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Report on Investigations on the Fresh-  
water Amphipoda of Newfoundland

by

D.H. Steele

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D. H. Steele

LIBRARY  
Dept. of Fisheries of Canada  
St. John's, Nfld.

Introduction

This investigation was intended to consist of two phases:  
1) a study of the distribution of the freshwater species in Newfoundland, 2) an investigation into the environmental factors affecting the distribution of the larger species. However, since the assistant who was to do this work for his Master's thesis left after one month, it was decided to delete the second phase and concentrate on the first with the resources available. As a consequence, the results obtained relate mainly to the distribution of the various species.

Distribution of the Newfoundland Freshwater Amphipods

Three species are known from the island of Newfoundland: Hyalella azteca, Crangonyx richmondensis and Gammarus lacustris. A key for their identification is presented at the end of this report.

Hyalella azteca (Saussure)

This most widely distributed species on the island probably occurs in all bodies of water (Fig. 1). Its abundance is correlated with the density of aquatic vegetation. It takes considerable searching to collect specimens in rocky areas where there is little plant life, whereas, it may be very

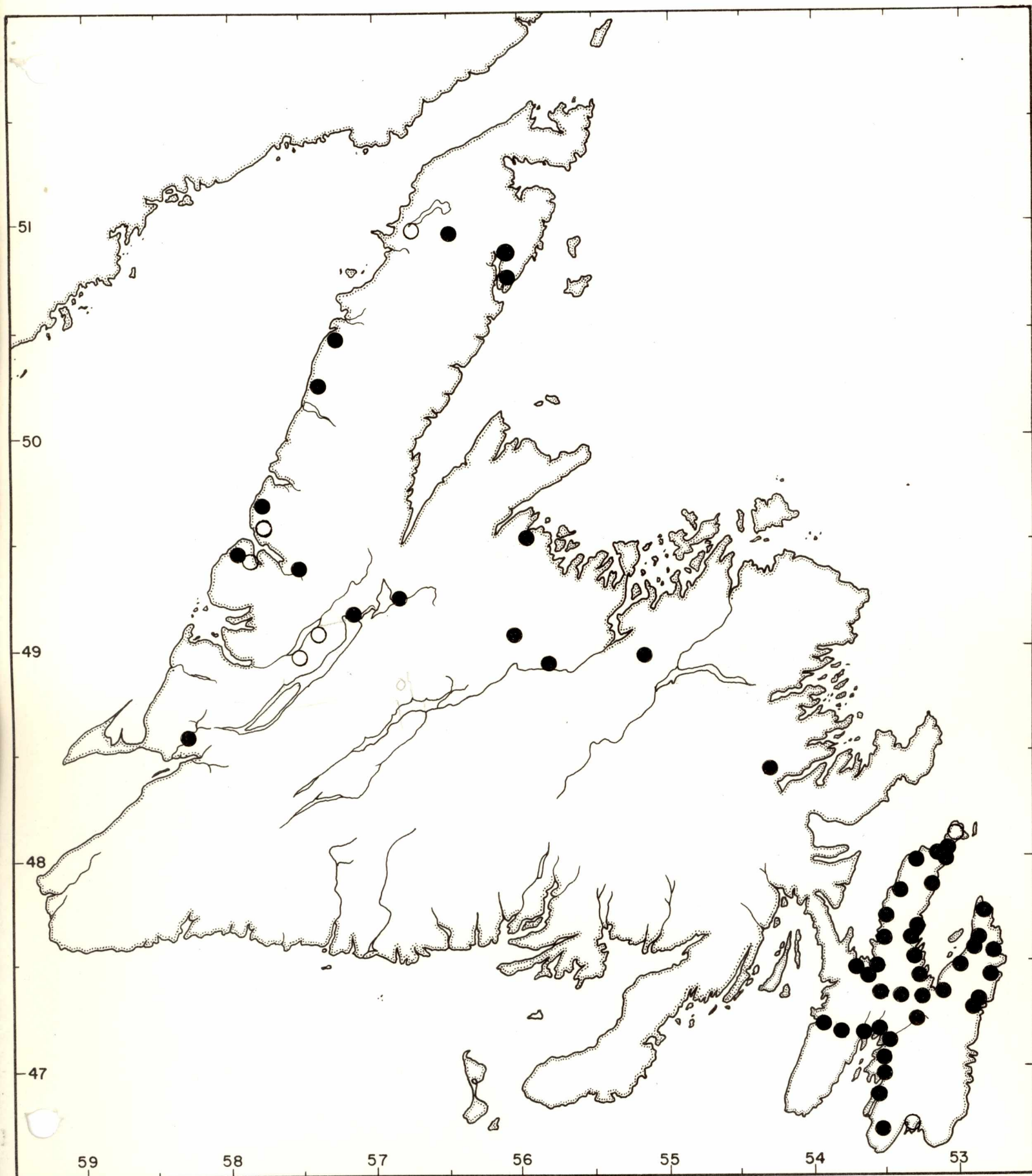


Fig. 1. Collections of *Hyalella azteca* (Saussure). Open circles indicate locations where it was not found.



abundant in protected areas and in small ponds where there is much vegetation. H. azteca is apparently the only species that may occur in running water, but here again it is found only in association with plants.

It is a small species (10 mm.) and thus is of limited value as fish food.

Crangonyx richmondensis (Ellis)

C. richmondensis was found only in eastern and central Newfoundland as far west as Lake O'Brien (Fig. 2). It is less common, apparently because it typically is found only where aquatic vegetation is abundant. It was collected with H. azteca in such situations but was scarce or absent in places where the vegetation was only moderately well developed.

It is a larger species (16 mm.) and is good fish food' but its restricted occurrence limits its value.

Gammarus lacustris (G. O. Sars)

This species has been found in only a few locations on the west coast, near the northern end of the Great Northern Peninsula and again near Georges Bay (Fig. 3). There may be a real gap between these two groups since it was not located in the intervening area, even though it was searched for especially. However, only coastal sites were examined and it may occur in the highlands. This species also occurs only where aquatic plants are abundant.

