



Nation Watches Montana Grayling



J. L. Kelly
Member State
Fish and Game
Commission

ANGLERS of America, fortunate enough to have cast a fly for Thymallus Montanus, or the Montana grayling, are keenly interested in efforts of the State Fish and Game Department to maintain the supply of this royal member of the piscatorial family. The grayling is particularly adapted to Montana waters and is found only in Alaska and certain Michigan waters, outside the brooks and lakes of the Treasure State.

Efforts are constantly being put forth by fish culturists of other states but results have been problematical. Montana grayling eggs have been shipped during the last year to the Steinhart aquarium at San Francisco which received 75,000; the California game and fish commission, which received 116,000, and to LaCrosse, Wis., where 72,000 were consigned. Exchanges of game fish eggs or birds were made in each case.

Grayling eggs are incubated at the Anaconda and Somers hatcheries which are equipped with the grayling or whitefish glass jar batteries. Batteries have also been installed at the cooperative hatcheries of the Bureau of Fisheries at Glacier Park and McAllister stations and at the Butte Anglers' Club hatchery at Divide. All are receiving grayling eggs from the Georgetown Lake station, the largest of its kind in America.

Because of the fact that no artificial feeding has proved successful with grayling, the fry are planted while in the "yolk" stage. This gives them the advantage of being in their new home, ready to seek natural food as soon as the yolk sack is absorbed.

Grayling will not thrive in many creeks and lakes because of the lack of certain aquatic plants or animal life essential to their growth. Just what this food is has not been discovered. This we do know, however, that if a small planting of grayling fry is made in waters containing this mysterious food, the results are astounding. If a plant is made in other waters under identical conditions and no results are achieved, those waters are checked off the list.

Alvin Seale, superintendent of the Steinhart Aquariums at San Francisco, has been experimenting with grayling for the last seven years but has as yet found no food, either artificial or natural, which may be fed with any degree of success. Mr. Seale each year re-

quests a small shipment of Montana eggs for further experimentation and it is hoped that the word will some day be received that the mystery has been solved.

Numerous attempts have been made in Montana hatcheries to feed the grayling. In some cases it has been possible to raise a few to an advanced fry stage, yet the experiment can not be called a success because the majority did not survive the tests.

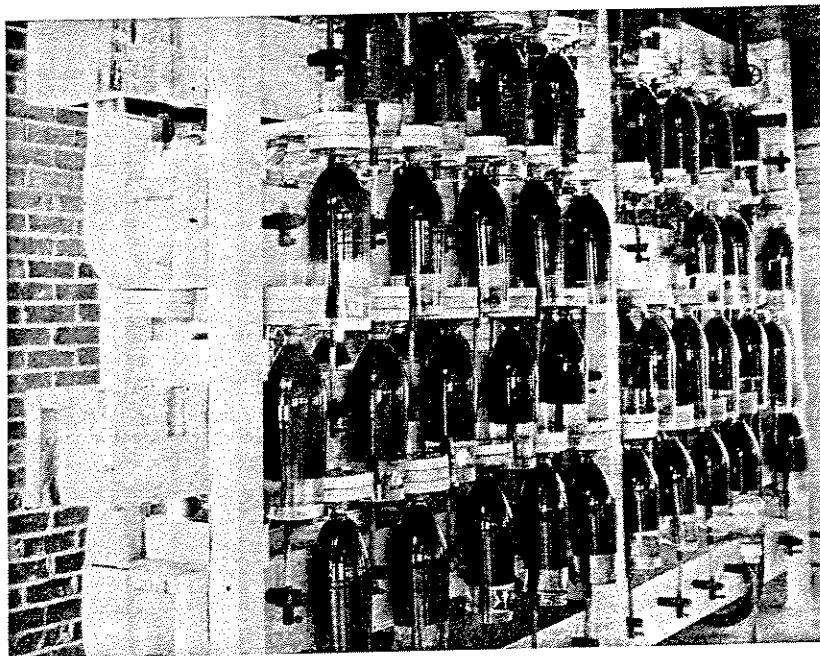
Michigan, which at one time was noted for its grayling, now reports them practically extinct. Fred Westerman, superintendent of hatcheries for Michigan, came to Montana in 1926 for the express purpose of gathering data relative to the grayling. Montana eggs were shipped to Michigan in 1926-27 and planted in waters known to have been the home of Michigan grayling in past years. Other plants were made in waters where conditions corresponded favorably with those at Georgetown Lake. Mr. Westerman in a recent let-

ter to the Montana department writes: "I fear that we must depend on Montana for grayling fishing, as apparently no results have followed the planting of these fish in Michigan streams. Our own native grayling are still maintaining themselves in the short section of the single stream in the upper peninsula where they have been found for many years."

