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Twentieth biennial report of the State Conservation Commission of Wisconsin for the fiscal years ending June 30, 1945 and June 30, 1946. 1947

Wisconsin. State Conservation Committee (1928-1956)
Madison, Wisconsin: [s.n.], 1947

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TWENTIETH BIENNIAL REPORT
CONSERVATION COMMISSION
STATE OF WISCONSIN

1944



1946



LETTER OF TRANSMITTAL

HONORABLE OSCAR RENNEBOHM
Acting Governor of Wisconsin
Madison, Wisconsin

Sir: In compliance with the provisions of section 14.61 of the state statutes, we have the honor to submit, for your consideration, the report of the State Conservation Commission of Wisconsin, concerning its work for the biennial period ending June 30, 1946, as well as certain recommendations, which we trust will meet with your approval.

Respectfully submitted,

STATE CONSERVATION
COMMISSION

VIRGIL L. DICKINSON, *Chairman*

GUIDO R. RAHR, *Secretary*

W. J. P. ABERG

ALDO LEOPOLD

JOHN O. MORELAND

CHAS. F. SMITH

March 15, 1947

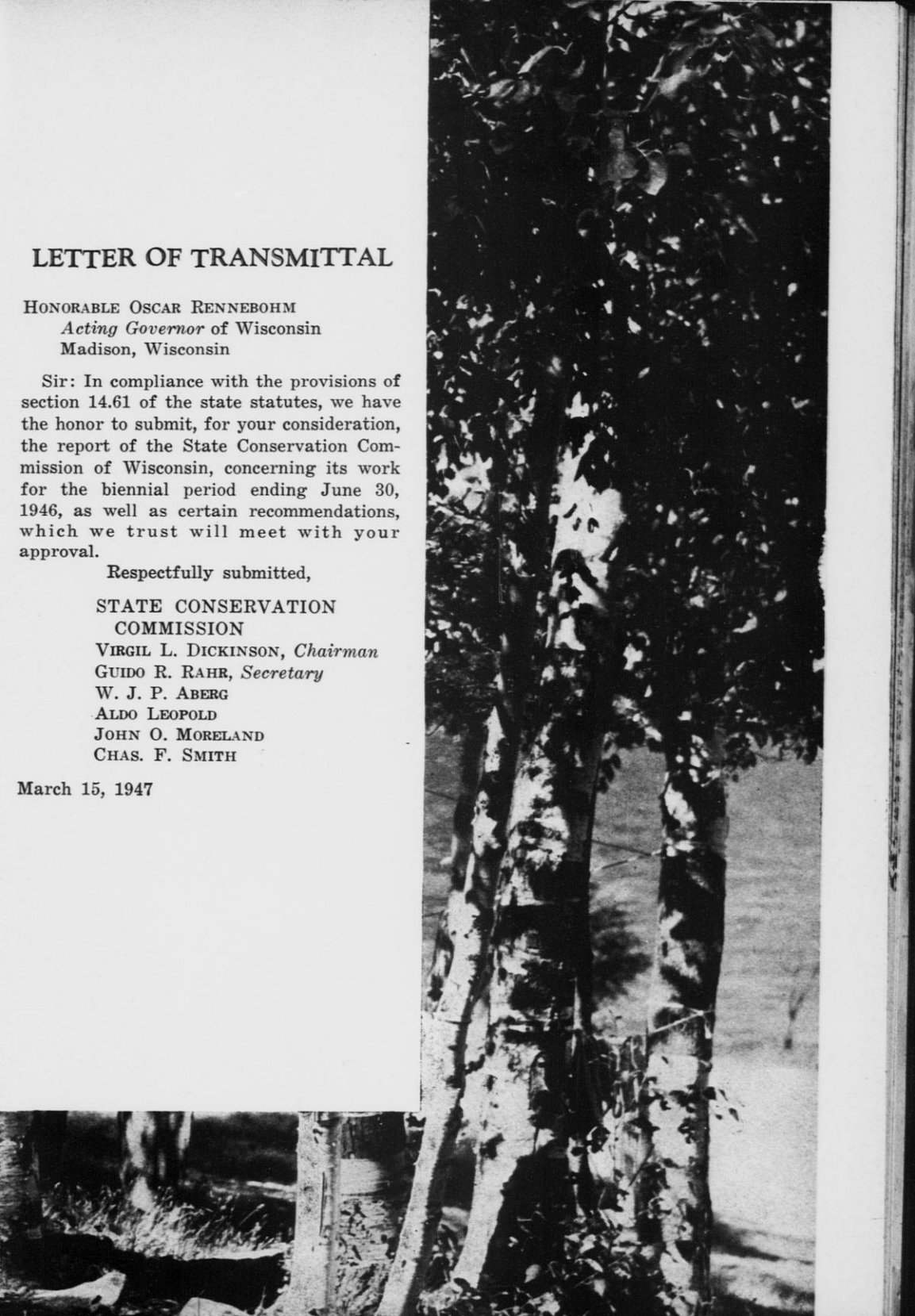


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TWENTIETH BIENNIAL REPORT
OF THE
STATE CONSERVATION
COMMISSION
OF
WISCONSIN

*For the Fiscal Years Ending June 30, 1945
and June 30, 1946*



MADISON, WISCONSIN
1947

CONSERVATION COMMISSION

VIRGIL L. DICKINSEN, Augusta, ALDO LEOPOLD, Madison
Chairman
GUIDO R. RAHR, Manitowoc, JOHN O. MORELAND, Hayward
Secretary
W. J. P. ABERG, Madison CHAS. F. SMITH, Wausau

DEPARTMENT PERSONNEL

E. J. VANDERWALL, *Director* ERNEST F. SWIFT, *Assistant Director*

A. J. Robinson, Chief Warden
Allen Hanson, Law Enforcement Area Supervisor
Harry Hosford, Law Enforcement Area Supervisor
L. D. Jones, Law Enforcement Area Supervisor
D. O. Trainer, Law Enforcement Area Supervisor
I. C. Rheaume, Law Enforcement Area Supervisor
Edw. Schneberger, Superintendent of Fish Management
G. E. Sprecher, Assistant Superintendent of Fish Management
D. John O'Donnell, Chief Biologist
Lyle E. Dye, Supervisor of Rough Fish Control
Arthur Oehmcke, Supervisor of NE Fishery Area
Chas. N. Lloyd, Supervisor of NW Fishery Area
Clifford Hills, Supervisor So. Fishery Area
Neil LeMay, Chief Forest Ranger
Wm. Meharg, Assistant Chief Forest Ranger
H. T. J. Cramer, Central Forest Area Supervisor
Myron West, NE Forest Area Supervisor
Clarence Johnson, NW Forest Area Supervisor
Virgil Moon, No. Forest Area Supervisor
C. L. Harrington, Superintendent of Forests and Parks
Wm. Brener, State Nursery Supervisor
Leif Steiro, State Forestry Supervisor
Clyde T. Smith, State Forestry Supervisor
Wm. Beckstrom, State Park Supervisor
Paul Lawrence, State Park Supervisor
R. J. Vanderwall, State Park Supervisor
F. G. Wilson, Superintendent of Cooperative Forestry
E. W. Erdlitz, Forest Crop Section
C. A. Bontly, Comptroller
H. T. Danielson, Procurement Officer
W. F. Grimmer, Superintendent of Game Management
Ralph C. Conway, Supervisor of Refuges and Public Hunting Grounds
W. E. Scott, Supervisor of Cooperative Game Management
Irven O. Buss, Chief of Wildlife Research
Wm. Ozburn, Supervisor of Propagation and Stocking
Lydia Stumpf, Chief Clerk
Caroline Dagestad, Assistant Chief Clerk
Elroy T. Baxter, Supervisor of License Section
Colonel A. H. Smith, Legal Counsel
Emil Kaminski, Assistant Counsel
J. H. H. Alexander, Superintendent of Information and Education
W. T. Calhoun, Supervisor of Education
C. L. Coon, Supervisor of Publications
E. N. Hein, Supervisor of Public Relations
Staber W. Reese, Supervisor of Visual Aids

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FINANCE

In order to carry on a large and comprehensive conservation program, the department receives funds from the following sources:

INCOME FROM SALE OF LICENSES

All monies derived from the sale of licenses such as hunting, fishing, trapping, etc., are deposited in the conservation fund and are appropriated to the Conservation Department in order to carry out the provisions of Section 23.09 which provides for an adequate and flexible system for the protection, development and use of fish and game, lakes, streams, plant life, flowers and other outdoor resources of the state of Wisconsin.

MILL TAX

Two tenths of one mill of each dollar of the assessed valuation of the property of the state as determined by the Tax Commission pursuant to Section 70.57 of the statutes is appropriated to the Conservation Department for the purpose of acquiring, preserving and developing the forests of the state.

FEDERAL AID

The Conservation Department receives federal aid under the Clarke-McNary and Norris-Doxey acts, for Forest Fire Co-operation and the Co-operative Distribution of Forest Planting Stock, under the Pittman-Robertson act for game research projects.

DIRECT APPROPRIATION

An appropriation of \$45,000 was appropriated from the state general fund to the Conservation Department during the fiscal year ending June 30, 1945 to carry out a program of recreational publicity. The appropriation for the same purpose during the next fiscal year was \$60,000. \$195,000 is appropriated annually from the state general fund to carry out the provisions of Section 77.14 (Forest Crop Law). During the fiscal year ending June 30, 1945, \$30,000 was appropriated for payment of bounties, chargeable to the state under Section 29.60. During the following fiscal year the appropriation was a sum sufficient except that the conservation fund reimbursed the general fund with one half the sum paid for bounties of red and gray fox.



Clerical

The duties of the clerical division include keeping accurate records of the department, maintaining a property inventory, distributing conservation commission orders and general information, issuing licenses, clearing purchase and printing orders, taking dictation and transcribing such, and assisting the Director, Assistant Director, division chiefs and other supervisory personnel to relieve them of routine duties wherever possible.

The clerical division is coordinated with all other divisions of the department and receives its technical supervision and advice from the division chief concerned. Seven sections constitute the clerical division as follows: information, license, accounting, mail and supply, filing, statistical and secretarial.

A brief resume of the principal duties and responsibilities of each follows:

The information clerk is the receptionist of the department. It is the responsibility of this section to receive callers, refer them to the proper division or, where possible, personally supply the desired information, handle inter-office telephone calls and other telephone calls that come through the switchboard.

The license section has charge of the sale and distribution of all licenses, records of arrests of conservation law violators and seizures made by law enforcement officers, handles the sale of confiscated articles, processes claims for damage to property by game animals, industrial cases, issues permits, and maintains a perpetual nonexpendable inventory record.

The various types of licenses, tags and permits handled are as follows:

LICENSES AND TAGS

Resident hunting, resident deer tags, nonresident hunting; trapping, trap tags; beaver trapping, beaver tags; raccoon tags; resident fur dealer, itinerant fur dealer; guide; taxidermist; Christmas tree dealer; resident fishing (rod and reel); nonresident fishing, nonresident fish shipping coupons; voluntary sportsmen's (spring and fall series); sturgeon tags; resident clamming; nonresident clamming; commercial fishing; set line; slat net.

Game farm, game farm tags; deer farm, deer farm tags; fur farm, fur farm tags; shooting preserve, shooting preserve tags; private fish hatchery; confiscation tags; reservation fur tags.

PERMITS

Wolf and coyote possession; scientist; gun; bird banding; ferret; cooperative; miscellaneous (which includes items such as buying raw furs for personal use; possession of mounted specimens of birds or animals; taking predatory animals, etc.).

Opposite page: Wisconsin offers unlimited opportunities for those who match their wits and muscle with the fighting muskellunge, pike, bass, and trout. Upper view—Fly rod fishing in a Wisconsin trout stream. Lower view—Gen. Dwight Eisenhower and his brothers display their two day catch of muskies.

The following number of hunting and fishing licenses were sold in this biennium:

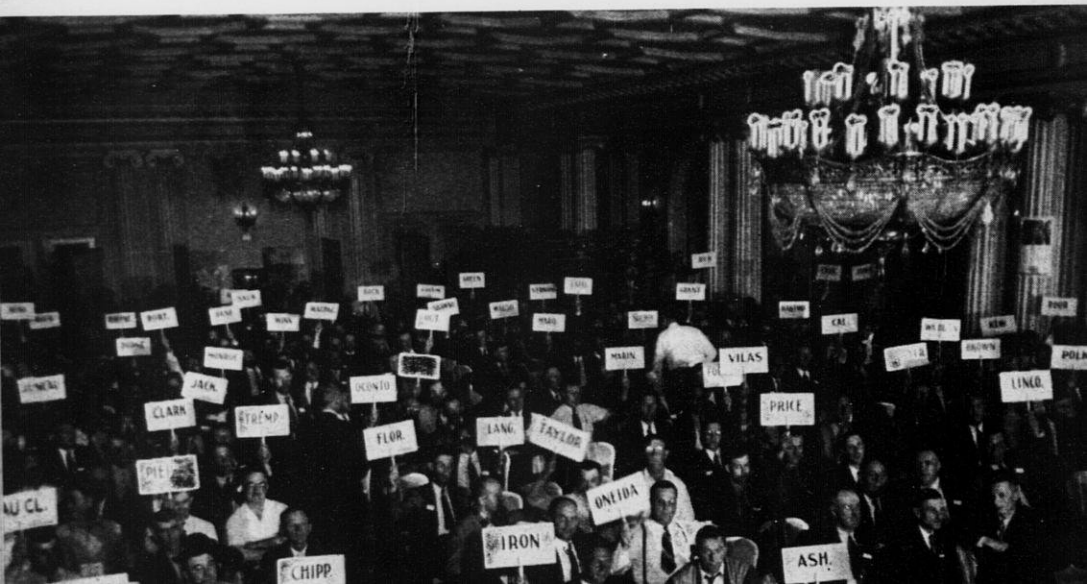
	1944-45	1945-46
Resident fishing	253,132	276,765
Nonresident fishing	121,628	148,758
Nonresident 10 day family	3,382	4,326
Resident hunting	286,570	290,785
Nonresident big game hunting	439	400
Nonresident small game hunting	429	223
Voluntary sportsmen's	10,152	13,193
Deer tags	127,204	133,148

The mail and supply section is responsible for the distribution of all mail coming to the department as well as the outgoing mail, fills orders for supplies and publications, is custodian of the department's storage spaces and vaults and keeps an inventory of all office supplies.

The statistical section is charged with the responsibility of compiling general department statistics such as fish distribution, game census, reports on trapping, hunting accidents, attendance at state parks, etc., and maintains the monthly conservation bulletin mailing lists consisting of some 33,000 names, as well as mailing lists of department personnel, daily and weekly newspapers and others.

The accounting section prepares the payrolls, audits all expense accounts and vouchers, maintains the personnel record of the department, and all related matters such as withholding receipts, benefit liability reports; annual reports of employee's earnings and withholding taxes, etc.

Conservation Congress meeting at Madison.



The filing section maintains the files of the department, including correspondence, leases, reports and other documents. Records are made of letters requiring additional attention at a later date and they are referred back by the file clerk to the persons concerned at the proper time for further action. It is also the duty of this section to properly classify and file books and pamphlets in the departmental library and check them in and out as requests are received.

In the secretarial section, the clerk-stenographers, typists and clerks are responsible for dictation and transcription, typing or clerical work assigned them by the various division chiefs and assistants.





State Forests and State Parks

The biennial report of the activities of the Division of Forests and Parks has been divided into three main parts: (1) State Forests, (2) State Forest Nurseries, and (3) State Parks.

With the closing of world hostilities and the reconversion from a war time to a peace time production in industry and other pursuits nearing completion, the people look to the state of Wisconsin and the conservation department to provide them with a larger and more expanded program of public use in the parks and forests.

The department personnel is rapidly returning from the armed services, and this fact together with release and manufacture of civilian goods and equipment has been of material aid in starting many needed improvements on the state forest, nursery and park properties.

STATE FORESTS

The eight state forests of Wisconsin now contain approximately 254,000 acres. The largest of these is the Northern Highland State Forest, located in Vilas and Iron counties, containing 124,150 acres. The lands owned by the state are well blocked, a fact which materially aids in administration.

The Brule River State Forest in the northwestern part of the state is located in Douglas county and contains 16,814 acres.

The American Legion State Forest contains 37,148 acres and is located in the northern part of Oneida county with many lakes and streams within its boundaries.

During the past ten or twelve years, the Flambeau River State Forest has grown from 2,961 acres in 1935 to 61,645 acres as of June 30, 1946. The North Branch of the Flambeau river flows through the entire length of the forest, and the beauties of the virgin forest can best be seen while on a canoe trip down the river.

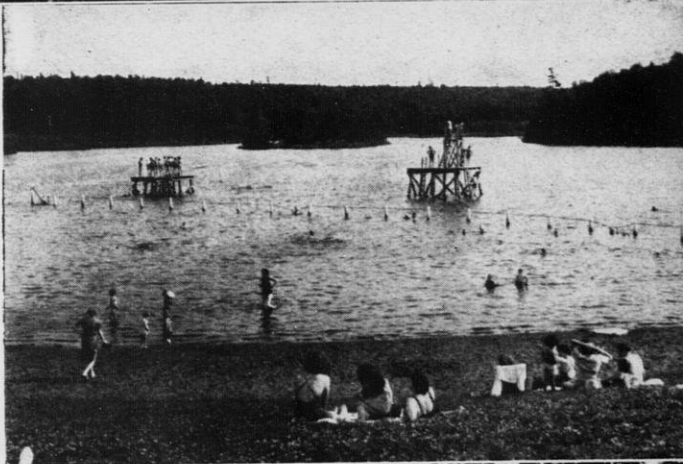
The Kettle Moraine State Forest, in southeastern Wisconsin, is located in the densely populated area of Wisconsin. Approximately 1,600,000 people, or one-half the population of the entire state, live within 30 to 50 miles of its borders. The Northern Purchase Unit is located in western Sheboygan county, southeastern Fond du Lac county and northern Washington county. The Scuppernong Unit of the forest is located approximately 15 miles west of the city of Waukesha in Waukesha county, and it extends





**Trempealeau Mountain
at Perrot State Park.**

**Interfalls Lake at Patti-
son State Park.**



**A Northern Highland
State Forest Lake.**



**Opposite page: Picnic
spot on the Chippewa
River at Ojibwa Road-
side Park.**

into the southern corner of Jefferson and the northern part of Walworth counties.

This state forest is being developed so as to provide a maximum recreational use of a forest property within easy reach of the people who live in the most densely populated portion of Wisconsin, the southeastern sixteen counties.

The Northern Purchase Unit of the Kettle Moraine State Forest now contains 7,558 acres of land and the Scuppernong Unit 3,873 acres. The ultimate area to be included within the boundaries of the two units of the Kettle Moraine State Forest will be about 49,000 acres if the acquisition program is carried through to completion during the coming years.

The Point Beach State Forest in Manitowoc county is, as its name suggests, a forest and sandy beach area located on a point which juts out into Lake Michigan. It contains 1,286 acres. One of its main attractions is its air conditioned climate, it being on a point which extends into the lake for quite a distance. The state owns approximately three miles of excellent sand beach.

Council Grounds State Forest is located in Lincoln county near Merrill and contains 278 acres. The forest fronts on the Wisconsin river and contains some excellent white pine, Norway pine, hemlock and hardwoods, similar to the original forest which used to exist in that area seventy or eighty years ago.

The Silver Cliff State Forest in Marinette county contains 3,800 acres (800 under the jurisdiction of the Conservation Commission and the remaining 3,000 under the control of the Commissioners of Public Lands). The area is forested with jack pine and some Norway pine.

STATE FOREST LAND ACQUISITION

During the past two years the state forest land purchase program has been somewhat retarded, and this is due primarily to the post-war increase in land values which have risen to a point where it has become extremely difficult to buy lands for forestry and recreational uses. This fact is particularly true in the case of the land acquisition being carried on in the Kettle Moraine and Point Beach State Forests. The acquisition of lands in the southern Wisconsin area reflects the much increased value of the agricultural lands which border both of these state forests. Many property owners are unwilling to sell their lands at this time for prices offered as based on the department's appraisal schedules, but are holding them in the hope of selling for more money at some future date.

The table which follows shows total acreage of state-owned forest land within the boundaries of the eight state forests.

STATE FOREST ACREAGE AS OF JUNE 30, 1946

Name	County	Acres
American Legion	Oneida	37,148.98
Brule River	Douglas	16,814.27
Council Grounds	Lincoln	278.17
Flambeau River	Sawyer	49,902.15
	Rusk	8,519.28
	Price	3,223.88
		61,645.31
Kettle Moraine	Fond du Lac	2,501.51
	Sheboygan	5,056.97
	Northern Unit	7,558.48
	Jefferson	52.00
	Walworth	291.00
	Waukesha	3,530.18
		11,431.66
Northern Highland	Scuppernong Unit	3,873.18
	Iron	12,437.73
	Vilas	111,721.38
		124,159.11
Point Beach	Manitowoc	1,286.25
Silver Cliff	Marinette	800.00
		253,563.75
	Total	

ACTIVITIES—PUBLIC USE

The state forest administration is largely concerned with development, maintenance and protection of public campgrounds, improvement and construction of trails and roads, the improvement of the growing timber stand, cultural practices for the betterment of the forest growth and all necessary details in regard to physical property such as buildings, equipment and similar items which are naturally concerned with the management and development of a forest and recreational property.

The recreational use of the state forests during the biennium has increased to about 1939 figures, and in the case of the Kettle Moraine State Forest, public use has surpassed the 1939-1940 figures. Plans for the construction of additional public use area are now being prepared.

During 1946, in cooperation with the State Highway Commission, a much enlarged state forest road improvement program was undertaken. This was possible due to the fact that there was a substantial balance in the state forest road fund which was carried over from the war years. Many new miles of blacktop highways were constructed and a considerable amount of seal coat work was accomplished. Much of this work was done either by the conservation department forces operating under contracts with the state highway commission or by contracts entered into by the commission and the various county highway departments.

During 1946 the department ventured on a new program of surveying and laying out of water trails for the pleasure and use of the canoe enthusiasts. This will mean the development of campsites, portaging points, the provisionary places along the many streams wholly or partly in public forest areas adjoining land and waters.

REFORESTATION ON STATE FOREST LAND

The forest planting program during this biennium has increased substantially over the preceding years when the nation was at war. The perfecting of the tree planting machine for reforesting large open areas has materially reduced planting costs and manpower needed and increased the total area planted.

The following table gives the figures on the forest planting completed for the years 1945 and 1946:

	<i>Trees</i>	ACRES		
		<i>New Plant</i>	<i>Replant</i>	<i>Total</i>
American Legion St. Forest -----	289,800	94	140	234
Brule River St. Forest -----	763,000	471		471
Flambeau River St. Forest -----	317,000	294		294
Kettle Moraine St. Forest -----	171,330	149	3	152
Northern Highland St. Forest -----	300,500	102	40	142
Northern Conservation Lands and Central Wisconsin Conservation Area Lands -----	1,078,350	689	15	704
	2,919,980	Total acres--		1,997

SALE OF FOREST PRODUCTS

During the biennium the conservation commission approved a number of timber sales from state forest land as an effort to aid in the relief of forest products shortages in the post-war building program.

The principal sales authorized and in progress are on the Northern Highland and Flambeau River State Forests. All areas for the timber sales were selected and marked for cutting by department foresters.

The income from these timber sales amounted to \$38,472.70 in 1945 and \$4,315.60 in 1946.

STATE FOREST NURSERIES AND TREE DISTRIBUTION

With a view of encouraging reforestation and the planting of trees for forestry purposes on both public and privately-owned lands in Wisconsin, the conservation department is producing planting stock for use as follows:

1. For reforestation of publicly-owned lands.
2. For planting by farmers and other landowners.
3. For planting demonstrations of an educational nature such as schools, 4-H Club grounds and the extension forestry projects.
4. For highway and other plantings by official public agencies.

The year 1945 brought the first upward trend in the distribution and planting of forest trees since the wartime decline started in 1941. The three state operated forest nurseries produced and distributed somewhat over 25,210,000 forest trees during the biennium.

There has been a considerable increase in planting on the state forests and county forests. The planting on privately-owned land has varied but little compared with the 1943-1944 period.

Several industrial forest operators continued their relatively heavy planting schedules during the two years just past.

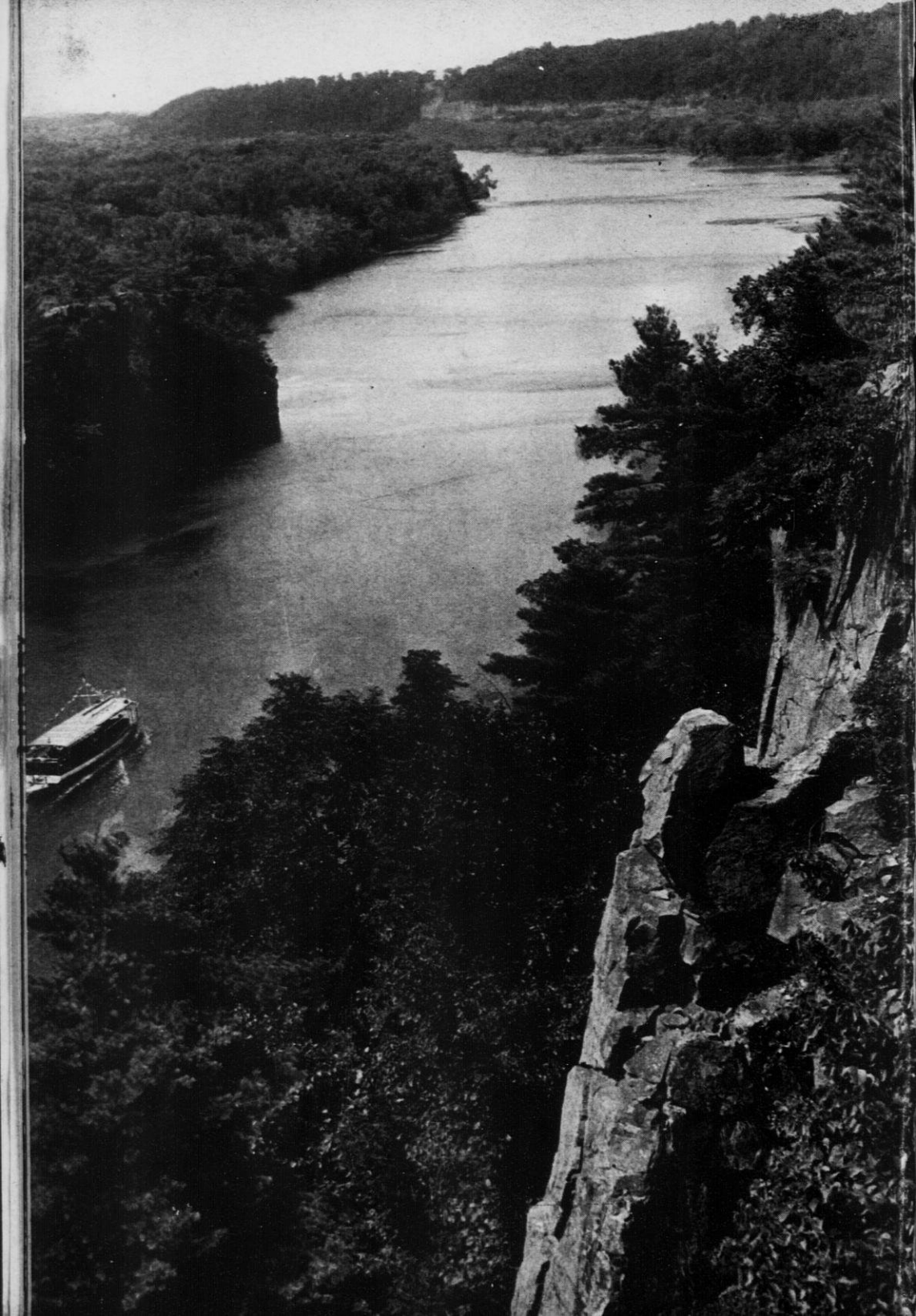
The introduction of transplanting machines for use at the Griffith State Nursery in 1944 and the purchase of three additional machines in 1945 and 1946 have greatly speeded up the transplanting work in all nurseries. The total number of transplants available for distribution to planting agencies will be materially increased and the cost of production will be decreased.

The production of game food bearing shrubs, vines and trees has continued and the demand for this type of planting stock has been more than adequately met by the nurseries.

A number of nursery research problems were studied in conjunction with the College of Agriculture of the University of Wisconsin and considerable progress on the following problems has been accomplished:

1. White pines resistant to blister rust.
2. Oak wilt.
3. Burn blight on jack pine and Norway pine.
4. Hypoxylon canker of poplars.
5. Red cedars resistant to blight.
6. Chemical to facilitate tree propagation and reduce obnoxious weed growth.
7. Work on improved compost, and a new soil green manure and crop with increased nitrogen fixation possibilities.

Tables on production, distribution and planting which follow will give added detailed information.



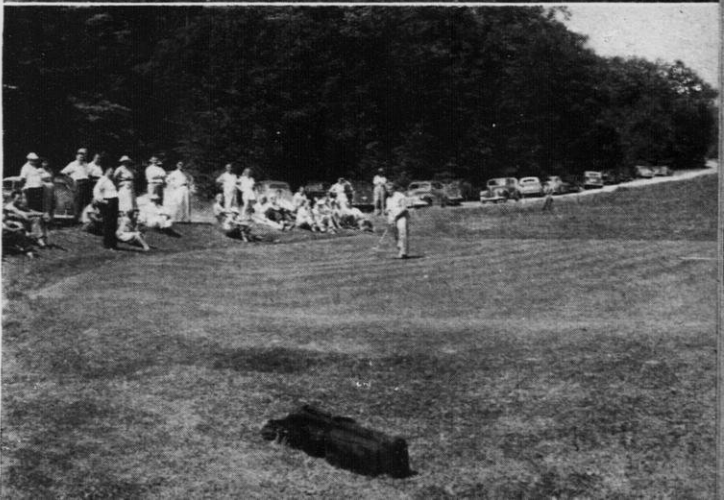


The beach at Pattison
State Park.

The public use building
at Pattison State Park.



Peninsula State Park
golf course.



Opposite page: The
Dalles of the St. Croix
River at Interstate Park.

STATE PARKS

The primary purpose of the state parks is to preserve the unusual and unique places of the state for all time, and to do so in such a manner that each area may be given the fullest possible use by the public. The parks provide a playground and vacation land for all of the people of Wisconsin and for many visitors from nearby states.

During the biennium just past, over 2,600,000 people used the facilities in the state parks.

During 1946 it has been possible to purchase replacements for worn out park equipment, and in this manner many needed improvements were made to the buildings and grounds in the various state parks.

In cooperation with the state highway commission, considerable repair and some new construction on state park roads have been completed. All of the important highways in the state park system have been blacktopped, which provide easy access for the motorists to the scenic beauties of Wisconsin's parks.

No new parks or other scenic areas have been added to the state park system. During the past two years land acquisition within the boundaries of the state parks has been limited to purchases which blocked in with existing park lands. The following parks have added acreages during this biennium:

	Acres
Peninsula State Park	92.70
Devil's Lake State Park	60.00
Rib Mountain State Park	80.00
Total	232.70

A tabulation of the state parks with their location and size and also attendance records for the years 1945 and 1946 follow.

STATE PARKS

Classification	County	Acres
Scenic		
Brunet Island	Chippewa	179.47
Copper Falls	Ashland	1,200.00
Devil's Lake	Sauk	1,451.97
Interstate	Polk	581.44
Merrick	Buffalo	123.55
Pattison	Douglas	1,160.00
Peninsula	Door	3,640.47
Perrot	Trempealeau	936.50
Potawatomi	Door	1,046.10
Rib Mountain	Marathon	494.33
Terry Andrae	Sheboygan	167.12
Wyalusing	Grant	1,671.08
Historical		
Cushing	Waukesha	9.30
First Capitol	Lafayette	1.89
Nelson Dewey	Grant	720.00
Tower Hill	Iowa	107.94
Roadside		
*Castle Mound	Jackson	221.70
*Mill Bluff	Monroe	66.00
New Glarus Woods	Green	43.10
Ojibwa	Sawyer	353.27
Rocky Arbor	Juneau	227.63
Total		14,402.86

* Under lease from federal government.

A PROGRAM OF DEVELOPMENT AND IMPROVEMENT OF THE STATE PARK SYSTEM

The growing use of existing public parks and similar areas has placed upon them such a burden as to make it mandatory now to expand present facilities and make substantial additions. Recognition of this requirement has been repeatedly made, particularly so in the Wisconsin State Planning Board's report of 1939 in which the board stated categorically "Additions to the existing holdings, acquisition of new sites, and governmental programs for financing adequate administration and development of present areas, have not kept pace with the new and greater demands for recreational opportunities." To implement such a program as will satisfy this clearly established requirement for additional park and recreational facilities, will require a broad and comprehensive program—a program which logically falls to the Wisconsin Conservation Commission because of its experience and functional position. Through this program the Wisconsin Conservation Commission would provide:

A statewide system of public scenic parks and historical and scientific monuments and memorials of outstanding quality for perpetual preservation and appropriate public enjoyment.

Areas of good scenic and high recreational value within state forests, not necessarily located with respect to population.

A system of state park parkways which will connect state and county parks; federal, state and county forests; state historic and scientific monuments, and which will preserve scenic watercourses for public benefit.

Roadside parks adjoining highways for the convenience of travelers as places for resting, picnicking, temporary overnight camping, and swimming, if possible.

To enable the Wisconsin Conservation Commission to accomplish such a program will require special legislation—legislation which will establish the Wisconsin Conservation Commission as the agency in this state to have charge of a state park system in all of its ramifications and on a fully recognized and unlimited statewide basis. Such established responsibility and authority will, with proper enabling financial legislative provisions, permit the preservation and conservation of scenic, historical, archeological, geological, botanical, scientifically valuable and naturally attractive areas in the state as well as the development, maintenance, and supervision commensurate with the appropriate use of all such areas or holdings.



Opposite page: Second growth of planted Norway pine on state-owned land in Vilas County.

Administration buildings at Griffith State Forest Nursery.



