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AN OPEN HISTORY OF
FISH AND FISH PLANTING
IN
YELLOWSTONE NATIONAL PARK
BY

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NEWTON B. DRURY,

Director.

AN OPEN HISTORY OF
FISH AND FISH PLANTING
IN
YELLOWSTONE NATIONAL PARK

Prepared by R. J. Fromm in connection with E. R. A. stream survey work.

In 1870 the first detailed and reliable report of the region now known as Yellowstone National Park was given to the people of the United States by the members of the Washburn-Doane exploratory party. Previous to this time information concerning the park region was sketchy, and for the most part greatly discredited. Several factors contributed to account for the paucity of reliable knowledge of this section.

Indians found the mountain passes of the park far more difficult than the passes of adjacent mountain territories. In addition, fishing and hunting in this region were far poorer than in the lower river and stream valleys beyond the high mountains of the park. The park was difficult of access, and once reached, offered little of practical value to either Indians or early white explorers. Because of the small amount of animal life in the park region the trappers and traders hardly found it a very lucrative territory.

It was not until reports on the park by gold-seekers, roaming everywhere in the mountains of Montana and Wyoming during the 1860's, became prevalent that interest was enough aroused to cause the formation of a party with the express purpose of exploring the headwaters of the Yellowstone River.

The Washburn party, first of the groups to thoroughly investigate the section, spent the late summer and early fall of 1870 in the park region, and on their return, reported on its wonders. Though the group was chiefly interested in the thermal phenomena and scenic attractions, some mention was made of the game animals and of fish.

H. P. Langford, member of the expedition, in his diary of the trip, mentions having great success in fishing for trout in the lower Yellowstone, beyond what is now the park boundary. Later, writing of Tower Falls and the surrounding country, he said, ".....we have an abundance of venison and trout." At the canyon and lower falls of the Yellowstone he wrote, "The river is filled with trout....." After the party had circled the lake and was in camp on the south side of the thumb he wrote that "....Mr. Hodges has spent the day in fishing, catching forty of the fine trout with which the lake abounds...." He did not make any mention of the lake fish being worry. p. 83

The next summer the naturalist for the Hayden expedition which investigated the park in 1871 made a search of the waters of Yellowstone Lake and reported finding only one species of fishes, the "salmon-trout", in the lake. His report says that their numbers were inconceivable, that the fish averaged one and one-half pounds, and that those fish were heavily spotted about the caudal fin. He also gave a rather extensive account of the worms found in the intestines and flesh of these fish. Worry fish, he said, were found only above the upper falls of the river.

In 1872 Hayden again conducted an expedition into the park, and he and various members of his party investigated several of the smaller streams and lakes of the region. Of a small lake east of upper Soda Butte creek he wrote, "One of them is about a quarter of a mile long, and is full of trout..... 10 to 15 inches long." "We might ask how these lakes became so stocked there is no communication for the fish with the main stream." His notes on Slough Creek state, "Slough creek rises in a little lake so full of trout that they cannot find sufficient food.....caught over a hundred trout in a few hours....12 to 15 inches in length.....every one poor and thin." F. H. Bradley, connected with the expedition and approaching the park by way of the Madison drainage, reported that in the region close to what is now the west entrance to the park the trout were "shy" and appeared to be few.

Other parties, more or less official in nature, substantiated these early reports and added slightly to the knowledge of the park's fishes and water-ways. Captain W. A. Jones, making a trip in 1873, wrote of his observations on a two-ocean pass he had located in the country above Yellowstone Lake. He believed it possible that fish from the Pacific drainage had crossed this pass and entered the lake waters.

Thus it became established that there were game fishes in the Yellowstone River along its entire length, in Yellowstone Lake, and in some of the principal tributaries of Yellowstone River. Little attention was paid to other water-ways in the park. Along the Firehole (upper Madison) the hot springs received the complete attention of these early parties, and the Gibbon remained almost entirely unexplored. At least, no mention was made by any early explorers of fish or fishing in and along these waters. Since it later developed that these streams, above their falls, were devoid of fish, any effort on their part at fishing would have been fruitless, and therefore would probably have gone unmentioned.

Following the publication of the records of the exploratory parties, interest in the park greatly increased. In 1872 Congress set aside the area adjacent to the headwaters of the Yellowstone as a national park, and regulations were made providing for the protection of fish and game in the park. Within a year the first of the tourists started arriving. These groups roamed throughout the park, viewing the wonders and fishing in streams and lakes everywhere in the park. Before long numerous publications appeared, relating various experiences of tourists in the park, and giving information on travel, accommodations, fishing, so on, in the region. The earliest of these guide-books, in their reports on fishing, duplicated the records of the Washburn and Hayden expeditions. Fishing was excellent at Tower Falls, and the lake fish, though unbelievably numerous, were heavily infested with worms, they reported. Gradually, as more and more of the park was visited, these touring parties began to find what a large extent of park water-ways was completely barren of fish. W. W. Wylie made an excursion through the park in the early 1880's, going from Mammoth Terraces across Swan Lake flats, along the Gibbon and Firehole, and across the divide to Yellowstone Lake. Speaking of the west fork of the Gardiner (Glen creek), he stated that no fish could be obtained above Rustic fall; he further mentioned that the angler would find no fish along the route which he took until reaching Yellowstone Lake.

Herman Haupt published a guide-book in 1883 which gave a rather extensive, though unscientific, account of fishing conditions. He noted that there were no fish in the Gardiner above the mouth, and none in the Gibbon, the Madison, the Firehole, and Shoshone lake. His observations proved to be largely correct, and the information in his book was more comprehensive than anything which had been published up to that time. Although it later developed that there were game fishes in the Madison, the reports of the early excursionists indicate that the whole Madison drainage was a very poor fishing territory.

The reports of the first two or three superintendents furnish less information on fish and fishing than do the guidebooks. N. P. Langford, the first superintendent, and Norris, his successor, mention, along with other administrative problems, the need for adequate means of protecting the fish and game of the park, but neither of them advocated conducting a stream survey or establishing a stocking program.. In 1880 Norris noted that the native fishes of the park were trout (the blackspotted trout of Yellowstone lake and river), mountain herring (Norris was undoubtedly mistaking the whitefish for what he called "herring"), and grayling. By 1881 he had extended his list to include catfish and "several varieties" of trout. His "catfish" were probably Miller's thumbs, *Cottus* sp., and his reporting several varieties of native trout has certainly never been substantiated. It was in this year that Norris reported that the worm infestation became particularly troublesome, and that many of the lake fish died. His report also tells that early in the summer he transferred some ten fish, with a supply of spawn, from a particularly productive lake in the northeast section of the park to various barren lakes and ponds nearby.

