



DEPARTMENT OF THE INTERIOR

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UNITED STATES FISH AND WILDLIFE SERVICE

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YELLOWSTONE LAKE PROVIDES UNUSUAL AVENUES FOR FISH STUDIES

Yellowstone Lake in Yellowstone National Park, from the piscatorial viewpoint, is unusual if not unique, records of the Department of the Interior show.

It is populated by native cutthroat trout, probably as pure a strain of a species as exists anywhere in the country, certainly a strain untarnished by mixtures as far back as records go.

This cutthroat trout is of western origin, which, biologists say, almost positively, came across the Continental Divide on their own power.

While the prevailing custom is for fish to run upstream to spawn, Yellowstone Lake is unique in that one of its several races of cutthroats runs downstream to spawn.

Yellowstone Lake not only has the spring and fall turnover of water customary to inland lakes but it also has a bona fide "upwelling" of water, normal to oceans but found only in those lakes which have size, depth and a prevailing wind which can create a wind tide which starts the downdraft and the corresponding upwelling. The upwelling is in West Thumb and the downdraft is in the east central part of the lake.

Yellowstone Lake fish are isolated from the world on the east by the beautiful Upper Falls of the Yellowstone River. Usually it is isolated on the west by the backbone of the Rocky Mountains; but not always.

Occasionally at Two Ocean Pass, a long flat gap through the Continental Divide where Atlantic Creek and Pacific Creek begin their separate journeys to the seas, water conditions are such that the streams are joined. Then it is that the lusty cutthroat which happens to be at headwaters of either stream, has the opportunity to "go over the mountain" and see what is on the other side.

For several years the United States Fish and Wildlife Service has been studying Yellowstone Lake. The studies serve two purposes--to help resolve practical problems of a fishery which attracts anglers from all parts of the country as National Park Service records and Fishing Bridge pictures attest; and to give biologists a chance to study a pure species which has been divided into a number of races because of the diversity of environment, variations of physical and chemical conditions which occur in the lake, and variation of temperature patterns, size, flow and chemistry of the many streams which flow into it.

The lake is one of the beauty spots of Yellowstone National Park. It is 7,750 feet above sea level. It has an area of 139 square miles and a maximum depth of 300 feet. It has an irregular shoreline of more than 100 miles and is fed by 35 tributaries. It has a capacity of more than 12 million acre-feet. The outflow is a million acre-feet a year or more, which means that the water is replaced every 10 or 12 years.

The largest tributary is the Yellowstone River. This river also drains the lake, plunging over Upper Falls 15 miles downstream. It is in this section of the river that some of the cutthroat run downstream to spawn.

The tributaries are varied in size and character--some of them carrying hot spring water too warm and too mineralized for fish habitation, others cool and inviting for both fish and fishermen.

Fundamentally the biological studies are designed to determine the best control procedures to be used in perpetuating the Yellowstone fishery. Studies of homing and spawning, egg counts and fry survival investigations, temperature and food studies are some of the projects in this general field. Sampling of bottom soils and mapping the lake bottom are being done to relate the physical and chemical features of the lake to the distribution of fish food and fish.

All of the biological, chemical, and physical data which have been collected during the current investigation and by earlier workers is being analyzed and a report is being prepared to help the National Park Service in the conservation of this unique fishery.

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