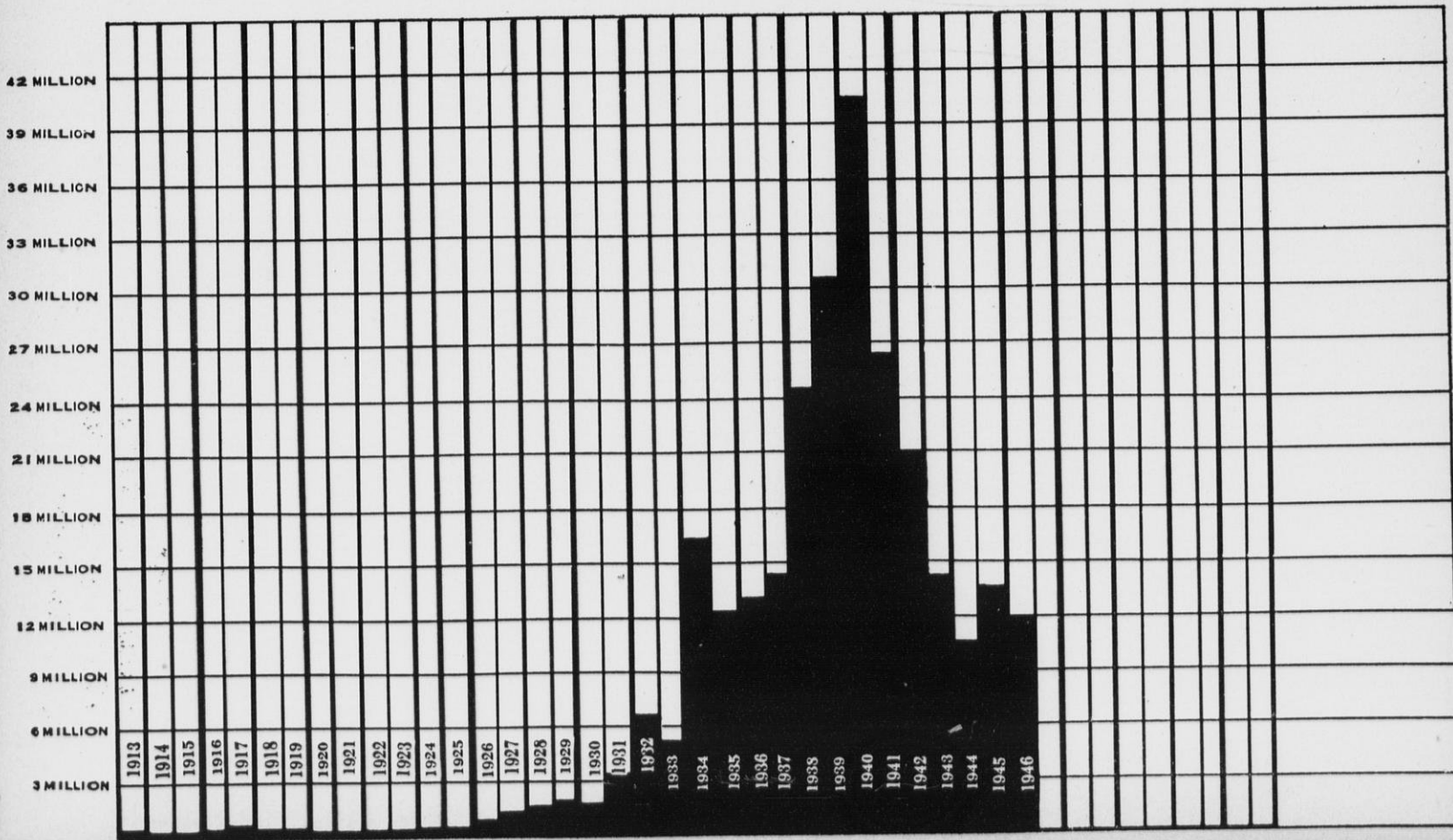
Digging and sorting little trees for forest planting.



A planted area of thrifty pine trees.



GRAPH SHOWING ANNUAL
OUTPUT OF STATE FOREST NURSERIES
1913 - 1946 INC.



Cooperative Forestry

COUNTY FORESTS

Twenty-seven northern and central Wisconsin counties owned 1,970,000 acres of county forest on July 1, 1946. This is greater than the sum of state and national forest holdings in Wisconsin. During the past several years there have been four sales of large blocks of county forest to paper companies for industrial forests. These sales have offset new entries, so that the total acreage of county forests has remained just below the two million acre mark since 1940. Thus, while the county forests have not increased, the blocking of holdings has been improved, resulting in better properties for administration. County acquisition of land by tax deed is definitely on the decline, but many counties are buying small tracts to improve blocking. Seven counties now own more than 100,000 acres, Marinette leading with 217,622 acres.

Forest planting has always been a major activity, the high point having been reached in 1940 when federal work agencies contributed to the planting of 25,069,000 trees on 19,992 acres of county forest. With man power shortage during the war years, forest planting declined until in 1945 only 1,545,000 trees were planted on 1,210 acres, the lowest record since 1932. Iron County led with 347,000 trees, while Wood, Florence and Clark were practically tied for second place with 220,000 trees each. In 1946, there was only a slight increase, with 2,689,000 trees planted on 1,776 acres. Marinette County ranked first with 558,000 trees planted and Iron County was second with 476,000. Wood and Oconto Counties both planted more than 220,000 trees.

County forests are beginning to yield a considerable volume of forest products. During the fiscal year ending June 30, 1945, county timber sales produced 2,180,000 board feet of saw logs and 24,944 cords of pulpwood and similar products. For the past year the reports covered 1,711,000 board feet of logs and 38,000 cords. Including the cord equivalent of the logs, cutting was at the rate of one cord from 66 acres the first year and one cord from 47 acres the second year of the biennium. Such low cutting rates indicate that cutting is still far below the annual increment. As the forest growing stock is built up, the annual cut can be increased.

The income from timber sales means cash for the county treasury. In the case of Marinette County the net income from timber sales is retiring the bonds on the new 80 bed county hospital.

PRIVATE FOREST CROP LANDS

Privately owned lands entered under the forest crop law continue to remain slightly above 150,000 acres. Small tracts are being withdrawn

annually and a few lying within county forests have been purchased by the counties. Since forestry is an extensive form of land use and forest management is most effective on large properties, it is not surprising that the small tracts held by non-resident owners are being withdrawn.

More than two-thirds of the privately owned forest crop lands are in industrial ownership. Here ownership is stable and forest management, including reforestation, is active. However, only one company is continuing to make new entries. With chronically delinquent lands now largely removed from the tax rolls, and with lower governmental costs resulting from county zoning and relocation of isolated settlers, the general property tax is lower than when the forest crop law was enacted. This has reduced the incentive for entry by owners who at first availed themselves of the provisions of this law.

COOPERATION ON FARM WOODLANDS

The first ten districts were practically identical with the forest protection districts and here the foresters' work is chiefly that of serving the county board committees in charge of county forests. However, they have always given assistance to private owners on forest planting or timber sales. During the past year the conservation commission has approved a plan to cover the entire state with 21 cooperative districts. Two of the new districts in the agricultural region of the state are now functioning. Here the job consists of working with the town chairmen who are ex-officio town fire wardens and of helping farmers on forest planting and timber harvesting.

Wisconsin ranks first among the states in forest planting on farms and it is important that the species of trees to be used are suited to the soil on which they are planted. Also, 57 percent of the land in Wisconsin bearing saw timber is found on farms. Too often this farm timber could contribute more to the annual farm income than is now the case.

Forest Protection

The problem of adequate fire control for the millions of acres of forest lands is still the most serious in the general conservation plan. The damage caused by uncontrolled fires to young growth, as well as to merchantable timber, is a matter of grave concern to everyone. The tremendous amount of forest planting during the prewar years is constantly increasing in value because of the increased values now placed on wood products and the approach of the earlier plantings to maturity. Then, too, the dependence of the wood-using industries on native products has increased because of the nation-wide demand.

As an example, the paper making industry in Wisconsin ranks second in the nation. A total of eighty-two paper, paperboard and pulp mills, representing a capital investment of \$322,000,000, employ 17,000 workers. The utter dependence of this industry on wood and wood products is a matter of common knowledge, and a large proportion of the raw product must come from Wisconsin forests to perpetuate this industry. In addition, there are many other wood-using industries to add to the staggering demand for forest products and they all constitute a very important part of the economic life and well-being of the state.

The adverse effect of uncontrolled fire on fish and game is well recognized and the problem is accentuated by the increasing numbers who seek relaxation in hunting and fishing. Closely allied is the necessity of maintaining watershed cover, to properly protect the reservoir of water which is so important.

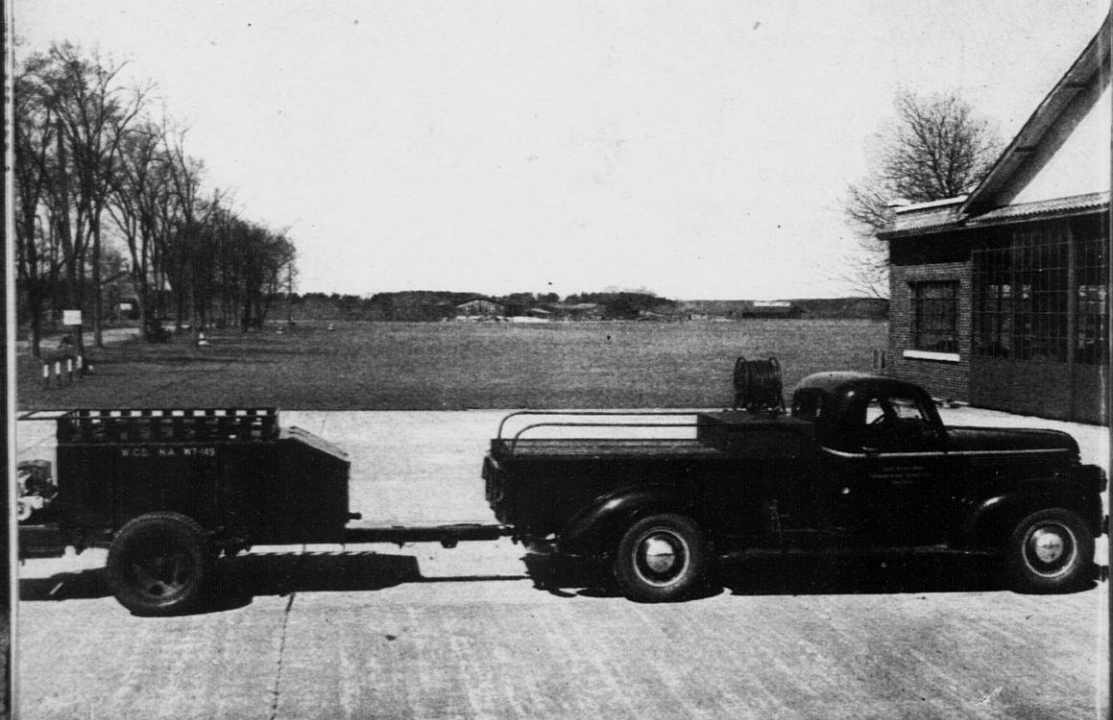
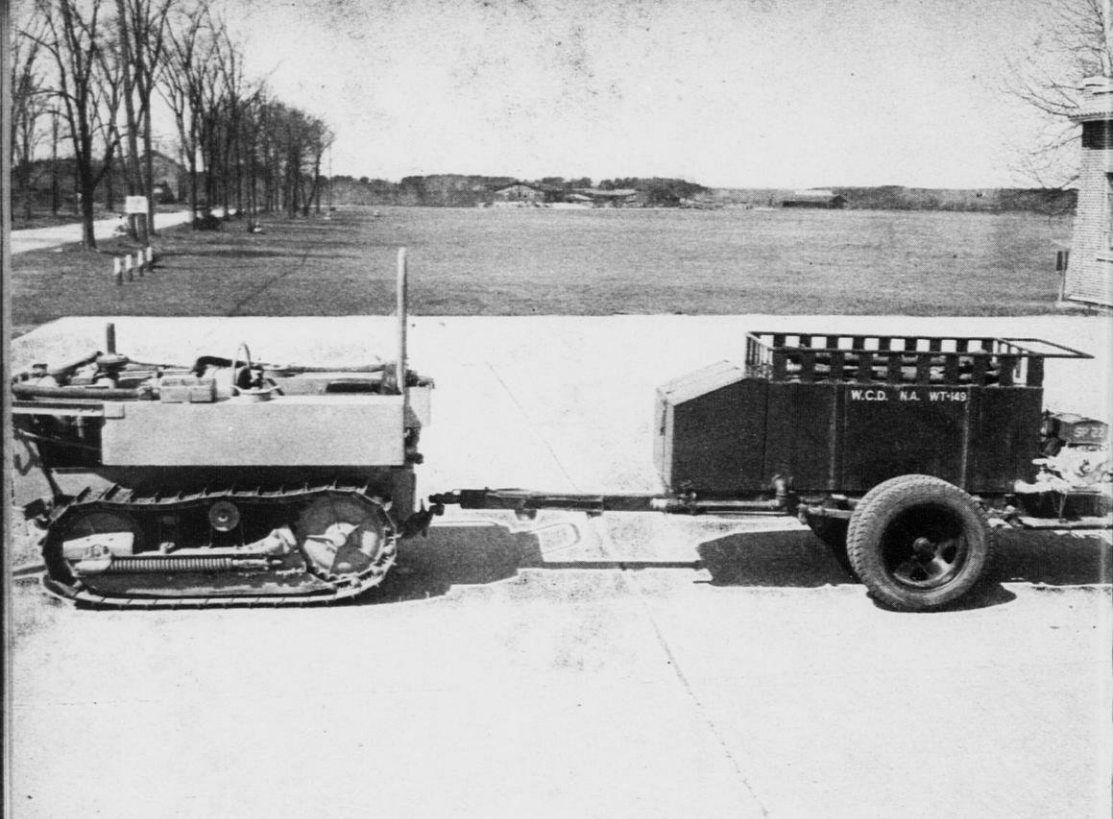
The primary objective of the forest protection division is to hold each fire to the smallest possible area and to limit the size of fires so that no more than five per cent of the total number of fires which start will exceed ten acres.

Forest Protection Organization

A total of 13,600,000 acres have been included under a system of intensive fire protection and are divided into the Northwestern, Northern, Northeastern and Central areas, covering all or parts of thirty-four counties in the northern and central parts of the state. Each area unit is composed of either two or three protection districts for a total of ten.

The area is under the direction of a supervisor, who is responsible to the chief forest ranger for carrying out all assignments in forest protection. A district forest ranger has direct supervision of each protection district and is responsible to the supervisor for methods used and results attained. Each protection district is composed of from three to five subdistricts, depending on size, hazard, risk and accessibility, and a forest ranger is in charge of each subdistrict and responsible to the district forest ranger.

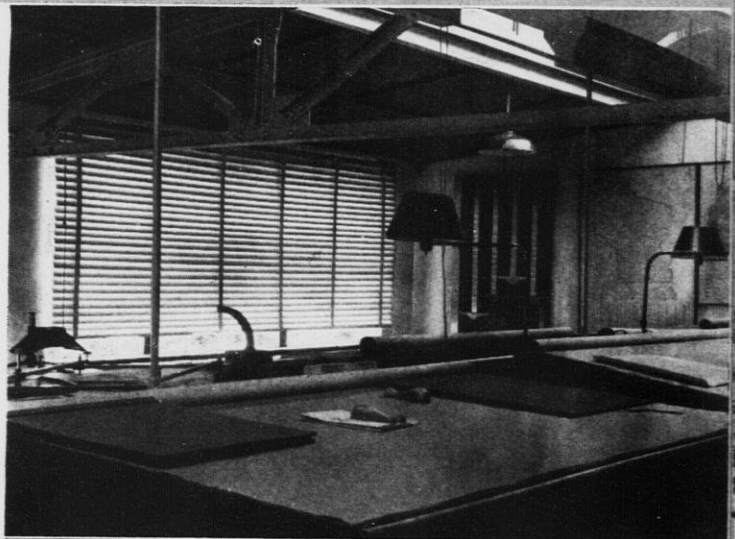
An additional ten million acres is given some assistance in protection by making available equipment items and assisting with technical advice.



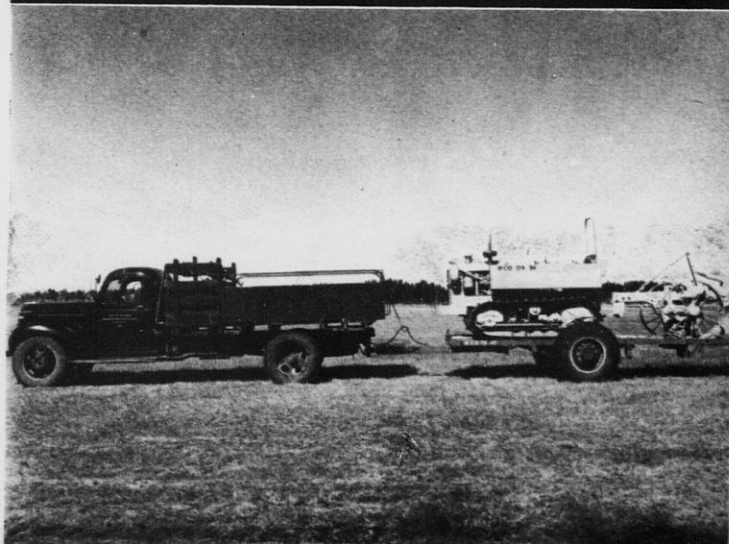


Forest Protection Headquarters at Tomahawk.

Map section of Forest Protection Headquarters.



Standard 1½ ton truck, tilting bed trailer loaded with tractor tanker and heavy duty middle buster plow unit.



Opposite page: Top—Specialized fire fighting equipped trailer tanker attached to tractor also equipped with pumper. Bottom—Trailer tanker attached to one ton truck.

During the war years, a retrenchment was necessary because of the lack of personnel. A plan is now about completed to again give assistance commensurate with the extent of the fire problem.

While the responsibility for fire suppression outside of the protection districts rests with the town chairman, every effort will be made to assist him by providing advice and limited amounts of equipment.

Fire Prevention

An important part of the forest fire control program is forest fire prevention, and in view of the fact that during the past decade over ninety per cent of all forest fires were man-caused, a constant program of education to create fire prevention consciousness is carried on to reduce the man-caused fires to the lowest practical minimum.

Forest fire prevention is carried on at all times; however, it is emphasized during specific periods. Two new sound projectors were acquired during the biennium and films are being developed and acquired. Every effort is made to present educational films, slides and talks to all interested groups with special emphasis made to schools. A considerable amount of fire prevention literature was secured and distributed through the war years, with highly satisfactory results.

A very considerable amount of space in newspapers and radio time were used in the interests of fire prevention, in addition to bulletins and other special articles. Constructing, placing and maintaining forest fire warning signs continued to be an important part of the overall fire prevention program.

The reduction of hazards as an important factor in fire prevention was accentuated by the increased demand for forest products. A considerable amount of effort was expended in securing compliance with the slash disposal law and the resulting elimination of the residue from logging operations where required. The cooperation of many of the timber owners and operators was commendable.

Periodic inspections were made of railroad locomotives operating through the forest protection districts. While a disturbing increase occurred in the number of railroad fires during 1946, part of it can be attributed to circumstances which were beyond their control and occasioned by the increased train miles, difficulty in making repairs, and use of poorer grades of coal. However, increased effort was made to secure a reduction of railroad-caused fires and a plan commenced to secure better burning of right-of-ways.

During high hazard periods, railroads were often required to operate a patrol after trains operating through the protection districts, at their own expense. This patrol, together with the locomotive inspection carried on in addition to their own inspection requirements, helped to stress the necessity for good fire prevention practices with all railroad personnel.

During acute hazard periods, services of personnel of other divisions of the department, as well as state and local officers, were secured and utilized as investigators and patrolmen, with gratifying results.

Detection and Suppression

Every effort is made to detect all fires as soon as possible after inception. To augment the primary system of lookout towers, secondary lookouts have been constructed for use during periods of high hazard and low visibility. All towers have available communication channels of either telephone or radio. As rapid communication is highly essential, some two thousand miles of telephone lines and 108 radio sets connect all towers, stations and fire crews. Considerable progress is yet to be made in the radio field and adequate radio installation will proceed as rapidly as technical details can be overcome.

During the past two years, there has been a considerable reduction in the number of miles of fire lanes and truck trails. Development in certain areas, particularly in the recreational field, have created a demand for avenues of access into heretofore undeveloped country and as the providing of roads is a town function, fire lane easements were released where the towns could show a need and former fire lanes became a part of the town highway system. In other instances, the reduction of hazard and the change in the character of the country since protection has been more effective, has obviated the necessity of maintaining fire lanes as a purely fire protection device and, consequently, led to their abandonment. The increasing interest of the several counties in the development of county forests has led, in several instances, to fire lanes passing to county ownership and becoming administrative roads. The part that fire lanes have played in the harvesting of otherwise inaccessible timber cannot be minimized. There does not appear to be any foreseeable need for any large scale fire lane construction program in the protected areas as a purely fire control device and efforts, generally, will be expended on maintenance and improvement of those most likely to remain a fire control necessity.

Fire suppression is an arduous task and as equipment is secured that will be more effective, a demand is created for trained personnel. To keep abreast of the needs and uses, considerable effort is expended in personnel training. As equipment is developed, it tends to reduce the amount of labor required and the savings can well be utilized in providing proven equipment and in research with the ultimate saving being made in the reduction from fire loss or damage.

One of the important organizational components is the emergency fire wardens, who are appointed for each protection district by the district forest ranger and county board. They are competent men, who are interested in forest fire control and who spend considerable time in the duties of their office and work without pay except for the nominal pay received when engaged in fire suppression. By their cooperation, the burning permit system is more efficiently operated and forest fire control becomes more effective.

Equipment

During the war years, plans for exchange and purchase of new equipment were postponed and in 1946 the first steps were made to bring the



**PREVENT
FOREST FIRES**

**EVERYBODY LOSES WHEN
TIMBER BURNS**

WISCONSIN CONSERVATION DEPARTMENT

truck fleet up to its prewar condition by the exchange of sixty of the oldest trucks of various sizes for 1946 model trucks in the one-half ton and one and one-half ton size classes. Many of the trucks designated for exchange were acquired by other divisions of the department, where their trucks were of older vintage. As rapidly as conditions permit, the truck fleet will be returned to the prewar standard in order to maintain efficiency and reduce maintenance costs.

Plans were completed and approved for the replacement of twenty-two crawler tractors of the 1932-1934 age group with twenty-two new tractors of approximately thirty horsepower. This exchange has been delayed by the inability of the manufacturers to secure essential parts but delivery is anticipated early in 1947 and will greatly improve the efficiency of many of the tractor-plow units. Three additional D-4 tractors equipped with bulldozers were secured from government surplus lists at a very appreciable saving. Their use for construction and maintenance, in addition to fire suppression, should be reflected in both efficiency and economy. Sufficient power take-off pumps were acquired to meet our needs for truck and tractor installations. Manufacture of twelve special utility trailers for fire control activities in the cooperative areas was in process at the close of the biennium.

Headquarters and Repair Station

One of the principal functions of the headquarters since 1934 has been the stocking of essential supplies for field distribution. Large purchases have resulted in greater discounts, reduced freight rates and the ability to supply the organization with essential supplies in a minimum of time. This activity was curtailed during the war years to meet the conditions even though the equipment maintenance program increased. As materials again become available, supply stocks will be built up to meet the needs.

As a direct result of the cessation of the planned equipment exchanges during the war years and the resulting aging of equipment, maintenance became an increased function of the repair shop and was rendered more difficult by the supply shortage. Experimental work was curtailed although some improvements such as power pump installations were made. Some complete equipment units were kept in readiness and dispatched to the field on request.

Future Plans

Experience has proven that forest fire control needs are constantly changing and complexity of the job results in increased demands for competent supervisory personnel and skilled equipment operators. Certain types of work, such as enforcement of the slash disposal law, group fire prevention contacts, logging to secure maintenance materials, equipment repairs, etc., are given added impetus during the fall and winter months. These activities, in addition to the assistance given to other divisions, requires the efforts of the division throughout the entire year.

Opposite page: Top—Forest protection ranger station. Lower left—Forest fire lookout tower. Lower right—Roadside prevention sign.

The increasing importance of adequate radio installation to permit quick communication with forest fire control crews is paramount. A considerable amount of the engineering and survey work has been completed and a radio system designed for forest fire control will be established as rapidly as funds permit. As the radio system becomes operative, a considerable reduction in secondary telephone line mileage is planned, resulting in a saving in telephone line construction and maintenance that will, to a considerable degree over a period of years, offset a large part of the radio costs.

Closely allied with radio is the need for an airplane to supplement tower detection and patrol during periods of high hazard and low visibility. Their worth for reconnaissance and actual crew direction on large fires has been clearly demonstrated many times. Equipped with radio for communication with ground stations, the airplane will be a valuable asset.

Research in fire control methods and equipment will again be carried on as materials become available. Experience has proven the value of and need for adequate equipment and the constantly changing condition of the forest cover necessitates new and improved equipment units. As forest fire control becomes more mechanized, savings in the actual cost of suppression can be increased through a reduction in the number of men required for emergency hire. Probably the greatest overall benefit will be the reduction of loss and damage from fires as a direct result of improved methods and facilities.

The trend toward more complete mechanization stresses the need for experienced equipment operators, which can best be met by a continuous in-service training program. With release of war-time restrictions, a planned in-service training program in all phases of forest fire control will be carried on with renewed vigor.

Fire prevention, following a definite plan and making use of the modern aids available, will be carried on with every effort made to secure a fire consciousness from all of those who travel through or inhabit the forest areas. The utmost use will be made of the press and radio in addition to special articles and printed materials. Cooperation of schools, clubs and other organizations will be directly solicited and the need for fire prevention stressed by discussion and use of moving pictures and slides.

Assistance to Local Communities and Residents

Since the enactment of legislation permitting the forest fire control organization to assist in cities or villages when requested, aid has been rendered in many instances. Where cities and villages are faced with a forest fire problem, the usual fire department equipment is quite often inadequate. When requested, the special equipment requirements are met by assignment from either the nearest departmental station or from the headquarters.

Fish Management

INTRODUCTION

In the fall of 1944, the Conservation Commission took action to consolidate all activities in fisheries into one division in order to bring about better coordination and correlation of activities. The division of fish management now consists of the following sections: Fish Propagation, Fishery Biology; Rough Fish Control, Great Lakes Commercial Fishing, and Records and Statistics.

The duties of each section are as the name implies and the activities are outlined in the following pages. To bring about the desired results in efficiency and economy by better coordination of activities considerable study in operations, personnel, equipment and programs was necessary and is still in progress. Many administrative changes were necessary and more are to follow as soon as further data are necessary.

The study of the various sections soon brought to light two very important and fundamental needs. They are: (1) the need of a definite fish management policy, and, (2) the need for adoption of reliable methods of maintenance of various records and accurate cost accounting. The value in maintenance of records and cost accounting cannot be overemphasized. By cost accounting many savings are made by pointing out inefficiencies and uneconomical procedures.

The formulation of a fish management policy was necessary to point the way in accomplishing the objectives of the fish management division. Many persons, and principally the section chiefs, contributed to the formation and statement of policy. It was approved by the conservation commission on November 8, 1946.

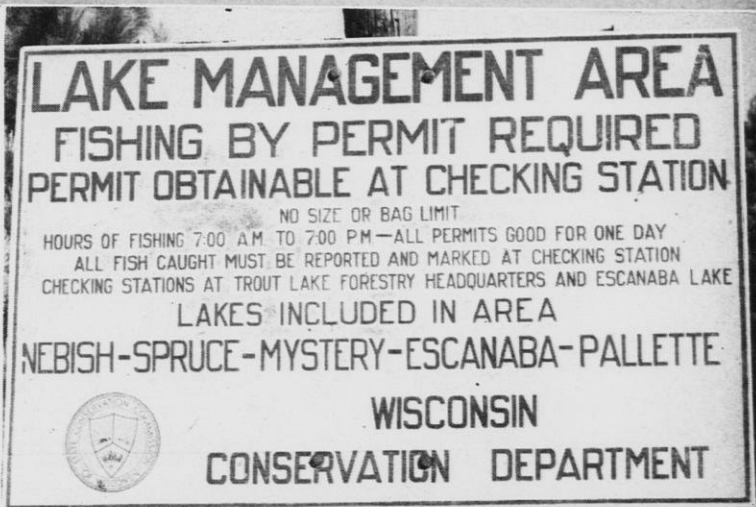
THE POLICY

The policy of the Fish Management Division of the Wisconsin Conservation Department shall be directed to conserving and perpetuating the fishery resources of the state for all of its citizens for all time. To accomplish this desired end it is considered fundamental to (1) recognize that all people shall have an opportunity to enjoy the privilege of fishing, (2) carry on fundamental research in the fishery aimed at finding better ways of improving fish and fishing for the benefit of the state, (3) recognize the importance of the habitat in relation to the fish crop and make provisions within our means to acquire, protect, and improve present habitat conditions, (4) prosecute a fish propagation program to provide fish of proper species and size and conduct fish rescue and transfer operations in accordance with the fish management needs of the waters of the state, (5) engage





Experimental study to increase light penetration through snow covering ice.



Experimental lake management area for testing liberalized regulations.



Preparing fish samples for growth study.

Opposite page: Top—Department stream crew operating electric shocker. Bottom—Marking lake trout fingerlings by fin clipping.

in a program of rough fish control when such operations are in the best interests of maintaining the more desirable game fish population and other interests, such as hunting, trapping and recreation, (6) assist and promote the commercial fishery of the Great Lakes and the Mississippi River consistent with the supply of fish therein, (7) properly allocate funds so that the essential activities of fish management can be conducted on a continuing basis, (8) maintain complete accounting records and statistics pertaining to all activities of the Fish Management Division, such records to be accessible to the general public at all times, (9) cooperate with related intra-state, interstate, and federal agencies as well as groups or individuals whenever this cooperation is deemed directly or indirectly beneficial to our fishery-resources, and (10) recognize that as servants of the people of the state that their interests are paramount in the execution of any program and with this view in mind keep the public informed as to proposed activities of the program and to engage in a program which will be of benefit to the greatest number of people.

FISHERY BIOLOGY

During the biennium a statement of policy as well as the long-range objectives for the fishery biology section were developed. These have been approved by the commission and are used as directional guideposts for long range and immediate functional planning in the section. The policy and objectives are as follows:

FISHERY BIOLOGY POLICY

The responsibility of the fishery biology section shall be to plan and direct research pertaining to all phases of fish management. Primary consideration will be given to an inventory of natural factors, productivity, the correlation of species of fish with different types of water and the control of competitive or destructive species. Contributory studies will deal with pollution, distribution, fish diseases, parasitism, food resources, growth and stunting, and the effects of stocking exotic species, overstocking and unwise stocking, farming, use of forest products, soil erosion, public health and recreational pursuits. Investigational results will be integrated with the propagation and rough fish removal programs in the development of fish management plans. The technical findings of the University, other Wisconsin agencies, other states and federal agencies will be utilized and cooperation with the above agencies will be maintained as far as manpower and funds permit.

Additional laboratory facilities and personnel will be added as needed, providing funds and manpower become available, and the extent of operations will be governed by the funds allotted by the conservation commission.

LONG RANGE OPERATIONAL OBJECTIVES

1. Complete reconnaissance surveys (physical, chemical, and biological characteristics) and the formation of management plans for the 725 streams and 1,025 lakes now being stocked, as well as special problem waters.

2. Development of improved techniques for propagation and fish management.
3. Elimination of hatchery diseases.
4. Formulate management plans for all waters investigated.
5. Maintain an advisory and investigational service for special problems as they pertain to the fishery of the state.
6. Development of improved and low-cost fish diets.
7. Control of fish parasites in natural waters.
8. Elimination of winter freeze outs.

LAKE AND STREAM SURVEYS

In the relationship of the fish management division to the angler there is an obligation to properly manage each body of water in order to obtain the maximum sustained yield of desirable species. In order to realize the greatest benefits each water must be considered as a separate problem in a systematic plan of fish management. Such a plan should be based upon a study of the physical, chemical and biological characteristics of the body of water, followed by a plan for stocking, if needed, regulations, elimination of pollution and other phases to assure a sustained yield. In the past and even at present, hundreds of waters have been stocked and certain regulations imposed without knowing whether such are needed or whether they may be actually detrimental.

The aim of lake surveys is to acquire a basis of fact to assist in formulating a constructive stocking policy for the planting of fish. The information acquired serves a double purpose in providing assistance not only to the department for administrative purposes but in furnishing also to the public in the locality a scientific interpretation of conditions of fundamental importance in the full utilization of the fishery resources. As such surveys progress the division of fish management is enabled to proceed with its program of stocking the lakes and streams on a sound basis and to provide for further study where the survey indicates urgent problems bearing on the future status of the fishery.

