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The Fishes of Flathead Lake

By DR. M. J. ELROD

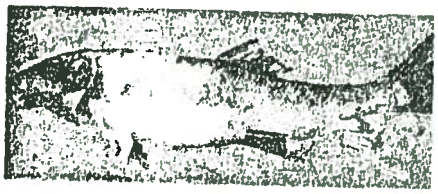
M. J. Elrod

THE STUDY on the food of the fishes of Flathead Lake was undertaken in the summer of 1916. Most of the work was done in July and August. The State Fish and Game Commission cooperated through the loan of nets, granting permission to take fish, and in many other ways. A total of 449 stomachs were examined. The number for each species is given separately in the report.

During the summer of 1915 Maurice D. Pace, then superintendent of schools at Polson, examined 45 stomachs, the results of which are included in the report. A digest of his report appeared in the special edition of the Flathead Courier the following year, September 14, 1916.

Francis Ross, whose father, David Ross, has been of great assistance in planting, distributing, and propagating fish in the waters adjacent to Kalispell and in Glacier Park, was a student at the Biological Station for several years. In the Daily Missoulian, July 21, 1924, he made a report on some of the fish introduced into Flathead Lake and reference to his report is made in several places under the proper headings.

The notes in parentheses, signed R. T. Y., are observations made by R. T. Young in 1928.



Here's Old Man Sucker himself. The western sportsman knows him. In fact he knows him intimately enough to hit him on the head with a rock and leave him for the magpies and wiggle worms. He abounds in Flathead Lake, according to the scientists who have made a searching investigation, and he's one of the reasons, with his Brother Carp, why the fish food intended for game fish is devoured. These fish are bottom feeders, lazily swimming over the pebbles or mud, sucking material into the mouth from time to time and blowing it out again. From this mass they abstract some food. These fish grow to be fifteen inches long. They are not eaten by the people living near the lake.

Sucker, Catostomus macrocheilus

There are two suckers in the lake. The first Catostomus macrocheilus, is the commoner. The second species is almost certainly the long nose sucker, Catostomus catostomus. The first species is abundant, more tenacious of life than any other fish examined. They struggle little when they get in the were raised. As a result, the stomach contents were usually well digested, and for the most part was undeterminable.

During the study of fish food in 1916 the stomachs of 48 were examined. A larger number could have been studied, were it deemed necessary, as many of those taken in the nets were returned to the water.

Three stomachs plainly showed remains of insects; two contained entomostraca; 14 had soft material, with nothing that could be definitely determined; and 14 were empty. As the fish are bottom feeders there was in each case a mass of mud and sand mixed with the stomach contents.

The fish are not used by any of the residents about the lake as food. The largest had a length of 16 inches and weighed a pound and three-quarters. Some of them were eaten by the members of the station staff and were pronounced fairly good. They are without doubt better food than is generally supposed.

They are fairly free from parasites. Only three had tapeworms, and only one had leeches. They are common in the lake, living along shore, and nosing in the mud and among pebbles.

Squawfish, Ptychocheilus oregonensis

This is also called Chappaul and Sacramento pike. It is found in the rivers from Vancouver Island south to San Joaquin. It ascends the tributaries of the Columbia to Flathead Lake and tributary streams, and the Snake River as far as the Great Shoshone Falls. Jordan and Evermann report it common in California streams, where it is used as food. In Flathead Lake it is very abundant, in numbers next to the Columbia Chub.

The stomachs of 119 fish were examined, 23 being empty. Thirty-four of the remaining 96 stomachs, 37 per cent, had fish in them. The food of the other 62 was mainly insects. The stomachs of 3$ had insects alone. The identifiable insects were mayfly larvae, caddice fly larvae, and grasshoppers. On August 16 of 1916 the little creek at Yellow Bay was sending grasshoppers into the lake in enormous quantities. They were floating by tens of thousands a mile or more from shore. One of the fish stomachs had 35 grasshoppers, another 25, one 20, one 10, and another had 5. The mayfly and caddice fly larvae were abundant in seven stomachs. Of the 34 stomachs containing fish, only 2 contained identifiable material, which was native whitefish. Twenty-one stomachs had soft material, too far gone for determination. One contained fresh water shrimp. The squawfish is evidently not particular about its food, and will take whatever is convenient.

