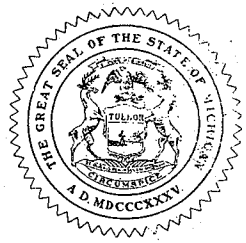
Michigan



State Department of Conservation

Fish Division

Reprint from

Fifth Biennial Report

1929-1930

FISH DIVISION

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Fred A. Westerman, In Charge

This report for the Fish Division undertakes to review briefly the principal activities during the past biennium, and to direct attention to some of the problems. There is probably no phase of conservation which interests more people all of the time than does fishing in its various forms. Millions of dollars are invested in our lakes and streams and their improvement, and additional millions in building and improving highways to reach them. Large sums are expended annually for tackle and equipment. Directly and indirectly employment and a livelihood is provided for many thousands of our people, so it requires only a casual appraisal to acquaint one with the tremendous value of the state's fisheries.

As mentioned in preceding reports, the so-called "fingerling program" undertaken six years ago, is now established on a substantial basis. With the single exception of pike-perch (wall-eyed pike), practically all species of fish distributed in our inland waters are now planted in a more or less advanced state, from two to eight months of age and upward. Younger fish are planted only where it may happen that more eggs and fry are available than rearing facilities will accommodate. In this connection, numerous extensions and improvements are still needed. Present trout feeding stations in most instances were hurriedly built to get production under way. Some of these should be enlarged for economical and efficient operation while others have been or may be abandoned for various reasons, such as inability to control the water supply, insufficient room for expansion, or unsuitable water conditions. There is need for at least one additional station in both the upper and lower peninsulas. These stations will cost from $7,500 to $10,000 each for acquisition and development of the site, including roads, caretaker's quarters, dams, dikes and ponds.

Some increase in the facilities for rearing fingerling bass and bluegills has been provided through extension of the pond system at the Wolf Lake Hatchery; by building two ponds on the Hillsdale site, and by the construction of several more cooperative ponds. The demand and need for bass fingerlings continues to greatly exceed the supply and it is necessary that the hatchery production of both large-mouth and small-mouth bass be considerably increased. Two plans may be considered in this connection:

1. Providing two or three times, or more, the present number of rearing ponds. This entails acquisition of additional locations where ponds can be built as most of the present hatcheries are expanded to their limit.

2. By adopting more intensive methods through supplementary feeding. The neighboring state of Ohio, as well as Michigan, has demonstrated that this is possible. Assurance of an ample and proper food supply, together with a consideration of added labor costs involved, and the changes necessary in the established pond layout, must be carefully considered in determining which plan is the most practicable.

Under policies recently adopted, the duties of the field forces in the Fish Division have been greatly added to. Recently a reorganization was effected whereby the state has been divided into eleven districts. Each district is in charge of a "District Superintendent of Fisheries Operations"—who will be responsible for all fish activities in the district including the operation of fish hatcheries, trout feeding stations, bass and bluegill rearing ponds, lake and stream surveys, lake and stream environmental improvement, the collection of spawn, fish planting, etc. It is believed that this program will permit a much more effective and efficient management in the Fish Division.

It seems imperative to call attention here to the necessity of adopting a financial policy, that will insure an equitable distribution of the cost of operating the Fish Division in proportion to the benefits received, and that will provide sufficient revenues to carry on this work.

Scientific research has been continued by the department with the Institute for Fisheries Research under the direction of Dr. Carl L. Hubbs, of the University of Michigan, Ann Arbor. The budget for this work was reduced during the year ending June 30th, 1932.

During the summer of 1931, the Institute initiated the creation and maintenance of environmental conditions conducive to the better survival, growth and reproduction of trout in a portion of the Pigeon river in the Pigeon River State Forest tract in Otsego and Cheboygan counties, as a means of increasing the quality of the fishing in this stream. This work, somewhat new in this state, seems to hold great potential possibilities on many of our important trout rivers—where the natural cover has been largely removed due to the logging operations of an earlier day, and perhaps somewhat to the action of flood waters. This may be said to be the fourth dimension in the program for the conservation and up-building of our trout supply. Stated in order, they are—introduction, propagation, protection and stream improvement.

An instructive and descriptive bulletin (Number 1), entitled—"Methods for the Improvement of Michigan Trout Streams", has been prepared by the Institute for the Department of Conservation.

The Fish Division strongly endorses trout stream improvement to the sportsmen of this state as an aid to better trout fishing. Fish hatchery crews are being trained in the methods employed and will be glad to advise and assist persons who may be interested in carrying on this work. The fullest public cooperation is necessary inasmuch as it is physically and financially impossible for the department to undertake the work on the hundreds of miles of streams where such improvement is practical.

A survey of the major lakes in Antrim and Hillsdale counties was also made by the Institute during 1931. During the summer of 1932, a survey was made of the larger lakes in Mason and Manistee counties. These lake surveys were only possible through the financial assistance provided by the Michigan division of the Izaak Walton League and interested residents of these communities.

Investigations on the Great Lakes, principally lakes Michigan and Huron, have been continued under the direction of Dr. John VanOosten of the U. S. Bureau of Fisheries, the states of Wisconsin and Michigan, sharing a part of the cost. Several manufacturers of fishing gear furnished many of the nets needed. Further field work cannot be undertaken due to a limited budget.

GENERAL HATCHERY OPERATIONS

A. B. Cook, Supervisor of Fisheries Operations

Necessity certainly has been the mother of invention in the activities of the Fish Division during the past two years. Some of these altered methods have been developed to a point where they are accepted generally while others are still in their infancy.

With the advent of the fingerling program, transportation presented a serious problem. Tremendous numbers of larger fish awaited transfer to streams and lakes under a system of transportation that was totally inadequate. Curtailment in railroad service together with the small capacity of the conventional ten gallon can for carrying advanced fish presented serious difficulties. After attempting to meet the problem in various ways, it was determined that motor tank trucks offered the most practical solution. At present there are four of these units in operation. The latest development in that direction consist of insulated four-compartment tanks of six hundred gallon capacity mounted upon a standard one and one-half ton chassis utilizing "Twinflex" tandem units. Water may be pumped into the tanks, circulated therein to insure aeration, and changed or tempered by means of a small motor driven pump equipped with an electric starter which is operated and controlled from the cab. The circulating system has eliminated much of the drudgery formerly associated with the "hand" aeration of fish in cans—further it has practically reduced to nil the risk in carrying fish. A thermometer is installed on the instrument panel of the truck which indicates the water temperature in the tanks. A small folding desk adds to the convenience in keeping records. By the use of these tanks the fish carrying capacity of a one and one-half ton truck has been increased three to five fold. Thousands of black bass, bluegills and yellow perch have been successfully delivered from the southern part of the state and planted in waters of upper Michigan.

