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SUMMARY OF RECENT DEVELOPMENTS IN THE SEA LAMPREY

INVESTIGATIONS IN MICHIGAN: 1949 SEASON

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Life history facts that were determined during our investigations have been reviewed at earlier conferences and in a recent issue of the Michigan Conservation magazine. The present report is limited to a summary of activities undertaken and new and interesting findings obtained during the current year, and a summary of the situation.

The new Ocqueoc River sea lamprey weir and traps were operated successfully during the spring season as was the Carp Creek sea lamprey weir which completed its third year of operation. Trap catches during the current season do not convey any sign of a leveling-off in the lamprey population. Evidently the peak of this biotic explosion has not yet been reached. Weir and trap catches and spawning ground observations show a general increase for the period 1947 to 1949 with the rate of increase greatest between 1948 and 1949. These data are summarized as follows:

	1947	1948	1949
Ocqueoc River	(10,000)✓	(13,000)✓	24,643✓
Carp Creek	1,617	2,937	2,763✓

\* Size of run based on nest counts in watershed with consideration for the spawning habits of the species.

\* Size of run not significantly different from that in 1948 in spite of an estimated 50 percent reduction in volume of flow in the creek.

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One peculiarity of this expanding population has been noted-- that is an increasing maleness among the spawning runs. The sex ratio in 1947 was 165 males:100 females, in 1948 it was 169 males:100 females, and in 1949, 208 to 214 males:100 females. The significance of this change is obscure but it does suggest a growing imbalance in the population.

It was also noted that in large rivers, a scattering of spawning migrants continue to enter the stream until as late as September 30. Runs in smaller tributaries are generally concluded by July 10.

Operation of the Carp Lake River dam and inclined-screen trap for capturing downstream migrants was continued through the early spring months and data concerning the time limits and character of this movement were obtained. The structure was partially damaged by extreme flood conditions in late March. It has subsequently been reconstructed as a permanent installation with trapping facilities which will carry the most severe floods.

Sea lampreys are at present most abundant in the northern quarters of Lakes Huron and Michigan, in the Mackinaw Straits and in the Detour Passage and nearby channels and connecting waters. The degree of scarring of fishes in this area is increasing. Among migrant Lake Huron suckers, taken in weirs and traps, 7 percent bore scars in 1947; in 1949, 25 percent

were scarred. During the same period, the size of the sucker runs declined 50 percent. In 1947, approximately 5 percent of the "coaster" rainbow trout were observed to have scars. In 1949, 22 percent of the rainbows taken in the Ocqueoc River weir were scarred. Increasing numbers of scarred fish are now reported by sportsmen angling in the St. Mary's River and the connecting waters to the North Channel of Lake Huron and to the lake proper. Lamprey-scarred walleyes, northern pike, smallmouth bass, and rainbow trout have been examined from these waters.

Some increase has been observed in the size of the sea lamprey spawning runs in the streams tributary to Whitefish Bay of eastern Lake Superior. Although migrants have been observed in four streams, no actual spawning has yet been observed. It is possible that many of the individuals composing these runs originated in the concentrations present in northern Lakes Huron and Michigan and the waters which connect them with Lake Superior. At present there is no evidence (observed spawning activities) which would indicate that these runs had been generated in the Superior basin.

A small tagging experiment has indicated that some lampreys, barred from spawning grounds, are diverted to other nearby streams with accessible spawning areas. This suggests that simple self-operating barrier dams might be used in conjunction with a weir or weirs in adjacent streams, thus reducing operating costs in a control venture.

It appears at the moment that weirs and traps are the most feasible method of attempting control of the sea lamprey. This is obviously an

expensive procedure which could only be alleviated by the development of low cost weirs. One such weir type has been developed during our investigations at Carp Creek and with some variations in construction which have been tested would be suitable for an inexpensive installation in smaller streams. The use of high power, electric shockers, electric fish screens, selective poisons, and the introduction of natural enemies all need further exploration. Each of these devices may have their own merits when utilized in particular watersheds.

It seems evident now that no single control measure, no panacea, mechanical or biological, will prove either effective or practical in reducing the numbers of lampreys. To meet the exigencies of varying stream conditions, of conflicting methods of watershed utilization, and of available financial support, it may be most feasible to employ to some degree, any and every effective method of reducing the numbers of lampreys where local conditions permit their use. There is some reason to hope that the total impact of many and varied destructive mechanisms will ultimately reduce the numbers of this parasite to a degree that will permit a greater survival among those food species currently suffering severe declines in abundance.

Our program for 1950 includes the continuous operation of the Carp Lake River dam and inclined-screen trap for the capture of newly transformed, downstream migrants, and the operation of the Oequece River and Carp Creek weirs for the capture of spawning runs.

Further studies of the biology of the sea lamprey and experimentation with control devices are to be carried on in cooperation with the U. S.

Fish and Wildlife Service. Specific plans for these projects have not been formulated, pending the organization of the Service's expanded Great Lakes Investigation program.

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