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(Pres. Foster · Commun - 19

BIENNIAL REPORT

OF THE

STATE CONSERVATION COMMISSION

OF WISCONSIN

FOR THE

YEARS 1915 AND 1916

MADISON, WIS.
Cantwell Printing Co., State Printer
1916

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COMMISSIONERS

JAMES NEVIN, *Chairman*.....Term expires February, 1921

W. E. BARBER.....Term expires February, 1919

F. B. MOODY.....Term expires February, 1917

R. S. SCHEIBEL, *Secretary.*

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LETTER OF TRANSMITTAL

HONORABLE EMANUEL L. PHILIPP,
Governor of Wisconsin.

Sir:—In conformity with law, we have the honor to transmit the report of this department for the fiscal years ending June 30, 1916.

JAMES NEVIN,
W. E. BARBER,
F. B. MOODY,
Commissioners.

R. S. Scheibel, *Secretary.*

COMMISSIONERS' REPORT.

Pursuant to statutory direction, we take pleasure in submitting our first biennial report. The report involves a rather unusual situation. Although it covers the two fiscal years ending June 30, 1916, this commission did not come into actual control until August 1, 1915. Thus, the first thirteen months of the biennial period were under the individual administration of the several departments combined to create this commission, and officially we are only responsible for the last eleven months of the period mentioned. We, therefore, feel that we should necessarily be brief as to the administrations during the aforesaid months, and confine our remarks to a financial statement. Chairman Nevin of this commission having long been active as superintendent of fisheries under the old commissioners of fisheries, we are able to include complete information covering the old fisheries department.

By provisions of Chapter 406, Laws of 1915, this commission succeeded to all the powers and duties of the Forestry Board, State Park Board, Conservation Commission, Commissioners of Fisheries and the State Fish and Game Warden Department. The intent and effect was to consolidate under one head all the closely related duties and problems of administration over forest and stream, fish and game, and to give powerful impetus to the conservation of the natural resources of the Badger State.

So that the public may better understand the actual meaning and result of the consolidation we have prepared the following statement:

Salaried positions and honorary appointments under old departments

	Salaried	Non-salaried
State Park Board	none	3
State Forestry Board	2	5
Commission of Fisheries	2	7
Fish and Game Warden	2	none
Conservation Commission	none	7
Office clerks and stenographers	8	none
Total	14	22

Salaried positions and appointments under new department

Commissioners and secretary	4	none
Office clerks and stenographers	5	
Total	9	none

It will be noted that the consolidation resulted in reducing the number of salaried officers, clerks and stenographers from 14 to 9, and incidentally 22 members of boards and commissions were dispensed with. The saving in salaries in the administration end of the work, however, is of minor

importance in the resultant economy. To this must be added the traveling expenses of the 22 commissioners. Under the old system each of the five departments issued its own annual or biennial report, a separate expense for the printing of stationery and office forms, and for postage, office supplies and equipment—five departments of state, all drawing from the public exchequer in practically a duplication of expenditures. The old forestry board, state fish and game warden and fish commission each occupied separate offices. The actual saving to the state cannot be placed at less than from ten to twelve thousand dollars.

Most important, however, is the increased efficiency in the services rendered the state. Politics has been absolutely abolished in our reorganization and a demand was made for strict attention to the work of our several divisions and particularly in the activities to conserve the wild life of the state. There is nothing so contaminating to efficient service of a department of this nature as political servitude. This commission is proud to say that our first instruction to every employee was that efficient service would be the measure of his tenure in office, and that his citizen's rights were matters of his individual preference. In making appointments to this department we adhere at all times to the State Civil Service laws. These policies have been strictly adhered to and will be as long as the present commissioners are at the head of this department.

Under the old régimé the state sustained five departments, all working entirely independently of one another, although the activities of all were so closely related that the work of one department overlapped or interwove with that of another. One department is now administering the affairs of five, and three men, who devote their entire time and attention, instead of twenty-six honorary commissioners, are responsible for the proper administration of the state's business along those particular lines.

Because of restrictions placed upon the activities of the old forestry board by the Supreme Court prior to the creation of this commission, the work on the forest reserves has been confined, chiefly, to that of protecting all state lands north of Town 33 from fire and trespass, the sale of dead, down, dying and mature timber, the maintenance of two forest nurseries, the sale of planting stock therefrom, surveying and leasing islands and lake lots, and other work incident to the proper care and protection of the property.

As the decision of the Supreme Court in no way affected the management of the state park properties, we have actively continued the improvement, care and operation of the several state parks as far as available funds would permit.

Joint resolution No. 32 passed by the 1915 legislature places with us the duty of presenting to the 1917 legislature a revision and codification of all fish and game laws. Pursuant to this action by the legislature, we immediately started investigations. After due notice was published, meetings were held with commercial fishermen at the following ports:

At Sheboygan on February.....14, 1916, 77 fishermen present.
At Green Bay on February.....15, 1916, 151 fishermen present.
At Sturgeon Bay on February....16, 1916, 103 fishermen present.
At Oconto on February.....17, 1916, 46 fishermen present.

At Marinette on February.....18, 1916, 50 fishermen present.
At Milwaukee on February.....23, 1916, 83 fishermen present.

These meetings were held for the purpose of gaining some knowledge directly from the licensed fishermen, on which to base our recommendations as to laws covering the commercial fishing industry on Lake Michigan and Green Bay. Five hundred and ten typical fishermen—men who have followed fishing in outlying waters for years—were present. If space would permit, we would like to print the minutes of the six meetings mentioned above, so that the reader might appreciate the varied and diversified ideas and opinions held by the fishermen. Not only do the fishermen of Sheboygan disagree with the fishermen of the other five ports (the same being true at all the meetings), but, also, the fishermen working out of the same port disagree among themselves. Hook fishermen say the pound-net and gill-net men are wrong, and vice versa. At the Sheboygan meeting arguments were made in favor of 2½, 2⅜, 2⅝, 2¾, 4, 4½ and 5 inch mesh for catching trout. The gist of the situation is that we, after a careful consideration of all the information secured, must present such a revision of the fish and game laws as we deem best and proper.

We take pleasure in commenting on the interest and vigor shown by the employees in the several divisions of this commission. It is refreshing to find an existing condition in that all our employees feel that they are all members of one big family, that their interests are all in common, and that they are working for a common cause—for the good of the department.

We wish to express the appreciation of this commission for the help and coöperation by the railroad companies in the distribution of fish planted in public waters. This assistance is invaluable in the final operations of our hatcheries. The rapid and expeditious transportation of the fish cans, the willing attitude of the railroads and their employees to assist whenever possible, are of great help in making our work a huge success.

We are also indebted to the Biology Department of the University of Wisconsin for assistance in problems that are of a more scientific nature. The University has always responded in a spirit most willing to assist us whenever possible.

The commissioners express to Mr. Arthur F. Belitz, assistant revisor of statutes, their thanks for the aid given in the revision and codification of the state fish and game laws.

BUDGET FOR BIENNIAL PERIOD ENDING JUNE 30, 1919.

Requested Appropriation: (Annual)

For General Operation	$200,000.00
For Repairs and Maintenance	13,000.00
For Property and Improvements	13,000.00
Total	$226,000.00

General Operation. ($200,000.00)

This expenditure includes all items of salaries, labor, supplies and traveling expenses. The amount is $30,112.54 below the total disbursements by the former Forestry Board, Park Board, Fish Commission and State Game Warden during the last year that these departments operated independently. The amount is practically the same as the amount expended for the purpose during our first year of operation. The amount is sufficient but we cannot properly administer the affairs of state under our direct supervision on a less amount. It is the same appropriation as given by the Legislature of 1915.

Repairs and Maintenance. ($13,000.00)

This expenditure includes the upkeep of all properties under our care, i. e., repairing of roads, all tools and equipment, painting and repairing of all buildings, and the upkeep of all hatchery ponds, raceways and pipe lines. Our inventory shows we have property and equipment representing an investment of $632,744.00. Being state property it is always expected to present the best possible appearance. Practically all of the ninety odd buildings need painting, many need a new roof, many miles of park roads need repairs, and the state boats, launches, engines and other equipment need overhauling.

For this purpose the Legislature of 1915 made an appropriation of but $5,000. It was the amount asked for the fish hatcheries alone and the approximate amount usually given that department. In the hurry during the last days of the session the amount was not changed and no provision was made for the parks, forestry and warden divisions. As a consequence some of our necessary upkeep work was left undone.

The amount asked for provides for the forestry, park, warden and fisheries divisions.

Property and Improvements. ($13,000.00)

This expenditure includes the erection of new buildings, building of new roads, new hatchery ponds, raceways or pipe lines, and the purchase of new tools or equipment. With 457,200 acres of land and property values amounting to over $630,000.00 under our control, it will be readily appreciated that the amount we ask for is not excessive.

The 1915 Legislature appropriated $4,000 for this purpose but the same is true as to the repairs and maintenance appropriation as explained above. It was only sufficient for the needs of the fisheries division.

Conclusion.

The total appropriation is some $26,000.00 less than the amount disbursed during the fiscal year ending June 30, 1915. It will also be noted that during the last fiscal year this department turned $227,261.40 into the treasury of the state of Wisconsin. We anticipate that the present year will see an increase of from ten to fifteen thousand dollars as last year the sale of hunting licenses was quite below the average, also the return on rough fishing was low. The commission is more than self-sustaining.

RECOMMENDATIONS.

That all moneys collected by this department from the sale of licenses, confiscations, wardens' fees, proceeds from fishing contracts, concessions, leases (except Federal Grant Islands) or derived from any other source in the general administration of this department, be deposited with the state treasurer and be credited to what shall be known as the "State Conservation Fund." That an appropriation be made for the administration of our work in the usual manner. The surplus in the Conservation Fund over and above our appropriation or disbursements may be expended by this commission, with the consent of the State Emergency Board, for any special purpose such as additional equipment, new buildings, new hatcheries or hatchery ponds, property improvements or increasing the warden force at any particular period. Such money to be used for any of our work with the exception of road work or improvement work on state parks. The said Conservation Fund to be cumulative and nonlapsible.

FISHERIES DIVISION.

To reënact subsection 4 of section 172–22, statutes of 1913, providing a fund for the rescue of fish from the land-locked sloughs and bayous adjacent to the Mississippi river. This fund was repealed, unintentionally, by section 22, chapter 607, laws of 1915. At the time the repeal went into effect, August 26, 1916, the fund contained $9,843.36. The fund should be re-established with an appropriation of $10,000.00.

To place a law in the statutes, prohibiting the pollution of our inland waters through the cheese, condensed milk and canning factories carrying the refuse from their operations into the lakes and streams. This department to coöperate with the State Board of Health in the carrying out of the provisions of such law.

PROTECTION OF FISH AND GAME.

Pursuant to joint resolution number 32 by the legislature of 1915, we have prepared a complete revision and codification of the state fish and game laws and the same will be submitted to the legislature of 1917 in the form of a bill. We have spent a great deal of time in study and securing information on which to base this revision and we sincerely trust that the legislature of 1917 will bear in mind that our recommendations are the results of almost two years of study and research.

We herewith mention some of the most important changes we endorse:

1. A general open and close season over the entire state for all varieties of wild animals. Repeal the many special county laws.

2. A close season over the entire state on partridge, grouse and prairie chicken.
3. Change the open season on wild birds from September 7 to September 26 and extend the season to December 31.
4. Change form of hunting license to smaller size and omit the deer coupons. Deer coupons to be furnished at an extra fee of 50 cents. Reason—out of 160,000 licenses sold only about 35,000 are used for deer hunting. Thus 125,000 licenses are printed, each with three coupons, which are never used for deer hunting. This will reduce the printing cost 50 per cent to 60 per cent and be more convenient for hunters and county clerks.
5. Reduce the limit of daily catch of trout from 45 to 25.
6. Prohibit the sale of black bass and muskellunge.
7. Provide a trapper's license for taking fur bearing animals.
8. To increase the nonresident fishing license fee from $1.00 to $2.00. The nonresident hunting license for small game from $10.00 to $25.00 and for small game including deer $50.00. That we issue a resident trout fishing license at a fee of $1.00.
9. Reduce the nonresident hunters' bag limit to the same as a resident hunter.
10. Change game farm license law to omit muskrat.
11. Change opening day for taking black bass from May 29 to July 1.
12. Place a daily bag limit on all varieties of game fish.
13. Change the sunrise and sunset law by allowing shooting 20 minutes before sunrise or after sunset.
14. A law as to the establishing of wild life refuges.
15. A law providing for the forfeiture of any license for the season for which it is issued, if the holder is found guilty of a violation.
16. Increase all penalties. Principally—$300 for the use of dynamite in killing fish, $100 for having venison in possession out of season, $200 for shipping game to market, $300 for serving venison in railroad or lumber camps, hotels or summer resorts.
17. An absolute close season for all fishing in Green Bay and Lake Michigan from October 20 to November 31 inclusive.
18. No pound nets to be used in Green Bay during the month of April.
19. Repeal all laws as to outlying waters and stipulate a minimum gill net of 2¾ inches stretch measure. Regulate the taking of fish according to size stipulating in the law the minimum size of each variety of fish that may be had in possession. Have a law that any gill net less than 2¾ inch stretch measure found set in the waters, or found on the boats or reels of fishermen operating in Green Bay or Lake Michigan may be seized by the state conservation wardens. (The law of the state of Michigan allows no gill nets to be used in outlying waters with meshes less than 2¾ inch stretch measure.)
20. Change deer law that bucks must have horns at least 6 inches in length.
21. To prohibit the carrying of a gun or rifle in any automobile, or other vehicle unless the same is unloaded, and knocked down or enclosed in a carrying case.

22. Change the clamming law to permit the use of a dredge with an opening not more than three feet wide or with prongs more than four inches in length. No clams to be retained that measure less than one and one-half inches in greatest dimension.

This is a matter of far greater importance than most people realize. In Wisconsin almost a million dollars is invested in the pearl button industry and thousands of people are employed. It has been known for some time that the clam shell beds were nearing depletion and that some law must be enacted to conserve the supply. In the fall of 1915 the former Commissioners of Fisheries called a conference at Madison. Minnesota, Iowa, Illinois and the U. S. Bureau of Fisheries sent representatives. Pearl button manufacturers from all over the United States and one shell buyer for an European manufacturer were present. The investigations were most exhaustive and a bill was prepared for passage in the 1915 legislature. Senator Robert Glenn, living on the banks of the Mississippi, introduced the bill known as bill No. ..... S, which passed the senate but when it reached the assembly it was so amended as to be of no importance. Minnesota and Illinois passed the identical bill as introduced and which was drawn up by the conference. Here is one result of Wisconsin's failure to pass the measure. Minnesota passed the bill, the waters of the Mississippi river between the two states are now considered as interstate waters under the reciprocal law between the two states. Minnesota sells her clammers a license to use a dredge, Wisconsin does not—Minnesota clammers are taking hundreds of tons of shells and our own people must sit by and see thousands of dollars slip through their fingers. The price of pearl button shells has raised from $8.00 to $32.00 per ton, the highest price ever known. The Wisconsin clammers have lost thousands of dollars.

23. That the commission be given the authority, in cases of emergency, to shorten or close any open season, or reduce the bag limit, or prohibit the catching of fish in any certain lake or stream.

FORESTRY AND PARK DIVISIONS.

1. A state-wide forestry policy.
2. The management of state lands in so far as the constitution will permit, by the state conservation commission.
3. That areas suitable for agricultural development be sold to bona fide settlers in small tracts (not over 160 acres).
4. That the scattering state lands be sold, since it is impossible to protect them from fire.
5. That the policy of leasing islands and lake lots be continued.
6. That the state forest nurseries be maintained and forest planting be encouraged throughout the state.
7. That the work of forest fire protection be extended over the entire wooded portions of the state through the coöperation of timber owners.
8. That the coöperative fire protection agreement with the Federal Government be continued. (Weeks Law)
9. That the forest fire laws be amended and strengthened.

10. That Trempealeau Mountain be accepted by the state as a state park and funds be provided for its management.
11. That the development of state roads within all of the parks be continued and adequate funds appropriated for this purpose as well as for the general upkeep and care of the properties.
12. That an appropriation of $40,000 be made to purchase the remaining interior holdings within the Devil's Lake and Peninsula parks.

We recommend that authority be vested in this commission to sell equipment or other paraphernalia when it is deemed to the advantage of the state, the proceeds of such sale to be credited to the department funds. We oftentimes have articles of equipment that are of no further use to the commission and which should be sold while still having a monetary value. As an instance, in 1915 the state had an old fish car that had been in use for over 20 years. It was necessary to purchase a new steel car as the railroad companies were prohibited from carrying it on passenger trains consisting of steel cars. The original purchase price of the old car was $5,000 and we had an opportunity to sell it to the Canadian Government for $3,500. The sale however could not be consumated until the 1915 legislature enacted a special law authorizing us to dispose of that one piece of worn-out equipment.

James Nevin,
Chairman.
W. E. Barber,
Commissioner.
F. B. Moody,
Commissioner.

Attest:
R. S. Scheibel,
Secretary.

DIVISION OF FISHERIES.

By JAMES NEVIN.

It was in 1882 that I first became identified with Wisconsin's work in fish culture and for 33 consecutive years I held the position of superintendent of fisheries under the old Commissioners of Fisheries. It is only natural that I should have a feeling of sentiment at the passing of the old commission with which I was connected for so many years. Memories both sad and pleasant come to me as I read the names of the gentlemen with whom I was associated during the past thirty-three years. Many of them have passed to the great beyond. The roll of honor is large and one of which I am proud. These gentlemen served the state as commissioners of fisheries with no thought of recompense, freely and gladly giving their best efforts to the building of a fisheries department of which Wisconsin may well be proud.

*Hon. Philo Dunning	Madison
Hon. C. L. Valentine	Janesville
*Hon. Mark Douglas	Melrose
*Hon. John F. Antisdel	Milwaukee
*Hon. James V. Jones	Oshkosh
Hon. Chris Hutchinson	Shullsburg
Hon. Calvert Spensley	Mineral Point
*Hon. A. V. H. Carpenter	Milwaukee
Hon. E. S. Minor	Sturgeon Bay
*Gen. E. E. Bryant	Madison
Dean E. A. Birge	Madison
*Hon. Geo. F. Peabody	Appleton
Hon. Wm. J. Starr	Eau Claire
Hon. C. G. Bell	Bayfield
*Hon. James J. Hogan	La Crosse
*Hon. Henry D. Smith	Appleton
Hon. Jabe Alford	Madison
Hon. A. A. Dye	Madison
Hon. A. L. Osborn	Oshkosh
Hon. Geo. B. Hudnall	Superior
Ex-Gov. Jas. O. Davidson	Madison
*Ex-Gov. G. W. Peck	Milwaukee
Hon. John C. Burns	La Crosse
Hon. B. C. Wolters	Appleton
Hon. Edw. F. Kileen	Wautoma

*Deceased

The change, however, was inevitable, and, in my opinion, the creation of the present Conservation Commission is one that should have occurred years ago. I will be brief in my report covering the Fisheries Division,

DRIVE ON STATE HATCHERY GROUNDS NEAR MADISON

and confine my remarks to what may be deemed important, interesting and to what should be printed for the information of those interested in fish culture by the State of Wisconsin. I wish, however, to elaborate somewhat on the subject of the conservation of fish and the necessary restrictions in the taking, catching and killing of fish in our state.

On the following pages will be found full and complete statistics covering the output of our seven permanent hatcheries and three substations. These tables give a complete statement as to the output of each hatchery, varieties of fish hatched and planted, cost of operation, inventories, acreage, and value of lands, buildings and equipment.

HATCHERY IMPROVEMENTS.

Since the issue of the last report by the former Commissioners of Fisheries, the state established what may be called a "sub-station" in Tenney Park, Madison. This hatchery is operated only during the spring hatching period, and is equipped for the propagation of wall-eyed pike and pickerel.

An important improvement was made at the Bayfield Hatchery during the past year. The conduit carrying the water from Birch Run pond to the hatchery has been extended up through the pond so as to take the water from the headwater springs. The extension is of twelve-inch vitrified pipe and increases the length of the pipe line some 900 feet. By taking the water directly at the springs we hope to remedy the following trouble. In the spring when the young trout are in the hatchery troughs, the rains and melting snow cause a heavy wash into Birch Run creek and pond. These heavy spring floods are caused by the lands being cleared for cultivation in recent years. The timber and brush has been cut, the lands have been plowed and each rain causes a heavy surface wash. The soil is a red clay and the spring floods wash the soil into minute particles, carrying it into the pond in such great quantities that the water is turned a distinct red. These clay particles are carried through the conduit into the fry troughs, and the clay adheres to the gills of the little trout causing their death by thousands. We expect to overcome this clay-water by taking the water supply, as I stated above, from the head-water springs.

It is the intention of the commission to build a number of fry ponds at the head of Birch Run and in which we will hold and raise a great quantity of our spring hatch of trout, until they attain the fingerling size, such fish to be for fall planting.

The barn at the Bayfield station was destroyed by fire on the afternoon of September 22, 1916. The fire was caused by lightning. The loss of the building and contents was approximately $1,500.00, which was covered by state insurance.

The Oshkosh Hatchery was moved from the former location in the North Shore Park to a lot the commission purchased on the river bank. The property has a 150 foot frontage on River street. The reason for the change was because in the old location the hatchery was not giving satisfactory results in the output of fry. This unsatisfactory condition was caused by the water supply which did not afford the proper quality of

water for the hatching of fish eggs. At the new location the water supply is taken by pumping direct from the river.

FISH DYING IN INLAND LAKES.

During the spring of 1916 we received more than the usual number of complaints as to large numbers of dead fish being found in our inland lakes after the ice went out. Several investigations were made, but the conditions were neither serious or alarming. For some reason the winter of 1915–1916 seems to have been a bad season for the wholesale dying of fish all over the state. As a rule it was found that the lakes in which the most dead fish were found, were lakes containing what may be termed an overpopulation of fish. Also the lakes were in some valley and the heavy snows of last winter were blown onto the ice in deep drifts. With this blanket of snow the ice was protected and the extreme cold weather did not crack and heave the ice. This prevented the water from throwing out the gases. The gases accumulated, air or oxygen could not get into the waters and the fish smothered. The dead fish were almost entirely sunfish and crappie; very few pike, pickerel or bass were found. This is not an unusual occurrence. It is not an epidemic or disease, but simply a dying off of the fish for want of air.

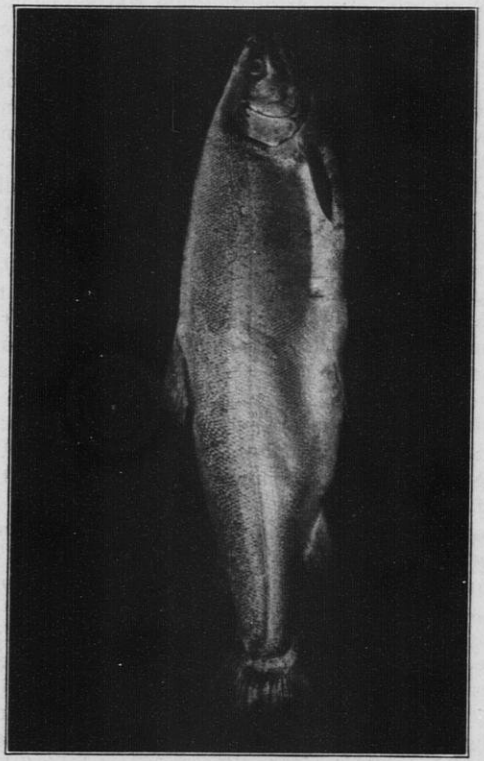
NECESSARY LEGISLATION.

The operation of fish hatcheries alone will not maintain our supply of fish for future generations. The work by the hatcheries must be strengthened by reasonable conservation laws, which laws must be rigidly enforced. Nature is very kind to her children—if they live in harmony and walk parallel with her laws. Permit the catching of fish during the spawning season, permit the catching of immature fish, stipulate no limit as to pounds or number of fish in possession, have penalties so low that the dynamiter and gill netter are always willing to "take a chance,"—then fully fifty per cent of the work by the hatcheries is lost before the millions of fish planted in public waters by the state have an opportunity to show results. Conservation does not mean hoarding our fish and game as a miser does his gold; it means to permit the taking, catching and killing of fish and game in such manner, at such times, and in such quantities as will conserve the supply for future years.

So that the reader may more readily understand the enormous drain upon our inland fisheries and appreciate the need of more stringent laws, I wish to state a few facts that will enable the people of our state to better understand the situation. During two weeks in June and the months of July and August, 1916, 865 boxes of game fish, each box weighing 20 pounds, were shipped from Woodruff, Oneida county, Wisconsin. A total of 17,300 pounds of pike, pickerel, black bass and muskellunge. Think of it! From one small northern station, having a population of only 329 souls, and there are hundreds of small summer resort stations just like it in northern Wisconsin from which game fish are shipped in like quantities.

Add to this the pounds of fish consumed in northern Wisconsin in camps, summer homes and summer resorts—for every pound of fish shipped two pounds are consumed locally.

Resort owners agree that the summer of 1916 was the biggest year of history. The hot weather in the cities compelled our people of the middle west to hunt for a place to rest, and the resort owners reaped the benefit. Two special trains were run into the Manitowish, State Line, Minocqua, Woodruff and Eagle River regions every night. Chicago sends an average



RAINBOW TROUT CAUGHT IN LAKE MICHIGAN NEAR RACINE, WISCONSIN. WEIGHT 11 POUNDS, 1 OZ.

of 150 persons into Wisconsin every night during the season. It is quite impossible to grasp the situation. Northern Wisconsin every year is more and more invaded by fishermen. It is stampeded by a horde of men, women and children. *Figures run into millions of dollars spent.*

We are often asked for estimates as to the pounds of fish caught with hook and line in the inland waters of the state, the value of same and the amount of money spent in the state by summer tourists. These are questions impossible to answer with any degree of exactness. All estimates are, to a greater or less extent, purely guesses. Working on a basis of

averages and securing what reliable information is available from the conservation wardens who examine all shipments of fish on passenger trains passing through the larger cities, looking for possible violations of the state game laws, figures can be given that may be considered as close to the actual amounts as is possible. Wisconsin has some three thousand lakes both large and small within its boundaries, and thousands of miles of rivers and streams. Almost every lake and stream produces several edible varieties of fish.

During the summer of 1916, some 27,000 nonresident fishing licenses were sold in Wisconsin. It is estimated that 800,000 pounds of fish were shipped through the City of Milwaukee last year by nonresidents in the north and central portion of the state to their homes and friends outside of Wisconsin. In addition thereto it is fair to assume that one-half this amount, 400,000 pounds, were shipped out of the state and not passing through Milwaukee, and that 1,000,000 pounds were consumed within the state. Wisconsin has a population of about two and a half million. If one person out of twenty goes fishing occasionally we would have a total of 125,000 persons, including men, women and children, in the entire state who go fishing. Say that each person catches 10 pounds of fish during the whole fishing season, it would represent a catch of 1,250,000 pounds of fish caught by the residents of Wisconsin. All told, residents and nonresidents would have taken a total of 3,450,000 pounds of fish from our waters with hook and line. Fresh fish bring from 15 to 20 cents a pound on the retail markets. Reduce the price to 10 cents and the total catch would have a value of $345,000.00.

As to the financial value of the summer tourist business; if each of the 27,000 nonresidents who came into Wisconsin spent $50.00, they left $1,350,000.00 in the state. They shipped out or took with them 1,200,000 pounds of fish worth 10 cents per pound, or $120,000.00. This does not include railroad fares paid. The average estimated amount of $50.00 spent is the very lowest amount for which any person could enjoy a week's sojourn in our resort regions. There are thousands of people who spend their entire summer in Wisconsin, many stay a month or more, and many for several weeks. These people leave several hundreds instead of $50.00 in the state. This estimate, bear in mind, is based only on the 27,000 nonresidents who purchased fishing licenses. Women who do not wish to ship fish, and children less than 16 years of age are not required to purchase fishing licenses. Not 30 per cent of the nonresidents, counting women and children, coming into Wisconsin purchase fishing licenses.

There are many and peculiar conditions to consider in an estimate of the worth of the Wisconsin waters and fishes. It is practically impossible to submit figures that may be considered at all reliable. However, I feel secure in making the statement that if anything, the figures I have given are very low. The value of our lakes and streams and the fish therein is inestimable. Wisconsin was quick to realize the worth of this tremendous natural resource and 42 years ago took the initial step for the perpetuation of fish life, in creating a Commission of Fisheries. The present generation is enjoying the results of the past work of the fisheries department and there is much in store for the enjoyment of future generations. The state spends annually about $110,000.00 for the protection

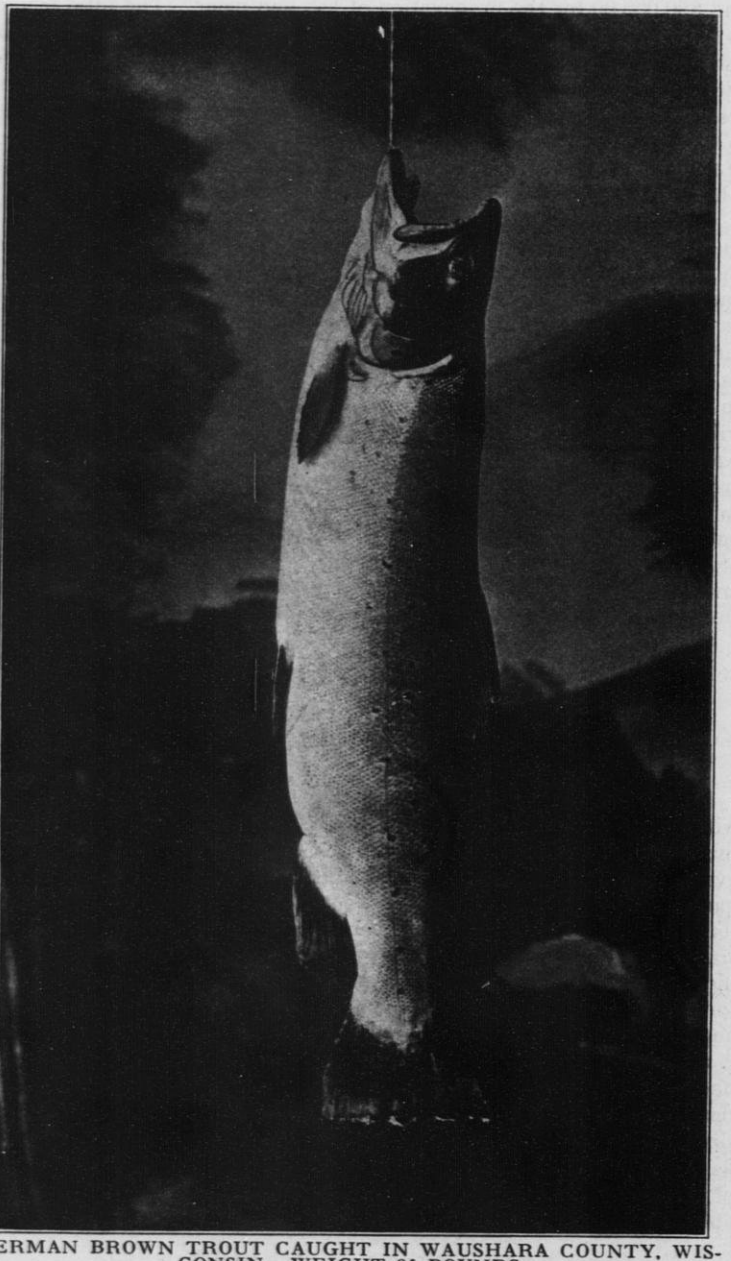
and $50,000.00 for the propagation of fish and game. The total income to Wisconsin from the various sources connected with the hunting and fishing, such as summer resorts, tourists, and additional taxes paid by the railroad companies because of their great increase in business in the resort regions, may be safely placed at some five million dollars a year. What moneys Wisconsin disburses for the protection and propagation of fish and game is returned many times by the thousands of nonresidents who yearly spend their summers and vacations in the state.

There is not a man in our state interested in the commercial fisheries of the Great Lakes and Green Bay who will not agree that the law covering the taking of fish from those waters is a farce; more than that, it is ridiculous. Every man knows that something must be done to conserve the fisheries of the Great Lakes. To secure coöperation and a united agreement as to the proper laws among fishermen is an impossibility. The fishermen of every port have their own ideas, and the gist of their idea is that they want no law at all. There is one point on which most of them will agree and that is "Catch fish how, when and where you will,—any size and any quantity." At every session of the Legislature new laws are enacted and old laws repealed. The laws of 1915 contain 15 pages of tables supposed to cover the taking of fish from outlying waters. These 15 pages convey little or no information to the person reading them and it is practically impossible today for any one to say just what the Wisconsin laws are relative to the taking of fish from Lake Michigan and Green Bay. Our laws on commercial fishing must be condensed to the following:

The minimum mesh of gill nets.
An absolute closed season on all varieties of fish.
A law covering restricted areas.
The regulation of the taking of fish by stipulating in the law the minimum size of each variety of fish that may be had in possession.

Cut the law down to these four items, have them just and reasonable, within the bounds of true "conservation" so that the commercial fisherman can obey the laws, *then enforce the law.* Such a law is simple and every person reading it will understand it. Illinois, Minnesota and Michigan all regulate the size of fish. The entire Dominion of Canada regulates its fishing industry by stating in their laws in plain English the minimum size of each variety of fish that may be had in possession during the opening season. Fish less than such size are confiscated whenever and wherever found, and the person having them in possession is brought into court and fined. It is immaterial whether the person having them in possession is a fisherman, fish dealer, or cold storage man—he is violating the Canadian law by having them in possession or under control. What is the result? The merchants and wholesale fish houses refuse to accept undersized fish, and the fishermen regulate the size of their mesh and their fishing operations so as not to catch immature fish. The law as to size of mesh, depth of water or distance from shore is all nonsense. As I state above, have the law cover the following:

1. No gill net of a mesh less than 2¾ inch stretch measure.
2. No gill nets of any variety to be set or used within one-fourth of a mile of any harbor, pier or breakwater, or any stream emptying into Lake



GERMAN BROWN TROUT CAUGHT IN WAUSHARA COUNTY, WISCONSIN. WEIGHT 8¼ POUNDS.

Michigan, Lake Superior or Green Bay, or within one-fourth mile of the shore line of Door county, or in any of the harbors or bays of Door county.

3. An absolute closed season in Lake Superior during the period from September 15 to November 1, and in Lake Michigan and Green Bay during the period from October 20 to December 1.

4. Stipulate the minimum size of lake trout, whitefish, chub, herring, bluefin, pike, pickerel and other fish that may be caught, had in possession or under control.

The statistics on Lake Michigan and Green Bay show that last year the state licensed the use of 12,533,665 feet or 2,375 miles of gill nets. Do you realize this means that if the licensed gill nets were joined they would reach from New York to Chicago, to St. Paul and then down to the City of New Orleans? Over two million set hooks were used. It is said that a man cannot count a million dollars, one at a time, in a life time. This will give you some understanding as to the dire necessity of placing upon the Statutes of Wisconsin, fishing laws that are truly in the light of conservation, laws that should be simple, each to understand, laws that may be enforced and laws that, when violated, the violater may be brought into court and the state be able to secure a conviction.

DISTRIBUTION OF FISH.

A great majority of the people interested in the planting of fish are of the opinion that because the fish hatchery is located in their midst, nothing further is necessary to furnish fry for distribution. They do not understand that we must either have a large number of breeding fish on hand, or that we must catch a large number of mature fish during the spawning season to obtain eggs for hatching. Brook and rainbow trout and black bass are the only varieties of fish that we raise for propagation purposes, and keep in our ponds, from which to obtain eggs for the hatchery.

At the time we started the 1916 distribution of fry, our files contained approximately 17,000 applications for fish of the various varieties. These applications were received from every part of the state. All told, approximately 206,000,000 fry were planted in the waters of Wisconsin by this Department. Of this number, some 140,000,000 brook and rainbow trout, pickerel, pike and muskellunge were planted in inland waters. The remaining 66,000,000 consisted of lake trout, whitefish, bluefin and chub, which were planted in the outlying waters of the Great Lakes and Green Bay.

The following table will show how the eggs of the different species of fish vary in size. We use as a basis the number of eggs per quart.

Brook trout average	13,000 to the quart
Rainbow trout average	10,000 to the quart
Lake trout average	7,000 to the quart
Wall-eyed pike average	150,000 to the quart
Whitefish average	40,000 to the quart
Muskellunge average	50,000 to the quart
Bluefin average	120,000 to the quart

The prevailing color of fish eggs in healthy condition is of an amber hue. If the eggs have not been properly fertilized or if there has been an undue

change in temperature, or if the eggs were not properly handled, those that die immediately turn white.

When the eggs are received at the different hatcheries they are all measured and in this manner we know exactly the number of eggs received. All poor eggs removed are measured and by subtracting the loss of eggs from the amount received at the hatchery, it is very easy to determine the approximate number of fry that the hatchery produces and ships out for planting in the waters of the state. Dividing the total production of the hatchery by the number of cans used to make the distribution gives the number of fry per can, and by multiplying the cans by the number of fry in each can, we arrive at the number of fish planted by each person applying for the same.

During the past three months the employees of the commission traveled over 46,000 miles in the distribution of fish and the planting of them in public waters. The fry was transported in specially constructed cans similar in shape to a ten gallon milk can. It required over 16,000 of these ten gallon cans to transport the fry and at certain times it is necessary to curtail the shipments, as the empty cans are not returned as rapidly as is necessary. Oftentimes persons receiving the fry do not return the cans to the depot promptly, and this hampers us greatly in our work of distribution.

ROUGH FISHING OPERATIONS.

During the season of 1915 the Commission entered into 36 contracts under sections 62.38 and 62.50 for the taking of buffalo, carp, dogfish, garfish, ellpout, suckers and sheepshead from inland waters. Six of the contracts were under sec. 62.38 covering the waters of Winnebago county and thirty covering other inland waters. Most of the rough fishing operations were carried on in Lakes Poygan, Winneconne, Butte des Morts and Winnebago in Winnebago county, and in the waters of the Crawfish and Rock rivers, Lakes Monona, Waubesa, Kegonsa and Beaver Dam. Under section 62.38 the fishermen paid the state at the rate of one-half cent per pound on all fish sold and under section 62.50 the state collected one cent per pound. All fishermen paid a per diem of $2.50 plus necessary expenses including lodging and board for the services of a state supervising warden.

Most of the fish were sold in eastern markets, carp bringing from 3 cts. to 6 cts. per pound, buffalo from 5 cts. to 10 cts. Several carloads of live carp were transported to New York in a car especially constructed for this purpose. These fish were shipped from Hubbleton and Beaver Dam.

To make rough fishing successful under these contracts, requires the investment of considerable capital. It also requires one who understands the business of fishing and operation of nets. Many fishermen lost money because of their inexperience. This work is practically confined to waters in the southern portion of the state; northern waters are not heavily infested with the rough fish. Very few game fish were taken in the nets. Our game fish do not remain in the vicinity of a large school of carp or buffalo. When a particularly large haul of carp was made, 40,000 to 60,000 pounds, not over 75 to 100 pounds of the better varieties of fish would be found in the haul.

The following table will show that the 36 contracts yielded a total catch of 1,381,168 pounds of fish marketed and on the same the revenue of the state amounted to $11,128.07. Approximately 300,000 pounds of dogfish, ellpout and garfish were caught, which were buried on the shores.