While sportsmen of the nation are looking to Montana for grayling fishing, the State Fish and Game Commission is putting forth every effort to restock streams and lakes and preserve this regal specimen. We are mindful of the task we have before us in preventing the extinction of this wonderful fish and we are doing all that is humanly possible under our financial handicap to preserve the grayling for this and future generations.

Thymallus Montanus, pride of the angling fraternity of the Treasure State, is in a bad way. His tribe is decreasing. Thymallus, the envy of sportsmen of America because of the fact that he

How Grayling Eggs Are Eyed and Hatched



THIS photograph of the battery of glass jars at the Anaconda hatchery demonstrates the manner in which grayling eggs are hatched. Under a good head of pure water running through each jar, the eggs are virtually churned to prevent them sticking together and to avoid the formation of fungus. Trout eggs are hatched in trays under lateral streams of running water, but more care must be taken with the grayling eggs.



MONTANA WILD LIFE



had for years declined to thrive elsewhere than in Montana, Alaska and parts of Michigan, has, with each succeeding year, shown a marked decrease in numbers. But "Thym," otherwise known as the Montana grayling, has during the last season demonstrated his willingness to cooperate with the department and during the last biennium 15,077,200 grayling eggs were artificially taken, hatched and distributed in Montana waters. Millions of these fingerlings were placed in Georgetown Lake, near Anaconda. It has been the first planting of grayling fingerlings necessitated in this prolific body of water since 1921, yet millions of game fish eggs have been taken at the mouth of Flint Creek, flowing into the lake.

Georgetown Lake for years has been the supply station from which grayling eggs have been taken. The eggs have been placed in hatcheries after the fish have been trapped and stripped artificially, while running up Flint Creek to spawn.

Records of the Fish and Game Department show that in 1921 Georgetown Lake was so choked with grayling that it was necessary to strip but a small fraction of the spawning fish to secure number of eggs wanted. At that time the restocking was stopped until normalcy was restored. Constant inroads being made on game fish in streams of the state is likewise reflected in the growth of fishing on Georgetown Lake, until there are now more than 200 boats on the lake, hundreds of Butte and Anaconda anglers are daily taking heavy toll and marked shortage of grayling is noted. During the 1929 spawning season experts of the department took 10,646,200 eggs and in 1930 this figure dropped to 5,064,000 because of the decreased supply.

These facts are but further demonstration of the manner in which Montana's lakes and streams are being whipped and trolled and stress the necessity for a continuation of the conservation program in which the state department is now engaged.

Figures compiled by the department show that during the last biennium, 1929-1930, a total of 72,953,934 game fish have been distributed in Montana streams, or 135 fish for every man, woman and child listed among the 537,606 in the federal census of 1930. During the last seven years the records show that 380,754,777 game fish have been produced in the state hatcheries and distributed in Montana waters. If all of these fish had survived attacks of natural enemies and escaped the lure of anglers, the figure means 708 fish for each of the persons listed in the 1930 census.

History of the propagation and distribution of the famed Montana grayling dates back to 1898—some 33 years ago—according to records of the department as compiled by Charles Healea of Butte, the first superintendent of fisheries employed in that work in Montana.

The first grayling eggs taken artificially in Montana were secured in Elk Springs Creek on the Jim Blair

How Many Eggs In a Fish?

PISCATORIAL experts of the Montana State Fish and Game Department have found the answer to the question: "How many eggs are produced annually by a game fish?" Sportsmen have asked the question countless times. To settle the argument scientific tests were made at the spawn-taking station at the mouth of Flint Creek on Georgetown Lake, the largest of its kind in the world. From 533 female native cutthroat trout a total of 984,312 eggs was taken in the test. This is an average of 1,830 eggs per trout. A similar test was made on the famed Montana grayling. Sixteen females were stripped and produced a total of 203,088 eggs, or an average of 12,683 to the grayling. Grayling eggs average 750 to 850 to the fluid ounce while the average trout eggs number 260 to 300 to the fluid ounce.

ranch in 1898 under the supervision of Dr. James Henshall of the Bozeman station, according to Mr. Healea. Elk Springs Creek is a tributary of the Red Rock Lakes. Little success accompanied the operations, according to Mr. Healea, until 1901, when no lot of eggs was collected and shipped to the federal hatchery at Leadville, Colo. Tests with the grayling were constantly being made but because of the peculiar habits of *Thymallus montanus* the state piscatorial experts were constantly learning something new of his idiosyncrasies. Eastern states were constantly calling for grayling eggs with which to attempt transplanting. Meanwhile the artificial egg-take in Montana was increasing, streams and lakes were being stocked and the hatcheries were running full blast producing the fingerlings.

In 1902 shipments of Montana grayling eggs were made to 19 hatcheries throughout the nation. Only two hatcheries reported success. They were at Paris, Michigan, and Wytheville, Florida. Water conditions in other states caused experiments to flunk.