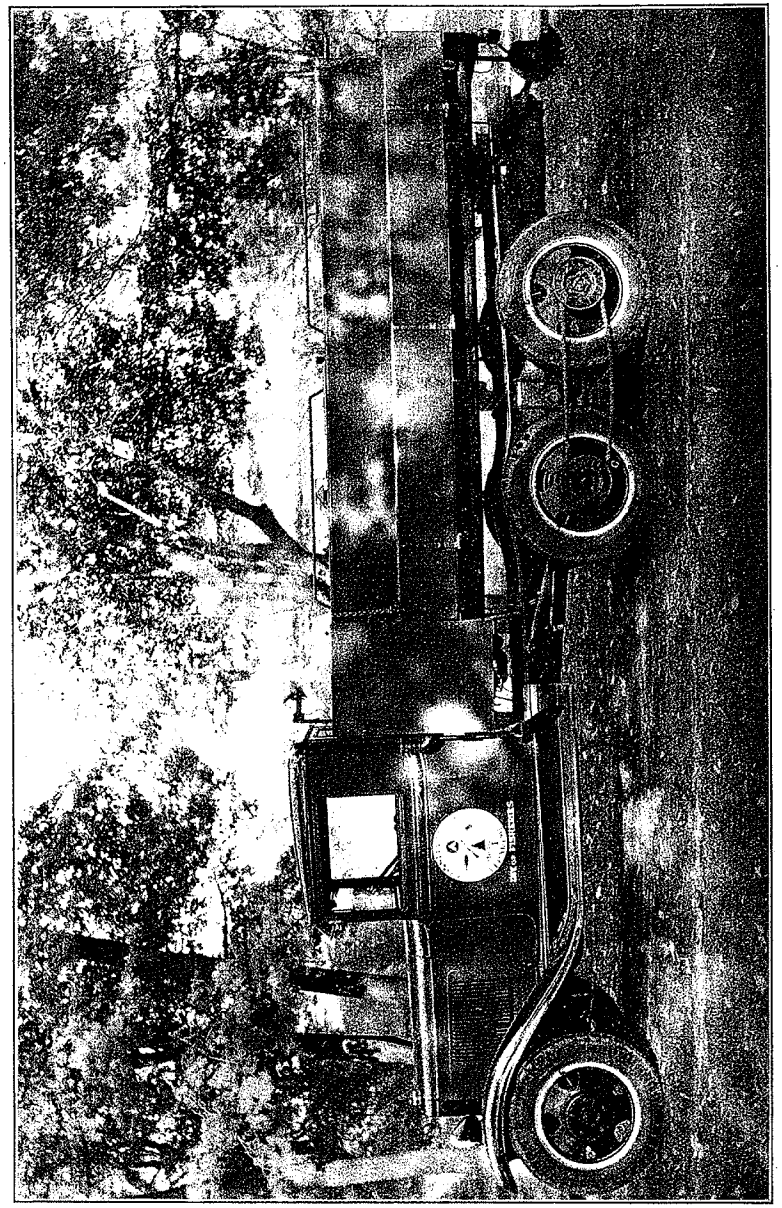
Many labor saving devices have been perfected or adopted, which have enabled the division to maintain former production levels in spite of a reduced budget. Some of these devises are power cleaners for troughs and ponds, automatic fish feeders, adjustable fish sorting equipment, "rediprime" pumps and electrical refrigerators.

Relief of crowded conditions in hatcheries has contributed much to reduce losses and improve the quality of fish produced although overcrowding is still present in some stations. The capacity of present facilities for rearing of fish of large size is inadequate to meet the demand or even the minimum requirement for certain species. This is especially true in the case of pond fishes.

Feeding experiments which are being conducted at several stations are contributing much to our knowledge of this vital subject.

The use of enamel for coating hatching troughs and fry tanks instead of coal tar or asphaltum paints has become the accepted practice throughout the state. Comparison with past practices has proven that this is more sanitary and tends to produce fish of greater vigor and growth with less mortality.

Experiments have proved beyond doubt that pondfish can be produced in great quantities by altered methods of propagation and feeding. Ex-



MODERN TANK TRUCK FOR TRANSPORTING LIVE FISH TO PUBLIC WATERS.

tensive study of the culture of water fleas (Daphnia), a minute organism upon which young fish feed in their early stages, has contributed much to our knowledge of the habits and propagation of this organism. Artificial food was utilized to a limited extent with splendid results. Lack of funds prohibits extending these methods to general practice due to necessary physical changes in present facilities.

The collection and incubation of perch fry at several of the hatcheries where jars and batteries were available has been discontinued; instead, perch fingerlings are seined at various points where they congregate from Great Lakes waters during the late fall months and distributed by tank trucks to lakes it is desired to plant.

A change has also been initiated in the manner of securing rainbow trout eggs, and the plan under which these fish are distributed. At a number of locations where important concentrations occur, the adult fish are netted or trapped and distributed above the dams where suitable natural spawning grounds are available to them. To stock other streams that are considered suitable, domesticated rainbow trout eggs are now being secured from hatcheries where spawning occurs several months earlier than in our rivers. The development of these fish compares favorably with the brook trout and brown trout, whereas eggs from the wild fish did not hatch until June. It is also possible that these domesticated rainbow trout will remain in the streams where planted whereas the native rainbow or steelhead trout are more or less migratory.

The hatchery formerly located near Sidnaw in Houghton county, has been abandoned, due to unsatisfactory conditions associated with the water supply. The equipment was transferred to Watersmeet and the land turned over to the Parks Division in 1931.

The hatchery located near Wolverine in Cheboygan county has also been closed for the same reason and in the interest of effecting economies. A temporary lease has been negotiated with the Highway Department for the use of the building for storage purposes.

HATCHERY REPORT

Paris Station—Mecosta County

Established 1881

Robert G. Fortney, District Superintendent of Fisheries Operations

This hatchery maintains the entire brown trout brood stock for the state.

A spring site, on the Barnard property located one-half mile south of the Paris Hatchery, was secured for a period of years. Initial experiments indicate this site is adapted for the hatching of trout and will aid materially in reducing the problems of hatching and rearing brook and brown trout through the early stages at the Paris Station.

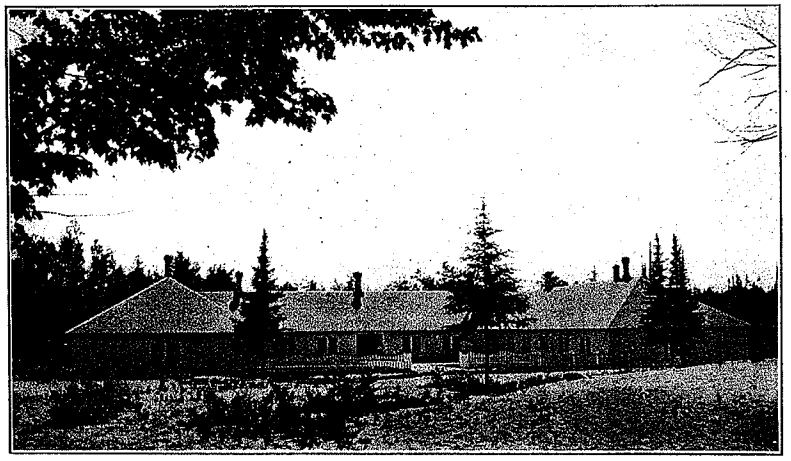
Inability to secure control of the water supply necessitated the abandonment of the Hart experimental station. The brook trout eggs formerly carried there are now being developed at the newly constructed Wolf Lake Hatchery in Van Buren county.

The Baldwin and White River Trout Feeding Stations have continued

to justify the investment in their development by the production of large numbers of fine healthy trout.

Operation of the trout feeding station on the North Branch of the Pentwater river was suspended last season through failure to secure sufficient guarantees from the owners of the property.

One of the outstanding pieces of work conducted by the Paris organization has been the establishment of a stream improvement demonstration on Paris Creek near the hatchery. This demonstration has attracted great numbers of interested sportsmen from all over the state and has done much to stimulate that important activity.



MICHIGAN'S LARGEST BROOK TROUT HATCHERY. 350 TROUGHS. THOMPSON, MICH.

Lydell Station—Comstock Park—Kent County

Established 1897

Claude Lydell—District Superintendent of Fisheries Operations

During the past two years there has been little change in the facilities or fish cultural operations at this station. Small-mouth and large-mouth black bass, bluegills, and pike-perch are propagated.

Much experimental work in daphnia production has been conducted. Six concrete ponds, ten by forty feet, have been built for this purpose.

To a limited degree, the feeding of pondfishes on artificial foods has been undertaken with favorable results and five feeding races have been constructed for this purpose. Great Lake shiners (Notropis atherinoides) in great numbers have been successfully retained in hatchery ponds and fed during the past year. The possible utilization of this species as a forage fish in inland waters is being studied.

A concrete dam was constructed in Strawberry Creek to protect the spring water supply to the hatchery; an electric refrigerator was installed, and the ice house rebuilt into a storage room for nets.

Drayton Plains Station—Oakland County

Established 1901

A. T. Stewart—District Superintendent of Fisheries Operations

During the past two years, there has been no change in the facilities or operation of this station. Its activities are confined to production of large-mouth black bass and bluegills—also to the development of pike-perch eggs.