Where the carp has established himself it is practically impossible to exterminate the fish, but consistent fishing will restrict their numbers to such an extent that the better varieties of fish may hold their own. Wherever the carp establishes himself it is not long before he becomes the dominating factor. The natural increase of the fish is exceedingly rapid and owing to its destructive habits the other varieties rapidly diminish. They simply crowd out the game fish and usurp the grounds. Some objections are made as to carp or rough fishing operations on the ground that seining the lakes does more harm than good. The season for rough fishing is from September 20 to March 20, at a time when the game fish are not

CATCHING WALL-EYED PIKE FOR COLLECTION OF SPAWN

spawning, are in deep water and for this reason there is practically no damage to the game fish. The fact stands that the carp will destroy more spawning grounds and water vegetation than all the seining that could be carried on. Lake Kegonsa in Dane county before carp fishing was carried on was practically a big carp pond. After three years of carp fishing operations, the summer of 1916 was the best game fishing season that the lake afforded for years. The water vegetation is now heavy and there are a number of splendid wild celery beds in the lake. There is absolutely no question as to the excellent results of cleaning the lake of tons of rough fish.

ROUGH FISHING OPERATIONS.

	Lbs.
Winnebago county waters (Sec. 62.50)	333,840
Rock river (Sec. 62.38)	158,162
Crawfish river (Sec. 62.38)	77,145

Lake Monona (Sec. 62.38)	165,465
Lake Waubesa (Sec. 62.38)	96,985
Lake Kegonsa (Sec. 62.38)	210,872
Lake Beaver Dam (Sec. 62.38)	239,307
Other waters (Sec. 62.38)	99,392
Total pounds marketed	1,381,168
Revenue collected by the state	$11,128.07
Number of contracts entered into	36

SURVEY OF TROUT STREAMS.

For several years I have recommended a thorough survey or examination of trout streams in the state, so as to secure positive information as to whether or not the proper and necessary conditions exist to make the planting of trout successful. Many waters that at one time were excellent trout streams no longer have the proper natural conditions for the development and growth of this species of fish. The timber and brush have been cut from the banks, and the stream now meanders through farm and pasture lands, where, during the summer months, hogs and cattle wallow in the waters. Rains, owing to the timber and brush being cut, cause a heavy wash and flood. There is no question but that many thousands of trout from the state hatcheries are planted in streams in which the fish cannot exist. What may have been a good trout stream a decade ago is to-day nothing but a dirty, roily creek.

This year we started the work of a survey covering Wisconsin trout streams. A complete investigation is made as to the present conditions, i. e., temperature of water, depth, width and length of the stream, food conditions, results of former plantings, or any information that may have a bearing on the subject.

Many persons are of the opinion that water is all a fish needs. We may as well say that air is all a human being needs. A stream may be as pure and cool as spring water and as clear as crystal, if the necessary water vegetation which produces crustacea and caddis is absent, the planting of trout is useless. Crustacea is a form of animal life belonging to the fresh water shrimp family. This food must be abundant in the waters or the young trout cannot survive as it is the only food on which a baby trout lives during the first few months of existence.

The work was started in the southern part of the state and thus far ten counties have been covered. The survey is in charge of Mr. B. O. Webster, foreman of the Delafield State Hatchery, who with one assistant traversed the country in an automobile. By placing additional men on the work we expect to complete the undertaking during 1917.

After the work has been completed and statistics tabulated, the department will be able to arrange the future distribution of trout fry so that the fish will be planted only in streams where we know they will find proper conditions for growth and reproduction. Hundreds of thousands of fry have been planted in streams in which a trout cannot survive. Many trout streams are now polluted with refuse from creameries, cheese and canning factories. This survey also covers the situation where persons

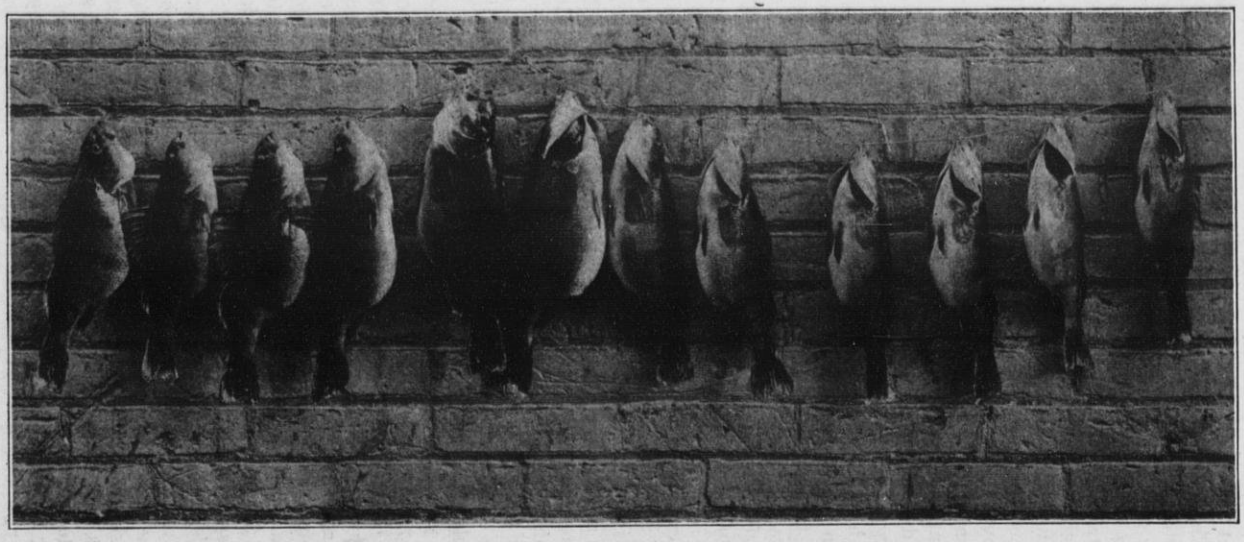
secure trout from the state, and then post the streams "No Fishing Allowed." At the expense of the state and the taxpayer they maintain a good trout fishing stream. In the future such streams will not be supplied unless the public may enjoy the fishing.

During the past season unusual and remarkably large catches of pike and bass have been made with hook and line in the waters of Lake Winnebago and its tributaries. A peculiar condition was the catch of white bass in those waters, being all of practically uniform size and smaller fish, few if any of the large white bass as of former years being caught. Summer resorts reported splendid fishing throughout the north territory. This is also true all over the state.

Since the advent of the automobile trout fishing particularly has suffered. In my opinion the auto is the great cause in the rapid depletion of our fish and game. With an auto, hunters and fishermen can cover as much territory in one day as formerly took a week. The sportsmen can run from one hunting ground or trout stream to another, covering several in a day, even though they be miles from one another. The streams are fished out as fast as the state stocks them. We have a minimum size law, but, nowadays trout fishermen seem, as a rule, to be fishing for numbers instead of the size of fish. Unless a reduction is made in the daily bag limit, I am in fear that we will be unable to keep our streams properly stocked.

In our general recommendations we will cover the change in the law reducing the bag limit on trout and lengthening the closed season on black bass, but I wish to make a few particular remarks regarding these two changes. We intend to reduce the bag limit on trout from 45 to 25. Any true trout fisherman will admit that in this day and age, a catch of 25 trout in one day should satisfy any fisherman.

As to black bass. For many years I have advocated a law permitting no bass to be caught until July first. Of all Wisconsin fishes, the black bass is the only game fish of importance that builds a nest and protects the eggs and young fish. From the time the eggs are deposited on the nest until the young are about 10 days old, the pair of old bass continually remain in the immediate vicinity, driving away any enemy that may seek to destroy the eggs or young. The present law opens the season for the catching of bass at the very time the bass should be protected, i. e., at the time the fish are on the nests. You may take a general average for 10, 20 or even 40 years, and you will find that the bass are on their nests during the month of June. Not one year out of ten will show that black bass have left the spawning grounds by June first, or years when they are still on the grounds in early July. Any real fisherman will tell you that if you will keep out of the shallow bass grounds in June that no bass will be caught. Some fishermen make the hue and cry that if fishing for all varieties of fish except bass is opened on May 29, that they cannot help catching black bass. Let the fishermen keep out of the bays and shallows during June and no bass will be caught. Go out on the lakes on May 29 and see where the men are fishing—every boat is up in some bay among the lily pads or on some gravel bar where the small-mouthed bass spawn—and all the men will be casting for bass. The fishermen destroy millions of bass every year. If the reader is one of those who fishes for black



TWELVE YELLOW PERCH. TOTAL WEIGHT 16 POUNDS. TAKEN FROM LAKE KEGONSA, DANE COUNTY, WISCONSIN

WALL-EYED PIKE FROM TOMAHAWK LAKE, ONEIDA COUNTY, WISCONSIN

bass during June he will admit, if he is truthful, that practically every female he caught was full of spawn. Give the black bass a chance to spawn and reproduce, and Wisconsin will always be one of the best black bass fishing states in the Union. The natural reproduction of young bass in the spring of 1916 was much better than the average year. This is due to the fact that the bass spawned late, the early fishermen quit after four or five days fishing on the spawning beds. Later the bass came in and many of the mature fish that would have been caught earlier in the season were left undisturbed, and the result was a good crop of bass fry. This condition means thousands of dollars to future sportsmen.

On the following pages will be found papers by Mr. John H. Lowe, of the University of Wisconsin, and Mr. R. L. Ripple, foreman of the Bayfield State Hatchery, regarding the use of gasoline and benzine in the treatment of trout attacked by a parasitic copepod commonly known as "fish lice" and causing an infection known as "gill trouble." As yet the work is in the early experimental stage, but I feel much encouraged as to the treatment developing into an important factor in the propagation of brook trout. Fish, like the human family, are subject to disease. The most common in the trout family is the above mentioned gill trouble. If unchecked the death rate among the confined fish is enormous. Scientists and fish culturists have spent years of study to find some method of checking the disease in the early stages. The pioneers in trout culture discovered that bathing the fish in a strong salt brine would, to some extent, check the ravages of gill trouble and to the present writing this is still considered the most beneficial remedy.

At the meeting held in Sturgeon Bay, Capt. Albert Kalmbach, who was born on the shores of Lake Michigan and who has been a commercial fisherman for some 45 years, read a paper to the fishermen present. The sentiment and ideas expressed by Capt. Kalmbach are so absolutely true and parallel with the conservation ideas of this commission that I take a great pleasure in printing his paper in this report.

THE EFFECT OF GASOLINE AND BENZINE ON THE PARASITIC COPEPOD, SALMINCOLA EDWARDSII OLSSON, PARASITIC ON THE GILLS OF THE BROOK TROUT.

By JOHN N. LOWE.

On or about July 8, 1916, Mr. James Nevin, Chairman of the Conservation Commission, requested me to perform experiments with gasoline with a view of determining whether it would destroy the parasitic copepod (Salmincola edwardsii Olsson) which is parasitic on the gills of the brook trout (Salvelinus fontinalis).

Three hatcheries were visited during the investigation, viz. Madison, Wild Rose and Bayfield.

The hatchery at Wild Rose presented the most extensive infection, the adult trout being most affected, but the young fish (fry) were found to be infested with one or more parasites. At Madison the adult fish were not as extensively infected as at Wild Rose but the condition was serious. The young fish (fry and year old) were found to be entirely free from the parasite. The young fish are kept in ponds which are entirely free from all sources of contamination. The Bayfield hatchery presented a different problem and has conditions which are more difficult to overcome. The water coming from Pike's creek is a constant source of infection as it was found that the "wild" trout were infected by the parasite. Nevertheless, it was found upon examination of the fish that the percentage of fish attacked by the parasite was less than at Wild Rose.

The experiments were performed at the Madison and Wild Rose hatcheries. The fish were exposed to gasoline and benzine for varying periods of time. A stop watch was used for recording time. The copepods were examined with a pocket lens magnifying 14 diameters, or with the lower power (⅔) of a compound microscope.

The fish placed in gasoline or benzine did not show any discomfort for the first fifteen or thirty seconds. After this period they jumped a great deal and gasped. In about two or three minutes they were suffocated or nearly so. The mucus secreted by the glands covered the entire body. It was creamy white due to the coagulation.

The recovery of the fish was interesting in these experiments. The gaoline penetrated into the tissues of the fish. The gills were covered with an oily film, which inhibited the respiratory functions of the fish and its recovery for a short time. When the fish were returned from gasoline to water, they remained on their sides from five to twenty-five minutes, depending upon the length of time they were kept in the gasoline and

benzine. There was a spasmodic gasping for a while (3 to 40 or more minutes), when the fish would make an uncoördinated dash forward, the distance covered varying with the individual fish. The usual distance was from two to four feet, when they fell on their sides. After a rest of two or three minutes another start would be made. After this period of rest the fish would right themselves and swim about in a more or less coördinated manner and finally recover.

Benzine was tried because it has a greater evaporating power than gasoline. It was found that fish treated with benzine recovered more rapidly than those treated with gasoline.

The fish treated with gasoline, benzine, or a mixture of the two were apt to die after partial or complete recovery. The muscles in the tail region would begin to stiffen and slowly all the muscles of the body became involved. The heart continued to beat from three to four hours after the muscles of the body had stiffened. The parasites examined on a fish in this condition were found to be in a healthy condition, and continued to live for hours after the fish were dead.

Most of the fish that were exposed to gasoline, benzine, or mixtures of the two, from one to five minutes recovered completely. The fish that died were individuals which were heavily parasitized or had been weakened by the parasites some time previously. There were a very few fish that lived after a six to ten minute exposure.

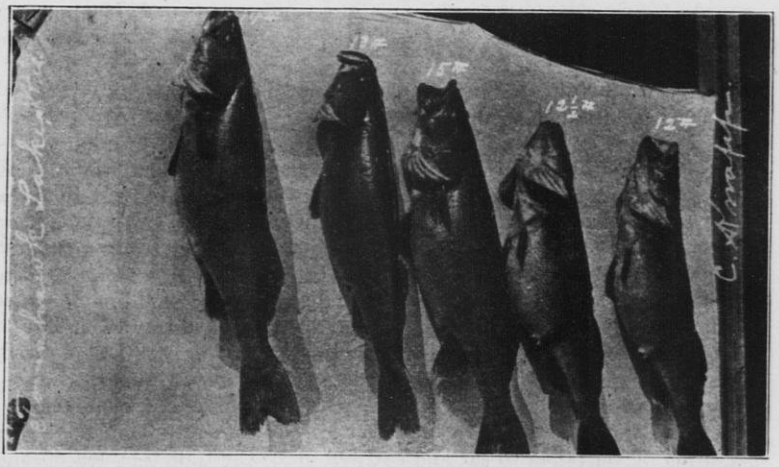
In regard to the effect of gasoline and benzine on the copepod, it is clear from a study of the experiments listed, that the parasite can withstand the effects of gasoline and benzine for a longer period than any of the brook trout can, even those in the best condition. Very few brook trout can live in gasoline or benzine more than ten minutes, but the parasites live in them from seventeen to twenty-eight minutes. A few of the copepods die when exposed to gasoline or benzine from three to ten minutes, but the number affected is so small that for all practical purposes the results are negative. Careful examination of the parasites killed by gasoline or benzine showed them to be very young individuals or females that had shed their first or second batch of eggs. Probably the ruptured egg sacs permit the gasoline to penetrate into the vitals of the copepod. The vigorous females with their first egg sacs developing are not killed by gasoline or benzine.

The life cycle of the female copepod is about three months. After this period death ensues and the dead parasite and the affected gill undergo deterioration. This reduces the number of functioning gill filaments, and the respiratory functions of the fish. The dead copepod and the affected gill filament serve as a locus for bacterial and fungus infections. Many of the fish examined had no paraistes on their gills, but from the white color of the degenerated gill filaments showed conclusively that they had been heavily infected. It was fish in this condition that died first, even a three minute exposure to gasoline or benzine causing death.

The affected gill filament appears white in color and is very firm to touch. This hardness is probably due to the formation of the scar tissue. The whiteness of the gill filaments is caused by the destruction of the very fine capillaries of the gill filaments. With this impoverished circulation and respiration the vitality of the fish is very much reduced.

The fish having a large number of white and hard gill filaments were found to be in very poor physical condition. There was no fat on the intestine or body wall. The fish were lean and the muscles were firm. The fish that had not been affected by the parasites showed the intestines surrounded with fat and the body cavity was lined with a thin layer of fat. The muscles had a firmness characteristic of fish in prime condition. This observation has an economic bearing.

It is a known fact that fish in nature put on extra amount of fat before their spawning season. This reserve of fat is used up during the maturation of the ova. Therefore, the number and quality of eggs produced by the



FOUR WALL-EYED PIKE. TOTAL WEIGHT 66½ POUNDS. TAKEN FROM TOMAHAWK LAKE, ONEIDA COUNTY, WISCONSIN

individual fish is dependent upon its physical condition. The high death rate of infected fish during or after the spawning season is no doubt due to the weakened condition of the fish by the parasite. The constant handling of the fish during this period is also a contributory cause as the weaker fish are not able to withstand the stripping.

The parasites are more numerous upon the old fish. A few parasites are harmful to the fish. Even a single parasite withdraws from the trout just enough blood for its own sustenance. The amount of blood required may be small but it is a loss, and it weakens the fish by just so much, and if the parasite dies this gill filament is functionless. When we consider that there are found from 125 to 200 copepods on the gills of a single fish we are forced to conclude that the drain on the fish's vitality is enormous. With this constant drain there is no energy left for the production of eggs.

THE USE OF GASOLINE IN THE TREATMENT OF FIN TROUBLE AMONG BROOK TROUT.

By R. L. RIPPLE.

During the month of April at the Bayfield Hatchery, there developed a certain fin trouble or disease among several thousand of our brook trout yearlings, a disease with which all fish culturists have come in contact with more or less. The quarters and conditions under which these particular trout were kept and had wintered were ideal, except that the space was somewhat limited and perhaps a little crowded. This fin trouble or disease, if it should be called such, was, in my opinion, caused in some way owing to said close quarters. Many thousands of trout of same age and size, from same eggs and stock fish, were wintered in the same water conditions, but with more ample space and with no bad results, and are a grand lot of trout at this time. When this fin trouble was first noticed, the very tips of the different fins, and tail as well, were slightly frayed, reddish in color and inflamed, the dorsal fin being in all cases more badly affected as the trouble advanced. The trout, although in the above sore condition, never failed to eat and eat well up to the time they fell off and died. As stated above, the disease advanced more rapidly on the dorsal fin and when this fin became affected down to the body of the fish, that trout died. The strongest trout among this affected bunch seemed to throw off the disease and become little the worse for it, except that the dorsal fin would heal over and become only a short stub, the same being true also with other fins and tail. At the first realization of this trouble, I removed and started cleaning up all the affected fish by salt brining and changing quarters, but I soon found that the old method of salting trout was of no avail in this instance, but only hastened their death by keeping the soreness inflamed.

I had removed 500 or 600 of the very worst affected trout to one of the hatchery tanks to prove to myself whether or not the salting operations were really of no avail. Here the water could be drawn down at will and different amounts of water and salt brine strength were tried, but the trout fell off very rapidly. The disease had advanced at that time beyond where any salting or cleaning up by that method, either in weak or strong solution, would do any good. Several other things were tried and still the trout died. Any one who loves his work and that which falls under his personal care, as most hatchery men do, can appreciate the fact that there was nothing left undone in trying to save my little bunch of "speckled beauties." Commissioner Nevin visited the hatchery on Sunday at the

time the disease was at its worst, and mentioned for me to try gasoline and kerosene on the fish, and see what effect that would have upon them.

The next day my good neighbor, Mr. Nourse, called me up saying that he wanted me to come over and help him make up a small crowd for an hour at his farm adjoining the hatchery, as one of University of Wisconsin men was to give a talk on the Diseases and Care of Sheep. I want to say here that I never will be sorry because of the one and one-half hours put in at that talk. The gentleman discribed the different diseases of sheep and finally came to stomach trouble and stomach worms and stated in his remarks that 2 spoonfuls of gasoline to 3 ounces of fresh cows' milk would cure and rid the sheep of worms. In my desperation in trying to do for my bunch of trout, I thought if gasoline had a killing effect on the stomach worms in sheep, why not might its uses be applied to this fin disease of my trout, as I had, of course, supposed that the fin trouble was a germ or parasite of some kind. It did not take me long to collect a half dozen of my worst affected yearling trout and place them in a quart of pure gasoline. In one minute by the watch all were quiet; the struggling of the trout was over; two more minutes elapsed, at which time they were removed to a vat of running water. After watching them several minutes without a quiver anywhere, feeling sorry, giving them up as dead and intending trying another lot for a shorter period of time in the gasoline, I was called out on the pounds. In about 15 minutes upon my return to the hatchery, I discovered my treated trout swiming about gaily. To test their welfare, I gave them some nice fresh liver to humbly atone for the trick I had served them. To my surprise they took food readily. To my further surprise, as I happened to glance into the gasoline measure in which they had been treated, I found that the gasoline was of dirty brownish color and jelly-like, and this proved to me that something had come off those trout.

The treated fish fairly glistened in coloring, they were so clean. The frayed fins turned whitish color at the diseased ends. It was not long before I treated quite a number in like manner, and kept two tanks going, one with the gasoline treated fish, and the other tank containing the salt brined trout. There was a loss in both tanks, but much greater by far in the salted tank. As I was treating my worst cases in both instances, there was bound to be a death loss among the gasoline treated trout from those fish that were beyond any hope anyway.

My experiments told me as far as I carried them that there is something to gasoline in the treatment and cleaning up of trout that should be carried out in a more scientific manner. Three minutes is the limit of time which brook trout will stand the clear gasoline, and revive in running water. The final loss of this bunch of trout was about one-half. Of those treated with gasoline, many were no doubt beyond any help at that time.

Without more positive proof on my part, owing to absence of strong magnifying glasses, and proper amount of time to devote to the work, and the advanced stage of the disease when the gasoline treatment was begun, I cannot state just what results were obtained. At any rate, here is something worth further consideration in the cleaning up of trout, and in the treatment of fin trouble herein referred to, especially if started when the fin trouble is in the first stages.

WHITE BASS TAKEN FROM THE WOLF RIVER, WISCONSIN

I cannot help but think what a great means this gasoline treatment might become if properly applied in the case of the common fish louse or copepod, which attaches itself to the gills of the brook trout, as many of you know. If only to destroy the two protruding egg sacs of this eventually death dealing parasite, that alone would pay well for an occasional gasoline bath among affected brook trout. Thousands of brook trout of any size may be treated in a few gallons of gasoline by holding them in it with scap nets.

PAPER READ AT MEETING HELD WITH COMMERCIAL FISHERMEN AT STURGEON BAY, WISCONSIN, FEBRUARY 16, 1916.

By ALBERT KALMBACH.

I am glad another opportunity is given us to meet at this time and discuss our common interests. In a spirit of good will to all, I have a message for you. It lies close to my heart and in choosing my thoughts I assure you I have only the future welfare of you fishermen in mind.

You all know I have about lived my alloted time in this career. My life is nearly spent. I have spent it among the fishermen. Personally I cannot live long enough to get much benefit out of conservation of fish, but sincerely, boys, I want you to think, and think hard and fast, I want to give you the benefit of my many years' experience in producing and marketing fish and studious observation of fish culture, and if by my humble efforts I can help make your future conditions better, then I can feel I am doing something in turn for good that has come to me in the business.

We are face to face with conditions that cannot continue as they are. Let us take our lessons from the experience of the past, and correct the future, making it much better for ourselves and our children.

This county is most favorably situated for fishermen, except possibly the marketing or selling of fish.

Our waters offer a considerable variety of edible fish. It has wonderful feeding and spawning grounds for all of them. The waters of Green Bay in particular offer one of the grandest opportunities for fish culture that the sun shines on. I believe and know that to be so.

If we could picture the real truth of our advantage until all the fishermen would have a state of mind that would make of each a volunteer defender of our future business; if they would look on our waters as the source of their future living, and they would honestly and earnestly work to guard that treasure as they would their bank account, they would earn very much more money, do it easier, feel better, take a livelier interest in public matters and become a most honored citizen, one in whom the whole community would take pride.

In arranging these meetings, we feel it is for the future good of our business that we promote a better understanding of each other and through such understanding become interested in the things that go to make our profession in life one of common sympathies.

We are composed of pound net, gill net and hook fishermen. But let us forget we are pound net men, or gill net men or hook men. Let us think

of a larger meaning of the word fisherman, and in this spirit we are men, earning an honorable living by producing food for the people, just as honorable as farming, and let us put honor into the profession. In these waters and this profession we have the means of making men, men we can be proud of as citizens.

In becoming fishermen in the larger meaning of the word, let us coöperate with one another, for getting our selfish ideas such as arise in differing interests as pound net men, and gill net men and hook men. Let us all help each other, aim to get legislation that will get us more fish in years to come.

It does not take much of an observer to see we are playing a losing game. A bare living or existence, with no gain, is the fare of most of the boys. What does that experience teach us? It means there is something very wrong, either in the way we catch fish or stock the waters, or both. You have all seen tons and tons of immature fish caught. If a total of those figures would confront you today you could scarcely believe your senses. Suppose for instance ten or fifteen years ago we had all sat around a good-fellowship club, had a good banquet and all had that Christmas felling such as we have for our families, and the idea went around the room, what can I do for each one of you? If you get each member of your family something for Christmas it costs you something. Now we want to do something for one another that costs an effort and sacrifice, and someone suggests,—We will not catch any more immature fish,—what do you suppose would have been the result today if such a suggestion were carried out? Here is a conservative estimate. Take one thousand pounds of No. 2 trout at a market price of three cents or thirty dollars. That is the value the fisherman gets, and the end, the end, mind you, of that thousand pounds. No other results from it to the fisherman.

You leave those fish alone as this Christmas gift to one another and what happens?

Let them grow to be four or six pounders and they become four thousand pounds, and at an average price of 7½ cents and their value is what? $300.00 or ten times as much as the 1000 pounds of immature. What else do we get by leaving them a few years? These fish on maturing will spawn and reproduce. A conservative estimate, you will agree with me would be several hundred thousand eggs from this 4000 pounds of mature fish. Most of the eggs in its turn becoming, in time, a fish, and by reason of this Christmas spirit we will let the fish grow to maturity, and it in turn leaves thousands of eggs behind it. Just pencil this out and the results will stagger the most vivid imagination among you. And mind you, we started with one thousand pounds of immature fish as a gift to each other. A small guess in eggs would be ten times as many fish reproduced, and put to dollars and cents becomes $3,000.00. That would have been a wonderful Christmas gift for us boys, now wouldn't it? To make that much for us now, we sacrificed back there a few years ago, $30.00 of fish for such wonderful results. Multiply such results many, many times for we have caught and marketed hundreds of tons of immature fish.

What would you think of a farmer who took crop after crop off his soil and never put anything back on the farm? He would be committing business suicide. And suppose that farmer couldn't wait for his stock to grow

to maturity and good prices, but would slaughter the little pigs, the calves, the colts and the wee chickens for a few cents because it was quick money and he could not wait. Would you say he was a good candidate for the foolish house?

That is a parallel I am impelled to draw in order that I may impress on your minds the necessity of changing our ways of business suicide. That is the viewpoint I want to place before you. I have not overstated the figures. I have understated them.

If we were big coöperative brothers, helping one another, and some ten to fifteen years ago adopted this Christmas spirit toward one another would we be scratching our heads and wondering how soon the finishing touches will be put to our business?

INTERIOR VIEW STATE HATCHERY AT OSHKOSH
HATCHING PIKE EGGS

The great State of Wisconsin has upon its statute books many laws aimed at helping us fishermen. This department of laws has made mistakes due to the fact that the makers of the laws did not know our conditions nor our possibilities. Particularly our possibilities. We had no means of becoming closely associated, most of our fishermen looked upon these laws and their officers as an institution interfering with their rights as individuals.

Selfish ideas for easy money over-balances the great constructive game, that of making a profession based upon fundamental principles of continuous existence and prosperity. Let us try to get legislation based on practical ideas that mean the building up of the industry. Then let us feel these laws are for us. You and me. Our future benefit. And we find ourselves in a spirit of coöperation with these laws. We and our interests are bound up with them, and when we see that, we become men in the large sense, men who feel today's acts are tomorrow's results.

The state is going a long way to meet us and putting out the correct idea, of serving our real needs just like mothering a family. Her representatives are with us today in a true spirit of "getting together," and aiming to make our future better. Suppose every commercial fisherman would accept with his privilege of fishing some responsibility to place back in the water something for what he has taken out, that would cost him some sacrifice and effort, and if he made this sacrifice he would feel some future interest in the waters and set forces to work to protect his future interests.

Our present method of grabbing what we can out of the water, because everybody is doing it, is what has brought us to our present crisis. We are now paying for that thoughtless way.

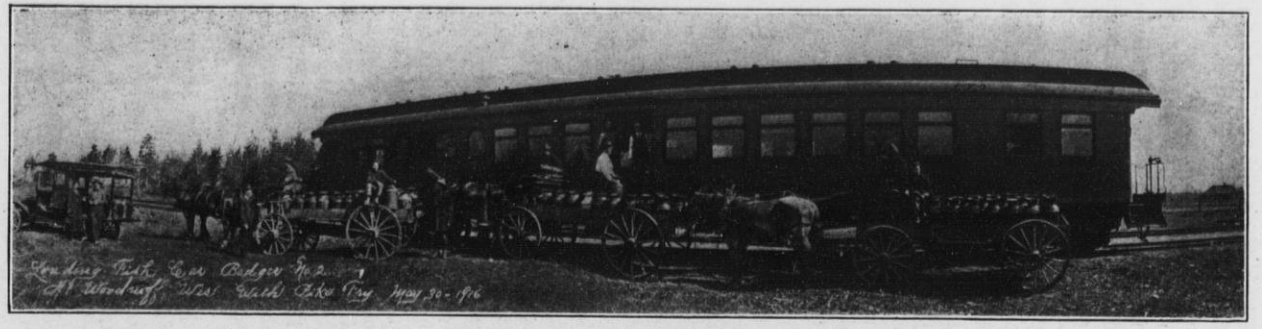
We read a few years ago that down East were thousands of abandoned farms, run out of business by their former owners, and left for taxes.

Someone with brains comes along, puts an effort and sacrifice onto the farm, regenerates the place, and it again becomes habitable and productive. So, with our waters, we have them run down to a point where it is a struggle to exist, in fact, our continued existence in this business is going to compel us to do something sooner or later. We have the waters to build up the industry, now, let us become coöperators using good business judgment. I want to call your attention, in closing, to what has been done in places where they have had the same troubles that now confront us.

Lake Erie was run down in fish stock. Boats could not pay expenses. There were no white fish and herring were very scarce. They went to a three-inch mesh net for small size and a four and one-half inch mesh for white fish. Everybody was loyal in support of those sizes. Last spring one boat on Lake Erie caught eleven thousand dollars of white fish in two months. When the fall run of herring came on, eighty-five tugs from seventy to ninety feet long each, fished out of Erie, Penn., and Dunkirk, New York, with daily catches ranging from two to ten tons each, and receiving four cents per pound in the round, for this stock, and on Lake Erie there are about 200 steam tugs. Some of them catch three hundred and fifty tons of fish per annum. On Lake Michigan and Green Bay we have about ninety steam tugs, in Michigan and Wisconsin. We have a very large body of water and a great deal of fine grounds for fish culture, and we could stock these waters to such an extent as to make us all rich.

But, the size of the catches is by no means the whole story. Go into the market at Chicago and see the prices Lake Erie fish bring. Compare their prices to the prices that our stock brings. It would pay all of you to spend some money to see these things for yourself, then you would know the truth on this subject.

We are men, and I believe in you, have known most all of you many years. I want to see you all do better, and so I urge now and here that we get better laws and become, ourselves, a part of those laws, realizing they are for us. Let us make the catching, marketing and shipping of immature fish an impossibility. We will then raise our profession in the eyes of all the world. Each one of us become a conservation force, active and alive, and no one will violate the spirit or rules of the game.



LOADING STATE DISTRIBUTION CAR AT WOODRUFF, WISCONSIN. DISTRIBUTING PIKE FRY

DIVISION OF WILD LIFE CONSERVATION

By W. E. BARBER.

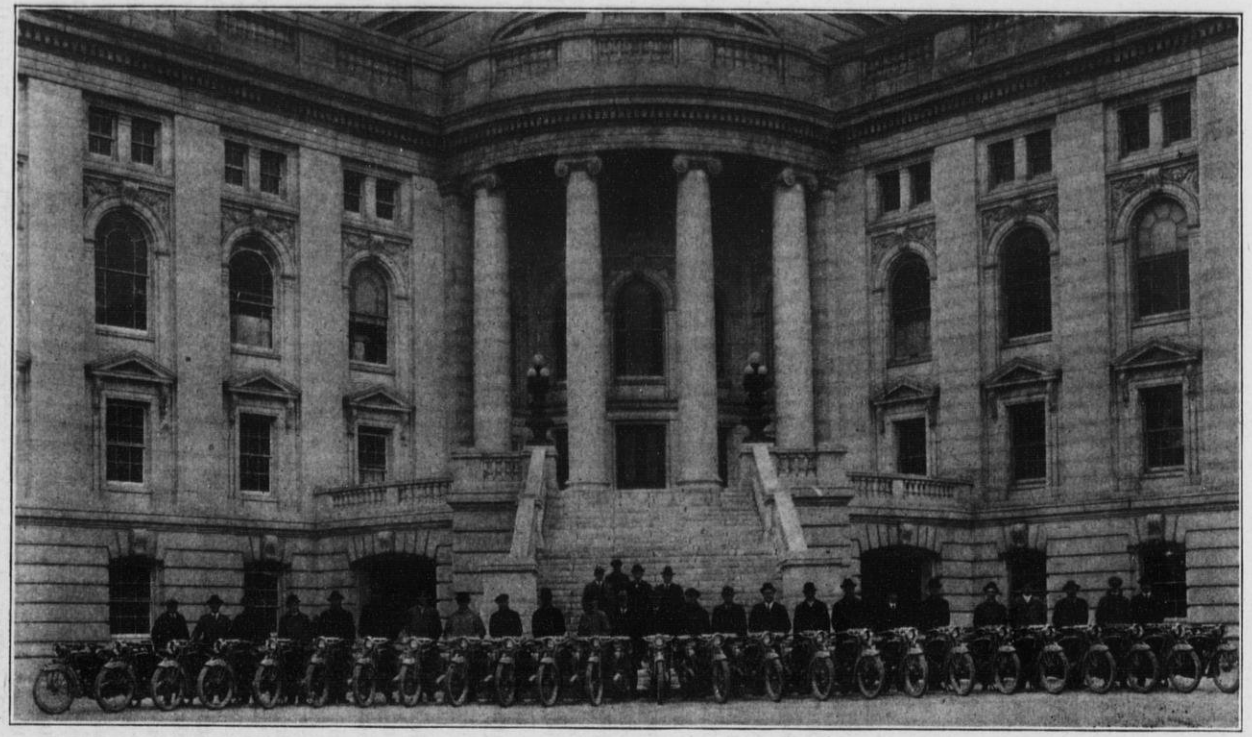
CONSERVATION WARDENS.

The first year of the supervision of this division by the Conservation Commission closed June 30, 1916, and we beg to report that much has been accomplished in the reorganization of the warden department for greater efficiency, in weeding out the dead timber and placing every warden on his merits of efficiency to retain his position with this division.

Wardens have been advised that circumspection in their deportment was demanded in all of their official acts and that their duties were to be confined entirely to the conserving of the wild life of the state, and that their political activities would no longer be the measure of their tenure in office. This departure has resulted in a more coherent organization which is manifest in a more general interest by each and every warden in pushing forward the activities of this division. We shall endeavor to add strength to this division by carrying forward the policy we have established and enthusing the spirit of coöperation among our force, which must result in greater accomplishments in the future.

The consolidation of these various departments has promoted the efficiency of the warden division tremendously. The permanent employes of the various departments are all conservation wardens with police powers to make arrests for any violations of the conservation laws, giving this division added supervision in suppressing violations. Besides, the parks and forests are essential for game covers and naturally belong in the great scheme of conservation.

We have in all at the present time 76 conservation wardens. This number is made up of 63 engaged entirely in the activities of wild life patrol duties. Added to these are ten forest rangers and three park superintendents who are located in vicinities where the services of wardens are essential. Prior to the consolidation of these departments, the wide stretch of wild timberlands of the northern part of the state were without adequate protection, and the adding of the forest rangers to the warden division had given that territory the much needed protection. The park superintendents perform an important service in protecting the song and insectiverous birds during the influx of campers during the summer months. They also patrol a considerable additional territory during the winter months.



MOTORCYCLE SQUAD, WISCONSIN CONSERVATION WARDENS

EQUIPMENT.

After taking an inventory of the equipment for carrying on the warden service we found that much was lacking in the facilities for wardens in covering their respective territories. Eight of the wardens owned automobiles which they were using under a per diem system. Two owned horses and were receiving pay in like manner. The balance had no way of covering their territory except as they hired livery, travelled by train or on foot. After auditing the expense accounts for a few months, we found that a large part of their expense accounts were for transportation, and they were by no means covering their territories adequately. It was up to us to furnish some means of transportation for our men if we were to expect efficient service. We informed ourselves as to what other states were doing for equipment and found them all in about the same condition as we were. We did find, however, that Massachusetts was using motorcycles in its forestry department for its rangers. They reported to us that they were a great success in both efficiency and economy. After gathering all of the information available, we concluded to purchase either motorcycles or Ford cars, and proceeded to advertise for bids for furnishing 25 motorcycles. We took the matter up with the Ford people and they sent their field man to Madison to confer with us. His best offer was their list price, as he said under the company's rules, they were obliged to protect their agents and could not make an inside price even if we took 25 cars.

Our best bid for 25 motorcycles was $4,975, offered by the Excelsior Motorcycle Company, of Chicago. Our next best bid was $5,490, offered by the Harley-Davidson Motorcycle Company, of Milwaukee. One other bid was offered by the Indian Motorcycle Company, of Springfield, Mass., their bid being $5,668.75. We placed our order with the Excelsior people, as they were the lowest bidders and offered a machine equal to any of the others, as pronounced by motorcycle experts. We put these motorcycles in use on May 20 of this year, and we believe they have paid their cost in saving of expenses. Besides, they have materially facilitated the service. Our contract with the Excelsior people covers the overhauling of every machine this winter, putting on new tires, reënamelling, overhauling the engine, replacing all worn parts with new and making the machines as nearly as possible as good as new. The price for this overhauling is $30 for each machine.

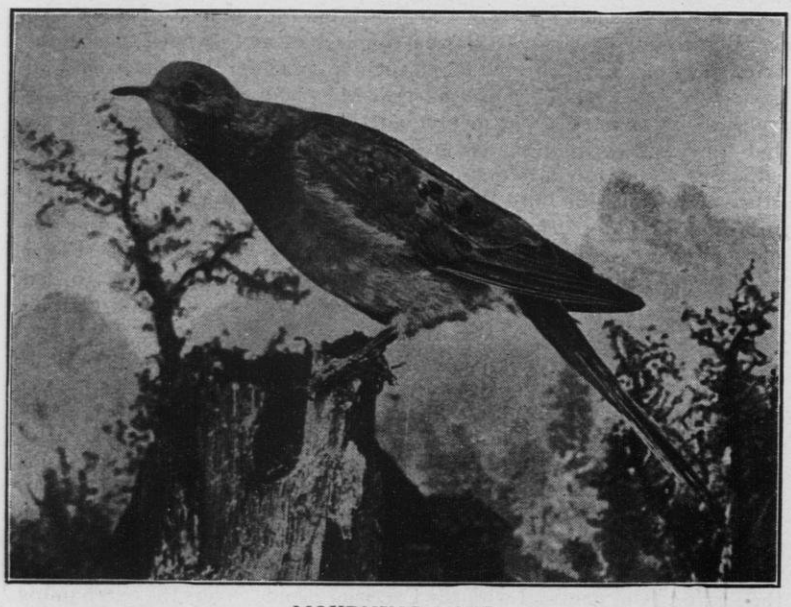
Wardens who own automobiles we are allowing five cents per mile for the miles actually travelled while in the service of the state. Automobiles are an expensive method of travel as compared with the motorcycle, but there is a large part of Wisconsin where motorcycles are not practical, as they are not a success on sandy roads.

