Goldman . . . Camoa, Sonora, Mexico.

Biological Survey, Washington, D. C.

Low Folder

No. 27-139

DAILY BULLETIN
U. S. Forest Service December 28, 1926
Southwestern District

No. 2 Common Leads In Volume Production: According to the Gulf Coast Lumberman, Douglas fir manufacturers saw parallel to the bark, contributing to straight-grain in boards and to the quantity of uppers, taking the V loss in the cheaper (more knotty) material at the heart. Of all softwood lumber produced, 37% grades into No. 2 common, and nearly 20% into the select grades.

Recent Personnel Changes: Recent changes in District personnel include, from the Coconino, the resignation of F. W. Buster, ranger in charge of the Bly District, and of R. F. Howell and A. J. W. Kuppe, assistants on project timber sales. One of the sales positions is being filled by the transfer of Ranger Monighan from the Apache.

Other resignations that have been submitted within the past few weeks include those of: Ranger H. R. Julian, in charge of the Mangas District, Apache; Principal Clerk Albers of the Sitgreaves; and Miss Margaret Blank, Assistant Clerk on the Apache. The resignation of Mrs. C. A. Merker, Junior Clerk on the Sitgreaves, was incident to her marriage to the Assistant Supervisor of the Sitgreaves. Her position has been taken by Mrs. Margaret Loveland.

While this list of people who have left the Service for other fields of activity looks rather formidable, the total District turnover for the past two years remains at a relatively low figure.

A Family Of Lions Less On The Datil: The Evans Brothers of Beaverhead were recently called on for help in catching a lion on Elk Mountain, about 80 miles southwest of Magdalena. They found the trail of the lion about a mile south of O Bar O Ranger Station just after a fresh fall of snow. The tale of the hunt is interestingly told in a recent Datil Bulletin. Their hounds were put on the trail and were able to follow it with little difficulty. The lion was overtaken at the carcass of a freshly killed deer. The dogs soon put the varmint up a tree and it was shot. About 50 yards distant was another deer which the lion had killed at about the same time. Both the deer were whitetail bucks. The lion was a female and it was seen that she had a family of young ones so the hunters took the back trail and followed it to a den in a cliff of rocks, where they found three lion kittens, about the size of grown house cats. They captured the kittens alive. The little fellows quickly learned domestic habits and they eagerly take milk from a nipple on a bottle just as any other baby creature. Lion kittens taken at that size make most cunning pets and are playful and gentle up until they approach maturity at about two-thirds grown, then they become rough and are easily angered. It is estimated that each lion kills an average of fifty deer per year and they are equally disastrous to cattle and sheep. They like fresh, warm meat and seldom take many meals from a single kill. It seems to be their nature, even when not hungry to kill for the sake of destroying; and they have been known to kill as many as a dozen sheep from a flock in a single night, probably eating from only one carcass. The Evans Brothers are owners of the well known Slash Ranch at Beaverhead. In addition to looking after their extensive cattle interests, they keep a pack of well trained hunting dogs; and spend a part of their leisure time each year at the exciting but fascinating sport of lion and bear hunting.

Leave: Pooler, Mullen, Loveridge, Herms, Wales (Albuquerque); Lang (Camden, S.C.); Hussey (Long Beach, Calif.); Kerr (El Paso Tex)
Visitor: Roberts (Sitgreaves) DO
Leaving: Randles

Lion Folder

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
NORTH PACIFIC DISTRICT

ADDRESS REPLY TO
DISTRICT FORESTER
AND REFER TO
G
Supervision

POST OFFICE BUILDING
PORTLAND, OREGON

January 3, 1927.

2 examples of lion attacking people

Mr. Aldo Leopold,
Forest Products Laboratory,
Madison, Wisconsin.

Dear Leo:

Reference is made to your letter of October 6:

On my return from a field trip I wrote to Supervisor Shelley on October 18 and he has since that time been endeavoring to get in touch with the parties concerned in the cougar attack to which you refer. I am enclosing copy of a letter from Supervisor Shelley, under date of December 21, and also a letter to Supervisor Shelley, dated December 22, which I trust will give you the information you were seeking.

Personally I have been in the mountains all my life and have never had any particular fear of cougar, being under the impression always that they were very cowardly animals as a species and I do not recall ever hearing of any attacks by cougar in the Rockies on adults or even children for that matter. However I could imagine a cougar attacking a small child, more because of its size than because it belonged to the genus homo. Since coming to the Northwest, however, there have been numerous stories of cougar attacks and some of them are fully substantiated. The killing of the small boy in the Okanogan country two years ago is an example beyond question.

We are still milling around with the wilderness area question, some work having been accomplished and the situation is slowly but surely clarifying itself. There is a disposition in some parts of the Northwest and in some of our most accessible wilderness areas to develop winter sports of the European variety. Particularly is this true this past year. In some places there is a disposition to welcome the wilderness area as such while in others there is a very decided opposition to any such areas. A bad fire season, such as 1926, when some of our best believed policies went by-the-board, in the matter of whether timber would or would not burn and at what time of day fires ran the worst, has caused us to revamp to a certain degree our ideas as to where trails and roads should be constructed.

Mr. Leopold.

We are likewise facing here in the Cascades a continued agitation for the exclusion of sheep grazing, even though the areas which now attract so much attention because of the flora have been so used for from 20 to 40 years for grazing purposes. The agitators do not seem to realize that if their contentions were well founded that sheep entirely destroy the flora of the region, that surely the flora on these particular areas would have disappeared long ago. We have been restricting use at certain seasons of the year on some areas, have been gradually reducing the numbers and otherwise attempting to meet the justifiable criticisms made by the recreation interests. However the extremists are still not satisfied and would apparently welcome the day when there was no grazing on any of the Forests in the Cascades. They overlook the fact entirely that the annual removal of vegetation is a natural aid in the prevention and suppression of fire. This past year was a splendid example in point since due to the lack of water many areas were partially or wholly ungrazed and it was on such areas that our fires reached the largest volume and were most difficult to control.

Personally I delight in getting far away from the telephone and the automobile but am finding it more and more difficult as the years go by to either get the equipment or, having the equipment, find such an area.

With kindest personal regards and best wishes for a happy and prosperous New Year,

Very sincerely yours,

E. N. KAVANAGH,
Assistant District Forester.

Encls.

Copy for Information

G
Supervision - Siuslaw

Eugene, Oregon

December 21, 1926.

District Forester,

Portland, Oregon.

Dear Sir:

Reference is made to your letter of October 18.

Upon receipt of your letter we at once wrote to the ranger requesting any information he might be able to give, or, if possible, the man's name and address, that we might write him direct for firsthand information. To date we have received no information of any kind and I had overlooked the fact that your letter had not been answered until it was called to my mind by the last page of the Forest Service Bulletin, Vol. 10, No.47.

So far as I recall, the gossip which goes with such things, there was good reason to believe that the attack occurred. I have spent a good many years in the woods and have never been attacked by a cougar but the stories regarding such attacks are not infrequent and I believe have a real foundation in fact, although I have never verified any of them. If I am able to secure any more information in regard to this, at a later date, I will advise you.

Very truly yours,

(s) R.S. Shelley

Forest Supervisor.

CC to D-1

G
Supervision - Siuslaw

Hebo, Oregon.

December 22, 1926.

Forest Supervisor,

Eugene, Oregon.

Dear Sir:

Reference is made to your requist for imformation regarding the story of a cougar attacting a man last summer in Tillamook County.

The mans name is Alvin French and was located at Pitner on the old Salmon River road in Lincoln County last summer. I understand that he acted as Fire Warden for the Miami people part of the time. This cougar attact occured near Pitner in Tillamook County. I recently learned that his daughter was located at Grande Ronde, Oregon and was attending the High School at this place. I met this Miss Margaret French who by the way, is small and looks anything but the part she played, being about 14 years old and the following is the story as she told it.

At about 8 A.M. my father and I left the Pitner ranch for a trip through the woods and as we often did in such cases, we took our fifles along. About ¼ of a mile below the Pitner place, along the old road, we came upon some milk cows and noticed that they seemed to be worried about something and were sort of milling around. This was in the dense timber and our trail led us past a bank of dirt, some 8 or 10 feet high. I was walking close behind my father and as we came abrest this bank, the top of which was located some 10 feet to our left, I suddenly saw a large form coming through the air from off this bank and down on top of us. I jumped back, and just in time, as the cat landed right where I had been standing and so close to my father that he couldnot seem to get his gun up to shoot but was punching the cat off with the barrel of the gun. I then shot the cat, through the heart just back of his shoulder, from a distance of about 6 feet and killed him with the one shot. The cat was about 8 feet long from tip to tip.

The young lady does not seem to care about talking a great deal about the affair and the information was gotten mostly from short direct answers to my questions. It seems that this cat had been laying in wait on the edge of this bank in hopes of getting a chance to jump onto some of the young cattle with the bunch she speaks of. According to her discription of the top of this bank

and surrounding country, the cat was in no way cornered by these people and could have remained undiscovered by simply lying still where he was and had he wished to get away could have doneso by going any direction but the one he took. Just what caused him to jump down upon these people, whom he seen long before they reached his location, I can not say unless he intended to attact them.

Very truly yours,

(s) L.E. Garwood

Forest Ranger.

A Week With a Government Hunter

W. A. Mullins

Archery as applied to mountain lions in New Mexico, in which the long bow and feathered shaft prove effective on those sly yellow killers of appaling numbers of deer and live stock

THE blossoms of dandelions, wild strawberries and other varieties of flowers were present in the foothills near the Palisades of the Cimarron in northern New Mexico on the morning of April 27. The next morning they were covered with snow, which began to melt away early in the day as the sun shone out. The writer was camped at the time on South Uracca Creek with J. A. Pickens, a professional mountain lion hunter in the service of the United States Bureau of Biological Survey. Pickens had been sent here to kill some lions, the tracks of which had been seen by a range rider during the winter. It was my intention to test out the effectiveness of a bow on any of the big cats *(Felis concolor)* that we might happen to tree with my companion's dogs. It may be said in the beginning that he uses only three dogs, hounds of unknown lineage, but of unusual qualifications, perhaps because of their owner's unceasing efforts in their training.

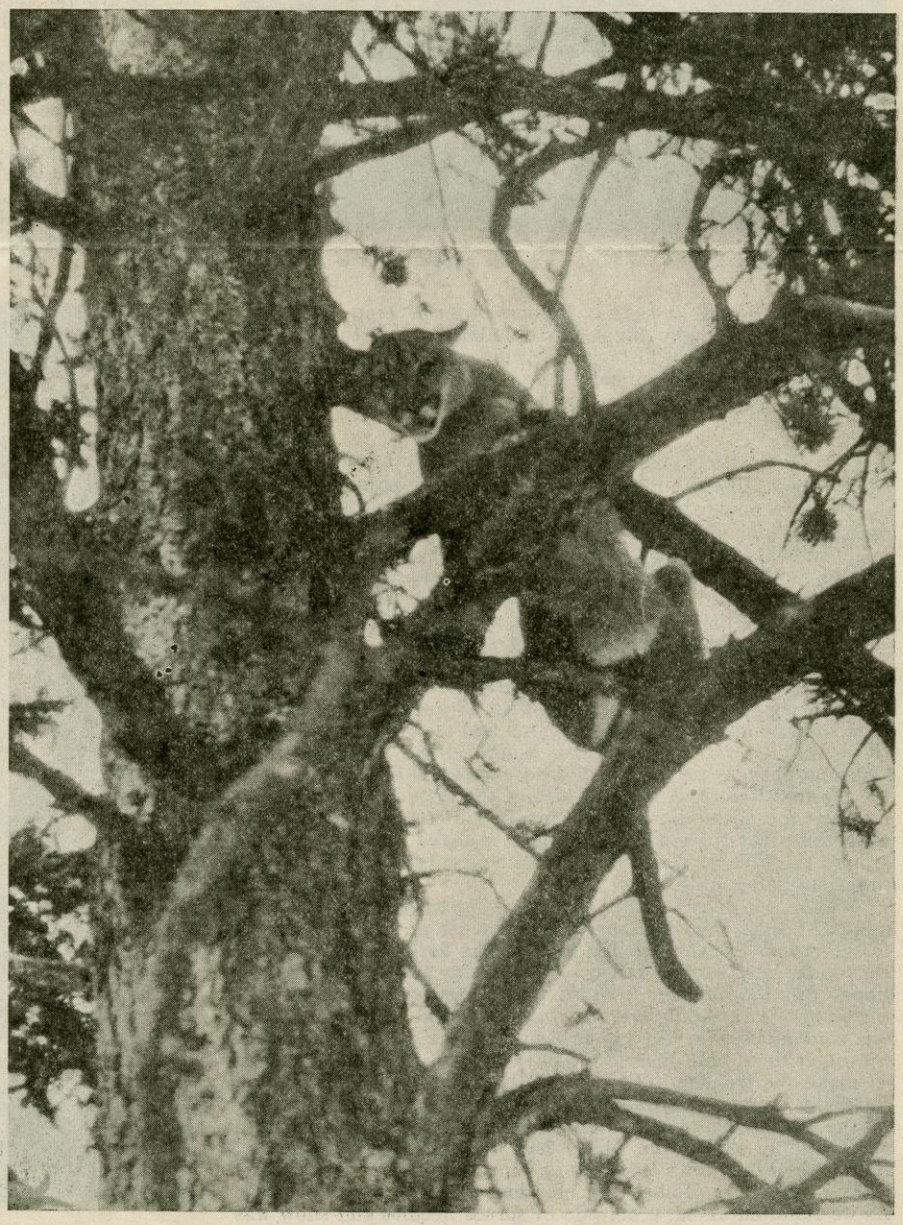
The presence of the snow meant that we had not arrived here too late, but the blossoms indicated that the time was near when one might search for weeks without finding a lion's track, because the deer, which had drifted down into these low foothills to get away from the deep snows of the higher ranges in winter, would soon be drifting back to the green slopes of the Sangre de Cristo Mountains. When the deer migrate the lions do likewise, for they have a fondness for venison equal to. if not rivaling, that of Robin Hood's merry outlaws. Horse flesh is their next choice of food, as many ranchers of the West can testify, and veal or mutton is not despised. It is preferred fresh, in fact is never eaten except while fresh, and to keep it in good condition as long as possible a lion nearly always drags its victim to a cool, shady place and covers it with dirt or leaves. In most instances the entire intestinal tract is removed from the carcass before it is covered. Should a wandering fox, bobcat or bear approach a kill thus hidden, it does so at its peril, for the lion is apt to be watching from some ledge or bluff near by and is credited with being able to defend itself against all comers. More than one rancher has awakened and found that his saddle horse that had been hobbled or staked out for the night had been stalked and killed by one of these tawny-colored night prowlers. On rare occasions even human beings have been attacked and slain, but nevertheless a mountain lion fears, above all things, a man.

BECAUSE the snow began to melt away early, and with it would go the scent of any trail that had been made during the night, we entertained no hopes of success on the first day, so decided to walk around near camp and be ready to get down to business the next morning. Thinking that we might find a bobcat, with the three dogs, a kodak, a bow and a quiver of arrows we started up the little creek that was noisily rushing along its burden of melted snow and cold spring water. As we strolled along and silently admired the ever-changing scene, or paused to note the tracks of deer that had passed in the night, or to comment on the size of a turkey's track that had passed within the hour, my companion was induced to relate some of his lion-hunting experiences.

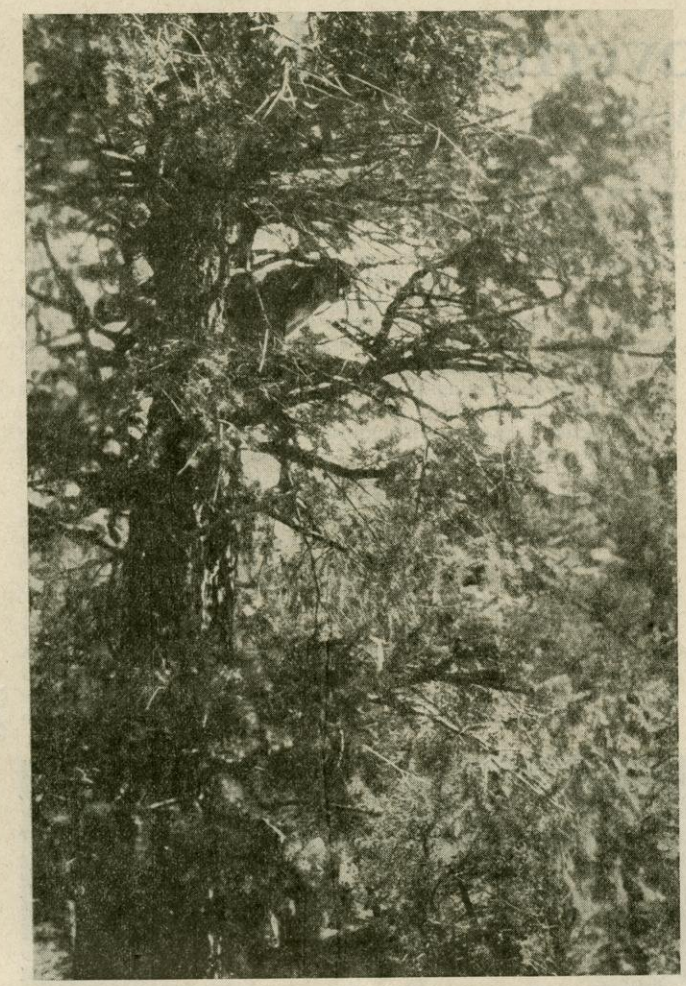
Judging from what he had to say, this kind of sport is second to none, but in order to be successful one must at times forego some of the modern conveniences, such as shelter, for a longer time than would be enjoyed by most men. It is the custom of this hunter never to abandon the trail of a lion as long as it can be followed. His dogs have treed lions by finding a track that had been made for forty hours, and one has never escaped after being treed by them. When once a trail has been found that can be followed, about the only thing that ever happens to prevent the animal from being treed is for a rain to fall on the trail. This kind of program often makes it necessary for the hunter to camp one or two nights on the trail before the quarry is overtaken.

On one occasion Pickens rode off into that little-known wilderness called the Mogollon Range, which lies along the Mexican border, and didn't return to camp until the twelfth day, but he brought back the lion that he went after! This old horse thief was called the Flying-T lion, so named because at times it made its home on the Flying-T ranch. Somebody set a trap at a colt that it had killed, which pinched off some toes from one foot, thus making it easy to distinguish its track at varying intervals in widely separated localities. Twice Pickens struck its trail and had to give it up because of falling rain, once after having spent two nights away from camp. Determined to have this lion's scalp, and there being no other way to obtain it, he tied two flour sacks full of provisions on his saddle and began systematically to ride the unnumbered and unnamed ridges and canyons, sleeping on his saddle blankets where night overtook him, until at last a fresh trail was found. After that it was easy.

An old male lion spends a lot of its time cruising about over the mountains in search of adventure. As it travels it leaves a certain sign here and there that makes it easy for a professional hunter to determine the direction his quarry is traveling. This sign is made by raking up small piles of pine or spruce needles



As the lion looked when we reached the second tree



Lion No. 2 as she looked when we reached the tree

under the trees that it passes. A lioness tries to keep her kittens hidden from the male parent, for if found by him they will be killed. The number of kittens in a litter ranges from two to five, and, unlike most wild animals, they may be born in any month of the year. They are usually raised on some brushy hillside where deer are plentiful.

WE WERE picking our way thru the thick oak brush on a steep hillside about 3 miles from camp when one of the dogs took a noticeable interest in a limb that hung out over an opening. I looked at my companion to learn if possible what this might indicate, and saw him examining a bare spot on the ground that to me looked as any one of the thousands that were beginning to appear as the snow disappeared.

"This looks like a track," he said, and then added in exactly the same tone that one would use in speaking to a companion, "Come here, Sam." The dog came as directed, stuck its nose into the spot indicated, and held it there for several seconds before moving to another bare spot about 18 inches away. By this time the two other dogs had appeared and all were taking an interest, but it was a full minute before either gave voice. A glance at Pickens revealed a pleased expression on his face, then for the first time that morning one of the dogs let out a scream that left me guessing as to whether it had stepped on a cactus, until the others joined in and began to make their way slowly around the hill. It was a lion's track and more than an inch of snow had fallen on it.

Would the dogs be able to follow the track after the snow melted? Right then and there one member of the party began to see visions of camping that night where dark overtook us and to wonder why we had failed to bring with us some reserve rations. But the manner in which those dogs worked made even the prospect of sleeping in a snowbank pleasing. Their excitement was contagious. For the first five minutes the going was slow for the eager dogs, and once or twice they were silent long enough to make me wonder if they would be able to follow the trail. Suddenly a new note crept into their mouthing and they made off up the hill at such a speed that they were beyond our hearing in an incredibly short time. They had found a kill, and near by the lion had lain down to digest its supper and keep an eye on its stock of groceries. It had run off when the dogs began to bark. As we followed along, a big pile of spruce needles and snow was observed in a thicket, from under which protruded the hind feet of a deer. Then we saw the fresh track of the lion that Pickens said was that of a big male.

It seemed a long time before we reached the top of the ridge, and then our hearts pounded so that at first we could not hear the dogs. Then they were located not far away. They were baying now, and we approached cautiously, for Pickens had warned that the big cat might leap out and lead us another merry chase if too much noise were made.

WHEN we arrived quite near the tree it seemed as if a tragedy would occur before our eyes. The lion had taken refuge in a big cedar that grew on the edge of a cliff, and was crouched on some limbs that extended out over the edge. One of the dogs in its eagerness had climbed into the tree and was baying in the very teeth of the snarling beast. Had the lion leaped out at our approach or struck the dog, as it might easily have done, the dog would have fallen 30 or 40 feet into a pile of boulders.

After a while, finding it difficult to stand on those limbs, the dog backed down out of the tree and we drew near. When within 25 feet I put an arrow on the string ready for a shot if the animal leaped out, and Pickens made some exposures with the kodak. They proved to be of no value, however, for there were so many limbs in the way that the lion could not be distinguished from any of the dark splotches of shade.

While Pickens stood on the edge of the bluff at the foot of the tree, peering into the finder of his kodak ready to make an exposure should the object of our chase expose himself to full view, and apparently as little concerned as if we had treed a jack rabbit instead of a big lion, I prepared to play the part of executioner. A small opening thru the limbs had been found thru which could be seen the shoulder of the lion, and it was decided to chance a shot at this part of his body. An extra arrow was stuck into the ground to be in readiness if needed, the one on the string drawn its full length and loosed.

Never was a bow so easily drawn nor had a shaft of mine been aimed at a mark like this. It would be untrue to state that I had not experienced certain misgivings as to whether it was safe to shoot this animal with a bow, but I felt a thrill of pleasure as the shaft sped thru the opening and struck, making a sound similar to that made by allowing the hand to fall on a feather pillow. Instantly there was a great commotion; a limb broke off and the wounded animal hung for a few seconds by his front feet, then dropped to the boulders below. Hanging there, a fleeting glance was had of a bleeding wound in the shoulder, and the arrow was nowhere to be seen. As it fell I rushed up and peered over the



We swung the lion to a limb and backed the horse under him

bluff and had the surprise of my life to see, instead of a dead lion lying on the rocks, a very live one speeding away in great bounding leaps. A sinking sensation came over me and my fingers trembled while fitting another arrow on the string. Was a bow, then, not an adequate weapon for this kind of game?

A part of the arrow was seen lodged in the limbs and by the time it was retrieved and examined the dogs were baying "treed" again. The point of the arrow, a steel blade 1 inch wide by 2½ inches long, and about 6 inches of the shaft, made of birch ⅜ of an inch in diameter, were gone. It was found later that the lion had carried this with him crosswise thru his shoulders. Most animals would have found it difficult to make any progress with such an impediment, and few of that size but would have been killed in the fall. Nevertheless, it was standing on the first limbs of a big pine some 30 feet from the ground when we arrived at the second tree. It looked as a rookie is supposed to look while doing bayonet practice—not exactly amiable. Its shoulder was bleeding badly and it constantly shifted its weight from one front foot to the other.

MORE exposures were quickly made and all was ready for another shot. This time there were no limbs in the way, and every inch of the lion's sleek body was visible. At this distance there was no excuse for missing a vital spot. Straight to its ribs flew the shaft, and as it struck the cat leaped to the ground with a snarling growl. A part of the arrow that protruded from its side was broken off as it brushed against a sapling; then a few yards farther the animal went up another big pine. Its tormentors followed closely, but it was useless to shoot again. It was dying when we arrived and was unconscious of the fact that when it fell out with a loud crash old Sam's teeth were buried deep into the throat of his seventy-sixth lion since Pickens has been using him in the service of the Government.

It was found that the second arrow had penetrated both lungs, and that the point, being improperly tempered, had turned when it struck the tough skin on the far side. We undertook to reach camp with our trophy by tying the feet to a pole, which was slung on our shoulders, but before going far this kind of transportation was voted impracticable. A horse was brought and after being blindfolded was induced to accept the burden. To satisfy our curiosity the animal was taken to the nearest ranch and weighed. It was rather disappointing to learn that it weighed only 130 pounds. It is marvelous how they shrink after being killed.

The next day pictures were made of the slain deer, a big doe, and on the days that followed search was made for other deer slayers. The remains of three more deer were found, all three big bucks, before more excitement was had. One morning Pickens rode alone to look over some country to the northwest. He returned late that night with the skin of a lion kitten, the size of a large dog, tied on his saddle. The next morning we returned to the canyon where it was killed, knowing that there should be a lioness and probably some more kittens in the vicinity.

It was 4 o'clock in the afternoon when we found the track of another kitten. As the track was made in mud, and a shower had fallen soon after noon the previous day, it must have been more than twenty-four hours old when found. The dogs were able to follow it, however, altho slowly, and at dark we called them off, spread our saddle blankets at the foot of a big spruce tree, and spent the night. At dawn the next day the dogs were again started on the trail where we had stopped them, and they seemed to make as good time as on the previous day. About 9 o'clock, finding where the lioness had crossed the trail they were following, the dogs quit the old trail and turned southeast after her. After a run of 3 or 4 miles she was treed.



Lion No. 2 after being shot thru the body with an arrow, the end of which may be seen protruding from animal's chest

WE RODE near the tree and tied our horses behind a little hill, and with kodak, bow, arrows, and this time a rifle, approached on foot. I had been reading some safety-first advertisements and insisted on the rifle being carried as a precaution against getting one of the dogs killed, if the lioness should only be wounded with an arrow. It may be said that unless one is wounded there is little danger of getting a dog killed, for a lion will run as long as able to do so. If wounded too badly to climb a tree and a dog once gets within reach of those sharp claws, it would require something with more shocking power than an arrow to save the unfortunate dog. Their method of defense is to grasp an enemy with front feet and teeth, draw the hind feet up near the fore feet, set the sharp claws into the skin, and suddenly straighten out. About one rake is sufficient to start a casualty list, whether the victim be man or dog.

The lioness was photographed in a spruce tree where she posed gracefully, but when all was ready to start the barrage she leaped down and ran to a taller tree. She was about 60 feet from the ground when the shooting started, and the first arrow whistled safely over her back and buried itself deep into the trunk of the tree, where it will remain for years to come. The second shot was a hit, but not a fatal

(Concluded on Page 76)



A mute appeal for extermination of the mountain lion

opment. The foremost and largest of the auxiliary fangs often move up in place alongside the old fangs before the old fangs are shed, so you frequently find snakes with three or four fangs. The development of new fangs is not dependent upon the extraction of the old; it is a change which is constantly taking place naturally. Rattlesnakes get several new rattles every year. Where the summer is long they may get four or more and in the north may not get more than two. Some snakes will get more new rattles than others in the same locality. You seldom find a rattler several years old with a tapered rattle terminating in the original birth button. Rattles become brittle, break up and are lost so the rattle is a very poor indication of a snake's age.

I am constantly hearing or reading of people killing rattlers with so many rattles "and a button." There is always a "button." The button is on the rattler when it is born but it is seldom on the snake when it is a few years old and when the "button" went several rattles probably went with it.—W. A. B.

A Week With a Government Hunter

(Concluded from Page 15)

one; then while she was trying to make up her mind to leap out, two more arrows sailed harmlessly by into the blue. The fifth shot was better. It struck behind the ribs, ranged thru the body and emerged behind the opposite shoulder, piercing a lung. It was useless to shoot again, for she would have fallen out dead in a short time, but after we had taken a snapshot, which shows her about to fall out of the tree with an arrow buried to the feathers in her side, another arrow was loosed that narrowly missed piercing the heart. At this she crashed to the ground, made a few leaps to get away, and collapsed.

The kitten that we had followed was killed two days later, and thus in a few days four lions were removed from the country mentioned. The old ones were killed with arrows, the kittens with bullets. Pickens says that every lion on the range will average killing two deer each week the year round, if the deer last. If there are not enough deer, then domestic animals must take their place. This being true, it seems probable that the number of deer that will drift down from the highlands next fall when the snow flies will be greater by far than as if their enemies had been allowed to continue their depredations.

How the Ring-Neck Broods

(Concluded from Page 30)

and secrecy. In the gunning season the ring-neck cocks flush readily enough, but during the nesting time it is next to impossible to put one of them to flight. They may be heard in the fields on all sides, uttering their odd double crow, but save at feeding time in the morning and evening, when they stroll out into the open in company with the hens, nothing is seen of them until the nesting season is finished and the chicks well developed.

The latter leave the nest almost as soon as they are hatched, the mother leading the entire brood away immediately into the shelter of the grass, where she is better able to hide and protect them than as if they remained huddled together in the nest. In this way they can accompany her while she hunts for food, and within two or three days they are faring for themselves. A week sees them capable of flight, on tiny wings.

Once away from the nest they never return, the mother hovering them wherever night happens to overtake them, after the fashion of domestic hens. The young pheasants develop rapidly, but in spite of this the family stays together until just before the advent of the gunning season in early autumn. By that time the birds are full grown, the young cocks even possessing the gaudy plumage of their elders.

CLASSIFIED ADVERTISING

Advertisements under this head are inserted at the rate of TEN CENTS A WORD PER INSERTION FOR READERS. DISPLAY RATES ON APPLICATION. No advertisement inserted for less than ONE DOLLAR, and CASH MUST ACCOMPANY ORDER, as we cannot afford to keep an endless number of small accounts in this department. Each number and initial counts as a separate word. Copy should be received by the first of each preceding month. For the protection of both advertisers and readers we require that you submit as references the names of two reputable persons with your advertisement. OUTDOOR LIFE is read monthly by thousands of sportsmen—men in all walks of life, distributed all over America—and you will find this classified advertising the cheapest and most effective you can buy.

Foxes

BREEDING Silver Foxes pays big dividends both in money returns and in the joy of fascinating employment—when Borestone is the foundation strain. Borestone holds more national championships than any other breed. It is healthy and prolific. Its pelts bring highest prices. And Borestones are almost as easy and inexpensive to raise as dogs. Write for interesting booklet.



BORESTONE MT. FOX CO.
Robert T. Moore, *Pres. & Sole Owner*
621 Pac. S-W Bank Bldg.
Pasadena, California

BORESTONE FOXES

QUALITY DARK BLUE FOXES
Silver Foxes, Interior Mink

Ten years breeder. Free booklet and credit plan giving purchaser 1 year to pay after delivery. Representatives wanted. I have sold more Blue Foxes for breeding purposes than anyone in the world. The reason: QUALITY at Reasonable Prices.
GROVER CLEARY FOX FARMS
1927 Smith Building Seattle, U. S. A.

A FEW CHOICE
SILVER FOXES
for sale. Pups or adults. Mated pairs or lone females. Registered stock only. Prices in accordance with pelt values.
THE FORTUNATE FOX FARM
Rene F. Galle St. Stephen, New Brunswick, Canada

FOXES
Alaskan Blues and Silvers; high quality; low prices; six bank references; over twenty-five-year period; many satisfied customers. Booklet free, tells all. Breeder-agents wanted.
CLEARY BROS., Fox Farms, L. Empire Building, SEATTLE, WASH.

MAKI SILVER FOXES
ESTABLISHED 1914
For Sale—Choice, standard-bred, registered Silver Foxes at reasonable prices. Can ranch them at $150 a year per pair, with guarantee of life and increase.
Terms Arranged to Suit Buyer
MAKI SILVER FOX FARM, Zim, Minn.

BLUE FOXES from the yards of the tamest foxes in America, where breeding and feeding problems have been solved, $275 per pair. Silver foxes, $700 per pair. Chinchilla rabbits, $25 for a trio from pedigreed stock. Blue Diamond Fox Farm, 5072 7th Ave., N. E. Seattle, Wash. tf

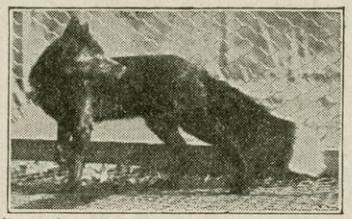
TWO PAIRS SILVER FOXES, registered. Minnie Sirwert, 518 7th St. S. E., Rochester, Minn.

Foxes

Tarnedge Foxes
ESTABLISHED 1910
THE PRIZE WINNING RANCH
35 Pairs of Breeders
31 Pairs of Prize Winners
Grand Show Champions
Sweepstakes Winners
Blue Ribbon Winners
The Oldest Ranch in the U. S.
TARNEDGE FOXES
CATALOGUE SABATTIS, N. Y.



Price and profit are fixed by quality of fur. Start with high quality Silver Foxes and your profit will be greater. Warren Rayner Silvers will bring success and a handsome income to you just as they have to others, for they are outstanding in color, texture and depth of fur. They are also prolific.
Write for information about the Warren Rayner Quality Foxes now.
WARREN RAYNER SILVER FOX CO.
2313 Warren Rayner Building Warren, Pa.
Ranches at Warren, Pa., and Vancouver, Wash.



Big Money for You Raising
Silver Foxes
Easy to raise and most profitable of all live stock. *Write for free particulars and prices.*
MAPLEWOOD SILVER FOX RANCH
Dept. O. L. Conover, Wisconsin

Announcing—
Year Book of the Silver Fox Industry
1926-1927 Edition
The Year Book will be sent free to those contemplating purchase of foxes. The aim of the American National Fox Breeders Association, in presenting this book, is to give prospective breeders accurate information about the industry and about fox raising.
American National Fox Breeders Association
424 McKnight Bldg. Minneapolis
Official Registration Organization of the Fox Industry

BEAUTIFUL SILVER BLACK FOXES
Now is the time to contract for Spring cubs. Don't wait. JOHN HUSSON, Route 3, Box 777, Portland, Oregon.

FOR SALE—Silver foxes, Canadian government registered; none better; some 90 points. Price $600 per pair. Karakul fur sheep, $100 each; Laurentian mountain raccoons, $50 per pair; Laurentian mountain mink, $150 per pair; registered genuine English bloodhound pups, $50 each. Write Charles Reasbeck, Vankleek Hill, Ontario. 9-5

FOR SALE—Silver foxes. The progeny of the famous Brunswick strain of Canadian silver foxes. Noted for their exceptional fur qualities. Write DuBois Silver Fox Co., Inc., DuBois, Pa. tf

I CATCH from 45 to 60 foxes in from four to five weeks' time. Can teach any reader of this magazine how to get them. Write for particulars. W. A. Hadley, Stanstead, Quebec. 8-6

Lion folder

DAILY BULLETIN

No. 27-169 U. S. Forest Service February 14, 1927
Southwestern District

Coronado Needs Branding Iron: If you have in stock a branding iron U. S. for animals it would be appreciated if it was transferred to the Coronado.

A New Officer: It is interesting to note that the Hon. Carl Hayden, Senator elect from Arizona has recently been elected a Vice-President of the American Forestry Association. (Coronado Bulletin)

Datil Has Antelope: The Datil has some antelope too, states the Datil Bulletin. While riding near South Water, on the V Cross T Range, January 19, 79 antelope were counted in one bunch, 10 in another and 6 in another, all of which could have been counted from one point and I didn't get to see the large bunch of about 200 which run around North Water. The Coconino needn't think they have all of the antelope in District 3.

Sale By Estimate: On a sale by tree measurements to the Lakeside Sawmill Company, on the Lakeside District of 231 M feet, the cost of administration, exclusive of a check scale on all logs cut, was 15.1¢ per M feet. The average cost of administration on sales to the same company, in which the logs were scaled, was 25.8¢ per M. feet, which would indicate a saving in cost of administration of 10.7¢ per M feet. The check scale on this sale showed the estimate by the measurements to be low by 10 M feet, or a loss in stumpage at $2.25 per M., of $22.50. The saving in cost of administration however, would amount to $24.72. It is assured of course, that the check scale is correct. With more experience in estimating, sales by tree measurements should reduce the cost of administration of ranger sales by at least 8¢ per M. Sitgreaves Elkhorn.

Ridding The Range of Lions: There have been two government hunters on the Sierra Ancha district since Christmas, states the Tonto Bulletin. Lon Weatherlin has caught three grown lions in a radius of three miles of Hells Hole and is camping on another's trail at the present time. The Swede who has been trapping on the Apache Indian Reservation has bagged a grown lion in the Cherry Creek and winter range country of the Flying H Cattle Company since Christmas. Shortly before coming to the Flying H he bagged five lions on the Flying V range of the Pleasant Valley District. I also know of two more lion catches that only date back to November. These were bagged by Mr. Whitley on Baker Mountain, making a total of fourteen grown lions killed in these parts during the past three months. Now some of you lion mathematicians figure out the saving this means to the stockmen and in game just for one year, please.

Field: Kerr, Hussey (Tonto)
Visitor: Simmons (Santa Fe) DO
Acting: Jones

(useable as index to lion population)

taken by some strange disease, the exact cause of which has not been ascertained. The disease, in some instances, has been termed alkali poisoning and yet there is much evidence to show that in some places where large numbers of ducks have died some other cause was more potent. That the loss taken amounted to thousands of birds was evident from the reports that every investigator so far has made. The real extent of the inroad on the duck supply and the fact that the death toll appears to be increasing, has not been apparent to most sportsmen. That it is time to act and to make some effort to save a larger breeding stock of ducks has been made apparent by poor hunting conditions of recent years and has again drawn attention to the problem of the control of the devastating sickness which causes such great mortality.

In the *Saturday Evening Post* for February 19, 1927, Dr. E. W. Nelson, chief of the United States Biological Survey, reviews the whole situation and pictures the devastation around the alkali states of the west. The astonishing statement is made that losses in the Bear River marshes of Utah have run from 30,000 to more than 100,000 and that in worse years they have amounted to from one million to two million ducks in addition to numerous birds of other species, and that the total loss in the west since 1902 has probably reached 15,000,000 ducks.

Relative to western conditions he says:

> The most imminent of all dangers now confronting our migratory wild fowl has developed in the states west of the Mississippi Valley. In this mainly arid region the water has disappeared from numberless lakes, ponds and marshes, covering thousands of square miles, through drainage, the diversion of water from streams for irrigation and a rapid evaporation, amounting to several feet a year in some areas, combined with a period of scanty rainfall extending over more than ten years.
>
> These vanished water areas vary from small ponds and marshes to such large open waters as Goose Lake, lying across the border between Northeastern California and Oregon. Until within a few years this lake, about fifteen by forty miles in extent, covered an area of about 600 square miles, with its greatest depth about twenty-five feet. In October, 1926, its basin was a bed of alkaline dust, whirling up with the passing winds into stifling clouds. Tulare Lake, in the San Joaquin Valley of central California, once had more than 250 square miles of ideal wild-fowl marshes. Its bed is now dry and occupied by ranches. A little farther south, Buena Vista Lake, somewhat smaller but of similar character, also has gone dry.
>
> In eastern Oregon a large number of lakes are known to have disappeared during the past few years. Malheur Lake, a large federal bird refuge in this state, long famous for the superb bird life breeding in it, has gradually decreased, until in October, 1926, it had only about one-tenth the water area existing the previous year and was only one twenty-fifth its original size. With another dry year it may disappear completely.
>
> There is reason to believe that with the return of rainy years many basins now dry may fill again. A remarkable indication of this was in the discovery, when Goose Lake went dry, of an old well-marked wagon road crossing its bed from east to west. It is reported that the bed of the lake is of hard clay, which held these ancient ruts firmly until they were filled with a finer siltlike material. Local tradition and old records tell that this lake bed was dry and wagon trains of gold seekers and other emigrants crossed it here from 1849 to 1853. Subsequent abundant rains must have filled the basin and maintained the lake until the recent dry period which has revealed what might be called a fossil wagon road about seventy-five years old.
>
> A return of wet seasons cannot be expected to restore the former conditions completely, for this region is being increasingly occupied by man, and many permanent changes have taken and are taking place, affecting its surface waters.
>
> The general decrease in water areas in the Far West has forced a great concentration of wild fowl in those still remaining. At the same time, through evaporation, a concentration of alkaline contents in very many of these areas has rendered the water poisonous to the birds drinking it. This, possibly aided by some yet undiscovered disease resulting from overcrowding, has brought on an appalling mortality, not only among all wild ducks but to a lesser extent among geese. In addition, it has caused a great death rate among all the species of sandpiper, snipe and other waders, and herons, gulls, blackbirds, and practically all birds that frequent marshes. This so-called duck disease occurs in varying intensity during the summer or fall months every year, causing heavy losses each season and every few years becoming especially virulent and producing a frightful devastation in the bird life.

SCIENTIFIC DATA SECURED BY LION HUNTER BRUCE.

Not only is state lion hunter Bruce performing great service to conservation by reducing the number of mountain lions, and thus improving the deer supply, but he is at the same time increasing scientific knowledge regarding this large predatory animal. For several years, he has been taking careful measurements of every animal killed making careful weights, and thus making it possible for those interested in accuracy to discount the usual stories regarding the ten and twelve foot length of a mountain lion. It has been found that a skin can be stretched very readily to give a length of nine or ten feet, but actual measurements of recently killed animals bring the actual average length to around seven feet. Furthermore, Mr. Bruce has fur-

nished the Museum of Vertebrate Zoology at the University of California with as fine a series of skins as is to be found anywhere in the world. As a consequence, the scientists will always have useful scientific material on which to base judgments as to the characteristics of this largest member of the cat family found in the west.

STORM DAMAGE.

The storms of February not only overflowed levees, inundated farms and caused thousands of dolars damage to agricultural interests, but it swept away and severely damaged various racks used by the Department of Fish Culture in trapping fish for spawning.

At Shackleford Creek, Hornbrook, Bogus Creek, Camp Creek and other places contiguous to Mount Shasta Hatchery, a great deal of damage was caused by the heavy rains. At Hornbrook Station the cabin and personal effects of the man in charge were washed away. On the Klamath the water is said to have been higher than at any time since 1889-90. While the man at Shackleford Creek was reporting conditions over long distance phone to Captain G. H. Lambson, superintendent at Mount Shasta Hatchery, the waters carried away all bridges and he was forced to take a horse on his return trip. Fall Creek suffered little, although the water ran over the tanks. Beaver Creek also withstood the high waters with no loss of material.

The repair of the racks and traps will take $1,000. The damage will hamper spawning operations and probably reduce the take of eggs for the season.

AN INDIAN BRUSH DAM FOR THE TAKING OF FISH.

The accompanying photograph is of a dam built by the Pomo Indians of Potter Valley across the main Eel River. This dam is built entirely of brush across a riffle. On the side where the fish are taken a portion extends up stream some few feet forming a sort of pocket, the bottom of which is covered with white rocks so that a fish swimming over them is easily seen. A platform of logs is then built over the water to stand on and a stake driven into the ground on which is fastened a light. Usually this light is a pine torch in a wire basket or "torch jack."

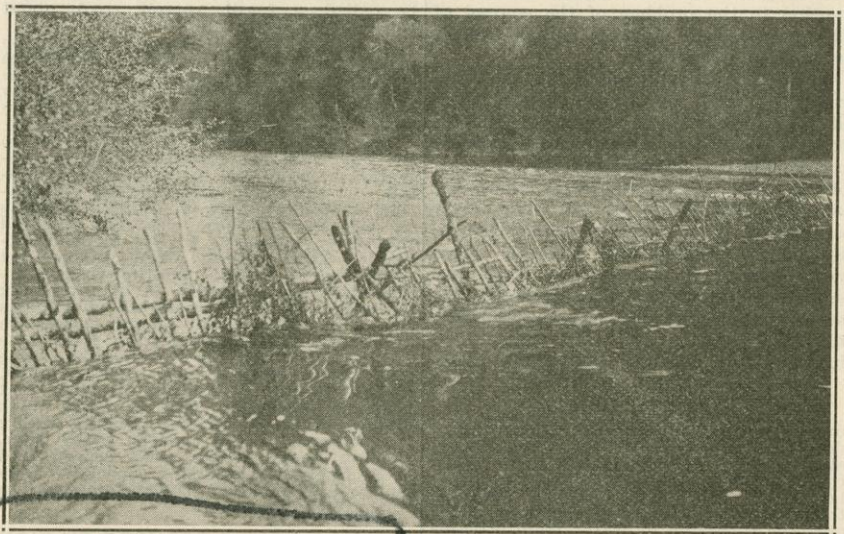


FIG. 28. Indian brush dam in Potter Valley. Typical of the old Indian method of securing winter food supply and also typical of an illegal method at the present time. Photograph by J. H. Hellard.

In years past the Indians would take their families, go out to the river, build a dam, stay by it for several days and catch large numbers of steelhead when they were running in the spring. This particular dam was across the river about two weeks before it was discovered. There has not been one like it built for several years as the practice is becoming obsolete. The construction was so good that no fish of any kind could get through and the

Lion folder
Service Bulletin
5/2/27

MOUNTAIN LION

By S. L. McNelly, Missoula.

During the two years spent on the West Fork District of the Missoula Forest, I have at different times heard stories about a certain young man on this district by the name of Harold Wyman. These stories were always about mountain lion, were very interesting, and were exceptional in that they varied considerably in the telling. Wyman is about 25 years of age, stands about 6 feet 2 inches in his goat hairs, and is built in proper proportion to his height. He is quite modest, and it is difficult to get him to tell of his lion hunts.

Last fall, while on range inspection in that part of the district, I stayed overnight at the Wyman Ranch, and bunked with Harold. On going to his room I noticed a very large lion rug and mentioned to him that it was an unusually large one. He admitted as much. After a careful roundabout approach I asked him to tell me the story. Here it is.

Wyman has two fine Russian wolf- and bloodhounds, crossed. One day, while running coyotes on Upper Stony Creek, the dogs suddenly stopped and gave several short barks or yips which told Wyman that something other than the ordinary coyote trail had been found. The scent was evidently fresh so it was with difficulty that he kept within hearing distance of the hounds. After a strenuous run to the Bitterroot Divide, across Little Stony Creek and to an open ridge on Williams Gulch, a distance of about 8 miles, he heard the dogs give the baying signal which indicated that the chase was over. By this time Wyman was sure that it was a lion and that the dogs had it treed. After reaching the dogs he found that it was a lion, a big fellow, on a large limb about 40 feet up.

Instead of shooting the lion at once he decided to catch up on his wind, and eat his lunch. He sat down a few feet from the tree where he could keep an eye on the lion. His rifle was laid on the ground at his right hand in a position for a quick grab in case the lion decided to leave. The dogs were on opposite sides of the tree, watching for the least hostile move. Mr. Lion was switching his tail in the usual manner of indicating his disapproval at being placed in such a situation.

Wyman was well along on the second course when one dog whined and stood up. Wyman, who had taken his eyes from the lion for a moment, glanced up just in time to see the lion spring toward him. He grabbed his rifle, shot from a sitting position, and fell backward just as the lion landed at his side. Using the end of the rifle barrel he pushed the lion away from him as it went through its death struggles. Upon examination a few minutes later, he found that the bullet had gone through the neck in just the right place to put an end to the hunt.

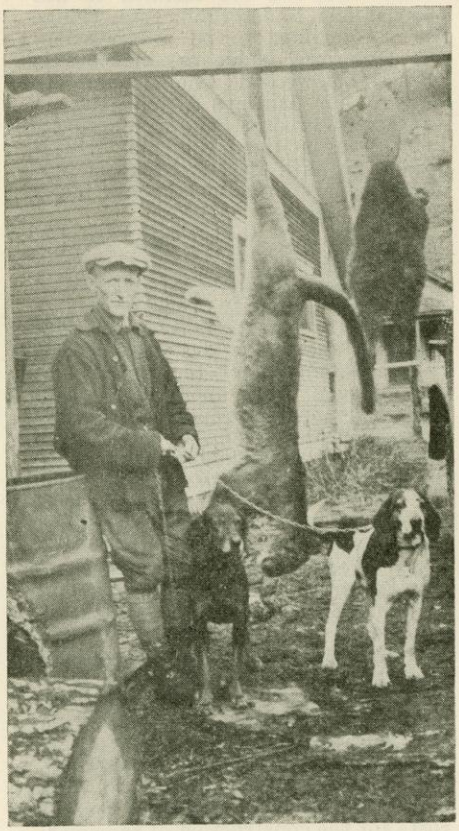
Leon Folder

NINE LIONS LESS IN MINERAL COUNTY

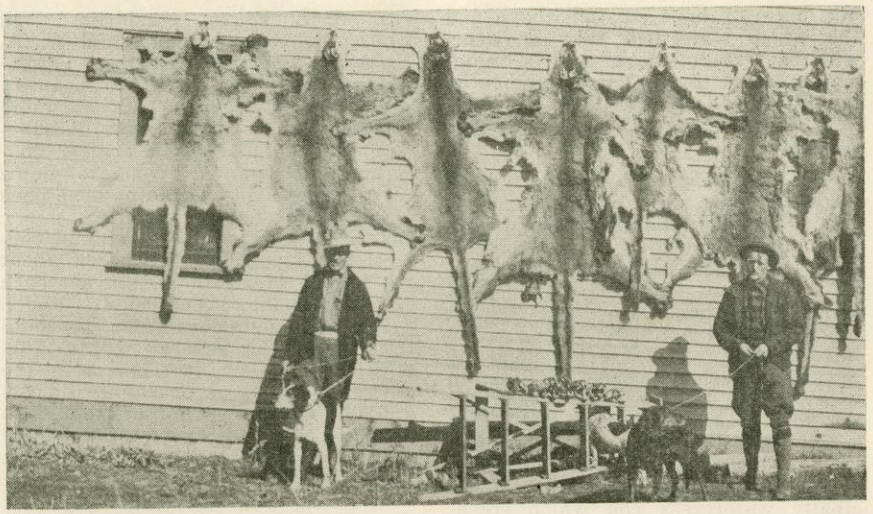
Ben Vogler, a cooperative hunter and trapper working for the Fish and Game Department and the Bureau of Biological Survey, and Raymond Allen, of the U. S. Forest Service, hunting in Mineral county in February, March and April, shot nine mountain lions that had apparently been feeding on the game and furbearing animals in that locality for some time.

The fund from which Mr. Vogler's salary is paid is known as the biological fund of the Fish and Game Department and is created by the setting aside of 25c from each hunting and fishing license sold. This fund is used for the extermination of predatory animals and birds that prey on game, domestic stock, poultry and song and insectivorous birds. While the sportsmen are paying Mr. Vogler's salary they are not the only ones to benefit by his good work, as the big cats he has taken were also real enemies of livestock and annually take considerable toll of sheep, calves and colts.

These men were ably assisted in their good work of destroying predatory animals by the two dogs shown in the pictures, which pictures are here reproduced by the courtesy of Mr. G. S. Childers of Superior. The darker dog is Lead, a fullblooded coon hound owned by Mr. Vogler. The other dog is an American fox hound owned by Harry Byrd of Missoula and is named Spot. Both are trained lion dogs.



Ben Vogler with "Lead" and "Spot" and the mountain lion caught on Trout Creek while eating a beaver which it had just caught. The beaver, which had its head eaten off, is also shown.



Ben Vogler, Government Trapper, and Raymond Allen, forestry worker, the skulls and pelts of eight mountain lion killed in Mineral County. Also "Spot" and "Lead."

The first kill was made February 17th on Trout creek. The second hunt started on March 12th and a lion was taken that day on Fish creek; another was taken on the 14th, one on the 16th, one on the 18th and three on the 19th of March. One of the lions taken had been shot a number of times with a revolver and dropped from the tree in which it had taken refuge. Lead throwing caution to the winds, sailed in to finish the lion, but was himself being badly clawed when Mr. Vogler struck the lion a heavy blow on the back with a club, rendering it helpless except with its front feet and jaws. But for the fact that two of the lion's tusks had been shot away, Lead's chances of escape would have been very slim.

The first three lions killed in March were secured within half a mile of the first foot-log on Fish creek. Others were taken along Fish creek. One, a big tom, measured 9 feet 6 inches; another of the lions measured 8 feet 8 inches. Two of the lions killed were kittens under a year old. The lion taken on Trout creek was shot as it was making a breakfast on the carcass of a beaver it had captured at one of the many beaver dams on the creek. It had eaten the head and a portion of the shoulders when killed, as seen in the picture.

It has not been generally known that lions fed on beaver except rarely, but evidence in the locality in which these were taken indicates that many beaver have been destroyed by the lions, which undoubtedly accounts for the disappearance of colonies of beaver in this district, disappearances which were explained by the generally accepted theory that the beaver had migrated.

Beaver

The remains of nine deer killed by mountain lions were found by these hunters along the creeks in Mineral county. It has been suggested that the mountain lions, which were thought to be very scarce in Mineral county during the last few years, owing to the good work of other cooperative hunters, had taken refuge in the Little St. Joe game preserve where they have multiplied unmolested.

BIG TIMBER CLUB PLEASED WITH PROGRESS BEING MADE

Under date of March 29th, E. L. Frang, president of the prize-winning Big Timber Rod and Gun club, writes as follows, not for publication, but as a matter of encouragement to the state secretary; but he won't know what we are going to do with his letter until he discovers we have done it, and so we will take a chance on "getting ours" from this "cocky" president of the club that always cops the big money in the state-wide common enemy control contest:

"Dear Friend Carp:

"Just a few lines to let you know we are still functioning, as far as conservation, propagation and protection of fish and game is concerned.

"Since the organization of the state association and the state fish and game commission we have bettered both hunting and fishing in our county, thanks to cooperation and helping each other. While we are blessed with more favorable conditions for good fishing than many other communities, having ten separate and distinct trout streams emptying into the Yellowstone river within ten miles of Big Timber, with the Boulder at the head of the list, we find that keeping them stocked is no simple task.

"When it comes to bettering bird hunting we find that it also takes much time and energy. But we feel that other communities could, if they used a little effort, have much better supply of birds than they have. We believe that the local rod and gun club, with the cooperation of nearly every man, woman and child in the community, have MADE our chicken hunting, by the destruction of an enormous number of predatory animals each year, as your records will prove. We are sorry, however, that other clubs are not taking stronger to this. We can not clean our county unless our neighbors clean their county, too, as the pests will overflow from the sidelines into our county.

Leon Folder

3. Find a profitable way of utilizing the surplus.

We are not so sure that it is a matter of choice of one or the other of these projects; rather it is the inclusion of all three projects plus several others. All three projects are worthwhile. It seems more reasonable that we should have a few big game animals saved to look at. Visitors to national parks usually gain a greater thrill from the sight of a wild deer or bear than from the scenery that surrounds them. At the same time there are certain areas that should be employed as propagation grounds for animals with the direct view to utilizing the surplus. In attempting the third project we might very well look to the first one, the actual restoration in certain areas of former numbers. This might mean restriction of grazing, furnishing of better food supply and other useful means looking toward an increase.

Game management is an inclusive term. No one yet has given us a definite outline of the main lines of attack to be used by anyone who might call himself a game manager. The term will continue to be rather intangible until something concrete is suggested. Within the next few years there will be forthcoming the aims, the methods and the means which will make this new term, "game management," more understandable.

HATCHERIES TO SERVE FULL TIME.

One of the plans for the coming year includes the continual use of a number of the state's hatcheries. The importation of European trout and others from the eastern United States brought to California species which deposit their eggs in the fall rather than in the spring, as do the native trouts. It seems a feasible plan, instead of closing some of the smaller hatcheries for several months each winter, to have shipped to them eggs of fall spawning trout. The resultant fish will be of size sufficient to place in holding tanks by the time shipments of rainbow and other spring spawners are obtained. Some of the hatcheries are so situated that they can not be operated in midwinter, but in other instances this plan seems feasible and will be tried out. This is the plan projected for the Yosemite Hatchery and, accordingly, winter visitors to Yosemite will have an opportunity to see the hatchery in full operation.

MOUNTAIN LION CONTROL

State lion hunter, Jay Bruce, has now a total of 315 mountain lion scalps to his credit. Last year he bettered his average by taking 36, the largest number yet secured in a single year. By September 1st of this year he had secured 31. He accounts for the better record this year as being due to a camp helper who has enabled him to spend more time actually on the hunt. The past spring was spent in San Diego and Ventura counties. In San Diego County four were secured, whereas six fell to his prowess in Ventura County. All of this was accomplished in spite of trouble with sick and injured dogs. At the present time his dogs are in fine working condition and several younger animals are being trained.

Mr. Bruce is considering an enticing offer to try his prowess in securing man-eating tigers and other large cats in the Orient. Such an expedition as is planned would take Mr. Bruce from his work temporarily, but would increase his knowledge and ability at trailing and killing the most noted among predatory species.

SUMMER RESORT EDUCATIONAL WORK.

As in past years the Division of Fish and Game has cooperated with the National Park Service in a nature educational program in Yosemite National Park. There are three outstanding features of the work: Lectures are given nightly at various resorts, a school designed to train nature guides and teachers of natural history, holds a seven-weeks' session and thousands are led afield on field trips to study nature first hand. The final reports show a trebling in attendance on the field trips, which is the more unique and important feature of the work, and are as follows:

YOSEMITE NATURE GUIDE SERVICE, EIGHTH SEASON, 1927.

Lectures—	Number	Attendance
Camp Curry	34	48,200
Yosemite Lodge	23	11,050
Museum Campfire	6	543
Special lectures	11	2,560
Geology at Museum	254	11,300
Glacier Point	88	8,258
Yosemite Hatchery	128	18,000
Totals	544	99,911
Field Trips—		
Camp Curry (adults)	149	3,586
Camp Curry (children)	55	735
Yosemite Lodge	104	1,727
All day	23	837
Glacier Point	48	522
Special	45	1,301
High country	7	221
Totals	431	8,929

A staff of eight men was employed by the National Park Service to give aid along the lines indicated. A special fea-

Lion folder

DAILY BULLETIN

No. 28-145 U. S. Forest Service December 20, 1927
Southwestern District

Mountain Lion In Sandias: Road Superintendent Kissam's road crew ran onto fresh lion tracks near Capulin Springs and on following them they found a fiv point buck freshly killed, reports the Manzano Ranger. We haven't so many deer in this refuge that we can afford to feed them to the lions. Now, if the Gila Forest craves this beast to hold their deer herd in check, please submit a requisition and we'll try to do our best. In the meantime, the Biological Survey is going to put a trapper on the refuge.

Christmas Tree Business Brisk: The demand for Christmas trees is very active, states the Tusayan News Letter. Ranger Rice will spent today and tomorrow, as well as the day before Christmas, on the Williams Christmas tree area so the local people may secure the necessary trees to make the children happy on Christmas day. Two trucks came up from Phoenix a few days ago and secured fifty trees from the Sitgreaves commercial area for sale in Phoenix. Snow conditions are making the securing of trees exceptionally difficult this year.

Cost Of Transportation: The total charge for primary and secondary haul of all domestic and imported lumber by all carriers is $408,500,000 or $12.00 per M ft. The length of the average primary rail haul is 700 miles according to Statistical Bulletin #21. Arizona and New Mexico pay $4.77 per M ft. transportation charge for lumber produced within their boundaries and $15.78 and $14.26 per M ft. respectively for lumber imported. The total transportation costs of the two states for the year 1924 was $1,078,569.00. (Ed: The much greater transportation charge for lumber shipped into the Southwest from other states as compared to that for the home grown product [illegible] that could be made by "growing your own".)

Mountain Lion folder

From "California Fish and Game"

MOUNTAIN LION CONTROL

Bounties have been paid on mountain lions by the state since 1907. The yearly average during these 21 years has been 246 claims paid each year. Records from the Thirtieth Biennial Report disclose that during the past biennium the number of lions killed bordered on this yearly average. The claims of lion killers over the entire state for 1926 amounted to 249 lions and for 1927, 241 lions.

It is believed that the total lion population in California is not greater than 500. This population is probably able to reproduce yearly not more than the number slain every year by hunters. In other words, control measures have been effective in that they have kept these large predators from increasing. The lion population has remained stationary. Further aggressiveness, making possible a greater yearly toll, would soon find the death rate in excess of the birth rate.

Survey May 1928

Mountain Lion Puts up Fight.--M. E. Musgrave, leader of predatory-animal control in the Arizona district, states that Hunter A. L. Jones reports his first instance of a mountain lion actually putting up a fight. Jones had been after this lion during the entire winter, but the animal was apparently trap-wise and would get into the bluffs and keep away from the dogs. Finally, however, Jones forced the lion out into the open, and in a letter he says briefly: "I just got him before he got me."

Lion eats Coyotes

DAILY BULLETIN
No. 28-311 U. S. Forest Service July 6, 1928
Southwestern District

Walnut Canyon Popular: Ranger Hackleman says, in the Coconino Bulletin, that the Walnut Canyon visitors are swarming again, sometimes a hundred a day.

Ranch Tool Boxes: The Coronado has installed six ranch tool boxes containing five man fire fighting outfits. It is understood that these are located at ranches of per diem guards from which fire fighters would naturally start for fires. Details of the ranch box design have been supplied forests.

Gives Them A Target: Senior Forest Ranger Oldham has solved the "sign shooting" problem, according to the Coconino Bulletin. To accommodate the boys who have the killer instinct, and who like to test their skill with fire-arms on our neat and attractive signs, Oldham places a pasteboard target below the sign, so that they may have their fun and still leave the sign, with its O's and D's intact. Perhaps an enlargement of this idea, in the way of a more durable target would be worth consideration.

New Measure of a Man's Greatness: The district has orders placed for about eight new Fords. Probably a number of individuals on the force likewise are waiting. Read this and curb your impatience: "J. R. Nealon (a contractor's superintendent on a big N. Y. Central job) is one of the busiest men in the State of Ohio. He has 180 men scattered over four miles and keeps every detail moving smoothly. His greatest achievement, however, was when he obtained a new Ford car when he wanted it, a thing few men have been able to approach, let alone equal".

(The Earth Mover)

This Lion Earned His Salt: On the morning of June 7, Maurice Jones, Biological Survey hunter, found the tracks of a lion at a salt log on the Peavine Grazing Unit of the Eldorado National Forest, states the California News Letter. He followed these tracks with the aid of his canine friend and after an hour or so, the tracks led to a coyote den where he found the evidence of an early morning tragedy. The evidence showed that two nearly one-third grown coyote pups had been killed and eaten by the lion.

Jones dug into the den from which he extracted and killed three more of the same species.

Beauty Spot Ruined: During the present 10-day period only two fires have been reported, one in each State, says the Apache Bulletin. We can only thank our lucky stars for this fact since it has been the most serious period of the season, if they just get started. The fire at Elderberry Spring on the Greer District last Sunday was in one of the beauty spots of the White Mountains, and had it not been jumped on immediately would have resulted disastrously. As it was, 3 acres of as pretty a picnic ground in the little pines as you want to see, was charred and blackened, leaving a monument to some careless smoker, whom all efforts to run down proved futile.

Field: Pooler (Coconino); Jones (Gila); Hussey (Tusayan).
Visitor: Shipp (Gila).
Acting: Calkins.

Lion Folder

THE SURVEY February, 1928

Miss H - copy for Housecat folder

Follows Lion Track Four Days.--G. E. Holman, leader of predatory-animal control in the Utah district, reports that Hunter Taft struck a lion track on January 23 and followed it for four days. The dogs finally treed the animal near the place where they first struck its track just after it had killed and eaten a bobcat caught in one of Mr. Taft's traps.

Making Collection of Utah Rodents.--For some time R. S. Zimmerman, leader of rodent control in the Utah district, and his assistant, A. W. Moore, have been making a collection of Utah rodents, and Mr. Zimmerman reports that at the present time they have a fine assortment. Their catalogue indicates that 170 specimens complete with skulls and data have been prepared. The collection comprises 18 genera of rodents and one of insectivores. One genus of Zapus constitutes a new record for Utah. The entire collection of nine specimens of Zapus comes from localities on the Manti National Forest in Sanpete County at an elevation of more than 8,500 feet. The extent of the range within the State has not been definitely determined. A newly recorded species for Utah is to be found in the series of pocket gophers that have been collected. This collecting has been done mainly by Mr. Moore in about eight months' time in connection with his regular field work in the district. Identifications were made by the Division of Biological Investigations.

return to Ar

Breaks Leg.--Hunter Bradshaw, of the California district, met with a serious accident the last of January that resulted in the breaking of his leg near the hip.

THE SANTIAM ADDS:

Look, the immense pulp-wood ricks,
That is for "Six Twenty-Six".

And the balm on yonder knoll
That's the "Santiam Patrol".

On all that drainage put the ban--
That is for our Working Plan!

C. C. Hall--D.6.

LIONS ON THE SEQUOIA

Last fall a party of cow men with two dogs killed three lions a few miles above California Hot Springs on the Sequoia Forest. Two were adults, a male and a female, and one was about a year old. In rounding up and bringing these lions to tree they covered an area of about five square miles and found the carcasses of 15 deer which had been killed by lions during the late summer and fall. The hunters probably covered 60 per cent of the area; therefore probably 25 carcasses would have been found if the entire area of five square miles had been covered in hunting for the lions. These lions ranged over an area of approximately 60 square miles, all fairly good deer country, and if the five square miles represent their average kill it may be safe to assume that the summer and fall kill on the entire range covered by these lions would be 300 deer. The cow men who killed the lions are close observers of tracks and signs of the woods and are fairly certain that the lions covered the 60 square miles of territory in making their regular rounds and were the only lions in that area during the past season.

On the other hand, some hunters followed a lion for eight days along the Kern River, finally caught up and killed him, and during that time they did not find where he had killed a single deer, although he was in a good deer country. He did, however, according to signs, make a run at a deer which he apparently missed. He killed some smaller animals such as rabbits, squirrels, etc.

Another cow man reports a case where an old lion, apparently too old to catch deer, started killing calves and in two weeks killed three calves.

Possibly a discussion of occurrences of this nature may give us a better understanding of this question. -T.W., D.5 News Letter.

DEATH OF J. B. (JACK) CAMMANN

On Sunday, April 15, death removed Jack Cammann from his labors as a Forest officer and left a vacancy in the organization and in the hearts of his fellow Forest officers that probably never can be filled.

Jack lacked just eighteen days of having been in the Forest Service for a period of twenty years. He began his career on the Gunnison National Forest on May 5, 1908, as a Guard and served there for a little over six years as Guard, Ranger, and Deputy Supervisor. On June 16, 1914, he was transferred to the District Office where he has been employed ever since, largely in the capacity of a mineral examiner, but working on many other activities. His loss will not only be felt in the Forest Service, but he had established confidence on the part of Land Office officials in his integrity and ability to an extent that Jack Cammann's word in mineral claim hearings was accepted without question.

Most of all will Jack be missed by those of us who were intimately associated with him and had come to appreciate his very human traits, his humor, generosity, and willingness to accept any job assigned to him without question. He will be long remembered as the highest type of Forest Officer.-District 2.

A WIRE

Cleveland, Ohio, April 26, 1928.

Forest Week films showing in our suburban theatres this week. Downtown theatres could not arrange programs. If we can have films another week, Loews downtown theatres will show all week. Museum of Education can use May 7th, 8th, and 9th in high schools. Advise immediately.

Cleveland Film Board of Trade.

Lion eats trapped coyote

Rodent Control Supervision Popular in New Mexico.--A. E. Gray, leader of rodent and predatory-animal control in the New Mexico district, reports that the demands for assistance in rodent control are heavier than ever before, and that in nearly every instance the people are asking for supervision of the work, remarking that "there must be something in the way the stuff is put out." More than two tons of poisoned grain were sold cooperatively direct from the New Mexico headquarters to 82 farmers and stockmen throughout the State during May.

Mountain Lion Caught in Texas.--C. R. Landon, leader of predatory-animal control in the Texas district, reports that Hunter E. A. Norton caught a mountain lion in Uvalde County under rather unusual circumstances: while riding his trap line on May 22 he found that a trapped coyote had been dragged away into a clump of bushes and hidden, after being partly eaten by a mountain lion; making several sets around the carcass, he found the mountain lion in the trap the following morning.

Lion Folder

(52)

"Outwitting the Mt Lion"
Andrew R Boone
Field & Stream - April 1928
Quoting Jay C Bruce
Lion hunter Calif. Game Com.

Alt. range 3000 - 5000 ft
1 lion per 36 sq miles in the "lion belt"
Each lion travels 100 sq miles
Est. 4 - 500 in state
Bounties paid on 4500 lions in 20 yrs.

Yes, the mountain lion does scream, or to me this scream has always sounded more like the clear clean-cut call of a woman. With the exception of the months December to February inclusive, I have heard them call in every month of the year, usually in the evening and early night. This call can be heard for a distance of several miles when atmospheric conditions are favorable, and is particularly clear and penetrating when heard at close range. One who has ever heard this call and known its source will never tell you that a mountain lion does not scream, for it automatically quickens your pulse and advances the spark of alertness.--Stephenson- White River.

Mountain lions do not scream. For forty years I have led an out-of-doors life in the foothills and mountains of Colorado; always in localities where lions were more or less plentiful. I have hunted and killed lions, have seen them captured alive and packed on horses, but I have never heard a lion scream. I have talked with famous hunters, men who have hunted, captured, and killed lions throughout the mountains of the western States, and none of these men claim that they ever heard a lion scream. The high-pitched snarling squall, sometimes heard in the woods, or in wild out-of-the-way places, is made by the red fox. It is this harsh piercing "squall" of the fox, that nature-fakers and tenderfeet hear and believe to be the scream of a lion.--Loring- San Juan.

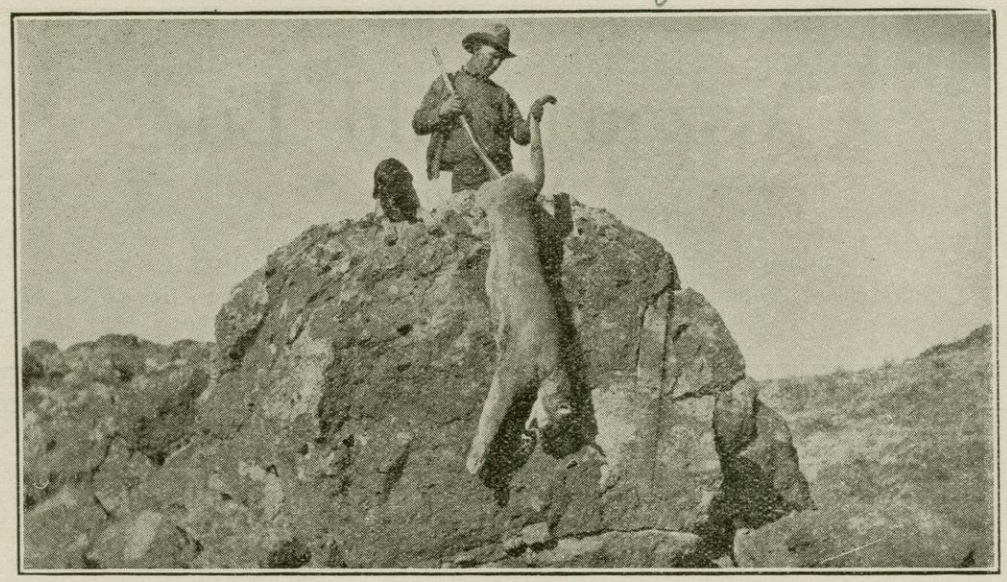
"Some Habits of Ariz. Mt Lion" M E Musgrave

Ariz Wild Life Jan 1929.

Total Kill by U S B.S 600 since 1918.

Manner of Killing deer.

A. G. P. A.



A. G. P. A.

Game Warden J. V. Lee and a yellow killer of the Chiracahuas

Some Habits of Arizona Mountain Lion

By

M. E. Musgrave

Leader of Predatory Animal Control

Although from childhood I have been more or less familiar with the mountain lion, or cougar, as it is known in the northwest, I did not become intimately acquainted with this animal until I took up predatory-animal work in the southwest, which afforded me an excellent opportunity for a close study of its habits on the range. Since 1918 our force of men has killed more than 600 mountain lions in Arizona, and from all the data we have gathered concerning this large number, I believe that some questions which have long puzzled us may at last be solved.

Let us consider, for instance, the time of breeding. It has been the firm belief of some that the young of this tribe are born only in the spring, but evidence now proves conclusively that this is not necessarily the case, for we have found kittens during every month of the calendar, and at altitudes ranging from three thousand to seven thousand feet. A favorable temperature, therefore, is not a factor in the birth of the lion's young.

These cubs, ranging in number from one to four, are usually born in a sort of nest under a projecting cliff shrouded in front by dense brush. Sometimes they are born in a cave, not in deep recesses nor in caves with small openings, but in a shallow, wide-mouthed cavity from which the mother can easily scent danger and make her escape. Twice we have found them under the thick, low-hanging branches of a tree and partly covered with leaves. With their leopard-like spots of very dark brown which they wear for the first four months or more, they were barely evident to the casual eye.

Young lions remain with the mother long after they are weaned, in fact they usually stay until run off by a male who wishes to mate with the female. Before the coming of the male the family usually confines itself to a given locality unless disturbed by hunters.

Except in a few cases we have known, the mother lion deserts her young when the dogs draw near, though she rarely travels any great distance from them. After her first dash for safety she takes to a nearby tree and if chased out of that, circles about in the vicinity but does not approach the lair where the kittens are hidden.

It is upon its wits rather than its legs that the mountain lion must largely depend for escape, for despite its amazing speed for the first hundred yards, it is no runner. Within that distance it can outrun any dog I have ever seen, especially on a downward slope; but after the first exertion its wind fails and it runs a losing race.

As an artful dodger, however, it is unsurpassed. Leaping from rock to rock across deep crevices, climbing to a treetop from which it can jump to an overhanging ledge, or springing from a ledge into a tree below, it is a most difficult creature for dogs to follow. I have seen the lion spring from the earth and land twelve or fifteen feet above in a tree; I have also seen it jump from a branch to the earth fifty or sixty feet below and light on its feet apparently unhurt.

Contrary to the habits of the female and the

young ones, the old males travel great distances. On several occasions I have known an old "tom" to cover more than twenty miles in a single night, traveling along the top of a high ridge and crossing over the peaks or highest spots as it reached them. Though the distance traversed may be sixty or seventy miles the animal will invariably return by the same route. In their wandering from one range of mountains to another, these lions often cross the desert in forty or fifty mile stretches, traveling usually by night and lying by day in the shade of a low mesquite or a palo verde. It is very easy to discover the runway of a male lion, for it makes scratches under practically every large tree along the route, although the habit of scratching up piles of leaves is not restricted to the males, for the female too does this.

We have learned much about the lion's method of securing its prey. Although it is often accused of hiding on a rocky ledge or in a tree and springing upon some unsuspecting animal below, we find from careful observation of many of its kills that it rarely does this. The usual method is to stalk silently its prey until it is within a few feet of it, when the lion bounds upon its back, gripping the shoulders with the front claws and often fastening the hind claws in the flanks. It then kills by biting the animal through the back of the neck. So swift and sure are its movements that more than one leap is rarely necessary, although we have found traces of two or three leaps and even of its pursuing its prey for some distance; and we have found a few instances where cattle, horses, and large deer have succeeded in shaking the animal off their backs. This, however, is unusual.

Having captured its prey, the lion usually drags it under a bush or tree before eating any part, displaying amazing power in handling an animal. I have seen a horse weighing eight or nine hundred pounds which a mountain lion has dragged twenty-five or thirty feet, as proved by tracks in the snow. Even more surprising is the fact that it sometimes carries off what is has killed. I have seen both deer and big calves some distance from where the kill had been made, with no evidence of dragging. To do this the lion first turns the animal on its back, picks it up by the brisket, all four feet sticking up in the air, and walks off with its own head held high.

After the lion has gorged itself on the meat, it covers the carcass with leaves, sticks, and rocks, and retires to some nearby spot to "sleep it off." We have found places where rocks weighing as much as fifteen pounds have been piled up against the carcass of a lion kill, and often sticks as large as a man's arm are placed crisscross on top of it. The lion may never return to eat a second time; on the other hand, the animal may come back for a second meal within a few days, or may eat from this carcass at various times during several weeks, sometimes returning to the scene of its crime long after the meat fails to appeal to him. While the lion prefers untainted meat, we have, in a few instances, found it eating carrion.

The lion's liking for the meat of the porcupine sometimes leads it into painful experiences, as quills found in the paws testify. No one knows just how it kills porcupines, but signs in the snow seem to show that it hooks them under the chin with its strong claws, turns them over, bites them in the breast, and proceeds to eat all the meat, leaving the skin of the back, quills down, and the intestines rolled aside.

Though exceedingly fond of burro meat, the lion is rarely able to indulge this appetite, for although the supply is plentiful, numbering about fifty thousand of the wild species in Arizona, and although found on the same range as the lion, the sturdy little jackass roams scot-free. From bitter experience the lion knows what a fiend the little creature can be in combat, fighting with terrible teeth, damaging hoofs, and mighty kicks.

Perhaps the least courageous of the larger wild animals, the mountain lion rarely shows fight unless wounded. When captured on the ground, if unhurt, its first impulse is to escape from the dogs. It makes for a tree where it stays until a hunter approaches; then it jumps to the ground and runs for another. After being run out of two or three trees, it is reluctant to leave, for it can not do much running on account of being short-winded. Hanging on with all claws set in the bark of the tree, it refuses to jump even though punched at with a long stick. I have climbed out on a big branch of a tree and sat within six feet of a lion while I took a snapshot of it, yet apart from hissing and growling it showed no signs of fight.

Although the reactions of mountain lions are generally those I have here set down, sometimes they do exactly the opposite thing. By far the greater number will run for their lives, yet once they know the dogs are after them, there have been a few that showed no such inclination, but fought to their death, and in one case an old male lion deliberately lay in wait for the dogs and killed one

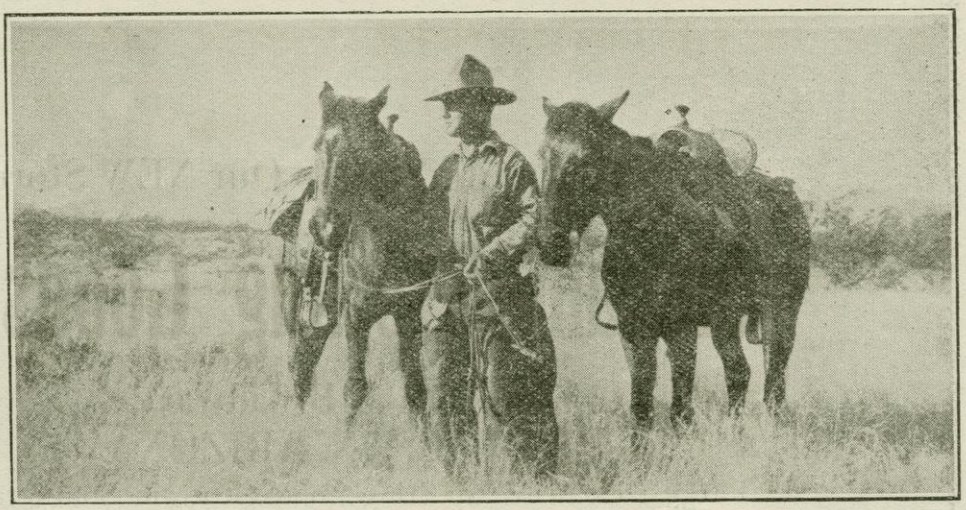


This little dog is credited with 50 *lions*

and badly wounded another.

It must be conceded, therefore, that there is marked individuality among mountain lions. For instance, note our observations of the young ones. We have taken several litters of them and raised them by hand. There was perhaps one in a litter

(Continued on page 25)



The author looking over some typical blacktail country in Sonora, Mexico.

Desert Blacktail

(Continued from page 4)

in the season the sun is warm and the bucks will lie in the shade of these cacti and rub the velvet off their antlers. Antonio and I had just dismounted and were going to eat a bite of lunch, when I noticed the tracks of three bucks leading toward a group of pithayas, just a few yards away. Motioning to the Indian, we slipped off our boots and, walking up behind one of the cacti, saw a buck stretched out in the shade. I went back and picked up the rib of a sahuaro about 6 feet long and, crawling up behind the cacti again, laid the rifle down and jabbed the buck on the rump. He leaped straight up, and whistled shrilly as he plunged thru the chapparral. His inquisitiveness, however, overcame his fear, and he suddenly wheeled around and stood facing us. I had the rifle ready and rolled him over. The Papago was very much amused at the incident, and as he and Francisco sat around the fire that night, he rehearsed the whole performance.

The sportsman that has hunted these deer among the tree-lined barrancas and over the lava-strewn cerros will count these golden days as they pass over his head, and while his luck might not bring him the coveted record head, after many miles of toilsome tracking, it will broaden his thoughts and bring him closer to the true hidden spirit of the wilderness.

* * *

LIST BLACK BEAR AS GAME ANIMAL

Should No Longer be Classed as Predatory Species—Sixteen States Should Give Bear More Legal Protection

Colonel J. A. McQuire, publisher of "Outdoor Life" began years ago to advocate recognition of the bear as a game animal rather than a predatory one. He succeeded in securing such recognition in some states, although there was more or less backsliding from time to time. It has taken a long time to secure this recognition of a fine species of game, a trophy worth any sportsman's effort and there is yet much to be done before the bear is everywhere on a proper footing as a recognized game animal.

The following states now recognize that the bear is entitled to some protection: Arkansas (entirely closed); California (closed in certain districts); Florida; Georgia; Louisiana; Michigan; Mississippi; New Mexico; New York; North Carolina; Oregon (protected in three counties); Pennsylvania; Tennessee; Texas; Utah; Virginia; Washington (subject to regulation by county game commissions).

There is a long list of states, however, that give no protection to bear whatever; although some of them have at certain times in the past. These states include: Arizona, part of California, Colorado, Idaho, Kentucky, Maine, Minnesota, Montana, New Hampshire, Oklahoma, parts of Oregon, South Carolina, Vermont, West Virginia, Wisconsin and Wyoming. It may be that some of these states do not contain any bear but they all should if the animal had the proper sort of recognition and protection.

During the next legislative session in the coming winter, efforts will be made in a number of states now affording bear no protection to secure for them suitable recognition. The bear is not a dangerous animal to human life; it is not a predatory animal except as to certain individuals and these should be dealt with as outlaws. The species generally is harmless and affords good sport in hunting as well as handsome trophies.

* * *

SOME HABITS OF ARIZONA MOUNTAIN LIONS

(Continued from page 3)

that was quite amenable and even affectionate. I recall one that was as gentle and docile as any house cat, even after he was grown, yet the others of the same litter were cross, vicious, and never trustworthy. One can never say, therefore, that a mountain lion will do a certain thing; it is a variable creature.

I have yet to see a lion that will measure more than 9 feet from tip of tail to tip of nose. The largest one taken in this state actually measured 8 feet 7½ inches. The average adult male lion, I should say, would measure 7 feet, 8 inches, and the average adult female 7 feet. The heaviest lion taken in this state weighed 276 pounds. The average weight of adult male lions would be about 176 pounds, while the average weight of female lions would be about 125 pounds.

—U. S. Biological Survey, Phoenix, Arizona.

GAME SURVEY

CONDUCTED FOR THE

SPORTING ARMS AND AMMUNITION MANUFACTURERS' INSTITUTE

BY ALDO LEOPOLD

421 CHEMISTRY BLDG.

MADISON, WISCONSIN

Cougar

Mr W A Conklin

Central Park Zool Garden

New York City

Dear Mr Conklin:

I am preparing a book on "Game Management," and also a report on the "Game Survey of the North Central States."

I am lacking the information specified below and would appreciate your filling in the reply blank in so far as you are able. Please return to me in the enclosed envelope. Thanks for your cooperation.

Yours sincerely,

ALDO LEOPOLD
In Charge, Game Survey

Subject: Breeding Age of the Cougar

Question: What is the minimum age at which the first young are born? 1, 2, or 3 years? Probably two - more probably 3 years (Seton "Lives of Game Animals" quotes you on this species but he omits this particular information)

Reply: May 29, 1930

I am taking the liberty of replying to your inquiry concerning the breeding age of the cougar. The first young may be born the second year, but it would more probably be the third year before this would take place.

Curator of Mammals & Reptiles
New York Zoological Park, New York

clipp
Mt
Lion
folder

Mother Mountain Lion Deserts Young.--Hunter Ed. Steele, of the New Mexico District, reports an unusual recent experience during a mountain-lion chase. He had located a female lion and her two kittens under a rock ledge. One of the dogs rushed in and killed a kitten, and the mother, instead of attempting to defend her young, merely trotted up the mountain-side. She was killed, however, by Hunter Steele.

the Survey, February, 1931

Library of
Aldo Leopold

May 1931

Feb MT
Leon

Cougar Characteristics

By M. E. Hatcher

THE cougar when full grown has strength estimated at fifty times that of a man. If this is true, a half-grown cougar could kill a man with the greatest ease. Physically, the lion is man's superior in strength, endurance, activity, sight, smell and hearing, yet, a man such as Boyd Hildebrand, of the state of Washington, famous throughout the Northwest as a big game killer and noted dead shot with revolver or rifle, makes playthings of them. Hildebrand is a made hunter.

Time takes us back to a cold, dull and dreary day in December, 1924, with the thermometer hovering around zero in the foothills of the Cascade Mountains of Okanogan County, when a cougar killed and devoured Jimmy Fehlhaber, thirteen years of age. The boy had been sent on an errand by his foster parent, R. B. Nash, to a neighbor's ranch a mile away on a well-traveled road. A trail through a dark, gloomy and dangerous canyon cut off a quarter of a mile. But Jimmy had been warned not to take this cut-off, owing to the perpendicular wall of the west side which, when wet or snow covered, would loosen the earth, allowing great boulders to come crashing down without warning. Yet, Jimmy chose to take this cut-off, whistling, as was his usual happy-go-lucky way, as he passed along the great shadowy walls, and through the thickets. He stopped now and then under some stunted pines to listen, but nothing could be heard, not even the chatter of a pine squirrel. With cap well pulled down and little gloved hands inside his mackinaw, he continued to push on through the deepening shadows of the canyon.