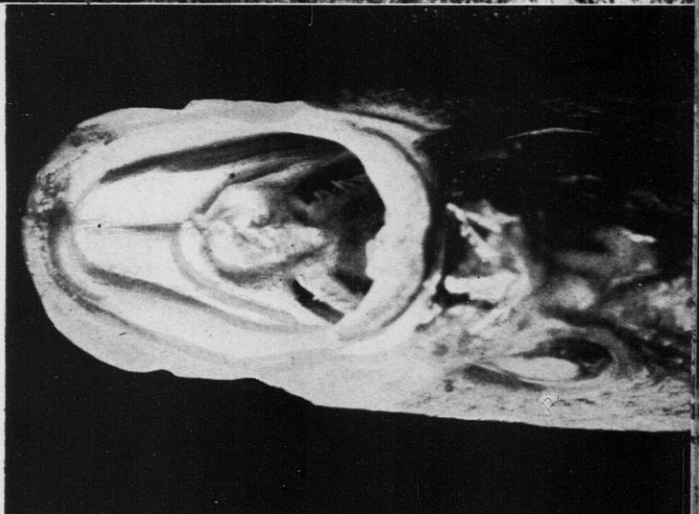
Even though the long range program aims to survey all of the lakes and streams now being stocked by the state, which are the most important waters, the immediate objective is to make surveys on problem waters of immediate importance. Such requests now amount to approximately 400 on lakes and 200 on streams. The requests have been received from various members of the commission, resort owners, conservation clubs and chiefly from fishery area supervisors and the conservation wardens. The requests are made for the following reasons: poor fishing, overpopulation of pan fish, population study and possible pollution, species now present, desire winter closing, check for freeze out, disease of walleye, walleye "all heads", poor condition of walleye and excessive algae bloom, check crappie popu-



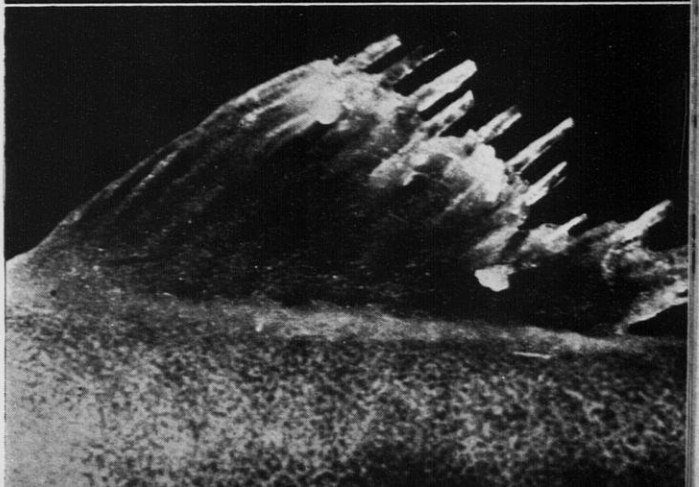


Stream crew operating electric shocker.

Thyroid Tumor-fish disease.



Fin Rot-trout hatchery disease.



Opposite page: Harvesting walleye fingerlings in Patty's Lake, Marquette County. 153,000 walleye fingerlings averaging $2\frac{3}{4}$ " and 750 walleye fingerlings averaging 7" were produced in this 6 acre pond during the summer of 1946.

lations and others. Most of the requests from fishery area supervisors and county wardens are for stocking recommendations, check on success of walleye and muskellunge plants, possible freeze out waters and requests for recommendations on pan fish removal, as well as establishment of possible trout lakes.

All surveys are operated in accordance with standardized procedures as developed by scientific workers and as used by all states doing work of a similar nature. Biological surveys may be either intensive or extensive. Intensive surveys obtain a tremendous mass of data on each water while extensive surveys obtain less data with stress placed on certain phases which allow the study of many more waters. We are studying a few waters on a continuing intensive level, however, due to the urgency of many of the requests for recommendations from fishery area supervisors and county wardens, most waters can only be studied at the extensive level with particular emphasis placed upon the fish populations. The lake surveys are intended to obtain basic information on fish populations, species composition, size distribution and growth, natural reproduction, water chemistry, fishing pressures and other data.

The physical aspects studied consist of development and improvements, location of spawning areas, water levels (bench mark notes), inlets and outlets, watershed conditions, shape, depth, basin contour, bottom types, banks, glaciation, soil, drainage area and other physical characteristics.

The chemical characteristics consist of a complete chemical analysis involving the determination of dissolved oxygen, pH, color, total alkalinity, transparency, sulphate ion, total phosphorus, soluble phosphorus, organic phosphorus, total iron, ferrous iron, chloride ion, ammonia nitrogen, nitrite nitrogen, nitrate nitrogen, organic nitrogen, and total nitrogen. From such analyses the productivity type may be determined. The presence of pollution in the water is investigated.

The principal stress is placed upon the study of biological characteristics, chiefly the fish populations. Fish are collected by various types of equipment, such as fyke nets, gill nets, and seines. All fish collected are weighed and measured, scale samples taken and then returned to the water. Occasionally 50 to 100 fish of various species are brought back to the laboratory for a complete parasite examination. From the field data frequency distribution charts are prepared, and condition factors calculated. Investigations are made on the forage fish relationships and spawning success of the various species present. The collected scale samples are aged and growth tables prepared and comparisons made with statewide growth averages for the various species. After the collection and analysis of data, reports and recommendations are prepared.

During the biennium the fishery biology section made biological surveys on 149 lakes and 89 streams. About two-thirds of these were made by temporary summer crews and the balance by permanent personnel. Permanent survey parties have now been established at each of the three biology laboratories so that extended studies may be made. Summer survey work only is deficient in that we obtain no information relative to the condition of the fish population during the other seasons. Conditions may be entirely suitable during the summer, however, limiting factors may occur during

the other seasons of the year. It has become more apparent that observations must be made throughout the year and not only during the summer as has been common in the past in the entire country.

SCIENTIFIC RESEARCH IN HATCHERIES

There can be no question of the value of research to the producing units, especially trout hatcheries, of the division. A few years ago approximately 60 per cent of the time of the biologists was spent in developing methods of prevention and treatment of disease which was costing the hatcheries thousands of dollars each year in lost production. During the present biennium, improved sanitary conditions, less crowding, accurate mortality records and rapid diagnosis and treatment have resulted in such improved conditions that only 4-5 per cent of the time of the biologist has been required.

The majority of the diseases affecting hatchery fish are due to bacteria or protozoa. An immense amount of study is still needed on many of these diseases to develop improved diagnostic and treatment procedures. In addition, sanitary conditions, diets and methods of treatment are continually being improved. One biologist has been stationed at one of the larger hatcheries in order that continuous and intensive effort can be placed on these problems.

Gill disease at the present time causes the heaviest mortalities in the hatcheries. We have found types which lend themselves to treatment and other types which fail to respond to treatment. Additional study of pathology is needed as well as a testing of new drugs for treatment.

Furunculosis, the most dreaded of all diseases has been greatly reduced, but still causes some loss of fish. Several hatcheries have been made furunculosis free by removal of all fish, thorough disinfection, restocking with disinfected eggs, and maintenance of strict sanitary conditions at all times. A definite cure for the disease is needed in addition to the above and although we have had some apparent success with the use of sulfathiazole, further bacteriological study and experimentation is necessary. Only one epidemic of furunculosis occurred and that was limited to one lot of 120,000 trout. The first examination showed a loss of 2,600 trout per day (2.16 per cent). Treatment was started with sulfamerazine and the mortality was reduced to almost zero in less than two weeks. The experimental use of sulfamerazine will continue. A number of other diseases are in need of additional study, such as endocolitis, lipoid degeneration of the liver, white spot, blue sac, soft egg, thyroid tumor, ulcer disease, fin rot, octomitus, and lymphocystis.

The recent eruption of tularemia in muskrats in the Horicon Marsh area made it imperative that information be obtained on the relation of this disease to fish. A cooperative investigation (preliminary) with the University department of veterinary science was organized, as rapidly as possible, to determine whether various species of fish (bullheads, bass, crappies, northern pike, perch and rainbow trout) are susceptible to tularemia (*Pasteurella tularensis*). This problem is of great importance to the fishermen of Wisconsin. If fish are susceptible, because of exposure to the disease, prophylactic measures will have to be devised. Several human beings in Wisconsin have contracted the disease from muskrats. A water-borne epidemic

of 43 cases was reported in 1935 from Russia in peasants who drank water from a creek which was thought to have been contaminated by water rats. No investigations on fish have been conducted in the past. Tissue culture studies have now proven that the tested species of fish do not transmit tularemia.

MISSISSIPPI RIVER

The cooperative Mississippi river survey which started during the last biennium has continued. This is a cooperative endeavor by the states of Minnesota, Wisconsin, Iowa, Illinois, Missouri, and the U. S. Fish and Wildlife Service. The actual planning of the fishery investigations has been made by a technical committee of which the chief biologist has been chairman during the past year.

The survey is planned to: (1) inventory the fishery resources of the river; (2) measure the intensity of sport and commercial fishing and its effect upon the standing fish population; (3) study the changes that occur in the fish species-complex and the ecological factors which bring them about; and (4) prepare recommendations for the regulation and management which will combine an efficient cropping of sport and food fishes with sound conservation of the resource.

The magnitude of activity is shown by the following partial summary of activities.

1. *Creel Census.* Certain sections of the Upper Mississippi have been covered by a sports fishing creel census during three separate fishing seasons, the summer of 1945 and the winters of 1944-45 and 1945-46. The findings have been presented briefly in two yearly progress reports of the Upper Mississippi River Conservation Committee.

Information obtained from this census includes the fishing success, measured in catch per unit of effort; the differences in species make-up of the catch in different localities; and differences in the catch from winter to summer seasons.

2. *Fishermen Counts.* Considerable success has been had in enumerating sport fishermen by means of an airplane. In this manner it has been found possible to determine, with considerable accuracy, the number of fishermen on a 125-mile stretch of the river on any given afternoon. Tabulation of a number of such counts gives a good estimate of the fishing pressure and the utilization of the river for sport fishing.

3. *Commercial Fishing Data.* Efforts to appraise the commercial fishing industry of this section of the river has been directed along two lines. First, a complete set of interviews with commercial fishing licensees has been obtained. This lists the amount and value of equipment, extent of operations, and so forth. Second, a system has been set up for regular reporting of catch by all commercial fishermen. The figures are so reported that they can be broken down into catch by species, month, and locality fished. This information, together with the average market prices, enables an estimate to be made of the value of the catch.

4. *Fish Collections.* Large numbers of qualitative fish collections have been made by sandbar seining and otherwise. These, together with fish

collected during test-net operations, will form the basis for a taxonomic listing of the fishes of the Upper Mississippi River.

5. *Studies of Fishing Methods.* A large amount of time has been spent with the commercial fishermen, making observations of the quantity and composition of catch by various types of tackle, fished in different localities and under different sets of conditions. These observations yield information concerning relative fishing efficiencies of different kinds of gear, and their performances under various conditions.

6. *Test Netting.* In 1946 a complete summer's project of experimental fishing was carried out by a test netting crew. The stretch of the river from Hastings to Cassville was covered in 11 stations. Various sorts of commercial and experimental gear were fished. The objects were (1) to gain an idea of the numbers and kinds of fish present in the river by a roughly quantitative sampling, and (2) to judge the fishing characteristics of various types of tackle.

7. *Growth-Rate, Ecological, and Life-History Studies.* Material (fish scales) has been collected for a study of the age and growth rate of the important game and food fishes of the river. Also, in the course of field work, many observations have been made which bear upon the life histories of various species, of which little was previously known; and of ecological relationships, such as water conditions, predation, diseases and parasites, and others.

8. *Winter Drawdown.* The drastic lowering of many of the navigation pools in each of the past few winters has made urgent a considerable amount of field work. Studies have been made upon the water conditions brought about by the lowered water levels, and upon the mortality of fish caused or contributed to by these conditions.

UNIVERSITY COOPERATIVE INVESTIGATIONS

The number of research investigations pursued cooperatively with the university increased during the biennium. In addition, a new cooperative agreement was formulated and agreed upon by the university and the conservation commission which will further extend such cooperative effort on the solution of problems having a direct bearing upon the natural resources of the state.

The fish parasite project continued in an effort to increase our knowledge of the life history and factors affecting the incidence and distribution of parasites and possible control measures of parasites which are important in making fish undesirable for food. This work has been divided into three closely related phases. (1) The determination of the parasite load of fish living in different types of lakes and streams. An examination has been made of almost 10,000 fish from approximately 150 different locations and this has given considerable information regarding the species of parasites commonly found in Wisconsin fishes. We hope now to correlate these distributions with the very extensive data of such workers as Birge, Juday, and Bordner, and thus determine what chemical, physical or biological factors are important in determining the parasite burden in fishes from the various types of Wisconsin lakes. (2) The study of environmental con-

ditions which favor the production of trematode cercaria in snails has continued. Considerable data have been collected regarding the percentage of snails that are infected and the parasite load of fish commonly found in the areas where the snails are abundant. Eight such areas are studied each year and three of these were used for experimental control measures with copper salts during 1946 with five untreated areas for controls. The results will be compared with those made on the same areas in past years. (3) The study on the determination of the species of trematode cercaria present in various snails and the working out of the life history of those that are unknown has progressed for only one year. Over twenty species have been studied and important leads on the life history of several were obtained. In addition, it was demonstrated that certain species are lethal to young fish.

A cooperative study was completed during the biennium on the effects of different concentrations of aquatic plants on fish growth. This was carried on experimentally in small ponds with the initial fish population being the same for each uniform pond, the variable factor being various densities of aquatic vegetation. The results indicated that the bass in the ponds containing aquatic vegetation were approximately 15 per cent longer and 80 per cent heavier than bass in the control ponds which did not contain vegetation.

The cooperative studies on the nutrition of trout have continued. Most of this work was concerned with the development of and use of purified rations for rainbow trout. These rations were fed in capsules and the size of the capsules was adjusted as the fish became larger. It was apparent that trout do not tolerate high levels of carbohydrate, especially if the carbohydrate is glucose. We have found that yearling rainbow trout fed a ration composed of glucose 48%, casein 40%, fat 2%, dried liver 5% and brewer's yeast 5% were able to maintain a hemoglobin level and growth rate equal to that produced by feeding 100% dried liver or a standard hatchery meat ration. Such fish, however, developed a very enlarged liver and died suddenly after eight weeks on experiment. In order to prevent liver damage it was necessary to reduce the carbohydrate level to 20% and to maintain the level of liver at 5%. Part, but not all, of the beneficial effect of liver could be replaced by a combination of riboflavin, pyridoxine and choline. Even when the liver was removed severe anemia did not develop.

We reported last year that meatless diets had been developed which proved satisfactory for yearling and older trout. Further field trials with these diets have given verification of these results. When the meat shortage became more acute this diet was fed to fingerlings. When fed as such it did not prove adequate, but if supplemented with 20% of fresh liver it promoted good growth. In the spring of 1945 fry in the egg stage were started on a meatless diet but octimitus broke out and there were heavy losses. However, when fresh liver was introduced into the diet together with 0.03% phemerol the condition was brought under control and the fish developed quite well. After many trials the following diet has given the best growth and the lowest mortality with fry. Skim milk powder 35%, liver "A" 10%, gelatin 10%, corn oil 10%, common (iodized) salt 0.5%,

alfalfa leaf meal 10% and soybean oil meal 24.5%. The addition of a salt mixture comparable to that found in whey improves the growth rate. At present we are determining which of the elements are necessary and then we shall determine the optimum amounts.

Another project was concerned with the normal histology of fishes, principally the origin and function of the blood cells of the perch. It is necessary that our knowledge of normal histology be increased and used as controls in further study of pathological conditions found in fish. A method was developed for obtaining blood samples directly from the heart without injury to the fish. Blood samples were stained differentially and it was found that the perch has the following types of blood cells: nucleated erythrocytes, thrombocytes, and two types of leucocytes-heterophiles and lymphocytes. Histological preparations showed the spleen and head kidney as the chief blood forming organs.

Due to our continued lack of many details concerned with the raising of minnows for bait a cooperative project has continued to operate and study certain phases of the problem. It was found that the spawning season for the bluntnose minnow extends throughout the summer and is not entirely dependent upon water temperatures. Concentrations of 60,000 per acre or approximately 200 pounds per acre have been produced from an initial brood stock of 1,000 adults. Fertilizers were used at the rate of 275 pounds per acre and since fertilization the succession of plants has been rapid. Additional ecological studies were made on plankton, bottom organisms, and plants together with complete chemical studies.

POLLUTION

During the last biennium investigations of pollution in our natural waters increased tremendously. A thorough study was made of all cases and on the basis of the evidence, conferences were held with all offenders. In part of the cases the offender paid for the destruction of the fish and such funds were placed in the public hunting and fishing ground fund. In other cases assistance was given in working out methods of safely disposing of wastes so as to not be detrimental to fish life or to the quality of the natural waters.

GREAT LAKES LAKE TROUT STUDY

An interstate group was established during the previous biennium for the purpose of carrying on technical studies to evaluate the effectiveness of the propagation of lake trout. During 1944 approximately 105,000 fingerling lake trout were marked by fin clipping and released in northern Lake Michigan so that the relative survival of stocked fingerlings could be measured and the contribution to the catch determined.

In 1945 approximately 162,000 lake trout fingerlings were marked by fin clipping and in 1946 an additional 150,000 which completes the three year marking program. A different mark was used each year and it is expected that marked fish from 1944 may begin to enter the commercial catch in 1947. All marking was done jointly by biology and propagation personnel.

SEA LAMPREY CONTROL

An international committee has been organized for the purpose of studying phases of the life history of the sea lamprey, possible methods of control and the economic effects upon the fishery of the lakes. The committee membership consists of representatives from the Province of Ontario, Minnesota, Wisconsin, Michigan, Illinois, Indiana, Ohio, Pennsylvania, New York and the U. S. Fish and Wildlife Service.

Phases to be studied in Wisconsin in cooperation with the Fish and Wildlife Service will consist of a survey to determine the extent of damage to the commercial catch caused by the sea lamprey. In addition, various phases of life history will be considered, such as, streams used for spawning, characteristics of streams, length of spawning period, and growth and development of larvae.

OTHER ACTIVITIES

Observations were made jointly with the propagation section on the spring spawning runs of walleyes in the Rock and Wolf rivers. Special attention was given to the probable time of the beginning of spawning and its completion. These findings are used to determine the opening date for fishing in these special waters.

Continued studies of oxygen deficiencies (freeze-outs) were made as a preliminary step towards the establishment of a freeze-out type or indicator lake series. In conjunction with this, studies were made as to the suitability of the biochemical oxygen demand test performed at various applicable temperatures as a guide to the time remaining that a given body of water can still support fish life.

A Tri-State Minnow Committee was organized by Minnesota, Michigan and Wisconsin and the U. S. Fish and Wildlife Service for the purpose of joint study on the minnow problem. The chief biologist and assistant superintendent of fish management were members of the committee, the latter being chairman. Some experimental production data were obtained during the year and a proposed joint bulletin was nearing completion which will present a summary of the presently available information on life histories, ponding construction, treatment of disease and other phases of minnow culture.

At the request of the Vilas County Sportsmen's Club and with the approval of the commission, five lakes were set up under experimental management and study. All size and bag limits were removed from all species. Harvest figures were obtained by a complete creel census and population studies have been made on the lake. The size of the lake varied from 15 to 291 acres and the fishing pressure during the first season varied from 5 to 27 man hours per acre of water. Such a study may have far-reaching results and provide us with information on whether or not continued fish planting is needed or may actually be harmful on lakes with only a moderate fishing pressure and also whether or not we have been too restrictive in our regulations and have provided too much protection to certain species.

FISH PROPAGATION

Wisconsin's fish propagation program began in 1874. The population of game fish in Wisconsin was declining and at that time the propagation of fish was the only known method of restoring fishing conditions. From 1874 to 1929 various species of fish were propagated and planted more or less indiscriminately to most of the waters of the state. Much of the work done accomplished the purpose intended. However, many waters were stocked with species which were quite detrimental to the fishing possibilities of the lakes and streams. The introduction of carp in southern waters and the planting of crappies and northern pike in some northern waters are examples of improper stocking methods. On the other hand, the introduction of brown and rainbow trout resulted in good trout fishing in waters too warm for native brook trout.

In 1929 first recognition of the need for fish habitat improvement was given. This persisted, and in 1933 the first lake and stream improvement projects were placed in operation under the CCC program. The work was continued under the W. P. A. program and over one million dollars in federal funds was spent to build improvement structures and to carry on stream-side planting in Wisconsin. Habitat conditions were definitely improved in many streams as a result of this work particularly due to stream-side planting. On the other hand, some of the work was definitely without value and had a detrimental effect on the fish-carrying capacity of the waters involved.

Prior to 1935 fish were planted by interested individuals who made applications for fish. They called at the hatchery when the fish were ready for delivery and planted them in the waters they wished to stock with fish. In 1935 all fish plantings were placed under the supervision of Wisconsin conservation wardens. The purpose of this change was to prevent the planting of fish in waters to which they were not suited and also to make sure that proper planting methods were used. At this time the conservation department expanded its own facilities for the distribution of fish and many were planted directly by departmental personnel.

In 1936 a policy stressing the rearing of fish to larger sizes for planting was inaugurated. Prior to this time all walleyes were planted as fry, most of the muskellunge were planted as fry and the major portion of trout was planted as fingerlings. It was then recognized that larger size warm water fish would have a better opportunity to survive in waters populated with panfish and other predacious species. The production of larger trout would provide fishing during the same season that the fish were planted. This policy has been continued and expanded to the present time.

In 1938 the fish distribution policy was again changed. Quotas for each body of water suitable for stocking were established once each year. The county conservation warden, the area biologist, and the fishery area supervisor held meetings to discuss the requirements of each lake and stream and to establish a fish planting quota to be filled by the various hatcheries. This plan has been in continuous operation ever since and all fish are planted by department personnel.

The production of panfish was also emphasized in 1938. Later studies, however, revealed that most of the smaller lakes of the state are overpopulated with panfish and that the production and distribution of these species would be of no value. Where there exists a need for the planting of panfish, a sufficient quantity can be obtained from overpopulated waters.

Scientific studies relative to fish stocking were also begun in 1938 and have been continued ever since. Changes in stocking policies have followed these studies.

In 1944 the production of fish by this division was drastically reduced and by 1945 had reached the lowest point since 1928. One reason for this reduction was the limited manpower, equipment, and supplies available to us under full war-time conditions. Another reason was the attempt to substitute in a large measure the production of larger fish in place of fry. Consequently, a total production of 268,523,093 fish was planted in Wisconsin waters in 1945. The following table illustrates the trend of annual fish plantings by numbers over the past decade.

1937 -----	1,096,739,759	1942 -----	757,233,531
1938 -----	1,124,884,750	1943 -----	554,733,546
1939 -----	1,133,472,848	1944 -----	429,028,751
1940 -----	1,529,208,004	1945 -----	268,523,093
1941 -----	1,062,392,488	1946 -----	408,591,067

It must, of course, be recognized that the actual number of fish planted in Wisconsin is not a true index of fish propagation activity as the cost of production and the effort expended in the production of large fish is many times greater than that for fish fry. It is obvious that a fish three inches in length has a much greater opportunity to mature and ultimately reach the fisherman's creel than would be expected from a fish only a fraction of an inch in length. Likewise, a trout of legal length has a far greater chance of being caught by a fisherman than has a fingerling who must first find food under natural conditions to grow to catchable size.

To produce larger size fish for stocking, equipment and facilities are required which were not necessary for the production of small fish. Rearing ponds, raceways, and large quantities of forage fish are needed. For the past two years the efforts of the division have been directed toward the construction of circular rearing ponds for trout production, musky rearing ponds, and natural ponds suitable for the production of walleye fingerlings. A new source of funds to enable the department to meet the added costs of this program have also been under consideration.

TROUT OPERATIONS

Trout production in 1945 was low but in 1946 the largest trout program in the history of the conservation department was successfully carried out. This does not mean that the greatest number of trout were propagated but that the greatest number of pounds of trout were planted in Wisconsin streams and lakes than ever before. Over 500,000 trout of legal size were planted. An additional 500,000 trout over one year of age and nearly legal size were planted. Over 4½ million fingerling size trout were also planted in the inland waters of the state.

The tremendous influx of fishermen from other states including persons returned from service, placed the greatest fishing pressure on the trout waters of the state that has ever been experienced. Yet most of the trout streams provided excellent fishing throughout the season.

Lake trout are now propagated only at the Bayfield hatchery for planting in Lake Superior and a few inland lakes. No artificial propagation of lake trout will be practiced for Lake Michigan for the next three years in accordance with a plan for experimental testing of fish propagation results.

MUSKELLUNGE OPERATIONS

The muskellunge is a native of northern Wisconsin waters. Therefore, the entire production of muskellunge from state fish hatcheries are distributed to waters located in northern Wisconsin which were originally populated by this species.

During 1945 and 1946 the production of muskellunge for planting as sac fry was considerably curtailed and larger numbers of swimming fry and fingerlings were planted. In view of the fact that the young muskies do not swim immediately upon hatching, they are unable to protect themselves in any manner from predators until they are about two weeks of age. They are known as sac fry during this stage. By retaining the fry in the hatchery until the food sac has been absorbed and the muskellunge is a free swimming fish, considerable mortality is avoided. When fish of this size are planted, they are able to find hiding places among the aquatic vegetation of the lake or stream and a greater survival is possible than is expected from the planting of sac fry.

In 1946 the distribution of fingerling muskellunge reached an all-time peak—189,502 muskies of this size were planted. The production of muskellunge fingerling is, of course, dependent upon the food available to these fish during their growing period. Suckers are the principle food used in the production of muskellunge fingerling. A fairly accurate check on the number of suckers consumed by muskellunge in ponds has been kept and it is now believed that each muskellunge will consume from 1,000 to 1,500 young suckers from the time he is hatched until he has reached two months of age. For this reason, tremendous numbers of suckers are hatched in the state fish hatcheries for muskellunge food. Large numbers of sucker fingerling are also seined from lakes containing an overpopulation of this species of forage fish. The suckers are placed in the rearing ponds and consumed by the muskellunge until they are planted in natural waters.

WALLEYE OPERATIONS

For many years the production of walleye fry was the most important spring spawning operation of this division. Because of the small size of walleye fry and the assumption that only limited numbers would ever survive to catchable size, it was necessary to distribute tremendous numbers of these small fish to the walleye fishing waters of the state.

Methods for fingerling production of walleyes were unknown in this state until 1940. In that year it was found that walleye fingerlings could be produced in natural ponds which contained no other species of fish. During the past six years, walleye fingerlings have been produced in great numbers. The production of each pond depends upon water levels, fertility, and the absence of other fish in the pond. The maximum production reached in this state was 69,528 four-inch fingerlings per acre or the equivalent of 790 pounds of fish per acre.

Considerable difficulty has been experienced in finding ponds suitable for walleye fingerling production. While many ponds in the southern part of the state contained sufficient fertility to produce walleye fingerlings, they were usually choked with weeds to such an extent that the fingerlings could not be removed from the ponds. In 1946, however, in cooperation with the State Board of Health and the fishery biology section, weed destruction by the use of chemicals was experimented upon to determine if the weeds could be destroyed without killing the fish. This experiment was quite successful and undoubtedly will be expanded in the future so that the geographical area of walleye production can be greatly extended.

BLACK BASS PROGRAM

Large mouth black bass are produced in hatchery ponds at Burlington, Delafield, Madison, Delavan, Blair, and DeSoto. Each year adult bass are placed in these ponds and removed after the bass fry have hatched and started to feed. The bass fry are then permitted to remain in the ponds until they reach fingerling size at which time they are distributed to various bass lakes and streams of the state.

In addition to the production of these hatchery ponds, large numbers of large mouth black bass fingerlings are transferred from certain Wolf river waters which contain a surplus fingerling population of this species, to lakes and streams in which stocking is necessary. In addition, many small landlocked lakes in northern Wisconsin contain stunted populations of black bass due to overpopulation of the species. By transferring quantities of bass from such lakes to lakes which require stocking, the overpopulation of the small landlocked lake is remedied and fish of an excellent size for stocking other important fishing waters are provided.

Small mouth black bass are produced at the hatcheries at Sturgeon Bay and at Hartmans Creek. Small mouth bass are propagated in the same manner as large mouth black bass. The fingerlings produced are distributed to the various small mouth black bass fishing waters of the state.

One of the major problems involved in the production of black bass in Wisconsin hatcheries is that of water control. Most bass ponds are constructed by damming up the stream which comprises the water supply. Consequently, no control over the water can be exercised when severe storms or floods occur. The result is usually the loss of many of the young bass which are carried over the dam or dyke and are lost before they have reached a suitable size for planting. Plans are now being made to construct by-passes to prevent the flooding of bass ponds constructed in this manner. We believe that such work will increase the output of the existing bass rearing ponds considerably.

NORTHERN PIKE PROGRAM

The production of northern pike fry is carried on at the Woodruff, Island Lake, and Spooner hatcheries. Northern pike produced at these hatcheries are distributed as fry to waters containing these species. For many years northern pike fingerlings from three to six inches in length were transferred from landlocked waters of the Wolf river area to the inland lakes of southern Wisconsin. In recent years, however, high water levels on the Wolf river have made such work unnecessary and very few fingerling northern pike have been distributed.

We now propose to propagate northern pike in rearing ponds to provide fingerlings of this species for stocking waters, particularly those containing populations of rough fish. The northern pike is a voracious feeder and is believed to be a distinct aid in the control of rough fish populations.

PANFISH PROGRAM

The propagation of panfish has been practically eliminated from our operations. Biological surveys have revealed that a sufficient population of panfish now exists in most waters of the state. Indications are that many waters are overpopulated with panfish and that all of our requirements for stocking lakes and streams with this species can be obtained through transfer operations from overpopulated waters.

The production of bluegills is a by-product of black bass propagation. Bluegills are planted in bass ponds to provide feed for bass. The remaining bluegills are removed at the time the bass fingerlings are planted and these bluegills are used for stocking waters which require this species of fish.

RESCUE AND TRANSFER OPERATIONS

Rescue operations are conducted under certain conditions. Many landlocked sloughs are flooded with water during rainy seasons of the year and then become stagnant during periods of drought. At this time oxygen becomes depleted and the fish population will be lost unless they are removed to fresh water. Our operations consist of seining out such landlocked pools and transferring the fish to the waters from which they came.

Similar conditions exist in reservoir areas where water is drawn off of a flowage after the ice has formed. Fish may become trapped under the ice in pockets in such flowages. It is extremely difficult to rescue fish trapped in this manner but every effort is made to return them to their parent waters.

Transfer operations are carried on to remove game and forage fish from waters in which they are found in too great abundance. Normally such fish are transferred short distances to understocked areas. In some cases, fish of catchable size are transferred to children's fishing ponds in the more heavily populated cities of the state. Children's fishing ponds are operated under permit issued by the conservation department and permit fishing by children only under supervision. This is an educational program as well as a fishing plan and involves cooperation with local civic bodies.

COOPERATIVE REARING POND PROGRAM

Some sixty-five cooperative rearing ponds have been established in various parts of this state. These ponds are operated under permit issued by this department and under the supervision of personnel of this division. During the war the shortage of available fish food caused the discontinuance of the majority of cooperative rearing ponds. However, now that the war is over, many of the ponds previously operated will be operated again as applications are being received for permits to cover such operations.

Most cooperative rearing ponds are used in the propagation of trout and require considerable expense and effort on the part of the cooperators to carry out the program. It is of great benefit to the department, however, in that it aids in the propagation of legal size trout for distribution to trout streams of the state.

DISTRIBUTION OF FEDERAL FISH

In 1945 the state of Wisconsin assumed the responsibility of distributing to lakes and streams or to cooperative hatcheries all fish provided by the Fish and Wildlife Service to Wisconsin residents. Prior to our agreement with the Fish and Wildlife Service, applicants requested fish directly from the Fish and Wildlife Service and they were shipped directly to the applicant for distribution under the supervision of this department.

Under the present plan all applications for fish are considered in the light of state requirements of the species requested. After the applications are approved, the fish are shipped to one of the state fish hatcheries and are distributed to the proper lakes and streams by personnel and equipment of this division.

FUTURE PLANS

Fish management plans are drafted once each year so that developments in fish management practices can be considered immediately upon their discovery. Present plans call for the expansion of propagation facilities for the production of legal size trout and fingerling warm water fish such as black bass, northern pike, walleyes, and muskellunge.

Undesirable stations are dismantled or sold as soon as they are discovered to be unsuited to our purposes. During the past two years the Hebron hatchery was sold because the water supply was unsatisfactory for the hatching of walleye eggs.

Included in our expansion plans is the construction of a series of muskellunge rearing ponds at the Chippewa Flowage. A survey has been made of the area and indications are that the terrain is suitable for the construction of ponds at a low cost. The water supply is excellent for muskellunge.

In expanding our facilities for the production of larger trout, we are considering the possibility of a new trout rearing station in northeastern Wisconsin. The water is now being checked for chemistry and temperature. If it proves satisfactory, negotiations will start to obtain property for the construction of the hatchery. Additions, consisting of circular rearing ponds are contemplated at state fish hatcheries at St. Croix, Madison, Brule, and

Crystal Springs. In addition to these plans, we expect to take advantage of all new developments which may occur from time to time, and after giving them a practical test, utilize such developments to the best of our ability.

The tables listed on pages 118 through 135 show the production of fish for planting for the calendar years 1945 and 1946.

ROUGH FISH CONTROL

Rough fish control has been one of the major fish management problems during that entire period of time since carp and other rough fish increased to such an extent that they destroyed nature's balance between rough and game fish populations.

As early as the year 1900 it was realized that it had become necessary to remove the excess populations of these rough fish, carp in particular. Several methods of removal have been attempted with varying degrees of success. The first of these was a license system. Private operators were permitted to seine the inland lakes by obtaining the proper license. This did not meet with the general approval of the sportsmen for the reason that it was not under direct supervision of departmental personnel. The second system was the contract system which is still in effect with only a few changes from its original form. Contracts are issued to private operators which permits them to seine or net rough fish in designated waters. Their operations are closely supervised by the state and if damage is done to the game fish or habitat, the operation is suspended. However, this system alone was unable to cope with the situation, and did not gain sufficient headway on the reduction of the rough fish in most waters. For this reason the system of removal by state owned and operated crews and equipment was inaugurated and became active in the year 1936, and has been in continuous operation up to the present time.

These operations in conjunction with the contract fishing have proven very effective and much headway has been made towards the restoration of nature's balance between rough fish and game fish populations in many of our better game fishing waters of the state. Rough fish cause damage by destroying vegetation, roiling the water and crowding out game fish and other preferred forms of wildlife. Rough fish control is deemed successful only after the vegetation becomes reestablished, the water clear and the preferred forms of fish and wildlife show an increase.

Outstanding examples of these waters are Lake Puckaway in Marquette and Green Lake counties and Lake Winnebago in Winnebago, Fond du Lac and Calumet counties. The recovery of aquatic vegetation and the consequent improvement in habitat conditions have been phenomenal. When state crews started operations in Lake Puckaway a few years ago the wild rice and celery had all but disappeared and now these two species of aquatic plants abound almost everywhere in this lake. Hook and line fishing is much improved and food and shelter for aquatic fowl and fur-bearers have been restored.



Opposite page: Carp being loaded for market.

Hoop netting in winter, Lake Wisconsin.



Landing good seine haul in Lake Winnebago.



Garfish removed in single seine haul.



Other problem waters such as the Madison lakes have been more difficult to bring under control but are showing definite signs of responding to our control methods.

