MONTANA DEPARTMENT OF FISH AND GAME
FEDERAL AID IN FISH RESTORATION SECTION
HELENA, MONTANA

40

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

#2

State of Montana

Project No. F-9-R-7 Name Southwest Montana Fisheries Study

Job No. III Title A study of the Management of the Grayling.

Period Covered May 1, 1958 to April 30, 1959

Abstract:

The 1955 rehabilitation of MacDonald Pond and Culver Pond was unseccessful. The barriers on these ponds should be modified before further treatment is attempted. Total rehabilitation of the refuge area is not considered possible. Habitat deterioration in and around the refuge is one of the most important problems of the grayling management. Other management possibilities are evaluated and recommendations are made.

Objectives:

To evaluate past and potential management practices which may help perpetuate the grayling in the Red Rock Lake area.

Techniques and Findings:

For a description of the area and results of earlier investigations see the completion report for project F-2-R.

During 1955, MacDonald Pond and Culver Pond (Widow's Pond) of the Elk Springs Creek drainage were rehabilitated. The objective was to establish a grayling population in these ponds before undertaking any other rehabilitation in the drainage. This was done to safeguard the success of this type of program, and to provide a source of grayling for more extensive rehabilitation operations.

It is not known when the barrier on Culver Pond was removed or washed out, however, young of the year brook trout were collected at the springs which showed that successful spawning occurred in 1957. Numerous brook trout and suckers of various sizes were collected with gill nets. The pond was stocked with grayling fry and fingerlings in 1956 and 1957 but none were collected or observed in 1958. The fish kill may have been complete but the barrier was certainly inadequate.

The spring streams entering MacDonald Pond were sampled with an electric shocker in May, 1958. These streams supported numerous young brook trout and rainbow trout prior to the rehabilitation but only sculpins were collected this year. Gill nets set in the pond took rainbow trout and suckers. The rainbow trout were numerous and lengths ranged from 3.3 to over 18.0 inches. Suckers were not as common as rainbow trout and they ranged in length from 7.2 to 11.6 inches. Most of the suckers that were aged were 3 years old and these would have been young of the year when the pond was treated. One sucker (7.2 inches long) was 2 years old and could not have been present when the pond was treated. No brook trout were collected in MacDonald Pond although they were numerous prior to the treatment. This pond was stocked with grayling fry in 1956 and 1957 but none were collected or observed in 1958.

Construction of a new barrier at Elk Lake (above the entrance of Horse Creek) and modification of the barrier at MacDonald Pond were discussed with refuge personnel. The refuge agreed to use their heavy equipment and personnel to do the work. This had not been completed by October 30, 1958 so the pond cannot be rehabilitated this spring.

Horse Creek has been diverted from Elk Lake to the stream below the barrier. This stream flows only during the spring, but should be surveyed before rehabilitation of the pond. The stream was surveyed to the origin in August 1958, and no fish were found.

A reconnaissance survey of the main lakes and marshes was made and total rehabilitation of this area is not believed possible with the methods now available. Nearly 10,000 acres of the refuge area is comprised of lakes and marshes. Control of the brook trout in the main tributaries to the Upper Lake could be done. A list of these tributaries showing their approximate length and summer discharge is as follows:

1. Hell Roaring Creek from canyon barrier to Red Rock Creek, 2 miles, 25 cfs.
2. Red Rock Creek above Hell Roaring Creek, 1½ miles, 11 cfs.
3. Red Rock Creek from Hell Roaring Creek to the lake, 8 miles, 35 cfs.
4. Corral Creek, 3½ miles, 2 cfs.
5. Antelope Creek, 2 miles, 1 cfs.
6. Tom Creek, 4½ miles, 2 cfs.
7. Hackett Creek, 2 miles, 7 cfs.
8. Elk Creek, 4 miles, 17 cfs.
9. Several short, unnamed spring streams enter Upper Lake from the south.

Brook trout were seldom taken by gill nets in the lake except around the mouths of the tributaries. If all of the streams listed above were rehabilitated, the brook trout would be controlled at least long enough to determine how important they are to the grayling population. This rehabilitation program should not be undertaken until grayling have been established in MacDonald Pond and/or Culver Pond.

Concentrating the waters into a single channel in potential spawning streams (Tom Creek and unnamed spring streams) should be done, however, beaver would have to be controlled in order for this measure to have lasting value. The rechanneling of Red Rock Creek away from eroding banks about

2 miles above the lake was reviewed. It is believed that this would be difficult and might prove more damaging than beneficial.

There is considerable habitat deterioration in the drainage areas of the Upper Lake and this situation is becoming worse. The bulk of the grazing resulting in damage to Red Rock Creek is above the refuge, but this still results in silting and stream deterioration on the refuge. The operation of a phosphate mine on Bureau of Land Management land is a new source of silt in Tom Creek and an unnamed spring stream. Refuge personnel are considering the diversion of Hackett Creek (Picnic Creek) below Culver Pond to irrigate grazing land on the north side of the refuge. Increased irrigation from streams on the refuge would not be compatible with a program for grayling management. There are certainly conflicting interests in this area and cattle as well as swan apparently have priority over grayling.

Recommendations:

It is recommended that this job should be dropped from project F-9-R and future observations should be carried under the general survey. If the barriers above and below MacDonald Pond are modified, the pond could be rehabilitated in the early fall. Aquatic vegetation was absent from the shallow areas on October 30, 1958. This was apparently due to increased use by waterfowl. The Montana Fish and Game Department should not engage in expensive management measures until the Fish & Wildlife Service officially considers grayling perpetuation on active function of the Red Rock Refuge and redesignate the refuge accordingly. However, the grayling should be fostered insofar as possible through fishing regulations.

Data and Reports:

The original data are with project leader at Montana State College, Bozeman.

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Date May 8, 1959