

seasons and other waterfowl hunting details, taking and possessing migratory birds for scientific or propagating purposes, eiderdown collecting, etc. The Act and Regulations thereunder are enforced by the Royal Canadian Mounted Police and in both administration and enforcement co-operation is received from provincial authorities. There are 106 migratory bird sanctuaries in Canada, having a total area of 39,687 sq. miles. A sanctuary may be established on the initiative of the Department of Northern Affairs and National Resources or of a provincial or municipal government, or on petition by a private person or organization. Bird banding provides valuable information on the migration of birds and their natural history and is especially useful in waterfowl management. Serially numbered bands supplied by the United States Bureau of Sport Fisheries and Wildlife are used in Canada as well as in the United States.

Many research projects under way were continued during 1963. These included the study, in co-operation with the governments of Manitoba and Saskatchewan and the Council of the Northwest Territories, of barren-ground caribou and of wolves that prey upon caribou. Human utilization is still the most important factor in herd reduction but other significant factors include effects of forest fires on winter range, predation, accidents and poor calf survival. Studies were continued on mink, muskrat and beaver in the Mackenzie District, and of polar bear and white fox in Keewatin and Franklin Districts. Big game mammals in the National Parks were also the object of continued study, special attention being given to mountain sheep and wapiti in the mountain parks of Alberta where large populations of those species facilitate investigations, and to the competition for food between wapiti and the livestock still allowed to graze in Riding Mountain Park in Manitoba. In Wood Buffalo Park, investigations into the problems of disease and low reproductive rates among bison were continued as a long-term project in the hope that some control of each might be achieved. A second outbreak of anthrax in bison outside the Park was dealt with and studies were initiated on the epizootology of the disease.

Damage to cereal crops by wild ducks and sandhill cranes continued to receive intensive study and much time was devoted to other species greatly reduced in number or in danger of extinction, such as the Ross' goose, trumpeter swan and whooping crane. National-wide investigations of migratory waterfowl included kill surveys conducted in Prince Edward Island, New Brunswick, Quebec and Ontario and a crop-damage survey in Saskatchewan. Arctic bird-banding programs were continued.

At the end of 1963 the research staff included 44 wildlife biologists stationed at various centres throughout Canada. Ornithologists were located at Vancouver, B.C., Edmonton, Alta., Saskatoon, Sask., Winnipeg, Man., Ottawa and Aurora, Ont., Quebec, Que., Sackville, N.B., and St. John's, Nfld. Mammalogists were stationed in the Northwest Territories at Fort Smith and Inuvik, at Whitehorse in the Yukon Territory, and at Edmonton, Sackville and Ottawa. A limnologist was located at Jasper and a range specialist and two pathologists at Edmonton and Ottawa, respectively. A number of university graduates and undergraduates are engaged annually to assist in summer field work. Ottawa headquarters has an administrative staff of about 30 in addition to supervisory research officers, and about 25 part-time migratory bird wardens and sanctuary caretakers are employed.

Provincial Government Wildlife Conservation Measures.—As stated previously, each province has jurisdiction over its own wildlife resources. The measures adopted by the respective provincial governments to conserve these resources are outlined in the 1963-64 Year Book at pp. 46-52. The conservation of wild fur-bearing animals in the different provinces is discussed in the Fisheries and Furs Chapter, Part II, and information on provincial conservation of fisheries resources is given in Part I of the same Chapter, together with data relating to the work of the Fisheries Research Board of Canada and to international fisheries conservation (see Index).