We found the department lacking in sufficient boats to properly patrol the waters that come under our supervision, and have purchased six additional boats and Evinrude motors, and one large boat for lake patrol. We are still lacking in equipment for our wardens if we are to expect efficiency and we will add from time to time until tnis necessity is supplied. We believe that the State should own sufficient equipment for carrying on

this work in an efficient manner without paying wardens for the use of equipment which they can ill afford to supply.

RUFFED GROUSE, PHEASANT AND PARTRIDGE.

Under the name of ruffed grouse, pheasant and partridge, this bird is well known to all sportsmen as the king of all game birds. It is not only the gamest of all game birds, but is the most palatable when served. This fine bird is in much need of protection or its name will be inscribed with those that have suffered extermination. Not many years ago these birds were plentiful in Wisconsin, inhabiting every grove and woodland through-



MOURNING DOVE

out the state, and no thought was given to their protection until their scattered numbers gave warning to the sportsmen that something must be done.

It was then that the first remedial law was passed, and that simply prescribed a shorter open season for hunting them and a reduced bag limit. The law protecting these birds is so promiscuously localized that a hunter travelling through three counties will find the same number of different laws. In other words, there are too many laws that apply only to separate counties.

It was a mistake that the last legislature did not prescribe a closed season for partridge, for the past two seasons have been disastrous in that the sleet, rain and ice during the winter months covered the forage, destroying many of them. The cold rainy weather during the hatching

season lessened the hatch of young birds. In the face of these facts it is no wonder that word comes to us from every part of the state that partridge are very scarce and in some localities that there are none at all. The only thing that will save this specie is a closed season, and it should extend until 1920.

PRAIRIE CHICKEN.

We can only repeat the same story of the prairie chicken that we have recited of the partridge. They are "on their last legs" and must receive attention from this legislature. Scattered flocks of small numbers are seen in some sections of the state, but from many counties the report comes to us that not a single bird is seen. This is a melancholy story as compared to those of a few years ago when they were seen in every county of the state in large flocks, furnishing the most exhilerating sport for both sportsmen and dog, and offering a resistless opportunity to enjoy the great outdoors.

There is a danger line in the resistless law of nature governing these species below which we must not trespass or we invite inevitable extermination. It is conceded by all ornithologists that there is a diverging line below which bird life cannot survive their natural enemies, and a lingering thinning of their numbers by these pests eventually results in their extermination. We are not too sure that our prairie chicken have not approached this line and we submit this information to this legislature to enable it to pass such laws as in its best judgment will conserve this specie. We advise a closed season until 1920.

QUAIL.

Quail are coming back. That sounds good and is full of meaning for these birds were so nearly exterminated in Wisconsin that after 22 years of continuous closed season they are just beginning to recover in appreciable numbers. We believe that at the expiration of the closed season which extends until 1921 we will have them in sufficient numbers to provide short open seasons for taking them. Many of the New England states have lost their quail and despite their efforts to bring them back by the importation of breeding stock, they have accomplished nothing as yet. It is the same story the world over that when you once let your native birds get away, it seems a matter of impossibility to restore them. There has been no degree of success attained by any of the states in the artificial propagation of our native birds. The only safe system is to watch carefully and protect them in their natural habitations.

The last two winters were exceedingly severe, as the heavy sleet and rain storms formed a coating of ice, covering the food supply, and immediately following we were visited with heavy falls of snow accompanied with severe cold weather. It was only through heroic work by this department that tremendous losses of these birds was averted. Feed was supplied by the state and the various protective associations, which was

distributed by our wardens and members of the associations, and the birds survived with very few perishing.

The farmers generally are very choice of the covies that are located on their premises, as they have proven their value to the agriculturist in

BOB WHITE

destroying potato bugs and other destructive insects. Consequently the quail have a generous friend in the farmer and a thrifty spirit of coöperation is redounding greatly to the benefit of the quail.

DUCKS.

We view with optimism the future of all of our waterfowl. The Federal Migratory Bird law has thrown around them that degree of protection that in its scope guarantees their protection throughout the United States. The few years that this law has been in effect has proven the wisdom of its passage in a large increase in the number of birds coming to Wisconsin. Our wardens report that it has been many years since the influx

of birds has been as great as this year, and many are making the lake regions of the northern part of the state their nesting grounds. Since the enactment of the proper kind of state and Federal laws for their protection, there has been noted everywhere a marked increase compared to the decline noted when unregulated hunting was allowed.

In our judgment it should not be the purpose of any restrictive law to make it so unreasonable as to preclude the possibility of the sportsmen bagging a legitimate limit. And in discussing this question we do not want to be understood as favoring a law that will open up the way for wholesale slaughter, but we do believe that the present law restricting the hours to a "sunrise and sunset" schedule is drawing the line a little too close. In our judgment this law could be extended to 20 minutes before sunrise and 20 minutes after sunset without infringing upon the safety in proper protection. Our very best sportsmen who are as strongly in favor of proper protection as any member of this commission and who are giving us most valuable assistance in the enforcement of the game laws, contend that our present law is too restrictive and should be changed as suggested above.

Wood duck are responding to the closed season provided for them six years ago and are coming back in large numbers. Our wardens report large flocks of them in every part of the state where a few years ago they were seldom seen. Mallards, teal, canvasbacks, redhead, pintail and coots are found in large numbers throughout the watered districts of the state.

So we feel safe in saying that our waterfowl are on the increase and they will continue to be a great source of pleasure and profit to all that enjoy the sport of hunting.

GEESE.

Geese have never been considered much of an asset to the sportsmen of Wisconsin. This is easily accounted for, as geese only light in a wide open space of country where their vision is not restricted. Their instinct of avoiding danger is much more keen than that of the other species. They adhere assiduously to nature's warning that self preservation is the first law of nature, and they take no chances. The only places in Wisconsin where any shooting of geese is reported is in Jefferson, Dane, Rock and Walworth counties. They frequently, while on their flight south, light in the open fields of these counties and some of our sportsmen usually wait their coming and occasionally bag a few of them; but these instances are rare.

THE FEDERAL MIGRATORY BIRD LAW.

The Federal Migratory Bird law which directs the Department of Agriculture to adopt suitable regulations and prescribe a fixed open and closed season for migratory birds has done more to conserve the migratory birds than all the laws ever passed by any of the states since the necessity for passing protective game laws was conceived. The game laws which

were passed at the last session of our legislature were framed to conform to the Federal law and it has added tremendously to the power and efficiency of our laws. It has not entirely done away with violations, but it has reduced all flagrant violations to the minimum. The Department is now considering the adoption of a Federal bag limit and the prohibiting of the sale of migratory waterfowl. This regulation would add another strong arm to the law which would aid tremendously. The Federal game laws have done more to bring protective legislation in the southern states than any other one thing.

Before the passing of that law, half of the southern states made no pretense at game protection, but now the states are few that haven't a very substantial code of laws which in most of the states are fairly well enforced. The prevailing weakness of the laws in those states is that they allow the sale of game, thus opening the way for wholesale slaughter. Their bag limits are excessive and they show no disposition to economize in saving the birds. Until this last year, their bag limit was 50 birds, but so much pressure was brought to bear by other states in urging that their bag limit was unfair to the more progressive states of the north, that they reduced it to 25 birds.

At the National Association of the Game and Fish Commissioners held at New Orleans the week of October 10, 1916, strong pressure was brought to bear urging that the states adopt a uniform bag limit for migratory birds, giving each state an equal maximum opportunity to share in the spoils of this natural resource. But no agreement was reached. However, we believe that such a resolution will be adopted at our next meeting which is to be held in St. Paul next year. Our sportsmen have claimed for years that we have not been getting a square deal or an equal opportunity with the southern states in taking these birds. We have claimed that we were protecting them rigidly during their stay in the north, carefully protecting them through the breeding season, only to have them slaughtered in the wintering zone in the south. This is absolutely true, but we believe that at our next annual meeting at St. Paul, this condition will be remedied and we will get together on a uniform bag limit and restrict all sale of these birds, which will bring about the desired results.

THE FEDERAL LACY LAW.

The Federal Lacy law which prohibits interstate shipment and traffic in game is a powerful weapon for good. This law applies only to states that have laws prohibiting the sale and traffic in game, and Wisconsin is one of that number. We have enforced the Wisconsin laws rigidly and have turned over to the Federal authorities several cases after receiving convictions in our courts. The Federal courts have then imposed additional fines, with heavy costs, which the violators have found a rough and rugged road to travel. It is important to know that one journey through the courts of this process has been sufficient to satisfy the game trafficker. We have never had occasion to make an arrest for a second offense, which convinces us that rigid laws is the true solution of game protection.

INSECTIVEROUS AND SONG BIRDS.

It is only within the past few years that any public attention was given to this class of birds. They came and went at their pleasure, and if they were fortunate enough to pass unmolested it was their good fortune. They were not looked upon as contributing anything of value to the human race other than their cheering songs and graceful presence about our daily

TREE SPARROW

walks. The hunter had no scruples as to shooting them just to see them fall prey to his marksmanship, and the small boy took delight in pursuing them with his toy implements of destruction. We are surprised that more of the species were not exterminated before modern education brought relief to these helpless creatures of the air.

Reason and education has at last rescued them from the perils that pursued them continually and we have found that they are as indispensable to humanity as the sunshine and rain. We have found that without the birds, agriculture would be a lost industry and the green fields and foliage

would disappear and a barren waste would follow in the wake of their destruction. No flowers would bloom or blossoms spring from the earth, but insects would swarm and vermin would cover the earth; and famine and desolation would be visited upon an ignorant and unholy race.

Our scientists have found that the value of these little creatures computed in dollars and cents alone amounts to millions of dollars annually. It is not beyond our reason to comprehend this when they have proven to us that many of the different varieties of insectiverous birds eat three times their weight in insects each day. Multiply this by the countless millions of these little workers that are busy from before sunrise until after sunset every day of the year, and contemplate what it means. It means that when we see one of these little creatures we must realize that he is a mighty creature for good to all humanity and that our lives depend upon his industry—that we must keep him forever with us.

The law protects these birds at all times and they are responding to this protection in increasing numbers. The Audubon societies have done a wonderful work in helping to create public sentiment favorable to bird life. Also in interesting the children in providing bird houses where they will be convenient for their nesting and in providing feeding stations where the birds find abundance of food during the winter months.

We still have a few alien inhabitants who have no regard for any species of wild life and they shoot or destroy the birds regardless of their usefulness. We are pleased to report, however, that the penalty of the law is easily inflicted on this class of violaters, as the courts are intolerant and invariably pronounce the extreme penalty of the law in these cases.

REFUGES AND SANCTUARIES.

The establishing of wild life refuges and sanctuaries has become a tremendous factor in the great scheme of conservation. Every state that has given consideration to the necessity of proper protection and maintaining of its species are establishing refuges where predatory animals and vermin are exterminated and every disturbing influence removed. Lured by the security and solitude offered by this sanctuary, the various species congregate with almost human intelligence and take up their home life.

States that have given the refuge system the longest tests are unanimous in their commendation of the beneficial results accomplished. Some states have set aside large tracts of wild lands, mostly timber lands, around which a single wire is strung to mark the boundary, and have placed posters short distances apart warning hunters and pedestrians that no firearms are allowed within the enclosure. The overflow from these refuges keeps the surrounding country supplied with the various species and guarantees a perpetual flow from these refuge districts for all time.

We have started this work in Wisconsin, having posted two community refuges, besides the six state parks, which are all patrolled by our wardens and careful attention given to the removing of disturbing elements. We are, however, handicapped through a lack of a proper refuge law to give these refuges the legal distinction they should have and the power to this commission necessary for state wide extension of this work. Our com-

mission has framed a refuge law which we are submitting to this legislature for passage, which, if passed, will equip us to carry on this work in the manner it should be. The coming of the automobile has opened the remote districts where seclusion was found, and settlement is encroaching more and more upon their habitations. This condition demands that broader protection must be given for these creatures, which is best afforded by a generous supply of refuges.

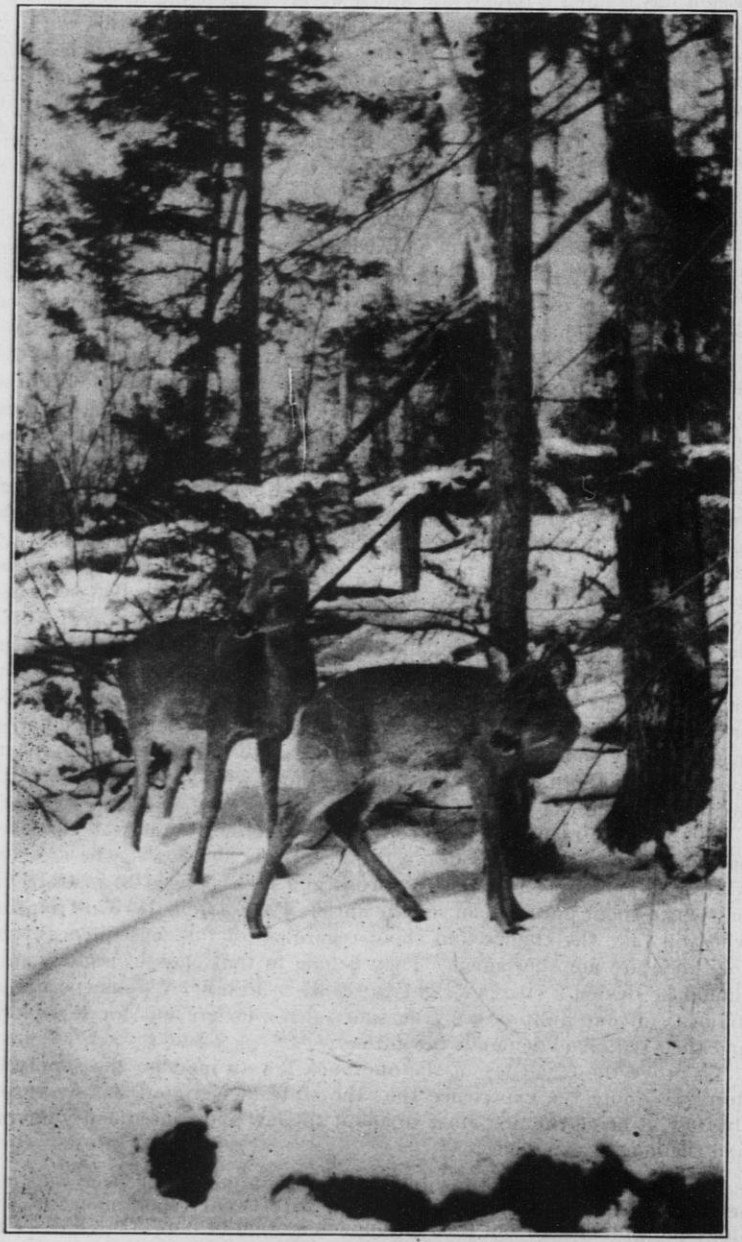
DEER.

The immediate danger of exterminating our deer was overcome by the passage of the one buck law by our last legislature. This is a proven method of conservation. Sixteen other states have tried this method prior to the passage of the one buck law in Wisconsin. Something had to be done to save our deer, as settlements are fast encroaching on the wilderness and the fast increasing population is narrowing the area of their habitation. Consequently we must throw around them the necessary protection to retain them as an abundant game animal. In the light of experience, we know that no animal responds more readily to protection and encouragement than the deer, for our first year's trial of the one buck law has resulted in producing more fawns this year than have been seen in the deer territory in any previous year. Nothing is more reasonable if we exercise common sense, than that by retaining our female deer we will perpetuate the specie. The farmer, rearing his domestic cattle or other animals, keeps his females and sells off the males, thus providing against depletion of his herds. The one buck law is a common sense law and it needs no scientist or prophet to figure out the benefits that must surely follow its enforcement. Every sportsman who desires to leave to his posterity the inheritance that God ordained to the children of men will support this law with his very best efforts.

This law, we realize, is an inconvenience to the hunter who cares for nothing only to satisfy his desire to kill. He is angry when he sees the white tails bounding through the brush and he is obliged to restrain his passion to shoot until he can see the antlers. We admit there are hunters who will take the chance and shoot regardless of the consequences, but such men are not sportsmen. They belong to that class of hunters that should be denied a citizen's right to secure a license. We believe that a majority of our hunters are true sportsmen who are out for the sport, and their red blood demands the antlers.

To prove the efficiency of the one buck law to increase the supply of deer, we quote the experience that the state of Vermont has had with this law, it being the first state to adopt the law and consequently having had the longest experience:

"Forty years ago, as a result of persistent hunting the deer were exterminated in the state of Vermont. In 1878 twenty sportsmen raised a fund and purchased from the Adirondack section of New York seventeen deer which were released in Turland and Bennington counties and protected by a closed season which continued for nineteen years. In 1897 an open season was again given, and has been continued each year since that



DEER IN STATE GAME FARM

time. During the eighteen years which have since elapsed bucks only have been killed, with the exception of the years 1909 and 1910 when an open season for does also was granted. This open season in 1909–10 was given solely for the reason that deer had become too plentiful and it was deemed wise to reduce their numbers.

"During these eighteen years official figures show that 23,265 deer have been killed by sportsmen. During the first half of the period, or from 1897 to 1905 inclusive, 2,855 deer were killed. During the second half 20,410 deer were killed, an increase of over 800 per cent. These figures prove * * * that under a buck law the deer increase in the woods at the same time that greater numbers are being taken by the hunters. The statement seems paradoxical, but there can be no denying the figures.

"It is interesting to note also that during the first four years of the open season, or from 1897 to 1900, inclusive, only 460 deer were killed, an average of 115 deer per year. This was the best that could be done after a nineteen year closed season. During the last six years the number taken averaged 2,763 deer per year. The great increase in Vermont deer therefore has taken place not under the protection afforded by a closed season, but under the buck law.

"Vermont, as stated before, is the state which has given the buck law the longest test. It is the only state in the Union today which complains with reason of having too many dear. In proportion to its hunting area more deer are killed under a buck law than in any other state under any kind of law. The deer are also the heaviest and finest specimens of the Virginia deer to be found in the United States. Hunting accidents are characteristically infrequent and the kind of accidents in which a man is shot at by mistake for a deer are almost unknown."

The one buck law has its friends and its foes—both equally pronounced in his praise and condemnation of the law, but viewing it from the standpoint of a conservation law, both as to humanity and deer, its first year's trial has demonstrated that it has conserved both. There was not a single fatality last winter from one hunter shooting another, mistaking him for a deer. A very unusual circumstance, for this is the first year in a score that several hunters have not lost their lives being shot to death by a reckless hunter that did not stop to see what he was shooting at. This law has demonstrated that the hunter stops and looks before he shoots. He looks for the horns, and does not shoot at the first sight of a moving object. It has made the hunter more cautious, and has added much to the sport for the hunter feels that his life is not in constant jeopardy. With all of the points favorable to this law, it should have but one amendment to make it complete. The law should specify that no deer may be taken without horns at least six inches long.

We refer those who believe that the one buck law is not a conservator of deer to the following schedule which shows the total number of deer shipped from the various counties during the years 1913, 1914 and 1915. This gives only the number of deer *shipped* and does not include those that were taken by private conveyances, which were many:

COUNTY	1913	1914	1915
Ashland	310	583	182
Barron	34	35	18
Bayfield	797	784	386
Brown	1	2	.....
Burnett	32	1	2
Chippewa	167	201	118
Clark	85	86	34
Douglas	516	470	195
Dunn	24	17	.....
Eau Claire	16	25	4
Florence	71	308	132
Forest	111	93	42
Iron	190	255	140
Jackson	26	16	7
Juneau	5	7	4
Langlade	75	104	39
Lincoln	101	147	39
Marathon	14	26	5
Marinette	195	205	76
Monroe	2	5	3
Oconto	20	58	31
Oneida	629	577	258
Polk	22	18	9
Price	487	529	145
Portage	1	2	.....
Rusk	508	368	185
Sawyer	968	1074	502
Shawano	7	4	4
Taylor	599	667	255
Trempealeau	.....	1	.....
Vilas	657	284	178
Washburn	232	184	178
Michigan points	.....	29	32
Unidentified, picked up by expressmen	67	59	54
Total	6969	7373	3137

THE MARKET HUNTERS.

It is needless to say that the market and pot hunters care little about the law as it now stands. They figure that there is only one chance in ten of their being caught, and if they are caught, the penalty of from $5

BEAR HUNTERS IN NORTHERN WISCONSIN

to $25 is only the fruit of one day's hunt; and they are willing to take the chance. These are the men that are the real destroyers of our game.

There is but one way to stop the traffic in game and that is by a heavy fine, and imprisonment for the second offense. The Federal Lacy law which prohibits interstate shipments of game has had a deterrent effect in shipping game outside of the state. The market hunter takes a long chance in undertaking to ship game to Chicago or any of the large markets, and but few have been willing to take that chance of falling into the clutches of Uncle Sam. Uncle Sam's laws are stringent and they fear them —they are afraid of the $200 fine—but they have no difficulty in peddling

game to willing purchasers near home. For instance, it is a notorious fact that the market hunter enjoys a lucrative business in trafficking in deer during the entire year. They do not wait until the opening of the deer hunting season, November 11, but they start out and secure a supply and have it ready for the hunters when they arrive. The hunter who is not fortunate enough after a week or ten days hunting to get his stipulated one buck, can easily (if so disposed) purchase one from the wiley market hunter and take his trophy home. This is a common practice, and while we are able to arrest an occasional market hunter, the fine is so small that it makes but a small dent in his lucrative profits.

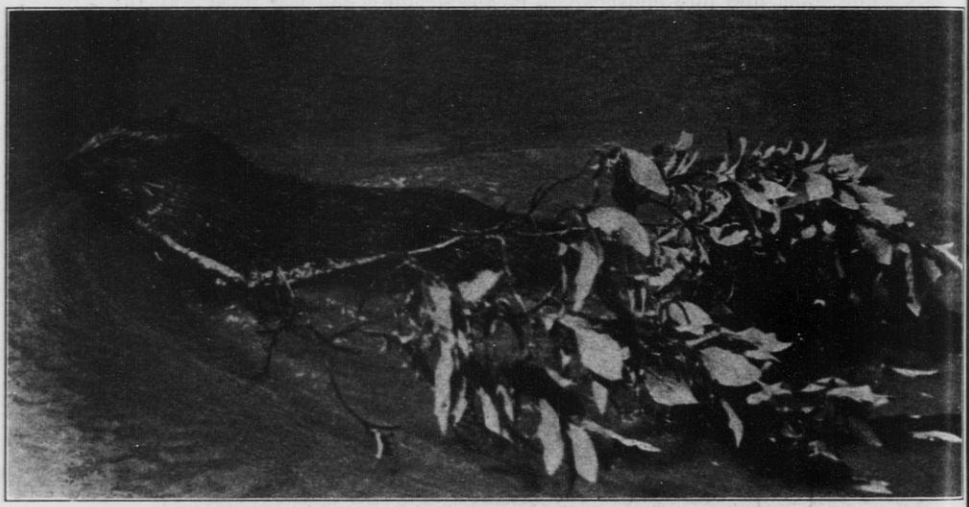
For instance, last winter we found where one of these market hunters had six deer hidden. We watched until he came after them and arrested him, took him into court where he plead guilty and was fined $50, the maximum for this violation. We sold the deer in Milwaukee for about $200. It is an inviting occupation for a good hunter and it is no wonder that they hazard the chance. The fine should be $100 for killing a deer out of season and $100 fine for each deer or part thereof sold, or six months in jail. Such a law would put a stop to the slaughter of deer for the markets and save them for the legitimate hunter.

From the mass of evidence we have, we feel safe in saying that one-half of all of the deer killed are killed by these market hunters. Their field for operation is so vast and their opportunity for evading an officer so extensive that it is hard to catch them. Besides, they are a lawless, desperate class of men and the law-abiding citizens are afraid to report them as they would be endangering their lives and property. Instances have been known where mysterious burning of buildings could be traced to this provocation. So we ask this legislature to arm us with some good stringent laws, backed up with rigid fines, and we feel confident we can suppress this vicious practice.

BEAVER.

In discussing the beaver situation in Wisconsin, we believe we have a sufficient fund of information on the life and customs of these little animals to write a book. There is no part of our duties that have been beset with so much difficulty as the wise little beaver have caused. He possesses more wisdom and is the master of more trades than the combined intelligence of all the animal kingdom. He is a forester, a lumberman, an architect, a carpenter, a mason and an all-round genius. He builds his dam and house and takes up his abode where he sees fit, regardless of all human consideration, backing up the water, covering cultivated fields and meadows much to the annoyance of the farmer. He backs up the water flooding railroad tracks and interferes with the commerce of the commonwealth, and no man dares molest his well laid plans to provide for themselves and families, for he is wrapped in the plainly written laws of the state of Wisconsin, which expressly provide that "no person shall hunt, take, capture or kill any beaver or molest their houses or dams." Protected as he is and has been for the past ten years, their numbers have multiplied until they have become a nuisance all through the northern

part of the state. Their numbers have become so great and they multiply so rapidly that they will soon hold title to a large portion of some of the counties by right of preëmption of claim. Scarcely a day passes that our commission does not get a complaint that a beaver colony has dammed a stream and asking us to relieve the situation. We, immediately upon getting a complaint, dispatch one of our wardens to blow out the dam and destroy the houses, only to have the satisfaction of repeating the operation in a few days, as the beaver immediately repair the damage and set up housekeeping as though nothing had ever happened. We realize that this kind of work cannot go on indefinitely, and we have settled on a permanent plan of solving the situation, and have started at the work.



A BEAVER AT WORK

The state owns 360,000 acres of forest lands in Oneida, Vilas and Forest counties, and we have trapped and shipped 30 beaver and liberated them on these lands. We had several colonies located on these lands prior to this shipment, which furnishes a sufficient number to guarantee the perpetuation of the species on lands where they will be immune from interference with any individuals' right and where they have sufficient space to spread out and replenish the earth.

Now that we have performed real conservation in this work, we recommend that our laws be so amended that this commission will be authorized to allow the farmers on whose lands a beaver colony is located and doing damage, to allow the farmer, under licensed supervision to capture the beaver and free the state from further annoyance. Further in this connection, it is well to know that many of the beaver colonies are located where they are doing no damage and no objections are raised to their remaining undisturbed.

A BEAVER DAM IN ASHLAND COUNTY, WISCONSIN

PROTECTIVE ORGANIZATIONS.

It has been the policy of this department to coöperate with the various protective organizations throughout the state. There are 86 of these organizations working under various names, but all with the one aim in view, that of protecting the wild life of the state and cultivating public sentiment favorable to the great scheme of conservation. We cannot overestimate the value of these organizations, as their activities extend into every county of the state and form a substantial support to this commission. These organizations have a combined membership of ten thousand sportsmen substantially interested in seeing to it that we have a wholesome and respectful observance of the law and a proper system of protection established in their various localities. During the past year we have established several of these organizations and shall continue this policy in the future, for we believe that in organization there is strength and strength is needed to perform the mission for which this commission was created.

EDUCATION.

In order that we have a lasting and wholesome appreciation of the value to humanity of the wild life of the nation, we must spread abroad the knowledge of the relations these natural resources bear to the lives and comforts of the people. No human being with a heart and conscience would raise a hand to harm or destroy a living creature that to him meant a lessening of his own individual benefits. Therefore it is of the utmost importance that these facts be made known to the people through a thorough program of education carried on, we believe, through our public schools of the nation. Textbooks with illustrations should be provided for the primary departments of all of our schools and a period for class recitations established, making it a permanent study in the curriculum of the public schools.

The adding of this study to the school curriculum would not only spread a knowledge of this important subject, but would be a source of enticement for the child's love for school. He would look forward to the period of class recitation as the brightest period of the school day and his interest would soon be made manifest in carefully protecting, caring for and encouraging the lives of these winged creatures which he has learned to love. The youths of today are the grown-ups of tomorrow and it is to them we must look to carry forward the work of conservation in its fullest sense.

Wisconsin with her boasted educational institutions consisting of the best university in the United States, eight normal schools, six thousand six hundred and thirty-six one room country schools, six hundred fifty state graded schools, three hundred fifty high schools and many subsidiary schools, and not one of them so far as we are able to learn have either study or recitation period devoted to the life, habits, customs or benefits that the wild life of the nation holds for the people. It is the same as leaving off the connecting rod of an engine which transmits the power of the engine to the propeller. The schools are the connecting rods that

would transmit the power of education and crystallize a public sentiment irresistible in its force for conservation.

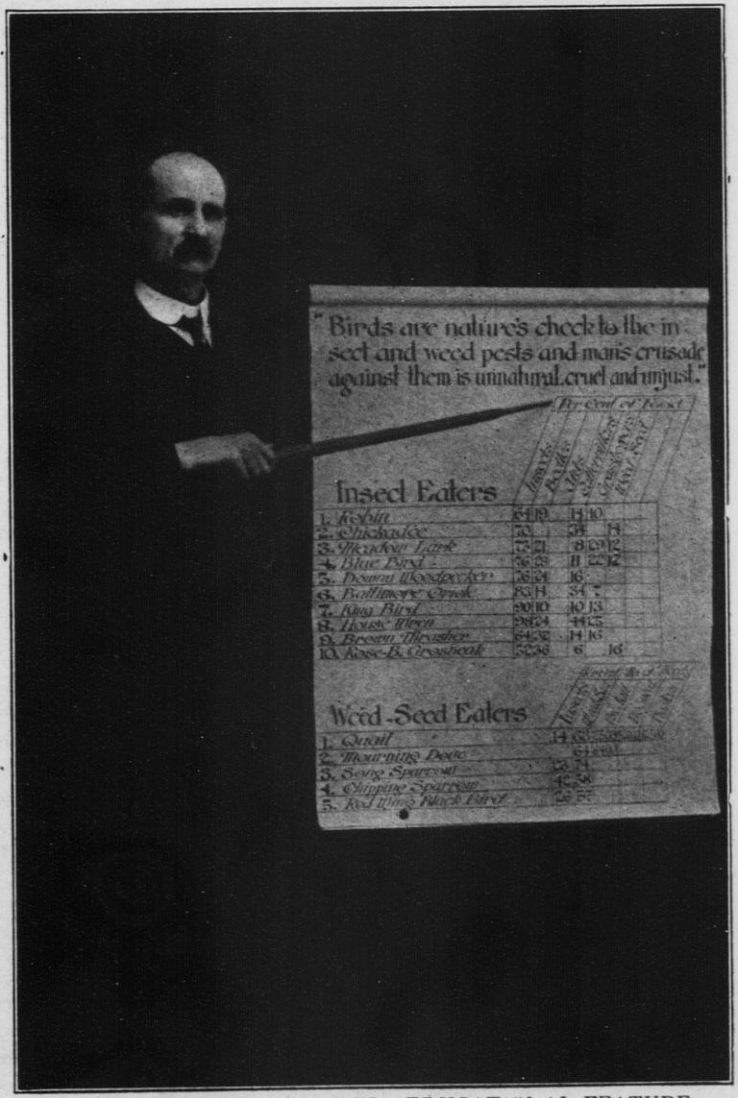
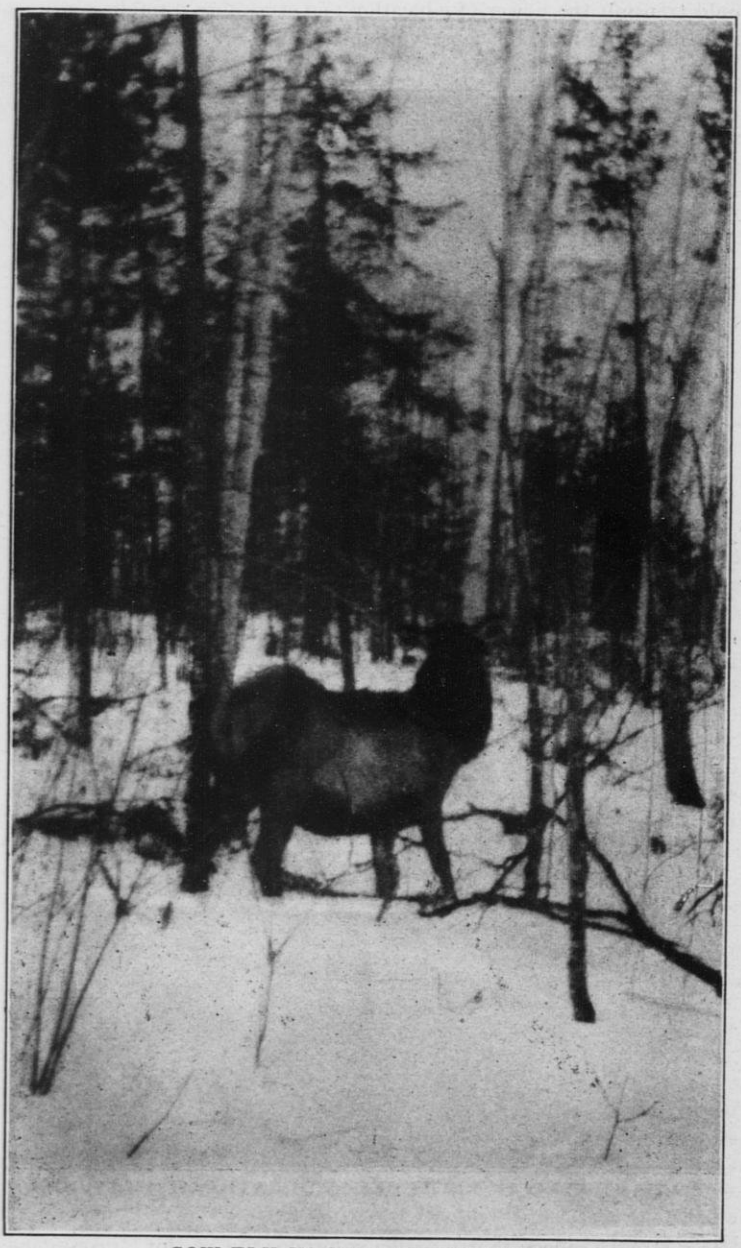


CHART USED IN LECTURES. EDUCATIONAL FEATURE

It is strange indeed that a nation so progressive as this, grasping every new idea (many of them that seem more speculative than enduring) should neglect such an important question, whose only true solution is



COW ELK IN STATE GAME FARM

education, and allow the old hammer and tongs method to supersede enlightened reason.

To the school program of education should be added public lectures given to audiences of adults throughout the various states, which would soon awaken a general interest in conservation that would endure for all time. This commission has already started this latter program and has had several speakers engaged in delivering lectures during the past winter. We shall enlarge upon this work and push this program of education to the best of our ability. It is the one thing that will save the wild life of this nation, and the work must be pushed vigorously. Until such time as the people become educated to the importance of a united public sentiment for conservation, we must pursue the course of warrants, courts and fines and follow the old method of educating with the sledge hammer, teach through fear instead of reason, and the more rigid the laws and the more severe the fines, the more potent the effect.

GAME FARM.

The Wisconsin Game Farm located at Trout Lake, Vilas county, is of considerable importance as a nursery for orphan fawns that are found wandering through the woods with no mother to nurse them and facing starvation. It is surprising how many of these helpless little creatures are rescued by wardens and settlers and sent to this farm where they are fed and cared for. We have in the enclosure at the present time about 100 deer, many of which were orphan fawns that have grown to maturity and form a large herd of breeders that are multiplying rapidly.

In 1913 the former game warden department secured a carload of elk from Yellowstone Park and placed them within the enclosure of the game farm. The long distance shipment and the inclement weather encountered on their journey resulted in the death of all but two, both of which are females, and they are still on the farm. This commission after continued effort, finally secured through the generosity of Charles Comiskey, president of the White Socks Base Ball Club and also president of the Jerome Hunting and Fishing Club, a fine bull elk which he presented to the state free of charge. This gives the state a nucleus for a herd and as they are all acclimated, we feel confident that we will soon have a considerable herd. A vote of thanks is due Mr. Comiskey for his generous gift, which is highly appreciated by this commission.

It is planned by the commission to secure a few moose for breeders and place them on the farm, as it is highly important that Wisconsin should bring back again this animal that at one time was quite plentiful in the far north regions of the state. There is no question but that moose are adapted to that section of the country and they should be encouraged as one of our game animals.

The Wisconsin Game Farm contains about 300 acres of wild timber land and is enclosed with a woven wire fence 10 feet in height. It answers a much needed requirement and will be enlarged from time to time as our animal stock increases. We shall endeavor to secure another carload of elk next year, as we are nicely equipped to handle them and the expense

of securing them is not great. Most of the expense is the transportation charges, as the government will furnish them for the expense involved in capturing them.

OSHKOSH HEADQUARTERS.

Soon after this commission assumed the management of this department, we discovered that the most extensive hunting and fishing grounds of the state were at the confluence of the Fox and Wolf rivers, Lakes Winnebago, Poygan, Big and Little Butte des Morts, in Winnebago and Fond du Lac counties. This territory had never had adequate warden service and the most flagrant violations of the fish and game laws were constantly taking place, and wholesale slaughter of both fish and game had become the chief occupation of a number of market hunters. They had built up a profitable business at the expense of the law-abiding citizens.

It was important that this practice be stopped, and in proceeding we established a headquarters for a corps of wardens at Oshkosh by providing an office in the state fish hatchery, equipped with telephone, and other accessories necessary for commodious sleeping apartments, a sufficient fleet of boats, motorcycle and automobile for patrolling the territory, a spacious boat house for securely caring for the boats. It has resulted in a general cleaning out of the offenders and has established a wholesome observance of the law that is redounding to the conservation of both fish and game.

Arrests have been many and the heavy fines inflicted by the courts at Oshkosh have become an obstacle of terror to the violaters. One visit to his Majesty's court has sufficed their appetite for illegal game, and they have concluded that it pays to observe the law.

FEEDING THE FAWNS. STATE GAME FARM. TROUT LAKE

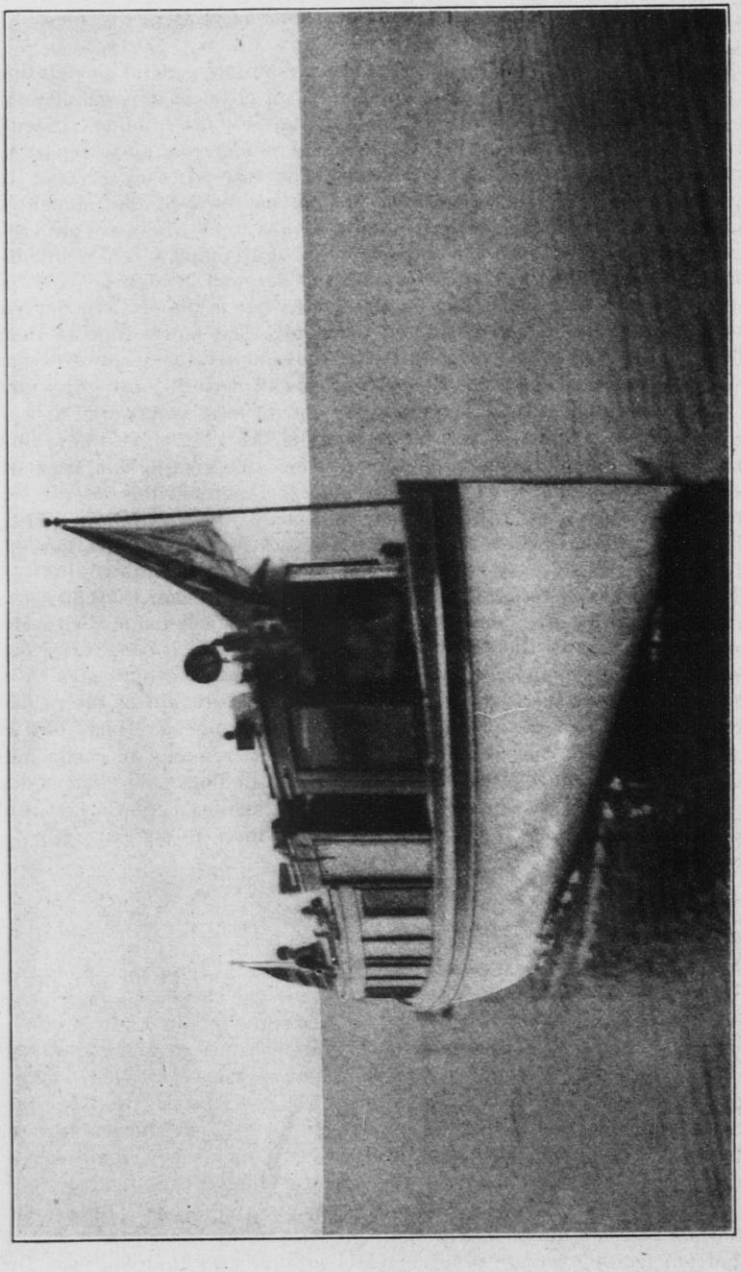
COÖPERATION.

