Distribution, Population Structure and Reproduction of Arctic Marine Isopods of the *Mesidotea* complex in the Southern Beaufort Sea

J. A. Percy and F. J. Fife

Arctic Biological Station
Department of Fisheries and Oceans,
Ste. Anne de Bellevue, Quebec H9X 3R4

March 1980

Canadian Data Report of Fisheries and Aquatic Sciences No. 198

Fisheries and Oceans Canada
Pêches et Océans
Gouvernement du Canada

Canadian Data Report of Fisheries and Aquatic Sciences

These reports provide a medium for filing and archiving data compilations where little or no analysis is included. Such compilations commonly will have been prepared in support of other journal publications or reports. The subject matter of Data Reports reflects the broad interests and policies of the Department of Fisheries and Oceans, namely, fisheries management, technology and development, ocean sciences, and aquatic environments relevant to Canada.

Numbers 1-25 in this series were issued as Fisheries and Marine Service Data Records. Numbers 26-160 were issued as Department of Fisheries and the Environment, Fisheries and Marine Service Data Reports. The current series name was changed with report number 161.

Data Reports are not intended for general distribution and the contents must not be referred to in other publications without prior written clearance from the issuing establishment. The correct citation appears above the abstract of each report.

Rapport statistique canadien des sciences halieutiques et aquatiques

Ces rapports servent de base à la compilation des données de classement et d'archives pour lesquelles il y a peu ou point d'analyse. Cette compilation aura d'ordinaire été préparée pour appuyer d'autres publications ou rapports. Les sujets des Rapports statistiques reflètent la vaste gamme des intérêts et politiques du Ministère des Pêches et des Océans, notamment gestion des pêches, techniques et développement, sciences océaniques et environnements aquatiques, au Canada.

Les numéros 1 à 25 de cette série ont été publiés à titre de Records statistiques, Service des pêches et de la mer. Les numéros 26-160 ont été publiés à titre de Rapports statistiques du Service des pêches et de la mer, Ministère des Pêches et de l'Environnement. Le nom de la série a été modifié à partir du numéro 161.

Les Rapports statistiques ne sont pas préparés pour une vaste distribution et leur contenu ne doit pas être mentionné dans une publication sans autorisation écrite préalable de l'établissement auteur. Le titre exact paraît au haut du résumé de chaque rapport.

Canadian Data Report of Fisheries and Aquatic Sciences

No. 198

March 1980

Distribution, population structure and reproduction of arctic marine isopods of the Mesidotea complex in the southern Beaufort Sea

by

J. A. Percy and F. J. Fife

Arctic Biological Station
Department of Fisheries and Oceans
555 St. Pierre Boulevard
Ste. Anne de Bellevue, Quebec H9X 3R4

Cat. no. Fs 97-13/1980-0198 ISSN 0706-6465

Correct citation for this publication:

Percy, J. A. and J. F. Fife. 1980. Distribution, population structure and reproduction of arctic marine isopods of the Mesidotea complex in the southern Beaufort Sea. Can. Data Rep. Fish. Aquat. Sci. 198: 91 p.

Table of Contents

Abstract

Percy, J. A. and F. J. Fife. 1980. Distribution, population structure and reproduction of arctic marine isopods of the Mesidotea complex in the southern Beaufort Sea. Can. Data Rep. Fish. Aquat. Sci. 198: 91 p.

This report serves as a repository for tabular data relating to the distribution, population structure and reproduction of the arctic marine isopods, Mesidotea entomon, M. sibirica and M. sabini from areas of the southern Beaufort Sea adjacent to the Mackenzie Delta. A freshwater form of M. entomon occurring in a lake in the Mackenzie Delta was also studied.

Key words: Arctic, Isopods, Mesidotea, Distribution, Reproduction, Size frequency.

Résumé

Percy, J. A. and F. J. Fife. 1980. Distribution, population structure and reproduction of arctic marine isopods of the Mesidotea complex in the southern Beaufort Sea. Can. Data Rep. Fish. Aquat. Sci. 198: 91 p.

Ce rapport sert de répertoire pour les données tabulaires reliées à la distribution, la longueur et la reproduction des isopodes arctiques marins, Mesidotea entomon, M. sibirica et M. sabini du sud de la Mer de Beaufort, près du Delta du Mackenzie. L'espèce d'eau douce M. entomon que l'on retrouvre dans un lac du Delta a aussi été étudiée.

