FISHERIES DIVISION 1902 - 1964

by
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Montana's first fishing regulations became effective February 2, 1865. The law passed by the first Territorial Legislature of 1864-1865, stated "a rod or pole, line and hook shall be the only lawful way trout can be caught in any of the streams of the Territory." This same law prohibited the baiting of a hook with any drug or poisonous substance or the use of seines nor nets.

It was not until Montana had become a state that wardens were hired to protect the fish and game resource. The office of State Fish and Game Warden was created on April 1, 1901, and between May 20 and May 28 of that year, eight deputy wardens were sworn in. These deputy wardens covered the entire state and were paid a salary of $100.00 per month. The $100.00 covering travel and travel expenses.

The importance of the fish and game resource to the economy of Montana was commented upon by the State Fish and Game Warden in the first biennial Report of 1902. He stated that eastern capitalists and wealthy non-resident sportsmen were rapidly becoming aware of all that Montana had to offer. At the same time, he warned that Montana had a serious lack of game protective laws and would do well to profit from the experience of some of the older states, not "waiting until the horse is stolen to lock the gate".

Continuing, the State Fish and Game Warden reported that the perch which had been introduced a few years earlier into Lake Sewell were thriving and that largemouth bass had been stocked in the lake in 1902*. Lake Sewell is now covered by Canyon Ferry Reservoir. About 3,000 trout fry were obtained from the U. S. Fish Hatchery at Bozeman, then under the supervision of Dr. James Henshall. These trout were planted in the North Fork of the Sun River above the falls.

As Montana developed, so did agriculture. And with agriculture came irrigation canals and ditches which diverted fish from streams and rivers. These fish losses to irrigation, prompted Dr. Henshall in 1904 to develop an inexpensive, paddle-wheel type of fish excluder that would keep fish in the streams. The paddle-wheel was

* Reported in second biennial report

~~was~~ designed to eliminate the difficulties of plugged screens and the resulting washed out headgates. Although the Fish and Game Department threatened to discontinue stocking fish in any stream that had irrigation canals or ditches without the fish excluders, very few of the paddle-wheels were ever installed.

In 1903 and 1904, the U. S. Fish Hatchery at Bozeman made the following plants of fry in Montana Waters:

Species	1903	1904
Brook trout	95,000	100,000
Rocky mountain trout	400,000	600,000
Steelhead trout	50,000	25,000
Mackinaw trout	2,000	6,000
Rainbow trout	40,000	20,000
Grayling	1,500,000	2,500,000
Lake Superior whitefish	800,000	

These plants of fry were reported responsible for keeping the streams of the state from being entirely depleted of fish. It was pointed out at the same time there was a very definite need for a state fish hatchery. The complete cost of such an installation was said to be about $5,000.00.

It was also during these years that water pollution made its initial recorded appearance. Severe fish losses were reported from cyanide mine wastes and the Department recommended the use of settling ponds to alleviate the problem.

The estimated cost of a state fish hatchery in 1905 and 1906 remained at $5,000.00; however, the need was even greater and the money was available from Fish and Game funds. Quoting the biennial report for 1905-1906 "the state would be almost devastated of fish if not for the U. S. Fish Hatchery at Bozeman".

It was perhaps for both political and personal reasons that Senator W. A. Clark built a private fish hatchery at Columbia Gardens in Butte in 1905. Certainly, providing fish for waters of the area was not an activity intended to dissuade Montana voters. At any rate, the fish from the Columbia Gardens Hatchery were turned over to the Butte Anglers Club who in turn had the Deputy Game Warden distribute them to suitable waters. This program was cited as an example of the fine spirit

of cooperation that existed between sportsmen and the Fish and Game Department.

Bass as large as seven pounds were being caught by enthusiastic 1905 and 1906 anglers from Echo Lake in Flathead County. At the same time Lake Sewell, near Helena, was producing one and one-half pound bass from the plant made in 1902. While bass were reported doing well in these particular waters it was pointed out that this fish was unsuited for the waters of eastern Montana where attempts had been made to estiblish it.