Progress has been made in increasing the production of bass in the hatchery ponds and splendid success followed the use of bluegill breeders for stocking hatchery and outside rearing ponds. A remarkable growth and production of blue-gills was secured by artificial feeding.

Harrietta Station—Wexford County

Established 1901

A. J. Walcott—District Superintendent of Fisheries Operations

Production of brook trout eyed eggs in excess of station requirement has been discontinued.

An extension to the hatchery water supply line is under construction to reduce the amount of sediment and to aid in controlling the fluctuation of the water temperature.

The feeding stations on Bear Creek, the Platte River and Tobacco River, which have been operated from Harrietta, have proved efficient projects of limited capacity.

Outstanding during the biennium has been the evolving of various labor-saving devices which have been adopted as standard equipment at all stations.

Thompson Station—Schoolcraft County

Established 1919

Stanley Shust—District Superintendent of Fisheries Operations

The new hatchery which was developed in 1929 has completely justified the investment. During the past two years, an outstanding production of brook trout has been achieved. A concrete floor has been placed in the building, the grounds have been graded and partially landscaped, and a roadway to the project was constructed by the State Highway Department in 1931.

Development of additional fingerling rearing races was the only expansion at the old hatchery, now used principally for the hatching and rearing of commercial species for stocking Great Lake waters.

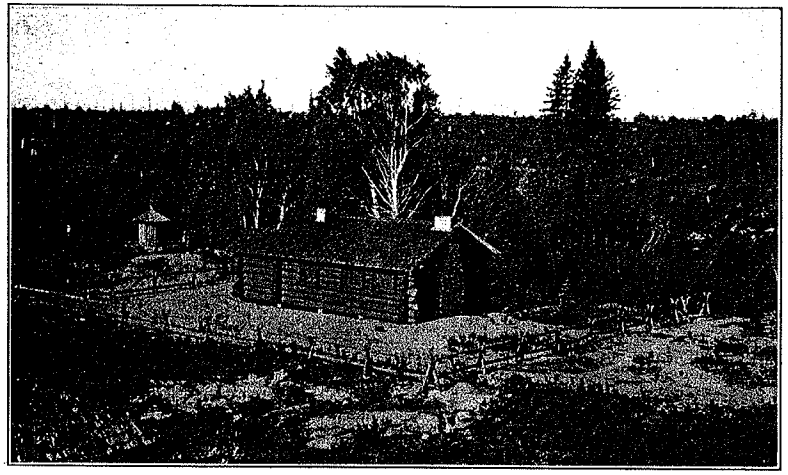
A trout feeding station was constructed on the East Branch of the Fox River in Schoolcraft county north of Seney in 1931. During the present season it has fulfilled every expectation. A carefully planned setting, with rustic buildings make this station one of great charm. It

has been visited by many people during the season just passed who are unanimous in their praise of its utility and beauty.

During this biennium, an experimental pike-perch station was established near the mouth of Days River, on Little Bay de Noc. It proved the possibility of taking spawn from the bay. Subsequent shipments of eggs from Saginaw Bay which were successfully hatched in the Thompson battery eliminated the necessity for this field station.

The Thompson Hatchery is now the largest state hatchery, and the most successful and diversified. Commercial species (lake trout, whitefish and pike-perch), are handled there in addition to many brook, brown and rainbow trout.

The brook trout feeding station on the East Branch of the Tahquamenon River near Eckerman has continued to function very satisfactorily.



CARETAKER'S CABIN—E. BRANCH FOX RIVER TROUT FEEDING STATION, SENEY, MICH.

Hastings Station—Barry County

Established 1920

John L. Brass—District Superintendent of Fisheries Operations

This station is utilized for the production of large-mouth and small-mouth black bass and bluegills. During the two years just past, much has been done in the way of improving the premises. Dikes were enlarged, sodded and new drives constructed. These alterations have added greatly to the efficiency and attractiveness of this station.

The recent experimental work in artificial feeding of black bass was conducted largely at Hastings with encouraging results.

Oden Station—Emmet County

Established 1920

Guy Lincoln—District Superintendent of Fisheries Operations

Oden Station has been very successful in developing trout through the early stages. Some difficulties have arisen in connection with the trout feeding stations administered from it.

Among the outstanding achievements of the Oden Station have been the trout feeding experiments, the perfection of a new type of automatic fish feeder and the use of enamel for treating the inside of hatchery troughs.

The results of experiments conducted as well as the use by other hatcheries of the devices perfected, has been of material benefit to fish cultural efforts at all trout hatcheries.

Operation of several trout feeding stations previously serviced from Oden has been suspended or discontinued for various reasons, the Sturgeon River Station at Wolverine being the only field trout feeding station operated by Oden Hatchery at this time. A new dam was constructed at the Sturgeon River Station during the past season. This station affords an opportunity for expansion.

Benton Harbor Station—Berrien County

Established 1920

C. J. Hyland—Foreman

Since the establishment of this station, the production has consisted of black bass and bluegills and a limited number of trout for planting the suitable streams of the immediate territory. Due to limited pond facilities for the production of bass and bluegills and no opportunity for expansion, and the establishment of the Wolf Lake hatchery which is equipped to carry the trout work more successfully, the operations at Benton Harbor were somewhat reduced.

This station is engaged solely in the production of black bass and bluegills to its fullest capacity and is operated under the administrative direction of the Wolf Lake hatchery. This has greatly increased the efficiency of fish cultural efforts in that section of the state as well as effecting economies in operation.

No new work has been undertaken although necessary repairs to pond systems and buildings have been made.

Harrisville Station—Alcona County

Established 1920

Charles Craig—District Superintendent of Fisheries Operations

Much experimental work in relation to pondfish culture has been carried on at this hatchery. Outstanding is the work done in the rearing of pike-perch (wall-eyed pike). It has been proved that under certain

conditions a satisfactory percentage can be reared to the fingerling stage.

A limited number of small-mouth bass are produced here, but water temperatures average rather low for the successful rearing of bass.

The hatching of brook trout has been suspended due to unsatisfactory water temperatures. Brook trout for the Silver Creek trout feeding station are being supplied by Oden Station.

The hatching of brown and rainbow trout has continued quite successfully.

Many general repairs have been made to the ponds and grounds.

A rather limited water supply, inability to control the headwaters of Mill Creek, the source of supply and other factors have presented numerous problems in the operation of this station.

Marquette Station—Marquette County

Established 1922

Louis Sauheitl—Foreman

In view of difficulties experienced in the hatching and rearing of brook trout through the early stages at this station, the brook trout for the Marquette hatchery territory the past season were hatched and reared through early development at the newly constructed Thompson hatchery. These fish were transferred to Marquette early in the season for continued growth until fall distribution. This resulted in a distribution of a greater number of fine, vigorous trout with less mortality than in any previous year.

The number of brown trout required for the territory were hatched and reared at Marquette without any difficulty.

For purposes of economy and efficiency, and by reason of transfer of Mr. J. G. Marks, Overseer, to the Wolf Lake hatchery, the administration of this station was placed under jurisdiction of the Thompson hatchery with a foreman in charge.

No extensive change or repairs have been made except necessary maintenance of buildings and ponds.

Watersmeet Station—Gogebic County

Established 1922

Ralph S. Marks—District Superintendent of Fisheries Operations

The establishment of a new brook trout hatchery at the Longyear spring, located about three miles from the original location, has largely overcome the handicap of the low water temperatures which prevail here during the incubation season. A fine flow of spring water is available at the new station.

A small frame building houses sixty-four hatching troughs and eighty troughs have been set up outside the building without shelter. Due to the severe winter weather and difficulties encountered, one season's operation has conclusively shown the impossibility of using unsheltered

troughs in this climate. Shelter of some sort must be provided before these exposed troughs can be placed in operation again and the results obtained at this location last season justify the small expenditure required.

An electric refrigerator was installed at the old hatchery during the past year.

Employees at this station have contributed much to our knowledge of fish diseases and experiments conducted by them indicate that there are great possibilities in warding off common fish diseases by prophylactic measures.