Introduction

Three isopods of the genus Mesidotea: M. entomon, M. sibirica and M. sabini occur abundantly in the coastal waters of the Southern Beaufort Sea, adjacent to the Mackenzie Delta. Large populations of M. entomon also occur in at least one of the freshwater lakes in the Mackenzie Delta. These isopods appear to form an important component of the benthic community, acting as voracious scavengers and serving as food for a variety of fish and marine mammals.

Some information on the taxonomy, morphometry, general biology and occurrence of Mesidotea in the western arctic has been presented by Bray (1962). He concluded that the type of bottom was the principal factor influencing population densities of the three species in different areas, with the highest densities (0.46 - 0.93g wet weight/m^2) occurring in mud-bottomed areas, and the lowest (0.38g wet weight/m^2) in sand and gravel areas. He further suggested that temperature and salinity are important factors influencing the relative proportions of each of the three species occurring in different areas. A massive and seasonally variable influx of freshwater into the Beaufort Sea from the Mackenzie River causes extensive gradients in temperature and salinity both horizontally and vertically in the water column. This must exert a major effect on the occurrence of different marine species in the immediate area.

In the course of studies on the physiological responses of the three species to temperature and salinity stresses (Percy et al, 1978) information was also gathered about the relative proportions of the three species

in different areas in the vicinity of the principal collecting sites at Herschel Island and Dolomite Lake. Additional information about the occurrence of the three species over a much broader area of the Southern Beaufort Sea adjacent to the Mackenzie Delta was obtained from benthic trawl collections accumulated during several years of fisheries surveys in the area. Some information was also available from extensive benthic surveys carried out as part of the Beaufort Sea Project.

The present data report serves as a repository for much of the available information about the relative proportions of each of the three species occurring at different locations in the Mackenzie region; no attempt has been made to estimate actual biomass values for the different groups. Information about population structure and reproduction in different areas is also presented.

Methods

All of the isopod collections considered in the present survey are summarized in table 1. To facilitate presentation of the data each collection has been assigned an identifying index number, generally in chronological order. Each sample is also cross-referenced with its original collection number. The collections utilized in this study are derived from a variety of sources.

During the summers of 1960 and 1961 Bray collected isopods while engaged in fisheries surveys with the Arctic Biological Station (Bray, 1962).

Data from several of his collections (index 1 - 5) made with either otter or balloon trawl from the M.V."Salvelinus"are included in the present compilation.

Numbers of benthic trawl samples were accumulated in the summer of 1971 during a fisheries survey in the Southern Beaufort Sea. These samples (index 6 - 8, and 11 - 22) and the accompanying hydrographic data were made available by the fisheries group at the Arctic Biological Station. All of the isopods in these collections were sorted to species, sexed and counted. The occurrence of females with embryos in the brood pouch or with well-developed brood lamellae was also noted. Animals were measured to the nearest mm and a size frequency histogram constructed for those collections containing significant numbers of animals.

During the summers between 1971 and 1975, extensive benthic surveys were made in the area by the zoobenthos group at the Arctic Biological Station. The detailed data from these surveys have been presented by Wacasey et al. (1977). This information was of particular interest because it included collections from some of the deeper offshore areas not covered in the fisheries surveys. These collections were made largely by grabs and thus the numbers of isopods obtained were necessarily small. Only those collections (index 9-10, 23-77 and 148-150) in which isopods occurred are considered in the present survey. In the original data report the numbers are reported on a square meter basis. In the present compilation the numbers actually collected are used to compare the relative abundance of the three species at each location. No information

is available about size, sex or reproductive condition of the isopods in these collections.

The physiological studies on the isopods were initiated during the summer of 1975, with the main collecting site being in Ptarmigan Cove, Herschel Island. At this time three 15 minute otter trawls were made from the M.V."Salvelinus"in Ptarmigan Cove, parallel to the shore and at different distances from it. These samples (index 78-80) were preserved and later processed as described earlier for the fisheries samples.

Animals for physiological studies were routinely collected in baited wire-mesh minnow traps of standard design. The openings were enlarged to accomodate the larger animals. The traps proved to be particularly effective for collecting M. entomon and M. sibirica. M. sabini was generally poorly represented in the trap samples, probably because it is a burrowing, less active form than either of the other two, and is thus most effectively collected by trawls or dredges. To examine the relative occurrence of M. sibirica and M. entomon in the nearshore regions of Ptarmigan Cove, a trap transect was set up during the summer of 1976. Three traps baited with fish were placed at each of eight selected depths between 1 and 25 meters. The traps at a particular depth were located at least 25 meters apart. The traps were retrieved after 5 hours and the isopods were sorted to species, sexed, counted, measured and examined for reproductive status (index 81-88). Two comparable collections (index 89, 90) were made in nearby Pauline Cove. Bottom temperature and salinity were measured at each of the trap locations.