Hildebrand bringing in a small cat

TRACKS in the snow afterward disclosed the fact that the lad had suddenly stopped. Ahead some 200 feet on the edge of a ledge stood a cougar. He had been enjoying a little warmth on the south side of a large boulder. Jimmy, being used to the habits of cougars, at first (the little tracks in the snow indicated this) had swung a little to the right and then continued on his course. The cougar at the same time left his place of rest. Jimmy, on coming out at the mouth or bottom of the canyon, met the cougar unexpectedly in a thicket, face to face. The big cat perhaps intended to head the lad off. Be that as it may, here the lad became frightened and did exactly the wrong thing—turned his back and started to run. The animal immediately started after him, bounding along the left side and a short way behind. Thus the tracks in the snow showed that they raced along for 50 yards when the cougar sprang fully 15 feet, landing on the boy's back, with its cruel claws ripping and tearing through the heavy mackinaw and into the tender flesh from shoulder to waist. The boy, somehow, regained his feet and again ran on. His brown jersey gloves found pressed close together showed they had been removed, without a doubt in order that he could get out his pocket knife, which was found unopened a few feet farther on. The big cat springing the second time crumpled its victim to the ground with a blow from its paw; a quick bite at the base of the skull and the unequal fight was ended.

A spray of bright blood on the right, a larger one on the left in the pure white snow, gave ample proof of what occurred, yet no pen can describe the thoughts and anguish, or the heart-rending screams for help by little Jimmy in that lonely canyon, as the great brute, with blood-shot eyes, deep-sounding growls, ripping claws, cruel fangs, and foaming mouth, bore him to the ground. The brute dragged the body back into the shelter and tore off the entire scalp and devoured it. From here it carried the body over to the mountain side into a darker and more secluded thicket where the prized portions were eaten at leisure.

Suddenly the air grew colder. Down through the canyon came the biting storm king. The branches of the forest stirred and bent their backs to the wintry blast. The sky grew black and closed in on the mountain summit and the sleet and snow swept down the slopes. Now and then the wind, whistling through the uppermost branches of the tree tops, swelled almost into shrieks. A northwest blizzard was on, and in a short time the thermometer dropped to 20 below zero. Hours later, by lantern light, searchers over the back trail found what was left of little orphan Jimmy, 150 feet off the original trail.

THAT stormy night of Dec. 17, 1924, on receiving the report that his little friend, Jimmy Fehlhaber, had been killed by a cougar, Boyd Hildebrand solemnly swore he would kill every cougar in Okanogan County. That night, he, with other hunters and a faithful young bloodhound, started out to be gone for weeks in the wilderness, over solid crusted snow. The bitter cold twice froze the nose of the dog, rendering him helpless.

Four weeks later a farmer living within 8 miles of the scene killed a cougar. On examination by the Smithsonian Institute, at Washington, a tight mass of human hair and a piece of overalls were found within the stomach, thereby proclaiming it the cougar that had killed the lad. Today this animal is mounted as a permanent historical exhibit in the Washington State Historical Society building at Tacoma, Wash.

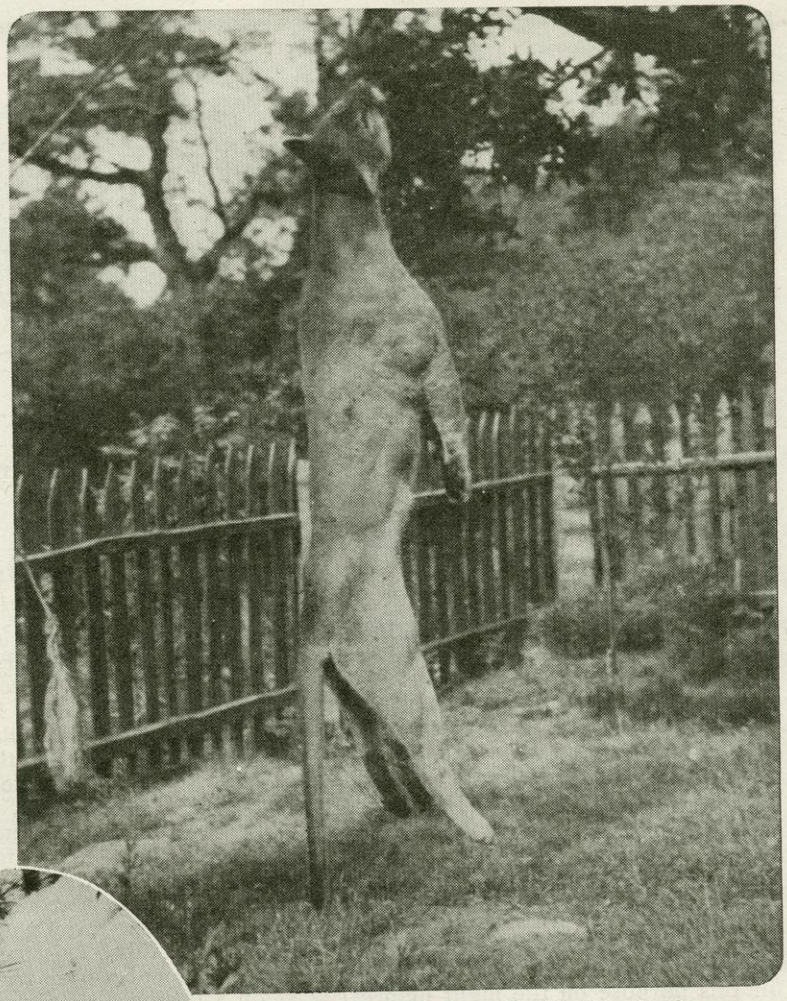
Hildebrand, true to his oath, has continued to hunt on. His fame is growing continually throughout the Northwest. He is tall and muscular, and his movements are as graceful as those of a tiger. His dogs are trained to the minute and know just what is expected of them. The big cats, says Hildebrand, don't give you much fight; they are so big they seem to feel they don't need to be afraid. Consequently they make no effort to get out of the way. The smaller ones, however, are fierce and full of fight and their capture isn't always an easy matter.

At night the lion steals forth toward deer or other game, located during the watching hours of the day. Keeping well to the lower ravines and thickets, he slowly creeps upon his prey. His cunning and ferocity are keener and more savage in proportion to the length of time he has been without food. As he grows thinner, his skill and strategy will increase. A well-fed cougar has shown that at times he may only secure one deer in about seven that he creeps upon. A starving cougar is another animal. He creeps like a snake, and, noiseless as a shadow, he springs with terrific force, seldom failing to reach his victim. Once let those cruel claws of

a hungry cougar come in contact with flesh for food, and they never let loose. But should he misjudge his leap, he seldom continues to pursue his quarry.

Elk is his easiest prey. The deer are more fortunate, as he gets about one out of five leaped at. Once the cougar sinks his claws into his victim, the struggles of his prey help to sink the claws deeper and deeper. The cougar quickly fastens his teeth in the throat with a grip that never is released until the death struggles are over. After he has become gorged, the carcass is dragged into a ravine or thicket, to be covered with leaves, dirt, sticks, etc. If fresh game is not to be had easily, he will return usually the second night, and after that the visits all depend on the supply of fresh meat he may capture. He is known to guard his cache against coyotes during a storm.

IN SEX among matured lions that roam the forest, there is an average of five females to one male. This is explained through the jealousy of the older males. The old males take delight in slaying the young of both sexes. The members of the whole litter suffer alike up to the weaning time; then only the males. After a litter is destroyed, mating time will come around regardless of the season of year. The cunning of the old lioness is astonishing. She is wise and faithful, seldom leaving her kittens. At the age of six weeks, the time of training for life's existence begins. She then takes them out to engage in the battles of life. These struggles must continue for them until death. It may here be said that a cougar seldom dies a natural death. On approach of night the mother and cubs stealthily stalk forth into the night, regardless of the weather. Because of the babies, the mother takes short steps. When she crouches for fear or game, each little lion crouches also, and like little statues, they remain until the mother makes her spring—then she signals them to come. Again the mother displays her shrewdness of why those short steps were taken, by slowly and carefully stepping in the tracks she made coming down the mountain side, and each little cub carefully following suit. This habit is practiced to keep deadly enemies ignorant. The hunter that knows the habits of the coyotes may easily tell when a cougar is near by the alarm yelps given by the coyotes close by. The story of the doing of a cougar as told in the snow is fascinating and as easy to read for the experienced as if told in print—how they stalk their prey, crouch flat to spring, and how the kill is made.



When he is stretched out like this the size of a mountain lion becomes impressive



A wounded lion tumbling down a mountain side

Does and fawns run more in bunches. The cougars that hunt in groups have very little difficulty in getting their prey. Bucks run singly to a greater extent and are not killed or stalked so often.

Hildebrand, a year ago, spent two months in the wilds of the Adams Lake country, 100 miles northwest of Kamloops, B. C., where he found evidence of over 100 deer killed by the big cats. Here he bagged twelve cougars, but with better snow conditions he felt his kill would have totaled twenty or more. British Columbia game enthusiasts were greatly interested and started an agitation to raise the bounty from $50 to $100. "Each year since I attempted to follow the trail of the cougar that killed little Jimmy Fehlhaber, I have spent a large part of each winter hunting cougars," says Hildebrand. "Often I am asked what sort of a sound they make. Just as often I have answered, 'I don't know, as I have never heard them make a sound or cry of any kind.'" People who find themselves in the dense forest wilds at night have declared they heard hideous howls that set their hair on end and have attributed them to the cougar. Wild life magazines and hunters have argued often over the description of the cougar's cry or call. "Last year I learned why the experience had been denied me," says Hildebrand. "In territory that for several years I had hunted, the cats were scarce. I never came upon over one at a time, except on one occasion when I shot a female, male and two cubs. Yet there had been no calls between them. But on getting into the British Columbia territory where the cats are thick, I had the pleasure, about 11 o'clock one night in December, to hear a great 'meow,' that did not come from the throat of a common house cat or a human voice. However, this story starts further back. A few days before this I had come upon the tracks of four cougars that gave me reason to believe they were hunting together. The trail led across a mountain, far from headquarters. After stalking the beasts for two days, without food, I returned to camp. I tarried only a short time, then returned on the trail and found a deer had been killed. Then they had crossed another mountain range, probably 5,000 feet high, and descended to a low valley some 20 miles distant, where deer were wintering. Just before dark I came onto a spot where a cougar had been bedded down. Later I found three deer had been killed. I made camp in a thick clump of timber and built a bed of fir boughs. A noise awakened me. I sat up and listened. An unmistakably clear 'meow' came to me. It was a quick, sharp and loud cry. I at once realized it was one of those big cats I had been trailing. *(Continued on page 58)*

3 SAFE TIPS ON TACKLE



First, "Bristol" steel rods. Second, "Kingfisher" lines, and third, "Meek" or "Blue Grass" reels. Three safe tips. Good fishing starts with good tackle.

Browse through the big Bristol Catalog. Just send a post card for your copy. Address The Horton Manufacturing Company, 255 Horton Street, Bristol, Conn. Pacific Coast agents, Phil B. Bekeart Company, 717 Market Street, San Francisco, California.

"Bristol" FISHING TACKLE

WRIGLEY'S SPEARMINT THE PERFECT GUM THE FLAVOR LASTS MINT LEAF FLAVOR

—steadies nerves and betters the cast when big fellows are shy and patience trying.

L43



This Remington Pocket Knife has stag handle and two keen cutting blades of superior steel, so shaped that they are especially good for skinning and cleaning fish, game birds, and fur bearing animals. We will send you this knife.

FREE of charge on receipt of only $1.00 for a whole year's subscription to NATIONAL SPORTSMAN, a 68-page monthly magazine crammed full of hunting, fishing, camping and trapping stories and pictures, valuable information about guns, rifles, fishing tackle, game law changes, best places to get fish and game, etc. Biggest value ever offered in a sporting magazine.

Clip this adv. and mail today with $1.00 bill.

NATIONAL SPORTSMAN
113 Transit Bldg. Boston, Mass.





The author's daughter seems proud of Cliff's fontinalis. Photo by Clifford White, Banff

delay. Twice in rapid succession he struck flashing rises too forcibly and left flies firmly implanted in the jaws of two hungry brookies who were probably as surprised as he was—but I doubt it—and when a miserable little 6-inch Rocky Mountain whitefish, locally misnamed "grayling," stole his fly from the very jaws of a mighty brook trout, even as he turned to strike, honestly, I thought Cliff would blow up! But nevertheless, tenderly and carefully, he turned the silvery, sucker-mouthed creature loose with the good-natured admonition not to do anything like that again or he might get knocked on the head, despite the Park's 8-inch minimum regulation. Probably it was justice, call it what you will, but on his next cast he rose, hooked, and subsequently landed another trout as large, or larger, than the one the grayling had caused him to miss.

AS FOR myself? Well, I was having the time of my life! Admittedly, the mortality rate on flies and leader points was high, for with my long and powerful rod it was all too easy to strike too severely for the strength of fine drawn gut, and in my excitement it was difficult to control myself well enough to hit easily; but still, despite my awkwardness, luck was with me, and before the rise was over I managed to basket three beauties, all within an ounce or so of the 2-pound mark. With these I was mighty well content, as who in this day and age wouldn't be? Incidentally, at one time I even had a double on, both big fellows; but as is invariably the case, with two big trout fighting against each other, as well as against the naturally over-anxious wielder of the fly-rod, the old, old story repeated itself and "they both got away," taking with them a badly-used leader in two sections. And again, just as the number of rises was beginning to diminish, I took a chance cast directly against the reedy shore, and hooked the largest cutthroat trout I have ever seen, before or since. She was a big hen fish, of at least 5 pounds weight, but for some reason or other had never spawned during the spring, and as a consequence was so logy and so full of long-overripe eggs which deluged the boat as Cliff lifted her in the net, that we released her, as being unfit for eating or for any other purpose.

With the frantic stimulation of the height of the rise over, at last Cliff and I started breathing normally again and took stock of what Vermilion's bounty had brought us. One by one, Cliff lifted his own trout from the creel and we checked their weights on the spring balance. Cliff had landed five in all, but his first was still the biggest brook trout of the day, none of his others exceeding 2½ pounds, but one of his smaller ones was the most beautifully conditioned trout we had ever seen. Only a scant 14 inches in length, it was as fat as any butterball and weighed 2 ounces over 2 pounds—proving still further that the little water of the Vermilion is capable of providing almost unlimited food resources for its finny denizens.

WHILE the afternon was still young, Cliff and I agreed that it was right to pack up and call it a day. True, we might have managed to pick up a few more trout had we so wished, but we had ample for our needs, and to keep on fishing after such a phenomenal rise would probably have been a disappointing anticlimax at best. We preferred to leave the Vermilion with the memory of the fishing as it had been during that hectic but enjoyable hour.

During the balance of that season, and last season as well, Cliff and I have made many visits to that trout-filled little water, sometimes spending a leisurely day on its surface, but more often, just slipping out for an hour or so of sport in the evening, and occasionally in the early morning. As yet we have not been disappointed. Not always have we got fish, but never have we failed to find enjoyment, and on every expedition we have learned something more of these transplanted easterners and their ways, something that some day will be of help in this or other waters.

So far there does not seem to be any noticeable decrease in the numbers of trout the lake holds, and there is no reason why the numbers should lessen or the average size decrease for many years to come. All that is required is a fair measure of protection during the spawning season, and good sportsmanship on the part of those who angle for them. With this, the brook trout of the Vermilion should provide good fishing for the wielders of the fly-rod almost indefinitely.

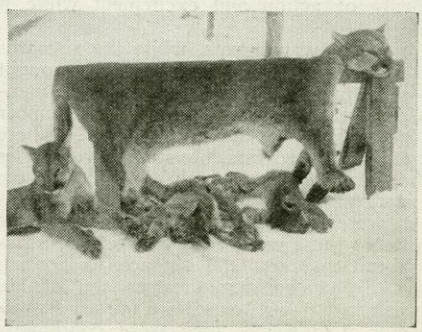
At any rate, Cliff and I sincerely hope so!

Cougar Characteristics

(Continued from page 31)

Then for the first time in all of my experience of hunting and wholesale slaughter of the cougar family, could I now speak with authority on the cougar language. Later I heard the sound more often. The 'meow' would carry for a half mile in the forest. As I became accustomed to finding tracks of the cats in bunches, I realized that they hunt in that manner where they are plentiful, and are real cronies in time of need. They may start a hunt alone or as individuals and then locate each other by their call.

"My largest kill in one winter of coyotes, with a rifle, is 111. My total kill during



Papa and mamma cougar, little Willie and two sisters, bagged by Hildebrand. Kittens usually come in pairs, male and female. If triplets, one male and two females. Never two males

the years of coyote hunting, is 1,700, besides my annual toll of cats. The forest census of the Chelan National Forest lists over 4,000 deer within its boundary. Deer are now on the increase, 650 being listed as killed by hunters during the three days open season in Okanogan County in 1930."

Hildebrand has helped the game commissioners to build up the game until it is known as the wonder country of the Northwest. To Hildebrand goes the credit for his untiring efforts and vigilance over the great Chelan and Okanogan forests, because slaying the cougar means increase in the deer.



Hildebrand and his famous bloodhound, kneeling behind two recently killed cougars in the hills of Okanogan County, Wash.

Editorial Note:—Our correspondent's version of a cougar attack (which was described in Outdoor Life at the time it happened) brings up the subject of one trait that is almost proverbial in the habits of the cougar—its abject cowardice. There are some rare instances on record to show that the cougar might attack man unprovoked—the incident of the attack on Jimmy Fehlhaber being one of the only two authentic cases we know of, and both attacks having been made on boys. (We never knew of an unprovoked attack by a cougar on a man.)

The other case of the attack on a boy occurred in California many years ago, probably ten or twelve. A boy was playing on a stream not far from his school when a cougar attacked. While the beast was mauling the lad the schoolteacher (a woman) ran to his assistance, broomstick in hand. The animal turned on her and killed her.

Scott Teague, the old Colorado big game hunter and guide, with whom we have been on many bear and lion hunts, once came upon a cougar that was eating the remains of a deer. Scott noticed that the cat showed an extraordinary menacing attitude as he came up, and, being armed with only a small .22 rifle, he stood for awhile, undecided as to what was best to do. In relating the incident, Scott said this was the first time he was ever held at bay by a cougar. The attitude of the animal was so bold that Teague decided to retreat, which he did—returning later with his dogs and treeing it. It proved to be an exceptionally old animal, with teeth either badly broken or worn down to the gums.

Battles of the African Jungle

(Continued from page 27)

of the brutes watching him. He made for the camp, with the native's help, but he was confident that, but for the scare the boy gave them, they would have attacked, and probably finished the lion's work. He said that since then he has every sympathy with the native's terror of the hyena.

Coming to the crocodile, I doubt whether the reptile has any more redeeming traits than the other member of the brotherhood. Yet I once saw an example of what may have been maternal affection, cannibalistic as the species undoubtedly is.

On the banks of the Quando, one afternoon, I found under a clump of trees a crocodile's nest. My boy assured me that under the flattened and scale-marked sand were many eggs. I asked him whether the sun hatched them. He pointed to the shade above, and the marks of belly scales, and said: "They are deep down. How can the sun hatch them?"

The Pioneer of Tackle Boxes

Made for Fishermen who Demand the Best

FOR 20 years Kennedy Kits have safeguarded the lures, baits, spoons, spinners, plugs, lines and reels of fishermen who know what's what in this greatest of outdoor sports, and kept them all fit for service.

During all this time, the quality of these now famous Kits has never varied. Being made of electrically welded steel, practically indestructible, their service has never been interrupted. Their superiority is evident at a glance. Their special quick-accessibility; their chip-proof baked enamel finish insures the long service and rust-resisting advantages experienced fishermen require.

See them at any sporting goods store. The new 1400 series; the T-14 or KK-14 and many others.

Kennedy Manufacturing Company
202 Harrison Street Van Wert, Ohio



Kit No. 1117D—Size 17" x 8" x 10". Four trays instantly accessible with the opening of the lids; special finish; cork in plug compartments, brass fittings.

Kit 618—Size 18" x 6" x 6". Single tray Cantilever box. This tray is divided to hold snelled hooks, sinkers, swivels and small accessories in the bottom as well as provide room for other equipment. Special Kennedy-brown baked enamel. Guaranteed water tight.

TRADE **Kennedy Kits** MARK

Some Fish to Catch Fish But the Fisherman Fishes

Another Famous Fish Line by GLADDING

INVINCIBLE

Waterproof Silk Casting Line

The most famous and largest selling waterproofed casting line in the world. The first waterproofed line ever made. Sportsmen judge all fishing lines by the Invincible standard. Where quality and service are desired, it is the first and only choice.

8 sizes. Tests 12-50 lbs.

A general service line for every type of bait casting—within the test limits.

A NEW AND DEADLY FLY ROD LURE

The River-Wolf

USE this sensational new lure for BASS, trout, musky or any game fish *and you will be sorting out the fish you wish to keep!* Guaranteed to get more strikes -- more fish than plain spinner and fly. Three patterns: white, yellow and natural, with gold plated spinner blades. Ask your dealer for the *River-Wolf*; if he can't supply you, send us his name and a dollar bill and we'll send you one of each pattern. Be sure to ask for our Assortment No. B-54. MARATHON CATALOG of Flies, Lures and Tackle, & GUIDE TO FLY FISHING FREE with your order!



3 Assorted Patterns for $1

MARATHON BAIT CO., WAUSAU, WISCONSIN

American Flies for American Waters

"SIX YEARS WITH THE TEXAS RANGERS"—World's best history of those famous scouts. 332 pages; illustrated; $4.00 delivered. Address OUTDOOR LIFE BOOK SHOP, Denver, Colo.

Text File lion

STATE GAME COMMISSION
COLIN NEBLETT, CHAIRMAN
SANTA FE, N. M.
J. B. McGHEE,
ROSWELL, N. M.
GILBERTO ESPINOSA,
ALBUQUERQUE, N. M.

ELLIOTT S. BARKER,
STATE GAME WARDEN

DATES OF REGULAR
COMMISSION MEETING
LAST SATURDAY IN FEB.
LAST SATURDAY IN MAY
LAST SATURDAY IN AUG.
LAST SATURDAY IN NOV.

State of New Mexico
Department of Game and Fish
Santa Fe, N. M.

April 14, 1932

Crossing lion radius

Mr. Aldo Leopold
905 University Avenue
Madison, Wisconsin

Dear Mr. Leopold:

It is very difficult indeed to keep all news articles written for the New Mexico magazine confined to exact or technical facts. In the case of the mountain lion rangings referred to by you I will state that Mr. Shuart secured his information from me and quite a number of other persons, but I believe that the statement he makes is somewhat misleading. Probably this statement was based on information given out several years ago by Mr. B. V. Lily about trailing a lion over an excessively large area. I would not, however, want to go on record as stating that a lion actually uses an area with a 100 mile radius. However, I personally know that a lion will travel over a route 100 miles or more in length, often making wide circles, sometimes 50 miles in diameter. I have followed such trails for days without coming up with the lion. While it is my belief that these animals do travel over a much wider area I have no actual proof of it. I have on several occasions hunted out rather large areas to where for months no sign of lion would be seen and then suddenly there would appear one or several lions within the area, indicating clearly a migration of these animals. I followed one male lion from Tusas Mountain thru the Jarita Mesa, across to Comanche Canyon and across the Black Mesa to just below Embudo, where he crossed the Rio Grande. This was a distance of about 60 miles and he was going strong when I left the track.

Also, I have followed a track from 10 miles north of the Colorado line at the head of Vermejo Creek southward thru the mountains to Cimarron Baldy, and he was still headed straight south and had made the trip without making or visiting a kill of any sort. It is my opinion that we get numbers of lions from Mexico which migrate far into the northern part of the state. The occasional finding of the thorns of desert cactus in the feet of lions killed in our northern mountains, both in New Mexico and Arizona, is indicative of extensive traveling.

Mr. Musgrave, of the Forest Service, at Albuquerque, I believe has considerable data as to lion migration and distances that they travel, which probably would be of some interest or value to you in connection with your game management book.

If I can be of further service to you in any way I shall be more than goad to serve you.

With kindest personal regards to yourself and family, I am

Sincerely

Elliott Barker

State Game Warden

esb-p

movements chapter - text

April 5, 1932

Mr. Elliott S. Barker
State Game Warden
Santa Fe, New Mexico

Dear Elliott:

In the last issue of "New Mexico" on page 9, Mr. Shuart states: "A mountain lion has been known to travel over an area within a radius of at least 100 miles."

If he got this information from you did he state your meaning correctly? If so, it would be rather an extreme case of mobility in a non-migratory animal.

I am shortly going to press with my book on game management and would like to cite this if it comes from you.

Yours sincerely,

ALDO LEOPOLD

Hunting Trouble

Pursuit of the Elusive and Wily Predatory Animals is Trouble With a Big "T" for Hunters and Trappers of State and Federal Game Protection Forces



DON COYOTE IN A TRAP

Coyote, Lion, Bobcat and Other Killers of Livestock, Animals, Birds not Decreasing in Numbers—Turn to Rough Country as New Habitat.

By Harry E. Shuart

(Photos by Author and Game Dept. Staff Members)

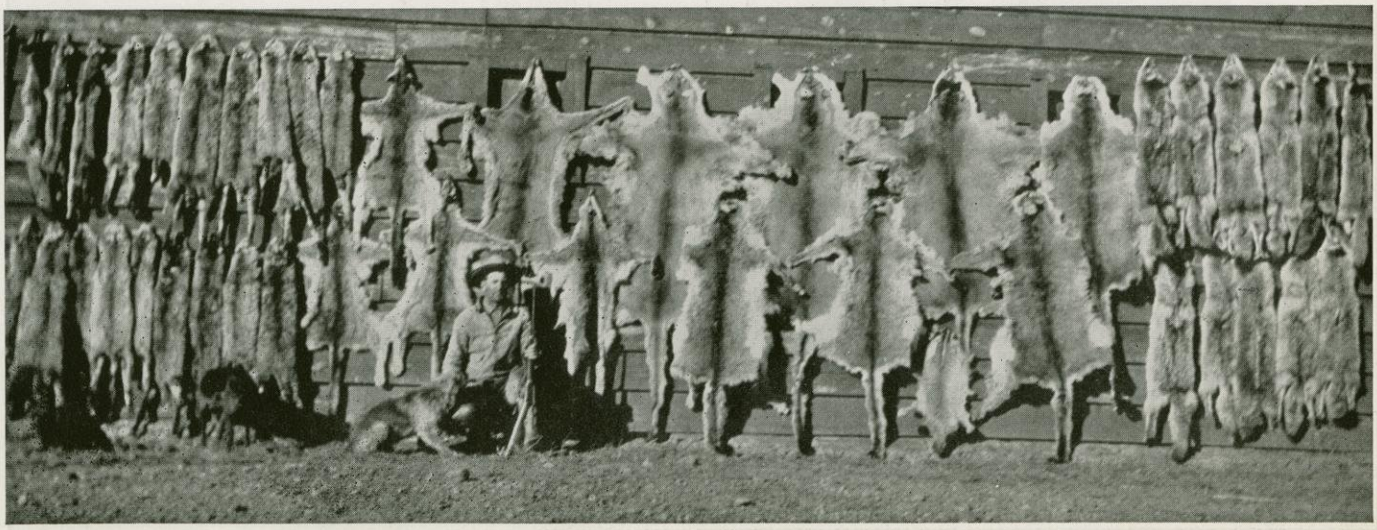
OPTIMISM expressed by the young Chinese servant in San Francisco who, after being advised each day for a week that ten thousand Chinese soldiers and only one hundred Japanese had been killed in the conflict raging around Shanghai, remarked, "Pletty soon be no more Japanese," cannot be felt by game conservationists in New Mexico, when the war that is being waged between mankind and predatory animals is being considered.

Despite the ever-increasing kill of predators, even the most optimistic game conservationist cannot foresee the time when these enemies of game birds and animals will be under control. It is the conservative opinion of the majority of those who may be classed as experts in game affairs that the predatory animal is holding his own insofar as total population is concerned.

Each year, it seems, the successful destruction of the predators, of which the coyote, the bobcat or wildcat and the mountain lion are the most formidable, becomes increasingly more difficult. Each year, according to the most authentic reports that can be obtained, the kill of game birds and animals and of livestock by the predatory beasts holds to about the same figure. True, there is a slight increase shown in the number of predators killed by hunters and trappers of the U. S. Bureau of Biological Survey and of the State Department of Game and Fish, but this increase is taken by some to indicate that there is a greater number to be killed. Others feel that the constantly increased effort on the part of those two official agencies is responsible for the increasing bag of predators.

But none there is who is willing to assert that the predatory population is on the wane.

The report of the Biological Survey for New Mexico shows that the total number of predatory animals killed in the fiscal year of 1928 was 2151. In 1929 the total bag was 2250; in 1930 it dropped back to 2029, and in 1931 reached the top figure of 2810. In the latter year the predators killed were as follows: Bobcats, 364; coyotes,



STATE GAME WARDEN BARKER AND HIS SEASON'S BAG OF LIONS, COYOTES AND OTHER PREDATORS

2336; lions, 70; wolves, 4; wild dogs, 6; hybrids—a cross between a wolf and a dog,—2, and stock-killing bears, 2. During the four last fiscal years the total bag of predatory animals, according to the Biological Survey report for the New Mexico district, shows 1290 bobcats, 7701 coyotes, 164 lions, 13 wolves, 33 wild dogs, 3 hybrids, and 2 bears, making the kill for the four-year period of all types of predators 9240.

Until recently, the State Department of Game and Fish has not engaged actively in hunting predatory animals. At present, however, 7 men are partially engaged in that work, five of whom are trapping and two who are hunting lions with dogs.

Among the predators the coyote offers the greatest problem for game conservationists. This cunning cousin of Fido or Towser—our faithful canine friends—is the most prolific and versatile of all of the game killers. Coyotes rear large families yearly, eat anything whether fresh or carrion, whether meat or vegetable or fruit, breed under almost every condition and adapt themselves to any type of country, whether plains or mountains, whether wilderness or inhabited by man.



DEPUTY WARDEN BERT BACA MAKES A "TRAIL SET"

Trappers and hunters are agreed that the coyote is the most difficult of all of the predators to catch or kill. His cunning has increased in the same ratio that the pursuit of him has increased, until today human ingenuity is taxed to the utmost to trap *Don Coyote*.

In the plains country which has been his natural habitat for years, the coyote is a killer of sheep, small calves, rabbits and birds. So long as he confines his dietetic choice to jackrabbits and other rodents, no objection is voiced by the sportsmen or the conservationist, but *Senor Coyote* apparently seeks a diversified menu and plays havoc with the sheep flocks during lambing season.



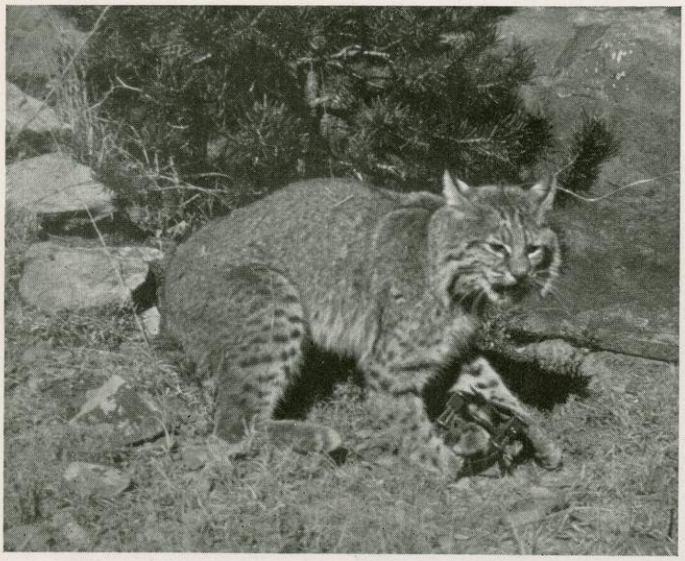
THE "TRAIL SET" COMPLETED--WHERE IS THE TRAP?

He has been hunted with more success in the plains country than elsewhere. Poison baits have accounted for many thousands. It is on the plains that the only type of coyote hunting that can be considered sport is found. With greyhounds and wolfhounds, those slender high-speed members of the canine species, hunters on horseback or in motor cars if the country is level, often engage in the sport of coyote coursing but it is an extremely fast-moving and fast-thinking dog that can master the coyote. It is a hard-fighting dog, too, which can whip a coyote after the chase is ended.

The coyote, adaptable rascal that he is, has added the rough country in the hills to his original plains habitat. Apparently he has followed civilization into the mountains and has found the change to his canine liking. *Don Coyote,* because of his appetite for mutton has followed the sheep bands from the plains into the mountains and there has added venison to his diet. Especially in the winter has the mountain coyote become a pronounced deer killer. Undoubtedly the continuous pursuit and trapping of the coyote on the plains has caused many of the wiser ones to desert that original habitat and to adopt the mountains as their home.

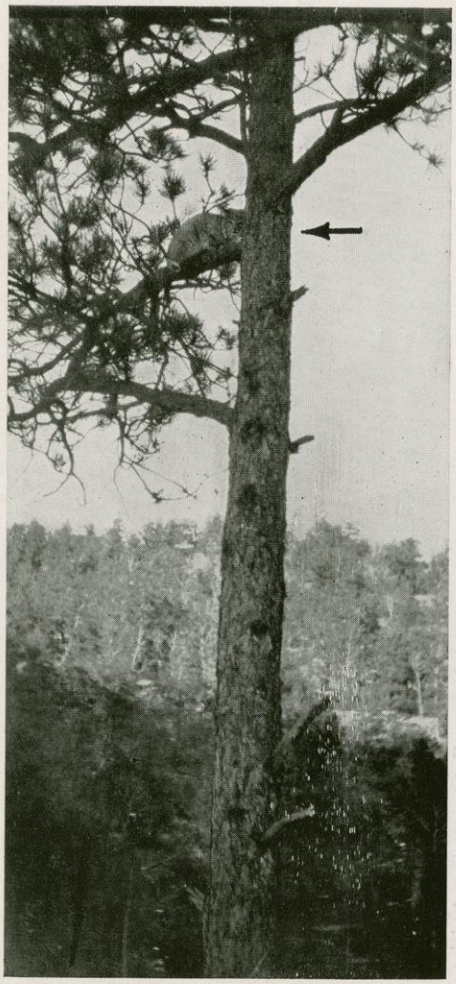
These mountain prowlers have become what may be termed "super-animals". They seemingly have found the venison diet not only to their liking but to their benefit for the mountain coyote has become a larger, stronger and more vicious animal than his cousin who remained on the plains. In the rough country the confirmed deer-killing coyote, according to estimates of game experts, will account for twenty deer a year. Of course, the greater bulk of his kill consists of fawns and does, although many instances are known where bucks have been the victims of an attack where two or three coyotes have banded together for the kill. And this slaughter of deer would be even greater were it not for the fact that the coyote is a carrion eater and does not demand fresh meat but is willing to return to his kill until it has been completely devoured.

The only successful methods of keeping down the mountain coyote population is through trapping or poisoning, which latter method is undesirable because it endangers game animals and hunting dogs. It is no mean accomplishment on the part of man to be able to outwit and trap this wily killer. Trappers for the Biological Survey and the game department are constantly on the hunt for new "baits," "scents" or "lures" that will attract *Senor Coyote* into their traps. The trapper who possesses a "scent" which is successful guards the formula as jealously as does Uncle Sam his military secrets. The average scent with which we have come in contact, however, may remain a secret as far as we are concerned. It appears to be a combination of all the known malodorous substances in the world and certainly, if it is attractive



THIS WILDCAT "GOT HIS FOOT IN IT"

to a coyote, it does not convince us that the coyote is the possessor of any of the finer sensibilities. In addition to the constant companionship of this olfactory disturbance, the successful trapper of a coyote must remember that he is a human being and that the slightest trace of a misplaced human scent will send his quarry scurrying and skulking from the vicinity of any trap no matter how well it may be concealed.

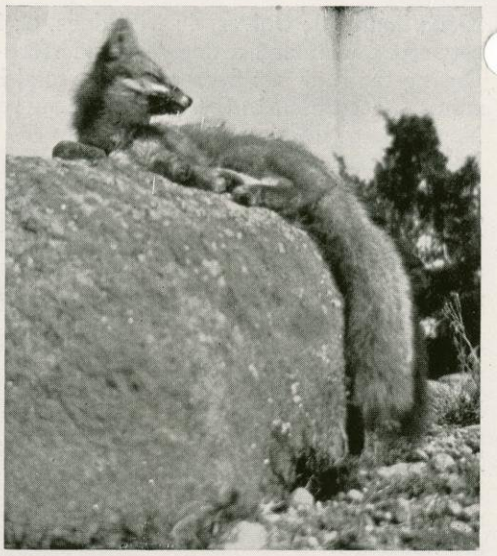


THE DOGS GOT TOO CLOSE SO THIS WILDCAT TOOK TO THE TREE

As the coyote has become increasingly cunning the careless trapper has been eliminated from the picture, so far as successful catches are concerned. His operations serve only to educate the animals to beware of traps.

The amateur trapper who hies himself forth in the quest of predatory animals with an assortment of equipment that would make the average ear, eye, nose and throat specialist ashamed of his lack of tools, finds no place in the present order of things.

The successful trapper — the chap who makes a business of catching predators, and really catches them — carries as little equipment as possible. The game department trapper, for instance, carries in his kit in addition to the traps, a piece of canvas about three feet square, a stout little shovel six or eight inches long and four inches wide, a small bottle of the aforementioned "scent", and some trap canvasses.



BRER GRAY FOX IS NOT A HAPPY CAPTIVE

Having selected a proper place for a set—and this selection must be right or there will be no catch, regardless of how well the set is made—the trapper spreads the canvas to the edge of the location of the trap. On this he stands or kneels so that no "man scent" will be left on the ground. Then he proceeds to dig a hole just big enough to contain the trap and the "clog" or "drag". The drag usually consists of a double steel hook to which the trap chain is attached and which will catch in brush or trees as the trapped animal attempts to escape. The cog is usually a small wooden block to which the trap chain has been securely fastened.

As the trapper excavates he places all dirt removed on his working canvas and disturbs the earth as little as possible outide of the actual excavation. After the trap has been spread and the trigger set so that the trap will spring when the animal steps on the little metal pan in the center, it is placed in the excavation so that it is about one-half inch below the natural surface of the dirt. The



A YOUNG MOUNTAIN LION TREED--HE LOOKS CUTE BUT HE'S A TOUGH HOMBRE

trap chain is placed in the hole as smoothly as possible before the trap is set in place. The clog to which the chain is fastened has been laid flat in the bottom of a deeper aperture and has been worked firmly down into the dirt so that even the most frantic efforts of a trapped animal are unlikely to pull it loose.

When the trap has been put into the proper position and dirt has been carefully placed about it — always with the shovel and never with the human hands so as to leave a scent trace —it is covered with a small piece of canvas just the size of the trap jaws when they are open. A small slot has been cut in one side of the canvas to permit the trigger to function properly. After the canvas has been spread over the trap, dirt is carefully placed in the excavation to bring it up to the original ground level. The entire set is then covered with a thin layer of dry dirt, twigs, or leaves so that it will conform as nearly as possible to the original appearance of the spot before the trap was set. There should not be and usually is not the slightest evidence that man has been in the vicinity.



GAME DEPARTMENT HUNTERS AND THEIR DOGS IN A BACK COUNTRY CAMP

After this reproduction of Nature which would stir envy in the heart of any artist, the trapper proceeds to place on the ground near his set or on nearby shrubbery that weird clash of odors that we have characterized heretofore as "scent".

Yet with all of these precautions, it is an even bet that *Don Coyote* will not step into the trap. Time and again the trapper returns to find where his quarry has circled the set cautiously, possibly two or three times and then has departed, seemingly in a hurry. Something was wrong. It may have been just the slightest trace of misplaced odor or an unnatural bait, but it was a warning as loud as a fire siren so far as *Senor Coyote* was concerned.

In the trapping of coyotes and bobcats, which are also known as wildcats and big lynx, the trapper who works on horseback maintains a line of traps from ten to twenty miles in length. A portion of these he visits each day and usually visits the entire line within a two-day period or within three days at the most. In the plains country where travel by automobile is possible the trapper's line will extend from 100 to 150 miles.



DEPUTY BACA (LEFT) AND "POP" FISHER, LION HUNTER, ON A RECONNAISANCE TRIP

The mountain lion, the largest and most vicious of the predators in New Mexico, now that the wolf has been virtually eliminated from the state, offers a different problem for the hunter. Lions are, as a rule, not trapped successfully. True, some have been trapped but the great majority of those bagged by the predatory hunters are taken by the use of dogs which trail the lions and tree them. In New Mexico there are several packs of dogs which have been trained for this work and which will disregard any other trail than that of a lion, except perhaps the trail of a bobcat.

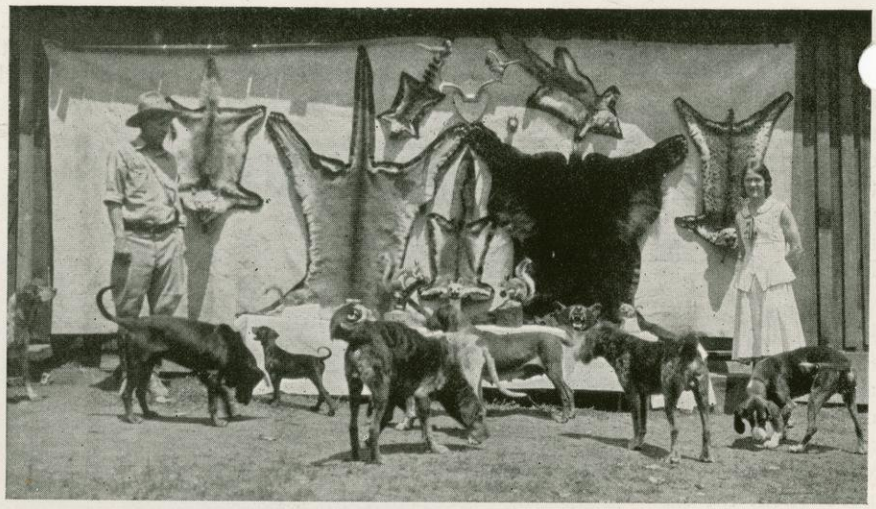
The lion population is much smaller than that of the coyote. Estimates of the number of lions in New Mexico vary but it is the consensus of game experts that there probably are not in excess of 300 lions in the state. This giant member of the cat family maintains a habitat almost exclusively in the rough country. A mountain lion has been known to travel over an area within a radius of at least 100 miles. The lion differs from the coyote in the fact that he usually is a lone traveler. This is especially true of the male lion. Following the mating season the male strikes out to patrol his range which may carry him over long distances daily. The female remains in one general locality until her young are born and reared to the self-supporting age. The young will travel with the female lion until they are eight to twelve months old when she leaves them to shift for themselves and goes again in quest of her mate. She may find him many miles away but that is her job. He does not return to her, but he has made it easy to be found.

The egotistical confidence of the male of the species

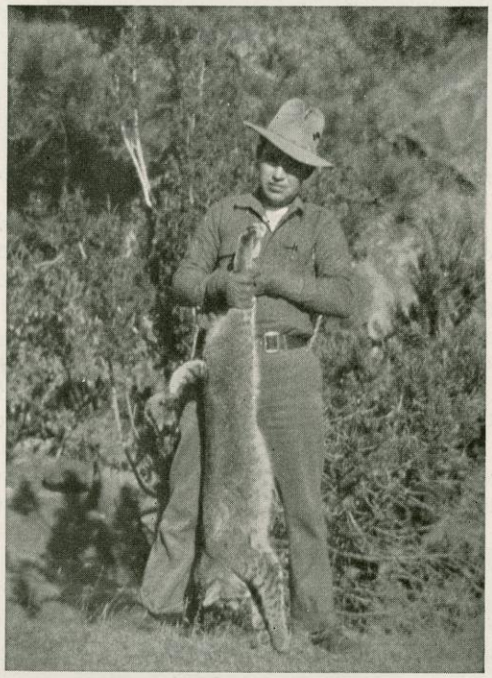
is shown by the fact that he has left during all of his travels certain signs and marks that the female recognizes. Here and there along his trail will be found claw marks, known as a "scrape", left in such a way that they cannot escape his mate's notice, and which in lion language tells her not only which way he has gone but that he will be back. And unless either he or she has run afoul of a hunter she will find him or wait for him on his regular patrol route no matter how far he has traveled or how rough the traveling may be.

The average adult lion, according to estimates by game experts will account for one deer a week where the lion is ranging in a fairly well populated deer country. The lion, contrary to popular belief, is not beef eater by choice. A cow, a steer or a calf is perhaps one of the last victims which the lion seeks. Preferred delicacies on the lion's menu are venison and mutton, or horseflesh—with deer meat preferred. The mountain lion is one of the few animals that successfully kills and *eats* the porcupine.

In certain areas of the state lion hunters are virtually certain to strike a fresh trail eventually. There are other portions where a lion has not been seen for many years, but the lion hunter is reasonably certain to find his quarry if he confines his activities to the rough country where the deer population is comparatively heavy. Lion hunting, although it is a business with the predatory animal control men enters into the catagory of sport with others. There are, in the state, several packs of lion dogs which are maintained for the use of sportsmen who accomplish the dual purpose of hunting one type of big game and protecting another by killing lions.



HUNTER ST. JOHN FINDS "BUSINESS GOOD"



BACA "HOLDS THE KITTY"

Dogs trained to hunt lions are able to pick up a trail many hours old and under favorable weather conditions they may be able to follow a scent that has been left as much as three or four days before. If they strike the trail of a male lion the hunters may travel many miles before the chase is ended with the animal treed. In the case of a female lion the hunt probably will not cover as much territory especially if she still is caring for her young.

The lion is capable of traveling at a fairly high rate of speed for short distances but eventually dogs will close in on the animal until it is forced to seek refuge in a tree. Even then the chase may not be ended. A lone dog, or even two, often fail to hold their quarry which may decide to put up a fight. In such cases the odds are against the dog or dogs but it is seldom that a lion has the temerity to leap from its treetop shelter into a battle with three or more pursuers.

If the lion hunter is a good shot the story is ended, but if his shot fails to kill and the wounded lion comes toppling out of the tree he may account for one or two dogs before he finally is killed. There probably is no more vicious animal than a wounded lion brought to bay. One sweep of the claws may mean the death of a good hunting dog. The wounded lion has an attack that the average dog cannot fathom. It catches the dog with its claws, pulls the animal in closely and breaks its neck with one bite of its powerful jaws. It is seldom that a dog survives in such a battl

During the recent winter months the lion k in New Mexico has been unusually heavy. Several reports of kills of four or five animals within a period of two days having been made. In all cases these have been female lions accompanied by their young.



MAMMA LION AND FOUR OF THE FAMILY "PASS OUT"

(Continued on page 32)

File: California
Deer
Mountain Lion

CROSS REFERENCE

See "Factors Influencing Wild Life in California, Past and Present," by Tracy I. Storer. Ecology, Vol. XIII, No. 4, October 1932, pp. 315-327.

File Jaguar

Nelson.E.W. and Goldman,E.A. "Revision of the Jaguars" Journal of Mammalogy Vol I4 No 3 (August I933) pp 22I-240.

(Including a few brief notes on life history)

Library of
Aldo Leopold

Jaguars Folder

REVISION OF THE JAGUARS

BY

E. W. NELSON and E. A. GOLDMAN

REPRINTED FROM
JOURNAL OF MAMMALOGY, VOL. 14, NO. 3, AUGUST, 1933

Reprinted from JOURNAL OF MAMMALOGY
Vol. 14, No. 3, August, 1933, pp. 221-240

REVISION OF THE JAGUARS

BY E. W. NELSON and E. A. GOLDMAN

The jaguars, the largest of American cats, are leopard-like in general appearance, but the larger size, more massive head and generally more robust form are distinguishing features. They inhabit the warmer parts of North and South America. There are records from California, northern New Mexico and well north in Texas, but the present range is from Arizona, southern New Mexico, and the Rio Grande Valley south to about 40° south in south-central Argentina. The common name, jaguar, now very generally applied to the animal, is derived from the South American Indian name "jaguara." The meaning of the name, according to Liais (Clim. Géol., Faune du Brésil, 1872, p. 450), is "carnivore that overcomes its prey at a single bound." In Brazil the jaguar was distinguished by the Portuguese as "onça verdadeira" (true ounce) or "onça pintada" (spotted ounce), from the puma, known as "onça parda" or "onça vermelha" (red ounce). In much of Latin America, however, these animals are now referred to, respectively, as the "tigre" and the "leon."

While the larger jaguars exceed the larger leopards in size and physical power and are very destructive to large animal life they are completely lacking in the ferocious aggressiveness sometimes shown by leopards in their encounters with man. In fact, the jaguars, although feared by natives in their tropical habitat, so rarely attack man that reports of such occurrences are very difficult to verify. In both North and South America they appear to have much the same shyness and dread of man as is shown by the puma or mountain lion, although they are claimed to be more dangerous in parts of South America.

It is doubtful whether any wild or domestic animal is safe from their onslaughts. Cattle, horses, and hogs are included in known jaguar depredations and many accounts indicate their special fondness for the flesh of peccaries. The large herds of white-lipped peccaries that roam tropical American forests are systematically followed and preyed upon by them. The great power and ferocity of their attacks are indicated by the fact that in 6 out of 92 skulls examined one or more of the canine teeth had been broken. In one instance all of the canines had been broken off short, and yet the animal, an adult male, had been able to subsist in spite of this handicap, as shown by the smoothly worn stubs. The broken canines suggest that these teeth, while fairly large, may be relatively weak for an animal with such powerful masseter muscles. In

the puma, on the other hand, the canines are rarely broken, but nasal and frontal contusions exhibited by a considerable number are evidently the result of mishaps in bringing down their prey.

Since the time of Azara (Apunt. Hist. Nat. Quad. del Paragüay, vol. 1, pp. 89–91, 1802) the question of the number of species of jaguars has been discussed. Azara referred to a belief of some of the people that two normally colored kinds of jaguar occur in the region. One of these was called the "yagüareté" and the other, the "yagüareté-popé," was thought to be of heavier proportions, and to differ in general color and arrangement of spots. The latter was also regarded by some as a fiercer animal and more dangerous to man. Azara, however, with his usual accurate appraisal of evidence discredited this belief and recognized only one kind, aside from the black phase of the jaguar, or "yagüareté negro," and his conclusions have been supported by more recent information. The concept of two kinds, based apparently upon individual variation, led to the naming of *Felis onca major* and *Felis onca minor* by Fischer.

The present brief outline of the relationships of the jaguars is the result of a study of material available in the principal North American museums, including the types of most of the described forms. Probably for the first time specimens of the jaguar have been assembled in sufficient series to give a clear concept of the ranges of individual, sexual, age and geographic variations. A total of 101 specimens have been examined, as follows: 35 skins and skulls, 57 skulls without skins and 9 skins without skulls. This is, however, far too small a number for an exhaustive revision, and some of the forms remain very imperfectly known. The geographic ranges of the forms are given as definitely as possible, but are of course very incomplete. A remarkable uniformity in the more essential characters of jaguars, regardless of locality, forces the conclusion that all are assignable to a single species. The ground color, and the size and arrangement of spots are so variable that little dependence can be placed upon them as characters, although slight average differences of subspecific value are presented in some cases.

Changes in size and minor cranial details from region to region are fairly constant, however, and serve to differentiate the various closely allied and obviously intergrading geographic races. Regional modifications, especially in size, are more irregular than in the puma, in which they are quite uniformly progressive from the largest subspecies in the northern Rocky Mountains through small tropical representatives to another large subspecies in southern Argentina. In the jaguars small subspecies may occur in close proximity to larger ones. An example is

Felis onca goldmani of Campeche, Mexico, the smallest of jaguars, which is replaced in the neighboring states of Tabasco and Vera Cruz by a much larger animal.

For the loan of specimens we are greatly indebted to Mr. H. E. Anthony, American Museum of Natural History, New York City; Dr. W. H. Osgood, Field Museum of Natural History, Chicago, Illinois; Mr. F. W. Miller, Colorado Museum of Natural History, Denver, Colorado; Dr. G. M. Allen, Museum of Comparative Zoology, Cambridge, Mass.; Mr. J. Kenneth Doutt, Carnegie Museum, Pittsburgh, Pennsylvania; Mr. John M. Phillips of Pittsburgh, and to Mr. Charles M. B. Cadwalader and Mr. James A. G. Rehn, Academy of Natural Sciences, Philadelphia, for especially valuable material obtained by the Matto Grosso Expedition in Southern Brazil.

Specimens examined, unless otherwise indicated, are in the United States National Museum.

Felis onca Linné

[References under subspecies]

Distribution.—Nearly transcontinental; found at the lower altitudes from the Grand Canyon, Arizona, southern New Mexico, and central Texas south at least to the Parana Valley, central Argentina. Mainly tropical in dispersal; not usually ascending into the colder belts at high altitudes.

General characters.—Size large—the largest of American cats. Form robust. Tail relatively short and tapering. Ears small, short and rounded, without elongated terminal tufts. Pelage short and rather bristly. Upper parts profusely spotted at all ages. Similar in general appearance to *Felis pardus* of the Old World, but differing notably as follows: Form more robust; skull presenting differential details, especially the relatively shorter canines; lower canines scarcely reaching plane of lower border of anterior nares (in *pardus* reaching well above this plane); canine longitudinal grooves absent or obsolescent; tail shorter and tapering; large pads, especially on soles of front feet, more evenly rounded; black rings outlining spots or rosettes similar to those of *F. pardus*, those on sides tending to enclose one or more small black spots (usually absent in *pardus*).

Color.—Ground color of upper parts varying from light ochraceous buff or pale straw color to light golden tawny or tan color, nearly uniform over median dorsal area from top of head to base of tail, becoming gradually paler to near cinnamon buff or light buff on checks, sides of neck, lower part of flanks and outer surfaces of legs; body in general heavily spotted with black; dorsum, except median line on posterior part of back and sides, marked by irregularly circular or crescentic or broken spots that tend to form rosettes or enclose smaller spots in a darker field than the general ground color; median line on posterior part of back bearing elongated, solid black spots that tend to present an irregular lateral paired arrangement or to become confluent; top and sides of head, neck, and feet marked by smaller black spots; under parts and inner surfaces of legs white,

heavily spotted with black; throat, under side of neck and inner sides of forelegs marked with more or less confluent black spots that tend to form transverse bars; upper surface of muzzle varying from pinkish buff to clay color, unspotted; cheeks, forehead, and feet with small, rounded black spots; upper and lower lips white near middle, becoming abruptly black toward angles of mouth; outer sides of ears deep black, with small buffy median spots; inner sides of ears thinly clothed with whitish hairs; tail with crowded, irregular black markings, separated on basal half above by narrow pinkish buffy or cinnamon buffy interspaces, becoming white below and toward tip, which is usually black. Some of the subspecies average darker than others; in some individuals the ground color is darker and richer than in others from the same locality. Average differences in the size and form of rosettes may be of subspecific value, but individual variation is extraordinary. No two animals are exactly alike and the spots may differ even on the right and left sides of the same individual.

Remarks.—Felis onca is subdivisible into very closely allied subspecies or geographic races. The males are larger than the females but males of a small form may be exceeded in size by females of a large form. In addition to larger sizes, as compared with females, the skulls of males are usually recognizable by their angularity, especially the greater development of the sagittal and lambdoid crests. Individual variation covers a wide range and adds to the difficulty of making accurate identifications. The most reliable distinguishing characters for the various subspecies are the differing combinations of size and cranial details as presented by average individuals. The following features are subject to important modifications: Form of the skull in upper outline; height and inflation of frontal region; width of rostrum; form of nasals; development of lambdoid crest; width and depth of interpterygoid fossa; form of audital bullae (with allowance for great individual variation); and size of teeth, especially the canines.

Felis onca onca Linné

East Brazilian Jaguar

[Felis] *onca* Linné, Syst. Nat., ed. 10, vol. 1, 1758, p. 42.

Type locality.—Pernambuco (now Récife), Brazil (fixed by Thomas, Proc. Zool. Soc. London, 1910, p. 136, Mar., 1911).

Distribution.—Extreme eastern Brazil west and north to the lower Amazon.

General characters.—A large subspecies approaching *paraguensis*, but skull smaller; frontal region less elevated behind postorbital processes; temporal ridges tending to unite to form the sagittal crest farther anteriorly; sagittal and lambdoid crests strongly developed, much as in *paraguensis;* audital bullae more fully inflated; dentition heavy. Compared with *major* of Surinam the skull is decidedly larger, with relatively much more prominent sagittal and lambdoid crests. The original description of *mexianae* indicates that the skull of typical *onca* differs from it in larger size and probably in other details. For cranial measurements see table, p. 232.

Remarks.—F. onca was based by Linné upon early accounts of the jaguar in Brazil. Of the species he merely says, "*Habitat* in America Meridionali." Unfortunately no specimens from near the type locality of *onca*, as fixed by Thomas, are available for our study. In the absence of such material we have

regarded skulls from the valley of the Rio Tocantins as the most likely, among those at hand, to represent this form, and have used them as a basis for comparisons.

Measurements.—No external measurements available. *Skull* (see table, p. 232).

Specimens examined.—Three, from Brazil, as follows:

PARA: Lower Amazon, 1 (skull only[1]); Tocantins River Valley, 2 (skulls only).

Felis onca coxi, subsp. nov.

Espiritu Santo Jaguar

Type.—From north of Rio Doce, Espiritu Santo, Brazil. No. 256388 [♀ ad.], skull only, U. S. National Museum, collected by W. T. Cox, 1931.

Distribution.—Eastern Minas Geraes and Espiritu Santo, Brazil; limits of range unknown.

General characters.—A small, light buffy or straw-colored subspecies. Much smaller than its geographic neighbors, typical *onca* or the Matto Grosso animal, described beyond, resembling the latter in color but differing from both in cranial details.

Color.—*Skin from upper Rio Doce, Minas Geraes:* Ground color of upper parts in general light ochraceous buff or yellowish straw color, slightly darker within the rosettes than in the interspaces, becoming still paler, less yellowish, and near light buff on sides of neck, flanks, and outer surfaces of legs; black spots and rosettes rather large and heavy, some enclosing smaller spots as in the other forms; black spots large, irregular, and partly confluent along median line on posterior part of back; under parts and inner surfaces of legs white, heavily spotted with black; tail with irregular heavy black markings throughout its length, separated by narrow interspaces, light buffy near base above, becoming white thinly mixed with black toward tip and white below.

Skull.—Cranium small, with a low sagittal crest and well-developed lambdoid crest. Compared with that of subspecies *onca* the skull is much smaller; frontal region more constricted immediately behind postorbital processes; bullae relatively broader, somewhat flatter posteriorly near line of contact with exoccipitals. Very much smaller, less angular than that of *F. o. milleri*, the Matto Grosso jaguar; frontal region much less highly arched, the sides most deeply constricted immediately behind postorbital processes (sides of frontals inflated behind postorbital processes in Matto Grosso form); fronto-parietal suture more evenly transverse instead of forming a narrow V pointing forward on the median line.

Measurements.—Flat tanned skin from upper Rio Doce, Minas Geraes: Total length, 2190 mm.; tail, 565. *Skull* (see table, p. 232).

Remarks.—*F. o. coxi* contrasts strongly in size with its much larger geographic neighbors in the Parana and Paraguay river valleys. Two skulls received many years ago from Herman von Ihering, and probably taken in the general vicinity of São Paulo, were at first assigned here but seem referable to the form described on p. 228. This new subspecies is named for the collector of the type, Mr. W. T. Cox, in recognition of his extensive studies of wild life.

Specimens examined.—Total number, 4, as follows:

---

[1] Collection Amer. Mus. Nat. Hist.

MINAS GERAES: Near Rio Doce, near eastern part of state, 1 (skull only); upper Rio Doce, 1 (skin only).
ESPIRITU SANTO: North of Rio Doce (type locality), 2.

Felis onca milleri, subsp. nov.

Matto Grosso Jaguar

Type.—From Descalvados, Matto Grosso, Brazil. No. 26552, ♀ adult, skin and skull, Field Museum of Natural History, collected by Mrs. Marshall Field, August 4, 1926.

Distribution.—Upper part of Paraguay River Valley, in southwestern Brazil and southeastern Bolivia.

General characters.—One of the largest of the jaguars—about equalling *paraguensis*. Ground color of upper parts pale—near light ochraceous buff. Skull larger than in *onca*, and differing in detail. Much larger than *coxi* of southeastern Brazil.

Color.—Type: Ground color of upper parts in general, including outer surfaces of forelegs and thighs, light ochraceous buff, slightly darker in tone within the rosettes than in the interspaces, paling to near light buff on sides of neck, flanks, and feet; black rings of rosettes large and most of them broken, enclosing one to four or five small black spots; black spots narrow and elongated along median line of back posteriorly; black spots on head and outer sides of legs large; under parts and inner surfaces of legs white, interrupted by large irregular black spots; tail with irregular heavy black markings, separated by narrow interspaces, ground color light ochraceous buff near base above, becoming white thinly mixed with black toward tip, and white below. In a very young individual from Corumbá, Brazil, the spots on the upper parts are angular and closely crowded leaving uniformly narrow interspaces and forming a well defined, reticulated pattern.

Skull.—Closely resembling that of *paraguensis* in large size, massiveness and angularity, but upper outline more arched, rising higher behind postorbital processes; frontal region broader and higher, the sides more expanded below temporal ridges; posterior nares and interpterygoid fossa narrower and deeper, the interpterygoid space more deeply concave as viewed from below; nasals broader, the anterior ends usually more divergent, narrowing more abruptly posteriorly; parietals developed forward and encroaching farther on frontals along sagittal crest than in most subspecies; dentition similar to *paraguensis* but molariform teeth rather light. Compared with *onca* the skull is larger; frontal region more elevated behind postorbital processes, the sides distended and bulging more prominently below temporal ridges; temporal ridges tending to unite to form the sagittal crest farther posteriorly; sagittal and lambdoid crests strongly developed, as in *onca;* audital bullae less fully inflated; dentition similar. Compared with that of *coxi*, the skull is much larger; frontal region more highly arched, the sides constricted farther posteriorly near fronto-parietal suture.

Measurements.—Type (tanned skin): Total length, 1880 mm.; tail, 475. *Skull* (see table, p. 232). An adult male topotype (in flesh): Total length, 2419 mm.; tail vertebrae, 665; hind foot, 302. Another adult male topotype: Weight (on platform scale), 290 lbs. An adult female topotype (in flesh): Total length, 2116 mm.; tail vertebrae, 604; hind foot, 255.

Remarks.—As the geographic range of the present form closely adjoins that of *paraguensis* the cranial peculiarities noted are remarkable. This case is paralleled, however, by similarly abrupt modification of characters along geographic lines elsewhere. The new subspecies is named for Mr. F. W. Miller who, in connection with his work for the Colorado Museum of Natural History, has made an important contribution to knowledge of the mammals of southern Matto Grosso. Mr. Miller referred specimens from Descalvados to *F. ramsayi*, which he proposed as a substitute name for *F. paraguensis* as indicated in our remarks under that form.

Specimens examined.—Total number, 19, all from Matto Grosso, Brazil as follows:

Corumbá, 5 (2, skulls only); [2]Descalvados, 13; [3]Lake Uberaba (on boundary between Brazil and Bolivia), 1 (skull only).

Felis onca paraguensis Hollister

Paraguay Jaguar

Felis paraguensis Hollister, Proc. U. S. Nat. Mus., vol. 48, p. 169, Dec. 16, 1914 (1915). Type No. 4128, [♂] adult, U. S. National Museum, collected by Capt. T. J. Page, about 1860.

Felis notialis Hollister, Proc. U. S. Nat. Mus., vol. 48, p. 170, Dec. 16, 1914 (1915). Type from San José, Entre Rios, Argentina, No. 4361, [♀] adult, U. S. National Museum, collected by Capt. T. J. Page, August, 1860.

Felis ramsayi F. W. Miller, Journ. Mamm., vol. 11, no. 1, p. 14, Feb. 11, 1930. Substitute name for *F. paraguensis*.

Felis o[*nca*] *paraguensis* Barbour, Records North Amer. Big Game, Dec., 1932, p. 155.

Type locality.—Paraguay.

Distribution.—Paraguay, adjoining part of Parana River Valley, Brazil, and northeastern Argentina.

General characters.—One of the largest of the jaguars. Color undetermined but probably similar to *milleri*. Skull about like that of *milleri* in size and angularity, but frontals less elevated behind postorbital processes, the sides less expanded below temporal ridges; posterior nares and interpterygoid fossa wider and shallower, the interpterygoid space less deeply concave; nasals narrower, tapering more gradually to posterior ends; dentition similar but molariform teeth rather heavy.

Measurements.—No external measurements available. Skull (see table, p. 232).

Remarks.—No skins of *paraguensis* have been examined by us and the color, therefore, has not been determined. *F. notialis* was based upon a skull regarded by the describer as that of a male, but which, with the advantage of more material for comparison appears to us to be that of a female. It agrees closely in essential characters with the type of *paraguensis*. *Felis ramsayi*, was proposed by F. W. Miller as a substitute name for *Felis paraguensis* on the ground that the latter

---

[2] Collection Amer. Mus. Nat. Hist.

[3] One in Field Mus. Nat. Hist.; 3 in Colorado Mus. Nat. Hist.; 9 in Acad. Nat. Sci. Phila.

was preoccupied by *Panthera paragayensis*. This name, however, was applied to an ocelot by Oken in 1816. A substitute name takes the same type specimen as that of the name replaced and therefore *F. ramsayi* has the same type as *F. paraguensis*. Oken consistently wrote "Paragay" for Paraguay and the differently-formed derivatives from such different names are not regarded by us as synonymous. *F. ramsayi* is therefore a synonym of *F. paraguensis*.

Specimens examined.—Total number, 4, as follows:

ARGENTINA: San José, Entre Rios, 1 (skull only—type of *notialis*).

BRAZIL: Campo Grande, Matto Grosso, 1 (skull only).

PARAGUAY: Puerto Pinasco, 170 kilometers west of Riacho Salado (in disputed territory), 1 (skull only); without definite locality, 1 (skull only—type).

Felis onca paulensis, subsp. nov.

Southeast Brazilian Jaguar

Type.—São Paulo region, southeastern Brazil (exact locality undetermined). No. 100123, [♀] adult, skull only, U. S. National Museum (Biological Survey collection), received from Herman von Ihering, June, 1900.

Distribution.—São Paulo region; probably widely distributed in southeastern Brazil.

General characters.—Size very large—about as in *milleri* and *paraguensis*, but differing in cranial details from both. Differing from *coxi* most notably in much larger size.

Color.—Undetermined.

Skull.—Closely approaching that of *coxi* in general form, but much larger, more massive and angular; sagittal crest much more strongly developed; temporal ridges more abruptly curved inward, uniting to form the sagittal crest farther forward. Similar in size and angularity to *milleri* and *paraguensis*, including the prominent sagittal and lambdoid crests, and dentition about the same. Distinguished from *milleri* by much narrower, less distended frontal region immediately behind postorbital processes; temporal ridges more abruptly curved inward, uniting to form the sagittal crest farther forward; interpterygoid fossa similarly narrow, but shallower. Differing from *paraguensis* in broader frontal region behind postorbital processes; bony palate decidedly narrower in front of interpterygoid fossa, interpterygoid fossa narrower, but deeper.

Measurements.—No external measurements available. *Skull* (type): Greatest length, 266.2; condylobasal length, 235.5; zygomatic breadth, 175.4; width of rostrum (behind canines), 70.5; interorbital constriction, 47.7; width across mastoid processes, 111.5; width of interpterygoid fossa, 23.8; upper canine-premolar series (alveoli), 76.3; crown length upper carnassial, 26.6; diameter upper canine (antero-posterior), 20.8.

Remarks.—*Felis onca paulensis* is based upon three skulls—one of an adult male in the Academy of Natural Sciences of Philadelphia, labelled São Paulo, and received from E. D. Cope many years ago, and two adult females in the U. S. National Museum, from the general region, received in June, 1900, from Herman von Ihering. This material is unsatisfactory, owing to the lack of more exact locality data, but the three skulls agree so closely among themselves, and differ

collectively so uniformly in important details from the neighboring forms that subspecific recognition seems warranted. Unfortunately no skins are available and the color must be left for later determination.

Felis onca boliviensis, subsp. nov.

Bolivian Jaguar

Type.—From Buena Vista, Santa Cruz, Bolivia. No. 34344, [♂] adult, skin and skull, Field Museum of Natural History, collected by J. Steinbach in 1924. Original number 1462.

Distribution.—Lower eastern slopes of Andes in central Bolivia, limits of range unknown.

General characters.—Similar in general to *milleri* but smaller and ground color of upper parts darker and richer in tone; cranial characters distinctive. Apparently differing from the little known form *peruviana*, of the coast region of Peru, in cranial details, especially the more oblique position of the paroccipital and mastoid processes.

Color.—Type: Ground color of upper parts in general, including outer surfaces of forelegs and thighs, near cinnamon buff, slightly darker in tone within the rosettes than in the interspaces, becoming paler buff on sides of neck, flanks, and on feet, the ground color along sides of body fading gradually into white of under parts; rosettes large and forming numerous complete circles or rings, but narrowly outlined, most of them enclosing one to four or five smaller spots; black spots on head and outer sides of legs of medium size; under parts and inner surfaces of legs white, with the large black spots or irregular blotches usual in the group; tail with irregular black markings, separated by narrow interspaces, light cinnamon buff near base above, becoming white thinly mixed with black toward tip, and white below. In a topotype the ground color above is of a brighter, richer cinnamon buff than in the type.

Skull.—Similar in general to that of *milleri*, but smaller, with upper outline more evenly arched; frontal region narrower, higher, more convex in front of postorbital processes, less elevated and less bulging laterally as well as upward behind postorbital processes; postorbital constriction near postorbital processes instead of farther posteriorly near fronto-parietal suture as in *milleri;* crown of carnassials, above and below, actually longer, therefore relatively decidedly longer, measured antero-posteriorly; canines about the same. Apparently differing from *peruviana* in the flatter, less highly arched upper outline; postorbital constriction nearer postorbital processes; paroccipital and mastoid processes more oblique in relation to axis of skull (paroccipital and mastoid processes in more nearly the same transverse plane in *peruviana* as shown in Blainville's plate illustration of the type); nasals broader.

Measurements.—Type (tanned skin): Total length, 2055 mm.; tail, 610. *Skull* (see table, p. 232).

Remarks.—In view of geographical contiguity *boliviensis* exhibits a surprising departure from *milleri* in cranial details and the more vivid color of the upper parts seems to be distinctive. No specimens of *peruviana* are available, and the exact relationship of *boliviensis* to that form remains to be determined. *F. boliviensis* differs, however, from Blainville's figures of the skull of the type of

peruviana, and the great range of geographic variation in the species would argue against the occurrence of the same forms east and west of the great wall of the Andes.

Specimens examined.—Three[4] (3 skins and 2 skulls), from the type locality.

Felis onca peruviana Blainville

Peruvian Jaguar

Felis onca peruviana Blainville, Ostéog. Icon. Mamm. Réc. et Foss., vol. 2, fasc. 12, genre *Felis*, p. 186; ibid., atlas, pl. 8, 1843.

Type locality.—Peru (probably from the coast region).

Distribution.—Believed to be the coastal region of Peru; limits of range unknown.

General characters.—Apparently a rather large subspecies with paroccipital and mastoid processes in more nearly the same transverse plane in relation to longitudinal axis of skull than in the other forms; frontal region broad, constricted posteriorly; nasals narrow, evenly tapering to an acute point posteriorly.

Remarks.—Blainville (l.c.) in explanation of the plate illustrations of the skull of the jaguar accompanying his work used the name *F. onca*, without description, for several figures, including the profile and upper and lower views of the cranium of a female from Peru. Under the Peruvian figures on the plate, however, is the legend "*F. onca peruviana* ♀," which seems to provide a valid name for a Peruvian subspecies. The animal was given alive to the menagerie by Rear Admiral d'Urville and, therefore, probably came from the coast region. In view of the general principles that govern geographic distribution of species it is unlikely that the same subspecies occurs to the east and west of the Andes, which, rising like a great wall, probably bars the easy passage of these great cats from one side to the other. Blainville's figures indicate cranial peculiarities, but were drawn from a menagerie animal and may not be entirely trustworthy. As no specimens of *peruviana* are available its exact relationship to the other subspecies remains to be determined.

Felis onca ucayalae, subsp. nov.

Upper Amazon Valley Jaguar

Type.—From Sarayacu, Rio Ucayali, Peru. No. 76451, ♂ adult, skin and skull, American Museum of Natural History; collected by the Olalla brothers, May 1, 1927.

Distribution.—Ucayali and Marañon river valleys, northeastern Peru, and probably beyond in neighboring parts of the upper Amazon drainage.

General characters.—Similar to *boliviensis*, but larger; rosettes heavily outlined and black spots on head, limbs, and under parts larger than usual in the species; skull differing from those of *onca* and *boliviensis* in detail, especially the narrowly spreading zygomata. Apparently differing from *peruviana* in cranial features.

Color.—*Type:* Ground color of upper parts in general near cinnamon buff; rosettes large and heavy, several of those in the mid-dorsal region with unbroken

[4] Collection Field Mus. Nat. Hist.

outlines, enclosing one or two small black spots; black spots on head, legs and under parts very large.

Skull.—Similar to that of *boliviensis*, but larger, more elongated; zygomata relatively less widely spreading; squamosal arm of zygoma more strongly developed; rostrum broader; temporal ridges more abruptly curved inward, and uniting to form a sagittal crest farther anteriorly; dentition similar. Apparently differing from *peruviana* in broader nasals, more abruptly narrowing near posterior ends, and in more oblique mastoid and paroccipital processes in relation to axis of skull. Compared with that of *major* the skull is larger; zygomata relatively less widely spreading; frontal region narrower; lambdoid crest much broader, more strongly developed; dentition heavier.

Measurements.—*Type* (tanned skin): Total length, 1982 mm.; tail, 523. *Skull* (see table, p. 232).

Remarks.—*F. o. ucayalae* is based mainly on a fine male specimen which we have been unable to refer to any other form. The skull differs from Blainville's plate illustration of *peruviana* which presumably came from west of the great wall of the Andes, but the exact relationship of *ucayalae* to that subspecies must be left for later determination. A skull from Moyobamba is very doubtfully included here, as it exhibits a departure especially in the shallow depth of the interpterygoid fossa, a character similar to that of the geographically distant form *paraguensis*. In a skin from Rio Napo the rosettes are more broken and the small enclosed black spots are more numerous than in the type.

Specimens examined.—Three, all from Peru,[5] as follows:

Rio Napo (near Iquitos), 1 (skin only); Moyobamba, 1 (skull only); Sarayacu, Rio Ucayali, 1 (type).

Felis onca major Fischer

Surinam Jaguar

[*Felis onca*] *major* Fischer, Syn. Mamm., Addenda, 1830, p. 366 (= 566).

Type locality.—Surinam.

Distribution.—Northern South America from Surinam west through British Guiana and extreme northern Brazil to western Venezuela.

General characters.—A medium sized cinnamon buffy subspecies, with outer rings of rosettes usually broken, but irregularly encircling one to four or five small black spots; skull with a narrow, weakly developed lambdoid crest combined with rather heavy dentition. Skull smaller than that of *onca*, with much less prominent sagittal and lambdoid crests. Ground color of upper parts about as in *ucayalae*, but rosettes more broken than in the type of the latter; skull smaller, with relatively reduced lambdoid crest and more widely spreading zygomata. Similar in color to *centralis*; skull larger with decidedly heavier dentition and less strongly developed lambdoid crest.

Measurements.—An adult male from Serra da Lua, Amazonas, Brazil: Total length, 1775 mm.; tail vertebrae, 583; hind foot, 240. *Skull* (see table, p. 232).

Remarks.—The name *major* was based by Fischer on the "Jaguar, great var." of Hamilton Smith (Griffith, in Cuvier's Anim. King., vol. 2, p. 455, and colored

[5] Coll. Field Mus. Nat. Hist.

TABLE 1

Cranial measurements of jaguars (all measurements in millimeters)

SUBSPECIES	LOCALITY	NUMBER	GREATEST LENGTH	CONDYLOBASAL LENGTH	ZYGOMATIC BREADTH	WIDTH OF ROSTRUM (BEHIND CANINES)	INTERORBITAL CONSTRICTION	WIDTH ACROSS MASTOID PROCESSES	WIDTH OF INTERPTERYGOID FOSSA	UPPER CANINE-PREMOLAR SERIES (ALVEOLI)	CROWN LENGTH UPPER CARNASSIAL	DIAMETER UPPER CANINE (ANTERO-POSTERIOR)
Adult males												
Felis onca onca	Brazil: Tocantins Valley, Para	256385	296.3	253.5	204.8	76.6	57.5	125.8	28.1	81.8	28.5	22
Felis onca milleri	Brazil: Corumbá, Matto Grosso	37503[a]	302	277	207	80.5	57		22	86.4	28.2	22.8
Felis onca paraguensis	Paraguay	4128[b]	295.5	264	195	77.5	55.5	122.2	29.2	83.5	29	21
Felis onca boliviensis	Bolivia: Buena Vista, Santa Cruz	34344[b,c]	266	236.5	175.5	68.2	47	112.5	21.1	81.5	28.5	21
Felis onca ucayalae	Peru: Sarayacu, Rio Ucayali	76451[a,b]	274.9	245.5	173.8	73.9	49.4	112.2	22.1	78	29.2	20.8
Felis onca major	Surinam	9505[d]	264	241.9	182.3	73.9	54.4	111	24.2	82	28.7	20.7
Felis onca mexianae	Brazil: Mexiana Island				180						28	
Felis onca centralis	Costa Rica: Talamanca	14177[b]	250.5	219.5	169.5	63.8	41.5	101	22.3	72.5	25.5	20
Felis onca goldmani	Guatemala: Laguna El Sotz, Peten	249823	237.5	217.8	166.5	64.9	44	100.5	21.3	72	23.5	19
Felis onca hernandesii	Mexico: Agua Brava, Sinaloa	25008			177.5	72	53.5	107.5	21.6	74.2	26.8	18.4
Felis onca veraecrucis	Mexico: San Andres Tuxtla, Vera Cruz	67403[b]	279	247.4	180	72.3	50	111.7	23	77.5	28	21.3
Felis onca arizonensis	Arizona: Cibecue	244507[b]	273	237.5	187	74.5	51	111.5	20	81	28	20.4
Adult females												
Felis onca coxi	Brazil: North of Rio Doce, Espiritu Santo	256388[b]	219.5	198.4	149.4	58.5	43	91	20	67.3	24.1	16.1
Felis onca milleri	Brazil: Descalvados, Matto Grosso	26552[b,c]	267.8	238	175.4	70.3	51.5	110.9	23.9	77.5	27.8	20
Felis onca paraguensis	Argentina: San José, Entre Rios	4361	261	232.3	175.5	72.3	43.8	107.8	27.8	79	30.8	20.8
Felis onca boliviensis	Bolivia: Buena Vista, Santa Cruz	21378[c]	242.4	212	160	65.8	47	97.3	24.6	74.5	28.5	18.8
Felis onca major	Venezuela: Caura Valley	137039	239	214.3	163.3	65.5	47	101.4	24.1	71	27.7	18.1
Felis onca mexianae	Brazil: Mexiana Island				160						25.8	
Felis onca madeirae	Brazil: Auará Igarapé, Rio Madeira	91702[a,b]	224	203	150.5	62	44.7	95.7	19.5	70.3	25.7	17.4
Felis onca centralis	Salvador: Conchagua Volcano	8003	231.5	207.7	156.2	63.5	43.8	99	21.9	71.3	25.9	17
Felis onca goldmani	Campeche: La Tuxpeña, Champoton	179171	204	187.8	143.8	55	38.8	85.5	20	64.9	24.4	16.7
Felis onca hernandesii	Mexico: Near Colima, Colima	6480	218.8	199.5	154.8	62.6	44.8	93.1	20.8	70.1	25.8	18
Felis onca arizonensis	Arizona: Greaterville	231961	217.5	192.4	155.3	64.6	44.3	96	21.3	68.8	25.1	16.4

[a] Coll. Amer. Mus. Nat. Hist.
[b] Type.
[c] Coll. Field Mus. Nat. Nist.
[d] Coll. Mus. Comp. Zool.

text fig., 1827). While in America Hamilton Smith, according to Griffith, "satisfied himself there were two distinct varieties of the Jaguar, differing principally in dimensions." One of his two figures, drawn from an animal from Surinam, bears the legend "The Jaguar, Great var? F. onca L." The other (l.c., colored text fig. opposite p. 456) representing a smaller, paler animal from America, but without definite locality, is inscribed "The Jaguar. Small or common var. F. onca L." On the latter Fischer founded [*Felis onca*] *minor*. As the name *major* was clearly applied to Smith's figure of an animal from Surinam it may be accepted as valid for the form inhabiting that country. The name *minor* of Fischer, however, without locality is unidentifiable.

Specimens examined.—Total number, 12, as follows:

BRAZIL: Frechal, Rio Surumu, 1;[6] Serra da Lua (near Bôa Vista), 3 (skulls only).[7]

BRITISH GUIANA: Georgetown, 1 (skull only);[7] Kartabo, 1.[6]

SURINAM: Without definite locality, 1 (skull only).[8]

VENEZUELA: Caura Valley, 1; Maracaibo (market), 2 (1 skin only; 1 skull only);[7] Maripa, 1;[6] Rio Orinoco (mouth of Rio Ocamo), 1 (skull only).[6]

Felis onca mexianae Hagmann

Mexiana Island Jaguar

Felis onca var. *mexianae* Hagmann, Archiv. Rassen- und Gesellsch.-Biologie, vol. 5, p. 10, Jan.-Mar., 1908. Type in Strassburg Museum.

Type locality.—Mexiana Island, estuary of Amazon River, Brazil.

Distribution.—Known only from Mexiana Island.

General characters.—Described as smaller than mainland animals from the vicinity of the Rio Tapajoz and southern Brazil. Skull measurements of largest adult male and female, respectively (from original description): Basilar length, 210 and 186 mm.; zygomatic breadth, 180 and 160; width across maxillae over canines, 70 and 64; length of upper carnassial, 28 and 25.8.

Remarks.—*F. o. mexianae* was based upon seven skulls from Mexiana Island. The measurements indicate a smaller animal than that of the adjacent mainland, but no specimens have been examined by us and the exact relationship to the other forms remains to be determined. As Mexiana is one of the outer islands in the estuary of the Amazon the occurrence of a small jaguar there suggests that the same or a similar form may inhabit other islands in the delta of the river.

Felis onca madeirae, subsp. nov.

Rio Madeira Jaguar

Type.—From Auará Igarapé (above Borba), Rio Madeira, Amazonas, Brazil, No. 91702, ♀ adult, skin and skull, American Museum of Natural History; collected by Olalla brothers, March 15, 1930. Original number 1991.

Distribution.—Valley of the Rio Madeira; limits of range unknown.

---

[6] Coll. Amer. Mus. Nat. Hist.

[7] Coll. Field Mus. Nat. Hist.

[8] Coll. Mus. Comp. Zool.

General characters.—A small, rather rich cinnamon buff subspecies; black rings of rosettes heavily outlined in the type, and enclosing a few small black spots. Similar in general to *onca*, but decidedly smaller. Not very unlike *coxi* but larger, darker, and richer in general color, and cranial characters distinctive. Differing from *major* in smaller size and cranial details, especially in the relatively greater development of the lambdoid crest.

Color.—Type: Ground color of upper parts in general near cinnamon buff, very slightly darker within the rosettes than in the interspaces; rosettes of medium size, heavily outlined, a few near mid-dorsal area irregular in form, completely closed, others consisting of nearly closed rings; three or four only containing each a single small black central spot; black spots on head, legs, and under parts of medium size.

Skull.—Similar to that of *onca* but decidedly smaller, less arched in upper outline; frontal region flatter; interpterygoid fossa very narrow; dentition light. Much smaller than that of *major*, with relatively broader, more strongly projecting lambdoid crest; interpterygoid fossa relatively narrower; dentition relatively lighter. Similar in general to that of *coxi*, but larger; interpterygoid fossa actually as well as relatively narrower; dentition much heavier.

Measurements.—Type (tanned skin): Total length, 1610 mm.; tail, 465. *Skull* (see table, p. 232).

Remarks.—The present form is based on a single specimen from near the center of the great valley of the Amazon. While close relationship to neighboring forms is indicated the characters pointed out seem to warrant subspecific recognition.

Felis onca centralis Mearns

Central American Jaguar

Felis centralis Mearns, Proc. Biol. Soc. Washington, vol. 14, p. 139, Aug. 9, 1901. Type No. 14177, [♂] adult, skull only, U. S. National Museum, collected by W. M. Gabb.

Felis onca centralis Goldman, Smiths., Misc. Coll., vol. 69, no. 5, p. 166, 1920.

Type locality.—Talamanca, Costa Rica (probably near Sipurio, in the valley of the Rio Sicsola).

Distribution.—Central America north to Salvador and along the Pacific coast probably to near the Isthmus of Tehuantepec; south to Guaduas, Cundinamarca, Colombia.

General characters.—A rather small form. closely resembling *hernandesii* but apparently averaging slightly darker; ground color of upper parts cinnamon buff instead of light ochraceous buff, the prevailing tone in the latter; black rosette rings considerably broken; skull very similar to that of *hernandesii*, but nasals less depressed anteriorly, more highly arched as viewed from the front. Similar in color to *major*, but skull smaller with decidedly lighter dentition and more strongly developed lambdoid crest. Differing from *goldmani* mainly in decidedly larger size.

Measurements.—No external measurements in the flesh available. *Skull* (see table, p. 232).

Remarks.—The close agreement of *centralis* and *hernandesii* in general characters is rather remarkable, in view of their geographically widely separated ranges.

