

MANUSCRIPT REPORTS OF THE BIOLOGICAL STATIONS

No. 147A

REPORT ON PRELIMINARY STUDY OF THE ENDOZOAN FAUNA  
OF OYSTERS FROM MALPEQUE AND CHARLOTTETOWN WATERS.

by

L. R. Richardson.

This series includes unpublished preliminary reports  
and records not intended for publication  
and did not bear the name of the author  
but they arise from the work of the station and  
give a clear indication of their nature and scope.

**FISHERIES RESEARCH BOARD  
OF CANADA**

MANUSCRIPT REPORTS OF THE BIOLOGICAL STATIONS

No. 147A

**Title**

REPORT ON PRELIMINARY STUDY OF THE ENDOZOAN FAUNA OF  
OYSTERS FROM MALPEQUE AND CHARLOTTETOWN WATERS.

**Author**

L. R. Richardson.

This series includes unpublished preliminary reports and data records not intended for general distribution. They should not be referred to in publications without clearance from the issuing Board establishment and without clear indication of their manuscript status.

REPORT ON PRELIMINARY STUDY OF THE ENDOZOAN FAUNA OF OYSTERS  
FROM MALPEQUE AND CHARLOTTETOWN WATERS.

A preliminary examination of oysters from Malpeque and Charlottetown waters with a view to determining the endozoan fauna of the oyster and any pathogenic forms was made during the last week in July. A total of sixty oysters was examined. Of these twenty-nine specimens (nineteen from Malpeque, five from Charlottetown and, for comparison, five from Malagash) were examined for microscopic forms. In no case were such parasites found present, the oysters being free from Bucephalid and Aspidobothriid trematodes and from larval cestode infections. This point is made since in warmer waters high mortalities amongst oysters have been recorded in consequence of infection by the cercaria of Bucephalis gracilescens.

The remaining thirty-one oysters were examined in detail for microscopic parasites. In each case, on opening the oyster a sample of the fluid from the mantle-chamber was examined for parasites or other forms which might contaminate preparations from the body of the oyster. With the exception of occasional protomonads, this fluid was clear. The mantle, gills, visceral mass and adductor muscles were examined for parasites and also any tissue of abnormal appearance was dissected out and studied in fresh preparations. When possible, clear fluid from the pericardial chamber was drawn off and examined. The contents of the stomach, diverticulae, mid-gut, style-sac and rectum were drawn off by pipette and were separately examined fresh and without contamination. In addition smears were prepared of the gonadial tissue, of the connective tissue and also teased muscle were examined. Neutral red, methyl green, Methylene blue and Iodine solution were used in staining fresh preparations. While smears were made of the pericardial fluid, intestinal contents, etc., and stained with Giemsa.

The thirty-one oysters examined in detail included fourteen from Malpeque, ten from Charlottetown and seven oysters from Malagash. The Malpeque oysters were collected from immediately off the Biological Station, from Paugh's creek and from Curtain island; the Charlottetown oysters were taken from Pownal bay and from York point. Oysters from the same waters showed no remarkable distinctions from one another but two noteworthy variations between the Malpeque-Malagash oysters and the Charlottetown oysters were determined.

The oysters from Malpeque and from Malagash contained rich cultures of ciliated spirochaetes and were uniformly and heavily infected. The form present closely resembles the commonly tolerated parasite or symbiont of the oyster - Spirochaeta balbiana, and was present in large

numbers in the stomach, mid-gut, and to a lesser extent in the diverticulae and style-sac of all oysters examined from these waters. No spirochaetes were found in the oysters from Charlottetown. This point is worthy of further investigation as a correlate or symptom of the disease.

The Charlottetown oysters were also distinct from the Malpeque and Malagash oysters in being infected by a ciliate protozoan at present tentatively determined as of the G. Orchitophrya and related to O. stellarum, a parasite of the gonad of the starfish. Rich cultures of this form were found in the stomach and diverticulae of five Charlottetown oysters, and one or several in the remaining five. None were seen in the oysters from Malpeque or Malagash.

No pustules were present in the Malagash oysters. In one oyster from Malpeque, a female collected from Paugh's creek, a single small round, creamish elevation was present on the edge of the right mantle just at the level of the muscle. Material of a similar appearance infiltrated portion of the gonad on the same side. The fluid exudate and the tissue of the pustule were examined fresh and Giemsa smears made. Two Charlottetown oysters from York Point bore large pustules. Both specimens were females. The one oyster possessed twelve pustules concentrated on the left side over the visceral mass and extending partly onto the free edge of the mantle. The pustules were creamish in colour, ranged in size from 3mm1 to 8 mm. in diameter and were elevated 2 mm. to 4 mm. above the surrounding tissues. The second specimen bore a small round yellowish patch with a clear dark center placed over the gonad, while 2 mm. above this was a small clear white patch resembling scar-tissue.

The examination of fresh preparations, of variously stained mounts and the preliminary study of Giemsa smears failed to reveal the presence of any parasites in material removed from the pustules, the fluids and tissues removed and examined being rich in amoebocytes and larger cells. The latter were immotile, lacking a capsule or rigid peripheral specialized cytoplasm and varying in form from spheres to tailed ovoidal shapes. These are comparable in size to and considered as egg-cells. The possibility is put forward that the pustule is the result of partial egg binding.

Very occasional flagellate protozoans were present in the mid-gut and rectum of oysters from Malpeque and Malagash. These were of minute size and insufficient specimens were observed to state whether these represented one or more forms. The examination of the pericardial fluid and the exudates from incisions in the various tissues generally revealed the presence of minute ciliated cells and slightly larger flagellated cells in addition to amoebocytes

and cells apparently thigmocytic.

During the examination for microscopic parasites, attention was directed to searching for specimens of Vahlkampfia patuxent or similar parasitic amoebae and also spores or sporulating stages of cephaline gregarines similar to Porospora portunicarum. No such parasites were located.

Summary:

The preliminary study of oysters from Malpeque, Malagash and Charlottetown reveals a marked distinction in the endozoan faunas of oysters from Malpeque and Malagash on the one hand, and Charlottetown where the oyster epidemics are in progress. The absence of spirochaetes and the presence of a large ciliate in the intestine of the Charlottetown oysters distinguishes these oysters from the Malpeque and Malagash specimens where spirochaetes were present and the ciliate absent. Pustules in oysters from Charlottetown yielded no parasites on examination. The study of additional material is desirable with a view to the ascertaining of the full extent of the above distinction and also the establishment of the significance of the motile cells observed in the blood and the minute endozoan fauna of the gut.

L. R. Richardson,

August 9th, 1938.