During the summer of 1977, the trap transect was again set up in Ptarmigan Cove. A heavy intrusion of sea ice into the area prevented positioning of the transect in the same place as in 1976. It was established parallel to the original but approximately a kilometer to the north east. Collections were made as before at selected depths between 0.5m and 14m (index 139-147). Heavy fog prevented recovery of the 14-meter traps at the correct time, so that results are excluded from the tabulation. However, when the traps were recovered 24 hours later they contained several hundred M. sibirica and 2 M. sabini, but no M. entomon. The 1977 transect collections were sorted to species, sexed, counted and examined for reproductive state, but were not measured. Bottom temperature and salinity were measured at each of the trap locations. In addition, a vertical T/S profile was made from the surface to the bottom at the 14-meter station at the time of placing the traps.

During the summers of 1976 and 1977 additional trawl samples were collected by the fisheries group operating from the M.V. "Salvelinus". These collections (index 94-137) were mainly concentrated to the northeast of Tuktoyaktuk, into Liverpool Bay, an area poorly represented in the earlier isopod collections. These collections were processed in the same manner as the previous fisheries collections.

During the summers of 1976 and 1977 the freshwater variant of M. entomon was collected by baited traps in Dolomite Lake (also called Airport Lake) located approximately 12 kilometers to the south of Inuvik adjacent to the airport. This lake is connected to the East Channel of the Mackenzie

River by a narrow winding channel. Traps were set in about 10 meters of water and left overnight. These collections (index 91-93 and 138) were sorted, sexed, counted and measured as before. To simplify the presentation the terms "marinus" and"limnos" are used in this report to designate the marine and freshwater forms, respectively, of M. entomon. However, these designations have no formal taxonomic significance and are not intended to imply the existence of two subspecies or physiological races.

On several occasions gravid animals were preserved individually immediately after collection in order to assess fecundity without the problem of loss of eggs from the brood pouch. In all, 32 M. entomon (limnos), 42 M. sibirica and 4 M. sabini were examined for the length-fecundity regression analysis. In order to estimate relative embryo sizes in each of the species, ten embryos from each of the brood pouches of several animals were measured (greatest diameter) with an ocular micrometer.

List of Tables

List of Tables (cont'd.)

List of Tables (cont'd.)

List Of Figures

List of Figures (cont'd.)

List of Figures (cont'd.)

Table 1. Station list and hydrographic data associated with isopod collections considered in the present study.

Index no.	Collection no.[1]	Date	Latitude	Longitude	Depth (m)	Salinity (°/₀₀)	Temp. (°C)
1	F60-1010	3.8.60	69°31.2'	139°4.5'	7-10	26.8	-0.5
2	F61-1009	6.6.61	69°43.5'	132°48'	6	20.4	-0.5
3	F61-1015	10.6.61	70°11'	128°35'	10	32.5	-1.4
4	F61-1082	19.8.61	70°13'	132°36'	28	32.9	-1.2
5	F61-1093	26.8.61	69°50'	133°02'	13	-	-
6	F71-002	18.8.71	69°49.3'	132°41.5'	9	-	-
7	F71-004	19.7.71	70°16'	131°40'	33	-	-
8	F71)07	23.7.71	69°34.6'	131°12.6'	5.5	-	-
9	B73-532	23.7.73	70°43'	130°14'	36	32.4	-0.5
10	B73-533	23.7.73	70°56'	130°14'	42	32.8	-0.8
11	F71-023	6.8.71	69°42.9'	130°16.5'	10	-	-
12	F71-024	6.8.71	69°43.7'	130°22'	11.5	-	-
13	F71-025	6.8.71	69°45'	130°25.5'	11.5	-	-
14	F71-026	6.8.71	69°45.7'	130°28'	10	-	-
15	F71-028	7.8.71	69°50.7'	129°36.1'	15	-	-
16	F71-030	7.8.71	69°54.6'	129°40.3'	12	-	-
17	F71-031	7.8.71	69°56.7'	129°42.3'	6	-	4.3
18	F71-032	7.8.71	69°48.1'	130°20'	-	-	-
19	F71-037	9.8.71	69°40.4'	130°35'	5	-	-
20	F71-038	9.8.71	69°43.8'	130°27.8'	9.5	-	5.4
21	F71-039	9.8.71	69°41.4'	130°28.1'	5	-	-
22	F71-040	9.8.71	69°41.1'	130°24.1'	11	-	-
23	B71-502	18.7.71	69°49.3'	132°41.5'	10	26.6	2.1
24	B71-503	19.7.71	69°58.4'	132°57.0'	19	30.7	-1.1
25	B71-504	19.7.71	70°16'	131°40'	38	31.6	-1.3
26	B71-506	20.7.71	69°59.4'	129°13.2'	13	26.7	3.1
27	B73-529	22.7.73	70°1'	136°26'	12	9.6	7.0
28	B73-530	23.7.73	70°11'	130°50'	9	12.7	6.6
29	B73-536	25.7.73	69°50'	134°30'	9	13.0	2.8
30	B73-537	25.7.73	69°48'	135°17'	9	24.4	0.6
31	B73-538	26.7.73	69°33'	136°00'	5	4.6	8.5
32	B73-541	27.7.73	69°14'	137°54'	34	30.1	-0.1
33	B73-542	27.7.73	69°32'	138°18'	94	32.3	-1.3
34	B74-545	27.8.74	70°23.2'	131°42.8'	37	31.0	-1.5
35	B74-547	28.8.74	70°18'	135°10.2'	56	31.9	-1.4
36	B74-548	29.8.74	70°8.1'	135°34.3'	44	31.5	-1.5
37	B74-549	30.8.74	69°56.2'	135°47.8'	24	30.4	-1.6