Some specimens of both forms are practically indistinguishable but the combination of slight characters pointed out is usually distinctive.

Specimens examined.—Total number, 10, as follows:

COLOMBIA: Guaduas, Cundinamarca, 1 (skull only).

COSTA RICA: Pozo Azul, 1 (skull only); without definite locality, 1 (skull only).

NICARAGUA: Province of Zelaya, 1 (skull only); San Rafael del Norte, 1.[9]

PANAMA: Atlantic side, 1 (skull only);[10] Boca de Cupe, 1;[9] Rio Peluca, 1 (skull only);[10] Tapalisa, 1.[9]

SALVADOR: Conchagua Volcano, La Union, 1 (skull only).

Felis onca goldmani Mearns

Yucatan Peninsula Jaguar

Felis hernandesii goldmani Mearns, Proc. Biol. Soc. Washington, vol. 14, p. 142, Aug. 9, 1901. Type No. 105930, skin only, U. S. National Museum, collected by E. A. Goldman, Jan. 5, 1901.

Felis onca goldmani Goldman, Proc. Biol. Soc. Washington, vol. 45, p. 144, Sept. 9, 1932.

Type locality.—Yohaltun, Campeche, Mexico.

Distribution.—The peninsula of Yucatan, south to northern Guatemala and probably British Honduras.

General characters.—Size smallest of the jaguars. Black markings small, in keeping with diminutive body dimensions. Most closely resembling *centralis*, but smaller; ground color of upper parts about the same in cinnamon buffy tone, and rosettes similarly broken; skull smaller, less angular, the sagittal and lambdoid crests less developed.

Measurements.—No external measurements in the flesh available. *Skull* (see table, p. 232).

Remarks.—The diminutive size of this jaguar at once distinguishes it from all of the other subspecies. It presents a remarkable contrast with the large jaguar of Vera Cruz, described beyond, although there is only a short distance between the ranges of the two, and intergradation may confidently be assumed.

Specimens examined.—Total number, 10, as follows:

CAMPECHE: La Tuxpeña, Champoton, 3 (2 skulls only, 1 skin only); Yohaltun, 1 (type—skin only).

GUATEMALA: Laguna El Sotz, Peten, 2 (skulls only); Lake Peten, 2 (skulls only); La Libertad, 1; Remote, Peten, 1 (skull only).

Felis onca hernandesii (Gray)

West Mexican Jaguar

Leopardus hernandesii Gray, Proc. Zool. Soc. London, 1857, p. 278, pl. 58. Described from an individual in the Gardens of the Zoological Society of London.

Felis hernandesii Mearns, Proc. Biol. Soc. Washington, vol. 14, p. 141, Aug. 9, 1901.

---

[9] Coll. Amer. Mus. Nat. Hist.

[10] Coll. Mus. Comp. Zool.

Felis onca hernandesii Goldman, Proc. Biol. Soc. Washington, vol. 45, p. 144, Sept. 9, 1932.

Type locality.—Mazatlan, Sinaloa, Mexico.

Distribution.—Western Mexico from Sinaloa south to the Isthmus of Tehuantepec.

General characters.—A rather small subspecies, closely resembling *centralis*, but apparently averaging slightly paler, the ground color of upper parts variable but near light ochraceous buff, instead of cinnamon buff; black rings of rosettes usually rather small and considerably broken, the number of small enclosed spots varying to as many as nine; skull very similar to that of *centralis*, but nasals more depressed anteriorly, less highly arched as viewed from the front. Approaching *arizonensis* in color and depressed condition of nasals, but smaller and the nasal character less extreme in development; interpterygoid fossa opening more widely, the lateral margins usually less strongly turned inward. Differing from *goldmani* in decidedly larger size, and in about the same cranial details as from *centralis*.

Remarks.—The range of *hernandesii* is separated from that of the jaguar of eastern Mexico, described later, by the southward thrust of the central highlands that form an effective, wedge-shaped barrier broadly separating the two northern forms of the species. The extensively broken rings of the rosettes, described and depicted by Gray and varying widely in all forms, seem to be fairly constant as an average character.

Specimens examined.—Total number, 16, as follows:

COLIMA: Coast Range (below Colima City), 1 (skull only);[11] Colima, 1 (skull only).

GUERRERO: Acapulco, 1 (skull only), 3 (skins only); Papayo, 1.

NAYARIT: San Blas, 1 (skull only).

OAXACA: Chivela, 1 (skull only); Tehuantepec, 2 (skulls only).

SINALOA: Agua Brava, 1;[11] Escuinapa (about 40 miles south of type locality and regarded as typical), 4.[11]

Felis onca veraecrucis, subsp. nov.

Northeastern Jaguar

Type.—From San Andres Tuxtla, Vera Cruz, Mexico. No. 67403, ♂ adult, skull only, U. S. National Museum (Biological Survey collection), collected by Nelson and Goldman, April 24, 1894. Original number 6090.

Distribution.—Gulf slope of eastern and southeastern Mexico from the coast region of Tabasco north through Vera Cruz and Tamaulipas to central Texas.

General characters.—Size largest of the North American subspecies. Color about as in the other North American forms but rosettes rather large; skull differing in size and combination of details.

Color.—Female from Perez, Vera Cruz: Ground color of upper parts in general pale cinnamon buff, slightly darker within the black rings of the rosettes as usual in the species, and paling gradually to light ochraceous buff on cheeks, sides of neck, flanks, and outer surfaces of legs; black spots and crescentic black rings of

[11] Coll. Amer. Mus. Nat. Hist.

rosettes enclosing small black spots rather large and heavy; black spots irregularly confluent along median line on posterior part of back; under parts and inner surface of legs white, heavily spotted with black; outer sides of ears black with cinnamon buff central spots; tail with large irregular black markings, separated by narrow, light interspaces buffy on basal half above, becoming white toward ip and below. A specimen from between Aldama and Soto la Marina, Tamaulipas, is similarly marked, but the ground color is slightly lighter in tone. One from Goldthwaite, Texas, is somewhat paler, the rosettes are larger, the black rings are more broken, and the posterior median dorsal spots are irregularly paired instead of confluent.

Skull.—Somewhat larger and more elongated than that of *F. o. arizonensis*, anterior nares much higher, the nasals more highly arched, less depressed anteriorly; interpterygoid fossa wider, the lateral margins less strongly turned inward; audital bullae usually larger; dentition similar but canines usually larger. Similar to that of *hernandesii* but decidedly larger, more massive; anterior nares higher, the nasals more highly arched anteriorly; canines larger. Differing from those of *goldmani* and *centralis* mainly in much larger size, the contrast greatest with *goldmani*.

Measurements.—An adult male and female, respectively, from between Aldama and Soto la Marina, Tamaulipas: Total length, 1,993, 1,574 mm.; tail vertebrae, 533, 432. *Skull* (see table, p. 232).

Remarks.—The northeastern jaguar is probably more closely allied to *centralis* than to any of the other subspecies. In view of the geographic nearness of the small form, *goldmani*, which inhabits the Yucatan Peninsula, the disparity in size is remarkable; but intergradation of the two may safely be assumed.

Specimens examined.—Total number, 8, as follows:

CHIAPAS: Palenque, 1 (skull only).

TABASCO: Frontera, 1 (skull only).[12]

TAMAULIPAS: Between Aldama and Soto la Marina, 2 (1 skull only).[13]

VERA CRUZ: Orizaba, 1 (skull only);[14] Perez, 1; San Andres Tuxtla (type locality), 1 (skull only).

TEXAS: Goldthwaite, Mills County, 1.

Felis onca arizonensis Goldman

Arizona Jaguar

Felis onca arizonensis Goldman, Proc. Biol. Soc. Washington, vol. 45, p. 144, Sept. 9, 1932. Type No. 244507, ♂ adult, skin and skull, U. S. National Museum (Biological Survey collection), collected by Jack Funk, April 12, 1924.

Distribution.—Mountainous parts of eastern Arizona north to the Grand Canyon, southern half of western New Mexico, and northeastern Sonora.

General characters.—A large northern subspecies, distinguished from all the other races by the flatter, more depressed nasals. Most closely allied to *hernan-*

[12] Collection Amer. Mus. Nat. Hist.

[13] Collection Carnegie Mus.

[14] Collection Mus. Comp. Zool.

desii, general colors and markings much the same, but size larger and cranial characters distinctive; skull more massive; rostrum broader; nasals much flatter, more depressed anteriorly; anterior nares wider but not as high; interpterygoid fossa opening narrower.

Measurements.—Type (tanned skin): Total length, 2145; tail, 660; hind foot, 230. *Skull* (see table, p. 232).

Remarks.—F. o. arizonensis reaches the extreme northern limit of the range of the species at the present time. Formerly it reached, according to the records, to southeastern California. While not very abundant it appears to be a regular resident of southeastern Arizona.

Specimens examined.—Total number, 5, as follows:

ARIZONA: Cibecue (type locality), 1; Greaterville, 2; Nogales (20 miles west), 1 (skull only).

SONORA: West foothills of Sierra Madre, due west of Casas Grandes, Chihuaha, 1 (skull only).

INAPPLICABLE OR UNIDENTIFIABLE NAMES

The nomenclature of the cats is much involved, many names being so vaguely used, or the accompanying descriptions being so inadequate that correct application is very uncertain if not impossible. The following list is believed to include the more important names requiring consideration in relation to the jaguar, but which for various reasons are not regarded as assignable to any particular form. No attempt is made to complete the synonymy which would be voluminous.

A. NAMES PROPOSED BY NON-BINOMIAL AUTHORS

1756. *Tigris americana* Brisson, Règne Anim., 1756, p. 270.
Pre-Linnaean use of this name for the jaguar, based on the accounts of earlier authors. Habitat in America.

1756. *Tigris nigra* Brisson, Règne Anim., 1756, p. 271.
Applied to the black phase of the jaguar in Guiana and Brazil.

1762. *Tigris americana* Brisson, Regnum Anim., 1762, p. 196.
Name repeated from his Règne Animal, 1756, p. 270, for the jaguar. Habitat in America.

1762. *Tigris nigra* Brisson, Regnum Anim., 1762, p. 196.
Name repeated from his Règne Animal, 1756, p. 271 for the black phase of the jaguar in Guiana and Brazil.

1769. *Tigris americana* Fermin, Descrip. Gén., Hist., Géog. et Phys. Colon. de Surinam, vol. 2, p. 97, 1769.
Vaguely used in referring to several kinds of spotted cats said to be widely distributed in America and found in Surinam. The jaguar probably was included in the general discussion, but binomial names are not consistently used by the author, and the name is regarded as unidentifiable. Fermin gives no references, but the name had been used by pre-Linnaean authors (Brisson, Règne Anim., 1756, p. 270, and others) for the jaguar of Brazil and the general range of the animal.

B. NAMES PROPOSED BY BINOMIAL AUTHORS

1775. *Felis panthera* Schreber, Die Säug., pl. 99, 1775; text, theil 3, p. 384, 1777.
The name *F. panthera*, is somewhat involved. In Schreber's work the name appears only on the plate as "Felis Panthera Buff" which is a repro-

duction of the "La Panthère Femelle" of Buffon (Hist. Nat., vol. 9, pl. 12, 1761). Buffon's plate is of an individual that had been kept a long time in the menagerie of Versailles. Buffon, p. 151 (op. cit.) assigns the animal to the Old World, but the drawing, showing enclosed spots in a number of the rosettes, suggests a jaguar. The tail, however, is too long and like that of a leopard. In describing the markings on the sides of the body Buffon says there is a small black spot in the center of the "pluspart de ces anneaux." While enclosed spots are much more characteristic in the jaguar they are sometimes present in a few of the rosettes on the leopard. The measurements of Buffon's "panthère femelle" indicate a proportional length of tail about as in the jaguar. Buffon evidently was not familiar with the jaguar and his illustration of the animal (plate 18, op. cit.) almost certainly represents an ocelot, as shown by the nuchal stripes, body markings and general proportions, including length of tail. His "Jaguar de la Nouvelle Espagne," described 15 years later (Hist. Nat., Suppl., vol. 3, p. 218, pl. 39, 1776), appears also to have been an ocelot. *Felis panthera* Schreber was, therefore, based upon a confused concept. The bulk of the somewhat conflicting evidence seems to favor reference of the name to the general synonymy of *Felis onca* rather than to that of *F. pardus* of the Old World.

1777. *Felis nigra* Erxleben, Syst. Regni Anim., 1777, p. 512.

Based upon *Tigris nigra* Brisson (Règne Anim., 1756, p. 271) and the black jaguar of other authors. Habitat given as Brazil and Guiana. Evidently refers to the black or melanistic phase of the jaguar, although Erxleben remarked that he was inclined to believe it represented a dark variety of *Felis concolor*.

1777. *Felis discolor* Schreber, Die Säug., theil 3, p. 393, pl. 104 B, 1777.

The name appears only on the plate. The text refers to the "black Tiger" of Pennant (Syn. Quad., 1771, p. 180, pl. 18, fig. 2). Comparison of Schreber's plate with that of Pennant shows that the former was redrawn from the latter. Pennant assigned the animal to a habitat in Brazil and Guiana. This is one of the names used for the black phase of the jaguar, without definite locality.

1795. *Felis jaguar* Link, Beyträge Zur Naturgesch., Zweytes stuck, p. 90, 1795.

A renaming of *Felis onca*. *Felis jaguar* was used by Temminck (Monog. Mamm., vol. 1, 1827, pp. 136, 256) as a common appellation in French for *Felis onca*, and was listed by Elliot (Monog. Felidae, 1883, p. unnumbered) in the synonymy of the species.

1816. *P[anthera] americana* Oken, Lehrb. der Naturgesch., theil 3, abt. 2, 1816, pp. 1054, 1061.

The jaguar is here involved in the use of the name but the description and references are very loosely drawn. The name is antedated by *Tigris americana* Brisson, 1762, and preoccupied by *Tigris americana* Fermin, 1769.

1816. *P[anthera] mexicana* Oken, Lehrb. der Naturgesch., theil 3, abt. 2, 1816, p. 1054.

Under this name Oken listed the "Tlaco-Ozelotl, Tlal-Ocelotl, Catus-Pardus mexicanus, *Panthera americana*" and "*F. pardalis*." Apparently associated with the last mentioned he says "Die alten Könige von Mexico

hatten dieses Thier um den Thron liegen." The next paragraph under the same heading, however, begins with "Jaguar (ist Tlaco-Ocelotl)." Aside from this confused application the name is preoccupied by *Felis mexicana* Desmarest (Nouv. Dict., vol. 6, p. 112, 1816 edition [original date of publication about Feb. 4, 1803—see Osgood, Proc. Biol. Soc. Washington, vol. 27, p. 3, Feb. 2, 1914]) which was based upon the "Chat Sauvage de la Nouvelle Espagne" of Buffon (Hist. Nat., Suppl., vol. 3, p. 227, pl. 43, 1776). Buffon himself (l.c. p. 228) regarded this as the same as the Serval, described and figured in his earlier work (Hist. Nat., vol. 13, p. 236, pl. 34, 1765).

1830. [*Felis onca*] *minor* Fischer, Syn. Mamm., Addenda, 1830, p. 366 (= p. 566).

Based on "The Jaguar. Small or common var. *F. onca*, L." of Hamilton Smith (Griffith, in Cuvier's Anim. King., vol. 2, p. 456 and colored text fig., 1827). No locality was given and the name is unidentifiable (See remarks under *Felis onca major*, p. 233).

1841. *Felis onca nigra* Wagner, in Schreber's Säug., Suppl., band 2, abth., 2, 1841, p. 475.

Reference under *Felis onca* to *Felis nigra* Erxleben.

1869. *Panthera onca minor* Fitzinger, Sitzungsber. Math.-Naturwissensch. Cl. Kais. Akad. Wissensch., band 59, abth. 2, p. 216, 1869.

Obviously equal to *Felis onca minor* Fischer (1830) to which reference is made by Fitzinger. The name is here ascribed to the animal of Mexico and the southern part of the United States, but is inapplicable as it was based upon an unidentifiable form.

1869. *Panthera onca alba* Fitzinger, Sitzungsber. Math.-Naturwissensch. Cl. Kais. Akad. Wissensch., band 59, abth. 2, p. 218, 1869.

Applied to an apparently albinistic color phase of the jaguar in Paraguay and in "Peru oder in Venezuela." Preoccupied by *Felis alba* Fischer (Syn. Mamm., Addenda, 1830, p. 366 [= 566]), based on the "white Tiger" of Griffith (Cuvier's Anim. King., vol. 2, p. 444 and text fig., 1827).

1869. *Felis onca poliopardus* Fitzinger, Sitzungsber. Math.-Naturwissensch, Cl. Kais. Akad. Wissensch., band 59, abth. 2, p. 220, 1869.

Name first proposed as *Felis poliopardus* Fitzinger (op. cit. band 17, pp. 295–297, 1 pl., 1855). Regarded by Fitzinger as a hybrid between *Felis onca* of Brazil and *Felis pardus* of west Africa.

1872. *Felis jaguarete* Liais and *Felis jaguapara* Liais, Clim. Géol., Faune du Brésil, 1872, p. 451.

In protest against the use of the name onça, introduced in Brazil by the Portuguese colonists, for an American animal, Liais proposed that *Felis onca* be transferred to the Asiatic species bearing the name *Felis uncia* which he ridiculed. Accepting the belief of some authors in the existence of two distinct species and having thus disposed of *F. onca* he proceeded to name the "grand jaguar" *Felis jaguareté* and the "petit" *Felis jaguapara*. By inference both of these are from Brazil, but without definite localities and are therefore unidentifiable.

1872. *Felis jaguatyrica* Liais, Clim. Géol. Faune du Brésil, 1872, p. 459.

Name proposed for a form of the black jaguar of Brazil.

U. S. Biological Survey, Washington, D. C.

Forest Pioneer

GAME

Feb Jaguar

Deer And Antelope On The Jornada Range Reserve: Director Campbell estimates that there are, approximately, 700 deer and 150 antelope on the Reserve. The total acreage of the Reserve is 192,000 acres.

Beaver For Chiricahuas: Bids are being gotten out by the Coronado Forest for trapping twelve beavers and transplanting them in some of the streams on the Chiricahuas. This is in the Fish Stream Improvement program under Nira, soon to be undertaken.

Plant Three Million Trout In Year: By the end of the current fiscal year the state game department will have planted about 3,000,000 fish in the various streams and lakes of the state, State Game Warden Elliott Barker reports. Due to the warm winter, planting has been going on almost continuously. The state has about 400,000 native trout in the Parkview hatchery ready for planting. They range from three to five inches long.

Large Jaguar Caught: Ranger Wingo of the Coronado reports that on March 31, 1934 the government hunter, Frank Colcord, in the Tumacacori Region succeeded in trapping a large male jaguar near the head of Pena Blanca Canyon. Colcord took the animal about fifteen miles west of Nogales on the Mexican border after a nine hour ride. This is the largest of the American cat family and sometimes weighs as much as 300 pounds. In coloring he is the most gorgeous of the American cats.

Three Wildcats Get Deer For Needy: Three wildcats went without their dinner recently, but Prescott's needy feasted on venison. The cats, stalking the forest in the Walnut Creek country, surprised a general land office survey party at lunch by pouncing upon a yearling deer within sight of the camp. The surveyors lost no time. Before the cats had tasted their meal the men rescued the prize and turned over a dressed animal to Ranger Joss T. Fears who in turn turned over a week's supply of venison to the Salvation Army.

A Bear Refuge: At a meeting of the Flagstaff Game Protective Association, Forest Supervisor E. G. Miller of the Coconino, recommended to the association, the establishment of a bear refuge to be located at the head of Fossil Creek, 60 miles south of Flagstaff, the refuges to be for a five year period. The proposed refuge is in rough country where very few livestock graze. It is estimated that not over one bear in ten becomes a stock killer. If the bear refuge is established by the Arizona State Game Commission it would be the first in the state and also in the southwest.

Hope To Capture Bighorn Herd For This Area Shortly: State game department hunters have not yet trapped any Mexican bighorn sheep for transplanting to the Sandia Mountains, but hope to before long, State Warden Elliott Barker said recently. The sheep are frequenting the area where a trap has been constructed in the Big Hatchet Mountains of Hidalgo County and some are likely to be caught before many weeks, Mr. Barker believes. The sheep probably will be released on the northwestern slope of the Sandias above the site of the Juan Tabo CCC Camp, he said. This is in the area where a new winter playground is being developed by the CCC.

Lion
Bear

From mimeographed news letter put out from Regional Forester's office, Albuquerque, New Mexico. 8/34

Mountain Lion Goes in for Bear Diet: It may be the depression, but mountain lions have started eating bear meat. So reports Fred Winn, Supervisor of the Coronado Forest. Yesterday, upon returning from a trip in the Chiricahua Mountains, Winn reported that an eight foot mountain lion, killed by the Lee Brothers of Paradise, government hunters, had yielded a foot from a bear cub. The contents of the big cat's stomach were examined, Winn said, and there was the foot. The hunters and others in the community reported that it was an unheard-of thing for a lion to attack a bear or a bear cub.

File: Coyote
Mt. Lion
Predation

From General Notes, Jour. Mammalogy, Vol. 16, No. 3, August, 1935, p. 229:

Cougar and Coyote

My friend, Pyeart Hulse, whose ranch is on Canyon Creek, Middle Fork of the Gila River, New Mexico, writes me about an experience of his father in December while on his trap line. I will tell the story in Pyeart's words: "My Dad had a strange experience with a lion last month. He was out on Canyon Creek Mountain setting some traps when he came right on to a lion and a kitten, and was within a few feet of them before either saw the other. The lion made away at once and jumped into the thick brush, preventing a shot. The lion had killed a deer and on looking it over Dad found a dead coyote a few feet from the kill. The ground was soft from a rain of the previous day and the tracks easy to trace. On looking closely he saw where the coyote had come up to the kill, and there it was that the lion made for the coyote and caught it in a couple of bounds. The coyote's head was badly crushed and showed where the tusks had gone through the skull into the brain, killing the beast at once. Dad set some traps at the deer carcass but the lion did not return. He skinned the coyote."

Evidently these predators were not on such friendly terms as it is supposed they sometimes are.--Charles A. Gianini, Poland, New York.

Puma

Gestation Period - 3 and one-third months

(C. Emerson Brown, Jour. Mammal., 1936)

Jaguar

Gestation period - 3 and one-third months

(C. Emerson Brown, Jour. Mammalogy, 1936)

Oct 1938

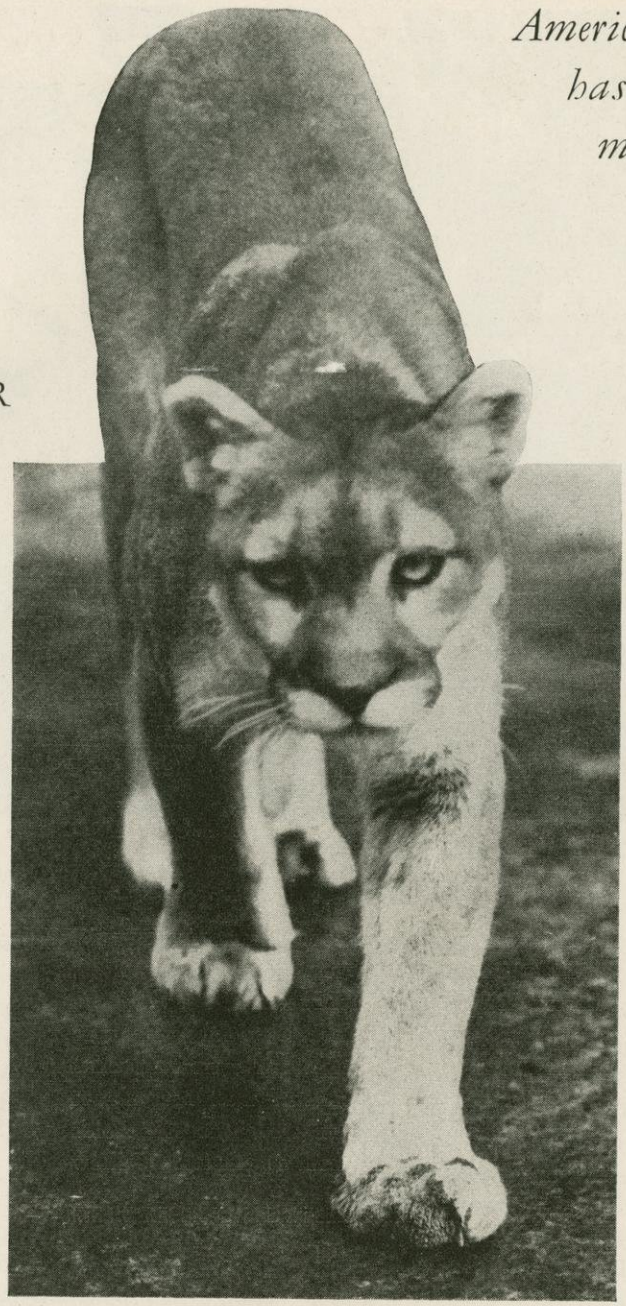
Curd from author

The Real Cougar

America's great wild cat has been the victim of misinformation and many false tales

Library of Aldo Leopold

By W. B. CONGER



ONE REASON, among several, that the cougar is feared by the uninformed is that it is misnamed a lion. The real lion is a cat. The cougar is a cat, but the cougar is not a lion. Another reason is its size. A third cause is the effect of the yarns of those who desire to give the impression that this creature is a four-footed fury, and thereby enhance their own reputations as hunters. Finally, there is the misrepresentation of this animal to the public by organizations that profit by its destruction.

Of the large animals of this country, the cougar is undoubtedly the most maligned. Those who have studied it tell us it is naturally of a mild and playful disposition when not goaded by hunger, fear or danger to its young. They tell us, too, that the cougar is always at heart a kitten, and that, with the exception of some monkeys, it is one of the most playful animals in the world. Grown cougars placed in captivity pine and die, but the young make affectionate and playful pets, purring with pleasure at the approach of a human being, stranger or friend, and begging to be caressed. Those who have raised them as pets testify to this mildness of disposition, affection, and lack of temper.

In the early history of this country, when cougars were plentiful, children went to school through fields and forests unharmed and unalarmed. Those who have come in contact with this animal in its natural home, minus the desire to shed its blood, have found it not ferocious but friendly. Through all the centuries the cougar was untroubled by the North American Indian. It had no fear of squaw or brave; it harmed no papoose, nor did the Indian, in turn, have any dread of it. The Gauchos of the Pampas called it "Amigo del cristiano"—man's friend. It has always lived in peace. It does not naturally run from members of the human race, but learns to do so when continuously persecuted. It has learned it has no chance against the man armed with a high-powered gun, who can shoot from a safe distance. It hates and dreads the yap of the small dog, or the uncanny wail of the hound, the forerunner of its doom, the heralds of a band of armed men. No protection has ever been given the cougar, although its young remain more or less helpless for from six months to a year. It is not a prolific animal, and the years of none of the members of the feline tribe are many, so its survival is none too certain.

A hunter, thrown from his horse early in a hunt, had his leg broken. As he lay helpless he saw a cougar moving about, in fact, the animal sat down near him, yet showed signs of restlessness, going and returning as if he feared the approach of an enemy. This man appears to have been unafraid of the cougar, although he felt some concern when he heard the roar of a jaguar, and became aware that the two great cats were fighting. The fight was renewed from time to time during the night; in the morning both animals had disappeared. On occasion another hunter who had a cherished reputation became, through a misadventure during a hunt, the butt of his friends' jests. Chagrined, he went in search of something to kill. He tried to knife a cougar sitting quietly by the wayside. The animal avoided him by a quick movement, gave his assailant one tap with his paw, then

looking for a few seconds at his discomfited enemy, trotted quietly away. It appears that the cougar does not attack a fallen man, a chivalry never shown him in his extremity.

No form of life was placed here to be snuffed out through indifference, or because of any whim or form of vanity, whether masculine or feminine, or from greed.

The cougar's natural and legitimate food is the flesh of the large and wild mammals, but it eats also many small creatures, even down to frogs and grasshoppers. As a pet it will eat anything offered it. Its favorite prey is some form of the deer tribe, in fact the original continental ranges of cougar and deer were practically the same. But the beauty so apparent to the conservationist-to-kill in the closed season becomes dull to his eyes during the open, and the cougar's natural food is begrudged him. When the animal's natural food supply has been thinned out by that unlovely trilogy—gunners, trappers and poisoners—it may attack unprotected cattle, sheep and colts, and thereby come into collision with the bank account. The cougar is a good sportsman, killing only what he needs, usually hunting alone or with his mate, returning to his cache for a second, sometimes for a third visit. What remains falls to the smaller carnivores of the woods. Of course, there are rogue cougars, just as there are rogue coyotes, rogue elephants, rogue sportsmen and rogue politicians. The rogue of any species enjoys only slaughter and persecution of the weaker, wasting large numbers by unbridled callousness and deliberately destroying what he cannot replace.



A COUGAR SURVEYS THE SCENE BELOW

Because of its size many regard the cougar as a most dangerous animal, which its record disproves

There are less than a dozen authentic accounts of attacks on human beings by our great cat, and of these several cannot be truthfully termed attacks. These few instances occurred in the West, from British Columbia to California.

In one instance, termed an "attack," two young cougars asleep near a log in Idaho were seized by a cubnapper. Abruptly awakened, they cried aloud. Both parents came hurrying to the rescue. In the ensuing fight, the thief, although assisted by a companion, was badly hurt, and both parents of the kittens were killed. The pair of cougar youngsters thus captured probably spent the remainder of their unfortunate lives in captivity in a zoo.

The following instance, which occurred in 1933, illustrates the friendly instinct of this quadruped:

"Lydia Ann Atkins, then about eight years old, had been sent to drive up the cows. Lydia was accompanied and assisted by a big yellow dog. The cattle were not unduly frightened, and if a cow loitered, the 'big dog' trotted out toward her and she joined the herd in a hurry. 'Panther,' shouted Father Atkins. 'Run.' The panther stopped and sat down on his haunches, looking at them benevolently. He turned and walked slowly away."

According to Lydia Ann this was not the first time the "big dog" had assisted her in driving up the stock, always stopping when he came to the bars.

In January, 1936, a cougar, somewhat out of his home boundaries, had full opportunity to kill a policeman on his beat in the suburb of a western city, but true to his friendly nature, the wild animal did not harm the guardian of the peace.

The last known instance occurred in September of the same year. A California deer hunter in camp states that his slumbers were disturbed throughout the night, the first time by something blowing in his face. "I brushed that off. Then something nudged me as if trying to share my blankets. I cuffed that off." In the morning he saw his tent floor decorated with paw prints "as big as hams." This man resigned his new position in the Forest Service as he said he could find gentler playmates than mountain lions. We wonder if he could.

It would be interesting to know the percentage of domestic stock killed each year by the cougar; from freezing; from starvation. It would be interesting to know why American ingenuity, which has heretofore not acknowledged defeat, has fallen flat in the protection of domestic animals.

It seems proper to suggest that the stock owner be not allowed to overbuy; that he should pay for the protection and provision of his own livestock and not expect the United States Government to do it for him; that he should not be allowed the "privilege" of using poison or traps; that no animal should be killed unless it is actually attacking livestock, and, thus, a known offender.

File Cougar

Cougar vs. Elk

BY WALTER C. THORNTON

THAT cougars sometimes prey on elk is a matter of common knowledge. According to popular conception, the killing of herbivorous animals by carnivores occurs without retaliation. Nature did not entirely overlook the herbivores, however, in regard to matters of defense against their natural enemies. The flailing front hoofs of elk and other members of the deer family are dangerous weapons of defense. I have made two observations on the range of the Roosevelt elk on the Olympic National Forest, in Washington, during the past ten years, which indicate that under some conditions the elk can effectively protect itself and its young against the cougar.

The first observation was made on a ridge between Tunnel Creek and the Dosewallips River in July, 1929. I was then en route to a nearby fire camp. While passing through a small opening in the timber, I was attracted by the torn-up condition of the ground which appeared to be the result of a brief elk fight. This did not seem reasonable, however, as it was not the elk rutting season. Then, entering a thicket at the far edge of the opening, I came upon the carcass of a cougar. A cursory examination disclosed that it was a young animal, perhaps two years old, and that apparently it had been in good health up to the time of its death. Its carcass and teeth were in good condition, and the pelt was perfect. The cougar looked as if it had been dead about three days. I first thought that someone must have wounded the animal and it had traveled to that point, crawled into the thicket, and died. However, I abandoned that idea when I failed to find a bullet wound.

Time did not permit further examination of the carcass, but two days later I returned to the scene to satisfy my curiosity. On this occasion I dragged the carcass out into a small opening and in the bright sunlight made a very careful examination. No evidence of violence was found other than what had the outward appearance of being a slight bruise on the head just over the eye, and slightly towards the center of the forehead. I scalped the cougar and found he had suffered a fractured skull. The wound had the appearance of having been made with a sharp semi-hard instrument.

The area adjacent to the point where I found the dead cougar was at that season frequented by elk cows and calves. Their tracks were numerous.

The second observation was made in August, 1931, at a point just south of the forks of the Bogachiel River. At the time I was cruising timber with Jim Carson, now a Union Oil Company salesman of Portland, Oregon. Carson was running compass for me and was the first to see the carcass of a cougar lying twenty feet from the heavily used elk trail which follows the south bank of the river at this point. This cougar had the appearance of having been beaten to death with a club.

The area surrounding the cougar's carcass was well cut up with tracks of adult elk and calves. We figured the cougar had been dead about three weeks and that the elk tracks were about that old. We were unable to find definite evidence of a struggle of any kind.

I passed the point where the cougar's carcass was lying on several consecutive days and on each day made further search for the scene of a struggle, but could find nothing which gave conclusive proof of the cause of the cougar's death. Finally my curiosity overcame my dislike for handling such an odiferous subject, and I dragged the cougar's carcass out on the gravel bar and made a quick examination. Apparently no bones were broken, and I could see no evidence of any injury serious enough to have caused death. I noticed what appeared to be a head injury so I removed the cougar's scalp and found a badly fractured skull. The fracture was just above the cougar's eye and had the appearance of having been made with an instrument similar to that which caused the death of the first cougar observed.

The finding of two cougar carcasses, both of which had received fractured skulls in an area frequented by cow elk and calves, leads me to believe the cougars' deaths resulted from an encounter with the elk. I have seen cow elk go after dogs in defense of their calves. They are lightning fast with their front feet and strike a terrific blow. I do not know that elk ever kill cougars, but after watching them use their front feet in battle I believe such an incident entirely probable. It is reasonable to assume that a well directed blow would cause a skull fracture in the relatively fragile skull of a cougar.





Wildlife Stamps

BEAUTIFUL, NEW, 1½ x 2 inch four-color Wildlife Stamps, each picturing a wild American animal, 25c per 100, POSTPAID. Regular price, $1.00 per 100. Approval. NATA, Charleston, W. Va.



File Cougar folder
(January 8, 1942)

Roy Komarek tells me that the cougars in southern Florida prey heavily on feral hogs and on raccoons. This may enable them to persist despite the elimination of deer for tick control.

IN REPLY REFER TO

Pat file Mt. Lion folder in Corresp. files no card

(2)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

201 New Post Office Bldg.
Phoenix, Arizona
August 8, 1942

Library
Department of Wildlife Management
University of Wisconsin

Dr. Charles T. Vorhies,
University of Arizona,
Tucson, Arizona.

Dear Dr. Vorhies:

About two years ago we purchased a few scales to be used by some of our personnel engaged in predatory animal control so that accurate weights on mountain lions could be secured. Prior to that time some of our fieldmen who had been engaged in mountain lion control for as long as 20 or 25 years felt sure that the average big tom mountain lion weighed from 150 to as much as 200 or 220 lbs.

Frank Colcord, formerly employed by this Service, was of this impression, and was instructed several years ago to weigh some of the lions he was taking. He caught a very large tom lion near Lakeside, Arizona, weighed the animal and found it weighed 120 lbs. instead of 175 lbs. he had estimated that it would weigh. A few months later he took an unusually large tom lion in the Rimcon mountains, out of Tucson, Arizona. Since this specimen was to be sent to the National Museum in Washington, he skinned the lion, cut away the flank meat, and took out everything except the bare carcass. The carcass was placed in cold storage in Tucson, but was brought to Phoenix ten days later. We expressed ourselves to Frank, believing this was the largest mountain lion we had ever seen, and we weighed the carcass without the skin or without the flank meat or viscera, and it weighed 136 lbs.

You will find enclosed herewith weights and measurements on 23 mountain lions. A few of the weights are estimated, and where this is the case, we have so indicated. On occasions where the lions were actually weighed, following the weight, we have inserted the word "actual". Of the 23 mountain lions weighed of both sexes it ~~would~~ was be noted that the hind foot measurement is fairly uniform for the sexes. It appears that the average measurement of the hind foot for adult females is 10ins. and no female lion taken to date has weighed more than 78 lbs. The average weight is around 72 to 74 lbs. for females. The largest adult male lion taken and actually weighed, weighed 143 lbs. It is readily determined that this was an unusually large lion as the hind foot measured 11½ ins. while measurements for all the adult male lions taken probably average 11 ins. for the hind foot. There is considerable variation in the measurements of lions tails. We do not know whether this variation actually occurs or whether errors were made in taking the tail measurement.

George Carpenter indicated that the tail measurement of a female mountain lion taken in the Baboquivari Mountains was ~~9~~ ins., 71/2 in while Giles Goswick indicates that on one occasion the tail of a fully adult male lion measured 35 ins. The hind foot measurements of the sexes are fairly uniform, and we thought that perhaps that you would be interested in such information as we have been able to obtain to date.

Very truly yours,

E. M. Mercer

E. M. Mercer,
District Agent, Division of
Predator and Rodent Control

EMM/c

23 mt.-lions.

Specie: Mountain Lion

Date Taken: August 10, 1940

Location: 2 miles East of Lookout Lake, Kaibab National Forest North of the Grand Canyon, Arizona.

Sex: Male

Weight: 80 lbs. (actual)

Length: 76 inches

Tail: 28 inches

Hindfoot: 11 inches

Estimated Age: 2 years

Collector: Chas. S. Blanchard

Specie: Mountain Lion

Date Taken: August 13, 1941

Location: Kaibab National Forest, East Rim, East of V. T. Park, Ariz.

Sex: Male

Weight: 75 lbs. (Actual)

Length: 67 inches

Tail: 27 inches

Hindfoot: 10$\frac{1}{2}$ inches

Shoulder: 27 inches (Height)

Estimated Age: Less than 2 years

Collector: Chas S. Blanchard

Specie: Mountain Lion

Date Taken: August 25, 1941

Location: Oak Canyon, West side of Kaibab National Forest, near Ryan, Arizona.

Sex: Female

Weight: 78 lbs. (Actual)

Length: 68 inches

Tail: 27 inches

Hindfoot: 10 inches

Shoulder: 27 inches (Height)

Estimated Age: two or three years

Collector: Chas. S. Blanchard

Specie: Mountain Lion

Date Taken: Nov. 5, 1941

Location: 3 miles North of Rugged Mesa, West side of Bloody Basin, Yavapai County, Arizona.

Sex: Female

Weight: 70 lbs. (Actual)

Length: 73 inches

Tail: 25 inches

Hindfoot: 10 inches

Shoulder: 24 inches (Height)

Estimated Age: 3 years

Collector: Giles Goswick

Specie: Mountain Lion

Date: February 17, 1942

Location: Granite Basin, Northwest of Skull Valley in Yavapai County, Arizona

Sex: Male

Weight: 46 lbs. (Actual)

Length: 59 inches

Tail: 24 inches

Hindfoot: 6¼ inches

Ear: 2-3/4 inches

Shoulder: 22 inches (Height)

Estimated Age: 6 months

Collector: Giles Goswick (Weight and measurements by Buehler)

Specie: Mountain Lion

Date Taken: February 20, 1942

Location: Granite Basin, Northwest of Skull Valley, in Yavapai County.

Sex: Female

Weight: 70 lbs. (Actual)

Length: 67½ inches

Tail: 26 inches

Hindfoot: 9½ inches

Shoulder: 25 inches

Estimated Age: Very old, 10 years.

Collector: Giles Goswick, weight and measurements taken by Milton.H. Buehler Jr.

Specie: Mountain Lion

Date Taken: February 24, 1942.

Location: Granite Basin, Northwest of Skull Valley, Yavapai County, Ariz.

Sex: Female

Weight: 76 lbs. (Actual)

Length: 72 inches

Tail: 27 inches

Hindfoot: 10 inches

Shoulder: 23 inches (Height)

Estimated Age: 2 to 3 years. Had never raised young.

Collector: Giles Goswick. (Weight and measurements by Buehler.)

Specie: Mountain Lion

Date: February 26, 1942

Location: Granite Basin, Northwest of Skull Valley, Yavapai County, Arizona.

Sex: Male

Weight: 103 lbs. (Actual)

Length: 76 inches

Tail: 29 inches

Hindfoot: 11 inches

Shoulder: 27 inches (Height)

Estimated Age: 5 years

Collector: Giles Goswick, Weight and measurements by Buehler.

Specie: Mountain Lion

Date Taken: March 5, 1942

Location: Bloody Basin, Yavapai County Arizona.

Sex: Male

Weight: 65 lbs. (Estimated)

Length: 60 inches

Tail: 22 inches

Hindfoot: 8 inches

Shoulder: 21 inches (Height)

Estimated Age: 1 year

Collector: Everett C. West

Specie: Mountain Lion

Date Taken: March 12, 1942

Location: Scotch Basin, 45 miles Northwest of Hillside, Arizona.

Sex: Female

Weight: 77 lbs. (Actual)

Length: 74 inches

Tail: 29 inches

Hindfoot: 10 inches

Shoulder: 30 inches (Height)

Estimated Age: 4 years

Collector: Giles Goswick

Specie: Mountain Lion

Date Taken: March 21, 1942

Location: ~~Trout~~ Creek, Pete Bartmus Range, 25 miles Northeast of Wickieup, Arizona, Mohave County, Arizona.

Sex: Male

Weight: 106 lbs. (Actual)

Length: 73 inches

Tail: 29 inches

Hindfoot: 11 inches

Shoulder: 27 inches

Estimated Age: 3 or 4 years

Collector: Milton H. Buehler Jr.

Specie: Mountain Lion

Date Taken: March 25, 1942

Location: Bloody Basin, Yavapai County, Arizona.

Sex: Male

Weight: 145 lbs. (Estimated) Very large lion

Length: 80 inches

Tail: 27 inches

Hindfoot: 11½ inches

Shoulder: 28 inches (Height)

Estimated Age: 5 years

Collector: Everett C. West

Specie: Mountain Lion

Date Taken: March 26, 1942

Location: Hide Mountains near Camp Wood, Yavapai County, Arizona

Sex: Male

Weight: 116 lbs. (Actual)

Length: 76 inches

Tail: 35 inches

Hindfoot: 11 inches

Shoulder: 31 inches (Height)

Estimated Age: 10 years

Collector: Giles Goswick

Specie: Mountain Lion

Date Taken: April 15, 1942

Location: ~~Peart~~ Creek, Pete Bartmus Range, 25 miles Northeast of Wickieup, Arizona, Mohave County.

Sex: Male

Weight: 115 lbs. (Estimated)

Length: 78 inches

Tail: 29 inches

Hindfoot: (?)

Shoulder: 23½ inches (Height)

Estimated Age: 4 to 5 years

Collector: Richard Brock in trap set by Milton H. Buehler Jr.

Specie: Mountain Lion

Date Taken: April 20, 1942

Location: Horse Mountain in Bradshaw Mountains, Yavapai County, Ariz.

Sex: Male

Weight: 115 lbs. (Estimated)

Length: 74 inches

Tail: 27 inches

Hindfoot: 10 inches

Shoulder: 30 inches (Height)

Estimated Age: 4 years

Collector: Giles Goswick

Specie: Mountain Lion

Date Taken: Maynl9, 1942

Location: Pine Mountain, Southeast of Mayer, Arizona, Yavapai County, Arizona

Sex: Male

Weight: 81 lbs. (Actual)

Length: 73 inches

Tail: 28 inches

Hindfoot: 8 inches

Shoulder: 26 inches (Height)

Estimated Age: 2 years

Collector: Giles Goswick

Specie: Mountain Lion

Date Taken: May 20, 1942

Location: Pine Mountain, Southeast of Mayer, Arizona, Yavapai County, Arizona

Sex: Female

Weight: 70 lbs. (Actual)

Length: 74 inches

Tail: 28 inches

Hindfoot: 8 inches

Shoulder: 26 inches (Height)

Estimated Age: 2 years (Young lion)

Collector: Giles Goswick

Specie: Mountain Lion

Date Taken: May 22, 1942

Location: Pine Mountain, Southeast of Mayer, Arizona, Yavapai County.

Sex: Female

Weight: 69 lbs. (Actual)

Length: 72 inches

Tail: 27 inches

Hindfoot: 8 inches

Shoulder: 26 inches (Height)

Estimated Age: 2 years (Young Lion)

Collector: Giles Goswick

Specie: Mountain Lion

Date Taken: May 10, 1942

Location: Cabin Draw, 30 miles Southwest of Winslow, Arizona, Coconino County.

Sex: Male

Weight: 140 lbs. (Estimated) Very large lion.

Length: 84 inches

Tail: 30 inches

Hindfoot: 11¼ inches

Shoulder: 27½ inches

Estimated Age: 4 years

Collector: Everett C. West

Specie: Mountain Lion

Date Taken: June 14, 1942

Location: East Clear Creek, 10 miles Northwest of Chevelon Butte in Coconino County, Arizona

Sex: Female

Weight: 73 lbs. (Actual)

Length: 78 inches

Tail: 29 inches

Hindfoot: 9½ inches

Shoulder: 24½ inches (Height)

Estimated Age: 2 years

Collector: Everett C. West

Specie: Mountain Lion

Date Taken: July 9, 1942

Location: Cabin Draw, 30 miles Southwest of Winslow, Arizona, in Coconino County.

Sex: Female

Weight: 73 lbs. (Actual)

Length: 78 inches

Tail:29 inches

Hindfoot: 9½ inches

Shoulder: 24½ inches (Height)

Estimated Age: 2 years

Collector: Everett C. West

Specie: Mountain Lion

Date Taken: July 10, 1942

Location: East Clear Creek, 10 miles Northwest of Chevelon Butte, in Coconino County, Arizona.

Sex: Male

Weight: 143 lbs. (Actual)

Length: 85 inches

Tail: 34 inches

Hindfoot: 11½ inches

Shoulder: 27 inches (Height)

Estimated Age: 5 years

Collector: Everett C. West

Specie: Mountain Lion

Date Taken: June 19, 1942

Location: Baboquivari Mountains, Pima County, Arizona.

Sex: Female

Weight: 74 lbs. (Actual)

Length: 72 inches

Tail: 21½ inches

Hindfoot: Not taken

Shoulder: 26 inches (Height)

Estimated Age: 4 years

Collector: George Carpenter

Wisconsin Conservation Department
Madison 2, Wisconsin

file Cougars

All Papers

Dec 1946

Madison, Wis.---Somewhere in northwestern Wisconsin near the junction of St. Croix, Dunn, Polk and Barron counties there may be one or more cougar or "mountain lions" feeding on deer and the remains of butchered animals, the conservation department said today.

At least six people from the towns of Clear Lake, Bowning and Prairie Farm have reported seeing such animals recently. Norman H. Johnson, Clear Lake, says that he observed such an animal cross a road 100 feet ahead of him in the town of New Haven, Dunn county, on June 4. More recently, a farmer, William Krug, Downing, reported he saw two such animals feeding on the remains of butchered cattle in his pasture. The animal is described as being about five feet long, not counting a long tail, and weighing from 125 to 150 pounds.

There are no authentic records of the cougar or mountain lion in Wisconsin since before 1880, but there have been reports from 1909 and even more recently which never have been proved.

PHF
12-19-46

THE UNIVERSITY OF NEW BRUNSWICK
FREDERICTON, N. B.

DEPARTMENT OF BIOLOGY

file Cougar
(slides in photo
Collection)

April 17, 1947

Professor Aldo Leopold
Department of Wildlife Management
424 University Farm Place
University of Wisconsin
Madison, Wisconsin
U. S. A.

of Cougar

Dear Professor:

Thank you for your letter of April 9th, and your confirmation of my identification of the tracks. I have not yet heard from Gus Swanson or Stanley Young, but I consider their concurrance a foregone conclusion now. However it will be interesting to see what they have to say, as they do not know the background of this study as you do, and will probably think I have just found this by accident.

The thesis illustrations are about ready to go on to you, and you should have them next week.

With best wishes,

Sincerely,

Bruce.

Bruce S. Wright

BSW/JGW

FOREST ENEMIES

THE PORCUPINE
Walter J. Perry

The accompanying illustrations are from photographs taken on the Carson National Forest in northern New Mexico.

This animal is quite common in the forests of New Mexico from the Pinon stands of the lower country up through the Yellow Pine belt and into the Alpine type at 10,000 feet elevation and above, and the damage to growing timber from this source is, in the aggregate, very great. None of our conifers are safe from his attacks for he is a gross feeder and has little if any choice of species, and though the pines and firs suffer probably the heaviest damage he will, on occasion, even strip the bark from oak saplings.

The chief damage by the porcupine consists in his eating the bark from the branches and upper stem of the tree, though some defoliation is also to be charged to him. When this gnawing occurs on large trees which have already attained their height growth the damage is not usually great, the work being usually confined to the branches, but when, as is more frequently the case, he chooses saplings on account of their more tender bark, he is very destructive. In this case he frequently removes enough bark to effectually girdle the young tree somewhere on the upper stem, following which the tree dies in from two to four years from that point upward.

Were it not for a strange provision of nature whereby when a thrifty young pine is so girdled and loses its leader one of the next lower branches may turn from it's horizontal position and grow perpendicularly, assuming all the functions of the true tree stem, the damage would be immensely greater than it is. (Illustration #1). However, this does not always occur, and many young trees are ruined outright, never making further upward growth. (Illustration #2). Even with this power of recovery from injury there is no inconsiderable damage from the fact that even if the tree does produce a second leader the bayonet, as the dead spike is called, remains for a great many years, constituting a menace to the tree as being a lodging place for spores of heart-rotting fungi, and is at last in part enveloped by the new growth which causes a faulty place in the tree. Also, of course, there must be more or less crook in the bole at that point. Again, such trees frequently put up not one but several such leaders, nature appearing to overdo the matter of trying to repair the damage. In this case the tree is frequently rendered of little or no value for lumber owing to the shortness of the undivided trunk, while the separate leaders may not attain individually to merchantable size and form. (Illustration #3). It is then known as a "wolf tree", taking up a great deal of room in the forest with it's abnormally large crown and producing no lumber.

Fortunately for the forest, while the porcupines have but few enemies capable of doing them serious injury, when men and mountain lions are excepted, neither are they very prolific. Mrs. Porcupine brings forth but once a year and but one at a birth.

In taking these pictures great difficulty was had in persuading Porky to face the camera and look pleasant (Illustration #4). Though it was easy enough to obtain a rear view. (Illustration #5). This was because Porky's tail is his "business end" which he always presents to his enemies. When cornered he will if possible stick his head into a bunch of brush, or against a log or rock, with his nose well down between his front feet. Then, with his formidable armament of barbed quills all erected and his equally armed and powerful tail free for action, he can defy anything but an armed man.

Though possessed of enormous gnawing teeth capable of inflicting a serious bite, he is so very slow in all his movements, except indeed his tail, that he does not depend upon them at all as a weapon, and only when thrown upon his back, and held there, will he even attempt to use them. These great teeth are four in number, two above and two below, and the latter may be as much as three inches long when removed from the jawbone. Also, these great gouge chisels are salf-sharpening, so that the older the animal the sharper his teeth. He has an excellent set of 16 deeply corrugated grinders, eight below and eight above. These grinders are so constructed that, while they have no roots proper, they cannot be removed without fracturing the bone, as that part of the tooth imbedded in the bone, and to which it appears to actually grow, rather than to merely occupy a socket as in most other animals, is larger than the portion that protrudes.

There is no foundation whatever for the once popular notion that a porcupine can "shoot" his quills, or that they are poisonous, though the quickness and range of action of his tail enables him to plant quills in an enemy so as to almost make it appear to the victim that they were "shot" there! When well imbedded in the flesh it is both difficult and painful to remove the quills from the fact that they are minutely barbed and lacerate the flesh as they are withdrawn. If broken off and left in the flesh, as usually happens with animals, the point works rapidly forward and may show up shortly at the opposite side of the leg or jaw, but I have never known of a case of "poisoning" or infection to follow.

The illustrations show Porky in his proverbial fretful mood, which, in his wild state, is the only mood he is ever in when a man is close enough to photograph him! When not on the war-path, and with his "bristles" laid down, he presents quite a different appearance. With all his apparent "fretfulness" however, if taken when young he tames very easily and makes an extremely affectionate and interesting pet, never raising his terrible quills except perhaps in the presence of a strange dog.

At first glance the porcupine would appear not adapted to climbing large trees. Although not furnished with sharp climbing claws like a squirrel, he has four powerful hooks on his thumbless hand, and aided by the stiff bristles on the lower side of his strong tail he has not much difficulty in ascending even a smooth-boled pine. However, this is too slow and serious a matter with him to be practiced for mere pastime, and having climbed such a tree he may remain in it for a week or even several weeks if in winter, and the snow is deep. His short legs and slow and clumsy waddling gait make it very difficult for him to get about in the snow.

Of almost exclusively nocturnal habits, this animal is but seldom seen traveling on the ground, although he will sometimes venture to descend in late afternoon and vary his menu of bark with a feed of various herbs and grasses in season. He is also fond of oak acorns and will hunt for them even under the snow in early winter.

It is remarkable the facility with which this animal that may occasionally reach a weight of 35 to 40 pounds can conceal himself in the crown of a tree, especially a pine. In this matter nature aids him greatly both in his conformation and color. Humped up on a pine branch and with his long back hair erected, both his color and shape blend so perfectly with the tufts of pine needles as to be not at all conspicuous.

In designing the porcupine nature sacrificed speed to power, and while slow he is tremendously strong. Also, his skeleton is most remarkable from the strength and thickness of the bones which appear to be entirely out of proportion to the size of the animal.

With the exception of some reptiles, I know of no animal so tenacious of life as the porcupine. When shot from a tree he may tumble 30 to 50 feet and, provided the spinal cord or the brain is not shattered by the bullet, get up and walk away. I have noted the heart pulsating strongly full fifteen minutes after the animal had been killed and drawn.

Although the porcupine was formerly, and may still be in some States, protected by law on the ground that he would furnish an easily obtainable food for an unarmed person lost in the woods, undoubtedly his value in this respect, and at this time, does not outweigh the actual damage he does in the forest. From the Forester's point of view there should rather be a bounty on him.

Manzano Inspection - 1923

Porcupine female, not over 6# weight, seen at Ellis corral. Had great difficulty climbing a 36" white fir with rough bark - no sign of recent suckling. Was sunning herself.

RFP

block of Forest Service timber. It is understood by members of the Santa Fe force that Scaler Tattrie of the Hallack & Howard sale on the Carson who is resigning August 1 is to be a partner in the lumbering operation. Briggs has been employed by the Hallack & Howard Company for the last two or three years. The new operation will use a No. 25 American Sawmill driven by a 25 horse power Fairbanks-Morse gasoline engine.

Getting at the Porcupine Problem: Investigations by Dr. Walter P. Taylor of the Biological Survey at the Southwestern Forest Experiment Station are already producing some interesting figures. A single small porcupine (weight 8 pounds) in a cage gnawed off 54 square inches of bark in a single night. Another porcupine (weight 13.5 pounds) fenced into an area about 90 feet square, disposed of 196 square inches of bark in six days, an average of about 33 square inches per day. In this time the porcupine worked on two large trees and 17 small ones, 6 of which he girdled. A third porcupine (weight 12 pounds) fenced into a slightly larger inclosure, was responsible for the removal of 300 square inches of bark in six days, an average of 50 square inches per day. In the process the animal worked on five blackjacks and 71 seedlings, of which latter 39, or more than half, were girdled and killed.

Field: Pooler (Gila); Kircher (Sitgreaves); Lang, Long (Crook); Marsh (Carson); Loveridge (Tusayan). French (Coronado)
Visitors: Headley, Washington (Sitgreaves); Preston, Washington (Carson).
Acting: Mullen.

Mrs & Folder

Porcupines

No. 25-150

DAILY BULLETIN
U. S. Forest Service
Southwestern District

December 29, 1924.

Delinquent Grazing Fee Report Due January 1: Supervisors are requested to submit promptly after January 1, their quarterly report on grazing fee delinquents.

Barnes to Speak at Livestock Convention: The program for the 28th Annual Convention of the American National Livestock Association which will be held in Albuquerque, January 14, 15 and 16, 1925 carries the name of Assistant Forester W. C. Barnes. The subject of his address is "Problems of the Range Cattleman- How Shall He Meet Them?"

No Annual Property Return Due: District Committee minutes No. 12 for November 20 mentioned the approval of the Forester for elimination of annual property returns by Forests due January 1 under the new scheme of office check devised by this District. This note is to repeat the good news since one unit was about to prepare a return when halted. Another job eliminated at a season of heavy office work helps.

Announcing the Arrival of -------: The newest arrival among the increasing family of manuals, among which clan there seems to be as yet no signs of race suicide, is a ponderous volume just ushered into the district, Christmas week. The last page of this husky newcomer is numbered 1230 so he's born full grown. Actually it is merely the rebirth in a single volume of three old well known manuals- the Department Fiscal, Property and Administrative Regulations. The new form will be vastly easier to amend and decidedly more usable than the little paper covered books that served so many years. A full supply was not received but all units will receive at least two complete copies in the first distribution.

Damage By Porcupines: Apparently the most serious damage by porcupines, under natural conditions, is done to two size and age classes, i. e., trees from 3 feet high to 4 inches diameter breast high and those from 4 inches to 10 inches diameter breast high.. Each one of these large growing trees represents the survivor of from one to ten thousand small seedlings, according to G. A. Pearson, Silviculturist, and damage to these trees is doubtless more serious, from the standpoint of forest maintenance, than damage to smaller seedlings, where the mortality is expected to be heavy, or larger trees, which have more nearly made their growth. The investigations show that porcupine work on the western yellow pine is of relatively little importance in virgin timber, but tends to increase in cut-over areas. While this result does not appear in the figures for the smaller seedlings, it seems to hold for all the other classes, and is most marked in trees from 3 feet high to 10 inches diameter breast high. In virgin timber trees above 10 inches in diameter are little damaged, in cut-over sections trees of this size are very few in number, but those present are likely to be hard hit. (Findings by Dr. Taylor).

Acting: Cheney.

Porcupine or "Misc Animals" folder

DAILY BULLETIN
No. 25-142 U. S. Forest Service December 18, 1924.
Southwestern District

Lumber Census: The cooperation of the Forest Service on the lumber census will continue. The short form (card form) will be used for gathering the data for 1924. Requests will be mailed out as soon as received from Washington. The usual clean-up work will be done by the special agents on the several Forests.

Swedish Forestry: Cutting has been going on in the forests of Sweden for at least 1,000 years. The forests of Sweden which consist principally of spruce and pine, now cover 52% of the total land area. In 1923 the exports of forest products from Sweden amounted to a value of about $183,000,000 and in the 12 months ended last June upwards of $19,000,000 of wood pulp was shipped to paper mills in the United States. (The Lumberman).

County Swinging Into Line: A short time ago, states the Coronado Bulletin, there was a fire near the new Patagonia-Nogales road which started in the grass adjacent to the forest boundary and would have been some blaze had not the state road crew put it out. The fire had all the earmarks of being incendiary but nothing turned up after an investigation. About a week later Ranger Kendall noticed smoke outside the forest in the same vicinity and went over and found a Mexican riding away from the area where the fire started. The Mexican was taken back to help on the fire and it developed that he had probably started it and possibly started the other fire which reached the forest. The Deputy Sheriff happened along and took the Mexican to town where he received 30 days in the calaboose and at the end of the sentence is to be deported as an undesirable alien. The action was more or less on the initiative of the county authorities and speaks volumes for the sentiment in that vicinity.

Porcupine

Porcupine Menu: As a result of the experiments conducted last summer by Dr. Taylor in northern Arizona it has been ascertained that a single porcupine, which was maintained in a yard 51 days removed 1419.91 square inches of bark (9.86 square feet) from western yellow pine in the yard. The average number square inches of bark removed per day, 27.84. Number of seedlings and other trees worked on, 50 (practically all those in yard. Number of seedlings girdled, 29 (58 per cent). Number of principal branches of large trees attacked, 31. A single porcupine maintained in another yard for 67 days removed 3575.72 square inches of bark (24.83 square feet) from western yellow pines. Average number of square inches of bark being 53.36 per day. The number of seedlings and other trees worked on, 131-(practically all in yard). Number of seedlings seriously injured, 115 (87 per cent). Number of seedlings missing altogether, 20 (15 per cent). Number of branches of six large trees worked on, 120. From the economic standpoint it is of interest that the principal damage in the porcupine yard was done to two classes of trees, namely seedlings from 6 inches to 3 feet high and from 3 feet high to 4 inches diameter breast high. The bark peeling and damage recorded is not altogether adequate as indicating porcupine work on seedlings, for, especially toward the end of the summer, many of the smaller seedlings were practically cut to pieces and consumed.

Field: French (Apache); Scott (Carson).
Acting: Kircher.

Procupine

DAILY BULLETIN
No. 25-190 U. S. Forest Service February 17, 1925
Southwestern District

Captain Ancona and Captain Jones: The Denver Post states that Edward P. Ancona and John D. Jones, whose addresses are given as U. S. Forest Service, Albuquerque, N. Mex., have been commissioned Captains of Engineers in the Officers' Reserve Corps. The announcement is made by Major David P. Wood of the 103d Division of the United States Army.

Former Governor Lowden Will Be Chairman: A conference of organizations that propose to boost American Forest Week, April 27-May 3, has been held in Washington and a committee of five people chosen for handling the affair. Ex-governor Lowden of Illinois has been selected as chairman with a strong corps of vice-chairmen and committeemen behind him. The committee has established headquarters and is already at work.

Sudden Service: The Forest Service has chafed, in some instances, under delays in getting service of papers by United States Marshals. Here is a case, however, that so far as D-3 knows, is a record beater. It shows a burst of speed that offers a challenge to be equaled. Late one afternoon the United States Marshal at Santa Fe was given Complaint and Summons to serve involving a suit which was being filed for the recovery of grazing fees. Service was duly made upon defendant fifty miles northeast of Espanola, seventy five or eighty miles from Santa Fe, as shown by the Marshal's return, the following day.

Winter Not The Season for Porcupine Control: Although it is easy to locate porcupines in the winter by the damage they do, they remain continuously in trees, according to Mr. E. E. Horn of the Biological Survey and, therefore, do not take poison. Mr. Horn, whose headquarters are in Denver has spent about three weeks this winter in company with Dr. Taylor in a porcupine control study at the Southwestern Forest Experiment Station near Flagstaff. He stopped for a day or two in Albuquerque on his way back to Denver. It was found that poisoning is not successful when the snow is deep because the porcupines do not often come down to the ground. They sometimes remain "up a tree" from two to three weeks. The Biological Survey men, as a result of their observations, recommend fall or spring for control work by poisoning because in those seasons the animals move about much more freely than in winter. It is not difficult, Mr. Horn states, to discover where the porcupines are in winter. Looking with field glasses from any high point or eminence, one can readily pick out porcupine trees by the peeled places which show up prominently in the light. Nor is it hard to shoot them when once a hunter reaches a porcupine tree but shooting is expensive control. About thirty animals were shot and examined during the study and some valuable things learned. All but one of the females contained young but in no case was more than one found in a body. The stomachs were also examined and found to contain quantities of pine needles and mistletoe in addition to bark. Winter conditions were extremely severe for study. Travel was difficult account of deep snow and work very uncomfortable. Horn had both ears frosted and also suffered from snow blindness.

Field: Kerr (Crook) Scott (Prescott) Jones, Randles (Santa Fe)
Acting: Kircher.

From D-2 Bulletin Dec 1925

PORCUPINES

Some very interesting facts regarding porcupines were brought out at a meeting of the Central Rocky Mountain Section of the Society of American Foresters, held in the District Forester's office on December 1. Since very little has been published on porcupines and the field men have displayed considerable interest in the subject, a brief summary is given.

A report prepared by Supervisor G. M. Hunter in 1918, while stationed on the Routt Forest, was read. Mr. Hunter's article emphasized the damage to timber by porcupines. A twenty acre plantation of Engelmann spruce on Soda Creek was partially destroyed by porcupines. Tallies made in the lodgepole pine - spruce - fir type on Elk River and Mill creek show that 27% of the trees above 10" D.B.H. and 42% of the trees below 10" were injured by porcupines, or an average of 36% of the total number in the stand. The injury to the trees was classified as follows: slight damage 35%; bad damage, 31%; serious damage (some trees may die), 21%; trees dead 14%. It was also brought out that 94% of the injured trees were lodgepole pine, 5% spruce, and 1% fir.

Hunter figured the loss due to porcupine injury on the basis of the difference in stumpage value between live and dead timber. For the Mill Creek area, where timber was appraised at $2.00 per M ft. B.M. in 1918, and dead timber at $.75, the damage due to porcupines amounted to $1.10 an acre. Since green sawtimber is now appraised at a considerably higher rate than in 1918, the present damage would be much greater.

All of the trees above 4½ feet in height were tallied on six acres in the yellow pine type near Pagosa Springs by Bates and Johnson in 1924. Out of 624 trees tallied, 119 or 19% were damaged. Most of these were saplings and young poles.

Hunter's article also showed the damage to livestock due to porcupines. In one herd of forty head on Snake River, an average of five head contracted quills each year. Only timely discovery prevented losses. J. H. Dickens of Walden reported that quills are removed from 1% of his cattle each season and that two 2-year old steers died from this cause last fall. Undoubtedly porcupine quills in the mouths and tongues of many cattle and sheep are responsible for their failure to put on weight.

Mr. E. E. Horn of the Biological Survey then gave a summary of the studies that he and Dr. Taylor have made at the Southwestern Experiment Station near Flagstaff, Arizona. The breeding season occurs during the fall. The young are born in May or June and there is seldom more than one to a litter. The young are quite large when born and have a set of quills that become hard and ready for action as soon as dry.

Mr. Horn's studies lead him to believe that the porcupine is a fairly intelligent animal. There are indications that he has definite migrations instead of wandering aimlessly around. For instance, in the

fall, the general movements of the animals are from the higher altitudes to the pinon-juniper type, while in the spring the reverse is true.

When there is much snow on the ground, they move very little and have been observed on the same tree from one to two months. This is the reason for the almost complete girdling of the upper branches and trunks of large pine trees.

The control of the porcupine is difficult for he seldom pays any attention to poison baits. Moreover strychnine has little effect on him. This, Mr. Horn believes, is due to the fact that the tannin in pine bark counteracts the strychnine. The tannin reacts with the strychnine to form a non-soluble that is passed off. However, strychnine salt has poisoned numerous porcupines where used adjacent to vegetable gardens. In the case cited the porcupines were undoubtedly living on a vegetable diet exclusively and the strychnine was effective.

One effective chemical is still in the experimental stage and the results are not available.

Mr. Horn found the best method of control to be a rifle. During the winter in the yellow pine type from a high point, one can detect the girdled trees with a pair of field glasses. These are then located and the porcupine are shot. Also, it is fairly easy during the winter to locate the animals by their scent.

Considerable discussion followed regarding the reason for the destruction of ax and other implement handles, saddles and other leather-goods, porch and kitchen floors. Theories were advanced that the "porkies" gnawed such things on account of the salt or oil present, altho one member argued that this was done merely by reason of "pure cussedness".

Mr. Horn stated that the Biological Survey had received some help from the field men in District 3 in the way of observations given in response to a questionairre sent out to the field. This would make a good subject for a bulletin article for anyone who has some first hand knowledge of porcupines and their habits, the damage they do, the number on any definite area, method of control, etc. Anything on this subject that is sent in for the bulletin will be transmitted to the Biological Survey. It is hoped that the Biological Survey will extend its study to the lodgepole pine type in Colorado or Wyoming.

FRED R. JOHNSON - D.O.

# # # # # #

Abe Martin says, "We used to call a feller a durned crank that devoted all his time an' attention t' one thing, but t'day he's a specialist."

Porcupines

DAILY BULLETIN
U. S. Forest Service
Southwestern District

No. 28-128 December 1, 1927

Bears On Rampage: Mr. Lee Rice of Cliff reports that several head of cattle have been killed on his range by bears in the last few days, according to the Gila Bulletin. He is requesting permission of the State Game Warden to trap for the killers.

Joe Campbell Passes Away Suddenly: Old timers in the Service will be grieved to learn of the death of Joseph K. Campbell, brother of former Governor Thomas E. Campbell of Arizona, on November 20 at his ranch house north of Prescott. Mr. Campbell was Assistant District Forester in charge of the office of Range Management from the time the District was organized in December, 1908 to July, 1911, being succeeded by Mr. Kerr. He resigned and went into the livestock business, later becoming a livestock inspector for Arizona. During the war he was Chief of Government Stockyards. Death came suddenly from heart trouble.

Clearing The Highway: January first has been set for the final removal of all advertising and other private signs now in existence on state highway rights of way. General instructions were issued by the Highway Commission early in the year for the banishing of all such signs. Notice was given all sign owners in this connection. In general the order has been carried out; however there are still some signs existing contrary to the Commission's action. Additional notice will be given, if necessary, and if all such signs are not taken down or removed to private property by January first, the State Highway Engineer has issued instructions for their complete removal at that time.

Exterminating Porcupines: The most interesting achievement in Forest Research in D-3 during the past three years has been the successful culmination of experiments in exterminating porcupines by Mr. E. E. Horn of the Biological Survey, according to the Monthly Report of the Branch of Research. During the past three years the Biological Survey has had from one to three men working intermittently on this problem at the Experiment Station. Two years ago poisoning appeared hopeless. Horn, however, has been working persistently on baits and methods of placing them, based on observations of the animal's habits. Salt and strychnine were found to be an effective bait, but for a long time difficulty was experienced in placing it where porcupines would be likely to find it. An important step in solving this problem was the discovery that the animals move back and forth between the lowlands and prominent mountain peaks along fairly definite routes of travel. These routes are made conspicuous by the fact that nearly every tree is damaged. Generous baiting in the path of migration, which is usally about a mile wide, will get nearly all the porcupines in the vicinity. Last spring Horn established a series of tree stations in one of these strips, placing an impoverished wooden cup containing salt and strychnine in each marked tree. A recent examination revealed a dead "porky" under more than half of the baited trees and in one instance three carcasses were found under a single tree. The present outlook is very favorable for effective control of this pest at a reasonable cost.

Field: Kerr, Hussey (Tonto); Herms (Phoenix, Ariz.)
Leave: Cheney (Georgetown, Ill)
Acting: Calkins

Porcupine folder

REPORT ON PORCUPINE STUDY, 1931

By Ranger L. W. Rogers, Santa Fe.

1. The porcupines found in the foothills and at lower elevations seem to prefer young alfalfa to the exclusion of most other plants during the spring. In the late summer and fall they do not bother alfalfa but want corn in the milk; they will keep on eating corn but most of the damage is done before the corn becomes hard. The porcupines I have found in the higher elevations or around 10,000 feet seem to prefer strawberry plant, Senecio, Sego Lily, June Grass and some Blue Grass.

Data on porcupines found in the lower elevations was secured from the residents of Cundiyo. This community was given poison salt and blocks for tree stations. They claim they got no results from tree stations, as they did not find any dead but claim they found two carcasses in a den where they had poison. They claim that the porcupines will eat alfalfa in the spring when it is young, most damage done during the month of May. They then seem to disappear, but just as soon as the corn begins to silk out they return and stick around the fields. They claim to have killed eight porcupines during the heavy snow storm last March but that the usual number was on hand again in the latter part of September and October.

One porcupine in the high country, at an elevation of 11,500 feet, was found grazing along in an open park at the head of Puerto Nambe. This porcupine was watched for a period of ten minutes, the exact spot noted, and the area was gone over carefully. I found that the strawberry plant was taken most, but Senecio, June Grass and a few leaves of Blue Grass and one plant of Sego Lily was also eaten. This was during the first part of July. Porcupines will not feed when they know they are being watched. The latter part of July another porcupine was seen at an elevation of 7,300 feet feeding along on yellow pea and some June Grass and one plant of Senecio was taken, but the porcupine was going up grade and very steep and it was hard to distinguish just how much was taken. They no doubt eat most of the more succulent weeds and grasses, but I do know they eat the above species, and as the above species can be found at most all elevations it is thought that the area is too extensive to try ground poisoning of any sort on these areas, but we should stay with the tree method and in dens where they occur in that locality.

2. Poison Stations: It is thought that October 15 to November 15 is the best time to establish tree stations, due to the fact that after November 15th we usually get a fairly heavy snow and it is believed that the porcupines will stay in trees at least during the first storm. If the stations are filled with poison just prior to this time the poison will remain most of the winter due to the moisture which will harden the salt and prevent same from being blown away. In the lower foothill country where the areas are accessible in the early spring, say March 1 to March 15, stations should be refilled to take care of porcupines during storms which we usually have in or during the latter part of March and April. Dens should have plenty of poison at all times of the year, at least every fall and spring, as the females inhabit dens while the young are being born.

3. Migrations: It is a known fact that the porcupines are in the foothills on January 1, at elevations ranging from 7000 to 8000 feet. This is proven by the statement from the people of Cundiyo that they see them at the Ritos and around their fields at Cundiyo, and the fact that they want a bounty on them, as they say they can kill any number of them during the winter if they could get enough money to buy the ammunition. During the spring the porcupines work on alfalfa from the latter part of April and during May, then it is thought that they feed back into the higher foothills three to four miles during June, July and August, and during the month of September return to original locality for the fall and winter.

The porcupines at the higher elevations no doubt stay in trees longer in the fall and then den up for the winter and do not migrate to the lower country. The reason for this conclusion is this: The fact that while the porcupines are in the alfalfa in the lower country during May one will see more porcupines at the higher elevations than at any other time. It was during the early part of May, 1931, that Mr. Appleton of the Aspen Ranch School, elevation 9,000 feet, killed five porcupines and at that time there were plenty of snowbanks to keep them in either the high country or the low country.

I can give one more reason for believing that the porcupines do not migrate from low to high elevations. I have seen porcupines at an elevation of 7,300 feet and the same day killed two porcupines at an elevation of 10,500 feet - and gone through two feet of snow on the way. Then again it seems as though the porcupines of the higher elevations are somewhat larger and have a light brown color with a tinge of red, where the porcupines of the lower elevations are a dark brown and do not seem as large. **There is a possibility that we have two species in this mountainous country, and this will be checked for verification at the first opportunity.

My observations lead me to believe that porcupines on my district do not have any definite lines of travel or migrations but range summer and winter more or less promiscuously depending on the supply of feed and water.

4. Rest Trees: During the past year I have found only one tree that answers the description of the rest trees given in Leaflet No. 60, (Porcupine Control In The Western States) and this tree has not been used in the past two years. Approximately two miles south of this rest tree there is a series of so-called winter trees, but this does not indicate any definite line of travel. There does not seem to be any definite width to travel lines.

5. Winter Trees: I have on the Tesuque District an infested area in Sec. 10, Twp. 16 N. R. 10 E. within the Arroyo Hondo watershed. This area has possibly 15 trees in a direct north and south line for one-half mile which show heavy damage by porcupines, the upper branches have been barked, the main stem on most trees barked or girdled for two to ten feet. The tree most heavily damaged is a white fir, the rest being blackjack and scrubby ponderosa pine. From this area in any direction the damage is hardly noticeable. This leads me to believe that they stopped in this series of trees for a period of one storm, then spread out and went to a lower elevation, or on to a higher one, lower I believe as this is only about one mile from the foothills.

I have checked very carefully trees showing mistletoe and groups of trees within a mistletoe area and have found that they do not eat mistletoe or if they do I have failed to find it. I have seen trees with mistletoe in the lower branches and have porcupine signs on the main stem at the top, but no sign on any branches having mistletoe. I have talked to natives in regard to porcupines eating mistletoe or showing a preference to trees with mistletoe but they are of the same opinion as myself that they do not eat mistletoe.
Note: Ranger Johnson reports noticing a preference for bark from mistletoed trees - probably because the cambium layer is thicker and perhaps more palatable.

6. Dens. During the past year I have found only two places where porcupines den up for certain, one with a southwest exposure on the boundary of the Aspen Mountain Plantation, elevation 9,500 feet. This is a bluff of quartz and granite, with a granite slide directly beneath. This den shows porcupine sign and poison put in den always disappears in a short time. The other den is along the Ritos just south of Cundiyo and is of gramite and limestone formation, elevation 7,300 feet. These are the only two dens on the District I have found that show sign of use. Have examined slides and cliffs at most signs of porcupine damage, but could not say they were used. The cover on the Aspen Mountain is composed mostly of aspen, white fir and some Douglas fir. The cover at the other den is composed of ponderosa pine, pinon, juniper, and some Douglas fir.

It is claimed by the natives that the young are born the latter part of April and in May. I have not seen a real young porcupine, but I have killed four females from May 18th on. Upon opening up for contents of stomachs, I have found no young and no young were following, which would go to show that the young must be born much earlier than May, possibly in the early part of March. This will be ascertained this coming spring through the cooperation of the residents of Cundiyo.

7. Poisoning. During the summer season of 1929 fourteen poison tree stations were put up in Agua Sarca Canyon. These stations were refilled both spring and fall for two years. No dead porcupines were ever found, but no new sign of porcupines have been noticed in the past year.

Sixteen stations were established on the Aspen Mountain Plantation the same year, fourteen tree stations and two dens. Three dead were found the first year after putting out poison. Poison in dens was always gone, but no carcasses found. Stations were refilled three times each year for two years. The second year the blocks were nearly eaten up in the spring. During the year of 1931 no new sign could be found except in dens, and in these the poison continued to disappear. The damage had ceased, or did during the year 1931. These stations will be refilled twice during the year 1932 with poison being put out in dens at each inspection trip over area.

All carcasses were found about one hundred feet from poison stations. None at stations and none of the dead were headed toward water.

The following are some of the things I would like to verify or have definite opinions on:

1. Possibility of two species.
2. Definite knowledge as to when young are born.
3. A known fact as to whether or not porcupines really migrate from the low foothills to the high country in spring and return in the fall.

** Quoted from letter from Dr. Walter P. Taylor concerning two species of porcupine.

"The Coues' porcupine (Erethizon epixanthum couesi) is assumed by the Biological Survey to be the form present in Arizona and southern New Mexico. The porcupine of southern Colorado and northern New Mexico is similarly assumed to be the yellow-haired porcupine (Erethizon epixanthum epixanthum).

"It is quite possible that the porcupines in the high mountains of the Santa Fe Forest are the yellow-haired species and those lower down are the coues' porcupine. In order to be sure of this, however, a number of specimens would have to be collected and studied at the Washington office of the Biological Survey where material for comparison is available.

"Unfortunately, there has been no world-wide monograph of this group. The systematic status is uncertain in areas half between the regular regions of distribution. I hope you will encourage Ranger Rogers to secure all the information he can on the subject."

- - - - - - - - -

Porcupine Control On The Tusayan: "Approximately 300 poison blocks were put out in January, 1931, by Rangers Morse and Hulbert," states Supervisor Kimball in his annual silvicultural report. "Examinations in the spring showed that many of the blocks had been chewed on, and a number of porcupine skeletons were found. The Biological Survey started control work in November, 1931, in charge of N. F. Gillham on the Tusayan and Coconino Forests. 700 blocks were put out between Kendrick and Wing Mountains. Mr. Gillham is now working east of the San Francisco Peaks, but expects to return to the Tusayan in the spring. If money is available, he plans on working a crew of three men and covering the heavily infested areas on the Tusayan and Coconino before the spring migration.

Beaver Colonies: On my recent trip to the Carson I noted good colonies of beaver on the Cimarron below the Eagle Nest Dam. Evidences of new work was noticed at several points along the stream. Beaver colonies are at work also on Red River between Questa and the mines. Several new tree cuttings were noted. A Mexican had a load of narrow leaf cottonwood poles taken from a nearby homestead nearly all of which had been felled by beaver. Beaver sometimes have a poor "eye" for "lean" and the tree fails to land where wanted. A number of trees had fallen parallel or away from the stream. These were of no use for dam construction.

J. D. Jones

Pennsylvania Game News
Vol. IV, No. 7, Oct. 1933, p. 10

Edward Pond, of Mehoopany R. F. D., shot a porcupine in his corn field that weighed sixty-eight pounds. The animal was weighed on sealed scales in the presence of witnesses.

cliff Porcupine

F. le Porcupine

But there is a value in this tiny remnant of original growth, this one out of a thousand acres, which we believe transcends all the other values combined—its value of scientific study.

European foresters long ago discovered what Americans are only now beginning to realize: that a virgin wood is a treasure house of information as to Nature's ways, a priceless record of the slow but inexorable processes by which she moulds every forest and its teeming fauna to fit soil and climate. No system of silviculture, no manipulation of the forest to yield abundantly some product or service useful to mankind, can long run counter to natural tendencies or processes. For a few years—fifty perhaps, or a hundred—we may order the forest according to our own ideas, but eventually Nature will have her own way. In our management of the forests of the future we must understand, and in the essentials follow, Nature's way.



Fifty-one inches in diameter, this tulip poplar is a monarch meanly slain, victim of the lowly porcupine. With their natural enemies, the cougar and bob-cat, exterminated or fast disappearing, porcupines fear only man.

I know no better example of the persistence of natural forces in the face of human interference than recent developments in the old-field stands of white pine in central Massachusetts. Two hundred and fifty years ago the early settlers in the Swift River valley cleared away the virgin stands of hardwoods, with here and there a white pine, to make pastures or "mowing" for their sheep and cattle. Doggedly they grubbed out of narrow valleys every vestige of the original tree growth, and year after year joined stubborn battle with the pine and grey birch seedlings that, sprung from wind-borne seed, skirmished from the adjacent woodlots. Then came sterner warfare, and when Father Abraham called, men marched away to bloodier fields. The autumn winds of the '60's showered their pastures with pine seed, and by the time they returned—some never did—pine seedlings formed unbroken thickets between crumbling fences. There for fifty or sixty years pine reigned supreme.

Then a strange thing happened. Encouraged by the thinning of the pine crowns that takes place in most white pine stands at about this age, not pine, but *hardwood,* seedlings began to appear here and there beneath the pines. They were not only ashes and maples, light seeded species, but also oaks and hickories, the heavy seed of which were carried into the pine woods from adjacent forests in the jaws of squirrel, chipmunk, or mouse, or in the beaks of jays and other large birds. Neither birds nor animals, we may be sure, had anything in mind but their own winter food supply when they transported these nuts, and they allowed only a small percentage to germinate. But a few seedlings developing year after year for the past decade or two now form an understory of young hardwoods beneath the pines, and will some day surely dominate the forest. Then will the cycle be complete. Centuries before men, red or white, claimed this ground, hardwoods and pines had struggled to dominate it. And the hardwoods, somehow better able to take advantage of the comparatively heavy soils of the valleys, won the long battle with the pines. Then came the Puritans. They banished both contestants from the field for two hundred years. Seventy-five years ago the losers returned. Eventually, after three hundred years of exile, the oaks, hickories, ashes, and maples will once more be victors over the pines.

Forces that may not be denied, equally persistent with those which brought even heavy-seeded hardwoods back to the old fields in central Massachusetts, are operative in every forest in the world. They produced the virgin forest.

~~Is Taylor on list?~~

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF BIOLOGICAL SURVEY

File Porcupine

IN REPLY REFER TO

Room 306 Agriculture Building
University of Arizona
Tucson, Arizona
July 15, 1935

Mr. Aldo Leopold
New Soils Building
College of Agriculture
University of Wisconsin
Madison, Wisconsin

Dear Aldo:

Herewith are enclosed the copies of our Jack Rabbit-Grazing Paper which you requested. I think there is a lot in the idea of jack rabbits and some of the rodents as animal weeds, although a good deal more work ought to be done before we become dogmatic.

I have just been working over the manuscript on "The Life History of the Porcupine" and find that this animal is another example, seemingly, of increase in numbers as a result of disturbance of original conditions. All of us who have worked on the porcupine are agreed, I think, that the animals are more abundant in cut-over areas than they are in well stocked stands of for example ponderosa pine. The key to this situation is that the porcupine is fond of the herbaceous vegetation growing on the forest floor. In closed stands or very well stocked stands of forest trees there is much less vegetation on the ground. In cut-over, on the other hand, there is usually an abundance of herbaceous growth. It seems clear that the numbers of porcupines increase rather than decrease under these conditions. That is why in some places they become an important problem in relation to reforestation.

A few days ago you wrote that you were having a copy of the Wildlife Handbook, compiled by Region 9, sent to the members of your committee. I have not received mine yet but want to get it.

With cordial regards,

Sincerely yours,

Walter P. Taylor

Senior Biologist.

P. S. Mr. P. B. Lister helped me out in digging out the reprints. Half of these were donated by him.

Library of
Aldo Leopold

Porcupine folder

Reprinted from JOURNAL OF FORESTRY
Vol. XXXIV, No. 6, June, 1936

Ecology and Life History of the Porcupine *(Erethizon epixanthum)* as Related to the Forests of Arizona and the Southwestern United States. By Walter P. Taylor. *Univ. of Arizona Bull. VI-5 (Biological Science Bull. 3) 177 pp. Illus. 1935.*

Those who still hope for blanket yes or no answers to questions of pest-control will be disappointed in Walter Taylor's bulletin. It is, in my view, an extraordinarily complete demonstration of the fact that such answers are usually, by their very simplicity, spurious. Even to one whose daily business deals with the unravelling of complex ecological relationships, the reading of this work leaves a feeling of astonishment that so simple an animal as the porcupine should be involved in such a multitude of interactions with his environment.

The bulletin is more than a competent life-history study; it is an elaboration of the new concept of "animal weeds." Just as destructive land use seems to give a competitive advantage to "worthless" plants, so also does it seem to encourage abnormal abundance of troublesome animals. Both seem to be associated with a retrogression in the plant succession and a decline in that stored-up ecological energy which, in agriculture, we call fertility, in forestry site-quality, and in wildlife productivity.