As early as 1909 considerable concern was expressed regarding the over exploitation of game fish; particularly below the dams - here fish congregated and became extremely vulnerable to fishermen. To alleviate the problem, the State Fish and Game Warden recommended that fishing be prohibited for a distance of 300 feet below existing dams. To further protect the fish he also prpposed at this time that there should be no winter fishing and that the limit for trout should be set at 25 pounds per day with a possession limit of 50 pounds. Actually, in 1909 there were no fishing restrictions. All that an angler needed at that time was a license which cost him $1.00.

Pressures for a State Fish Hatchery finally brought about approval for a station at Anaconda. Construction of the hatchery was completed in 1908 and in 1909 it was reported that production of fish at Anaconda had already made a noticeable increase in fishing success in Montana streams. It was expected that by 1910 the Anaconda Fish Hatchery would be taking approximately one million brook trout eggs from stock originally obtained from Rhode Island. At Georgetown Lake, brook trout planted by the Anaconda station, were beginning to show up on spawning beds in large numbers.

It was noted that although there were over a million more black-spotted trout fry planted than formerly, it was very difficult to evaluate the results since these fish were found naturally in quite large numbers.

Fairly large numbers of Lake Superior whitefish were being planted in Flathead Lake where there were great expectations for this excellent fish. The species had proven itself in the waters of the Great Lakes and it was felt it would do equally well in Flathead Lake. It might be brought out here that this whitefish introduction

was successful. As near as residents of the area can recall, there was a brief period of commercial netting for Lake Superior whitefish on Flathead Lake sometime around 1915. Apparently, adequate supervision of the commercial fishing was difficult and anglers were opposed to the reportedly large numbers of trout being taken in the nets. The commercial fishing venture was short lived.

Grayling plants made in 1909 were said to be successful in Georgetown Lake, the Bitterroot River, the Flathead River and the Yellowstone River. In Georgetown Lake the grayling reached a weight of two pounds in two years.

Regarding other species, a 1910 statement of future policy stated that rainbow trout and steelhead trout would be planted in isolated reservoirs only.

A second State Fish Hatchery was completed in 1912 on the shores of Flathead Lake near the town of Somers. It was expected that this station would produce some three million trout fry and from 8 to 10 million whitefish fry the following year.

The Anaconda station, now nearly four years old, planted in 1912, 600,000 grayling fry, 16,350 rainbow trout fry, 1,300,000 brook trout fry and 2,425,000 cutthroat trout fry. This was the first year accurate hatchery records had been kept. There was no question of the success of the fry planting program. The excellent fishing available in Georgetown Lake provided sufficient evidence.

In what was the forerunner of the cooperative agreement between the Fish and Game Department and the Montana University System, Dr.Elrod of the biological department of the State University in 1912 explored some Montana waters to determine their suitability for stocking. Today the cooperative program is well established. During the field season, students accomplish a wealth of management work, at the same time training for their degrees in wildlife management.

Upper Two Medicine Lake, previously barren of fish, was stocked with 20,000 brook trout fry in 1912. In discussing the merits of various species, there was considerable doubt expressed at the the advisability of stocking rainbow trout; these fish were said to be quite cannibalistic.

In 1913 the position of Hatchery Superintendent was created by the Fish and Game Commission. As the hatcheries expanded and requests for fish multiplied, the work load was greater than the State Fish and Game Warden could efficiently handle. The new Superintendent reported that 15,000,000 fry were liberated from the Anaconda and Somers stations during the 1913-1914 seasons. He stated also that the relatively large losses that the hatcheries were experiencing in the transportation of green eggs had been overcome by eyeing eggs at the various spawning stations.

At the Anaconda hatchery the ACM Company assisted in some development work on the springs. The Anaconda and the Somers stations each received a new 1913 Ford motor car and, in addition, Somers also received an electric light plant and a 31-foot boat. The boat was to be used to haul the cans of fish fry from the hatchery to the town of Somers where they would be loaded on railroad cars for distribution. Much of the early fish distribution was carried out by rail and in 1913 the Fish and Game Department purchased a remodeled railroad car for $6,000.00. The unit was equipped with insulated tanks capable of carrying over 130 cans of fish. The man responsible for distribution of the fish from the railroad car actually lived with the fish, doling them out along the route until his cargo was gone.