[1] F = Fisheries collections (F60 and F61 series from Bray, 1962) (bottom trawls)
B = Benthic ecology collections (Wacasey et al, 1977) (grabs and dredges)
PC = Ptarmigan Cove, Herschel Island collections. (trawl and baited traps)
DL = Dolomite Lake, Mackenzie Delta collections. (baited traps)

Table 1. (continued)

Index no.	Collection no.[1]	Date	Latitude	Longitude	Depth (m)	Salinity (°/₀₀)	Temp. (C)
38	B74-550	30.8.74	70°21.1'	136°36.3'	58	32.1	-1.4
39	B74-551	30.8.74	70°6.9'	136°50.2'	42	31.7	-1.5
40	B74-552	31.8.74	69°56.2'	137°4.7'	40	32.2	-1.5
41	B74-556	1.9.74	69°27'	138°48.5'	54	32.4	-1.6
42	B74-559	2.9.74	69°59.7'	135°21'	32	30.9	-1.6
43	B75-565	17.6.75	70°8'	132°37'	31	31.6	-1.6
44	B75-568	18.7.75	70°14'	139°4'	408	34.6	0.4
45	B75-569	5.8.75	70°14'	139°4'	441	34.8	0.4
46	B75-570	5.8.75	70°42'	134°45'	55	31.6	-1.4
47	B75-571	6.8.75	70°2'	135°34'	37	31.7	-1.5
48	B75-574	8.8.75	70°7'	132°17'	32	29.2	-0.2
49	B75-575	9.8.75	69°33'	138°56'	10	21.8	3.7
50	B75-604	13.7.75	69°32.3'	133°52.5'	4	4.1	7.5
51	B75-608	14.7.75	69°32.3'	134°9.4'	4	10.6	8.5
52	B75-610	14.7.75	69°33.5'	134°5'	18	18.4	1.5
53	B75-611	15.7.75	69°34.3'	134°3'	3	3.9	10.0
54	B75-612	17.7.75	69°35.9'	133°58.5'	7	2.8	12.2
55	B75-B	10.5.75	69°34'	138°57'	6	10.5	-0.8
56	B75-573	7.8.75	71°22'	130°24'	70	32.4	-1.5
57	B75-D	16.5.75	69°17'	138°32'	7	2.2	-1.1
58	B75-E	12.5.75	69°7'	137°57'	16	30.1	-1.8
59	B75-G	17.5.75	69°0.5'	137°13'	4.5	1.0	-0.2
60	B75-1	24.7.75	69°14.5'	138°29'	1.4	7.5	9.1
61	B75-4	24.7.75	69°15.5'	138°28'	1.3	8.1	9.1
62	B75-25	23.7.75	69°20.5'	138°42'	2.5	8.0	9.1
63	B75-27	23.7.75	69°21'	138°40'	12.5	26.2	1.0
64	B75-31	20.7.75	69°34.2'	138°56'	3.5	16.4	6.3
65	B75-34	21.7.75	69°34'	138°53'	3.0	18.8	6.5
66	B75-100	17.7.75	69°6.5'	137°57'	13.0	28.3	1.0
67	B75-104	16.7.75	68°59'	137°21'	3.0	26.2	0.3
68	B75-005	7.7.75	69°23'	133°13'	2	12.0	12.0
69	B75-006	7.7.75	69°22'	133°14'	3	8.0	12.0
70	B75-009	11.7.75	69°24'	133°7'	2	14.0	12.0
71	B75-025	5.8.75	69°45'	132°15'	3	4.0	7.6
72	B75-026	5.8.75	69°44'	132°12'	3	9.0	7.4
73	B75-029	8.8.75	69°43'	132°14'	2	4.5	7.8
74	B75-030	15.8.75	69°54'	131°8'	5	2.0	8.5
75	B75-031	15.8.75	69°57'	131°10'	7	6.5	9.3
76	B75-033	16.8.75	69°58'	131°17'	5	6.5	9.7
77	B75-034	17.8.75	70°00'	131°5'	8	6.5	8.8
78	PC75-a	29.7.75	69°34'	138°57'	9	-	-
79	PC75-b	28.7.75	69°33.5'	138°57'	13	-	-
80	PC75-c	29.7.75	69°32.5'	138°57'	30-40	-	-