Norris was replaced by Superintendent Conger in 1882, and Conger was replaced by Wear in 1885. During those years the park was poorly and inadequately policed, and many acts of vandalism and poaching were committed. The situation became so troublesome that, finally, in the fall of 1886, a detachment of soldiers from the United States army was stationed in the park.

In June, 1889, Captain F. A. Boutelle received command of the garrison. Being an enthusiastic angler, he was quick to notice the absence of fish in a number of park waters. After only a month of service in the park his report included, "In passing through the park I noticed with surprise the barrenness of most of the waters of the park. Besides the beautiful Shoshone and other small lakes, there are hundreds of miles of as fine stream as any in existence without a fish of any kind. I have written Colonel Marshall McDonald, U. S. Fish Commissioner, upon the subject, and received letters from him manifesting a great interest. I hope through him to see all of these waters so stocked that the pleasure-seeker in the park can enjoy fine fishing....."

This was the first real move which had been made along these lines, the first official recognition that fishing conditions in the park could be, and should be improved. As a result of these communications between Boutelle and McDonald, the commissioner visited the park that summer (1889), and decided to stock various streams in the park. During August and September the U. S. Fish Commission made the following plants in the park:

Eastern Brook Trout in Glen creek and Gardiner river above the falls,

5000 fishes.

Rainbow Trout in Gibbon river above Virginia Cascades, 1000 fishes.

Loch Leven Trout in the Firehole river above Keopler Cascades, 1000 fishes. *These were later found to be Brook Trout*

Mountain Whitefish in the Twin lakes and in the Yellowstone river between the lake and the falls, 1000 fishes.

Red-throat Trout (Blackspotted) in Lava Creek above the falls, number of fish not given.

X The Commissioner made request in September, 1889, that D. S. Jordan visit the park for the purpose of securing data on its waters and fishes before further plants were made. Jordan was in the park from September 27 to October 11, 1889; his report that period includes a list of the native fishes which he found, the streams in which these fish were found, an account of the physical characteristics of almost all of the principal lakes, streams and rivers of the park, a list of the barren waters of the region, and a list of those lakes and streams suitable for trout. The complete report can be found in the Bulletin, U. S. Fish Commission, 1889. A *Reconnaissance of the Streams and Lakes of the Yellowstone National Park, Wyoming*, by David Starr Jordan.

In the following list of species which have been found to be native to the park, the modern scientific terminology has been given according to J. R. Simon in his book, *Yellowstone Fishes*, 1939.

Game Fishes:

Blackspotted Trout, Salmo alarkii lewisi (Girard).

Found in the Snake river drainage, Yellowstone lake and river, the Madison drainage, and the principal tributaries of these systems not made inaccessible by falls or other barriers.

Grayling, Thymallus montanus (Milner).

In the Madison drainage and the Gallatin river.

River Whitefish, Coregonus williamsi yar.

In the Madison drainage, the Yellowstone river below the falls, and the Snake drainage.

Non-game Fishes:

Rosyside Sucker, Catostomus fecundus (Cope and Yarrow).

Found in the Snake drainage.

Sucker, Catostomus catostomus (Forster).

In the Yellowstone below the falls.

Note: Two species of suckers of the genus Pantosteus were secured and identified for the first time in 1937 and 1938. Jordan makes no mention of these suckers as natives of the park, and it is possible that they have been introduced by bait-using fishermen.

Longnose Dace, Rhinichthys cataractae ocella (Garman).
In the lower Yellowstone, the Madison and the Snake.

Dusky Dace, Apocope oscula carringtonii (Cope).
In Heart Lake and the Snake drainage.

Silverside Minnow, Richardsonius balteatus hydrophlox (Cope).
Found in the Snake drainage.

Utah Lake Chub, Gila atraria (Girard).
In the Snake drainage.

Sculpin, Cottus pumotulatus (Gill).
In the Madison drainage and the Gallatin river; this species was the only fish found in the Gibbon above Gibbon fall.

Note:—Simon reports another species of sculpin, Cottus semi-scaber (Cope), as being found in the Snake drainage. This fish is undoubtedly a native species, previously unreported.

Jordan found that the vast majority of barren waters lacked fish not because these waters were unsuitable, but because some barrier kept the fish from using certain waters. He listed the following barren streams and lakes:

Yellowstone drainage:

Cascade Creek above Crystal fall.
Broad creek.
Deep creek.
Tower creek above Tower fall.
Gardiner river above Osprey fall.
Glen creek above Rustic fall.

Madison drainage:

Gibbon river above Gibbon fall, except for sculpins found between Gibbon fall and Virginia Cascades.
Firehole river above Firehole Cascades.

Snake drainage:

Lewis river above its lower fall, including Shoshone and Lewis lakes.
Crawfish creek.
Falls river above Terraced falls.
Upper Bechler river.
Upper Boundary creek.

In general, the native fishes of each particular drainage made use of all the tributaries of that drainage, except those waters made inaccessible by barriers, and those waters which, in rare cases, were unfit for fish. Three notable instances where fish were found in waters they might not logically be expected to occupy were recorded and explained by Jordan.

The only fish found in the Yellowstone drainage above the falls was the blackspotted trout. This species probably came from the Snake (Pacific) drainage by way of Two-Ocean Pass.

The sculpins found in the Gibbon above the fall could have been "planted" there by osprey, Jordan explains.

Fish in Lava creek above Undine fall might have crossed a low, swampy divide between a tributary of Blacktail Deer creek, accessible to fish of the Yellowstone, and a tributary of Lava creek.

The native fishes of the park drainages, according to Jordan and later investigators, were:

Yellowstone drainage:

Blackspotted trout, whitefish, suckers (*Catostomus* and *Pantostomus*), longnose dace.

Madison drainage:

Blackspotted trout, whitefish, grayling, longnose dace, sculpin (*Cottus punctulatus*).

Snake drainage:

Blackspotted trout, whitefish, flatnose sucker, rosyside sucker, longnose dace, silverside minnow, dusky dace, chub, sculpin (*Cottus semiscaber*).

The fish commission announced that it proposed to extend the stocking program in the park pending the results of Jordan's investigation. They intended, they said, to stock park waters with several different species of Salmonidae, reserving a distinct basin or section of river for each species. Numerous plants were made beginning during the summer of 1889 and extending through 1900, but it was not until the latter year that the program became well enough organized to constitute a continuous, well-directed project.