Included also in the records for 1914, was a brief statement that kokanee were first introduced that year into Flathead Lake.

The fish cultural program expanded gradually as funds were available and as spawning stations and distribution could be developed. It was recommended in 1918 that the Department purchase a new railroad fish distribution car at a cost of from $25,000 to $50,000. The old remodeled car purchased five years earlier had traveled a great many miles, had received hard use, and was declared to be unsafe for further service.

To provide an inexpensive source of meat in the 1917-1918 period, carp were being netted from Bowdoin Lake, near Malta. While no indication of the success of this program was ever given, it is doubtful that native Montanans utilized any great numbers of this fish. Actually, commercial fishing for carp in Bowdoin Lake and

the nearby Nelson Reservoir was continued on through the early 1920's by the McNeil brothers. Fishing was done in winter through the ice and the carp were shipped to the New York market by rail.

Introductions of new species of fish were showing marked success. Rainbow trout planted in Georgetown Lake were providing some excellent fishing for state anglers and chinook salmon planted as fry in the Clearwater Lakes in April of 1917 were measuring from 13 to 16 inches in July of 1918. The chinook salmon eggs were purchased in 1916 from Bonneville, Oregon. It was apparently from this same shipment of eggs from Oregon that a few fish finally identified as blueback salmon resulted. The Montana bluebacks were found in 1918 while seining in Lake Mary Ronan for brook trout to spawn. The State of Oregon was extremely interested in the return of these blueback salmon since they had been trying for some time, without success, to establish stocks in Oregon waters.

It was about this time that there was a somewhat deeper interest expressed in the overall fisheries picture in the state. This interest applied to what had been done in the past and what would be done in the future. An evaluation of the Bitterroot River fishery showed populations of cutthroat trout, whitefish, squawfish, and suckers present; although brook trout, rainbow trout, steelhead trout, and grayling had been planted. No grayling survived and a very small number of the planted fish survived.

Plans for the future included, (1) a compilation of lakes, streams and rivers in the state showing the kinds of fish, the character of the water, the sources of pollution, the number and the time of fry plants made and the results of the plants. (2) The instruction of all clubs and individuals involved in planting fish as to the proper methods of fry planting. (3) The stimulation of interest in breeding or holding ponds. Also under way were plans to cooperate with the Forest Service in introduction of fish into barren waters located on the forests.

Some thought was being given to the possibility that there were antagonistic

species of fish, and the brown trout and Dolly Varden trout were cited as examples. The predatory brown trout which had been introduced by the Federal Service into the Madison River a few years earlier, probably 1914 to 1916, was becoming quite numerous. Reports received from Michigan, Iowa and Colorado stated that the brown trout was particularly dangerous where grayling populations were concerned. Pursuing the brown trout situation further, it was reported that the earliest record of brown trout propagation was in 1902, when a small number were hatched and distributed from the Northville Station in Michigan, the Manchester Station in Iowa, and the Leadville Station in Colorado. N o mention was made as to where the eggs were obtained for these early experiments. Montana was apparently interested in the brown trout at an even earlier date. One account stated that in 1899, some fingerling brown trout were planted in the pond located on the Hoffman Ranch near Bozeman. These trout weighed up to 6 pounds in 1903. Again there is no mention made of the source of the fingerling brown trout.

The Superintendent of Fisheries, in discussing the planting program, pointed out that while there were some advantages to planting larger size fingerling fish, they were outweighed by the higher costs of rearing and distribution. In view of the information available at that time, the Fisheries Superintendent stated that the three varieties of fish considered best for Montana waters were cutthroat trout, rainbow trout and grayling.

At the Somers fish hatchery on Flathead Lake in 1918, landowners' cattle were trampling the springs and causing silt problems in the hatchery water supply. There was a very distinct possibility that a new hatchery site would have to be located.