The squawfish is tenacious of life, dying slowly in the nets. For this reason the food contents of the stomach may be well digested between the time of becoming entangled in the net and being removed for examination.

Anglers who have sunk a hook into a fish that struck like a trout, fought like a trout and broke water like a trout, have perhaps called him something like Ptychocheilus Oregonensis (Rich) — which means Squawfish—or then, again, they perhaps have called him something else when his yellow belly curled up in the landing net or flipped around on the sandbar. Here's the head of one of those Oregonensis things, taken from Flathead Lake and photographed by Dr. M. J. Elrod.

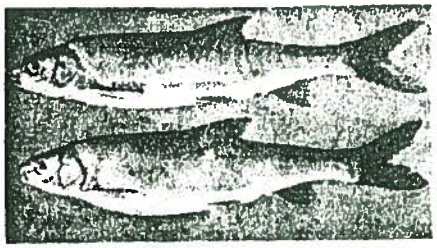
The stomachs of all squawfish examined contained tapeworms. Some had as many as 20 or 25. In a few cases the stomachs were quite filled with a mass of the parasites. There were leeches on 10 of the fish. These were in the mouth and on the fins. One fish had 10 in the mouth alone. The leeches when expanded were an inch or more in length.

The fish spawns from the middle to the last of July. The largest ones taken were about 18 inches in length and weighed four and a quarter pounds. It seems to serve in part as food for the bull trout. It takes the hook readily, and stays largely in shallow water along shore. None were taken in the nets set in deep water.

The squawfish, so far as the writer knows, is not eaten by the residents near Flathead Lake, nor by people in any other part of the state where the fish occurs. Indeed, it is ridiculed as a food fish. It is not rated at its proper value. Young squawfish have good flavor, though a little bony, since the fish belongs to the minnow family. When heads, fins, and tails were cut off, and the fish cooked with Columbia chub and young trout, those eating could not alway sdecide whether the fish being eaten was of one or the other. It should be better appreciated as a food fish.

Columbia Chub, Mellocheilus caurinus

This is also called locally "pee mouth." It is the most abundant fish



You'd never believe it, but this is a photograph of a pair of Mylocheilus Caurinus taken from Flathead Lake by the scientists employed by the State Fish and Game Commission. Most folks call them the Columbian chub. The chub, a prize fish for the small boy, is easily taken with a hook, is good tasting, often served as whitefish, frequently called whitefish, because it loses color shortly after it is taken from the water. This is one of the abundant fish of the lake, and is deserving of greater recognition as a food fish. Photo by Elrod.

in the lake. From streams where it has access to the Pacific Ocean it often enters the sea. It frequents the spawning beds of the salmon of the coast rivers, where it devours the salmon eggs.

In 1916 the stomachs of 104 chubs were examined, of which 22 were empty. Of the remaining 82, 57, or 70 per cent, had entomostraca, and 25 contained water insects. They do not seem to take fish as food. They are used as food by squawfish and bull trout.

In 77 of the 104 stomachs tapeworms were found, but not in as great numbers as in either the squawfish or bull trout.

The fish are rather tenacious of life. Large numbers of those taken in the gill nets in 1916 were returned to the water, seemed not to be seriously harmed, and swam away.

The females spawn in late July or early August. Specimens taken at that time were either depositing eggs or were full of eggs. The males were full of milt.

During the breeding season adult males have a red line on each side, bordered with black. When the fish are removed from the water and left in the sun for a time the color disappears so that they are almost white. They are, therefore, erroneously called whitefish by some people, especially by boys. This is the fish boys may readily catch, as the proverbial hooked pin with dough for bait is eagerly taken.

The adult is from 8 to 9 inches long, weighing a little over a quarter of a pound. The largest specimen taken was 15 inches long, weighing a pound. Its flesh is of good flavor, and it deserves more recognition as a food fish.