Between 1902 and 1907 operations in artificial egg taking of the grayling and propagation in hatcheries were continued in Montana under the supervision of department experts with varying degrees of success and in the spring of 1908 Superintendent Healea collected approximately 1,000,000 grayling eggs

at the mouth of Meadow Creek, eyed them in glass jars used for whitefish eggs, with water constantly running in and out of the jars, churning the eggs and preventing them from settling into a compact lump. These operations were conducted under the old Montana Power flume. The eggs were shipped to the Anaconda hatchery when eyed. They were hatched and 500,000 fingerlings were planted in Georgetown Lake—the first on record planted in those waters. The first eggs from this planting of fish were taken in 1911.

The first native trout planted in Georgetown Lake were from eggs secured through the federal hatchery at Bozeman, from Henry's Lake in Idaho, according to Mr. Healea. That was back in 1907—about 24 years ago. Later plantings were secured from Yellowstone Lake and distributed from the Bozeman station. Mr. Healea asserts that Georgetown waters have always been a natural habitat for the native trout and declares that there were thousands of them in Flint Creek before the dam was created which formed Georgetown Lake.

When Lewis and Clark made their famous exploration trip to the Pacific Northwest through Montana they found the grayling in its native habitat in this state and mentioned the fact in their journal. They alluded to it as a new variety of white trout or silver trout. In 1872 James W. Milner of the United States Fish Commission found the species in a creek tributary to the Missouri near Camp Baker, Montana, and after describing the fish, named it *Thymallus montanus*. While the grayling of Montana is closely related to the Arctic grayling there is enough difference to award each a scientific rating of its own. Scientists assert that it is probable that the Arctic grayling was the parent stock from which came the Montana and Michigan grayling and from the widely separated habitat of the three it is assumed that they were transported to their varied domain during the glacial period. This theory is strengthened by the fact that Elk Lake, one-half mile from the Montana grayling station, is abundantly inhabited by both grayling and lake trout—the latter bearing the scientific moniker of *Crestivomer namaycush*—the lake trout of that variety being found in no other waters west of Lake Michigan.

Grayling eggs can not be handled in the same manner as trout eggs, during the incubating period. When first taken

by artificial means are trapped and the eggs are because of the drop which re buoyant.

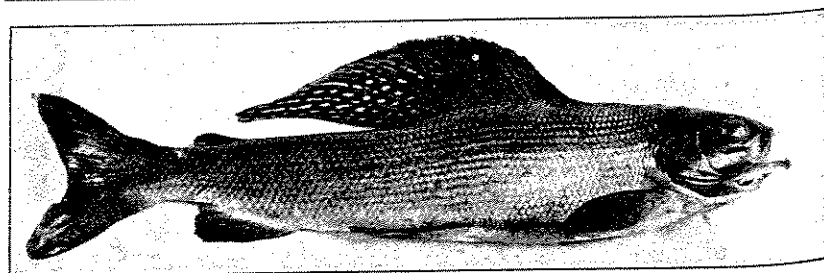
In the natural spawn along with their eggs rather than in to trout. The life until hatching of the egg incubate in motion and p are placed on touching each lateral current in bunches, loss is tremendous grayling has a try are slender

Montana spawning, with his his ace of head, and his as one of Mo delicacies. He the Treasure zealously watch fisheries expert ment are kept ports being ma and preservati anus.

THE BI

If you want to By some ob and want a pr On which y Don't go to his Much leisu but if you wan Just ask th The man with A moment es always b His friends But he whose Is crowded forgets the ar He can not when you And want to the man Works twe I'll find a That has I and fix you v Is framing

The surest come on Sat on Satur



The Montana Grayling



The Boy and His Gun



LUCKY indeed is the boy who has a father who is a sportsman and who is a good enough sportsman to take his son on his hunting trips. If the dad is a real sports-

man he can teach his son the proper way to handle a gun and the fundamental principles of good sportsmanship. Some boys are denied the privilege of such companionship and for these we will enumerate some of the things a boy with a gun must always remember.

You must always treat a gun as though it were loaded and cocked even though you are positive that it is not. It is always the gun they didn't think was loaded that causes hunting tragedies. Keeping this thought in mind, never point your gun at anything you wouldn't want to kill, even in fun.

If you are hunting alone, it doesn't make a great deal of difference how you carry your gun, but never, under any circumstances, take it by the end of the barrel and drag it along.

If there are other boys with you the gun must be carried so that it does not point in their direction—watch this point carefully because if you keep it pointed away from them you will not be likely to shoot them accidentally. It is much better to go hunting with only one other boy than with a crowd. It is safer and your opportunities of getting game are much better.

Be careful not to get mud, snow or any foreign substance in your gun barrel. If you think such a thing may have happened, break your gun at once and see that the barrel is clear. If it shouldn't be, and the gun should be discharged, the barrel will blow up, not only ruining the gun, but also it might cause a serious accident to yourself or any one standing nearby.