The Conservation Commission should have a more general coöperation of the people in the work we are doing. It is a physical impossibility for us to suppress violations without the assistance of law-abiding citizens, but a feeling exists among the people that it is unbecoming to report to an officer of this commission violations, and instead, they proceed to criticise this department because we are not on the spot the moment a poacher in some remote district commits a violation. Many people view a conservation warden as an undesirable citizen having received his appointment as a compensation for political services rendered. This is entirely an erroneous idea, as the warden service is under Civil Service laws and all wardens are instructed to devote their entire time to their official duties. We believe this department merits the most generous coöperation of the people, as we are engaged in a work most important to every individual within the state. We should have your moral as well as your active support in the enforcement of the laws. We know that many people do not understand the relations this commission bears to the well-being of the people. We are officers appointed to conserve the only natural resource that it is possible to destroy and exterminate. Then tell us why, if you believe these natural resources should be conserved, that every citizen should not volunteer his hearty coöperation.

No other natural resource can be destroyed. The land, the lakes, the rivers and forests are indestructible. All of these will remain with the people to the end of the earth. But the wild life which constitutes one of our greatest blessings can be exterminated and when once gone it is gone forever. We have an example of the utter disregard of the people for these species in the passing of the passenger pigeon. That bird is gone forever. Not one living bird of that specie remains on earth, and just a few years ago they were here in countless millions. This is the one black spot on our civilization that cannot be removed, and we should guard well lest we repeat the error by adding more to the list with the passenger pigeon.

STATISTICS.

The State of Wisconsin is without any statistics as to the amount of game and fur bearing animals that are taken in the state each year. This is a condition that should not exist. This state should know approximately the number of each variety of animals and game birds taken. We have worked out a plan whereby we believe we can secure this valuable information, and which we think will interest every citizen that is interested in knowing the value of this resource to the people. Our department received a letter from Washington, D. C., asking us how many ducks were killed in Wisconsin during the open season of 1915 and we were unable to give them any sort of information on this subject. There has never been any system of taking this census which we believe to be a most important factor if we are to intelligently provide laws that will meet the demands necessary for systematical conservation.



WARDEN PATROL BOAT "GALATEA"

We propose to attach to each hunting license sold a coupon with columns designating at the top the name of each variety of game or fur bearing animal. At the expiration of the license, the purchaser will return to his local county clerk the coupon with the number of each variety taken during the year placed in the column provided for that variety, before another license will be issued to the applicant. These coupons, in turn, to be forwarded to the Conservation Commission by the county clerks.

With this system in force, at the close of the hunting season we will be in possession of information of a most interesting nature which we have no doubt will astonish the most careful students of our game. We believe it will show that our fur bearing animals are producing many thousands of dollars worth of fur and that our game valued alone in dollars and cents will astonish every citizen that reads the report. We believe that the sportsmen will coöperate with us most heartily in securing this information, as it has always been a question that they have wanted solved. We have consulted with several of them as to the practicability of our scheme and they have all acquiesced in the wisdom of securing this information. They also state that it will be no trouble to the hunter to fill out the coupon at the close of the season, for hunters as a rule keep track of their kill just for their own information.

We believe this information will be of great value to our Department of Agriculture in the compiling of the statistics of the state, also our State University will be in possession of information that they have long sought to obtain. It is interesting to know that Wisconsin will be the first state in the Union to obtain this information if our next legislature passes the law legalizing the coupon.

The time is past when we can afford to permit this department to be run in a haphazard manner. It needs the very best supervision that is possible in every branch of its activities, and the more information we can obtain the more intelligently we will be able to administer to its needs.

The following poem written by Dr. Hornaday, director of the Bronx Zoölogical Gardens of New York City, so vividly illustrates the picture of future generations of boys, whose red blood calls them to the GREAT OUTDOOR SPORT, that we print it with our report, as a warning of the responsibility we owe to future generations:

ROBBED

Oh, where is the game, Daddy, where is the game,
That you hunted when you were a boy?
You've told me a lot of the game that you shot,
No wonder such sport gave you joy.
I'm old enough now to handle a gun,
Let me be a sportsman, too.
I'd like my fair run of clean outdoor fun,
And I want to shoot just like you.

But where are the birds, Daddy, where are the birds?
I can't put them up anywhere.
You had your good sport with the wild flocks and herds,
And surely you saved me my share.

And where is the big game that roamed around here,
When grandfather came here with you?
I don't see one antelope, bison or deer,
Didn't grandfather save me a few?

Why don't you speak up, Dad, and show me some game?
Now, why do you look far away?
Your face is all red with what looks like shame,
Is there nothing at all you can say?
What! The game is all gone! There is no hunting, now!
No game birds to shoot, nor to see!
Then take back your gun: I'll go back to the plow,
But oh, Daddy, how could you rob me!

DIVISION OF FORESTRY AND PARKS.

By F. B. MOODY.

All of the powers granted by former legislatures to the State Board of Forestry and the State Park Board, with respect to the management of the so-called forest reserves and state parks, were delegated to the Conservation Commission. The work of the two divisions since August 1, 1915, has been under the direct supervision of the forester member of the commission.

The report of the former State Forester for the two preceding years prior to the consolidation of the Departments was not issued, and it has not been deemed necessary to report on the work of the Forestry Board for that period, except in a general way.

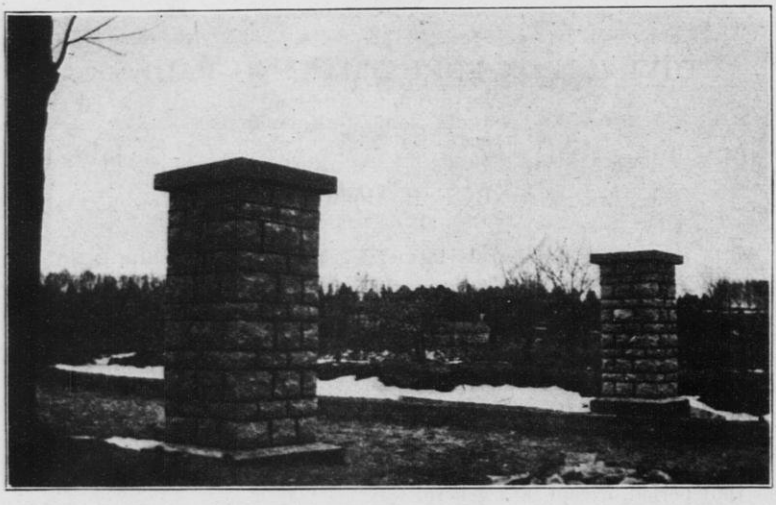
The status of forestry in Wisconsin is a peculiar one, and in order to present the matter clearly, the following statement is made, setting forth the reasons why the whole question was brought before the Supreme Court for adjustment.

THE FORESTRY CASE.

The policy of the Forestry Board in acquiring large tracts of land under a land contract caused the questions to be raised during the 1913 session of the legislature as to whether the purchase of forest reserve lands is not "works of internal improvement" which is prohibited by the State Constitution. Since, upon careful study of the question by the Attorney-General's department, they were unable to find that this question had ever been decided by the courts in any state, they advised that the question be brought before the Supreme Court of Wisconsin. The Court agreed to take original jurisdiction of the case, and it was brought before the Court upon "the petition of the Attorney-General seeking to obtain a writ of mandamus against the defendant, the Secretary of State, to compel the auditing of certain vouchers issued by the State Forester and the issuance of warrants thereon against the State Treasurer for the payment of part of the purchase price of certain lands attempted to be purchased from the G. F. Sanborn company to be added to the State Forest Reserve."

The suit was a friendly one, and the Secretary of State agreed to refuse payment of the vouchers so the case could be brought promptly before the Supreme Court.

Upon the submission of briefs by both sides, other points were brought out, among them: (1) Whether the Forestry Board has correctly construed the Statute in presuming to have authority to bind the State by



ENTRANCE TO THE PENINSULA STATE PARK. FISH CREEK

FORESTRY HEADQUARTERS. TROUT LAKE

long time, interest bearing obligations; (2) whether the basis, itself, of the forestry scheme, the legislative diversion of the land and proceeds thereof granted to the State for particular purposes to a different one, is legitimate; (3) whether using revenues raised by present taxation to promote the production or improvement of forests for the benefit of future generations, is a public purpose within the meaning of the Constitution; (4) whether interest bearing obligations of the State in excess of $100,000 is valid in any event; (5) whether the creation of interest bearing indebtedness of a less amount is valid in view of existing indebtedness of the State to the trust funds or otherwise; and perhaps still others, might, upon due consideration, aided by eminent counsel, be deemed worthy of judicial interference and of being brought to the attention of the courts in this litigation in an appropriate way. The case is of great importance.

"It is therefore considered that the court should and will decline to decide upon the duty of the Secretary of State in respect to making the payments in question on the motion of quash, but will permit such motion to be withdrawn and a return to be made to the alternative writ within thirty days, setting forth by answer every difficulty which he may be advised should be thus set forth in order that all questions in relation to his duty may be so solved as to protect the state and its officers in respect to the use of moneys for forestry purposes which are in the custody of the State Treasurer.

"In case of issue being joined as herein suggested, the Court will aid in reaching a final conclusion speedily by placing the case on the present calendar and advancing it for argument."

The decree of the court was rendered February 12, 1915, and is as follows:

"By the Court: It is considered, ordered, decreed and adjudged that:

"First, The demurrer to defendant's pleading be and is overruled.

"Second. The land contract mentioned in the petition is void for reasons indicated in the opinion, particularly because:

"a. It created a state debt and created such when state indebtedness exceeded the constitutional limit.

"b. It is an evidence of indebtedness within the state constitutional prohibition.

"c. The contract was not authorized by statute.

"d. By section 10, Art. VIII, at the date of the contract, it is fatally within the 'Works of internal improvement' feature of the forestry statutes (though they are in important features, as indicated in the opinion, not so tainted) and the addition, in form, to such section in November, 1910, failed for reasons stated in the opinion.

"e. It is an inseparable part of the forestry legislation and particularly of the invalid features thereof stated in the opinion.

"Third. The forestry legislation, including section 1072–1, Chapter 367, Laws of 1897, Chapter 450, Laws of 1903, and Chapter 264, Laws of 1905, and such other acts as there may be, did not repeal or affect sections 250 and 251, Stats. 1898, for reasons cited in the opinion. Such sections are part of the written law of the state and govern the matters therein referred to.

"Fourth. All land derived by the state from the United States under the swamp land grants, the lands in lieu of swamp lands, set aside for educational purposes under Chapter 537, Laws of 1865, and confirmed by Chapter 151, Laws of 1869, and subsequent practice, and all other lands so derived or in lieu of swamp lands and required to be set apart under the terms of said sections 250 and 251, by section 2, Art. X of the constitution and the legislative action referred to became, and so far as not dis-

posed of are, school fund lands, as regards the manner of handling the same, subject to the constitutional duty to conserve the same for the purpose of producing money for the school fund, as indicated in the opinion; but under the control of the legislature in respect to the manner of dealing therewith for such purpose.

"Fifth. The sections of the statutes composing Chap. 740, Laws of 1913, and those composing Chapter 491, Laws of 1907, are unconstitutional for the reasons stated in the opinion.

"Sixth. The provisions of the forestry legislation, other than the features mentioned, are valid within limitations, stated in the opinion.

"Seventh. The state has an equitable lien on the lands included in the illegal contract for the money paid thereon, and such money, equitable, is declared to have been trust money, whereby such lien inures to the benefit of the trust fund property.

"Eighth. For the benefit of the trust funds, the balance due on the contract shall be paid out of trust fund money when practicable, and to provide therefor, all moneys to the credit of the forestry fund derived from sales of land, or from appropriations to buy lands, or in the tax title fund referable to sections 1494–131 to 135 inclusive, Stats. 1913, are declared to equitably belong to the drainage and constitutional trust funds. Because of the diversion of such funds to forestry purposes and to the general fund, and the resulting confusion, the whole is declared to have the character of the more important funds which have wrongfully lost their identity, and such equitable status shall subsist so far as necessary to fully remedy the diversion and confusion.

"Ninth. The newly acquired lands under the forestry law, except those donated to the state for forestry purposes, have the cast of the constitutional trust fund lands and will be administered accordingly until, upon a full accounting it shall be found what part, if any, will remain after fully restoring the integrity of the trust fund lands and trust funds.

"Tenth. The facts being admitted, the alternative writ of mandamus is dismissed, but the cause retained for the purpose of final disposition upon the coming in of the report of the referees hereinafter appointed.

"Eleventh. There shall be an accounting which is hereby ordered of all dealings with the trust fund lands of the date of Ch. 367, Laws of 1897, and so long prior thereto as practicable, not earlier than the decision under Chapter 537, Laws of 1865,—and of lands acquired under the forestry legislation since 1897, except those donated to the state for forestry purposes or acquired by proceeds of the latter, and an accounting of all proceeds of such trust lands and income thereof and income which such proceeds would have earned had the same been devoted to the trust to which they belonged, such accounting to include all moneys paid into the forestry fund or general fund, derived from trust fund land or lands purchased therewith and income from such proceeds, and a partition shall be made of the entire property so found equitable and legally to belong to the constitutional trusts, including any indebtedness from the general fund; giving due credit for all proper disbursements chargeable to such trust funds,—so that each of the constitutional trusts will have their equitable and legal portion of the trust fund property with identity established as to lands and other assets, as near as may be, after the manner of the decision under Chapter 537, Laws of 1865. Such accounting shall include all matters not specifically mentioned so far as necessary to cover the field discussed in the opinion and carry out the intent thereof guided by such opinion; and the referee shall report the result of the accounting to the court with all convenient speed.

"For the purposes of the accounting the cause is referred to the commissioners of public land and Judge Samuel D. Hastings as special referee.

"The holders of land contracts like the particular one shall be bound by the decision herein subject to the right of any vendor or assignee of such vendor to show cause why to the contrary within twenty days after service of a copy of this order on such vendor or assignee and notice to show such cause within such time or be so bound, and such notice in writ-

ing shall be given, so far as practicable, within twenty days after the entry hereof and proof be filed as part of the proceeds of this case.

"Administrative orders will be accorded, if necessary, for further guidance in the course of the accounting, to the end that this determination may be fully carried out according to the intent thereof.

"Upon the coming in and confirmation of the report of the referees, judgment shall be rendered in respect to the matters covered thereby in accordance with such confirmation."

In a concurring opinion, Chief Justice Winslow does not share the doubt in regard to the right of the State to raise taxes in acquiring and handling land as a forest reserve. It is as follows:

"My difficulty with the opinion" (of the court) "stated in a general way, is this: It so limits and circumscribes the powers of the state with regard to the afforestation and reforestation that it leaves little more than a shell behind. At least this is the way the opinion impresses me and the way I think it will be generally understood.

"There are three general propositions which I think should be stated in this case clearly and fully, without hedging them about with limitations, qualifications, and provisos which render them practically useless, and those propositions are as follows:

"First, the acquisition, preservation, and scientific care of forests and forest areas by the State, as well as the sale of timber therefrom for gain in accordance with the well understood canons of forest culture, is preeminently a public purpose. It would be a mere affectation of learning to dwell upon the value to a state of great forest areas. That has been established long since and is not open to question. The lamentable results which have followed the cutting of forests over large areas, the serious effects of such cutting upon climate, rainfall, preservation of the soil from erosion, regularity of river flow, and other highly important things which go to make the welfare of the state, are matters of history. They need not be descanted upon.

"Second, before a public purpose of the first rank in importance, there can be no question of the power of the state to levy taxes for the accomplishment of the purpose. The power of taxation exists for every public purpose unless some constitutional prohibition, either federal or state, has taken it away. I find no such prohibition. I confess my inability to understand the reasoning which finds it in that clause of the Constitution which commands the legislature to levy an annual tax to defray the estimated expenses of the state. The power of taxation is one of the necessary attributes of sovereignty. To say that, because the Constitution makers thought best to make a specific provision that taxes should be levied for certain purposes, they intended thereby to interdict taxation for all other purposes, is to my mind unthinkable. Besides, if afforestation and reforestation be public purposes, then the moneys spent in carrying them on are necessarily and properly expenses of the state and come within the constitutional command. The expenses of a state include the moneys which it spends in carrying out the public purposes which the legislative judgment directs to be carried out.

"Third, afforestation and reforestation of large areas are not 'works of internal improvement' within the meaning of the Constitution. In stating the proposition, I accept the definition given in the case of the *State vs. Froehlich*, 115 Wis. 32; 91 N. W. 115; 58 L. R. A. 757; 95 Am. St. Rep. 894. It was there said that the term includes 'those things which ordinarily might, in human experience, be expected to be undertaken for profit or benefit to the property interests of private promoters, as distinguished from those other things which primarily, and preponderantly merely facilitate the essential functions of government'. In the same opinion it was said, in substance, that this classification does not exclude the possibility that some of the dominant characteristics of one class

may be present, but, of course, not dominantly in illustrations of the other class.

"Now I affirm that it is not to be expected in the light of human experience in this land at least, that the establishment and conservation of great forest areas for the public good should be undertaken by private enterprise, and I also affirm my belief, as previously stated, that such work is preëminently a public work, and hence one of the essential functions of government. It has not been recognized as such until recently perhaps, but that is merely because the conditions which make it such have only recently arisen and become acute. So in my judgment every act which is necessary to be done in successfully carrying on afforestation and reforestation, including the purchasing of the necessary lands, may properly be done by the state. My original opinion was that this might properly be done by the state. My original opinion was that this might properly include the erection of sawmills and the manufacture of lumber out of the timber which under the rules of scientific forestry ought to be cut, but I yielded my opinion on this point, and I stand by the concession. I do think, however, that it covers every necessary and proper act up to and including the sale to third persons of standing timber which ought to be cut.

"I have not desired to argue out these propositions, but only to state them." (Northwestern Reporter, Vol. 151, No. 3, pp. 377–378, *State vs. Donald.*)

Following out the decree of the Court, a special referee (Samuel D. Hastings) was appointed to render the accounting ordered by the court (see 11th item of the decree). Mr. Hastings, with reference to the newly acquired lands, says in part:

"The judgment is that they 'have the cast of the constitutional trust fund lands and will be administered accordingly, until upon a full accounting, it shall be found what part, if any, will remain after fully restoring the integrity of the trust fund lands and trust funds.' The accounting shows a large indebtedness to each of the four constitutional trust funds. The integrity of said funds will not be fully restored until all of said indebtedness is paid. The reason for such lands having such cast is stated in the opinion as follows: 'On account of the unwarranted confusion of the different classes of trust fund lands with lands purchased by proceeds of trust fund lands and other moneys, including money drawn from the general fund, and income from trust funds and other confusions, all must be regarded as having the cast of trust fund lands and money, so far as necessary to the full restoration of such trust fund lands and property, and identification of the amount belonging to each fund as to the date of chapter 367, Laws of 1897, and further back if found practicable.' " * * *

"I have construed the opinion and judgment of the court to be that upon the facts and conclusions pointed out in this report all the newly acquired lands have the cast of Normal School lands, and are to be administered as such until the entire debt of the General Fund as found in this report is fully paid.

"Following the interpretation of the Court's opinion and judgment, and of the constitution and statutes, as above explained, I find and report:

1st. As to the Normal School Fund:

(a) All of the lands conveyed to the State of Wisconsin pursuant to the provisions of the Act of Congress approved September 28, 1850, and the Act of Congress approved March 2, 1855, and known as swamp and indemnity lands, respectively, to which the state still holds title, belong to the Normal School Fund. * * *

"(m) The General Fund is indebted to the Normal School Fund in the sum of One Million Five Hundred and Seventeen Thousand Five Hundred and Fourteen Dollars and Twenty-three Cents. ($1,517,514.23), which arose as follows:

1. The value of Normal School lands given away without consideration	$96,063.14
2. Moneys belonging to the principal of this fund placed in income fund and spent	70,939.02
3. Moneys taken from the principal of the trust fund and used as part of the General Fund for general state purposes	515,700.00
4. Proceeds from sales of Normal School lands, paid into and used as part of the General Fund	419,674.69
5. Proceeds from sale of Normal School lands paid into the Forest Reserve Fund and used for forestry purposes	414,162.20
	$1,515,539.05
6. One-half amount received from Fuller and others for interest in swamp lands patented to state	1,975.18
	$1,517,514.23

"(n) The Normal School Fund has a lien upon all the lands acquired by the state under the 'forestry laws,' either by purchase or by tax deeds, for the full amount of said indebtedness of the General Fund to said Normal School Fund. All of said lands have the case of Normal School Fund lands, and are to be administered as such until upon a full accounting it shall appear that said indebtedness has been fully paid from the proceeds of said lands or other sources. Said lands are described in Schedules I and K. The quantity shown is 157,091.44 acres."

Under the decision the Conservation Commission having as a primary object the production of school fund money, has the right to manage all of the state lands with the exception of the school lands proper, which are small in amount, totalling some 12,100 acres. Therefore, it is possible for the State to hold the forest lands now possessed and to acquire other lands, provided such purchases are made to enhance the value of the trust. With the same object in view, it is possible to reforest portions of the so-called forest reserve.

The Supreme Court decision did not, in any way, affect the management of the State Park properties, or lands granted to the State for forestry purposes.

GRANTS OF LAND FOR FORESTRY PURPOSES.

Under the Federal grant of 1906, approximately 20,000 acres of vacant government land were transferred to the State for forestry purposes. The act provides that any or all of the land may be sold with the consent of the Secretary of the Interior, provided the proceeds be used only in the reforestation of the permanent reserves.

Of this grant 5,963.47 acres have been sold for a price of $21,966.92, which constitutes a reforestation fund, in which there is now a balance of $9,284.00, and more than two-thirds of the lands are still held, which are probably worth from $45,000.00 to $50,000.00.

In 1912 another grant was made conveying all of the unsurveyed and unattached islands to the State north of Town 33, to be used as additions to the forest reserve only. Some 637 islands totalling about 875 acres have been surveyed and listed to date.

Since these islands cannot be sold, under the terms of the grant, the policy of leasing them for summer resort and camp site purposes was adopted. The annual revenue from island leases to date is $862.00 for 38 islands. It is expected, however, that they will eventually bring in an income of approximately $10,000.00 per year, as may be seen from the following table:

ISLANDS GRANTED TO WISCONSIN BY THE UNITED STATES.

County	Number	Acreage	County	Number	Acreage
Ashland	5	8 .28	Marinette	5	1 .47
Barron	35	16 .64	Oneida	99	154 .84
Bayfield	40	56 .42	Polk	43	55 .33
Burnett	47	58 .64	Price	15	11 .80
Douglas	7	23 .43	Sawyer	48	104 .96
Florence	18	17 .02	Vilas	111	107 .92
Forest	13	27 .88	Washburn	98	162 .99
Iron	44	30 .17			
Langlade	3	1 .80		637	875 .14
Lincoln	6	5 .55			

NEBAGAMON LUMBER COMPANY GRANT

In 1907 the Nebagamon Lumber Company granted to the State 4,321.07 acres of land in Douglas county under the following conditions: "The said lands to be used for forestry purposes only and should the same be no longer used for said purpose, the title of the same is to revert back to the party of the first part." These lands are worth approximately $20,000.00.

A portion of this grant lies along the Brule river, which rises near the upper St. Croix Lake, flows north through the eastern part of Douglas county and empties into Lake Superior. Such portions of the land as border the stream have been surveyed into lots to be leased for camp and cottage sites, and will be managed as a State Park rather than as a Forest Reserve.

PURCHASED LAND.

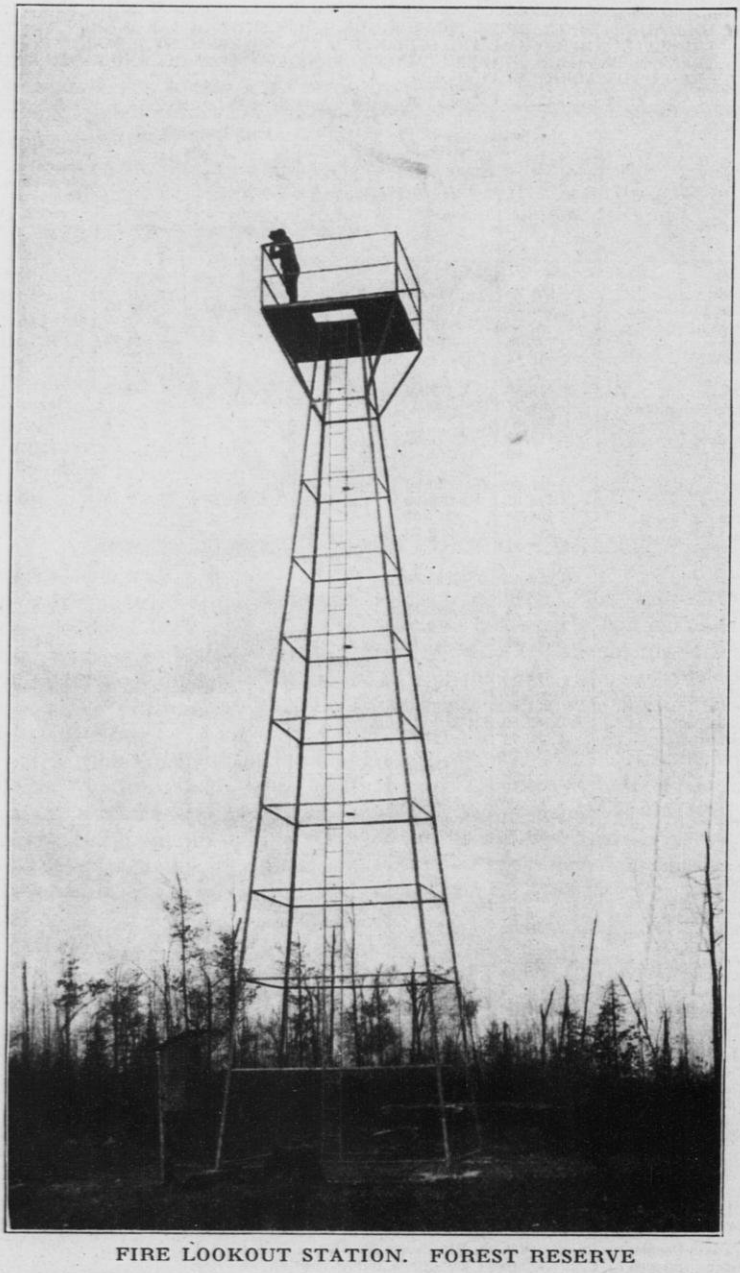
There was purchased by the Forestry Board approximately 159,000 acres in Douglas, Iron, Oneida, Vilas and Forest counties. This land was acquired at an average price of $3.45, including three purchases of heavy standing timber as follows:

	Acres
Acreage purchased from $2.00 or less to $2.56	60,217 .62
Acreage purchased from $2.68 or less to $3.50	56,972 .54
Acreage purchased from $3.75 or less to $4.60	38,451 .95
Acreage purchased from $5.00 or less to $6.50	3,270 .67
Over $6.50	90 .77
Total Acreage	159,003 .55
Total Cost	$548,562 .24

THE FOLLOWING TABLE GIVES THE ACREAGE BY COUNTIES OF LANDS GRANTED TO THE STATE UNDER SWAMP AND SCHOOL GRANTS, GOVERNMENT REFORESTATION GRANT, NEBAGAMON LUMBER COMPANY GRANT, ISLAND GRANT AND LANDS PURCHASED FOR FORESTRY PURPOSES.

	Swamp, School, Etc. Acres Vacant.			Govt. Reforestation Grants.		Acres Purchased as additions to forest reserves.
	Swamp	School	Agric. Coll. & University.	Acres Vacant	Total Granted	
Adams	120.72	160.00				
Ashland	3,685.76	160. a		360.00	440.00	
Barron		40.00				
Bayfield	909.02	80.00		270.58	758.42	
Buffalo	551.42		U. 36.90			
Burnett	2,294.86	1,120.00		1,354.30	4,069.28	
Chippewa	204.24					
Clark	1,025.80		U. 40.00			
Crawford	1,115.02	.27				
Dodge	.66					
Door	37.00	40.00				
Douglas	716.02	280.00		1,241.23	1,909.73	605.08
Dunn	204.50	280.00				
Eau Claire	211.02	200.00	U. 83.73			
Florence	3,598.44			80.00	80.00	
Forest	33,572.12	1,565.50		240.00	240.00	1,919.29
Grant	40.60					
Iron	21,772.71	1,329.80		596.74	707.14	7,016.21
Jackson	1,526.99	360.00				
Juneau	50.00	154.50				
La Crosse	200.27					
Langlade	1,258.00	80.00		40.00	40.00	
Lincoln	961.32				95.60	
Marathon	160.00					
Marinette	4,860.74	139.87		447.10	447.10	
Marquette	134.68	60.00				
Monroe	120.00	440.00				
Oconto	1,000.30	40.00				
Oneida	42,507.64	1,660.80		3,167.67	3,167.67	34,812.20
Pepin	111.41					
Pierce	62.77	1.10				
Polk	225.85	840.00		646.00	686.40	
Price	17,872.04	360.00		1,075.69	1,750.69	
Richland	15.54					
Rusk	2,394.96					
Sawyer	8,677.23	560.00		1,711.00	2,336.90	
Shawano	279.55					
Taylor	1,882.54	40.00	A. C. 40.00			
Trempealeau	110.90					
Vernon	523.39					
Vilas	12,223.39	1,242.60		2,444.57	2,444.57	114,889.79
Washburn	2,051.28	840.00		433.15	817.40	
Waukesha		Vil. Lot				
Waupaca	40.00					
Winnebago	447.06	80.00				
Islands in Lakes, various counties		32.02				
	169,647.76	12,107.26	200.63	14,027.43	19,990 90	159,273.17

Lands in Douglas county granted by the Nebagamon Lbr. Co. ..... 4321.07 A.
Islands conveyed by U. S. for forestry purposes in various counties ..... 875.00 A.
a. 80 acres escheated lands.



FIRE LOOKOUT STATION. FOREST RESERVE

Note: By triangulation methods a fire may be quickly and accurately determined and located.

FOREST PROTECTION.

The protection of forests from fire is the first essential in the development of a forest policy for a State. Past experience has proven that the forests of Wisconsin have suffered great damage from fire at times, and, without question, history will repeat itself in the future, unless a well planned fire organization is developed, to be ready for the real dry season.

The protection of forests from fire in the north one-half of the State is brought about through an organization of town fire wardens, assistant fire wardens and the protective force of rangers and patrolmen in what is known as the forest reserve region. The town fire warden system is established by having each town chairman become ex officio fire warden and the road superintendents, assistant fire wardens. The chief duties of the fire wardens, of whom there are about 555 in the territory, in which there is a fire hazard, are the fighting of fires, instead of prevention and detection. The system of fire protection as applied to the greater part of the State lands or the so-called forest reserve area is one of *prevention, detection and control.*

The present forest fire organization outside of the protected area is inadequate since there is no definite plan of detection and prevention. The local wardens usually will wait until fires are upon them before taking any protective measures. From a conservation standpoint, forest fire prevention is the most important feature. Therefore, adequate appropriation should be made through State taxation to make it possible to provide for the appointment of so-called district fire wardens, whose duties would be to coöperate with the local fire wardens, timber owners, and others, throughout the entire wooded area of the State.

The protected area, within which the greater protion of the State reserves is located, includes 1,250,000 acres in Forest, Vilas, Oneida, Iron and Price counties. In protective work, over this entire area the State is aided by the Federal Goverment under the Weeks Law, and by individuals and companies owning large tracts of lands within its borders. This area is divided into 17 districts, varying in size from 66,000 to 138,000 acres. A ranger or patrolman is in charge of each district. Protective work is facilitated by a telephone system, a network of roads and trails, proper means of transportation and lookout towers, the latter making it possible to observe over one-half of this area.

The cost of protecting this one and one-fourth million acres of land was one and one-third cents per acre in 1915. It is proposed to gradually extend the lines of protection as funds and outside coöperation become available.

FOREST FIRE ORGANIZATIONS.

As an example of the development of organized effort of timberland owners in the prevention of fire, the following data was compiled from reports of several associations. Organized effort on the part of timber land owners in this state would do much toward solving the fire problem. An organization covering three or four counties lying contiguous would be the most effective since an opportunity would present itself of close coöperation with the Federal, State and town wardens and patrolmen.

COMPILATION OF DATA ON FOREST FIRE PROTECTIVE ASSOCIATIONS.

Name of Association	Address	Date of report	Acreage protected	Public acreage	Private acreage	Total cost per year	Assessment per acre	Max. No. wardens	
Klamath Lake Counties Forest Fire Protective Association	Klamath Falls, Ore.	1915	449,888		449,888	$7,535.26	.01		Private, with State Coöperation.
Douglas County Fire Patrol Assn.	Roseburg, Ore.	1915	801,557	535,275	266,282	9,271.54	.012	35	State, Federal & Private Coöperation.
Coas County Fire Patrol Association	Marshfield, Ore.	1915	460,446		460,446	9,208.92	.02	23	State, Federal & Private Coöperation.
Polk County Fire Patrol Association	Dallas, Ore.	1915	117,205	12,587	104,618	1,758.08	.015	10	State, Federal & Private Coöperation.
Union-Wallowa Counties Fire Assn.	La Grande, Ore.	1915	317,913		317,913	3,078.95	[3].01 [4].005	11	State, Federal & Private Coöperation.
Washington Forest Fire Association	Seattle, Wash.	1915	2,586,409			46,022.01	.02	85	Chiefly a private organization, but cooperates with State & Federal Governments.
Northern Montana Forestry Association	Kalispell, Mont.	1915	706,746	[1] 345,317 [2] 361,429		1,470.27	.01	19	State, Federal & Private Coöperation.
Central Pennsylvania Forest Fire Protective Association	Snow Shoe, Pa.	1915	300,000			690.37		26	Private & State Coöperation. Depends on small assessments and gifts from land owners.
Pocons Protective Fire Association	Monroe County, Pa.	1915	212 members. No statement of acreage			503.06		7	Private. Depends on small assessments and contributions for support.
Central West Virginia Fire Protective Association	Elkins, West Va.	1915	No statement of acreage			3,828.93		16	Private principally, but receiving aid under Weeks Law.
Kennebec Valley Protective Association	Bingham, Maine	1915	1,250,000			2,024.86	1½ mills		Private concerns.
New Hampshire Timberland Owners Assn.	Gorham, N. H.	1915	930,540		930,540	6,699.07	¾c	17	Private concerns.
Vermont Timberland Owners Assn.	Bloomfield, Vt.	1915	275,128		275,128	1,928.09	.01		Private concerns.
Northern Forest Protective Association	Munising, Mich.	1915	1,000,000		1,000,000		.01		Private concerns.

(1) Federal. (2) State & private. (3) Timbered Land. (4) Cutover Land.

FROM 1908 TO 1914 INCLUSIVE.

	Contributing area.	Protection cost.	Annual cost per acre	Average number of fires per year	Average number of acres burned annually	Average number M. B. F. timber burned annually
Potlatch Association	310,000	$32,080	$0.10	41	21,136	111,963
Clearwater Association	411,000	$22,127	$0.05	54	10,139	165,462
Coeur D'Alene Association	439,000	$27,387	$0.06	66	2,815	12,500
Pend Oreille Association	445,000	$18,736	$0.04	97	16,660	1,268

LOCOMOTIVE INSPECTION.

The coöperative work with the railroads running through the forest regions of the state has been continued with splendid results during the past two seasons. There has been a steady improvement in the type of equipment used by the various roads and especially in the general upkeep of the spark arresting devices.

Following is the report of Mr. A. E. Hoffman, Merrill, covering the work from May 1, to November 1, 1916.

Wisconsin Conservation Commission,
Madison, Wisconsin

Gentlemen:—

I herewith submit to you my report of locomotives and rights of way inspected for the past six months, ending October 31, 1916.

The following table shows the number of locomotives inspected each month and their conditions:

	Total.	G.	F.	B.	R.	O. S.
May	91	86	4		1	
June	102	80	16	5		1
July	68	56	7	3	2	
August	39	31	1	4	3	
September	90	79	5		6	
October	131	112	10	2	7	
	521	444	43	14	19	1

The following is a table of the rating of locomotives inspected of the different roads.

The locomotives of the C. & N. W. Ry. and C. St. P. M. & O. Ry. are reported as one for the reason that they are occupying the same round houses in a great many places.

	Total.	G.	F.	B.	R.	O. S.
N. W. Line	186	171	7	0	8	0
Soo Line	96	92	4	0	0	0
C. M. & St. P.	93	85	2	0	6	0
Green Bay & W.	25	20	4	0	1	0
L. S. T. & T. Ry.	19	8	8	2	0	1
Great Northern	16	9	7	0	0	0
Mar. Tom. & E.	6	4	1	1	0	0
Wis. & Northern	6	4	1	1	0	0
D. S. S. & A. Ry.	4	4	0	0	0	0
No. Pacific Ry.	3	3	0	0	0	0
	454	400	34	4	15	1

KEY TO TABLES.
G.—Good.
F.—Fair.
B.—Bad.
R.—In shop for repairs.
O. S.—Ordered out of service.

The following are ratings of the logging locomotives:

	Total.	G.	F.	B.	R.	O. S.
Hines Lumber Company, Park Falls	9	5	0	3	1	0
Rib Lake Lumber Company, R b Lake	6	5	0	0	1	0
Kneeland McLurg Lumber Company, Phillips	5	2	1	2	0	0
Robbins Lumber Company, Rhinelander	5	3	0	2	0	0
Roddis Lumber and Veneer Company, Park Falls	4	3	1	0	0	0
Phelps Bonnell Company, Phelps	4	4	0	0	0	0
Mohr Lumber Company, Hixon Line	3	1	1	1	0	0
Goodman Lumber Company, Goodman	3	3	0	0	0	0
Leona and Northern, Leona	2	1	0	1	0	0
Kneeland & West, Lugerville	2	2	0	0	0	0
Foster Latimer Company, Mellen	2	2	0	0	0	0
Owen and Northern, Owen	1	0	0	0	1	0
Menominee Bay Shore Company, Soperton	2	2	0	0	0	0
Wells Lumber Company, Ellis Junction	2	0	1	1	0	0
Dunbar & Wausaukee Railway, Wausaukee	2	1	1	0	0	0
Westboro Lumber Company, Westboro	2	1	1	0	0	0
Union Land Company, Hixon Line	2	1	1	0	0	0
Turtle Lake Lumber Company, Winegar	1	1	0	0	0	0
Vilas County Lumber Company, Winchester	1	1	0	0	0	0
Menasha Paper Company, Ladysmith	1	1	0	0	0	0
Foster-Mueller Company, Hiles	1	1	0	0	0	0
Marathon County Lumber Company, Stratford	1	1	0	0	0	0
Medford Lumber Company, Medford	1	0	1	0	0	0
Keith & Heil, Crandon	1	1	0	0	0	0
Wachsmuth Lumber Company, Bayfield	1	1	0	0	0	0
Flambeau Lumber Company, Park Falls	1	1	0	0	0	0
Gurney Lumber Company, Gurney	1	1	0	0	0	0
	66	45	8	10	3	0

Of the 521 locomotives inspected, 355 head ends were opened.