During the year 1932 the state acquired title to one hundred and sixty acres in Section 25, Town 52N., R. 35 W., Houghton county, through which the Otter River flows and on which the mouth and lower portion of Bear Creek is located. A trout feeding station is being established there at the present time. Development consists of the necessary dams, ditches, roadway and caretaker's cabin. This station will be operated in 1933 and should amply serve the needs of the many fine trout streams of the copper country. This territory was formerly serviced from the Sidnaw hatchery but since the abandonment of that station on account of its inadaptability to fingerling production, the territory has been serviced from the Marquette Station.

The Michigan Grayling (Thymallus tricolor), is now found only in this section of the Otter River. An effort will be made to protect and preserve the dwindling remnant of this widely famed fish here in its last native haunt, and if possible, to propagate and increase its numbers. This seems the only remaining hope of success in view of the failure of the several past attempts.

Bay City Station—Bay County

Established 1922

C. J. Hyland—Foreman

During the winter of 1931-1932, a number of repairs and improvements were made at this station. Worn out wooden tanks were replaced with concrete. A new circulating water supply was installed for emergency use. The capacity of the hatching batteries was increased from seven hundred and ninety-two to one thousand thirty-five standard hatching jars.

Due to increased efficiency in taking and caring for spawn, better spawn taking equipment, and generally wholehearted cooperation on the part of commercial fishermen, the quality of the pike-perch spawn handled at Bay City hatchery has been materially improved.

This station operates from November to April in the hatching of whitefish, and during April and May in hatching pike-perch. The building is closed during the summer and early fall months.

Grayling Station—Crawford County

Established by Grayling Fish Hatchery Club in 1914

Acquired by State in 1926

P. G. Zalsman—District Superintendent of Fisheries Operations

The policy of carrying a stock of adult brook, brown and rainbow trout has been practically discontinued, and only a small number of adult fish are now carried here, principally for exhibition purposes.

This is largely due to the unsatisfactory water temperature for developing the eggs through the early stages with attendant large losses, cost of fish food in carrying and rearing brood stock, the additional personal service required as well as the utilization of ponds for brood stock which under the present policy, are devoted to the production of fish for planting public waters. Comparison of cost of eggs available from commercial sources alone justifies this changed policy. Advanced brook trout fry can be successfully transferred from other hatcheries to stock the numerous fingerling rearing ponds that have been built here.

This hatchery services the trout feeding station established on Hunt Creek and two cooperative stations on the AuSable River.

Wolf Lake Hatchery—Van Buren County

Established 1928

Jay G. Marks—District Superintendent of Fisheries Operations

While this is the youngest of the state's system of fish hatcheries, it is also one of the largest and most diversified. The fifteen ponds used for the rearing of large-mouth and small-mouth bass and bluegills provides more water acreage than any other hatchery. Six of these ponds were built during 1931; two at Wolf Lake and four at the Almena site three miles distant. In addition, Wolf Lake, containing about 26 acres, is under state control.

The building completed in 1931 is a modern up-to-date trout hatchery with a complement of ninety-six troughs and an additional outdoor battery of one hundred and forty-four troughs. Provision should be made later to house these unsheltered troughs as their operation under present conditions is not entirely satisfactory.

The steam heating plant from the Sidnaw hatchery was transferred and installed in this building.

Brook trout are now hatched here for stocking several trout feeding stations in the Paris district as well as to stock the scattering trout streams in all of the counties in the southwestern part of the state. Excellent results followed the feeding of trout in the troughs during the past summer.

This station has potential possibilities for considerable future development.

OTHER FISH CULTURAL ACTIVITIES

Rearing Ponds

Henry A. Schuil—Supervisor Cooperative Rearing Ponds

The construction of rearing ponds to increase the production of bass and bluegills, both the state-owned and operated projects and those constructed and sponsored by sportsmen's organizations and other interested individuals, has not been as extensive as during the preceding biennium.

Several of the ponds built by organizations or individuals are no longer operated, not from lack of interest so much as the failure of small ponds to produce fish of sufficient size and number to justify continued operation, also shortage of pond water supplies on account of general deficiency in precipitation. Most of these small ponds which have been abandoned were completed without the inspection or advice of the Fish Division, prior to construction.

The lack of suitable locations which, by reason of natural conditions, could be developed at a minimum of expense together with general business conditions, has retarded the expansion of the cooperative rearing pond system. Of significant interest is the financial support of counties and townships in rearing pond construction which indicates an awakened interest in the benefits of good fishing to the community. Ponds are in service at thirty-one locations, principally in the southern part of the state. Of this number, five are owned and operated by the Fish Division with the cooperation of the local organizations.

Among the latter, five thousand dollars was expended for the development of two large ponds on the Emery Mills site at Hillsdale which was acquired by the Hillsdale County Chapter of the Izaak Walton League, and deeded to the state. These ponds have produced a goodly number of bluegills the past two seasons which were planted in the lakes of that county.

Field Operations

A large number of yellow perch fingerlings from two to three inches long were again secured in the Boardman River at Traverse City, also in the St. Joseph River at Berrien Springs, the South Branch of the Black River at Bangor, the Cass River at Frankenmuth, and the outlet of Van Ettan Lake, Iosco county, during the season of 1931. These fish were transferred for planting in inland waters including a widespread distribution to the upper peninsula. Because of the quantities of these fish ascending tributary streams from Great Lakes waters at various points in greater or lesser numbers each fall, the propagation of yellow perch by state hatcheries was discontinued following the 1931 season.

With extensive local cooperation, a number of adult wall-eyed pike and other desirable game fish were trapped and placed above the dam at Cheboygan, also a number of fingerling perch were placed above the dam at Elk Rapids.

In cooperation with the Consumers Power Company, rainbow trout and wall-eyed pike were taken and transferred above the Newaygo Dam on the Muskegon River and rainbow trout were taken and transferred above Junction Dam on the Manistee River.

A number of game fish were trapped below the dam at the outlet of Hamlin Lake, Mason county, and planted above in various parts of the lake by members of the Mason county chapter of the Izaak Walton League.

A large number of fish consisting mainly of wall-eyed pike were salvaged from the St. Mary's river in a portion which was cofferdammed for deepening of the navigation channel by the U. S. War Department, Corps of Engineers.

Noxious Fishing

The removal of noxious fish from inland waters has been continued by contract or permit to take carp by means of seines or trammel nets; employment of a crew for removal of garpike with gill nets and spears, and the organization of spearing parties under the direction of conservation officers for the removal of garpike, dogfish and carp.

It is believed the actual damage to valuable species of fish by the so-called noxious species is exaggerated but investigations conducted by the scientific staff the past several seasons should reveal the relationship of these fish to the more valuable fishes.

Little can be done to eliminate these species from our waters and all efforts for removal can only tend to somewhat control their numbers.

The following is a report of noxious fish taken:

NOXIOUS FISH CONTROL

Seasons of 1931 and 1932

	Number of Fish.							
	Dogfish.		Garfish.		Carp.		Others.	
	1931.	1932.	1931.	1932.	1931.	1932.	1931.	1932.
Fish taken under contract with individuals by use of seines and trammel nets	2,584	3,796	862	30	92,257	96,331	7,988	9,723
Fish taken by Department employees by the use of gill nets and seines	190	80	3,181	1,822	27	.....	.....	.....
Fish taken under the supervision of Conservation Officers by use of spears	5,245	250	1,199	146	738	851	.....	.....
Totals	7,919	4,126	5,242	1,998	93,022	97,182	7,988	9,723

Mussels

Persons taking mussels for commercial purposes are now required to file an annual report. While accurate statistics are not available for earlier years, it is apparent that this industry has suffered from both the depletion of the supply and the effect of a demoralized market.

The reduction in the number of licenses issued may be partly due to an increase in the license fee from one to three dollars in 1931, but more important was the heavy production in the year 1929 when shells

brought unusually attractive prices, encouraging recruits in 1930 when both production and prices were unsatisfactory.

The mussel resource in Michigan apparently needs careful regulation if it is to be saved from complete exhaustion.