Table 1. (continued)

Index no.	Collection no.[1]	Date	Latitude	Longitude	Depth (m)	Salinity (°/₀₀)	Temp. (°C)
81	PC76-1	4.8.76	69°33.5'	138°58'	1	25.5	1.2
82	PC76-2	4.8.76	69°33.5'	138°58'	2	24.0	1.7
83	PC76-3	4.8.76	69°33.5'	138°58'	3	23.0	1.9
84	PC76-4	5.8.76	69°33.5'	138°58'	5	13.0	7.0
85	PC76-5	5.8.76	69°33.5'	138°58'	10	25.5	0.5
86	PC76-6	4.8.76	69°33.5'	138°58'	15	32.0	-1.4
87	PC76-7	4.8.76	69°33.5'	138°58'	20	32.0	-1.4
88	PC76-8	4.8.76	69°33.5'	138°58'	25	32.5	-1.4
89	PC76-9	5.8.76	69°33.5'	138°58'	2	3.0	8.0
90	PC76-10	4.8.76	69°33.5'	138°58'	6	17.0	3.6
91	DL76-1	24.7.76	68°18'	133°33'	10	Fresh	9.6
92	DL76-2	25.7.76	68°18'	133°33'	10	Fresh	9.6
93	DL76-3	1.8.76	68°18'	133°33'	10	Fresh	9.6
94	F76-003	18.7.76	69°29.2'	133°4.8'	5.5	-	-
95	F76-006	18.7.76	69°29.2'	133°4.8'	5.5	-	-
96	F76-009	19.7.76	69°37.0'	136°6.5'	6.4	25.0	4.2
97	F76-010	19.7.76	69°38.5'	133°23.2'	6.4	24.0	0.65
98	F76-013	20.7.76	69°29.9'	133°5.5'	6	24.0	1.75
99	F76-017	31.7.76	69°27.7'	130°57'	24	16.0	
100	F76-018	3.8.76	69°42.8'	130°12'	12	21.0	1.0
101	F76-019	3.8.76	69°45.1'	130°16'	14	22.5	1.0
102	F76-020	4.8.76	69°47.2'	130°19.5'	11	22.0	2.0
103	F76-022	6.8.76	69°53'	129°23.4'	18	28.5	1.5
104	F76-023	6.8.76	69°55'	129°27.2'	16	27.5	2.5
105	F76-024	6.8.76	69°57.6'	129°32.2'	14	24.5	4.0
106	F77-002	21.7.77	70°21'	128°2'	3	12.0	10.5
107	F77-005	22.7.77	70°19.3'	128°29.5'	9.2	32	-1.0
108	F77-006	25.7.77	69°26.5'	131°55.5'	-	-	-
109	F77-008	26.7.77	69°47.8'	130°21.8'	4.0	22	2.6
110	F77-010	26.7.77	69°45.1'	130°15'	6.0	26	0.6
111	F77-017	28.7.77	70°41'	127°43'	150	-	-
112	F77-018	28.7.77	70°40'	127°47'	100	-	-
113	F77-019	28.7.77	70°38.2'	127°48.9'	50	-	-
114	F77-020	28.7.77	70°36.3'	127°58'	25	-	-
115	F77-021	29.7.77	70°33.8'	126°53'	335	34	0.3
116	F77-023	4.8.77	70°20'	128°35.5'	14	-	-
117	F77-026	4.8.77	70°39.3'	127°53.5'	40	-	-
118	F77-028	5.8.77	70°43.6'	127°40.2'	120	-	-
119	F77-030	5.8.77	70°29.5'	128°16.5'	6	25	5.0
120	F77-032	8.8.77	69°59.7'	129°26.7'	7	30	2.5
121	F77-035	10.8.77	70°9.5'	130°51.3'	5	31	0.6
122	F77-037	12.8.77	69°58.7'	131°8'	5	30	2.5
123	F77-038	13.8.77	69°45.5'	132°10.7'	1.5	-	-

