

INVESTIGATIONS INTO THE NATURAL HISTORY OF THE HERRING OF THE ATLANTIC WATERS OF CANADA, 1914.

PRELIMINARY REPORT No. 1.

BY

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When the Biological Board of Canada did me the great honour of asking me to visit Canada for the period of a few months to study the Atlantic herring fisheries, I accepted this invitation with the greatest pleasure, hoping that some useful scientific information might be obtained through a comparison of the herring fisheries of the two sides of the Atlantic, if studied by the methods employed during recent years in north European waters.¹ It was from the beginning understood that a few months' work could aim at nothing more than a preliminary orientation in some of the most fundamental problems. These most important problems seem to me to be the following:—

1. Do the herring that visit the Atlantic coast of Canada all belong to a single race or type, or is it possible to distinguish several races in these waters?
2. Does the rate of growth vary (according to the conditions of the waters along the coast)? Can types of different growth be distinguished and defined?
3. Is the renewal of the stock of herring of a constant character, or are there the same great fluctuations in the stock (in the number of individuals belonging to the different year-classes) as in European waters?

The first two problems or groups of problems are of course identical with the problems of the distribution or migrations of the herring. If the Atlantic stock of herring can be shown to belong to several different races, then of course the area of distribution and migration of each race or type may be defined by a study of samples of herring taken from different localities along the whole coast.

The third problem is of the greatest importance for any elucidation of the old riddle—the fluctuations in the yield of the fisheries—this being to a very great extent dependent on the fluctuations in the number of herring at the time living in the sea.

In order to be able to study these questions, I asked the Biological Board to assist me in getting collections, samples of the catches of the fishermen from different parts of the coast. I have further, for the same purpose, made a journey along that part of the Atlantic coast of North America where herring are caught, from Boston along the Atlantic Coast of Canada to Newfoundland, trying everywhere to get samples for an examination by the methods referred to above. Samples have been collected as follows:—

1. Spring Herring, 1914—

- (a) Collections from the coasts (west, north, and east) of Newfoundland.
- (b) Collections from the gulf of St. Lawrence (Magdalen islands, several places in the Northumberland strait, and the west coast of Cape Breton).

¹ See my paper: Fluctuations in the Great Fisheries of Northern Europe. *Rapports et Procès-verbaux*, Copenhagen, 1914.