GREAT LAKES DEER GROUP MEETING

Itasca State Park, Minnesota
September 26-29, 1961

Events of the 1961 Deer Group Meeting

Tuesday evening, September 26 - Park Superintendent, Andy Peterson, welcomed the Group to Itasca Park and informed members of its facilities. Following Peterson's discussion, Minnesota Fisheries Biologist John Dobie presented an illustrated history of the Park.

Wednesday morning, September 27 - Krefting presented his Deer Research Program Analysis. He distributed outlines entitled 1.) Deer Research Program Analysis- which included past accomplishments and research needs 2.) Deer Management Research Needs in the Great Lakes Region. Krefting discussed the need for a smaller committee made up of current Group members to expedite analysis of the research program. He listed the following major fields of deer research and presented a priority listing of deer research projects.

Major Fields of Deer Research

1. Study and evaluate the silvicultural techniques that will produce the best possible integration of deer and other wildlife, timber production, and other recreational opportunities.

2. Studies to develop new and better techniques for determing deer populations, production, and nutritional requirements.

3. Develop new survey techniques for appraising the condition and trend of Lake States deer range.

4. Studies to develop new methods of assessing deer damage to forest reproduction throughout the Great Lakes region.

5. Evaluate the human behavior pattern of the deer hunting public as it relates to the failures of past educational programs and determine methods of correcting them.

Priority List of Deer Research Projects

1. Appraisal of methods of determining deer populations that are needed not only to set regulations for the removal of surplus deer but also to determine what population level constitutes a surplus.

2. Determine nutritional requirements of deer and nutritive values of browse plants and devise practical means of improving nutritively poor range.

3. Develop better techniques for measuring kill, losses from diseases and parasites and losses from starvation, poaching, and predation.

4. Determine the behavior characteristics and patterns of deer as they relate to mobility and management.

5. Develop and test methods of determining carrying capacity of deer range.

6. Make life history studies of the more important deer browse plants with special emphasis on propagation in relation to deer browsing.

7. Appraisal and development of new silvicultural techniques designed to integrate timber production and deer habitat improvement.

8. Establish large research-management demonstration areas and make pilot plant tests of range survey methods, evaluations of silvicultural techniques and deer harvesting methods.

9. Devise new methods for convincing the public of the need for managing deer on a scientific basis.

10. Test aging techniques and devise new ones that can be used as they relate to actual representation of the herd.

11. Measure deer productivity for important forest cover types and kinds of soil.

A representative of each of the states and provinces then presented a brief resume of their current research projects. Of the many excellent projects mentioned, two attracted more than the usual interest:

1.) Whether the condition of the summer range in certain areas was limiting deer populations.

2.) Techniques employed in live-trapping, snaring and marking big game animals for movement studies.

Wednesday afternoon, September 27 - Field trips within Itasca Park disclosed the effectiveness of herbicides in the experimental control of hazel. Of note was the selectiveness of the herbicide 2,4-D in killing the existing hazel and sparing the more desirable deer browse species.

Pine regeneration following drastic reduction of the park deer herd was also dramatically demonstrated. By 1945 the pine reproduction within the park was reduced by over-browsing to virtually nothing. A heavy hunter harvest in that year together with subsequent control through hunting has allowed the pine forests to begin recovery.

The discussion following the field trips centered about the recent big game hunting seasons.

Ontario -- License sales totaled about 113,000 in both 1959 and 1960. Hunters in western Ontario enjoyed 45% success in 1960. The Soo area experienced 30% hunter success in 1959 and following a severe winter, the success dropped to a very low 2 per cent in 1960. The Prairie Sound-Penbrook territory enjoyed 35 per cent success in 1959 and 22 per cent success in 1960. The eastern end of the province produced relatively good hunting with 33 per cent success in 1960.

Wisconsin -- Party permits have been used very successfully the last few years. In 1959, 380,000 licenses were sold and the kill of nearly 107,000 was the highest since 1950. The 1960 season was very poor. With license sales at 335,000 the expected kill of 80,000 dwindled to an actual 62,000. Warm, dry weather was

an important factor in the low kill. Aging information indicated a shortage of 1½ year old bucks. Does in several northern areas.