REPORT OF MUSSEL OPERATIONS

Taken from Michigan rivers

	1930.	1931.
Number of Licenses issued	2,460	522
Number of pounds of shells taken	1,753,500	1,503,511
Value of shells	$34,472.52	$27,376.06
Value of slugs and pearls	3,206.50	2,546.64
Total value	$37,679.02	$29,922.70

EXHIBITIONS

Aquarial exhibits of live fish have been continued in cooperation with the Educational Division, though there has been a marked reduction in the number over the preceding biennium. A total of twenty-two exhibitions of live fish were made during the years 1931 and 1932.

COURTESIES

While the present geographical location of fish hatcheries has largely eliminated long trips and while trucks have to a considerable degree superseded the shipment by rail of young fish for planting, the Fish Division is grateful to the railroads of the state for the splendid service they have continued to furnish in the movement of the State Fish Car, "Wolverine," and in the transportation of its messengers, fish cans and other equipment used in the collection of spawn and the distribution of fish to the lakes and streams.

Appreciation is expressed to the organizations and individuals who have contributed much in the construction and operation of fish rearing ponds, the use of trucks in the distribution of fish from these ponds and trout feeding stations and the collection, transfer and planting of fish in public waters.

An especially valuable service has been provided by the Ann Arbor railroad company in transporting trucks carrying fish for stocking purposes between Frankfort and Manistique through its car ferry service gratis. This has served to draw the upper and lower peninsulas much closer together from the fish cultural standpoint.

The Fish Division appreciates the friendly relations which continue with the U. S. Bureau of Fisheries, both in an administrative way and in carrying on various field activities.

An innovation in the transportation of Michigan fish was the delivery of two thousand seven-months-old brook trout to Isle Royale by hydroplane from Houghton, and three thousand by boat in 1932, through the courtesy of the Royale Line in furnishing transportation.

COMMERCIAL FISHING

Production during the years of 1930 and 1931 has continued on quite a satisfactory scale. In 1927 only, has the catch during the past ten years been larger. The average price received, however, has been somewhat less than for several years past. Outstanding has been the fact that the catch of whitefish during each of the last three years has exceeded any other species. According to statistics, this has not occurred since 1889. Increased catches of whitefish have been made in Lakes Michigan and Huron and in Saginaw Bay. This increase coincides rather closely with the use in these waters of the deep water trap net. The adoption of this gear has aroused a storm of protest among the commercial fishermen. The fear persists that these nets are tapping the reserve supply of whitefish with serious subsequent results. Much killing of undersized fish has resulted, apparently due to the manner in which the nets are handled and the depth of the water in which fished. Recent reports indicate the nets have been removed to other localities on account of reduced catches on several whitefish grounds.

The present method of securing monthly reports from commercial fishermen covering their daily catches of fish is providing accurate information as to the trend of commercial fisheries.

During the past year, a questionnaire was submitted to all commercial fishermen operating in Michigan waters, which provided an opportunity to express their individual opinions as to changes which are believed necessary in the present laws and regulations governing the fisheries.

The Division of Fisheries has continued its active cooperation with the fishermen and the U. S. Bureau of Fisheries in the collection of spawn, incubation and in the planting of the young fish.

The Department has also maintained a close interest in the proposed plan of standardizing regulations governing commercial fishing on the Great Lakes between the several states and Canada. The department sent a delegate to conferences held at Buffalo, New York, in October, 1931, and July, 1932, with reference to Lake Erie regulations.

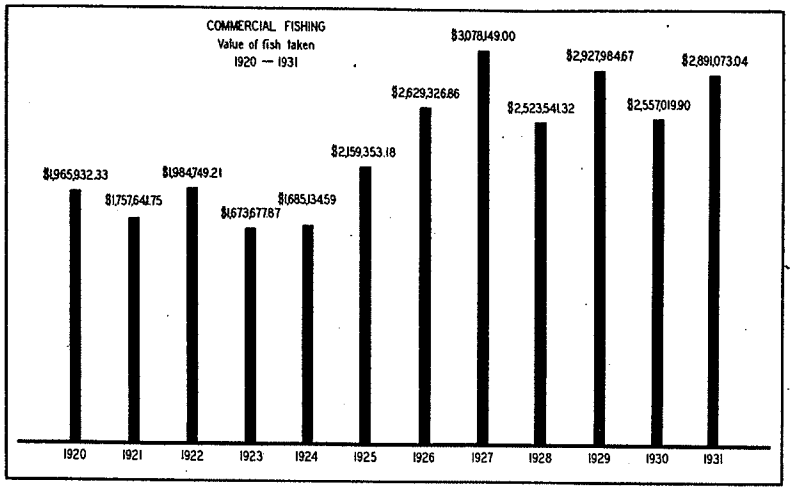
Attention is invited to the statistical report on commercial fishing for the years 1930-1931.

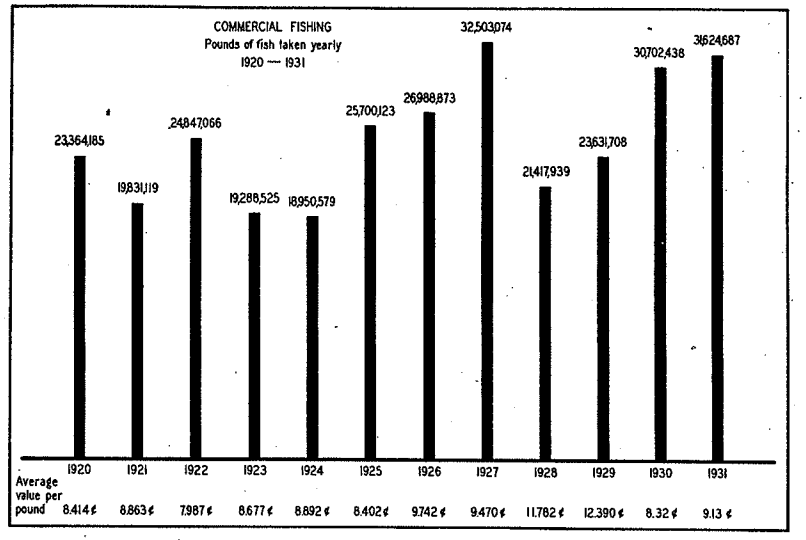
COMMERCIAL FISHERIES
MICHIGAN WATERS OF THE GREAT LAKES 1930
CATCH IN POUNDS AND VALUE

Kind.	Lake Michigan.	Lake Superior.	Lake Huron.	Lake Erie.	Saginaw Bay.	Total No. of Pounds.	Value.
Whitefish	4,218,852	204,601	2,299,925	1,264	1,079,850	7,804,492	$1,092,628 88
Herring	683,964	2,198,996	1,160,540	.....	3,589,162	7,632,662	152,653 24
Lake Trout	2,372,546	1,654,229	1,689,762	.....	96,033	5,812,570	813,759 80
Suckers and Mullet	765,891	77,716	802,964	154,046	1,710,469	3,511,086	70,221 72
Carp	10,262	757	93,834	608,494	803,179	1,521,526	30,430 52
Chubs	743,526	118,644	489,659	.....	18,761	1,368,590	68,429 50
Pike-Perch	41,664	8,662	181,700	38,784	933,301	1,204,111	102,657 76
Perch	112,761	4,383	109,762	33,578	605,187	865,671	69,253 68
Menominee	186,475	11,207	104,218	.....	5,109	307,009	24,560 72
Saugers	23,938	4,072	7,883	22,999	189,591	248,483	12,424 15
Grass Pike	28,209	3,702	19,537	8,183	47,714	107,345	10,734 50
Bullheads	803	20	3,646	50,887	49,098	104,454	5,222 70
Catfish	615	834	959	5,253	81,264	88,925	7,114 00
Sheepshead	17,040	.....	3,617	60,586	2,249	83,492	3,539 68
Lawyers	13,192	1,068	3,390	150	3,486	21,286	851 44
Dogfish	45	.....	.....	899	16,008	16,952	678 08
Rock Bass	803	.....	2,378	1,721	10,824	15,726	1,572 60
Caviar	705	.....	61	.....	184	950	380 00
Miscellaneous	451	.....	.....	276	.....	727	77 03
Totals	9,221,742	4,288,891	6,973,835	987,120	9,239,469	30,709,701	$2,556,989 95