The animal weed theory had its origin on the Santa Rita Range Reserve in Arizona, as a possible explanation of the dominance of jackrabbits and other rodents.

Weed associations, however complex in their environmental adjustments, seem to be simpler in their composition as to species than the associations which they replace. The weed is often a member of the preexisting association, but in it occupies a circumscribed niche. It is the process of resource-exploitation which presents weeds with the opportunity for dominance. It may reflect some profound intuitive understanding when we automatically resent the dominance of weeds. (These speculations are not the author's, but my own.)

In the Southwest overgrazing is suspected to be the underlying "cause" of too many porcupines.

Like all good jobs, Taylor's work raises more questions than it answers. Just how effective is the mountain lion as a porcupine-control? What is the role of the porcupine as a consumer of and at the same time a vector for mistletoe? To what extent does the porcupine delimit the lower edge of the timber type? Are porcupine gnawings a cause, or an effect, of bark beetle attacks? To these and many other queries, Taylor adds new data and fresh interest, but not final answers.

No life history, however well rounded, is devoid of weak spots. One of the weak spots in this one is, I think, the treatment of population cycles. A cyclic rise in porcupines is postulated as a possible alternative for the weed theory, but the discussion does not dig very deep. Historical data on past fluctuations in abundance are naturally scarce, but it seems at least thinkable that ring-counts of calluses on old gnawings might have yielded evidence of fluctuation. However, such counts would admittedly be very laborious. There is no discussion of the inherent probability

of cycles in porcupine. In my opinion the animal's coarse vegetable dietary and freedom from starvation losses would indicate a probability of cyclic behavior. It is in such animals that the cycle is usually prominent.

One wishes that the study might have included some banding to check against the interesting circumstantial evidence on seasonal migration.

The author seems to have tripped up on one minor question of fact: he asserts that "the porcupine has a slower breeding rate than any other mammal in North America, so far as known." The breeding age is two years; the number of young per year is one. The breeding index is thus 2:1. The black bear, however, is slower. The breeding age, according to Seton, is three or four years and the litter one to four, average two, but *litters are born only in alternate years.* The breeding index on this basis is, at fastest:

$$3:\frac{2}{2}, \text{ or } 3:1,$$

a slower rate than porcupine. Grizzly bears likewise have a 3:1 index, and possibly elk and buffalo. It is, I suppose, none too certain that the alternate-year postulate in bears is correct.

In discussing the recent reduction in mountain lions as a possible reason for porcupine increase, the author consistently ascribes it to "hunting for sport . . . and as a protection to the stock industry." If this implies an order of importance, I would take issue. Excessive reductions in lions have more commonly followed Biological Survey predator-control than sport-hunting. Elliott Barker, State Game Warden of New Mexico, has recently suggested that the way to put lions on moderate-density sustained-yield basis is to withdraw government control entirely, and put the whole job on a sport basis. Barker points out that motorized dog-packs now give the sport-hunter sufficient mobility to cover the lion range, and that the "law of diminishing returns" operates more promptly on sportsmen than on paid hunters.

By and large, we may confidently add Taylor's Porcupine to that growing list of first-rate ecological life-histories which constitute the foundations for wildlife management.

ALDO LEOPOLD,
University of Wisconsin.

Asp porcupine

PORCUPINES

Whether porcupines cause more damage in the forest than bark beetles or fire is difficult to determine. But that they constitute a source of loss that is in the same general class - at least in some localities - is generally agreed.

Advantage was taken of increased labor supplies made available a few years ago by emergency work to provide some increased degree of control. As á result á marked decrease in damage has become evident. It is surprising, however, that the number reported to be killed does not decrease correspondingly.

In 1933 the total kill by all agencies in Region 2 was reported as 12,616. In 1934, it was 16,238; in 1935, 22,077; in 1936, 14,572; in 1937, 9,987; and for 1938 the number was 9,521. Perhaps we have reached a balance where the ability of the porcupine to perpetuate itself just about equals the skill of man to hunt him down and kill him.

In the 1938 report of porcupines killed it is interesting to note that the Harney Forest leads the list with 1,845 "pincushions" to its credit. The White River Forest stands second, with 1,194 porcupines killed. The Arapaho is next, with 673, followed by the Medicine Bow with 575 and the Holy Cross with 537. CCC camps are credited with 289 porcupines, the Biological Survey exterminated 2,746, forest officers, 1665, while the largest number was credited to local hunters, temporary laborers and probably stockmen, totaling 4,795.

- H. D. COCHRAN - REGIONAL OFFICE

Rocky Mt. Region Bulletin (U. S. Forest Service), Wildlife Number, Vol. 22, No. 2, February, 1939.

July 1, 1942

mountain sheep
porcupine
accidents

Honess, R. F. and N. M. Frost. "A Wyoming Bighorn Sheep Study. Wyo. Game and Fish Dept., Bull. 1, July 1, 1942, p. 15: "The carcasses of two bighorns were found in which the faces were full of porcupine quills. There can be no doubt the quills were fatal to the ewe, as they protruded into her mouth in such a fashion that eating was impossible". (Photo p. 16)

Porc folder
ugine

March 9, 1943

Mr. W. M. Miller
Farmers and Merchants State Bank
Stanley, Wisconsin

Dear Mr. Miller:

Your letter of February 18 addressed to the University of Wisconsin regarding repellents for the control of porcupines damaging cabins has been referred to this laboratory for reply.

We have done a limited amount of study with deterrents for porcupines and in these trials have found chemicals such as copper carbonate, dry lime sulfur, pentachlorphenol, and creosote to be of value in preventing damage. These chemicals have been used in varnish type adhesives. Our work to date has been purely experimental and therefore we can offer you little in the way of a finished product. Both copper carbonate and lime sulfur impart a color to the surface on which it is applied. I assume yours is a unpainted building so this may be objectionable for this reason. For unpainted wood I would suggest that you try an application of hot creosote. This can be applied with a paint brush.

I am sorry that we can not be of more assistance to you. At the moment we are contemplating a continuation of this work and hope to have more desirable information to offer at the completion of the work.

Very truly yours,

JFW.

Jack F. Welch
Assistant Biologist

cc Aldo Leopold
University of Wisconsin.

File Porcupine

Fred Wilson saw a porcupine for several days in a grove of large north aspens with catkins. He was presumeably eating the catkins. Vilas Co April 10 1945.

AL

Porcupine

Library of
Aldo Leopold

Mortality Due to Porcupine Quills

A Mr. Fisher of the park transportation company had found a coyote "with more quills in his mouth than the ordinary porcupine has in his body." He approached within 5 feet of the animal, and could have easily killed it with a club, for the coyote was more interested in extracting the tiny barbs than he was in the presence of the man.

O. J. Murie tells of the experience of Ranger Jack Tevebaugh:
In the latter part of March he shot a coyote that was extremely emaciated. It was found to be full of porcupine quills, in the skin, in the tissues under the skin, on the head, and even inside the mouth. On the head were two festering sores."

Page 28 of Adolph Murie's "Ecology of the Coyote in the Yellowstone". Filed Coyote box.

Library of
Aldo Leopold

Porcupine
folder

Pine or Porcupine?

By W. T. Cox

WILD animals constitute a great asset in any well-managed forest. Occasionally some animals become a liability also. The charm of the forest is greatly enhanced by the presence of deer and other game and by the presence of beaver, squirrel, chipmunks, birds, and a long list of useful, harmless or nearly harmless creatures. Probably among the latter class should be rated the porcupine. This widely distributed citizen of the forest, variously known as "porkyhog," "quillpig," "pricklecub," and "porcupine," has furnished amusement for many a visitor to forest districts. He is not noted for his intelligence and certainly not for his speed, but his corpulent figure and comical ambling antics are interesting and at least mildly entertaining.

The Indian used porcupine quills for many purposes, such as sewing needles, baskets, war bonnets, and other novelties. The flesh of the porcupine is not distasteful and has saved many an unarmed traveler in the woods from exceedingly great hardship, if not from actual starvation. It is easy to kill one of these animals with a club, since they are not difficult to find in the winter season and may easily be approached within clubbing distance and with safety. The old idea that the porcupine can throw its quills is, of course, erroneous.



ROOSTED HIGH

Porky has "taken to the tall timber" in search of a particularly succulent morsel of bark for his evening meal.



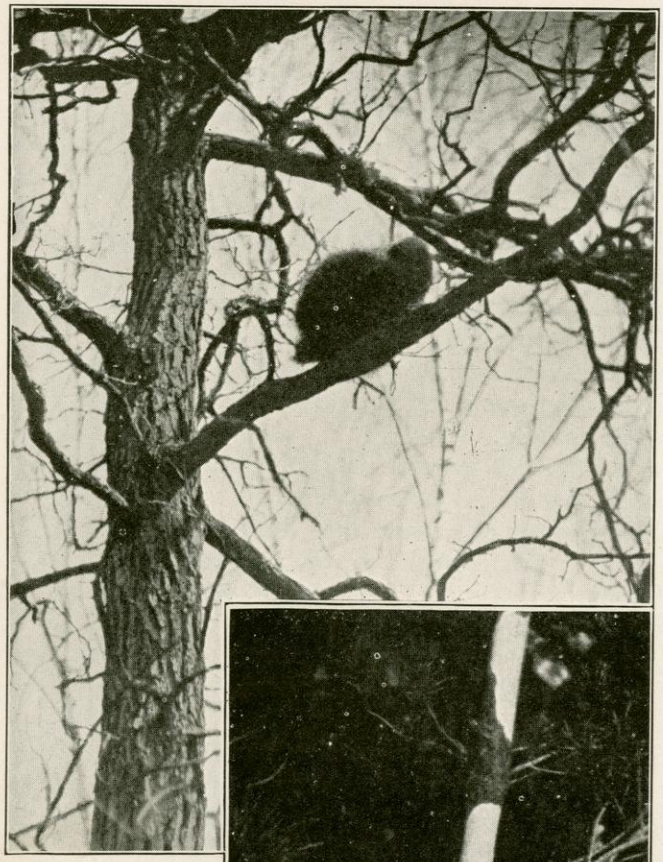
"PORKY" IN TWO CHARACTERISTIC POSES

All abristle, he waddles down the woodland path, on devastation bent, incidentally delighting visitors to the park who may happen to catch a glimpse of him as he ambles along.

A Ravenous Appetite for Bark

As is well known, the porcupine feeds upon the bark of a variety of trees. He is not particular, but in northern Minnesota he seems to give some preference to white pine, though he also girdles many thrifty Norway pines, jack pines, highland or white spruce, and sugar maples. The most thrifty, medium-sized trees usually are preferred. A ring of bark will be girdled at 20 or 30 feet above the ground, and then at various points higher up the tree, the result, of course, being the death of such trees as are completely girdled, unless the point attacked is so high up as to merely render the tree "stag-headed."

Tracts of virgin timber remaining in any region after destructive logging has wrecked the forest in all the surrounding territory are particularly liable to damage by insects, rodents, and other destructive agencies. This is easily accounted for from the fact that the comparatively small area of remaining timber attracts the animal life which formerly found its home in the sur-



RESTING AFTER THE EVENING MEAL

Mute evidence that it was a good one. This is why "Porky" must be suppressed.

rounding forest, now cut away. Itasca Park and Forest, at the headwaters of the Mississippi River, is a good illustration of this fact. This tract of one hundred and thirty million feet, in a district which once contained billions of feet of timber, seems to be the mecca for a disproportionately large wild-life population, some useful and attractive, some harmful.

THE PORCUPINE A LUMBERING FELLOW

The porcupine, which ordinarily is not very abundant and whose work is rather inconspicuous, has become so abundant at Itasca that it commands the attention of the park superintendent and other foresters engaged upon work in the forest. Recently, in marking trees for an improvement cutting, twenty-six forties were carefully gone over. Snow lay on the ground and it was easier to see porcupines than it would be in the summer-time, and the men were able to obtain a fairly accurate count of these animals and to determine what damage they were doing. On the twenty-six forties, seventy-six porcupines were seen, or an average of three to the forty. Since there are five hundred and sixty forty-acre tracts in this particular State Forest, it would seem that there must be in the neighborhood of sixteen hundred porcupines busily engaged in girdling trees on the reserve.

Careful note made as to the work of these animals showed that each one had recently girdled and killed on an average 4.9 white pine trees. The trees were of an average diameter of fifteen inches, representing the equivalent of 950 board feet of timber killed by each animal, or a total of 69,500 board feet on the twenty-six forties. This timber has a stumpage value of $8 per thousand feet. It will be seen, therefore, that the porcupines of Itasca Park and Forest are killing each year approximately a million and a half feet of timber, worth on the stump $16,264, or approximately 1.2 per cent of the present annual growth. They constitute a source of damage which must be reckoned with in the management of the property.

But it would not be advisable to exterminate the porcupine in a forest such as Itasca, which is visited by tens of thousands of people who are interested not alone in the trees, but in the wild creatures also. To wage relentless warfare upon such an inoffensive animal as the porcupine would seem cruel, and in fact a reasonable number of them should be in evidence, so that visitors may get an occasional glimpse of them shuffling across the trails or perched up in some lofty pine; but to allow this "highland beaver" to increase beyond his present numbers would be exceedingly unwise and even dangerous for the welfare of the forest.

ECHOES FROM LAST ISSUES OF TRAP LINE

File wolves

Charles E. Walker, State Trapper, Crandon, Wisconsin, writes: -

"Thanks for the Trap Line and the information in regards to scalps and skins. My luck is getting better. Last Friday, I took my first timber wolf in trap, blind set. I got to him just at sundown, and took him out without skinning. Some load - weighed 84 pounds. Skinned him Sunday morning. Had a Milwaukee Sentinel reporter over, who took picture of him. I took pictures of him alive. Have not got them developed yet.

Then Monday I took a coyote. Caught at deer carcass in State Game Refuge. Tuesday, I got my second timber wolf - a big fellow. Here is where I got the best of Roy Gratias. I got this wolf in a snare and he broke the snare and got away. While I was standing there feeling just too bad, I noticed some drops of blood and then quite a pool of blood and I doped it out that he had ruptured a blood vessel and was bleeding from the nose. Well, that gave me some hope, and I took up the trail. The brush was very thick and I lost t the trail many times and gave up once, and then decided to have one more look, and I found him dead with just enough of the snare left to reach around his neck. He was a dandy - 7 ft, 8 inches from tip to tip and stood 35 inches high. After I had him skinned, I held a post mortem and found left jugular vein ruptured. Opened stomache and found it empty except a tuft of deer hair - nothing in the intestines.

Wi[illegible] and pictures soon. I am sending in the broken snare

for quick receipts to replace stock that is going out on deliveries. The soft-wood index for the week was 37.00 while last years index for the same week was 28.03 showing the increase that has taken place.

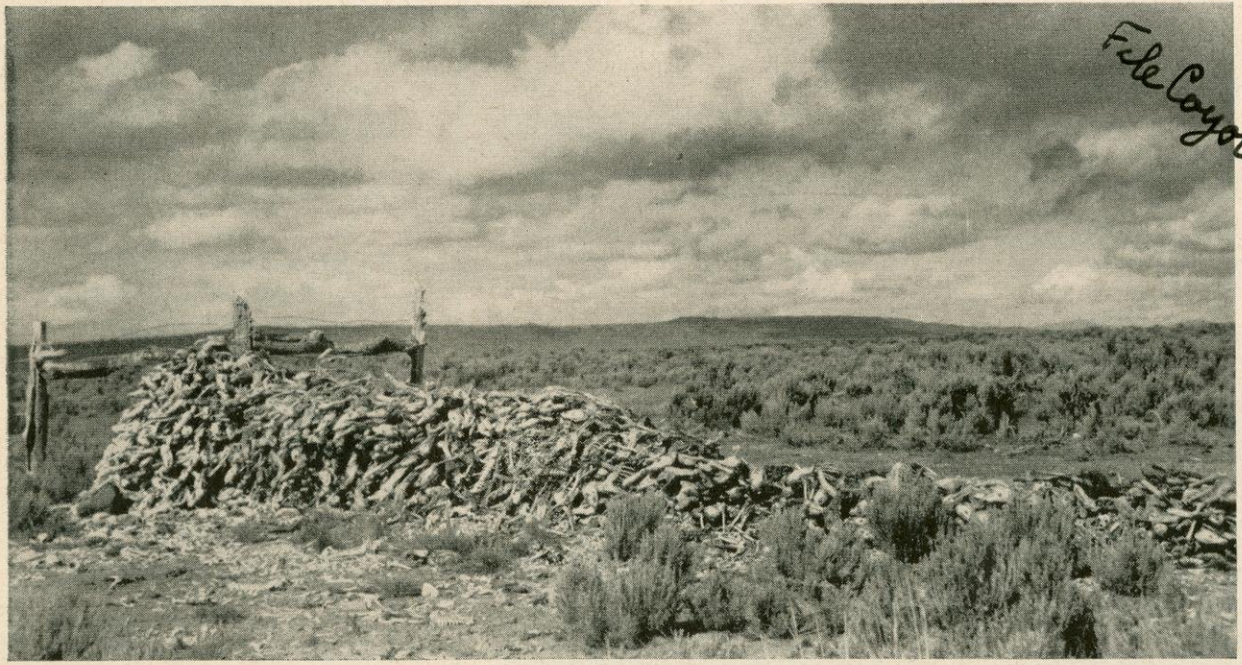
Determined to Keep His Bone: Coyote refused to drop his load even at the risk of his life. Ranger Ben Nabours of the Gila tells an interesting story of a coyote he came upon while it was gnawing a huge thigh bone of a horse. Instead of slunking away as is the custom of coyotes, this one gathered up the thigh bone and took it along. Nabours rode close but the coyote kept the bone even though it was so heavy he could scarcely run. Nabours decided to try to rope him and came right alongside then concluded he would better shoot him. By this time coyote and horse were covering ground pretty fast. Nabours shot twice with his six shooter but missed both times. Mr. Coyote concluded, however, that the Ranger had an unfair advantage. He reluctantly let go his bone and took to the brush. He got away but surely did hate to give up that thigh bone.

Field: Pooler, Long (Coconino); Jones (Crook); Myers, Cook (Gila); McNaught (Crook); Hughes (Apache).
Visitors: E. W. Kelley, Washington (Coconino)
Leave: Marsh.
Acting: Cheney.

Coyote folder

Note from H. B. Marshall, 1178 University Farm, St. Paul

Coons killed by coyotes in spring after they begin to come out of hibernation. Killed by single coyotes and eaten. Abundance of coons determined by coyotes and corn. Coons increased in his locality after coyotes killed out.



File Coyote

from Oakest

COYOTE CARCASS PILE

Sirs:

Here is the "sequel" to that picture of pelts from predatory animals (LIFE, Jan. 31). This shows the carcass pile of another predatory animal hunter, containing hundreds of skeletons of coyotes. Let no one grieve for the departed, as the slinking "prairie wolf" is the livestock man's worst enemy. This picture was snapped early one morning recently on the high sagebrush plains of central Oregon by R. G. Johnson, professor of range livestock management at Oregon State college.

JOHN C. BURTNER

Corvallis, Ore.

File Coyote (no card)

From "Wildlife in Wartime" Fish & Wl Service 4:1:10.

WYOMING

DEER CONDUCTS "BLITZ" ON
ITS OLD ENEMY - THE COYOTE

While tending his trap line on French Creek in Johnson County, Wyo., last December, Predatory Animal Hunter Charles Vest, employed by the Fish and Wildlife Service, United States Department of Interior, stopped on the ridge to look around and suddenly found himself in a ringside seat viewing an unusual fight.

Just as Vest spotted two coyotes leaving the bottom of the draw, his attention was attracted to a noise from another direction. This proved to be a big dog coyote running at top speed with a buck deer in hot pursuit. When the deer caught up with his ancient enemy, he knocked the coyote down with his front feet, then jumped on him with all four feet.

After taking a hard pounding, the coyote managed to crawl into a brush patch. Although the deer did not attempt to follow the coyote, he circled the patch until he spied Hunter Vest and took to his heels, followed by three does that had been waiting at a distance. The coyote, Vest discovered, was trampled so badly he could hardly crawl, so it was an easy matter for the Government hunter to finish the job the deer started.

3432

wolf folder (Ruxton)

P. 209. Wolves. A dozen came up and fought for tossed out scraps of meat while butchering an antelope near Costilla. Says "From the fact that the antelope congregating in large bands, they were unable to prey on these animals, which are their favorite food."

P. 211. Turkeys in La Trinchera, 2 days No. of Costilla.

P. 211. A wolf which came to eat the offal of the butchered antelope on the Costilla followed Ruxton for

1 day Costillo - Culebra

1 day Culebra - Trinchera

1 day Trinchera - Sangre de Christo Cr. (Vallecito)

(Here they passed a dead mule which evidently detained the wolf, as he is not afterward mentioned. The incident illustrates, however, how the coyotes may have followed the gold-rush to Alaska over the McKenzie trail.)

P.266. Gray wolf warming himself and dozing by a large campfire as Ruxton awoke during night. Says "these animals gnaw the straps of a saddle on which your head is reposing for a pillow."

Ruxton

P. 253. Wolves very hungry during the spring season. Chewed the saddle strings of unguarded saddles and during the night ate the rawhide lariat to within a yard of the mules' throats.

(Ruxton)

P. 221. Coyotes - 6 entirely cleaned up an old buck (shot but too poor to dress) in 10 minutes Bones clean.

Wolf folder (Ruxton)

U. S. DEPARTMENT OF AGRICULTURE
Office of the Secretary
Press Service

Release - Immediate.

April 14, 1922.

"OLD THREE TOES" TURNS THEM UP

Super-Coyote of Caddo County, Okla.,
Trapped by Government Hunter.

Old Three Toes and his co-killers were a hard-boiled lot, whelped in a region where the length of a coyote's life depended a good deal upon the length of his legs and on the same dimension in his head. They belonged to a superior breed, developed by the very methods that had been designed for their undoing, and Old Three Toes was the strongest, fleetest, and wisest of the clan. For six years he spread destruction among the herds and flocks in an 18-mile area in Caddo County, Okla., outwitting packs of expensive dogs that killed off his slower and weaker relatives. Only the fittest survived. The weaklings and dullards were culled before they had the opportunity to reproduce their inferiority.

But if these super-coyotes could survive in the face of ordinary methods of extermination, life was a different matter when they were called upon to face the skill and persistence of Government hunters. If you would know what happened to this band of destroyers and to the greatest of them all, read a few paragraphs from two reports sent in to the Biological Survey of the United States Department of Agriculture by E. F. Pope, predatory animal inspector for the Oklahoma-Arkansas district. In December the inspector wrote:

"Inasmuch as the people of the Lookaba community have sustained losses from coyotes amounting to many thousands of dollars, and, after spending $1,000 for a pack of stag hounds, have failed to bring the animals under control, this promises to be an excellent opportunity for demonstrating the proper methods. However, on account of a superabundance of dogs in the locality, many of which are still referred to as 'valuable dogs,' we must confine ourselves to the use of traps.

"After looking over the largest pasture in the neighborhood, where coyotes were said to have committed depredations for the last

six years or more, I concluded that coyotes were not unusually abundant but their tracks were unusually large and indicated that most of them were large, heavy animals. In fact, the people there state that all the slower, weaker specimens have been caught with dogs and that the survivors are all large, rangy animals and that a race of super-coyotes is being produced in Caddo County. We heard much of Old Three Toes, an extra large coyote or wolf, that has been chased with dogs for the past six years. We were not looking especially for his tracks, but the first tracts we found were rather large, even for a very large coyote, measuring 3-3/4 inches long and 2-1/4 inches wide, with one toe missing from the right fore foot. In shape they were typical coyote tracks. We found the same tracks in three different parts of the pasture, two or three miles apart. As there are some very rough, heavily timbered canyons there, Old Three Toes may prove to be a wolf or a coyote-dog hybrid.

"At this writing there are probably 50 traps awaiting the return of the super-coyote, or whatever he is, and we expect to hear of his capture any day."

What the coyote hunters accomplished was detailed in the January report, which says in part:

"Twenty-nine days of strenuous activity were devoted to the Caddo County project, which resulted in a total bag of 19 coyotes, practically all of them large, rangy old sinners that had outrun the dogs, refused to be enticed with bait, and committed depredations against live stock to the extent of at least $10,000.

"In our narrative for December reference was made to Old Three Toes, notorious over the whole county. The following letter from Mr. Mullins, his captor, fully justifies the prediction of his speedy downfall:

"'It is too bad that you could not have stayed another day and had a good look at Old Three Toes, who hit the two traps with the short stakes we set together. The very last night he roamed the woods was the night you left. He was not a wolf or coyote-dog hybrid as had been rumored, but an estra large coyote, as was indicated by his tracks. We did not weigh him until Saturday evening, when we took him to town to give the people a chance to see him; that is, the few who had not heard of his capture and come to our camp. There has been a crowd here ever since he was caught, one person coming 17 miles. Five days after his capture Old Three Toes weighed exactly 39 pounds, which means that he must have weighed at least 45 pounds when caught. There is no doubt in the minds of the people here that he is the offender they have been chasing all over the county for the past six years.'"

//

29. The Problem of Sales Personnel.

30. New ideas in stumpage appraisals

31. Management in the woodland type

32. ~~Have we forgotten erosion?~~

33. Watershed Protection and erosion on Salt River (Goddard)

~~34.~~ _____

~~35.~~ _____

36. City Tree Planting - an opportunity for public service (Randles)

37. Visit to Dr. Long's Laboratory and informal explanation of his recent work.

45 Forest Range Problems from the viewpoint of the Sheepman - Eduardo M. Olivera, President New Mexico Woolgrowers Association.

46 Forest Range Problems from the Viewpoint of the Cattleman - Victor Culberson, President New Mexico Cattle & Horse Growers Assoc.

THURSDAY - JAN. 29th.

Morning Session -

38. Are we applying results of our reconnaissance and studies? (Kerr)

39. What we are doing on the Jornado Range (Forsling)

40. Grazing and reproduction (Westfeld)

41. Can we prevent equities thru range improvements ~~by G-4 permits?~~ (~~Andrews~~) Extending the principle of G-4 to all public as a means of extinguishing equities. (Andrews)

42. Progress toward fencing

43. ~~New ideas in~~ stock associations Why not more

44. Getting the Natural Increase Removed

~~45.~~ _____

~~46.~~ _____

Afternoon Session -

47. Predatory animal news JS (Ligon) US Biological Survey

48. New Developments in Game work (Shepard)

~~49.~~ _____

~~50.~~ _____

Articles on Game

Lyon estimates 25000

Coyotes killed 1919. in N Mex

30 wolves left 52 killed 1919

~~37~~ 3 lions taken

Lincoln Inspection - 1921

Coyote Work. Project organized by Allman of Biol. Survey on east side Sacramentos and said to have cost only $90 (1 mo. wages) + $8 poison, and to have killed between 30 (seen) and 100 (est.) coyotes. Were working on calves, turkey and deer. Money put up by permittees on assessment based on permit number. Same project organized at Ruidoso 8/26.

5/1/22

Bold Coyote: "The following story is furnished by Ranger McDuffie and can be vouched for by the five other people present and concerned:

'I heard a dog bark, and upon looking out of a window, saw a coyote coming down the trail toward the open yard space between the Santa Rita Range Reserve headquarters house and Wm. Nicholson's house. The dog, a large mongrel, was afraid of the coyote and retreated as it advanced. I grabbed a rifle and hurried out. By the time I reached the gate on the trail, the other dogs had come to the assistance of the first one, and Tip, a big white shepherd of Nicholson's, had the coyote by the throat and had been bitten by it on the nose just below the eye. I put a Springfield bullet through the coyote's head and stopped further combat. By this time everybody on the place was present. Nicholson told me that as the family sat at breakfast they heard a noise at one of the windows, which swing inward and are practically even with the ground. At the noise they all looked up and saw a coyote bump the window twice with its head. The window opened, the coyote stood looking into the room for a moment and then backed away. There were five dogs about the house and part of them chased the coyote. It ran but a short distance from the house and then turned back toward it. The fight and finish took place less than 50 yards from the house. We are all at a loss to explain such behavior. The coyote's carcass was burned, and as a matter of precaution, the dog that was bitten is being closely watched for symptoms of rabies.' " (Coronado Bulletin.)

Field: Kerr (Sitgreaves); Long (Camp Grant); Hussey (Tonto); Myers (Manzano); Cooperrider (Gila); Cassidy (Santa Fe).
Visitors: Loveridge (Carson) - DO.

FRANK C. W. POOLER, District Forester,
By: J. C. Kircher, Acting.

Gila Inspection - 1922

Lobos attack cows on hind end - generally flanks. Fall to eating before animal dead.

Prescott Inspection - 1922

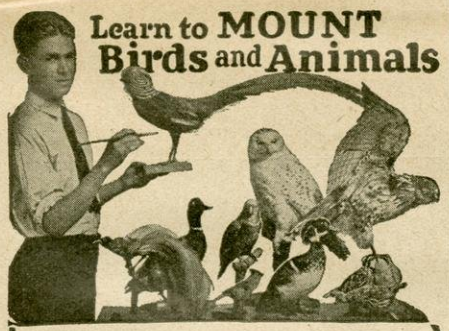
Coyotes eating manzanita berries in large quantities, as per sign seen on road S.W. Mayer. These are the brown ripe berries, easily gathered as they pile up on the ground.

Santa Fe Inspection - 1923

Wild Plums eaten by coyotes, seeds and all, Barker says.

Killing by Coyotes

Barker has seen 3 cases. All were individual cases rather than pack. Not always in deep snow.



Learn to mount all kinds of game, **birds, animals, fish, game-heads — tan furs,** make **rugs, robes,** etc. You can now learn this fascinating art in your own home during your spare time **quickly and easily.** 40 complete lessons covering every department of Taxidermy. Simple, complete and workable — for sportsmen, men, boys or women. Every hunter, trapper or fisherman in the world needs these wonderful lessons. Old reliable school. 75,000 graduates. **Success guaranteed.** Save those fine trophies of rod and gun. Double your interest in hunting, fishing and outdoor sports. You **CAN** be your own taxidermist. Here is your opportunity.

Sportsmen! Mount Your Own Specimens!

Preserve the splendid trophies you have bagged during the season, without paying the taxidermists' exorbitant charges. Many specimens are now becoming very rare. Mount them now while you can still get them. Decorate your home, office or den with the choicest of art. Taxidermy is a hobby that every sportsman should have.

Learn Field Taxidermy!

Many valuable specimens are lost because they are not properly handled when killed. Learn how to take care of skins in the field so that they may be stuffed and mounted perfectly later on. **This is most important** for every **hunter, trapper** and **fisherman.** Our lessons cover this subject thoroughly, as well as every other feature of the taxidermist's work.

BIG MONEY can be made during spare time. Mounted specimens sell readily for **high prices.** You can do the work for others at taxidermists' regular charges. One of our students writes: *"I have made over $550.00 during my spare time selling my specimens and mounting for others."* Professional taxidermists earn as high as **$3000 per year,** and their services are always in demand. Through our lessons you can learn to do this work as well as the expert.

Write for FREE Book

"How to Mount Game." Tells you all about this fascinating sport and how you can become an expert taxidermist. Beautifully illustrated with dozens of photos of mounted specimens. This book contains information vital to every sportsman, hunter, fisherman and nature lover. Sent you absolutely **free** — no obligation. Don't pass up this wonderful opportunity. Send your name and address on coupon below. Write today—now!

Free Book Coupon



"Be Wise"

Northwestern School of Taxidermy
64-N Elwood Building, Omaha, Nebr.

Send me, absolutely free, your illustrated book, "How to Mount Game." Also tell me how I may learn to be an expert taxidermist easily and quickly by mail. No obligation,

Name.....

Address.....

It will pay you to look thru the advertising pages of this issue.

IN THE FUR FIELD

CONDUCTED BY A. R. HARDING



Wolves—Timber and Prairie

According to one writer there are many varieties which vary much in size and color, yet there are perhaps only two distinct species, the timber wolf and prairie wolf. Thruout much of the West the "prairie wolf" is called a coyote.

In North America of the timber wolf there are the following varieties: the small, dark grey or black of Florida and southeastern states; the red of southern Texas; the brindle of Mexico; the light grey of the central plains; dark grey of eastern Canada; white of northern Canada and Alaska; large black of northwest coast region.

There are also several varieties of the smaller or prairie wolf found thruout the prairie regions of the United States and Canada. During the past few years the government has been killing off this animal so that "coyotes" are not as plentiful as they were.

The common grey wolf, of the stock region, is still fairly plentiful. It is one of the most destructive of animals to stock and game. Grey wolves vary considerable in size, and full grown specimens weigh 100 pounds or more, their fur being long and heavy.

The breeding season of the grey wolf varies more or less. Some litters are born in the summer, altho the majority are usually born in March and April. The mating season is mainly in January and February. The litters usually number five to eleven. The young are born in the foothills and bad lands, in holes in the buttes and under rim-rock and even in enlarged badger dens. The breeding season of the coyote (prairie wolf) is generally later than that of the grey wolf.

Nearly all states where wolves are found, and some of the Canadian provinces, pay bounty on these animals. Besides the state bounty, ranchmen generally pay an additional bounty. Experienced wolf hunters and trappers, in more than one of the Rocky Mountain states, have been able to make fair wages during past years. The inexperienced trapper will find these animals very cunning and wary, and until they are able to take mink and fox, they are not apt to make a success at bounty trapping.

For the large grey wolf the No. 4 trap is a very good size; for the coyote the No. 2 double spring or other sizes of about similar strength should be used. Some trappers, as a means to fasten, in localities where there are stones, use these, by wiring securely around and to the end of the chain. In other localities good hard-wood stakes are used which are about 15 inches long, unless the ground is very soft, when longer ones are needed. Thruout much of the wolf country hard-wood is scarce, in which case iron pins or stakes are much used.

Many different kinds of scents are used by trappers after wolf and fur bounty. The urine of the wolf, bottled and kept until it has become rancid, is a very good scent. The sexual organs of the female, taken when in heat, added to the urine, makes it far more attractive to the male. This scent is most successful during the mating season—January and February.

There are more or less wolf trappers who do not use scent in connection with sets. Some of their methods are:

Find a well defined rock trail, somewhere on the wolf's route of travel. Set two traps close together on the trail, then go 50 yards, more or less, and set two more in the same manner. A large bait should be placed near the trail and about midway between the two settings. When wolves get to feeding on the bait they will travel in the trail and will not be expecting danger so far from the bait. If desired only one trap need be set in each place, but two are better. It is a good idea to set the traps several days before placing the bait so as to allow time for the human scent to leave. This set should not be made in localities where stock will be using the trails.

Another method which requires three or four traps is made by fastening all traps to one stake. Find a smooth spot and scoop out a lttle hollow, drive the stake down until the top is below the level of the ground. Fasten the bait securely to the top of the stake so as to hide the stake and also to prevent the animal from taking the bait away. If three traps are used, spread them out in the form of a triangle; if four are used arrange them in the form of a square. Set the traps carefully so that when they are covered everything will be smooth and looking just as it did before. As the bait is fastened, the animal cannot take it away, and in trying to pull it up, will step in one of the traps sooner or later. In its endeavor to get out of one trap it is pretty apt to step into another, and then there is little danger of its getting away.

The practiced eye of the old timer will know at a glance where to set. For the beginner it might be well to add if a place can be found where the traps may be set between bunches of weeds, cactus, etc, so much the better.

Altho wolves are persistently trapped, poisoned and shot, they will not be exterminated for years—perhaps never. Increased wolf fur value during recent years has added to the revenue of the fur trade hundreds of thousands of dollars. At the October auction sales 36,400 wolf pelts were sold. No doubt the total sold for the year, at winter and spring sales, would be 100,000 or more. This does not represent the yearly catch by any means, for large quantities are sold direct from dealer to manufacturer. Perhaps as many are sold direct to the manufacturers as are sold thru the various auctions, so that total for the year is well up to 200,000. Some of those sold last year were no doubt taken the previous year, but the day or night, rather, when the howl of the wolf will not be heard thruout much of the West, is far in the distance.

In states or provinces where the topography varies from plains to high mountains, such as much of the Rocky and Cascade Mountain country, the quality of this article varies from good to poor, even when caught or killed during winter months. Take the state of Colorado for example: The high mountain-caught will average with a level country farther north; foothills with northern Kansas and Missouri; plains with Oklahoma and similar.

No. 24-88

Daily Bulletin
U. S. Forest Service
Southwestern District

October 15, 1923.

Born on October 9 to Deputy Supervisor and Mrs. J. W. Girdner at Clifton, Arizona (Apache Forest) a son. Both mother and son are reported as doing nicely.

Taking Wood Without Permit Comes High: To the Datil belongs the honor for the first conviction under the State Law for stealing wood from the Forest. On Saturday D. J. Jones of Magdalena was fined $25.00 and costs for stealing one load of wood from the Datil National Forest. The fine was suspended since this was the first case in Magdalena.

Bulletin 1105: Since only 100 copies of U.S.D.A. Bulletin 1105 "Natural Reproduction of Western Yellow Pine" have been received in the District Office, only one-half the intended quota for each Forest is being sent. When our full supply is received the Forests will be supplied with the additional number necessary to complete their quota.

What Turkeys Feed On: Supervisor Sizer has submitted the following very interesting list of the crop contents of a wild turkey killed by Mrs. Sizer on October 4: 258 pinon nuts, 26 grasshoppers, 25 large black beetles, 6 small black beetles, 2 black wasps, 1/4 cup of grass seed. Other Forest officers who can contribute any data to the question of turkey feeds will be gladly heard from.

Do Coyotes Go Wild?: "Last Saturday, October 6, when I passed the old Bullock Ranch, which is deserted, I noticed a coyote who was snapping at his sides and acting queer. I tied up my pack-horse and tried to rope him, as I had no gun, but he got into a rocky canyon where my horse could not follow. I camped at the Bellota Ranch that night which is also deserted, and just as the moon rose in the morning, about three A. M., I heard a noise in my pack sacks, near my bed. I sat up and saw a coyote's head above one of the sacks, where I had some bells and other noisy things. He seemed to be strangling and chewing on the handles of the sack. Picking up a handful of gravel, I threw it in his direction and shouted, but instead of stampeding in the direction I expected, he came for me and the more I bucked and elbowed him the more determined he became to ride my bed. I had covered my head before he arrived, so I finally lay still, and after choking and chewing my tarp awhile he charged my pack-horse, who was picketed near. A commotion ensued, in which I took part with an alamo limb, which broke the first time I landed on the coyote, and I was making tracks for the bed again, when Mr. Coyote changed his mind and ambled to the old ranch house, some 30 yards away, where he encountered a hog, and they went off across the flat, whoofing and choking. Now I am watching the poor pack-horse for signs of hydrophobia, as he had a badly lacerated eye which has turned white, and the first time he refuses his drink, I will have to play executer." (Ranger Freeborn in Coronado Bulletin)

Field: Pooler, Kerr (Coconino); Lang (Tusayan); Cook (Roswell); Talbot (Tonto); Hughes (Sitgreaves); Long (San Antonio, Texas).
Visitor: Rachford, Washington (Coconino).
Acting: Leopold.

Wild Horses - Supervisor Mink's Plan: Supervisor Mink of the Lemhi Forest is laying plans for horse roundups this fall. In order to get around some of the usual difficulties incident to horse roundups, he is taking a number of interesting precautions. On account of the difficulty of finding purchasers for the horses after they have been taken and impounded, he has made arrangements with the Lemhi Woolgrowers Association to purchase 100 head of the horses to be used as coyote bait. He has also made arrangements with a commission buyer who will ship all horses weighing over 1050 pounds to market at his own expense, guaranteeing the accrued charges on the horses, as well as the freight, charging for his service only his regular commission. Supervisor Mink has also had conferences with county officials in two of the three counties touched by the Lemhi Forest and these men have promised to cooperate with him in disposing of the horses under the Idaho law.

-------#-------

DISTRICT 5 - CALIFORNIA DISTRICT

Gray Wolf: An old male gray wolf was recently taken in eastern Lassen County by a Government trapper working under the direction of Chas. G. Poole, Predatory Animal Inspector of the Biological Survey. This is the second scientific record of this species from California, the first being from San Bernardino County near the Colorado River. The present specimen was 5 feet 6 inches long and 32 inches high at shoulder. It weighed but 56 pounds, approximately half of the weight of a wolf of that size in good condition. One hind foot had been severed just below the hock. Mr. Poole states that there have been stories of a big old wolf in southern Idaho which has done a great deal of damage to stock. He thinks it is quite within the realm of possibility that this may be the individual which, harassed by Biological Survey trappers, the drying up of water holes, or a combination of the two, drifted across to California, there to meet his fate.--P.J.F.

I didn't know they were absent from California. This addition pertains to the distribution in Arizona

- - - - - - -

Big Things on the Shasta: On the Trinity District of the Shasta the following measurements of big trees have recently been made:

An Incense Cedar,	circumference	26 ft.	4 in.
A Foxtail Pine,	"	20 "	55 "
A Douglas Fir,	"	22 "	8 "
A Western Yellow Pine,	"	23 "	1 "

A Sugar Pine which measures 112 ft. to the first limb.--A.E.N.

- - - - - - -

2/3/24

HG Smith Coyotes & wolves will both cross with dogs but never with each other. The hybrids, however, will probably cross any way. Wolves weigh 80-120#. The wolf-dog caught by Smith in Sacramentos was mated to a hound bitch.

A trapped wolf after tying up his mouth is "tamed" by clamping a small steel trap over the scrotum. They quit fighting when this is done.

Predatory Animals in Arizona Reduced: Predatory Animal Control Leader Musgrave, reports in the Arizona Hunters News Letter: "This is the end of our fiscal year and the lion work especially has been very satisfactory. We had set our average at ten lions per month for the fiscal year and the end of June finds us with two lions over. This means a great saving in livestock and game to the State of Arizona and I feel that the State of Arizona has gotten value received for the money expended. I had hoped to see the last wolf taken from the interior of the State before the end of the fiscal year but it seems that there are two wolves left."

Educational "Movies" Success in Arkansas: Six hundred people and a Congressman contributed to a successful showing of Forest Service films in the opening meeting of the Arkansas-Ozark Fire Prevention Campaign in D-7 recently, according to the District Seven Digest. District Three has gone deeply into intensive educational work during the last three years and is greatly interested in the outcome of the efforts being made by D-7 which are presumably along similar lines of approach. It is believed there is no better opportunity in the whole Forest Service territory for determining what education can accomplish than that presented in Arkansas where, apparently inherited prejudice linked with lack of general information has made the problem of forest protection one of extreme difficulty to the forest officer. At the meeting mentioned which was held at a ranger station the Digest states, there were present more than 350 members of the Pope County Boys and Girls Club. The remainder of the crowd of about 600 was made up of residents of the vicinity. Congressman Ragon was the speaker. He discussed in a creditable manner, the report says, fire prevention, the game situation and the phases of Forest Service work from every angle.

Forestry and Bankers: Many Louisiana bankers are making fire protection and reforestation compulsory on mortgaged lands. For the purpose of insuring the resale possibilities of such property they bind the mortgagor to make every effort to prevent forest fires on his land and to plant trees on waste and cut-over areas. This practice is being energetically supported by the Louisiana Department of Conservation, and has been taken up by bankers in all parts of the State. It has spread all the more rapidly since the failure of efforts to boom certain cut-over lands for farming as opposed to timber-growing purposes. The Louisiana Bankers' Association in April 1925, adopted the following as the standard forestry clause for insertion in mortgages: "The mortgagor does hereby further bind himself to put his waste or idle lands not suitable to agriculture to trees, and to protect all forest trees and tree seedlings growing on any of the above-described lands, and he further pledges that fires or other destructive agencies will be prevented wherever possible."

Forest Worker.

Note: The bankers of the southwest might well draft a similar measure and provide in mortgages on livestock, requirements for the observance of proper stocking, range distribution and salting.

Field:

D. O.: Kerr (Prescott); Calkins, Scott (Apache); Hussey (Coconino); Lang (Santa Fe); Cheney (Crook); Marsh (Tusayan); Loveridge (Datil)

Others: Rachford (Washington) Prescott.

Acting: Jones

Coyote Folder

DAILY BULLETIN

No. 26-34 U. S. Forest Service August 10, 1925.

Southwestern District

Nearly 400 Fewer Broomtails: In a recent horse roundup on the Canjilon District of the Carson, 380 members of the "savage, unmanageable tribe of broomtails" were impounded.

Rain Interrupted Travel But Not For Long: July 30, according to the Lincoln Bulletin, one of the heaviest rains in years fell on the Ruidoso District. At 1:30 p. m. a culvert on the Ruidoso Highway was washed out. It left a gap in the road seven feet wide and five feet deep. A group of neighbors including the District Ranger undertook to restore the road and at 3:30 p. m. travel was resumed. In the two hours that elapsed between the going out of the culvert and the completion of temporary repairs, 27 west bound and 24 east bound automobiles, averaging three passengers each, arrived at the place and were waiting to pass.

Bingo Beat Both Ways: It's a fast canine that can outrun coyotes both in pursuit and when pursued. The Gila Bulletin tells a tale about Bingo, the faithful dog companion of Supervisor Winn. Recently while Mr. Winn, Assistant Supervisor Putsch and Bingo were afield, Bingo came tearing out of the brush in the lead of two coyotes. Bingo's human friends shouted and encouraged like Sheridan did when he yelled: "Turn, boys, turn, we're going back," and Bingo, taking new spirit, whirled and chased the coyotes. He probably nearly caught them but when the coyotes were out of sight of the shouters and out of hearing of the shouts, they, too, took heart and turned in pursuit of Bingo. Bingo, however, was entirely too rapid for any such as they and reached a position of shelter and safety behind Winn and Putsch fully twenty yards ahead of the panting coyotes. Bingo is all right; he beats them going and coming.

I've seen this double ended chasing too. AL

"Chico Versus Chamiso:" A sheepman in the Zuni Mountains of New Mexico, according to the Manzano Ranger, recently made the statement that a plant called Chico is a much better sheep feed than Chamiso. When the sheepman described Chico, members of the Manzano force concluded that Chico and Chamiso are the same plant, although the sheepman claims that Chico has a more tender foliage and never produces bloating. Ranger Sherman has been requested by Supervisor Kartchner to obtain specimens, including twigs and fruit, of what is said to be Chico as well as what he knows to be Chamiso for identification to determine the difference, if there is any. While the Manzano Supervisor has not requested outside help on the subject, it is believed any ideas and information will be welcomed. The discussion of forage plants is generally profitable in any event and the Daily Bulletin has space for contributions on the Chico-Chamiso subject.

Field: Hussey (Coconino); Mullen, Randles (Lincoln); Lang (Santa Fe); Kerr (Tusayan); Marsh (Swanzey, N. H.)
Military Leave: Ancona, Jones, Long (Ft. Bliss, Texas)
Acting: Calkins

Wash Folder

ECONOMIC INVESTIGATIONS

Chas. G. Poole, leader of predatory-animal control in California, sends word that no unfavorable reports have been received from the old foot-and-mouth disease territory in Tuolumne County and the Stanislaus Forest and that the danger of a recurrence of the disease among deer is practically eliminated.

G. M. Trickel, senior administrative assistant in Colorado, spent practically the entire month assisting new hunters in predatory-animal work, and in the course of his operations in May he reports practically no loss on the lambing ranges from coyotes or bobcats.

Hunter W. J. Nearing, in carrying out his work on a ranch near Fruita, Colo., was successful in taking a 650-pound bear that had been making a series of raids on the rancher's herds. Its stomach contained three small lambs, which the bear had evidently gulped a short time before capture.

The manager of a large livestock company of Dubois, Idaho, reports that coyotes are scarce on the north end of the Targhee project and that losses from these animals have been very light. Not long ago this company employed night shooters against coyotes.

Sympathy is extended to Hunter W. E. Cozzens, of Cokeville, Wyo., whose 2-year-old son died on May 31.

Cattlemen of the Kaibab country on the Arizona strip adjacent to Utah have complained for several months of damage by a pair of timber wolves, and many unsuccessful efforts have been made to catch them. Recently, however, Geo. E. Holman, leader of predatory-animal control in Utah, detailed Hunters Willis and Rasmussen to that section, and after several days the old she-wolf was trapped, and "Blackie," Mr. Holman's thoroughbred foxhound, backtrailed and led the hunters to her den. Near it were the carcasses of eight colts, a number of calves, four deer, and part of a full-grown horse. Three of the wolf pups were killed and one was captured alive, and by automobile, train, and parcel post forwarded about 300 miles to Mr. Holman.

O. E. Stephl, leader of rodent control in Montana, and S. E. Piper, of the eradication laboratory, have been experimenting on both the Richardson and Armatus ground squirrels in the vicinity of Monida, Mont.

Albert M. Day, leader of rodent control in Wyoming, writes that an idea of the damage done by ground squirrels in Cokeville may be gained by noting the loss of water through their burrows along irrigation ditches. On one ranch were 15 holes, 25 feet below a small ditch, within a radius of 15 feet, and the water was bubbling up a foot or more high as it drained and broke out through the holes. Two ranch hands had been working for more than a week trying to stop the breaks and had thrown approximately 400 sacks of dirt in to plug the leaks. In one instance, the water had washed a hole 3 feet wide, 4 feet long, and 5 feet deep in the bottom of the ditch. It was necessary to flume the break, and the superintendent of the ranch stated that the whole hillside would have to

be flumed unless the ground squirrels were checked. He also stated that in three years ground squirrels have caused at least $5,000 damage in loss of water, damage to crops, and breaks in ditches. Mr. Piper is experimenting in this district on various poison mixtures to be used against the ground squirrels

Galen C. Oderkirk, of the eastern rodent-control district, has spent two weeks carrying on successful rat-control demonstrations in Wisconsin. At one demonstration rat holes in a poultry house were dusted with crude calcium cyanide and twelve rats driven out. Burrows were then excavated and 110 dead rats removed. An area of approximately 10 by 20 feet was treated in this demonstration.

FOOD HABITS RESEARCH

C. C. Sperry went to Austin, Tex., in the middle of June to make a survey of a body of water used as a city reservoir and to determine in what way it could be made more attractive to waterfowl.

FUR RESOURCES

Mr. Ashbrook visited during the month a large fox-breeding estate at North East, Pa., and also attended a meeting of the Wisconsin Fox Breeders' Association at Milwaukee and Wausau, Wisc.

D. Monroe Green spent several days early in the month at Saratoga Springs, N. Y., inspecting animals at the Experimental Fur Farm and conferring with Dr. Karl B. Hanson regarding the construction of a new building for rabbits and also plans for a number of hutches of an improved type. An experiment is to be started at the farm to ascertain the feasibility of raising rabbits in yards instead of hutches. Two large runways, to accommodate between 25 and 50 animals, are being constructed, and the stock will be kept in these yards for a full year. Mr. Green stopped in New York on his return to confer with a veterinarian of the Rockefeller Foundation who is conducting extensive experiments in rabbit diseases. Particular attention is being given to a disease called snuffles, with a view to discovering some remedy that may be used as a preventive and cure.

Four mimeographed circulars, Bi-880, "Breeders of Fancy Rabbits," Bi-881, "Breeders of Utility Rabbits, "Bi-887, "Breeders and Purchasers of Guinea Pigs," and Bi-889, "Publications on Trapping," have been issued recently and copies may be had on request.

GAME AND BIRD RESERVATIONS

Mr. Goldman left on June 12 for Hot Springs, Ark., where he represented the Bureau at the Sixth National Conference on State Parks, June 14 to 16. While in Arkansas he visited Big Lake and Walker Lake Bird Reservations and inspected various other areas within the State to determine their suitability for bird refuges.

Library of
Aldo Leopold

American Forests, November, 1927

Wolves, Coyotes and Nature Fakers

By
WALTER J. PERRY

Nov. 1927

THE CUNNING COYOTE
Night prowler and savage music maker.

FROM time to time one comes upon nature stories in some of our most popular publications not infrequently signed by writers of wide reputation and even perhaps with a section of the alphabet tacked to their names. These stories, while often true to life and of the greatest interest to people—especially young people—who like to broaden their horizon in that greatest and most fascinating of studies, are all too frequently little less than criminal in their tendency to mislead. In fact, some of them, while carrying the ear-marks of scientific articles, and with the added prestige lent by their authors' names, are little more worthy of credence than Kipling's "Jungle Books."

A favorite subject of these highly imaginative "naturalists" seems to be wolves. Perhaps this is because peoples of all times have seemed to be particularly credulous when the subject was wolves, from the classic story of the foster mother of Rome's founder, on down to date.

Having had some little first-hand experience with wolves I have read these stories with the greatest interest—I was interested to know how the authors got that way!

For example, a few years ago I met, and entertained for the night at my house, a gentleman who claimed to be a naturalist and who I am assured has written much on varied subjects along that line. He is in fact considered an authority. He discoursed largely of wolves, and was imbued with the rather popular idea that they were possessed of an almost supernatural cunning. In fact I gathered that he gave them credit for almost Sherlock Holmes-like powers of deduction, and he capped the climax by assuring me in dead earnest that quite a number of timber wolves had lately been discovered right in the heart of one of our larger cities. It seems that they were enabled by their cunning to make their living undetected, prowling at night and hiding during the day! He said he thought it a pity to exterminate "such splendid animals."

Some time since there appeared an article on the coyote, in one of our oldest and best periodicals. The author had undoubtedly drawn heavily upon hearsay information and had been led into some ridiculous errors. Any range man would at once see he had accumulated a vast stock of misinformation. Some examples were the statements: Coyotes never prowl at night. Coyotes never howl except in the neighborhood of their dens. Coyotes never go into the timber, being much too smart to allow their vision to be obstructed, etc., etc. Such stuff as that is all tommyrot. Most persons, if they happened to know anything at all of coyotes, would simply smile and forget the article. But many people, it may be, are reading of this very interesting animal for the first time and have no personal knowledge of him. These are the ones who record this misinformation in their minds as facts.

As to the first statement that coyotes never prowl at night: They do habitually prowl at night though not exclusively of nocturnal habits. To say they howl only about their dens is absolutely foolish on the face of it. After crediting Mrs. Coyote with a cunning far in

excess of anything she really possesses, the writer would apparently have us believe that she proudly sits up over her den and howls a notice to the wide world and all her enemies that she has an extra fine litter of pups there! Very likely indeed! I would lose all the great respect I have for her tribe if I could really believe she was so foolish. They *do not* howl in the immediate vicinity of their dens. On the other hand, they do howl at night or in late afternoon whenever they may be on their wide rambles. They howl alone their mating call or gathering call; they howl in packs when hunting at night, and this is the wildest, most utterly savage music—yes, music—a man may hear.

As to their never going into the timber: it is to laugh! The only place where they do not take advantage of the cover of timber is on the Staked Plains where none grows. There they take advantage of every buffalo wallow, or tuft of grass, or bunch of yucca to keep out of view. They can and do hide behind a remarkably small object, aided by their rather nondescript coloring which blends with almost anything. Anyone who has hunted in or been in our western forests in winter must have noted the criss-cross trails of coyotes in the snow. The only time they desert the woods is when the snow is too deep and too soft for them to travel. When the snow crusts in late winter they return again.



Courtesy Biological Survey

THE KILLER

Lightning swift in his attack upon his enemy, the wolf asks—and extends—no quarter.

With all their shyness they are at times—especially at night—quite bold. I have had a dog coyote come within forty yards of my camp at night, and taking advantage of the darkness, spend a happy half-hour telling me his poor opinion of me and all my kind, even to the seventh generation! I have lain quietly in the dark and listened to him voice his undying hate, scorn and utter defiance of me, my dogs, my guns and all my inventions. I allowed him the privilege of free speech, and while next day, when our eyes were more equal, I might shoot him, it was not because I despised him, for getting right down close to the ground and looking at the matter, he has it all over me in a dozen different ways. The only thing I can best him in is head work—and then it takes years to learn to *think* in coyote and do that!

In the New Mexico mountains coyotes mate about March 1 or even a little earlier, and the two to five or six pups are born about 60 days later, usually in a den excavated far into soft ground on some sunny point or hillside. The same den may be used year after year if undisturbed.

Coyotes, though not less fierce and bloodthirsty than their big cousins the gray wolves, are not nearly so bold. They frequently follow bands of the big killers and fatten on the leavings of slain cattle and horses. For while the big fellows insist upon absolutely fresh meat, and generally get it, the coyote is not so choice and will return again and again until the bones are picked clean.

One should really chalk up to coyotes the loss of many newborn calves now charged to "lobos"—that, by the way, is a proper name for wolves borrowed from the Spanish. Coyotes will kill, carry off and eat young lambs or kids, as well as all kinds of poultry. A possible exception may be ducks. I once knew a bunch of tame ducks about 15 in number killed in the course of a few days by some animal which did not either eat or carry them away. A very careful examination convinced me this was the work of a coyote. Coyotes will sometimes attack a band of sheep and slash their throats, apparently for the pure love of slaughter. I once saw 68 head of sheep that had been so killed in one night after having been scattered by a bear. Only a small part of one or two had been eaten. A lobo may do the same thing for the same reason.

The coyote feeds upon any animal he is able to kill, as well as upon grasshoppers and other insects when food is scarce. I have watched them on the Dakota prairies industriously catching grasshoppers, and have

known them to feed heavily upon a variety of small red plums along the creeks there. Also I am informed by an eye witness, and have myself seen unmistakable evidence, that they feed upon juniper berries. Truly the coyote race seems to be in no danger of extermination from famine! I have also been an interested spectator of their method of killing prairie dogs, upon which they depend largely for their fresh meat during the summer. I have seen a coyote creep up on his belly to the edge of a prairie-dog town, and when any of the population became suspicious and sat up to look around he would flatten out and blend with the ground and grass until feeding was resumed. When he judged the time had arrived the coyote would make a lightning charge with head close to ground not at the luckless dog but so directed as to cut him off from his hole. Some few dogs learn this trick. I once watched for some ten minutes a coyote stalking a cottontail rabbit near some creviced rock where with a leap or two the rabbit could be safe in a hole. He obviously realized this and was very patiently waiting for bunny to get a sufficient distance from his hole and make a run on him worth while. I shot this fellow—he was poaching on my preserve.

Coyotes—lobos, too—kill sheep and such small animals by an attack at the throat, by a slashing cut, and not by seizing as a dog might. He seldom or never seizes. Fighting in the open his tactics consist in making a lightning swift leap past the enemy or prey and a side snap as he goes. If his snap is successful, the momentum of his body causes his long and slightly hooked teeth to tear out and thereby inflict a terrible ripping wound instead of a mere puncture. Cornered, he does not merely bite his enemy, but with the quickness of a rattle-snake his head is extended and brought back in the same motion, and the weight of his head and neck is thrown into a whip-cracker snap. The result is a cut rather than a mere bite. Very few ordinary dogs can kill a coyote at close quarters, though heavy and swift hounds make kills by overtaking and overthrowing him while he is still in full flight.

The lobo kills larger game than the coyote and usually hunts in couples or in packs. If there is more than one wolf one keeps at the animal's head and the other will make a flying leap and slash at the lower part of the ham, severing the ham string. The stricken animal sinks down helpless and is at their mercy—and a wolf knows none. But as the wolf or coyote extends no quarter neither does he ask any. I feel quite sure that no amount of torture would serve to bring a whimper from a captive coyote, and that with his dying effort he would endeavor to kill his captor.

Once in order to supplement my observations on coyotes, either at large or trapped, I dug out a den and raised two of the young to maturity from small pups. They were kept in semi-captivity in a good sized poultry wire pen and were never chained up. While they were extremely interesting they could hardly be called pets, and although I have been quite successful in raising and gentling various naturally wild animals, I was never able to gain their confidence and bring them to a stage of gentleness where they would willingly allow me to place a hand on them, though when caught they would not bite me, and I habitually fed them raw meat from my hands without danger. Handling these I learned that a serious bite may be avoided by closely observing the eyes and mouth. Once a coyote strikes no man is quick enough to avoid his fangs, but before he strikes the pupils of his eyes invariably dilate, and another and equally sure sign is an opening of the jaws and retraction of the tongue.

As a result of my experiments to test the keenness of their senses and their intelligence my conclusion was that their senses of sight, hearing, smell and touch were extremely acute. It was interesting to note that when soundly sleeping the slightest unfamiliar noise would cause them to prick up their ears, or an odor as of food would cause their nostrils to work and they would presently awake. Noises to which they were accustomed, even the shriek of a locomotive, would fail to rouse them.

Rather than credit the coyote with any particular intelligence, above that of the dog, such as many writers have ascribed to them, I would say that the keynote of their whole nature and the explanation of their escape from extermination—with the whole world against them—is an abnormally developed bump of caution. They fear anything they do not entirely understand, and were it not for a certain sense of curiosity they exhibit, especially when their sense of smell is appealed to, it would be almost impossible to trap them.

Wolves are not easily trapped, though any skillful trapper can place a trap so no man or animal could detect it by the sense of sight, and after the man scent has left the locality it only remains to induce the wolf to visit the spot and tread on the trap. There are various scents used to lure wolves. Some of food, others containing the sex lure, and still others which are merely a "stink bait" designed to work upon their curiosity. Any of these may be deadly under favorable circumstances.

Approaching the lure the wolf will circle and sniff from all sides, gradually drawing nearer but all his senses on the alert. The slightest scent or other sign of the trapper, or an unnatural softness of the ground under a foot, and he is off not to return. So the experienced trapper makes his set in perfectly open ground where it is likely to be sprung during this reconnoitering.

On the whole, wolves are absolute savages, they are wild, wild a thousand generations before they are born, and this wildness, which is excess caution, has enabled them to hold their own or at least escape total extinction, but they do not reason—not quite—only man does that.

And, withal, I am forced to admire the coyote because "stacked up against hell and damnation he has managed to stay in the game." If I kill him it is because he is my enemy, and the enemy of civilization in general, and makes no claims to the contrary, and not because I despise him. And by the same token, if I kill him it will be in open warfare—cleanly, with rifle or pistol.

CONTROL OF PREDATORY ANIMALS

(Letter from the Secretary of Agriculture, House Document No. 496.

Published by U.S. Govt. Printing Office, 1929.

The individual work of wolves can scarcely be compared with the persistent attacks of roving bands of coyotes. In morgan County, Utah, three coyotes attacked and killed $500 worth of sheep in an hour. Near Antonito, Colo., 67 ewes became separated from the rest of the herd and two days later were found killed by coyotes. In Oregon four coyotes in two nights killed 15 purebred sheep and rams. In California, near Middletown, on one ranch running 2,000 sheep, coyotes killed 200 in one year, although the sheep were close herded. In a flock of 36,000 sheep owned by 10 men near Marysville, Calif., the loss caused by coyotes was 1,950 in one year; and out of 1,175 turkeys owned by three men the loss in one night was 187. Near Wilbur, Wash., a woolgrower reports the loss of 33 sheep by coyotes, 17 being killed in one week; and Near Olympia a poultry producer reports the loss of 80 chickens in one month's time from the same source. In Montana, in one night's raid coyotes killed 26 lambs owned by two neighboring woolgrowers, and near Sula 200 lambs were killed by coyotes between June and September 1.

Nor do ravages on livestock form the only real menace from coyotes, for it has been found that in California these predators have done considerable damage to melon and grape crops. Coyotes have frequently been known to take practically every bunch of grapes in small vineyards. Wild game also suffers from the work of coyotes, as may be instanced by statistics compiled in the New Mexico field office at Albuquerque, where it was found that the stomachs of 48 coyotes taken during August, 1927, contained deer flesh; also in April of that year considerable depredations by coyotes on young calves were noted in New Mexico--much of this being done in feed pastures, particularly on newly born calves.

In Arizona, during the fiscal year 1920, 445 stockmen and farmers reported livestock losses from predatory species of $378,151 in one year; a number of others reported a loss of 2 to 10 per cent of their calf, colt, and lamb crop each year from wolves crossing into that State from Mexico, and from other predators such as mountain lions, bears, coyotes, bobcats, and foxes. Since the bringing of the gray wolf under control in 12 of the western range States, to hold control it has been necessary constantly to maintain expert wolf hunters in known wolf crossings on the international boundary along the Arizona-New Mexico border, to destroy the wolves coming sporadically from the Province of Sonora, Mexico.

DAILY BULLETIN

No. 29-23 U. S. Forest Service January 28, 1929
Southwestern District

The Forester Passes Thru: Major R. Y. Stuart, Chief Forester and Assistant Forester C. E. Rachford passed thru Albuquerque on the limited today enroute Phoenix to attend the National Woolgrowers' Association convention. They were joined here by Assistant District Forester Kerr and Inspector Shoemaker. District Forester Pooler will also meet them at Phoenix enroute from the Arizona Highway Meeting at Los Angeles. The convention will last three days, the 29, 30 and 31.

Stepping Out: Tucson is rapidly assuming metropolitan airs. The big steam shovel has completed excavation for the new 10-story Consolidated Bank Building and is now at work excavating for the foundation of a new 10-story hotel. Both are on Stone Avenue. The new court house is under construction and the new Federal Building plans are about completed which will provide ample quarters for all the Federal departments now scattered promiscuously over the city.

Coyotes Very Numerous: G. C. Luna was in the office recently and stated that the Tucker Bros., had caught 90 coyotes and 15 bobcats so far this season on that part of Ed. Otero's range in the vicinity of Sullivan's Hole, reports the Datil Bulletin. Practically everybody in the country is trapping coyotes for their fur and while they are mostly amateur trappers they are catching them everywhere. I was told this evening that every coyote caught up in the mountains had a stomach full of deer hair and meat. Two boys here at Chloride, who are attending school regularly, caught four coyotes in traps in sight of town last month. Another school boy over at Inman's ranch, missed no school but caught 10 coyotes in 12 days. Gus Welty caught 8 coyotes last month along the canyon above Fairview. John James of the James Bros., saw four coyotes chasing a big Black tail buck just south of Chloride last week. C. G. Yeple saw a large loafer wolf on Mineral Creek last week.

Coyote & deer

Public Contract Measure: A bill known as the Public Contract Act introduced by Congressman Crampton promises, if it passes, to enshrine this man's name for a long time in the grateful memory of long harassed department heads, fiscal agents and purchase agents of the Government. The bill has a number of sections aimed to simplify the purchase, contract and specification business largely throwing the last word in these matters to the department heads rather than the Comptroller General. The awkward fiscal year limitations on leases and purchase of seasonal commodities is to be eliminated, bids will not be required for work, materials, supplies or services other than personal when the amount is $500 or less- the present limit being the well known $50; final decision on acceptance of other than low bid rests with the head of the department; informal contract bond requirement is raised from $1000 to $2000; liquidated damages for delay in contract work are to be determined and remitted by the head of the department and not the Comptroller; only formal contracts (more than $2000) will be filed in the General Accounting office obviating the large amount of record work now necessary in connection with the vast number of small contracts; bonds requirement in construction work raised from $500 to $2000.

Field: Pooler, Kerr, Shoemaker (Phoenix, Ariz.)
Visitors: Pearson
Acting: Jones

Coyote

EAGLES' PREY

(From the Journal of Mammalogy, February, 1929, Vol. 10, No. 1, page 83)

(General Notes)

On the plains and in the mountains of the western country the eagle most often observed is the golden eagle. Once in a while, on the Missouri and possibly on other large rivers, the white-headed eagle may be seen and sometimes breeds.

Among the mammals that the golden eagles kill for food are jack-rabbits, some smaller rodents, and the young of deer, antelope, wild sheep and white goats. In the old days of antelope abundance, plainsmen frequently told of attacks by eagles on well grown antelope. I myself once saw an eagle stoop at two yearling antelope that were running side by side. When threatened, the antelope reared on their hind legs, struck with their feet at the eagle and drove it off. I quoted, years ago, a similar observation by my friend, W. H. Reed. In old times, eagles killed many antelope.

A hungry eagle may well enough attack any living thing it thinks it can kill. It requires flesh and is not critical as to what this is. Two or three observations on this point, reported from Montana, seem worthy of record. The first comes from G. Monroe, son of J. B. Monroe of Blackfoot. In the spring of 1926 young Monroe was riding from his father's house on the St. Mary's Lakes, Montana, toward the home of William Gird, who lives further down the St. Mary's River. When he had passed just below the mouth of Hausman Creek, he saw a full-grown coyote trotting along on an open hillside about four hundred yards from him, apparently hunting ground squirrels. Young Monroe had no gun with him and rode on. As he watched the coyote he heard a rush through the air and saw a large eagle descend and strike the coyote over the kidneys with its talons, and seem to try to rise with it. At all events, it vigorously fanned the air with its wings. The eagle continued to hold the prey which presently ceased to struggle. The young Monroe rode over the place and drove the eagle away from the dead coyote and later he and Gird examined the animal. Its throat was torn.

On an occasion when the wife of J. B. Monroe was returning from Two Medicine River she saw an eagle attacking a large badger. Apparently the eagle would soon have killed it, but the woman drove off the bird and the badger got into a hole.

A coyote and a badger are fighting animals and might be expected to try to defend themselves, but no resistance to an eagle could be made by a young deer, a mountain lamb, or the kid of a white goat. -- George Bird Grinnell, 238 East 15th St., New York, N. Y.

Digest of
Predator Control on Saline Game Preserve
(From Waller's Tabulation)
20,000 acres (31 sq. Mi.) in Saline(?) C., Kansas

Class	1924	1925	1926	1927	1928	1929	Total	Aver. Per Yr.	Aver. Per Sq.Mi.	Total Bounties	1929 Rate
Falcons or Darters	164	600	742	1219	1416	1222	5363	894	28.8	$2681.50	50¢
Hawks	782	1810	1746	2302	3025	3298	12,963	216	7	$3041.75	25¢
Owls	87	100	172	324	335	239	1257	209	6.7	$ 188.55	15¢
Total Hawks & Owls	(1033)	(2510)	(2660)	(3845)	(4776)	(4759)	(19,583)	(3264)	(105.3)		
Rats	325	323	2856	1799	(discontinued)		5303	1326	42.8	$530.30	10¢
Rattle or Bullsnakes	328	277	490	484	546	483	2608	435	14	$391.20	15¢
Common Snakes	1412	677	1229	1102	1077	1248	6745	1124	36.2	$674.50	10¢
Coyotes	15	6	50	30	108	121	330	55	1.8	$330.00	1.00
Total Head	3113	3793	7286	7260	6507	6611	34,569				
Total Bounty	$528	$915	$1366	$1426	$1812	$1790	$7837	$1306	$42.1		

File
Kansas
Hawks & Owls folder
Coyotes folder
Desk Book (Digests)
North Central Report
Text on Game Management

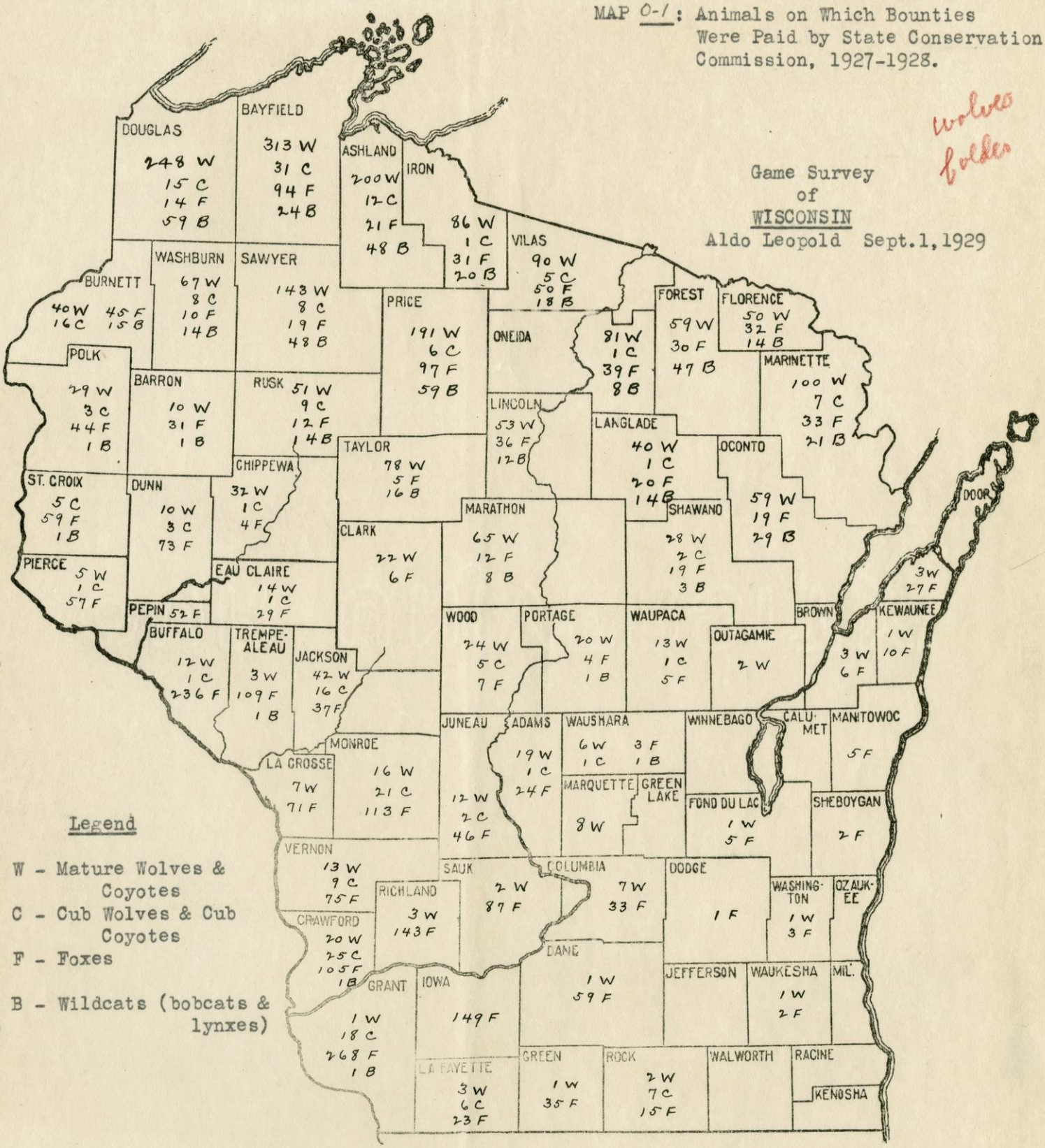
Copy to Major Waller

Big table in "Predator Control" Box

MAP 0-1: Animals on Which Bounties Were Paid by State Conservation Commission, 1927-1928.

wolves
bodies

Game Survey
of
WISCONSIN
Aldo Leopold Sept. 1, 1929



Legend

W - Mature Wolves & Coyotes

C - Cub Wolves & Cub Coyotes

F - Foxes

B - Wildcats (bobcats & lynxes)

This map compiled by W. B. Grange for the information of the Game Research Committee of the Wisconsin Conservation Commission.

July 3 to 15, prior to taking up his duties in Alaska.

PREDATORY-ANIMAL AND RODENT CONTROL

Crouch Returns from West.--W. E. Crouch returned to Washington on July 2 after completing a successful tour through the majority of the Western States, where opportunity was afforded him to confer with leaders, assistants, and many individual cooperators of the Bureau.

Day Transferred to Washington; Hamm Becomes New Leader in Wyoming.--Albert M. Day, leader of predatory-animal and rodent control in the Wyoming district, was transferred to Washington, effective July 1, to fill a new position in this division made possible by a slightly increased appropriation for 1931. He will be succeeded in Wyoming by Adolph S. Hamm. For some time the need for additional help in the division has been felt, in view of the extension of control operations throughout the country, which in turn has brought about increased work in the administration of and closer contact with field projects.

Mr. Day entered the service of the Biological Survey under a six-months' appointment as field assistant on April 1, 1919, and was assigned to rodent-control work in Wyoming. Following this he entered college and later took the civil-service examination. As a result, on March 16, 1920, he received a permanent appointment as Biological Assistant. On July 1, 1920, he was put in charge of the rodent control work in Wyoming. Between August 28, 1920, and March 7, 1921, Mr. Day was on part-time employment with the Bureau, during which time he continued his studies at the University of Wyoming and received his degree. He resumed full-time duties on March 16, 1921, and led the rodent-control project in a satisfactory manner during the following years. On July 1, 1928, he was placed in charge of both the predatory-animal and the rodent control work in Wyoming, and led these two projects up to the close of the past fiscal year. Before this later promotion, Mr. Day had advanced from the position of temporary field assistant, through biological assistant, junior biologist, and assistant biologist to associate biologist. He has succeeded in extending con-

Killer Meets End



Wis State Journ.
Nov 23, 1930

This picture shows Charles Walker, one of Mr. Coleman's predatory game hunters, with a timber wolf and two bobcats he killed in 1927. The wolf was 8 feet, 1 inch long and weighed 97 pounds. In the fall he would have weighed nearly 150, it is estimated. The bobcat is more dangerous to men than the mountain lion, Mr. Coleman declares, because they will fight when molested.

U.S. Hunter Leads War on Badger Timber Wolf

$4,160 Damage Done Yearly by Gray Killer, is Estimate; Deer Chief Victims

The deer, warily picking his way through brush and fallen timber, failed to notice the gray shadow that lurked beside the trail ahead of him. As the buck came abreast of it, he seemed to sense his danger and paused an instant before breaking into wild flight. With a snarl the shadow sprang.

Later a trapper came upon the half devoured carcass of the deer. It was the second one he had found that week. Around each were tracks of a big timber wolf.

The wolf doesn't kill to satisfy his hunger alone, but will kill for the sport of it.

It was to combat this ruthless destroyer of Wisconsin's wild life that O. L. Coleman, leader of the United States predatory animal control, was loaned to the state game conservation commission early in 1930.

Do Great Damage

For the wolf and his smaller cousin, the coyote, cost the state thousands of dollars every year with their slaughter of wild life. The timber wolf, it is estimated, kills two deer a week. His average life is about 15 years. Confiscated venison sells for 30 cents a pound and the average deer will weigh 120 pounds. This brings the actual value of a single deer to $40 and thus a wolf destroys $4,160 worth of property each year.

Since Coleman's arrival here in March this year, six trappers have been secured and territories alloted them in the northern part of the state. They are located at Pembine, Goodman, Mercer, Mellen, Cable and Gordon.

For the first three months after Mr. Coleman came here, the entire plan of having hunters control the predatory animals was on probation.

For the next three months, from June 15 to Sept. 15, the number of pelts and scalps of coyotes and wolves turned in by the hunters increased 29 per cent.

13 Years in Service

"The increase will be much more rapid from now on as the hunters become more familiar with their country and the snow reveals the haunts of the animals," predicts Mr. Colleman.

Mr. Coleman has been with the government for 13 years. Practically all of this was spent in the southwest, where he had started as an independent hunter in 1907.

"It's much harder to hunt and trap wolves and coyotes here than in the west," Mr. Coleman declares, "There, the soft soil and open country permit trailing of the animals. Trap lines can be followed and tended quickly from an automobile.

"Here in the timber, the tracks don't show.

"We don't use any poison in our war against the predatory animals here. Coyotes, wolves and bobcats are the animals we are after."

Coyotes Bring Laugh

In Mr. Coleman's office here there is a large array of pictures of his early day catches and a black bear hide covers one of the walls. Coyotes caused him many a misery and a laugh.

"One of them," he says, "pleaded so hard with his eyes, wagging his tail and grinning like a pet dog that I just had to let him go. But he was the only one I ever did let go.

"Then there was a rough jolting ride behind a pair of racing burros, over a half mile of brush covered mesa. I was driving along slowly when the team suddenly pricked up their ears and started on a dead run across the prairie. I couldn't see a thing that would attract them or frighten them. Besides, my efforts were concentrated on hanging on the bouncing wagon.

"A coyote suddenly bobbed up ahead of the burros. He swerved and they followed so quickly that I was nearly thrown. Finally they ran him down in a pile of brush, reared up and brought their front feet square on his back. By the time I was off the wagon the coyote was dead."

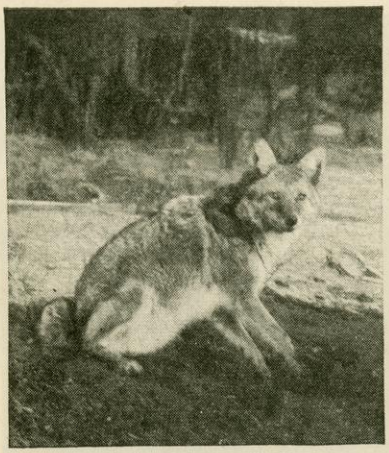
Curiosity Fatal

Mr. Coleman is perhaps the only man who has ever seen a coyote spring a trap. From it arises his theory that curiosity is the cause of most coyotes getting trapped. He described the experience.

"I was setting my trap line and noticed this coyote about 400 yards away, watching my every move. I advanced 150 yards closer to him and still he watched. Then he moved toward the first trap I had set, not over 100 yards away.

"Lying down on his haunches, with his foreleg extended the coyote would touch the trap lightly with a paw, withdraw it and look at me and announce the trap. He repeated this about eight times and had the dirt brushed away from the trap. Then it snapped. It wasn't until the chain became taut that the coyote seemed to be troubled with being caught."

Field & Stream
Dec 1930



A fur-bearing bum

Don Coyote—*the Adaptable*

The deer's most dreaded enemy is on the increase in spite of control measures

By S. OMAR BARKER

WHILE driving a bunch of yearlings up a New Mexico mountain road one day last spring I observed a most amusing sight. From the southward, over the red cliff-head of Hermit's Peak, came a passenger plane, its motors roaring like the echo of doom over the timbered hills.

Suddenly, from a piny slope to the left of the road, there emerged a coyote. If he had been equipped with motors, they too would have been roaring, for he was most assuredly on his way. He flashed across the road not twenty feet ahead of the yearlings nor forty steps from us, but he never gave us a look. Under a fence he ducked and sped like a torpedo across a snowy field. Far above, but still behind him, came the roaring plane.

Don Coyote, the devil-may-care, had at last seen something that panicked him. With an eagle like that swooping over his tail, he had no time for the impudent, half cautious, sidelong look he usually bestows upon humans during flight. Nor was this the usual crafty spurt to the shelter of timber. It was the wild, abandoned flight of terror.

But Don Coyote will get used to airplanes. Adaptability is his middle name. He is one citizen of the wild whom the encroachments of civilization seem to leave unterrified.

Time was when he fled thus wildly at the sight of a car. Now he trots along half sidewise and watches them pass. He has learned that they are harmless when moving. If they stop, look out for fireworks. But even then his nonchalance does not become terror — merely caution. He spurts for cover. Once he has gained it, he stops to look back, then trots on about his business.

His business, too, has changed to suit the times. Once an indolent, well-fed scavenger, Don Coyote nowadays makes quite active shift for himself. Properly a prairie wolf, he has nevertheless become in the Southwest a killer of the mountains, the deer's most deadly enemy. In the old days of teeming game, there were wolves and panthers in plenty to do his killing for him. He was content with their leavings. Today game is scarcer and his meat killers are practically gone. So he has turned killer.

While out walking a few weeks ago I heard the pitiful bleat of a young deer in distress. It seemed to come from the willows along the creek. I ran toward it. Suddenly, not ten steps ahead of me, an enormous coyote leaped from the water and scurried off up the hill. So intent had he been on his kill that he had not sensed my coming. Unfortunately I carried no gun.

Outstretched in the shallow water, which instinct had made her seek as a refuge, lay a six months' fawn. Though she was alive, her flank was badly torn. Plainly Don Coyote had already begun his meal.

I should have left the deer as she was, returned home for my rifle and come back to watch for the killer. His death would have saved the lives of a dozen fawns during the winter. But I hadn't the heart to sacrifice this poor little wounded deer. I took time to get her home to a warm shed. Then I went back with my gun. It was too late. Don Coyote had returned. He had even followed my own tracks for a hundred yards, unwilling to sacrifice his dinner, but now he was gone.

Nor is he only a killer of fawns. I have found more than one full-grown buck pulled down by a pair of coyotes. His method is to run them down. The old-time scavenger, his killers gone, has adapted himself handily by learning the trade himself.

Ranchmen, government and free-lance trappers all trap for him and shoot him on sight. But he survives. He is trap-wise, and getting wiser every year.

Settlements do not disconcert him. He takes a keen, clownish delight in the nocturnal taunting of dogs with his indescribable *yi-yap-yurr-rr-rr-rr-ing*. He learns readily how to steal chickens in broad daylight, using tall grass, hay fields, ditches or shrubbery for his ambush. Failing at the chicken yard, he makes a ripping raid on the sweet-corn field when night comes, grabbing a bite or two from two or three dozen ears.

He is often in hopeful attendance at the birth of a calf. He helps himself to sheep anywhere, anytime. He has been known to kill and eat domestic cats. In the grain field he plays at the exciting game of jumping on top of the shocks to scare out chipmunks and field-mice. He dotes on tame turkeys. All kinds of fruit rank high on his diet card.

1 cat folder

My father buries his winter apples in dirt pits out in the orchard, and never a winter passes but that the coyotes find them. And they come, sagaciously, early in the night, before the ground has frozen too hard for digging.

It is some such weakness as this appetite for apples that finally betrays even the wisest old Don in the woods and sends his pelt to the furrier's. Yet it is no uncommon thing to see tracks where coyotes have circled a trap-ringed carcass at a safe distance night after night, too wise to close in for a meal. They can be trapped, but it takes plenty of skill and patience.



The fawn I rescued from Don Coyote

TO Don Coyote's diet card add watermelons, cantaloupes, turnips, honey, piñon nuts, grasshoppers, beetles, horned toads, young pigs, green peas, strawberries—the list is too long. Easier to list what he will not eat. The Biological Survey hunters tell me he is becoming increasingly wary about indulging in poisoned meat baits. They also say that of all the predators he alone is holding his own—or better. Others report that he is even increasing and spreading eastward again through the farm lands where long ago he followed in the wake of killer wolves and buffalo hunters.