Minnesota -- The 1959 deer season was the best in years. 198,000 hunters harvested 104,000 deer for a success of almost 53%. Snow conditions were very favorable for hunting. Hunter success in 1960 dropped to 41% with 230,000 hunters taking 95,000 animals. Snow conditions were mediocre. Minnesota did not experience the recent severe winters as did the other regions of the Great Lakes.

Manitoba -- Experienced good hunting success in 1959 followed by poor success in 1960. License sales average about 35,000.

Thursday, September 28 - The field trip to the Tamarack National Wildlife Refuge located about 30 air miles SW of Itasca Park occupied most of the day. Robley Hunt, the refuge manager presented an illustrated introduction to the area and the work being done on it. The restoration of small water areas for waterfowl use by removing accumulated organic debris with the use of D-7 dozers was an interesting sidelight.

The deer history of the Tamarack National Wildlife Refuge is similar to that experienced by Itasca Park; over-protection followed by over-browsing and a heavy hunter kill required for herd control. An exclosure near refuge headquarters provided a very striking comparison between browsed and unbrowsed conifers.

The results of experimental aerial spraying of herbicide was ably demonstrated. Hazel was eliminated and the better deer food species were benefitted. Some preferable deer food species were increased as much as 400% at a cost of $3.50 per acre.

A study plot subjected to heavy soil sterilization experienced very favorable natural pine regeneration. The complete removal of existing vegetation through the hand application of soil sterilants was sufficient to encourage successful re-seeding from nearby red and white pine.

Following a field lunch at Egg Lake the group divided, some members continuing westward to the Minnesota prairies and the remainder returning directly to Itasca Park.

Thursday evening, September 28 - Members of the group attended one of three discussions concerning: 1.) Deer Movements 2.) Moose 3.) Weather. The chairmen of these three groups have submitted summaries of these discussions and these are attached.

A business meeting was held concurrently with the meeting of the discussion groups. The minutes of this meeting are also attached.

Friday morning, September 29 - Bartlett read the minutes of the business meeting and summarized the events of the meeting as a whole. The group discussion chairmen presented summaries of the three topics previously mentioned.

Olson stated that the convincing field demonstrations provided at Itasca Park and the Tamarack National Wildlife Refuge impressed Group members with the extent depleted deer range can be improved with herd control and continued management.

With this comment the meeting adjourned.

NOTE! Soon after returning from the 1961 meeting at Itasca State Park, Michigan personnel made arrangements for the next meeting of the Great Lakes Deer Group. It is scheduled for the last week of September at their Training School and as suggested in the 1961 business meeting, will tentatively be held for the same length and at the same time of the week as in 1961.

Submitted by

I. H. Bartlett
L. H. Blankenship
B. A. Fashingbauer

GREAT LAKES DEER GROUP

Business Meeting
September 28, 1961

Present were:

Michigan.....David Arnold, I. H. Bartlett
Minnesota.....Arnold Erickson, Milton Stenlund
Ontario.....Robin Hepburn
Wisconsin.....James Hale
U.S. Fish & Wildlife Service,
St. Paul.....L. W. Krefting, A. B. Eustis
U.S. Forest Service.....Herman Olson (Region 9, Milwaukee)
Lake States Forest Exp. Station,
St. Paul.....Forest Stearns

Bartlett was appointed chairman for the meeting.

Moved by Krefting, supported by Stenlund, that the Lake States Forest Experiment Station and its representative Forest Stearns be officially welcomed into the Great Lakes Deer Group. Carried.