During his investigations Jordan observed the presence of larval worms in the trout of both Yellowstone and Heart lakes. Study of diseased specimens which he collected disclosed that the worms were the same as those identified by Dr. Leidy, who was connected with the Hayden expedition of 1871. The species was named *Dibothrium cordiceps* by Leidy, but modern taxonomic lists give it as *Diphyllobothrium cordiceps* Leidy. Researches of Duchamp in 1876 indicated that the adult stage of these worms was passed in the intestines of various piscivorous aquatic birds, but the particular species of bird used by the worms of the park was not known at the time Jordan made his report. Jordan also found very large parasitic worms in the abdominal cavities of the suckers of Witch creek and Heart lake.

The accompanying sketch map shows the area of the park which was originally barren of fishes.



Cross-hatching shows area found barren of fishes by Jordan in 1889, with the exception of sculpins in the Gibbon above Gibbon fall.

1889

During the same summer in which Jordan was making his investigation of the park's waters, the following plants were made:

Lava creek, 1000 blackspotted trout.
Gibbon, above Virginia Cascade, 990 rainbow trout.
Firehole, above Keppler Cascade, 995 Loch Leven Trout.
Gardiner, above Osprey fall, 4,975 E. brook trout.
Yellowstone, above the falls, 2,000 whitefish.
Twin Lakes, 1000 whitefish.

Later investigation indicated that an error was made in the planting of fish in the upper Firehole, and that the reported Loch Levens were in reality Eastern brook trout.

1890

Shoshone Lake, 30,000 Mackinaw or lake trout.
Shoshone Lake, 3,350 Loch Leven trout.
Lewis Lake, 12,000 Mackinaw trout.
Lewis Lake, 3,350 Loch Leven trout.
Glen creek, above the fall, 7,875 E. brook trout.
Nez Perce creek, 9,800 Von Behr or German brown trout.
Yellowstone, above the falls, 10,000 whitefish.

Extensive stocking of the park streams and lakes was being contemplated, and Boutelle reported that the fish commission was holding about 150,000 trout and salmon in readiness to be shipped to the park.

1891

G. S. Anderson succeeded Boutelle as commander of the army forces in the park. He reported that the lakes and rivers were filled with fish, and expressed the hope that black bass might be planted in some of the lakes of the park.

1892

B. W. Evermann, connected with the U. S. Fish Commission, examined the waters of the park during the summer of 1891, and his report, published in 1892, states that all of the 1889 and 1890 plants were thriving, except for the whitefish, "of which not a trace remains."

1893

Shoshone creek, 4,500 E. brook trout.

Anderson again requested that black bass be planted in the park. Trout fishing was reported to be excellent.

1894

A shipment of 250 bass was received in December, 1893. The entire

lot, believed to have perished in the sub-zero weather, was thrown into the Gibbon near the Norris geyser basin.

Previous plants were reported to have multiplied inconceivably.

1895

Upper geyser basin lakes, 500 black bass.

Beaver lake, 1000 rainbow trout.

Delacy creek, 1000 rainbow trout.

Plants in the upper Gardiner, the Firehole and Shoshone creek were prospering. Rainbow trout in the Gibbon above Virginia Cascade apparently were not doing very well, and most of them had descended the cascade into a lower section of the Gibbon.

1896

None of the bass plants could be located. Superintendent Anderson recommended that, since the park fishes, though numerous, were often small, a minimum length rule of five or six inches for fish taken from park waters should be established.

1897

✓ Lt. Elmer Lindsley, assigned to duty in the park, made a study of the waters and fishes of the region during this year, and reported comprehensively on the location and condition of the various plants.

1898

An endeavor by Captain J. B. Erwin to establish a hatchery in the park was without success.

Erwin stated that there had been no reports of bass being seen or caught in the park.

1899

Captain O. J. Brown reported fishing to be good.

1900

Up to and including this year, plants had been made in 1889, 1890, 1893 and 1895.

The following is a summary of the game fishes found in the stream and lake basins of the park, as they are believed to have existed in 1900. An (n) indicates the fish were native to the basin. Planted fish are indicated by the year date of the plant following the name of the fish; Plants which are believed to have survived are marked with an asterisk(*), and fish found in water where they were not native or planted are marked with a sharp (#). In the last case, some explanation of these non-native, non-planted fish is given if it is possible.

Yellowstone Lake Basin

Blackspotted trout, n.
Whitefish, 1889, 1890.

Lower Yellowstone River Basin

Blackspotted trout, n..
Whitefish, n.

Snake River Basin

Blackspotted trout, n.
whitefish, n.

Madison River Basin

Blackspotted trout, n.
Whitefish, n.
Grayling, n.
Rainbow trout #, came over fall from Gibbon River.
Von Behr trout #, came from Firehole River.
E. brook trout #, came from the Firehole River.

Gibbon River Basin

Rainbow trout, 1889*.
Black bass, 1893. 7 1894?

Firehole River Basin.

E. brook trout, 1889*, planted in error. Thought to be Loch
Levens when planted.
Von Behr trout, 1890*.
Blackspotted trout #.
Rainbow trout#.

Shoshone and Lewis Lakes Basin

Mackinaw trout, 1890*.
Loch Leven trout, 1890*.
E. brook trout, 1893*.
Rainbow trout, 1895.

Upper Gardiner River Basin and Glen creek

E. brook trout, 1889*, 1890*.

Twin Lakes

Whitefish, 1889.

Lava creek

Blackspotted trout, n., and planted 1889*.

Upper geyser basin lakes

Black bass, 1895.

Beaver Lake

Rainbow trout, 1895.

The presence of blackspotted and rainbows in the Firehole above the cascades, as reported by Lindsley following his studies during the summer of 1897, is almost impossible to explain. They might have been planted unofficially by tourists or sportsmen, or fish-eating birds could have played a part.

The whitefish plants in the Yellowstone above the falls and in Twin Lakes, and the bass plants in the upper geyser basin lakes, were practically the only ones which failed to survive.

1901

Beginning with this year fish cultural activities in the park became extensive. D. C. Booth, superintendent of the Spearfish, South Dakota, hatchery was in the park, and collected and shipped to Spearfish over a million eggs from the trout of Yellowstone Lake. He recommended that a hatchery be built on Obsidian creek, a tributary to the upper Gardiner.

Booth also sent a shipment of Eastern brook trout to the park.

Obsidian and Glen creek, 10,000 E. brook trout.

Cascade creek, 20,000 blackspotted trout.

1902

The following plants of fish from the Spearfish hatchery were made:

Upper Gardiner tributaries and Glen creek, 50,000 E. brook trout.

Yellowstone Lake tributaries, 40,000 rainbow trout.

✓ D. C. Booth again collected and shipped several million blackspotted trout eggs. The fish commission authorized the construction of a building at West Thumb to be used as an egg-collection station, but plans for a hatchery on Obsidian creek were rejected.

1903

Eastern brook trout, from the Spearfish hatchery.

Tower creek, 15,000.