COMMERCIAL FISHERIES
MICHIGAN WATERS OF THE GREAT LAKES 1931
CATCH IN POUNDS AND VALUE

Kind.	Lake Michigan.	Lake Superior.	Lake Huron.	Lake Erie.	Saginaw Bay.	Total No. of Pounds.	Value.
Whitefish	3,485,041	476,650	2,515,623	2,928	1,973,297	8,453,338	$1,183,467 32
Herring	658,600	798,355	1,151,537	.....	4,115,684	6,724,176	201,725 28
Lake Trout	2,547,462	1,955,362	1,896,325	.....	169,273	6,568,422	919,579 08
Suckers and Mullet	950,261	91,535	1,220,536	172,024	1,134,152	3,568,508	107,055 24
Carp	35,326	130	113,960	890,745	850,469	1,890,630	56,718 90
Perch	693,732	4,621	80,438	65,344	738,753	1,582,888	126,631 04
Chubs	437,139	73,394	488,914	.....	11,733	1,011,180	80,894 40
Pike-Perch	49,408	5,445	162,117	75,317	684,855	977,142	156,342 68
Bullheads	1,500	.....	18,871	166,495	73,992	260,858	15,651 48
Menominee	130,855	1,322	38,229	.....	1,726	172,132	12,049 24
Saugers	26,218	54	2,708	26,560	101,063	156,603	12,528 24
Grass Pike	23,713	2,474	27,938	14,463	11,494	80,082	7,207 38
Lawyers	49,659	1,479	1,029	581	2,624	55,372	2,214 88
Sheepshead	7,165	.....	.....	41,673	1,283	50,121	2,004 84
Catfish	573	.....	1,307	8,931	32,306	43,117	3,880 53
Rock Bass	1,641	.....	5,312	3,412	13,878	24,243	1,212 15
Dogfish	92	.....	.....	641	3,275	4,008	80 16
Caviar	1,462	.....	.....	.....	.....	1,462	584 80
Miscellaneous	405	.....	.....	.....	.....	405	60 75
Totals	9,100,252	3,410,821	7,724,844	1,469,114	9,919,657	31,624,687	$2,889,888 39





NUMBER OF NETS, HOOKS, BOATS, BUILDINGS, AND THEIR VALUE 1931

Nets Used	Number	Value
Gill, 1½"-2"	1,837	$ 45,925.00
Gill, 2¼"-2½"	2,733	60,126.00
Gill, 2¾"-2⅞"	8,494	169,880.00
Gill, 4½" and over	49,333	739,995.00
Pound Nets	1,439	215,850.00
Trap Nets	3,085	123,400.00
Hoop Nets	1,001	15,015.00
Fyke Nets	425	8,500.00
Hooks	796,311	4,088.00
Seines	164	16,400.00
Total	864,822	$1,399,179.00

Boats Used	Number	Value
Steam	39	$ 170,750.00
Oil Screw	36	214,400.00
Gas	974	733,968.00
Row	228	7,900.00
Sail	3	2,875.00
Total	1,280	$1,129,893.00

Value of Buildings and Grounds $1,517,180.00

Grand Total Value of Nets, Hooks, Boats, Buildings and Grounds $4,046,252.00

FISH PLANTED—GREAT LAKES

Kind.	1929.	1930.	1931.	1932.
Lake Trout:				
Advanced fry	6,688,000	3,355,000	1,680,000	3,272,500
1 Month	186,000	180,000	1,102,000	.....
2 Months	.....	.....	.....	50,000
3 Months	330,100	.....	.....	.....
5 Months	21,300	.....	.....	.....
Yearlings	13,000	.....	.....	.....
Total	7,238,400	3,535,000	2,782,000	3,322,500
Pike-Perch:				
Advanced fry	44,660,000	115,000,000	43,200,000	191,050,000
Total	44,660,000	115,000,000	43,200,000	191,050 000
Whitefish:				
Advanced fry	69,235,000	83,620,000	85,380,000	9,790,000
Total	69,235,000	83,620,000	85,380,000	9,790,000
Grand Total	121,133,400	202,155,000	131,362,000	204,162,500

U. S. BUREAU OF FISHERIES DISTRIBUTION TO MICHIGAN WATERS

Species	1929	1930	1931	1932
Brook Trout	592,600	388,500	1,259,540	217,950
Brown and loch leven trout	.....	.....	13,500	47,200
Rainbow and steelhead trout	229,772	267,600 (1)	154,700 (3)	149,800 (4)
Lake Trout	26,140,500	29,121,900	22,107,000	18,866,500
Landlocked Salmon	300	13,500 (2)	86,100	25,000 (5)
Small-mouth black bass	69,500	30,000	21,600	7,800
Large-mouth black bass	.....	20,335	9,130	6,940
Bluegills and sunfish	.....	8,650	800	11,450
Yellow perch	.....	6,945	4,055	900
Pike perch (wall-eyed pike)	3,710,000	2,040,000	3,910,000	36,300,000
Whitefish	6,369,000	87,250,000	97,380,000	4,895,000
Crappies	.....	4,025	6,600	500
Catfish	.....	6,615	2,275	.....
TOTALS	37,111,672	119,158,070	124,955,300	60,529,040

(1)—50,000 eyed eggs
(2)—10,000 eyed eggs
(3)—50,000 eyed eggs
(4)—60,000 eyed eggs
(5)—25,000 eyed eggs

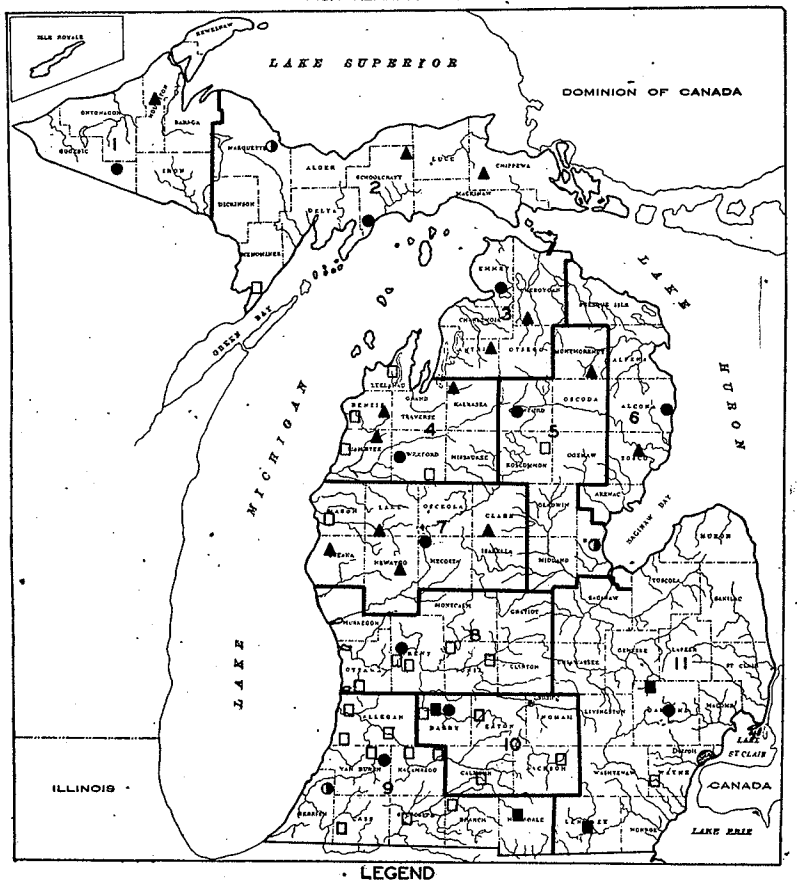
FISH PLANTED—INLAND WATERS.

