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EFFECTIVENESS OF LAKE IMPROVEMENT IN HOWE LAKE

Examination of the effectiveness of lake improvement devices and practices leads to an increased optimism regarding this relatively new phase of fish management. It has been found repeatedly that the improvements made have been successful and effective even though the extent to which the fishing is improved as a result of these environmental changes has not yet been evaluated. For example:

On a half dozen or more lakes examined where gravel spawning beds were installed, a large number of these beds were invariably used for spawning. It has been indicated (by O. H. Clark) that of several hundred spawning beds examined in lakes in the Waterloo Project, about 7 out of 8 were used.

According to the Michigan Lake and Stream Directory, Clear Lake, Montmorency County, is "unfit for big game fish." A superficial examination indicated that small (probably stunted) perch were quite abundant but that bass (small-mouthed) were few. This marl lake contains ample gravel for spawning, but, when examined, had almost no protection for young fish. Brush shelters were installed (in 1933) and later examination indicated that these were used by the young bass. Creel census in recent years indicates that this lake yields several hundred legal-sized small-mouthed bass annually. The mere protection of the young bass from the perch probably brought about a decided change in the population of catchable bass.

Howe Lake, a relatively small lake several miles west of Grayling, was "improved" by Camp Higgins in the summer of 1933, soon after this camp was organized. The lake was found to have sandy shoals with no gravel, almost no vegetation or protection and no forage fish were in evidence. Gravel beds and brush shelters were installed, beds of yellow pond lilies were planted, minnow slabs were placed on the shoal and blunt-nosed minnows were taken from Lake Margrethe and placed in Howe Lake. The lake has since been examined at intervals to note the status of the improvements.

In 1934, during the bass spawning season, the lake was examined for a period of several days. No bass spawning beds could be located except on the gravel which had been provided in 1933. Recent examination indicates that the beds are still suitable and are still being used by the bass. To what extent the gravel has increased the hatch is not known, but it is known that the Grayling Hatchery removed many more fingerlings from this lake in 1934 (for stocking in other lakes) than were taken in previous years.

For several years after the blunt-nosed minnows were stocked they were not in evidence. This year, however, it was noted that the blunt-nosed minnows apparently have become established. Their eggs were found under a number of slabs (both natural and installed) and it appears probable that they will increase in numbers.

Brush shelters are still in place and apparently are attracting the fish. It was noted that the brush was partially covered, in places, by algae. The shelters probably harbor quite a few food organisms for the young fish.

The weed beds are still in evidence, but the plants have become smaller each year and are now too small and stunted to be of much benefit. It is probable that the sandy lake bottom is deficient in certain elements essential for the growth of these plants.

The lake appears to be relatively infertile and, even with the improvement devices working effectively, a large production of fish will probably

not be possible without some increase in fertility.

Howe Lake is reported to have been closed to fishing some few years ago and was intended to be used to provide bass fingerlings for other lakes. With an abundance of perch (probably slow-growing) little food, little protection for the young fish and poor spawning conditions, it is not surprising that this project was unsuccessful. There is reason to believe however that this lake could be made to produce many bass fingerlings for stocking other lakes in the area. The benefits which may be derived by stocking bass for maintenance have by no means been determined but, since fishermen apparently frequently express a desire for more bass stocking, the venture might prove especially desirable from a public relations angle regardless of its significance biologically.

Should the Department desire to use this lake to provide fingerling bass for other lakes, the following changes should, in the writer's opinion, be made:

1. Removal of all fish. At present perch appear to be dominant, so much so that they apparently remain stunted and are of little value for fishing. They probably do consume a large number of the young bass. The writer has watched them chase the schools of young bass and has taken perch readily on young bass used as bait to see whether or not the perch would take them. Sunfish and suckers are also present. It is reported that carp have been taken from this lake in the past, but, if still present, they are probably not abundant.

The removal of these fish with a subsequent study of them would be of interest and value to the Institute.

2. Restocking. The lake should be restocked with forage fish (blunt-nosed minnows can be probably obtained in abundance in Tomehawk Lake, Presque Isle Forest). A brood stock of bass should, of course, also be introduced before the next spawning season.

3. Closing the lake to fishing. The lake now appears to be fished very little and could be closed to fishing without affecting many anglers.

4. Spawning beds. More gravel could be provided when and if needed.

5. Fertilizing. Some fertilizing would undoubtedly prove desirable.

It seems probable that, with the changes suggested, this lake might be used effectively as a source of bass for stocking other lakes. The changes could be made at reasonably little cost (except for the cost of the derris root) and the lake would need little attention once these changes were effected. This lake has a sandy shoal and therefore can be easily seined.

In the writer's opinion, this lake might prove decidedly useful from a fish-cultural standpoint and the altering of the lake as indicated above would also provide interesting information from a lake management point of view.

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