Upper Gardiner, 20,000.

Loch Leven trout, from Spearfish.

Nez Perce creek, 10,000.

Blackspotted trout, from Thumb collecting station.

Duck Lake, 290,000.

Yellowstone Lake, 22,000.

Millions of trout eggs were collected at Thumb, and distributed to various parts of the United States and Europe. The Thumb collection station was completed during this year.

In compiling this history it has been found that the superintendents' reports and the fish and game ledgers kept by the army department do not always agree as to where fish were planted, or the number of fish planted.

An attempt has been made to have the various sources of information augment one another.

1904

Eastern brook trout
Obsidian creek, 21,000.

Inclement weather prevented the extensive planting of fish.

Superintendent Pitcher advised that fish cultural work might be more easily handled through the Bozeman hatchery than from Spearfish.

1905

Eastern brook trout, from the Spearfish hatchery.

103,000 fish planted in Ice Lake near Gardiner, in the Gibbon above Virginia Cascade, in Obsidian and Indian creeks, and in Swan Lake.

Blackspotted trout, from the Thumb station.

374,600 fry planted in Duck Lake, Yellowstone Lake and Ice Lake near Fountain.

Booth supervised the collection of about 5,100,000 blackspotted trout eggs.

1906

The Thumb station was improved and enlarged. About 2,455,000 eggs were collected, and of this number around 215,000 were returned to park waters.

Blackspotted fry, from Thumb

215,000 fry planted in Duck Lake, and Yellowstone Lake tributary.

Eastern brook trout, from the Spearfish hatchery.

100,000 fish in the upper Gardiner, in Lava creek, and in the Gibbon above Virginia Cascade.

Rainbow trout, from Spearfish.

Gibbon River, below Virginia Cascade, 10,000.

A total of 325,000 fishes were placed in the waters of the park. D. C. Booth was again in charge of this work.

1907

Eastern brook trout, from Spearfish.

Upper Gardiner River, 69,000.

Glen creek, 30,000

Rainbow trout, from Spearfish.

Yellowstone Lake tributaries, 3,800.

Lava creek, 200.

Blackspotted fry, from the Thumb collecting station.
Yellowstone Lake tributaries, 400,000.

According to Booth's report, the lake waters were high, and, as a result, interfered with the collecting of trout eggs. Therefore, a smaller number of eggs, about 2,660,000 in all, was secured. Of this total, 400,000 were returned to lake waters, as noted above in the planting statistics.

Glen creek and Sportsman Lake were both closed to fishing during this summer. Because of the proximity of Glen creek to the road, and the heavy fishing which it thereby received, this stream had been closed to fishing off and on since the summer of 1896. Sportsman Lake was closed due to evidence which indicated that fish had been taken from the lake by other means than hook and line.

1908

Blackspotted trout fry, from the Thumb station.
Yellowstone Lake tributaries, 2,490,000.

Eastern brook trout, from the Spearfish hatchery.
Upper Gardiner, 69,400.
Glen creek, 21,600.
Swan Lake, 9,000.

Rainbow trout, from Spearfish.
Gibbon River, 10,000.
Grebe Lake 8,500.

Land-locked salmon, from the Bozeman hatchery.
Duck Lake, 2,000.
Yellowstone Lake, 7,000.

These plants were made in May 1908, and they marked the attempted introduction of a new species, the land-locked salmon, to park waters.

1909

Blackspotted trout fry, hatched at Thumb.
Yellowstone Lake tributary, 400,000.

Eastern brook trout.
Glen creek, 10,000.
Obsidian creek, 40,000.

Rainbow trout.
Blacktail Deer creek, 3,000.
Gibbon River, 7,000.

Land-locked salmon.
Yellowstone Lake, 5000.

The Thumb station was reported by Booth to be the greatest field collecting center for blackspotted trout eggs in the United States. During nine years of service approximately 33,000,000 eggs had been collected, and of these 12,000,000 had been taken in the last two years.

Booth further stated that in his opinion the stories of wormy lake fishes were greatly exaggerated, and that judging from fish handled during the egg-takes, few of the lake trout were diseased.

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1910

Blackspotted trout, from Thumb.
Yellowstone Lake tributary, 75,000.

Eastern brook trout, from Spearfish.
Glen creek, 21,600.
Obsidian creek, 24,000.
Lava creek, 5000.

Rainbow trout, from the Spearfish hatchery.
Tower creek, 30,000.

H. D. Dean, from the Bozeman hatchery, made an experimental collection of blackspotted trout eggs from the fish of Trout Lake, located near the junction of Pebble with Soda Butte creek.

In all, about 6,500,000 trout eggs were collected this year.

1911

Bureau of Fisheries work in the park was placed under supervision from the Bozeman hatchery. H. D. Dean was in charge of operations.

Over 20,680,000 trout eggs were taken from Yellowstone Lake fish and from Trout Lake fish. About 4,661,000 of these eggs were returned as fry to the lake and its tributaries.

Blackspotted trout fry, from the Thumb station.
Yellowstone Lake and tributaries, 4,661,000.

Blackspotted trout fry, from the Bozeman hatchery.
Lava creek, 100,000.

Eastern brook trout, from Bozeman.
Glen creek, 10,000

1912

W. T. Thompson of the Bozeman hatchery directed the fish work in the park for this year. He supervised the collection of better than 29,320,000

blackspotted trout eggs from Yellowstone and Trout Lakes, Around 4,000,000 of these eggs were planted as fry in waters of the park.

Blackspotted trout fry, from the Thumb station.
Yellowstone Lake tributaries, 2,735,000.
Duck Lake, 50,000.
Grebe Lake, 300,000.
Delacy creek, 850,000.

Eastern brook trout, from Bozeman.
Lava creek, 3000.
Blacktail Deer creek, 3000.
Glen creek, 16,000.
A Sepulchre Mountain lake, 7000.

Three new boats were secured for use in connection with fish work, and the Thumb station was enlarged.

1913

A hatchery building was constructed on the northwest shore of the lake within a mile or two of the point where Yellowstone River leaves the lake. Across the lake, at the mouth of Clear creek, a smaller building was erected.

Because of the run of trout up the streams tributary to the lake was small, the egg-take was correspondingly small. About 7,500,000 eggs were collected.

Blackspotted trout, from the Lake hatchery.
123,300 fry in Yellowstone Lake tributaries and Shoshone River tributaries.

Eastern brook trout, from the Bozeman hatchery.
Blacktail Deer creek, 12,250.
Glen creek, 11,250.

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1914

Blackspotted trout, from the Lake hatchery.
Sylvan Lake, 30,000.
Tower creek, 25,000.
Yellowstone River, 90,000.
Yellowstone Lake tributaries, 415,000.