Oregon Chub, Luciscus gillu

This handsome, brightly colored little fish, about 4 inches long, goes in large schools. It is probably not numerous enough to be of importance, except as food for some other species of fish. In 1915 a school of these fish was observed at Osprey island, near the peninsula at the lower end of the lake. With a few sweeps of a butterfly net about 150 were captured. The stomachs of a number were examined. The food consisted mainly of entomostraca, with a few insects and one grasshopper.

Native Trout, Flat Trout, Salmo clarkii

This fish also has the names of Black Spotted Trout, Salmon Trout, Flat Trout, Red Throated Trout, American Cutthroat Trout. 2 in 1916, 3 in 1915

This species, named for Clark of the Lewis and Clark expedition, is native to the waters of the Pacific Coast. It is eagerly sought by all fishermen because of its fine edible qualities. During the summer months it is found sparingly in Flathead Lake, but in early spring, and again in early fall, it occurs in large numbers along shore, when it is easily taken with hook and line. On the east side its movement in the fall of the year seems to be from the head of the lake down the lake shore. At places only a few miles distant it appears a day or two earlier at the place farther up the lake.

During the summer of 1916, when the study of the food of fishes was being conducted, a total of about 25,000 feet of net was placed, at different times and in different localities. Only two fish were taken in the nets. They measured about 15 inches. Three others were taken in the previous year. As a result, the stomachs of only five fish have been studied. They contained only insects. One was a collector of beetles, having 12 in its stomach, besides other insects. One had a mass of insect remains, mostly mayflies and grasshoppers. One, taken in 1915, had 50 undigested and hundreds of partly digested insects.

The fish is clean, lives mostly on insect food, has few parasites, is gamey, and is very desirable for food.

(Possibly the reason the net took so few is that it occurs chiefly in the surface waters.—R.T.Y.)

The Bull Trout, Salvelinus malma

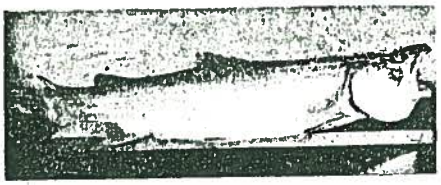
This species is variously known in different places at bull trout, Dolly Varden trout, charr, Oregon charr, red-spotted trout, malma, and golet, a vernacular name in Kamchatka. It is distributed in the "streams east and west of the Cascade Range from the Upper Sacramento to Montana, Alaska, and Kamchatka, generally abundant northward, descending to the sea, where it reaches a weight of about 12 pounds. One of the most beautiful and active of the Salmonidae.*

*Jordan and Evermann, Fishes of North America, p. 508.

GIVE AND TAKE

The sportsman knows and heeds the rules.
He will not stoop to take
A mean advantage of his foe, though victory is at stake.
He'll give his rival every chance to beat him if he can.
He'll battle for the goal he seeks, but battle as a man.

This is undoubtedly the largest fish in the lake. James Hyer, in 1916, reported taking one 37 inches in length and 25 inches in girth weighing 25 pounds 10 ounces. It was taken with



Dolly Varden or bull trout, from Flathead Lake. This is one of the large fish of the lake that is destructive to other fish, as shown by examination of their stomachs. It is a very desirable food fish, and is abundant in the lake.

a trolling line. Unauthenticated reports tell of specimens weighing up to 32 pounds.

It is undoubtedly the worst fish in the lake with regard to the destruction of other fish. Of 121 stomachs examined in 1916, 57 were empty and 64 contained fish or fish remains. Dr. R. T. Young mentions a bull trout 19 inches long containing a partly swallowed whitefish 13 inches in length. The majority of the fish found in the stomachs of the bull trout were, however, squawfish, which is not considered desirable. 121