Fry plants made in Montana in 1917 and 1918 were as follows:

Species	1917	1918
Brook trout	3,884,500	4,552,000
Rainbow trout	1,294,800	1,529,000
Cutthroat trout	4,321,000	3,470,000
Grayling	1,300,000	2,965,000
Rocky Mt. whitefish	240,000	750,000
Lake Superior whitefish		475,000
Silver salmon	822,700	4,998

It was around 1921 that the Department expended a considerable amount of time and effort on the very popular program of rescuing and distributing large numbers of bass and sunfish that had been left stranded by receding Flathead River floodwaters. A great many lakes, ponds, and reservoirs received plants of bass and sunfish from the fish rescue program during this period.

With money finally available in 1922, state fish hatcheries were constructed at Big Timber, Lewistown, Great Falls and Red Lodge. These brought to a total 12 units being operated by the Fish and Game Department. There were feeding ponds being used at Missoula while spawning operations were carried out at Lake Mary Ronan, Flint Creek and Ashley Lake. The Department received a portion also of the eggs taken by the Federal service at traps on Willow Creek on the Madison River. The Department felt that the only way the cost of fish distribution could be reduced was to build a number of small hatcheries throughout the state.

In the Missouri River, between Logan and Great Falls, the brown trout population was reported building up. Nelson Reservoir, near Malta, was producing some excellent catches of walleyes. In 1923, commercial seiners took 11 carloads of carp from Nelson Reservoir and shipped them to New York. The Department, looking for sources of revenue, was planning to charge the fishermen 15% of the gross receipts for the carp - an estimated $2,000 annually. Catfish taken in the Nelson Reservoir seining operations and transferred to Nine pipes Reservoir were said to be thriving and providing excellent fishing.

Combined plants of fry from the 12 state units in 1923 and 1924 totaled 43,513,718 fish. These plants included all species of trout, whitefish, salmon, bass, sunfish, perch, bullhead, and catfish. For a better planted fish survival it was proposed that future plants of fish should be fingerlings rather than fry. The bull trout was being called by sportsmen the cannibal of Montana streams. Despite this aversion to the bull trout, there was strong opposition to the proposal that they be removed with nets.

Fish displays at fairs throughout the state were being especially well received it was pointed out in 1925. The cities of Helena and Billings had fine aquariums for fish displays.

Although the Department anticipated hiring a qualified fisheries biologist about this time, it was to be nearly 25 years before this anticipation was realized.

Montana has the distinction, however, of having the first biological research station in the United States. This station was established at Yellow Bay on Flathead Lake in 1927 in cooperation with Montana State University. The unit was to sutdy fish life and fish food organisms in Flathead Lake.

Over the years the program of rearing ponds had received considerable emphasis as an effective method of improving fishing. The Fish and Game Commission were somewhat less enthusiastic in their report in the 1931-1932 biennial. Here they reported that rearing ponds were proving to be of little value generally, only a few of the better ponds had shown favorable results. There were hopes, however, that the ponds on Beaver Creek near Havre, just put in operation in 1932 would make possible the rearing of larger fish for stocking the Bear Paw area waters. The then operative CCC unit stationed near the site of the rearing pond gave considerable assistance to construction of the rock work facility. Housing and storage buildings were built of logs.

The Emigrant Fish Hatchery, which was the third State fish hatchery, built in 1919, was moved across the river to its present site in 1931. At the Libby Station, in 1931, a dwelling and a garage were completed. It was, as a matter of interest, noted also that the Fisheries Division purchased a new 1931 Chevrolet coupe for the sum of $681.87. Other stations added to the hatchery system this year included Philipsburg, Polson, and Miles City. The Miles City pond construction had been started in 1927. One installation was closed. Lack of sufficient water forced abandonment of the Missoula feeding ponds.

Approximately 26 million fry were planted in 1931. Although details are lacking, this impressive number of fish included the first golden trout stocked in the state. Miles City produced bass, sunfish, crappie, and perch. Several plants of brook trout were made in the Red Lodge- Cooke City area in the spring of 1931 and substantial plants were planned for 1932.