Moved by Stenlund, supported by Olson, that Krefting proceed with the management-research program analysis to develop a summary and formulate suggestions from the material accumulated. That he be assisted by a committee composed of Michigan-MacMullan, Bartlett; Ontario-Hepburn and a management person to be selected by Ontario; Wisconsin-Hale and a management person to be selected by Wisconsin; Minnesota-Erickson and a management person to be selected by Minnesota; U. S. Forest Service-Olson, Stearns; Fish and Wildlife Service-Krefting (Chairman); Education-Warren Chase. That this committee meet in Madison, Wisconsin, in early February, 1962 to complete the drafting of a final summary of the deer research program analysis with emphasis on management-research needs in the Great Lakes region. Carried.

Krefting agreed to provide the members of this committee with an abstract of his findings to date on the research program analysis, the abstract to be used as a base for preparing material for the February meeting.

Michigan requested the honor of acting as host to the Great Lakes Deer Group in 1962. The invitation to meet in Michigan next year was accepted. It was generally agreed that fall meetings, preferably mid-September, were preferred over winter meetings. Hence, it was suggested that Michigan attempt to arrange for a mid-September meeting of the same length and the same time of week as that at Itasca Park. The exact date and place is to be left to the discretion of the host state. It was generally agreed that a person or group from outside the Deer Group be invited to the next meeting similar to the invitation extended to Manitoba for this meeting.

It was strongly suggested that each member organization (province, state, and federal) appoint a person from the Deer Group to compile a list of publications from their unit that might be valuable for future use especially by the management-research committee. These lists are to be distributed to the various units. It was further suggested that the mailing list of individuals interested in deer group material be revised and distributed.

On a motion by Hepburn, supported by Stearns, an official vote of appreciation was extended to those members of the host state of Minnesota and others who were responsible for this exceptionally good and well planned meeting and excellent accommodations.

Meeting adjourned.

Submitted by

I. H. Bartlett

DISCUSSION GROUP SUMMARY

Deer Movements - B. A. Fashingbauer, Chairman

Three major objectives of deer movement study were recognized by the discussion group:

1. Deliniation of management units
2. Developing or refining of census techniques
3. Providing additional life history data

The fallacies of maintaining extensive refuge tracts for deer is appreciated and such areas are currently being reduced in size or completely abandoned. Just how large or small a given area should be for effective management, however, is not known with any certainty and factors influencing the proper size and distribution of such management areas are poorly understood.

Knowledge of animal movements to aid in refining census techniques is needed immediately. Group discussion indicated that the track-count form of census, previously tried and abandoned, is being revived. Track counts are now used experimentally in local areas within Minnesota and Wisconsin. Supplemented with sound deer movement data this type of census could be extremely useful. Perhaps shining counts as carried out in Michigan will prove of greater significance with the accumulation of movement information.

A knowledge of deer life history is enriched by a greater understanding of herd social structure and associated behavior. The difficulty in securing information of this type is recognized and it will probably be treated in a later phase of deer movement studies.

The topic occupying most of the group discussion time was that of current marking techniques. Principally two methods were discussed:

1. Marking groups of deer with identical colored polyethylene cord with no means of distinguishing individuals in the field. Identity of the group rather than the individual animal is stressed.

2. Marking of deer with colored collars bearing "Scotchlite" symbols permitting field identification of individual animals.

Both of these methods permit deer movements to be followed during the interim from time of marking to time of recovery. The inability to do this with conventional ear tags alone has proven decidedly disadvantageous.

The group marking of animals is achieved in Michigan with snare-type collars similar in design and application to that devised in Russia. This method permits relatively large numbers of deer to be marked within a short time with a minimum of expense and effort. Deer of a local area are marked with collars identical in color and may be distinguished in the field only from unmarked deer or animals marked with a different color and representing a different locality. Current use of this method in Michigan is intended to determine the regions from which deer move to a specific yarding area. Deer so marked can, when recovered, be individually identified by a numbered metal disc attached to the colored neck cord.

For more intensive studies involving movements and behavior patterns of deer a collar with symbols which can be read in the field is more satisfactory. This

manner of marking enables the field recognition of an individual deer and movements of this animal of known sex and age may be plotted as the information is obtained. In Minnesota collar marking of this nature has been conducted since 1959 and 259 deer have been so marked. It is intended to continue this collar marking operation for a number of years. Field data indicate that most of the deer remain, for extended periods at least, within a radius of one mile or less although movements up to 165 miles within a period of eight months are known to have occurred.