During the period of time from the year 1912 up to the present time the total removal by contract crews and state operations is listed below. All individual carp fingerling removal listed were removed entirely by the state operated crews in addition to 55,000,000 pounds of the total poundage removed between 1935 and 1946.

<i>Year</i>	<i>Pounds</i>	<i>Individual Carp Fingerlings</i>
1912	1,321,000	
1913	1,214,000	
1914	1,335,000	
1916	610,523	
1917	583,573	
1918	1,190,000	
1919	2,605,224	
1920	2,159,000	
1921	1,834,582	
1922	1,027,950	
1923	1,371,917	
1924	6,787,770	
1925	4,118,978	
1926	2,944,609	
1927	2,468,822	
1928	2,944,609	
1929	3,005,405	
1930	1,726,340	
1931	1,822,527	
1932	1,365,401	
1933	3,378,846	
1934	6,005,488	
1935	5,401,233	
1936	6,681,306	13,502,910
1938	8,611,836	
1939	11,027,491	845,408
1940	7,821,456	3,088,040
1941	10,396,722	
1942	7,790,099	
1943	7,398,260	147,595
1944	4,838,322	640,743
1945	5,182,149	
1946	5,790,244	148,780
	<u>139,949,839</u>	<u>26,870,566</u>

LONG RANGE PROGRAM

Under long range plans which are being set up at the present time the conservation department has adopted the following policy regarding rough fish removal: "To remove rough fish and principally carp whenever and wherever possible with whatever means available without material injury to game fish populations and habitat".

In future rough fish removal work it is felt that it will be necessary for the conservation department to take up where contract fishermen are forced to leave off. It goes without saying that as soon as the rough fish are

thinned down to such an extent or are of the small and unsaleable variety the private contract fishermen must discontinue operations as they cannot operate except at a profit. At this point the rough fish section must take over until absolute control is realized. This work will of course have to be subsidized by an appropriation as it cannot be efficiently carried on a self-supporting program of financing.

Under the revolving fund system of finance it has been possible to operate in many of the non-profitable areas in past years, but as carp are brought under control less and less profitable operations will be available to state crews.

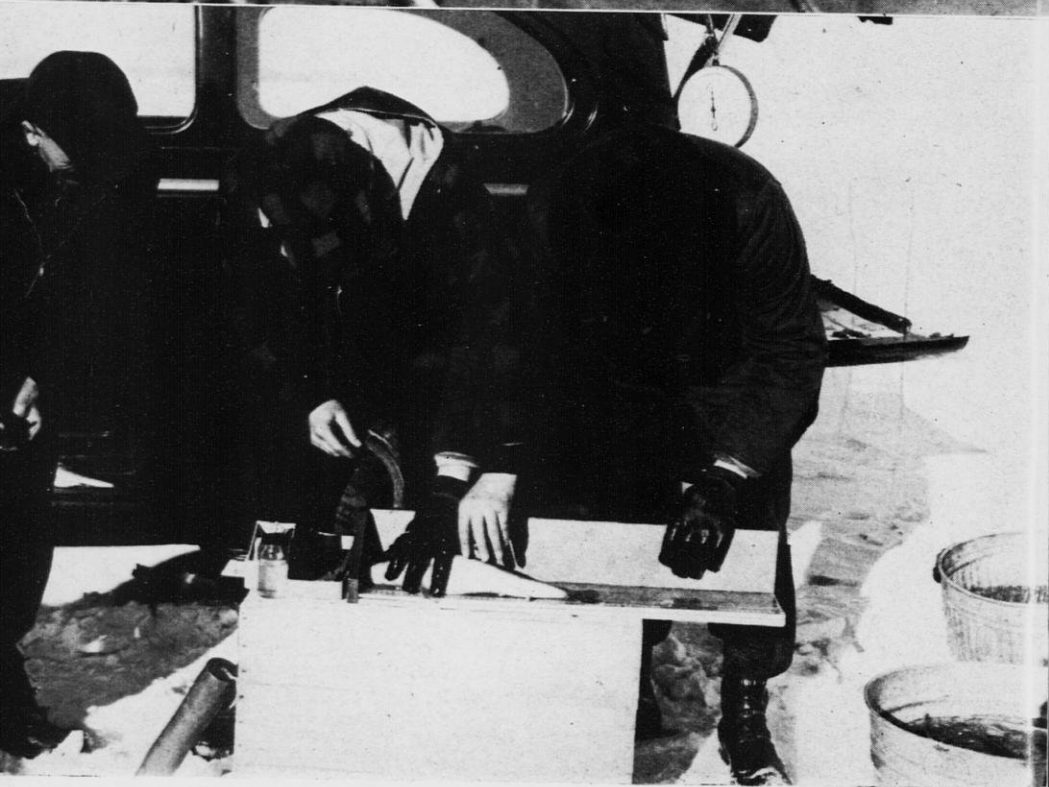
DISPOSITION OF FISH CAUGHT

Up to this time all saleable rough fish are disposed of for use as food, and during the war years this heavy production of rough fish augmented the nation's food supply.

As many as possible of the small unsaleable rough fish have been processed in our state canning plant for food for fingerling and legal size trout in our state hatchery rearing ponds. This has been a valuable addition to hatchery food during this critical period of food shortages. The balance of the unsaleable fish was disposed of to fur farms for animal food.

LIST OF OPERATING CAMPS AS OF JULY 1, 1946

1. McFarland—Madison lakes and all waters in Dane, Iowa, Richland, Crawford, Grant and Green counties.
2. Edgerton—Lake Koshkonong, Rock river and all waters in Rock, Jefferson and Waukesha counties.
3. Delavan—Lake Delavan and all waters in Walworth, Racine and Kenosha counties.
4. Wisconsin Dells—Lake Wisconsin and the Wisconsin river. All waters in Columbia, Sauk, Juneau, Adams, Wood, Monroe, and Jackson counties.
5. Beaver Dam—Beaver Dam lake, Rock and Crawfish rivers, Fox lake, and all waters in Dodge county.
6. West Bend—All waters in Washington, Ozaukee, Milwaukee, and Sheboygan counties.
7. Green Lake—Big and Little Green lakes, Lake Puckaway, Fox river, and all waters in Green Lake, Marquette, and Waushara counties.
8. Omro—Fox river, Waukau creek, Lake Butte des Morts, and waters in Winnebago, Waupaca, and Outagamie counties.
9. Oshkosh—Part of Lake Winnebago, Lake Poygan, Wolf river, and waters in Winnebago, Outagamie, Brown, and Calumet counties.



10. Fond du Lac—Part of Lake Winnebago and all waters in Fond du Lac, Calumet, and Manitowoc counties.
11. Fremont—Wolf river and other waters in that area.

GREAT LAKES COMMERCIAL FISHING

A very important source of fresh water fish for food comes from the Great Lakes. Wisconsin has jurisdiction over parts of Lakes Michigan and Superior respectively. Commercial fishermen are required to file monthly reports of their catches and these data show trends of various fish populations and also show that this is a very important industry valuable to the state's welfare. In addition to the compilation of data on the take of fish from the Great Lakes studies are continuously made as to the efficiency of various types of gear in order that the harvest is made sanely and without exploitation so that there is not a depletion of the fishery. In many instances in order to enable the fishermen to make a better harvest special permits are issued wherein the commercial fishermen may operate for a given species of fish and these operations are supervised so that other species are not destroyed. There is included herewith a tabulation showing the pounds and values of fish by species caught commercially in the Wisconsin waters of the Great Lakes for the years 1945 and 1946 respectively.

From an examination of the 1946 tabulation of pounds of each species of fish caught and the value of same, it will be noted that while lake trout ranks third in pounds, it is of the largest value, being \$950,000.00. Whitefish rank fourth on the list of pounds of fish caught and it is second in value, being approximately \$450,000.00. Herring is next with approximately 8,500,000 pounds of fish valued at approximately \$370,000.00. Chubs next with a value of \$283,000.00. It is noted that there is a decline of approximately 600,000 pounds of fish caught in 1946 and a decrease in value from \$3,700,000.00 to \$2,426,000.00.

During 1945 there was a considerable rise in the price of fish but in 1946 the price dropped sharply, particularly during the last of the year. However, \$2,500,000.00 was realized by the commercial fishermen of the Great Lakes during this year. There was a considerable decrease in the pounds of lake trout caught in 1946 from 1945 and 1944 in all of the lake trout fishing ports. It is pleasing to note, however, that there was an increase in the catch of whitefish in 1946 over 1944 and 1945 for a considerable amount in southern Green Bay, Door county waters, and Lake Superior. In 1945 and 1946 there was an increase in the catch of chubs in general throughout the Wisconsin Great Lakes waters. The total catch of herring in southern Green Bay and Door county increased 1,000,000 pounds in 1945 and 2,000,000 pounds in 1946 over 1944. In Lake Superior, herring increased 2,000,000 pounds in 1945 and 1,000,000 pounds in 1946 over 1944. During 1945 and 1946 approximately the same number of pounds of perch were caught in southern Green Bay, being 700,000 pounds. This was a decrease of approximately 1,500,000 pounds from 1944. There was a large increase in the catch

Opposite page: Top—Fish killed by industrial pollution.
Bottom—Winter studies on walleyes.

of smelt in 1946 by approximately 200,000 pounds over approximately 60,000 pounds in 1945 and practically none in 1944. The open season for walleyes in southern Green Bay permitted the catching of approximately 120,000 pounds in 1945 and 1946 over practically none in 1944. The catch of pickerel in 1946 decreased from approximately 50,000 pounds in 1944 and 1945 to 15,000 pounds in 1946. The other values of fish which were caught in much smaller numbers averaged about the same number of pounds as in former years. The total catch for 1946 being 18,400,000 and was approximately 600,000 pounds less than in 1945 and approximately 2,000,000 pounds more than in 1944.

Another fact which must be taken into consideration is the intensity of fishing. All indications are there were many more fishermen during at least the early part of 1946 than there were in 1944 and 1945, but we do not have the complete data as yet to show the catch per effort for 1946.

PERMITS

Smelt

From 1936 until 1943 permits were issued by this section for the taking of smelt with nets of less than 1¾ inch mesh under supervision of men appointed to collect data and supervise the operations of the fishermen, the particular concern being that no undersize perch were taken unnecessarily.

In the spring of 1943 the smelt died in such large quantities that there were practically none of them left in 1944 and 1945.

However, in 1946, the smelt fishermen of Marinette and Oconto felt there were enough smelt to warrant fishing for them under supervision. Therefore, 42 permits were issued at Marinette and 16 permits at Oconto for the periods from February 8 to April 24 and March 7 to April 26. However, ice conditions did not permit the fishermen on the ice as frequently as usual and very small quantities of smelt were caught. They took 98,739 pounds of smelt under permit.

Herring

Conservation Commission Order F-405 provides that all small mesh gill nets must be removed from the Green Bay waters from April 15 to June 1 so no spawning fish will be caught or disturbed at that time. This prohibited the taking of herring when the fishermen felt they could make considerable profit without harming the spring spawning fish. Therefore, the conservation department issued permits to the fishermen. They paid for the services of one supervising warden who inspected their work and gathered the data concerning the catch.

In former years fishermen at Marinette, Sturgeon Bay, Fish Creek, and Ellison Bay had desired permits for the taking of herring. However, in 1945 only the Marinette fishermen desired permits as fishermen from other ports did not feel there were enough herring to warrant carrying on the activity.

In 1946 none of the ports applied for permission.

Carp

Again the same regulation as mentioned above prohibited the taking of carp during May. While the carp is a spring spawning fish and every effort is being made to rid them of the inland waters, the fishermen felt they should be permitted to seine for them during this prohibited net period season if they would not harm other valuable spring spawning fish.

Accordingly, permits were issued to 4 fishermen at Oconto in 1945 and 5 permits in 1946 to seine for carp under a man who supervised and inspected their work and collected data concerning the catch. In 1945 the permits were effective from May 21 to June 1, and in 1946 the permits were in effect from April 17 to June 1. There were 12,891 pounds of carp caught in 1945 and 96,495 pounds in 1946 in the vicinity of Oconto.

At Green Bay 26 permits were issued in 1945 and 34 permits in 1946. The permits in 1945 were effective from May 1 to June 1, and during the same period during 1946. In 1945, 709,774 pounds of carp were caught and 439,232 pounds in 1946.

Permits of this type have enabled the fishermen to make considerable profit in catching fish at a time they would otherwise be prohibited from taking them. As the purpose of the prohibited net season is to protect spring spawning fish, we have felt if the fishermen are to receive a special privilege of this kind they should pay for the services of a man to supervise and inspect their operations, and see that no valuable fish are harmed. Therefore, in obtaining their permits it has been necessary for them to pay an equal share of the salary and expense of the man supervising their operations. If the quantity and value of the fish caught does not warrant the cost of protecting the spring spawning fish, then it is felt permits should not be issued.

Lake Trout

On Lake Superior, the Wisconsin closed season for lake trout and whitefish in recent years has started on September 25, while in the State of Michigan, the season has started on October 10.

The boundary line between Michigan and Wisconsin waters in Lake Superior is very close to the Apostle Island and has not been very definitely established to date. Therefore, the Wisconsin Lake Superior fishermen felt that an injustice was being done them by having our closed season start so early when the Michigan fishermen could fish for an additional 15 days, practically on their doorstep.

Therefore, recommendations were made to the conservation commission to continue the open season until October 10 for at least this one year to give the Wisconsin fishermen the same opportunity as Michigan fishermen and in hopes the two states could get together on a uniform closed season date another year.

During this period from September 25 to October 10, the Wisconsin Lake Superior fishermen caught approximately 46,700 pounds of lake trout and 25,200 pounds of whitefish, or a total of 71,900 pounds.

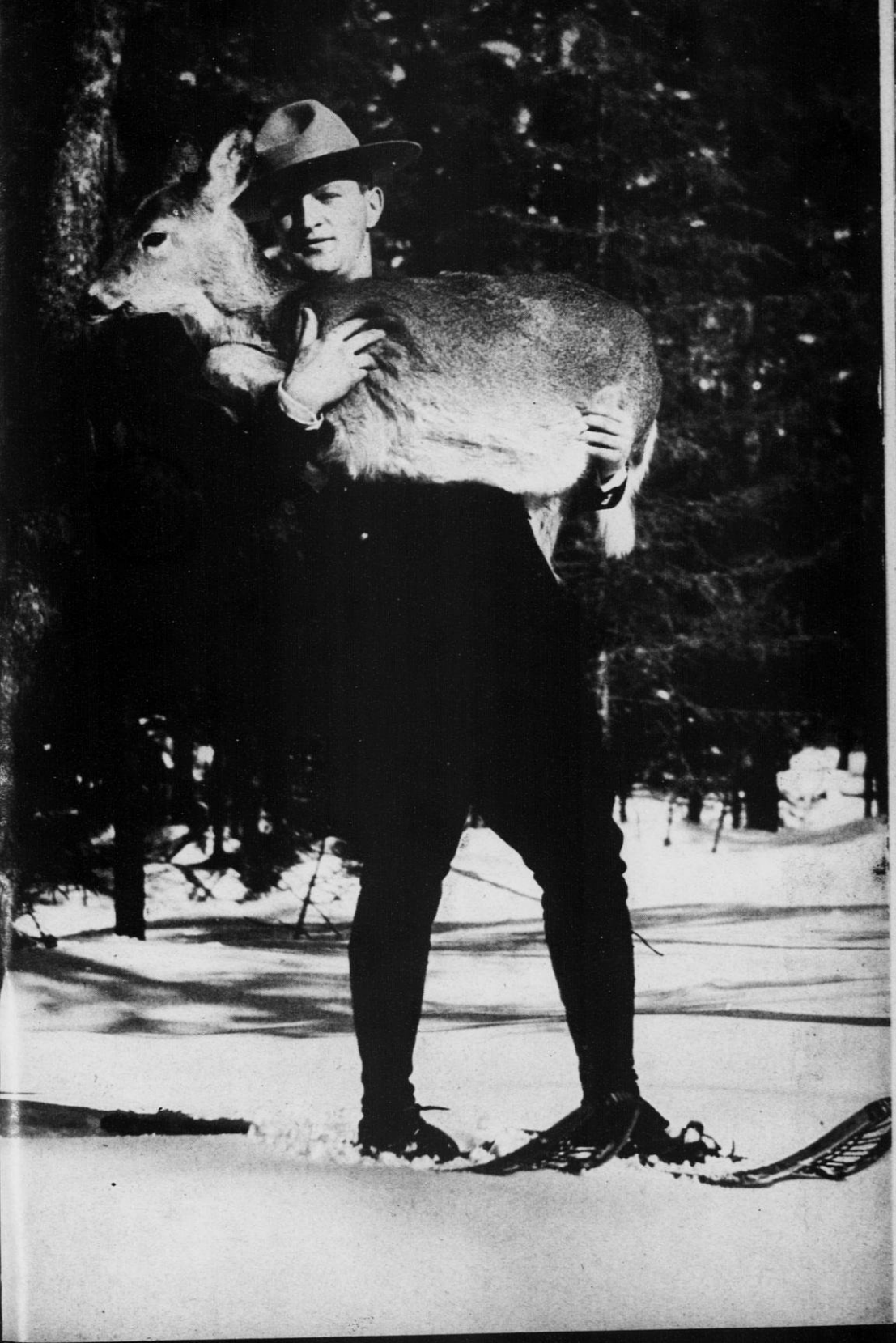
Pound Net Mesh

Prior to April 22, 1944, Conservation Commission regulations provided that by July 1, 1945, the mesh in pound nets, except one or two lifting sides, should be not less than 4½ inches when set in over 50 feet of water in Lake Michigan and Green Bay.

The fishermen using pound nets for the taking of lake trout felt this mesh was entirely too large for the catching of legal lake trout (17") and that so many legal trout would escape through the meshes that they could not afford to use the 4½ inch mesh.

Therefore, during 1944 and 1945 this section made an exhaustive study and examination of the size of lake trout caught in the various size meshes of pound nets used at that time and submitted a complete report containing data, charts and graphs of the findings. It was found that practically no percentage of undersize fish were taken in a mesh of 4 inches or over, while in a pound net having meshes of 3¼", 3⅜", and 3" a considerable percentage of undersize fish were caught.

In view of the immediate probability of the international commission soon having authority to also establish rules and regulations concerning fishing in Green Bay and Lake Michigan, it was recommended that the present regulation on pound nets which were in use April, 1944, which had no requirement as to mesh size be extended until October 10, 1947. The commission accordingly extended the regulation to be effective until September 30, 1947.



Game Management

The game management division is slowly returning to normal after the war years and the return and addition of thirty-seven personnel who served in the armed forces.

All sections of the division, including game management, propagation and stocking, refuges and public hunting grounds, and research, have been restaffed or reorganized and are headed by permanent section chiefs.

GENERAL GAME ADMINISTRATION

Total game division disbursements for the years ending June 30, 1945, and June 30, 1946, were \$388,174.04 and \$529,412.38 respectively. Expenditures include general game administration; hunting and trapping regulations; all propagation and stocking; exhibits; land leases and purchases; experimental and cooperative projects; surveys and investigations; winter feeding; refuges and public hunting grounds; administration of commercial game, deer, and fur farms; licensed shooting preserves; game and trapping season reports; publications; game research, and miscellaneous game projects and services.

The game division now has 116 permanent employees in its four sections.

GAME REGULATIONS

In the authority conferred upon it by the 1933 legislature, the Wisconsin Conservation Commission continues its responsibilities for the regulation of open and closed seasons on all species of game and on all fur-bearing animals.

It is unfortunate that the people of Wisconsin do not utilize to better advantage the opportunity they have in presenting their opinions and recommendations at the seventy-one county fish and game hearings that are held for these express purposes. It is hoped that as the period of readjustment continues the people of Wisconsin will make wider use of this opportunity. The department looks to the advice it receives from the conservation congress and coupled with an increasing force of game technicians, managers, and research men, the combination can solve many of the complex problems that are plaguing the game administrators of Wisconsin.

Hunting pressure has now reached a peak where many theories on game management and game administration found practical in the 1930's and early 1940's must now be revised to meet fast changing conditions.

PROPAGATION AND STOCKING

It was to be expected that during the war the game farm would have to operate under extreme difficulty, and this was to a great extent true. The farm experienced even greater troubles in securing good feeds and materials during the first six months of 1946.

The rearing programs were carried on for the biennium without reduction, and we anticipate a slight increase in production for 1947 regardless of scarcities and high prices.

Landscaping and general maintenance work was held to a minimum during the biennium. A new shelterbelt was planted across the entire northern side of the Thomas property, and general maintenance of the shelterbelts and the parks were maintained.

Both the bird and animal exhibits were continued at the farm, although the display of the rare exotics was curtailed due to lack of importations, scarcities, and high prices.

Game farm personnel attended forty-two public meetings during the two year period, and furnished conservation exhibits to twenty-seven wildlife shows and fairs.

Of interest is the continued increase in the visits of school classes from many parts of the state to the exhibition sections and the school forest and arboretum.

Animals cleared through the confiscation section of the farm included fifty-one fawn deer, six mature deer, twenty cub bears, sixty-six raccoon, and a number of beaver, mink, foxes, porcupine, skunk, badger, otter, rabbits and squirrels. In addition 296 deer were trapped at the Barksdale Powder Plant in Bayfield county during the winter of 1945-46, and 1,219 pheasants were trapped in Milwaukee county.

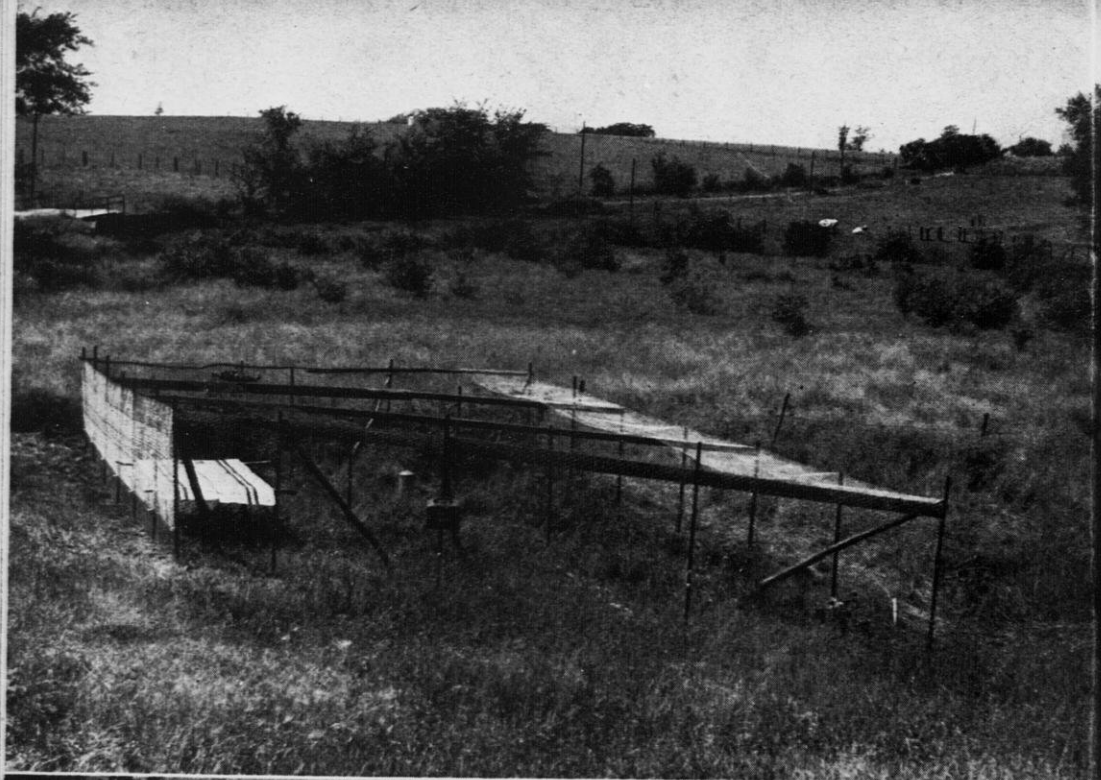
A total of 796,560 game bird eggs were produced at Poynette during the biennium, and aside from the distribution of eggs the cooperators' 488,133 game birds were hatched at the farm.

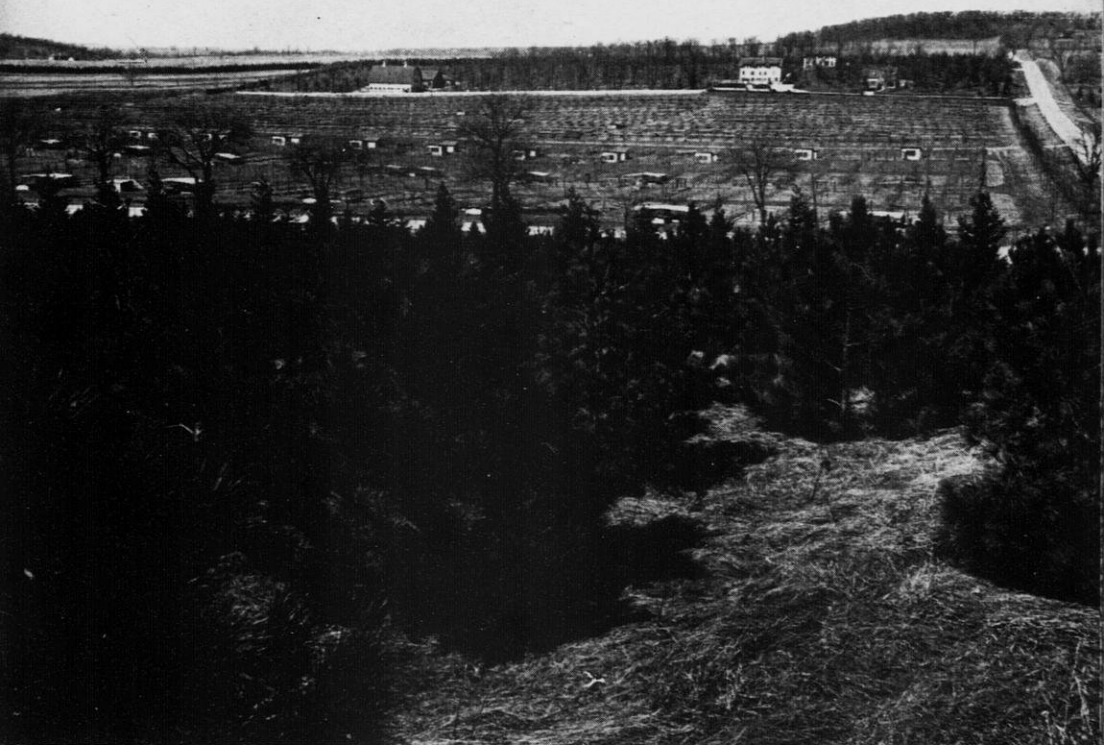
There were 344,771 day-old pheasant chicks distributed to cooperating clubs during the two years, and from these were stocked in the field a total of 255,560 pheasants between the ages of eight weeks and maturity. A total of 31,224 game bird eggs were distributed to cooperators. During the biennium there was stocked directly from the farm 46,895 mature pheasants, 20,042 ten to twenty weeks-old pheasants, and among experimental plantings 4,299 Chukar partridges and 372 Reeves pheasants.

A total of 1,486 black-cross and gray raccoon were stocked during the period.

During the biennium the game farm laboratory carried on disease control work incident to the production program on the farm, and maintained a diagnostic and field service for the commercial game and fur farms. Field service and experimental projects were necessarily limited.

In August, 1945, Dr. Gaylord Hartsough left the department for private employment, and the pathological laboratory remained inactive until Dr. A. M. McDermid was selected to fill the vacancy in February, 1946.





Corner of State Experimental Game and Fur Farm showing evergreen planting in foreground, pheasant rearing pens and headquarter buildings.

Forests, prairies and marshland provide an infinitely varied habitat for game birds.

Opposite page: Top—Auxiliary holding pens for gradual release of pheasants. Bottom—Experimental deer feeding pens used in deer research project.



GAME MANAGEMENT ACTIVITIES

Winter Game Bird Feeding

Each winter since 1929 or earlier the department has operated a winter game bird feeding program to help carry the wild birds through these critical months. Feeding activities concentrate mainly on the pheasant, Hungarian partridge and quail, but some feeding of grouse (especially prairie chicken) is accomplished. The feeding program is carried on under the supervision of the conservation wardens in each county with the help of local conservation organizations and sportsmen's clubs.

In the winter of 1944-45 a total of 386,450 pounds of cob corn, shelled corn and scratch feed plus 1,400 pounds of grit was distributed at a cost of \$7,729.32. Because of a mild winter in 1945-46 with considerable amounts of unharvested corn remaining in the fields, only 165,891 pounds of grain, 780 pounds of scratch feed, and 2½ acres of standing corn were furnished at a cost of \$3,515.96. Although emergency winter feeding activities for birds has been questioned as to its value in some states, it is felt Wisconsin's dairy farming practices do not permit sufficient grain to be left in the fields and that, therefore, the supply must be augmented.

Winter Deer Feeding and Deer Yard Acquisition

According to a bill incorporated into the Wisconsin statutes in 1943 the revenue received by the department from 50 cents on each deer tag sold is to be expended exclusively for the purchase and distribution of winter deer feed and for the acquisition of winter deer yards. As a result of this legislation there was set aside in 1944-45 a total of \$63,611.50 and in 1945-46 a total of \$66,566.50 for these purposes.

During the winter of 1944-45, all divisions participated in the feeding of deer, but in 1945-46 the entire responsibility was placed upon the forest protection division, since the distribution of man power and equipment was such that this division was best fitted to cope efficiently with an expanded program. Listed below are cost schedules and a summary of feed distribution for the period:

	1944-45	1945-46
Feed -----	\$20,312.26	\$43,940.89
Express and Freight -----	1,695.30	1,890.38
Gas and Oil -----	197.80	304.39
Supplies -----	200.02	1,581.75
Telephone and Telegraph -----	47.65	106.55
Truck Repairs -----	52.50	632.55
Building Material -----	311.99	291.31
Tools and Equipment -----	845.00	8,729.89
Rent, Fuel, Light and Water -----	147.14	---
Travel Expense -----	1,148.72	2,868.92
Salaries -----	4,887.03	11,347.08
Insurance -----	32.66	67.04
Department Contributions -----	3,672.37	---
Misc. (Snowplowing, etc.) -----	---	261.26
	\$33,550.44	\$72,022.01
Less surplus corn sold -----	603.53	3,270.00
Net total -----	\$32,946.91	\$68,752.01

	1944-45	1945-46
	Lbs.	Lbs.
Feed Distributed:		
Alfalfa hay -----	405,462	1,381,313
Cob corn -----	339,570	---
Concentrated feed -----	366,075	840,588
	1,111,107	2,221,901

Expenditures for Deer Yard Acquisition

During this biennium a total of 27,493.94 acres of deer yarding lands were purchased with a total expenditure of \$90,344.67. However, because of the multiple uses of these lands, some areas were purchased jointly with deer yard funds and public hunting grounds and forestry funds. Of the acreage listed above, 13,527.67 acres were acquired through such joint expenditures.

The actual amount of money spent for yards from deer yard acquisition funds alone during the biennium totaled \$67,470.74; in 1944-45, \$27,113.69, and in 1945-46, \$40,357.05. Expenditures of the forestry and public hunting grounds funds for this purpose totaled \$22,873.93.

The counties in which these deer yards were acquired during the biennium from these several funds are as follows:

<i>County</i>	<i>Acreage</i>
Ashland -----	4,840.80
Bayfield -----	160.00
Douglas -----	10,349.00
Iron -----	3,760.00
Lincoln -----	960.00
Marinette -----	997.24
Price -----	4,810.67
Sawyer -----	1,616.23
	27,493.94

The above figures indicate a total income for the biennium of \$130,178.00 and an expenditure of \$169,169.66. It should be stated that the \$38,991.66 expended over total income was drawn from previous unexpended balances.

Deer and Bear Damage Claims

According to the statutes a total of \$12,000.00 was appropriated from the general fund for the payment of deer and bear damage claims for the fiscal year 1944-45, but as this amount proved to be insufficient and had to be amplified by emergency appropriations, the law was changed on July 1, 1945 so as to appropriate annually for this purpose a total of \$25,000.00. Even this amount proved to be too small to cover expenditures.

During the biennium a total of \$73,275.25 was expended in payment of claims for deer and bear damage. The payments for each fiscal year and animal are as follows:

<i>Fiscal Year</i>	<i>Deer</i>	<i>Bear</i>	<i>Fiscal Total</i>
1944-45 -----	\$23,732.90	\$11,509.57	\$35,242.47
1945-46 -----	28,546.83	9,485.95	38,032.78
	\$52,279.73	\$20,995.52	\$73,275.25

Bounty Payments

On March 11, 1945 the new statute became effective placing a bounty on foxes with a payment of \$2.50 for each adult and \$1.00 for kits. One-half of the expense for this bounty was to come from the conservation fund and one-half from the state's general fund. This was in addition to the already effective statutory payments from the general fund on wolves and coyotes of \$20.00 for each adult and \$10.00 for each cub and wildcat and lynx of \$5.00 on each animal. The total numbers of animals bountied under this law for each fiscal year of the biennium and expenditures were as follows:

	<i>Animal</i>	<i>Number Bountied</i>	<i>Expenditure</i>
1944-45:	Coyote and Wolves -----	1,119	
	Wildcat and Lynx -----	221	
	Red Fox -----	2,748	
	Grey Fox -----	329	
		<hr/>	
		4,417	\$26,373.50
1945-46:	Coyote and Wolves -----	4,181	
	Wildcat and Lynx -----	1,048	
	Red Fox -----	17,523	
	Grey Fox -----	5,865	
		<hr/>	
		28,617	\$141,506.00
Totals for Biennium:	Coyote and Wolves -----	5,300	
	Wildcat and Lynx -----	1,269	
	Red Fox -----	20,271	
	Grey Fox -----	6,194	
		<hr/>	
		33,034	\$167,879.50

Miscellaneous Projects

During the biennium miscellaneous game management activities were of necessity kept at a minimum because of personnel lost to army service. However, an experimental demonstration stream planting project was maintained and developed further on Badfish Creek near Oregon, Dane county, and several cooperative land management projects on private property were encouraged. Hunter's and trapper's report cards were tabulated and a special study was made of questionnaire cards sent out to a sample group of deer hunters. The Wisconsin conservation congress recommended game legislation in 1944 at a meeting in Madison but in 1945, because of a ban on travels for such purposes, only district meetings were held by this group.