The Big Hole River was becoming one of the more popular fishing streams in the State at this time and it was hoped the new highway between Helena and Great Falls would beneift Montana anglers by making a lengthy stretch of the Missouri River accessible. Fishermen were catching large numbers of squawfish and suckers in the Clearwater Lakes and plans were underway to develop the trout fishing in these lakes, fulfilling a long-felt need. Kokanee were now showing up well in the Flathead Lake fishery and in 1933 a Polson processing plant turned out 21,000 cans of kokanee for distribution to the needy of the state. While a general stream improvement program was proposed at this time, it was felt that it would be wise to classify the streams of the state before any work was done. Department plans also included the establishment of a fish hatchery some 35 miles north of Missoula. This hatchery would replace the Missoula feeding ponds abandoned because of water shortage in 1931.

The depression period of the thirties was reflected in Department income. In 1931 the Department received $223,655.08; the 1932 receipts dropped to $179,644.14 and continued to decline through 1933. Lay-offs were common at this time and occasionally pay days were delayed. At the same time, as if the depression were not sufficient, a severe drought dried up many fine trout streams. Sportsmen and Department personnel were quite active in fish rescue and salvage operations.

To take advantage of the assistance available from the Civil Works Administration and to generally up-date the hatchery system, the Fish and Game Commission recommended several improvements that were carried out. Circular ponds were constructed at the Great Falls, Anaconda and Somers hatcheries; cabins were built at Flint Creek, the large pond at Big Timber was completed, and some development work was done on the

springs above the Somers hatchery so that more water could be accumulated.

For $4,500 the Department acquired title in 1933 to the Daly Fish Hatchery at Hamilton. The original cost of the installation to Mr. Daly in 1918 was $30,000.

The fish traps in the Madison River, the South Fork of the Madison and Duck Creek produced nearly 5 million brown trout eggs in 1933. At the Georgetown Lake traps, 48 tons of suckers were removed this year, 74 tons in 1934. ~~Kokanee were showing up well in the Flathead Lake fishery. In 1933 there were 21,000 cans of kokanee processed for distribution to the needy of the state.~~

A pilot stream improvement project was carried out on the West Fork of Rock Creek near Philipsburg. A series of log dams and deflectors were installed in the stream under the direction of Dr. Clarence Tarzwell who had initiated the program in the State of Michigan.

A general stream improvement program was proposed for Montana at this time; however, it was decided that the streams of the state should be classified before improvement work was actually begun. Recommendations were also made, as they had been for 30 years, to provide screens for irrigation outlets. Fish losses to the ditches were reported to very high.

Over the years, sportsmen were given considerable credit for their assistance in the distribution of fish. Apparently some difficulties developed under the existing methods for in 1933 the Department proposed a regulation that any unauthorized planting or transplanting of fish should be illegal.

Fish distribution was considerably improved in 1934 by the addition of a spray type aeration system installed in a new fish truck at Anaconda. This system was reported to be much superior to the old oxygen method.

Fisheries personnel learned something of fishery management principles in 1934 at a short course given by Dr. C. J. D. Brown at Montana State College.

A general program of hatchery improvement and building followed the gradual

recovery from the depression. New houses were built at existing stations as expansion made necessary the services of an assistant foreman. Hatchery grounds were improved and required care,new ponds and raceways made it possible to rear fish to more desirable sizes.

In 1942 state waters were being stocked under a newly initiated 5-year distribution plan. Eleven state hatcheries and 3 federal hatcheries cooperated in planting an estimated total of 34,000 miles of fishing streams and 1550 lakes. The 5-year plan was designed to make the most efficient use possible of the fish hatchery system. One of its primary aims was to prevent the existing overlaps in fish planting. The plan was based on the best information then available from game wardens, the Forest Service, and local residents. Fish plants that were shown to be undesirable were eliminated from the schedule. Fish production at each of the hatcheries in the state was carefully evaluated as to the numbers and size of fish that could be p roduced and this production was then allocated to the waters to be stocked. The hatcheries would produce as many large fish as possible consistent with station facilities and funds. The 5-year plan did much to coordinate hatchery activities in the state.