In 1916, while studying the food of fishes at the Biological Station at Yellow Bay, a gill net of one-inch mesh was set in water about 10 feet deep. It was a daylight catch, in shallow water close to the laboratory. In about 15 feet of the net 196 Columbia chubs were caught, ranging from 7 to 10 inches in length, and 2 bull trout, weighing about 3 pounds each. The stomachs of the two bull trout were empty. No other fish were in the net. The inevitable conclusion is that the bull trout were chasing the school of chubs. In the desperate effort at escape the entire school were caught in the net, as well as the two enemies that were chasing them. also in 1916 - net 196 Col chubs 2 Bull trout

Not only is the bull trout an enemy of any other fish in the lake, but they are afflicted with both external and internal parasites. The external parasites are attached to the gills, fins and tail. They are small, degenerate copepods, and are entirely harmless. Of the large number of stomachs examined, all but three had tapeworms in the stomach and intestine. In some cases the worms were very numerous. They were often too long for either stomach or intestine without looping or folding, and some were bent back and forth several times. One stomach contained several spoonfuls. When the fish are cleaned for cooking these parasites are, of course, removed and destroyed, and are never eaten. But through the offal of the fish the tapeworms are undoubtedly further disseminated.

Bull trout die quickly after being caught in the net. Contrary to general supposition, in nets of small mesh, set for small fish and minnows, they were rarely caught.

(We have taken it down to 275 feet, but it is mostly found in 25-150 feet of water.—R.T.Y.)

Rocky Mountain Bullhead, Cottus semiscaber

This fish is also called Blob, Miller's Thumb, Muffle Jaw, and Springfish. It is only 2 or 3 inches long, and has been taken occasionally among the pebbles along shore. The few specimens taken have been captured by skillful use of the hands or insect net. Many people about the lake have never seen the fish, for its color and habits are protective, and its size insignificant.

Native Whitefish, Coregonus williamsoni

It is also known as Williamson's Whitefish, and Rocky Mountain Whitefish. It is found in the waters on both slopes of the Rocky Mountains.

It does not take bait often when sought with hook and line, but Pace says that when insects are present and whitefish are feeding on them they bite readily. He reports the best bait to be the larvae of stoneflies, abundant on the underside of stones in many places in the lake. This larvae is commonly but erroneously called helgrammite. The true helgrammite is the young of the Dobson fly, an inhabitant of southern Atlantic Coast streams.

During 1916 but 38 native whitefish were taken, 9 of which came from Yellow Bay. Of the 38 stomachs 16 were empty. Entomostraca were in great abundance, appearing in 14 stomachs. In some cases they could be taken out by the spoonful. Four stomachs contained insects, mostly the larvae of tipulid flies, simlium flies, and others that were not determinable. Six stomachs contained shells, one a planorbis, another several physa, and the others shells too mashed to determine. Two stomachs had soft material in which the animal life was indeterminable. One contained sand, bark, and grass. Seven of the 36 had tapeworms, one, two, or more. Compared with other species it is fairly free from these parasites. Pace reports that 6 specimens taken with hook and line at the outlet of Flathead Lake (1915) all had stomachs filled with insect larvae, mostly of the salmon fly. This insect is nearly mature at the time the fish were caught and were ready to leave the water and take wing.

This examination of the food of the native whitefish shows that the species is distinctly free from the charge of capturing fish. It lives on insects and other small water animals and is therefore a species to be encouraged.

While it is taken in various parts of the lake, it is abundant only at times and in certain places. The spawning season is in late fall, about November. In 1915 traps were placed at the mouth of Swan River, where it empties into the lake, by the State Fish and Game Commission, to secure eggs. Some 30,000 fish were taken. In 1916 a second attempt was made at the same place, but the number taken was negligible, and no eggs were secured. In 1917 a third attempt was made, but the number of fish taken was small.

The native whitefish is not rated at its true worth as a food fish, perhaps because of its apparent scarcity, perhaps because it does not take the hook readily, perhaps because by many it is confused with the Columbia chub, which is about the same size or smaller, and which becomes white when exposed to the light. It is a good pan fish, with good flesh. It is clean, and has few bones as compared with the chub. The lake seems well adapted to the fish and the fish to the lake. The reason for their relatively larger numbers than some of the other fish is because they can live on the micro-organisms of the lake.