Going through or over fences with a gun is dangerous unless extreme care is used. The gun should be pushed through the fence, muzzle first, and laid down on the ground before the hunter attempts to go through himself—never go through first yourself and then drag the gun through.

A gun should never be leaned against a tree, stump, fence or building; something might brush against it, knocking it down and discharging the gun. Quite frequently such a gun has been knocked down by a dog and people injured by the resulting accidental discharge. Much the same thing applies to carrying a gun in a boat; if you must set it down, place it so the muzzle points away from you and any one else that might be with you, and over the edge of the boat, never where the accidental discharge might blow a hole through the sides or bottom of the boat.

When stopping for lunch, or when on the way home after hunting, be sure to empty the shells from barrels and chamber and still handle the gun as though you believed it to be loaded.

It is dangerous to carry a loaded gun in an automobile—many fatal accidents have resulted from failure to obey this law.

The above rules apply most particularly to shotguns, but should also be observed in the handling of rifles. With a rifle, you must also remember that the range is much further, and that you might endanger some one that is not in sight.

For this reason it is illegal to discharge a gun within the limits of any village, town, or city and no boy should do any hunting near a town or a dwelling place in the country. If you want to do some target shooting, go to a sand-pit or a hillside where it would be impossible for a chance or glancing shot to do any damage.

Do not forget that the killing of song birds and harmless animals at any time is against the law and that game birds and animals may only be taken during the legal open season. Better confine your hunting to target shooting than needlessly destroy wild life.

LITTLE FISHERMAN

Sitting by the river,
Bare legs browned with tan,
Underneath an old straw hat,
Size for any man,
What cares he, he's fishing.
Happy little man.
"Gee! I've caught a stunner,
Know it by the bite,
Look at all them bubbles,
Putting up some fight.
Pull away, my heartie,
I'll get you alright."
Bare feet firmly planted,
Back against a tree,
Little angler triumphs,
Lands his fish with glee.
All the little lads about,
Congregate to see.
"Tell you he's a whopper!"
Gasp'd the hero brown,
While the sweat of labor
Trickled from his crown.
"He's a-way-up pounder,
Nearly pulled me down."

—Outdoor America.

by artificial means when the female are trapped at the spawning station, the eggs are of a rich amber color because of the presence of a large oil drop which renders them almost semi-buoyant.

In the natural state the grayling spawn along edges of a stream, depositing their eggs in the aquatic plant life rather than in the sand and gravel as do trout. The eggs adhere to the plant life until hatched. The adhesive qualities of the egg makes it imperative to incubate in jars so as to keep them in motion and prevent fungus. If they are placed on ordinary hatchery trays, touching each other, and exposed to a lateral current of water, they adhere in bunches, fungus appears and the loss is tremendous. When hatched the grayling has a small yolk sac and the fry are slender and delicate.

Montana sportsmen regard the grayling, with his lustrous royal dorsal fin, his ace of clubs markings near the head, and his elegant edible qualities, as one of Montana's prize piscatorial delicacies. He belongs particularly to the Treasure State. Anglers who are zealously watching strides made by the fisheries experts of the state department are keenly enthusiastic over efforts being made to insure restocking and preservation of *Thymallus Montanus*.

THE BUSY SPORTSMAN

If you want to get a favor done

By some obliging friend,

And want a promise safe and sure

On which you may depend,

Don't go to him who always has

Much leisure time to plan—

But if you want a favor done

Just ask the busy sportsman.

The man with leisure never has

A moment he can spare;

He's always busy putting off until

His friends are in despair.

But he whose every waking hour

Is crowded full of work

Forgets the art of wasting time—

He can not stop to shirk.

So when you want a favor done,

And want it right away,

Go to the man who constantly

Works twenty hours a day.

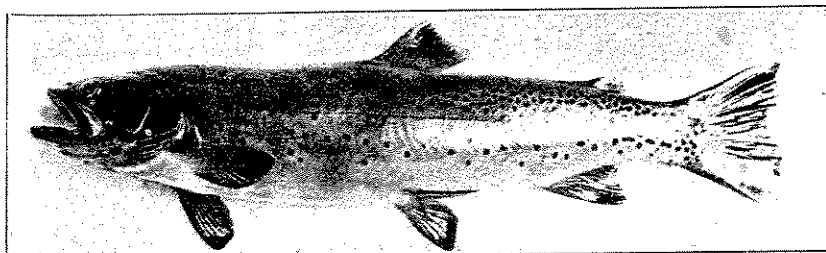
He'll find a moment, sure, somewhere,

That has no other use

And fix you while the idle man

Is framing an excuse.

The surest way to keep your husband home on Saturday night is to shoot him on Saturday afternoon.



Another Montana Beauty