This period was actually a turning point in fisheries management. There was, in general, a greater concern over the quality of fish produced. Hatcheries were exploring methods of more efficient operation; for example, the use of refrigeration to improve the feeding methods, processing of rough fish as a possible fish food, larger distribution units to bring transportation costs down. The Department proposed the establishment of a research section to carry out fisheries investigations.

The hatcheries were planting at this time approximately 10 million each annually of rainbow, cutthroat and brown trout; most of them small fingerlings. Totals of fish planted were to be cut somewhat as larger fish were planted.

Over nearly a forty-year period, 29 fish screens had been installed in various irrigation systems in the state. These screens represented an initial cost to the Department of about $800.00 each plus a yearly maintenance cost of $150.00 while they were in operation. As of 1942, only three of the 29 screens were still being used;

most of them at some time had plugged up with debris and had been pulled up on the ditch banks.

The Superintendent of Fisheries reported in the 1943-1944 biennial that the low wages being paid by the Department made it extremely difficult to keep personnel for more than a very short time. The general result of the high rate of labor turnover was a poor quality of hatchery help. At the same time, some of the distribution units which could not be replaced because of the war were in poor condition.

In 1945 a pike (walleye) hatchery was built at Nelson Reservoir near Malta and some development work was done on the McNeil Slough near the hatchery.[1] Both of these projects received assistance from Phillips County sportsmen.

Department recommendations at this time included a rough fish control program, provisions for the issuance of commercial fishing licenses, and the formation of from 8 to 10 supervisory districts in the state.

July 1, 1947 marked the establishment of the fisheries biological station. A trained fisheries biologist, Mr. C. K. Phenicie, was hired to head the section. Recognizing that the hatcheries were the keystone of the fisheries division, some of the objectives of the biological section were listed - helping the hatcheries develop improved fish distribution methods, the providing of scientific data, studying methods of planting fish, doing fish tagging and tag return studies, examination of growth rates and conditions of Montana fish, outlining a creel census program.

The Department faced with a large number of construction problems at this time, hired an engineer, Mr. C. K. Dalton, who was given the responsibility of drawing the necessary plans for the construction work and seeing that it was successfully completed.

At the Arlee fish hatchery, which had been purchased by the Department in 1945, a new hatchery building and a brood pond were constructed for $85,000. At the Anaconda hatchery a cold storage plant was installed and a new pipeline was laid to help that station meet its proposed production figure of 450,000 fish 4 to 6 inches in length. At the Ennis hatchery the first use of internal fish tags was tested on 255, 9-inch rainbow. The Department was seriously concerned about the problems

[1] apparently this is the original McNeil Hatchery

associated with the construction of a proposed pulp mill on the Flathead River. Groups from Havre met with the Fish and Game Commission in 1948 regarding a rearing pond program located below Fresno Dam on the Milk River. Montana State College offered both office and laboratory space to the Chief Fisheries Biologist. The offer was declined by the Fish and Game Commission who felt the office should remain in Helena. Walleye pike eggs were to be obtained from the State of Minnesota and would be hatched at the McNeil station on Nelson Reservoir. Planning was authorized in May 1948 for the Bluewater fish hatchery.

So that additional fish could be provided for waters of the state, the Department provided additional funds to the Federal fish hatcheries at Creston, Ennis and Miles City. The extra funds at these stations purchased fish feed to increase their overall production.

Work progressed rapidly on age and growth studies, food studies and creel census. By 1949, summer field crews had collected a considerable amount of material that was being processed at the fisheries laboratory located at Montana State College in Bozeman. In 1950 the hatchery section experimented briefly, and finally unsuccessfully with the use of cooked carp for fish food. This same year Eli Melton first successfully hatched out whitefish eggs.

The 1951-1952 biennium marked 50 years of Department existence and progress. Certainly a great deal had been accomplished in these first 50 years in developing an organization capable of managing the vast resources of the state. It was estimated that in 1951, fishermen spent a total of $9,397,700; and of this amount, non-resident fishermen accounted for $875,250.

A hatchery biologist was hired in 1951 to help in the control of fish diseases and assist in the development of fish diets suitable for the various state hatcheries. Commercially produced pelleted fish food was relatively new and results obtained through feeding it were quite irratic.