Each year of the biennium special permits were issued for bow hunting on the Necedah National Wildlife Refuge, with over 2,000 issued in 1944-45 and 3,800 in 1945-46. Game and fur farm licenses were issued to new licensees during this period as follows:

	1944	1945
Game Farms -----	17	25
Fur Farms -----	79	118

There are at present approximately 173 game farms, 28 deer farms, and 474 fur farms licensed in the state by the department. Many of these farm licenses, however, are issued only to permit individuals to keep pet or exhibit animals, and most of the fur farms are for muskrat areas. Mink and fox farms are not licensed by the department. Also during this period several hundred special permits for trapping, bird banding and scientific collectors were issued. Licenses also were prepared for 68 shooting preserves on 42,400 acres in 1944-45 and 71 shooting preserves on 42,680 acres in 1945-46.

LABORATORY

An agreement was made between the Department and the Disease Control Council of the Great Lakes Mink Producers Association and the United Mink Producers Association in January, 1946, wherein these associations would be permitted the use of the facilities of the laboratory and employ their own pathologist. This cooperative movement was in the interest of disease control to commercial mink breeders.

A cooperative agreement was made between the conservation department and the University of Wisconsin in November, 1945, wherein was established a working arrangement for genetics study in fox and mink to be conducted at this station and maintained and supervised by the laboratory staff of this station.

The following list includes some of the more important subjects on which experimental work was carried out:

- Muskrat Disease Investigation
- Mink Distemper Control
- Genetics Studies in Fox and Mink
- Roundworm Control in Raccoon
- Roundworm Control in Fox
- D. D. T. Toxicity to Mink

The following is a brief resume of activities for the two year period:

Station birds treated or examined	437	
Outside birds treated or examined	642	
		1,079
Station animals treated or examined	1,929	
Outside animals treated or examined	9,399	11,328

Grand Total		12,407

The following publications were written and received national prominence during the biennial:

- Wisconsin Mink Bulletin
- Report on Muskrat Disease Outbreak
- Distemper in Mink at Whelping Time
- Food Poisoning
- Feed Misuse
- "Yellow Fat" in Mink
- Mink Feeding Schedule

The following previous bulletins were revised in the light of newer knowledge:

Pneumonia in Mink
Abscess in Mink

A total of 25,000 cc. of Autogenous Infectious Enteritis vaccine was made in the laboratory in 1946 for use in controlling this disease in raccoon raised at this station.

A total of 87 field trips covering 12,592 miles were made of which 27 were services to fur breeders of the state and 60 were for administrative purposes, wildlife disease investigations, and disease control work associated with the pheasant cooperative propagation program.

FEDERAL AID IN WILDLIFE PROGRAM

During the biennium of July 1, 1944 to June 30, 1946 the state's federal aid in wildlife research, development and acquisition projects for game were in a state of flux because of the war effort. However, the general trend in these projects during the end of this period was one of reorganization and expansion. The war had called into service a total of 19 game management personnel. Two of these, Elton Bussewitz of the pheasant research project, and Earl T. Mitchell of the Horicon Marsh development project, did not return.

Also as a result of the war, the grouse research project under the leadership of Wallace Grange ended on June 30, 1942 and the waterfowl and pheasant research projects, under the leadership of Mr. F. R. Zimmerman and Dr. Irvan O. Buss, respectively, on June 30, 1943. The final reports of all of these projects were delayed in completion and publication because of these circumstances, and by the end of the biennium only the pheasant project's report, "Wisconsin Pheasant Populations", was available for the public. The waterfowl and grouse reports are now in final stages of preparation. New research projects of more definite and more limited scope are being inaugurated as of July 1, 1946 on waterfowl, with Ralph Hopkins as leader and on pheasant, with Frank Kozlik as leader.

The following are summary reports of the federal aid in wildlife projects which continued operating during at least part of the biennium:

Deer Research Project

The deer research project under the leadership of W. S. Feeney with headquarters at Ladysmith continued active throughout the biennium. Because of the seriousness of these deer problems the work was even increased to some extent and much more assistance in field study was given the project by other department field personnel.

Most intensive was the work studying and classifying winter deer yards as to their condition in regard to availability of deer foods. In the winter of 1944-45 a total of 537 deer yards were cruised, with project workers covering 187 of the most critical and other department personnel 475. This winter a total of 2,432 man-days were expended on this work with 8,555

miles covered on foot and 1,706 deer yard reports filled out. The findings for this comparatively mild winter indicated that browsing on the principal food species was excessively heavy in 46 per cent of the yards in northern Wisconsin and that the deer herds, with only 27 days of actual yarding conditions, were browsing in excess of the carrying capacity in more than one-third of the yards.

During the winter of 1945-46 this same type of thorough survey was carried on with a total of 621 of the known 819 deer yards cruised and studied to more or less extent. This winter also was unusually open and mild in the north, but conditions in many of the deer yards remained as serious as in the previous year. Also this winter special studies were begun to determine the results of a large artificial deer feeding program and test aerial surveys were made to determine the value of such methods in locating new winter concentration areas.

Also during this biennium the project began pen-controlled deer feeding experiments to determine the value of certain types of natural and artificial foods in relation to the deer's nutritional requirements. Other studies which continued regularly were those of studying age classes and antler points as indicating factors to the deer herd's reproduction and status. A special investigation and harvest to alleviate overpopulated conditions on Chambers Island in Green Bay in October, 1945 definitely indicated the tendency of even experienced woodsmen to underestimate deer populations. More deer were harvested than were believed to exist on the island and about half the number originally estimated were believed to still remain.

Damage to natural forest reproduction by excessive deer populations was found to be of major importance and special studies are proceeding on this subject. Throughout the biennium the deer herds increased with mild winters and harvest of only forked bucks while the condition of the winter deer yards remained acute largely because many of them were too far depleted to come back rapidly. It was found that even in spite of mild winters heavy deer populations continue to keep the annual growth of food shrubs and trees closely cropped.

In the spring of 1946 the department published a booklet by Assistant Director Ernest F. Swift entitled, "A History of Wisconsin Deer". This publication summarized many of the findings of the deer research project resulting from six years of field studies and also analyzed present conditions in relation to the changing environment of the past.

Quail Census Project

This project, one of the oldest continuous census studies in the United States, has been carried on by various agencies since 1929. It has been operated since 1939 by federal aid funds under joint supervision of the department and the school of wildlife management of the University of Wisconsin. Albert Gastrow has been the local project leader with student assistants from the University. The project studies a 4,500 acre area near Prairie du Sac with regular field censuses from November to April each year with continuous trapping, banding, sexing, and aging of the birds

throughout the winter. Additional quail study work has recently been added to this project on a 9,900 acre trapping area in Dunn county. The purpose of this work is to determine the yearly fluctuation and turnover of quail on the northern extremity of their range for comparison with Prairie du Sac findings.

Pheasant Research Project

Although this project was technically inoperative during the biennium, some preparatory work was done in the spring of 1946 which is now being followed up by the new project beginning in July 1946.

A study of spring-released pheasants was initiated at the Kewaskum public hunting grounds in Washington county and also on an area in Dunn county. The two areas will be used for comparative purposes. Initial findings indicate that practically all of the hen pheasants released at Kewaskum in spring laid eggs, but they laid later than the average in wild birds and there were fewer eggs per nest. Hen pheasants harvested in a special season in Dunn county were studied for these same factors with a new technique using ovaries taken from the birds harvested.

Food Habits Research Project

The purpose of the food habits research project, centered at a laboratory at the state experimental game and fur farm in Poynette, was to analyze crop and stomach contents of birds and mammals with major work to be done in cooperation with the field research projects on pheasants, grouse, quail, waterfowl, and deer. This work was carried on during the biennium by George B. Rossbach until his resignation on December 31, 1944. It was again inaugurated on March 20, 1946 under the leadership of Harry Anderson until his resignation on June 30, 1946. The project has on hand a considerable amount of material to analyze and additional specimens continually submitted by field research projects.

Horicon Marsh Acquisition Project

This project for the acquisition of lands necessary for the development of the state's portion of Horicon Marsh in Dodge county was largely completed previous to this biennium. However, a few parcels of land were pending purchase and some were found necessary to permit flowage operations or good land management practices. During this period purchase was completed on four parcels of land, totaling 388.17 acres at a cost of \$15,600.00. Because two small parcels of unusually high value for public access to the Marsh were involved in these purchases, the price per acre does not reflect the average price paid for most of the Marsh property previously.

Horicon Marsh Development Project

During this biennium the Horicon Marsh development project, operated by the department as the Horicon Marsh wildlife area with headquarters at Horicon, was under the temporary leadership of S. Paul Jones until October, 1945, when the regular leader, J. R. Smith, returned from army

service. Project activities were necessarily curtailed during this war period biennium, but during the final six months activities again increased for more intensive management.

Operations on the project during this period included the stabilization of water levels at the department's Horicon dam at 74.00 feet whenever possible, share-trapping activities in the fall of 1944 and 1945 with proceeds placed in a revolving fund for marsh management, farming of state-owned land by project personnel and share-cropping, and planting and management of game food and cover. Other activities included posting, fence building, control of undesirable trees and brush, and planning of contour and strip-crop farming, new roads, building remodeling and management practices such as controlled burning.

PUBLIC HUNTING AND FISHING GROUNDS SECTION

This biennium was marked by a great expansion of the public hunting and fishing grounds system in Wisconsin. The cessation of the war enabled a staff of thirty men, including biologists, game managers, foresters, engineers, surveyors, and aids, to lease, purchase, and manage land in the best interest of public hunting and fishing on a scale never before attempted in Wisconsin.

The technical staff, particularly biologists and foresters, is intended to intensify game production on some lands owned by other divisions of the department as well as on hunting ground areas, and will also extend eventually to include some cooperative effort on privately owned lands.

Forty new areas (134,202 acres) were established during this period. This increased the total number of areas in operation to fifty-one, and the total acreage to 145,516. Of this, 8,912 acres have been purchased and the balance leased. These areas vary in size from less than 1,000 to nearly 10,000 acres, and are located in twenty-seven counties, with emphasis placed on the southern half of the state adjacent to the heavily populated sections.

In addition to the areas established primarily for public hunting and fishing grounds there is an additional 4,000,000 acres of land a greater portion of which is open to public hunting and fishing. This includes approximately 2,122,045 acres of county and privately owned forest crop open to public hunting under the provisions of the forest crop law, conservation lands other than those acquired specifically for public hunting and fishing, state land commission lands, and U. S. Forest Service lands. The greater portion of the acreage lies in our deer and grouse territory. Emphasis has been placed upon hunting grounds rather than fishing areas as the fisherman contributes directly to the program only when he purchases a voluntary sportsmen's license.

In addition to work accomplished as reflected by the total acreage figure, other purchase projects in process of completion were advanced and expedited.

For efficiency in administration the state was divided into two areas, eastern and western, with the activities of field personnel in each area channeled through supervisors.

Many more proposed areas, intended to be leased were given preliminary inspection and those found acceptable included in the work program for the coming year.



Law Enforcement

The law enforcement division of the conservation department is charged with the protection of the state's natural resources involving the enforcement of all conservation laws and regulations. All natural resources are held in trust by the state for all of the people, and conservation wardens are employed to protect the interests of present and future citizens. The taking of game and fish contrary to law means utilization of wildlife by a few individuals at the expense of law abiding citizens. The inherent right of all people to the use of natural resources was recognized by the legislature which consequently made provision for a program of conservation law enforcement.

The task of conservation law enforcement becomes more involved and demanding with the progress of the years, the past biennium has witnessed the growth of the warden force from 88 officers to approximately 100; consisting of 1 Chief Warden, 6 area supervisors, and 93 field men.

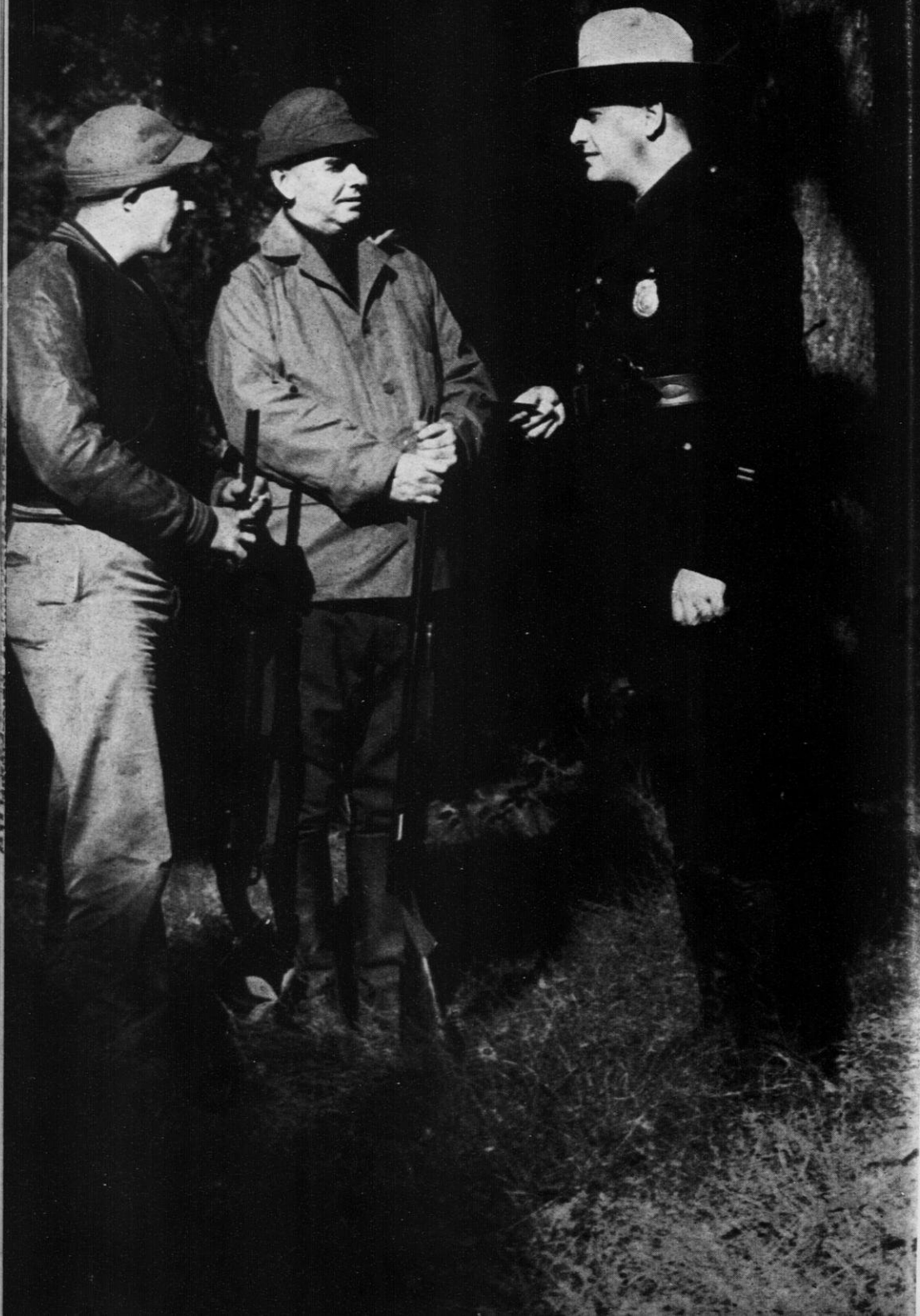
WARDEN DUTIES

The duties and problems of conservation wardens become greater and more varied each year due to expansion of the department, demands of the public for additional enforcement, and modernization and advancing trend of the times. They are required to enforce all conservation laws and regulations; supervise fish planting and stocking of pheasants and other wild game; conduct surveys necessary in these programs; provide information for the establishment of seasons and bag limits for various species of fish, game, and animals; collect specimens for scientific research; direct winter feeding programs; assist in beaver control and predatory animal control; cooperate with other state departments, federal agencies and law enforcement agencies; assist in establishing game and fish refuges; settle deer and bear damage claims; assist in forest protection work; and supervise lake and stream improvement. Wardens are responsible to a large extent for increases in departmental revenue by carrying on an active program of checking hunters and fishermen for licenses.

Law enforcement on the great lakes has been improved greatly by added activity on the part of patrolling personnel.

MODERN IMPROVEMENTS

Five F. M. two-way radio sets have been installed in wardens' automobiles in Northern Wisconsin on an experimental basis. They operate in conjunction with the state highway traffic division and have proven successful to date. It is planned to further modernize the entire division by installing such radios in all enforcement officers' cars in the near future.



Each year finds the conservation warden employed in new and varied activities making greater demands on his time. Activities which may or may not be directly relating to problems of fish and game are carried on in cooperation with other conservation department divisions. The scenes on these two pages show the warden checking hunters, trappers, and inspecting illegal operations of seining and fur trapping.





An in-service training school was inaugurated during the past year which emphasized modern law enforcement trends and improved public relations. The school was held at the U. S. Forest Service training center near Eagle River, Wisconsin, and consisted of three classes of four days duration each, leaving a skeleton crew of wardens in the field at all times. It is intended to make such training an annual event.

ARREST RECORD

For the biennium ending June 30, 1946, department records reveal that 3,665 persons were arrested for violations of the fish and game laws. This is an increase over the previous biennium of 753. Records also indicate that 4,448 seizures were made during the period. The upward trend in arrests is believed to be the result of improved and enlarged enforcement methods.

DEER AND BEAR DAMAGE CLAIMS

In 1945 the legislature found it necessary to increase the appropriation for this purpose to \$25,000.00 annually due to the increasing deprecations to farm crops and animals caused by deer and bear.

During the biennium the deer and bear damage claims investigated and settled by wardens were as follows:

	1944-1945	1945-1946
Bear damage claims paid -----	\$11,509.57	\$ 9,485.95
Deer damage claims paid -----	23,725.50	26,339.77
Total -----	\$35,235.07	\$35,825.72

These figures reveal that the present appropriation is insufficient, and in 1946 it was necessary to appeal to the emergency board for additional funds.

Farm crops suffer most from deer damage although orchards, landscaping and trees are included. Bear damage is confined almost entirely to domestic animals and bees.

It is interesting to note that the counties in which deer damage claims exceeded \$2,000.00 during the biennium were as follows:

Adams -----	\$3,047.00
Bayfield -----	2,303.40
Burnett -----	2,016.20
Clark -----	2,695.17
Columbia -----	2,327.36
Douglas -----	4,917.99
Juneau -----	3,013.28
Marinette -----	4,647.23
Wood -----	3,763.34

Opposite page: The conservation warden performs many services to the public in addition to his regular duties. Besides protecting the rights of citizens in the matter of taking game and fish, wardens conduct educational tours for the benefit of boy scouts and other youth organizations.

BEAVER CONTROL

497 beaver damage complaints were investigated by three state trappers employed by the department, which resulted in the live trapping and transferring to suitable locations of 318 beaver. During the same period of time it was necessary to trap and pelt 413 beaver which could not be taken alive due to weather conditions and urgency of the complaints.

WARDEN RETIREMENT SYSTEM

Under the provisions of Section 29.14 which provides a retirement system for conservation wardens, five wardens have been retired and replaced by young men.

NOYES EFFICIENCY AWARD

The Haskell Noyes Conservation Efficiency Award, which is presented by Mr. Noyes of Milwaukee, former chairman of the conservation commission, is intended to imbue the conservation wardens with a spirit of friendly competition. The warden winning the award receives a gold watch, and his name is engraved upon a silver plaque which hangs in the Madison office. This award is given annually, and the recipient is selected on the basis of efficiency with which he conducts his cases and seizures, his citizenship and general appearance, his cooperation with other divisions, his care in making reports and answering inquiries, and any unusual and additional service rendered to the department or to his community.

The 1943 award was presented to Conservation Warden William Field of Beaver Dam, Dodge county. The 1944 award was presented to Conservation Warden Chauncey Weitz of Luck, Polk county.

EDUCATION

With the comprehensive educational program now being conducted throughout the state, it is felt that a better attitude toward law observance, combined with an efficient law enforcement organization in the field, much greater protection for fish and game and other natural resources will be realized. The continued cooperation of the public is important and highly valued by the wardens and is gradually resulting in a better understanding of conservation requirements. It is realized that education or law enforcement alone will not curb willful and commercial violations but by a combination of the two, progress is being made.

Information and Education

EDUCATION

During the biennium the education section continued to provide conservation information and to carry on projects and programs with interested individuals and groups. As in previous years, special attention was directed to conservation education in the schools. Thousands of requests were received from teachers and pupils who are sent publications and materials on various phases of conservation.

In recognition of the importance of teacher training institutions in the success of the conservation education program, conferences were held with instructors; talks and demonstrations made before student-teacher classes; motion pictures were shown, exhibits displayed and source materials recommended. As in previous years new publications were sent to the libraries of these schools. Not only department literature was supplied but also those available from other agencies as well.

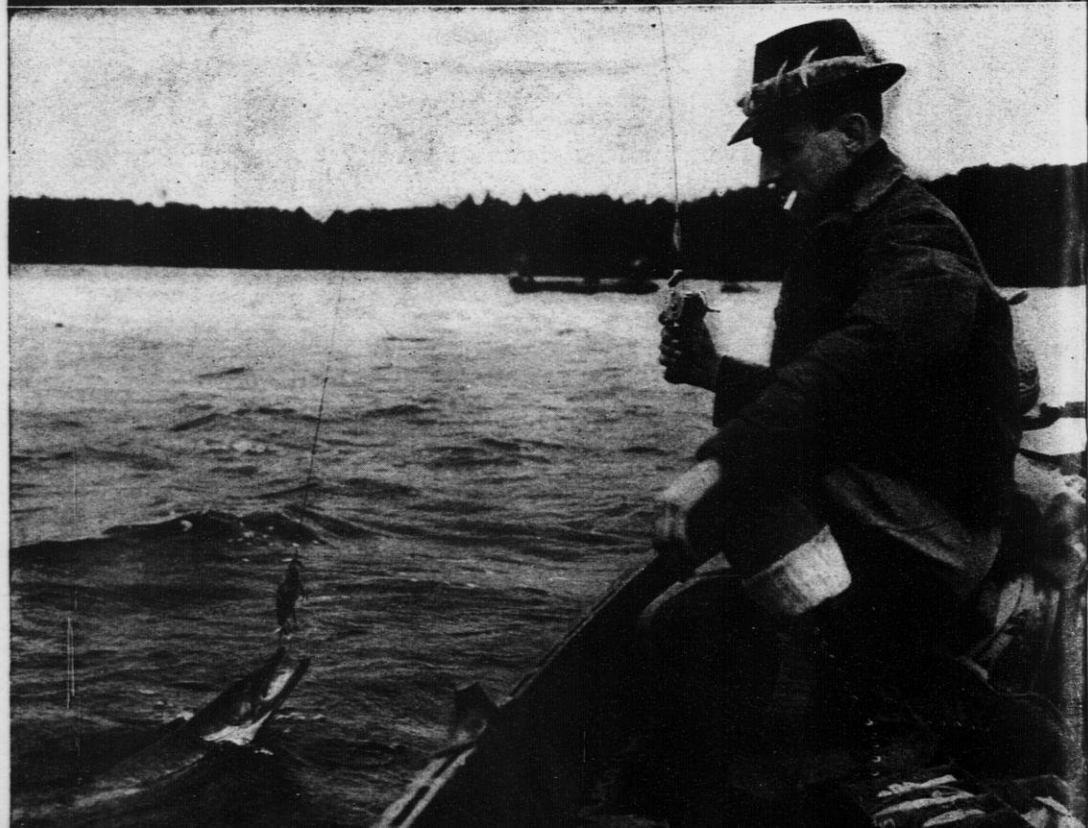
A forward step in conservation education was taken by the Department of Public Instruction in its state-wide curriculum planning program. As a part of this program a resource committee in conservation was selected and has been functioning since 1945. A representative of the education section serves as a member and consultant on this committee. Other members of the department have been called in to assist in their specialized fields.

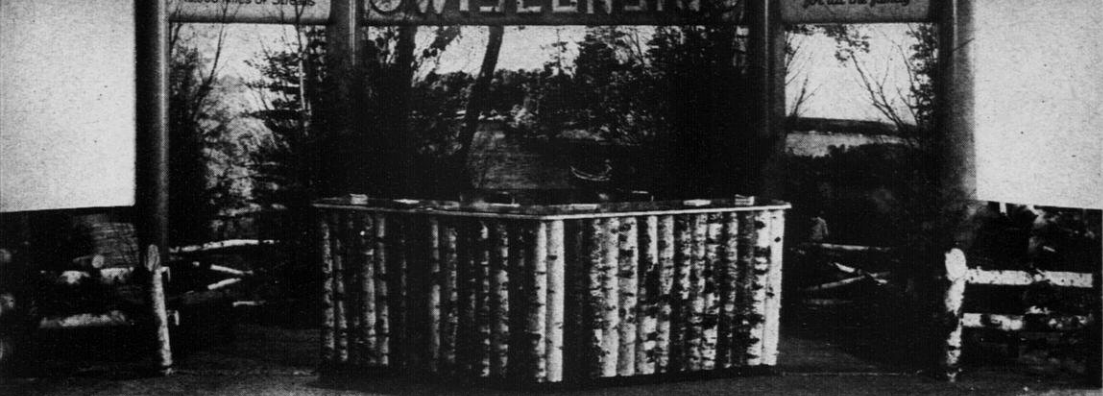
The education section, at all times, works in close cooperation with the state superintendent's office in matters of conservation education. Conferences were held between personnel of the two departments in order to determine the best methods and procedures to be used to stimulate teaching conservation in Wisconsin schools.

At teachers' institutes, conferences and convention talks were given, literature distributed and educational exhibits were displayed.

In 1945 all the high schools in the Upper Wisconsin River Valley were visited by the supervisor of conservation education. Conferences were held with school executives and conservation club advisors. An assembly program was presented in most schools. School librarians were consulted and publications provided. The supervisor met with a number of high school conservation clubs. A Conservation Leadership Camp for superintendents, principals and club advisors from this region was held the following summer at Eagle River. It was sponsored by Trees for Tomorrow, Inc., with personnel of the Wisconsin Conservation Department, U. S. Forest Service, Extension Service of the University of Wisconsin and the Department of Public Instruction participating in the program.

The number of junior conservation clubs continued to increase during the past two years. There has been a definite trend for many other youth groups to include and expand conservation activities in their programs.





The conservation department brought the Wisconsin outdoors into the auditoriums of several big midwest cities during the annual spring travel and sports shows. Above—New recreational advertising display.



Water sports are one of the principal pleasures of a vacation in Wisconsin. Pictured on these pages are speed boat riding, sail boating, water skiing, fishing, and canoeing.



Rural groups, such as the 4-H Clubs and Future Farmers have done outstanding work. The education section has encouraged the activities of these organizations through the recommendation of practical projects and programs depending on local interests and conditions. As in previous years, the supervisor and other department personnel participated in Annual State 4-H Conservation Camps for outstanding rural youth in Wisconsin.

The Wisconsin Conservation Bulletin is sent to every school in the state. A special section "Conservation and the Wisconsin Teacher" is presented in each issue during the school year with the objective of providing helpful information for those teaching conservation.

The activities of this section included talks and motion picture showings before conservation clubs, service clubs, women's organizations and other groups as in previous years.

The education section assisted in various in-service training programs conducted for department personnel.

The chief objective of the department's educational program is to bring to our citizens an understanding of the problems affecting our natural resources and the remedial activities carried on to meet these problems. To attain this objective presents a real challenge. To meet this challenge the work in this field must continue to expand in the future.

Educational activities are not limited to any one section or division of the conservation department—rangers, foresters, wardens, park custodians, fishery, game and other personnel all carry on educational work with the public in their territories.

PUBLICATIONS

During the past two years several essential department publications were prepared. Following the end of the war when the paper quota was removed, a considerable amount of long delayed printing work was started.

The largest new publications produced were: the 32 page "Wisconsin Mink Raising", 184 page "Wisconsin Pheasant Populations", 48 page "Pheasant Propagation Handbook", 96 page "A History of Wisconsin Deer" and the four-color "Wisconsin State Parks and Forests" folder. Besides the above mentioned booklets were folders of the fishing regulations, ice fishing laws, hunting and trapping regulations, all of which were printed in large editions and took the most time, preparation and supervision.

Also published were the complete "Conservation Laws", "Visual Aid Material", "List of Publications", "1945 Deer Kill", "Nature's Own Weed Killer—The German Carp", "Facts and Comments on Raising Two Common Bait Minnows", "Wisconsin Fishery Biology—Grubs in Fishes", "Forest Crop Laws and Private Forest Taxation in Wisconsin", "Wisconsin Timber-Harvest Forests", "Handbook for Fighting Forest Fires" and "Deer Dilemma".

Revised printings were also made of the recreational publicity booklet "Your Vacation in Wisconsin" and the "Devil's Lake State Park" folder, also several pieces of printing matter including posters, stickers, leaflets, license cards—all of which require layouts, copywriting, editing and careful printing follow-through.

Two other major printing jobs started late in 1946 were the "Wisconsin Game Fish" booklet and "Wisconsin Water Trails" which will be completed and ready for distribution in the spring of 1947.

The major printing difficulty encountered during the last few years was that of securing delivery of paper stock of even reasonably satisfactory quality and sufficient quantity, a problem which by no means ended in the termination of war. The shortage of paper stock still seems to be a delaying factor in the printing of most publications.

PHOTOGRAPHIC SECTION

During the past biennium the department's photographic section has attempted to organize a film library of subjects designed to effect a better understanding of the aims and accomplishments of this department. It is believed that every citizen should perhaps know more about forest production and protection, bird and animal habits, fish propagation and research, and other subjects of a similar nature, since these activities insure the future of the country's natural resources.

Scenic and recreational films have been made showing Wisconsin's fine fishing waters, state parks, canoe trips, winter sports and natural vacation areas. These reels are of interest to citizens of the state as well as the tourist public from other sections. All films and other visual aid material are offered free of charge to any interested groups, except transportation charges from and to Madison, Wisconsin.

Production of new films was necessarily curtailed because of the war, but six copies of a new all color, sound film, "Spring Comes to Wisconsin" were produced and released and are now in popular demand. The visual aid library now contains 317 reels of 37 different subjects, approximately one-third of these are colored, sound films. Reports of film, slide and display set showings totalled 9,380 for the biennium. Records of speeches delivered by department representatives are maintained in this section and show a total of 260 during the biennium; 201 used department movies with their talks.

The still photograph file contains over 10,000 photographs of conservation subjects and scenic views about the state. Newspapers, magazines and state publications utilize these photographs, without charge. Our only requirement, in all cases, is the use of a department credit line under each reproduction printed.

PUBLIC RELATIONS

Records of the public relations section of the conservation department show a maintenance of public interest in conservation through the war years and the post war period that has elapsed since. In common with every other activity, services were handicapped with shortages and there is need for a faster movement of material into public channels.

Much of the time of the section is taken up with furnishing information to individuals representing themselves, groups or publications. Requests come by mail, telephone and personal contacts. The office of public relations is usually the first port of call of newspaper reporters.

Routine news releases of the department continue to take up more than 100,000 column inches of newspaper space annually, no great variation

being experienced over the years. This service goes to all Wisconsin newspapers and to about 150 out of state papers who by request are on the mailing list. The department has no method of determining use of this material by newspapers in other states. The clipping service of the department is confined largely to Wisconsin newspapers.

The Wisconsin Conservation Bulletin has started its second decade of publication by the public relations section. It has a circulation in the neighborhood of 35,000, which is the present maximum authorized. It continues to be a simple pamphlet published at the lowest possible cost in the hope of reaching as many people as possible. How many subscribers can eventually be served by this publication has not yet been determined.

One of the chief difficulties in the operation of the Bulletin has been the many weeks required to convert copy into printed pamphlets for distribution. This time lag bars the use of much material of seasonal interest and makes it necessary for the department to depend on newspapers for timely information. If a shortening of the printing time could be achieved the Bulletin would be an increased public service.

The public relations division annually compiles a list of Wisconsin hunting accidents, information much in demand within the state and by national organizations such as insurance and safety organizations.

The public relations section, convinced that "How's Fishing?" is the big summer-time question in Wisconsin, periodically issued county by county reports on that subject through 1946. Field men reported on their particular areas and these short reports were assembled by the public relations section and supplied to newspapers and other outlets. The program was a new venture in the public information field and was highly successful. The reports were carried in and out of Wisconsin and at least one publication of national circulation used each issue completely as prepared by the section. Editors of papers in Wisconsin and in other states praised the service and it resulted in a record of publicity for Wisconsin fishing. Speed is vital to this program and it is hoped that faster service can be arranged next year. The service was carried into fall with reports on hunting conditions.

Another new venture in the public information field in 1946 was the inauguration of a weekly, illustrated feature supplied to weekly and daily newspapers of Wisconsin. The features deal with fundamentals of conservation. A number of editors praised this service in letters to the department and 150 of them expressed their desire to use the material or used it without special notification. The service is reaching more than a million newspaper readers in spite of the paper shortage and unprecedented competition for newspaper space.

A final record of the "Outdoor Housekeeping" features cannot be compiled before the close of 1947. Cuts and mats of the drawings made for the service will be of permanent value to the department and newspapers as they present extended use possibilities. The art work may eventually appear in a department pamphlet.

A decided increase in demands on the public relations section services is expected with the return of more normal times.

RECREATIONAL ADVERTISING

Wisconsin's recreational advertising and publicity program operated first under wartime then under peacetime conditions during the biennium. From war through transition to peace necessitated modification of activities in keeping with changed conditions bearing directly upon vacation travel.