He is a jokester, a clown, a buffoon of the outdoors, a prowler, a howler from the hilltops, a taunter of dogs, a dodger, a killer, a vagabond, a fur-bearing bum. But he has one most precious and ever present knack that brings him through —he is Don Coyote, the adaptable.

wolf folder

Large Wolf Taken in Arizona.--The buffalo wolf of Plains fame, which proved so destructive to "white-faced buffalo" after the bison had been exterminated on the western grasslands, still continues to take heavy toll of Hereford cattle in Arizona, the rugged contour of Arizona's highlands furnishing the lobo with safe retreats. The common practice of taking these marauders in the early days was with packs of fleet wolfhounds. In the rougher sections of the West such packs of dogs were of little value, as they ran only by sight. Canyons, washes, bowlder piles, and heavy vegetation so obstructed their view that the wolf easily made its get-away. Government Hunter Carl Larsen, recently captured, near Rice, Ariz., the first wolf ever taken in Arizona with dogs as far as the Bureau has record. While following a cold mountain-lion track with his nine hounds, Larsen crossed the wolf's trail made in 12 inches of snow and followed it with his pack about half a mile, when he jumped the wolf, This animal, having recently gorged itself with veal, led the pack about 4 miles, when, becoming winded, it turned to fight. While the dogs harassed it, Hunter Larsen approached close enough for a shot. The wolf proved to be an old male, weighing more than 150 pounds and measuring 6 1/2 feet from the end of its nose to the tip of its very short tail. It is a far cry from running wolves on the plains of Texas in the early '60's to taking a record animal in the mountains of Arizona in 1931, but such a thing has happened. The nearly white skin of this wolf is now a Bureau specimen.

The Survey, March, 1931

Hunter Bitten by Rabid Coyote.--Hunter Ray Williams, of the Idaho District, recently had an unpleasant experience with a rabid coyote that he had run down in deep snow. The coyote gripped his horse's leg and held on. In attempting to dislodge the animal, Williams was bitten. The coyote's head was sent to Boise for bacteriological examination and the case was diagnosed as rabies. Williams has taken the Pasteur Treatment. No further cases have been reported.

"Banded" Coyote Captured.--Early this year there came to the attention of Luther J. Goldman, leader of predatory-animal control in Idaho, a newspaper clipping regarding the capture, in the vicinity of Kooskia, of a coyote wearing a dog collar that bore 1921 Jefferson County dog license No. 231. The collar was very tight on the coyote's neck, and beneath it the skin was completely bare. Inquiry disclosed the following facts: About 10 years ago this coyote, then a pup, was captured by a former resident of Rigby, who brought it home and made a pet of it. It followed members of the family about and was curbed only when its appetite for wandering chickens became too keen. When it grew older it was chained, but shortly broke loose and since then has apparently been wandering about. The animal was retaken in December, 1930, near Kooskia, which is at least 300 miles by air from Rigby, 200 miles of which is over extremely steep mountain country. When taken, the coyote was in good condition, and residents in that vicinity believe it to be the animal that was seen there last winter and summer This furnishes an interesting instance of the extensive wanderings of coyotes under certain conditions and indicates the difficulty of their control.

File Coyote

DuPont News
May 15, 1931

Coyotes

COYOTE INVASION OF ALASKA NEARS NESTING GROUNDS

"A furred invasion which has been creeping steadily northward across Alaska, killing and scattering herds of reindeer, caribou and wild sheep, and plundering the catch of trappers, is expected to reach and overrun the great migratory waterfowl breeding grounds on the Bering Sea coast this summer.

Coyotes, pursued as pests in the United States and Canada, spread into Alaska a comparatively few years ago in spite of a war declared against them in 1927 are still widening their frontiers of destruction, according to H. W. Terhune, executive officer at Washington of the Alaska Game Commission.

First entering the Territory from Canada through the White River section, the animals, last year were reported to be almost within striking distance of the northern breeding range of ducks and geese, where officials fear they can do enormous damage." - American Game Association.

extra

THE COYOTE AND HIS CONTROL

By E. Raymond Hall

THE COYOTE, despised by some, loved by others, has both virtues and faults. He is really a wild dog. Inasmuch as the old adage "Give a dog a bad name and he will not live it down" has a measure of truth, let us mention first a few of his virtues.

He is a health officer among game and other animals, including man himself. For one thing, he is a scavenger and on watersheds, which supply water for domestic use, he retrieves many a carcass for food that otherwise would decay and contaminate the water supply, or serve as a lure to filth-loving insects which carry the organisms of decay to man's food. The services rendered in this direction are much greater than the casual observer would suspect. One reason for this is that when the service is done the evidence is largely removed. Several times I have noted the carcass of a deer, or one of man's domestic animals, which in a few nights time was all but obliterated by coyotes. Only the larger bones remained.

More important still, as a health officer, are his services in eliminating the diseased and unfit. By taking relatively more of the weaklings than of the vigorous over vast periods of time, say among deer, the race of deer has doubtless been improved. The outstanding service, however, is in taking the diseased. By reason of the ease with which sick animals can be caught—and, probably by long experience, the flesh-eaters seem almost instantly to recognize in their prey such actions as are due to illness—they tend to be eliminated before they can act for long as carriers and spreaders of disease. A case in point illustrating the value of the flesh-eaters is furnished by the willow grouse.[1]

The grouse were subject to semiperiodic outbreaks of endemic coccidial disease. Although the grouse were present in fair numbers, each year there was appreciable fluctuation. This influenced shooting. Thinking to increase the grouse supply, well meaning sportsmen had the predatory birds and animals removed. True to prediction, the grouse increased for a time. Then the endemic disease broke out again. This time it spread so far and wide that the grouse were all but exterminated and have not recovered over a long period of years since, where before, a fair number of healthy birds were always to be found when the flesh-eaters were on guard to snap up the diseased before they could spread the lethal malady to so many of their fellows.

Coming nearer home, we have some reason to suspect that when the flesh-eaters are removed the California quail may react like the grouse. Dr. Clarence O'Roke's valuable studies of the quail[2] for the Fish and Game Commission showed the existence of a protozoan disease in that species. This disease, possibly brought by introduced species of game

[1] Nature (London), pp. 567–568, 1927.
[2] Calif. Fish and Game, vol. 14, pp. 193–198, 1928; Univ. Calif. Publ. Zool., vol. 36, pp. 1–50, 1930.

birds, or possibly endemic, takes toll of the quail and when the flesh-eaters (carnivores and birds of prey) are not on guard to snap up the sick individuals the latter linger on to provide disease organisms for the ever present blood-sucking flies to transmit to healthy birds. Also in some places where the carnivores have been eliminated, the quail decreased.[3] There is good reason, therefore, in the interest of game propagation alone to use the greatest caution in reducing the carnivores. Among the carnivores acting, at least in part, as game protectors, the coyote, of course, is only one, but he is an important one; important in ways other than the one just cited.

One of the other ways in which he operates to man's advantage is by acting as a check (not necessarily as a control) on harmful rodents. Here we should digress to avoid the common misconception that all rodents are harmful. The grasshopper mice (*Onychomys leucogaster* and *O. torridus*), for example, feed almost entirely on insects.[4] A great number of these insects are of kinds which damage forage and crops, and prevent us from regarding the grasshopper mice as harmful. However, a great many kinds of rodents, among others the California ground squirrel, are regarded as "harmful" because they take heavy toll of forage for game and stock; they destroy cultivated crops, the eggs of ground-nesting birds, like quail, and act as carriers of disease. These rodents are subject to fluctuation in number. The fluctuation is greater in the polar than in the temperate latitudes and least in the tropical zones; but some fluctuation occurs everywhere. Here in our temperate latitude these fluctuations seem generally to be determined largely by weather conditions and abundance of food and shelter. When an increase goes unchecked, due to absence of the carnivorous animals, or for any other reason, nature often takes care of it eventually by a plague [5] which sweeps away all but a few individuals. As is well known, the damage done before the plague comes to the rescue usually is large, not to mention the sums spent in attempted artificial control. Now right before this happens is when the carnivores play their most important part as checks. When any one rodent species begins to increase in numbers, the flesh-eaters, naturally, by reason of the ease with which this kind of food can be obtained, concentrate on it and the numbers they eat often account for a slowing down of the increase until climatic conditions again bring the species back to the average. In this way outbreaks are prevented. It is readily seen, therefore, that the action of the carnivores as natural checks is of deciding effect when the increase *begins,* not after an outbreak is accomplished.[6]

In checking an outbreak at its beginning, the coyote alone may have deciding effect, especially with ground squirrels and rabbits, which form his staple article of food. Furthermore, in these two species the plagues which often eventually act in the coyote's absence are of kinds transmissible to man. These are tularemia in the rabbits and the dreaded bubonic plague in the California ground squirrel. In these cases the flesh-eater, the coyote, not only forestalls an expensive out-

[3] Seton, E. T., Lives of Game Animals, vol. 1, p. 391, Doubleday Page and Co., 1925.
[4] Sperry, Chas. C., Technical Bull., No. 145, U. S. Dept. Agric., pp. 15–19, 1929.
[5] *Bacillus murisepticus* in the Kern County mouse outbreak of 1927; *B. tularense* in the Berkeley Hills mouse outbreak of 1927; *B. pestus* carried by ground squirrels in the San Francisco Bay region of California.
[6] Among the scores of cases to be cited, see, Calif. Fish and Game, vol. 9, p. 111, 1923; and Univ. Calif. Publ. Zool., vol. 30, pp. 189–203, 1928.

break of rodents or rabbits, but at the same time prevents an outbreak of disease dreaded by man himself! Suggestively enough, the two outbreaks mentioned above (footnote No. 5) in which plagues broke out, followed ill advised extermination campaigns against the carnivorous animals. In wild life administration it must be recognized, as trained biologists long have done, that there are complex relationships which make it impossible in most cases to produce, say, more game, simply by killing the animals other than man which prey upon it.

Similarily, neither is it usually possible to adjust things exactly to man's satisfaction by eliminating some entire group. Indeed, among the smaller animals, like insects and rodents, it seldom is possible, except theoretically, to exterminate the species. If it is exterminated or even reduced to very low ebb, it sometimes is replaced by a still more objectionable species; or it turns out that in other ways the attempted cure is more expensive than the illness. Thus, if the California ground squirrel were exterminated—and it will not be with our present density of population—the more objectionable brown rat might very well take its place. Some well-informed persons think this probable. Then, too, it not infrequently happens that the exterminated species acted as a check in some unsuspected direction, and a new problem develops!

Lately, investigators have expressed the belief that coyote control should not have been carried on in certain areas where deer damage to crops is increasing. The damage seems traceable largely to does. Unlike the sportsmen who take the big vigorous bucks, the coyote takes the diseased weaklings and decrepit does. With a fair number of coyotes might we not have avoided much of the present difficulty which is of growing seriousness? The case of the Kaibab deer lends support to this belief.

Quite a different way in which the coyote constitutes an asset is through providing a considerable income in fur. In California alone the annual return certainly averages around $100,000 and perhaps two or three times that. The coyote might, under wise management, constitute an important part of our valuable, but neglected, natural resource, the wild fur supply.

Now to the coyote's faults. He takes sheep and is especially troublesome at lambing time. He may make inroads on poultry. Although the figures on such losses are much exaggerated, the losses are real. The fact that it is the individual coyote, one out of a great number, which turns "killer," makes the losses no less in amount. Coyotes have been known to carry rabies, too. Again, although the damage done by rabid coyotes is greatly exaggerated and overemphasized by many, and although the coyotes do not act as reservoirs for the disease, but get it from dogs, which, if properly muzzled all over the land for a given period of time, would result in elimination of the disease, it is a fact that coyotes have transmitted rabies to domestic animals and to man himself. When this state of affairs is found, it has to be met with appropriate control measures.

Coyote control has been attempted by the following methods: (1) By use of dogs; (2) by trapping when furs are prime; (3) by offering bounties; (4) by hired government trappers working in the

fur season and out; (5) by organized drives; (6) by den hunting; and (7) by use of poison.

To take up these methods in reverse order it may be said that the use of poison, although widely practiced, is highly objectionable. It is to be hoped that the growing volume of protest against it will soon result in its discontinuance. Its use is justified only in a case of absolute necessity, such as might arise in a serious outbreak of rabies. One objection to it is that the "killer coyote," the individual sought, is no more apt to be taken than any other one. Indeed, because of his canny nature developed through experience with man, he is less apt to take the poison than others of his kind. The main objection, however, is that even when most carefully distributed, either in suet pellets or in meat baits, poison destroys a far greater number of unquestionably beneficial animals[7] than it does of coyotes. When used in a region for the first time, poison often has really denuded that area of the smaller beneficial animals. Although its subsequent use there against the wary coyote, some of which persist in spite of the use of poison, does not destroy so many smaller, beneficial animals, this is due to the latters having been so thoroughly killed off when poison first was used. Also, the wiser, adult coyotes refuse the poison baits, which are apt to be buried by mice, carried afar and dropped by birds, or otherwise distributed so that they may be picked up later by any animal less wary than the coyote. Many times, too, valuable dogs are killed by the poison. The animals killed by poison have no fur value unless found soon after death. A large majority so killed are never found. The use of poison is the most objectionable[8] of all the methods of control.

Den hunting, practiced in the spring and summer, enables the coyote hunter to run up an imposing list of animals destroyed. Almost all the animals accounted for are young which have done no damage and in the vast majority of cases never would. The larger number would furnish valuable pelts to private trappers the following autumn or winter before they were old enough to develop renegades. This method, then, is wasteful as regards the fur and, like poison, seldom gets the individual causing the damage.

The next method of control, much practiced in the Middle West is the "Wolf Drive." It is employed under the guise of a protective measure, but actually is carried out more for the sport it furnishes. Having in times past, as a rather irresponsible sportsman, participated in many of these, may I proceed to a true account of a "wolf drive's" initiation and operation. The conversation of those grouped about the friendly warmth of the stove in the general store having reached an *impasse* on national politics and exhausted the weather possibilities, present, past, and future, someone suggests a wolf (coyote) drive. Then and there an area is chosen; a Saturday is set; and eight captains are selected. On the morning of the appointed day a few men with shotguns have posted themselves along the roads on the four sides of the twelve mile square. At 9 o'clock sharp those at the corners start toward the center of the square and by 9.20 those at the middle of each side are marching too. Now we have a circle, twelve miles in diameter,

[7] Jour. Mammalogy, vol. 11, pp. 362–375, 1930.
[8] Hearing before the House Commitee on Agriculture * * * on H. R. 9599, Serial O, p. 59. 1930.

of widely spaced men converging on a central point. As one farm house after another is passed the male occupants, from five years of age up, fall into the line while the mounted captains by much furious riding along the roads, try to keep the line of hunters in circular form. The constant additions to the ranks together with the resultant crowding of the men as the circle grows smaller, form a progressively more solid line which at the finish may be several men deep.

Here is the thrill we have walked six miles or more to get. Luck being with us, one or two coyotes are in the ring, and they act for all

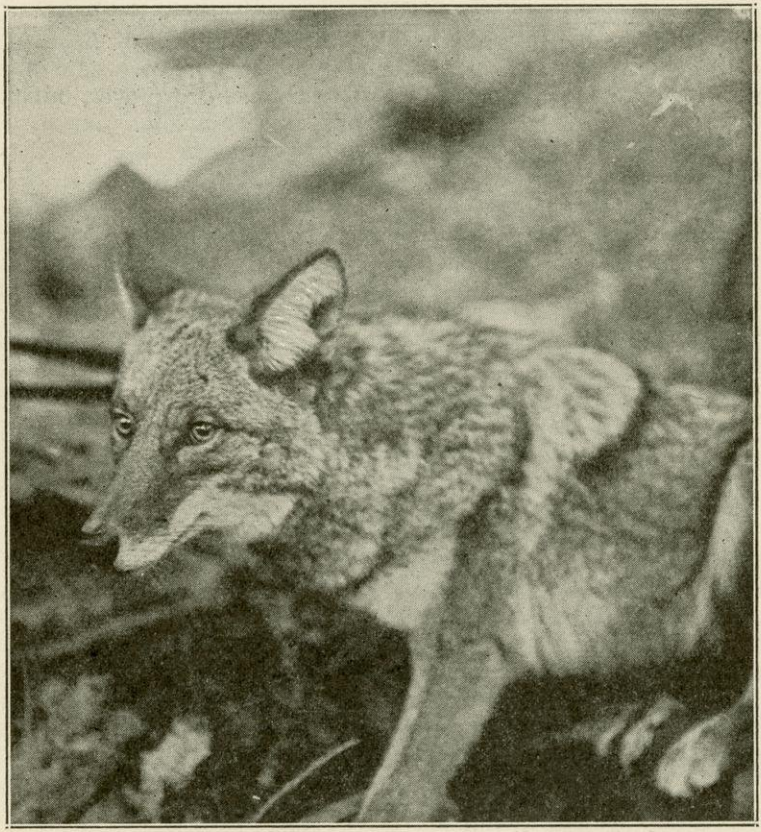


FIG. 89. Don Coyote, Sr., looking wistful. Close up view of male mountain coyote captured at foot of Yosemite Falls trail, Yosemite Valley, December 31, 1914. Photo by C. A. Hollinger.

the world like my dog Jake did the time he followed the buggy to town and got lost on Center street. Shotguns boom; boys yell; Jim Smith's tightly stretched trousers' seat, as he stoops to retrieve a dropped shell, proves poor armor for misdirected No. fours from the other side of the ring; Sam Smith gets a stray shot in the knee; but the "wolves" are killed, or else get away, to be chased out of sight by Joe Green's greyhounds trained for jackrabbits. Anyhow, a good time is had by all and the ladies' aid, at the nearby schoolhouse, serves dinner. Dinner

over, we boys, in plain sight of the city sports, waste innumerable shells on empty tin cans tossed in the air for targets until one of the sophisticated urban sportsmen derisively casts doubts that we could hit the side of a house. With a proper rural hesitancy and injured air we offer wagers on our ability to hit his hat tossed in the air. The wager accepted, a surprising reversal of form results in the destruction of the hat, and another carefully laid plan of the rustic farm boy has demonstrated the gullibility of his object of contempt.

But hark! The stentorian voiced county auctioneer has mounted the schoolhouse steps and is offering the "wolves" to the highest bidder. The proceeds, plus that from the dinner, are placed in the hands of the treasurer of the ladies' aid, to apply on the pastor's overdue salary. And so the drive is over. Homeward we go, the more fortunate in grain wagons (now replaced by cars) the women folks drove over, but many trudging across the snow covered fields, little realizing that the none too scrupulous class of gunners who participated have tested their marksmanship on else than coyotes and, in fact, have played havoc with the quail and other small game of the area.

The method of employing paid government hunters to trap the year through is objectionable in that more small fur bearers than coyotes get in the traps; not to mention valuable dogs. The fur taken out of season is wasted. The rodents may increase due to removal of their principal natural enemies. Since the work is paid for out of the tax money, the farmer argues, with some justice, that if the sheepman is to have this "free work," certainly he, too, as a taxpayer, should have some "free work," say a government cutworm catcher in his cornfield. It is pointed out, too, that it costs around $25 for each coyote taken, which is outrageously expensive. All those who trap for fur in winter are more than annoyed at this waste of a valuable natural resource. The wise, experienced "killer" coyote is not always first to get in the trap and very often watches his less canny relatives and other species of harmless and beneficial animals precede himself in taking the fatal misstep. For these and a host of other reasons, the system of employing government trappers to work the year around is neither economical nor efficient.

Less expensive, slightly less objectionable but no more effective, is the bounty system. This seems really to work only with a large mammal, like, say, the mountain lion, where it pays to go after the individual. When the species is reduced to the point where it no longer pays to go after the individual, no control is accomplished and the net result is to redistribute some of the tax money. Once established, such a system is difficult to discontinue and too often the bounty system is extended to cover "new" kinds of "pests." Then, as has happened in many counties, the treasury is depleted; the county goes in debt to carry through the year and the bounty has to be discontinued or the tax rate raised enough to take care of the burden. There is the matter of fraud, too. Foxes, dog skins and what-not are "made into coyotes"; innumerable substitutes are palmed off as the original. Without a uniform bounty on coyotes those from all adjoining districts tend to be presented in the one paying the highest bounty. More often than not, bounties, established by well meaning citizens, are paid in areas where the animal in question is more beneficial than harmful.

Nevertheless, we probably shall continue to have bounties so long as sheepmen, farmers, and hunters act as biologists; just as we shall continue to have untimely deaths so long as people insist on plying their ills with the wares of the patent medicine man, rather than seeking the advice of a physican.

Private trapping for fur as a general control undoubtedly is better than any of the methods already mentioned. Furthermore, where the others have not been employed, it has given just as good results. Of course this was not always true, but has been over the past few years on account of the high prices of fur which, in effect, place a high bounty on the animal. The animal is *used*. Taxpayers' money is not spent in getting him. Instead, a productive means of livelihood is afforded to many.

This alone, however, is sometimes not enough. The "killer coyote" has the knack of keeping out of the sets of private and government trappers alike. Here is where the dogs come into their own, especially in the open country—hounds that run by sight. Before the advent of the poisoners, which spelled the doom of certain types of good dogs as well as that of foolish coyotes, this method was much practiced in the west. No better sport is to be had either. Away after the quarry, and some *can run*. Although the average coyote can do only about twenty-six miles per hour, some are much faster and give the wolf hounds a good run and now and then a tolerable fight. Here the wise old killer coyote has but little better chance than any other. Indeed, by using one good trailing dog to start the wolf hounds—and a pair of wolf hounds do the work—the killer can be singled out at the scene of one of his misdeeds, followed, jumped, and quickly dispatched. With good dogs, one man can, and has, equalled the achievement of the full time control man using poison and traps. Also this method is economical of the harmless and beneficial kinds of animals. In the more thickly timbered sections, like the redwood belt where the coyote has followed man, hounds that hunt by sight are, of course, not so successful, but over the majority of the range of the coyote they are far and away the best method of "control" and get the renegade individual.

In review: The coyote, by reason of its high rate of reproduction, adaptability and cunning, will persist in spite of efforts to exterminate it. A few will persist after other valuable species are exterminated by efforts directed at the coyote. Therefore, any method of control used should not be destructive of valuable fur bearers, game, and other beneficial wild life. The coyote has virtues which make it worth encouraging in certain areas. Outstanding of these are its services as a disease eliminator among game, as a preventive of bubonic and other plagues dreaded by man, as a check on harmful rodents, as an eliminator of decrepit game which may damage crops, and as a valuable fur bearer. The coyote has faults of which the following are noteworthy: It contracts and sometimes spreads rabies. Renegade individuals destroy sheep and sometimes poultry. Where this occurs control must be resorted to. Any effective method of control must permit singling out the individual which does the damage. The poorest methods of control are, first, poisoning, and second, trapping out of season. The best methods of control are winter trapping, supplemented,

where necessary, by the year round use of hounds against individual culprits.—*Museum of Vertebrate Zoology, University of California, December 19, 1930.*

GOVERNOR ROLPH—CONSERVATIONIST AND SPORTSMAN

[The following data and ancedote on the Governor was divulged by his son, James Rolph, III.]

GOVERNOR JAMES ROLPH, Jr., is a conservationist and sportsman of the first order. A large landowner and rancher in the State, he has spent years in study and development of fish and game resources. It is the first time in many years that California has had a Governor who is so keenly interested in this phase of the work.

On his ranch in San Mateo County, he maintains an excellent kennel of trained dogs. Much experimental work on various breeds has been done here and some astonishing results are noted.

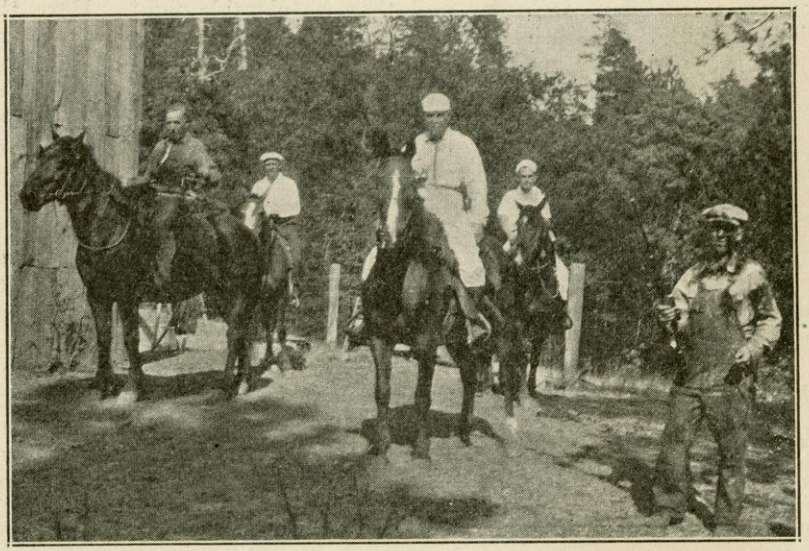


FIG. 90. Governor James Rolph, Jr., starting on the trail of the wary buck. Photograph submitted by James Rolph, III, May 1, 1931.

In his quest for superior hunting stock, he has even imported the wild dog from Australia. This breed was crossed with the American shepherd dog and an excellent jumping dog for brushy country was the result.

The Governor spends as much time as possible riding over his property and making personal investigation of the game life. Game nuisances are abated to a reasonable degree. One day during the deer

File COYOTE ✓
Deer

Sperry, Chas C. "Autumn Food Habits of Coyotes, A Report of Progress, 1932" Journal of Mammalogy Vol 14 No 3 (Aug 1933) pp 216-220

Chart shows Carrion 29%
Rodents 17%
Rabbits 29%
Sheep and Goats 14%
Birds 3%
Deer 2%
Skunk and Badger 2%
Insects 1%
Vegetable 3%

Game birds founf in 4% of stomachs included 19 grouse, 7 quail, 9 ducks.

Wild fruits included cactus, thornapples, mesquite.

Based on 3042 stomachs, 1019 empty, 570 debris, 1453 with contents.

From Journal of Mammalogy, General Notes, Vol. 15, No. 2, May, 1934, p. 158

Mother Wolf Carries Food Twelve Miles to Her Young

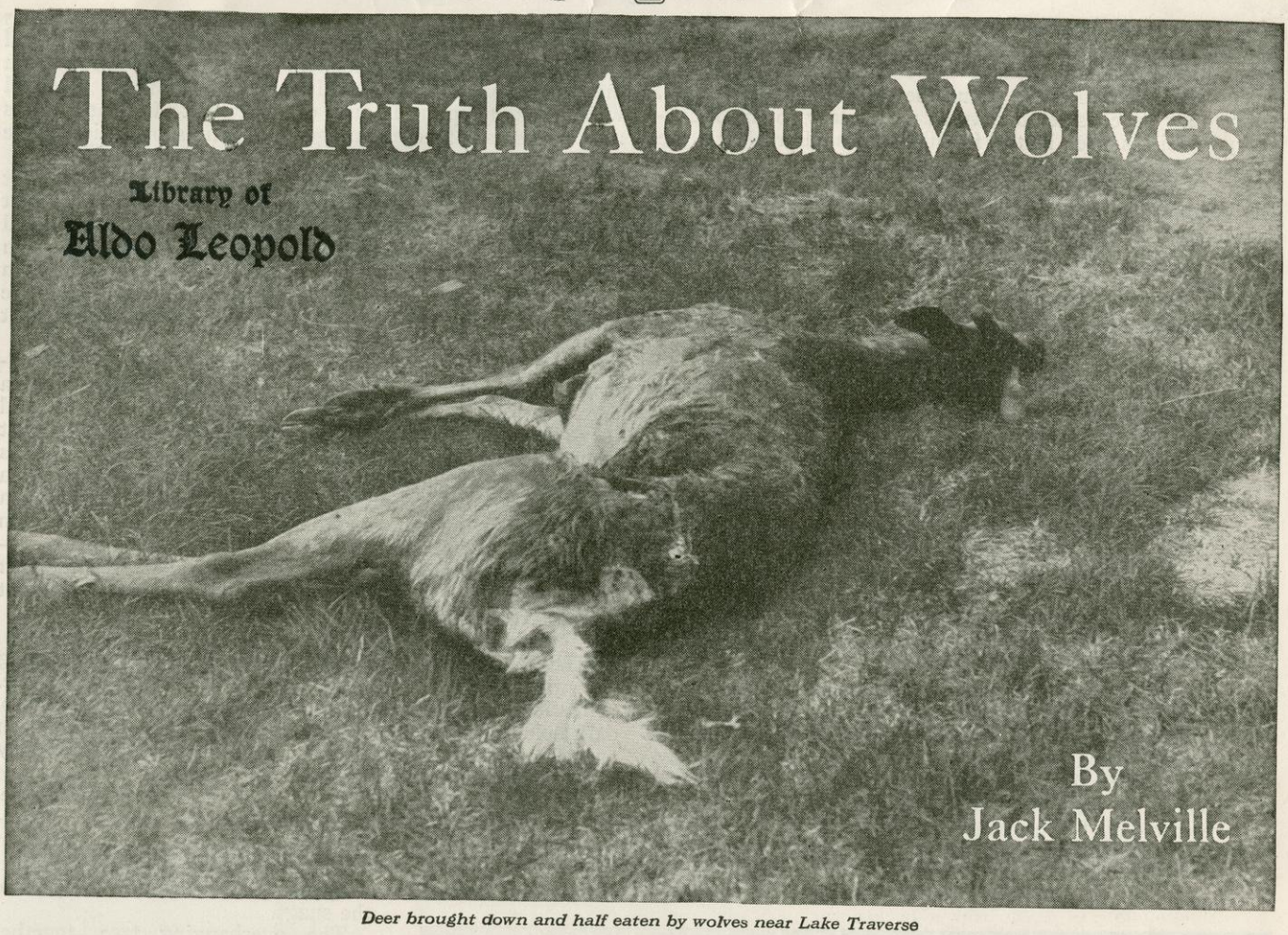
"The following observation of Ranger Lee Swisher in the Toklet region of Mount McKinley National Park affords valuable data on the range and home life of the Mount McKinley timber wolf (Canis pambasileus Elliot) and is here given in essentially his own language in letter of October 16 and November 21, 1933.

"Last spring (1933) I found several mountain sheep killed in Polychrome Pass and with my binoculars saw an old wolf carrying meat from there, going north down the Toklat River. I spent over a week trying to follow her trail and at last found her den and pups on a small island in the Toklat River, about three miles below the last hills of the north range. I judged the distance that she carried the meat to her pups was more than twelve miles.

"In locating their dens I find that a pair of wolves cover from 100 to 150 square miles of territory while foraging for their young . . . The largest pack that I have seen here was eleven, but their usual number is from five to eight during the winter . . . It seems that they take their intended kill by surprise. Last winter I compared the distance, in feet, of bounds made by an old ram and the wolf that caught him. For a short distance their leaps were approximately the same (about sixteen feet). When the old ram struck a patch of ice he lost out in a few jumps . . . I have not yet seen where wolves chased their victims more than two hundred yards."--Joseph S. Dixon, Wild Life Division, U. S. Office of National Parks, Buildings and Reservations, Berkeley, California.

The Truth About Wolves

Library of
Aldo Leopold



By Jack Melville

Deer brought down and half eaten by wolves near Lake Traverse

A FULL moon shone brightly on the steel-white, snow-covered lake. It was forty below, and a heavy silence hung over the lake and over the low hills behind its shores. Suddenly a chorus of wild shrieks and yells and long-drawn howls broke into the night. The clamor came from far up a little valley that opened on the shore. A dark form plunged from the thicket and rushed madly out on the frozen surface. A hundred feet behind, four long gray shadows broke from cover on its trail and streaked after it. The yelps grew louder and more excited.

The light of the moon showed the hunters to be the great gray timber wolves of northern Canada, and their quarry a fine big buck. In the forest, and across the deep snows in the clearings, the deer was faster than any of the pack; but through careful generalship the leader of the wolves had forced the chase to the shallow snow on the lake. Here the pack formed a moon-shaped crescent and herded the deer toward a point of land half a mile down the lake. Although the wolves were excited and were raising a terrific din, they seemed to lag and gained no ground on their prey. The buck had almost reached the point, and apparent safety, when from the tip of the woods a fresh wolf hurled himself into the path of the doomed animal. There was a quick flash of snapping, tearing jaws and the buck was down to be fought over and torn to pieces while still alive.

With glasses I had watched the whole drama, powerless to help. I had been awakened from a sound sleep and crawled out of my sleeping bag in time to watch the whole show. The chase had passed right in front of me and at one time was only several hundred yards away. I rekindled my fire, quieted my dogs and crawled back in the eiderdown.

A number of times previous to this night I had read the same story in the snow and have seen it repeated once since. Just as the guide places his huntsmen on the deer trail and then with his dogs drives the deer to the slaughter, so does the wolf leader place one of his pack on this point of the lake, one on the next and usually one on the third point and then with the remaining he ranges the back country, starts his quarry and carefully drives it to its hidden doom. Does this plan come from instinct or is it a carefully thought out plan of action, executed by an animal that knows how to think clearly? As in man, so in wolves, or in fact any kind of animals, the degree of intelligence varies widely according to the individual. Some wolf leaders are startlingly astute and others quite dumb. All are cowardly treacherous.

Is It Instinct or Intelligence That Makes Them the Fearful Menace They Are?

Now let us explode a bubble. Everyone has read and heard stories of humans being attacked by wolves. There is no authentic record of the American brush or timber wolf attacking a human being either singly or in packs. The "Sault Ste. Marie (Ontario) Star" has had for years a standing offer of $100 to anyone who could prove a single story of that kind. So far the money has not been claimed.

The Canadian government had a commission that for several years investigated all such stories and could not find one instance where anyone had actually been attacked. That wolves will follow a human being, dog team or team of horses, is a well-known fact. For the past fifteen years the writer has lived in wolf country. During most of those falls and winters he has amused himself in the pursuit of these animals, both in northwestern Ontario and in Algonquin Park (in north Ontario). A great many times he has been followed by wolves, both day and night, but at no time was in any danger of attack. In fact, except on the trap line or during fall hunting season, he never carried a gun while in the bush.

THERE is a story of a young mail carrier, out of Sudbury I believe, who was traced when several days overdue at the end of his 300 mile run. The searching party found his sled, the bones of his dogs, and bones of the young man. The snow around the sled was packed down by wolf tracks showing that there had been a good-sized pack. When the party back-tracked his trail they found where his moccasined feet had dragged in the snow for several miles. The man was

either unconscious or dead before the wolves had come.

Most animals are cruel but few can touch the fiendishness of the wolf. He kills a great part of the time for the sport of killing. When on the chase under those circumstances the pack range along beside a spent deer that would be easy to pull down, keep him running and tear great pieces out of his flanks and hams, slowly destroying him on his feet. On the ice at the foot of a high cliff on the Petewawa River I saw thirteen deer that had taken the 500-foot leap rather than fall prey to the pack. Not one of them had been touched after it had landed on the river ice, but many of them were ripped, slashed and had great chunks of skin and muscle torn out during the chase.

ONE big wolf sure put a fast one over on me. Every four days he traveled a certain deer trail. He would make the trip east one day and four days later he would pass heading west. Just what the idea was I never found out but I wanted his hide. Let one place a rotten log across the trail. Here he always placed his front foot on the same spot while stepping over it.



The author with a wolf on his shoulder



Left — Tito, one of the huskies of the author's dog team

Below — The author with his team of huskies and wolf-dogs

and all I got was disappointment. He had come along at a fast trot right up to the log and stopped, stood for several minutes without moving and then gingerly walked around the end of the log to the side the set was on and up to within about three feet of the trap. There he had stopped and looked things over for a minute, then deliberately turned his back and scratched gravel at the trap until it sprung, left his scent on it as an added insult and trotted off. He never used that trail again.

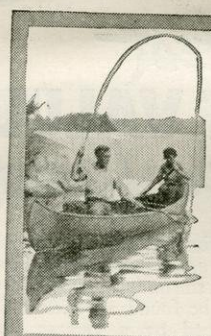
I have talked to a great many rangers and wolf trappers about this instance. Some of them have had similar experiences. All agree that these wolves have been previously trapped and are wise. Certainly instinct warned him of danger but pure cussed brain work made him spring the trap and insult the trapper.

THE most generally used method of trapping wolves today is by snaring them. Poison is prohibited by law* and a good law it is, saving the lives of thousands of small animals and birds. The snare is usually a $\frac{3}{16}$ steel cable set either spring pole or snub. The set is placed on a deer trail or old abandoned road. The spring-pole set is as follows. First a pole sixteen or eighteen feet long is cut and lashed about five feet from the ground to a tree close to the path. The small end of the pole extends a little better than half way cross the path. A long forked pole raises the butt end of the spring pole high enough so that the small end will be about thirty inches from the ground. To this small end the wire loop is fastened with hay wire. The loop is then set cross-wise of the trail. Old branches are used to block both sides of the snare leaving a small gateway where the snare is. Mr. Wolf comes along the path, his head goes through the loop, it tightens, he plunges—throwing the forked pole over, the heavy butt end drops, hoisting him by the neck so that his hind feet just touch the ground where he hangs until dead. Rather brutal, but very *(Continued on page 68)*

*Editor's Note:—Some qualification is needed. In Manitoba, for instance, an authorized officer may poison wolves in any provincial game reserve, and in Ontario expert trappers may be so authorized anywhere.

After carefully preparing my outfit by smoking my trap, gloves and ground sheet and weathering them well, using extreme caution to keep all human scent away from the trap set and vicinity by wearing green deer skin moccasins with the hair on the outside, I set the trap, using every trick and artifice to cover the setting. To the human eye it was perfect. That night a half inch of snow fell on the bare ground and three days later about an inch more. The set could not have been better concealed. The fifth morning I journeyed to get my wolf





A home on the water

A GRACEFUL sweep of cedar . . . tight-planked . . . strong ribbed . . . covered with seamless, water-tight canvas. The effortless stroke-stroke-stroke of a paddle unfolds the glory of all outdoors. Get an Old Town Canoe.

1934 Old Towns cost as little as $68. Send for a free catalog, showing models and prices. Also sailing, sponson, square-stern canoes and outboard boats. Including big, fast seaworthy models for family use. Rowboats. Dinghies. Write today. Old Town Canoe Co., 575 Fourth Street, Old Town, Maine.

"Old Town Canoes"



BIG MONEY Assembling NEW BOAT IN 3 DAYS

$6 Paddle GIVEN! $6 Double-blade paddle now given with your Ki-Yak—if you hurry!

Make *big money* on each 20 lb. Mead KI-YAK you *easily assemble* at home in 3 days from *complete* "cut-to-fit" Kit, $15.75 F.O.B. Factory (2-Seater, $19.50). *Can't* sink. Seaworthy. Fast! *Snappiest* thing afloat. (Complete Sailing Rig, a few dollars extra). RUSH 10c for illustrated folder and Free $6 Paddle Offer!

MEAD GLIDERS Dept. O-5 12 S. Market CHICAGO, ILL.

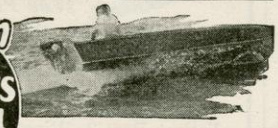
BOATS THAT CAN "TAKE IT"

Patented, exclusive construction features make Pioneer Metal Boats stronger, more rugged. Non-sinkable. Equipped with mounting for outboard motors. Runabout models, rowboats, types for fishing and hunting. Catalog and details free.

PIONEER MFG. CO. 507 Perry St. Middlebury, Ind.

Thompson BEATS the World on BOATS

Better Built Lower Prices

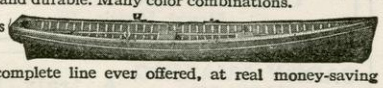


Canoes $45 and up



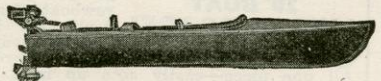
Some all wood, others canvas covered. Light, swift, safe, strong and durable. Many color combinations.

Rowboats $36 and up



Most complete line ever offered, at real money-saving prices.

Hydro-plane Rowboat $70 and up



A VERY FAST UTILITY MODEL FOR ROWING OR SMALL OUTBOARD MOTOR. OTHER OUTBOARD MOTOR BOATS $36 AND UP

SNIPE SAIL BOAT



Crosby-Rudder design. Eligible for racing in its class. A very fast and able craft that will outsail many boats having double its sail area. Safe and dry under actual sailing conditions. Length, 15½ ft.; width, 5 ft.; depth, 20 in. Weight, 450 lbs. *Price, $185.*

CATALOG FREE—SAVE MONEY—PROMPT SHIPMENT

Please state the kind of boat you are interested in (69)

TWO LARGE FACTORIES

THOMPSON BROS. BOAT MFG. CO.

218 Ann St. PESHTIGO, WIS. [*Write to Either Place*] 118 Elm St. CORTLAND, N.Y.

malaria—which develops into the generally fatal black water fever—are both caused by the apparently trivial bite of mosquitoes. Happily, no sportsman would go into the tropics without a generous supply of quinine, which is both a preventive and curative of malaria.

Modern firearms are the best the world has ever known. A well placed shot from the right gun will stop anything on earth. No sportsman would consider hunting dangerous game without a satisfactory rifle and adequate sporting equipment—but mosquito nets, simple drugs, ordinary caution and common sense are just as important to his safety.

The Truth About Wolves

(Continued from page 15)

efficient and those in the know have very little sympathy with him.

The snub set is somewhat similar except that no spring-pole is used. The snare is lashed to the butt end of a heavy sapling or small tree. The snare is set in the same manner as the spring-pole set. Wolves caught in the spring-pole set have practically no chance to show individuality but such is not the case of the ones caught in the snub. After the first plunge which shows them they are caught some lie down and go to work on the cable. A fair percentage of these actually cut the cable in two with their teeth and so escape. Others, after a short struggle which continually tightens the noose, lie down quietly and wait for the end. Then there are some that really go down fighting. They twist and jerk, plunge and turn, snarling and chewing everything within reach. The mess these fellows make is really astounding. They finally die by strangulation and a cut throat. In the winter of 1929, I lost five wolves because they chewed through 94-strand steel airplane cable. One old fellow cut his noose as though he had used a fairly sharp chisel. The chief ranger of our district shot him some thirty-five miles from the set with the wire still around his neck.

DUE to the splendid, tireless work of the rangers, wolves are getting mighty scarce within the boundaries of Algonquin Park. In 1927 there were many packs in the park. Almost any winter night the hunting cries of one or two packs could be heard anywhere in the northern end. Today there are very few and what are left have been so broken up that they do not do an awful lot of damage in comparison. In 1930 there were over a hundred wolves snared in the park. In 1931 only eighty, while in the winter of 1932 I doubt if there were fifty. The happy result is that where there was one deer in the park in 1927 there are ten today and the ratio among smaller animals is much greater.

Many dog mushers will tell of the wonderful intelligence of the wolf dog in harness. My own leader, Jerry, was three-quarters wolf and one-quarter huskie. He was a one-man dog and a strange mixture of love and viciousness, tameness and savagery. His mastery over his half wild team mates was a perfect example of brawn, cunning and brain work. If one slackened in his traces Jerry sensed it and whipped him. He was a trained deer dog and loved the chase.

One day while canoeing on the lake I saw three wolves chase a little, spotted fawn into the water. Speeding the canoe to the spot I picked the little fellow up and took it back to camp with me. My guides built a large, chicken wire compound for it. As soon as he was placed in it I took Jerry up to the netting and carefully explained that the fawn was mine and that he, Jerry, was to protect it. In a few minutes he understood and shortly the wolf dog and the deer were the best of friends. Many a grand romp they had together when the fawn became tame enough to be allowed the freedom of the camp. Jerry killed two of my dogs that attempted to molest his pet.

THE same big fellow would just tolerate grown-ups but was passionately fond of children. In front of my main lodge was a sand cliff about thirty-five feet high above a beautiful sand beach. One of Jerry's self-imposed tasks in summer was to lie on the edge of the cliff overlooking the lake and beach. Playing in the sand at the water's edge would be from fifteen to twenty-five little tots ranging in age from two to seven or eight years old. From the dreamy, far away expression in the dog's eyes one would never think that his senses were fully alert but let one of those youngsters get out in the water past his little waist line and in three leaps the big fellow would be in the water between the lake and the child. In an instant he would be transformed into a hideous, snarling, snapping demon, but never touching the child. The youngster, frightened, would rush screaming for shore. As soon as he was safe the demon became a dog again. Without even noticing the child he would trot up the steps to his place on the cliff and there go to dreaming again as if nothing had ever happened. He acted as my beach guard for two summers, saved two lives and was worth four men or a dozen nurse maids. Was that instinct? I bring this chap into the argument as he was mostly wolf and one that surely knew how to think.

I saw a wolf at Buck, Ontario, that weighed 270 pounds. He was enormous, of course. The gray timber wolf generally weighs from ninety to 110 or 120 pounds. To tell how high a wolf stands from his footprint, measure the print from front to back and multiply by eight and one-half. One of the largest tracks I ever saw was at Lake Traverse, Algonquin Park, Ontario. The track on hard sand measured four and three-quarters inches. The wolf, by that reckoning, was forty and three-eighths inches tall. I saw his trail first in October and that winter I saw the wolf.

It was in January, about thirty-five below and a blizzard blowing. I was on snowshoes near the middle of the lake. Jerry, the dog, was following me. My parka hood was pulled far out over my face, leaving a small opening to see through. Suddenly Jerry crouched beside me snarling, whining and showing a brave front to real fear. I threw back my hood and found that in the storm I had walked into the middle of a large pack of wolves. The closest was not over twenty-five yards away. I did not have a weapon of any sort and except that those wolves were worth $25 bounty apiece plus pelts I did not need one. They had evidently seen Jerry and I at the same time we saw them. They sure were in a hurry to put distance between us. The wolf leading the rout was, from his great size, the owner of the footprint I had measured.

There seems to be a lot of controversy as to whether animals are guided entirely by instinct or whether they think. Personally I would like to get into the argument. I don't know much about your animals of civilization but I sure do know that the little brothers of the wild dope things out for themselves. Of course instinct plays a very large part in their lives but, as in humans, so in the wild to a lesser extent, clear-headed thinking has its share in maintaining their respective places in every day existence. I doubt if they would last very long on sheer instinct.

Reprinted from JOURNAL OF MAMMALOGY
Vol. 15, No. 4, November, 1934, pp. 286-290

WINTER FOOD HABITS OF COYOTES: A REPORT OF PROGRESS, 1933

BY CHARLES C. SPERRY

This progress report on food habits of coyotes is based on the examination of 2,584 stomachs collected in 10 western States during December, January, and February, 1931 to 1934. Analyses were made in the Denver Laboratory of the Division of Food Habits Research of the U. S. Biological Survey. Acknowledgment is made of the assistance of Shaler E. Aldous, Franklin H. May, and Cecil S. Williams, of the Denver Laboratory staff, who made many of the stomach analyses and prepared the preliminary tabulations. Of the 2,584 stomachs, 668 were empty, and 219 contained débris only. This leaves 1,697 on which to make an appraisal of the coyote's diet during the winter months.

Examination of stomachs continues to play a most important part in our study of the food habits of the coyote. Since experience has shown the shortcomings of field analyses of stomachs, all of our examinations are made in the laboratory. Some field work has been done and more is contemplated, as a knowledge of field conditions is necessary to a correct interpretation of laboratory findings.

From the 1,697 recordable stomachs that enter into the present study, taken during December (656), January (651), and February (390), the following summary has been prepared on the basis of frequency of occurrence of the various items. The accompanying illustration, however, gives percentages by bulk. The latter method of appraisal has long been standard in recording data on the food of numerous birds and mammals, and, since the percentages of all items aggregate 100, this method permits easy preparation of charts or graphs. It is often of greater importance, however, to determine the fre-

quency with which the coyote indulges in certain feeding activities than to know the bulk of the food it consumes on such occasions. This is particularly true when considering the coyote's relation to livestock, poultry, and game. For this reason, the following discourse will deal in terms of the frequency with which items have been found, while the figure presents volumetric estimates.

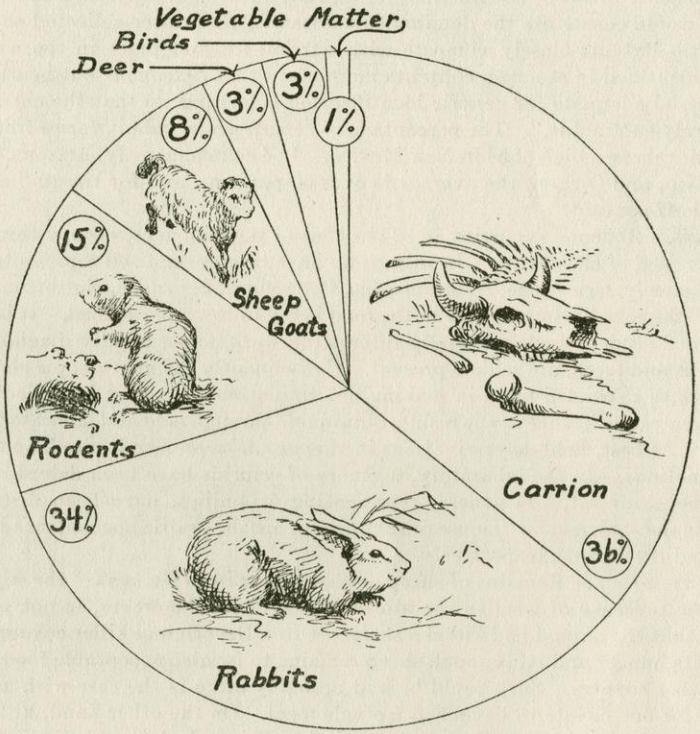


FIG. 1

CARRION.—It is not surprising to learn that carrion heads the list of the winter foods of the coyote, for with the advent of cold weather the coyote can find few of the small forms of life that constitute part of its regular warm-weather diet. Consequently an old dried carcass, even an empty hide, is likely to prove acceptable as food, with the resulting marked increase in the amount of carrion recorded. The greater part of this carrion food is derived from the remains of horses, burros, cows, coyotes, and sheep. In addition all known station material is placed under this heading. By the term "station" is meant the carcass of an animal used as a decoy, to attract coyotes to the spot where traps or poison have been placed. The kinds of carcasses used for station material vary greatly, in accordance with field conditions and the trapping technic of individual

hunters. In general, however, horses, cows, coyotes, and sheep provide the bulk of station material, although some trappers get excellent results by using rabbits, prairie dogs, marmots, or other smaller animals as a lure. Carrion was found in nearly half (49 per cent) of the winter coyote stomachs and made up 36 per cent of the bulk of the total food. The fact that very many of the winter stomachs were from coyotes secured through the use of a lure, in the form of a carcass, tends to accentuate the carrion item in those stomachs. Were it not for this contingency there is every reason to believe that "rabbit" would constitute the dominant food item of the winter-collected coyotes.

Rabbit.—Rabbits closely compete with carrion for first place in the winter diet. *Lepus* is identified in stomach contents more often that *Sylvilagus* but nearly half the time material adequate for generic identification is lacking, so that the entry must be made merely as "rabbit." The percentage of occurrence of rabbit varies from a low of 26 in California to a high of 64 in New Mexico. In 4 States, namely, Arizona, Colorado, New Mexico, and Oregon, the average is over 60 per cent, and for the 10 States represented it is 47 per cent.

Rodents.—Rodents, occurring in 32 per cent of the stomachs, occupy third place in the winter food of the coyote. In this group have been recognized representatives of 6 families, namely, Cricetidae, Heteromyidae, Geomyidae, Sciuridae, Erethizontidae, and Muridae—the relative importance in the food being in the order named. It is here that the mammal student finds especially interesting work, since readily diagnostic parts, such as feet and teeth, are seldom present. Consequently the microscopic characters of hairs must be depended upon in making determinations. It may be added that here lies the greatest difference in the results obtainable through field and laboratory stomach analyses. At best, field determinations in this group have been limited, and devoid of fine distinctions. In the laboratory, 9 genera of sciurids have been determined, while under "mouse or rat," 14 genera, representing 5 families, have been distinguished. Leading in the squirrel and "mouse or rat" groups are the prairie dog and meadow mouse, with 15 and 189 records, respectively.

Domestic Stock.—Remains of sheep or goats occur in 16 per cent of the coyote stomachs. The presence of wool in the stomach of a coyote, however, is not *prima facie* evidence that the animal had killed a sheep. Often the original killer coyote may have satisfied its hunger and left enough sheep remains to furnish acceptable food for one or several other coyotes. Such could be and probably often is the case with any carcass too large for one coyote to devour at a single meal. On the other hand, killer coyotes have been known to destroy a number of individuals in a flock in a single night. Often fragments of an old left-over "kill" in a coyote's stomach are recognizable as carrion by the laboratory workers and are so recorded. In the present work more than 40 per cent of the sheep records were listed as carrion—either because a sheep was used as a station or because the fragments under consideration were definitely from an old dried or maggot-infested carcass. It may be added, however, that field observations indicate that an old, dried-up sheep carcass is unattractive to a coyote and seems to be eaten only when all other sources of food fail.

Calf, colt, or hog remains are rarely found in winter-collected stomach of coyotes, having been recorded but 16 times in a total of 1,697 stomachs (less than 1 per cent).

Deer.—The remains of deer were found in 5 per cent of the stomachs. This is a slight increase over the 4 per cent recorded for coyote stomachs collected during Spetember, October, and November. A similar difference is noted in the volumetric percentage of the deer item, which is 3 per cent for winter stomach and 2 per cent for those taken in fall. Each of the 10 States contributed deer to the food of the coyote, although in 6 cases the percentage was small. The percentage of occurrence of deer in the winter coyote stomachs from the other 4 States was: Colorado 14, California 11, Oregon 9, and Washington 5.

McLean (California Fish and Game, vol. 20 no. 1, pp. 30–36, 1934) found deer meat a major food item of California coyotes, but concluded (p. 34) that most of it should be considered carrion. In our study we have not yet sufficient information to estimate fairly how much of the deer item of the coyote's food should be classed as carrion.

One Colorado coyote stomach and another collected in New Mexico contained remains of antelope.

Miscellaneous Animal Food.—Infrequent mammal items in the coyote's winter food are remains of badgers, moles, shrews, and skunks. Together, however, they make up but a trace of the total food and only 1 per cent by occurrence.

Lizards and snakes occurred in 1 per cent of the winter coyote stomachs. The dominant item in this class is the bull snake, with 6 records; rattlesnake takes second place, with 4 records; and the spiny swift (*Sceloporus*) third, with 3. Other reptiles less frequently captured by coyotes include spotted lizards (*Holbrookia*), sand swifts (*Uta*), whip snakes, racers, and pilot snakes.

Insects, as would be expected, are an uncommon food of coyotes in winter. Of the Texas coyote stomachs, 5 per cent contained insects, but the average for the 10 States is only 1 per cent. Final results showed twice as many records for grasshoppers as for all other insects combined.

Other unusual items of coyote animal food include a fish, eaten by a Washington coyote, and centipedes, 9 of which were found in a coyote stomach collected in Texas.

Birds.—Birds eaten by coyotes may be grouped in three categories, namely, poultry, game birds, and all other birds. Each of the three contributes 1 per cent to the volume of the winter food.

Poultry is infrequent, being recorded but once in an average of 40 coyote stomachs.

Game birds were found in 4 per cent of the stomachs collected in winter; they comprised 27 grouse, 13 quail, 4 Hungarian partridges, 2 pheasants, 1 sage hen, 6 ducks, 3 coots, and 1 goose.

A variety of other birds are eaten by coyotes. Our laboratory analyses show that nongame birds enter the diet of the coyote once in each 16 meals. Most of these are magpies, robins, meadowlarks, blackbirds, and sparrows. Other species occurring two or more times in the 1,697 stomachs include: Road-runner, hairy woodpecker, horned lark, chickadee, nuthatch, thrasher, and bluebird. Some magpies may be picked up dead about poison stations, while an occasional ground-feeding bird may easily become a coyote victim.

More complicated, however, are some of the problems of interpretation that arise in connection with the avian food of the coyote. For instance, there was the Montana coyote that devoured a meadowlark, a wren, and a sparrow along with a meadow mouse and 3 deer mice, although half the contents of the well-filled stomach consisted of carrion (horse), and an additional 30 per cent was made up of rabbit. The most successful bird-eating coyote was a December animal taken in New Mexico. Examination of its stomach disclosed a robin, a bluebird, a meadowlark, and a blackbird as well as 2 deer mice and 55 juniper berries; carrion (horse) comprised 60 per cent of the total contents.[1]

Vegetable Food.—Wild fruits, berries, and seeds contribute 1 per cent, both by occurrence and by volume, to the coyote's winter food and occasionally they comprise the total meal of an individual. Important items among wild fruits are mesquite, with 9 records; and cactus and juniper, with 5 each. The last meals of two Arizona and two New Mexico coyotes were composed entirely of mesquite beans and juniper berries, respectively. A Washington coyote made nine-tenths of its last meal on chokecherries.

---

[1] It is altogether probable that much of the bird food of the coyote consists of individuals killed by automobiles on the highways. See article on page 320 of this issue.—Ed.

Cultivated fruit was present in about 1 per cent of the stomachs, the 17 records being made by California and Washington coyotes. Apples were eaten by 10 coyotes and pears by 5. One California coyote made a full meal on figs, and another from the same State was responsible for the lone grape record.

Grass is a rare food item of the coyote.

The Denver Food Habits Research Laboratory continues to receive regular shipments of stomachs of predatory mammals from members of the Biological Survey's predatory-animal control force in practically all the Western States, and the examination of contents is progressing at the rate of approximately 500 a month. The next progress report will cover the food habits of the coyote during the spring and summer months. In the meantime, stomachs, not only of coyotes, but of other predatory mammals as well, collected at any time and obtained in any part of the country, including Alaska, will be gratefully received.

Denver Laboratory, Division of Food Habits Research, U. S. Bureau of Biological Survey.

Library of
Aldo Leopold

clipt with folder

Why We're Afraid of Wolves

By LEE J. SMITS

Minn. Waltonian
November, 1934

● There is no recent record of a wolf attacking a man, yet unproved reports keep alive a legend which had its origin in the dark ages ●

EVERY winter there arrive in newspaper offices, by wire and by mail, the stories of wolves attacking human beings. Often these accounts are thoroughly circumstantial, giving the place, time, and names of the victim or victims.

As nearly as it is possible to form a conclusion from investigation of a steadily growing series of reports, none of these stories is true.

That is, the intent to attack is not present, even if wolves do follow human beings—which may happen.

Move slowly through the woods, still-hunting deer, and you will sometimes have a bluejay or a red squirrel follow you, cussing you out as a dangerous intruder.

Through inquisitiveness, it is possible that wolves may tag along in human tracks. (Although much more frequently they will cross an old snowshoe trail only after careful scouting.)

For many years the United States Bureau of Biological Survey made inquiry into every report of a wild animal attacking man in the United States. It was demonstrated that men were attacked, without seeming provocation, by various kinds of animals, but never by wolves. Vilhjalmur Stefansson, Arctic explorer, who lived for a decade in a region where wolves are found in their wildest state, took pains to investigate and to inquire, and became convinced that wolves never have, in modern times, attacked man. In addition to his actual field experience, he has for twenty years or more followed reported instances of attacks by wolves on human beings, and each story has proved to be pure invention. Stefansson for some years continued to wonder about the tales of wolves devouring human beings in Russia—there was so much of art and legend relating to enormous and bloodthirsty packs, roving the Steppes. Correspondence with scientists and fur traders has served only to drive the Russian wolf menace further toward the region of pure mythology.

Prohibition had a certain effect on the dissemination of wolf yarns. When open, public saloons flourished in the logging towns of the northern parts of Minnesota, Michigan, and Wisconsin, it was from bartenders that travelers derived their information as to the ferocious fauna of the woods. Almost every bartender had a wolf story, and most of them believed their own tales. In fact, a great many lumberjacks can give, with the utmost sincerity, plausible accounts of wolves preying on mankind.

In the bartender version, the most recent attack had occurred the winter before at no great distance from the place where the story was being told. One standard form related to two brothers, Scandinavians, who worked in lumber camps separated by a few miles of woods. On a Thanksgiving—or Christmas—one brother set out to visit the other, and did not return. It was supposed that he had taken a job in the camp with his brother, and his acquaintances were astonished when the brother appeared, inquiring for him. A search was then made, and the bones of the young man were found scattered about the base of a tree against which he had made his futile stand before the onslaught of a pack of wolves. In some versions he had killed a wolf with a knife or club.

Similar stories appear regularly in Northern newspapers, and are generally believed by their readers. Chase S. Osborn, former governor of Michigan, has been for a half century a newspaper publisher in northern Wisconsin and Michigan, and has personally investigated scores of such wolf tales, all of which were fakes. There may have been the death of a wayfarer in the woods from cold, alcoholism, or accident, as a foundation.

In 1927, many papers carried the story of a wolf charging into the home of a settler in Mackinac County, Michigan. The animal was attacking a child when the mother seized a gun and dispatched it. A few days later I visited the scene of this thrilling adventure, and viewed the body of the "wolf"—a scrawny collie dog, with a white blaze on its chest.

J. W. Curran, editor of the Sault Ste. Marie, Ontario, Daily Star, has for many years offered one hundred dollars for any authenticated case of wolf attacking man, in the Algoma district of Canada, a region where timber wolves are fairly plentiful. Many claims to the reward have been made, invariably backed by second-hand reports, but it has never been collected, and Editor Curran now expresses his willingness to extend his offer to the whole North American continent. This he has hitherto hesitated to do only because of the difficulty of making personal and accurate investigation of all wolf stories, although usually nothing more than a letter to the nearest postmaster or Hudson Bay post is required to spoil even the most detailed and impressive of these yarns.

Harry P. Williams, assigned by the United States Bureau of Biological Survey to supervise state trappers of predators in Michigan, has hunted wolves in the United States and Alaska for many years. He captured the notorious Custer wolf of the Black Hills, the bane of cattlemen, and is acknowledged to be as wolf-wise as any man living. It is his belief that the wolf legend itself is responsible for the stories of wolf attacks which are given circulation by well-meaning witnesses.

One day a deputy United States marshal in Alaska returned from a deer hunting trip to report that he had been treed by wolves at the edge of a small muskeg. Williams listened attentively to the story, took down the location of the muskeg and, journeying to the spot, surprised a pack—or family—of wolves; an adult pair and their half-grown offspring, no doubt. Before they could get out of range, Williams' rifle had brought down half a dozen of the animals.

What happened to the marshal, Williams is convinced, was that he startled the sleeping wolves, who, not having caught the scent of man, ran at the sound of his footsteps, and made the mistake of running toward him. When a frightened deer runs directly toward the hunter, it is never assumed that it has bloodthirsty intentions. An animal with as highly organized a nervous system as a wolf's may blunder in a time of excitement much as a man may blunder in parallel circumstances. A cool-headed Canadian trapper, in the Algoma district, once annihilated a pack of eight or nine wolves with his rifle. He sighted them eating a deer on a frozen lake. The day was very still, and after he began shooting, the wolves were utterly confused by the echoes bounding from the steep, rocky shores, and raced to and fro in confusion while he picked them off. Each time they neared the shore, a resounding echo turned them back.

Did wolves attack human beings in America prior to white civilization? Indian lore does not list the wolf as a man-killer. The Jesuit Relations contain accounts of bold depredations on livestock by wolves, but do not refer to them as dangerous to human life. One Jesuit chronicle describes a half-breed hauling moose-meat into a fort on a sleigh and fighting off, with his whip, a pair of wolves that ran after the sleigh, snatching at the meat.

The Lewis and Clark expedition encountered vast numbers of wolves preying on the buffalo herds of the Missouri valley. These wolves were unacquainted with man, in many places, and were exceedingly bold. One soldier of the expedition rushed a wolf, gorged and sleeping apparently, and killed it with a sword. On another occasion a soldier asleep at night, with his arm extended outside the wall of the tent, was bitten

by a wolf. As the man started up, the wolf dashed off. It may have innocently assumed that the arm was all there was of the man. It is said that great horned owls have been led into similar mistakes by woodsmen wearing fur caps on cloudy nights.

Lewis and Clark were thoroughly dependable reporters, and they do not mention feeling the slightest fear of wolves. Grizzly, or "white" bears, as they called them, were a real menace to hunters of the expedition.

It is recorded, and is entirely believable, that in October, 1831, Louis Pasteur, then nine years old, witnessed the death of a man from rabies caused by the bite of wolf in the mountains of eastern France. A rabid animal is insane and a rabid kitten would tackle a Great Dane.

Similar to these accidents are the reports received by Editor Curran, of the Canadian Sault, of wolves in captivity that have bitten persons. Such reports, of course, have no bearing on the dictum that wolves, in the wild state, do not attack human beings.

HOW, then, did the wolf legend arise? Were wild wolves ever a peril to mankind?

It is well known that the predators readily alter their feeding habits under changed conditions. Buffalo wolves learned to kill stock. An occasional lion or tiger develops into a systematic man-killer. That wolves never attacked human beings in America, before the coming of the white man, might be explained on the grounds that Indians tried to keep in regions well-supplied with game, and wolves had no reason to linger where their own food resources were exhausted, so the inducement for wolves to eat Indians may never have existed.

Throughout the wildest portions of Canada, where wolves may sometimes go hungry, and where men are sometimes present, wolves have never displayed any inclination to resort to human flesh as an emergency ration. Many perfectly honest Canadians believe that wolves, if hungry enough, will gobble a trapper, but old trappers and fur post factors—if they have any reputation at all for truthfulness—say that they never knew of wolf attacking man.

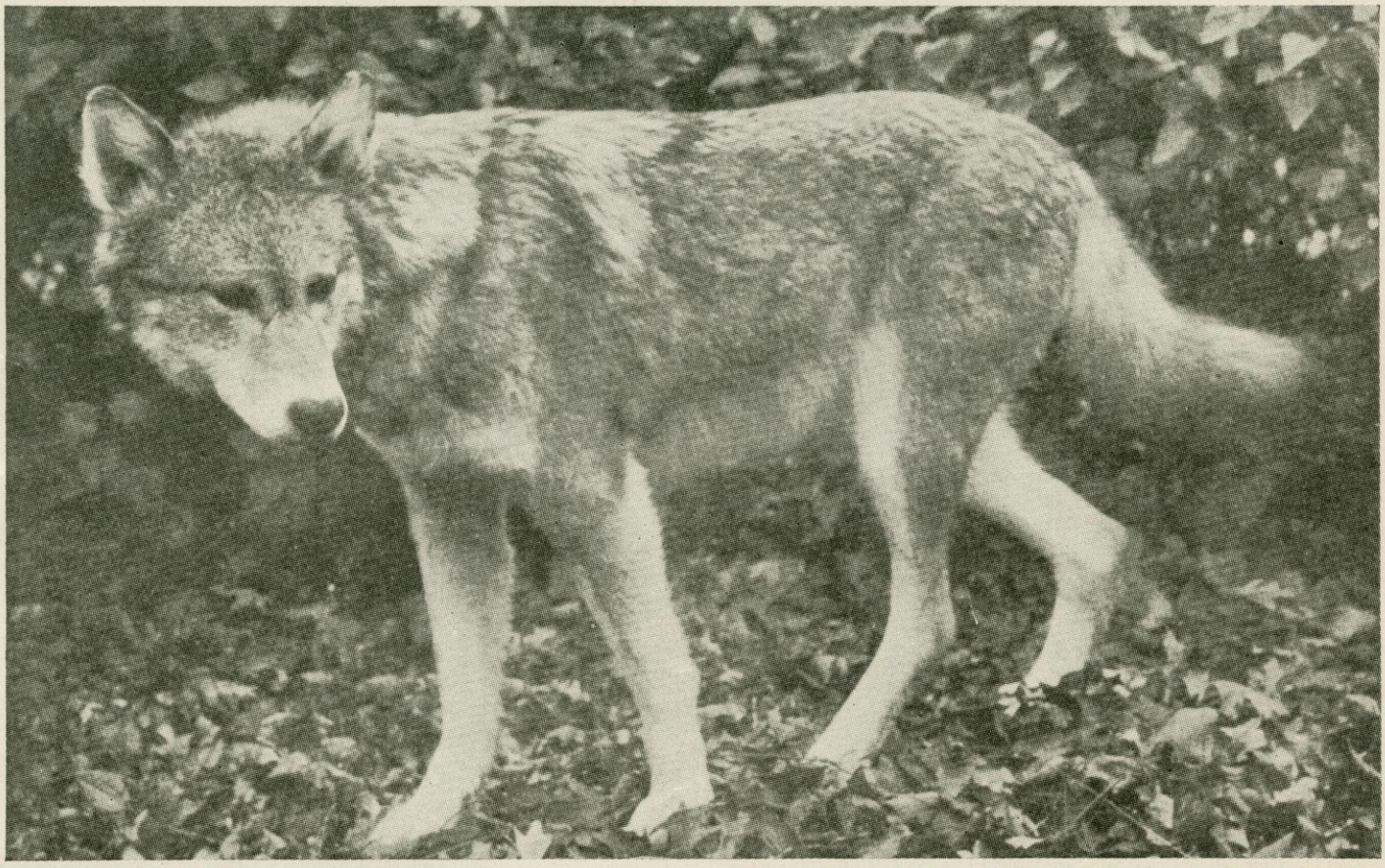
The largest North American wolves attain a weight of 125 pounds. They are exceedingly powerful and sagacious, and exhibit excellent team work in their hunting. It would be perfectly easy for one wolf to drag down and kill an unarmed man. Yet wolves in the woods of North America are so man-shy that they will not approach a deer carcass that has been dressed.

But, in Europe, before the use of firearms, when settlement had interfered seriously with the natural food supply of wolves, is it not possible that they did prey on humanity? Medieval chronicles indicate that this is the case. An eleventh century document says of famine conditions in Central Europe, "Wolves, finding so many bodies on the road, began to grow bold and to attack living men."

A few such attacks would be sufficient to start the legend of man-killing. Wolves, with their great cunning, their terrifying howls, and their ferocious aspect, have always played an important rôle in folk tales. It is highly logical to believe that the stories of wolves attacking persons, appearing every winter in our newspapers, have their remote origin in the tales, truthful at first, told around the fireside in the dark ages. A somewhat parallel legend is that concerning snakes in regions where there are no poisonous species. Where dangerous serpents are most numerous, snakes in general are much less feared than at the edge of the northern limit of serpent distribution in North America. Dangers chronicled are more blood-chilling than dangers experienced.

Wolves are extremely intelligent and adaptable. Williams reports instances of wolves adopting and rearing litters of unweaned cubs, orphaned by a trapper. In the buffalo days the poisoning and trapping of wolves was a simple matter. Now even immature specimens are crafty, whereas an old one, like the Custer wolf, displays a degree of sagacity that is positively uncanny.

Indirectly, wolves—or rather wolf stories—actually are a factor in bringing about a considerable number of deaths annually in this country. No hunting season passes without lost men perishing. They die, not from cold or hunger, in the great majority of instances, but from panic and exhaustion. Once he realizes that he is lost, the man who has all his life heard of wolves devouring persons—and Little Red Riding Hood made an impression on most of us in infancy—begins to quake. When darkness comes, he sees wolves in every shadow, he hears them in every rustle of the leaves. All too often the tenderfoot's last shred of common sense vanishes, and he begins a frenzied scramble ending in death unless rescue arrives.



Minnesota's Largest Recent Timber Wolf

File: Coyote
Mt. Lion
Predation

From General Notes, Jour. Mammalogy, Vol. 16, No. 3, August, 1935, p. 229:

Cougar and Coyote

My friend, Pyeart Hulse, whose ranch is on Canyon Creek, Middle Fork of the Gila River, New Mexico, writes me about an experience of his father in December while on his trap line. I will tell the story in Pyeart's words: "My Dad had a strange experience with a lion last month. He was out on Canyon Creek Mountain setting some traps when he came right on to a lion and a kitten, and was within a few feet of them before either saw the other. The lion made away at once and jumped into the thick brush, preventing a shot. The lion had killed a deer and on looking it over Dad found a dead coyote a few feet from the kill. The ground was soft from a rain of the previous day and the tracks easy to trace. On looking closely he saw where the coyote had come up to the kill, and there it was that the lion made for the coyote and caught it in a couple of bounds. The coyote's head was badly crushed and showed where the tusks had gone through the skull into the brain, killing the beast at once. Dad set some traps at the deer carcass but the lion did not return. He skinned the coyote."

Evidently these predators were not on such friendly terms as it is supposed they sometimes are.--Charles A. Gianini, Poland, New York.

Gray
Gestation period,/ Wolf - 9 weeks

" " Coyote - 64 days

(C. Emerson Brown, Jour. Mammal., 1936)

1936

wolf folder

LANSING, July 12. - Frank J. Waters of the State Administrative Board has found in the files of his office an original duplicate of a wolf bounty certificate issued in Clinton county, south central Michigan, nearly 100 years ago.

The certificate is dated Dec. 14, 1841, and was made out in long-hand in the office of the Clinton county clerk. It reads as follows:

> "Coo Cosh, an Indian inhabitant of said county being duly sworn by an interpreter deposeth and saith that on the 6th day of November, 1841, I did take and kill in the township of Bengalo in said Clinton county a full-grown wolf..."

The certificate was signed by the county clerk and the justice of the peace. The bounty allowed for the wolf was $4.

Several other original bounty certificates, some of which are from VanBuren county, have been found by Waters.

1936

Wolf Bodies

LANSING, July 15 P. M. -- Four male wolves were among the 149 predatory animals killed by bounty hunters in Michigan during June, the heaviest take of wolves since January when bounty hunters reported killing four wolves.

+ worth? -- but we have a man working on just that

The June kill of predators by bounty hunters cost the Department of Conservation $1,280. The catch consisted of the following: Coyotes, 118; bobcats, 27, and wolves, four.

A budget allotment of $40,000 has been set aside by the State Conservation commission for the fiscal year which began July 1 to operate the bounty system and pay bounties.

File Coyote

Release May 15, 1937

UNFAIR ODDS

"Montana Fish and Game Notes" publishes the report of eye witnesses of a hold-up and murder on a Montana ranch recently. The victim was a coyote - the assailants, three black crows, according to a recent bulletin of the American Wildlife Institute.

The ranchers who witnessed the affair declared that the coyote didn't have a chance - the odds were too great. Swooping in turn, the crows picked and clawed viciously as the animal ran in circles for about half an hour. Finally, completely exhausted, the coyote dropped and the crows tore him to pieces.

And from Sylvia, Kansas, Grace T. Bigelow, Deputy State Game Warden, sends word that crows killed a litter of nine young pigs belonging to Reno County Commissioner, Charles Hornbaker. "What's to be done?" asks Warden Bigelow. A suggestion might be that we develop a taste for crow meat. Properly prepared it's really not bad eating as to our surprise we learned recently. "Bish" Crawford, president of the Missouri Crow Shooters Association, slipped up on our blind side and before we knew it, we had literally "eaten crow".

- - -

Release May 15, 1937

Extract from Wisconsin Conservation Bulletin, December-January, 1937-38, p. 47:

OPEN SEASON FOR WOLVES

This year for the first time since March, 1935, hunters and trappers will be allowed to traverse the national forest areas of Wisconsin on their lawful business. Wolves have increased to such an extent during the period of absolute protection for fur bearers that control measures in the form of an open season were deemed advisable. The season for taking brush and timber wolves was open during the 1937 deer season, and also will extend from Jan. 1 to March 15 in 1938. Trappers will be regulated by the same provisions which apply throughout the rest of the state.

File: Wolf
Weights

Extract from Notes and Observations, Canadian Field-Naturalist, Vol. LII, February, 1938, p. 29:

"On Saturday, 13th November, 1937, a large wolf was killed at Dacotah, Manitoba, twenty miles south-west of Winnipeg, Manitoba, by W. & J. Rasmussen. The animal was an extremely large male, weighing 92½ pounds and measuring 68 inches."

Department of Conservation
Lansing, Michigan
March 17th, 1941

File wolf

Professor W. J. Hamilton Jr.
Cornell University
Ithaca, New York

Dear Bill:

I have the copy of your letter of March 13th to Mr. Feeney of the Wisconsin Conservation Department in regard to wolf administration.

As you no doubt know, the official policy of all public agencies in North America seems to be against any kind of protection of this species. This holds true at least for all political units in which this species occurs. So far as the middle west and east are concerned, Michigan is one of the few states which still boasts of the occurrence of the timber wolf.

So far as official policy is concerned, wolf control is still practiced. As you know a bounty system prevails in this state which provides for the destruction of coyotes, wolves and recently bobcats in the Upper Peninsula only. Actually, so far as wild dogs are concerned, the bounty is really aimed at coyotes and is supported by both sportsmen and farmers with vigor. The number of wolves destroyed as the result of the operation of this system amounts to about thirty individuals per year, which is small, comparatively speaking, and it also is probably about as much suppression pressure as the species will tolerate. Very few of these thirty animals possibly are trapped intentionally by the trappers. They set their traps out for coyotes and when working in wolf country occasionally they will catch a wolf. Most trappers consider the wolf too scarce to justify the expenditure of any considerable amount of time and effort on their part. So far as our state is concerned, I believe that we are going ahead on this matter of predator control just as about as quickly as we dare and with very few exceptions we are constantly faced with rather determined opposition toward our ideas. Judging from our own experiences it is going to be some time before the public at large really understands predators and their role in the scheme of things. There are many more points which I could bring up here, but perhaps could be discussed better at the Mammal Meetings at Chicago this spring which I note you are planning to attend, and which I also plan to attend. For once the meetings are going to be near home.

If there is any further information which you may desire for your report at the meetings, please don't hesitate to call. We shall do our best toward handling the problems satisfactorily.

Sincerely yours

(Signed) A. M. Stebler
Cusino Wildlife Experiment Station
Shingleton, Michigan

AMS:rmb

March 21, 1941

Mr. A. M. Stebler
Cusino Wildlife Experiment Station
Shingleton, Michigan

Dear Steb:

I am mighty glad to have your letter re the wolf control policy. I am mailing a copy to Feeney and Aldo Leopold. We do not want to be antagonistic on this matter; on the contrary we would like the official policy of the states in which wolves occur outlined at the Mammal Meetings in Chicago. Won't you plan to be in attendance and give a report on the wolf situation in Michigan? I know it will contribute much to the meeting and that your unbiased observations will do much toward formulating a proper policy for the mammal society. With every good wish,

Sincerely,

W. J. Hamilton Jr.

WJH:K
Copies to
William S. Feeney
Aldo Leopold
Francis Harper

March 5, 1942

File Marinette Co. folder
Fox folder
Wolves folder

Wolves, Foxes, Coyotes in
Marinette County

Byrl Sotzen of Athelstane, Wis., moved to a farm in Silver Cliff Twp. in 1921. He was then 3 years old.

He remembersh hearing wolves howl. They had deep voices and were probably timber wolves.

He thinks wolves disappeared about 1925.

About 1926 his brother trapped red foxes, caught one. About 1931 fox-hunters from Marinette came out with dogs. Thinks they got some. Dug some dens.

Has the impression no foxes during wolf days; will try to verify from old timers.

About 1933 began to hear coyotes, which were working a neighbor's sheep. Thinks there are still some foxes, but not numerous. Coyotes numerous. Chased one with car in 1941.

Conclusion: This looks as if foxes came in when wolves removed, possibly because they were removed. Also looks as if at present coyotes might be holding the foxes down.

this way the sweetest tasting that you ever ate."—C. P. F.

Coyote Doings

The following interesting sidelight on the family affiliations of coyotes was taken from a report published by the United States Department of Agriculture, Bureau of Biological Survey, Colorado-Kansas District, which works in co-operation with the Colorado State Board of Stock Inspection Commissioners for the extermination of predatory animals:

Assistant George M. Trickel, working in the Montrose section, accomplished a very commendable piece of work on May 3rd. Near the William Moore ranch, about seven miles northwest of Montrose, Colo., he discovered a coyote den on the east side of Spring Creek Mesa in a hillside covered with thick greasewood. Approximately thirty feet from this den he discovered another den. A short distance from den No. 1 he shot and killed the adult female. In digging out the second den he killed the second adult female. Then, in digging out both the dens with a shovel, he got two litters of pups, ten in number. In the first den there were four large pups and three very small pups. In the other den he succeeded in getting three large pups. Evidence thus showed that the pups in these two dens had intermingled, and that neither female adult coyote was particular whether or not she nursed her own puppies. After killing the two females and getting the sum total of ten pups, he took scent from one of the females, and the following day trapped an old male coyote near these dens. As far as has been ascertained, this male coyote is the "daddy" of the two litters, which is rather unusual, as is also the fact that coyote pups of two females will intermingle from one den to another.

"Are they unhappily married?"

"Oh, I hardly think they're rich enough for that-"

File wolf folder

Rusch, WM 1943 Two-way waste. Amer Forests 49:6: 286-289, 318, 320.

p 288: "The last hey wolf on the Yellowstone was killed in 1923"

Blue

COPY

File wolf

Radisson, Wisconsin
April 7, 1944

Mr. Ernest Swift
Assistant Director
Wisconsin Conservation Dept.
Madison, Wisconsin.

Dear Ernie:

The following is a report of my activities for the past few days on the wolf check up.

The first part of the week I was in the Flambeau Forest area, and in the northern end I contacted Louis Johnson, trapper and resort owner, and he informs me that there has been 3 timbers in there most all winter. Sam was with me and he also informs me that there has been 3 and probably 5 timbers in there most of the winter, but we found no sign on this new snow. Saw several coyote and fox tracks thru out this territory. Medium deer concentration in the logging operations around Lake of the Pines and Evergreen Lake. Deer sign scarce in the rest of the ground covered. Rabbit very scarce, no grouse seen (ruffed). Saw several coyote and fox tracks on way from Radisson to this territory.

Checked wolf sign in my old territory in sections 4,5,6 & 7 T38, R6. Found large mature buck deer in Sec. 7 that had been shot with a .22 rifle 10 days to two weeks ago and was in a very weakened condition. Was too weak to run, so killed it. There were several coyote tracks around this deer but they had not attacked it. There were many coyote and fox tracks in this vicinity and also 2 bob-cats. Also dogs running deer, but found no deer killed by either. Coyote droppings show that they are feeding on deer. Deer population very light, rabbit very scarce, this is a very good snow-shoe rabbit country., also a good partridge country but found no sign at all. Flushed 15 to 20 birds here last year on this same trip.

George Edberg accompanied me on a trip up in the East Fork and Moose Lake territory. Contacted Mr. Robert Robertson and he advised me to go to Moose Lake fur farm and across to Camp Sawyer and across to Black Lake and return to Winter. He informed me that he had seen the tracks of one bunch of timbers, five in number and one bunch of two in this vicinity off and on all winter. We were able to see tracks up until about 1:00 P.M. when it started to thaw. We found 51 coyote tracks, 10 fox and one timber wolf track crossing the fire lanes. Rabbits very scarce. Deer scarce except in the vicinity of Venison creek where there was a medium heavy concentration working out of the spruce and cedar swamps along the creek. Found no sign of coyotes or wolves killing deer.

Mr. Dan Holzem of Ojibwa told me that he had seen timber wolves north of Ojibwa on the old Hines Grade in the vicinity of the head waters of Crazy Horse creek, chasing deer. Henning Pearson accompanied me up in this territory to see what we could find.

Found no timber wolf sign, but saw several coyote and fox tracks. We actually saw a very large bob cat eating on a fresh killed doe. The deer was still warm and we were within 150 feet of the cat before he saw us. It was plain to see how the cat killed the deer. The cat must have jumped to the doe's shoulders, biting the deer in the neck and throat, riding it until it went down with holes in the wind pipe and from loss of blood. The deer was killed in section 17-39-6. in a new slash area. This is the first and only deer that I have ever seen killed by cats. Also found where one more had been killed about two weeks ago. There were several cat tracks in this vicinity. No coyote had been to this or the other carcass. I opened the fresh killed doe and she had two doe fawns. There is about a medium concentration of deer in the logging operations, 75 to 100 deer in this vicinity. Rabbits none and ruffed grouse none. Covered about 4 or 5 sections in this vicinity.

Due to the spring break up I will have to give up this work, unless otherwise informed. It is my honest opinion that there are more coyotes and fox in the northern counties than I can remember. During the past few years they have been slowly increasing, last winter you could find a couple or three tracks of coyotes and fox almost anywhere and with the increase last year from them one or two females in each vicinity there are now a lot of coyotes and fox. I believe that the increase this year is going to be very large and you no doubt will get lots of claims for damage to sheep. I do not believe that the damage to deer by coyotes anything to worry about. We found several deer killed by coyotes in Iron county but do not believe it to be the practice of coyotes in general. The timber wolf is also on the increase and spreading out to territory that has not had timbers in for some time. Bob cats are quite common again. Snow-shoe rabbit is going down hill fast and so are the ruffed grouse. I believe 50% less than last winter.

Trusting that this report is to your satisfaction, I remain

Sincerely yours,

/s/ Geo. Ruegger

George Ruegger.

Copied
4-8-44
gms

file wolf

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
CHICAGO, ILLINOIS

ADDRESS ONLY
THE DIRECTOR, NATIONAL PARK SERVICE

54

September 13, 1944.

Mr. Aldo Leopold,
Department of Wildlife Management,
University of Wisconsin,
424 University Farm Place,
Madison, Wisconsin.

Dear Mr. Leopold:

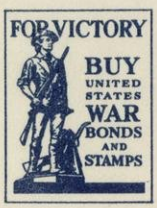
We have received your two letters of August 24 and 30 and greatly appreciate your comments and advice concerning the possible introduction of wolves to Isle Royale National Park.

One of the cardinal points of national park wildlife policy is the protection and perpetuation of vanishing species. Also, as you have pointed out, there can be no question about the value of the national parks for research on wildlife species and problems and the obligation of the National Park Service to preserve those areas so that their value as outdoor research laboratories will continue unimpaired.

Frankly, a question uppermost in our minds in connection with returning wolves to Isle Royale is the possibility of an adverse public reaction that might do harm to the conservation of an adequate stock of wolves in the lake states region. Apparently the Wisconsin Conservation Commission is subject to considerable pressure even now to reduce the numbers of wolves. Thus far, Michigan has been able to carry on a mere token control with full knowledge that more, not less, wolves would be desirable in order to keep down the over-population of deer in the Upper Peninsula. In addition to preserving our own good relations, we should like to avoid doing anything that would bring the present protection policies of Wisconsin and Michigan into a possible line of fire.

We have seen almost countless instances of opposition to steps designed to correct intrusions on the wilderness parks. Once a condition is established, a management measure undertaken, or a road or building constructed, it is very difficult to get rid of it. Opposition to its elimination is often out of all proportion to the demand for establishment of the artificiality. The corrective step of bringing back wolves to Isle Royale might be another such instance.

We shall consider this matter further and let you know when a decision has been reached. In the meanwhile, please be assured that we appreciate your advice and information regarding possible sources for securing suitable animals.



