

fisheries on the respective lakes. In Algonquin Park, detailed studies concerning lake trout, smallmouth bass and brook trout are in progress and management techniques are being tested against the background of a creel census which has been continuous since 1936. Studies on walleyes, parasitology and limnology have recently been initiated.

A selective breeding experiment concerning the hybrid between lake trout and speckled trout is progressing favourably. The deep-swimming character of the lake trout and the character of maturity at early age of the speckled trout are those being selected for combination in the hybrid.

Co-operation by Ontario in the field of sea lamprey control is being extended through the Great Lakes Fishery Commission.

Manitoba.—The fishing industry in Manitoba occupies an important position in the economy of the province. This valuable resource produces annually some 36,000,000 lb. of commercially caught fish with a market value in excess of \$7,000,000. Over 5,000 persons are engaged in the industry as producing fishermen and 6,000 are employed in processing, transportation, boat building and other related industries. The lake area in Manitoba totals some 39,000 sq. miles. As road and transportation facilities are developed in the northern area and remote lakes become accessible for production, commercial production will increase.

Those engaged in the commercial fishing industry in Manitoba own and operate some 1,600 fishing boats ranging in size from large diesel lake freighters to small skiffs powered by outboard motors. The value of these boats together with gear and equipment is estimated at \$4,000,000. Much of the fishing gear is costly but is essential to efficient production. New types of gear are at present in use on a research basis and experiments are being conducted in an effort to develop efficient low-cost methods of production. The Department of Mines and Natural Resources has given leadership in these matters and the continuing program of gear research has produced gratifying results.

Supervision of commercial fishing operations and the enforcement of the Manitoba Fishery Regulations occupies a staff of Conservation Officers who patrol the province using diesel boats during the open water season, bombardier snowmobiles and light trucks during the winter months, and aircraft in remote areas. All patrol units are equipped with two-way radio systems. An active and continuing campaign is conducted by the government and industry directed toward improvement of sanitation and quality standards in fish handling facilities and processing plants.

Sport Fishing.—Angling continues to be one of the most popular forms of outdoor recreation in Manitoba and many anglers are extending their activities to include winter ice fishing. During the year ended Mar. 31, 1963, more than 104,000 licences were sold to resident and non-resident anglers. In 1963, master angler awards were made to 640 anglers who caught fish of trophy size, an all-time record.

The Department formulated a program to diversify sport fishing waters and two new species have been introduced to Manitoba waters—the kokanee, a land-locked fish of the sockeye family, and the prized sportfish muskellunge. Eventually, these species will provide challenging and interesting angling opportunities.

Provincial Hatcheries.—Manitoba's four main hatcheries and two spawn-taking camps serve an important function in the management of fishery resources. The Whiteshell Trout Hatchery raises several trout species which are planted to diversify and improve sport fishing waters. The other three hatcheries support the populations in commercial fishing waters. Plantings of hatchery-reared pickerel are also made to replenish sport fishing waters. The two spawn-taking camps are operated on a seasonal basis.

Fisheries Research.—Biological research covers a wide field of scientific endeavour designed to provide factual information that can be used as a basis for sound management policies. Research studies involve oxygen tests to determine the incidence of winterkill,