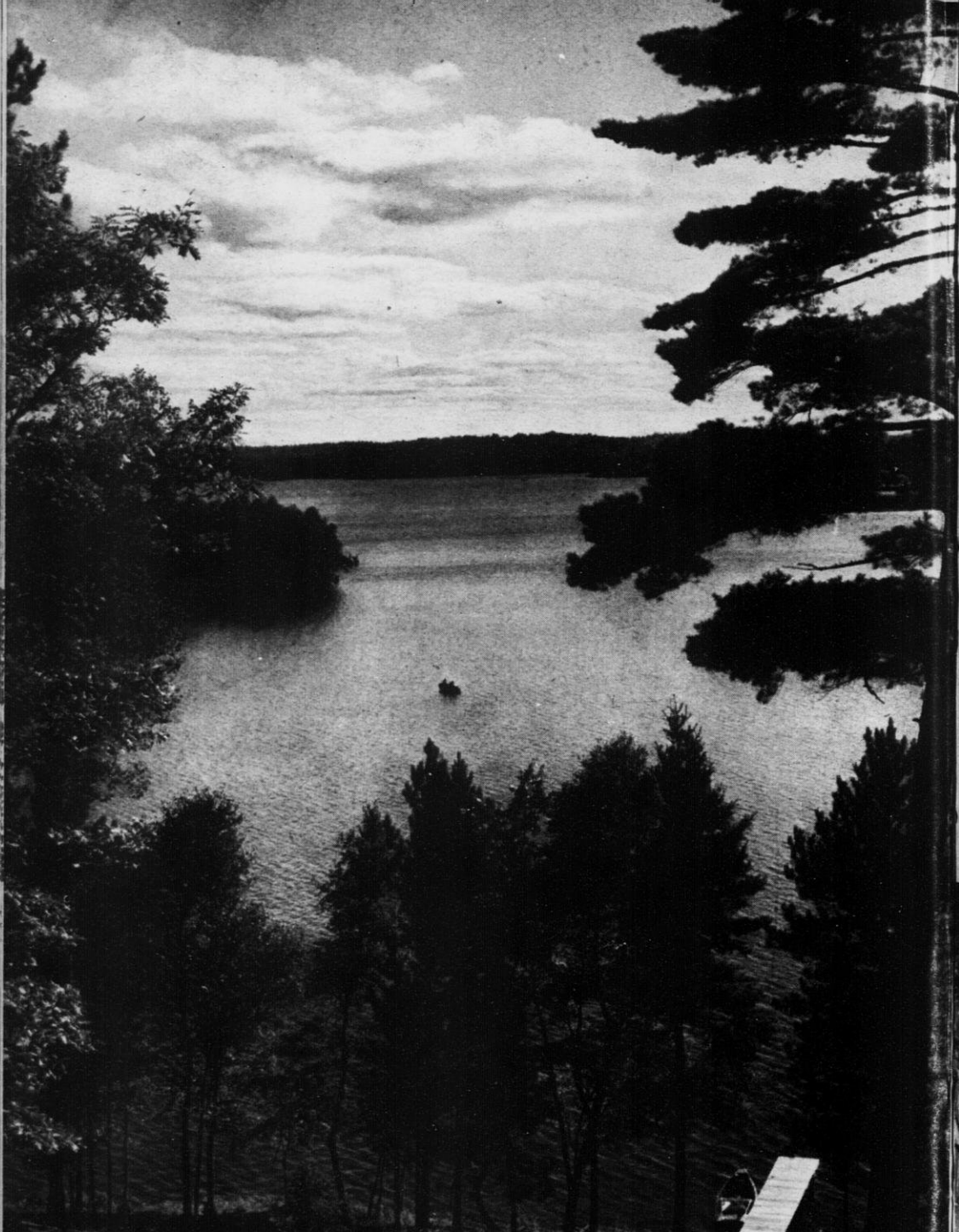
In 1945 the impact of war severely effected recreational travel. Such factors as gasoline rationing, automobile tire economy, weekend congestion of trains and busses, cancellation of all "vacation special" trains to resort centers, longer working weeks, vacations staggered over a longer season, wartime fatigue for which outdoor recreation is the accepted remedy—all these and many other war imposed conditions were evaluated and observed in drafting a suitable program. Future travel instead of current travel was keynoted. Timely invitational messages were directed especially to the attention of those who could spare the time for vacations and to workers in war industries whose long hours of trying work made occasional outdoor rest and relaxation an imperative and practical antidote.

Vacation advertisements in 1945, tailored to fit a reduced appropriation, were "double-barreled" invitations inasmuch as they appealed directly to those who needed immediate rest from the stress of war work, and indirectly to those who were looking forward to and making plans for vacations to be taken after the war. Directed as usual at residents of other states, but with even greater than customary concentration within the nearby Chicago area which is Wisconsin's major zone of appeal, ads were scheduled to appear weekly in 30 metropolitan newspapers from April through August. Monthly ads appeared between March and September in 12 outdoor and other magazines with large national reader coverage.

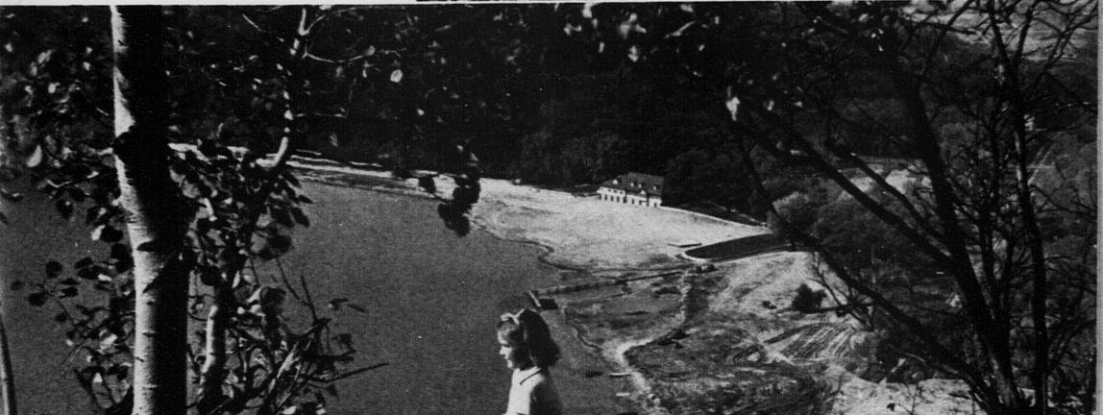
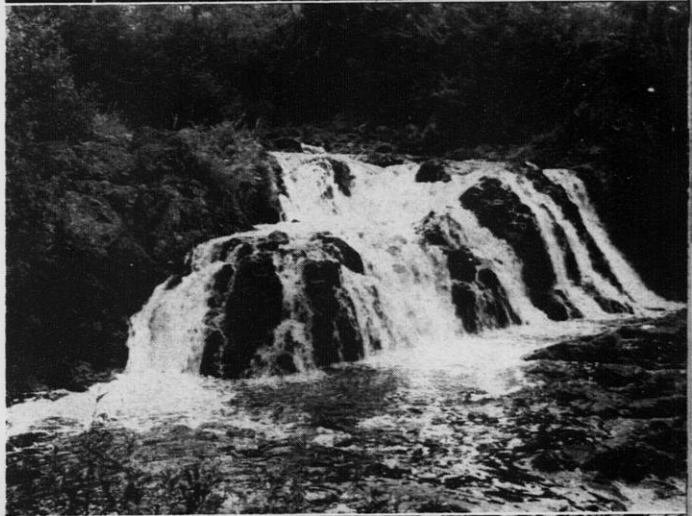
The war's end during 1945 brought a great change and marked increase in vacation travel during 1946. Lifting of gasoline rationing and tire restrictions, resumption of special vacation train service to resort centers, financial ability and time coupled with pent up vacation desire, the return of vacation-hungry veterans from arduous war service—these were among the potent factors evaluated in advance of the 1946 season as the basis for an enhanced advertising program.

Proof that Wisconsin's vacationland appealed strongly even under wartime conditions was found in the 28,454 inquiries received in response to ads during the 1945 season. Evidence of the pronounced upswing in vacation interest and desire to travel was strikingly shown by the 67,645 inquiries which resulted from the 1946 advertising campaign.

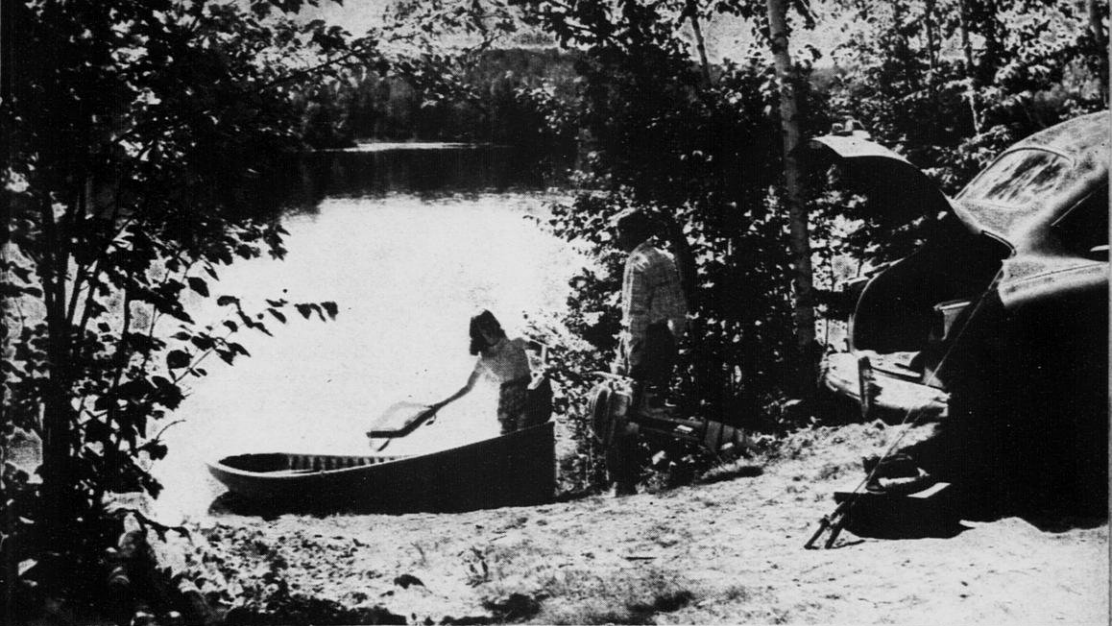
Supplementing the advertising program throughout the biennium were regularly released newspaper articles and photographs featuring topics of seasonal outdoor interest. Special events and outstanding recreational attractions of the various vacation regions within the state received particular attention. Additional essential components of the program to increase tourist patronage included prompt follow-up of all inquiries with packet mailings of literature, fishing regulations, official highway maps, lists of regional organizations and also regional literature when requested by inquirers or when necessary as a supplementary reference to personal



Wisconsin is considered an ideal summer playground as thousands of out-of-state visitors will agree. On these two pages are shown views of Northern Highland and American Legion State Forests; cascade of the Bad River, Copper Falls State Park; and a panorama of Devil's Lake State Park from the high cliffs.







Lakes and streams to be counted by the thousands, providing good fishing, boating, camping and picnicking are readily accessible to the Wisconsin vacationer.



letters. Exhibits, displays and showings of motion pictures were presented at outdoor travel expositions in Chicago and Minneapolis. Speaking engagements were filled at numerous meetings. Profitable contacts were maintained with outdoor and travel editors, travel agencies, railroads and bus lines, air lines serving Wisconsin and Great Lakes steamship lines. All these efforts are essential to foster good will and promote vacation travel to Wisconsin.

In brief, all ethical and effective promotional means within the limits of state funds appropriated for that purpose were employed to keep the name and fame of Wisconsin's wonderful vacationland fresh in the minds of prospective vacation guests.

CONSERVATION DEPARTMENT
STATISTICAL REPORT

CONSERVATION FUND

1944-1945	Fish & Game Conservation	Public Hunt- ing & Fishing Grounds	Deer Feeding & Deer Yard Acquisition	Deer & Bear Damage	Forestry Conservation	Forests So. Wisconsin	Reserved for Forestry
Balance on hand							
Transferred to deer & bear damage	\$ 601,448.65	\$ 153,097.72	\$ 57,979.61	\$ 1,691.27	\$ 474,405.01	\$ 79,418.14	\$ 300,000.00
Transferred to forests so. Wisconsin	32,000.00				150,000.00		
Sub-total							
Receipts—1944-1945	569,448.65	153,097.72	57,979.61	1,691.27	324,405.01	79,418.14	300,000.00
Transferred from fish & game conservation	1,246,464.78	166,171.05	63,611.50		1,316,407.75		
Transferred from forestry conservation				32,000.00			
Transferred from emergency board				1,926.20		150,000.00	
Sub-total							
Expenditures 1944-1945	1,815,913.43	319,268.77	121,591.11	35,617.47	1,640,812.76	229,418.14	300,000.00
Balance	707,818.10	261,545.56	66,737.80	375.00	604,430.26	152,394.85	300,000.00
1945-1946							
Balance on hand							
Transferred to deer & bear damage	\$ 707,818.10	\$ 261,545.56	\$ 66,737.80	\$ 375.00	\$ 604,430.26	\$ 152,394.85	\$ 300,000.00
Transferred to forests so. Wisconsin	25,000.00				150,000.00		
Sub-total							
Receipts—1945-1946	682,818.10	261,545.56	66,737.80	375.00	454,430.26	152,394.85	300,000.00
Transferred from fish & game conservation	1,460,331.22	175,075.35	66,892.75		1,317,518.42		
Transferred from forestry conservation				25,000.00			
Transferred from emergency board				28,073.80		150,000.00	
Sub-total							
Expenditures 1945-1946	2,143,149.32	436,620.91	133,630.55	53,448.80	1,771,948.68	302,394.85	300,000.00
Balance	1,371,978.97	91,051.44	118,623.43	37,625.93	1,187,950.70	105,405.58	300,000.00
Balance	771,170.35	345,569.47	15,007.12	15,822.87	583,997.98	196,989.27	300,000.00

CONSERVATION FUND—Continued

1944-1945	Sale and Removal of Rough Fish	Park Concessions, Rentals, etc.	Park Recreation	Raccoon Propagation	Chapter 498 Laws 1935	Total Overall Conservation Fund
Balance on hand.....	\$ 99,256.23	\$ 11,512.32	\$ 12,042.13	\$ 4,054.35	\$ 4,142.50	\$1,799,047.93
Transferred to deer & bear damage.....						32,000.00
Transferred to forests so. Wisconsin.....						150,000.00
Sub-total.....	99,256.23	11,512.32	12,042.13	4,054.35	4,142.50	1,617,047.93
Receipts—1944-1945.....	199,474.38	19,209.91	7,001.90	5,043.43		3,023,384.70
Transferred from fish & game conservation.....						32,000.00
Transferred from forestry conservation.....						150,000.00
Transferred from emergency board.....						1,926.20
Sub-total.....	298,730.61	30,722.23	19,044.03	9,097.78	4,142.50	4,824,358.38
Expenditures 1944-1945.....	216,172.69	12,742.31	7,502.35	142.00	850.00	2,606,729.46
Balance.....	82,557.92	17,979.92	11,541.68	8,955.78	3,292.50	2,217,629.37
1945-1946						
Balance on hand.....	\$ 82,557.92	\$ 17,979.92	\$ 11,541.68	\$ 8,955.78	\$ 3,292.50	\$2,217,629.37
Transferred to deer & bear damage.....						25,000.00
Transferred to forests so. Wisconsin.....						150,000.00
Sub-total.....	82,557.92	17,979.92	11,541.68	8,955.78	3,292.50	2,042,629.47
Receipts—1945-1946.....	228,101.05	18,745.56	9,845.10	4,523.50		3,281,032.95
Transferred from fish & game conservation.....						25,000.00
Transferred from forestry conservation.....						150,000.00
Transferred from emergency board.....						28,073.80
Sub-total.....	310,658.97	36,725.48	21,386.78	13,479.28	3,292.50	5,526,736.12
Expenditures 1945-1946.....	285,153.27	25,068.44	7,003.40	1,660.97		3,231,522.13
Balance.....	25,505.70	11,657.04	14,383.38	11,818.31	3,292.50	2,295,213.99

CONSERVATION FUND RECEIPTS

	1944-1945	1945-1946
Nonresident fishing licenses	\$ 337,918.56	\$ 471,027.34
Nonresident family fishing licenses	14,298.70	20,526.00
Fish shipping coupons	7,347.40	8,180.15
Resident fishing licenses	238,669.14	302,034.36
Nonresident hunting licenses	31,353.00	27,700.00
Nonresident hunting preserve licenses	340.00	240.00
Nonresident archer licenses	1,420.00	2,140.00
Resident hunting licenses	257,465.10	260,743.70
Resident hunting licenses to public hunting and fishing grounds	143,208.50	145,043.00
Duplicate licenses	659.00	750.05
Settlers hunting licenses	325.00	371.00
Sportsmen licenses	33,268.50	42,470.50
Sportsmen licenses to public hunting and fishing grounds	22,962.55	29,024.35
Deer tags	63,607.50	66,566.50
Deer tags to deer feeding and acquisition deer yards	63,611.50	66,566.50
Trapping licenses	19,909.90	13,082.43
Trap tags	36,030.64	17,264.03
Fur dealer licenses	7,687.00	8,134.00
Raccoon tags	5,043.43	4,523.50
Beaver trapping licenses & pelt tags	133.00	24,572.50
CWCA receipts	14,463.27	17,540.62
Confiscations & seizures	26,413.17	37,438.06
Great Lakes commercial fishing licenses	11,837.50	13,537.00
Mississippi River commercial fishing licenses	5,177.00	5,324.00
Set line licenses	2,223.40	3,369.70
Fish dealer licenses	2,675.00	3,100.00
Slat net licenses & tags		2,224.50
Guide licenses	671.00	969.00
Clamming licenses	290.00	270.00
Occupational tax—mink	1,311.40	1,803.57
Fur farm licenses	6,735.03	10,140.72
Deer farm licenses	1,853.35	1,753.50
Game farm licenses	665.56	649.36
Taxidermist licenses	440.00	495.00
Sturgeon tags	395.85	415.65
Xmas tree dealer licenses	3,066.62	4,255.90
Interest on bank deposits	997.05	1,111.44
Miscellaneous	28,097.37	49,429.98
Fire loss	3,674.01	3,224.54
Park receipts	19,209.91	18,745.56
Golf receipts	7,001.90	9,845.10
Commission on & sale of rough fish	234,494.15	228,101.05
Pittman-Robertson receipts	50,025.99	38,810.37
Clarke-McNary receipts	233,861.83	175,682.66
Forestry mill tax	1,002,385.88	1,060,972.79
Other forestry collections	80,160.04	75,862.97
Transfer from general fund	1,926.20	28,073.80
	\$3,025,310.90	\$3,309,106.75

CONSERVATION FUND EXPENDITURES

FISHERIES

	1944-1945	1945-1946
Salaries	\$ 151,401.40	\$ 190,744.15
Travel expense	16,656.35	19,827.83
Rent, fuel, light, water	8,689.51	5,202.93
Postage	579.69	292.04
Printing	349.45	174.69
Telephone & telegraph	2,594.10	3,210.28
Express & freight	423.28	679.21
Gas & oil	7,044.23	9,778.83
Supplies	12,368.01	10,595.21
Building material	1,979.11	4,581.61
Maintenance—equipment	4,172.21	9,688.21
Equipment	1,940.78	10,699.32
Fish food	30,227.10	35,754.90
Advertising	504.10	735.85
Insurance	3,391.16	3,271.94
Land	350.00	-----
Services	-----	255.00
Pound net rescue	-----	3,061.29
Sub-total	\$ 242,670.48	\$ 308,553.29

BIOLOGY

Salaries	\$34,142.56	\$40,024.54
Travel expense	6,899.10	9,472.95
Rent, fuel, light & water	988.97	593.66
Postage	97.42	104.56
Printing	109.66	277.21
Telephone & telegraph	493.21	412.40
Express & freight	57.16	45.71
Gas & oil	291.98	636.88
Supplies	3,361.16	3,072.08
Building material	1,020.39	1,653.89
Maintenance—equipment	990.62	565.45
Equipment	4,260.93	6,048.71
Drugs	-----	845.00
Services	-----	2,040.45
Fish food	35.43	35.43
Insurance	182.70	229.68
Sub-total	\$ 52,931.29	\$ 66,058.60

CONTRACT & COMMERCIAL FISHING

Salaries	\$ 152,162.49	\$ 175,896.12
Travel expense	30,511.13	32,056.34
Rent, fuel, light & water	6,859.68	6,769.86
Postage	147.55	13.34
Printing	18.80	177.16
Telephone & telegraph	3,982.26	3,600.68
Express & freight	366.58	363.30
Gas & oil	4,785.13	4,706.74
Supplies	10,635.29	13,516.93
Advertising	6.60	17.20
Building material	992.61	2,809.27
Fish food	2,440.93	4,057.49
Groceries	17,336.74	20,626.83
Maintenance—equipment	5,589.31	7,153.60
Equipment	2,160.74	6,522.70
Insurance	1,283.18	1,316.67
Compensation awards	304.00	162.00
Unemployment compensation	871.65	1,110.81
Transfer adjustment acct.	-----	19.01
Encumbrances	-----	4,257.22
Sub-total	240,454.67	285,153.27

LAW ENFORCEMENT

	1944-1945	1945-1946
Salaries	194,755.30	217,790.56
Travel expense	87,581.55	116,662.56
Rent, fuel, light & water	592.17	885.55
Postage	237.22	192.85
Printing	288.36	440.81
Telephone & telegraph	1,400.84	1,621.16
Express & freight	156.22	349.48
Gas & oil	199.19	249.58
Supplies	1,229.66	2,512.72
Building material	43.05	66.81
Maintenance—equipment	743.06	1,000.29
Equipment	3,952.34	8,579.29
Advertising	-----	2.00
Insurance	497.08	520.19
Sub-total	291,676.04	350,873.85

LAW ENFORCEMENT—PATROL BOAT

Salaries	4,575.90	6,727.06
Travel expense	1,042.37	2,520.43
Rent, fuel, light & water	681.86	565.96
Postage	6.00	-----
Telephone & telegraph	256.18	261.60
Gas & oil	114.11	90.99
Supplies	600.78	558.86
Maintenance—equipment	1,052.64	517.29
Equipment	72.20	290.27
Sub-total	8,402.04	11,532.46

GAME

Salaries	102,599.94	132,155.43
Travel expense	12,607.42	15,443.00
Rent, fuel, light & water	6,263.72	11,187.47
Postage	3,333.76	1,890.44
Printing	1,767.35	908.35
Telephone & telegraph	1,487.78	1,781.11
Express & freight	809.09	851.97
Gas & oil	2,910.98	2,496.20
Supplies	8,303.94	17,086.37
Building material	2,172.66	4,816.67
Maintenance—equipment	4,454.24	2,704.69
Equipment	2,997.51	2,963.29
Birds, eggs & animals	367.50	924.00
Feed	70,522.54	77,195.77
Winter feed	8,073.64	3,836.85
Insurance	2,240.61	2,227.18
Advertising	831.20	414.85
Services	-----	797.57
Miscellaneous	794.12	475.82
Game census	2,295.68	1,952.27
Chambers Island project	-----	775.92
Sub-total	234,833.68	282,885.22

PITTMAN-ROBERTSON

	1944-1945	1945-1946
Salaries.....	18,697.67	22,839.15
Travel expense.....	5,427.35	6,049.39
Rent, fuel, light & water.....	719.97	535.21
Postage.....	3.00	12.18
Telephone & telegraph.....	308.68	423.47
Express & freight.....	3.74	81.80
Gas & oil.....	117.82	245.95
Supplies.....	655.24	1,086.70
Building material.....	719.19	38.79
Maintenance—equipment.....	79.73	63.74
Equipment.....	563.94	2,807.77
Land.....	13,200.00	2,601.00
Insurance.....	267.51	24.72
Services.....		42.42
Sub-total.....	40,763.84	36,852.29

PUBLIC HUNTING & FISHING GROUNDS

Salaries.....	18,059.96	37,068.32
Travel expense.....	6,954.62	16,880.83
Rent, fuel, light & water.....		59.50
Postage.....	3.00	.22
Printing.....	552.39	125.47
Telephone & telegraph.....	224.30	369.95
Express & freight.....	130.25	38.24
Gas & oil.....	357.88	180.35
Supplies.....	1,815.75	1,544.10
Building material.....	178.82	152.56
Feed.....	797.00	859.56
Maintenance—equipment.....	293.12	502.05
Equipment.....	1,717.31	7,720.41
Advertising.....	2.40	31.85
Pheasant damage.....	278.47	136.50
Land leases.....	6,472.12	7,737.10
Land acquisition.....	19,880.53	17,597.22
Services.....		22.50
Transfer adjustment acct.....		6.71
Insurance.....	5.29	18.00
Sub-total.....	57,723.21	91,051.44

DEER FEEDING & DEER YARD ACQUISITION

Salaries.....	4,834.18	12,084.44
Travel expense.....	1,146.52	2,687.80
Rent, fuel, light & water.....	119.86	4,109.33
Postage.....		.39
Printing.....		5.24
Telephone & telegraph.....	35.59	103.95
Express & freight.....	1,676.72	1,935.73
Gas & oil.....	197.80	494.93
Supplies.....	162.34	1,763.23
Maintenance—equipment.....	104.74	637.55
Equipment.....	845.00	9,334.30
Construction.....	301.00	291.31
Feed.....	18,149.13	45,910.38
Land.....	27,098.81	39,150.23
Transfer adjustment acct.....	148.96	
Services.....		47.58
Insurance.....	32.66	67.04
Sub-total.....	\$ 54,853.31	\$ 118,623.43

FOREST PROTECTION

	1944-1945	1945-1946
Salaries		
Travel expense	\$ 407,429.73	\$ 460,252.76
Rent, fuel, light & water	16,986.55	17,579.74
Postage	5,171.91	5,172.87
Telephone & telegraph	2,638.77	2,324.31
Express & freight	4,338.58	4,598.26
Gas & oil	357.35	1,323.28
Supplies	12,911.82	14,812.83
Advertising	10,823.19	11,590.92
Maintenance—equipment		21.65
Equipment	24,428.38	15,959.47
Construction	15,114.20	65,374.40
Land	3,363.85	5,421.23
Insurance	575.00	
	4,303.38	4,731.92
Sub-total	508,442.71	609,163.64

FIRE SUPPRESSION

Salaries	19,887.50	26,778.60
Travel expense	1,520.97	1,877.17
Sub-total	21,408.47	28,655.77

STATE FORESTS & NURSERIES

Salaries	86,218.02	115,154.70
Travel expense	3,092.07	3,133.56
Rent, fuel, light & water	1,306.17	1,705.24
Postage	79.50	151.27
Printing	153.48	71.65
Telephone & telegraph	249.26	313.76
Express & freight	255.06	412.26
Gas & oil	1,889.55	3,465.84
Supplies	9,623.98	9,921.59
Advertising	35.85	20.90
Maintenance—equipment	3,647.97	6,303.98
Equipment	2,570.40	12,407.08
Construction	372.35	996.47
Insurance	1,506.46	1,686.33
Sub-total	111,000.12	155,744.63

FORESTS IN SOUTHERN WISCONSIN

Salaries	22,497.32	31,737.57
Travel expense	1,888.24	2,104.98
Rent, fuel, light & water	887.73	838.69
Postage	107.24	93.36
Telephone & telegraph	246.67	289.07
Express & freight	22.48	33.32
Gas & oil	1,201.87	1,374.86
Supplies	851.63	651.79
Advertising	122.20	153.81
Maintenance—equipment	2,374.28	3,748.57
Equipment	612.40	2,828.01
Construction	528.39	1,734.83
Insurance	1,136.99	1,111.26
Land	44,369.17	58,187.77
Compensation awards	39.50	258.00
Unemployment compensation	125.18	259.69
Transfer adjustment acct.	12.00	
Sub-total	77,023.29	105,405.58

COOPERATIVE FORESTRY

	1944-1945	1945-1946
Salaries	34,136.98	36,394.12
Travel expense	9,076.43	10,632.51
Rent, fuel, light & water	45.83	38.83
Postage	13.12	14.50
Printing		390.10
Telephone & telegraph	76.71	77.78
Express & freight	2.08	
Supplies	236.22	110.81
Maintenance—equipment	274.84	7.95
Equipment	1,103.97	183.96
Insurance	2.49	6.82
Sub-total	44,968.67	47,857.38

COUNTY FORESTS

County forestry aid	165,004.77	175,094.05
Sub-total	165,004.77	175,094.05

BLISTER RUST CONTROL

Salaries	\$ 2,664.92	\$ 3,007.66
Travel expense	587.38	604.58
Printing		32.96
Supplies	59.65	12.16
Sub-total	\$ 3,311.95	\$ 3,657.36

TREE DISEASE RESEARCH

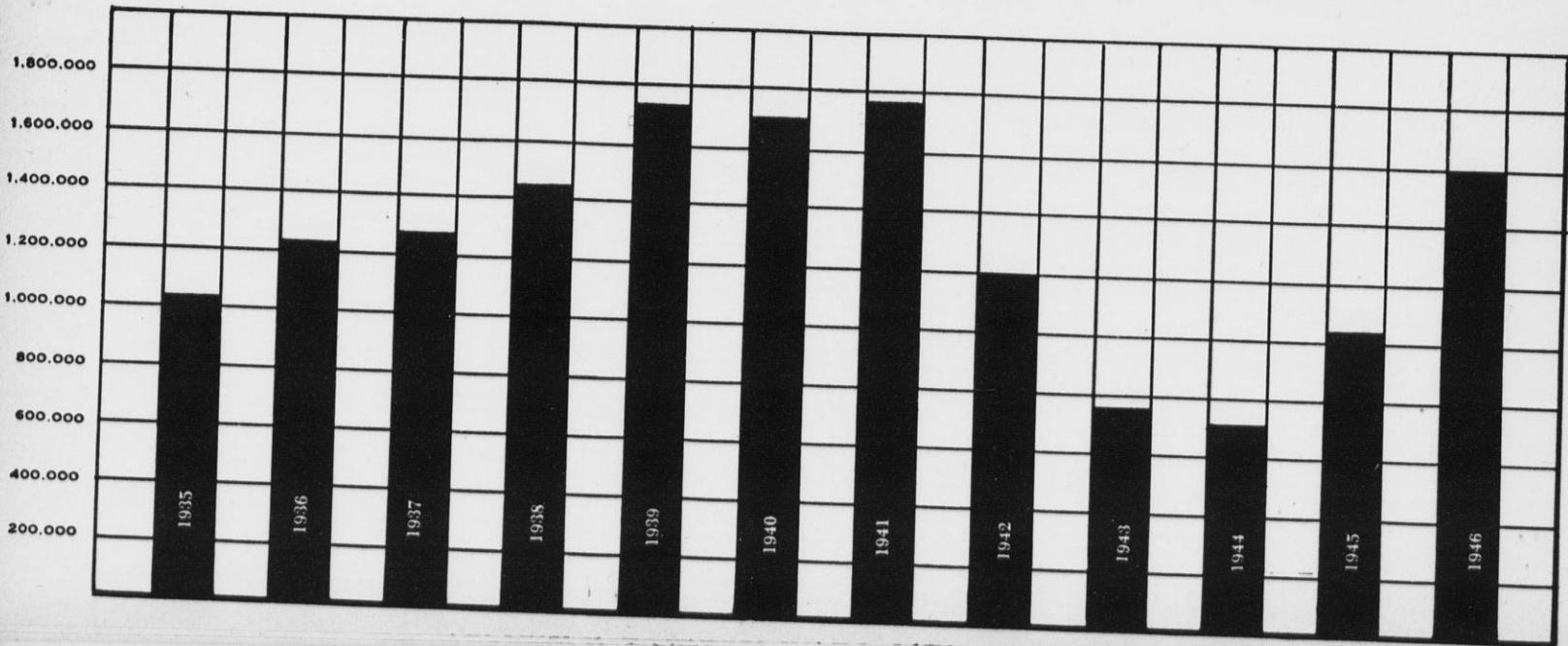
Salaries	\$ 1,899.12	\$ 2,877.85
Travel expense	455.33	710.21
Sub-total	\$ 2,354.45	\$ 3,588.06

SOIL RESEARCH

Salaries	\$ 3,569.42	\$ 3,048.50
Travel expense	480.98	521.43
Supplies		598.16
Sub-total	\$ 4,050.40	\$ 4,168.09

PEOPLE IN ATTENDANCE

GRAPH SHOWING STATE PARK
ATTENDANCE RECORD
FOR
11 YEAR PERIOD
1935 - 1946 INC.