Kind.	1929.	1930.	1931.	1932.
Brook Trout:				
Advanced fry	3,740,000	670,000	.....	.....
1 Month	1,763,000	1,330,000	.....	.....
2 Months	535,000	820,000	816,000	18,000
3 Months	244,000	30,000	215,000	185,000
4 Months	194,000	871,000	291,000	319,000
5 Months	493,000	657,000	344,000	149,000
6 Months	1,100,000	1,404,000	1,357,000	650,000
7 Months	663,000	823,000	1,659,000	1,576,000
8 Months	279,000	427,000	1,912,000	2,291,000
9 Months	98,000	64,000	1,000	132,000
10 Months	10,000	.....	.....	.....
Yearlings	4,335	7,285	6,100	44,000
Adults	6,061	2,645	26,668	18,246
Total	9,129,396	7,105,930	6,627,768	5,382,246
Brown Trout:				
Advanced fry	2,070,000	325,000	200,000	.....
1 Month	1,515,000	540,000	1,122,000	.....
2 Months	242,000	814,000	228,000	718,000
3 Months	190,000	35,000	190,000	212,000
4 Months	16,000	56,000	462,000	293,000
5 Months	143,000	350,000	216,000	29,000
6 Months	176,000	43,000	271,000	340,000
7 Months	63,000	66,000	454,000	446,000
8 Months	.....	91,000	15,000	25,000
9 Months	72,000	.....	.....	.....
Yearlings	4,500	9,000	400	106,500
Adults	16	9,125	36,918	6,505
Total	4,491,516	2,778,125	3,195,318	2,176,005
Rainbow Trout:				
1 Month	718,000	327,000	52,000	.....
2 Months	517,000	317,000	153,000	.....
3 Months	792,000	677,000	559,000	33,000
4 Months	459,000	39,000	232,000	11,000
5 Months	116,000	204,000	71,000	119,000
6 Months	.....	3,000	.....	.....
7 Months	.....	.....	2,000	122,000
Yearlings	11,636	.....	.....	3,700
Adults	282	.....	.....	160
Total	2,613,918	1,567,000	1,069,000	288,860
Lake Trout:				
Advanced fry	188,000	.....	.....	.....
2 Months	.....	90,000	.....	.....
3 Months	122,000	.....	.....	35,000
4 Months	.....	137,000	15,000	81,000
5 Months	32,000	3,000	7,000	16,000
6 Months	6,000	.....	19,000	.....
7 Months	.....	.....	.....	30,000
8 Months	.....	11,000	.....	.....
9 Months	.....	.....	.....	8,000
Yearlings	12,125	13,000	.....	1,500
Adults	100	.....	.....	700
Total	360,225	254,000	41,000	172,200
Small Mouth Bass:				
Advanced fry	158,000	10,000	.....	.....
1 Month	6,000	59,000	5,000	.....
2 Months	15,000	54,000	25,000	11,000
3 Months	11,000	9,000	33,000	35,000
4 Months	21,000	49,000	34,000	66,000
5 Months	5,000	6,000	5,000	6,000
6 Months	600	12,000	1,500	1,200
Yearlings	.....	.....	.....	1,265
Adults	47	57	409	1,957
Total	216,647	199,057	103,909	122,422

FISH PLANTED—INLAND WATERS.

Kind.	1929.	1930.	1931.	1932.
Large Mouth Bass:				
Advanced fry	5,000	.....	.....	.....
1 Month	21,000	67,000	9,000	.....
2 Months	341,000	206,000	7,000	263,000
3 Months	37,000	41,000	102,000	178,000
4 Months	127,000	84,000	176,000	235,000
5 Months	46,000	7,000	97,000	38,000
6 Months	3,000	12,000	1,500	.....
Yearlings	100	16,500	.....	1,170
Adults	12	1,466	.....	895
Total	580,112	434,966	392,500	716,065
Perch:				
Eyed Eggs	.....	14,300,000	.....	.....
Advanced fry	58,698,000	59,137,000	.....	.....
1 Month	53,000	.....	.....	.....
2 Months	86,000	8,000	.....	.....
3 Months	500	16,000	.....	.....
4 Months	14,000	.....	.....	.....
5 Months	53,000	2,000	.....	.....
6 Months	1,436,000	8,798,000	7,036,000	518,900
Yearlings	600	81,000	72,000	.....
Adults	5,675	.....	116	.....
Totals	60,346,775	82,342,000	7,108,116	518,900
Bluegills:				
1 Month	3,000	.....	.....	.....
2 Months	5,000	140,000	.....	.....
3 Months	391,000	158,000	1,133,000	.....
4 Months	1,707,000	1,671,000	1,956,000	375,750
5 Months	458,000	1,173,000	1,068,000	3,316,000
6 Months	5,000	.....	67,000	157,000
Yearlings	16,000	19,000	6,000	82,000
Adults	.....	175	750	.....
Total	2,585,000	3,161,175	4,230,750	3,930,750
Pike-Perch:				
Advanced fry	9,410,000	29,115,000	32,070,000	48,930,000
2 Months	.....	.....	.....	2,000
4 Months	.....	.....	2,500	.....
Yearlings	350	.....	.....	.....
Adults	365	8,300	50	.....
Total	9,410,715	29,123,300	32,072,550	48,932,000
Miscellaneous:				
Bullheads	.....	15,500	.....	.....
Calico Bass	.....	1,000	5,500	.....
Eyed Herring Eggs	.....	.....	131,000	.....
Golden Shiners	.....	.....	1,500	15,000
Great Lakes Shiners	.....	.....	93,000	62,000
Japanese Trout	2,000	.....	.....	.....
Land-locked Salmon	.....	7,500	.....	16,500
Rock Bass	.....	.....	750	.....
Steelhead Trout	.....	.....	47,000	24,000
Sunfish	.....	1,300	26,000	.....
Total	2,000	25,300	304,750	117,500
Grand Totals	89,736,304	126,990,853	55,145,661	62,356,948

FISHERIES DISTRICT MAP
SHOWING LOCATION OF
STATE FISH HATCHERIES
TROUT FEEDING STATIONS
FISH REARING PONDS



LEGEND

- ● ◐ STATE FISH HATCHERIES-FISHERIES DIST. HDQRS.
- ▲ STATE TROUT FEEDING STATIONS
- ■ STATE BASS AND BLUEGILL REARING PONDS
- □ CO-OP BASS AND BLUEGILL REARING PONDS

STATE FISH HATCHERIES (14)

Bay City	Bay County	Sec. 29, T. 15 N., R. 5 E.
Benton Harbor	Berrien	Sec. 17-18, T. 4 S., R. 17 W.
Drayton Plains	Oakland	Sec. 15, T. 3 N., R. 9 E.
Grayling	Crawford	Sec. 5, T. 26 N., R. 3 W.
Harrietta	Wexford	Sec. 13, T. 22 N., R. 12 W.
Harrisville	Alcona	Sec. 12, T. 26 N., R. 9 E.
Hastings	Barry	Sec. 18, T. 3 N., R. 8 W.
Lydell	Kent	Sec. 36, T. 8 N., R. 12 W.
Marquette	Marquette	Sec. 18, T. 47 N., R. 24 W.
Oden	Emmet	Sec. 18, T. 35 N., R. 4 W.
Paris	Mecosta	Sec. 9-10, T. 16 N., R. 10 W.
Thompson	Schoolcraft	Sec. 32, T. 41 N., R. 16 W.
Watersmeet	Gogebic	Sec. 23, T. 45 N., R. 39 W.
Wolf Lake	Van Buren	Sec. 13, T. 2 S., R. 13 W.

STATE TROUT FEEDING STATIONS (14)

	Baldwin	Lake	Sec. 3, T. 17 N., R. 13 W.
	Bear Creek	Manistee	Sec. 29, T. 24 N., R. 14 W.
	E. Br. Fox River	Schoolcraft	Sec. 16, T. 47 N., R. 13 W.
(3)	Hunt Creek	Montmorency	Sec. 17, T. 29 N., R. 3 E.
(1)	Jordan River	Antrim	Sec. 20-29, T. 31 N., R. 5 W.
(2)	Otter River	Houghton	Sec. 25, T. 52 N., R. 35 W.
(1)	N. Br. Pentwater River	Oceana	Sec. 1, T. 15 N., R. 17 W.
	Platte River	Benzie	Sec. 7, T. 26 N., R. 13 W.
(1)	Rapid River	Kalkaska	Sec. 24, T. 28 N., R. 8 W.
	Silver Creek	Iosco	Sec. 20, T. 23 N., R. 7 E.
	Sturgeon River	Cheboygan	Sec. 16, T. 33 N., R. 2 W.
	E. Br. Tahquamenon Riv.	Chippewa	Sec. 23, T. 46 N., R. 6 W.
	Tobacco River	Clare	Sec. 12, T. 17 N., R. 5 W.
	White River	Newaygo	Sec. 21, T. 14 N., R. 12 W.