215 had the 3 x 3 wire mesh.
107 had the $\frac{3}{16}$ x 1½ perforated plate.
14 had the 2½ x 2½ wire mesh.
11 had the $\frac{3}{16}$ x ¾ draftac wire mesh.
8 had the 4 x 4 wire mesh.

Of the 521 locomotives inspected, 166 were hot and the front ends were not opened, the ash pans only being examined.

You will note that of the total amount of the large type of engines which numbered 454, but 39 defects were found, or 9 per cent, whereas, of the 67 engines used for logging purposes, 18 defects were found, or 27 per cent. In view of these facts, I believe that time would be well

spent in keeping a closer watch on the logging engines, rather than calling on the larger round houses so frequently.

The reason of the poor conditions of the logging engines is the frequent changing of crews, and the master mechanic or superintendent of the company neglecting to make personal inspections as to the conditions of same.

Records of head end and ash pan inspections at the larger round houses are kept to date with a few exceptions. Quite a large number of the smaller round houses which are terminals, where they house from two to five engines, keep no record at all.

Of the various kinds of head end spark arresters, now in use, the "Slater Box Front" of the C. & N. W. Ry. is the best. The Master Mechanic front ends used by the C. M. & St. P. Ry., Soo Line, G. B. & W. Ry., and others, are efficient and give very good service if kept in repair.

The "Teepee" stack hood used by the C. M. & St. P. Ry., is a very good one. At that I doubt if it is any better than the one used by the C. & N. W. Ry., which is a much easier one to be made and cheaper in construction. The Soo Line hood is a good one, but a bungly affair, and much more expensive to make than either of the others.

Engine crews with whom I have talked find no fault with the steaming of engines with hoods attached. The objection they have is that the cab is filled with live cinders, making it very disagreeable.

The Soo Line has installed on the sides of all their engines carrying stack hoods, observation windows, which will do away with a great deal of the unpleasant features regarding cinders.

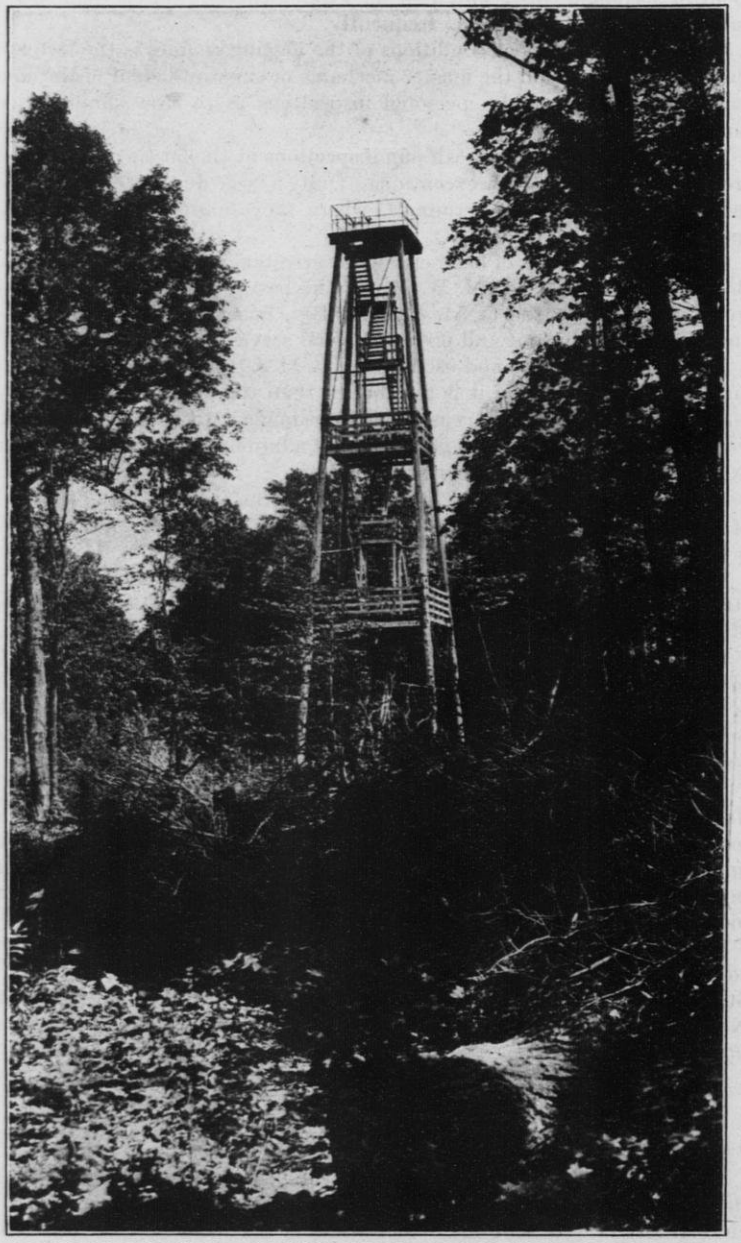
Of all the different styles of ash pans, the hopper slide and C. B. & Q. of the large type of engines is the best. The hopper pan with drop bottom is a very poor one. The only engines equipped with same are the Lake Superior Terminal & Transfer Company of Superior, and they do not leave the yards.

The best pan for the small standard engines is the swipe pan, but I note that the C. M. & St. P. Ry., are replacing same with a shallow hopper pan which is not giving very good satisfaction, by reason of the many openings caused by the slide running through the hopper. The slat bottom pan, of which there are but very few still in use, are the poorest and most dangerous.

Twenty-seven rights-of-way were inspected. Of these, two were found to be "Good." The right-of-way of most of the main lines of the C. M. & St. P. Ry., the N. W. Lines and the Soo Line, are in very fair condition. None of them, however, are strictly within the law, and could be improved upon.

FOREST FIRES IN 1915.

Favorable weather conditions during the past four years have kept the damage of fires to a minimum. At the end of the fire season of 1915, circular letters were sent out to all town fire wardens outside the protected area. The data compiled from the reports of 318 fire wardens is as follows:



LOOKOUT TOWER. 75 FEET HIGH. PENINSULA STATE PARK

Distributed by Causes.	
Lightning	4
Railroads	35
Lumbering	2
Brush burning	56
Campers	14
Incendiary	5
Unknown	52
Miscellaneous	6
Total number of fires	174

The total area burned over, including both timbered and open land, was 46,511 acres, while the damage to timber and improvements amounted to $28,132. This data is significant, since the season was a very wet one. In spite of this fact, however, many fires were started and considerable valuable property destroyed. In order that we may be prepared for the real dry periods, which are bound to come in the near future, probably within five years, it is hoped that a well organized scheme of forest fire protection may be developed, and that individuals, corporations and other landowners organize forest fire associations and make it possible to coöperate to the fullest extent with the State throughout the wooded regions.

COÖPERATION WITH FEDERAL GOVERNMENT IN FIRE PROTECTION

In 1911 Congress approved an act (Weeks Law) authorizing the Secretary of Agriculture to coöperate with states in the protection from fire of forested areas at the headwaters of navigable streams, and an appropriation was made available for such protection. Under the coöperative agreement, States were obligated to spend an amount equal to the allotment provided by the government. Wisconsin was one of the first states to coöperate and has received an annual allotment of $4,500.00. Under the agreement entered into in 1916, eight federal patrolmen were appointed by the Conservation Commission for a period of six months and have been given definite districts to patrol and are under the direct supervision of the Head Ranger. During periods of no fire danger these patrolmen are employed in permanent improvement work, such as building trails, fire lanes, telephone lines, roads, etc. A close coöperation exists between the Federal Patrolmen and the State force of eight forest rangers.

PERMANENT IMPROVEMENT WORK

In the development of the forestry work some 37 buildings have been erected to shelter the ranger force at an approximate cost of $28,600. Two forest nurseries have been established which have an output of 1,000,000 trees annually. Other improvement work includes the building of about 250 miles of roads, 140 miles of fire lanes, and 80 miles of telephone lines.

VALUE OF IMPROVEMENTS AND BUILDINGS ON THE STATE FOREST RESERVES.

37 Buildings	$28,690.00
4 Steel Lookout Towers	547.00
86 Miles Telephone Lines	3,151.00
Trout Lake Nursery. (Land improvements, water system with power engine, fencing, nursery frames, etc.)	4,700.00
Tomahawk Lake Nursery. (Land improvements, water system with power engine, fencing, nursery frames, etc.)	2,600.00
Nursery Stock (Trout Lake)	9,385.00
Nursery Stock (Tomahawk Lake)	1,983.00
Implements, tools, wagons, boats, speeders, furnishings for headquarters building, men's cabins, camp equipment for field work	4,100.00
Total	$55,156.00

During the fiscal year ending June 1, 1916, the forest rangers have carried on the general lines of improvement work of keeping open the fire lanes, repair of old roads, trails and telephone lines; the protection of the fish and game within their respective districts, thereby coöperating with the conservation wardens, which not only prevents duplication of work, but also makes for efficiency in both branches of the service.

The organization of the forest fire protective force is given in the appendix to the report and sets forth in detail the duties of the rangers in fire protection.

STATE PARKS.

The first State Park in Wisconsin was established by the legislature of 1878. All state land owned by the state in twenty-three townships in Iron and Vilas counties, some 50,000 acres, was set aside with the express provision that "no authority should be given to anyone to cut down or destroy any timber on such lands." For nineteen years this land was held intact. In 1897 the legislature placed the land on the market, and about 32,000 acres were sold. It is of interest to note that most of this same land, which was sold for approximately $8.00 per acre, was later repurchased by the state for a forest reserve at about one-third of the original price, but with the timber cut. In 1895 a law was passed authorizing the Governor to arrange to acquire 250 acres in what is now known as the Interstate Park, and he was authorized to appoint three Commissioners to examine the land and determine the values. In 1899 the legislature appropriated $6500.00 for the purchase of the lands, and the remainder from the purchase to be available for the general purpose and care of the park.

The first actual purchase of land for park purposes did not take place until 1901. The state has spent $291,571.23 for the purchase of lands for state parks, as may be seen from the following tabulated statement:

PAYMENTS FOR PARK LANDS.

	Interstate	Peninsula	Devil's Lake	Marquette
1901	$ 3,635.00			
1902	3,557.00			
1908	11,959.50			
1909	1,600.00			
1910		$49,649.00		
1911		30,534.20	$19,892.30	
1912		15,999.21	49,434.86	$16,158.93
1913			59,170.28	10,000.00
1914				10,000.00
1915				9,980.95
	$20,751.50	$96,182.41	$128,497.44	$46,139.88

In addition to the appropriations there has been some income from the sale of old buildings, fuel, leases, concessions, etc., which, with the amount left over from the appropriations, makes up the present "Park Purchase Fund," amounting to $12,695.46.

All of the state parks have been designated as wild life refuges, and game is increasing in them. Camping sites are laid out on two of the parks, and these are maintained in a clean and sanitary condition. Maps showing the camp sites are in preparation. Campers are charged 50c per week to pay for supervision and annual cleaning of the grounds. They are also required to deposit five dollars with the park superintendent as a guarantee that they will leave their camp site in good condition. Should the site need special cleaning the superintendent deducts the cost from the deposit. Portable camp sites are being leased at $10.00 per year rental with privilege of renewal. Ten leases of this character have been made to date.

The following rules and regulations have been adopted and are made a part of all leases:

For Fire Prevention: Campers must not leave fires without knowing they are out. Smokers must not throw matches, cigarettes, or pipe ashes where there is a chance of fire starting.

Camping Parties must secure a permit to camp on park grounds from the park superintendent.

Hunting or Trapping or the carrying or using of fire arms is strictly prohibited.

Trees, Shrubs and Plants shall not be mutilated. The carving or writing on any buildings or rock, and the removal or defacement of signs is prohibited.

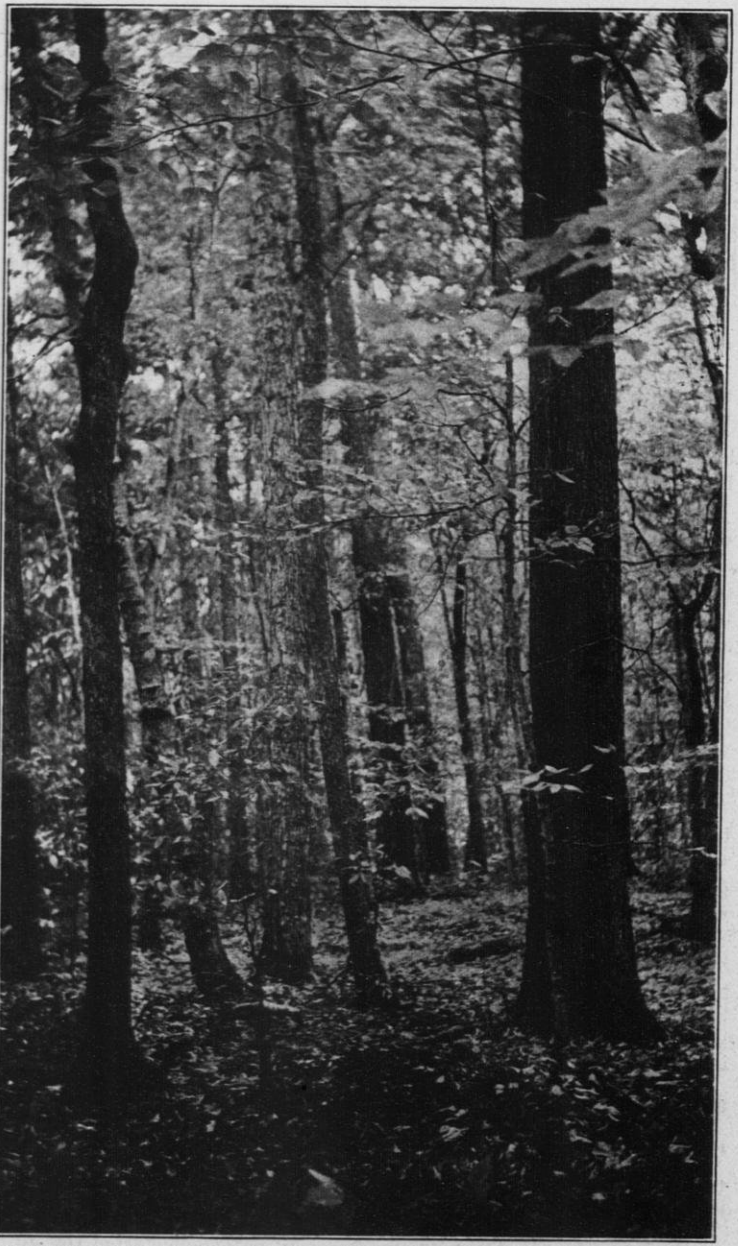
Automobile Drivers shall not run their cars above 15 miles per hour at any time on park roads.

The Prohibition relating to intoxicating liquors on the grounds must be strictly observed by campers and cottagers.

Boats and Other Property of campers and cottagers must not be tampered with, and glass of any kind, tin cans, or other rubbish that might injure bathers must not be thrown into the lake.

Rowdyism in deportment and profane language will not be tolerated on the grounds. Violaters of this rule will be expelled from the grounds and prosecution will follow if persisted in.

Persons Who Violate any of the Foregoing Rules will be summarily removed from the park and be subject to the laws as provided. The park



VIRGIN FOREST OF MIXED HARDWOODS NEAR EAGLE BLUFF
PENINSULA STATE PARK

superintendent is hereby authorized and directed to enforce these rules and regulations and all provisions of the law governing the state parks.

The Active Coöperation of all campers and cottagers is earnestly asked in all matters concerning the welfare of the parks for the preservation of order and proper sanitation."

The total expenditures on the six parks during the fiscal year 1915–16 were as follows:

Devil's Lake Park	$4,028.44
Peninsula Park	3,824.24
Interstate Park	1,776.65
Marquette Park	1,378.72
Brule Park	342.88
Cushing Park	295.00

Value of Buildings on State Parks.

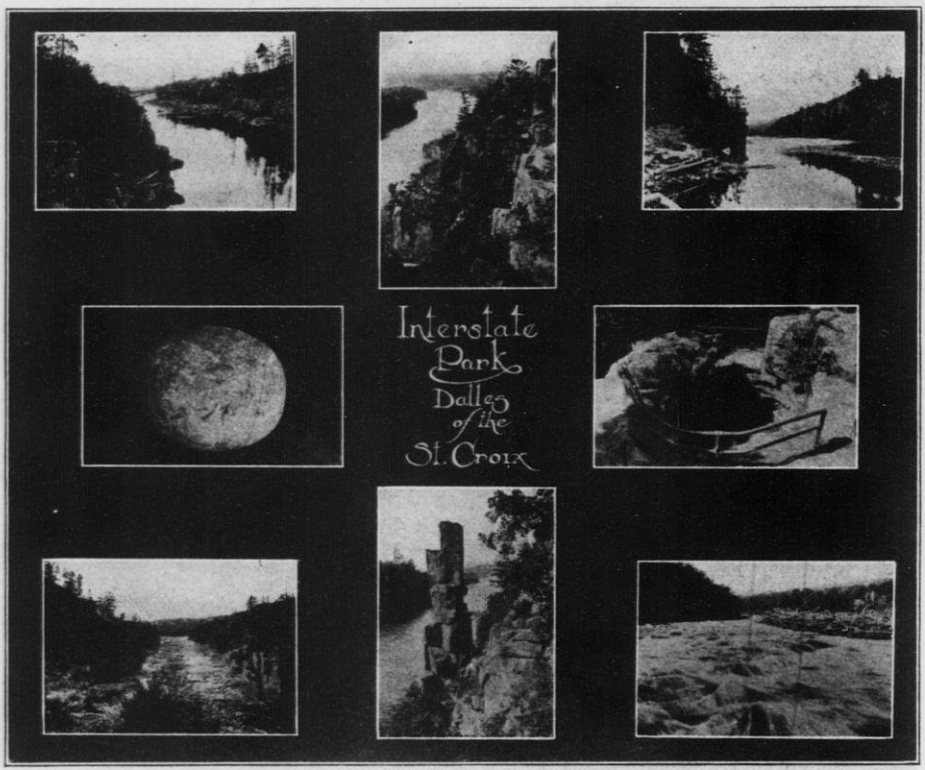
Devil's Lake Park	$20,350.00
Peninsula Park (buildings)	15,634.00
(towers, 2)	1,620.00
Marquette Park	1,000.00
Interstate Park	400.00
Total	$39,000.00

PROPOSED GIFT OF TREMPEALEAU MOUNTAIN.

This commission takes great pleasure in announcing that, through the great generosity and public spirited act of Mr. John A. Latsch of Winona, Minnesota, Trempealeau Mountain, comprising almost 500 acres, both scenically and historically one of the most interesting points in the upper Mississippi, will soon be donated to the state as a public park. Dr. E. D. Pierce of Trempealeau and other local historians have been endeavoring to secure this property for the public, and through their efforts Mr. Latsch became interested and decided to purchase it and donate it to the county or state. Dr. Pierce and Mr. Latsch at first desired to present this property to the State Historical Society, but were persuaded by Mr. M. M. Quaife, Superintendent of the Society to turn it over to the state as an addition to the State Park System, since the Historical Society is not organized to administer such a trust.

Trempealeau Mountain was called by the Winnebagos, "Hay-nee-ah-chah" or "Soaking Mountain," and the French voyageurs adopted the native term, but in their own language, and the present term is an anglicized corruption of the latter part of the French designation, and no one who has ever voyaged on the upper Mississippi and has seen from the deck of his boat the lofty crest of the noble peak towering above him as if from midstream, can question the appropriateness of the name.

Father Louis Hennepin discovered Trempealeau Mountain in 1680 and five years later Nicholas Perrot and party going to build a fur trading post among the Sioux Indians, was overtaken by bad weather near this site, and took up their quarters at the foot of the mountain, where they remained until the spring of 1686. Three years later they planted the



LABELED ON PICTURE

arms of Louis XIV and in his name took possession of all the land drained by the waters of the Upper Mississippi. In 1731 a fort was built on the site of Perrot's wintering post by a representative of the French Government.

In recent years the State Historical Society and interested local historians have succeeded in locating the site of Perrot's post of 1685, and Linctot's fort of 1731–36. Several hearthstones were uncovered, one with a rude chimney; a blacksmith forge was found, and many other relics of white occupancy. Thus, of the ten or more forts built by the French in Wisconsin, to Trempealeau belongs the distinction of possessing the only ones whose ruins have been certainly identified.

Before long, under the auspices of the State Historical Society, the mountain will be formally tendered to the State, to constitute forever one of the most interesting spots embraced in Wisconsin's splendid system of State Parks.

INTERSTATE PARK.

This park is owned jointly by Wisconsin and Minnesota, as it lies on both sides of the St. Croix river, which at that point, forms the boundary between the two states. It contains 730 acres, of which 580 acres are owned by Wisconsin and 150 by Minnesota. This park is complete.

The Dalles of the St. Croix are the chief features of the park. The river flows through a narrow gorge in the Keweenawan trap rock, which at one point rises to a height of more than 200 feet. There are several picturesque rock formations, the most interesting of which are "The Old Man of the Dalles" a remarkable profile stone face on the Wisconsin shore, and the "Devil's Chair," a column of rock on the Minnesota side. A series of pot holes, varying in diameter from one to six feet, and in depth from one to eighty feet, are found on the banks, chiefly on the west side of the river. These pot-holes, now to be seen high above the river, were worked into the solid rock by the grinding action of the spherical boulders, many of which still remain in them.

Professor Martin, in "Physical Geography of Wisconsin," says:

"Before the Glacial Period the upper St. Croix had a course to the West in Minnesota. Its middle course in the St. Croix Dalles is postglacial. Before the Glacial Period its lower course was occupied by a short stream, whose headwaters were the Apple River, tributary of today. The St. Croix River was the outlet of two of the glacial lakes in the Lake Superior basin, north of Stillwater, Minnesota, the valley is fairly wide, with gently sloping terraced sides" * * *.

"The rock ledges (at the Dalles) are ancient lava flows, of which seven may be identified, rising like giant steps above the river. The lava or trap, is well-jointed, so that there are vertical precipices and isolated crags along the St. Croix river."

The general improvement work on the park has been under the supervision of a park superintendent. Much of the wooded area has been cleared of underbrush, trails and bridges have been repaired, and the dead and down trees have been cut, from which over 43,000 feet of lumber was

LOOKOUT POINT. MARQUETTE STATE PARK

sawed. A portion of the lumber has been used in building a tool house near the ball ground which will also afford a dressing room for the players.

The baseball ground has been developed on the upper end of the park, midway between the towns of St. Croix Falls and Taylor's Falls, the towns subscribing $423.00 and $119.00, respectively, for the work. The time of the superintendent in supervising the work was donated by the state, together with other expenses, amounting to $147.00.

During the next two years the road south through the park should be improved to the southern boundary, since it is expected the town of Osceola will continue this road from the park boundary south, making all parts of the park accessible to the public.

Considerable forest planting on the open fields is contemplated during the spring of 1917. A bath house will be erected on Thaxter Lake, which lies entirely within the park.

On the rock bluffs, white and red pine and oak abound. The hills farther back are covered with mixed hardwoods, and the bottom lands are covered with elm, silver maple and hackberry.

MARQUETTE PARK.

The Marquette State park is located in Grant county in the angle formed by the confluence of the Wisconsin and Mississippi, and includes the bluffs along both rivers. The greater portion of this land was the old Glenn homestead and it was due to the efforts of Senator Robert Glenn that the natural beauties were preserved, as he for a long time had in mind the idea of this area becoming a great natural playground for the people of future generations. The park is complete and contains 1651 acres. The Military road terminates on the park, the highest point being some 500 feet above the Mississippi, and 1180 feet above sea level.

None of the natural beauties of the park have been destroyed, although some of the upland has been cleared, thus giving a variety of scenery. The site of the first fur trading post established on the upper Mississippi is on the park. Above the narrow crest of Sentinel Ridge, overlooking the Mississippi, is located one of the finest groups of Indian mounds in this section of the state. This system is over one-half mile in length, and is known as the "Procession of Mounds" consisting of 14 conical, 13 linear and a single effigy mound. These mounds were marked by the Wisconsin Archaeological Society in 1911, the tablet bearing this legend,—

"PROCESSION OF MOUNDS"
Length about one-half mile.
Marked by the Wisconsin Archaeological Society
September, 1911.

Effigy mounds of deer and bear, linear, chain and burial mounds are common.

Father Marquette, and his associate, Louis Joliet, the great explorers, discovered the Mississippi river from Point Lookout, on their voyage of discovery in the year 1663. Other points of interest are Sunshine Hill,

WEST BLUFF—DEVIL'S LAKE STATE PARK

Signal Hill, Eagle Eye, Black Hawk Monument, Roll-away, Linden Valley, Winnoshick and Glen Grotto, a brilliantly colored sandstone cave, with water falls tumbling over its sides, making it one of the beauty spots of the park. About 450 acres of the park land have been cleared. The balance is well wooded, consisting of such species as white, red and black oak, basswood, sugar maple, aspen, and white birch on the upland and slope types. In the hollows may be found ash, basswood, slippery elm, black walnut, butternut, mulberry, and honey locust. The bottom land type is composed mainly of silver maple, white elm and river birch.

The many points of interest on the park are being made accessible by the construction of three miles of standard road, which lead to Point Lookout; to Sentinel Ridge, winding in and about several Indian mounds, and down through a long hollow to the Burlington Railroad, where a station will be erected by the railroad company, thus making it possible for pleasure seekers to reach the park in the shortest possible time. Further appropriations should be made to extend the road system to Walnut Eddy on the Wisconsin river, a distance of one and one-fourth miles. Many trails should be laid out, the superintendent's house repaired, fences built and other improvements necessary to the comfort of visitors.

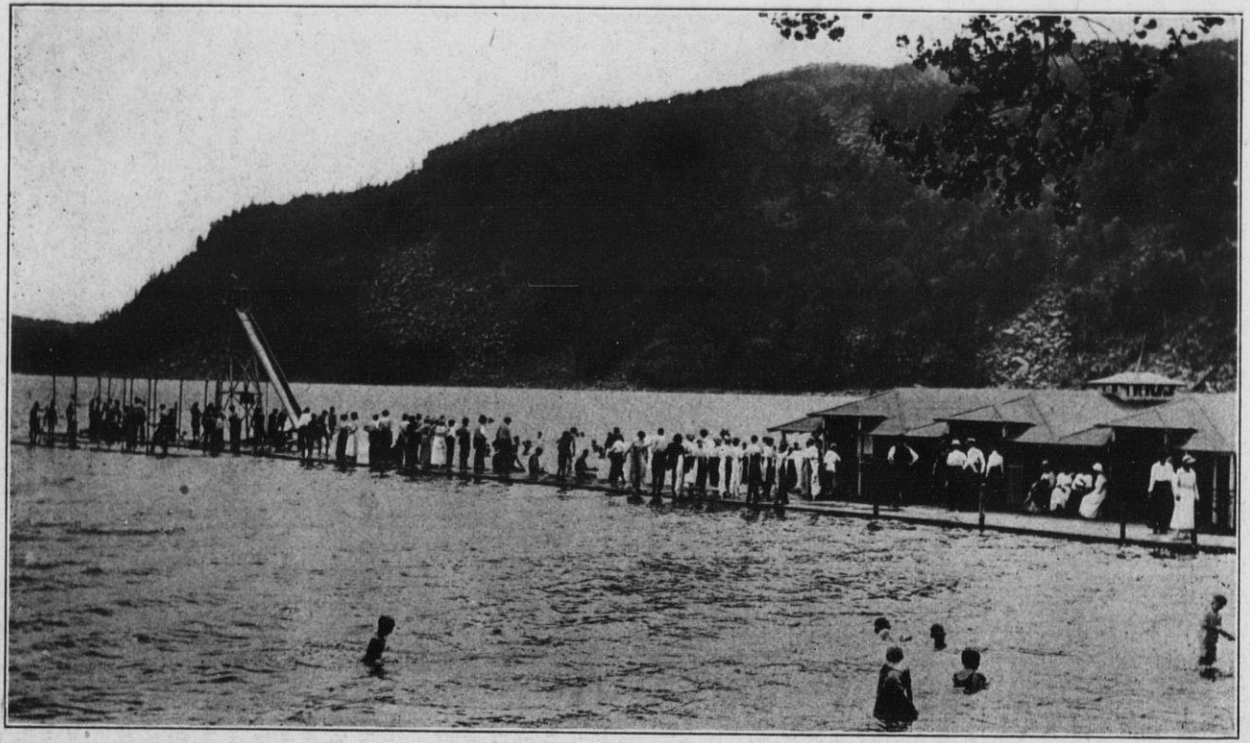
DEVIL'S LAKE PARK.

The Devil's Lake Park contains 1040 acres surrounding the lake, and is the most centrally located of the state parks, being accessible both by rail and automobile from all points. It has long been a playground of the people and the summer hotels have had a large number of guests annually. It is located in Sauk county, near Baraboo. The surface of the lake lies 600 feet below the east bluff, which is itself some 1400 feet above sea level. It is a beautiful sheet of water, without a visible outlet, fed by springs, and surrounded by great crags and bluffs of rock, thrown up by volcanic action of some former age.

The lake is one and one-fourth miles long, one-half mile wide and 43 feet deep, and is enclosed on the east, west and south shores by rugged bluffs of Baraboo quartzite. The north and southeast ends are filled with glacial drift, in fact this glacial drift has formed the lake basin by damming up both ends of the older gorge. The bluffs are without glacial drift, and the limit of the driftless area, is sharply defined. The geology classes of the University of Wisconsin and the University of Chicago spend several weeks in field work on the park and the surrounding country annually. President Van Hise of the University of Wisconsin, one of the most distinguished geologists in the country, has said, "I know of no other region of the state which illustrates so many principles of the science of geology."

There are several interesting rock formations, the most remarkable ones being known as the "Doorway," the "Needle" and "Turk's Head." Some interesting Indian mounds are found on the park, the most striking being an eagle mound on the southeast shore.

The rough topography of the park and the surrounding region prevented clearing, so the percentage of forest area is large, and the native flora and fauna has survived remarkably well.



DEVIL'S LAKE AFFORDS SPLENDID BOATING AND BATHING FACILITIES TO THE GENERAL PUBLIC

The native flora is extremely varied and natural conditions will be maintained so that the botanist will find not only the species, but also the ecological conditions under which they grow. River birch is found along the lake shore, mixed hardwood stands occur on the higher land, large white pines occupy the rocky slopes, and the tops of the bluffs are covered with oak. The chief sports are boating, fishing, swimming and climbing. Excellent sand beaches with a uniform and gradual slope are found at both ends of the lake. Many of the visitors make a practice of climbing some of the bluffs daily, and while the slopes are not nearly high enough to be considered mountains, they are steep and rugged enough to make it extremely interesting if one deviates from the trails, as many do.

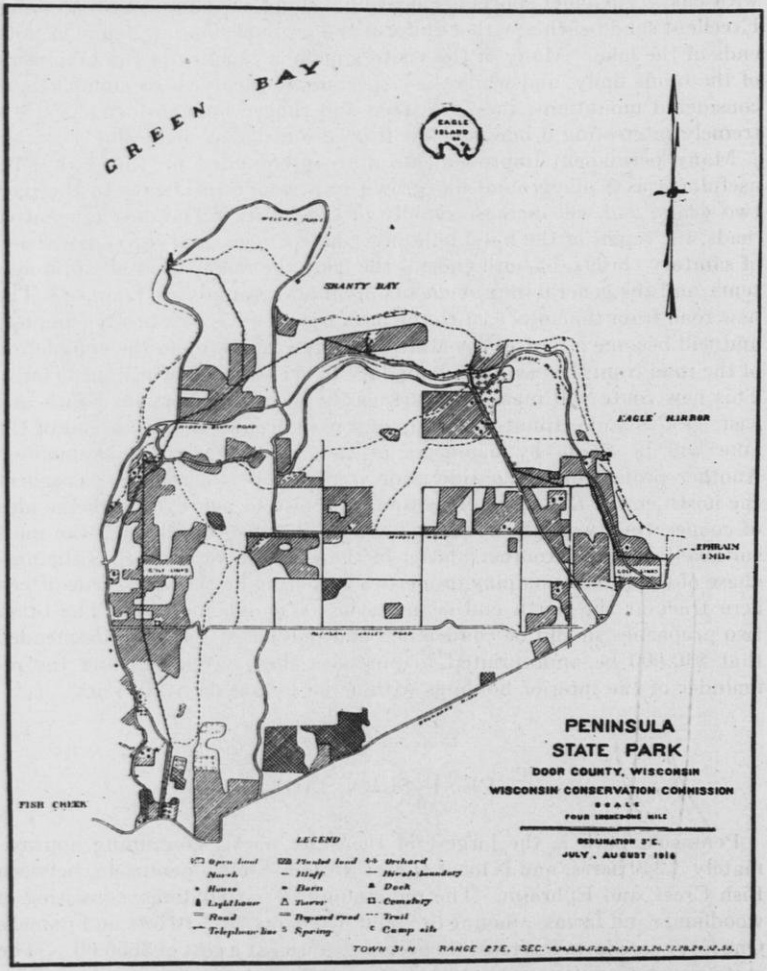
Many permanent improvements are contemplated on the park. Its usefulness as a playground has grown to a wonderful degree in the past two years, and will increase rapidly in the future. The development of roads, the repair of the hotel buildings and cottages, and the construction of sanitary closets, at both ends of the lake, the installation of water systems, and the general improvements of all playgrounds are planned. The new road from the hotel east to the park boundary is practically complete and will become a part of the state highway system, upon the completion of the road from the east park boundary to the old road near Zauft's farm. This new route will make the park easily accessible from the south and east. Plans and estimates of costs of a road around the south end of the lake will be made by engineers of the State Highway Commission. Another project under consideration is the proper location of a road at the north end of the park. This route will also be surveyed with the idea of coöperating with the town and city of Baraboo in selecting the most suitable location. Another matter of the greatest importance is the purchase of the three remaining properties bordering on the lake. One fifteen acre tract at the north end is in process of condemnation. The other two properties should be condemned and purchased. It is recommended that $40,000 be appropriated to purchase these properties and the remainder of the interior holdings within the Peninsula State Park.

PENINSULA PARK.

Peninsula park is the largest of the state parks, containing approximately 3,240 acres, and is located on the Door county peninsula, between Fish Creek and Ephraim. The remaining interior holdings, consisting of woodlands and farms, amount to about 465 acres, and 10 lots and parcels. One forty acre farm has recently been purchased at a cost of $650.00. The state now has under option 160 acres of farm and woodland property, for a price of $6,150.00, which upon the completion of the purchase will leave a balance of about 300 acres and 10 lots and parcels to be added to the park. It is estimated that the remaining interior holdings can be purchased for $14,000.

This land should be added to the state's holdings. The sums available in the park purchase fund will undoubtedly be sufficient to pay for these properties as they are offered for sale in the future.

The park is well timbered. The flora is not extensive, but the forests of white and red pine, hemlock, balsam and hardwoods, are beautiful. Several stands of beech show a forest type that is rather unusual. Dense stands of white cedar are found along the shore, while in some of the fields,



GENERAL MAP OF PENINSULA STATE PARK

juniper and more rarely the shrubby yew (Taxus canadensis) give an effect of formal planting.

It is planned to not only make the fullest use of the park as a great pleasure ground, but also to so manage the wooded areas, totaling 2,770 acres, that there will be a sustained yield of forest products. A complete forest working plan has been prepared for the ensuing ten years. The

total estimate of the standing timber amounting to 4,812,987 feet on the park is as follows:

Estimate of Timber on Peninsula State Park.

Species	Board Feet	Cords	Posts
Balsam	274,951		
Cedar			27,420
White pine	455,594		
Red pine	283,970		
Hemlock	1,765,520		
*Beech	598,430		
Birch		3,233	
†Maple	894,808		
Basswood	131,840		
Ash	30,164		
Poplar		1,929	
Oak	377,710		
Miscellaneous		489	
Total	4,812,987	5,651	27,420

*Reduced 30% for defect.
†Reduced 20% for defect.

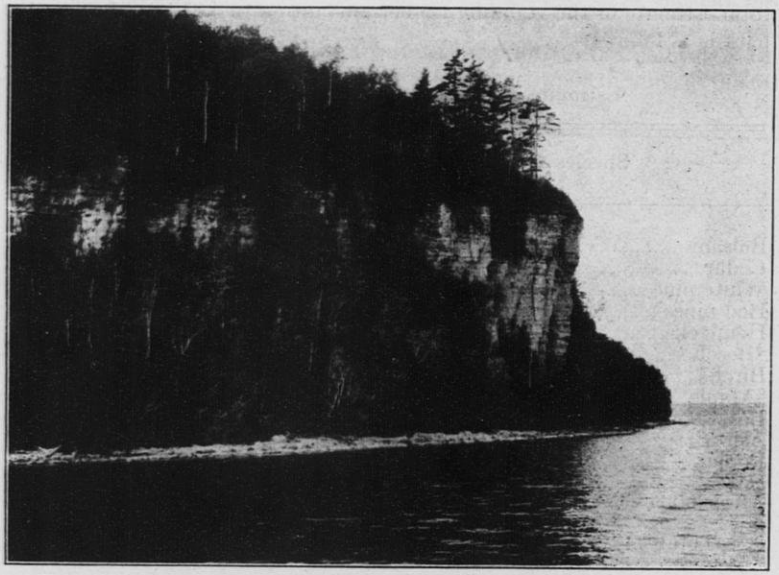
Fifty acres of open fields along the boundary road were planted to coniferous stock of the following species, during the spring of 1916.

White pine	40,250
Red pine	12,000
Scotch pine	10,000
White spruce	4,000
	66,250

There are remaining some 500 acres of open land suitable for forest planting. It is planned to reforest the entire area, spreading the work out over a period of 10 years, or fifty acres per year. The trees will be supplied from the state nurseries at Trout Lake and Tomahawk Lake.

Many improvements are contemplated. The great need is good roads and improvement and repair of the many cottages now on the park, all of which are in a dilapidated condition. The golf links, on either side of the park, are now being used by the followers of the game. Roads and numerous trails make all parts of the park accessible.

The numerous harbors along the peninsula make sailing or motorboat cruising safe, and boats from the various yacht clubs are often seen at anchor in the harbor at Eagle Island. Door county is a favorite region with motorists, and many cars come to the park each year. The park is reached by motor-stage from Sturgeon Bay or by boat from Marinette. Others come from the lower ports on Lake Michigan on the Goodrich line steamers. Good hotel accommodations are found at Fish Creek



EAGLE BLUFF. PENINSULA STATE PARK

MACADAM ROAD. BOUNDARY OF PENINSULA STATE PARK

and Ephraim, both villages adjoining the park. Camp sites may be had by applying to the superintendent, and several unfurnished houses may be leased for the season.

Two lookout towers to aid in detecting forest fires have been erected on Sven's Bluff and Eagle Bluff, which are connected by telephone with the superintendent's residence and the local exchange. As these towers are built with railed stairways and landings, they may be climbed safely by anyone, and visitors to the park find the views well worth the climb. From both towers, buildings in Marinette, eighteen miles across the bay, may be seen on clear mornings with the naked eye.

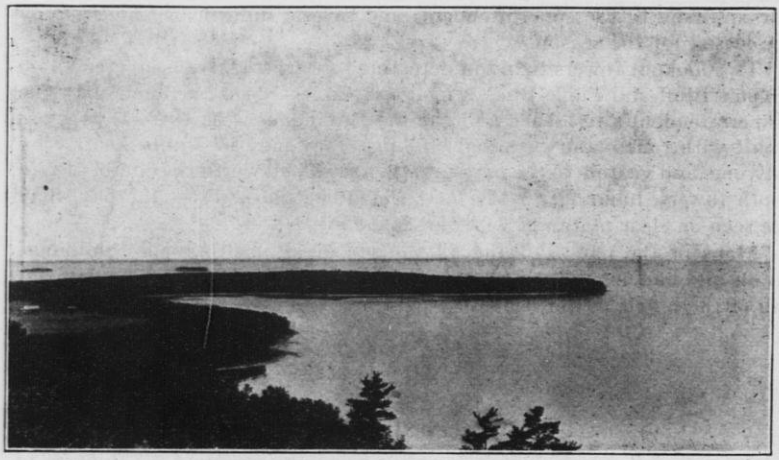
Maps of the park showing all wooded areas, fields, roads, buildings, trails and lookout towers, are now being prepared and will be available at all of the hotels in the region.

