

or propagating purposes, eiderdown collecting, etc. The Royal Canadian Mounted Police is responsible for enforcing the Act and Regulations. In both administration and enforcement, provincial authorities co-operate with the Canadian Wildlife Service.

There are 95 migratory bird sanctuaries in Canada with a total area of over 5,000 sq. miles. A sanctuary may be established on the initiative of the Department 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.

An investigation of the barren-ground caribou, begun by the Canadian Wildlife Service in 1948, is continuing. The animals are found mainly in the Northwest Territories but may migrate seasonally into the three Prairie Provinces. The investigation established that too great a harvest was being taken and led to more stringent hunting regulations and more predator control and conservation education.

Other recent and current projects of the Service include long-term studies of the muskrats of the Mackenzie and Athabasca deltas and beaver surveys in wooded areas of the Mackenzie District. A start has been made on transplanting beaver from abundant to scarce areas. Damage to cereal crops by wild ducks and cranes has received intensive study. The largest remaining herd of North American buffalo or bison kept in Wood Buffalo National Park has been closely studied to determine the extent of reproduction and the effects of disease. Murres, sea birds of importance to many inhabitants of Newfoundland, are under investigation to find out how their numbers are affected by human activities. Much time has been devoted to other species greatly reduced in number or in danger of extinction, such as Ross's geese, trumpeter swans and whooping cranes.

The present research staff includes 30 university-trained wildlife biologists, stationed at various centres throughout Canada. Ornithologists are located at Vancouver, B.C. (1); Edmonton, Alta. (3); Saskatoon, Sask. (2); Winnipeg, Man. (1); Ottawa, Ont. (2); Kingston, Ont. (1); Maple, Ont. (1); Quebec, Que. (2); Sackville, N.B. (2); and St. John's, Nfld. (1). Mammalogists are stationed at Yellowknife (2); Fort Smith, N.W.T. (2); Aklavik, N.W.T. (1); Whitehorse, Y.T. (1); Edmonton, Alta. (1); and Ottawa, Ont. (5). Limnologists are located at Banff, Alta. (1); and at Winnipeg, Man. (1). A number of university graduates and under-graduates are engaged annually to assist in summer field work. The Ottawa headquarters includes an administrative staff of about 30 in addition to supervisory research officers. About 25 part-time Migratory Bird Wardens and Sanctuary Caretakers are employed.

## PART III.—CLIMATE AND TIME ZONES

### Section 1.—Climate

The following article is a comprehensive study of the climates of Canada, specially prepared by the Meteorological Branch of the Department of Transport. Considerations of space make it impossible to include in this edition the detailed tabulations of climatic factors for individual meteorological stations but these will appear in the 1960 Year Book. In the meantime, the following article on Climate, together with detailed tables for 45 stations, will be made available in reprint form. The history and functions of weather observing stations in Canada are dealt with at pp. 51-52.

#### THE CLIMATE OF CANADA\*

Canada is a land of many climates. Frigid wind-swept barrens, hot sun-ripened grain fields, dusty scanty grasslands and wet heavily forested slopes are all part of the Canadian landscape. Each is largely a product of past and present varied climates and in turn the

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