Eastern Brook trout, from Bozeman.
Blacktail Deer creek, 10,000.
Glen creek, 10,000.

An egg collection station was built at the mouth of Columbine creek, and

the Lake hatchery grounds were improved.

W. T. Thompson recommended that, as a policy, a large number of blackspotted trout eggs or fry should be returned to the Yellowstone Lake waters each year following the egg collecting. During this year, of the 12,000,000 eggs which were collected, about 560,000 were planted in various streams and lakes of the park. This made return plants amount to $4\frac{1}{2}\%$ of the total egg-take.

1915

Eastern brook trout.

Blacktail Deer creek, 15,000.

Obsidian creek, 15,000.

Blackspotted trout fry.

Yellowstone Lake tributaries, number unknown.

Around 5,500,000 eggs were collected from the trout of Lake Yellowstone. W. T. Thompson was again in charge of this work.

Automobiles were admitted to the park for the first time during this summer. Permission to use private automobiles in the park in following years led to a greater number of visitors and therefore, to more extensive fishing in the park water-ways.

The following summary of fish planting activities in the park through 1915 is keyed in the same manner as the 1900 summary.

Native fishes of each stream basin, thus: (n).

Planted fish, thus; year date following the name of the fish.

Planted fish believed to have survived, thus: (*).

Non-native, non-planted fish, thus: (#).

Yellowstone Lake Basin

Blackspotted trout, n., and planted 1903-1915*.

Whitefish, 1889, 1890.

Rainbow trout, 1902, 1907.

Land-locked salmon, 1908, 1909.

Lower Yellowstone River Basin, including the lower Gardiner.

Blackspotted trout, n.

Whitefish, n.

Loch Leven trout #, possibly planted in the Gardiner in error in 1889.

SNAKE River Basin.

Blackspotted trout, n..

Whitefish, n.

Madison River Basin.

Blackspotted trout, n.

Whitefish, n.

Grayling, n.

Rainbow trout #, came over fall from the Gibbon.

Van Behr and/or Loch Leven trout #, came from the Firehole.

Eastern brook trout #, came over falls from the Firehole and Gibbon.

Gibbon River Basin.

Rainbow trout, 1889*, 1906*, 1908*, 1909*.

Black bass, 1893.

Eastern brook trout, 1905*, 1906*.

Blackspotted trout, 1912, in Grebe Lake.

Firehole River Basin.

Eastern brook trout, 1889*, planted in error.

Van Behr trout, 1890*.

Loch Leven trout, 1903*.

Blackspotted trout #, reported in 1897.

Rainbow trout, #, reported in 1897.

Shoshone and Lewis Lakes Basin.

Mackinaw trout, 1890*.

Loch Leven trout, 1890*.

Eastern brook trout, 1893*.

Rainbow trout, 1895.

Blackspotted trout, 1912 in De Lacy creek.

Upper Gardiner River Basin.

Eastern brook trout, 1889*, 1901-1910*, 1915*.

Glen creek.

Eastern brook trout, 1890*, 1901*, 1902*, 1905*, 1907-1914*.

Lava creek.

Blackspotted trout, n., and planted 1889*, 1911*.

Eastern brook trout, 1906*, 1910*, 1912*.

Rainbow trout, 1907.

Cascade creek.

Blackspotted trout, 1901*.

Tower creek.

Eastern brook trout, 1903.

Rainbow trout, 1910.

Blackspotted trout, 1914.

Blacktail Deer creek.
Blackspotted trout, n.
Rainbow trout, 1909.
Eastern brook trout, 1912-1915*.

Shoshone River Basin.
Blackspotted trout, N., and planted 1913*.

Duck Lake.
Blackspotted trout, 1903*, 1905*, 1906*, 1912*.
Land-locked salmon, 1908.

No report was made of fish being found in Swan Lake, Twin Lakes, the two Ice Lakes, the Sepulcher Mountain lake and the upper geyser basin lakes.

The planting records for 1889 show that Loch Levens were planted in the upper Firehole. Later investigation established the fact that these fish were actually Eastern brook trout. The appearance of Loch Levens in the lower Gardiner would indicate a mistake had been made, and that the Lochs intended for the Firehole were planted in the Gardiner. It is possible that these Loch Leven trout were confused with Eastern brooks, and planted as such in the upper Gardiner. If this was the case they might have been able to find their way over the fall into the lower Gardiner.

By 1915 the only native park fish which had been extended through planting beyond its original waters was the blackspotted trout. This species was introduced into Cascade and Shoshone creeks and Duck Lake with success.

Rainbow trout had survived plantings in the Madison drainage. Loch Levens were found, due to successful plants, in the Madison drainage and Shoshone and Lewis Lakes. A possible erroneous plant had introduced them into the lower Gardiner.

Eastern brooks had been planted and were thriving in the Madison drainage, Shoshone creek, the upper Gardiner, Glen creek, Lava creek and Blacktail Deer creek. Mackinaws had survived planting in Shoshone and Lewis Lakes.

1916

Eastern brook trout, from the Bozeman hatchery.
Nez Perce creek, 17,000.

Blackspotted trout.
Yellowstone Lake tributaries, 200,000.

Spring snow and floods and summer dryness greatly hampered egg collecting this year. Bears also seemed to be particularly troublesome.

About 7,435,000 eggs were collected from the lake trout. These eggs, except for return plants in the park waters and the loss from incubation,

were shipped to the Bozeman hatchery and other Bureau of Fisheries centers, as had been the case with the greater part of the egg-take of all years.

1917

This year a general adjustment of the concessions in the park occurred. The transportation, hotel and lodge companies were all reorganized.

In line with this change, it was urged that the park be placed before the public as a complete all-summer resort, and among other developments, a more extensive stocking of fishing streams was planned.

While the hotel and camps companies were permitted to catch fish in park waters for serving in their dining rooms, as had been the practice for many years, the taking of these fish from areas of heavy tourist fishing was prohibited beginning with this season.

Well over 8,000,000 eggs were collected from the blackspotted trout of Yellowstone and Trout Lakes. Most of these, as usual, were shipped to various hatcheries and national parks in the United States.

Eastern brook trout, from Bozeman.

Obsidian creek, 4,200.

Glen creek, 13,300.

Blackspotted trout eggs and fry, from the Lake hatchery.

1,975,000 eggs and fry in Yellowstone Lake and tributaries, Indian creek, Lewis Lake, Lamar River, Blacktail Deer creek, Lava creek and Delacy creek.

1918

Extremely inclement weather made the importation of fish for planting purposes almost impossible. Many of the park roads were impassable for a good part of the summer. Almost 3,700,000 eggs were collected in the park during this summer, and about 800,000 of these were returned as fry to tributaries of Lake Yellowstone. Because of the bad weather, this was the only planting done this year.