STATE FOREST ROADS

	1944-1945	1945-1946
Salaries.....	\$ 24,654.43	\$ 11,183.07
Rent, fuel, light & water.....	209.85	-----
Gas & oil.....	3,246.85	2,015.33
Supplies.....	1,356.96	660.25
Express & freight.....	8.77	1.02
Maintenance—equipment.....	3,142.90	1,717.54
Equipment.....	220.40	3,410.43
Sub-total.....	\$ 32,840.16	\$ 18,987.64

PARKS

Salaries.....	\$ 53,284.97	\$ 85,867.52
Travel expense.....	928.62	2,001.07
Rent, fuel, light & water.....	2,124.32	2,553.83
Postage.....	10.74	26.67
Printing.....	48.62	371.21
Telephone & telegraph.....	493.95	578.76
Express & freight.....	34.96	95.02
Gas & oil.....	1,828.86	3,592.42
Supplies.....	4,029.24	5,109.42
Building materials.....	3,126.38	1,847.41
Advertising.....	37.90	2,627.68
Maintenance—equipment.....	5,882.06	6,825.71
Equipment.....	1,707.58	4,933.81
Land.....	7,750.00	-----
Insurance.....	2,632.35	16.65
Unemployment compensation.....	161.91	181.37
Sub-total.....	\$ 84,082.46	\$ 116,628.55

ADMINISTRATION

Salaries.....	\$ 70,481.58	\$ 72,126.85
Travel expense.....	4,555.55	3,508.95
Rent, fuel, light & water.....	12,502.76	12,532.76
Postage.....	11,044.56	12,061.83
Printing.....	1,907.22	1,569.48
Telephone & telegraph.....	1,678.72	1,759.28
Express & freight.....	845.87	566.24
Supplies.....	4,893.79	7,500.83
Advertising.....	64.00	3.40
Maintenance—equipment.....	-----	2.49
Equipment.....	340.63	682.86
State car expense.....	217.20	258.72
Insurance.....	9.01	30.00
Sub-total.....	\$ 108,540.89	\$ 112,603.69

FINANCE

Salaries.....	\$ 12,120.00	\$ 12,977.77
Travel expense.....	4.35	40.90
Supplies.....	63.02	113.05
Sub-total.....	\$ 12,187.37	\$ 13,031.72

INFORMATION & EDUCATION

	1944-1945	1945-1946
Salaries.....		
Travel expense.....	\$ 11,170.53	\$ 14,263.00
Rent, fuel, light & water.....	1,788.70	1,840.35
Postage.....		6.36
Printing.....	3,040.00	3,007.20
Telephone & telegraph.....	4,907.06	7,639.86
Express & freight.....	176.98	215.75
Supplies.....	26.02	33.24
Equipment.....	2,709.33	2,640.88
Insurance.....	43.47	1,778.91
Services.....	31.07	31.07
		13.95
Sub-total.....	23,893.16	31,470.57

MISCELLANEOUS

Salaries.....		
Travel expense.....	\$ 12,336.69	\$ 22,895.08
Rent, fuel, light & water.....	2,869.29	3,784.37
Postage.....	635.93	131.00
Printing.....	62.00	2,154.62
Telephone & telegraph.....	18,640.41	14,617.87
Express & freight.....	134.87	133.64
Gas & oil.....	33.02	323.11
Supplies.....	445.96	859.64
Advertising.....	3,654.11	5,889.05
Maintenance—equipment.....	38.40	38.20
Equipment.....	4,817.35	1,633.22
Services.....	3,440.69	4,190.10
Transfer adjustment acct.....	10.75	363.33
Insurance on bank acct.....	2,330.67	620.74
Compensation awards.....	2,174.78	3,345.73
Unemployment compensation.....	2,061.41	1,981.66
Construction.....	15,226.83	14,764.16
Cancelled drafts.....	231.20	831.03
Insurance.....	4.80	
		325.72
Sub-total.....	\$ 69,199.16	\$ 77,640.79

BEAVER CONTROL

Salaries.....		
Travel expense.....	\$ 5,264.39	\$ 5,524.70
Gas & oil.....	2,688.67	3,688.99
Supplies.....	3.81	2.56
Building material.....	79.67	187.05
Maintenance—equipment.....		6.67
Equipment.....	153.50	50.31
	243.62	505.93
Sub-total.....	\$ 8,433.66	\$ 9,966.21

EXHIBITS

Travel expense.....		
Express & freight.....	\$ 993.62	\$ 1,385.50
Supplies.....	5.99	1.86
Feed.....	15.93	6.75
	29.29	33.25
Sub-total.....	\$ 1,044.83	\$ 1,427.36

STATE RETIREMENT SYSTEM

	1944-1945	1945-1946
Pensions.....	\$ 2,746.29	\$ 3,072.21
Sub-total.....	\$ 2,746.29	\$ 3,072.21

LAND PURCHASES

Land acquisition.....	\$ 62,752.02	\$ 41,882.68
Sub-total.....	\$ 62,752.02	\$ 41,882.68

DEER & BEAR DAMAGE

Deer damage.....	\$ 23,725.50	\$ 26,022.49
Bear damage.....	11,509.57	9,485.95
Deer proof fence.....	7.40	2,117.49
Sub-total.....	\$ 35,242.47	\$ 37,625.93

BOUNTIES

Bounties— $\frac{1}{2}$ of fox.....	\$ 2,479.00	\$ 27,310.25
Sub-total.....	\$ 2,479.00	\$ 27,310.25

ENCUMBRANCES

Encumbrances.....		\$ 51,108.83
Sub-total.....		\$ 51,108.83

CHAPTER 489/L—1935

Land.....	\$ 850.00	
Sub-total.....	\$ 850.00	

CHAPTER 447/L—1945

Treas. Dodge—Fur Horicon Marsh.....	\$ 422.60	\$ 2,286.32
Sub-total.....	\$ 422.60	\$ 2,286.32

RACCOON PROPAGATION

Feed.....		\$ 738.97
Animals.....	\$ 142.00	\$ 922.00
Sub-total.....	\$ 142.00	\$ 1,660.97
Grand Total—Conservation Fund Expenditures.....	\$2,606,729.46	\$3,231,522.13

**GENERAL FUND APPROPRIATIONS
RECREATIONAL PUBLICITY**

	1944-1945	1945-1946
Appropriation.....	\$ 45,000.00	\$ 60,000.00
Appropriation—Bonus.....		340.34
Appropriation—Emergency Board.....		5,000.00
Total.....	\$ 45,000.00	\$ 65,340.34
Expenditures		
Salaries.....		8,857.39
Travel expense.....	\$ 7,140.00	\$ 8,857.39
Rent.....	674.98	1,226.69
Postage.....	1,011.91	983.34
Printing.....	482.00	3,538.50
Telephone & telegraph.....	786.40	1,708.17
Express & freight.....	146.50	167.06
Supplies.....	7.69	10.84
Advertising.....	1,548.76	2,165.72
Outdoor shows.....	29,204.30	43,095.17
Unemployment compensation.....	607.39	2,549.07
Total.....	\$ 41,609.93	\$ 64,331.37

BOUNTIES

Appropriation (Sum sufficient).....	\$ 23,894.00	\$ 113,398.75
Expenditures		
Bounty Claims.....	\$ 23,894.00	\$ 113,398.75

FOREST CROP LAW

Appropriation—Administration.....	\$ 5,000.00	\$ 5,000.00
Appropriation—Forest Crop Aid.....	190,000.00	190,000.00
Appropriation—Bonus.....	154.00	211.00
Appropriated receipts.....		
Severance tax.....	762.53	203.85
Withdrawals—Forest crop lands.....	1,422.71	1,316.96
Total.....	\$ 197,339.24	\$ 196,731.81

EXPENDITURES

Salaries—Dept. of Taxation.....	\$ 1,080.00	\$ 1,080.00
Salaries.....	3,154.00	3,961.00
Travel expense.....	591.31	
Rent.....	105.96	97.13
Printing.....	72.32	
Supplies.....	22.27	20.25
Advertising.....	43.20	47.00
Forest crop aid.....	189,211.06	189,933.14
Severance tax.....	762.53	203.85
Withdrawal of forest crop lands.....	1,422.71	1,316.96
Total.....	\$ 196,465.36	\$ 196,659.33

GOVERNMENT REFORESTATION FUND

1944-1945 1945-1946

Unexpended balance.....	\$ 3,352.38	\$ 20,329.67
Plus receipts.....	17,756.77	17,477.98
Sub-total.....	\$ 21,109.15	\$ 37,807.65
Less expenditures.....	779.48	33.95
Balance.....	\$ 20,329.67	\$ 37,773.70

GOVERNMENT REFORESTATION FUND RECEIPTS

Nursery stock.....	\$ 15,579.86	\$ 15,149.06
Island and land leases.....	2,172.89	1,838.00
Sale of land.....	3.02	10.92
Interest on bank deposits.....	1.00	-----
Cancelled drafts.....	-----	-----
Total.....	\$ 17,756.77	\$ 17,477.98

GOVERNMENT REFORESTATION FUND EXPENDITURES

Insurance on bank deposits.....	\$ 7.08	\$ 33.95
Services.....	630.00	-----
Travel expense.....	142.40	-----
Total.....	\$ 779.48	\$ 33.95

STATE PARK ATTENDANCE RECORD 1945-1946

Name of Park	1945		1946	
	People	Cars	People	Cars
Brunet Island.....	52,170	13,210	60,738	17,019
Copper Falls.....	27,520	6,700	42,725	9,850
Cushing Memorial.....	3,887	1,000	7,618	2,565
Devil's Lake.....	314,405	75,865	492,510	160,005
First Capitol.....	4,350	1,200	7,800	2,000
Interstate.....	131,406	31,000	167,900	43,390
Merrick.....	35,055	9,065	46,425	12,675
Nelson Dewey Memorial.....	6,972	1,734	12,042	2,846
New Glarus Woods.....	5,540	1,382	10,521	3,645
Ojibwa.....	2,523	718	2,062	625
Pattison.....	64,183	13,057	116,453	23,050
Peninsula.....	143,266	37,998	218,641	59,452
Perrot.....	11,170	3,812	20,547	6,175
Potawatomi.....	82,091	31,197	112,699	29,827
Rib Mountain.....	60,120	16,840	96,995	27,786
Rocky Arbor.....	8,650	3,200	15,618	4,049
Terry Andrae.....	25,800	5,796	61,785	13,532
Tower Hill.....	14,560	3,519	39,699	10,102
Wyalusing.....	41,322	10,341	64,723	16,287
Total.....	1,039,990	267,634	1,589,701	442,880

ANNUAL OUTPUT OF STATE FOREST NURSERIES

Year	Private	Public	Total
1911			
1912		192,300	*192,300
1913		18,000	**18,000
1914		68,500	68,500
1915	20,200 77,400	458,430	478,630 77,400
1916			
1917	110,200	216,650	326,850
1918	272,105	332,525	604,630
1919	246,278	262,485	508,763
1920	200,151 206,682	309,900 113,875	510,051 320,557
1921			
1922	199,601	255,925	455,526
1923	39,482	83,710	123,192
1924	177,260	176,800	354,060
1925	247,000 350,538	163,300 160,700	410,300 511,238
1926			
1927	748,497	424,200	1,172,697
1928	1,038,249	579,000	1,617,249
1929	1,101,464	637,200	1,738,664
1930	1,393,267 1,185,075	1,022,750 981,500	2,416,017 2,166,575
1931			
1932	1,304,250	2,050,350	3,354,600
1933	880,315	5,701,500	6,581,815
1934	822,950	4,318,050	5,141,000
1935	1,486,725 1,376,189	15,209,785 10,737,715	16,696,510 12,113,904
1936			
1937	3,592,224	9,535,482	13,127,706
1938	5,811,662	8,702,429	***14,514,091
1939	6,530,124	18,775,862	***25,305,986
1940	8,775,557 12,305,025	21,872,280 28,352,316	***30,647,837 ***40,657,341
1941			
1942	11,085,364	15,575,351	***26,660,715
1943	11,373,445	9,417,192	***20,790,637
1944	9,612,340	4,117,192	***13,729,532
1945	7,867,220	2,160,590	***10,027,810
1946	10,080,584 8,019,675	3,252,224 3,858,332	***13,332,808 ***11,878,007
TOTALS	108,537,098	170,094,400	278,631,498

* Stock secured from Michigan State College.

** Stock purchased.

*** Includes inter-nursery shipments.

STATE NURSERY TREE DISTRIBUTION

All Nurseries, State and County Years of 1945 and 1946

Species	State Forests	County Forests	*Extension	**Private	Highway	***General	Total
Norway Pine	828,680	1,169,674	528,150	4,171,270	42,555	2,821,300	9,561,629
White Pine	155,470	479,755	630,545	1,706,390	39,000	1,463,750	4,474,910
Jack Pine	1,590,270	2,206,160	412,550	1,172,550	40,000	528,075	5,949,605
Norway Spruce	5,000	93,130	188,150	650,365	12	165,312	1,101,969
White Spruce	180,100	137,750	334,000	1,258,475	40,000	639,205	2,589,530
Black Locust			44,250	191,425		15,335	251,010
American Elm	7,000	5,000	36,325	42,375		31,300	122,000
White Ash	56,500	21,000	102,300	104,250		56,160	340,210
Balsam Fir		1,000	40,975	329,017		62,635	433,627
Red Cedar			6,950	247,025		39,325	293,300
White Cedar	1,500	6,000	7,875	45,925	4,000	15,875	81,175
Hemlock			500	5,800		4,550	10,850
Basswood	1,000						1,000
TOTAL	2,825,520	4,119,469	2,332,570	9,924,867	165,567	5,842,822	25,210,815

* Extension—Stock distributed through the State Extension Forester, the Assistant State Club Leader and the County Agricultural Agents. This column includes the Community Forests.

** Private—Individuals purchasing under the tree application and agreement form.

*** General—Trees transferred to other state nurseries and other agencies not covered by the above headings, i.e., Gordon Nursery, Soil Erosion Service, Parks, Clubs, Institutions, etc.

CO-OPERATIVE FORESTRY—FOREST CROP LANDS BY COUNTIES

July 1, 1944 to June 30, 1946

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County	Private Entries					County Entries					Total Forest Crop Lands
	Prior to 1944	1945	1946	With-drawn	Net Private Lands	Prior to 1944	1945	1946	With-drawn	Net County Lands	
Adams	1,031.27				1,031.27						1,031.27
Ashland	1,279.76			200.00	1,079.76	36,828.31			120.00	36,708.31	37,788.07
Barron	651.52				651.52	4,944.84	453.83	1,561.23		6,959.90	7,611.42
Bayfield	1,175.00			240.00	935.00	142,108.91	2,214.73	3,462.80	42.00	147,744.44	148,679.44
Burnett	260.30				260.30	88,849.68	4,607.18	3,995.17	567.14	96,884.89	97,145.19
Chippewa	223.00		240.00		463.00	15,798.44	949.07	480.00	80.00	17,147.51	17,610.51
Clark	1,445.55			1,280.00	165.55	125,093.78		3,443.35*	720.53	127,816.60	127,982.15
Door	1,001.90			80.00	921.90					921.90	921.90
Douglas	1,600.01			240.00	1,360.01	237,134.07	7,228.81		36,713.06	207,649.82	209,009.83
Dunn	176.38			176.38							
Eau Claire	600.00			80.00	520.00	34,055.05	280.00	600.00		34,935.05	35,455.05
Florence	43,498.76			160.00	43,338.76	39,709.07			213.92	39,495.15	82,833.91
Forest	22,982.32			120.00	22,862.32	10,766.16			40.00	10,726.16	33,588.48
Iron	600.00			280.00	320.00	161,343.11	4,287.82	2,813.89	480.00	167,964.82	168,284.82
Jackson	320.00			160.00	160.00	103,621.58	560.00	160.00	666.93	103,674.65	103,834.65
Langlade	160.00		120.00		280.00	9,534.98	1,621.27	120.00		11,276.25	11,556.25
Lincoln	5,892.40			235.00	5,657.40	86,574.49	2,103.75	281.95	605.00	88,355.19	94,012.59
Marathon	5,455.81			80.00	5,375.81	83,874.84	1,238.82	6,987.80		92,101.46	97,477.27
Marinette	400.00				400.00					890.00	890.00
Marquette	55.00				55.00	213,271.80	3,811.78	1,142.13	602.80	217,622.91	218,022.91
Monroe						2,107.08				55.00	55.00
Oconto	623.40			160.00	463.40	38,308.53	1,880.04		837.60	2,107.08	2,107.08
Oneida	44,650.04			363.37	44,286.67	72,372.69				39,350.97	39,814.37
Outagamie	360.00				360.00	556.98				72,372.69	116,659.36
Polk	1,087.10				1,087.10	8,085.84	280.00	206.40	80.00	556.98	916.98
Portage	431.71				431.71					8,492.24	9,579.34
Price	2,258.26			163.82	2,094.44	71,252.61				431.71	431.71
Rusk	974.52			240.00	734.52	76,914.33	240.00	1,734.79	4,720.00	68,507.40	70,601.84
St. Croix	92.50			92.50				320.00	121.39	77,112.94	77,847.46
Sawyer	3,550.00		40.00	440.00	3,150.00	93,925.89	871.50*	922.03	346.90	95,372.52	98,522.52
Shawano	450.74				450.74					450.74	450.74
Taylor	1,051.55				1,051.55	13,554.62		1,080.00		14,634.62	15,686.17
Vilas	483.24				483.24	32,336.42	1,873.32	2,048.38	5,665.80	30,592.87	31,076.11
Washburn	2,366.59				2,366.59	111,979.53	3,496.45	8,584.14	3,324.05	120,736.07	123,102.66
Waupaca	40.00			40.00							
Waushara	80.00				80.00					80.00	80.00
Wood	6,742.43				6,742.43	33,713.15	512.60	**1,047.09	637.00	34,635.84	41,378.27
Totals	154,941.06		400.00	4,871.07	150,509.99	1,948,616.78	38,510.97	40,991.70	56,584.12	1,971,535.33	2,122,045.32

* Includes transfer of privately-owned lands to county.

** Includes 360 acres adjustment on 1942 entry.

**SUMMARY OF FOREST, FIELD AND MARSH FIRES FOR 1945
AS REPORTED BY DISTRICT FOREST RANGERS**

District No.	No. of Fires	Acres Burned	Acres per Fire	Reported Damage	No. of fires by size classes			Per Cent 10 Acres or Less
					Under ¼ Acre	¼ to 10 Acres	Over 10 Acres	
1	62	249	4.02	\$ 512	11	47	4	94%
2	117	6,218	53.15	35,838	39	66	12	90%
3	46	94	2.04	290	22	23	1	98%
4	58	294	5.07	884	13	39	6	90%
5	111	629	5.67	1,613	30	67	14	87%
6	48	41	.85	68	18	30	-----	100%
7	105	368	3.50	1,276	34	67	4	96%
8	59	347	5.88	1,494	23	32	4	93%
9	67	298	4.45	560	19	39	9	87%
10	69	433	6.28	1,333	16	47	6	91%
Total or average	742	8,971	12.09	\$ 43,868	225	457	60	92%
				Per Cent	30%	62%	8%	100%

**FOREST, FIELD AND MARSH FIRES 1945
NUMBER, AREA AND DAMAGE BY CAUSES**

Cause	Lightning	R. R.	Logging	Clearing	Camp Fires	Smokers	Incendiary	Misc.	Total
Number.....	6	121	5	121	20	241	128	100	742
Acres Burned	12	519	5	907	5,187	810	1,356	175	8,971
Dollars Damage.....	\$ 28	\$ 1,994	\$ 9	\$ 2,291	\$32,944	\$ 1,963	\$ 4,101	\$ 538	\$43,868

**FOREST, FIELD AND MARSH FIRES 1945
ACRES BURNED BY LAND CLASSES**

District No.	Merchantable Timber	Young Growth	No. Forest Growth	Total Forest Lands	Non-Forest Lands	Total Acres Burned
1	-----	145	-----	145	104	249
2	601	3,485	1,538	5,624	594	6,218
3	-----	49	15	64	30	94
4	-----	188	24	212	82	294
5	2	441	24	467	162	629
6	-----	14	-----	14	27	41
7	4	317	23	344	24	368
8	-----	162	28	190	157	347
9	4	135	-----	139	159	298
10	-----	354	3	357	76	433
Total....	611	5,290	1,655	7,556	1,415	8,971

**FOREST, FIELD AND MARSH FIRES 1945
DAMAGE BY CLASS OF DAMAGE**

Timber		Reproduction Value	Other Values	Total Damage
M. B. F.	Value			
3,005	\$ 13,052	\$19,389	\$ 11,427	\$ 43,868

**SUMMARY OF FOREST, FIELD AND MARSH FIRES FOR 1946
AS REPORTED BY DISTRICT FOREST RANGERS**

District No.	No. of Fires	Acres Burned	Acres per Fire	Reported Damage	No. of fires by size classes			Per Cent 10 acres or less
					¼ acre or less	More than ¼ acre or less than 10 acres	10 acres or over	
1	144	782	5.43	\$ 2,370	47	79	18	87%
2	233	2,032	8.72	14,311	108	102	23	90%
3	92	152	1.65	610	48	42	2	98%
4	189	381	2.02	805	59	119	11	94%
5	181	569	3.14	1,287	69	103	9	95%
6	72	241	3.35	1,153	28	42	2	97%
7	189	628	3.32	1,791	90	84	15	92%
8	189	277	1.99	1,053	62	72	5	96%
9	181	490	2.71	1,483	90	79	12	93%
10	147	2,240	15.24	5,032	45	79	23	84%
Total or Average	1,567	7,792	4.97	\$ 29,895	646	801	120	92%
				Per Cent	41%	51%	8%	100%

**FOREST, FIELD AND MARSH FIRES 1946
NUMBER, AREA AND DAMAGE BY CAUSES**

Cause	Lightning	R. R.	Log-ging	Clear-ing	Camp Fires	Smokers	Incen-diary	Misc.	Total
Number-----	11	471	14	257	44	426	174	170	1,567
Acres Burned	22	1,210	14	1,152	31	1,014	2,755	1,594	7,792
Dollars Damage-----	\$ 81	\$ 2,822	\$ 24	\$ 3,300	\$ 142	\$ 2,757	\$ 6,475	\$14,294	\$29,895

**FOREST, FIELD AND MARSH FIRES 1946
ACRES BURNED BY LAND CLASSES**

District No.	Merchantable Timber	Young Growth	No Forest Growth	Total Forest Lands	Non-Forest Lands	Total Acres Burned
1	-----	192	76	268	514	782
2	2	947	471	1,420	612	2,032
3	-----	64	7	71	81	152
4	-----	185	11	196	185	381
5	-----	222	38	260	309	569
6	6	118	1	125	116	241
7	4	511	53	568	60	628
8	1	129	15	145	132	277
9	2	243	10	255	235	490
10	-----	1,818	1	1,819	421	2,240
Total ----	15	4,429	683	5,127	2,665	7,792

**FOREST, FIELD AND MARSH FIRES 1946
DAMAGE BY CLASS OF DAMAGE**

Timber		Reproduction Value	Other Values	Total Damage
M. B. F.	Value			
36	\$ 279	\$ 11,384	\$ 18,232	\$ 29,895

**FOREST, FIELD AND MARSH FIRES 1946
RECORD BY YEARS**

Year	Total Cost of Protection	Area Under Protection in Million Acres	Cost per Acre in Cents	No. of Fires	Per Cent of Fires 10 Acres or Less	Area Burned Over	Acreage per Fire	Damage
1937 -----	\$354,314.51	13.6	2.6	1,311	97.0	2,967	2	\$ 1,436
1938 -----	421,497.48	13.6	3.1	916	88.0	8,081	9	20,174
1939 -----	447,503.43	13.6	3.3	2,021	93.0	9,864	5	22,157
1940 -----	422,330.87	13.6	3.1	1,622	89.0	11,534	7	23,594
1941 -----	443,935.87	13.6	3.3	799	97.0	1,439	2	2,854
1942 -----	442,639.74	13.6	3.3	823	92.0	3,104	4	6,694
1943 -----	487,692.19	13.6	3.6	962	88.0	12,814	13	40,698
1944 -----	532,723.34	13.6	3.9	1,180	89.7	9,532	9	16,956
1945 -----	544,580.31	13.6	4.0	742	91.9	8,971	12	43,868
1946 -----	658,318.74	16.1	4.1	1,567	92.0	7,792	5	29,895

**FOREST, FIELD AND MARSH FIRES 1946
EXPENDITURES BY YEARS**

Year	Contributed by State	Contributed by Federal Government	Contributed by Counties	Total Cost of Protection
1937	\$280,167.72	\$ 63,978.00	\$ 10,168.79	\$354,314.51
1938	341,744.67	68,098.08	11,654.73	421,497.48
1939	402,262.04	38,631.30	6,610.09	447,503.43
1940	265,899.83	136,819.52	19,611.52	422,330.87
1941	340,646.07	95,554.36	7,735.44	443,935.87
1942	326,650.01	108,898.92	7,090.81	442,639.74
1943	303,839.59	177,699.49	6,153.11	487,692.19
1944	341,376.63	188,006.98	3,339.73	532,723.34
1945	327,837.73	212,203.71	4,538.87	544,580.31
1946	330,768.20	324,069.51	3,481.03	658,318.74

**FOREST, FIELD AND MARSH FIRES 1946
ALLOTMENT OF EXPENDITURES BY YEARS**

Year	Administrative Expense	Field Personnel	Equipment and Improvements	Fire Fighting	Total Cost
1937	\$ 47,103.01	\$205,645.96	\$ 81,227.96	\$ 20,337.58	\$354,314.51
1938	67,342.07	235,069.62	95,776.33	23,309.46	421,497.48
1939	80,130.48	248,446.73	82,187.50	36,738.72	447,503.43
1940	73,770.73	235,375.51	75,707.61	37,477.02	422,330.87
1941	74,562.01	258,607.23	73,161.77	37,604.86	443,935.87
1942	65,452.44	326,439.34	37,169.32	13,578.64	442,639.74
*1943	65,600.74	387,437.62	21,243.88	13,409.95	487,692.19
1944	51,743.30	429,997.44	33,466.03	17,516.57	532,723.34
1945	33,184.70	462,891.20	34,361.25	14,143.16	544,580.31
1946	42,548.67	556,241.98	37,006.72	22,521.37	658,318.74

* Increase in figures shown in 1943 report, additional government grants not previously reported.

DISTRIBUTION OF FISH BY SPECIES AND SIZE—1945

Species (size)	Total	Grand Total
Bluegill		
adult	1, 100	
fingerling	321, 820	
yearling	13, 300F	
	34, 000	
	800F	356, 920
		14, 100F
Brook Trout		
adult	6, 175	
fingerling	700F	
two year old	617, 616	
yearling	519, 990F	
	6, 801	
	161, 146	
	4, 677F	791, 738
		525, 367F
Brown Trout		
adult	26, 475	
fingerling	200F	
yearling	850, 051	
	389, 850F	
	178, 526	
	7, 300F	1, 055, 052
		397, 350F
Bullhead		
adult	110, 880	
fingerling	1, 244, 050	
yearling	7, 224F	
	117, 000	1, 471, 930
		7, 224F
Catfish		
fingerling	1, 630F	
yearling	500F	2, 130F
Crappies		
adult	3, 181	
fingerling	3, 900	
	31, 460F	7, 081
		31, 460F
Hybrid		
fingerling	8, 087	8, 087
Lake Trout		
fingerling	8, 319, 978	
fry	4, 570, 400	12, 890, 378
Large mouth black bass		
adult	550	
fingerling	936, 531	
yearling	705, 130F	
	835	937, 916
		705, 130F
Muskellunge		
fingerling	68, 872	
fry	5, 614, 337	5, 683, 209
Northern pike		
adult	351	
fingerling	3, 125	
fry	4, 449, 842	4, 453, 318
Perch		
adult	100	
eggs	37, 218, 500	
fingerling	69, 533	
	500F	37, 288, 133
		500F

DISTRIBUTION OF FISH BY SPECIES AND SIZE—1945—Continued

Species (size)	Total	Grand Total
Rainbow trout		
adult.....	18,933	
fingerling.....	2,000F	
two year old.....	1,310,000	
yearling.....	89,377F	
	5,650	
	87,860	
	12,585F	1,422,443
		103,962F
Shiners		
fingerling.....	32,000	
yearling.....	250,000	282,000
Small mouth black bass		
fingerling.....	369,500	
	912F	369,500
		912F
Suckers		
adult.....	6,899	
fingerling.....	4,000	10,899
Sunfish		
fingerling.....	600F	600F
Walleye pike		
fingerling.....	1,145,563	
fry.....	200,336,599	
two year old.....	186	
yearling.....	1,741	201,484,089
White bass		
adult.....	100	
fingerling.....	10,300	10,400

Total 1945 fish distribution in Wisconsin:

State	268,523,093
Federal	1,788,735
Grand Total	270,311,828

FISH DISTRIBUTION BY STATIONS*—1945

Station (and species)		Total
Hatcheries		
Bayfield		
brook trout adult	3,000	
brook trout fingerling	172,050	
brook trout two (2) year old	5,118	
lake trout fingerling	285,565	
lake trout fry	3,370,400	3,836,133
Brule		
brown trout fingerling	71,000	
brown trout yearling	43,325	
rainbow trout fingerling	66,700	181,025
Burlington		
bluegill fingerling	156,800	
bullhead adult	82,000	
bullhead fingerling	440,000	
large mouth black bass fingerling	198,000	
northern pike fingerling	125	
perch eggs	26,661,980	27,538,905
Crystal Springs		
brook trout adult	500	
brook trout fingerling	30,000	
brook trout two (2) year old	678	
brook trout yearling	8,400	
rainbow trout adult	100	
rainbow trout fingerling	2,000	41,678
Delafield		
bluegill fingerling	54,000	
bluegill yearling	8,500	
large mouth black bass fingerling	105,000	
large mouth black bass yearling	835	168,335
DeSota		
bullhead adult	250	
crappies adult	275	525
Hartman Creek		
brook trout fingerling	14,753	
perch fingerling	30,000	
shiners fingerling	32,000	
small mouth black bass fingerling	333,500	
walleye pike fingerling	41,500	451,753
Hayward		
brown trout fingerling	73,800	
brown trout yearling	50,005	
rainbow trout fingerling	69,500	
walleye pike fingerling	6,000	
walleye pike fry	37,185,479	37,384,784
Island Lake		
muskellunge fry	2,298,687	
northern pike fry	2,145,462	4,444,149
Lakewood		
brook trout adult	2,000	
brook trout fingerling	10,800	
brook trout yearling	19,600	
rainbow trout fingerling	38,800	
rainbow trout yearling	15,120	86,320
Langlade		
brook trout yearling	29,800	
brown trout fingerling	15,000	
brown trout yearling	12,400	
rainbow trout fingerling	21,000	
rainbow trout yearling	3,000	81,200
Marsh Miller		
northern pike fry	167,830	
walleye pike fry	11,317,342	11,485,172

* This includes distribution by hatcheries, rearing ponds, transfer, and rescue operations.

FISH DISTRIBUTION BY STATIONS*—1945—Continued

Station (and species)		Total
Hatcheries Continued		
Nevin		
brown trout adult.....	10,400	-----
brown trout fingerling.....	142,000	-----
brown trout yearling.....	4,600	-----
rainbow trout adult.....	5,649	-----
rainbow trout fingerling.....	280,000	-----
rainbow trout two (2) year old.....	150	-----
rainbow trout yearling.....	1,500	444,299
Osceola		
brook trout adult.....	675	-----
brook trout fingerling.....	156,852	-----
brook trout two (2) year old.....	1,005	-----
brook trout yearling.....	47,530	-----
lake trout fingerling.....	476,053	-----
rainbow trout adult.....	7,890	-----
rainbow trout fingerling.....	96,500	-----
rainbow trout two (2) year old.....	4,500	-----
rainbow trout yearling.....	40,940	831,945
St. Croix Falls		
brook trout fingerling.....	169,100	-----
brook trout yearling.....	48,901	-----
brown trout fingerling.....	80,000	-----
brown trout yearling.....	10,998	308,999
Sayner		
walleye pike fry.....	24,634,557	24,634,557
Spooner		
large mouth black bass fingerling.....	35,090	-----
muskellunge fingerling.....	31,044	-----
muskellunge fry.....	2,110,337	-----
northern pike fry.....	1,723,000	-----
walleye pike fingerling.....	9,360	-----
walleye pike fry.....	67,265,756	71,174,587
Sturgeon Bay		
bluegill fingerling.....	10,000	-----
bullhead fingerling.....	13,000	-----
lake trout fingerling.....	7,558,360	-----
lake trout fry.....	1,200,000	-----
rainbow trout adult.....	45	-----
small mouth black bass fingerling.....	31,000	8,812,405
Thunder River		
brook trout yearling.....	4,000	-----
brown trout adult.....	5,000	-----
brown trout fingerling.....	23,000	-----
brown trout yearling.....	40,498	-----
rainbow trout fingerling.....	33,000	105,498
Westfield		
brook trout fingerling.....	20,000	20,000
Weyauwega		
walleye pike fry.....	31,463,497	31,463,497
Wild Rose		
brown trout adult.....	12,225	-----
brown trout fingerling.....	444,500	-----
perch eggs.....	10,556,520	-----
rainbow trout adult.....	5,249	-----
rainbow trout fingerling.....	702,500	-----
rainbow trout two (2) year old.....	1,000	-----
rainbow trout yearling.....	24,300	-----
walleye pike fingerling.....	12,200	11,758,494
Woodruff		
hybrid.....	8,087	-----
large mouth black bass fingerling.....	10,645	-----
muskellunge fingerling.....	37,061	-----
muskellunge fry.....	1,205,313	-----
muskellunge yearling.....	293	-----

FISH DISTRIBUTION BY STATIONS*—1945—Continued

Station (and species)		Total
Woodruff—Continued		
northern pike fry	413, 550	
perch fingerling	14, 333	
walleye pike fry	28, 469, 968	30, 159, 250
Rearing ponds (state operated)		
Barron county pond No. 1		
walleye pike fingerling	5, 280	5, 280
Barron county pond No. 2		
walleye pike fingerling	78, 399	78, 399
Barron county pond No. 3		
walleye pike fingerling	75, 804	75, 804
Barron county pond No. 4		
walleye pike fingerling	510	510
Blaine rearing pond		
walleye pike fingerling	5, 000	5, 000
Blair rearing pond		
bluegill fingerling	60, 000	60, 000
Coloma pond No. 1		
bullhead yearling	42, 000	
walleye pike fingerling	232	42, 232
Crystal Lake (Beaver Dam)		
bluegill yearling	25, 500	
bullhead yearling	75, 000	
shiners yearling	250, 000	350, 500
Crystal Lake pond No. 2		
walleye pike fingerling	7, 000	7, 000
Forest county bass pond No. 1		
large mouth black bass fingerling	279	279
Forest county pond No. 3		
walleye pike fingerling	1, 094	1, 094
Forest county pond No. 4		
walleye pike fingerling	2, 288	2, 288
Forest county pond No. 5		
walleye pike fingerling	68	68
Forest county pond No. 6		
walleye pike fingerling	4, 276	4, 276
Iron county pond No. 1		
walleye pike fingerling	5, 741	
walleye pike yearling	15	5, 756
Iron county pike pond No. 2		
walleye pike fingerling	24	24
Langlade county pond No. 2		
walleye pike fingerling	412	
walleye pike two (2) year old	186	
Walleye pike yearling	984	1, 582
Langlade county pond No. 5		
walleye pike fingerling	15, 241	15, 241
Lincoln county pond No. 2		
walleye pike fingerling	2, 849	2, 849
Lincoln county pond No. 3		
walleye pike fingerling	855	855
Oconto pond No. 2		
walleye pike fingerling	4, 064	4, 064
Polk county pond No. 1		
walleye pike fingerling	12, 470	12, 470