(It is practically impossible to tell the difference in taste between the native whitefish and the Lake Superior whitefish.

Native whitefish are taken mostly at depths of 25 to 100 feet.

The following data will give some idea of their relative abundance. On October 13, 1928, 1200 feet of net, 6 feet depth, set for 48 hours at a depth of 15 to 75 feet off Chapman Point, caught 52 bull trout, 18 native whitefish, and 2 Lake Superior whitefish. Off Cedar Island, 400 feet of net, in 11 days, raised October 13, 1928, caught 75 bull trout, 16 native whitefish, 4 Lake Superior whitefish, 9 squawfish, 11 suckers, and 4 Columbia chubs. On October 16, location not stated, 1200 feet of net, set 48 hours in 20 to 75 feet of water caught 20 bull trout, 15 native whitefish, 3 Lake Superior whitefish, 12 suckers, and 8 squawfish.—R.T.Y.)

The following species of fish have been introduced into the water of Flathead Lake, or adjacent streams and ponds, whence they may have escaped and entered the lake:

Mackinaw Trout, Christivomer namaycush

Also called Great Lake trout, Longe (Vermont), Togue (Maine), Namaycush, Masamacush. Found in the Great Lakes region and lakes of northern New York, New Hampshire and Maine, headwaters of Columbia and Fraser Rivers, streams of Vancouver Island, and north to the Arctic Circle, Great Bear Lake, and Saskatchewan River.

Henshall, in a List of the Fishes of Montana, printed in 1906, reports the Mackinaw trout as having been planted in Flathead Lake.

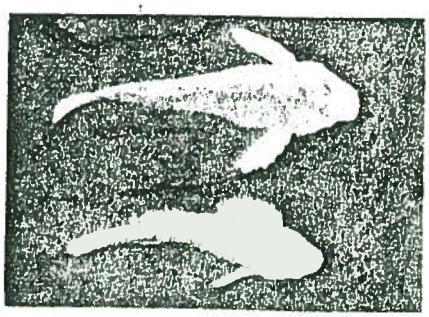
There seem to be no reports that this fish has been caught in the lake, but it may be confused with the bull trout.

Black Bass, Microperus salmoides

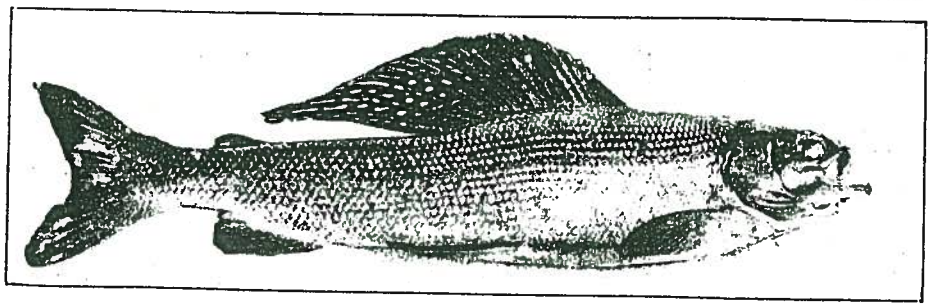
Although there are many large mouth black bass in the lake, they are rarely taken. They are wary of the nets, and are not often caught by hook and line. When they are caught by hook and line, or by trolling, they are very gamey, and put up a good fight. During the study of 1916 the only ones taken were young fish driven into a net, 17 near the Biological Station in Yellow Bay, and 3 in Wood's Bay. Of these 9 had empty stomachs, 10 had remains of fish, and 1 had insects. Robert Oslund reported seeing the fish catching damsel flies on the surface of the water.