Deer movements and associated information pertaining to wintering yards occupied a significant portion of the group discussion. Michigan personnel expressed interest in determining the distance deer will be attracted to browse made available from cuttings in winter yards. Of a related nature is the strange deer behavior noted in Michigan and Ontario whereby the animals may habitually pass through a cedar stand possessing the characteristics of a good yarding area and congregate elsewhere where conditions for survival appear less favorable.

The discussion touched upon the supposition that deer move toward the wintering area at a rate consistent with the existing weather conditions. Michigan's marking studies may disclose information in this regard.

A question was presented regarding crown-cover density required to reduce snow cover in a yarding area to the extent where animal movement is not confined to trails. This topic was received with interest but no information regarding it was at hand.

These topics and occasional additional comments indicate that the interest of deer research and management personnel continues to center about the winter yard.

Creed of Wisconsin initiated a topic of discussion related to the major topic of the evening. Game personnel of Wisconsin have been requested by forestry personnel to provide a description of the interspersion of openings and forest types best suited for deer management. Such a plan will serve as a guide in their silvicultural practices. As the discussion continued it was obvious that the answer to this problem required considerable study. It appears as though we have been supplying our best guesses along this line but really little in the way of something based upon established fact.

Weather - L. A. Ryel, Chairman

It was generally agreed that temperatures are important to deer survival during the yarding season, but as yet they have not been considered to the same extent as snow depth in estimating winter severity. Ryel reviewed some of the general reactions of deer to lowered temperatures. The usual reactions to prolonged cold weather in deer are 1) increased food consumption, and 2) increased activity. Conversely cold, stormy periods lasting for only a few days may result in 1) decreased food consumption, 2) decreased activity, and 3) shivering. Food consumption by deer appears to follow a definite pattern during the yarding season regardless of the diet the deer receive. Normally food consumption increases rapidly after the rut to a peak in January, then gradually declining again to a low in late February or early March.

Ryel described briefly the results of a three year study by Verme at the

Cusino Wildlife Experiment Station on the relation of winter shelter to the physical condition of deer. This study gave rather inconclusive results in regard to the main objective, but of several factors studied, food intake appeared to be most closely related to temperature. There seemed to be little effect due to wind, snowfall, or air pressure by itself.

Hepburn and Cumming described Ontario's winter severity index. This involves three steps: 1) Collection of snow depth and crust information from about 165 snow stations distributed throughout the deer range. Each station is located in a pure stand of pole-size hardwoods and consists of ten graduated stakes spaced one chain apart. Crust is evaluated as A-none, B-light, C-strong enough to support a man on snowshoes. Average snow depth and crust conditions are radioed to Maple each week. 2) Weekly readings are transformed to a scale from 0 to 3 as follows:

	Snow depth				
	0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30.0+
Crusted	0	1	2	3	3
Uncrusted	0	0	1	2	3

and 3) These weekly values are totaled for the winter for each station to produce the final winter severity index. Totals for the winter are assigned to three classes.

Index value	Description
0-9	light
10-19	moderate
20-29	severe
30+	extreme

Fairly good correlations of index values with the following fall's kill have been made by Hepburn and with proportion of yearlings in the kill by Cumming. The relationships are not linear, however, and values up to 20 will produce little or no change in hunter success. In western Ontario a severity index of 26 resulted in a 22% decrease in success. In the Sault Ste Marie-Sudberry-North Bay Areas a severity index of 30+ resulted in a very poor hunter success in 1960.

Hepburn is currently trying to use fuel oil company records of average fuel oil consumption as an index of winter temperatures and wind conditions. He hopes to incorporate this with his snow data.