FISH DISTRIBUTION BY STATIONS*—1945—Continued

Station (and species)		Total
Rearing Ponds (state operated)—continued		
Polk county pond No. 2 walleye pike fingerling.....	219, 825	219, 825
Polk county pond No. 3 large mouth black bass fingerling.....	9, 915	9, 915
Polk county pond No. 4 large mouth black bass fingerling.....	4, 985	4, 985
Price county pond No. 1 walleye pike fingerling.....	573	573
Price county pond No. 2 sucker fingerling.....	4, 000	
walleye pike fingerling.....	800	4, 800
Price county pond No. 3 walleye pike fingerling.....	8, 094	8, 094
Price county pond No. 6 walleye pike fingerling.....	410	410
Price county pond No. 8 walleye pike fingerling.....	825	825
Rusk county pond No. 1 large mouth black bass fingerling.....	1, 000	1, 000
St. Croix county pond No. 2 walleye pike fingerling.....	10, 260	10, 260
St. Croix county pond No. 3 walleye pike fingerling.....	14, 925	14, 925
St. Croix county pond No. 4 walleye pike fingerling.....	3, 740	3, 740
St. Croix county pond No. 5 walleye pike fingerling.....	81, 125	81, 125
St. Croix county pond No. 6 walleye pike fingerling.....	28, 455	28, 455
St. Croix county pond No. 7 walleye pike fingerling.....	27, 355	27, 355
St. Croix county pond No. 8 walleye pike fingerling.....	19, 830	19, 830
St. Croix county pond No. 9 walleye pike fingerling.....	20, 555	20, 555
St. Croix county pond No. 10 walleye pike fingerling.....	43, 175	43, 175
St. Croix county pond No. 11 large mouth black bass fingerling.....	795	
walleye pike fingerling.....	840	1, 635
St. Croix county pond No. 12 walleye pike fingerling.....	22, 520	
walleye pike yearling.....	39	22, 559
St. Croix county pond No. 13 walleye pike fingerling.....	10, 609	10, 609
St. Croix county pond No. 14 large mouth black bass fingerling.....	940	940
St. Croix county pond No. 15 walleye pike fingerling.....	3, 410	3, 410
St. Croix county pond No. 16 walleye pike fingerling.....	17, 756	17, 756
St. Croix county pond No. 17 walleye pike fingerling.....	72, 770	72, 770

FISH DISTRIBUTION BY STATIONS*—1945—Continued

Station (and species)		Total
Rearing Ponds (state operated)—continued		
St. Croix county pond No. 18 walleye pike fingerling	17, 665	17, 665
St. Croix county pond No. 19 large mouth black bass fingerling	5, 325	5, 325
St. Croix county pond No. 20 large mouth black bass fingerling	2, 135	2, 135
St. Croix county pond No. 21 large mouth black bass fingerling	5, 755	5, 755
St. Croix county pond No. 22 large mouth black bass fingerling	9, 075	9, 075
Sawyer county pond No. 1 walleye pike fingerling	10, 080	10, 080
Sawyer county pond No. 2 walleye pike fingerling	70, 113	70, 113
Shawano county pike pond No. 3 walleye pike fingerling	205	205
Tichigan rearing pond large mouth black bass fingerling	11, 500	11, 500
Vilas county pond No. 1 walleye pike fingerling	24	24
Vilas county pond No. 2 walleye pike fingerling	833	
walleye pike yearling	268	1, 101
Vilas county pond No. 3 walleye pike fingerling	4, 500	4, 500
Vilas county pond No. 4 walleye pike fingerling	12, 780	
walleye pike yearling	23	12, 803
Vilas county pond No. 6 walleye pike fingerling	1, 334	1, 334
Vilas county pond No. 8 walleye pike fingerling	7, 662	7, 662
Washburn county pond No. 1 walleye pike fingerling	1, 065	1, 065
Washburn county pond No. 2 walleye pike fingerling	2, 605	2, 605
Washburn county pond No. 4 walleye pike fingerling	4, 835	4, 835
Washburn county pond No. 5 walleye pike fingerling	45, 725	45, 725
Washburn county pond No. 6 walleye pike fingerling	41, 495	41, 495
Washburn county pond No. 7 walleye pike fingerling	24, 335	24, 335
Washburn county pond No. 8 muskellunge fingerling	438	438
Washburn county pond No. 9 large mouth black bass fingerling	2, 115	2, 115
Washburn county pond No. 10 large mouth black bass fingerling	11, 720	
walleye pike fingerling	2, 200	13, 920
Washburn county pond No. 20 muskellunge fingerling	36	36

FISH DISTRIBUTION BY STATIONS*—1945—Continued

Station (and species)		Total
Rearing ponds (state operated)—continued		
Rearing ponds (Cooperative)		
Black River Falls rearing pond brook trout fingerling	6,090	6,090
Clifton Rod & Gun Club rearing pond brown trout yearling	3,100	3,100
Crystal Lake rearing pond bluegill adult	300	-----
bullhead adult	500	-----
bullhead fingerling	12,500	13,300
Elderon rearing pond brook trout fingerling	4,000	4,000
Gresham rearing pond brook trout fingerling	9,000	9,000
Iowa county pond large mouth black bass adult	350	350
Mauston Rod & Gun Club rearing pond brook trout fingerling	3,000	3,000
Monroe county Flora Dell pond bluegill fingerling	27,720	27,720
Niagara rearing pond brook trout yearling	2,915	2,915
Plover rearing ponds brook trout fingerling	18,000	-----
rainbow trout yearling	3,000	21,000
Sparta Rod & Gun Club rearing pond brown trout yearling	6,600	6,600
Westby rearing ponds brown trout fingerling	2,400	2,400
Wittenberg rearing pond brook trout fingerling	3,971	-----
brown trout fingerling	4,201	8,172
Transfer operations		
Miscellaneous transfers		
bluegill adult	800	-----
bluegill fingerling	8,300	-----
bullhead adult	28,130	-----
bullhead fingerling	338,550	-----
crappie adult	2,906	-----
crappie fingerling	3,900	-----
large mouth black bass adult	3,200	-----
large mouth black bass fingerling	519,257	-----
northern pike adult	351	-----
northern pike fingerling	3,000	-----
perch adult	100	-----
perch fingerling	25,200	-----
sucker adult	6,899	-----
white bass adult	100	-----
white bass fingerling	10,300	950,993
Rescue operations		
Miscellaneous rescue operations		
bluegill fingerling	5,000	-----
bullhead fingerling	440,000	-----
small mouth black bass fingerling	5,000	450,000
Total fish distributed—1945		268,523,093

DISTRIBUTION OF FISH BY SPECIES AND SIZE—1946

Species (size)	Total	Grand Total
Bluegill		
adult.....	7, 653	
fingerling.....	475, 160	
two-year old.....	7, 500F	
yearling.....	4, 000	
	184, 080	670, 893
		7, 500F
Brook trout		
adult.....	16, 469	
fingerling.....	1, 453, 146	
legal.....	654, 150F	
yearling.....	236, 744	
	1, 460F	
	124, 437	1, 830, 796
	4, 790F	660, 400F
Brown trout		
adult.....	1, 504	
fingerling.....	1, 282F	
legal.....	2, 098, 350	
two-year old.....	169, 000F	
yearling.....	196, 439	
	4, 674F	
	271F	
	288, 604	2, 584, 897
	3, 870F	179, 097F
Bullhead		
adult.....	2, 000	
fingerling.....	133, 000	
two-year old.....	4, 960	
yearling.....	44, 900	184, 860
Crappies		
adult.....	31	
fingerling.....	19, 400	19, 431
Herring (whitefish)		
green eggs.....	6, 282, 086	6, 282, 086
Hybrid muskellunge		
fingerling.....	16, 323	
yearling.....	39	16, 362
Lake trout		
fingerling.....	160, 670	
fry.....	12, 749, 815	12, 910, 485
Large mouth black bass		
adult.....	318	
fingerling.....	837, 024	
yearling.....	420, 480F	
	797	838, 139
		420, 480F
Muskellunge		
fingerling.....	189, 502	
fry.....	6, 511, 112	
yearling.....	14	6, 700, 628
Northern pike		
adult.....	131	
fingerling.....	3, 298	
fry.....	9, 962, 892	
yearling.....	202	9, 966, 523
Perch		
adult.....	11, 491	
eggs.....	13, 398, 660	
fingerling.....	298, 915	
yearling.....	10, 480	13, 719, 546

DISTRIBUTION OF FISH BY SPECIES AND SIZE—1946—Continued

Station (and species)	Total	Grand Total
Rainbow trout		
adult.....	8,514	
fingerling.....	951,427	
legal.....	107,050F	
yearling.....	66,289	
	350F	
	57,310	
	150F	1,083,540
		107,550F
Small mouth black bass		
fingerling.....	69,450	
	11,425F	69,450
		11,425F
Suckers		
adult.....	354	
fry.....	4,563,240	4,563,594
Sunfish		
fingerling.....	1,200	1,200
Walleye		
fingerling.....	775,888	
fry.....	346,360,688	
two-year old.....	241	
yearling.....	3,820	347,140,637
War mouth bass		
fingerling.....	8,000	8,000
Total 1946 fish distribution in Wisconsin:		
State.....		408,591,067
Federal.....		1,386,452
Grand Total.....		409,977,519

FISH DISTRIBUTION BY STATIONS*—1946

Station (and species)		Total
Hatcheries		
Bayfield		
brook trout adult	12,500	
brook trout fingerling	185,000	
brook trout legal	27,201	
brook trout yearling	21,000	
brown trout fingerling	165,000	
herring (whitefish) green eggs	6,282,086	
lake trout fingerling	18,670	
lake trout fry	3,444,000	10,155,457
Brule		
brown trout fingerling	82,350	
brown trout legal	37,400	
brown trout yearling	16,650	
rainbow trout fingerling	94,000	230,400
Burlington		
bluegill adult	3,500	
bluegill fingerling	181,200	
bullhead adult	2,000	
bullhead fingerling	15,000	
bullhead yearling	24,000	
large mouth black bass fingerling	97,700	
northern pike fry	25,376	
perch adult	3,500	
perch eggs	13,398,660	
perch fingerling	32,300	
walleye fry	53,965,776	67,749,012
Chippewa Flowage		
muskellunge fry	1,321,766	
sucker fry	563,240	
walleye fry	25,950,583	27,835,589
Crystal Springs		
brook trout adult	930	
brook trout fingerling	72,500	
brook trout legal	5,000	
brook trout yearling	18,600	
rainbow trout adult	645	
rainbow trout fingerling	68,000	165,675
Delafield		
bluegill fingerling	80,000	
bluegill yearling	5,000	
large mouth black bass fingerling	231,500	
walleye fry	38,395,888	38,712,388
Hartman Creek		
bluegill fingerling	10,000	
bluegill yearling	172,000	
brook trout legal	15,126	
large mouth black bass fingerling	10,000	
northern pike fry	145,914	
perch adult	200	
perch fingerling	265,900	
perch yearling	10,000	
small mouth black bass fingerling	14,450	
walleye fry	734,581	1,378,171
Hayward		
brown trout fingerling	67,000	
brown trout legal	41,554	
brown trout yearling	11,750	
rainbow trout fingerling	25,000	145,304
Island Lake		
muskellunge fry	1,232,046	
northern pike fry	4,647,706	5,879,752

* This includes distribution by hatcheries, rearing ponds, transfer, and rescue operations.

FISH DISTRIBUTION BY STATIONS*—1946—Continued

Station (and species)		Total
Hatcheries—con.		
Lakewood	254,800	
brook trout fingerling	13,527	
brook trout legal	17,300	
brook trout yearling	15,528	
rainbow trout fingerling	3,348	
rainbow trout legal	3,100	307,603
rainbow trout yearling		
Langlade	96,000	
brook trout fingerling	1,500	
brook trout legal	23,200	
brook trout yearling	39,000	
brown trout fingerling	11,721	
brown trout yearling	63,300	
rainbow trout fingerling	2,650	
rainbow trout legal	10,150	247,521
rainbow trout yearling		
Marsh Miller	50,743	
northern pike fry	8,116,757	8,167,500
walleye fry		
Nevin	2,500	
bluegill adult	194,500	
bluegill fingerling	4,000	
bluegill two-year old	663,000	
brown trout fingerling	21,417	
brown trout legal	15,113	
brown trout yearling	500	
rainbow trout adult	67,000	
rainbow trout fingerling	40,400	
rainbow trout legal	11,600	1,020,030
rainbow trout yearling		
Osceola	2,830	
brook trout adult	181,775	
brook trout fingerling	81,500	
brook trout legal	9,890	
brook trout yearling	1,585	
rainbow trout adult	138,599	
rainbow trout fingerling	12,325	
rainbow trout legal	19,600	448,104
rainbow trout yearling		
St. Croix Falls	167,891	
brook trout fingerling	55,000	
brook trout legal	4,240	
brook trout yearling	49,000	
brown trout fingerling	7,500	
brown trout legal	2,423	286,054
brown trout yearling		
Sayner	324,824	
muskellunge fry	57,100,000	57,424,824
walleye fry		
Spooner	1,957	
muskellunge fingerling	1,335,370	
muskellunge fry	3,315,962	
northern pike fry	69,921,147	74,574,436
walleye fry		
Sturgeon Bay	142,000	
lake trout fingerling	9,305,815	
lake trout fry	55,000	9,502,815
small mouth black bass fingerling		
Thunder River	148,300	
brook trout fingerling	5,511	
brook trout legal	11,400	
brook trout yearling	46,300	
brown trout fingerling	1,500	
brown trout legal	15,000	
brown trout yearling	6,000	
rainbow trout fingerling	6,086	
rainbow trout legal	5,900	245,997
rainbow trout yearling		

FISH DISTRIBUTION BY STATIONS*—1946—Continued

Station (and species)		Total
Westfield		
brook trout fingerling.....	311,350	-----
brook trout legal.....	25,185	-----
brook trout yearling.....	14,500	-----
brown trout fingerling.....	217,000	-----
rainbow trout fingerling.....	100,000	668,035
Weyauwega		
large mouth black bass fingerling.....	39,000	-----
walleye fry.....	56,867,517	56,406,517
Wild Rose		
brown trout adult.....	1,504	-----
brown trout fingerling.....	760,700	-----
brown trout legal.....	81,586	-----
brown trout yearling.....	165,747	-----
rainbow trout adult.....	5,729	-----
rainbow trout fingerling.....	374,000	-----
rainbow trout legal.....	1,180	-----
rainbow trout yearling.....	210	1,390,656
Woodruff		
bluegill adult.....	493	-----
large mouth black bass fingerling.....	1,000	-----
muskellunge fry.....	2,297,106	-----
northern pike fry.....	1,777,191	-----
walleye fry.....	35,808,439	39,884,229
Rearing ponds (state operated)		
Barron county pond No. 1		
large mouth black bass fingerling.....	16,684	16,684
Barron county pond No. 2		
walleye fingerling.....	56,654	56,654
Barron county pond No. 3		
walleye fingerling.....	57,865	57,865
Blair rearing pond		
large mouth black bass fingerling.....	23,000	23,000
Bunker Hill pike pond		
perch fingerling.....	715	-----
walleye fingerling.....	275	990
Forest county pond No. 3		
walleye fingerling.....	522	-----
walleye yearling.....	61	583
Forest county pond No. 4		
walleye fingerling.....	164	-----
walleye yearling.....	95	259
K pond No. 3		
walleye fingerling.....	180	180
Langlade county pond No. 2		
walleye fingerling.....	22,074	-----
walleye yearling.....	242	22,316
Langlade county pond No. 5		
walleye fingerling.....	6,144	-----
walleye yearling.....	33	6,177
Langlade Kempster pond No. 2		
walleye fingerling.....	28,000	28,000
Lincoln county pond		
walleye fingerling.....	6,580	6,580
Niagara pike pond No. 1		
brook trout yearling.....	5	-----
walleye fingerling.....	490	495

FISH DISTRIBUTION BY STATIONS*—1946—Continued

Station (and species)		Total
Oconto pond No. 2		
walleye fingerling	2, 243	
walleye yearling	33	2, 276
Patty's Lake rearing pond		
bullhead fingerling	8, 000	
walleye fingerling	152, 300	160, 300
Plainfield pike pond		
walleye fingerling	176	
walleye yearling	39	215
Polk county pond No. 1		
walleye fingerling	1, 820	1, 820
Polk county pond No. 2		
walleye yearling	778	778
Polk county pond No. 4		
large mouth black bass fingerling	12, 870	12, 870
Polk county pond No. 5		
walleye fingerling	28, 825	28, 825
Polk county pond No. 6		
large mouth black bass fingerling	1, 835	1, 835
Polk county pond No. 7		
walleye fingerling	15, 266	15, 266
Polk county pond No. 8		
walleye fingerling	1, 930	1, 930
Polk county pond No. 9		
large mouth black bass fingerling	1, 605	1, 605
Price county pond No. 3		
walleye fingerling	770	
walleye yearling	28	798
Price county pond No. 10		
walleye fingerling	81	81
St. Croix county pond No. 3		
walleye fingerling	1, 040	
walleye yearling	543	1, 583
St. Croix county pond No. 5		
walleye fingerling	22, 715	
walleye yearling	245	22, 960
St. Croix county pond No. 6		
walleye fingerling	185	
walleye yearling	670	855
St. Croix county pond No. 7		
walleye fingerling	387	387
St. Croix county pond No. 9		
walleye fingerling	85	
walleye yearling	65	150
St. Croix county pond No. 10		
walleye fingerling	203	203
St. Croix county pond No. 11		
walleye fingerling	8, 950	8, 950
St. Croix county pond No. 12		
walleye fingerling	400	
walleye yearling	42	442
St. Croix county pond No. 16		
walleye fingerling	8, 632	8, 632

FISH DISTRIBUTION BY STATIONS*—1946—Continued

Station (and species)		Total
St. Croix county pond No. 17		
walleye fingerling	1,310	
walleye yearling	261	1,571
St. Croix county pond No. 18		
walleye yearling	161	161
St. Croix county pond No. 19		
large mouth black bass fingerling	10,067	10,067
St. Croix county pond No. 21		
large mouth black bass fingerling	252	
large mouth black bass yearling	657	909
St. Croix county pond No. 22		
large mouth black bass fingerling	3,131	
large mouth black bass yearling	140	3,271
St. Croix county pond No. 23		
walleye fingerling	21,235	21,235
St. Croix county pond No. 24		
walleye fingerling	16,600	16,600
St. Croix county pond No. 27		
walleye fingerling	152,144	152,144
St. Croix county pond No. 28		
walleye fingerling	72,000	72,000
St. Croix county pond No. 29		
walleye fingerling	12,000	12,000
St. Croix county pond No. 30		
walleye fingerling	7,735	7,735
St. Croix county pond No. 31		
walleye fingerling	173	
walleye two-year old	241	414
St. Croix county pond No. 32		
walleye fingerling	58,795	58,795
Sawyer county pond No. 1		
walleye yearling	213	213
Sawyer county pond No. 2		
walleye fingerling	2,945	2,945
Shawano county Putman's pond		
walleye fingerling	71	71
Spooner ponds		
muskellunge fingerling	19,590	19,590
Spooner pond No. 20		
muskellunge fingerling	1,180	1,180
Spooner rearing ponds		
muskellunge fingerling	50,411	
sucker fry	4,000,000	4,050,411
Vilas county pond No. 2		
walleye fingerling	714	
walleye yearling	18	732
Vilas county pond No. 3		
walleye fingerling	287	287
Vilas county pond No. 4		
walleye fingerling	960	
walleye yearling	29	989
Vilas county pond No. 8		
muskellunge fingerling	10	10

FISH DISTRIBUTION BY STATIONS*—1946—Continued

Station (and species)		Total
Washburn county pond No. 5 walleye yearling	264	264
Washburn county pond No. 6 large mouth black bass fingerling	25,470	25,470
Washburn county pond No. 7 walleye fingerling	1,680	1,680
Washburn county pond No. 8 muskellunge fingerling	691	691
Washburn county pond No. 10 large mouth black bass fingerling	13,135	13,135
Washburn county pond No. 11 walleye fingerling	54	54
Weyauwega pond walleye fingerling	229	229
Wild Rose pike rearing pond walleye fingerling	2,000	2,000
Woodruff pond No. E1 hybrid muskellunge fingerling	12,090	12,090
Woodruff pond No. E2 muskellunge fingerling	4,000	4,000
Woodruff pond No. E3 muskellunge fingerling	3,500	3,500
Woodruff pond No. E4 muskellunge fingerling	5,500	5,500
Woodruff rearing pond No. 1 muskellunge fingerling	1,627	1,627
Woodruff rearing pond No. E1 hybrid muskellunge fingerling	2,541	2,541
Woodruff rearing pond No. 2 muskellunge fingerling	3,935	3,935
Woodruff rearing pond No. E2 muskellunge fingerling	5,142	5,142
Woodruff rearing pond No. 3 muskellunge fingerling	11,773	11,773
Woodruff rearing pond No. E3 muskellunge fingerling	900	900
Woodruff rearing pond No. 4 muskellunge fingerling	44,700	44,700
Woodruff rearing pond No. E4 muskellunge fingerling	1,600	1,600
Woodruff rearing pond No. 5 muskellunge yearling	11	11
Woodruff rearing pond No. 5A muskellunge fingerling	9,131	9,131
Woodruff rearing pond No. 5B muskellunge yearling	3	3
Woodruff rearing pond No. 6 muskellunge fingerling	23,818	23,818
Woodruff rearing pond No. 8 muskellunge fingerling	37	37

FISH DISTRIBUTION BY STATIONS*—1946—Continued

Station (and species)		Total
Rearing ponds (cooperative)		
Black River Falls rearing pond		
brook trout fingerling	20,000	
brown trout fingerling	9,000	29,000
Chaseburg rearing pond		
brown trout yearling	8,000	8,000
Crystal Lake rearing pond		
bluegill yearling	5,000	5,000
Dodgeville rearing pond		
brown trout legal	4,500	4,500
Gresham rearing pond		
brook trout yearling	213	213
Niagara rearing pond		
brook trout yearling	2,700	2,700
Ontario rearing pond		
brown trout yearling	16,000	16,000
Park Falls rearing pond		
brook trout legal	594	
brook trout yearling	1,389	1,983
Rhineland rearing pond		
brook trout legal	2,600	2,600
Scharnhorst rearing pond		
brown trout legal	300	
rainbow trout legal	300	600
Sparta Rod & Gun Club rearing pond		
brown trout yearling	12,000	
rainbow trout yearling	6,750	18,750
Steuben Rod & Club ponds		
brook trout legal	182	
brook trout yearling	200	382
Viroqua Rod & Gun Club rearing pond		
brook trout yearling	14,000	14,000
Wild Rose rearing ponds		
brown trout legal	500	500
Wittenberg rearing pond		
brook trout fingerling	11,000	
brook trout legal	4,000	15,000
Wonewoc rearing pond		
brook trout fingerling	4,500	4,500
Transfer operations		
Miscellaneous transfers		
bluegill adult	1,160	
bluegill fingerling	9,060	
bluegill yearling	930	
brook trout adult	209	
brook trout fingerling	30	
bullhead two-year old	4,960	
crappie adult	31	
crappie fingerling	14,400	
hybrid muskellunge fingerling	1,692	
hybrid muskellunge yearling	39	
large mouth black bass adult	318	
large mouth black bass fingerling	349,775	
northern pike adult	131	
northern pike fingerling	3,298	
perch adult	7,791	
perch yearling	480	
rainbow trout adult	55	
sucker adult	354	
sunfish fingerling	1,200	395,913

FISH DISTRIBUTION BY STATIONS*—1946—Continued

Station (and species)		Total
Rescue operations		
Miscellaneous rescue operations		
bluegill fingerling	400	
bluegill yearling	1, 150	
bullhead fingerling	110, 000	
bullhead yearling	20, 900	
crappie fingerling	5, 000	
northern pike yearling	202	
war mouth bass fingerling	8, 000	145, 652
Total fish distributed—1946		408, 591, 067

POUNDS AND VALUE OF FISH BY SPECIES CAUGHT COMMERCIALY IN WISCONSIN WATERS OF THE GREAT LAKES

	1945		1946	
	Pounds	Value	Pounds	Value
Lake Trout, No. 1	3, 086, 832	\$1, 605, 152. 64	2, 159, 110	\$ 950, 008. 40
Lake Trout, No. 2	571	17. 13	1, 235	37. 05
Whitefish, No. 1	667, 984	367, 391. 20	1, 208, 970	447, 818. 90
Whitefish, No. 2	1, 338	40. 14	3, 355	100. 65
Menomonic	22, 046	3, 306. 90	15, 952	2, 392. 80
Chubs	2, 490, 182	597, 643. 68	2, 576, 604	283, 426. 44
Herring	8, 066, 361	525, 565. 17	8, 611, 235	371, 541. 82
Perch	857, 388	171, 477. 60	861, 346	129, 201. 90
Suckers	1, 222, 694	134, 496. 34	972, 159	58, 329. 54
Carp	1, 767, 809	123, 746. 63	1, 189, 086	53, 508. 87
Catfish	76, 989	32, 335. 38	89, 234	23, 200. 84
Bullhead	289, 170	80, 967. 60	170, 807	29, 037. 19
Smelt	57, 718	7, 503. 34	200, 698	26, 090. 74
Lawyer	65, 453	1, 963. 59	58, 076	1, 742. 28
Crawfish*	13, 667	410. 01	2, 591	77. 73
Walleyes	138, 845	40, 265. 05	150, 916	40, 747. 32
Pickeral	50, 394	7, 559. 10	16, 711	2, 172. 43
Sheepshead	98, 721	13, 820. 94	99, 869	6, 990. 83
Bloaters	21, 613	216. 13	21, 200	212. 00
Salmon	43	22. 36		
Dogfish	5	. 05	509	5. 09
White Bass	151		1, 538	
Totals	18, 982, 307	\$3, 713, 900. 98	18, 408, 625	\$2, 426, 142. 82

* Crawfish not included in total pounds, included in value.

MILITARY SERVICE HONOR ROLL*

Ades, Spencer E.	Curran, George A.
Adler, Frederick E.	Cuthbertson, Andrew
Allen, Raymond E.	
Allman, Harry C.	Dahlberg, Burt L.
Amundson, Dennis W.	Danielson, Alwin E.
Amundson, Ernest O.	Davis, Harley
Anderson, Robert O.	Davis, John R.
Anderson, Roy R.	DeBoer, Stanley G.
	Deerwester, Therman G.
Bachay, Geo. S.	Delwiche, Thomas J.
Bacon, Charles	Denny, Robert M.
Balk, Vilas D.	Dittrich, Burt G.
Bare, Louis W.	Donohoe, Joseph F.
Barrett, George H.	*Douglas, Merlin C.
Barton, Edwin	Doyle, James E.
Baumann, Arthur W.	Dunshee, Robert C.
Beecroft, Harry J.	
Berry, Lyle J.	Eberhardt, Wm. E.
Blaisdell, Everett C.	*Ebert, Mark J.
Blaisdell, Harry G.	Ecklund, Carl E.
Blomquist, Harold T.	Edminister, Clifford
Blomquist, Wm. E.	Eggen, Roy W.
Blumenstein, Norman A.	Ellinger, Randall G.
Boehm, Martyn	Erdman, Earle C.
Boles, Donald L.	Eschenbauch, Frank J.
Bollman, John P.	Eschenbauch, Rolland
Brackin, Alfred H.	
Braun, George W.	Faast, William
Brecke, Marvin G.	Fassbinder, George E.
Brown, Bruce A.	Fischer, George D.
Buchanan, Harold	Fish, Roger L.
Buettner, Arnold A.	Fisher, James N.
Burgermeister, John L.	*Flanigon, Thos. E.
Burhans, Floyd A.	Follis, Robert R.
Bush, Edward I.	Ford, Robert B.
Buss, Irven O.	Foss, Harold F.
Button, Percy L.	Fradrich, George W.
Butzke, Lester B.	Frazer, Calvin H.
Byam, Loren E.	Freund, Kenneth V.
Byam, Wilbur	Fromader, Austin W.
Byington, Homer L.	
	Galston, Allan S.
Carter, Earl L.	Garbutt, Bert M.
Casper, Robert J.	Gauthier, Irving E.
Champney, Allen G.	Gee, Lynn L.
Chasteen, Raymond	Gemmill, Stanley L.
Chellow, Arden E.	Gillette, Arthur J.
Cherwinski, Florian	Gouge, Fred C.
Cherwinski, Thaddeus J.	Granberg, John C.
Choinski, Walter F.	Graswold, Alvin H.
Church, George W.	Grunke, George E.
Clumpner, Alva A.	Guldwick, Alfred J.
Colt, Clifford E.	
Conestrop, Roy E.	Hadland, George S.
*Conroy, Francis P.	Hake, Robert D.
Conway, Jane P.	Halberg, Jack E.
Conway, Ralph C.	Hall, Ray H.
Corbin, Joseph	Halle, Merlin D.
Cornell, Eldred M.	Halvorsen, Ralf E.

* Killed in service.

Hansen, Harvey N.
Hanson, George O.
Harris, Richard F.
Harris, Willard Q.
Hartman, George F.
Hatch, Kenneth D.
Haukom, Allan S.
Heard, Mont
Heinle, Edward J.
Henrickson, Patrick E.
Herman, Carl D.
Hoffman, Willis O.
Holger, Warren M.
Holtz, Vesper E.
Hopkins, Ralph C.
Hoppe, John A.
Hubbard, Benjamin W.

Jacobson, Fred L.
Jacoby, Clyde L.
Jensen, Alvord C.
Johnson, Arnold D.
Johnson, Chas. J.
Johnson, George A.
Johnson, Seldon W.
Jonas, Joseph W.
Jones, Ralph A.
Jones, Robert C.
Jordan, Lewis C.
Jorgenson, Rollin G.
Just, Wilfred C.

*Karlson, Robert H.
Kaseno, Charles M.
Kellner, James J.
Kelly, James C.
King, Edward J.
King, Frank H.
Kingsbury, Leroy
Kleinhans, Robert E.
Klimowski, John E.
Knash, John J., Jr.
Knutdson, Arthur
Koehn, Robert S.
Kozlik, Frank M.
Kraemer, Elmer C.
Kriewald, Lawrence E.

Laesch, Willard L.
Lake, Ruthven J.
Lambert, Georgia R.
Landsverk, Odeen
Lawrence, Chas. H.
Leisch, Fred E.
Leisch, Louis A.
Lemke, Herbert J.
Le Tourneau, Irving A.
Liebig, Harry R.
Lieding, Calvin A.
Lindquist, Clare R.
Lloyd, Charles N.

* Killed in service.

Long, Neal D.
Lundholm, Woodrow A.

McCutchin, Thayre
McDermand, David
McGinnis, Harold J.
McLeod, George R.
McLeod, Lloyd L.
McMonagle, Bert T.
McQuaid, John E.
Mackie, Donald J.
Maginnis, Eldon E.
Majewski, Carl H.
Malloy, James B.
Mann, Marlyn K.
Markle, Robert B.
Marshak, Leo
Marshall, Louis L.
Masek, Robert L.
Mathwig, William H.
Mattke, Marvin E.
Mau, Harvey W.
Mayfield, Robert A.
Merrill, Lee D.
Michaud, James L.
Mielke, Otto C., Jr.
Miller, Billy C.
Miller, Sidney
*Mitchell, Earl T.
Moeller, Ira J.
Mortensen, Stanley J.
Motl, Laurence F.

Nelson, Alvin E.
Nelson, Kenneth E.
Nelson, Lloyd
Nelson, Stanley C.
Nord, Michael F.
Norregaard, Fred
Nys, Gordian F.

Oatman, Rexford
Oberg, Robert A.
Odell, Robert W.
Olson, Clifford
Olson, Lester C.
Olson, Orville B.
Oppedesan, John

Palas, Bernolt W.
Palm, Robert N.
Pearson, Adrian L.
Pecha, Albert
Peot, Norbert J.
Perkins, Robert J.
Peter, Earl C.
Peters, John J.
Peters, Roger D.
Peterson, Arlo F.
Peterson, William V.
Phillips, Gayland C.

Poborsky, Frank J.
Polfuss, Herbert D.
Posekany, Lewis
Prechtel, Lloyd W.
Prehn, Lawrence E.
Prey, Leroy D.
Prichard, Donald A.
Pripps, Norman E.
Procknow, Lyle N.
Pultz, Russell A.
Puskala, Tauno L.
Putman, Elmer E.

Radtke, Laverne O.
Raether, Lester O.
Reardon, Emery W.
Redmond, John P.
Reid, Lloyd W.
Reid, Richard W.
Reid, Thomas F.
Rheaume, Allan K.
Risser, Everett A.
Roach, Alton E.
Rose, Albert J.
Rost, Bernard J.
Rubin, William J.
Ruminski, Edward F.

Sanders, Laurence E.
Sando, Oscar C.
Schaefer, Earl E.
Schaeffer, Frank E.
Schmitz, Warren A.
Schnagl, Theodore G.
Schultz, Elfred O.
Schumacher, Kenneth F.
Scott, Walter E.
Scoville, Warren H.
Sedlak, Jerry
Selle, Otto S.
Sheets, Chester L.
Shepard, Earl G.
Shogren, Donald L.
Shogren, Wesley R.
Siebold, Joseph F.
Siewert, Henry A.
Skarweski, Raymond J.
Skogstad, Spencer F.
Smith, J. Robert
Smith, Lyndon A.

Stea, Trygve, M.
Stevens, Lyle A.
Stone, Elmer G.
Strand, Peder
Stricker, J. Daniel
Stroebe, Harry
Struve, Edward
Stuart, Frederick W.
Sundberg, Clyde W.

Taff, Edward P.
Taff, Jack L.
Tameling, Henry
Templin, Roy A.
Thompson, Daniel Q.
Thompson, Harold L.
Thompson, Marion L.
Tice, Rex C.
Tuttle, Ralph T.

Vanish, Edward P.
Vick, George T.
Vross, Adam S.

Wade, John S.
Wagner, Eugene J.
Ware, Lyle E.
Watts, Jerome H.
Weaver, Robert B.
Weber, Raymond G.
Welch, Isabelle E.
Welsh, Stanley W.
Wendt, Frederick R.
Wenger, Roy L.
Welke, Frank J.
Williamson, LaVern L.
Williamson, Lyman O.
Williamson, Malcolm J.
Williston, Allan S.
Wilms, Chester R.
Wolf, Harold C.
Wood, William S.
Woodzick, Henry T.
Wunsch, Frank C.

Zelinske, Walter
Zimbeck, John L.
Zimmer, Werner R.
Zimmerman, Fred B.

* Killed in service.