During 1916 the black bass was reported in considerable numbers in the shallow water of the lake, and among the grass and rushes at the mouth of Hell Roaring Creek, in the southeastern corner of the lake. At Wood's Bay they were abundant. Mr. Melton reported them common at the fish hatchery. In August (1916) they could be seen by the hundreds every day. In the evening they were swimming about in schools, close to the surface, with the

The Bullhead



When spring freshets come and the fellers who enjoy bringing home the big bacon begin to be active, that's the time that the Cottus Bairdi Punctualatus flourishes. To the scientists who have made a thorough investigation of the waters of Flathead Lake, the long-winded name quoted in the preceding sentence is what they call 'em. To the bait fishermen, who propose forming a society to propagate them, they're known as Montana bullheads. They are wee fellows and when a bull trout or a huge loch leven strikes he hasn't a chance to get away. He has swallowed everything up to the second joint of the rod and the meat hunter's job consists only in finding a cozy place to land him. This fellow, however, is known to scientists as a Blob, or Miller's Thumb. They report, after investigation of Flathead Lake, that this small fish is scarce, and of no economic importance except that it is destructive to fish eggs, and perhaps to small fish also. It hides among the rocks and pebbles along shore, is easily overlooked, and is quick in its actions when alarmed.



Montana's Famous Grayling

dorsal fin out of the water, cutting the water like miniature sharks. This was twelve years ago, when they were abundant. None were seen in the open lake, but they were distributed entirely around the lake near shore.

(Several were observed in and around the mouth of Hell Roaring Creek this year (1928) and small specimens were seen elsewhere near shore.—R.T.Y.)

The black bass was first planted in Blaine Lake in Flathead Valley near the Swan Range. By accident they escaped into Flathead River, thence traveling readily to Flathead Lake.

Since it is universally recommended that black bass should not be planted in water containing trout, because of its destructiveness to the eggs and young of the latter, the reduction of the numbers of native and introduced trout may be easily understood. With bull trout, squawfish, and bass taking young trout, the trout are in grave danger of being still further reduced in numbers.

It is true that an insufficient number of stomachs was examined to be certain of conclusions, yet of those examined 50 per cent used fish as food, while only one in 20 had insects in the stomach.

Chinook Salmon, Ouchorhynchus tschwytscha

This is also called Quinnat Salmon, King Salmon, Columbia Salmon, Sacramento Salmon, Tywee Salmon, Sawdwey, and Tsawytscha.

According to Francis Ross these fish have been planted in the lake, and prior to 1912 were caught in Stoner's Bay, at Big Arm, and at the mouth of Flathead River. They may be expected in the lake at the present time.

(Not found this summer.—R.T.Y.)

Eastern Brook Trout, Salvelinus fontinalis

This fish was planted in the streams whose waters flow into the lake many years ago, and may have migrated to the lake. It goes also by the name Speckled Trout. It belongs to the charrs, of which it is the best known. While it has been largely introduced into western streams, it is not native west of the Mississippi River.

Rainbow Trout, Salmo irideus

This species was planted in the lake, as reported by Francis Ross, about 30 years ago. Since then they have been reasonably numerous. They are frequently mistaken for the native trout, and are probably caught without being recognized. The species is closely related to the Steelhead (Salmo gairdneri), differing chiefly in having larger scales. It is a Pacific Coast species.

(Not found this summer.—R.T.Y.)

Sockeye (Saw-qui) Salmon, Oncorhynchus nerka

This is variously called Blue-back Salmon, Redfish, Frazer River Salmon, Saw-qui Salmon, and Krasuaya Salmon. Jordan and Evermann say of it: "The redfish is known to ascend to the small lakes of Alaska, British Columbia, Washington, Oregon, and Idaho, and to spawn in their inlets. This species * * * does not reach the lakes of Idaho until August."

To this must now be added Flathead Lake in Montana.

(Francis Ross reported one, in August, 1928, I believe from Yellow Bay. Mr. Arnet caught a female in early September. Mr. Smith caught a male October 25, which is now in the collection at the State University. These are the only records of Sockeye Salmon caught during 1928 of which I have knowledge.—R.T.Y.)