Sincerely yours,

Newton B. Drury

Newton B. Drury,
Director.

File wolf

Clipping from the Louisville Times, August 14, 1944.

WOLVES NEEDED?

"Wisconsin's Department of Conservation publishes a pamphlet which leaves the impression that without wolves, cougars, and wildcats, maintaining deer herds in health, for hunting, will prove impractical.

The Wisconsin report, based upon painstaking investigation, brings out the fact, or apparent fact, that not elsewhere than where predators have been controlled severely, or exterminated, have problems of health of deer arisen; that where such control or extermination has been accomplished starvation and malnutrition occur, and artificial feeding is a failure.

At the same time the Federal Government goes ahead promoting deer conservation and trying to exterminate cougars and wolves, and the American Wildlife Institute publishes a book, THE WOLVES OF NORTH AMERICA, which says their total conquest has been necessary to final settlement of any country they inhabit; a book which, the advertising indicates, advocates extermination.

It is not, apparently, true--although it is unimportant in this discussion--that wolves are untameable and it is not true that their total conquest has been necessary to final settlement of any country. If deer hunting is to be stabilized maybe we shall need wolves, cougars and bobcats in appropriate situations. Wisconsin is rich in experience."

file wolves folder
(no card)
NOV 1944

write Stanley Young.

Dr. Stanley P. Young
U. S. Fish & Wildlife Service
Merchandise Mart
Chicago, Ill.

Dear Dr. Young:

For the past two years there has been a decided increase in kills of sheep, hogs, and cattle by predatory animals in the northern counties of Wisconsin. While some of these can be traced to activities of dogs, the majority are owing to predation by wolves, coyotes and "killer" bears. The local residents are demanding that the state government meliorate the problem because great economic hardships are being incurred.to such an extent that many farmers are going out of the sheep business. This has made the problem more acute because sheep farming had been encouraged in this section to help diversify livestock interests of the farm in this grassland type of agriculture.

The Governor has asked the University to submit recommendations for the best approach to the problem. It is the desire of the advisory committee to not only meet the problem, but in doing so to assemble as much information as possible which will aid in the future management of pradatory animals.

Because you have assembled a mass of information in your recent book and are intimately familiar with the problem in North America, we are calling on you for suggestions and further information. Would you please comment on the following points:

1. Does the Service enter into cooperative projects with the states on control of predatory animals and, if so, under what terms

is such help available? We understand that your methods do not involve poisoning, but rely chiefly on the effectiveness of professional wolfers.

2. Because a few of the problem counties border the state of Michigan there appears a joint problem. What do you suggest as a method for attaining cooperation with Michigan?

3. If your ~~eradicators~~ predator control men are not available, could you suggest men who could help the Conservation department's trappers in bringing the problem under control?

4. What experience have you had with organizing local groups to trap and shoot wolves and coyotes in such a way that the work can be directed and controlled? We do not believe a project should be initiated which cannot be brought to a stop. The extinction of the wolf may cause more distortion in the present overly populated deer herds.

Dear Stanley - Young

Sent 11-27-44.

You will shortly receive, from a University Faculty Committee, a request for advice about coyote, wolf, & bear control in Wisconsin.

This committee was appointed at the request of the Governor, and will probably carry considerable weight with the Legislature and the Conservation Commission.

I have stayed off it because of my position on the Commission, and have not tried to influence its findings or questions.

In addition to the Committees' specific questions, it would help if you could give it (and me) some background. The present "outbreak" of coyotes, bears, both foxes, & wolves I think began before the bounty was abolished in 1943. Have you evidence of any similar simultaneous outbreaks in the past, or in other states at this time? (I know the fox high extends from Pa. to Minnesota, but do the other species also show irruptive behaviors elsewhere?) This is pertinent, because we don't know ~~whether~~ (except in foxes) whether we are dealing with a temporary phenomenon which can be expected to disappear of its own accord, or a "permanent" one. With best regards

CC Walter Rowlands

Aberg

Vunderwall

File wolves

FOR VICTORY BUY UNITED STATES WAR BONDS AND STAMPS

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
CHICAGO 54, ILL.

ADDRESS ONLY
THE DIRECTOR, NATIONAL PARK SERVICE

December 28, 1944.

Dr. W. H. Burt,
Curator of Mammals,
University of Michigan,
Ann Arbor, Michigan.

Dear Burt:

Thank you for your letter of December 26 and the statement by Conger regarding the wolf on Isle Royale. The bare statement is certainly open to question. However, I certainly agree with your opinion that the wolf should have been able to cross to the island.

I appreciate very much the trouble you have taken in this regard.

Sincerely yours,

(SGD) V. H. Cahalane

Victor H. Cahalane,
Biologist.

cc: Prof. Aldo Leopold, with copies of Mr. Burt's letter of Dec. 20 and Dr. Burt's letter of December 26.

COPY
11-28-44

STATE OF MICHIGAN
DEPARMENT OF CONSERVATION
LANSING 13

December 20, 1944.

Mr. Victor Cahalane
U. S. Dept. of the Interior
National Park Service
Chicago 54, Illinois

Dear Mr. Cahalane:

Your letter of December 12, regarding the presence of wolves on Isle Royale is at hand.

We can find no evidence that wolves were ever on the island. As you know, Paul Hickie did a lot of investigating on and about Isle Royale, and a search through his notes reveals no evidence of wolves. Hickie seems to have concluded that while wolves may once have inhabited the island, there is no actual record available.

Hickie states that coyotes are frequently called "brush wolves" in Isle Royale, which may account for some of the confusion in trapper's and hunter's conversation.

After looking over Hickie's notes we doubt very much that wolves were found on Isle Royale since the coming of the white man, if, indeed they were ever there.

Very truly yours,

H. D. Ruhl
In Charge, Game Division

(SGD) G. W. Bradt
By G. W. Bradt
Game Management

GWB:PO

C O P Y
11-28-44

UNIVERSITY OF MICHIGAN
MUSEUM OF ZOOLOGY
ANN ARBOR, MICHIGAN

December 26, 1944.

Mr. Victor H. Cahalane,
National Park Service,
Chicago 54, Illinois.

Dear Cahalane:

The only published record of the wolf on Isle Royale, of which I am aware, is that by Conger (A Key to Michigan Vertebrates except Birds, by Allen C. Conger, Michigan Agriculture College, 1920). On page 60 he states "The Timber Wolf is not uncommon on Isle Royale and in many parts of the Upper Peninsula." I don't know where he got his information, but I am inclined to take it a bit cautiously. Some of his statements are obviously based on something other than facts. However, I see no reason why the wolf should not have crossed the ice to the island. My guess would be that they were there, but we have no definite records.

Sincerely yours,

(SGD) W. H. Burt
W. H. Burt
Curator of Mammals

Aldo Leopold

COPY

File wolf

IMMEDIATE AND LONG TIME MEASURES RECOMMENDED FOR PREDATORY ANIMAL CONTROL IN NORTHERN WISCONSIN.

no mention of bounty

This report summarizes the collective opinion of a special committee of staff members of the University of Wisconsin, appointed by Dean E. B. Fred, at the request of Mr. Frank Graass, secretary to Acting Governor Goodland. The committee had at its disposal, during the progress of the study: (1) the testimony of farmers in northern Wisconsin who have sustained losses from predatory and game animals including coyotes, wolves and bear; (2) the historical and statistical data on bounties for the past 75 years in Wisconsin as compiled by the Wisconsin Conservation Department; (3) the advice of Dr. Stanley Young of the U. S. Fish and Wildlife Service, who has recently published a very complete treatise, "The Wolves of North America;" (4) the advice and testimony of a highly skilled trapper, Mr. Sam Ruegger, of Sawyer County, Wisconsin.

An Area Problem For Which Extermination Of Predators Is Undesirable

The committee wishes to emphasize at the outset that extermination of predators in the region is neither recommended nor sought. The enactment of rural zoning ordinances by counties to regulate the use of land for forestry, recreation and agriculture,

the establishment of nearly five million of acres of public forests, the active promotion of recreational uses of land by hunters and tourists through state and privately financed advertising, the removal of isolated settlers after the purchase of their properties at public expense, all bear testimony to a pattern of land use in northern Wisconsin that does not admit of the complete extermination of any native species of animal. They are essential, in limited numbers, to a proper balance of wild life within the region, and to afford maximum use of the forest and recreation area by sportsmen and naturalists.

On the other hand the general adoption of a system of livestock farming (dairy cattle and sheep production) encouraged and promoted by the University in suitable sections in northern Wisconsin, bring with it a more immediate task, the protection of domestic stock from predatory animals. However, even the extension of such livestock operations does not require total extermination of predatory animals that maintain balance which reflects to advantage in agricultural as well as recreational spheres.

The problem, therefore, is one of establishing and maintaining reasonable controls on numbers of wild animals permitted to remain in the area, and of selecting the measures to be followed in exercising these controls most effectively. Such procedure must keep in mind the most competent use of public funds, as well as fact-supported data on wild animal population and conditions that are now in the possession of the Conservation Department or that may be obtained by that Department in the course of its work.

Game and Non-Game Animals Are Predators

It is the opinion of the committee that the responsibility must be divided for damage by wild animals to agricultural crops and livestock. When any animal is placed under protection by the State, and particularly when such an animal is declared to be game, the taking of which will be limited to specific seasons and places, it clearly becomes the duty of the State to pay, out of its game hunting license income, sums to compensate private individuals for losses sustained to crops or livestock by wild animals. Bears, deer and foxes, particularly where foxes are protected by a closed season, represent this class of animal. On the other hand, coyotes, wolves and wildcats are not so protected, hence they are not the obligation of any public agency charged with the duty of promoting the propagation and protection of game for the benefit of sportsmen who finance the work through hunting licenses. They become, if an obligation at all, an obligation of the general public which benefits as its citizens prosper in the pursuits of commerce and agriculture. The silt that blocks a harbor is in a sense a predator that makes waterborne commerce at least hazardous if not impossible, and the public has for a century or more recognized its obligation by removing the hazard at public cost. The main issue in the case of coyotes and wolves is whether the hazard is controlled by full-time paid employees, or by occasional "laborers" who get paid for their labor strictly on the basis of their accomplishments. There can be no valid argument against the thesis that the cost is a public one, chargeable to the general fund of the State, not the conservation fund.

(Copy)

RUSK COUNTY LOSSES BY PREDATORY ANIMALS

140 Farmers Solicited - Sheep Breeders and Others. Cards Still Coming In, Up To Oct. 16, '44

Name	Address	No. and Kind Of Losses	Losses From	Men who have gone out of sheep business because of damage
G. M. Clifford	Glen Flora	2 Sheep	Unknown	
Lester Lelm	" "	10 Sheep	"	
Kenneth Clifford	" "	8-10 Sheep	"	
Richard Peterson	" "	3 Sheep	"	
Henry Ducommun	Ladysmith	28 Lambs	Wolves	Sold out--Wolves
Elmer Erickson	Glen Flora			Sold out on account of wolves.
Albert Fendel	Ladysmith	9 Sheep	3-bear--6-unknown	
Claude Fiser	"			Sold out.
Robert Neilson	"	25-30 Sheep	Wolves	
Flunker Bros.	"	38 Sheep	Unknown	
Earl Haskins	Glen Flora	4 Sheep	Wolves	
Wm. Howard	" "			Sold out on account of wolves and bear.
Jim Hraban	Tony	6 pigs	Bear	
Hembrook	Weyerhauser	4 Sheep	Dogs	
Isador Lessor	Ingram	31 Sheep	18-Wolf--4-bear--3-dogs--6-unknown	
W. H. Mack	Glen Flora	31 Sheep	25-wolf--6-dogs	
Glen Mattison	Bruce	16 Sheep	12-dogs--4-unknown	
C. H. Mayou	Ladysmith	4 Sheep	Unknown	
C. C. Nessa	Osseo	2 Calves	Wolf or bear	
H. R. Parker	Ladysmith	20 Sheep	Wolves	
Gerald Prileman	Exeland	13 Sheep, Heifers and bulls)	10 by bear, 3 unknown	
Geo. A. Rathsack	Glen Flora	21 Sheep	8-wolf--3-bear--3-dogs--7-unknown	
Robt. Rathsack	" "	4 Sheep	2-wolf--1-bear--1 dog	Sold before losing too many.
John C. Sagert	Winter	2 Sheep	Unknown	(Found too late to tell)
Walter Sanger	Winter	8 Sheep	Bear	
Irwin Schroeder	Weyerhauser	3 Sheep	Unknown	
L. Esther Spooner	Conrath	10 Sheep	Unknown	Sold sheep in September
Geo. VanderLoop	Ladysmith	11 Sheep	4-dogs--7-unknown	
H. H. Wilson		12 Sheep	3-wolf--2-bear--3-dogs--4-unknown	
M. F. Wilson	Holcombe	20 Sheep	Unknown	
Leslie Yancey	Ladysmith	1 Cow	Bear	
Walter Zasoba	Glen Flora	4 Sheep	Wolves	
Albert Taylor	Superior			Sold out on account of bear. Want to start in again as soon as situation improves.
Mrs. Jos. Christman	Tony			Sold out a year ago (sheep).
Oswald Johnson	Glen Flora	8 Sheep--5 Lambs	Bear	(5 Lambs, unknown)

Survey made by County Agent Erle Barber, Rusk County, Ladysmith, in cooperation with Wis. Cons. Dept. Warden.

Partial Survey Reveals Large Losses

That there is need for fast moving control measures, the committee offers as evidence the report of livestock losses sustained in Rusk County. This report, based on partial returns from a questionnaire submitted by County Agent Erle Barber, indicates the extent of livestock damages sustained as a result of predatory animal depredations.

Recommendations For Legislative And Control Action

The committee feels that recommendations for effective regulation and restraint in both game and non-game animals will involve two procedures: (1) legislative action that will permit immediate reimbursement for losses incurred through predacious creatures with concurrent incentives for the reduction of such creatures which have reached destructive numbers; (2) legislative action that will permit longer time studies and research investigations for the purpose of establishing permanent balance between Wisconsin agricultural and recreational resources in the northern area.

I. Immediate

Non-Game Animals

Timber Wolf (Canis lupus lycaon) It is recommended that since testimony presented by wolf trappers and Conservation Department personnel indicate clearly that timber wolves, unlike coyotes or brush wolves, shun civilization, and do little damage to domestic animals, no immediate steps be taken to reduce nor exterminate

this species. The timber wolf is an important agent in the ecological cycle and is on the verge of extinction in Wisconsin, therefore in the best interests of wild life conservation extermination of this species should be prevented.

Wildcat (Lynx rufus) It is recommended that since few losses from wildcats have been sustained by farmers in northern Wisconsin, and since experienced trappers have pointed out that these animals inhabit the swamp areas and feed on rabbits and do only occasional damage to domestic fowl and livestock no remedial measures be taken at this time.

Coyote (Brush Wolf) (Canis latrans) It is recommended that the bounty be immediately restored on the coyote to bring it under control and therefore reduce the losses due to these predators. The restoration of the bounty system will permit many individuals to participate in the control of this predator and will distribute the benefits (payments for kills) over a wide area.

Advocates of the bounty system are to be found among farmers and sheep producers who have sustained losses. It is significant to note that in many cases these are not the men who would collect bounty payment.

Payments of bounty on coyotes should be made out of the general fund of the State and the amounts paid for individual animals killed or trapped should be kept in line with similar payments made by the states of Minnesota and Michigan. This is an important precaution in order to prevent excessive payments being made by the State of Wisconsin for coyotes trapped or killed in these adjoining states.

Game Animals

Fox (Vulpes fulva urocyon) Damage by this species has little direct effect on agriculture in northern Wisconsin. Much damage has been done to eggs of ground nesting birds (partridge) and to rabbits, but this predation while extensive, is a problem involving the general conservation programs of the State rather than an immediate agricultural problem.

Bear (Euarctos americanus) The Wisconsin Conservation Commission has this year (1944) instituted three separate measures for the control of bear in Wisconsin. These were: (1) the establishment of a special bear season in October; (2) the concurrent bear and deer season in November; (3) the provision that any land owner be permitted to kill or trap bear on his premises at any time.

The committee recommends that there be a specific appropriation out of the conservation fund of the State to pay all bear damage claims. The amount of this appropriation would be based on the experience of the past several years in administering such damage claims.

The committee feels that the present procedure for payment of these losses with the Circuit Judge acting as arbiter between the Conservation Department and the farmer, in case of dispute, is entirely satisfactory.

The committee does not wish to recommend any procedure that would in any way limit the powers of the Wisconsin Conservation Commission in either extending the open season (particularly in the spring months of March--April or May), or closing seasons on bear.

Bear should be treated as a game animal and its numbers kept in harmony with its environment, this can best be done by reasonable and carefully timed regulation. The Commission should be in a position at all times to determine bear population trends and to institute immediate action when necessary. The Commission should be permitted to use its discretion in determining when the number of bear have been sufficiently reduced so that no additional open season is needed.

Under no conditions do we favor bounty on bear. The State has the means at hand to get rid of its killer bear through its special trapper system, and thus to remove the cause for a large damage fund.

II. Long Term Measures

The following long term measures are proposed:

(1) That these two agencies, the Wisconsin Conservation Department and the University of Wisconsin, establish a special study of a minimum of 5 years duration to determine essential factors having an influence upon the sudden increases or decreases in population, migration movements, food habits and any other characteristics that in the opinion of the cooperating agencies make these animals a hazard to agriculture.

(2) If the present bounty law on coyotes and foxes is to be continued, we recommend that carcasses or prescribed parts of bountied animals be made available upon request to the Conservation Department or the University of Wisconsin for examination and study.

(3) We favor cooperative control on a county unit basis involving the use of voluntary man power under direction of a qualified leader to regulate numbers of predators when they become suddenly destructive and a menace to farm livestock. Many authorities are skeptical as to the effectiveness of the bounty system. Therefore, we recommend that experiments should be initiated to test the suitability of other control measures to Wisconsin's predator problem.

Respectfully submitted,

University Committee

/s/ Arthur D. Hasler, Zoologist

/s/ Fred B. Trenk, Extension Forester

/s/ James J. Lacey, Extension Animal Husbandman

/s/ Chairman Walter A. Rowlands, Extension Supervisor of County Agents

Madison, Wisconsin
December 18, 1944

Copied:
ahb
1-9-45

March 20, 1945

copy in wolf folder
one also in
writings

WOLVES

Aldo Leopold

(A discussion following the film "Wildlife of Denali" by Adolph Murie.)

Adolph Murie was sent to Denali (Mt. McKinley) to answer the question: "Are wolves destroying the mountain sheep herd?" He found that in 1940 wolves were getting only a few lambs and old broken-toothed sheep, whereas a decade previous, when sheep had overgrazed their range and overflowed into smooth topography, much heavier mortality from wolves had prevailed. In short, he found wolf predation on sheep to be automatically adjusted to the sheep herd: when sheep became too numerous, those on smooth hills were vulnerable and wolves trimmed them down; when sheep became scarce they inhabited only the "roughs" and hence were secure.

Similar compensatory mechanisms are being discovered in many other predator-prey relationships. Failure to appreciate this fact may lead to serious errors in conservation policy.

For example: Wisconsin has now re-enacted a wolf bounty, despite the fact that there are probably less than 50 timber wolves left in the state. A recent increase in coyotes, with heavy loss in sheep and other livestock, practically forced this action. Yet the continuance of the bounty might extirpate the timber wolf. This, in turn, might injure the ultimate welfare of the deer herd, which in 1942 had outstripped its supply of winter food, and had to be reduced by an open season on females.

In the wolf-deer relationship, the wolf tends not only to trim down excess numbers, but also to improve distribution by breaking up congestions. Deer herds subjected to normal predation never overtaxed their food supply, and deer "irruptions" are still unknown in Mexico and Canada. Irruptive

behavior began with federal extirpation of wolves and cougars in 1915. In Europe deer troubles likewise followed the removal of predators.

Artificial feeding is no remedy for excess deer, because deer do not stop eating natural browse when fed on hay and grain. On the contrary, the drain on natural foods is increased by artificial feeding. The end result of prolonged artificial feeding of deer is to pauperize the herd and to eliminate those woody plants which yield nutritious browse. These good food plants are then replaced by worthless ones. Meanwhile the deer deteriorate through malnutrition; it has been proved by experimental tests that deer do not maintain their weight on any winter ration devoid of good browse.

These prey-predator-food relationships are not understood by the public. Many conscientious citizens are indignant over the reduction of the Wisconsin deer herd, and now claim that "the remnant is being fed to the wolves". They do not realize that wolves occur in only 8 of 35 deer counties, and that there is only one wolf for each 2,000 deer hunters. They assume that good deer hunting cannot exist on the same terrain with wolves, whereas history shows the contrary: in fact, Seton estimates that in Pennsylvania a wolf per 2 square miles existed at the time of the best deer hunting.

For these reasons, the publication of authoritative prey-predator studies, like that now given us by Murie, is of great importance to sound conservation.

cc Dean Russell
Mr. Swift
Mr. Feeney

Return to my Wolf File

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
CHICAGO, ILLINOIS
(54)

ADDRESS ONLY
THE DIRECTOR, NATIONAL PARK SERVICE

September 23, 1946.

Mr. Aldo Leopold,
Department of Wildlife Management,
University of Wisconsin,
Madison 5, Wisconsin.

Dear Aldo:

You will be interested to know that on July 13 a temporary employee found fresh wolf tracks in the mud near Slough Creek in Yellowstone National Park. A good plaster cast was made and filed in the Mammoth Museum.

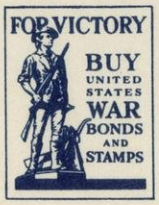
This is the third substantial record of a wolf in Yellowstone in recent years. During the winter of 1940-41 an animal was seen near the hotel at Canyon, and a cast was made of a track. I have seen this cast in the park museum at Mammoth, and without doubt the track was made by a wolf and not a coyote. About two years ago last summer, a park ranger who is an exceptionally good observer and accurate reporter saw a wolf near Dunraven Pass.

I believe that the best interests of the species will be served if no publicity is given to these observations.

Sincerely yours,

Vic

Victor H. Cahalane,
Biologist.



October 5, 1946

Mr. Victor H. Cahalane
National Park Service
Chicago 54, Illinois

Dear Vic:

I am much pleased to hear about the Yellowstone wolf, and I appreciate your taking the pains to let me know about it. There should of course be no publicity; let's just hope for a second one. I assume this must be drift from Canada.

I am letting Bill Feeney and Dan Thompson see your letter, but they will understand that the information is confidential. Both of them share our views about wolves.

Yours sincerely,

Aldo Leopold

cc Feeney and Thompson ✓ Pls return

E. J. VANDERWALL, DIRECTOR
FORESTS & PARKS--C. L. HARRINGTON
COOPERATIVE FORESTRY--F. G. WILSON
FOREST PROTECTION--NEIL H. LE MAY
INFORMATION & EDUCATION--
J. H. H. ALEXANDER

STATE OF WISCONSIN
CONSERVATION DEPARTMENT
MADISON 2

ERNEST SWIFT--ASSISTANT DIRECTOR
FISH MANAGEMENT--DR. EDW. SCHNEBERGER
GAME MANAGEMENT--W. F. GRIMMER
LAW ENFORCEMENT--A. J. ROBINSON
FINANCE--C. A. BONTLY
CLERICAL--MISS LYDIA STUMPF

file wolf

FILE REFERENCE:

November 30, 1946

Mr. Victor Markkula
Herbster
Wisconsin

Dear Mr. Markkula:

We wish to thank you for the wolf skin which arrived today in good shape. You did a fine job of skinning it out. It will be a good addition to our study of skins for educational use.

Our preliminary investigation indicates that it is a timber wolf and not a brush wolf or coyote according to the bounty claim. Our decision is based largely on the total length of the animal which is considerably more than the maximum for coyote. Also, someone evidently weighed the animal, for the bounty claim listed a weight of 70 pounds and that is why we believed it was not a coyote and arranged to purchase the skin. We understand you did not weigh it.

For our records to go with this specimen, would you please answer the following questions:

1. Where was the animal taken? Can you give us section, township and range or else a definite distance from a specified village?
2. Was animal trapped?
3. Were other wolves running with it in a pack?
4. Was it a male? We believe it was but wish to be positive.
5. What date did you take the animal?

Thank you for this information. An envelope is enclosed for your convenience in replying.

Very truly yours,
GAME MANAGEMENT DIVISION

W. E. Scott, Supervisor
Cooperative Game Management

WES:jt
Enc.
cc: Comm. Leopold
Dr. John Emlen, Jr., U.W.

UNITED STATES

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

CHICAGO 54, ILLINOIS

file wolf

December 19, 1946.

Mr. Aldo Leopold,
Department of Wildlife Management,
University of Wisconsin,
424 University Farm Place,
Madison, Wisconsin.

Dear Aldo:

The two copies of Swift's publication arrived. I should have informed you previously. I appreciate very much the trouble you took to have the bulletins sent to me and hope it was not too much bother.

Undoubtedly, there will be an opportunity for you to get in on the Mount McKinley wolf preservation scrap. The Camp Fire Club people do not change their minds easily. (I could almost drop the word "easily".) I hope it will be possible for you to get to Mount McKinley sometime, and that before the wolves are all gone. The opportunity which I enjoyed on several occasions in August 1940 for watching a number of those fine animals may not occur again.

The principal sparkplugs of the Camp Fire Club's campaign tried to persuade the Boone and Crockett Club to go on the record in favor of a wolf extermination bill. From someone who was present at the annual meeting two weeks ago, I have heard that Gabrielson really spoke his mind (in our favor) and practically called the Camp Fire Club boys a bunch of ignoramuses.

Sincerely yours,

Vic

Victor H. Cahalane,
Biologist.

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
CHICAGO, ILLINOIS

File wolf
and "beaver"

ADDRESS ONLY
THE DIRECTOR, NATIONAL PARK SERVICE

(54)

Library of
Aldo Leopold

August 11, 1947.

Mr. Aldo Leopold,
Department of Wildlife Management,
University of Wisconsin,
424 University Farm Place,
Madison 5, Wisconsin.

Dear Aldo:

Because you have been interested in the subject of a predator for the beavers of Isle Royale, you should know of a mimeographed "Report of Wildlife Studies in the Rocky Mountain National Parks in 1945" by Ian McTaggart Cowan. A copy of the report was sent to us by the National Parks Bureau of Canada. As you may not have seen it, the following information is quoted from a section dealing with the food habits of the wolves of Jasper and Banff National Parks.

"In certain areas beavers are an important dietary item. For instance (25 out of 60) of the pup scats at the Buffalo Prairie den consisted entirely of beaver remains. Here beaver exceeded in importance deer and elk combined.

"As stated above Buffalo Prairie has for a long time been noted for the size of its beaver population. The many streams that wind between the rugged hills and ridges are a succession of old beaver meadows and dams in various stages of disrepair. There are still several active colonies but the aspens, the favorite beaver food, have been killed to an extent that certain beaver colonies are subsisting on jack pine. Others are wandering many yards from the ponds in search of food. These circumstances render the beavers easy prey to wolves, coyotes and bears. There is little doubt that wolves and other predators are effective in reducing a beaver population that has eaten itself out. In this area the beavers have worked progressively further and further up small streams so that when the last food is eaten they cannot find safe passage to a large river or lake. The streams here are many of them so small that they offer little protection to migrating beaver.

"I have seen no evidence that predators can prevent a beaver population from increasing until it is so large that safely available food becomes inadequate.

FOR VICTORY
BUY
UNITED
STATES
WAR
BONDS
AND
STAMPS

At first reading, paragraphs two and three seemed a little contradictory to me. After studying them over, I infer that Cowan believes wolves do not catch up with the beaver population until the rodents must travel "too far" for food. Then the wolves find easy pickings and really cut down the beaver population.

I expect that this would happen on Isle Royale if wolves were present.

Coyotes are present on the island, but are comparatively few in number. Small prey, such as hares, are scarce, and beavers are inaccessible in winter. Moose would be available but rarely, except as carrion. Perhaps because of this limitation which winter imposes on the coyotes, they have never become sufficiently numerous to show up as a major enemy of the beavers.

On the other hand, wolves would be able to subsist on moose during the winter.

Sincerely yours,

Victor H Cahalane

Victor H. Cahalane,
Chief, Biology Division.

August 13, 1947

Dr. Victor H. Cahalane
National Park Service
Merchandise Mart
Chicago 54, Illinois

Dear Vic:

The quotation from the Cowan report is extremely interesting. Do you know him personally? I met him this year and my rating of him is high.

It seems very plausible to me that the length of the trip for food should determine the ability of wolves to catch beavers.

Yours sincerely,

AL:PM

Aldo Leopold

muskrat folder

Bill Sarles, in June 1920, at Three Lakes, Wisconsin saw a muskellonge hit a live muskrat swimming in the lake. The animal seemed full-grown.

"Roadrunner"

Extract from "The Game Birds of California"
by
Grinnell - Bryant - Storer

(Published by University of Cal. Press)
Berkeley - 1918.
(Chapter on Natural Enemies - page 22)

make folder under predators

"The ground-foraging Roadrunner has been accused of destroying the eggs and young of Valley Quail. An attempt to obtain light on this point brought little positive evidence. The investigation included a review of every published reference to the food of the Roadrunner in California, as well as the analysis of eighty-three stomachs of Roadrunners taken in southern California (H.C.Bryant, 1916). The investigation showed that, although the Roadrunner may occasionally attack small birds, its bird-eating and egg-eating habits have been exaggerated, and that the killing of this bird as an injurious species is wholly unjustified, It is only in very rare cases that young quail are molested."

Start folder for this or file under "misc. annuals"

P.265. Wolverine (Carcagieu) "Although exceedingly rare, was occasionally met with in the mountains".

(NOTE: Unless he means Colorado only he must mean New Mexico since he covered no other States. A Canadian with with him, which indicates Colorado).

(Ruxton)

Ruxton heard "most wonderful stories" about them jumping "from an overhanging rock on a deer or buffalo". Ruxton saw one while hunting sheep, but doesn't say where.

Wolverine in Michigan

Wolverine Borders

In connection with the recent note by A. W. Schorger in this journal (vol. 20, p. 503) regarding the occurrence of the wolverine (Gulo luscus) in the Upper Peninsula of Michigan, the following comments seem pertinent:

In 1882, at the age of twenty years, Gottlieb Rudat came to America from Germany. In 1903 he settled at a homestead near the Huron Mountains in Marquette County, some 35 miles northwest of the city of Marquette, where he still resides. "Dutch John," as he is known locally, obtained a livelihood for many years by trapping. When he first arrived in the country, the forest was still practically virgin, with only trails and a few poor roads through it. Wolverines were present, he states, but never were abundant. He never caught one, but did see one "long ago" on Dead River, in the northern half of Marquette County. Incidentally, he caught one fisher (Martes p. pennanti) about 1929, but the bulk of his business was in beaver, muskrat and mink.

- Richard H. Manville, Museum of Zoology, University of Michigan, Ann Arbor.

No. 500

DAILY BULLETIN
U. S. Forest Service
Southwestern District

February 7, 1923.

Received in the Library: New Mexico College of Agriculture, Bulletin No. 56. The duty of well water and the cost and profit on irrigated crops in the Rio Grande Valley by Vernon, Lovett and Scott.

Typewriter desks: There is a call for a stenographers' typewriter desk which we are unable at present to fill. If any supervisor has one that can be spared, please advise.

Winter Road Work: According to the Lincoln Bulletin, the Salazar Canyon Road which is being constructed under the direction of Forest Examiner H. D. Burrall is nearing completion. This road is both a Forest and Community development project. Its major industrial use will come from wood deliveries to the town of Lincoln and to the U. S. Marine Hospital at Fort Stanton. It will also facilitate the delivery of farm produce to these points and to Capitan.

Black Spruce Reproduction: Investigations conducted by the Cloquet Experiment Station, on the method of reproduction of Black Spruce, reveal the fact that this tree reproduces almost entirely from layering. The process is as follows: A lower branch of an old tree becomes covered with sphagnum moss, which grows on the forest floor, and soon adventitious buds are formed. One of the buds sends a shoot above the ground and this becomes a new tree while the remaining buds develop into roots. These roots supply the new tree with food and ultimately the branch from which they sprang will decay and the new tree must then depend solely on its own roots for existence. As new trees send out branches the cycles will be repeated and thus the Black Spruce will continue to possess the swamp. Black Spruce occurs in dense stands in the swamps of the Lake States and Canada.

Wild Dogs: Last summer one of the boys on the Black Range Crest trail crew had his female Airdale in camp, which mated with a Police dog. Her owner was called on to augment the protective force at Diamond Peak and when work was over he returned home with the Airdale for only a short time before going to Hurley to seek work. The Airdale evidently thought he had returned to Diamond Peak and she went there to find him. While there she gave birth to nine puppies, according to Hugh Hodge of the Diamond Bar ranch, although one died shortly after birth as it was found in the den. The result was as usual. A mother with eight puppies to feed must have something to eat. She naturally did what she knew to be wrong - calf killing -- and thus evaded man at every turn. Since her puppies have become larger their range of territory is widening. Their tracks have been seen seven miles down on either side of the Black Range and, unless already captured, hunter Inmen, of the Biological Survey is having his hands full. At last reports, Mr. Hodge said it was nearly impossible to trap or to approach close enough to shoot these dogs.(Gila Monster)

Field: Pooler (Phoenix); Kerr, Cooperrider (Gila)
Leave: Cheney.
Acting: Marsh.

Armadillo Killed on Weed
Dist of Lincoln (Lincoln Bulletin
9/13/23)

Tonto Inspection - 1923

Ring-tailed cats Found at Roosevelt, Vail, Station, Eagle Creek, Springerville, Blue River.

10/16/23

Dr Pellet killed a Ringtail Cat in Sandias 6 yrs ago (1917)

AR

(Game files)

January 11, 1924.

Methods of Attack:

Musgrave at the Flagstaff meeting gave the following general description of the methods used by predatory animals in attacking game.

Dog Tribe: Attacks from behind and eats from behind after killing. Attack often takes the form of hamstringing.

Cat Tribe: Attacks from the front and usually starts eating on the neck.

Bear: Mauls or crushes the head. Usually do not eat freshly killed meat. wait for worms and then eat them

AL

A. L.

RFS

May 22, 1924.

Col. R. E. Twitchell,

Santa Fe, New Mexico.

He answered yes

Dear Col. Twitchell:

As you know, I am collecting data for a book on Southwestern game and would like to get your advice on the two following questions:

(1) In Cousins' book, "A Marvellous Country", he assumes that Acuco was a synonym for Acoma. Can you tell me whether he is correct. A very important buffalo reference hinges on the question.

(2) White, in his recent History of El Paso, says that Cibola was an Indian word for buffalo. I had always supposed this was merely a form of the Spanish "cebolla" for onion.

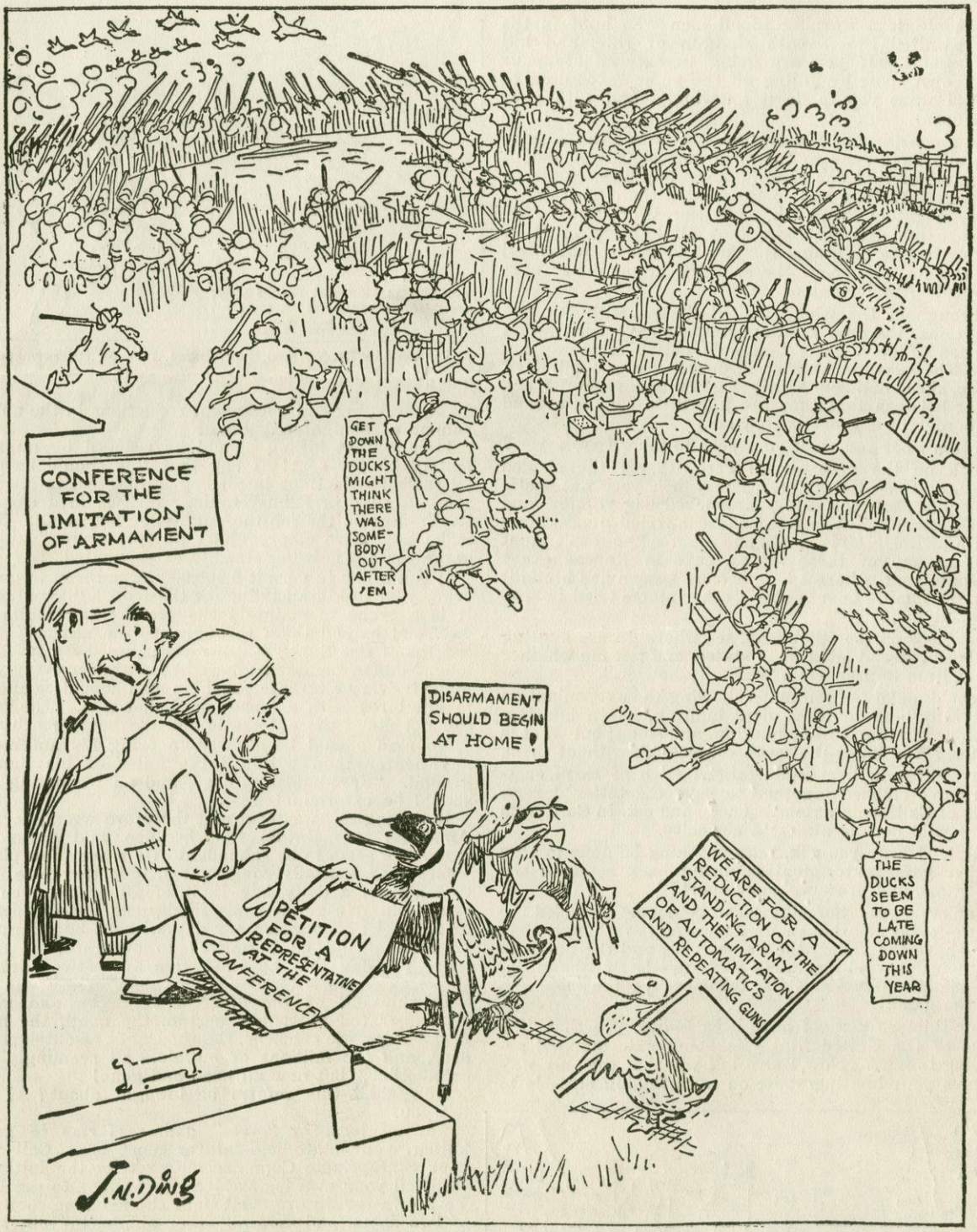
Your passing on these two points will be very greatly appreciated.

Can't remember what he answered but think I sent you the letter before leaving

Very sincerely yours,

Aldo Leopold.

L. N.



SPEAKING OF DISARMAMENT

With the compliments of J. N. Darling of Des Moines, Iowa, to the 5,500,000 gunners of the United States who annually take the field against our remnant of game.

FIVE MILLION MEN HUNT ANNUALLY IN THE U. S. THEY ARE EXTERMINATING GAME AND SPORT. BEWARE OF A GAMELESS CONTINENT!

THIS is a warning to all men who hunt in the United States with shotgun or rifle, and kill game. If you are going to exterminate your own sport by killing off the game "according to law," I want you to do it knowingly, and with your eyes open.

As a conspicuous illustration, note what the men of Colorado have done to the once marvelously abundant big game of that one time hunters' paradise. Even as early as 1912 they had so far wasted their heritage of bison, mountain sheep, elk, mule deer, white-tailed deer, antelope and grizzly bear, that all hunting of these species had to be **stopped!** You had grouse and quail and rabbits left. Now the shooting of quail has been stopped! Am I right or not?

Throughout the whole United States, with but few exceptions, the free hunting-grounds have been swept so clean of good game that only paltry remnants are left. The exceptions, wherein ducks, geese, quail, deer, moose, sheep and bear may yet be found, are **so few and so far between** that they are like little islands around the border of a great barren sea!

Is this what **you** want your sons to inherit from you?

Look on the map shown herewith, at the shaded states, and see the 21 states in which your automatic and pump shotguns, and your wicked bag "limits" and open seasons, have enabled the confirmed quail-killers to EXTERMINATE quail shooting. You can't hunt quail in any of these states, save in Kansas every alternate year, where a 5-year close season has brought back the quail. Last winter 4 other states tried to stop all quail hunting.

Now look on the other map, see where grouse hunting has been exterminated in 14 states, and tell me whether or not I am improperly a "calamity-howler."

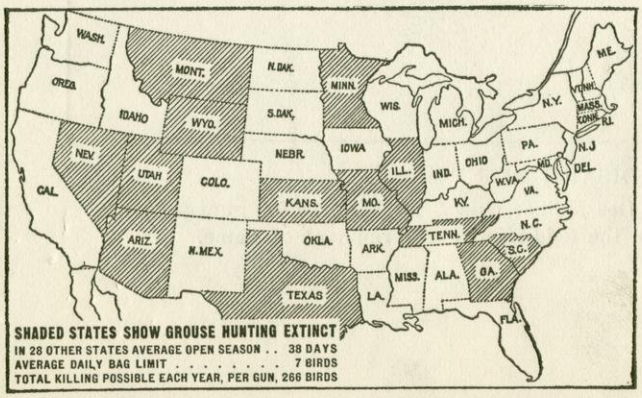
I could make for you maps showing the extermination of grizzly-bear hunting, deer hunting, sheep hunting, antelope hunting, turkey hunting, and so on; but what is the use? You know the facts well enough without them.

In California five organizations (two of them eastern) have clubbed together to save the tattered remnants of California antelope, sheep and elk. In California a live wild deer is almost a curiosity.

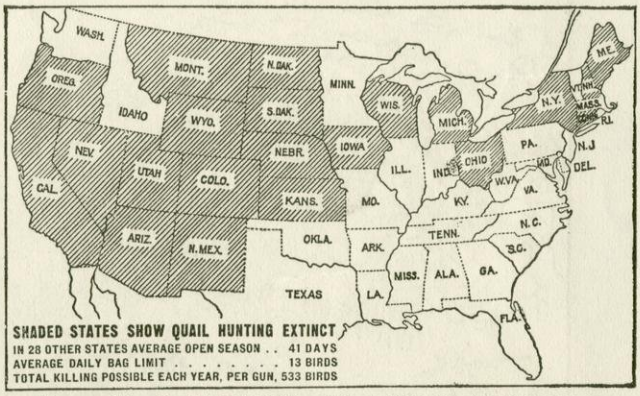
"But," I hear you ask, "can anything be done to stop further game extermination, bring back **some** of the lost game, and preserve **some** sport?"

I answer, yes. Something can be done,—**provided** the nature-loving sportsmen of America, few though they are,—have the vision, the horse sense and the nerve to see their duty and resolutely perform it! But the initiative and the labor must be furnished by **the men who kill the game!**

For thirteen years I have been telling you that "the game of the United States is being exterminated according to law." Now I also tell you that **the only way** to save your hunting sport on a continuing basis is to



Prepared by Dr. W. Reid Blair, July 1, 1923, for the Permanent Wild Life Protection Fund



Prepared by Dr. W. Reid Blair, July 1, 1923, for the Permanent Wild Life Protection Fund

make sweeping and permanent reductions in the annual volume of slaughtered game!

I claim that killing should be reduced by approximately 50 per cent! I say that this should be done by radical reductions in all bag limits, and in all open seasons, save in Pennsylvania, which is in a class by itself. But do the job thoroughly, or not at all. Don't make any more empty bluffs at "preserving" killable game while it is being steadily exterminated.

It is a crime to permit 5,500,000 armed men to go out every year to kill all the game the foolish "law allows." It is a crime to maintain the present bag limits per day, and extend them throughout "the season." The lengths of the killing seasons are everywhere twice too long. No man should be allowed to hunt deer every year. Make it every alternate year! No man should be allowed to kill birds with a 5-shot or 6-shot gun. The game can not stand the automatic and the pump machines.

No man should be allowed to bring his automobile any nearer than within three miles of his hunting ground. "Free-hunting" dogs, and all wandering cats should be exterminated.

It is illogical, wasteful and therefore wrong for any American to maintain that because wild ducks and geese now seem to be "abundant" **(in a very few places, where they specially congregate)**, it is therefore right to maintain a daily bag limit of 20 or 25, even for one week. No gentleman's family can possibly eat 20 or 25 ducks or 8 geese per day without bursting; and no man should be permitted to slaughter so much game per day that he must give away two-thirds or three-fourths of it to keep it from spoiling.

In thinking of the "increased" ducks and geese, remember the passenger pigeon, the quail, the great flocks of prairie chickens, the thousands of antelope and deer, and the millions of buffalo,—all seemingly "inexhaustible," but now all dead and gone!

How shall this reform be brought about? I will tell you.

For all local or "state" game reforms in game-killing, your state legislatures must act. Call upon your State Game Commissions to take the initiative, then tell your own legislature you want it to get busy. Your own legislature must limit the machine shot-guns to two shots, and stop all other abuses in your state.

For all migratory game, also ask the Secretary of Agriculture to so frame his annual "Regulations" as to **reduce killing fifty per cent,** all along the line. That is all you need to say to him!

Sportsmen, remember that it is not too late to save hunting sport from extermination,—provided you have the nerve to do it! Have you got it! "Yes?" Then come on, and make good!

WILLIAM T. HORNADAY
Campaigning Trustee, Permanent
Wild Life Protection Fund.
New York Zoological Park, August 1, 1923.

A LETTER *from* W. T. HORNADAY *to* E. W. NELSON

West Farms, New York City.
June 24, 1924.

Dr. E. W. Nelson,
Chief of the Biological Survey,
Washington, D. C.

Dear Dr. Nelson:

I regret to see from your letter of the 19th that your attitude is unchanged. This is of enormous importance, because you are now the last remaining obstacle that blocks the road to a great reform. I call you "the last," because, when all other opposition faded out on May 22, 23 and 24, I became very sure that the National Conference on Outdoor Recreation did not mean to hand me a Dead Sea apple.

But you, Edward W. Nelson, the official and the chief game protector of the United States, for 100,000,000 people who don't shoot, and not counting those who do shoot, refuse to concede that there is such a thing as wickedly wasteful bag limits, or that anything can justify reductions from present limits, -- wasteful or not, -- save progressive decreases in the supply of game, and actual danger of extinction. And at the end of your letter you have recorded this amazing declaration!

"Even if a million birds should be killed next fall more than if the reduction in bag limits were made now, that additional killing would in nowise have the slightest influence in endangering the future existence of any species of wildfowl, so far as the best knowledge we possess indicates."

Ye gods, Dr. Nelson, what an assumption! Do you wish it to go down in history as a parallel to the action of the Ohio State Senate in 1857, denying protection to the passenger pigeon because of its "millions?"

You declare that you have started "an investigation" to obtain testimony by which to determine the necessity, or the lack thereof, to reduce bag limits because wildfowl are "decreasing." The open inference is that if the evidence points to no "decrease," then no reductions in bag limits are necessary. Now, you and I know very well that at least 100,000 of the bag-limit duck shooters of California, Texas, and the Carolinas are ready and willing to send you their written testimony that ducks and geese are not "decreasing," that they are "increasing" enormously, and that it is a public service to kill them under present bag limits to keep them from becoming too numerous. I am quite willing to concede to you in advance the possession of 10,000 such pieces of evidence. You know very well that they are available in the wildfowl shambles, so why waste time in actually procuring them?

You remind me of the fireman who refused to save a rich man's house, saying, "He's got plenty more houses. The loss of this one won't ruin him. Let her burn!" Refusing to change the bag limits until wildfowl are threatened with extinction is like permitting hide-hunters to kill 500,000 bison because another 500,000 remained, and there would be no danger of species extinction from that act.

In view of your position, and your obligation to the people of this nation, I think you are very remiss, -- first in not having taken the initiative yourself in this reform, and secondly in standing out in opposition to it after it has been put before you by some one else. Noblesse oblige! You are not merely the protector of the shooting rights of the 5 per cent of sportsmen. You have a duty to the 95 per cent of people who have vested rights in every migratory bird until it is lawfully killed, and who do not shoot at all.

There is yet time for you to act in this matter. I warn you not to wait for any meeting of that Advisory Board, -- at a cost of 1,000,000 wildfowl wastefully slaughtered, because that Board refused to act last December. I want to say to you that the footing of that Board is now mighty insecure; and I hope that a word to the wise will be sufficient.

On July 15 you can notify the people of this nation that sound conservation policy and the rights of the whole people in the migratory game demand that on August 1 the wasteful and unjustifiable bag-limits on migratory wildfowl shall be corrected; and by August 1 the minds of the duckhunters will be adjusted to the idea. As for the "conservationists," where is there one man worthy of the name who could object?

Yours very truly,

W T Hornaday.

AEH

FOUNDED BY THE MEN AND WOMEN OF 1913-15

TRUSTEES { W. T. HORNADAY
CLARK WILLIAMS
JAMES H. PERKINS

COUNSEL, HENRY W. DEFOREST
30 BROAD STREET

PERMANENT WILD LIFE PROTECTION FUND

FOR WORLD-WIDE CAMPAIGN WORK DURING THE NEXT HUNDRED YEARS.

West Farms, New York City, June 30, 1924.

To Our Leaders and Allies:-

"Our Vanishing Game" No. 3, now sent to you, will give you full information of our formal request to the Secretary of Agriculture, Hon. Henry C. Wallace, to take immediate action to reduce the present excessive bag limits on ducks and geese in 29 states. My efforts have thus far produced no results. Be sure to read my correspondence with Secretary Wallace and Dr. Nelson.

They have started an investigation, to determine whether ducks and geese are "decreasing" or increasing. From the storm centres of wasteful slaughter will come back an abundance of testimony declaring that waterfowl are "increasing," very rapidly, and that no further protection is necessary. As to the increase in hunters and automobiles,—why bother about it?

I now place the issue in YOUR hands!

Perhaps you and your friends can persuade Secretary Wallace that by the logic of a bad situation it is now his duty to act as we request. If you believe that our request is right, and that 1,000,000 waterfowl ought to be saved next season by action now, it will be entirely proper, and in order, for you to exercise your sovereign "right of petition" and say so, **in your own way,** by letter.

I am sure that the Secretary of Agriculture maintains an open mind (and a sound heart), and that the moment he becomes convinced that it is right and desirable that he should act, he will put a stop order on the slaughter of 25 ducks and 8 geese per day, and reduce the number, everywhere in the United States and its dependencies to 15 and 4.

But the taking of the action that we recommend and request would be no child's play. In the putting over of any worth-while reform, "the hit bird always flutters." But soreness over the loss of riotous killing privileges **never is permanent!** If you are interested, **encourage Secretary Wallace to act;** and assure him that if he acts to stop the wasteful slaughter of our migratory game, at least twenty millions of Americans will back him up.

The time for action is short!

Yours very truly,

W. T. Hornaday

Fur Bearers

Otter

12/22/24

MEMO FOR BOOK FILES

ON

OTTER

Will C. Barnes says that while he had a ranch on the Sitgreaves Forest there were otter at the mouth of Chevalon Canyon, that is the junction of Chevalon Creek with the Little Colorado. These otter were trapped out, however, in 1888.

AL

2222 Van Hise Ave.
Madison, Wis.
April 16, 1925.

Mr. Joseph Dixon,
Economic Mammalogist,
Univ. of Calif.,
Berkeley, Calif.

Dear Sir:

I notice in the April issue of "Parks and Recreation" the attached paragraph concerning the occurrence of wolverine, fisher, and marten in California.

I am writing a book on the game of Arizona and New Mexico and have no record of any of these species occuring in those States. A rough indication of where they occurring in California would be of interest for comparative purposes. Can you tell me briefly their origin and present range in California? I do not need anything detailed - simply the altitudes and general geographic regions. Anything you can give me will be very much appreciated.

Very truly yours,

ALDO LEOPOLD.

P. S. Kindly return the clipping.

W. W. CAMPBELL,
PRESIDENT OF THE UNIVERSITY

UNIVERSITY OF CALIFORNIA
BERKELEY

MUSEUM OF VERTEBRATE ZOOLOGY

Fur Bearer ~~Wolverine~~ Folder

April 24, 1925

Mr. Aldo Leopold,
2222 Van Hise Avenue,
Madison, Wisconsin.

Dear Mr. Leopold:

I have your letter of April 16 relative to distribution of wolverine, marten and fisher in California. Briefly all three species are found along the main Sierra Nevada particularly from the Yosemite region south to the vicinity of Mount Whitney, which marks their approximate southern distirbution in California.

The fisher is found chiefly in the boreal zone and has been observed in summer in the Yosemite region at an elevation of 11,000 feet. However, in winter time they are found lower down, being taken by trappers chiefly in the sugar pine belt, sometimes occurring as low as 4000 feet.

The marten is resident in the Hudsonian zone at elevations of from 8000 to 11000 feet, occasionally being taken in winter as low as 6000 feet.

The wolverine is restricted to the higher peaks; specimens have been taken at from 6500 feet in winter up to 11,500 feet in summer, and the animals probably range clear over the summits of the highest mountains, that is up to and over 14,000 feet.

See Rex Tom who saw Wolverine in Colo. about 1846

I am returning your clipping, also a separate of the article referred to.

Yours truly,

Joseph Scattergood Dixon

Joseph Scattergood Dixon
Economic Mammalogist.

2222 Van Hise Ave.
Madison, Wis.
April 23, 1925.

Mr. E. A. Goldman,
C/o Biological Survey,
Washington, D. C.

Dear Goldman:

I notice by the March 31 Survey that you have described "Two New Ocelots from Mexico." My intense interest in findings of this kind needs no explanation to you. Can you let me see a copy of your manuscript or tell me where it will appear so that I will not miss it? Also, can you tell me briefly whether you have ever suspected the occurrence of ocelots in Arizona or New Mexico? I have collected a great many jaguar records and have sometimes suspected that they were not all jaguars.

With kindest personal regards,

Very sincerely yours,

ALDO LEOPOLD.

THE SURVEY

ISSUED MONTHLY FOR THE PERSONNEL OF THE BUREAU OF BIOLOGICAL SURVEY
UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. 6 Washington, D. C., March 31, 1925 No. 3

GENERAL NOTES

Papers by members of this bureau have been presented at recent meetings of the Biological Society of Washington as follows: "White Sheep in the Alaska Range," by O. J. Murie, on February 28; "The European Hare in North America--Is It a Menace?" by James Silver, on March 14; and "The Future of the Potomac Valley Below Great Falls," by Dr. H. C. Oberholser, on March 28.

The following publication of the bureau was issued in March:

"Spread of the European Starling in North America," by May Thacher Cooke. Department Circular 336. Received March 12.

Manuscripts have been submitted for outside publication as follows:

Goldman, E. A. "Two New Ocelots from Mexico."
Howell, A. Brazier. "Asymmetry in the Skulls of Mammals."
Jackson, Hartley H. T. "Review of 'Bird Islands of Peru,'" by Robert Cushman Murphy.
Malloch, J. R. "The American Species of the Genus Griphoneura Schiner (Diptera, Sapromyzidae)"; and "Systematic Notes on and Descriptions of North American Wasps of the Subfamily Brachycistinae."
McAtee, W. L. "The Place of the Bird in the Modern World"; "The Relation of Birds to Woodlots"; and "The Birds at Dinner."
Preble, E. A. "The Arctic Lemming"; "Bird of Paradise Flower"; "The Cassowary"; "A Fisherman of the Depths"; "Grasshopper Gray"; "The Insistent Katydid"; "The Kinkajou"; "The Lover of Nature"; "The Mud-skipper"; "Mussels of the Shore"; "The Sea Horse"; "A Whip-tailed Lizard"; and "The White Cobra."
Scheffer, Theo. H. "Fur Farming, A Survey."

BIOLOGICAL INVESTIGATIONS

Dr. H. C. Oberholser and F. C. Lincoln, accompanied by photographers from the Office of Motion Pictures and the Division of Illustrations, have made several trips down the Potomac River recently to observe the thousands of canvasbacks, scaups, black ducks, and other species of waterfowl that have congregated below Washington. Among the more unusual ducks observed were greater scaups, ring-necked ducks, goldeneyes, baldpates, gadwalls, and old squaws. Three Canada geese afforded excellent opportunities for observation on March 9, and 21 of these birds were seen on the 12th. According to reports, larger rafts of ducks have been seen this season than for many years.

Pred. Animals

AL

THE BOUNTY SYSTEM

For more than 30 years previous to 1920 the State of Montana paid bounties on predatory animals. It is reported that during this period more than a million dollars was expended by the State on bounties. In addition to this huge sum stock associations, round-up associations, and individual stockmen have paid out thousands of dollars.

I can well remember along about 1900, when the Shonkin Round-up Association, which covered a large territory on both sides of the Missouri River below Fort Benton, hung up a bounty of $50 on grey wolves, and later this bounty was raised to $100, and again in 1909, when I was Supervisor on the Custer Forest, the Otter Livestock Association offered a bounty of $50 on grown wolves and $10 on wolf pups. Many other associations did likewise. Of course, there is no way of knowing just how much has been paid from State and private funds, but I think it is safe to say that one and one-half million dollars would not cover the bill.

While some progress may have been made under the bounty system, it seemed slow indeed, and stockmen began to cast about for other methods. The fact that fraud in collecting bounty money was being perpetrated quite generally and there seemed to be no definite way to prevent it, helped mold sentiment against the bounty system. Fraud in many forms was practiced but the most common seemed to be for some local trapper to get in touch with trappers outside the state and exchange hides with them. That is to say that outside hides were brought in the state by local trappers for bounty purposes only -- the local trappers getting bounty on local hides and trading them for out-of-state hides.

Most of the Western States have adopted the hunter system in lieu of the bounty system, and all seem to be satisfied that a step in the right direction has been made. Montana adopted the hunter system in 1920, but allowed the "turkey raiser" to write into law a bounty system in 1925. The present bounty provides the following bounties for "animals killed between the first day of April and the first day of July, both dates inclusive of each year. For each grown wolf, $15; for each grown coyote or coyote pup, or wolf pup, $2; for each mountain lion $20." Just why a bounty between April first and July first only seems a moot question. Can it be that the predatory animals like their turkey and lamb chops better during these months?

During the coming State Legislature there is going to be an effort to repeal the present bounty system, which, from a careful study of the attached map, seems to justify a change. Note, for instance -- thirteen Border counties paid bounty in 1925 on 5,166 coyote pups and 235 adult coyotes,

while the remaining 43 counties in the state paid bounties on only 2,938 pups and 174 adults. Or, in other words, 23 per cent of the counties paid 63per cent of the bounty, which would seem to indicate that coyotes prefer to live in Border counties, especially along the Canadian Border, where it is suggested, that they furnish company for the bootlegger.

The ratio of adults to pups shown by the bounty records is about one to twenty, respectively. Bounty hunters don't want to destroy the breeding stock, so instead of getting the mothers, they left them to bring forth a crop next year. It is estimated that the average litter is about six pups, which, if correct, means that about 1,250 female coyotes were left for seed by these bounty hunters.

Under the present bounty law, the funds of the Fish and Game Department are assessed $7,500 annually, and it is interesting to note that less than 100 predatory animals were killed for bounty in the twelve big game counties of the state.

Another interesting view of the matter is found in the following example: Assume the amount of money paid for predatory animal bounties in the past has been one and one-half million dollars, and assume that all agree that it would be good business to spend an equal amount in the future to reduce or eliminate predatory animals. The question is: How is the best way? "Bounties," you may say. But no; we tried that and it doesn't work. What then! Well, a million and a half dollars, along with the fur values of predatory animals, would keep a trained and expert hunter in each county for the next 25 years. "But," you say, "that would be equal to a pension." Well, then, why not put three or four experienced men in each county for the next two or three years and clean up the job, and then a very few experts along the Border would keep the State free?

G. A. Smith.

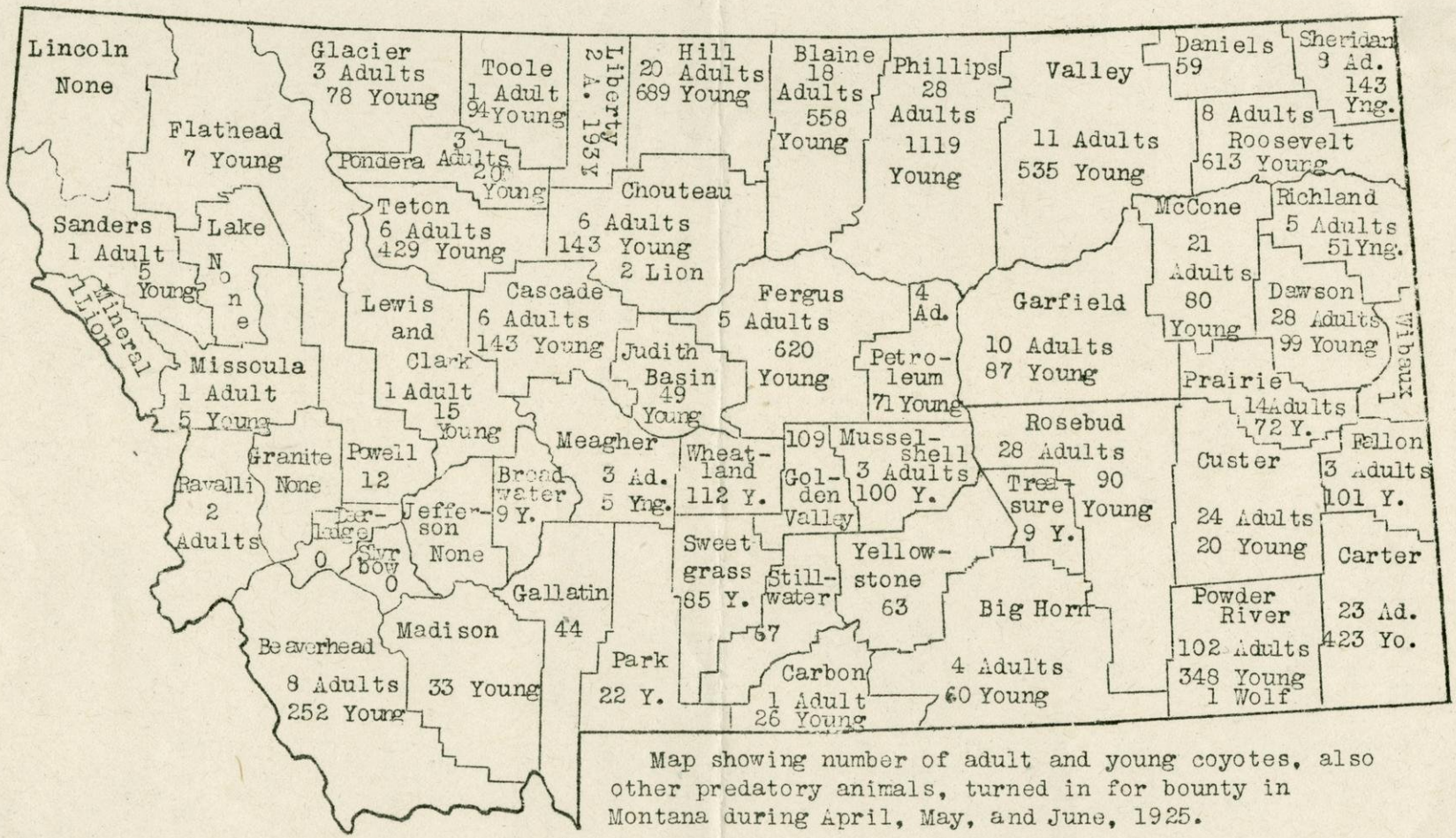
N. B. See following map of Montana.

°-o-°

A Long-Distance Record (So Far As We Know)

During this summer's heavy fires in the West, large quantities of ashes, charcoal, and other fire material were carried great distances. In the Bureau of Research at Harrisburg is a small quantity of ashes and charcoal which was carried a distance of thirty miles, from West McDonald in the Glacier National Park to St. Marys. A. E. Rupp, Chief of the Bureau of Forest Management, reports that in 1920, when he was District Forester at Fort Loudon, fire material was carried from a fire burning on Sideling Hill in Fulton County to Fort Littleton in Franklin County, a distance of nine miles. Can you beat it?

From Bulletin of Penna. Dept. of Forests and Waters.



Map showing number of adult and young coyotes, also other predatory animals, turned in for bounty in Montana during April, May, and June, 1925.

Predatory animals

CONGRESS FAVORED BOUNTIES

THE Conservation Congress held at Saginaw, Michigan, recently went on record as favoring a return to the bounty system of controlling wolves, coyotes, wildcats, lynxes, foxes, weasels and certain predatory birds, provided proper safeguards are made against fraudulent collection of bounties. A uniform rate of bounties for Wisconsin, Minnesota and Michigan was recommended by the Congress.

Figures covering the three years prior to 1926 were presented, which disclosed that during that period bounties were collected on 3,159 wolves, 5,448 foxes, 765 wild cats, 169,904 weasels and 99,288 hawks and owls, at an average cost of 92 cents per bird and animal to the state. During the same period the state trappers took 1,877 wolves, 2,320 foxes, 198 wildcats, 525 weasels and 3,922 hawks and owls at an average net cost to the state of $13.35 per bird and animal. The total number of individual birds and animals taken under the bounty system was 268,564 as against 8,842 by the paid trappers, but much of this difference is accounted for in the figures on weasels. The average cost of each wolf killed under bounties was $30, and by trappers, $60.07.

The payment of bounties on crows and woodchucks was not approved, the cost being out of proportion to the importance of their relation to the preservation of game and to agriculture. In four years that Michigan paid bounties on these two species, it cost the state $737,590, being twice the amount paid for all other species in the same period.

Sept 1928

Unto CSL file

What's What and How— in Conservation

By Seth E. Gordon

When to Release Pheasants

1. We hatched forty-five young ringneck pheasants from fifty eggs, and because of wet weather and other conditions beyond our control we lost twelve of them to date. They are now four weeks old and growing fine. When should these birds be released to get the best results? W. J. S., Indiana.

SO far you have made an excellent showing. The largest losses among young pheasants usually occur during the first three weeks after hatching.

The best time to release the birds is an open question. It depends upon what your aims are, the usual winter conditions, the amount of natural food and cover where they are to be released, the extent to which you are prepared to supply feed during the winter months, whether you have a close or an open season this fall, whether both sexes may be killed, etc.

Many who know pheasants thoroughly prefer to turn the young birds loose when they are nine or ten weeks old, because insect life is then still plentiful and the birds quickly learn to rustle for themselves. Others prefer to hold them until from twelve to fourteen weeks old; still others recommend holding the birds over the winter and releasing them in the springtime.

Usually young pheasants run about 55% to 60% cocks, and in states where only cocks may be killed it will not retard the future increase of your birds if fully half the cocks are killed by hunters, because pheasants are polygamous and one male will mate with from three to six hens.

My own judgment is that under reasonably favorable conditions best results will be obtained by releasing the birds before winter sets in, then arrange to place feed for them when the ground is covered with snow and ice. Few individuals or clubs have ideal conditions under which to hold game birds over the winter. If you want to try it I will gladly advise you concerning pens, feed, etc.

Distinguishing Musky and Pike

2. How can I tell the difference between muskellunge and the northern pike? My friends don't seem to agree concerning positive identification marks or characteristics. A. L. S., Wisconsin.

MY dear fellow, you are in no worse trouble than most anglers and many of the fish experts themselves. You certainly can't go by the size, because many great northern pike weigh as much as the average muskellunge.

The most generally known form of musky is the spotted musky. It is native to all the Great Lakes and lakes and streams tributary thereto, a few lakes in the Upper Mississippi Valley, also in Canada north of the Great Lakes. The barred musky is best known in Chautauqua Lake, New York, and adjacent waters. In some waters the musky runs solid dark on the back and does not have either spots or bars.

The great northern pike is still more widely distributed, being found all the way across the continent from Labrador to Alaska and south to the Great Lakes Basin, northern New York, the Upper Mississippi and its tributaries.

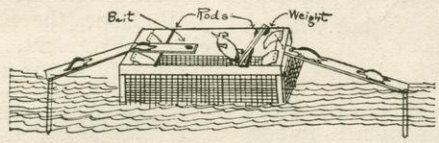
The musky seems to vary greatly in different waters. Some well-known fish experts distinguish the musky from the pike by his spots and the background, claiming that great northern pike (Esox lucius) usually has light spots on a dark background, while the common musky (Esox masquinongy) usually has dark spots on a light background. Others disagree with this theory and say it is not a safe rule to follow, even claiming that in some waters just the reverse seems to be true.

The United States Bureau of Fisheries says that a surer way of separating the pike from the muskellunge is by the scaling on the cheeks. In the pike the cheek is nearly entirely covered with scales, while in the muskellunge the lower half of the cheek is devoid of scales in the great majority of individuals.

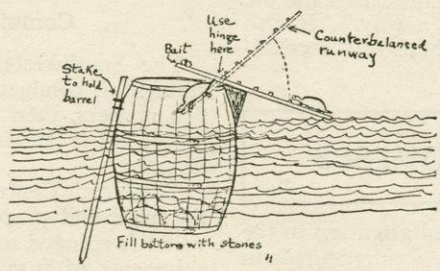
Turtle Trap Dope

3. I noticed your advice to "R. K., Ohio" in the August OUTDOOR AMERICA *concerning snakes and turtles. I want some kind of a trap for use at a pond where there is no attendant in charge all the time, say one that will work while I sleep. What can you recommend? E. B. J., Michigan.*

YES, we can recommend two traps that "work while you sleep." Both of them were recently illustrated in the monthly bulletin issued to all Kansas Walton League chapters by the Kansas Division of the League. Both are here illustrated by rough sketches. The first one shown was designed by Prof. L. L. Dyche. The size recommended is 4 feet long, 2 feet high and 2 feet wide. It is built by covering a framework of lumber with wire netting, counterbalanced treadle boards on hinges or rods at each end, and a 6 inch strip of tin tacked on the inside and bent down to prevent Mr. Turtle from crawling out. Runway boards from the top of the water to the trap should be firm so the turtles don't get "cold feet" and go right on over the top.



The other is a barrel trap recommended by Claude J. Meredith, Superintendent of Wardens of Kentucky, the details of which are easily obtained from this rough sketch.



This is easily constructed and should do the work while you sleep. All you need to do is remove the turtles. How's that?

Seth Gordon, Conservation Director of the Izaak Walton League, will gladly answer queries on all conservation subjects. Consult him about your conservation problems.

The World's Largest Spawn Taking Station

(Continued from page 22)

dred pounds of feed a week. These ponds are screened off at the overflow and the screen must be cleaned two or three times daily, to keep proper drainage. The bottom and sides of the pond must be thoroughly scrubbed once a day to remove all traces of fungus growth. If the advocated policy of holding fry over a year before planting were put into practice, these fry would grow to need ten ponds for each one hundred thousand fry, and require 1,000 pounds of food a week, with the resulting increase of labor. Further, the fish would be trained to expect feeding twice or three times a day and would not grow into the rustlers the early planted fish are.

The ideal conditions would be for larger rearing ponds, fed by spring creeks, to be built near the larger creeks, and so constructed that they could be entirely drained to remove all fish before restocking. This would enable the holding of the fry for a year in natural conditions. Proper choosing of places to plant comes next. Small tributary streams with plenty of feed and screened off so that large trout cannot get at the fry would be best.

In planting, the maximum temperatures of the creek water and the water in the fish cans should be slowly equalized to avoid sudden chill to the fingerlings.

The Fish and Game Commission of Montana have had two large tank trucks constructed to hold about a barrel and a half of water each. These automatically cool and aerate the water and will safely carry 80,000 fish at one load. The air is brought through a box of ice and forced into distributing rods at the bottom, keeping the water in proper condition for any length of time. These tank cars are loaded at the hatcheries and the fry are not handled again until they reach the place of planting. These cars soon run out to the head waters of any stream and unless the distances are great, they can make several trips a day, taking practically an express carload shipment at one load instead of the ten or twelve automobiles usually used in distributing. Best of all, the fry reach the planting grounds without long delays, without any intermediate handling and in water of constant temperature and well aerated. There is very little loss.

The area of the state is so large and the conditions of the streams vary so greatly in east and west Montana that nearly all varieties of game fish can be successfully raised and matured. In the western and southeastern mountain streams abound Native, Rainbow, Dolly Varden and Eastern Brook Trout and Grayling. Whitefish are in the lower streams bordering the warmer waters. Salmon and Lake Superior Whitefish in several lakes and in the eastern rivers where the water is too warm for trout come the Pike, Channel Cat and Carp. In some streams Bass have been planted, but these are not as plentiful as others.

And now, with 35,000,000 little trout placed in her mountain streams annually, and soon a like number of warm water fish supplied the eastern rivers from a recently established hatchery at Miles City, Montana is making for her people and offers to the visitor some of the choicest fishing streams in the Northwest. With her ever-increasing resources of wild life to bring interest in the beauties of her mountains, she invites the visitor, tourist and traveler to share her outdoor glories.

COPY File Weasel

COMMONWEALTH OF PENNSYLVANIA

Board of Game Commissioners

Harrisburg, Pa.

February 19, 1929.

Mr. Aldo Leopold,
421 Chemistry Bldg.,
Madison, Wisconsin.

Dear Mr. Leopold:

Your letter of February 15th addressed to Mr. Ross Leffler has been referred to me.

I am sorry that I can give you no personally collected data on reversion of the house cat to conditions sufficiently feral to induce the animals to rear their young in dens away from buildings. I do know, however, that in Pennsylvania and West Virginia house cats are to be found in some numbers in wild timber so far away from villages or occupied dwellings as to lead us to believe that they are, in virtually every sense of the word, wild.

These animals are frequently chased, treed and killed by 'coon hunters. As I recall my own experience in this field we killed from one to five such cats on every night trip. Incidentally, we also ran into a good many skunks.

I could not without special inquiry determine how many house cats' dens have been found in the wilds by our men but I know that a good many have been found.

In your third paragraph you refer to a weasel which was shot carrying a house cat kitten four inches long. I do not know of this particular case and the record was not placed in our mammal notes apparently. I do know, however, that at the farm of Mr. Quincy W. Hershey located near York Springs, Adams County, Penn., a weasel killed one night a house cat kitten at least 11 inches long (measuring tip of nose to tip of tail). The kitten was caught on the back porch and its would-be rescuers came to late to keep the weasel from killing it though they did catch the weasel.

I do not know that either the fox or bob-cat ever preys upon the house cat; but I do know that both Great Horned Owls and Barred Owls which I have had in captivity killed cats upon occasion. A Great Horned Owl which I kept tethered in our back yard caught two half-grown kittens on one night.

I am sorry that this data is of fragmentary nature and if you do not need the material for some time I can, no doubt, get more definite material for you within the coming few weeks.

Very truly yours,
George Miksch Sutton, Chief,
Research and Information.

DAILY BULLETIN

No. 29-60 U. S. Forest Service March 13, 1929

Southwestern District

Coronado Veterans: Here is the Coronado list of 'Old Timers' according to the Coronado Bulletin: Bob Thompson from July 18, 1906, 23 years; Fred Winn from March 7, 1907, 22 years; Carl Scholefield from June 15, 1908, about 21 years; L. W. Hess, September 1, 1909, about 20 years; William John Anderson, May 7, 1909, about 20 years. A fairly good record as anyone will admit. We doubt if any other forest in the Southwestern District can show a better one.

Attendance Record: In the U. S. Civil Service Commission, one appointee took no annual or sick leave in 1928, and performed 250 hours of overtime work. A total of 104 took no sick leave; 66 worked more than 100 hours each overtime; and a member of the disbursing office rendered 850 hours of overtime service. If he took no annual or sick leave, he put in an average of 2 hours, 48 minutes, 52 and forty-five one hundredths seconds of overtime on every one of the 302 working days, after deducting the 53 Sundays and 11 holidays.

Kansas Has Broomies: A Kansas City, Mo., dispatch February 24 says: "Wild horses in western Kansas have become so much of a nuisance the legislature has been asked to come to the aid of the wheat farmers. Martin F. Trued of Greeley County has a bill which will give the farmers who take up stray horses the right to claim possession of the animals at the end of two months. According to Trued, Greeley County farmers have corralled wild horses for more than a year to protect their wheat. The animals are strays from eastern Colorado."

Mink In Arizona and New Mexico: Noting the mention of mink on the Pecos by Ranger Johnson of the Santa Fe in the Daily Bulletin of February 25, Dr. Taylor wrote Mr. Musgrave concerning Arizona and received the following reply: "My first observation of mink in Arizona was back in 1918 or 1919 when I was catching fish out on Flakes Lake near Snowflake, Arizona, a mink came up and deliberately walked off with one of my fish. I sat there and waited for perhaps ten minutes and he returned and did the same thing. Later I saw one on Silver Creek south and east of Colorado. I have also seen sign of mink along the little Colorado near Springerville. M. E. Musgrave, Biological Survey."

Gasoline Purchases In New Mexico: Contract No. X8Ac-3, dated 12/27/28, with the Magnolia Petroleum Company, under which gasoline purchases are to be made up to June 30, 1929, provides for a deduction of 5¢ per gallon under the existing service station pump or tank wagon price, but does not allow for an additional 1¢ per gallon deduction as did the contract for the period ended December 31, 1928. The present contract provides for a 2% discount on gasoline purchases for payment within ten days, and on bulk oil purchases a 10% discount from the regular retail price is allowed. Purchasing officers should see that purchases from the Magnolia Company are made and vouchered in accordance with the existing contract.

Field: Calkins (Crook); Burall (Santa Fe); Cheney (Tonto); Mullen (Lincoln)
Acting: Jones

Turtle Folder (Predators)

March - April 1929

THE TURTLE TRAP THAT NEVER MISSES THEM

Proves Most Effective for Catching Common Turtles, So Menacing to Fish Life of Our Ponds

THERE are in Louisiana today turtle traps and more turtle traps. In fact, there are all kinds of turtle traps. First there is the drop trap, for catching logger heads and snapping turtles; then there is the game trap made by placing fish hooks on logs where the turtles sun themselves. There is the net trap, the most effective type of which is made by attaching a net, under a slanting log, so that when the turtles drop overboard, they fall into the net.

But none of these have proved as effective for catching the common pond turtles as the new trap recently invented by Percy Viosca, Jr., head of the fisheries division of the Department of Conservation. With this trap more common turtles are caught than ever before.

No matter how common a turtle may be, however, if properly prepared as a turtle soup or stew, it can be made into one of the most delectable dishes in the state's menu of aquatic foods.

But that's not the only reason for catching pond turtles. Even more important than the soup, is the fact that if they are allowed to become too numerous, they become a menace to the fish life of the pond.

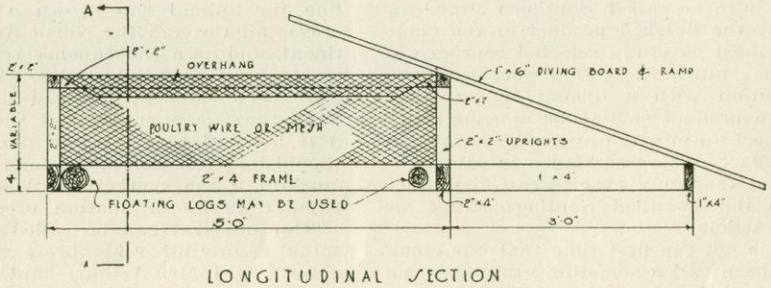
"But", you may ask "How can a few turtles more or less in a pond make any difference?"

Since turtles are largely vegetarian in their habits, a few will not prove particularly destructive. But once they become sufficiently numerous to destroy all of the vegetation found in the pond, the real trouble begins. Having consumed all the available food of one type, they must of necessity turn to another source of supply. And so they begin feasting on the eggs and young of the fish. And if they are still hungry, the crayfish and other forms of fish food are eaten.

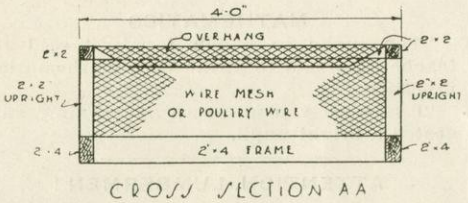
They therefore constitute a real menace, so that the trap invented by Mr. Viosca, not only increases the plates of turtle soup, but it helps protect the fish, by preventing an over-supply of turtles.

And the nicest thing about this trap that never misses our plebian "shellbacks," is that anybody can make one. Just take a look at the drawings, read the directions, then drag out the tool chest and get to work.

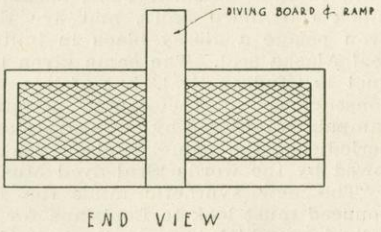
A floating wire cage is attached to a frame supporting a slanting board. The lower end of the board extends below the surface of



LONGITUDINAL SECTION



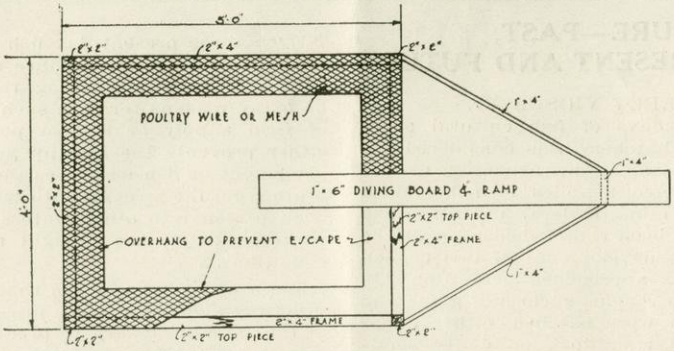
CROSS SECTION AA



END VIEW

TURTLE TRAP
SHEET Nº 2

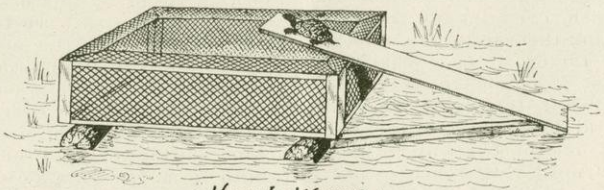
CONSTRUCTION DETAIL OF TURTLE TRAP



TURTLE TRAP AS SEEN FROM ABOVE

the water, and the upper end over the center of the cage. The cage is usually made of poultry netting which covers the bottom and sides completely, and there is an overhang made of the same wire which extends inward about six inches all around the top. It is best to slant this overhang slightly downward. The whole arrangement is floated by means of logs or beams and is placed out in the center of a pond or bayou where turtles are plentiful. The turtles will soon find the slanting board and climb upon it to sun themselves. When the sun sets they will drop into the open top of the cage, and may be collected at dusk, or if someone approaches the trap during the day time, those turtles which are on the end of the board will drop into the cage. As many as two dozen and sometimes more are taken in a single trap during the day. And they can't get out. The wire overhang prevents their escape.

In communities where the pond turtle is becoming an increasing menace to the fish life, it might prove profitable for all of the neighboring families to "get together," and somewhat in the manner of the quilting "bee," of old, work towards the construction of a sufficient number of turtle traps. With such cooperation, the traps could be constructed in a very short while, and by common agreement could be placed at the most strategic points.



HOW IT WORKS

CLAY SURVEY IN CENTRAL AREA COMPLETE

The Minerals Division of the Department of Conservation with the cooperation of the Louisiana State University Experiment Station, is conducting a survey of the clay resources in the State of Louisiana. The first report on this project covered the Shreveport area, including Caddo, Bossier, Webster, DeSoto and Red River parishes. The second report covered the Monroe-Ruston area, including Claiborne, Union, Morehouse, Bienville, Lincoln, Jackson, Ouachita and Richland parishes. This bulletin, the third of the series on Louisiana clays, deals with the central portion of the State, including Sabine, Vernon, Beauregard, Natchitoches, Rapides, Winn, Grant, Caldwell and LaSalle parishes.

Samples were taken from carefully selected locations with due consideration of relative distances from fuel, labor and market, as these factors have a decided bearing on the value of the clay apart from its ceramic properties. In estimating the value of clay deposits, only exceptional quality counterbalances cheap fuel and labor and ready market. Samples were taken where feasible in cuts on highways and railroads and from ravines. In cases where these topographical features were missing, sampling was done by boring with a two-inch auger. Prospecting was carried on by W. G. Cole, R. W. Harris and J. W. Whittemore. Tests of the samples were made in the ceramic engineering laboratory at L. S. U., Baton Rouge, by Mr. Whittemore and his assistants, C. A. Hitzman, J. H. Roberson and C. E. Patterson.

The bulletin describes the field work and laboratory testing of clay samples. The economic use of each deposit is indicated with the results of the tests. The tests of only those samples which have some value for the manufacture of ceramic products are given.

ADDRESS ALL GENERAL COMMUNICATIONS TO STATE CONSERVATION COMMISSION, MADISON

File Predators (Folder for mink)

COMMISSIONERS
WILLIAM MAUTHE, CHAIRMAN
FOND DU LAC
EUGENE WENGERT
MILWAUKEE
O. C. LEMKE, WAUSAU
A. W. ICKS, GREEN BAY
F. L. GILBERT, MADISON
E. M. DAHLBERG, SECRETARY
LADYSMITH

THE STATE OF WISCONSIN
CONSERVATION COMMISSION

L. B. NAGLER
CONSERVATION DIRECTOR

C. L. HARRINGTON
SUPERINTENDENT OF FORESTS AND PARKS
B. O. WEBSTER
SUPERINTENDENT OF FISHERIES
MATT. PATTERSON
ASST. TO DIRECTOR
H. W. MAC KENZIE, ANTIGO
CHIEF WARDEN

Wm. Aldo Leopold
Madison, Wisc.

July 29th 29
Racine
Wisc

Dear Mr. Leopold.

As per your request I interviewed Wallace Jones of Union Grove this County, who gave me the following information regarding a mink den.

This mink den was found March 1927 in an old skunk den, in this den were, parts of pheasants, hungarian partridge several chicken heads, and about thirteen muskrat tails. also two rats part eaten.

Very Truly Yours.
G. J. Peterson.
Warden

This den was found three miles south of Union Grove Racine County.

Skunk folder

September 10, 1929

Professor H. W. Wight
School of Forestry & Conservation
Ann Arbor, Michigan

Dear Wight:

Last spring Stoll of the Detroit News asked us to loan him Sabin to break in the keeper of a private estate near Detroit. We did this and Stoll brought in to me a list of "vermin" which he stated had been taken from less than 2500 acres during the two months ending August 15th. I know very little as to the location or character of these lands but Stoll thought the list was authentic and, if so, it would certainly seem that some manner of vermin control was in order on these premises.