This same year concrete tanks were installed at the Hamilton hatchery and a duplex residence for hatchery personnel was built at the Anaconda station. Silver salmon eggs to be obtained from the State of Washington were scheduled to go to the Anaconda station.

A fish management policy based on a scientific approach was adopted by the Department in 1953. From a strictly economic viewpoint it was proposed that: (1) fry and fingerling trout should be used where practical, (2) Fish of all sizes should be liberated at such times and in such manner as to insure the greatest possible return to the creel. (3) Fish should be liberated only where needed for management, and only where a reasonable return to the creel could be assured. It was further emphasized that fish should be planted only: (a) where there were no game fish present or where an introduced species would be more desirable. Once introduced, natural reproduction should adequately support sport fishing. (b) where waters had no, or inadequate, spawning grounds (c) where heavy fishing pressure warrants, and (d) to re-establish fish.

A study of the effects of irrigation practices showed that fish losses to the ditches could be reduced through the removal of pools that would attract fish, through cutting away the brush cover along ditch banks, and through a gradual decrease in flow in the ditches rather than a sharp cut off of the flow. The Fish and Game Commission authorized preliminary planning for the construction of a dam on Beaver Creek near Havre. The impoundment would provide a manageable fishing lake in an area low on trout waters.

The rehabilitation of the Marias River Drainage was the major project carried out in 1955. Undesirable fish were eliminated from some 600 miles of river and tributaries prior to the closure of Tiber Dam. Species to be eradicated were carp and goldeye. The goldeye is still absent above Tiber Dam and although there are some carp present in these waters, they are by far less numerous and less widely distributed than they were prior to the rehabilitation.

To provide a measure of the success of hatchery plants, to test the quality of the hatchery fish, to determine the effects of transporting fish for long distances, and to observe the effects of various fish diets, the Flint Creek test stream project was initiated. A typical one-mile section of the stream was set apart from the rest of the stream by barriers at each end. The one-mile section was further divided by a barrier

in the middle. This separation gave an opportunity to test various groups of fish simultaneously or to test various treatments in one section as against control fish in the other section.

Hatchery operations cost the Department $323,929.88 in 1955; making the 15,153,516 fish weighing 142,830.9 pounds that were produced, average $2.03 per pound or 4½ cents per fish. The 1956 costs dropped to $1.77 per pound or 2 cents per fish with a production of 22,606,786 fish, weighing 131,444.4 pounds.

In 1959 a statewide stream classification was prepared through the joint efforts of the Fish and Game Department, the MRBS and Montana State College. This project did much to clear up the misconception that Montana had unlimited miles of excellent fishing streams. Actually there were only 410 miles of top quality "blue ribbon" streams in the state.

The Lewistown hatchery expansion was completed in 1959, taking advantage of an excellent supply of nearly ideal spring water and a central Montana location. Other studies at this time included improved hatching methods at Arlee and the use of fiberglass troughs at most of the state installations.

The 1960-1962 biennium saw considerable emphasis on the maintenance of fish habitat. The damaging effects of channel changes on fish populations were measured and recorded on representative streams throughout the state. Public interest was strong enough that the state legislature passed a bill which gave the Fish and Game Department a voice in preserving fish habitat.

The survey of high mountain lakes received a tremendous assist with the acquisition of a helicopter by the Department. The helicopter has made it possible to obtain,in a matters of hours, information that would take weeks using a pack outfit.

The effects of silt on fish populations in a stream were shown dramatically in a study on Bluewater Creek near Bridger. Trout thrived and reproduced in the section of the stream located above silt-laden return flows - in the silty waters and muddy bottom below the inflows, only suckers were able to survive.

Brood trout holding and spawning facilities constructed at the Arlee station make it one of the most modern in the nation. This unit holds the brood rainbow trout that provide eggs for the entire state rainbow program - fish that have been selected for desirable traits that fit Montana waters.

Future plans include upgrading the hatcheries for the production of quality fish, developing healthy brood stocks of both westslope and Yellowstone cutthroat trout, and increased efforts in habitat preservation.