Blackspotted trout fry, hatched at Lake.

Yellowstone Lake tributaries, 800,000.

1919

The army force in the park was withdrawn in October, 1918, and the ranger force was organized during 1919.

During this year, and the two or three years previous, the pelicans around Yellowstone Lake received considerable study. In 1917, Dr. H. B. Ward made some collections of the diseased trout and pelicans. By this time it was generally recognized that the two hosts of the trout parasite are the blackspotted trout and the pelican. The superintendent's papers for 1918 noted that the pelicans were very numerous during that summer, and were heavy predators on the lake trout. Then, in 1919, Fish Commissioner H. M. Smith made further observations on the pelicans and their fish-eating

habits. It was generally advised that some control measure be introduced to decrease the number of pelicans in the park.

W. T. Thompson supervised the collection of about 6,973,000 eggs from the blackspotted trout of the park. He also conducted the planting of blackspotted trout fry, rainbows and Eastern brooks.

Blackspotted trout fry, from the Lake hatchery.
Yellowstone Lake tributaries, 572,000.

Eastern brook trout, from the Bozeman hatchery.
47,525 fish in Lava creek, Glen creek, Blacktail Deer creek and the Firehole River.

Rainbow trout, from Bozeman.
87,500 fish in Gibbon River, Glen creek, Lupine creek and Panther creek.

Superintendent Albright, appointed this year, recommended that a larger percent of the collected blackspotted trout eggs should be returned as fry to the waters of the park.

Because tourists were experiencing more and more difficulty catching fish, particularly at the end of the season, the hotel and camp companies were prohibited from taking fish from park waters for serving on their tables. During this year, the last in which this practice was allowed, the two companies served about 7,500 pounds of trout on their tables.

Yellow perch were taken from Goose Lake in the lower geyser basin. These fish had not been officially planted, and it was believed that some private citizen had placed them in this lake.

1920

Thompson directed the collecting of around 6,512,000 blackspotted trout eggs, almost 2,000,000 of which were planted as fry in various streams of the park. Plants of Eastern brook trout and rainbow trout were also made.

Blackspotted trout, fry, from the Lake hatchery.
1,951,300 fry planted in:
Yellowstone Lake tributaries.
Shoshone and Lewis Lakes tributaries.
Falls River and tributaries.
Boundary creek.
Bechler River headwaters.
Tower creek.
Cascade creek.
Lower Yellowstone River tributaries.

Eastern brook trout.

38,000 fish in Glen creek, Obsidian creek, the Gibbon and Firehole Rivers.

Rainbow trout.

Gibbon River, 40,000.

The planting of blackspotted trout in a more extended area this year was in line with the announced intention of making fishing even more varied and attractive for tourists than ever before.

1921

Brook trout, from the Bozeman and Emigrant hatcheries.

Elk creek, 72,000.

Glen creek, 5,000.

Lava creek, 5,000.

Rainbow trout, from Bozeman.

Gibbon River, 80,000.

Grayling, from Anaconda.

Grebe Lake, 1,000,000.

Blackspotted trout, from the Lake hatchery.

2,889,000 fry and eyed eggs in Jones creek, the lower Yellowstone tributaries, Yellowstone Lake tributaries, Blacktail Deer creek and Lava creek.

This year was the first that grayling had been planted in the park. No further attention was given to this species of fish for another ten years.

The experimental planting of eyed eggs was also tried for the first time this year. The practice grew until within five years about half of the blackspotted plantings were as eyed eggs.

Richard A. Muttowski made investigations into the fish food conditions of Yellowstone Lake, and reported the food sufficient to support large numbers of fish. Smith and Kendall, of the U. S. Fish Commission, published their booklet on Yellowstone fishes during this year.

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1922

About 16,751,900 blackspotted trout eggs were collected in the park this year, as contrasted with about 5,996,000 eggs for 1921. C. B. Grater of Leadville, Colorado, was in charge of the fish work this year.

Eastern brook trout, from Montana hatcheries.

116,000 in Blacktail Deer creek, Glen creek and Willow creek.

Rainbow trout, from Montana

120,000 in the usual streams through-out the park.

Blackspotted trout, from the park hatchery.

7,373,800 as fry and eggs through-out the park.

Blackspotted trout, from Montana hatcheries.

800,000 in streams through-out the park.

The fish hatchery at Fish Lake, near Soda Butte creek, to be used for the collection of blackspotted trout eggs, was constructed in 1922.

Dr. H. B. Ward again made a study of the pelican-fish problem in the park. Because the pelicans consumed a large number of fish each day, he recommended that their numbers be reduced. However, objections to this type of a control policy were raised by various Audubon societies, and it was generally felt that, if any steps were taken, they should be limited in their nature so as to not too greatly disturb the pelican colony of the park.

1923

Eastern brook trout, from Bozeman.

50,000 in Lava creek, Glen and Obsidian creeks.

Rainbow trout, from the Bozeman hatchery.

100,000 in the Gibbon and Firehole Rivers.

Blackspotted trout, from the park hatchery.

13,015,000 in the streams and lakes of the park and vicinity.

C. F. Culler was in charge of the collection of about 31,570,000 blackspotted trout eggs.

Around fifty percent of the blackspotted trout were planted as eyed eggs. From observations the Bureau of Fisheries workers seemed to feel that these egg plants were meeting with a good deal of success.

The egg collecting station at Thumb was torn down during this year.

1924

An egg-collecting station was built on Peale Island out of the material salvaged from the Old Thumb station. New fish trap racks were built on many of the Yellowstone Lake tributaries.

The egg-take this year started very early, due to low water and ice-free conditions on the lake. Around 32,000,000 blackspotted trout eggs were secured.

Eastern brook trout, from Montana hatcheries.

53,900 in the usual brook trout streams in the park.

Loch Leven trout, from Montana hatcheries.
41,800 in streams throughout the park.

Blackspotted trout, from the Lake hatchery.
14,471,100 eggs and dry in the usual blackspotted streams and lakes
in the park.

This year was the first in which Loch Leven trout were planted in
large numbers in the park. Previously they had been planted limitedly in
the years 1889, 1890, and 1903.

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1925

A new egg-collecting station was built at the mouth of Clear creek.

The streams were extremely high this year, and the fisheries workers
reported that the lake fish spawned on the beaches of the lake instead of
ascending the streams. There was a much reduced egg-take for this year.

✓ Rainbow trout, from Montana hatcheries.
80,000 in streams throughout the park.

Blackspotted trout, from the park hatchery.
4,376,760, throughout the park.