BRULE PARK.

A part of the Nebagamon Lumber Company grant of 4,321 acres of land along the Brule river, a famous trout stream, in Douglas county, has been set aside as a state park and is being managed as such. It is located between the Northern Pacific and the Duluth, South Shore and Atlantic railroads and is within easy walking distance from the Brule and Winneboujou stations. Twenty-seven lots have been laid out along either side of the river in Section 23. These cottage sites will be leased either for portable or permanent buildings for periods of from one to twenty years, as desired. Approximately three-quarters of a mile of new road was opened up adjacent to the lots on the east side of the river, which connects on the west end with the proposed road through the recently platted Heimbaugh and Spring addition. When this road is completed, it will, in all probability, be the main road between Brule and Winneboujou. Because there is but little timber growth on the lands, the greater part of the river lots, as well as some fifty acres of hill land on the west side of the river, was planted to coniferous forest trees to the amount of 72,000. The needed protection from fire has been given the plantations by opening the old logging railroad grades, which makes all parts of the planted areas accessible.

CUSHING MEMORIAL PARK.

The Cushing Memorial Park is located about a half mile west of Delafield, Waukesha county, on the site of the old Cushing homestead. It comprises about eight acres, one-fourth of which is low and marshy, along the Bark river, the remaining portion rising slowly in a dry even slope. At the crest of this slope is located the shaft erected in memory of the "Three Wisconsin Cushings," while on the site of the old farm home, no traces of which remain, but in which two of the boys were born, a large stone marker has been placed.



LIGHTHOUSE POINT AND SHANTY BAY FROM LOOKOUT TOWER.
PENINSULA STATE PARK

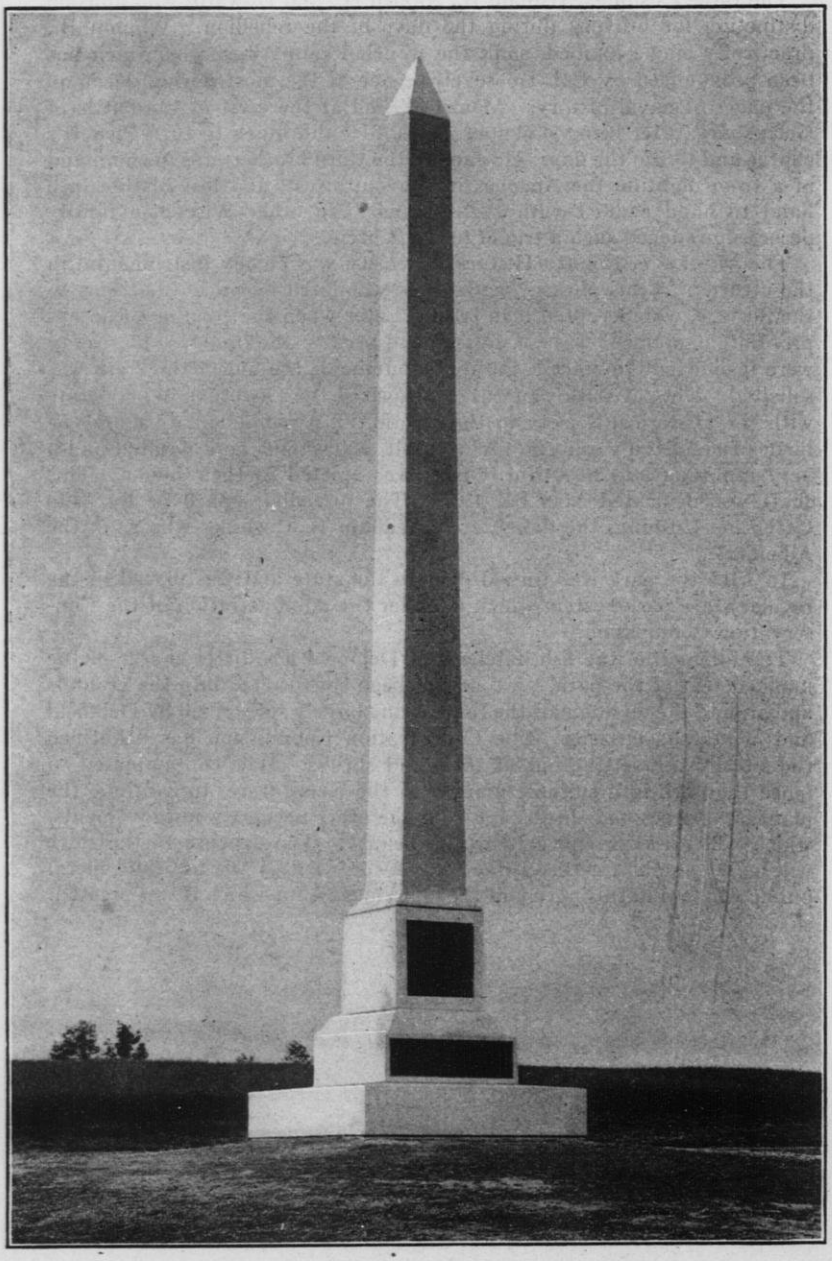
AN EFFORT AT "FORMAL" PLANTING BY NATURE
PENINSULA STATE PARK

The three Cushings, William B., Alonzo H., and Howard, won unusual distinction for bravery during the days of the rebellion. William B., practically single handed, sank the ironclad ram Albemarle, which has been pronounced by Col. Roosevelt as one of the most daring deeds on the pages of naval history. Alonzo H., fell at the crest of the battle of Gettysburg, after being shot four times. He did much to turn Pickett's charge and to win the day. Howard B. the third brother, was in command of a troop fighting the Apaches in the southwest, and lost his life in a hand to hand conflict with the Indians. No other Wisconsin family perhaps, produced such a trio of brave fighters.

The Waukesha County Historical Society was chiefly instrumental in the creation of this park. The land was donated by various citizens to the Society, who accepted it in trust. Later when the erection of an appropriate monument was considered, and because the funds of the society were insufficient to erect a suitable monument, the aid of the state was solicited. The legislature of 1911 authorized the Governor to coöperate with the Historical Society in the erection of a monument to mark the birth place of the Cushings. As a result, $5,000 was appropriated and a very imposing and beautiful obelisk was erected in their honor. This shaft was dedicated May 31, 1915. The unveiling was done by Miss Catherine Cushing, the daughter of William B. Cushing, who sank the Albemarle.

In 1915 the park was turned over to the state and was placed in the regular state park system which is under the administration of the Conservation Commission.

The foreman of the fish hatchery at Delafield has direct charge of the management of the park. A road has been constructed into the grounds and around the monument, the funds being largely subscribed by Delafield and Waukesha citizens. The Conservation Commission has beautified the site by the setting out of trees and shrubs. It is contemplated to fence the park in a suitable manner in the near future, to continue the planting of trees and shrubs and to make other necessary improvements, which will preserve and enhance its beauty. The expense to the state will be very small for this work, and is warranted by the use the general public will find in this park and the high purpose for which it was created.



CUSHING MEMORIAL MONUMENT

STATE FOREST NURSERIES.

By C. L. HARRINGTON.

The state forest nurseries were established for two reasons:

1. To furnish plant material for the restocking of lands unsuited for agriculture, and park properties owned by the state.

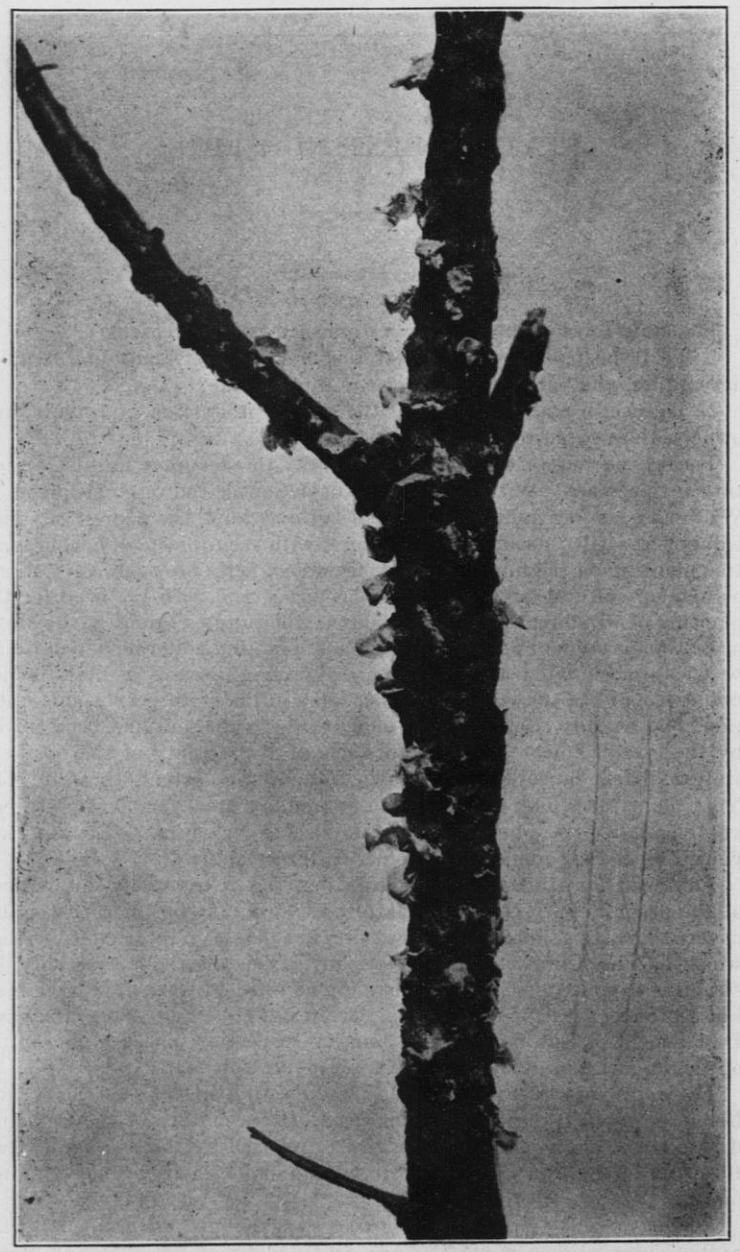
2. To furnish planting stock, at the cost of production, to private land owners who desired to reforest their holdings.

The second reason was adopted primarily to encourage forest tree culture in the state. With the gradual depletion of the original forests in Wisconsin, leaving millions of acres of cut-over land, the poorest of which will not be settled for a century or more; with the problem of encouraging tree planting on the hundreds of thousands of acres of rough, very stony, or non-agricultural lands on Wisconsin farms, and with the need for the planting of windbreaks or shelter belts in the prairie regions of the state, arose the question of providing a source of planting material, which would be cheap, acclimated and free from destructive diseases or pests, which might jeopardize the growth of other trees in the state. The same questions had already risen in states along the Atlantic and had been solved by the establishment of forest nurseries in over twenty of the northern states. These nurseries have grown to enormous extent, those of New York alone furnishing from three to five million trees for planting to private land owners annually. In establishing nurseries, Wisconsin was guided by the experience of the older eastern states.

The need for state-grown planting material is especially emphasized at the present time. An outbreak of the white pine blister rust was discovered early this summer in Polk county in a plantation started from stock which had been imported from Germany. This disease is especially destructive to white pine, young or old, for no infected trees have ever been known to recover from its ravages. As a result of this discovery, the State Department of Entomology and Nursery Inspection placed a quarantine on the importation of all five needle pines into this state.

The sentiment regarding forest tree planting in the state is yearly becoming more favorable. As the need of tree culture in the economic development of the state is more clearly realized by the average citizen, the work of the reproduction of timber stands on lands primarily suited for this purpose will increase.

At the present time two forest tree nurseries are maintained by the State Conservation Commission, one located at Trout lake, which embraces about seven acres, and the other at Tomahawk lake, includes about four acres. The Trout lake nursery is primarily suited for the development of



YOUNG WHITE PINE TREE ATTACKED BY BLISTER RUST.
NOTE THE FRUITING BODIES

coniferous species, being located on a sandy loam soil. The Tomahawk lake site is composed of heavier soil and is intended more for the raising of the broad leaved trees. Each nursery is equipped with the necessary fences, roads, shade frames, tools and watering facilities to properly care for and protect the growing seedlings and transplants to all times of the year.

The nursery work under the administration of the Conservation Commission has experienced a healthy growth. During the spring of 1916, 1,501,000 two-year seedlings were transplanted at an average cost of 85 cts. per thousand. These transplants were composed of the following species:

NUMBER OF TRANSPLANTS

	Trout Lake Nursery.	Tomahawk Lake Nurs.
White pine	220,000	222,600
Red pine	648,000	220,400
Scotch pine	88,000	
Norway spruce	102,000	
	1,058,000	443,000

SEED BEDS WERE SOWN AS FOLLOWS:

	Trout Lake Nursery.	Tomahawk Lake Nurs.
White pine	50	20
Red pine	20	
Scotch pine	66	10
White spruce	6	8
Norway spruce	15	10
White ash		3
Basswood		2
	157	53

The results of this work were fairly satisfactory. The extreme dry spell in July caused the loss of some of the transplants, but the heaviest damage was done by the June beetle grubs. These occurred in unusual numbers. They work underground, chewing off the roots of the trees, thus causing them to wither and die. They are especially destructive to transplants. At present no effective way has been discovered to combat them. In ordinary years the damage from this cause is light, but during years when the grubs are unusually numerous, their work is very destructive and this is especially true on new land.

Except for the practical failure of the Scotch pine seed beds, due to the long storage to which the seed had been subjected on account of the war, the sowing of 1916 was of average success. Very good stands of white and red pine and Norway spruce were obtained.

STOCK DISTRIBUTION.

The distribution of nursery stock throughout the state was especially noteworthy during 1916. The following tables give complete data relative to these shipments. Especial attention is called to the steady increase in the shipments to private parties.

SHIPMENTS OF PLANTING STOCK FROM STATE NURSERIES (Spring of 1916).

Order No.	Consignee	Address	From Trout Lake												From Tomahawk Lake				ORDER TOTAL
			White Pine			Norway Pine			Scotch Pine		Norway Spruce			Total	White Pine		Wt. Sp	Total	
			2-2	3-0	2-0	2-2	2-1	2-0	2-2	2-0	2-2	2-1	2-0		2-2		2-2		
	Peninsula Park	Fish Creek	3,000				12,000		10,000					25,000	37,250		4,000	41,250	66,250
	Wild Rose Hatchery	Wild Rose	2,200				2,000		2,200		200			6,600			200	200	6,800
	Brule Planting	Brule					36,000		18,000					54,000	18,000			18,000	72,000
	Headquarters					1,250			15,250					16,500					16,500
	Devil's Lake Park	Devils Lake	3,000			500			1,000		500			5,000					5,000
	Woodruff Fish Hatch	Woodruff	500			1,250			750					2,500	2,000		100	2,100	4,600
	E. Wilson	Gordon					36,000			12,000				48,000	12,000			12,000	60,000
S161	Theo. Mentges	Withee	1,000								100			1,100					1,100
S162	Percy Ap Roberts	River Falls	200						100					300					300
S163	Wm. A. Warner	Whitehall	100			100			100		100			400					400
S164	W. F. Kern	Waukesha		500					500			500		1,500					1,500
S165	C. Scheckler	Racine	500								500			1,000					1,000
S166	Geo. H. Conrow	Whitehall	500						500		1,000			2,000					2,000
S167	E. A. Ross	Greenwood	200								200			400					400
S168	J. H. Fiebing	Elkhart Lake	100			100			100					300					300
S169	Harry McClurg	Viroqua									300			300					300
S1610	Mil. Co. Park Com.	Milwaukee	1,000			1,000			1,000		1,000			4,000					4,000
S1611	A. Kazmeier	Kiel	400											400					400
S1612	Geo. F. Comings	Eau Claire		350								1,000		1,350					1,350
S1613	Henry A. Price	Withee	200								300		500	1,000					1,000
S1614	Lewis J. Lee	De Forest									500			500					500
S1615	Rusk Farm Co.	Chetek	4,000		500				1,000		2,000			7,500					7,500
S1616	Faast Land Co.	Conrath	4,000		500				1,000		2,000			7,500					7,500
S1617	L. D. Moses	Ogdensburg	250											250					250
S1618	J. R. Kelton	Poynette							500		500			1,000					1,000
S1619	F. A. Aust	Madison	3,000			2,000						500		5,500			500	500	6,000
S1620	J. A. Schmidt	Ladysmith	500						300					800			200	200	1,000
S1621	Clayton Lurvey	Dousman	300		100	100						100	100	700					700
S1622	W. K. Coffin	Eau Claire	2,000	1,000								500		3,500			500	500	4,000
S1623	Ben Meier	Coon Valley	200			500						300		1,000					1,000

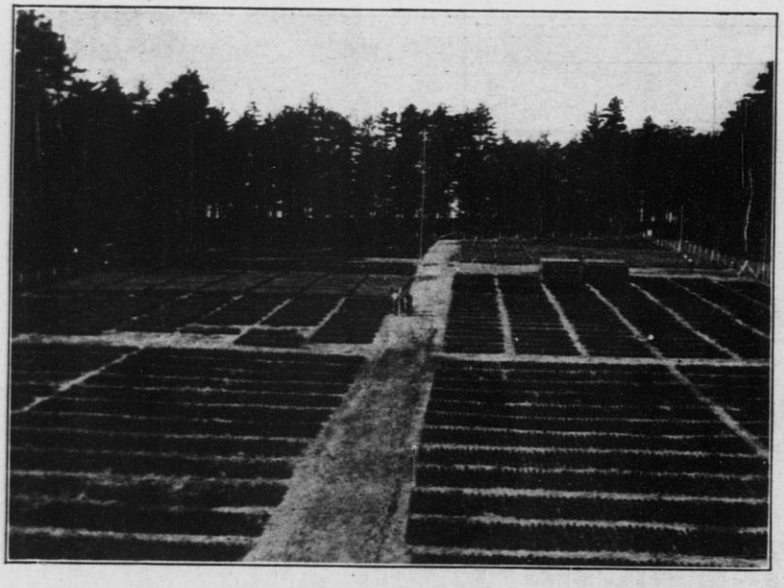
S1624	J. Woelfel	Hayton	100			100			100			100		200				200
S1625	P. A. G. Lee	Deerfield	100									300		300				300
S1626	F. A. Aust	Madison	400									300		700				700
S1627	Philip Schottler	Withee	500								500			1,000				1,000
S1628	J. H. Nye	Minong				500								500				500
S1629	F. G. Van Horn	Hixton	100											100				100
S1630	E. Alton	Sayner	50						25		25			100				100
S1631	Faast Land Co.	Conrath					2,000							2,000				2,000
S1632	Fred Miles	Deerfield	50						25		25			100				100
S1633	L. J. Pickarts	So. Madison	200								200			400				400
S1634	A. T. Zieman	Randolph	250			250								500				500
	Ed. Gabe	Sayner	25			25			25		25			100				100
	H. Freund	Oxley	100			125			25		50			300				300
	E. M. Weaver	Woodruff	100			100			100		100			400				400
Total Shipments, Spring of 1916			29,125	1,850	1,100	7,900	88,000		52,600	12,000	10,125	3,300	600	206,600	69,250		5,500	74,750	281,350

Private shipments (1914) — 20,200
Private shipments (1915) — 77,350
Private shipments (1916) — 110,200
(2-2)—2 years in seedbed and 2 years in transplant bed.
NOTE: 40,000 conifers were planted on state lands in the fall of 1916.

1916 State shipments.....171,150

PORTION OF NURSERY. TROUT LAKE

Note: Original pine forest in the middle and left background; new plantations in the right background.



A PORTION OF THE STATE FOREST NURSERY. TROUT LAKE

The following table gives the inventory of the growing stock in the state nursery on July 1, 1916:

STATE NURSERY INVENTORY
July 1, 1916.

Trout Lake.

Species	Number	Years in Seed Bed	Years in Trsp. Bed	Source of Seed	Condition	1917 price per M	Value
White Pine	227,305	2	2	Collected 1911	6″ — 15″ tall. Good.	$5.00	$1,136.53
White Pine	220,000	2	1		2″ — 5″ tall. Good.	4.00	880.00
White Pine	200,000	4	0		4″ — 10″ tall. Good.	3.00	600.00
White Pine	320,000	3	0		2″ — 6″ tall. Good.	2.50	800.00
Norway Pine	403,270	2	2	NE For. Co. 1912	4″ — 12″ tall. Exc.	5.00	2,016.35
Norway Pine	648,000	2	1	NE For. Co. 1912	2″ — 6″ tall. Good.	4.00	2,592.00
Norway Pine	100,000	3	0	NE For. Co. 1912	2″ — 8″ tall. Exc.	2.50	250.00
Scotch Pine	800	2	3	D. Hill (Ger.)	12″ — 24″ tall. Exc.	5.00	4.00
Scotch Pine	88,000	2	1	D. Hill (Ger.)	3″ — 8″ tall. Good.	4.00	352.00
Scotch Pine	50,000	3	0	D. Hill (Ger.)	2″ — 8″ tall. Exc.	2.50	125.00
Norway Spruce	2,000	2	2	D. Hill (Ger.)	3″ — 6″ tall. Exc.	5.00	10.00
Norway Spruce	102,000	2	1	D. Hill (Ger.)	1″ — 3″ tall. Fair.	4.00	408.00
Austrian Pine	10,000	3	0		5″ — 9″ tall. Good.	2.50	25.00
Col. Blue Spruce	23,000	2	2	D. Hill & Co.	3″ — 7″ tall. Good.	5.00	115.00
Sitka Spruce	500	4	0		3″ — 12″ tall. Good.	3.00	1.50
Douglas fir	16,000	3	0		2″ — 3″ tall. Fair.	2.50	40.00
White Cedar	10,000	4	0		1″ — 7″ tall. Fair.	3.00	30.00
Totals	2,420,875						$9,385.38

Tomahawk Lake.

White Pine	31,000	2	3		7″ — 15″ tall. Good.	$6.00	$ 186.00
White Pine	222,600	2	1		2″ — 16″ tall. Good.	4.00	890.40
Norway Pine	220,400	2	1		2″ — 6″ tall. Good.	4.00	881.60
White Spruce	4,300	2	3		4″ — 12″ tall. Good.	6.00	25.80
Totals	478,000						$1,983.80
Grand Total	2,899,175						$11,369.18

NOTE: These figures are exclusive of the 1916 seeding.

The prospects for a reasonable expansion of the activities in the state nurseries during 1917 are encouraging. Inquires from various parts of the state indicate that a good demand for planting material may be expected. Plans are under way for the better handling of all tree shipments and for transplanting and seeding. The Wisconsin forest nurseries should experience the same healthy growth during the coming five years that has characterized the state nurseries in the east, and particularly the New York nurseries.

FOREST PLANTING.

During 1916 approximately 211,000 conifers were planted on state owned lands, while 110,200 plants were furnished private parties, at cost, for planting in the state. The main planting activities on the part of the

PLANTING CREW AT WORK. TROUT LAKE

Note: Cost of planting this type of land will average about $800 including the cost of the planting stock.

state, were confined to the State Park lands. At headquarters camp, in the vicinity of Trout lake, about 15 acres were planted to mixed pines during the spring season, while about 35 acres were planted in the fall. These were in the nature of experimental plantings. The planting work in the State Parks was carried forward very energetically, and exceptionally good results were obtained.

The weather conditions during the planting season were very favorable. The days were cool and considerable rain fell.

The following data gives the number of trees planted on lands owned by the state in 1916.

Trout Lake (Headquarters)	
Spring Planting	16,500
Fall Planting	40,000
Peninsula State Park	66,250
Brule River State Park	72,000
Devil's Lake State Park	5,000
Wild Rose Fish Hatchery	6,800
Woodruff Fish Hatchery	4,600
	211,150

The following table shows the amount of stock shipped for planting to private land owners in the state, tabulated by counties, since shipments were started from the state nurseries:

TREES SHIPPED TO PRIVATE LAND OWNERS—BY COUNTIES.

County	1914	1915	1916	Total
Barron			7,500	7,500
Calumet			600	600
Clark			3,500	3,500
Columbia			1,000	1,000
Dane			8,000	8,000
Dodge			500	500
Douglas	1,000	51,000	60,000	112,000
Eau Claire			5,350	5,350
Florence	6,000	3,000		9,000
Jackson			100	100
Lafayette		1,000		1,000
Milwaukee			4,000	4,000
Oneida		450	400	850
Pierce		300	300	600
Portage		3,200		3,200
Price		3,400		3,400
Racine			1,000	1,000
Trempealeau	10,000		2,400	12,400
Sheboygan		14,000	300	14,300
Vernon			1,300	1,300
Vilas	500	1,000	500	2,000
Rusk			10,500	10,500
Washburn	1,400		500	1,900
Washington	1,300			1,300
Waupaca			250	250
Waukesha			2,200	2,200
	20,200	77,350	100,200	207,850

The following table gives the total acreage planted on state owned lands:

	Acres
Star Lake	136
Trout Lake	412
Rest Lake	93
Plum Lake	129
Muskalonge Lake	45
Peninsula Park	50
Devil's Lake Park	4
Brule River Park	75
Wild Rose Fish Hatchery	6
Woodruff Fish Hatchery	4
Tomahawk Lake	1
	955

The success of the plantings may be judged by the following percentage of living trees at the end of the first season's growth, based on actual counts:

	Per cent Surviving.
Star Lake	83
Trout Lake	75
Rest Lake	82
Plum Lake	80
Muskalonge Lake	78
Peninsula Park	94
Devil's Lake Park	40
Brule River Park	60
Wild Rose Fish Hatchery	80
Woodruff Fish Hatchery	85
Tomahawk Lake	85

Up to the present time, the conifers and especially the white and red pines and Norway spruce have been advocated for general planting in the state. The Commission has deemed it advisable to enlarge on this

NORWAY SPRUCE PLANTATION 18 YEARS OF AGE

policy so as to include the best broad-leaved trees. From the standpoints of beauty, rapidity of growth and commercial value, the basswood, red oak and white ash are considered to be the best species, and these will be grown in the nurseries. These trees will be ready for distribution during the spring of 1918. They are of particular value for planting in the hardwood belt in the southern part of the state, but also are very well suited to the heavier soils in the northern counties.

Forest tree planting on the part of private land owners is constantly encouraged by the Conservation Commission. In order to stimulate these activities planting plans are prepared for land owners, and thrifty planting stock is supplied from the state nurseries at cost. This co-operative effort to encourage tree culture in the state has met with a reasonable response from land owners, as the sales of planting stock will verify. It is safe to predict that this opportunity offered by the Commission will be taken advantage of in an enlarged way in the future. The order blank adopted by the Commission, and the 1917 price list for planting stock follows:

WISCONSIN CONSERVATION COMMISSION
Madison, Wis.

Price List of Planting Stock

Gentlemen:

The undersigned hereby applies for the following number and kinds of trees for planting in the town of.....
County of....., State of Wisconsin.

No order granted for less than 100 trees. Extra charge of 50 cts. per order will be made on lots of less than 1000. Prices are F. O.B. at Trout Lake or Tomahawk Lake. You will be notified if supply of certain stock is exhausted on receipt of your order. Please send full purchase price with all orders.

Amount of Remittance: $.....

Species	Number of trees desired	Price per M.	Age (Years)	Height inches	Cost
White Pine Seedlings		$2.00	2	2–6	
White Pine Seedlings		2.50	3	4–10	
White Pine Transplants		5.00	4	6–15	
White Pine Transplants		4.00	3	3–8	
Red Pine Seedlings*		2.50	3	4–10	
Red Pine Transplants		4.00	3	5–10	
Red Pine Transplants		5.00	4	6–14	
Scotch Pine Seedlings		2.50	3	4–8	
Scotch Pine Transplants		4.00	3	5–10	
Austrian Pine Seedlings		2.50	3	5–9	
Norway Spruce Transplants		5.00	4	3–8	
White Spruce Transplants		5.00	4	4–12	
Col. Blue Spruce Trspts		5.00	4	3–7	
Douglas Fir Seedlings		2.50	3	2–4	
White Cedar Seedlings		3.00	4	2–8	
Total					

*Another name for Norway Pine

Ship to..... Ship by { Freight / Express / Parcel Post }

Name.....

Packed by.....

Address.....

Date Shipped.....

Exp. Office.....

Description of Land to be Planted

Topography.....Kind of soil.....
Original growth.....
Previous use of land.....
Remarks.....
Date Rec'd..... Tree Order No.....

EXTENT, VALUE AND USE OF WISCONSIN WOODLOTS.

By C. L. HARRINGTON.

The real importance, extent or possibilities of the farm woodlots in Wisconsin are but little appreciated by the average citizen of the State. This perhaps is the chief reason why the average farm woodlot is mismanaged. A woodlot properly located and cared for is an essential part of the well-managed farm. It is highly important that this part of the farm should receive its proper share of attention in order that the benefits arising from its presence may be realized to their fullest extent. These benefits are of material importance to every citizen and to the general prosperity of the State. In brief they are as follows:

WOODLOTS.

1. Produce a valuable crop—fuel wood, poles, posts and timber material.
2. Beautify the landscape and hence make for more comfortable and desirable living conditions.
3. Form wind breaks.
4. Furnish shade for cattle and horses without being damaged, if properly managed.
5. Harbor bird and animal life.
6. Tend to regulate the rate at which surface water is carried off and in this respect they are of great importance on steep slopes.

Any one of these six points is sufficient to warrant the maintenance of a woodlot and in the aggregate they furnish a preponderance of evidence in its favor.

The extent of the farm woodlots in Wisconsin may be realized from the following statistics as given by the U. S. census of 1910:

Total land area in Wisconsin	35,363,840 acres
Improved land	11,907,606 acres
Unimproved land	9,152,460 acres
Woodland in farms	5,317,652 acres

From these figures it can be seen that the woodlots cover an area of almost five and one-third million acres, or about 15 per cent of the total land area of the State. Wooded lands on farms, of course, are distinct from lands that are primarily forested. Thus in Dane county, embracing

769,280 acres, and one of the most highly developed agricultural regions of the State, we find 95,976 acres in woodlots, whereas, in Iron county containing 506,880 acres, most of which is still in the wild state, we find only 4,662 acres in farm woodlots. Their extent depends entirely upon the agricultural development of a region. Using this classification the State may be divided into three main divisions as follows:

1. The southern counties such as Rock, Green, Walworth, Dane or Dodge, in which agriculture is of major importance, and where the wild lands are very limited. In counties of this type, the woodlots are small on the average, but they have a definite place in the management of each farm. An interest is usually taken in their development, and a plan for intensive encouragement is feasible and practical.

2. Counties in the central portion of the state, such as Clark, Waupaca, Chippewa or Langlade, where agricultural development is far advanced, but in which the cut over or forested lands are still of great extent. In these counties the woodlots are just beginning to receive some consideration from farm owners, but very little is done in the way of definite improvements. The woodlot is not as yet recognized as an essential part of the general farm, because of the vast amount of wood material which is still found in all parts of these counties.

3. Counties in the northern part of the state such as Iron, Forest, Vilas, Sawyer or Marinette, which contain a vast acreage of cut over or timbered lands, and in which agricultural development is still in its infancy. In these counties the woodlot is of minor importance at present, although plans for its proper development can be reasonably considered at the present time.

The value of the wood material on the five and one-third million acres of woodlots in Wisconsin would exceed fifty million dollars at the very conservative estimate of ten dollars per acre. Each year hundreds of thousands of cords of firewood and millions of feet of saw logs are hauled from these woodlots, besides great quantities of poles, posts and ties. The value of these products is difficult to approximate, but it is of great importance to the rural communities. But this does not limit the value of the farm woodlot. The birds and small animals are man's best aids in controlling the insect world, and consequently their depredations, on crops, cattle and even mankind, and these are always harbored and encouraged in woodlands. In mitigating the severities of the winds, small stands of timber are of the utmost importance. The woodlot affords those beauties to the landscape of a farming community, the lack of which makes prairie regions so desolate. As a means of preventing severe gullying on steep hillsides or on very light soils, tree growth cannot be excelled. Practically every farm in the state has some land on which a woodlot could be profitably located. In the southwestern portion of the state, where the lands are rough and hilly, the woodlots are best located on the steep slopes, the narrow ridges, or the rock strewn hillsides.

In the central and eastern counties the woodlots should be so located as to give protection from the prevailing winds, or on a lean, stony or eroded portion of the farm. In all parts of the state there are lands unsuited for cultivation, and on such sites quick growing tree species should be planted. It requires very little effort after a woodlot is once started,

according to the proper methods, to keep it in good condition. It is always better to have a valuable crop growing slowly on a poor piece of land than to have the site remain completely idle.

The oak woodlots of the southern and particularly the southwestern counties are the best to be found in the State. In many instances the woodlot is located on a piece of land which could be used to better advantage if tilled, or, on the other hand, lean, rocky, or very rough sites are cultivated or pastured, which, if used for tree growth would yield better returns, while the more suitable lands could be cultivated.

The growing stock in the central and northern counties has been so depleted in many instances, that but little reproduction can be expected, and generally the new stand of trees in such circumstances is composed chiefly of inferior species. The condition of the average woodlot is sure

EFFECTS OF GRAZING IN THE WOODLOT
REPRODUCTION ENTIRELY LACKING

to be bad, if the owner cuts his timber with no thought to the future, and is generally indifferent to the advantages gained by the best methods of woodlot development.

Consider the possibilities that lie in the way of better woodlot management. The well managed stand of forest trees should produce from three-fourths to one cord of wood material per acre per year. This crop is grown on lands that are unsuited or inferior for tillage or pasture purposes. It is a clear gain from lands that would otherwise remain idle. If we assume that under the present conditions of management, the average woodlot is producing ⅛ of a cord of wood material per acre per year, the 5⅛ million acres yield over 650,000 cords. Figured for fuel purposes, perhaps the lowest economic use to which this material could be put, its value would exceed a half millions dollars. With proper methods of management, this yield could be doubled and even tripled in a few years, and eventually the yield would equal nearly one cord of wood material per acre per year. To Wisconsin, a State possessing no coal and with fuel costs constantly

increasing, this product is of especial importance and, if coupled with the other advantages which spring from this source, it undoubtedly warrants better methods of management in the average farm woodlot.

Just what constitutes better silvical systems as applied to woodlot management cannot be discussed here, because of the great diversity of conditions that are met with in the state. Every woodlot has its own problems. The pine stands of the sandy regions of the state require different treatment than the oak woodlots of the southern counties.

With a view towards determining the best systems of management that can be applied in Wisconsin, the woodlots of the following counties, and all factors that might influence their development, have been studied.

Adams	Fond du Lac	Ozaukee	Trempealeau
Ashland	Green	Polk	Vernon
Barron	Jefferson	Portage	Walworth
Bayfield	La Crosse	Richland	Washburn
Calumet	Langlade	Rock	Washington
Crawford	Lincoln	Rusk	Waukesha
Columbia	Manitowoc	Sauk	Waupaca
Dane	Marathon	Shawano	Winnebago
Dodge	Marinette	Sheboygan	
Douglas	Oconto	Taylor	

It is planned to issue reports from the data compiled during these studies for those regions of the State in which woodlot conditions are of a similar character.

To further encourage woodlot development, the following plan has been adopted by the Conservation Commission.

On request to the commission by the owner of a tract of land, who also agrees to bear the expenses of travel and maintenance of the examiner, a thorough examination of the property is made by an expert forester. The results of this examination are set forth in a practical working plan report. This plan embraces a practical system for the cutting and marketing of small tracts of timber such as farm woodlots, or in case of bare areas or one in need of planting, the report includes a practical planting plan, or where a combination of conditions exists, a combination of both cutting and planting plan is considered. The ideas and desires of the owner of the property examined are always taken into consideration in the preparation of the report. In order to reduce the cost of such examinations to the individual, the requests to the Commission from one part of the State are gathered together, and at a definite time an examiner is sent to complete all examinations in that region. In this way the work is made more systematic for the Commission, and less expensive to the property owner.

In conjunction with this plan of land examination the commission is growing forest trees on a large scale, which will be sold to land owners in the state at the approximate cost of raising them. It is hoped that through the circulation of the instructive pamphlets on woodlot conditions and management, coupled with lectures and personal contact with the owners of woodlots, that a greater interest will be aroused in their favor and that the yield of the woodlots of the state will be materially increased.

APPENDIX

TO

REPORT OF FORESTRY DIVISION.

FOREST FIRE PLAN

FOREST FIRE PLAN

FOR PROTECTION OF HEADWATERS

OF

WISCONSIN AND CHIPPEWA RIVERS

AS DEVELOPED BY THE

WISCONSIN CONSERVATION COMMISSION

IN COÖPERATION WITH THE

FEDERAL GOVERNMENT, CORPORATIONS,
AND INDIVIDUALS

OUTLINE PLAN.

1. ORGANIZATION
   - Protected area
     - Coöperation
   - Diagram protective force
   - Permanent force
     - Head ranger, duties and responsibilities
     - District ranger, duties and responsibilities
     - Forest Assistants
     - Permanent workmen
   - Temporary force
     - Federal patrolmen
     - Workmen
   - Emergency force
     - Local residents
     - Payment of outside fire fighters

2. PREVENTION
   - Cleaning up slashings and fire traps
   - Posting of fire notices and warnings
   - Guidance of tourists
   - Press items and magazine articles
   - Personal appeals
   - Apprehension of individuals who set fires
   - Improvement of spark arresting devices
   - Record of fires

3. DETECTION
   - Lookout towers
     - Equipment
     - Triangulation system for locating fires
     - Instructions to tower men
   - Patrol during dry seasons
     - Instructions to patrol men
   - Hydro-aeroplane observation
   - Communication
     - Telephone lines
       - Inspection
     - Portable phones

4. CONTROL
   - Fire lines
   - Roads and trails
   - Tool boxes
     - Location
     - Equipment
   - Transportation
     - Auto trucks
     - Velocipedes

5. COST OF PROTECTION
6. SUMMARY OF IMPROVEMENTS AND EQUIPMENT
7. DISTRIBUTION OF PROTECTIVE FORCE

ORGANIZATION.

The problem of fire protection is to organize a force of men sufficiently trained and active to prevent the destruction by fire of property within their respective districts. There will always be some fires, the number depending upon the dryness of the season, the number of tourists within the protected area, etc., and therefore the effectiveness of the protective force in fire prevention will vary with the season. Fire protection is necessary from April 1 to December 1, which is considered the fire season. All other activities are subordinate during that period. Careful attention is given to weather conditions, so that during a dry time the various districts can be more carefully patrolled and protected.

Protected area.

The area considered in this plan includes about 74 townships. It is the duty of the protective force not only to protect all tangible property, whether public or private, but also as far as possible, the natural beauty of the region from all destructive agencies.

Within this area the state is aided in protective work during the fire season by:

1. Federal coöperation.
   9 forest fire patrolmen
2. C. & N. W. railroad.
   1 or 2 forest fire patrolmen.
3. C. H. Ferry estate.
   1 forest fire patrolman.
4. Lumber companies within the region.
5. Indian service.

A lookout tower has been erected on the reservation and it is hoped that the officials will enter into active coöperation with the state during the season of 1916.

The patrolmen mentioned above work under the supervision of the Conservation Commission, and receive their pay through the Commission.