G. lacustris is relatively a large species (16 mm.) and is regarded as the trout food par excellence in northern

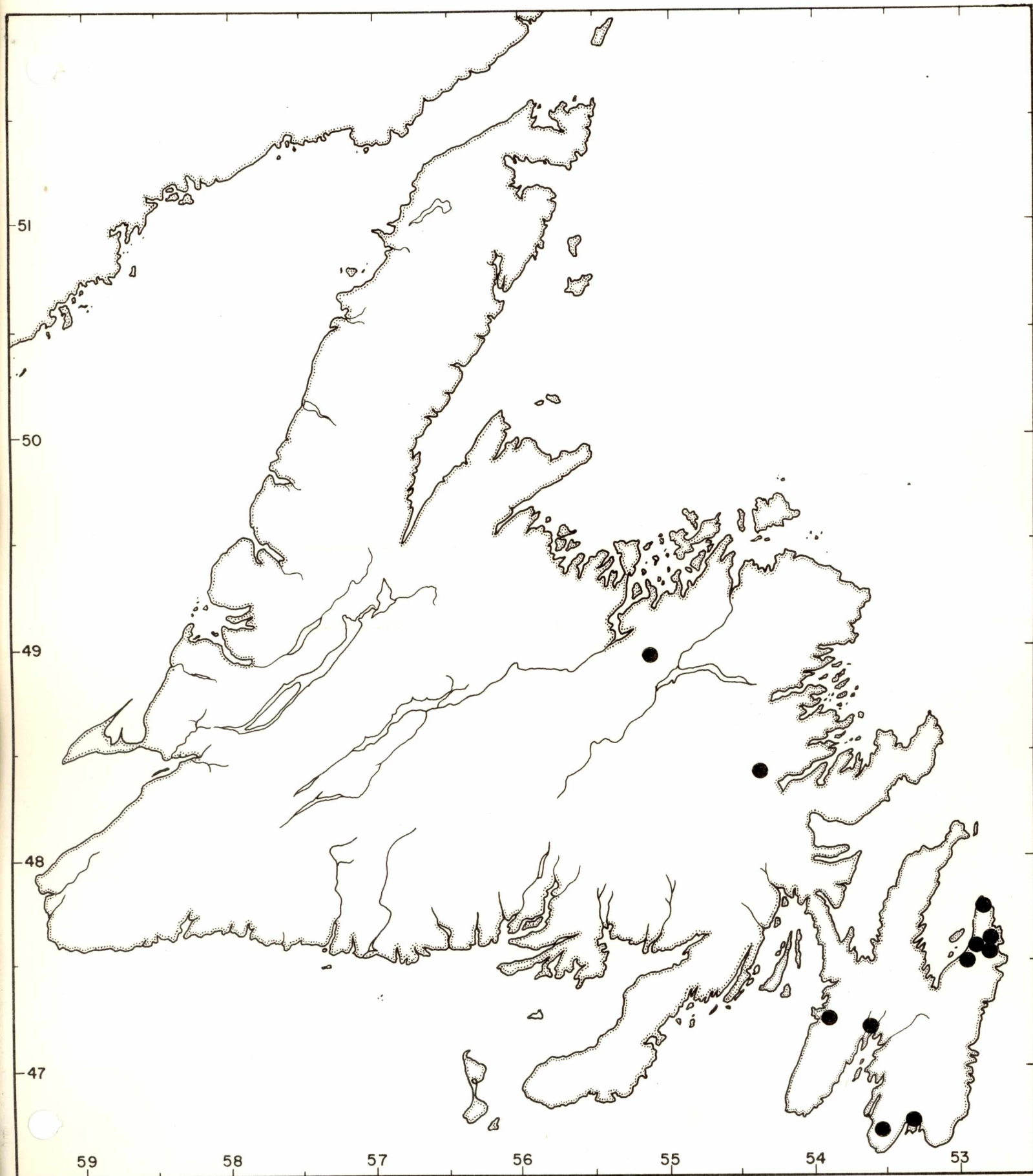


Fig. 2. Collections of Crangonyx richmondensis Ellis .