The Bureau of Fisheries collected about 11,748,000 blackspotted trout
eggs.

1926

Blackspotted trout, from Lake.
5,889,000 in streams throughout the park.

Almost half of the blackspotted plants were as eyed eggs.

Otter at Fish Lake were reported to be consuming a good many of the
spawning fish, and arrangements were made to have some of these animals re-
moved.

The construction of a new hatchery and workers' quarters was urged. In
addition, a hatchery and rearing ponds at Mammoth, to be used for fall spawn-
ers and for winter holding, was recommended.

1927

The lake water this spring was the highest on record, and as a result
operations started late. About 13,300,000 blackspotted trout eggs were
collected.

The Columbine creek cabin was torn down, and the Peale Island station
was repaired.

Eastern brook trout, from Bozeman.
37,750 in streams throught the park.

Rainbow trout, from the Bozeman, Montana, and Saratoga, Wyoming, hatcheries.

68,500 in streams throughout the park.

Blackspotted trout, from the park hatchery.

5,675,000 in streams and lakes throughout the park.

Some question was raised this year as to the advisability of planting fish in the eyed-egg stage; consideration was also given to the value of fry planting.

In June, 1927, Superintendent Albright received a check for \$15,000.00 from W. E. Corey, eastern sportsman, to be used to help in building a new fish hatchery in the park.

John H. Brunson, fish culturist, made a special investigation of the waters, the fish and general fishing conditions of the park. His report of his work indicates that the park waters are favorably suited to Loch Laven trout, and he recommended that this species be stocked extensively. He also advised the killing of the perch in Goose Lake.

He found food conditions to be excellent in streams receiving warm water influxes, and he recommended that fingerlings, not fry or eyed-eggs, should be planted so as to be able to take full advantage of these favorable conditions.

1928

The new hatchery building at Lake was under construction during this year, and work on the rearing ponds at Mammoth was started.

Eastern brook trout, from Bozeman.

13,000 in the usual brook trout streams of the park.

Rainbow trout, from the Bozeman hatchery.

98,000 in streams throughout the park.

Loch Laven trout, from the Bozeman hatchery.

71,500 in streams throughout the park.

Blackspotted trout, from the park hatchery.

8,455,000 in streams of the park and vicinity.

1929

The new Lake hatchery was completed, and everything placed in readiness for use starting the season of 1930.

Ten rearing ponds were completed at Mammoth, and eastern brooks, rainbows and Loch Levens were placed in them. In a short time these fish developed an ailing condition, and were therefore taken out of the ponds and planted.

C. F. Culler supervised the collection of about 23,668,000 blackspotted

trout eggs in 1928, and 14,656,000 eggs in 1929.

Eastern brook trout, from the Bozeman hatchery.
31,600 in streams throughout the park.

Rainbow trout, from Bozeman.
37,300 in streams throughout the park.

Loch Leven trout, from Bozeman.
84,000 in streams throughout the park.

Blackspotted trout, from the park hatchery.
7,245,000 in the usual streams and lakes of the park and vicinity.

The bears caused an especially large amount of trouble to the fisheries workers this year.

1930

Mr. F. J. Foster was placed in charge of the park hatchery this year. Under his direction about 15,389,000 blackspotted trout eggs were collected.

Eastern brook trout, from Bozeman.
Lava creek, 15,000.

Rainbow trout, from Bozeman.
90,000 in the Gibbon and the Firehole Rivers.

Loch Leven trout, from Bozeman.
26,250 in the Firehole and the lower Gardiner.

Blackspotted trout, from Lake.
7,722,000 in the usual blackspotted streams and lakes of the park.

1931

Eastern brook trout, from the Bozeman hatchery.
39,225 in Obsidian and Blacktail Deer creeks.

Rainbow trout, from Bozeman.
150,000 in the Gibbon, Firehole and Madison Rivers.

Loch Leven trout, from Bozeman.
Firehole River, 36,500.
Campanula creek, 160,000.

Blackspotted trout, from the park hatchery.
6,000,000 as fingerlings, fry and eggs in streams throughout the park.

Of the six million blackspotted trout plants, 817,500 of this species were planted as fry or fingerlings in the Gallatin, Bechler and upper and

lower Yellowstone River drainages.

About 17,500,000 blackspotted trout eggs were secured. An experimental attempt at collecting grayling eggs from the fish of Grebe Lake was made. This trial indicated that further and more extensive collections of these eggs at this point were entirely possible.

1932

The taking of grayling eggs from Grebe Lake was again attempted. Snow conditions made this experiment a very difficult one.

Eastern brook trout.

134,500 in Blacktail Deer creek, the upper Gardiner and Gibbon Rivers and Lava creek.

Rainbow trout.

203,500 in the Firehole and Gibbon Rivers.

Loch Leven trout.

Firehole River, 36,000.

Blackspotted trout.

7,055,000 in the usual blackspotted streams and lakes of the park.

Rainbow and Loch Leven trout, from Montana hatcheries, were held for a considerable time in the rearing pools at Mammoth, and planted late in the fall of this year.

The egg-take from the blackspotted trout at Yellowstone Lake and Fish Lake amounted to about 17,519,000 eggs.

1933

Eastern brook trout.

121,000 in the usual brook trout streams of the park.

Rainbow trout.

314,000 in the Firehole River, the lower Gardiner, the Gibbon, Middle creek and Lost Lake.

Loch Leven trout.

108,800 in the Firehole River and Goose Lake.

Grayling, from Grebe Lake.

1,950,000 eggs in the Firehole River, Obsidian creek, Cascade Lake, Grebe Lake and Ice Lake.

Blackspotted trout.

7,675,000 in streams and lakes throughout the park.

A hatchery was established at Grebe Lake to be used in the collection of grayling eggs from this body of water. This year 2,418,000 grayling eggs

were secured. Over 28,234,000 eggs of the blackspotted trout were obtained at the various park collecting points.

Lowell Woodbury made studies on the parasites of the trout and other fishes of the park.

Judging from information secured from tourists fishing in the park, fishing seemed to be improved over what it was in previous years.

1934

Fishing continued to be exceptionally good throughout this year, according to reports from tourists.

Fish were not placed in the rearing pools at Mammoth this year. From the first the water supply of these ponds had appeared unsuitable, and at no time had fish prospered in them. The bacterial disease, fin rot, caused additional trouble, and the pools finally had to be abandoned.

Eastern brook trout, from the Bozeman hatchery.
Blacktail Deer creek, 8710.

Rainbow trout, from Big Timmer, Anaconda and Bozeman.
621,050 in the Gibbon, Firehole and Madison Rivers, and Lost Lake.

Loch Leven trout, from Bozeman.
Firehole River, 208,000.