The following companies, which own large tracts of land within the fire protective area, are carrying on lumbering operations, and have walking bosses, foremen and other employes going over their timberlands:

Forster-Mueller Lumber Co.,	Hiles, Wis.
Hackley-Phelps-Bonnell Lumber Co.,	Phelps, Wis.
Brooks & Ross Lumber Co.,	Schofield, Wis.
A. H. Stange Lumber Co.,	Merrill, Wis.
Turtle Lake Lumber Co.,	Winchester, Wis.
Vilas County Lumber Co.,	Winegar, Wis.

The state does not assign any patrolmen to service on these lands. However, the patrolmen of the areas adjoining the lands owned by these

companies are instructed to watch them for fires and should any occur to take steps to fight them. These companies have authorized the head ranger to call out any of their employes at any time to help in fighting fires, the expense of such work to be borne by the lumber companies.

Diagram of administrative organization:

STATE CONSERVATION COMMISSION.

JAMES NEVIN,
W. E. BARBER,
F. B. MOODY.

Fisheries	Game	Forestry
JAMES NEVIN	W. E. BARBER	F. B. MOODY

Parks	Reforestation (C. L. HARRINGTON)	Education	Fire Protection (E. M. WEAVER)

Permanent force	Temporary force	Emergency force
Rangers (10)	Federal patrolmen (9)	People of the surrounding region:
Forest Assistant (1)	Workmen and laborers	Settlers, Woodsmen
Permanent workman (1)	(5 to 50)	Summer resort owners and employes (300 to 500 men)

Permanent force.

The protective force consists, first, of rangers, forest assistants, patrolmen and laborers employed by the forestry branch of the Conservation Commission within the protected area and, second, of the hired fire fighters and the surrounding population. The latter are of service in the prevention and detection of fires, but are called upon to fight fires only in times of emergency. The protective force is under the direct charge of the head ranger in all matters relating to protection, while each district is supervised by a ranger.

The protected area is subdivided into 17 ranger or patrol districts, varying in size from 60,000 to 138,000 acres. The average number of acres per district is 95,900.

The head ranger is field superintendent of all districts. He is held responsible to the commissioner in charge of forestry activities for the efficiency of the field work in all districts. His duties require him to outline all work that is carried on in each district, especially work to improve the protective system; to make frequent inspections of all work being carried on, of all equipment and of lines of communication; to hire workmen; to look after trespass cases and sales of forest products, and to supervise all other administrative and protective work over the entire area.

In his district the ranger has complete charge of all protective work, and is held responsible to the head ranger for the efficiency of the fire fighting force under him. He must keep posted on general affairs within his district that have any bearing on the fire situation; he must see that the fire fighting apparatus is in shape for service; he must oversee all improvement work such as road building, fire line and trail construction, telephone line maintenance and inspection. He is responsible for the care of all state property within his district.

The forest assistants and permanent workmen are also a part of the permanent protective force. The former have charge of raising the planting material, of the reforestation work on state and private lands and of all work that requires technical training; the latter are employed irregularly throughout the entire year to help with any of the various undertakings. These men are always ready to go on the fire line when occasion demands. They are for the most part trained fire fighters and are generally well acquainted with the region.

Temporary force.

Under the Weeks law the National government coöperates with the state in forest fire protection on the headwaters of the Wisconsin and Chippewa rivers. In 1915 a fund of $4,500 was obtained from which 8 patrolmen were kept in service during the fire season (April 1 to December 1). They, with the general laborers, constitute the temporary fire fighting force. They are all men experienced in fighting fires, and during dry seasons are either on lookout or patrol duty. During times of little danger, as after heavy rains, they help in the maintenance and construction of roads, trails and telephone lines. At the beginning of the fire season each federal patrolmen is assigned a definite area to patrol. His route is outlined, and he is expected to comply with all provisions in the set of instructions furnished him.

Emergency force.

The emergency force consists of the inhabitants of the protected area. Under ordinary circumstances these men act as a detection and prevention force in that they report fires that occur without making any attempt to put them out, and through their care and warnings to those inclined to be shiftless with camp fires, brush fires, etc., many fires are prevented. These people are largely settlers, resort owners, guides and woodsmen. In times of emergency, when great fires are burning, the presence of these people permits the rapid expansion of the fire fighting force, as each ranger and federal patrolman, having previously been appointed fire warden by the town chairman in which his district is located, is empowered to call out all able-bodied men to fight forest fires.

The rangers have a thorough knowledge of the available emergency fire fighting force. The emergency force is composed of several hundred able-bodied men, and is of great importance during very dry seasons when the fire risk is exceptionally great.

Payment of outside fire fighters.

All men called out to fight fires by a ranger or patrolman who is acting under his authority as fire warden, are paid one-half by the county in which the fire occurs and one-half by the state. The law further provides:

"No payment shall be made to any claimant under this section until he shall have presented an itemized account, and made oath or affirmation that said account is just and correct, which account shall be approved by the county board, and audited by the county clerk. The county clerk shall thereupon issue to such claimant his warrant upon the county treasurer for the sum to which such claimant is entitled and the county treasurer shall pay the same.

FOREST FIRE PREVENTION PLACARDS DISTRIBUTED BY THE CONSERVATION COMMISSION

"The county clerk shall transmit the original oath and copy of the warrant to the secretary of state, who shall audit such claim, and one-half thereof shall be paid out of the general fund of the state treasury by warrant issued by the secretary of state upon the state treasurer in favor of the county which paid such claimant. However, no county shall expend more than five thousand dollars under this act in any one year."

At the last session of the legislature further provision was made for two years of "a sum sufficient for the protection from forest fires of any lands owned by the state north of town 33." Under this law specific amounts can be obtained from the state treasury for payment of fire fighters upon a written order of the Governor. This law applies to the protection of state lands only.

PREVENTION.

Prevention of fires is essential in a protective system. If the causes of fires can be eliminated, or partially eliminated, and there is every reason to believe they can be, the risks and the cost of protection will decrease accordingly. For the prevention of forest fires the following measures have been adopted on the protected area:

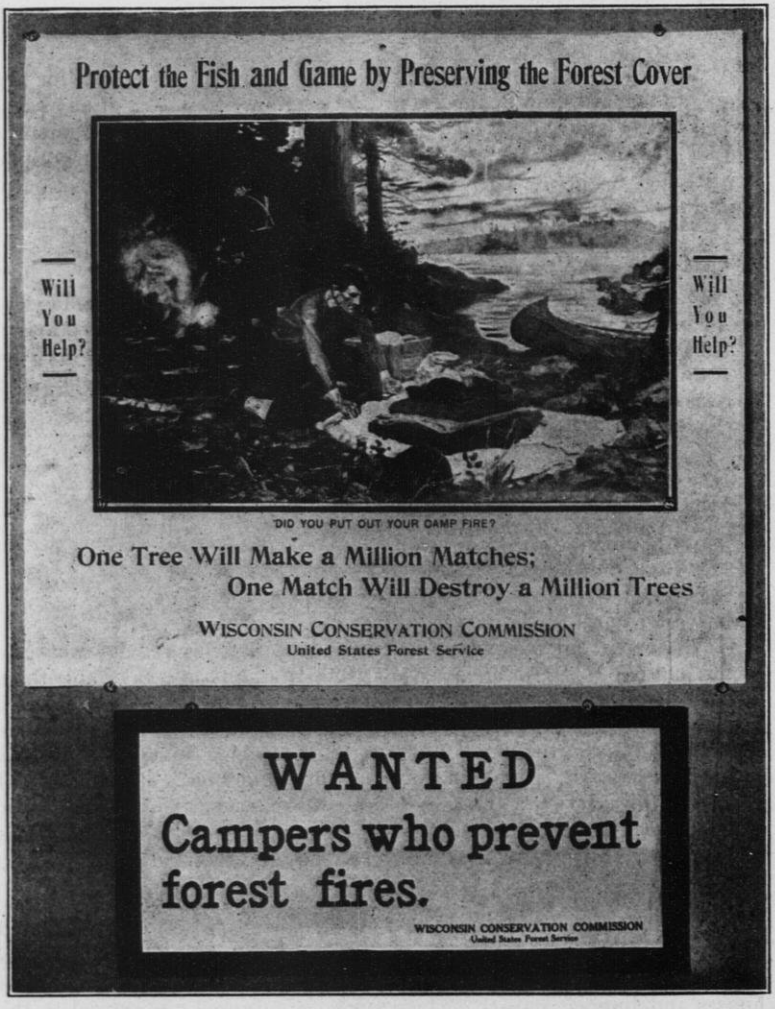
1. Cleaning up slashings and fire traps.
2. Posting of fire notices and warnings.
3. Directing of tourists.
4. Printed and personal appeals.
5. Apprehension of persons setting fires.
6. Improvement of spark arresting devices.
7. Record of fires.

Cleaning up slashings and fire traps.

Each ranger and patrolman is expected, during his regular work, to locate and map all slash areas within his district, and at a favorable time, usually in the fall when the frost covers the ground in the morning, to systematically burn these fire traps. The fiercest and most destructive fires are caused by the uncontrolled burning of old slashings, and as long as such areas exist, there will be great danger of fires. The burning of these slashings during a time when fires will not run, and the systematic control of the work greatly reduces the danger. In this manner hundreds of acres of old slash have been cleaned up on the protected area.

Posting of fire notices and warnings.

For the guidance and instruction of all persons within the protected area regarding forest fires, signs and posters are placed at conspicuous places, such as trails, crossroads, railroad stations, camping sites, school houses and summer resorts. These signs are informal and appeal to the reader to aid in preventing fires, or to extinguish them in all cases, because of the destruction or endangering of property or natural resources. Each spring signs of this type are posted, bearing new designs and instructions, in order that the fire danger for that year may be refreshed in the minds of the people of the protected region. These signs and posters are very effective in calling attention to the fire danger, and in constructive education of all who visit the lake region regarding the real status of forest fires.



FOREST FIRE PREVENTION PLACARDS DISTRIBUTED BY THE CONSERVATION COMMISSION

During times of extreme drought special red fire warnings are issued and posted by the town chairmen, prohibiting the setting of all fires except those necessary for warming the person or preparing food. This is a special preventive measure and is resorted to only in times of great danger.

Directing of tourists.

Throughout the protected area many ideal camping sites have been laid out by resort owners, forest rangers, or campers. In most cases these camp sites are equipped with stone fireplaces, tables and benches. The protective force, each season, endeavors to guide all camping parties to such locations, as the starting of fires in definite spots which have been previously arranged for such use, always decreases the danger of such a fire developing into a forest fire. On such camp grounds the combustible material about the fireplace is cleaned up, and the site put in good condition for campers.

Press items, magazine articles.

From time to time articles regarding protective work are issued for the instruction of the people at large. This is a direct effort to train the public to be careful with fires. It results in a decrease of forest fires, and brings home to the public one phase of the conduct expected of them when visiting the great resort region of the state. These articles arouse interest, not only in forest fire protection, but also in other forest activities.

Personal appeals.

The forest ranger or patrolman, whenever occasion permits, is expected to call upon settlers, campers, resort owners, woodsmen and all others within his district to warn them of any particular fire danger, or to instruct them in being more cautious in setting fires. Under ordinary circumstances many fires are prevented in this manner especially on the part of new campers who unintentionally leave their camp fires burning. The rangers or patrolmen often visit camping parties in the more out of the way places and call their attention to the danger of leaving fires in exposed or dangerous places, or, at other times, advise a settler regarding the best time and method of burning brush. This method of prevention can be made very efficient if the rangers and patrolmen are men of tact and good personality, and as a general rule men of these qualities make up the force.

Apprehension of persons setting fires.

Occasionally some malicious person sets a forest fire. In such cases the ranger or patrolman who has charge of the district in which the suspected incendiarism has occurred takes steps to apprehend the offender. A thorough investigation is made and if the evidence collected is deemed sufficient to convict the offender, criminal action is brought against him.

Improvement of spark arresting devices.

One of the most serious causes of forest fires has been the live sparks thrown from locomotives. Of late years the attitude of the large, as well as the small railroad companies, has been radically changed in regard to their responsibility in this respect, and as a result we find that today the companies are very thorough in their inspection of ash pans and front end netting. This change of attitude has been brought about largely

by an inspector, which the commission was authorized by law to employ. The law now provides that all locomotives on main lines must be equipped with efficient spark arresters, and that locomotives on branch lines or spurs in the protected region must have screens over the smoke stacks, so as to prevent the escape of sparks. These measures have resulted in a very material reduction in the number of fires which annually were attributed to this cause.

Record of fires.

Each ranger is required to keep a record of all fires which occur within his district. The date of each fire, location, area burned over, when and by whom reported, and all other points of information bearing upon the fire are recorded.

DETECTION.

Lookout towers.

Four main and four auxiliary lookout towers are maintained within the protective area as follows:

	Height	Approximate Area of View.
1. Muscalunge Lake Tower	55 ft.	100 sq. mi.
2. Tomahawk	55 ft.	144 sq. mi.
3. Rest Lake Tower	55 ft.	64 sq. mi.
4. Oxley Lake Tower	55 ft.	64 sq. mi.

Auxiliary towers	Height	Approximate Area of view
1. Camp No. 2 Lookout	40	36 sq. mi.
2. Tower in 41–3	20	36 sq. mi.
3. Tower in 40–3	20	36 sq. mi.
4. Tower in 40–14	20	36 sq. mi.

The five towers first named are of steel construction, each 55 feet high and each set upon prominent hills so that they command a complete view of the surrounding country; the auxiliary towers are tall poles also set on prominent hills. Into each auxiliary tower iron steps have been screwed, which permits of easy climbing, and thus a patrolman can obtain a good view of the surrounding country. These towers are of primary importance in the detection of forest fires.

Each tower is equipped with:

1. A mounted and oriented field map, with protractor.
2. One alidade.
3. One pair of field glasses.
4. One wall telephone instrument.
5. One portable telephone.
6. One shovel and canvas pail.
7. One set of telephone repair tools.

The field glasses enable the observer to obtain a clearer view of the surrounding country. Should a fire be discovered, the observer immediately

notifies both headquarters and the nearest ranger, giving the bearing of the fire from the tower, and its general appearance. Although the lookout observer is distinctly a detector of fires, there are times when a fire may occur close to the tower, and it is then his duty to go to the fire and commence an attack, and stay until relieved by the ranger or patrolman who comes to fight the fire with the necessary help.

As a general rule a fire is visible from more than one tower, and thus two bearings are reported to headquarters. From these two angles the exact location of the fire can be determined. This is known as the triangulation method of location.

Each tower is located on a map at headquarters which corresponds with the fire map on each tower, and strings are used to mark off the bearings, as reported by the towerman, on a circle graduated to degrees. The intersection of these strings gives the location of the fire, thus enabling the ranger or patrolman, with his knowledge of the roads and trails, to get to the fire in the shortest possible time.

The following instructions apply to each tower man:

"Continuous observation between the hours 7:00 a. m. and 6:00 p. m. is absolutely necessary during such weather as requires lookout duty, and all watchmen are required to be at their stations between the above mentioned hours.

"As soon as a fire is located call headquarters and get in communication with the ranger nearest the fire. If the fire is outside the district of any ranger, then call any person having a telephone within the fire zone and request him to get to the fire as soon as possible, and to notify the nearest fire warden or ranger.

"Every effort should be made to obtain the coöperation of settlers, resort owners, and other persons who can be helpful in the territory covered by the lookout.

"Each morning before leaving the ranger station call headquarters camp to see if the line is in good order, and after getting to the tower call headquarters to be sure the line is in good working order, and if the line is out of order repair it immediately.

"You should submit a report on the weekly report blanks to E. M. Weaver, head ranger, Woodruff, Wis. When weather conditions are such that it becomes unnecessary to be on the lookout for fires, you will receive instructions from head ranger Weaver, regarding your further duties."

For the detection of forest fires the lookout tower is very efficient except during cloudy or hazy weather. At such times the area over which a clear view can be obtained is reduced. Even under such circumstances the value of the tower is very great.

Patrol during dry seasons.

During dry seasons the patrolmen are actively engaged in patrolling the area assigned to them by the head ranger at the beginning of the fire season, and according to the instructions with which they are provided. They cover the territory in which the greatest fire danger exists, such as along railroads and near the more popular lakes. Each man is equipped with a shovel, a canvas pail and oftentimes with a portable phone. In the protected area the shovel is the best tool for fighting fires as the soils are light and easily handled. The patrolmen operating along the railroad tracks travel on hand pedes, a permit to operate over the

tracks being held by each member of the regular force. The track patrolmen are generally equipped with a shovel and collapsible canvas pail. As often as possible the patrolmen get in touch with the lookout towers, by phone, during the day. The general method of track patrol is to follow all trains entering the protected area until they have passed through, and extinguish all fires that might be set as soon as possible.

Hydro-aeroplane observation.

During the summer of 1915 the owner of a hydro-aeroplane stationed at Trout Lake offered his services for fire detecting purposes. His offer was accepted, and the experiment proved of no little value. The range of view from this machine took in from 15 to 40 miles radius with the naked eye, and over 60 miles when strengthened with a pair of field glasses. Over this vast area fires could be readily detected. The hydro-aeroplane would be a successful means for detecting fires were it not for the fact that flights are as yet very hazardous when a strong wind is blowing and it is during just such periods that fires break out and make their greatest headway. However, it is believed that eventually the aeroplane will be a practical device for patrolling great areas of land as the speed of one of these machines is such that three or four counties could be readily patrolled each day.

Communication.

The most important points within the protective area, such as ranger stations, lookout towers, and the small towns are all connected by telephone lines, some of which are owned by the state, others are the general toll systems. The state has over 80 miles of telephone lines in active service. All of the state lines radiate from headquarters, at which point a switchboard is located which enables connections to be made between the different state lines or with the general toll system. They insure rapid communication regarding the location and condition of any fire that may occur. Every effort is made to keep these lines of communication open and in good condition, this service ranking next to actual fire fighting. In order to do this each ranger is required to call headquarters every morning to test out his line.

Portable phones are a part of the equipment of most of the districts. These phones are convenient for communicating while patrolling along telephone lines, and often save the patrolman many miles of walking or riding to report a fire. The value of these instruments lies in the saving of time in reporting a fire and summoning help. Portable phones are located as follows:

Headquarters	2	Woodruff	1
Oxley	1	Manitowish	1
Star Lake	1	Sayner	1
Plum Lake	1		

CONTROL.

This subject takes up all points involved in the fighting of a fire after it has started. The control system includes all fire lines, roads, trails, fire fighting equipment, tool boxes and other devices of the protective system which aids in bringing a fire under control in the shortest time.

Fire lines.

Fire lines are narrow open lanes (10 to 50 feet wide) from which all inflammable material has been cleared. They are usually plowed. The main object of a fire lane is to provide a cleared place from which to attack a forest fire. Fire lanes divide the country up into small units and thus prevent disastrous fires by limiting each fire to a small area. The protective area has been netted with fire lanes.

Natural barriers are used wherever possible. Thus the lanes frequently connect lakes or rivers; run along ridges or skirt areas of great fire danger or special importance such as plantations. Old railroad grades are often made to serve as barriers or secondary roads by pulling up the ties and plowing. The fire lane is not supposed to serve as a point at which every individual fire will stop without action on the part of the protective force, although this often happens. They furnish a cleared space at which a fire can be checked either by a back fire or direct fighting with sand or water.

Roads and trails.

Roads and trails are absolutely necessary in the managing of any forest, particularly in a fire protection plan. All parts of the country must be accessible in order to permit rapid transporting of fire fighting crews, or to facilitate patrol work.

In order to make the area accessible to the force, to the few settlers who live in this region and to the thousands of tourists who annually visit it, over 250 miles of dirt roads have been constructed. Some of these are first class turnpikes, while others are old logging railroad grades, which were improved. The latter are always serviceable for teams or automobiles. In every case the roads are a part of the fire line system.

Many lakes within the protected area are connected by portage trails which are often of great advantage in getting to a forest fire. Besides these, many miles of trails have been opened up in all parts of the area which a ld to the accessibility of the region.

Tool boxes.

Boxes containing fire fighting tools are located at strategic points throughout the area for the use of fire fighting crews. The keys to these tool boxes are left with some responsible person, usually the station agent, who is instructed to give the keys to anyone who needs the tools for fire fighting purposes. These tool boxes are an important part in the fire fighting system as they obviate the need of transporting tools for long distances, and at times furnish a source of tools to an emergency fire fighting force. Tool boxes are located at:

Mercer, Powell, Arbor Vitae, Star Lake, Boulder Junction, Tomahawk Lake, Robbins, Conover, Gagen and Sayner.

The standard equipment of a tool box consists of:

12 shovels; 12 galvanized pails; 6 grub hoes; 6 axes; 6 mattocks, and 6 rakes.

These tools are kept in good repair and are sufficient to equip a fire fighting crew of from 12 to 18 men.

Cutting stubs.

Old dead stubs are dangerous when standing along roadsides or fire lines, since sparks from such a height are carried for long distances. Such old stubs have been cut back for from 6 to 10 rods on each side of over 125 miles of roads and fire lanes. Such work as this is generally carried on during the winter months and is an important step in the control of fires.

Transportation.

Rapid transportation of a fire fighting crew is essential to efficient control of forest fires. In order to accomplish this, an auto truck is stationed at headquarters camp which is held in readiness, especially during times of drought. This truck will accommodate from 6 to 10 men with their equipment. Coupled with a good system of roads and trails, the truck is invaluable in getting to a fire in the shortest possible time. Instances have occurred when a reported fire was reached in from 20 to 30 minutes with the truck, whereas with a team or by foot the time required would be between one and two hours. The advantage gained is readily realized. Not only is the fire fighting crew in good physical trim after reaching the fire and therefore able to do better work, but the fire has had but little time to gain headway, and is, therefore, extinguished with comparative ease. The truck is also very serviceable in reforestation work for the transportation of plant stock, equipment and men, and in general administration.

The C. M. & St. P. Ry., C. & N. W. Ry., and the "Soo" line, in coöperation with the Conservation Commission have granted permits to all rangers, patrolmen and forest assistants, to operate velocipedes over their lines within the protected area. This is a direct advantage in patrol work along railroads, because of the special fire hazard, and also in getting to fires which occur along the rights of way in the shortest time. This privilege aids greatly in the work of detecting and controlling forest fires.

COST OF PROTECTION.

The following figures give the cost for fire protection during 1915:

The state expenditures in 1915 were	$11,039.13
Private expenditures under state supervision were	765.00
Government expenditures	4,498.20
Total expenditures under state supervision	$16,302.33

Acreage in fire protected area..... 1,250,000
Cost per acre for protection..... $.013

The area for 1916 has been increased to about 1,700,000 acres, inclusive of the Indian Reservation.

SUMMARY OF IMPROVEMENTS, EQUIPMENTS AND DISPOSITION OF THE FOREST PROTECTIVE PERSONNEL.

IMPROVEMENTS

Stations:	Location
Headquarters Camp	Sec. 8, T. 41–7 E.
Plum Lake Ranger Station	Sec. 29, T. 41–8 E.
Star Lake Ranger Station	Sec. 15, T. 41–8 E.
Tomahawk Lake Ranger Station	Sec. 4, T. 38–7 E.
Carroll Lake Ranger Station	Sec. 4, T. 39–7 E.
Wildcat Lake Ranger Station	Sec. 34, T. 43–7 E.
Oxley Ranger Station	Sec. 24, T. 42–6 E.
Rest Lake Ranger Station	Sec. 4, T. 42–5 E.
Patrol Cabin	Sec. 28, T. 41–7 E.
Patrol Cabin	Sec. 12, T. 42–8 E.
Patrol Cabin	Sec. 14, T. 43–7 E.
Patrol Cabin	Sec. 32, T. 42–4 E.

Lookout Towers.

Primary Lookouts	Location
Muskellunge Lookout Tower	Sec. 34, T. 41–7 E.
Oxley Lookout Tower	Sec. 23, T. 42–6 E.
Tomahawk Lookout Tower	Sec. 27, T. 39–7 E.
Rest Lake Lookout Tower	Sec. 4, T. 42–5 E.
Flambeau Lookout Tower	Sec. 34, T. 41–5 E.

Auxiliary Lookouts	
Camp No. 2 Lookout	T. 42–8 E.
Lookout	T. 41–3 E.
Lookout	T. 40–3 E.
Lookout	T. 40–14 E.

Roads.

About 250 miles of dirt roads constructed at an average cost of $131.58 per mile.

Fire lanes.

About 141 miles constructed at an average cost of $84.67 per mile.

Telephone lines.

Over 80 miles constructed at an average cost of $35.93 per mile.

Slash burning.

Slash burned on over 1500 acres at an average cost of about $5 per acre.

EQUIPMENT.

One auto truck located at headquarters.
10 fire tool boxes. (Standard equipment)
Location
Mercer
Powell
Arbor Vitae
Star Lake
Boulder Jct.
Tomahawk Lake
Robbins
Conover
Gagen
Sayner

Eight portable phones

Location	
Headquarters	2
Oxley	1
Star Lake	1
Plum Lake	1
Woodruff	1
Manitowish	1
Sayner	1

Four lookout kits each consisting of:
A mounted and oriented field map.
One alidade.
One pair of field glasses.
One wall telephone instrument.
One portable telephone.
One shovel and canvas pail.
One set of telephone repair tools.

Ten Velocipedes located as follows:

Headquarters 4, Woodruff 1, (Gas car); Oxley 1, Sayner 1, Star Lake 1, North Crandon 1, Wildcat Lake 1.

Each station is also equipped with shovels, pails, rakes, mattocks and all other necessary fire fighting tools, besides camping kits, telephone repair tools, tents, maps and all other paraphernalia needed for the protective system.

COMMISSIONERS OF FISHERIES.

FINANCIAL REPORT.

July 1, 1914 to June 30, 1915

OPERATION ACCOUNT.

July 1, 1914.	Annual Appropriation	$48,500.00	
June 28, 1915.	Refund H. C. Prange Co	23.00	
June 30, 1915.	Total disbursements		$46,189.54
July 1, 1915.	Balance on hand		2,333.46
		$48,523.00	$48,523.00

REPAIRS & MAINTENANCE.

July 1, 1914.	Appropriation	$3,250.00	
	Total disbursements		$3,210.00
July 1, 1915.	Balance on hand		40.00
		$3,250.00	$3,250.0

LAND AND IMPROVEMENTS.

July 1, 1914.	Appropriation	$4,910.00	
	Total disbursements		$4,885.00
July 1, 1915.	Balance on hand		25.00
		$4,910.00	$4,910.00

MISSISSIPPI RIVER FUND. (SEC. 172–22–4)

Total amount collected to June 30, 1915	$9,485.36
Disbursements	2,434.27
Amount on hand July 1, 1915	$7,051.09

ADMINISTRATION AND OFFICE EXPENSE.

Salaries	$5,410.08	
Traveling expenses	433.39	
Printing, postage, telephone, office supplies	906.78	
		$6,750.25

Madison Hatchery.

Salaries	$3,440.00	
Sundry labor	267.75	
Supplies and equipment	1,085.89	
Fish food	969.09	
Repairs and improvements	2,161.03	
		$7,923.76

Bayfield Hatchery.

Salaries	$3,322.00	
Sundry labor	645.35	
Supplies and equipment	923.18	
Fish food	886.38	
Repairs and improvements	1,225.57	
		$7,002.48

Oshkosh Hatchery.

Salaries and labor	$371.50	
Supplies and equipment	200.81	
		$572.31

Minocqua Hatchery.

Salaries and labor	$1,242.00	
Supplies and equipment	920.41	
		$2,162.41

Delafield Hatchery.

Salaries and labor	$1,873.48	
Supplies and equipment	187.49	
		$2,060.97

Wild Rose Hatchery.

Salaries	$2,670.00	
Sundry labor	585.71	
Supplies and equipment	546.38	
Fish food	796.17	
Repairs and improvements	1,058.70	
		$5,656.96

Sturgeon Bay Hatchery.

Salaries	$1,080.00	
Sundry employment	1,071.05	
Supplies and equipment	1,305.12	
		$3,456.17

Sheboygan Hatchery.

Salaries	$1,166.34	
Sundry employment	1,207.00	
Supplies and equipment	1,195.55	
		$3,568.89

Spooner Hatchery.

Labor, equipment and supplies	$405.38	
		$405.38

Eagle River Hatchery.

Completing building	$666.78	
Labor, supplies and equipment	660.01	
		$1,326.79

Transportation and Distribution.

Salaries and labor	$705.25	
Freight, dray and express	2,270.58	
Employee's traveling expenses	4,565.96	
Supplies and equipment	468.07	
		$8,009.86

Miscellaneous.

Collecting lake trout, bluefin and pike eggs	$3,474.85	
State Fair Exhibit	131.50	
State Insurance	527.52	
Overdraft from fiscal year ending June 30, 1914	1,254.44	
		$5,388.31
Grand Total		$54,284.54
Total appropriation	$56,660.00	
Refunded by H. C. Prange Co	23.00	
Total disbursements		$54,284.54
Unexpended balance		2,398.46
	$56,683.00	$56,683.00

FINANCIAL STATEMENT FOR YEAR ENDING JUNE 30, 1915

(Old Boards and Commissions)

Forestry Board	$ 40,629.94
Park Board	22,733.67*
Fish Commission	53,030.10
State Game Warden	135,813.37
Total	$252,207.08

(*) Covers Marquette, Peninsular, Devil's Lake and Interstate parks.

FINANCIAL STATEMENT FOR YEAR ENDING JUNE 30, 1916

(New Conservation Commission)*

Forestry Division	$ 25,286.19
State Park Division	17,681.65†
Fisheries Division	52,598.67
Warden Division	110,783.22
Total	$206,349.73*

(*) The office or administration expense was prorated among the four divisions.
(†) Covers Marquette, Peninsular, Devil's Lake, Interstate and Cushing Memorial parks.

CLASSIFIED FINANCIAL STATEMENT.

July 1 1915, to June 30, 1916

GENERAL ADMINISTRATION.

Salaries, commissioners and office force	$ 17,666.20
Traveling expenses	2,550.47
Office supplies	761.31
Printing	5,139.23
Postage	1,528.65
Telegraph and telephone	369.65
Freight, dray and express	182.62
Total	$ 28,202.13

FORESTRY DIVISION.

Salaries and sundry labor	$ 7,083.55
Supplies	1,147.60
Employee's expenses	1,399.44
Equipment	199.01
State Insurance	170.99
July, 1915, disbursements under old department	3,689.99
Total	$ 13,690.58

FORESTRY DIVISION (FIRE PROTECTION).

Sundry labor	$ 2,935.84
Supplies	1,039.89
Equipment	150.00
Employee's expenses	419.88
Total	$ 4,545.61

STATE PARKS DIVISION.

Peninsular Park, (Salaries, labor, supplies)	$ 3,824.24
Devil's Lake Park, (Salaries, labor, supplies)	4,028.44
Interstate Park, (Salaries, labor, supplies)	1,776.65
Marquette Park, (Salaries, labor, supplies)	196.98
Brule Park, (Salaries, labor, supplies)	342.88
Cushing Park	295.00
State Insurance	167.46
Total	$ 10,631.65

WARDEN DIVISION.

Salaries	$ 57,762.41
Warden's Expenses (Railroad fare)	4,704.36
Warden's Expenses (Hotel expense)	16,420.82
Warden's Expenses (Livery)	5,008.80
Warden's Expenses (Telephone, telegraph, supplies)	2,378.06
Supplies and repairs	2,432.72
Equipment	2,992.34
State Game Farm	131.24
State Insurance	78.55
July, 1915, disbursements under old department	11,821.79
Total	$103,731.09

FISHERIES DIVISION

Madison Hatchery.

Salaries and sundry labor	$3,147.85	
Fish food	746.76	
Equipment	154.00	
Supplies and repairs	487.62	
		$4,536.23

Bayfield Hatchery.

Salaries and sundry labor	$3,945.45	
Fish food	696.35	
Equipment	221.77	
Supplies and repairs	818.90	
Improvements	1,302.28	
		$6,984.75

Oshkosh Hatchery.

Sundry employment	$ 160.00	
Equipment	110.00	
Supplies and repairs	138.51	
Improvements	2,543.21	
		$2,951.72

Minoqua Hatchery.

Salaries and sundry labor	$1,243.75	
Equipment	80.00	
Supplies and repairs	579.19	
Improvements	242.42	
		$2,145.36

Delafield Hatchery.

Salaries and sundry labor	$2,099.70	
Supplies and repairs	102.56	
		$2,202.26

Wild Rose Hatchery.

Salaries and sundry labor	$2,839.54	
Fish food	819.49	
Equipment	152.04	
Supplies and repairs	321.55	
Improvements	508.39	
		$4,641.01

Sheboygan Hatchery.

Salaries and sundry labor	$2,249.50	
Water rent	606.48	
Supplies and repairs	558.08	
		$3,414.06

Sturgeon Bay Hatchery.

Salaries and sundry labor	$1,643.00	
Water rent	504.13	
Supplies and repairs	286.19	
Improvements	308.34	
		$2,741.66

Sub-Hatcheries.

Spooner, (Labor and supplies)	$297.70	
Eagle River, (Labor and supplies)	126.11	
Madison, (Erecting and equipping)	730.19	
		$1,154.00

Distribution of Fish.

Salaries and sundry employment	$791.00	
Employees' expenses	3,806.88	
Freight, dray, express	1,631.04	
Supplies	450.31	
		$6,679.23

Miscellaneous Disbursements.

Collecting fish at Neenah Dam	$500.17	
Collecting lake trout eggs	804.81	
Collecting pike eggs	2,281.47	
State Insurance	529.32	
July, 1915, disbursements under old Dept	3,982.62	
		$8,098.39
Grand Total Fisheries Division		$ 45,548.67
Grand Total, all Departments		$206,349.73

Recapitulation.

Salaries	$109,907.59
Per diem	17,069.27
Fish Food	2,680.72
Equipment	4,467.15
Supplies	11,304.26
Printing	5,139.23
Postage	1,529.65
Telephone and telegraph	722.88
Employees' traveling expenses	41,805.47
Dray, freight, express	1,872.04
State Insurance	867.77
Property and Improvements	3,996.40
Repairs and Maintenance	4,987.30
Grand Total	$206,349.73
General operation	$197,366.03
Repairs and Maintenance	4,987.30
Property and Improvements	3,996.40
Grand Total	$206,349.73

Appropriation for Operation (172–42–1)	$200,000.00	
Repairs and Maintenance (172–42–2)	5,000.00	
Property and Improvements (172–42–3)	4,000.00	
Total disbursements		$206,349.73
Unexpended balance on hand July 1, 1916		2,650.27
	$209,000.00	$209,000.00

Administration and Office expenses	$ 28,202.13
Warden Division	103,731.09
Forestry Division	13,690.58
Forestry Division (Forest Fire Protection)	4,545.61
State Parks Division	10,631.65
Fisheries Division	45,548.67
Total	$206,349.73

Statement of Salaried Employees.

Commissioners and office force	9
Conservation warden force	63
Parks Division	4
Fisheries Division	17
Forestry Division	10
	103
Short period employees in the parks, forestry and fisheries divisions, hired as extra help when necessary	230
Regular and extra men employed during fiscal year	333

FOREST RESERVE FUND.

Balance July 1, 1915	$11,040.45	
Receipts	13,144.94	
Expenditures		$ 79.70
Balance, July 1, 1916		24,105.69
	$24,185.39	$24,185.39

GOVERNMENT REFORESTATION FUND.

Balance July 1, 1915	$12,694.82	
Receipts	737.47	
Expenditures		$ 3,685.21
Balance, July 1, 1916		9,747.08
	$13,432.29	$13,432.29

PARK PURCHASE FUND.

Balance, July 1, 1915	$10,825.34	
Receipts for year	1,870.12	
Balance available		$12,695.46
	$12,695.46	$12,695.46

GLENN PARK FUND.

Balance on hand	$5,999.84
Disbursements	1,181.74
Balance on hand July 1, 1916	$ 4,818.10

DEVIL'S LAKE PARK FUND.

Balance on hand	$ 45.66
Disbursements	38.70
Balance on hand July 1, 1916	$ 6.96

PENINSULAR PARK FUND.

Balance on hand	$ 231.01
Disbursements	231.01

FOREST FIRE PROTECTION.

(Coöperative Disbursements)

Paid by U. S. Government under Weeks Law	$3,813.00
Paid by Mansfield Ferry, New York City	$ 370.00

WISCONSIN CONSERVATION COMMISSION
CLASSIFICATION OF RECEIPTS.

July 1, 1915, to June 30, 1916

Nonresident Anglers' Licenses	$23,215.83
Lake Michigan, Superior & Green Bay licenses	4,208.00
Lake Pepin, St. Croix & Mississippi River Licenses	2,811.75
Rough Fish (Winnebago County waters)	2,578.36
Rough Fish (other waters)	9,632.11
Resident Hunting licenses	133,578.50
Nonresident Hunting licenses	11,670.00
Duplicate licenses	106.50
Settlers' licenses	632.00
Confiscations	2,730.48
Wardens' fees	554.75
Fines imposed (credited to School Fund)	16,969.50
Set Line licenses	1,728.70
Game Farmers' licenses and registration fees	1,092.39
Concessions from park lands	1,870.12
Island leases and nursery stock sales	737.47
Ground leases, timber sales, trespass, etc	13,144.94
Total	$227,261.40

INVENTORY.

FISHERIES DIVISION.

Madison Hatchery	
63 acres of land, 7 buildings, 17 ponds, 1350 feet of raceway	$35,000.00
Tools and equipment	4,000.00
Bayfield Hatchery	
502 acres of land, 6 buildings, 26 ponds, 1500 feet of raceway, 6700 feet of pipe line	45,000.00
Tools and equipment	5,000.00
Oshkosh Hatchery	
One city lot, hatchery building, boathouse and dock	7,000.00
Tools and equipment	2,500.00
Minocqua Hatchery	
275½ acres of land, 5 buildings, 7 ponds, 2200 feet of pipe line	25,000.00
Tools and equipment	2,500.00
Delafield Hatchery	
30 acres of land, hatchery building, 6 ponds, 1490 feet of pipe line	27,000.00
Tools and equipment	1,500.00

Wild Rose Hatchery	
59½ acres of land, 5 buildings, 32 ponds, 1035 feet of pipe line	$25,000.00
Tools and equipment	1,500.00
Sturgeon Bay Hatchery	
2 city lots, hatchery building	10,000.00
Tools and equipment	1,000.00
Sheboygan Hatchery	
City lot and hatchery building	10,000.00
Tools and equipment	1,000.00
Spooner Hatchery	
City lot and building	1,500.00
Tools and equipment	700.00
Eagle River Hatchery	
City lot and building	1,500.00
Tools and equipment	700.00
Tenney Park Hatchery	
Building	500.00
State Fish Car "Badger No. 2"	13,500.00
Car shed at Wild Rose	1,500.00
Total	$222,900.00

INVENTORY.

Warden Division	
25 motorcycles	$5,000.00
Launch "Beda"	1,000.00
Launch "Anna S"	750.00
Launch "Kingfisher"	1,000.00
Launch "Wisconsin"	100.00
Launch "Submarine"	150.00
Launch "Galatea"	1,500.00
12 detachable boat motors	780.00
14 row boats	350.00
Automobile	1,500.00
3 Ford trucks	1,000.00
Total	$13,130.00
State Parks Division	
Devil's Lake park—Buildings	$20,350.00
1040 acres of land	128,497.00
Peninsula Park Buildings and two lookout towers	17,255.00
3190 acres of land	96,182.00
Marquette Park Buildings	1,160.00
1651 acres of land	46,139.00
Interstate Park Buildings	400.00
580 acres of land	20,571.00
Cushing Memorial Park 8 acres of land	5,000.00
Actual cost to state	$335,554.00

Forestry Division	
37 buildings	$28,690.00
4 steel lookout towers	550.00
86 miles telephone line	3,150.00
Trout Lake Nursery (land improvements, water system, equipment)	4,700.00
Tomahawk Lake Nursery (land improvements, water system, equipment)	2,600.00
Nursery Stock (Trout Lake)	9,385.00
Nursery Stock (Tomahawk Lake)	1,985.00
Implements, tools and equipment	4,100.00
1000 acres of forest plantations	6,000.00
Total	$61,160.00

Recapitulation of Inventory.