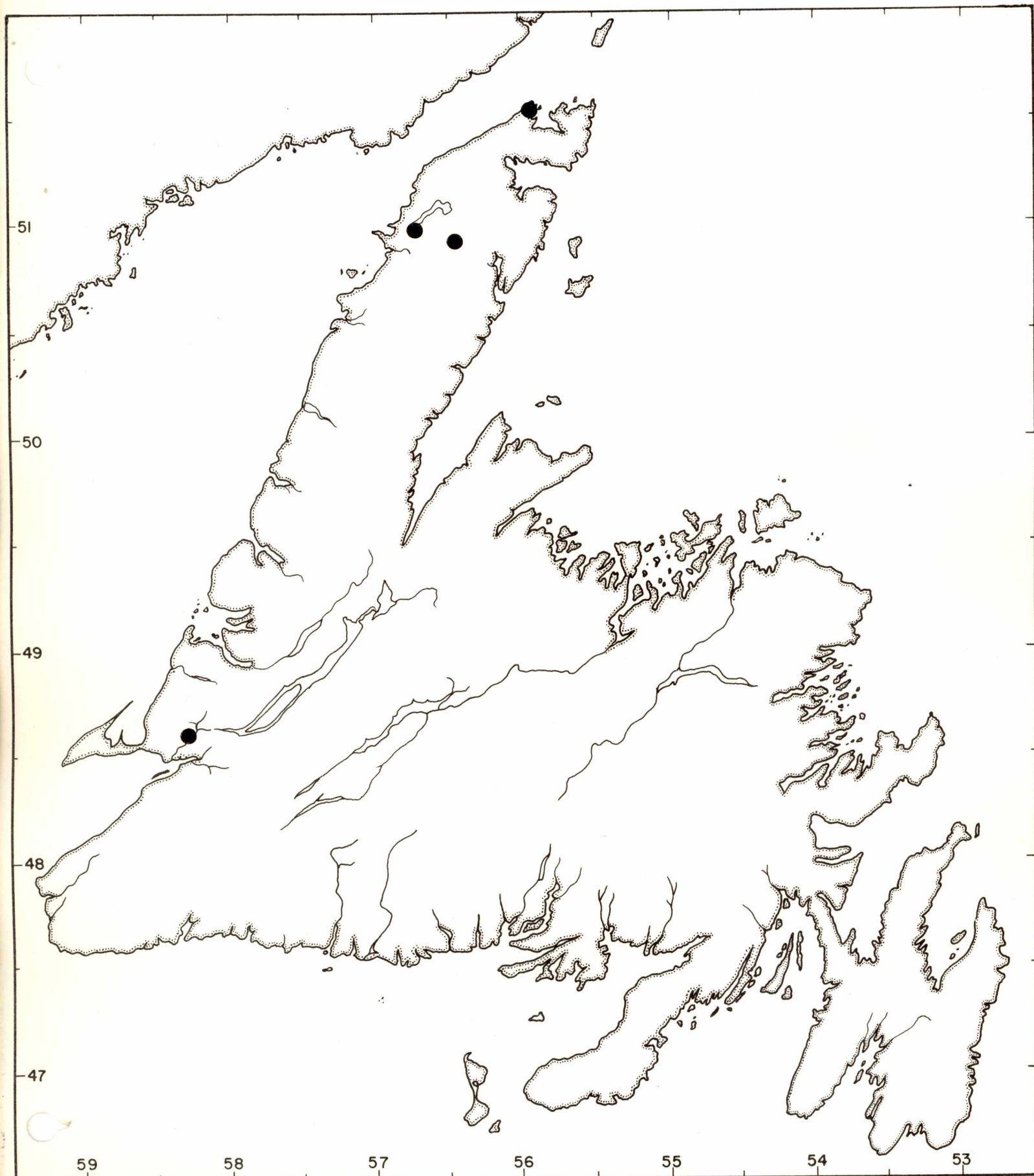


Fig. 3. Collections of Gammarus lacustris G.O. Sars



Europe. Its restricted occurrence in Newfoundland limits its value here.

#### Discussion

Contrary to expectations, the distributions of Crangonyx richmondensis and Gammarus lacustris are rather complex, but it cannot be determined whether this is due to environmental factors or to historical reasons. If the reasons are historical, it might be possible to transplant these species into regions where they are not found at the present time, and thus aid the culture of freshwater fish. However, since both of these species occur only where vegetation is abundant and none of the three species occurs abundantly in running water, this means their value would be limited in many regions of the island.

It is planned to continue with this investigation in order to establish more firmly the limits of the various species and to attempt some preliminary studies of some of the environmental parameters to determine if they may correlate with the distributional patterns.

Key to the species of freshwater amphipods of Newfoundland

- A. Inner ramus of uropod three at least one half the length of the outer; accessory flagellum of the first antennae consisting of several segments-----Gammarus lacustris.
- AA. Inner ramus of uropod three very short and scalelike; accessory flagellum of the first antennae consisting of a small single segment, or lacking.
- B. Accessory flagellum of the first antennae lacking; usually with small posteriorly directed spines on the posterior margins of the first two abdominal segments--Hyalella azteca.
- BB. Accessory flagellum of the first antennae a single segment; without dorsal spines on the abdomen--Crangonyx richmondensis.