1 fox (red)	75 crows
49 cats	629 Eng. sparrow
139 skunk	18 starling
30 red sq.	2 great horned owl
22 weasel	1 sharp shinned hawk
11 house rat	2 yellow belly woodpecker
10 dogs	41 snapping turtle
2 badgers	34 gar pike
6 mink	56 wood chuck holes gassed

Yours very truly,

P. S. Lovejoy
Game Division

139) 2500 (18 acres per skunk
139
1110
1112

October 12, 1929

Mr. Aldo Leopold
421 Chemistry Building
University of Wisconsin
Madison, Wisconsin

My dear Leopold:

From "Science" of the issue of October 4, 1929, I quote the following for your information:

"Tularemia, newly discovered disease of rabbits, rodents, and men, may also affect cats, muskrats, pigeons, ring-necked pheasants, grouse and quail, it appears from studies reported to the American Public Health Association by Dr. R. G. Green and E. M. Wade, of the University of Minnesota and the State Department of Health. This new disease which has caused much concern in public health circles, is acquired by men who handle infected animals. The fact that many more kinds of animals may have the disease greatly increases the danger to human beings by increasing the possible sources of infection."

L. W. T. WALLER, JR.

File: Wolverine
New Mexico

Extract from Journ. of Mammalogy, May, 1931, p. 166.

"On the evening of the same day, an Acoma Indian named Flaming Arrow was visiting me. He told me his people had a hunting song in which they extolled the three great hunters--first, the Mountain Lion; second, the Eagle; and third, the Ho-Ho-an or Ko-Ko-an. He did not know the white man's name for the last; but said it was as big as a dog, somewhat like a small bear, but it had a bushy tail. Its coat was rough, its feet black, and its back nearly white. It was terribly fierce.

"Then from his medicine bag, he produced a carving, a small effigy of the creature's head. It was an excellent likeness, and there can be no doubt that the KO-Ko-an is the Wolverine. The Indian said it was formerly found in all these mountains, but had disappeared. None of the present generation had seen one.

"This extends the Primitive range of the species considerably to the southward."

Ernest Thompson Seton, Santa Fe, N. N.

Muskrat folder
Fur Farming Box

Cross Reference

See "Annual Report of Muskrat Investigation Laboratory, Church Creek, Md., p. 96 of 11th Annual Report of the Conservation Department of the State of Maryland, 1933. (Filed Maryland Box)

File Sex Ratio folder
Weasel folder

Extract from "The Weasels of New York" by W. J. Hamilton, Jr. The American Midland Naturalist, Vol. XIV, No. 4, July, 1933, p. 300.

In large numbers of M. noveboracensis as raw pelts and carcasses, the males outnumber the females approximately 3 to 1. In the smaller cicognanii, the males outnumber the females 2 to 1. It must be remembered, however, that about 95 per cent of the weasels taken by trappers are caught in steel traps set for skunk, and the diminutive female of the Bonaparte seldom brings enough pressure on the pan of the trap to spring it. The small animals, when caught, are usually taken about the middle, and not by the foot, indicating it was the weight of the entire body that sprung the trap. If the animals are caught in box traps, the sexes are more nearly equalized. Indeed, Mr. C. J. Rulison, at Clay, N. Y. caught six weasels in two weeks trapping with box traps. One was a male noveboracensis, while five were the little females of cicognanii.

File Grit folder
Weasel folder ✓

Extract from "The Weasels of New York" by W. J. Hamilton, Jr. The American Midland Naturalist, Vol. XIV, No. 4, July, 1933, pp. 329-330.

"In a number of weasels, the hind gut was found to be crammed with hard-packed sand. This was not found only in trapped animals, so cannot be explained as having been ingested in the animals' frantic efforts to escape. A large male noveboracensis that was shot by a hunter late in November and presented to me in an unskinned condition, had the rectum and part of the intestine distended with much sand. I am unable to account for this inorganic matter in a number of weasels."

File Opossum

An opossum was killed at Mt. Vernon, _____ Co., by Judd Kempton, Nov. 15, 1933.

From Iowa News Release
March 29, 1934

File Muskrat

MUSKRAT BATTLES CATFISH TO DEATH

A muskrat became the victor in a battle with a 10 inch catfish according to C.C. Lille and L.F. Kiner, deputy game wardens, who witnessed the battle while patrolling the Iowa River. The muskrat swam to the bank with the fish in its mouth. The unusual thing in this story is that the muskrat is called a vegetarian.

CROSS-REFERENCE

See "Nutritional Anaemia in Mink" by Ronald G. Law and Arnold H. Kennedy. Can. Field-Nat. Vol. XLVIII, March, 1934, pp. 47-49.

~~Folder~~
~~Coon Man~~
File Coon

Shipping Point, Express and Telegraph Station, Hokah, Minn. *Reference, Hokah State Bank*

Hill Crest Fur Farming Company

Not Incorporated

B. Tippman, Operator

Breeders of Purebred Poultry, Holstein Cattle, Fur-Bearing Animals,
Game Birds and Ferrets, Purebred Seed Grains, and Ginseng

A Square Deal
Our Motto

Foreign Office
Leipzig, Germany

Hokah, Minnesota 4/7/34.

Dear Mr. Moore,

Your kind letter rec'd finds us busy getting ready for littering time of coons. A dog kennel makes a fine den for coons. Hollow logs are fine but hard to keep free of vermin. Our racoon come out nearly every day in winter to feed. A few ears of corn is fine feed or fish or horse meat. Racoons seldom den up in the ground they are tree dwellers mostly. We are raising ferrets, muskrats, coon, mink, fox, skunks & some badger. & deal in other game. Coons are as easy to rear as dogs. I have secured some seeds from members of our experiment asso. & find most of them quick & businesslike eager to locate cash sales & located Golden Glow corn, Progress wheat & Wis Early black Beans. Got hailed out in 1933 & must buy all our seed for 1934. Will soon get in the field next week, frost is out & can plow now, busy year ahead. Our herd of cows didn't have any T. B. in recent county wide test. Farming operations still need a higher price level to pay a labor income, fur business took a big advance over 1932 winter, season of 1933 & winter of 1934 was more like prosperity coming back. We also again secured our veteran's benefits we lost thru the "Economy bill" last March. The war is over but I can never forget it's after results as I returned alive but never well. Anytime I can be of assistance in answering questions on fur bearers advise me as I have been at it since 1910. With best of personal regards to you I remain



Sincerely,
Bert Tippman.
S.C. Class of 1922.

Otter ✓
Swan

Extract from "The Primitive Persists in Bird Life of Yellowstone Park," by George M. Wright. The Condor, Vol. XXXVI, No. 4, July-August, 1934, p. 151.

"We walked up the crest of the hill on the west side of Tern Lake where we could get a good, though somewhat distant, view of the Trumpeter Swan nest that we had been studying. Both parent birds were out of sight, so we started on. At the last opening in the trees we hesitated for the fateful last look.

"A black object loomed by the swan nest. With field glasses glued to our eyes, we saw that it was an otter stretching its full length upward to peer down into the next. From one side it reached out toward the center and pushed aside the material covering the eggs. Then the commotion started. With rapt interest, the otter rooted around in the dry nest material, heaving up here and digging in there, until it was more haystack than nest. Then the otter started to roll, around and around, over and over. This went on for a number of minutes. At frequent intervals its long neck was craned upward, and the serpent-like head rotated around to discover (we supposed) if the Swans were returning. At last the otter seemed to weary of this play. It climbed from the nest to the outer edge, then slid off into the water. Swimming off along the edge of the marsh grass, it was the undulating silver demon of the water world. Once it dove and several times detoured into channels through the grass, only to come right out again and continue on. It never turned back, and was finally lost to sight.

"Where were the Swans all the while we had been praying for their return? We well remembered that time two years ago when they came flying in from a far corner of the lake to drive off a Raven which had already broken one egg. Careful search with the glasses revealed the parents, all that we could see being the water-stained heads and black bills protruding from the marsh grass. One was about six hundred feet from the nest, the other not more than two hundred and forty feet. Yet both birds gave no evidence of concern. Seeing that the damage was already done, and another year's potential Swan crop for the Mirror Plateau lost irrevocably, we saw no further reason for caution. So we stripped off our clothes and waded out across the shallows. We were amazed to find all five eggs intact. There they were, all together, rolled to one side but perfectly whole. So much for circumstantial evidence. Had we gone on, Mr. Otter would have had one order of scrambled Trumpeter Swan eggs charged on his bill."

Muskrat folder

CROSS REFERENCE

See "Swimming of the Muskrat" by John D. Mizelle. Journal of Mammalogy, Vol. 16, No. 1, February 1935, pp. 22-25.

3/22/35

Muskrat Freezing to Ice

Lake Superior Muskrat & Mink Farm (Clarence Palm, Superior, Wisconsin) operate a fur farm in Superior. Feed rats within an enclosure. Use carrots and greens. He told J. F. Wilder, 2217 Ogden Avenue, Superior, that in late winter when he is feeding on the ice he has to chop out many rats with tails frozen to the ice, after they have come out to feed.

These rats live in both banks and houses. The rats maintain their own openings in the ice.

Thinks they carry 75 pairs on 80 acres, but this may be off.

A.L.

Muskrat ✓
Accidents
Douglas Co.

4/15/34 File: Fisher

Jacobek caught 2 cab(?) fisher in Price Co. in winter of 1907.

This was in Town of Emory 3 miles W. of Oneida Co. line.

A.L.

4/15/34 File Fisher

Paul B. Riis figures that it takes 16,000 acres to support a fisher in the Superior N. F.. This was the actual population where undisturbed except by illegal trapping.

AL

From New Worlds, by
Jack Van Coevering
Summer, 1935

Muskrat

MUSKRATS, considered valuable fur bearers in America, are equally valuable fur bearers in Europe, but their nuisance-value exceeds their fur-value. Five muskrats brought from Alaska in 1905 and released in Bohemia by K. Waschatke, Forest and Domain Director, were estimated in 1914 to have increased to 2,000,000. Today, all central Europe is fighting the muskrats. Reason: the rats undermine dykes and roads.

samen Habicht wieder auflebt. Wer einmal nach Falknerart mit einem Habicht längere Jahre zusammen lebte, wird ihn ebensowenig vergessen wie seinen besten Gebrauchshund.

Daß Raubvögel in der Nähe ihres Horstes rauben, konnte auch ich jahrelang beobachten. Hatte ich doch das Glück, in einem Revier jagen zu können, in dem der Wanderfalke an steiler Felswand seinen Horst hatte. Diese 100 Meter hohe Felswand stieß mit ihrem Fuß an einen Streifen Stangenholz, das stets von Eichelhähern belebt war. Doch wehe dem Häher, der die schützenden Kronen der Stangen verließ! Unfehlbar sauste ihm von einer der Felsklippen ein Falke in den Nacken, und wehe der Taube, die, fremd in der Gegend, dem Felsen zu nahe kam. Möge uns dieser Horst noch recht lange erhalten bleiben, denn allzu viele sind schon hier am Mittelrhein verwaist.

H. Groebel, Metternich.

Eine erschütternde Nachsuche. Am 10. Februar d. J. schoß ich in einem mecklenburgischen Revier nachmittags ein Stück Rotwild. Ich hatte mich entschlossen, diesem Stück die Kugel anzutragen, weil es unter den acht Stücken Wild, bei denen es stand, dadurch auffiel, daß es hell und struppig im Haar war. Nach langem Beobachten, besonders spitz von hinten, glaubte ich es als Schmaltier ansprechen zu können. Ich mußte recht weit schießen, da mir zahlreich dazwischenstehendes Rehwild ein Näherpürschen unmöglich machte. Unglücklicherweise machte das Stück im Schuß eine Bewegung, so daß es die Kugel etwas spitz von hinten bekam. Nach Zeichnen und Abkommen saß die Kugel zu tief und hatte einen Vorderlauf in Höhe des oberen Gelenks gefaßt. Es lag etwas Schnee, ich konnte die Wundfährte bis zur nahen Dickung halten. Schweiß lag in der Mitte der Fährte, das Stück schonte den rechten Vorderlauf. Die Nachsuche setzte ich für den nächsten Morgen an, nachdem ich beim Umschlagen des Jagens festgestellt hatte, daß das kranke Stück in diesem geblieben war.

In der Nacht schneite es, am Morgen wurde dann das Jagen von einigen Schützen umstellt und ein sicher auf Schweiß arbeitender Teckel zur Wundfährte gelegt. Mit vielen Widergängen führte die Nachsuche durch das Jagen in das nächste und übernächste. Der Schweiß hatte vollkommen aufgehört. Als die Fährte durch lichte Kiefern stand, schien der Hund, der bis dahin fest am Riemen gelegen hatte, zu faseln. Mit hoher Nase suchte er im Wind und war unschlüssig. Dann verwies er eine etwas erhöhte Stelle im Schnee und scharrte. Da lag ein frisch gesetztes Rotwildkalb. Ohne Zweifel hatte das bedauernswerte kranke Stück infolge Schmerz und Aufregung hier vorzeitig gesetzt. Ich machte mir bittere Vorwürfe, beim Schuß nicht noch vorsichtiger zu Werke gegangen zu sein. Das Kalb war sehr viel weiter entwickelt, als ich es je bei im Februar zur Strecke gekommenen Alttieren festgestellt habe. Es war über 60 cm lang. Ein Teil der Bauchdecke war durch die Nabelschnur ausgerissen. Viel schweißig-wässerige Flüssigkeit, die das Stück beim Setzakt verloren hatte, war zu finden. Am Nachmittag kam das Stück dann nach langer Hetze vor dem Hund zur Strecke. Das erste Geschoß hatte den Gelenkknochen verletzt und zwei Rippen gestreift, dem Stück also sicher große Schmerzen bereitet. Es war zum erstenmal beschlagen, muß aber, nach der Stärke des Kalbes zu schließen, sehr zeitig gebrunftet haben. Die vorgeschrittene Entwicklung des Kalbes dürfte mit ein Grund zu dem traurigen Ereignis des vorzeitigen Setzens gewesen sein.

Waltborn.

File Marder

Zur Charakteristik des Edelmarders. Im vergangenen Winter hatte ich reichlich Gelegenheit, mich von der vielseitigen Leistungsfähigkeit des Edelmarders zu überzeugen. Vorausschicken muß ich, daß ich in einem etwa 100 m vom nächsten Wald abliegenden Nebengehöft Geflügelzucht betreibe. Hier verschwanden zunächst Anfang Dezember auf unerklärliche Weise aus den in einem offenen Schuppen befindlichen Nestern die Kampfer-Nesteier. Eines Morgens fehlte dann eine von drei Bronzeputen, die auf einem am Gehöft stehenden Obstbaum zu nächtigen pflegten. Am nächsten Morgen fehlte wieder eine Pute, und die auf der anstoßenden Wiese umherliegenden Federn ließen erkennen, daß die Puten dort gerissen waren. In einer unter einem Vordach angebrachten Taubenhöhle reiften ein Paar Jungtauben als seltene winterliche Delikatesse ihrer Bestimmung entgegen, aber als ich sie dieser zuführen wollte, waren sie spurlos verschwunden. Aufklärung sollte jedoch bald erfolgen, denn bereits am anderen Tag mußte ich feststellen, daß ein Marder in den im Hausgiebel angebrachten Taubenschlag eingebrochen war und hier das übliche Blutbad angerichtet hatte. In der nächsten Nacht war er vom Dache aus in einem zur Zeit leerstehenden Stall eingedrungen, der aber noch von einigen Hennen als Schlafraum benutzt wurde. Zwei Rhodeländer Hennen lagen ohne Kopf am Boden!

Da ich mit der Wiederkehr des Marders rechnete, legte ich nun einen Schwanenhals und war sehr erstaunt, am andern Morgen statt des vermuteten Steinmarders einen Edelmarder darin vorzufinden. Es war eine nur mittelstarke Fähe, deren Tracht sich als unbefruchtet erwies, soweit ich dies feststellen konnte. Als kurz darauf Schneefall eintrat, spürte ich, daß jede Nacht ein Fuchs die nächste Umgebung des Gehöftes besuchte, so daß ich mir nun ein Bild vom Verlauf des Puten-Dramas machen konnte. Die Puten waren des Nachts vom Marder überfallen und mit diesem auf die anstoßende Wiese geflattert, um hier vollends abgewürgt und wohl auch teilweise angeschnitten zu werden. Der Fuchs hatte sie dann als gute Beute in Sicherheit gebracht. Interessant ist, daß der Marder die stark riechenden Kampfer-Eier verschleppt hat, denn daß er sich diese einverleibt hätte, ist wohl kaum anzunehmen. Aus dem Umstand, daß es sich um recht kräftige Puten und einen verhältnismäßig schwachen Marder handelte, kann man ermessen, daß der Edelmarder unserem Auerwild recht gefährlich werden kann.

Ludloff.

Vom Fuchs im Schwarzwald. In den umliegenden Revieren (Amt Freiburg, Villingen) hört man von seiten der Jagdbehörden, daß sich die Füchse heuer stärker als sonst vermehrt haben. Bedauerlicherweise mußten einige Bauern auf einsamen Gehöften darüber Klage führen, daß die Fähen während der Zeit der Jungenaufzucht von den Gehöften 10 bis 20 Hühner, einige Enten und sogar Gänse weghol ten. Seitdem Heumahd und Kornernte vorbei sind, hört man weniger von solchen Räubereien. In vielen dieser Reviere war in anderen Jahren dagegen keine Fuchsspur zu finden.

Heinrich Wehrle.

Ist heutzutage so etwas noch möglich?! Die „Torgauer Zeitung" (Kreisblatt) bringt unter dem 7. Juni 1935 in Nr. 131 folgende Notiz: „Fischzug auf einen Bock. Eine schwierige Zollfrage ergab sich unlängst in der Nähe von Basel an der deutsch-schweizerischen Grenze. Fischer, die am Rhein angelten, bemerkten plötzlich einen Rehbock, der fröhlich in den grünen Fluten schwamm, sein majestätisches Geweih hoch in die Lüfte streckend. Der Bock schien zu überlegen, welchem Ufer er sich zuwenden sollte. Endlich entschloß er sich für das schweizerische, nichtsahnend, daß hier der Tod auf ihn lauerte. Denn die Fischer benutzten sofort die gute Gelegenheit, um den saftigen Braten zu erlegen. Noch nie hatten sie so einen herrlichen „Fischzug" aus dem Rhein getan. Schon war der Rehbock zerlegt, schon war der saftige Rücken gebraten und bereits zum Teil in den Fischermägen verschwunden, als sich plötzlich die Zollbehörde einmischte, die irgendwie von dem seltenen Fang Wind bekommen hatte. Dieser Bock, sagte die Zollbehörde der Schweiz, war ganz gewiß ein deutscher Bock, bestimmt ist er nach der Schweiz hinübergewechselt und demnach zollpflichtig. Die Fischer hätten gern das Gegenteil bewiesen, aber alles Sträuben half nichts. Sie mußten noch nachträglich den Zoll erlegen für den Rehbock, den sie sozusagen aus dem Rhein „geangelt" hatten. . . ." J.

Flugleistung einer Möwe. In siebzig Tagen von der Kurischen Nehrung bis Belgisch-Kongo. Die Vogelwarte Rossitten erhielt kürzlich aus der Gegend von Coquilhatville in Belgisch-Kongo einen Brief mit der Mitteilung, daß am 17. Oktober 1934 am Kongo eine Möwe mit einem Fußring „Vogelwarte Rossitten 60829" erlegt wurde. Aus den Büchern der Vogelwarte Rossitten ergab sich, daß es sich um eine junge Heringsmöwe, vielleicht von einer Brutkolonie Finnlands oder des Eismeeres stammend, handelt, die am 8. August 1934 an der Küste der Kurischen Nehrung von Seefischern gefangen, und in der Vogelwarte beringt und freigelassen worden war. Sie war nach 70 Tagen tief im Herzen Afrikas angetroffen worden.

Wie man aus Rückmeldungen anderer beringter Heringsmöwen sicher schließen darf, ist diese Möwe quer durch das europäische Festland von der Kurischen Nehrung aus ans Mittelmeer und von da den Nil aufwärts geflogen, um dann im Quellengebiet des Nils zum Flußsystem des Kongo überzuwechseln. Bei einem Flug in der Luftlinie hätte dieser Vogel zirka 6200 Kilometer in 70 Tagen, am Tage also durchschnittlich 89 Kilometer, geleistet. Ganz gewiß hat er aber mehr oder weniger große Umwege beschrieben und eine durchschnittliche Tagesleistung von vielleicht 110 bis 120 Kilometer entwickelt.

P. A.

Ein frecher Zigeuner. Der Jäger eines Nachbarbezirkes traf eines Morgens einen Zigeuner, der im Wald kreuz und quer herumstrolchte und suchte. Auf Anruf blieb der Zigeuner, ein baumlanger, starker Kerl, stehen und erklärte dann, er gehe spazieren. Der Jäger gab ihm aber zu verstehen, daß er ihn für des Wilderns verdächtig halte und befahl ihm, die Arme hoch zu nehmen, damit er ihn nach Waffen durchsuchen könne. Der Zigeuner dagegen meinte, das falle ihm gar nicht ein. Als ihm verständlich gemacht wurde, daß er dann abgeführt werden müsse, und als das Kommando zum Vorausschreiten erfolgte, blieb der Zigeuner gelassen stehen und erklärte, er werde auch nicht einen Schritt mitgehen. Nach einer halben Stunde standen beide auch noch auf demselben Fleck, und nach einer weiteren halben Stunde verließ der Jäger den Ort seiner Jagdpolizeigewalt als Unterlegener. Nun wird der Jäger viel deswegen gehänselt, doch wenn er uns im Kreise die Frage vorlegt, was denn jeder einzelne in seinem Falle getan hätte, dann sind die Ansichten recht verschieden. Denn beim Wildern war der Zigeuner nicht unmittelbar betroffen worden, dagegen widersetzte er sich der Polizeigewalt. Seine körperliche Überlegenheit ließ eine physische Geltendmachung der Polizeigewalt nicht zu, und den Kerl über den Haufen zu schießen, hätte doch wohl jeder angesichts der durchaus nicht gefährlichen Sachlage Bedenken getragen.

Combe.

Skunk gestation period - 63 days

(C. Emerson Brown, Jour. Mammalogy, 1936)

brüten konnte. Damals gab es kaum freigemähte, unausgebrütete Gelege, auch nicht abgemähte Läuschen oder von landwirtschaftlichen Maschinen verletztes Jungwild. Das Wild hatte Ruhe zur Fortpflanzung und das junge Volk eine ungestörte Kinderstube mit guter Deckung. Wurden im Spätsommer die Schafe über diese unbearbeiteten Acker geführt, so konnte das nicht mehr stören und schaden, weil die Jugend bereits herangewachsen war. Und war der Abschuß im Jahre vorher auch noch so groß, im neuen Jagdjahr gab es doch wieder genügend neues Wild, weil das wenig übriggebliebene eben die Möglichkeit, Ruhe und Gelegenheit hatte, sich reichlich fortzupflanzen. Und das hat es ja auch gründlich besorgt. Und wenn der Bauer reichlich Stalldünger untergepackt hatte, wenn unter den groben Schollen so viel Stroh lag, daß die dicken Strohbülten herausragten, dann gab dies ein prächtiges, warmes Winterlager für den Hasen und für das Rebhuhn gute Deckung in Gefahr. Die Zeiten sind auch für das Wild anders geworden. Dem Landwirt steht künstlicher Dünger zur Verfügung, den er sich in beliebigen Mengen anschaffen kann. Er läßt daher auch nicht das kleinste Stückchen Acker ungenützt liegen. Das Wild hat zum Setzen, zum Brüten, zur Aufzucht keine Ruhe mehr, ein großer Teil des Jungwildes kommt um. Ausgemähte Gelege werden vorzeitig verlassen, Jungwild wird durch landwirtschaftliche Maschinen getötet oder so schwer verletzt, daß es leicht eine Beute des Raubwildes wird. So hat sich der künstliche Dünger in bisher noch nicht erörterter Weise ungeheuer nachteilig für den Wildbesatz ausgewirkt. Der Wildbahn wird ja in den letzten Jahrzehnten viel mehr Wild entzogen als früher. Die vollkommeneren Waffen machen die Erbeutung des Wildes immer leichter. Auch durch die weit größere Anzahl der Jäger wird der Wildbesatz mehr gezehntet. Nicht zuletzt tragen auch die höheren Pachtpreise zu dem stärkeren Abschuß bei, weil viele Jäger durch größere Jagdbeute den Betrag wenigstens einigermaßen wieder hereinbekommen wollen, um den sie sich bei der Jagdversteigerung über ihre Verhältnisse hinaus verstiegen haben. Schließlich bewirken auch die fortgeschrittenen, immer zahlreicher werdenden Verkehrsmittel wie Eisenbahn, Auto, Motorrad, welche immer mehr bis in die entlegensten Gegenden vordringen und sich mit stets gesteigerter Geschwindigkeit bewegen, eine immer größere Wildvernichtung. Zu dieser Vernichtung kommt nun noch die Behinderung des Wildes in der Vermehrung durch die vorstehend geschilderte hundertprozentige Bodenbewirtschaftung, ferner durch die schon oft verurteilte Ausrottung der Hecken, Trockenlegung von Bruchländern und vielem anderen. Es kann sonach nicht verwunderlich sein, wenn der Besatz an Niederwild, vor allem an Rebhühnern, dauernd stark zurückgeht. Die fortschreitende Ausdehnung der Städte, Siedlungen und Industriestätten darf auch nicht vergessen werden. Meine Wände schmücken brave Gehörne, die ich in früher Jugend dort erbeutete, wo bereits seit Jahrzehnten unzählige Räder surren, Hämmer stampfen und viele tausend Menschen emsig arbeiten, dort, wo heute Siemensstadt steht.

Carl Rabenalt.

Helft den Wildenten! Zum Artikel des Herrn von Oertzen in Nr. 45 dieses Blattes erlaube ich mir folgendes zu sagen: Auf unseren Jagden im Warthebruch wurden viele Wasserhühner, hier Lietzen genannt, geschossen, die entweder mit 20 Pfg. verkauft oder an den Fischer verschenkt wurden, der uns seine Kähne zur Verfügung gestellt hatte. Die Frau des Fischers hat uns des öfteren auch Wasserhühner gebraten, und sie schmeckten recht gut, wenn auch nicht wie Wildenten. Die Vorbereitung der Wasserhühner zum Braten bestand nicht im Abziehen der Haut, wie Herr von Oertzen vorschlägt, sondern nur im Abbrühen mit kochendem Wasser, was aber gründlich geschehen muß. Die Fischersfrau stand auf dem Standpunkt, daß der tranige Geschmack nicht in der Haut liegt, sondern auf derselben, da das Drüsenfett in die Federn gerieben wird und von da aus auch auf die Haut kommt. Es wird ja auch von der Wildgans behauptet, man könne sie nur nach abgezogener Haut essen. Ich habe aber schon manche Wildgans mit Genuß verspeist, ohne die Haut abzuziehen. Nie aber habe ich es unterlassen, die Gans vor dem Braten abbrühen zu lassen. Nur eine einzige Gans ist mir als ungenießbar in Erinnerung, die im März geschossen war. Hier handelte es sich wohl um ein uraltes Stück, das reichlichen Trangeschmack hatte. — Die Eier der Wasserhühner sind sehr wohlschmeckend und den Möweneiern gleichzustellen, wenn sie sie nicht sogar übertreffen. Wir haben uns die Eier stets hart kochen lassen. Das Weiße sieht wie beim Hühnerei aus, das Gelbe hat eine mehr ziegelrote Färbung. Die Fischer haben die Wasserhuhneier immer gern mitgenommen, wo sie sie fanden, ebenso die Tauchereier. Mir sind die Eier immer eine willkommene Bereicherung meiner Küche gewesen. Das Rührei von diesen Eiern ist hervorragend. — Sehr interessant, wenn auch nicht ganz ungefährlich, ist die Lietzenjagd vom Paddelboot aus. Ich habe diese Jagdart als Leutnant auf dem Woldenberger See viel ausgeübt. Ich hatte dazu ein aus drei Brettern zusammengeschlagenes Boot, wie es die Wartheflößer sich anfertigen und am Schluß der Reise mit dem Holz zurücklassen, es kostete damals 1 Mk. Ein solches Boot ließ ich an der Spitze und am Ende mit Kasten versehen, in die das nötige Handwerkszeug kam. Vor dem Sitzplatz war ein Eisengestell als Gewehrauflage. Das Gewehr war an dieses Gestell so festgebunden, daß bei Umschlagen des Bootes das Gewehr nicht im Wasser verlorenging. Paddelboote heutiger Bauart kannte man damals noch nicht. Mit diesem Boote fuhr ich auf den See hinaus und, leise paddelnd, an den Rohrrändern entlang. Die Wasserhühner kamen fast immer dicht vor dem Boot aus dem Schilf heraus und wurden dann mit mehr oder weniger Erfolg beschossen. Allerdings mußte man darauf achten, daß man nicht seitwärts schoß, denn der Rückstoß des Gewehres warf das leichte Boot um, wenn man nicht sehr gut balanzierte. Mir ist das Boot ja nie umgekippt, doch manchmal war es nahe daran. Selbstverständlich muß man schwimmen können und so frei im Boot sitzen, daß man nicht daran hängenbleibt. An den Stellen, wo Wasserhühner aus dem Rohr kamen, fand ich dann auch meist das Nest und konnte die Eier mitnehmen. Auch den Haubentaucher habe ich mit dem Boote gejagt. Sah ich auf dem freien Wasser einen Taucher, so ging es in voller Fahrt an ihn heran. Das Gewehr lag griffbereit. Sowie der Taucher tauchte, fuhr ich mit Volldampf in der Richtung weiter, in der er getaucht war, und war dann meist auf Schußweite heran, wenn der Taucher wieder auftauchte. Dann wurde das ebenfalls festgebundene Paddelruder schnell fortgeworfen und die Flinte ergriffen. Bevor der Taucher dann von neuem tauchte, war der Schuß heraus. War der Taucher aber schneller, so ging eben der Verfolgungskampf weiter. Diese Jagdart ist spannend und aufregend.

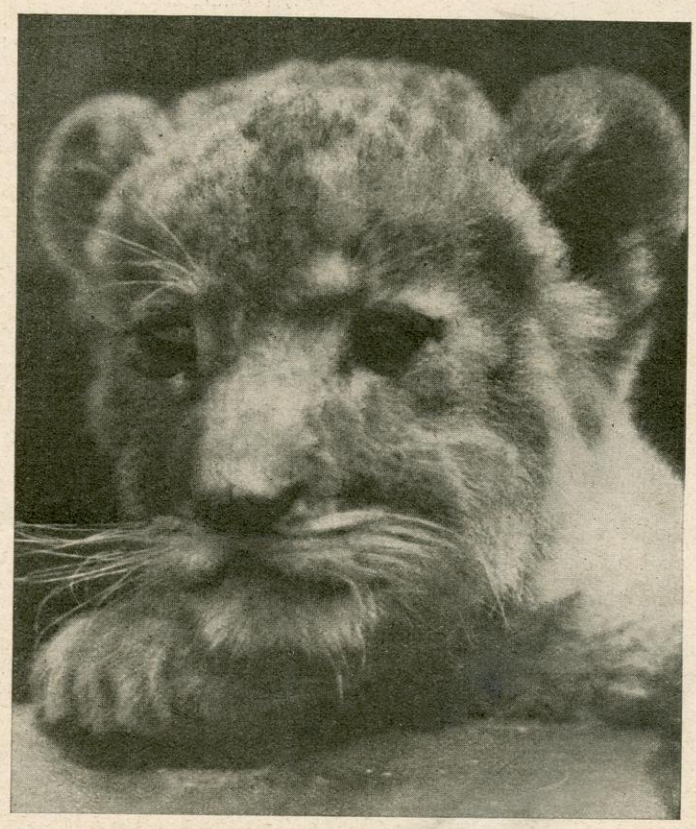
von Zychlinski.

Erlebnis mit Fischottern. Herr „Nimrod" erzählt in Nr. 37 der „Deutschen Jagd" „Zwei Erlebnisse mit Fischottern". Auch ich kann ein Erlebnis schildern, wonach der sonst so scheue Bursche auch frech sein kann. Daß er außer Fischen auch Enten greift, ist mir bekannt. Aber daß er sich an den wehrhaften Fischreiher heranwagt, war mir neu. Es war auf der von mir gepachteten Wasserjagd auf der Having, einer großen Einbuchtung in unsere schöne Insel Rügen. Als ich mich mit meinem Boot etwa Mitte September 1935 am Rohr entlang schob, fiel mir ein großer Fleck schwimmender Federn, etwa einen Meter vom Rohrgürtel entfernt, auf. Sie waren weißgrau, und da sie nicht



Er ist wieder da! (Phot. Seidenstücker, Berlin)

von unseren Enten stammen konnten, die Eisenten zu dieser Zeit aber noch nicht hier sind, so stand ich vorläufig vor einem Rätsel. Aber die Lösung sollte ich bald haben. Ich schob mich ins Rohr und deckte mich leidlich. Nicht lange danach, bei noch sehr gutem Büchsenlicht, hörte ich ein öfteres Knacken von altem Rohr, so daß ich annahm, es pürscht sich ein Mensch langsam durchs Rohr. Plötzlich hörte ich ein klägliches Schreien, dann ein aufgeregtes Flügelschlagen, und darauf stieg ein Fischreiher aus den Binsen und fiel etwa 15 Meter vor meinem Boot auf das offene Wasser ein. Aus seinem Gebaren konnte ich jetzt schließen, daß er etwas beobachtete, denn er äugte aufgeregt in die links von mir stehenden Binsen. Mich bemerkte er überhaupt nicht, obwohl er gerade vor der von mir freigelassenen Schußöffnung stand. Als auch ich diese Gegend beobachtete, kamen aus den Binsen, etwa 10 Meter neben meinem Boot, zwei Fischotter herausgeschossen und strebten direkt auf den Fischreiher zu. Der Fischreiher stieg wieder auf, strich nur etwa 30 Meter links ab und stellte sich wieder in das 25 cm hohe Wasser. Die Fischotter rannen nun unter mehrmaligem Spielen wieder in das Rohr zurück. Kaum waren aber wieder einige Minuten vergangen, als etwas abseits beim Fischreiher die beiden Fischotter wieder erschienen und auf den Fischreiher zurannen. Da er im offenen Wasser war, konnte er sich auch jetzt wieder erheben und strich wieder direkt vor mein Boot. Die Fischotter, denen es abermals nicht gelungen war, seiner habhaft zu werden, rannen wieder langsam ins schützende Rohr zurück. Mehrmals hörte ich noch das Knacken vom Rohr, dann wurde es still um mich. Der Fischreiher stieg langsam zur Seite und war dann hinter einem Rohrvorsprung meinen Blicken entschwunden. Jetzt gedachte ich der schwimmenden Federn und wußte nun auch, daß es Reiherfedern waren. Wahrscheinlich hatten die beiden Fischotter den Reiher schon einmal gegriffen. Dies war auch anzunehmen, denn als gesunder Reiher wäre er jedenfalls sofort nach dem ersten Angriff abgestrichen. So flog er aber nur Strecken von etwa 30 Meter. Einen verendeten Reiher habe ich später vor dem Rohr nicht gefunden. Da ich in meinem Revier die wenigen Reiher schone, entschloß ich mich nicht zum Abschuß. Allerdings wäre es für mich interessant gewesen, die etwaige Verletzung festzustellen. Martin Winkler,
Baabe, Insel Rügen.



Löwenkinder-Gesicht (Bilderarchiv Zoologischer Garten Berlin)

Gehörnte Ricken. Über dieses Thema kann ich ausführlich berichten, denn wir haben immer einige im Revier gehabt, so lange ich denken kann, und ich habe auch heute noch einige. Geschossen habe ich selber im ganzen vier. Meine hierbei gemachten Erfahrungen will ich gern zur Verfügung stellen, obgleich sie zum Teil für mich schmerzlich und peinlich gewesen sind, aber gerade deshalb will ich sie bekanntgeben, denn dadurch dürften viele Zweifel zum Nutzen des Rehstandes behoben werden. Die erste gehörnte Ricke schoß ich als solche im Spätherbst 1912, und zwar mit voller Überlegung, denn sie stand allein, und in der Jagdliteratur wurde damals allgemein die Ansicht vertreten, daß diese Ricken meist gelt seien und daher abgeschossen werden müßten. Beim Aufbrechen war ich sehr erstaunt, daß die Ricke Milch hatte, also auch geführt haben mußte. Im Mai 1913 schoß ich meiner Meinung nach auf einen der so verpönten Knopfspießer und stellte beim Aufbrechen tief beschämt eine hochbeschlagene gehörnte Ricke mit zwei gesunden Embryos fest. Sie stand auf einer Wiese in so hohem Grase, daß ich ihren Zustand nicht erkennen konnte und mich nur auf das Gehörn verließ. Von nun an war ich sehr vorsichtig, und konnte Jahr für Jahr gehörnte Ricken mit Kitz feststellen. Gelegentlich eines Feldurlaubs schoß ich dann im November des Jahres 1916 eine stark abgekommene, gehörnte Ricke aus einem Sprung Feldrehe. Sie war sonst anscheinend gesund, aber sicher über zwölf Jahre alt. Die letzte gehörnte Ricke schoß ich ebenfalls in stark abgekommenem Zustand im Dezember 1935. Sie war gleichfalls sehr alt und hatte außerdem einen schlecht verheilten, doppelten Kieferbruch, der meines Erachtens nur durch einen Zusammenprall mit einem Auto entstanden sein konnte. Die Ricken haben alle fast genau das gleiche Gehörn. Es ist nicht gesegt, mit dem Glase aber deutlich zu erkennen. Die Vererbung der Ricken ist ohne Zweifel recht gut. Dies ist leicht zu erkennen, wenn sie mit ihren vorjährigen Bockkitzen zusammenstehen. Zwitterbildung habe ich nie feststellen können; ich halte die Gehörnbildung bezüglich der Vererbung unbedingt für gut und erkläre mir daraus die über dem Durchschnitt gute Gehörnbildung der Böcke in meinem Revier. Boldt.

Wie stark sind die Gehecke unseres Raubwildes? Laut Ausweis meines Jagdbuches sah ich am 30. Mai 1896 im Staatswalde von Kattenhofen (Lothringen) bei der Pürsch eine Edelmarderfähe mit vier Jungen. Morgens gegen 5 Uhr traf ich die Gesellschaft auf einer kleinen Waldblöße an. Als die Fähe mich eräugte, baumte sie an einer stärkeren Buche auf, gefolgt von den vier Jungen, worauf alle in einem Baumloch verschwanden. Ich setzte mich gedeckt an, wartete einige Zeit und quäkte dann auf der bloßen Hand. Neugierig steckte die Fähe den Kopf aus dem Loch, baumte ab und kam auf mich zu. Als sie mich eräugte, fauchte und keckerte sie, und ich mußte sie schließlich mit dem Jagdstuhl abwehren, da sie wütend an mir hoch wollte. Die Mutterliebe hatte sie jedenfalls zu diesem Wutausbruch getrieben.

Brehm sagt über die Gehecke der Marder: „Die Jungen, deren Zahl erheblich, so viel man weiß, zwischen zwei und zehn schwankt, kommen blind zur Welt und müssen lange gesäugt und gepflegt werden." Riesenthal schreibt in seinem Jagdlexikon: „Der Edelmarder ranzt schon im Januar, wobei es zu bissigen Balgereien zwischen den Rüden kommt. Nach neun Wochen bringt die Fähe drei bis vier etwa zwei Wochen hindurch blinde Jungen, welche sie mit großer Liebe und Sorge hegt und säugt." — Was die Ranzzeit des Edelmarders betrifft, so lesen wir ja in der Nr. 41/1936 vom 10. Januar, daß der Hessenjäger am 17. Juni 1935 ein Edelmarderpaar überraschte, als der Rüde die Fähe deckte. Jagdbischof.

Freche Gesellen. An einem trüben, nebeligen Sonntagmittag, kurz vor Weihnachten vorigen Jahres befand ich mich draußen, wo eine Fichtendickung an ein Buchenaltholz des Nachbarreviers grenzt. Ich stand neben einer Buche, den Hund angeleint neben mir, als in der Dickung etwas angehechelt kam und ein Fuchs keine drei Schritt neben mir erschien. Mein sechs Monate alter Kurzhaar fuhr Laut gebend nach dem Fuchs, aber anstatt daß dieser schleunigst die Flucht ergriff, setzte er sich und zeigte dem Hund keckernd das Gebiß. Erst als ich mit dem Stock nach ihm schlug, zog sich der Fuchs noch immer keckernd in die Dickung zurück und verschwand vor dem geschnallten Hund in einem Bau.

In einem Nachbarrevier schoß der Forstbeamte im September auf einem Kahlschlag einen Bock, der nach wenigen Fluchten vor der Dickung zusammenbrach. Keine zehn Schritt von dem Bock erschien darauf ein Fuchs auf dem Schlage und äugte interessiert nach dem noch schlegelnden Bock. Der Schütze, welcher ungedeckt etwa hundert Schritt an dem Schlage stand, schob eine neue Kugelpatrone in den Lauf seiner Büchse und schoß den Fuchs vorbei. Dieser ergriff aber nicht etwa die Flucht, sondern schlich sich immer näher an den Bock heran, bis ihn die nächste Kugel neben dem Bock verenden ließ. Wie sich herausstellte, war es nicht etwa ein Jungfuchs, sondern ein alter Rüde! H. A. Gleitsmann.

Zu: **„Wie lange dauert die Rehbrunft, und welche Böcke beschlagen die meisten Ricken?"** (Nr. 43 der „Deutschen Jagd"). In meinem Jagdbuche finde ich folgende Notiz: „14. Oktober 1890. Heute nachmittag 3 Uhr beobachtete ich auf den Wiesen einen Gabelbock, der in dem Zeitraum von 12 Minuten eine sehr starke Ricke dreimal beschlug. Nach jedem Akt zog der Bock, ohne sich inzwischen niederzutun, mit dem Windfang am Feuchtblatt der Ricke hinter dieser her, bis es zum nächsten Beschlag kam. Erst nach dem dritten Beschlag taten sich beide Stücke nieder." Landrat a. D. von Meyer, Frankfurt (Oder).

File muskrat

July 29, 1936

Mr. Aldo Leopold,
Madison, Wis.

Dear Mr. Leopold:

An old trapper, a neighbor of mine, has called my attention to the condition of the muskrats in this neighborhood. He says they are short of feed and die during the winter. He suggest that around here they be trapped this fall as they die anyway. He does not trap now as he is too busy with his mink. Last winter, he tells, one rat lived at a spring on his place, eating water-cress. His wife, one day, saw the rat travelling to the river. Two or three days later, he found the rat dead, on the river bank. Two or three years ago, he found 15 dead rats in a slough near his home.

I do know that there are no cat-tails

arrow-head or water lilies in the river here now.

I do no trapping myself, but knowing of your interest in game I pass this information on.

Yours truly
E. L. White.
Ft. Atkinson, Wis.

Mail address - R 2, Jefferson, Wis.

Muskrat

Gestation period - 21 days (T. H. Patton,
St. Louis)

(C. Emerson Brown, Jour. Mammal., 1936)

CORNELL UNIVERSITY
ZOOLOGICAL LABORATORY
ITHACA, N. Y.

file fisher

November 3, 1936

Professor Aldo Leopold,
1532 University Avenue
Madison, Wisconsin.

Dear Professor Leopold:

There is no manner of determining the number of fisher taken in New York annually, but rest assured they are far from extinct. The Annual Report of the New York Conservation Department for 1930 list 66 fisher taken in the Adirondack region in 1928. In the 1935 report there were recorded 31 fisher taken in the 1933-34 season. As I have pointed out elsewhere (Scientific Monthly, Feb. 1935, pp. 182-187) such returns are notoriously inaccurate, and <u>always too low</u>!

At present I am working on a manuscript of the fur resources of the state. Many of my Adirondack trapper friends whom I know personally, have given me no end of valuable data on the fisher and marten and their present status in the big woods. One writes that during the past 2 years fisher and marten have been driven out of certain sections by the use of dynamite in the hands of CCC gangs cutting fine roads into the remote sections. That may be one reason they were caught more frequently last season in comparatively settled sections.

Fisher are not difficult to take, and are frequently caught in fox sets. Others chase them into hollow trees, smoke them out and thus capture a few. One of my advanced students, while returning to his home at Axton, New York, during the Thanksgiving recess, 1935 made a cubby set for fox or marten. He used a deer paunch for bait. The trap was left set, and when he returned to it a month later, held a fine, well furred female fisher, for which he received $40. It's skeleton is now in our collection.

Current low prices of the past 5 years have taken some of the pressure from marten and fisher trapping, but with rising prices, in spite of a now closed season on marten and fisher in New York, a number will be taken and bootlegged into Quebec.

It is difficult to essay how many fisher are annually taken. It probably runs between 100 and 200. As a matter of fact, I really think marten are now scarcer than fisher, contrary to reports of the Conservation Department's Annual Report.

Sincerely,

W. J. Hamilton, Jr.

WJH:EB

COPY

Cycle folder
Weasel folder

STATE OF WISCONSIN
Conservation Department

Ladysmith, Wisconsin
March 16, 1937

To the Director
Wis. Conservation Dept.
Madison, Wisconsin

Attention: F. G. Wilson

Dear Sir:

Frequent observations during the winter show that field mice have hit a new low. Last winter there were thousands of field mice that did damage to field and forest crops on a large scale. This year there are very few mice and no damage noticeable. The cause of this rapid decline (not figuring possible disease ravage) is due to the extreme numbers of weasel this year that were not present last year.

On a sample plot of young maple where there was much girdling damage last winter, I saw tracks of two mice and six weasel this winter.

Trappers in Rusk and adjoining counties have caught hundreds of weasel this winter. The mice were done away with but I think too many weasel were taken to insure future control of the mice.

Rabbits seem to be on the increase so maybe it is their turn to gnaw.

Very truly yours,

Kenneth Beechel
Area Forester

Muskrat

Iowa's Muskrats Are Travelers

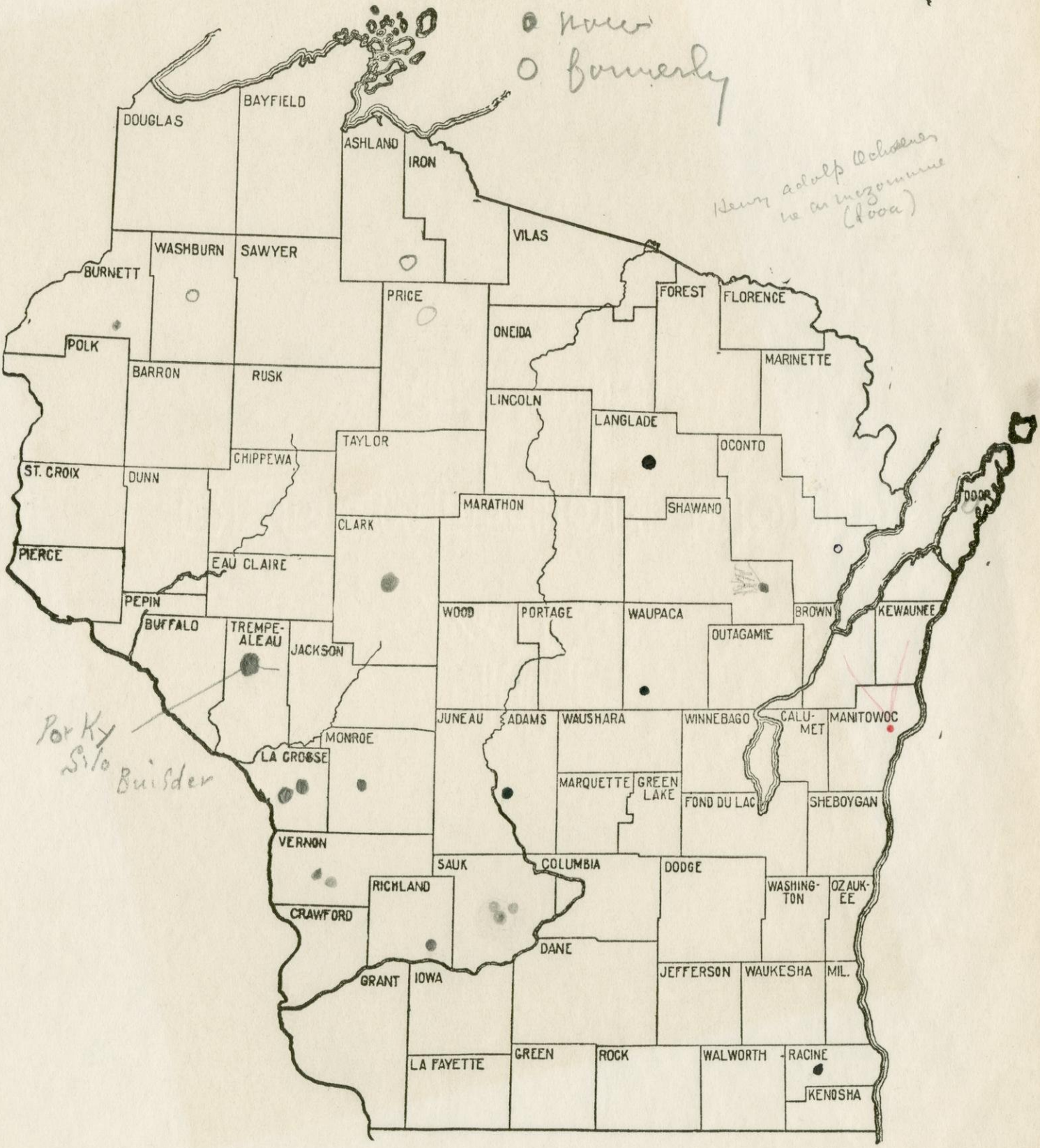
Some idea of the distance a muskrat will travel is given in a report of Dr. Paul L. Errington, Research Assistant Professor of the Iowa State College. A tag was placed on a muskrat when 8 days old on July 5, 1935, and was released on the northwest shore of Round Lake in Clay County. The same animal was killed in a hog house owned by J. W. Zerfoss of near Superior in Dickinson County and near Swan Lake in the early part of the winter of 1936-1937. The distance between these points is about 21 miles. Dr. Errington has one other report of a tagged muskrat which was taken 4 miles from the place it was tagged.

muskrat
(Beaver Breeder
July
1937

Farmers Short Course, 1938

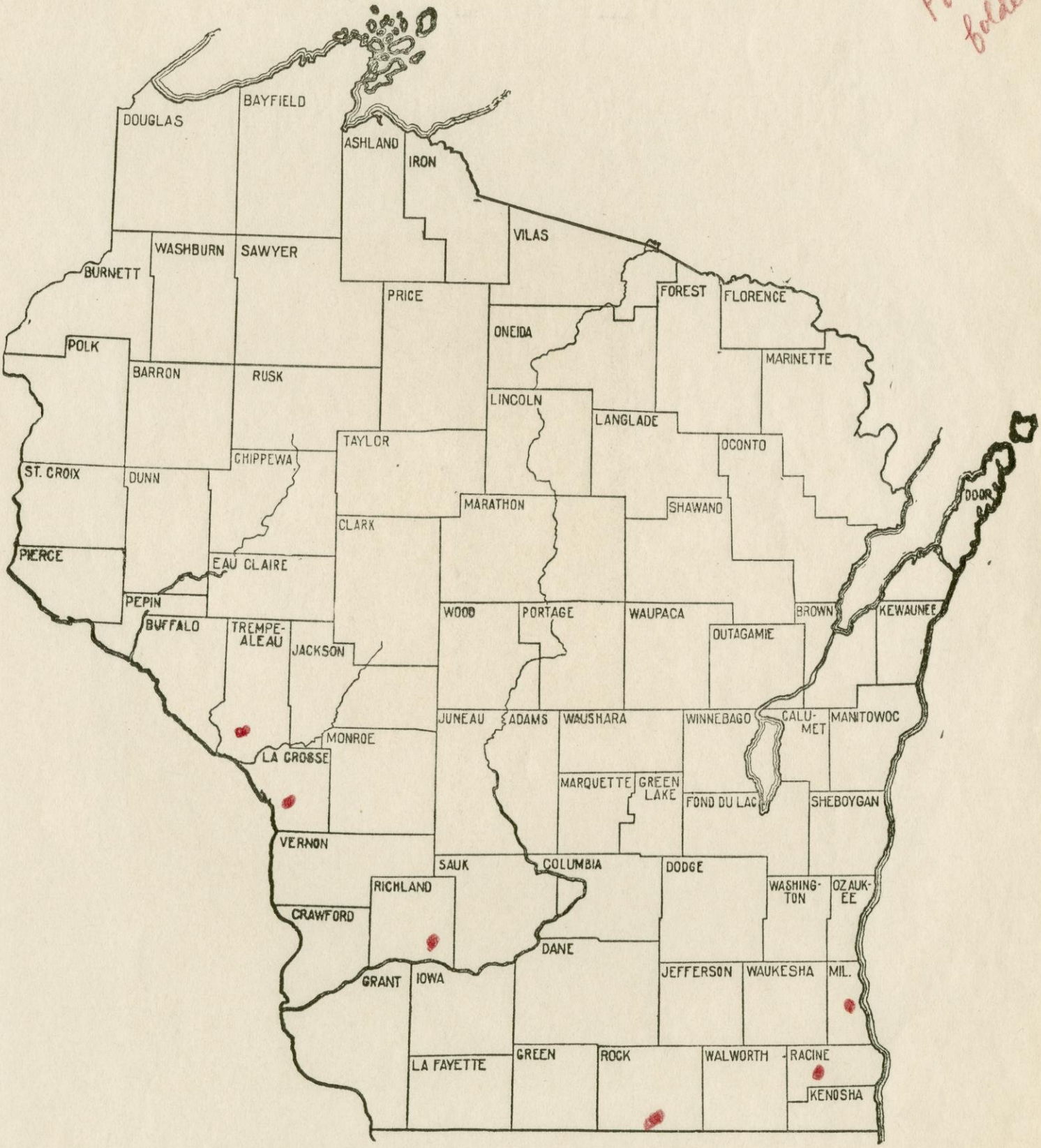
Students who Have seen Badgers

File Badger



Opossums Reported by Short-Course Students
1938.

Possum folder



Copies for Buss
Sowls
Skunk folder

Extract from note, "Feeding Behavior of a Skunk," by A. M. Stebler, in Jour. Mammalogy, Vol. 19, No. 3, August, 1938, p. 374:

"Probably the most interesting mannerism observed concerned the way in which he obtained the contents of hens' eggs. First he tried to open an egg by biting it vogorously, but his mouth was too small to permit him to secure an effective purchase upon it. He then walked around the egg several times, cuffing it with a front foot as he encircled it. This method was likewise of no avail. Eventually he straddled the egg, grasping it with his front feet in a manner not unlike that assumed by the center of a football team while waiting for the signal to snap back the ball. Now he forcibly passed the egg between his hind legs, apparently in an attempt to strike an object with it. Immediately upon snapping the egg, he would look or turn around as if to locate the egg or to see if it was broken. After a few trials he broke it against a stone window sill. Then he lapped up the contents."

Clip Fisher

THE FISHER

The fisher, one of the largest members of the weasel tribe, and the possessor of a very valuable skin, has just recently, for the first time, been reported as having occurred or occurring in Region 2. Ranger Stanley Zeger learned this fall that a trapper named Lars Scorr caught two on Bear-tooth Plateau of the Shoshone Forest in the early 1920's near the Montana State line. Tracks and other fisher signs have been irregularly reported several times since up to the last two years.

In make-up the fisher resembles the marten very closely, but is four or five times larger and its fur is a much darker brown. It is an inhabitant of the colder forested regions and is said to be the most proficient and powerful of the smaller carnivores. It is said to be the most active arboreal hunter, being able to catch marten, squirrels and other mammals inhabiting the tree tops. It is just as good a hunter on the ground as in the trees, and is also said to be one of the few mammals which can prey on porcupines with impunity.

-A. A. MCCUTCHEN - SHOSHONE

Rocky Mt. Region Bulletin (U. S. Forest Service), Vol. 22, No. 2, February, 1939.

File: Otter folder
Bayfield Co.

Note in Journal of Mammalogy, Vol. 20, No. 3, August 1939, p. 371

- - - - -

Swimming Power of the Canadian Otter

Conservation Warden Ben Waskow, Bayfield, Wisconsin, recently reported that on February 24, 1939, Ben Gustavson, a commercial fisherman, also of Bayfield, pulled up a set line from 42 feet of water and 500 feet from the shore of Bass Island, Apostle Islands, Lake Superior, to find an otter (Lutra canadensis) on one of the hooks. The bait was missing from several hooks, and the otter must have been caught on a hook while taking the bait or a larger fish. The otter had been drowned in its efforts to release itself.

This fishing is done through holes in the ice which covers the island waters during this season. Although the swimming powers of the otter are well known, this definite record of depth and distance traveled under ice is unusual.--W.E.Scott, Wisconsin Conservation Department, Madison, Wisconsin.

La Conservation Review



■ A typical trappers' village on Harvey Canal No. 2 in Jefferson Parish.

Louisiana Furs to the Fore

ILLUSTRATIONS FROM THE JEFFERSON PARISH YEARLY REVIEW.

By
Estelle Verjie Cottman

The season of fur coats is upon us! A royal pageant of glorious womankind clothed in lustrous, luxurient furs will soon be charming the eyes of the nation; new and vastly becoming styles, fashioned by experts, are now displayed in the shops, and sad, indeed, is the fate of her who cannot afford one of these beautiful coats or jackets.

What a wealth of gorgeous furs to choose from! Chinese and Persian lamb, Jap and Chinese mink, Russian squirrel, muskrat, kid, caracul, silver fox, Hudson seal, pointed skunk—all are shown in attractive modes, chic and new.

History tells us there was a time when animal pelts were used for utilitarian purposes only, but now milady bedecks herself in furs both in summer and winter, to add to her beauty and allurement.

Some student of feminine psychology has said that there should be a clause in the Constitution of the United States declaring that once in her life, at least, every woman should own a fur coat. We are quite sure that most women would vote for this amendment!

In the shops there seems to be a fur garment suited to every purse and person. There are several distinctly new features that characterize the latest styles, but the most outstanding one is the "built up" shoulder. Collars are not large this season; in fact, many coats are collarless. Even fur collars on cloth coats are small. Sleeves offer many new ideas such as the spiral treatment, the comfortable width at the wrist and the overtrim above the elbow.

Louisiana furs are among the most popular. Natural and dyed mink are featured in some of the most beautiful coats. Muskrats are shown in dark silvertone, natural ombre and in silver, the last with the pelts interlocking in wonderful designs. Short coats in pointed skunk, dark with an occasional white hair showing, are very attractive. The shops are also showing handsome neckpieces in silver and red fox.

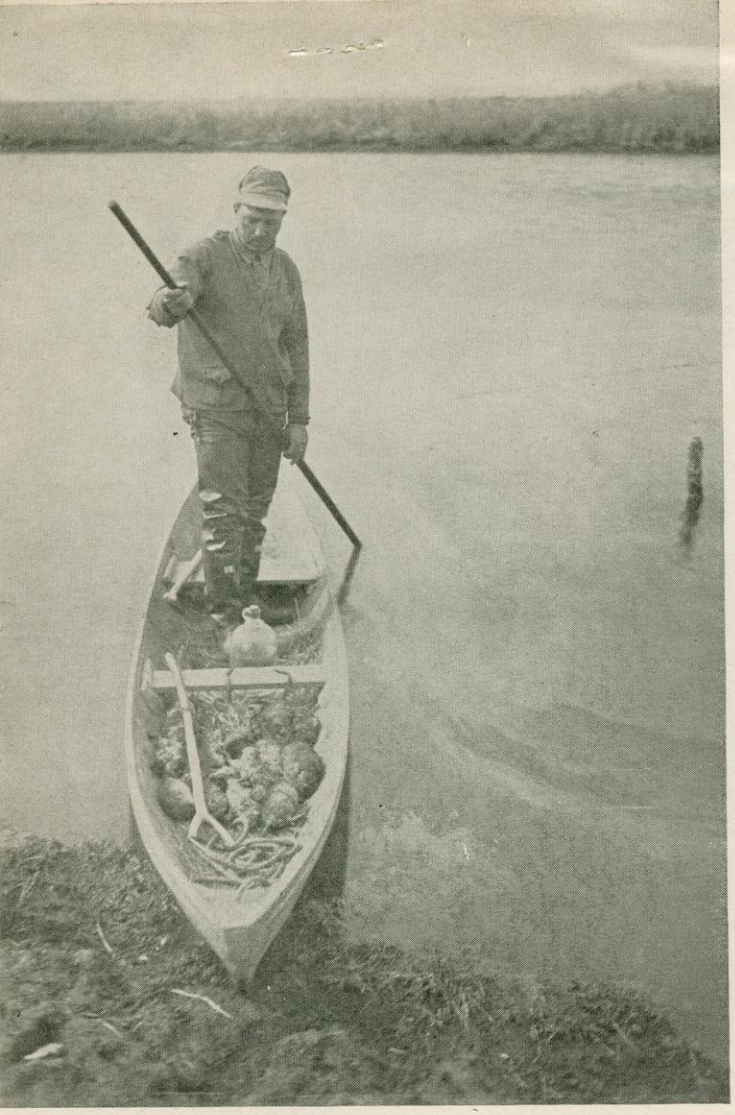
TRADING IN PELTS

So common is the wearing of furs today that we are apt to forget the importance that early trapping and fur barter had in the history of our country. We forget that trading in pelts was the beginning of commercial enterprise in America. While the countries of the Old World were jockeying for territory in the New, huge fur trading companies were formed, trading posts established, and trappers and explorers were penetrating deeper and deeper into the wilderness for pelts.

The Old World had nothing to compare with the abundance of wildlife in North America. Such a supply was almost unbelievable, and trappers could not conceive of any decline in the millions of fur animals.

That such a decline was possible became evident with the building of the railroads that made these wildlife havens easily accessible. Newly settled towns and cities encroached upon the natural habitat of these wild creatures, driving them back, depleting their numbers and limiting their breeding areas.

The invention of the steel trap was a boon to the trapper, enabling him to increase his take, and, automatically his income, but it was a tragedy for the furbearers. Before this invention the trapper depended upon the uncertain results of nets, snares and deadfalls, but now his catch was almost a certainty.



Home at the end of the day. The day's catch may be seen in the bow of the boat.

With such easy trapping methods, wise men soon realized that there would come a time when fur animals would be very scarce or even extinct, so steps were taken to provide legal protection for them during their unprime season and to regulate and supervise methods of trapping. Today Federal and state laws insure a permanent breeding supply of furbearers, guarantying a continued occupation for trappers and an additional source of revenue for state and nation.

Louisiana occupies an important position in the fur industry and holds it chiefly because of the millions of muskrats produced each year. During the season of 1929-30 the total catch of rats reported in the United States was 8,435,583, of which Louisiana was credited with 6,296,556.

LOUISIANA LEADS IN FUR TAKE

This catch is remarkable. The muskrat area in North America spreads from Newfoundland to Alaska and from Louisiana to California, while in Louisiana their producing area is limited to lower Louisiana; yet in a single year this State contributed 75% of the entire catch of North America.

It appears that the best fur pelts come from animals that weather severe winters and grow a heavy pelage for protection.



A trapper's cabin on the edge of the marsh. On the rack to the right may be seen muskrat pelts, hanging out to dry.

Naturally, the mild climate of Louisiana does not necessitate such a thick hair growth yet our furs are steadily gaining a reputation for duribility and strength.

A typical rat skin is "silver" on the belly, "gold" on the sides and brown on the back. Silver skins make the most beautiful coats, with gold ranking next in value. In making a coat, several thousand pelts may be examined for color and quality before some seventy-five are finally matched.

The natural pelts have long guard hairs that protrude from the soft under fur. When these hairs are plucked out, the pelt is sold under the name of "moleskin". When this plucked fur is dyed seal or black its trade name is "Hudson seal". The wearing quality of this fur is excellent and garments made from it are beautiful and satisfactory.

The undyed muskrat pelts make handsome and durable coats and wear much better than some more expensive furs. Often the skins are blended, dyed a rich brown and sold as mink. The true Louisiana mink is skillfully blended into a dark brown and compares favorably with northern pelts.

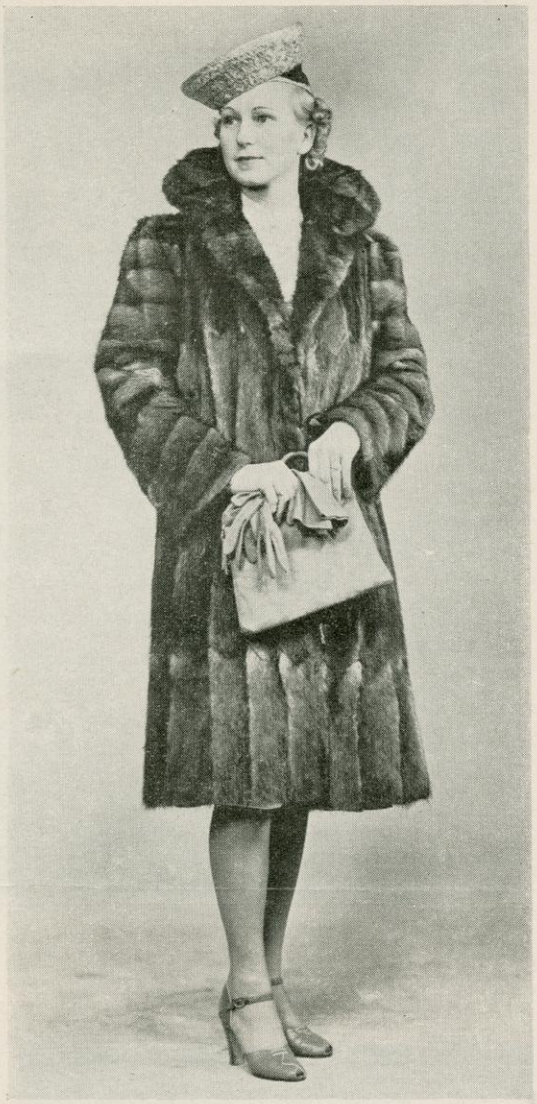
Modern methods have lifted the cheaper furs into the higher priced class. By ingenious methods of plucking, dying



■ The trappers' children sometimes catch and raise young muskrats as pets. "Jacko", on the arm of Carl Zar, is two months old.



■ Fur buyers grading hides. The hides are bought at trapping posts and sorted out according to species and grades.



■ **The regal lines and lustrous sheen of this muskrat coat worn by Callista Clancy, daughter of Sheriff and Mrs. Frank J. Clancy, of Kenner, would make it a fashion favorite for well-dressed women anywhere.**



■ **This silver muskrat coat worn by Rita Mae Gegenheimer, of Gretna, (Miss New Orleans 1937), is only one of the many styles possible in muskrat fur, a fur that is not only smart, but remarkably serviceable.**

and trimming, cheap skins are made to resemble more costly furs. The clever manufacturer produces what is known as black fox by dying the gray fox pelt. Even the beautiful silver fox fur is sometimes imitated by dying the common gray pelt black, gluing on white tips from the skin of a badger and adding the white tail-tip from a skunk. The pelts of Louisiana's bay lynx and opossum are cleverly manipulated and sold under attractive trade names. However, there is a growing demand for these skins in their natural pelage.

THE SKUNK IN POLITE SOCIETY

Under proper treatment the despised skunk enters polite society. The natural skin is black and white and to make the attractive black fur so much admired, the white hairs are cut out and the skin carefully sewed together again. The result is a fur of unusual beauty and luster, which gives a more beautiful effect than by simply dying the white hairs black as is sometimes done.

The finest furbearer in Louisiana is the otter, whose pelt in the palmy days of the last decade brought the trapper the top price of thirty-five dollars. Our largest pelt is that of the raccoon and the manufacturers do marvelous things to add to its beauty; but even "as is" it is a handsome, sturdy fur and very popular, especially for collars, cuffs and trimmings.

Fur coats should be given good care, no matter what the pelage. If accidently wet, they should be brushed, hung carefully and dried—but not by artificial heat. They should be kept in good repair by experts—this is not an expensive service—and should be sent to the cleaners often enough to keep them soft and glossy. Of course they should be kept in cold storage in summer. The wearer should loosen them seated and avoid carrying her purse in such a manner as to rub them shiney or wear off the hair.

Last but certainly not least, women should remember that if they MUST purchase a cheap fur coat their best bargain will be one fashioned from Louisiana muskrat pelts, either the natural or the moleskin!

Timber wolves still occur in various parts of Louisiana, being of the black timber wolf variety. Apparently they do no appreciable damage to domestic stock in this State, since they keep to wild and remote areas, but undoubtedly they destroy deer.

"Pressure maintenance" is defined as the practice of returning gas from flush production to the oil formation for the purpose of keeping oil reservoir pressure and energy as near initial conditions as possible for the purpose of increasing the ultimate oil recovery of the field.

Route students
File muskrat

April 12, 1940

Mr. L. Butler, Biologist
Fur Trade Commissioner's Office
Hudson's Bay Company
Winnipeg, Manitoba

Dear Mr. Butler:

I have your letter of April 4 and will be glad to pass on to you the thoughts that come to my mind upon reading your recent paper on muskrat foods. The inclosure is my file copy of a manuscript that I had gone over for the last time the day before I received my copy of the Canadian Field-Naturalist in which your paper appeared; you will observe that I have made some late changes to include references to your findings. Your discovery of Equisetum being so important as a food plant surprised me, especially in view of the following original(now amended) passage on page 8 of my MS:"Horsetail..... seems to be the only waterside growth of which utilization for food has not been recorded in the Iowa field notes...." Insofar as I have known cottontails simply to mow down Equisetum about as your muskrats did, my guess is that there is something very attractive about the plant that causes animals, once they get started, to consume it selectively, but that its silica content, hence grittiness, may serve as a strong initial barrier to utilization. One might postulate regional differences in silica and HCN content - which may very well exist - but the fact that animals of not dissimilar feeding tendencies may relish Equisetum and eat it without apparent detriment (it may, however, be a source of stock poisoning) in both regions seems to point more to the establishment of local habits.

From the published accounts of your experiments, I would say that your approach has potentialities far in excess of present results. I would like to see you try some inferior - perhaps slowly lethal - diets on captive muskrats, under conditions designed to simulate winter food shortages, for it is certainly true that muskrats can stay alive for varying lengths of time on foods that are by no means in the category of bulrush and cat-tail underparts. In other words, there may be tremendous differences in optimum and merely subsistence diets, and appraisals of the immediate food resources

of marshes must take into consideration the supply of a much larger part of the available organic matter than the most palatable or nutritious plants. With your facilities, could you carry on a series of experiments - using, of curse, adequate controls, etc. - to determine just about what a muskrat needs to squeeze through a winter?

When we try to consider the role of psychic factors in relation to food utilization and population, our interpretations of data become still more hazardous, and I can better refer you to the latter parts of the inclosed MS than to attempt elaboration of this subject by letter. It is especially baffling th try to explain how muskrats react strongly to differences in food during summer, when their regular foods may not only be generally abundant beyond visible needs but also constantly replenished by new growths; without imputing too much in the way of intelligence or foresight to the muskrat, one may suspect that gradations in ease of living may thus be reflected in the behavior of local populations.

In the event that you plan further experiments, I would be pleased to help you in any way that I can. Would there be any chance of your spending a few days with me here in Iowa?

I expect to submit my paper, "Versatility in feeding and population maintenance of the muskrat", to the Journal of Wildlife Management, but it has a number of hands to go through, and I cannot say when it will be published. You may return my file copy at your convenience - no hurry.

Sincerely yours,

Paul L. Errington
Research Associate Professor

PLE:JH
CC: Prof. Leopold

File: Badger
Fox

Anton Novy of Manitowoc tells me that he has found evidence that a badger may dig out and kill a fox in an underground den. He found a dug-out den with the remains of a fox and evidence that a badger had done the work.

A.L.
5/23/40

MUSKRAT FOLDER
December 9, 1941

Frederic Leopold tells me that on a 3-acre pond just west of the Chrystal Lake Club House in Henderson County, Illinois, 40 muskrats were trapped this fall bringing $2.00 each, or $80 for the year's crop. There were 7 houses in this pond, but a large number of additional rats inhabited bank burrows. The pond is bordered on one side by the road and on the other side by the railroad bank, hence opportunities for bank burrows are especially good.

cc Errington

Investigation of Egg-shell Deposit at Ft. Atkinson

5 Kent K Bolden

Irven O. Buss

On October 10, 1941, a personal investigation was made of reported egg-shell deposits on East Sherman avenue, Fort Atkinson, Wisconsin. The deposits were discovered in a gravel pit, which was used as early as 1915. Removals since that time have left a pit about two acres in area and partly surrounded by a 10-foot bank. At the north-central edge of the pit, under the roots of 24-inch box elder stump, three "veins" of shells were exposed by workmen removing gravel. The upper vein was about 18 inches beneath the clay surface of the ground, the second about two feet deeper, and the third about 18 inches beneath the second. Each vein was from two to four inches wide and from 1/2 inch to two inches in thickness. At not less than two places along the veins, larger caches of shells were discovered. All shell fragments observed were permeated by small tree rootlets.

Prior to the time of this investigation considerable disturbance had occurred at the site and likely removed considerable evidence which might have been used to clarify the picture. An entire chicken egg and many fragments were removed during early September. Among the fragments an egg membrane was found which precludes an Indian deposit or a deposit over five years old.

Although the upper vein of shells was only about 18 inches beneath the ground surface and the box elder stump, there were no large roots growing through the veins. Each vein had many small rootlets grown through it showing that the deposit was present during the tree's last year of growth. Numerous shoots grown up about the stump showed that the tree had been cut three years ago. Since the shells were not decomposed, and since at least one egg membrane was still intact, and since finally the deposits were diffused only with one-year rootlets from the box elder tree, it seems logical to conclude that the deposits are from three to four years old.

How did the shells get under the growing box elder tree from three to four years ago?

The farmer on the Heckler farm told C. E. Brown that no egg shells were ever deposited in this place (a former orchard) by his family. There is no evidence on the sod of a refuse pit having been dug near the stump. Furthermore, refuse pits would not show strata of deposits in narrow and shallow veins; so it seems that man was not responsible for their occurrence under the stump.

There are no reptiles in this state that would carry hundreds of chicken eggs three blocks and then deposit them in burrows that terminated five feet below the surface of the ground. (From three to four years ago the only nearby source of chicken eggs was a hatchery three blocks from the depository on the opposite side of a paved street). If reptiles had been interested in caching chicken eggs from this hatchery, it is very likely that they would have taken them in the opposite direction toward water which was as near the hatchery as the gravel pit.

Eliminating man and reptiles, there remain only a few mammals that could have made this cache. Striped gophers, Franklin's ground squirrels, rats, or chipmunks are too small to carry a chicken egg without breaking or puncturing the shell. Of the remaining mammals who eat eggs and burrow in the ground, only the skunk, mink, woodchuck, and opossum inhabits this vicinity.

A mink would not carry the eggs away from water, nor would he store them this deep.

A woodchuck is a diurnal species that would not cross the paved street in daylight to get the eggs. It is unlikely that it could carry a hundred to five hundred eggs this distance without being seen by some one.

Opossums would not carry the eggs this distance nor would they burrow into the ground five feet to make a deposit.

Only the skunk remains, and it seems there is no evidence which eliminates this species. On the other hand, the skunk fits into the picture very well and all evidence points toward the skunk. Being of nocturnal habits, unafraid of man or his structures, a good traveler, good digger, possessed of keen olfactory senses, and being fond of eggs, all label the skunk as guilty. Extensive investigation within and near the pit showed that skunks still inhabit the

vicinity in goodly numbers and visit the pit in quest of beetles and other food. Ordinarily skunks eat their eggs where found, but where there are many more eggs than their stomachs will hold, it is not impossible to believe that they would deposit them for food during winter.

Recession of muskrats in Mobile Bay

424 University Farm Place
December 23, 1941

Mr. George C. Moore, Leader
Inventory of Wildlife Resources
Department of Conservation
Montgomery, Alabama

Dear Mr. Moore:

Your decline in Mobile Bay rats is intensely interesting.

I certainly had no impression that recessions occur within three years. I know the recession of pheasants in New England took twenty years. I can't remember how long the recession of pheasants in the Williamette Valley took, but you could find out from Arthur Einarsen, Wildlife Research Unit, Corvallis, Oregon.

I know of no case in which actual extinction followed the recession. In all the cases I know, a low level of population persisted.

It will, of course, be impossible to distinguish a recession from an ordinary cycle until time enough has elapsed to show whether these rats stage a recovery. It would be interesting to find a violent cycle so far south.

The best thinker in this particular region on the problem of muskrats is Paul Errington at the State College, Ames, Iowa. He might contribute something to your problem.

Were native muskrats absent from Mobile Bay when these Louisiana rats were introduced? I am not quite clear on this question.

With best regards,

Aldo Leopold
Professor of Wildlife Management

ALBERT W. GILL
DIRECTOR

J. M. WHITE
ADMINISTRATIVE ASSISTANT

THOS. A. FORD
DIRECTOR CONSERVATION PLANNING

NEILSEN B. O'REAR
EDITOR OF PUBLICATIONS



BEN C. MORGAN, CHIEF
GAME, FISH AND SEAFOODS

W. G. LUNSFORD, CHIEF
PARKS, MONUMENTS AND
HISTORICAL SITES

J. BROOKS TOLER, STATE FORESTER
FORESTRY DIVISION

DEPARTMENT OF CONSERVATION

MONTGOMERY, ALABAMA

December 18, 1941

Recession of Rats on Mobile Bay

Mr. Aldo Leopold
Professor of Game Management
University of Wisconsin
Madison, Wisconsisn

Dear Mr. Leopold:

We have a peculiar situation in the Mobile Bay Delta that has us "stumped." About 1928, a few pair of muskrats probably the Louisiana type were planted in the Mobile Bay Delta. Up until this time there had never been any report of the Louisiana 'rat being found east of the Mobile Bay or the Mobile River. From all available reports, there were about fifteen pair put in about this time. These 'rats multiplied to a point that by 1934, there were twenty or thirty thousand 'rats being removed. By 1936, the peak, reports show that there was at least one-hundred thousand 'rats removed from this area. During the 1937 trapping season, these 'rats had fallen off to a point where it was found unprofitable to trap. The trapping season in this area was closed in 1938, and has been closed ever since. When the trapping season was closed, there were at least several hundred 'rats left on the area for breeding stock. In each successive year since then the 'rats have tended to decrease.

Recently the State Department of Conservation with the assistance of the Federal Aid Project has undertaken to determine the reason for this decline. After having made several preliminary surveys in company with several authorities on muskrats, we are still unable to definitely put our finger on any limiting factor.

One factor that I have had in mind is the so-called "recessive establishment" which usually appears to become distinct within three years. Do you have any records or know of any instances where a species increased vigorously for a period of more than three years before the decline started, and finally extinction came into effect? Before I write my final report, I wish to check all factors and try to eliminate those that seem most likely to have little or no effect

on a sudden decrease. Then we will try to determine what effect other factors might have on the 'rat population in the Mobile Bay Delta. I would appreciate your opinion on the possibility of this, that is "recessive establishment", being a factor in the sudden decline in the muskrat population.

You will notice that from the time these 'rats were released until the peak was reached, it was a period of approximately nine years. During the last four years, the 'rat population has decreased at least eighty per cent more. However, there are more 'rats there now than was suppose to have been planted in the beginning.

I understand from Dr. Herbert L. Dozier, of the Fish and Wildlife Service, and other interested persons that there has been a sharp decrease in 'rats in general over much of the east coast and the Louisiana marshes. I do not know whether this is the downward trend of a cycle or some other factor that has caused a decrease in the 'rat population. Dr. Dozier is under the impression that there is a possibility of a disease being the major factor in this decrease. It seems to me that since the 'rat population is so low in the Mobile Bay area, the disease factor should have a minor influence on any continuous decrease.

Any suggestions that you might be able to give me will be appreciated.

Sincerely yours,

DEPARTMENT OF CONSERVATION

Geo. C. Moore

George C. Moore, Leader
Inventory of Wildlife Resources
In Alabama

GCM:al

muskrat yields
Foldr

Morocco, Indiana
March 10, 1942

Mr. Aldo Leopold
1532-University Avenue
Madison, Wisconsin

Dear Mr. Leopold:

It has been over four years since I left southwestern Wisconsin to take a position of project bilogist with the Soil Conservation Service. Much has happened in that time but I always look forward to returning to the Badger state. I am writing to you in regard to an idea I have been working on for the past two years. I would like to have your opinion on the plan.

At college we were taught that a diversified farm is the best paying one. With that thought in mind, I have planned for what I term a diversified "biological farm" with honey, furs, and woodland products as the main products. If the bee pasture were owned by me, legume seeds could be a by-product. Professor H. F. Wilson has told me that a good beekeeper with 500 colonies of bees could expect a gross annual return of $5000. During the past year (without a fall honey flow-due to the summer drought and excessive fall rains) I experimented with 25 colonies of bees which returned an average gross receipt of $10.00 per colony. This was in territory where the honey flora is not nearly as good as in most parts of Wisconsin.

As to the income from furs, I have been following Mr. Erringtons' work and believe that a surplus of at least two muskrats per acre could be taken from a well managed marsh. During the winter of 1938-39, while I was working in southeastern Ohio, I started a trapping project on a small pasture marsh. I had hopes of staying at that work unit for five years, but was transfered before I could run a second years study of the marsh. Enclosed is an extra copy of the report which you may keep if you like. It was interesting to note that the owner of the marsh knew very little about trapping marsh rats(he preferred trapping bank-rats which he said was much easier work).

Specialized woodland products such as Christmas trees, wreath material, fire logs, fence posts, pulp wood would bring in the greatest return, with timber as a long time objective. I believe that these specialized products would bring in as large a net return per acre as some of the crops I have seen growing on farms of southeastern Ohio and northwestern Indiana. That list of forest products looks large, however with my seven years experience in proper land use and woodland management I am sure that I would still have a fine looking woodlot after following a proper management system. What's more it would give me an opportunity to manage wildlife on my own land, particularly deer and ruffed grouse.

The location of such an enterprise, I've set up temporarily as somewhere in northeastern Wisconsin, near my home. The main factors determining the location would be a good honey flora(naturally sweeet soils) near a marsh of about 500 acres. About 200 acres of spruce, balsam, aspen, and white cedar would make up the woodland.

Seasonal work on a farm of this type would be as follows:
January to March or April- Taking fur surplus and some forest products.
April to November - Beekeeping
November to January- Woods work, Christmas trees, wreath material, etc.

About a $5,000 to $10,000 investment would be necessary which I think I could be able to raise somewhere.

My experience in SCS has given me an insite on so called "land values". Particularly here in northwestern Indiana, I have seen land sold for from $60 to $125. per acre, which will take the buyer(if he is lucky) a lifetime to pay for it. Much of it is farmed in such a way that the owner might have some top soil left to farm after twenty or thirty years of farming, just when he needs to have the land working more for him. If low-priced woodland and marshland such we have in parts of Wisconsin could be put to some honest to goodness sustained yield management, I believe that our woodland and wildlife products would show as great a net return per acre as some of the land now being farmed, and at the same time preserve the natural beauty of the land.

About two years ago many of the specialized technicians in our service were made over into diversified farm planners. In the past two years I have been working up farm plans for a complete soil and moisture conservation program and have been doing as good a job of it as men who have been doing the work for seven years. You may wonder why, with my present status of P-2 Ass't. Soil Conservationist, I would even think of the possibility of becoming what I term a biological farmer. It is not that I am dissatisfied with my job- on the contrary I like extension work and enjoy meeting and talking over problems of proper land use with the farmers. However, I don't enjoy the gypsy life that we are leading, three different states and seven different work units in seven years. Most of my friends in the service have moved more often than that. We get nicely acquainted in a neighborhood and then we are on the move again. For a single man this might be all right, but I don't think a family should be on the move continually with no place they can really call home.

Do you think that such a farm as I have described is feasible? Investment in the land(200 acres woodland and 500 acres marshland) would be small; the biggest investment would be in bees and supplies. Some hired help would be needed during harvest time of honey and Christmas trees and possibly for some of the other woodland products.

Sincerely yours,

George Stanek

George Stanek

PROGRESS ON MUSKRAT FUR INCOME PER UNIT OF AREA ON TWO SMALL MARSHES

Description of Marshes:

These marshes are located one on each side of the Yoker Valley road where this road joins state highway #147 in the SW¼ of Section 33, Wayne Township, Noble county, Ohio.

At the initiation of this project, both marshes were to be trapped, however, time and equipment allowed only working of the east marsh, leased by James Wyscarver. Though both marshes are owned by the Muskingum Conservancy District, the one worked was leased by a farmer.

History of the East Marsh.

The Wyscarver marsh has been owned by that family more than fifty years. Approximately, forty-five years ago, or about 1894, this twenty acre marsh had been tile drained and cultivated. Evidently the tiling was not a great success as the ground reverted back to pasture after one or two crops of corn and wheat. One old-timer, said a crop of 85 bushels of corn to the acre was grown from this ground and also a good crop of wheat. Gradually the pond increased with water until a large pond of approximately twenty acres now remains. The present farmer said that the marsh has been considered a marsh for the past ten years. Ditches had been dug through the pond and to Yoker creek but these proved ineffective for drainage.

Marsh Vegetation.

A detailed vegetative survey was not taken, due to ice and high water. However, a survey will be taken during the spring of 1939. A comparison of plant species density with the density of muskrat houses will be made.

In general, the marsh is well vegetated with Sweet flag (acorus calamus), Smart week (Persicaria sp.), Spike rush (Eleochoris sp.), Sedge (Carex sp.), Wool grass (Scirpus cyperinus), Cat-tail (Typhia) and other grasses.

IV. Muskrat Population.

One hundred and twenty (120) muskrat lodges were counted on the Wyscarver marsh by two men, taking fifty-foot strips through the marsh. Of the 120 lodges, 20 could be classified as unused. These twenty showed no evidence of repair, were small in size, and some had a saggy appearance. It is believed that the main muskrat population lived in the marsh, as only one bank bordered the marsh about one hundred feet from the water lines and this showed no signs of bank-dwelling muskrats.