(1) Not operated 1932.
(2) Under construction 1932.
(3) Privately built, state operated.

BASS AND BLUEGILL REARING PONDS (30 LOCATIONS)

Pond.	County.	Location.
Adrian Chapter I. W. L. A. (Adrian)	Lenawee	Sec. 3, T. 7 S., R. 3 E.
Allegan Rod and Gun Club	Allegan	Sec. 27, T. 2 N., R. 13 W.
Battle Creek Chapter I. W. L. A. (Gull Lake)	Kalamazoo	Sec. 18, T. 1. S., R. 9. W.
Belding Sportsmen's Club	Ionia	Sec. 10, T. 8. N., R. 8. W.
Benzonia Township (Beulah)	Benzie	Sec. 24, T. 26 N., R. 15 W.
Bloomingdale Chapter I. W. L. A.	Van Buren	Sec. 2, T. 1 S., R. 14 W.
Branch County Chapter I. W. L. A. (Union City)	Branch	Sec. 12, T. 5 S., R. 8. W.
Brandywine Chapter I. W. L. A. (Niles)	Cass	Sec. 31, T. 7 S., R. 16 W.
Cadillac Chapter I. W. L. A.	Wexford	Sec. 28, T. 21 N., R. 10 W.
Cook Pond (Hastings)	Barry	Sec. 24-25, T. 3 N., R. 9 W.
Davis Pond (Ortonville)	Oakland	Sec. 10, T. 5 N., R. 8 E.
Detroit Chapter I. W. L. A. (Susterka Pond, Belleville)	Wayne	Sec. 28, T. 3 S., R. 8 E.
Dwight Lydell Chapter I. W. L. A. (Grand Rapids)	Kent	Sec. 25, T. 8 N., R. 12 W.
Gun Lake Protective Association	Barry	Sec. 33, T. 3 N., R. 10 W.
Hillsdale County Chapter I. W. L. A. (Hillsdale)	Hillsdale	Sec. 25, T. 6 S., R. 3 W.
Holland Fish and Game Protective Association	Ottawa	Sec. 23, T. 5 N., R. 15 W.
Jackson County Conservation League	Jackson	Sec. 16, T. 2 S., R. 1 E.
Kalamazoo River Fish and Game Club (Saugatuck)	Allegan	Sec. 22, T. 3 N., R. 16 W.
Leelanau Township (Lake Leelanau)	Leelanau	Sec. 26, T. 30 N., R. 12 W.
Mason County Chapter I. W. L. A. (Scottville)	Mason	Sec. 14, T. 18 N., R. 17 W.
Marshall Chapter I. W. L. A.	Calhoun	Sec. 2, T. 3 S., R. 6 W.
Menominee Chapter I. W. L. A.	Menominee	Sec. 4, T. 34 N., R. 27 W.
Onekama Commercial Club (Onekama)	Manistee	Sec. 26, T. 23 N., R. 16 W.
Otsego and Plainwell Chapters I. W. L. A.	Kalamazoo	Sec. 5, T. 1 S., R. 11 W.
Schuil Acres (Grand Rapids)	Kent	Sec. 21, T. 7 N., R. 11 W.
South Haven Rod and Gun Club	Allegan	Sec. 28, T. 1 N., R. 16 W.
St. Helen's Resort Association	Roscommon	Sec. 30, T. 23 N., R. 1 W.
St. Joseph County Fish and Game Association (Mendon)	St. Joseph	Sec. 12, T. 6 S., R. 11 W.
Vermontville Gun Club	Eaton	Sec. 29, T. 3 N., R. 6 W.
Webber Dam, Consumers Power Company	Ionia	Sec. 33, T. 7 N., R. 5 W.

DIVISION OF FISHERIES—INVENTORY FISCAL YEAR ENDING JUNE 30, 1932.

Name of Unit.	Project.	Area in Acres.	Valuation of Land.	Valuation of Buildings.	Valuation of Equipment.	Valuation of Ponds.	Total Valuation.
Bay City	Hatchery	State Park		$15,000.00	$12,104.96		$27,104.96
Bay Port	Hatchery	Private	Leased	2,000.00	500 00		2,500.00
Benton Harbor	Hatchery	16.1	$1,461.00	14,730.00	4,156.80	$20,000.00	40,347.80
Drayton Plains	Hatchery	19.5	7,350.00	17,550.00	3,842.65	15,000.00	43,742.65
Grayling	Hatchery	66	2,200.00	7,475.00	3,022.98	12,300.00	24,997.98
Harrietta	Hatchery	100	2,600.00	16,115.00	3,616.50	28,000.00	50,331.50
Harrisville	Hatchery	20	6,500.00	15,000.00	5,728.60	12,000.00	39,228.60
Hastings	Hatchery	53	5,000.00	19,000.00	2,791.55	9,000.00	35,791.55
Lydell	Hatchery	73	34,475.00	17,520.00	6,845.82	39,000.00	97,840.82
Marquette	Hatchery	32	9,280.00	18,690.00	4,470.00	6,770.00	39,210.00
Oden	Hatchery	129	14,079.40	19,754.00	6,846.39	6,135.00	46,814.79
Paris	Hatchery	158	6,380.00	25,000.00	9,222.58	25,000.00	65,602.58
Sidnaw (1)	Hatchery	State Park					
Thompson	Hatchery	90	6,975 00	29,725.00	10,650.05	5,025.00	52,375.05
Watersmeet	Hatchery	128.5	4,905.00	13,800.00	12,646.43	3,500.00	34,851.43
Wolverine	Hatchery	127	635.00	2,810.00	716.40	1,135.00	5,296.40
Wolf Lake	Hatchery	154	7,500.00	15,000.00	4,611.25	20,000.00	47,111.25
1. Adrain	Rearing Ponds	5	2,500.00				2,500.00
2. Baldwin	Feeding Station	15.75	Leased	4,400 .00	592.72	40,000.00	44,992.72
3. Bear Creek	Feeding Station	Private	Leased			1,000.00	1,000.00
4. Fox River	Feeding Station	160	900.00	1,775.00.	147.95	2,136.00	4,958.95
5. Hillsdale	Rearing Ponds	84	5,000.00		301.99	5,000.00	10,301.99
6. Jordan River	Feeding Station	Private	Leased			2,000.00	2,000.00
7. Junction Dam	Field Station	Private	Leased	1,300.00	166.50	1,000.00	2,466.50
8. Platte River	Feeding Station	40	500.00			1,500.00	2,000.00
9. Silver Creek	Feeding Station	Huron Nat. For.	Leased		223.33	1,750.00	1,973.33
10. Sturgeon River	Feeding Station	Private	Leased		350.00	1,816.50	2,166.50
11. East Branch Tahquamenon River (2)	Feeding Station	80	100.00	300.00	50.00	6,650.00	7,000.00
12. Tobacco River	Feeding Station	Private	Leased			2,500.00	2,500.00
13. Union City	Rearing Ponds	15	Leased			4,000.00	4,000.00
14. White River	Feeding Station	40	600.00		49.81	7,000.00	8,779.81
15. State Fish Car "Wolverine"	Distribution Car			1,130.00	251.02		2,251.02
State Patrol Boat No. 1				2,000.00	155.25		35,155.25
				35,000.00			
Totals			$118,840.40	$295,074.00	$94,061.53	$279,217.50	$787,193.43

(1) Abandoned for fish hatchery but buildings and acreage turned over to Parks Division for blocking in with Sidnaw State Park.
(2) Forty acres state-owned, forty acres leased.