Grayling, from the Grebe Lake hatchery.
3,148,000 in Gardiner, Gibbon, Madison Rivers, Grayling creek and Grebe Lake.

Blackspotted trout, from the park and Bozeman hatcheries.
14,116,990 in the usual blackspotted streams and lakes of the park.

This year about 38,190,000 blackspotted trout eggs and 4,343,320 grayling eggs were collected from the fishes of the park.

1935

Rainbow trout, from Bozeman.
607,191 in Fish Lake and the Madison and Gibbon Rivers.

Loch Leven trout, from Montana hatcheries.
Madison River, 287,600.

Grayling, from Grebe Lake.
2,712,500 in the Madison and Gibbon Rivers, and Lewis, Grebe and Beaver Lakes.

Blackspotted trout, from the park hatchery.
10,821,644 in streams and lakes throughout the park.

The Bureau of Fisheries workers collected over 30,825,000 blackspotted trout eggs, and around 3,660,000 grayling eggs from these two species of fish in the park this year.

Over 3000 blackspotteds were taken from Fish lake, stripped of their spawn, and then planted in Soda Butte creek. To replace them about 3500 rainbow trout, #4 to #8, were secured from the Bozeman hatchery and planted in Fish Lake. This activity was in line with a plan to convert Fish Lake from a body of water containing blackspotted spawners to one containing rainbow spawners, thereby assuring the park of an adequate supply of rainbow eggs for stocking purposes.

An attempt was made to replenish certain waters which seemed to be deficient in fish food. Vegetation and shrimp were planted in the Gibbon River, Twin Lakes, Ice Lake and Beaver Lake.

1936

A National Parks Service policy, with regard to fish planting activity in the national parks, was established this year. The Service recommended that:

No exotic fishes be planted in waters containing only native fishes.

The propagation of native fishes be encouraged to the greatest possible extent.

The wider distribution of exotic fishes be prohibited.

Artificial improvements on streams and lakes be avoided.

There be no introduction of exotic aquatic life to serve as fish food.

It might be advisable to leave barren waters as such.

Eastern brook trout, from Bozeman.

40,800 in Blacktail Deer, Lava and the upper Gardiner.

Rainbow trout, from Montana hatcheries.

132,420 planted by the N. P. S. in the Gibbon, the Gallatin and various small lakes.

504,176 planted by the state of Montana in the Madison and the Firehole.

Grayling, from the Grebe Lake hatchery.

1,998,000 in Grebe Lake, Gibbon River, Grayling creek, Lewis Lake and various small lakes.

Loch Leven, from Montana hatcheries.

Madison River, 95,200.

Blackspotted trout, from the Lake hatchery.

8,013,896 in Yellowstone Lake and tributaries, the Gallatin, the lower Yellowstone River and tributaries, Snake River and various small lakes.

The egg-take in the park this year amounted to above 25,000,000 black-spotted eggs and around 4,200,000 grayling eggs.

Over 1000 rainbows, #6 to #7, were planted in Fish Lake, while at the same time about 1880 blackspotted trout were taken from this lake and planted in Soda Butte creek. This was a continuation of the attempt to convert Fish Lake into a body of water containing rainbow spawners.

An effort at sucker control on Lake Yellowstone by means of early trapping on various lake tributaries was not too successful.

1937

A study of Goose Lake was made this year. It was found to be entirely suitable for trout, and several methods for poisoning the perch in this lake was considered. During 1936 Park Ranger R. M. West made a review study of the fish fauna of the park and the trout parasites of the region.

Eastern brook trout, from Bozeman.

63,875 in Blacktail Deer, Lava and the upper Gardiner.

Rainbow trout, from the park and Montana hatcheries.

572,665 in Fish Lake, the Gibbon, Nez Perce creek, Soda Butte creek and various small lakes.

Grayling, from the park.

2,864,950 in the Gibbon, Grebe Lake, the Madison, Lewis Lake and various small lakes.

Loch Leven trout, from Montana hatcheries.

Madison River, 225,280.

Blackspotted trout, from the park hatchery.

13,123,977 in Yellowstone Lake and tributaries, Snake River, Gallatin River, the lower Yellowstone and tributaries, the Bechler River.

A record take of about 40,913,000 blackspotted trout eggs was secured this year. Around 5,715,000 grayling eggs were taken. The rainbow egg-take, the first to be secured in the park, amounted to about 763,180 eggs. These eggs were secured from the rainbow spawners in Fish Lake.

1938

The perch in Goose Lake were poisoned with derris root this year, with apparently successful results.

Bear predation at the fish traps was controlled by means of electric

fences this year, instead of by the use of dogs.

Judging from the reports of tourists, fishing appeared to be an increasingly popular sport in the park.

Eastern brook trout, from Bozeman.

57,960 in Blacktail Deer, Lava and the upper Gardiner.

Rainbow trout, from the park and Montana hatcheries.

595,270 in the Gibbon, Lamar, Madison, Nez Perce Creek and Tower creek.

Loch Leven trout, from Montana hatcheries.

257,742 in the Madison and tributaries.

Grayling, from the park.

2,608,210 in the Gibbon, Grebe Lake, the Madison, Grayling creek and various small lakes.

Blackspotted trout, from the park hatchery.

8,762,076 in the usual blackspotted streams and lakes in the park.

The fish planting report for this year advised that eyed eggs be planted only when long and difficult means of transportation to reach out-lying streams or lakes would necessarily bring about heavy losses of fry or fingerlings.

Egg collections for this year were as follows:

Blackspotted eggs, 30,351,571.

Grayling eggs, 5,837,000.

Rainbow eggs, 843,794.

1939

Eastern brook trout, from the Bozeman hatchery.

6000 in Blacktail Deer creek and lake, and Lava creek.

Rainbow trout, from the park.

472,565 in the Firehole, Gibbon and Madison Rivers, Nez Perce creek and various small lakes.

Grayling, from the park.

2,061,590, in the Gibbon, Grayling creek, Grebe Lake and the Madison.

Loch Leven trout, from Montana hatcheries.

273,900 in the Firehole and Madison Rivers.

Blackspotted trout, from the park.

10,021,978 in the usual blackspotted waters of the park.

The book, Yellowstone Fishes, by James R. Simon, was published by the

Yellowstone Library and Museum Association.

Maynard Barrows, who had directed the fish planting work for the park service since 1936, continued in charge of this work.

Notable in the stocking records for this year was the mention of the planting of over 1,000,000 blackspotted fingerlings, #1 to #1 $\frac{1}{2}$, hatched and fed at the Lake hatchery.

The Bureau of Fisheries men collected 37,388,556 blackspotted trout eggs, 5,117,660 grayling eggs and 726,524 rainbow eggs this year.