Lake Superior Whitefish, Coregonus clupeiformus

This is the common whitefish. Jordan and Evermann state of its distribution, "Great Lakes and neighboring waters, rarely ascending streams; not in Alaska nor Arctic America." However, the whitefish in the streams tributary to Hudson is generally referred to by writers as belonging to this species. J. B. Tyrrell, in his report of his exploration of the country between Churchill River and Lake Athabaska, in 1892, says: "The whitefish (Coregonus clupeiformus) is found everywhere throughout the district, but more especially in the shallower lakes." The fish in Flathead Lake, which were transplanted from St. Mary Lake, a tributary of the Saskatchewan River and of Hudson Bay, are referred to this species.

A planting of some three million fish, secured from the United States Fish Commission, taken from the Great Lakes, placed in the lake several years prior to 1916, seemed to have disappeared. Repeated search failed to produce a single specimen. In 1916, during the months of July and August, 1250 feet of net were placed at various places in the lake, from shallow water to 200 feet in depth. No "Lake Superior" whitefish were taken. As they do not take the hook they had to be sought with nets.

A few years later eggs were secured from fish taken at St. Mary Lake in Glacier National Park. Presumably from these eggs but possibly from the first planting, the fish now taken from the lake have developed, but they are not abundant.

(They are taken in 25-100 feet depth. L. C. Smith notes that they come into the bays to spawn in winter. He has been catching a few for several years. —R.T.Y.)

Bluegill Sunfish, Lepomis pallidus

Also called Blue Bream, Blue Sunfish, Copper-nosed Bream, and Dollardee. This was first introduced in Flathead County in 1910, when 500 were placed in Church's Slough, a tributary of the Flathead River near Kalispell. A few years later they were caught in Lake Basin and Foy's Lake. They escaped into Flathead River, thence to Flathead Lake, and have been taken at Yellow Bay.

Crappie, Pomoxis annularis

Small Mouth Bass, Micropterus dolomieu

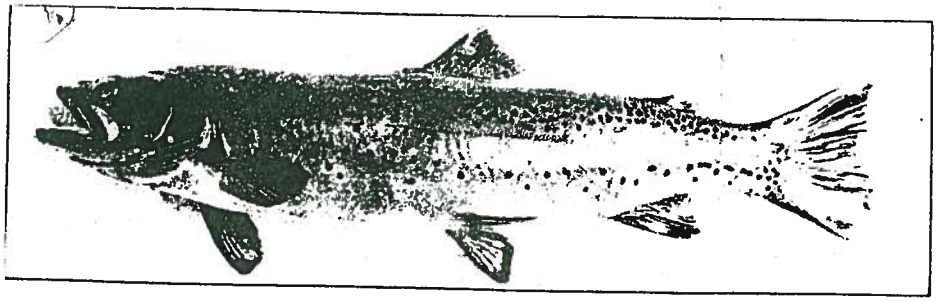
Bullhead, one of the catfishes

According to Francis Ross these three fish were planted in Church's Slough near Kalispell in 1910. They have easy travel to Flathead River in high water. From there they may enter Flathead Lake, hence they may be found in this water.

(L. C. Smith under date of November 19, 1928, writes that a Mr. Salaman of Polson caught a 22-inch silver salmon recently near Wildhorse Island.—R.T.Y.)

THE NEXT DOOR DOG

Some people say the next door dog
And mine are just the same.
They say the only difference is,
Mine has a different name.
They say that tail and spots and ears
And eyes and nose and bark
Are just the same as my dog
In the daylight or the dark!
But for a million dollars down
And fifty million more,
I wouldn't trade my dog
For the dog next door!
He may look just the same to you,
And may be just as fine:
B U T
The next door dog is the next door dog,
And my dog—is—mine!



Another Montana Spotted Beauty

FISHING FOR SUCKERS

A man in a hospital for mental cases sat fishing over a flower bed. A visitor, wishing to be affable, remarked:

"How many have you caught?"

"You're the ninth," was the surprising reply.

BETTER OR WORSE

"Do you take dis heah man to be yo' lawful, wedded husban' fo' better or fo' wuss?" asked the parson of the able-bodied dusky bride.

"Ah'll jes' take him as he is, pahson," she responded. "Effen he gets any bettah, Ah knows de good Lawd's gwine to take him, and effen he gits any wuss, Ah'll tend to him mahse'f."