Studies by Hepburn indicated when snow depths reached 25 inches deep mobility was reduced to 10% of maximum. In the range from 17 to 20 inches mobility was about 50% of maximum. Stenlund reported that snow records in the Superior National Forest from 1947 to date show that starvation occurred during the three winters of 1947-48, 1949-50 and 1955-56 when a snow depth of 18 inches or more persisted for 12 weeks or longer. About 18 inches of snow seemed to cause yarding in Minnesota.

Several people expressed a real need for a severity index which could be used to predict losses. Blankenship suggested that the various states get similar data to Ontario's so that comparisons could be made throughout the Great Lakes Area. This idea received general approval. Cumming pointed out the usefulness of a winter severity index in educating hunters to the effects of snow on deer losses and hunting success.

Gunvalson and Petraborg noted that the time of snow fall is also important. In Minnesota it is generally true that if they can get past December without 18 inches of snow, deer losses would be light. They likened winter deer distribution to concentric circles around yarding areas. As snow depths increased deer tended to range less and less from heavy cover. Petraborg noted many deer seemed to remain near yards even in the summer.

A general discussion developed concerning the effects of cold wet springs on early fawn survival. Ryel mentioned he had noticed increased mortality in hand-reared fawns under such conditions.

Conversely, Bossenmaier reported that this year's drought conditions in Manitoba may be influencing deer distribution there. It may also have an adverse effect on fall physical condition. Others noted that weather as it effects food supply is certainly important in determining fall deer distribution, especially mast crops.

The weather during the hunting season definitely influences the magnitude of the kill throughout the Great Lakes Area. Hepburn cautioned, however, that ideal weather may vary with the type of hunting. In eastern Ontario, for instance, where most deer hunting is done with dogs differs from western Ontario where dogs are not much used.

Finally there was much interest expressed by the group present in a discussion of the whole deer yarding concept: What is a deer yard? Why do deer yard? Will deer change yards? What determines if deer will use a certain stand as a yard? What are the inter-relationships of condition of yard, snow depth, temperatures, and deer density to winter survival? All present agreed that much additional information was needed to answer any of these questions.

Moose - D. W. Simkin, Chairman

The meeting opened with a brief general discussion of the status of moose populations and moose hunting in Ontario, Manitoba, Minnesota and Michigan.

Ontario - Aerial surveys done by the intensive search method in the winter of 58-59 gave an estimate of approximately 120,000 moose in the part of Ontario south of the Hinterland.

In 1960, 31,948 resident and 4,212 non-resident licences were sold in Ontario. Residents were 30.5% successful while non-residents were 66.1% successful. An estimated 12,058 moose were killed by licenced hunters in Ontario in 1960.

Over most of the moose range of the province the season extends from October 1 through to December 24 with any age and either sex being legal. Recently, due to the increase of moose in the marginal deer habitat in the eastern part of the

province, a special deer or moose licence has been issued. Sixteen hundred and eight of these licences were sold in 1960.

Although any age or sex are legal there appears to be strong hunter selection for bulls by non-residents (191 bulls per 100 cows), and to a lesser degree by residents (134 bulls per 100 cows).

In 1959, the last year for which information is available on amount of money spent by moose hunters, $4,058,282.00 was spent of which $610,000.00 was spent on licence fees.

Non-residents averaged $435.00 per hunter season and residents $100.00.

Analysis of temporal distribution of kill shows that about 80% of the moose harvested are killed in the first two weeks of the season. Most hunters apparently prefer to hunt on the open water where availability of moose is good and the effort required to transport the meat is at a minimum.

Manitoba - Two seasons are used in Manitoba. The early season, September 18 - October 14, in the area north of 53rd parallel permits shooting of adult bulls only, and is for residents and non-residents. The late season in the southern and northern areas, November 27 - December 9 and November 27 - December 30 respectively, is for residents only and allows hunters to take animals of any sex or age.

Approximately 3500 moose hunters purchase licences and based on voluntary returns the hunter success is about 58%.

In addition to the kill by licenced hunters a very high kill, as yet uncalculated, is made by Indians in the northern part of the province.

