

raised by the Department, now amounts to 9,000,000 lb. of lake trout and whitefish combined. Continual checks show that no serious decline in the available fish populations has been caused over the years by commercial fishing. Similar studies have been made on Lake Winnipeg since 1948 and show, for comparison, the detrimental effects of uncontrolled fishing on a long-exploited lake.

In the Great Lakes area the Board has been involved mostly with the control, if not the elimination, of the sea lamprey populations. From 1954 to 1956 this work was done under the direction of a federal-provincial Great Lakes Fishery Research Committee and since that time under contract with the Great Lakes Fishery Commission which was set up in 1956 under a Convention between Canada and the United States. The main attacks on the lamprey, which prey on the populations of trout in these lakes, have been in Lake Michigan by the United States and in Lake Superior by the United States and Canada. The battle is being fought by means of electrical and other barriers to the ascent of the adult sea lamprey into streams to spawn and by the use of a specific lampricide on the larval and juvenile forms of this predator.

General biological research on the lamprey of the Great Lakes area is part of the Sea Lamprey Investigation. Work on other species is carried out by agreement and co-operation with the fisheries research workers of the Province of Ontario.

PACIFIC COAST

Of prime importance to the Pacific Coast and an important item in the fisheries economy of Canada is the salmon resource which uses Canadian West Coast streams for propagation. From its station at Nanaimo on Vancouver Island the Board carries out a far-flung program covering studies on the life histories of the five principal species of salmon—from conditions in the streams where they are spawned through their migrations in freshwater and out to sea, their life in the broad reaches of the Pacific Ocean and their return to their native streams to spawn a new generation. For sockeye and pink salmon, the Board's work is done in co-operation with the International Pacific Salmon Fisheries Commission which has jurisdiction for these species in the Fraser River system and in the Convention (with the United States) areas off the mouth of the Fraser River.

The Board is also concerned with a determination of the conditions in the freshwater environment which will allow the best possible use of these areas for the production of fry and of sea-going smolts; recommendations for controls over fishing for incoming spawning fish to allow the escapement to the spawning areas of enough fish to make full use of the areas; and the effects of obstacles to upriver movement of adults and means to guide migrating smolts safely past dams and other water falling towards the sea.

The Pacific Coast herring fishery is also of importance. The Board's studies of this fishery give the basis for prediction and the determination of annual quotas to maintain maximum long-term yield. Much of the work is exploratory and consists of surveying spawning areas to estimate abundance of the resulting year-classes. Tagging of thousands of individual fish and the recovery of these tags in the fishery the following year have confirmed the substantial independence of the various stocks of herring in different areas along the coast.

Studies are also made of the more important species which make up the groundfish fishery, as a basis for regulation to maintain the yield at its optimum long-term level. Studies are also carried out on shellfish, crabs, whales and sea-lions to provide information on which to base recommendations of the best uses of these species.

One of the main purposes for the establishment of the International North Pacific Fisheries Commission (Canada, United States, Japan) in 1951 was to protect the fisheries of one country from unacceptable exploitation by the others. The fisheries were salmon, halibut and herring, each of which was claimed to be under maximum exploitation in relation to the conservation of a continuing resource. The Board has put a great deal of effort into gathering together information to show the status of each of these species in the Canadian fisheries.