Fisheries Division	$222,400.00
Warden Division	13,130.00
State Parks Division	335,554.00
Forestry Division (lands not included)	61,160.00
Grand Total	$632,744.00

Lands Under Direct Control. (Acreage)

Fish hatcheries	900
State Parks	6,469
Forest county game refuge	42,080
State Game Farm	300
Brule Forest Reserve	4,321
U. S. Forest Reserve grant	14,027
State Forestry lands	341,228
U. S. Grant Islands (637)	875
Indian Reservation Lands (claimed by state)	47,000
Total acreage	457,200

CLASSIFICATION OF CONFISCATIONS.

July 1, 1915, to June 30, 1916.

Seizures of:	
Doe carcasses	23
Venison in closed season	29
Venison without coupon attached	1
Of live deer, closed season	4
More than lawful amount of venison	1
Dogs running deer	2
Deer heads or hides	21
Small game unlawfully in possession	3
Small game in transportation	2
Beaver hides	2
Otter hides	1
Illegal furs	60

More than bag limit of ducks	3
Ducks unlawfully in possession	4
Fish in closed season	13
Fish illegally transported	66
Fish illegally caught	18
Fish, undersized	32
Illegal nets	53
Fish, unlawfully labelled	3
Set lines, illegal	11
Snag lines	4
Boats	9
Guns	29
Traps	7
Spears	7
Fishing rods or creels	2
Duck decoys	2
Rabbits and ferrets	3
Pelicans	1
Total number of seizures	416

Amount realized from sale of confiscated goods, $2,730.48.

AMOUNT OF FINES AND COSTS IMPOSED ACCORDING TO COUNTIES, FROM JULY 1, 1915, TO JULY 1, 1916.

	Fines.	Costs.		Fines.	Costs.
Adams	$ 100.00	$ 9.76	Marquette	$ 75.00	$ 8.82
Ashland	205.00	31.21	Milwaukee	90.00	15.52
Barron	630.00	118.20	Monroe	.....	.....
Bayfield	320.00	61.05	Oconto	120.00	55.79
Brown	415.00	199.87	Oneida	297.50	63.57
Buffalo	50.00	10.45	Outagamie	400.00	52.68
Burnett	30.00	.....	Pierce	70.00	3.10
Chippewa	190.00	43.65	Pepin	25.00	.75
Clark	100.00	10.12	Polk	1,125.00	158.83
Columbia	150.00	19.74	Portage	50.00	21.22
Crawford	125.00	10.80	Price	75.00	14.52
Dane	415.00	19.95	Racine	25.00	22.86
Dodge	555.00	103.14	Richland	330.00	37.47
Door	75.00	12.34	Rock	270.00	29.78
Douglas	585.00	49.78	Rusk	260.00	28.70
Dunn	10.00	2.35	St. Croix	25.00	2.30
Eau Claire	1,390.00	92.55	Sauk	110.00	46.94
Florence	200.00	49.10	Sawyer	150.00	26.77
Fond du Lac	265.00	108.77	Shawano	25.00	10.35
Forest	125.00	36.14	Sheboygan	117.00	49.15
Grant	75.00	7.50	Taylor	100.00	9.29
Green	120.00	19.31	Trempealeau	50.00	7.56
Green Lake	.....	5.60	Vernon	50.00	6.89
Iowa	95.00	13.03	Vilas	400.00	53.55
Iron	135.00	20.70	Walworth	310.00	45.36
Jackson	25.00	2.18	Washburn	395.00	56.62
Jefferson	200.00	45.69	Washington	420.00	102.27
Juneau	370.00	129.50	Waukesha	485.00	145.89
Kenosha	110.00	89.04	Waupaca	430.00	160.93
Kewaunee	100.00	6.28	Waushara	75.00	39.99
La Crosse	50.00	7.05	Winnebago	890.00	76.62
Lafayette	245.00	34.35	Wood	100.00	23.08
Langlade	100.00	8.00			
Lincoln	495.00	104.10	Total	$16,969.50	$3,538.65
Manitowoc	150.00	17.64			
Marathon	285.00	86.30	Total amount of warden's fees collected		$554.75
Marinette	1,135.00	576.24			

ITEMIZED STATEMENT OF ARRESTS FROM JULY 1, 1915, TO JULY 1, 1916.

Transferring license	3
Resident hunting without license	32
Nonresident hunting without license	3
Hunting or killing deer in closed season	44
Killing or having doe in possession	20
Venison in possession in closed season	38

Buying or selling venison	14
Killing more than one deer	4
Hunting deer with dogs or having dogs in camp	11
Serving venison in camp or to borders	4
Dynamiting fish	33
Unlawful method of fishing	102
Using fish trap	2
Catching and retaining undersized fish	28
Selling, catching or having game fish in possession in closed season	38
Catching game fish with dip net	20
Shipping more than 20 lbs. of fish in 7 days	3
Shipping more than 25 lbs. bullheads	3
Illegal transportation of fish	13
Using snag lines	7
Unlawful fishing within 200 feet of dam	3
Unlawful use of nets or seines	102
Unlawful use of set lines	26
Fishing without license, outlying waters	1
Fishing with lines unattended	6
Unlawful transportation of small game	4
Hunting or killing game birds in closed season	32
Killing more than fifteen ducks	4
Shooting ducks from motor boat	5
Shooting ducks in open water	33
Shooting ducks at night	44
Buying and selling game birds	4
Killing harmless birds or disturbing nests	26
Killing rabbits or squirrels in closed season	11
Hunting rabbits with ferret	10
Trapping in closed season	38
Trapping without license	2
Trapping beaver	4
Possessing otter	1
Shooting or spearing muskrats and mink	11
Molesting muskrat houses or trapping therein	23
Possessing green furs in closed season	23
Killing raccoon in closed season	6
Interfering with conservation warden	1
False labelling of shipments	2
Depositing deleterious substance in streams	4
Obtaining bounty by fraud	7
Issuing false certificates for bounty	11
Running Dogs in closed season for birds	2
Nonresident fishing without license	12
Setting poison without posting notice	1
Having venison without coupon attached	2
Total	883

Fine sentences imposed	594
Jail sentences imposed	52
Both fine and jail sentences imposed	5
Cases pending	37
Cases dismissed	41
Acquittals	31
Fine suspended on payments of costs	77
Both fine and costs suspended	30
Placed on probation	16
Total	883

STATEMENT OF ARRESTS AND SEIZURES BY WARDENS.

Arrests	Seizures	Warden	Address
8	1	Berg, M. E.	Rhinelander, Wis.
12	2	Berschens, M. L.	Madison
5	8	Barnhardt, Wm.	Sturgeon Bay
26	13	Boomer, I. H.	Oshkosh
1	.....	Bernett, George	Tomah
8	.....	Bosworth, E. F.	Merrill
10	1	Buell, V. C.	Appleton
11	5	Brunet, A. R.	Fond du Lac
5	3	Childs, A. S.	Ashland
16	18	Cranston, D. M.	Green Bay
6	1	Cole, W. A.	Vesper.
5	3	Curtis, P. S.	Viroqua.
12	5	Devine, Thos.	Spooner.
10	3	Diedrich, Peter	Milwaukee, 491 Superior.
32	17	Fisher, F. W.	Gillett.
11	4	Fosnot, John B.	Tomahawk.
16	2	Foster, John W.	Wausau.
10	4	Gautsch, E. W.	La Crosse.
23	8	Grey, W. T.	Rice Lake.
18	8	Gruebner, H. C.	Sheboygan.
14	8	Hall, A.	Darlington.
20	3	Hall, George F.	Rubicon.
4	4	Holmes, A. A.	Trempealeau.
6	8	Hope, Andrew	Hammond.
8	4	Hull, G. F.	Wittenberg.
7	2	Jakoubek, K. C.	Phillips.
7	2	Keeler, J. G.	Bagley.
18	2	Kelsey, J. V.	Stevens Point.
12	2	Keys, W. A.	Princeton.
15	9	Kleist, Mike	Oshkosh and Green Bay.
15	10	Lanning, B. P.	Black River Falls.
30	4	Lee, Albert	Luck.
10	2	Long, John	Mellen.
1	2	Little, C. S.	Stanley.
22	4	Mason, W. P.	Janesville.
12	7	McNaughton, Jas.	Superior.
15	5	Miller, G. A.	Boscobel.
12	5	Nolan, R. B.	Sextonville.
21	6	Oberholtzer, H. J.	Eagle River.
7	6	Powell, A. W.	Bayfield.
9	5	Pooler, W. D.	Superior.
15	1	Pugh, John	Racine.
9	2	Randall, F. D.	Waupaca.
10	76	Raeth, Val.	Milwaukee, 1178 Humboldt.
5	7	Richtman, S. P.	Fountain City.
6	1	Russell, A. G.	Wabeno.
7	8	Russell, Frank	Park Falls.
24	5	Sampson, Andrew	Stoughton.
62	20	Smith, Denton	Marinette.
14	3	Soule, L. M.	Ladysmith.
11	13	Stahl, Geo.	Green Bay, Box 208.
3	2	Swant, M. F.	Menomonie.
17	3	Thorn, M. C.	Wausau.
14	8	Tiedeman, H. C.	Thorp.
28	7	Tuttle, E. W.	Oconomowoc.
9	4	Wismer, W. W.	Drummond.
11	1	Worden, John D.	Plainfield.
22	2	Fess, Edw.	Madison, 4 months.
5	7	Cadrant, J. J.	Green Bay, 3 months.
3	.....	Gwidt, Steve	Marinette, 3 months.
4	2	Jeske, Louis	Madison, 2 months.

DISTRIBUTION OF FISH.

SUMMARY OF OUTPUT OF HATCHERIES, 1915.

Madison Hatchery:

Brook trout, advanced fry	1,207,800
Rainbow trout, advanced fry	2,046,800
Rainbow trout, yearling	3,800
Brook trout, adult	1,800
Rainbow trout, adult	2,150
Furnished trout for State Fair Exhibit	300
	3,262,650

Bayfield Hatchery:

Brook trout, advanced fry	3,107,800
Rainbow trout, advanced fry	830,000
Brook trout, fingerling	63,200
Rainbow trout, fingerling	146,700
Lake trout fry	13,977,500
Bluefin fry	17,280,000
Brook trout eggs	50,000
Brook trout, fingerling sent to Madison and Wild Rose Hatcheries	15,500
Brook trout, adult	2,805
Rainbow trout, adult	547
Furnished trout for fairs and aquariums	250
	35,474,302

Oshkosh Hatchery:

Wall-eyed pike fry	18,000,000
Wall-eyed pike eggs at the point of hatching	12,600,000
	30,600,000

Minocqua Hatchery:

Wall-eyed pike fry	41,078,000
Black bass fry	50,000
Pickerel fry	300,000
Muskellunge fry	600,000
Bullheads, adult	145
	42,028,145

Delafield Hatchery:

Wall-eyed pike fry	36,200,000
Black bass, fingerling	168,000
	36,378,000

Wild Rose Hatchery:

Brook trout, advanced fry	1,675,000
Rainbow trout, advanced fry	1,909,200
Rainbow trout, yearling	8,200
	3,592,400

Sturgeon Bay Hatchery:

Lake trout fry	17,346,000
Whitefish fry	4,400,000
	21,746,000

Sheboygan Hatchery:

Lake trout fry	14,511,220
Bluefin fry	9,900,000
Lake trout, eyed eggs	100,000
	24,511,220

Spooner Hatchery:

Wall-eyed pike fry	18,904,000

Eagle River Hatchery:

Wall-eyed pike fry	28,350,000

Mississippi River:

Croppies and Sunfish, fingerling	20,600
Pike and Bass, fingerling	12,875
Pickerel, fingerling	10,300
Rough fish, fingerling	7,725
	51,300

Neenah:

Perch, fingerling	81,360
Lake trout eggs impregnated	1,176,500
State Fair Exhibit	330
Total	246,156,407

DISTRIBUTION OF FISH.

RECAPITULATION OF FISH DISTRIBUTED, 1915.

Brook trout, advanced fry	5,990,600
Brook Trout, fingerling	63,200
Rainbow trout, advanced fry	4,786,000
Rainbow trout, fingerling	146,700
Wall-eyed pike fry	142,532,000
Black bass fry	50,000
Black bass, fingerling	178,000
Muskellunge fry	600,000
Pickerel fry	300,000
Lake trout fry	45,834,720
Lake trout, impregnated eggs	1,176,500
Whitefish fry	4,400,000
Bluefin fry	27,180,000
Perch, fingerling	81,360
Miscellaneous	12,785,827
Mississippi river, miscellaneous	51,500
	246,156,407

SUMMARY OF OUTPUT OF HATCHERIES, 1916.

Madison Hatchery:

Brook trout, advanced fry	1,172,000
Rainbow trout, advanced fry	1,563,600
Brook trout, adult	2,000
Furnished fairs and aquariums	40
	2,737,640

Bayfield Hatchery:

Brook trout, advanced fry	2,986,200
Rainbow trout, advanced fry	628,800
Lake trout fry	10,686,000
Rainbow trout, adult	1,034
Furnished fairs and aquariums	320
	14,302,354

Oshkosh Hatchery:

Wall-eyed pike fry	1,350,000

Minocqua Hatchery:

Wall-eyed pike fry	26,404,000
Black bass fry	416,000
Pickerel fry	900,000
Muskellunge fry	800,000
	28,520,000

Delafield Hatchery:

Wall-eyed pike fry	28,550,000
Black bass, fingerling	448,000
Black bass, yearling	8,247
Roach, fingerling	5,100
Black bass, yearling to State Fair	312
	29,011,659

Wild Rose Hatchery:

*Brook trout, advanced fry	100,000
Rainbow trout, advanced fry	1,861,800
Furnished fairs and aquariums	12
	1,961,812

Sturgeon Bay Hatchery:

Lake trout fry	12,180,000

Sheboygan Hatchery:

Lake trout fry	16,042,080
Whitefish fry	4,074,070
Chub fry	18,480,000
Bluefin fry	5,092,000
	43,688,150

Spooner Hatchery:

Wall-eyed pike fry	17,438,400

Eagle River Hatchery:

Wall-eyed pike fry	28,800,000

Tenney Park Hatchery:

Wall-eyed pike fry	26,240,000
Neenah: Whitebass and Perch, fingerling	73,990
Weyauwega: Pickerel, fingerling	3,000
Hayward: Croppies, fingerling	1,150
State Fair Exhibit	330
Total	206,308,485

RECAPITULATION OF FISH DISTRIBUTED, 1916.

Brook trout, advanced fry	4,258,200
Rainbow trout, advanced fry	4,054,200
Wall-eyed pike fry	128,782,400
Black Bass fry	416,000
Black bass, fingerling	448,000
Black bass, yearling	8,247
Muskellunge fry	800,000
Pickerel fry	900,000
Lake Trout fry	38,908,080
Whitefish fry	4,074,070
Chub fry	18,480,000
Bluefin fry	5,092,000
Whitebass and Perch, fingerling	73,990
Pickerel, fingerling	3,000
Croppies, fingerling	1,150
Roach, fingerling	5,100
Miscellaneous	4,048
	206,308,485

*2,000,000 eyed brook trout eggs sent to Bayfield.

DISTRIBUTION BY COUNTIES

1915.

County.	Brook Trout Advanced Fry	Rainbow Trout Advanced Fry	Brook Trout Fingerling	Rainbow Trout Fingerling	Wall-eyed Pike Fry	Black Bass Fry	Black Bass Fingerling	Perch Fingerling.
Adams	10,800	23,800						
Ashland	118,800	209,000		12,400	1,936,000			
Barron	93,600	88,400	2,100	5,600	1,902,000			
Bayfield	577,000	388,000	5,570	22,800	4,428,000			
Brown	73,800	87,200						
Buffalo								
Burnett	3,600	4,800			2,000,000			
Calumet		8,400			950,000			
Chippewa	91,800	84,200	600		492,000			
Clark	10,800	41,400	2,100					
Columbia	93,600	72,800			3,266,000			4,800
Crawford	48,600	11,200						
Dane	135,000	112,000			6,436,000		5,000	960
Dodge	7,200	4,200			1,400,000			4,520
Door	23,400	21,600			408,000			
Douglas	147,600	92,800	2,700	19,800	1,240,000	6,000		
Dunn	140,400	61,600		1,600	740,000			
Eau Claire	82,800	49,000						960
Florence	57,600	51,800			570,000			
Fond du Lac	37,800	10,800			646,000		5,000	3,160
Forest	171,000	76,000		4,800	1,796,000	6,000		840
Grant	70,200	39,200		1,200				
Green	64,800	36,400			204,000			350
Green Lake	25,200	4,200			450,000			
Iowa	77,400	30,800				6,000		
Iron	120,600	35,200			1,368,000			
Jackson		132,000	17,100	11,000	476,000			1,920
Jefferson	19,800	9,800	450		2,834,000		6,000	5,160
Juneau	73,800	33,600			1,250,000			
Kenosha					1,690,000		11,000	2,160
Kewaunee	39,600	59,400						
La Crosse	39,600		4,200		1,200,000			
La Fayette	18,800	4,200					6,000	490
Langlade	28,800	30,000		4,800	1,786,000	2,000		
Lincoln	115,200	25,200			2,812,000			
Manitowoc	54,000	104,400			1,064,000			420
Marathon	145,800	145,800	2,400		1,216,000			
Marinette	286,200	260,400		4,800	3,524,000			
Marquette	39,600	33,600			1,200,000			
Milwaukee					120,000			
Monroe	124,200	127,400	4,200		800,000			
Oconto	75,600	74,200			646,000			960
Oneida	55,800	18,200			18,048,000	10,000		960
Outagamie	5,400							
Ozaukee		8,400			320,000		5,000	1,680
Pepin								
Pierce	111,600	75,600		8,400				
Polk	36,000	56,600			1,066,000			
Portage	131,600	156,600			984,000			1,800
Price	57,600	66,600			2,040,000			
Racine	10,800				1,242,000		8,000	1,920
Richland	70,200	85,400		8,200	200,000			
Rock	27,000				1,506,000			3,000
Rusk	115,200	81,000		4,800	1,164,000			
St. Croix	118,800	91,200		10,400	396,000			

DISTRIBUTION BY COUNTIES

1915.

County	Brook Trout Advanced Fry	Rainbow Trout Advanced Fry	Brook Trout Fingerling	Rainbow Trout Fingerling	Wall-eyed Pike Fry	Black Bass Fry	Black Bass Fingerling	Perch Finger-ling.
Sauk	77,400	29,400			3,000,000			
Sawyer	55,800	22,400		3,600	1,756,000			
Shawano	252,800	159,200			2,728,000	2,000		960
Sheboygan		51,400	2,700		1,440,000		15,000	1,380
Taylor	10,800	27,200			1,258,000			
Trempealeau	91,800	170,800	12,000	16,800	340,000			2,760
Vernon	91,800	36,400	3,300	5,600				
Vilas	54,000	101,800			28,858,000	12,000		
Walworth	37,800	5,600			3,348,000		9,000	2,760
Washburn	61,200	51,200			6,672,000	12,000		
Washington	12,600				1,582,000		5,000	4,680
Waukesha	95,400	39,200			6,672,000		91,000	3,840
Waupaca	133,200	77,400			934,000			960
Waushara	854,000	670.400	3,600		1,310,000		5,000	
Winnebago					3,078,000			27,000
Wood	77,400	68,400			1,632,000			960
Total	5,990,600	4,786,000	63,200	146,700	142,532,000	50,000	178,000	81,360

DISTRIBUTION BY COUNTIES

1916.

County	Brook Trout Advanced Fry	Rainbow Trout Advanced Fry	Wall-eyed Pike Fry	Black Bass Fry	Black Bass Fingerling	White Bass & Perch Fingerling
Adams	54,000	24,000				
Ashland	144,000	166,800	1,722,000			
Barron	120,600	73,600	1,688,400			
Bayfield	329,400	209,600	3,791,600			
Brown	45,000	7,200				
Buffalo	36,000	9,600				
Burnette	14,000	16,000	453,600			
Calumet	26,000					
Chippewa	25,200	64,000	592,200			
Clark	36,000	27,000				
Columbia	80,000	57,600	1,212,000			1,200
Crawford	25,200	41,600				
Dane	113,200	163,600	15,840,000		35,000	
Dodge	18,600	6,400	300,000		20,000	3,600
Door	18,000	5,400				
Douglas	167,400	46,400	2,468,400	24,000		
Dunn	111,600	49,200	1,042,600			
Eau Claire	122,400	24,000	327,600			1,200
Florence	36,000	54,000	780,000			
Fond du Lac	37,800	21,600	400,000			3,900
Forest	84,600	81,600	2,294,000			
Grant	68,000	68,800				
Green	46,000	28,800				
Green Lake	5,400	5,400	200,000			12,000
Iowa	48,000	12,800				
Iron	91,800	16,000	2,162,000	28,000		
Jackson	10,800	104,000	138,000			
Jefferson	19,200	16,000	3,842,000		30,000	2,400
Juneau	6,000	25,600	1,384,000			
Kenosha		7,200	900,000			1,920
Kewaunee	102,000	79,200	506,000			
La Crosse		28,800	1,200,000			
La Fayette	14,000		250,000		Y. 300	
Langlade	46,800	5,400	1,886,000	24,000		1,040
Lincoln	64,000	50,400	1,196,000	36,000	Y. 1,200	1,200
Manitowoc	37,200	32,400	598,000			1,440
Marathon	64,200	113,400	1,334,000	12,000		1,200
Marinette	194,800	238,400	1,500,000			
Marquette	120,000					
Milwaukee						
Monroe	30,000	73,600	500,000			
Oconto	66,000	91,800	368,000			
Oneida	94,800	16,000	13,224,000	136,000		1,200
Outagamie						
Ozaukee	6,000	16,000				
Pepin						
Pierce	102,600	38,400				
Polk	61,200	4,800	575,200			
Portage	46,400	100,800	1,100,000			4,480
Price	101,600	124,000	2,100,000			
Racine	12,000		642,000		4,000	2,160
Richland	32,000	51,200				
Rock	36,800	38,400	1,600,000		24,000	2,640
Rusk	61,200	124,800	598,000			
St. Croix	126,000	51,000	403,200			
Sauk	44,000	32,000	2,304,000			1,200
Sawyer	82,800	85,000	1,658,400			1,440
Shawano	243,000	174,400	1,196,000			3,180
Sheboygan	8,000	7,200	700,000			1,440
Taylor	30,600	17,200	1,500,000			

DISTRIBUTION BY COUNTIES

1916.

County	Brook Trout Advanced Fry	Rainbow Trout Advanced Fry	Wall-eyed Pike Fry	Black Bass Fry	Black Bass Fingerling	White Bass & Perch Fingerling
Trempealeau	36,000	88,000	552,000			
Vernon	18,000	48,000				
Vilas	43,200	90,000	17,413,000	132,000		
Walworth	32,000		3,062,000		4,000	5,340
Washburn	73,800	20,800	7,055,200	24,000	Y. 500	1,200
Washington	6,000	15,600	3,696,000		Y. 400 16,000	3,240
Waukesha	56,000	26,400	7,192,000		Y. 4,847 303,000	4,440
Waupaca	82,000	108,000	1,418,000			1,730
Waushara	143,000	523,800			Y. 1,000	
Winnebago			8,951,000			19,000
Wood	12,000	104,400	966,000			
Total	4,258,200	4,054,200	128,782,400	416,000	448,000 Y. 8,247	73,990

Y. Yearling.

COMPLETE STATEMENT OF FISH SPAWNED, EGGS TAKEN, FISH HATCHED AND DISTRIBUTED.

Hatchery	Kind of fish	Mature	Fish on hand			Fish Spawned		Eggs Taken		Eggs Hatched		Fry shipped		No. of Cans	No. of fish per can	No. of eggs taken	Received from other sources	No. of fry hatched	No. of fry lost	No. of fry retained	No. of fry distributed	Total fish distributed from hatchery
			Two Year	One Year	Fry	Female	Male	First	Last	First	Last	First	Last									
Madison	Brook trout	7,500	4,300	4,000	13,000	2,558	3,000	10-28	12-2			2-28	3-10	586	2,000	2,500,000		1,325,000	3,000	150,000	1,172,000	
	Rainbow trout	15,000	5,000	6,000	8,000	2,200	2,000	2-25	4-1			4-27	5-30	946	1,600	3,800,000		1,635,000	21,400	50,000	1,563,600	
	Miscellaneous																				2,040	
																						2,737,640
Bayfield	Brook trout	12,000	7,000	10,000	200,000	5,824	3,194	10-13	11-26			4-23	6-3	1,659	1,800	3,740,225	2,000,000	4,305,169	18,969	200,000	2,986,200	
	Rainbow trout	7,822		1,750	150,000	1,196	1,197	5-3	5-25			6-23	7-1	393	1,600	1,093,650		820,000	41,438	150,000	628,800	
	Brown trout	308	1,697		6,000	201	65	10-13	11-10			4-15	6-3			430,850	Included in	brook trout				
	Lake trout							10-8		1-24		5- 4				14,595,500		10,686,000			10,686,000	
	Miscellaneous																				1,354	
																						14,302,354
Oshkosh	Wall-eyed pike																	1,350,000			1,350,000	1,350,000
Minocqua	Wall-eyed pike							4-28		5-22		5-22	6- 1	1,148	23,000	30,450,000		27,000,000	596,000		26,404,000	
	Black bass	486										6-28	7- 5	208	2,000						416,000	
	Pickerel fry							4-21	5- 7	5-16	5-16	5-16	5-16	50	18,000	1,200,000		900,000			900,000	
	Muskellunge							5- 2		5-22		5-25	5-30	96	8,200	1,000,000		800,000			800,000	
																						28,520,000
Delafield	Wall-eyed pike							5- 6	5-11	5-16	5-20	5-17	5-20	571	50,000	43,000,000		28,550,000			28,550,000	
	Black Bass Fingerling											7-77	7-14	448	1,000						448,000	
	Black Bass Yearling											9-25	9-30								8,247	
	Roach											9-25	9-30								5,100	
	Miscellaneous																				312	
																						29,011,659
Wild Rose	Brook trout	5,900	3,169	4,725	10,000	4,577	3,992	10-25	1- 3							2,716,000		416,000	16,500	300,000	100,000	
	Rainbow trout	12,500	9,000	12,000	50,000	2,998	2,300	1-26	4-10			4-20	5-10	901	1,800	2,881,000		2,448,050	87,050	500,000	1,861,800	
	Brown trout	700	575	630	1,000	12	9									25,000		15,000		15,000		
	Miscellaneous																				12	
																						1,961,812
Sheboygan	Lake trout							10-22	11-17	3- 4	4-17	3-28	5-23			19,344,000		16,042,080			16,042,080	
	Whitefish							1-31	1-31	4- 7	4-28	4- 8	4-28			5,000,000		4,074,070			4,074,070	
	Bluefin							11-26	1-31	4- 6	4-20	4- 6	4-20			25,460,000		5,092,000			5,092,000	
	Chubs							11-10	11-23	3-18	4- 5	3-31	4- 5			24,420,000		18,480,000			18,480,000	
																						43,688,150
Sturgeon Bay	Lake trout							10-22	11-16	2- 8	4-15	4-10	4-29			16,200,000		12,180,000			12,180,000	12,180,000
Spooner	Wall-eyed pike							5- 5	5-10	5-18	5-25	5-22	5-31	1,384	12,600	26,100,000		17,550,000	112,000		17,438,400	17,438,400
Eagle River	Wall-eyed pike							5- 2	5- 8	5-20		5-24	6- 1	673	43,000	32,400,000		28,800,000			28,800,000	28,800,000
Tenney Park	Wall-eyed pike							5- 7	5-12	5-16	5-24	5-17	5-26	820	32,000	43,200,000		26,550,000	310,000		26,240,000	26,240,000
Neenah	White Bass and Perch fingerling																					73,990
Weyauwega	Pickerel fingerling																					3,000
Hayward	Croppies fingerling																					1,150
State Fair Exhibit																						330
																						206,308,485

STATISTICS ON COMMERCIAL FISHING INDUSTRY
LAKE MICHIGAN AND GREEN BAY.
YEAR—1915.

Port	Pounds	Value
Kenosha	272,516	$16,083.12
Racine	328,345	31,792.57
Milwaukee	1,915,011	102,094.80
Port Washington	505,371	35,527.20
Cedar Grove	160,145	6,623.90
Oostburg (including Thiensville)	91,970	3,466.69
Sheboygan	834,602	54,524.88
Manitowoc	104,954	3,046.29
Two Rivers	767,879	44,373.40
Algoma	333,129	21,239.48
Kewaunee	188,405	7,602.74
Luxemburg	63,661	2,469.64
Sturgeon Bay & Sawyer	708,976	26,038.00
Ports above Sturgeon Bay	2,725,478	91,934.50
Brussels	765,815	30,171.74
Suamico & Little Suamico	1,117,768	28,749.68
Green Bay (City)	3,186,556	73,508.06
De Pere	263,606	6,909.69
Marinette and Peshtigo	1,613,562	37,671.89
Oconto	1,496,964	32,625.63
Pensaukee	1,145,268	23,415.52
	18,590,071	$679,869.42
VARIETY		
Whitefish	120,916	10,561.98
Lake Trout	3,850,765	277,681.29
Bluefin	730,372	15,043.72
Chubs	2,542,481	112,333.91
Herring	5,530,305	96,943.66
Pike	179,395	14,592.39
Bass	14,854	593.49
Perch	2,349,168	69,578.00
Rough Fish	3,271,815	73,329.12
Crawfish (2,635,485)		9,211.86
	18,590,071	$679,869.42

Number of reports	639
Number of men employed	1,249
Number of row boats, 292; value	$5,690.00
Number of power boats, 320; value	154,878.00
Feet of gill net, 12,533,665; value	228,449.50
Fyke nets, 1,469; value	33,420.00
Pound nets, 330; value	63,743.00
Trammel nets, 27; value	820.00
Set hooks (feet), 2, 328,660; value	7,145.75
Feet of seine, 36,640; value	3,553.00
Number of crab nets, 975; value	185.00
Number of tugs, 58; value	180,400.00
Sail boats, 3; value	97.00
Total	$678,381.25

STATISTICS ON COMMERCIAL FISHING INDUSTRY

LAKE SUPERIOR.

YEAR—1915.

	Pounds	Value
Whitefish	43,187	$3,516.36
Lake Trout	511,443	28,274.11
Bluefin	3,783	184.10
Herring	1,904,202	16,344.15
Pike	49,315	5,428.13
Perch	89	6.14
Rough Fish	166,018	3,478.37
Sturgeon	2,673	302.07
	2,680,710	$57,533.43

Number of men employed, 163.	
Number of row boats, 48; value	$1,072.00
Number of power boats, 48; value	24,115.00
Feet of gill nets, 1,163,100; value;	24,371.00
Number of fyke nets, 2; value	150.00
Number of pound nets, 49; value	5,425.00
Feet of set hooks, 72,200; value	400.00
Number of tugs, 2; value	5,000.00
Number of sail boats, 2; value	1,875.00
Total	$62,408.00

STATISTICS ON COMMERCIAL FISHING INDUSTRY

MISSISSIPPI RIVER.

YEAR—1915.

Specie	No. Pounds	Value
Buffalo	388,214	$20,216.83
Carp	560,864	21,361.90
Bullheads and Catfish	60,090	6,256.26
Sturgeon or spoonbill	6,066	655.66
Sheephead	164,895	3,885.80
Red Horse	4,957	172.29
Gar and Dogfish	70,834	632.78
Eel Pout		
Suckers	24,909	677.74
Total	1,280,829	$53,859.26

*Out of 177 licenses issued, about 30 failed to render reports.

RECAPITULATION ON COMMERCIAL FISHING INDUSTRY.

YEAR—1915.

	Pounds	Value	Investment
Lake Michigan and Green Bay	18,590,071	$679,869.42	$678,381.25
Lake Superior	2,680,710	57,533.43	62,408.00
Mississippi river	1,280,829	53,859.26	55,260.00
Rough fishing inland waters	1,381,168	55,246.72	25,000.00
Total	23,932,778	$846,508.83	$821,049.29

MUSKRAT FUR INDUSTRY.

Number of fur farm licenses issued	118
Licenses issued in Winnebago county	84
Licenses issued in balance of state	34
Greatest number of furs sold under one license	*12,125
Total number of furs reported sold (amount received $27,304.25)	63,459

*Reported by C. H. Sherburne, Fremont, Wisconsin

SUMMARY OF FISH PLANTED BY WISCONSIN SINCE 1877.

Year.	Brook trout.	Rainbow trout.	Salmon.	Carp.	White-fish.	Lake trout.	Wall-eyed pike.	Black bass.	White bass.	Muskel-lunge.	Pickerel.	Yellow perch.	Miscel-laneous.	Total.
1877–1880	1,202,259	.....	233,510	.....	25,945,000	35,257,000	.....	.....	.....	.....	.....	.....	.....	36,335,969
1881	1,988,900	.....	.....	°163	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,088,163
1882	828,590	.....	.....	.....	6,000,000	.....	.....	.....	.....	.....	.....	.....	.....	6,828,500
1883	1,339,000	.....	.....	.....	16,000,000	.....	8,000,000	.....	.....	.....	.....	.....	.....	25,330,000
1884	2,605,000	95,000	.....	°253	17,000,000	.....	9,700,000	.....	.....	.....	.....	.....	.....	38,800,000
1885	1,510,000	600,000	.....	°6,765	.....	.....	14,500,000	.....	.....	.....	.....	.....	.....	16,616,765
1886	2,275,000	630,000	.....	°556	33,210,000	.....	3,450,000	.....	.....	.....	.....	.....	.....	39,571,556
1887	2,900,000	1,345,000	.....	°17,165	31,500,000	500,000	8,800,000	.....	.....	.....	.....	.....	.....	45,093,165
1888	2,285,000	1,590,000	.....	°25,512	18,000,000	700,000	4,450,000	.....	.....	.....	.....	.....	.....	27,050,512
1889	2,190,000	2,615,000	.....	5,230	30,000,000	5,850,000	14,050,000	.....	.....	.....	.....	.....	.....	54,710,230
1890	3,320,000	3,460,000	.....	°35,591	27,472,500	*27,472,500	14,680,000	.....	.....	.....	.....	.....	.....	76,568,091
1891	2,620,000	2,415,000	.....	°9,855	35,000,000	*1,536,000	6,000,000	.....	5,200,000	.....	.....	.....	.....	52,780,855
1892	3,245,000	3,340,000	.....	°8,700	14,000,000	*10,704,000	13,595,000	.....	.....	.....	.....	.....	.....	44,872,700
1893	1,635,000	1,675,000	.....	°5,050	35,000,000	*14,249,000	5,500,000	°29,000	.....	.....	.....	.....	.....	58,096,050
1894	3,785,000	2,605,000	.....	°8,125	33,000,000	*10,777,000	9,600,000	°73,000	§4,960	.....	.....	.....	.....	59,853,085
1895	2,556,000	1,470,000	.....	°8,525	15,000,000	*22,100,000	23,100,000	°116,000	§2,345	.....	.....	.....	.....	64,275,770
1896	3,110,000	1,611,000	.....	.....	27,500,000	†22,710,000	25,250,000	°156,634	§13,500	.....	.....	.....	.....	69,120,089
1897	1,949,000	1,241,000	.....	.....	18,000,000	‡10,010,000	23,300,000	°4,400	§9,115	1,100,000	.....	.....	.....	55,613,615
1898	1,852,500	1,180,000	.....	.....	3,000,000	7,362,900	53,980,000	°112,200	§23,420	.....	.....	.....	.....	67,760,120
1899	2,208,000	1,005,500	.....	.....	.....	16,848,000	60,190,000	°68,665	§15,100	.....	.....	.....	.....	80,455,755
1900	2,393,000	1,653,000	.....	.....	.....	30,797,500	69,850,000	.....	.....	100,000	7,090,000	.....	.....	111,793,500
1901	1,866,500	1,068,500	.....	.....	34,450,000	19,980,000	78,200,000	°44,270	.....	472,500	*5,840,000	.....	.....	132,921,770
1902	2,569,000	1,299,000	.....	.....	66,820,000	17,877,000	37,325,000	°10,200	.....	80,000	.....	.....	.....	126,150,200
1903	1,512,500	1,050,000	.....	.....	37,500,000	16,168,000	49,170,000	°318,000	.....	100,000	*2,080,000	.....	200,125	105,089,625
1904	2,090,000	2,283,750	.....	.....	20,375,000	20,463,000	37,825,000	‡549,900	.....	50,000	.....	.....	100,200	83,737,850
1905	2,937,000	1,362,000	.....	.....	■15,278,000	18,803,000	76,800,000	‡341,300	°1,463,000	50,000	.....	°723,880	252,700	118,010,980
1906	2,442,500	1,673,000	.....	.....	53,780,000	16,197,500	79,140,000	‡940,550	°3,500	800,000	*5,180,000	°18,000	23,575	160,409,125
1907	**1,980,000	1,558,500	.....	.....	27,025,000	19,724,000	44,900,000	‡409,500	°1,250	420,900	†2,870,000	.....	146,026	99,034,276
1908	**2,272,000	2,098,500	.....	.....	12,210,000	12,345,000	112,075,000	‡779,800	.....	†452,000	5,859,000	.....	1,255,769	149,338,009
1909	**2,460,000	**2,358,800	Bluefin	.....	17,720,000	22,282,000	85,010,000	‡1166,400	°1,000	†920,000	1,920,000	.....	8,227,190	142,065,390
1910	**3,323,800	**2,616,500	.....	.....	1,600,000	25,650,600	70,990,000	‡851,700	.....	76,000	600,000	.....	1,156,098	106,864,698
1911	**4,898,000	**3,088,000	4,375,000	.....	3,750,000	32,034,080	121,750,000	1,400,200	.....	200,000	580,000	.....	514,255	172,590,535
1912	**7,250,400	**2,719,200	3,150,000	.....	10,080,000	22,174,167	153,240,000	236,762	.....	125,000	2,405,250	.....	867,523	180,074,135
1913	**6,543,000	**4,090,000	28,000,000	Bullhead	5,000,000	21,925,300	115,690,000	1,212,000	°58,500	100,000	2,300,000	.....	1,179,390	234,164,115
		[1] 15,625	[1] 15,625	°23,000		*4,680,000	*42,790,000	°544,925			°12,375			
	**6,830,600	**5,206,500	14,760,000	.....	5,720,000	38,762,000	149,797,000	762,000	°49,000	225,000	750,000	°129,100	2,962,176	247,079,876
1914	.....	°70,250	*12,000,000	.....	.....	*8,000,000	.....	**647,000	‡41,250	.....	.....	.....	.....	.....
				.....	.....	‡360,000	.....	°8,000	.....	.....	.....	.....	.....	.....
1915	**5,990,600	**4,786,000	27,180,000	.....	4,400,000	45,834,720	142,532,000	50,000	.....	600,000	300,000	°81,360	12837,337	246,156,407
	°63,200	°146,700	.....	Chub	.....	*1,176,500	.....	°178,000	.....	.....	.....	.....	.....	.....
				.....				416,000	°36,995	800,000	900,000	°36,995	4,048	206,308,485
1916	**4,258,200	**4,054,200	5,092,000	18,480,000	4,074,070	38,908,080	128,782,400	°448,000	[4] 1,150	.....	°3,000	.....	.....	.....
								[3] 8,247	[5] 5,100	.....	.....	.....	.....	.....

* Impregnated eggs. † Eggs and fry. ‡ Fry and fingerlings. § Adult fish. ° Fingerlings. ** Advanced fry.
[1] Yearling. [2] White bass and perch fingerling. [3] Green Bay trout. [4] Croppies. [5] Roach.
Note—Fish planted in fry stage unless otherwise indicated.