Minnesota - It was reported that on the basis of aerial surveys conducted during the last twowinters in the main moose range of Minnesota, the estimated population was between 4000 to 5000 animals. The density varies from one moose per 2 square miles up to 2 moose per square mile.

Minnesota used a variation of Ontario's intensive search census method. Instead of tight orbiting, transects are flown up and down the randomly selected 25 square mile study plots.

As yet, few browse surveys have been conducted in the moose range of Minnesota. In general, however, the results of these surveys are essentially the same as those conducted in similar habitat in northwestern Ontario.

Using the multiple random start sampling method, pellet count surveys conducted in two different areas, one a 1943 cut-over and the other a 1949 cut-over, estimates of 2.9 moose per square mile and 6.7 moose per square mile respectively, were obtained.

Information on moose distribution, sex ratios, rate of twinning and single births, etc., is being collected quantitatively with the use of moose record cards.

Fifteen dead moose were reported last year in the northeast section. Several were also reported dead in the Red Lake area where there is also considerable loss due to accidental kills in the deer season.

Michigan - The mainland population of moose in Michigan is very low. Nine moose were reported in 1959 and 11 in 1960. It was suggested that animals which move into Michigan are soon removed by poaching.

Using the intensive search method, population estimates of 300 - 600 have been made for Isle Royale. Krefting has conducted pellet count surveys in connection with his browse work but sampling is not intensive enough to provide a population estimate for comparison with aerial survey estimates.

General - It was agreed that the crotising count per day per moose, as reported for Wells Gray Park, B.C. and which was used in both Minnesota and Ontario ground surveys, was likely not applicable to the eastern range moose which are more widely distributed and sedentary rather than highly concentrated and migratory as is the case for the herd where the crotising count basis was established.

Pathology - It was reported that very high infestations of giant liver fluke were frequently observed in moose found dead in Minnesota, particularly in the Red Lake area. It is suspected that the area around Red Lake is very favourable for the snail which acts as the intermediate host of this parasite.

Autopsy of some animals revealed that destruction of liver tissue due to the high infestation of this parasite was the probable cause of death. The Minnesota people suspect that moose are less tolerant to this parasite than are white-tailed deer.

In Ontario cases of infestation of moose livers with this fluke are quite uncommon and are all but unknown in northwestern Ontario.

A few cases of "moose sickness" have been reported in recent years in the northeastern Minnesota moose range.

Origin of Moose Range - Most of the present moose range of Minnesota is in cut-over areas. In contrast most of the moose range of Ontario is in old burned areas and areas devastated by spruce budworms. It is believed that there are more moose now in Ontario than there has been for many years and that this is mainly due to the wide scale forest fires which burned in the 1930's.

Research Being Carried Out and Anticipated

Ontario - Two studies are presently being carried out in NW Ontario:

(a) Study of reproduction based on the analysis of approximately 300 reproductive tracts collected in northwestern Ontario.

(b) Moose movements. Eighty-seven moose have been ear tagged using the helicopter tagging method. It is hoped that a larger scale program will be enacted next year. Subsequent recoveries will provide us with movement data and from some known age jaws for evaluation of our ageing techniques.

Ontario is very interested in the neck collars developed in Minnesota for deer and hope to determine feasability of using a similar technique on moose for observations of live animals.

Minnesota - In the northeast, work is being initiated in an effort to estimate the amount of browse available to moose.

Work is also being planned to assess the amount of hazel produced after burning in aspen and pine stands.

Both Michigan and Minnesota people are concerned with the effect that controlled burning for improvement of pine stands will have on moose and deer range.

Summer Range - Summer range was briefly discussed. It appears that more use is made of aquatic plants by moose in Ontario than in Minnesota during the summer.

Range Extensions - Minnesota briefly summarized the history of moose from the high density of 1917 - 1922 when the last season was held through to the present day. It was suggested that land use had considerable effect on moose numbers.

ATTENDANCE AT GREAT LAKES DEER GROUP MEETING

Itasca State Park, Minnesota
September 26-29, 1961

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