According to Paul L. Errington, Research Associate Professor at Iowa State College, who has been doing a great deal of work in muskrat research, a technique for estimating muskrat populations with any accuracy has not been devised. However, he states that "Superior muskrat marshes have yielded annually 6 to 8 muskrats per acre over extensive areas, except in bad years, and as a rule the smaller marshes yield somewhat more per unit of area". With that in mind, our estimated catch, without depleting the breeding stock, for the Wyscarver marsh for the 1938-39 trapping season was to be 6 muskrats per acre, or a total of 120 muskrats.

Due to lack of time and materials, house population counts and trapping was confined to the Wyscarver marsh. For the 1939-40 trapping

season, the east marsh or Leyman property marsh will be included in the study.

The attached map of the Wyscarver marsh shows the distribution of the muskrat houses, each circle being a house.

VI. Water Level.

The fall pond acreage was approximately fifteen acres with 120 houses well above the water. During February 1939, due to rains, melting snow, and runoff from adjacent land, over twenty-five acres were under water, covering more than half of the muskrat lodges.

What effect this has on the muskrat population remains to be seen during the fall of 1939. With the flooding of Senaca Lake, thousands of acres of potential muskrat marsh will be created. Muskrat house building may move from present ponds to more shallow water.

Posting and Protection of the Marshes

Both marshes were posted with signs a day before the trapping season opened. Close watch against poachers was given the Wyscarver marsh by Mr. Wyscarver, whose house is located near that marsh. The project biologist of the Soil Conservation Service headquarters at Cambridge and the game protector of Noble County also patrolled these marshes. No evidence of poaching or trespassing was noted in the Wyscarver marsh but attempts were made to trap the Leyman marsh by outsiders. These were quickly stopped by springing the traps which discouraged the would-be-trappers.

VII. Trapping Muskrats.

Forty No. 1 steel traps were set on November 17, 1939 by the project biologist in the Wyscarver marsh. All traps were set at least ten feet from muskrats' lodges in runways or near feeding beds. Although most of these traps, properly set, were effective, killer traps will be used in the future.

Where runways were of such depth to allow muskrats to swim freely over the traps, stones and bricks were used to elevate the traps. Most of the rats were caught near feeding beds and in runways. Most of the muskrats and better furs were caught when the pond was frozen. Muskrats drowned quickly in sets under the ice. Only five muskrats escaped by chewing off a leg. Two were caught by their tails.

One hour daily was spent on the trap line, beginning November 18, 1938 through January 14, 1939, excepting December 25, 28, 1938 and January 1 and January 13, 1939. The accompanying chart shows the daily catch.

Much of the winter feed consisted of roots of the sweet flag (acorus calamus).

IX. Skinning and Fleshing and Stretching.

Preparation of the hides for market was done by the project biologist, who then turned the pelts over to the farmer for marketing. Skinning time for each muskrat was, approximately, five minutes.

Fleshing a skin took from a half to three-quarters of an hour. More about fleshing is written under fur values. Furs were stretched on home-made wire stretchers made from No. 9 fence wire. More aeration

and faster drying furs made for rapid sale of furs if necessary.

IX. Disposition and Sale of Furs

Pelts were turned over to the farmer for marketing in eight lots, beginning December 6, 1938 to January 16, 1939 - as shown in chart No. I. There were any number of places that he could sell the furs, fur houses, mail order houses, local dealers and local buyers. Local buyers are like local fur dealers but, in addition, travel from farm to farm buying up raw furs. For the entire season, local buyers were paying fifteen ($.15) cents, or more, less than local dealers, so that local buyers were checked from the list. The first three sales were sold, one to a local dealer, one to a mail order house and one to a fur house. The fourth sale went to a local dealer. All of the first four sales contained pelts properly skinned, thoroughly fleshed and properly stretched. Although fur houses paid more for one particular pelt in a shipment of furs, their average price per fur was not as high as that paid by a local dealer. In addition, the local dealer stated that fur preparation was not taken into consideration of fur that he bought. The remaining four lots of fur were sold to a local dealer without fleshing or stretching the pelts. Ninety ($.90) cents was the top price paid by the local dealer, however, his grading down scale as in fur house or mail order house fur grades was not so drastic and as a result, he paid the best average fur prices. Though mail order houses and fur houses advertise premiums for well prepared furs, their average fur price paid did not show it. For that reason, the last four lots of furs were sold to a local dealer very shortly after skinning the muskrats with no labor lost in fleshing and stretching.

Return on Labor of Trapping and Return Per Acre of Marsh.

Four hours were spent on November 17, 1939 in setting the trap line, all sets being blind sets - no bait used. From that day on, fifty four daily visits were made spending one hour per visit to the trap line. The majority of the muskrats caught were skinned only, (no fleshing or stretching), about five minutes skinning time for each muskrat. About five hours were spent the last day, pulling, cleaning and storing the traps.

Although the intended catch was one hundred and twenty muskrats, only sixty-six were caught, selling for an average price of seventy-six ($.76) cents, or a total value of $50.20.

Gross Income for 66 Muskrats - $50.20

Hours of Work for the Season

Setting the traps	4 hours
Running trap line (Average one hour daily)	54 hours
Skinning the animals	6 hours
Total hours	64 hours

The return per hour was, therefore - $\frac{\$50.20}{64} = \$0.78$

The return per hour of work of seventy-eight cents is twice as much as the farmer could have earned by other work in the neighborhood and, also, the time was expended in a slack season of the regular farm operations.

Sixty-six muskrats were caught on twenty acres, a catch of 3.3 muskrats per acre. The gross income from furs of $50.20 on twenty acres showed a return of $2.51 per acre.

X. Sexes and Condition of Furs.

The first eighteen muskrats caught were listed unprime. Roughly, in this section of Ohio, the trapping season for muskrats opened one month before furs were prime.

Five pelts of the first two week's catch showed damage by teeth marks due to fighting among rats. Though none of these flaws were complete holes, they appeared as weak dark spots on the pelts.

A total of thirty-six male and thirty female muskrats were caught, or 54% were males and 45% were females. Of the 66 muskrats caught, nine were classified as young, or kits, by the trapper. Only two were classified as kits by buyers (mail order and fur house). The other seven kits sold to a local dealer were not listed as kits due to good quality fur or easy grading.

Two muskrats were damaged in the traps by other muskrats, one being slashed so badly that it was not worth marketing. These slashes were from the head to the tail over the back.

XI. Predators.

No signs of mink or mink damage to muskrat houses were noticed during the trapping season.

XII. Proposed Future Work.

1. During the spring and summer months, approximate breeding dates will be ascertained by observation and the number of litters to be determined by frequent visits to the marsh.

2. By a vegetative census in the Spring of 1939, the quantity of muskrat food will be estimated. By frequent observations throughout the year, the value of the vegetation will be ascertained by studying the feeding habits of the muskrat.

XIII. Yield to Expect Per Acre.

After two or more years field work, we believe that a yield of six to eight muskrats per acre, annually can be recommended in trapping muskrats on small farm marshes.

Chart I

Sale of Muskrat Furs from Twenty Acres of Marshland
By One Farmer in the Seneca Fork Project
Cambridge, Ohio

Date of Sale	No. of Pelts	Sold At Value	Ave. Price	Fur Condition and Prices Per Pelt and Where Sold												
				No. not Prime	No. of $1.15	No. of 90¢	No. of 85¢	No. of 75¢	No. of 70¢	No. of 60¢	No. of 55¢	No. of 50¢	No. of 35¢	No. of 25¢	No. of 15¢	Buyer
12/10/38	6	$2.80	.466	6						3		3				Local Dealer
12/14/38	11	7.55	.686	11	1		3	3			2		1		1	Mail Order
12/20/38	12	8.35	.695	1	1		1	7				1	1	1		Fur House
1/3/39	5	4.50	.90	0		5										Local Dealer
1/4/39	18	15.00	.833	0		15						3				Local Dealer
1/5/39	3	2.50	.833	0		2			1							Local Dealer
1/10/39	8	6.80	.85	0		4				2		2				Local Dealer
1/16/39	3	2.70	.90	0		3										Local Dealer
TOTALS	66	50.20	.76	18	2	29	4	10	1	5	2	9	2	1	1	

Chart II

Muskrat take on a Twenty Acre Marsh

Seneca Fork Project, Cambridge, Ohio 1938-1939

Date	Muskrats No. and Sex		Kits No. and Sex		Total No. and Sex		Total Males Females	Fur Condition No.		Damaged No.	Notes
	Males	Females	Males	Females	Males	Females		Prime	Unprime		
Nov. 18	2				2		2		2	2	Tooth marks on hide
19	2	2			2	2	4		4	2	" " " "
21		2				2	2		2		
22	2				2		2		2		
Dec. 3	2	2	2		4	2	6	6	6	1	Tooth marks on hide
5	2				2		2		2		
12	1	2			1	2	3	3			
14		2				2	2	2			
15	1	1			1	1	2	2			
19		2				2	2	2			
20	1				1		1	1			
21	1	1			1	1	2	2			
22	2				2		2	2			
23		3				3	3	3			
24	2				2		2	2			
25	No	visit	to	trap	lines.						
26	2	4			2	4	6	6			
27	1	1			1	1	2	2			
28	No	visit	to	trap	lines.						
29		1				1	1	1			
30	1				1		1	1			
Jan. 2	3	2			3	2	5	5			
3	1				1		1	1			
4	1	1			1	1	2	2			
5	1		1		2		2	2			
7			1	2	1	2	3	3			Damaged by other rat
8	1				1		1	1		1	while in trap
9			2	1	2	1	3	3			
14	1	1			1	1	2	2			
TOTALS	28	27	6	3	36	30	66	48	18	6	

PROGRESS REPORT ON STUDIES OF MUSKRAT POPULATION AND VEGETATION OF TWO SMALL MARSHES

As mentioned in the field work of this project, a definite technique of estimating muskrat populations with any degree of accuracy has not been devised. However, a marsh with many muskrat houses, such as this marsh has, should yield a harvest of six to eight rats per acre annually - assuming that nothing serious has happened to reduce the muskrat population before trapping or the habitability of the marsh for muskrats.

Since the field work on one marsh began, two farmers in the area have asked how they could handle some of their swamp lands for the purpose of raising muskrats. When Senaca Lake floods to normal pool stages, hundreds of other farmers will be interested in managing marshlands for annual wildlife crops of furs.

A thorough vegetative survey of the two marshes will be taken during the spring of 1939. With observational studies of muskrat feeding habits, it can be determined what plants are taken in largest quantities and which are of little use. To encourage proper land use on newly formed marshes, farmers can be given information as to what species of marsh plants to plant and how to speed up marsh vegetation by planting.

A study of the existing marshes, with their present population of muskrats, when the water level changes with the flooding of Senaca Lake, will throw some light on muskrat management of the area.

##

Second Progress Report of

Muskrat Fur Income Per

Unit of Area on Two Small Marshes

1939 -- 40

January 15, 1940

I. Marsh Condition After First Controlled Trapping Season.

Two weeks after the 1938-39 trapping season, the marsh appeared well stocked with muskrats. Muskrat signs were plentiful enough to look forward to a good catch of animals for the following trapping season. During February, rains, melting snow, and runoff waters from adjacent land, inundated twenty five acres of the marsh, covering more than half of the muskrat houses. This water, however, did not last long, the long dry spell during the summer and fall caused the marsh to dry up in all but a few small areas. The marsh was so dry that a man wearing ordinary shoes could walk through it without wetting his feet. A gas line was laid through the marsh during the last week of October. A year previous, two feet of water stood on the site of the gas line.

A check of the marsh in late November showed approximately twelve muskrat houses in use. After discussing the situation with the farmer, it was decided to close trapping operations for the 1939-40 trapping season and allow the remaining muskrats as breeding stock. The farmer agreed to keep all records of future trapping returns from the twenty-acre marsh.

The second marsh, located approximately five hundred feet west of the Wyscarver marsh has been dropped from the study due to the question of legality of ownership. Although a count of the houses in this marsh was not undertaken, it could be seen (November 1939) that many new muskrat houses had been built on the east side of the marsh, the side closest to the Wyscarver marsh. It is surmised that the main muskrat population of the dry marsh moved the few hundred feet to the marsh offering more water with an abundance of food.

Vegetation Survey:

A vegetation survey of the twenty-acre marsh was made in July 1939.* The map and legend show the distribution and vegetation types.

* Map and Legend attached.

II. Economic Survey.

The economic survey of this farm is for the year 1938. It took into account only the income value of the crop yields and estimated pasture value. This farmer, being a livestock dealer, has a more rapid turnover from stock sales than the average farmer. Therefore, no livestock has been included in the economic survey.

The return from fur animals increased the 1938 total farm income by 8.2 percent. Table 1 shows the economic survey as applied to farm acreage in crops and other land use. Table 2 shows the wildlife (fur) income produced on a 196-acre farm during the 1938-39 trapping season.

TABLE 1

Economic Survey on Land Use

of a 196-Acre Farm,

Noble County, Ohio .

Crop	Acreage	Yield Per Acre	Total Yield	Value Per Bu. or Ton	Value Per Acre	Total Value	Cash Outlay	Balance Net
Corn	18	50	900	.62	31.00	558.00	47.38	510.62
Oats	6	25	150	.34	8.50	51.00	31.02	19.98
Hay(Mixed)	25	2 tons	50	9.28	18.56	464.00	66.00	398.00
Woods(Pastured)	22	--	--	--	.50	11.00	--	11.00
Pasture	120	--	--	--	1.50	180.00	--	180.00
Miscellaneous	5	--	--	--	--	--	--	--
Totals	196					1264.00	144.40	1119.60

Average income per acre from farm (crops) -- $5.71

Average income per acre from farm (fur) -- .47

The values given to crops were taken from the average crop prices for the years 1934 to 1938.

The cash outlays were computed by figuring the average farmer expenditures in the form of fertilizer, seed, twine, and threshing costs.

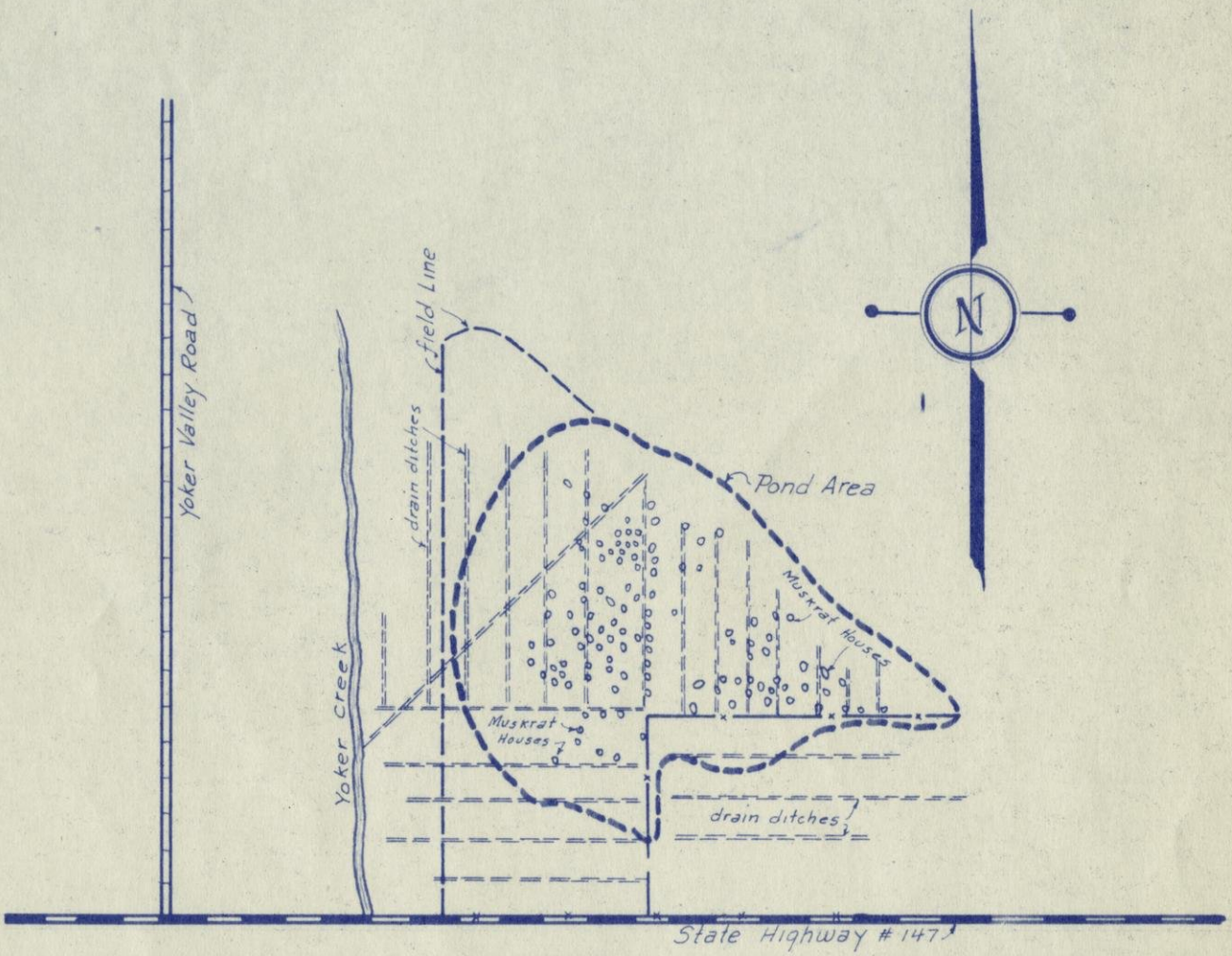
TABLE 2

Income from Fur Animals
on a 196-Acre Farm,
Noble County, Ohio.

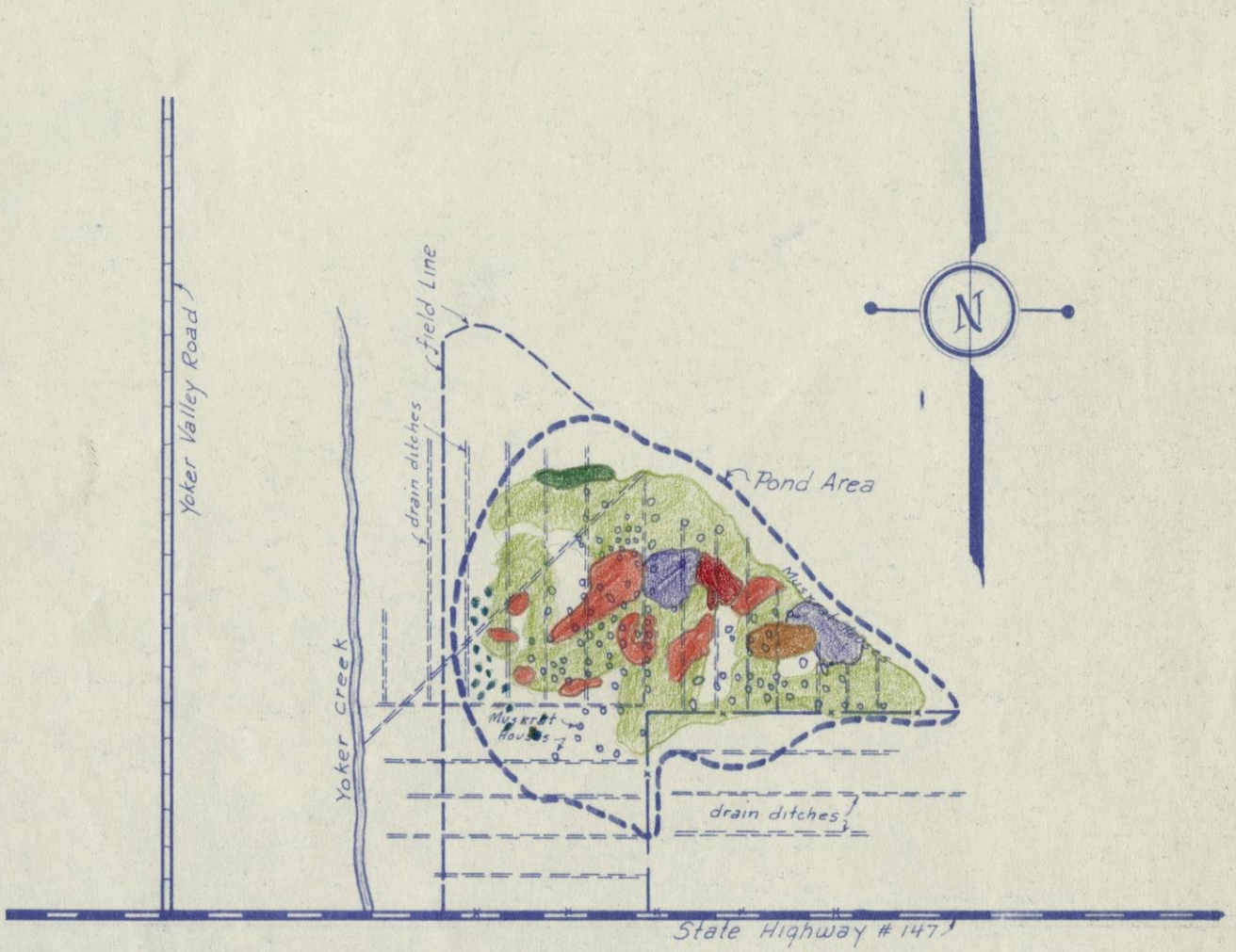
Animal	Land Type	Acreage	Total Number Animals Caught	Average Value Per Pelt	Value Per Acre	Total Value
Muskrat	Marsh	20	66	.76	2.51	50.20
Muskrat	Creek	--	34	.60	--	20.40
Mink	Creek	--	3	5.00	--	15.00
Raccoon	Creek	--	3	1.50	--	4.50
Totals			106			90.10

Average income per acre of farm from furs -- .47

Increase over regular farm income by
annual fur take - - - - - - - - - - - - - - - - - - 8.2 percent.



OWNER_ MUSKINGUM CONSERVANCY DISTRICT
ADDRESS_ NEW PHILADELPHIA, OHIO.
OPERATOR_ JAMES WYSCARVER
ADDRESS_ BATESVILLE, OHIO
LEGAL DESCRIPTION_ NOBLE COUNTY
WAYNE TOWNSHIP S.W. $\frac{1}{4}$ - SECTION 33
DATE_ FEBRUARY 1939
ACRES IN FARM_ 21.7
BY GEO. STANEK



LEGEND OF VEGETATION SURVEY

- Bur-reed Sparaganium sp.
- Sedge Carex sp.
- Smartweed Polygonum sp.
- Sedge Carex sp.
- Sedge Carex sp.
- Wool grass Scirpus cyperinus
- Cat-tail Typha laitfolia

OWNER_ MUSKINGUM CONSERVANCY DISTRICT
ADDRESS_ NEW PHILADELPHIA, OHIO.
OPERATOR_ JAMES WYSCARVER
ADDRESS_ BATESVILLE, OHIO
LEGAL DESCRIPTION_ NOBLE COUNTY
WAYNE TOWNSHIP S.W. $\frac{1}{4}$ SECTION 33
DATE_ FEBRUARY 1939
ACRES IN FARM_ 21.7
BY GEO. STANEK

Oct. 1, 1942

excerpt from the Flambeau--A Dissertation on Wild Rivers p. 5

File Marten

***

Flambeau wildlife is of a character to please both tyro and expert. We saw 52 deer in the river during a day and a half afloat. The strong deer-line on all white cedars, and the heavy nipping of striped maple, dogwood, and pine seedlings suggests that there are too many deer for their own good, and that an increase in the remnant of wolves would be salutary to all concerned. Many mergansers and some blackducks and woodducks hatch along the river. There are still ospreys and bald eagles. The most southerly Wisconsin outpost of ravens is found here. Aspen is scarce, hence beavers are scarce, but muskrats thrive on the river's abundant mussels, and minks thrive on the muskrats.

The Flambeau's real thrill for the more experienced wildlifer is the possible existence of a remnant of martens in one of the blocks of uncut timber. The last known marten skin came out of the Flambeau in 1900, and the species has been considered exterminated, not only from this region, but from the state. In 1940, however, a deer hunter who is also a taxidermist and naturalist reports seeing a live marten, and a reliable local trapper saw tracks in the same locality during the same winter. He also saw tracks in another locality six years ago. If martens still live on the Flambeau, the creation of a wild area with large blocks of uncut timber is justified on these grounds alone; the recreational and forestry values may be regarded as "velvet".

"Skunk" Frank trapped 2 or 3 in 1900

Henry Hervis Glen Flora

Tom West of Little Ferndale

Ray Spellans of Viroqua, about 1½ mi above forks of Flambeau, opposite Little Ferndale in 1940±1

***

file otter folder ✓

Jack Zatic of the Peshtigo Trout Club caught a 3½ # trout in the Peshtigo in June 1925, that contained a 9 inch otter pup. Professor Bartlett of some Kentucky institution had both the trout and the pup skinned and mounted. The otter had been recently taken because the skin was in good condition.

Aldo Leopold

July 19, 1943

File marten folder ✓

Jack Zatic saw a marten in 1933 at Lake Wabikan between Laona and Crandon, Forest County, Wisconsin. He saw the marten climb a tree and also was certain it was not a mink.

Aldo Leopold

July 19, 1943

wolverene

IN REPLY REFER TO

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Columbus, Ohio
July 26, 1944

~~Copy sent~~ file wolverene (attached to other letter)

Prof. Aldo Leopold
College of Agriculture
424 University Farm Place
University of Wisconsin
Madison 5, Wisconsin

Dear Aldo:

Glad to hear of your interest in our Ohio wolverine record. All this time I have been trying to get more information. Haven't seen the animal as yet, but as nearly as I can learn it is a wolverine. Undoubtedly, it is an escaped animal - but from where no one knows. It is unfortunate that it was published without more data, as such reports are misleading.

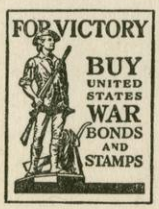
We've also has a number of badgers turn up outside their range - origin puzzling. The numerous coyote records we've been able to trace as to their source.

Best of luck. We surely enjoy the Wisconsin News Letter.

Sincerely,

Lawrence e/s.
Lawrence E. Hicks, Leader
Cooperative Wildlife Research Unit
Ohio State University

LEH:gb



Recent [illegible]

June 9, 1944

Lawrence Nichols

Dear Lawrence -

No doubt you've been pestered by inquiries concerning the alleged wolverine reported killed Dec 8 1943 in Mahoning County, Ohio. (Ohio Conservation Bull. June 1944 p10).

This sounds so improbable that outside readers can hardly be expected to accept it as fact, even though the identification was made by "a noted sportsman".

Have you, or some other competent person, identified the animal? What is the chance of some hoax, or escape from some zoo? I'm mystified.

With personal regards

CC Schorger

(C O P Y)

File muskrat

Feb. 5 - 45

Mr. W. Grimmer
Madison, Wis.

Dear Mr. Grimmer:

For many years I have been watching birds and animals and feeding them in winter and trying to find out just what they like to eat, but last week I found out what muskrats like the best, and maybe you found this out long before I did. But anyhow I thought I would pass it on to you. I always knew that muskratslike vegetables, but you just can't chase them away from brussels sprouts. It happened that last year one of my next door neighbors planted more brussels sprouts than he could use, and a lot of them are still standing in the garden and in spite of the cold and snow they are pretty green. All last week our dogs that we have in a wire fence in the back yard were doing a lot of extra barking, and the other morning they almost tore the fence down so I went out to see what it was all about and there were three big muskrats eating the brussel sprouts as fast as they could. I started over to them and they soon disappeared in the snow. When I looked I found they had a regular network of tunnels under the snow which run all the way down to the creek which runs past the back end of our lots, and is about 100 feet from the garden. Now I find that they come up even in broad daylight with all the dogs in the neighborhood howling at them.

I just thought this might interest some of the fellows that might want to feed muskrats sometime.

Yours,

(s) W. J. Femal
1585 Franz Ave.
Green Bay, Wis.

Copied
ab
2-7-45

File muskrat folder

Minnesota take of muskrat (Conservation Volunteer July-Aug 1945

p48:

1941	943,710
1942	1,900,000
1943	2,563,900

June 19, 1945

Badger

Badger reported at Menominee Indian Reservation, June 13, by T. F. Kouba.

file muskrat

Wisconsin Conservation Department

INTRA-OFFICE
MEMORANDUM

Date October 10, 1945.

TO: Aldo Leopold

FROM: S. Paul Jones

SUBJECT: Data on Muskrat House building.

Records on muskrat house building are rather scarce here at Horicon marsh but the information below may be of some use to you.

William H. Field, warden at Beaver Dam: Mr. Field states that he noticed definite building in 1945 about a week before the opening of the waterfowl hunting season on September 20. 9/13 He also points out that the muskrats drag food up on to the houses all the year except when they are frozen in.

Barney Wanie, fish division at Horicon: Mr. Wanie states that he observed building for a week previous to September 25 and that some building is done up to the freeze-up. He belives that the heaviest building is about October 15.

Franklin W. Burrow, HMWA: Some building done all year except when the muskrats are frozen in. Most of the building is done Oct. 1-15 and continues to the freeze-up.

Harold A. Mathiak, HMWA: States there was definite house building about August 20, 1943. On September 6, 1945, some houses were completed

S. Paul Jones, HMWA; On September 16, 1943, many houses were observed well along in construction and fresh material was observed on most of them. On September 1, 1945, definite evidence of building was noted.

Definite dates are a little difficult to establish since there is activity in house building over a considerable period of time. This is agreed to by all the observers consulted.

S. Paul Jones
S. Paul Jones

cc: Ralph C. Conway

25 - 10
1
26
10
3 16

(12)

No. _____

Phenology for Sept & October

Species, Station, Item	37	38	39	40	41	42	43	44	45	Aver.
Muskrat (Ondatra zibethica zibethica) First house building										
Sauk and Dane					10/25	10/3		10/1		
Horicon marsh	—	—	—	—	—	—	8/20	—	9/1	

(Data by courtesy of _____, State Conservation Dept)

Dear Bill -

Have you anyone in the Dept who has kept track of house-building in muskrat in S. Wisconsin? My own data are too few to have much value. It occurs to me that Paul Jones, or Harold Mallman, or somebody else may have a series of dates for some given locality, like Horicon. If so I'd appreciate permission to use them in a phenology paper, with credit of course to them.

It would be preferable if it could be stated whether the dates refer to the beginning or the completion of houses

Aldo Leopold 9/11/45

CLYDE B. TERRELL
WILDLIFE CONSULTANT



OSHKOSH, WIS.

PLACES MADE ATTRACTIVE
TO FINS, FURS, FEATHERS AND FOLKS
SINCE 1908

October 30, 1945 — Concerning: Muskrat cycles

Prof. Aldo Leopold
424 University Farm Place
University of Wisconsin
Madison, 5, Wisconsin

Dear Aldo:

At our camp on Terrell's Island we keep a journal, or log book, in which anyone going there can record any information or comments that they desire. It is of interest to note in this log book a quotation of November 17, 1939, recorded by Jack Spanbauer and Alex Gorr, who trapped the muskrats there that fall:

> "Muskrats are plentiful this year at Terrell's Island---1,881 caught this season to date--- best record of any fall trapping on Terrell's Island marsh."

I believe that the fall of 1939 represented the high point in the muskrat cycle and that the fall of 1944 represented the low point in the muskrat cycle and that the cycle has now definitely taken an upturn.

In 1944, the first four trapping days, October 26, 27, 28, and 29, 1944, a total of 196 muskrats were taken on our muskrat farm. This year, 1945, on the same four dates, the first four days that we trapped, a total of 430 muskrats and 1 coon were taken. The same marsh and the same number of men, namely, 2, trapped the property in the fall of 1944, and the fall of 1945. The coon ~~was~~ caught was the first caught in several years.

We have two tracts of marsh in this area, the Spring Brook Marsh, of 120 acres, and the Terrell Island Marsh, of 200 acres. It used to be that the Spring Brook Marsh would produce the most muskrats during early fall trapping.

During the fall of 1943, we dredged 6,100 feet of ditch on the west half of the Terrell Island Marsh. This ditch runs from 4 to 6 feet deep, 16 to 18 feet wide, and a bank was

(OVER PLEASE-SAVE PAPER)



PHONE 3347

thrown up on one side of the ditch. This ditch and bank have many things to recommend it, two of the chief things being that it is deep enough to provide water, when the water is lowered at the Neenah-Menasha dam effecting this marsh, so that the muskrats can live through freeze-outs. Secondly, the banks that are thrown up make excellent places for dens and sites for the muskrats to raise their young and to keep them above water during flood periods in the spring breeding season.

It used to be that the Spring Brook Marsh produced more muskrats in the early fall trapping, as heretofore stated, than the Terrell Island Marsh. This year, of the 430 muskrats taken on the first four days of the open season, 279 muskrats were taken from the Terrell Island Marsh, the majority of which came from the area improved by the ditches and banks, while 151 were taken from the Spring Brook Marsh.

We observed that the muskrats from the area where they live largely in dens in the banks that have been thrown up, run larger and are better furred.

I am passing this on as a matter of information and record.

With best wishes.

Clyde B. Terrell

CLYDE B. TERRELL
CBT:jgw

November 3, 1945

Mr. Clyde B. Terrell
Oshkosh, Wisconsin

Dear Clyde:

The historical data and catch figures which you sent me have great value and I am filing them carefully.

I can get the utility of a ditch and I think your experience will be valuable.

May I ask you this question: up to what age are you able to distinguish a young muskrat from an old one and what criteria do you use?

With personal regards,

Aldo Leopold

(Signed in Mr. Leopold's absence to avoid delay.)

muskrats

Copy

900 Gay Building
Madison, Wisconsin
October 23, 1945

Mr. Clyde B. Terrell
240 Winnebago Street
Oshkosh, Wisconsin

Dear Clyde:

I have a copy of the letter you wrote to Bill Grimmer on October 10th, concerning permission for muskrat farmers to harvest runner rats. I agree with you thoroughtly that we should utilize this resource. It is another instance where adherence to old established regulations produces an illogical result.

Another suggestion in your letter is one which Aldo Leopold and I have talked about a good deal, and which we intend to put through, and that is employment of a capable fur man in the Game Department. To date, it has been impossible because of lack of personnel, but many of the good boys are coming back from the service, and we should be able to get a man in the near future. In the past, there has been too much of this work done by the Enforcement Department, and unfortunately they are not trained in the needs of Game Management. Not only that, but their entire approach is an inelastic one based upon a rigid police type enforcement of the law. These things will come with time.

With kind regards, I am

Sincerely yours,

(Signed) Wm. J. P. Aberg

31

CLYDE B. TERRELL
WILDLIFE CONSULTANT



OSHKOSH, WIS.

PLACES MADE ATTRACTIVE
TO FINS, FURS, FEATHERS AND FOLKS
SINCE 1908

October 27, 1945

COPY

Mr. Wm. J. P. Aberg, Chairman
Wisconsin Conservation Commission
900 Gay Building
Madison, Wisconsin

Dear Mr. Aberg:

Thank you for your good letter of October 23, 1945. I am glad to know that you feel that the runner rats, which are frozen and starved out as the water is lowered by the mills, should be utilized. I am putting in an application to take such runner rats on top of the ice as they freeze out, between December 15, and March 15, the usual limits. We never know just when this freeze-out is going to happen because much depends upon how fast the lowering of the water is, how cold the weather is and how much snow there is in the marsh. I have tried to save our muskrats on our muskrat farm by dredging 6100 feet of ditch so the water will stay deep enough so the rats can live when these freeze-out periods occur. I have another ditch about 500 feet long that was dredged about 35 years ago. As finances permit, I intend to do more of such work to partly offset the freeze-out and try to put our marsh in such shape that the rats can live there over winter, or at least a great percentage of them.

Bob McCabe knows.

I am much interested to read that you and Aldo Leopold favor employment of a capable fur man. It seems to me that such a man should have actual experience as a trapper and fur man, and if he also has some education in game management, such as being taught today by our friend, Leopold, I feel that it would make a most excellent combination. He needs both types of education and experience justas much as he needs two legs to stand on.

I am hoping to see you at the annual meeting of the Izaak Walton League in Milwaukee, on November 3. I notice that you are on the program.

In observing different muskrat areas, recently I have observed that there are certain spots where there are a great many houses and many spots where there are no signs of them. It seems to me that a state fur man should try to

(OVER PLEASE-SAVE PAPER)



PHONE 3347

determine the reasons why there is a good crop in some places when they are scarce in others. On my own licensed muskrat ranch, where we have been practising muskrat management, I have several times as many muskrats per acre as on adjoining marsh, owned by the Butte des Morts Land Company and trapped by the Benedict's of Butte des Morts. The property touches our land on the north, east, and one tract joins us on the southwest. Part of the abundance of muskrats on our marsh may be due to good hunting conditions, and part due to our ditches and management. Another marsh, at the little village of Eureka, along the Fox River, (just west of) is full of muskrat houses more than any other spot that I visited on a trip yesterday. This marsh is located at the west edge of the Eureka limits. At North Fond du Lac, along Lake Winnebago, the marsh owned by the Supple Brothers, which you have propably seen on the highway between Fond du Lac and Oshkosh, just as you get out of Fond du Lac, is full of muskrat houses. Perhaps you have noticed another little lake and marsh along the highway, about a mile north of Sun Prairie. I haven't been by that place this year, but there seems to be an unusual number of muskrats there every fall since I can remember. How is it now?

I think that a prospective state fur man, or possibly some of Leopold's students should try to determine what makes muskrats abundant in these spots when they are generally scarce. Our State Muskrat & Beaver Farmer's Association is just as much interested in these things as good farmers in the state are interested in better methods of producing better live-stock.

I am taking the liberty to enclose a copy of this letter in a letter to Aldo Leopold, for his information. I hope to see you both in Milwaukee, on November 3.

Best wishes.

Sincerely yours,

CLYDE B. TERRELL
CBT:jgw

CC Aldo Leopold and Harry H. Klemme

November 3, 1945

Mr. Clyde B. Terrell
Oshkosh, Wisconsin

Dear Clyde:

The historical data and catch figures which you sent me have great value and I am filing them carefully.

I can get the utility of a ditch and I think your experience will be valuable.

May I ask you this question: up to what age are you able to distinguish a young muskrat from an old one and what criteria do you use?

With personal regards.

Aldo Leopold

(Signed in Mr. Leopold's absence to avoid delay.)

The American opossum and its cousin

By Elizabeth Tillotson

(This copy given me Dec. 21, 1945. Ar)
with notes by A. S. Hawkins on opossum at Faville Grove"

Although it is not generally believed, not all wild life has decreased since the "good old days" which our grandparents boast about. In fact, some has been increasing, as we shall see.

When I was a little girl, I knew of the opossum only through stories of the South. Today, the 'possums are probably as numerous on our farm twenty-five miles east of Madison as on many southern plantations.

I saw my first possum while I was riding along the shore of Rock Lake, three miles south of our farm, It was in the spring, 1936. I saw it crouched down in the center of the road, staring at the headlights of the car. We dodged it, and went back, but it had disappeared somewhere over the grassy embankment.

As recently as 1912, Cory, the leading Wisconsin authority on the subject, writes: "It occurs sparingly in northern Illinois and southern Wisconsin. Dr. Hoy writes '--not uncommon in Racine and Walworth Counties as late as 1848. They have been caught as far North as Waukesha, and one was caught near Madison

in 1872, since which time I have not heard of any being taken. I am told that a few are still found in Grant Co.' "

Last year I helped to interview some of the "old timers" of this neighborhood concerning the history of the community, the wild life, the farming methods, and the customs at the time when they were young. About fifteen of them declared that they had "never heard tell of any possums" around here until the last three of four years. The following is a quotation from our write-up of the interviews: "Mrs. Ben Crump remembers her father (Mr. Ephriam Wilson) brought in a possum on one occasion about fifty years ago, and insisted that his mother cook it. No one could eat it except Mr. Wilson."

A raccoon hunter who has for years hunted on this and on surrounding farms killed his first two possums near here in 1930. Three years later he shot eleven on our farm alone. And in 1936, the number was doubled; he shot twenty-five near by. This rapid increase in the possum population here in southern Wisconsin and the other southern Lake states must indicate that something unusual has happened in the South to cause this sudden northward movement. Until very recently the possum has been cont to remain in its original home. Have conditions in the North changed so drastically that the possum actually may in the future move out of the South, in to ~~preference to~~ the North?

No one knows the reason for this surprise visit. We are trying to find the answer for these reasons: First, because the possum is one of the most interesting animals; Second, because it is an exceptional phenomenon of nature; and Third, because there is a very real economic bearing.

Probably no better general short description is given than in the references I have used which quote Purchas (some say it was Captain John Smith) in 1612: "The opassum hath a head like a swine, a tayle like a Rat, as big as a Cat, and hath under belly a bag, wherein she carrieth her young."

This slow, thick, short legged possum has a white pointed face with large bare ears, and a scaly prehensile tail. Many call it a "silly, grinning idiot." He is always a pacifist. Everyone knows about his "playing possum" trick which is actually a fainting spell. He does not consciously play possum. His body goes limp, the heart almost ceases to beat, and the body temperature goes down. The disgusted offender gives a final shake, and leaves "Billy Possum" to brush himself off, and go in search of a supper of fish worms, beetles, and apples, or anything else that happens to be in the way. The possum is omnivorous, being fond of fruit, insects, live meat or carrion. Pray(quoted by Seton) even gives strong evidence that the possum is cannibalistic. It is hard to believe that such a mild mannered animal is so vicious.

Seton says that the possum seems not to have developed very far as a sanitationist; but he quotes Townsend and Bachman as saying that it washes itself, catlike, after a meal, and that it takes sun baths. This and other evidence indicates that when undisturbed, the possum is not exclusively a night prowler. Early on an afternoon in February, 193[illegible], a possum was caught in a woods near here. At the same time of the day in December, 1936, another was seen a short distance from a farm house, devouring bees at a hive.

The majority of possums are gray. Wells says that "--among the usual grays a small proportion of black specimens (up to 10%) are to be found, while in other regions a small percentage of cinamon-colored animals regularly occur.

Seton says that the possus is always solitary; but he quotes a story written to him which is contradictory. A pet possum owned by a negro mammy disappeared during very cold weather and returned a few days later, followed by a full-grown possum. Considering the brain capacity of the possum (as measured by Baily, in Seton) which holds about twenty-five beans, as compared with 150 held by a similar sized coon, it is highly improbable that any possum would leave a warm home to go out into the cold to bring his friends back to share it with him.

Despite the fact that the possum is an able climber, he is too lazy to climb except for a meal of

fruit, or to escape from danger (when the danger isn't right upon him, in which case he plays possum). He hardly ever nests high in a tree, preferring a hole in the ground or a hollow log. The nest is lined with leaves and grass, transported to the nesting site by the tail. After a gestation period of from eleven to thirteen days, the young are born. An astonishing fact is that all marsupials including kangaroo, the opossum, and the mouse-like marsupial, are approximately the same size at birth. They are so small that Luttringer was able to place eighteen young possums in an ordinary teaspoon. Naturally, if they are this size, the young must be wtill very embryonic; but the front legs and claws are well developed, enabling it to climb without assistance from the mother, up over the abdominal wall into the pouch, where it finds and attaches itself to a teat. There are more produced than can be accomodated in the pouch. The rest perish. There may be from five to eighteen young. The young opossum remains attached here, growing and developing, for about four weeks. Then for the first time it relaxes its hold inside the pouch, and emerges occasionally in the fifth week. In the sixth week they really venture out and travel about riding on the mother's back, their tails wrapped securely around hers. After two months the young leave the adult, although they are not entirely grown. At a year, the female produces young; it is not known whether it pairs

or is promiscuous. Two adults have not been observed together, even at mating time.

The opossum has many enemies, notable among them man and dog. The great horned owl, coyote, wolf, cougar, bear, wild cat, and fox are its other important enemies. Seton says (in contradiction to Anthony) of the last two mentioned: "We recollect no instance of its having been killed by the wild cat or the fox. Errington states definitely that the red fox eats possum.

Despite all its enemies, the possum manages to keep increasing. Probably the four most important reasons are that it is enormously prolific, it is generally a night prowler, it can climb trees, and it lives in a hole under ground.

The opossum is the only marsupial in North America; all other marsupials are found in South America and Australia. "There are wolf-like, cat-like, mole-like, and ant eater-like marsupials; some of them even have parachutes of skin connecting the fore and hind limbs together so that it can plane through the air like a flying squirrel."--Wells.

Encyclopedia Britannica says the family appears "to have originated in N.A. and spread to Europe and S.A. Probably the American possum is the survivor of an ancient and diversified group which was possibly spread as far East as Asia. This gave rise to the American marsupial and Australian carnivorous marsupials.

The possum is known to have a limited home

range, although it sometimes moves as much as two miles a night.

Why is this "rat of the woods"steadily moving northward? It does not, and can not move as birds do, but must take years to ever get anywhere, even if it moved steadily, which it doesn't.

In December, 1935, one of the men working on this farm came upon two dead possums, in two fields adjacent to the woods here. One lay in the shallow snow in a hay field, and the other he found in a corn field. The man thought they were either diseased or had frozen to death. The bodies were at least one hundred yards apart. Was there something about the climate which the possums were unable to combat? Perhaps food was scarce.

When we think of the economic importance of anything, we usually consider the food and clothing angle first. Possum meat, although it is eaten, especially in the South, is not highly prized.

Possum fur is the fourth most valuable in the United States. It is not particularly handsome or durable. A good many women, although they don't know it, are indebted to the possum for their fur coats. Other furs would be out of their reach financially. Under high sounding names such as Australian Chinchilla, Russian marten, and stone marten, the good old possum fur coat makes thousands happy. Because the possum is just as expensive to raise as the more valuable animals, it is

improfitable to have possum farms; so the animals must grow and be trapped in the wild.

Henderson and Craig say, "--opossums have been found definitely susceptible to tularemia in a fatal form." The disease does not flourish in the South, but it does in the North. Perhaps this is a good reason for banishing it, or at least for preventing its becoming too numerous. The best we can do is to watch, wait, and see.

BIBLIOGRAPHY

Anthony, H. E.
1928 Field Book of North Am. Mammals pp.3-7
G. P. Putnam's Sons

Ashbrook, Frank G.
1928 U. S. Dept. Agr. Leaflet No. 27

Cory, Charles B.
1912 Mammals of Ill. & Wis. Mool. series, Vol 11
Chicago

Dearborn, Ned
1932 Foods of Some Predatory Fur Bearing Animals
in Michigan Publ. by U. of Mich. Press

Errington, Paul L.
1935 Journal of Mammology Vol. 16, No. 3--p.193

Encyclopedia Britannica
Booklet No. 3, Edition 14.

Fur Animals of La.
1931 Bul. No. 18--Publ. by State of La. Dept. of
Conservation- pp.75-85

Hamilton, W. J.
1934 Life History of the Rufescent Woodchuck

Hendersin, Junius & Craig, Elberta L.
1932 Economic Mammology--Charles C. Thomas

Jordan, David Starr
1929 Manual of Vert. Animals, Ed.13 W'ld Bk. Co.

Luttringer, Leo A.
1931 An Introd. to the Mammals of Penn. Issued
by Board of Game Commissions--Bul No 15

Seton, Ernest Thompson
1929 Lives of Game Animals Vol.4 Part 2
Doubleday, Doran & Co. Inc.

Taylor, Walter P.
1930 Outlines for Studies of Mamm. Life Hist.
U. S. Dept. Agr. Misc. Publication No 86
Washington, D.C.

Williams, Samuel Howard
1928 Mamm of Penn. Pittsburgh

Arthur S Hawkins

Year	No. seen	of whom reported	
about 1880	1	Mrs. Crump	Mr. Eph Wilson brought it home see Nat. Hist. of Fav. Grove note
1926	1	Mason + Strassburg	- university farm just out of Cambridge on 18
1930	5	Mason	Goose Lake (2) and vicinity - none taken between 1926-30
1933	about 60	"	His dog was esp. fond of possums that year 11 or 13 were taken in Faville Wds on one night alone (3 adults rest young)
(Quite a few between 1930-33)			
1936	25-30 by dogs	Mason	Tried to avoid them. Saw several the dogs didn't tree so believes they are thicker than 1933.
about 1900	—	Kleist	Says they were reported in the big swamp near Jeff. Junct. by hunters.
Jan 1936	1	Kleist	Farmers Is - grav. pit back of Bruce Taylors. "Played possum" "snow deep (almost too deep to wade in)". Mr. Kleist reports having killed one in a sewer on Madison St. about 10 yrs ago. It was one of 2 kept as pets by a neighbor. The other died. They were imported from Texas
Summer 1935	1	Lange	In yard. Played possum and was put on roof as dead. a little later it was seen walking off to Springer woods
Dec 1935	2	Giese	Found 2 frozen carcasses in one day along the E side of Faville Wds. They backed marks of violence on their bodies; hence the theory that they died of hunger, cold or disease
Feb. 22 1935	1	Hawkins	Captured under stump where it was eating a rabbit carcass (Played possum) mid afternoon.
Jan 17, 1936	1	"	Tracked from H. Kin spring to Rock pile Springers wds at apple
Feb. 1935	1	"	at Riley tracked one some distance - Slatter + Littleton
Spring 1936	1	"	Crossed rd. ahead of car N. end Rock Lake - seen by headlights
Feb 1935	1	"	1 found dead in watercress Springhole - Sauk City
Dec 9, 1936	1	"	at foundation of Lys Styles house eating dead bees mid afternoon
1935 (Oct)	1	Kleist	A neighbor hunting between the marsh + Mud Lake picked one up + carried it in his hunting goat all afternoon. It got away from him after he got it home
Feb 1935	1	Hawkins	Tracked in Bergs woods
Dec 9-12	tracks	"	Bergs wds, Fav. Wds at Goose Pd, Plum grove + Cr. St.
Summer 1934	1	Tillotson	Smith Lot. Killed by Woolie
July 1936	1	Hawkins	Oak grove back of Tillotson cow barn, carcass under oak tree (skull in collection)
Feb 11, 1937	1	"	at sunset, feeding at G.P. 2.
Feb 13	1	S. Kisow	Killed by dog at feeder today Cambridge Marsh

M (f.b.) - 01
(f.b.) = fur bearing
(B) = buffer

Subject: mammal Census (Opossum)

Harry Mason, local hunter, reports:
Never caught any white coon hunting until ——
This year took 25. In '33 took 11 in
Faville woods alone.

12/9 — Saw a possum at beehives by cellar Fav.-Kin line (near WW Kin. 1#). It was very sluggish and if I hadn't been stopped by a fence I could easily have caught it before it scurried down one of the 2 recently used holes in the old cellar. Tracks showed that it had been feeding on dead bees which were scattered around in the snow.

It was about 3 P.M., the sun was shining, temp. about 40°. Snow piled about 4" deep around bee hives.

12/11 — Possum tracks seen: near Goose pond #2, prairie 1# (in slaters) and prairie #3 (Plum grove)

12/16 — Very poor tracking but there were what appeared to be 2 tracks N side of Berg rd.

2/11 — A small possum seen tonight at sunset while visiting the 6 P.M. pheasant trap. It hid under a brush pile

2/13 — One killed by Pal Keiser on Cambridge marsh

Coon season 1937 — H. Mason says his dog killed about 15

1/16/38 — 1 Possum caught alive in pasture in afternoon by Elmer Krull of route 89 Jeff. Rd. Brought to Fav. Br. + ear tagged #13 released in Fav. wds. — Wt. 2795.2 gms. little over 6 #.

The Opossum Didelphis Virgin

1912 - Cory writes " The Virginia opossum -- occurs sparingly in northern Illinois and Southern Wisconsin. Hollister records three specimens having been killed in Walworth Co. during the past 15 years. Jackson states that three specimens were taken in Green Co, one in January, 1902, and two in the autumn of 1906. Dr. Hoy writes " the opossum were not uncommon in Racine and Walworth counties as late as 1848. They have been caught as far north as Waukesha and one near Madison in 1872, since which I have not heard of any being taken. I am told that a few are still found in Grant Co.

An Opossum was killed near Columbus, Columbia Co. in the fall of 1905.

I have a record obtained from old timers for about 1880 at Lake Mills.

Increase around Chic. about 1928 after a dearth, which in turn followed a period of fair abundance in "the early days"

Danbury, Burnette Co. 1935 Leopold

Kewaunee NW corner 1933

First Possum 1930 Sowls, Lafayette

at least 3-4 at Arboretum now - Feney -

Arboretum 1934 L. Brown - 1931 (1)

1/9 No squirrels nor rabbits seen during 1/8, 1/9 despite much ground covered in good territory (the best) on 1/9. The temp. was below zero following yesterdays rain & the ground was ice coasted.

Harry Mason claims to have seen a fox squirrel mortally wound a quail in the old 4 acre Sams Kisow station. 5 squirrels & a covey of quail were in the Sta as he approached. The quail had been torn & wounded so it couldn't fly. (He shot all the squirrels)

He & Strassburg also had the experience of tracking a small mink in a fresh snow to where a pr chicken had roosted. As the tracks ended here there seemed nothing else than to believe that the chicken had carried off the mink after being attacked. A search of the neighborhood (with a good dog) failed to reveal either chicken or mink

Started trapping for birds 2/2 at 3 PM
Rabbits had been in 4 out of the 10 traps by moving after light squirrels began to bother & were in 3 traps (2 pheas, 1 quail) during day.

Fox activities become much evident around feeding stations during first week of Feb. (for some reason).

2/14 - went Fox hunting with H. Mason this PM but didn't strike any fox.

2/17 - un-determined ♀ pheas. mammal kill at G.P. 3

Muskrat

PLANS AND ESTIMATES FOR WILDLIFE RESEARCH PROJECT - MUSKRAT
(1st Revision)

WISCONSIN'S MUSKRAT PROBLEM:

Wisconsin needs management procedures necessary for producing maximum yields of muskrats. However, it is futile to produce such maximum yields unless they are adequately harvested. High muskrat populations not adequately harvested result in wholesale die-offs. It is not important whether these die-offs are the result of diseases, severe winters, intra-specific strife, or other known causes. It is important, financially speaking, if such a die-off occurs! Unless man reduces a dense population which he has helped create, nature will reduce it to the carrying capacity of the range and at man's expense.

It is necessary, therefore, to know something about carrying capacity of Wisconsin marshes. An intensive study of carrying capacity of any marsh involves detailed study of reproduction, limiting factors, food requirements, territorial requirements, movements and wanderings, census methods, time of harvest, and competition with other interests. It is impossible to set down an outline that can be closely followed that will result in conclusive findings for all these intricately-involved problems, especially when one researcher with a shaved budget is faced with all of them. It is possible, however, to begin intensive study of at least the most important problems and work toward conclusions of the others.

WORK PLAN:

(A) Details of program for first and only year under this project statement:

(1) The leader will headquarter at Horicon unless a more favorable station is known. He will cooperate and work together with the leader of the waterfowl project and other personnel of the state department.

(2) Literature pertaining to muskrat studies, especially those that have been conducted in neighboring states, will be reviewed and studied.

(3) A study of reproduction will be started. Muskrats will be trapped, tagged, and retrapped to determine: potential number of young per year per female, average number of young produced per female under various conditions and population densities, survival of young per female under different ecological conditions and population densities, and the population density of breeding stock at which the greatest number of harvestable young are obtained.

(4) A census method will be developed that can be used to determine the harvestable "surplus" on the area before trapping starts and that can predict at an early date the approximate crop that will be available for harvesting. This census method will be based on the number of muskrats per house per acre. To develop such a method trapping and tagging will be necessary.

(5) Winter and predation losses will be studied to give information on the proper time of harvest under specific and various conditions. In such studies weather, water stability, topography, soil type, pelt primness, and market conditions will be carefully analyzed.

(6) Limiting factors will be studied. This term is intended to include: (1) effects of a given population on plant succession and the survival of the better foods (recent evidence from Canada not only shows the importance of muskrats in affecting plant succession, but it shows the importance of openings created by muskrats for the benefit of wildfowl), (2) which plants are required to carry a colony of muskrats through the winter, (3) the problems of weather that affect the environment rather than having a direct effect on the animal, and

how many more rats should be expected on an acre of marsh in southeastern Wisconsin as compared to northern Wisconsin.

(7) Physiological studies will be a definite part of the program. During the trapping seasons, and at certain other seasons, muskrat carcasses will be salvaged for study. The most important endocrine glands, especially the gonads, will be fixed and preserved in F.A.A. (10 parts formaldehyde, 10 parts glacial acetic, 20 parts 95% alcohol, and 60 parts water). These glands will be carefully examined in the laboratory when field studies permit to determine possible influences of various endocrines on reproduction and other population problems. In addition to the glands preserved, the leader will carefully examine the genital tract of all females recording observations on placental sites, periodic pigmentation, and muscular collapse of the oviducts. In some cases these oviducts will be preserved for further study.

(8) Throughout the year the leader will study many routine but pertinent problems relating to proper muskrat management, especially where such problems are peculiar to Wisconsin conditions.

COMMENT:

It will be necessary for the man working on this project to have <u>good</u> physiological training. Such training seldom goes with under graduate training. Physiological training should not be confused with pathological training or ability. It is not conceivable that a man studying reproduction could go far without introducing physiological work into his studies.

ESTIMATED EXPENDITURES - Period 1 July 1946 to 30 June 1947

(A) Salaries and wages:

Name	Duties	Period	Rate	Total
Project leader	Supervise project	1 year	$200.00 mo.	$2,400.00
Total: (salaries and wages)				$2,400.00

(B) Travel expenses:

Name	Duties	Period	Rate	Total
Project leader	Supervise project	1 year	$ 80.00 mo.	$ 960.00
Total: (travel expenses)				$ 960.00

(C) Materials and supplies:

Item	Number	Unit cost	Total
Misc. equipment (containers, postage, stationary, film, printing, etc.)	unknown	unknown	$ 85.00
Contingency fund			$ 55.00
Total: (materials and supplies)			$ 140.00

Grand total: (salaries, travel, supplies) $3,500.00

Respectfully submitted,

Irven O. Buss

IOB/5-22-46

red fox

opossum ✓

Jedlich (of Cook Co. Forest Preserve) says that when living on The Pallas Area in 1919 there were no opossums. Caught first in 1923. Also no red fox in 1919. Came in during the 1920's.

Aldo Leopold
August 27, 1946

copy for Steve

Fall Woodchuck 9/9/46

Woodchuck In August 12 – Sept 3, 1946 a woodchuck at Canton Mass displayed following food preferences:

Preferred	Passed up	
String Beans (Bearing)	Calendulas	Tomatoes Chard
Marygolds (blooming)	Asters	Carrot
	Zinnia	Onion
	Cabbage	Beet
		Cucumber

Information by Mrs Hindley Bureau Entomology

AL

IOWA STATE COLLEGE
OF AGRICULTURE AND MECHANIC ARTS
AMES, IOWA

DEPARTMENT OF ZOOLOGY AND ENTOMOLOGY

Jan Boer
Lopold Mss (49)
muskrat file

January 8, 1947

Professor Aldo Leopold
424 University Farm Place
Madison 5, Wisconsin

Dear Aldo:

I am sending under separate cover a half-dozen reprints of the fox-muskrat paper. We could spare a few more if you happen to need them.

Concerning imprisonment of muskrats in frozen lodges, I have no evidence that such things occur very often at the latitude of Iowa and southern Wisconsin, and probably then largely during the occasional very severe winter when northern conditions do, in effect, prevail. I am mindful of Seton's (Lives of Game Animals, 1929, Vol. 4, pp. 593-594) comments and his quotation from Mayne Reid; and also recall, from my own trapping experiences, ice about five feet thick on Upper Red Lake and nearly three feet of ice even on South Dakota lakes--which indeed reflects cold sufficient to impose great problems of survival upon the muskrats. But, of course, snow ordinarily confers much protection in the North; I remember once, when I spent an afternoon talking Saskatchewan River muskrats with Denmark and Cunningham, somebody made the point that with the usual amount of snow, 50 below zero in central Manitoba really might not be colder in the marsh than 30 below in South Dakota.

From what I have seen, it would really take a lot of freezing to imprison muskrats, for they often cut through frozen mud or ice when conditions require it. In addition to the observations on this sort of thing given on pp. 178-182 of my paper "Reactions of Muskrat populations to drought", Ecology 20:168-186, 1939, we have a considerable amount of unpublished data indicating that vigorous Iowa animals can break out about any time they may want to--though getting back into a suitable retreat under the ice may be a different matter. Last winter, I was astounded to find clear evidence of muskrats at Goose Lake rehabilitating in mid-winter or very early spring several lodges that had been "dead" and mink-bored for weeks--with chambers exposed to view and ice many inches thick sealing the plunge holes. Whether they cut away all that plunge hole ice from above or below, I don't know for sure; but I think it was from below. At any rate, they did it, not only once but repeatedly and in widely separated parts of the marsh, thus upsetting at this late date some ideas I had held for thirty years! So don't expect too little of the muskrat as a winter engineer, as long as he gets enough to eat and keeps his extremities from freezing.

Sincerely yours,

Paul

Paul L. Errington
Research Associate Professor

PLE:PKT

(Over)

P.S.

I have been having misgiving as to the propriety of my not sending Albert Gastrow reprints of the Ecological Monographs and Quarterly Review of Biology papers, to which his work has importantly contributed. I can hardly tell him that I deliberately withhold them from him to avoid biasing his future observations on the area (which at least has been my intended policy since leaving Wisconsin, and I don't recall having failed to live up to it), but there is the possibility that he might feel hurt if he knows of their existence and isn't given copies. Certainly, no one is more deserving of courtesy in such a matter than faithful old Albert but what should I really do? Would you care to ask by ad Steve what their views might be?

Ask Cyril

V.L.E.

January 21, 1947

Dr. Paul Errington
Department of Zoology
Iowa State College
Ames, Iowa

Dear Paul:

Thanks for your explanation of the imprisonment question in muskrats.

Cyril Kabat is the best judge of anything pertaining to Albert Gastrow. I am asking him to size up the matter and if he thinks Albert should get copies of the recent papers we can furnish them from here. I doubt whether Albert would read them even if furnished and I doubt whether they would bias his observations even if he read them.

We have had some interesting discussions with David Lack and he told me about his talks with you.

With personal regards,

Aldo Leopold

January 30, 1947

Mr. Albert Gastrow
798 Water Street
Prairie du Sac, Wisconsin

Dear Albert,

Cyril and I thought you would like to see Paul's latest paper, of which he has furnished us with a supply for his friends here. I enclose a copy.

This paper is based, in part, on the Prairie du Sac data. It is pretty deep stuff, but in my opinion very important. I don't agree with all of it, but Paul has performed a big service in bringing together all this widely scattered material.

I have been well aware thatyou have done a lot of overtime this winter. At the moment I am unable to compensate you for this, but I will find some way to even things out eventually. I have been much pleased that you felt well enough to do all this aditional field work.

With personal regards,

Aldo Leopold

cc PLE
Irven Buss

Bob
file Midwest

August 26, 1947

Dr. Charles M. Kirkpatrick
Department of Forestry and Conservation
Purdue University
La Fayette, Indiana.

Dear Doctor Kirkpatrick:

Four men from the conservation department of the Cook County Forest Preserve District plan to attend the Ninth Midwest Wildlife Conference at La Fayette on December 9, 10 and 11.

Since the work of our department is centered around nature study and conservation education, we would like to see one or two lively discussions in these fields. I am sure that my boss, Roberts Mann, superintendent of conservation, could give a good account of himself on some such title as "Teaching Outdoor Appreciation: Objectives and Accomplishments." Also, one of our naturalists, Roland Eisenbeis, can give an interesting discussion of his experiences this summer teaching nature study, conservation of natural resources and outdoor manners to youngsters of the Chicago area.

For two years, John Jedlicka, another of our naturalists, with the assistance of several other of our employees, has kept records of the larger mammals and birds killed on the highways in this region. These records can be summarized to give an interesting sidelight on the causes of death of wildlife in a metropolitan area. If these subjects are acceptable, we will send definite titles a little later.

I may send Dr. Ricker a title on a second year of creel census at Maple Lake.

Since I helped organize the first Midwest Conference in 1935, I might be permitted to make a suggestion. It is that special effort be made to draw into the conference all of the Midwest people working as naturalists in national parks, state parks, city parks, forest preserves, etc., or anyone else interested in the professional side of conservation education. We have recently scouted the possibilities of employment

in this field in the Chicago area and it appears within the next few years there will be openings for about 100 people specially trained in wildlife, natural resources, teaching methods and socialogy.

I would like to point out that the Midwest conference was organized with three main objectives: (1) to promote a professional scientific viewpoint among the wildlife technicians of the Midwest especially for the younger men, (2) To give greater time for the discussion of Midwest problems than was offered by the National meetings in order to develop a Midwest policy and viewpoint, and (3) To draw together all of the groups interested in management of wildlife resources regardless of conflicting interests, and thresh out their differences on the basis of available facts.

It now appears to me that the conference is concentrating too much on fish and game management for licensed sportsmen. Unless the technicians working on wildlife from other viewpoints are allowed to air their views at these same meetings misunderstandings and schisms are certain to develop and the original purposes of the conference will be partially defeated.

It is easy to lose sight of these things because the conference has no permanent organization, no charter, no officers, no members, -- just a local committee in the state selected for the meeting.

Very truly yours,

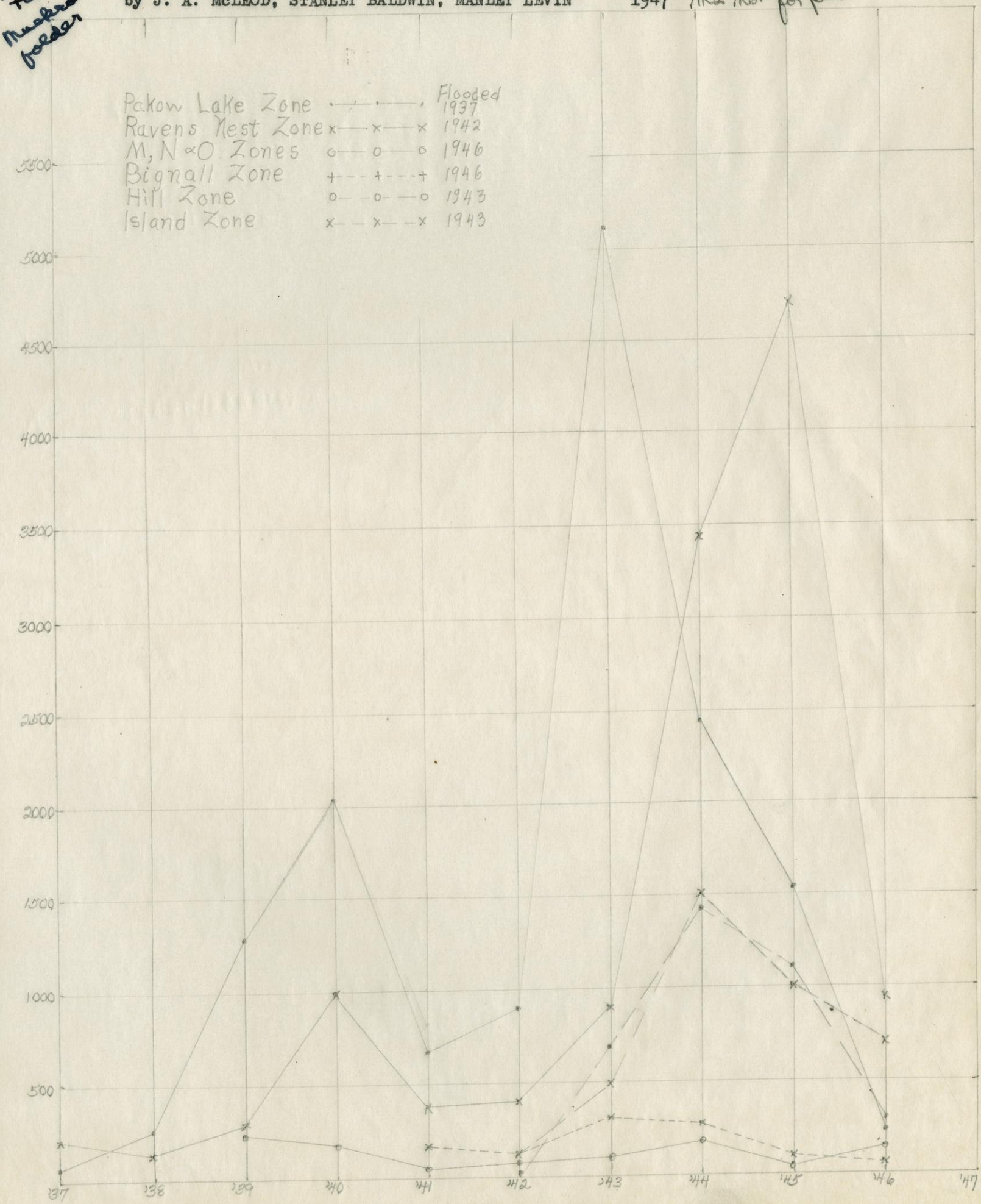
David H. Thompson
Senior Naturalist.

CC: Dr. T. H. Langlois
CC: Prof. Leopold
CC: Harlow B. Mills
CC: Dr. William E. Ricker
CC: Dr. A. S. Hazzard
CC: Dr. Paul Errington
CC: Mr. E. B. Speaker

A BIOLOGICAL INVESTIGATION OF THE SASKATCHEWAN RIVER DELTA WITH SPECIAL REFERENCE TO MUSKRAT PRODUCTION

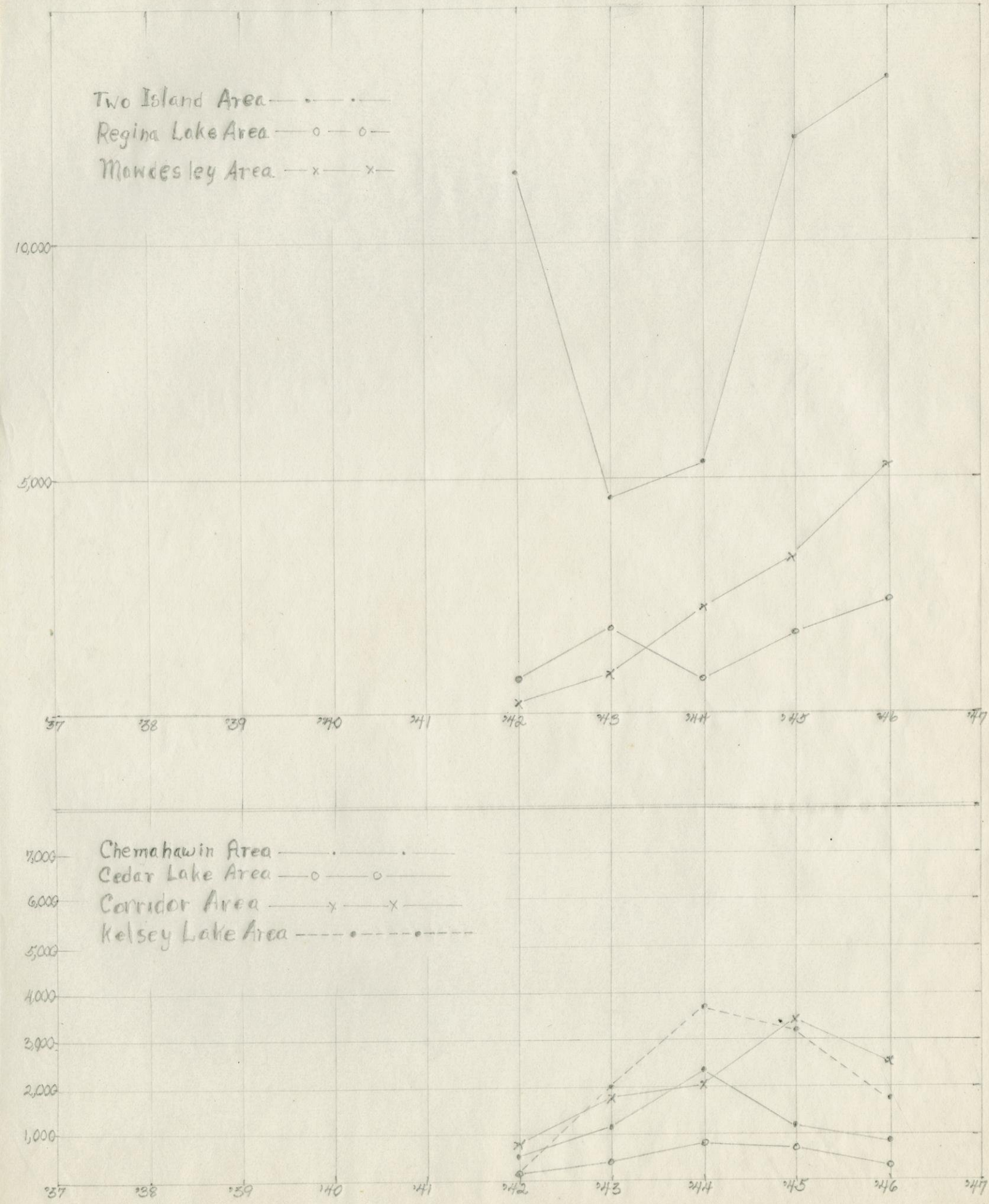
by J. A. McLEOD, STANLEY BALDWIN, MANLEY LEVIN 1947 ms not for pub.

File Muskrat folder



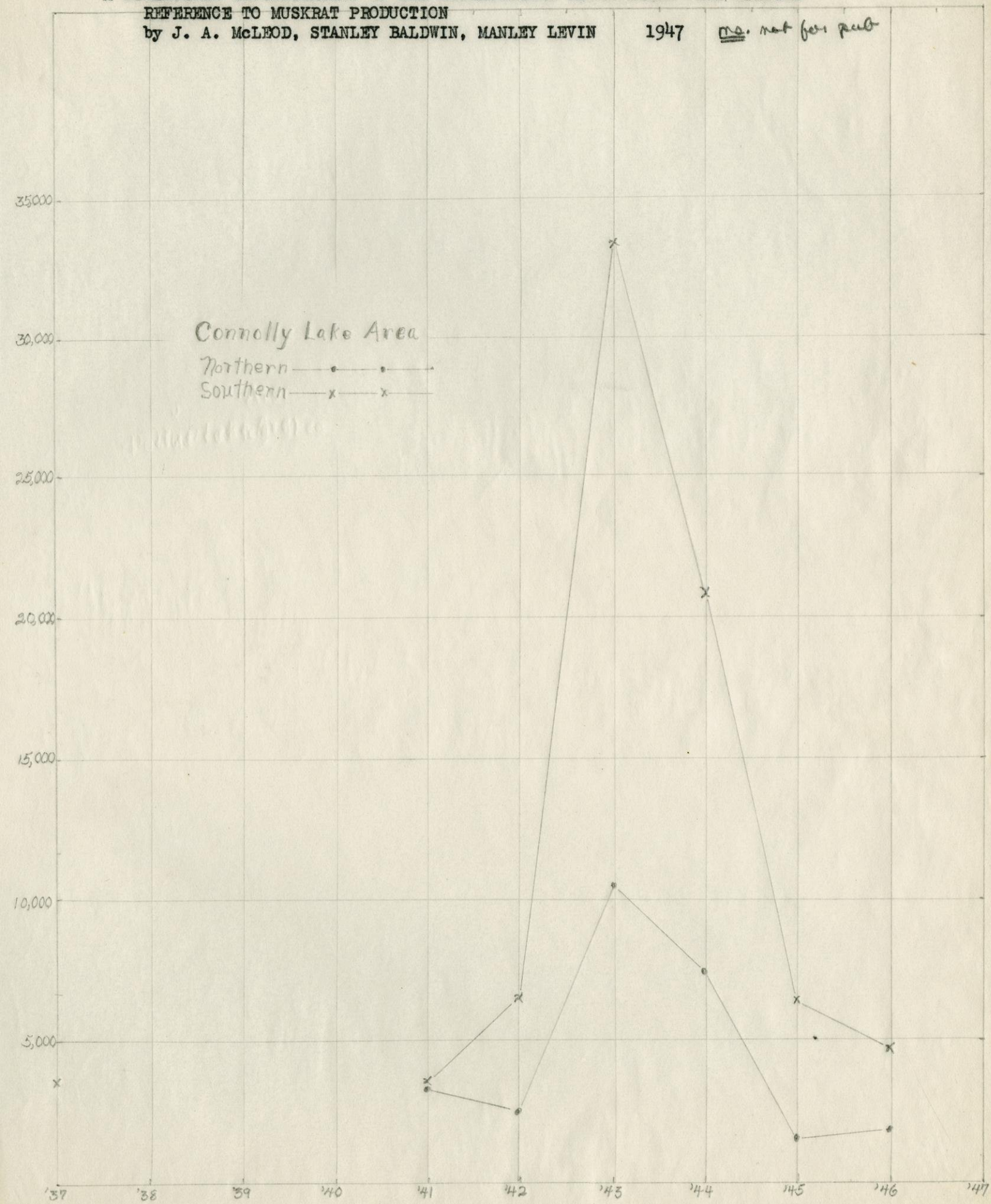
A BIOLOGICAL INVESTIGATION OF THE SASKATCHEWAN RIVER DELTA WITH SPECIAL REFERENCE TO MUSKRAT PRODUCTION

by J. A. McLEOD, STANLEY BALDWIN, MANLEY LEVIN 1947 mo. not for pub



A BIOLOGICAL INVESTIGATION OF THE SASKATCHEWAN RIVER DELTA WITH SPECIAL REFERENCE TO MUSKRAT PRODUCTION

by J. A. McLEOD, STANLEY BALDWIN, MANLEY LEVIN 1947 no. not for pub



THE CALIFORNIA RING-TAILED CAT.

By WALTER FRY, in charge Nature Guide Service, Sequoia National Park.

The California ring-tailed cat *(Bassariscus astutus raptor)* is one of the most remarkable animals of the Sequoia National Park. Owing to nocturnal habits it is seldom seen by park visitors, but when once seen it is remembered because of its grace, varied coloring and almost human facial expression of kindliness. This cat belongs to the raccoon family; the body length is about 15 inches, and a round slim tail of nearly the same length is heavily furred to the tip. The body is slender; legs short; height about nine inches; weight about two and one-half pounds; ears broad, one and one-half inches, scantily haired; eyes large, mild and expressive. The fur is strikingly marked with black, white, brown and gray.

The ring-tailed cat ranges from Costa Rica on the south northward through Mexico and Texas, thence on to Colorado, southern Utah, Nevada, and Oregon on the north. Throughout its range it seeks the warmer climates, as it is not well adapted for cold weather. In places it is fairly abundant, while elsewhere it is very rare and in many places wanting. In California this mammal is not plentiful anywhere, but inhabits the Upper Sonoran Zone, usually below 5500 feet, along the western slopes of the Sierras. In other localities the zonal range differs greatly from that in California; in Oregon it is at sea level, while in Mexico it is from sea level up to 10,000 feet.

The California ring-tailed cat is strictly nocturnal in habit and wanders far and near in quest of food, eating almost anything that comes its way. The principal food here is rats, mice, gophers, birds, frogs, lizards, berries, fruit and many insects. Although the animals can run somewhat rapidly and climb trees quickly, they seldom catch their pray except by stalking. These animals hunt alone. I have never heard them give voice except when pursued closely or captured. When approached they will give a short quick bark similar to the California gray fox, and when captured they utter a shrill cry of fear and rage.

The breeding season for this locality is April to June. The young are three and four in number and probably only a single litter is produced each year. The animals den in rock crevices, under logs and in hollow trees. In these dens, on beds of dry grasses and leaves, the young are born with eyes closed. Their bodies are covered with downy fur, lighter in color than that of the adults, and the tail bands are scarcely visible. When six weeks old the young come out of the den and at two months they go on nightly hunts with their mother. The mother weans them at the end of the third month and leaves them to shift for themselves.

I have had many interesting personal experiences with these animals and find them intelligent, bold and inquisitive. They are not combative and they respond quickly to kind treatment, making fine pets.

On May 25, 1906, while I was camped at Rocky Gulch, Sequoia National Park, I saw two beautiful specimens of these cats, an adult male and a female. Both were so good-natured and gentle that it was only necessary to feed them a few times to induce them to come into the cabin with me. They became so tame that they would eat from

my hands, climb into my lap, and sleep in a bed that I prepared for them in the cabin. A few days after my arrival the female had three kittens, about the size of newly born house cats. For two or three days the mother would not permit the father to come near them, but later the family occupied the one bed. The kittens grew rapidly, and when three weeks old the parents began to carry food to them; at the age of about eight weeks they accompanied their parents on nightly hunts, returning to the cabin in daytime. Later I was relieved by a detachment of soldiers, who also made pets of the ring-tail family so that they became as tame as any house cats.

Scarcely any other wild animal has as many names as the ring-tailed cat. In the United States it is known as "ring-tailed cat," "miners' cat," "coon cat," and "band-tailed cat." In Mexico it bears the name of "cacomixtle," except in Lower California, where it is the "babisuri." Despite this nomenclature the animal is not related to the feline family, but is akin to the raccoons. All the common names in the United States are gradually giving way to that of "ring-tailed cat." While this common name is not well chosen, as the term "cat" properly belongs to the feline family, it is now too firmly established to be dislodged.

Will the ring-tailed cat continue to thrive and hold its own under existing laws? Positively, it will not. The animals have no protection except in the national parks; but as the park areas comprise but a small portion of their range the protection from this source is but meager. Outside the parks these pretty animals are being depleted from year to year by the ever-increasing number of fur trappers. The animals in the neighborhood of the Sequoia National Park are not half as numerous as they were ten years ago. They are not endangered on account of their fur, as it is not high on the market; but as the trappers make their sets for other animals of higher fur value, the ring-tailed cats are constantly getting into their traps and are killed and taken along. While the animals are not in danger of immediate extinction in California, I do consider that it will soon become necessary for the state to furnish adequate protection or we shall lose this beautiful California mammal.

It is not safe to upset the balance of nature and destroy the many species of mammals, birds and harmless snakes which prey on rats, mice, gophers, ground squirrels and other vermin. The ring-tailed cats, the badgers, the skunks, the raccoons, and even the coyotes are men's best friends; while as to the hawks and snakes, they destroy hundreds of vermin for each domestic bird taken. Let nature alone and there will be little need to spend millions to poison and to trap vermin. As it is now, the poison and traps put out only too often destroy as many friends as enemies.

The campaign against vermin is too often foolishly and thoughtlessly conducted; and when there is a financial reward for men to trap and poison, the facts of natural science are neglected. Man is but slowly emerging from the savage state when the lust to kill was among the strongest of his instincts. It is easy to appeal to this instinct by labeling animals as "vermin" to be destroyed without proper consideration of the many biological factors involved.

Refuge presented by the Russell Sage Estate and it is also near the large tract given by the Rockefeller Foundation.—*American Game Protective Association Bulletin.*

On June 6, 1924, President Coolidge signed the bill establishing fishing reserves in Alaska and effecting other measures to conserve the salmon fisheries of the Territory; also prohibiting halibut fishing in the North Pacific Ocean each year between November 16th and February 15th, inclusive, to protect the spawning season of this fish in the territorial waters of Canada and the United States, as designed by treaty.

The disappearance of the standard game of the farmer and small boy has caused many a law to be placed on the statute books of eastern states. Maryland has started legislation of this kind by attempting the passage of a bill prohibiting the sale of cottontail rabbits. Although a favorable report was given by the committee the bill failed of passage.—*California Fish and Game.*

When fire sweeps through the forests of the northern Rocky Mountains, the opportunity is given for a very curious manifestation of nature's reforestation work. In such instances it often happens that the fire-blackened forest areas are gradually reclothed with the green of lodgepole pine trees. The curious feature lies in the fact that in the original forests lodgepole pine is outnumbered 100 to 1 by a mixture of western white pine, western larch, western red cedar, and Douglas fir. In the new forest, lodgepole is predominant and far outstrips in growth the comparatively scarce reproduction of other species. This comes about largely because of the nature of the lodgepole pine cone, which resists all ordinary efforts of the elements to open it. Because of this, lodgepole pine retains the cones on the trees for many years unopened. When fire goes through the forest, the lodgepole cone is no more than thoroughly dried out. Later, on the ground and in the exposure to air and sunshine, the cones open and the seeds, locked in the cones sometimes as long as 20 years, are liberated. In open spots, such as the burned forest offers, these seeds germinate and grow very rapidly. Lodgepole pine is not a particularly valuable tree in itself, but as the savior of areas that would otherwise turn to brush-fields or barrens, it is an excellent ally of the forester. Not the least of its virtues is its rapid growth averaging 12 inches a year in height for the first fifteen years.

Over five million fish eggs and 160,000 fry were planted in the streams of Yellowstone National Park recently, according to information given out at the Department of the Interior, and extensive fish-planting operations will be carried on during August. These fish eggs and fry were furnished the National Park Service from the fish hatchery located on Lake Yellowstone and operated by the Bureau of Fisheries.

Wolverine, fisher and marten need a closed season in California, these species having reached the danger point of existence, according to Joseph Dixon, economic mammalogist, University of California. He has gone a step further and recommended a three year closed season for these animals to the legislative committee of the California Fish and Game Commission. Mr. Dixon contends, from investigations covering a period of years, that marten, wolverine and fisher are not numerous enough to cause any appreciable damage, either to game or domestic stock. A study by the author of food found in the stomachs of these animals has shown that they live largely on rodents and hence, from an economic standpoint, are at the most only slightly injurious. What little damage they may do in destroying game is offset many times by the value of the pelts they produce. *At the present rate of decrease, there will be no martens or fishers left* in California within five years.

An alligator killed on a preserve in South Carolina last fall had five mallard ducks in his stomach. Two years ago there were on this preserve large numbers of wood ducks, but they gradually disappeared and the alligator is blamed. Certainly if he consumed five ducks for one meal, he would soon make a tremendous

File Turtle Folder

Mud Turtle Feeds on Sprouting Corn.--Mud turtles may invade cornfields and compete with ground squirrels and moles in destroying stands of corn, according to information that has come to the attention of Mr. Oman. A Riley County, Kans., farmer reports that in the spring of 1928 he noted a mud turtle moving along a listed corn row. Close inspection and observation showed that the turtle rooted along, hog-fashion, to find the sprouting corn.