Table 1. (continued)

Index no.	Collection no.[1]	Date	Latitude	Longitude	Depth (m)	Salinity (°/₀₀)	Temp. (°C)
124	F77-039	13.8.77	69°44.3'	132°6.7'	2.5	-	-
125	F77-042	14.8.77	69°45.3'	132°29.5'	8	32	1.1
126	F77-043	14.8.77	69°46.5'	132°32.3'	8	-	-
127	F77-044	14.8.77	69°47.5'	132°35.9'	8	1	31
128	F77-045	14.8.77	69°48.2'	132°38'	9	-	-
129	F77-046	14.8.77	69°49'	132°39.8'	9	32	0.2
130	F77-047	14.8.77	69°49.8'	132°41.5'	9	-	-
131	F77-048	16.8.77	69°43.5'	132°35'	5	-	-
132	F77-051	20.8.77	69°31.7'	133°11'	4	27	6.6
133	F77-052	20.8.77	69°31.6'	133°16.7'	3	-	-
134	F77-055	23.8.77	69°37.3'	133°0.5'	6	30	2.9
135	F77-057	23.8.77	69°37.3'	133°17'	5	30	4
136	F77-058	23.8.77	69°37.3'	133°25.7'	5	-	-
137	F77-060	23.8.77	69°37.3'	133°46'	4	-	-
138	DL77-1	19.7.77	68°18'	133°33'	10	Fresh	8.1
139	PC77-2	14.7.77	69°33.5'	138°57'	0.5	2	9.9
140	PC77-3	14.7.77	69°33.5'	138°57'	1	2	6.8
141	PC77-4	14.7.77	69°33.5'	138°57'	2	2	5.4
142	PC77-5	14.7.77	69°33.5'	138°57'	3	2	4.7
143	PC77-6	13.7.77	69°33.5'	138°57'	4	2	4.4
144	PC77-7	13.7.77	69°33.5'	138°57'	6	2	4.1
145	PC77-8	13.7.77	69°33.5'	138°57'	8	30	-1.05
146	PC77-9	14.7.77	69°33.5'	138°57'	10	31	-1.3
147	PC77-10	14.7.77	69°33.5'	138°57'	12	32	-1.5
148	B75-570	6.8.75	70°42'	134°45'	55	31.6	-1.4
149	B75-572	7.8.75	70°56'	132°33'	65	32.3	-1.5
150	B75-574	8.8.75	70°07'	132°17'	32	>29.2	-0.2

Table 2. Numbers of M. entomon, M. sibirica and M. sabini in collections of isopods from various locations in the southern Beaufort Sea. Data also expressed as a percentage of each species relative to the total number of isopods.

Index no.	Collecting Gear[1]	Total Isopods[2]	M. entomon[3] no.	%	M. sibirica no.	%	M. sabini no.	%
1	OT	1148	1043	91	103	9	2	0.2
2	BT	25	25	100				
3	BT	14					14	100
4	BT	82					82	100
5	BT	9			9	100		
6	OT	207			52	25	155	75
7	OT	566			6	1	560	99
8	OT	10	10	100				
9	G(X5)	(13)						
10	G(X5)	(6)						
11	OT	19	3	17			16	83
12	OT	13			2	16	11	84
13	OT	12			2	17	10	83
14	OT	16			14	87	2	13
15	OT	41			5	12	36	88
16	OT	19			11	57	8	43
17	OT	39			23	59	16	41
18	OT	32			26	81	6	19
19	OT	1					1	100
20	OT	3			3	100		
21	OT	1					1	100
22	OT	5			2	40	3	60
23	G(X6)	3					3	100
24	G(X6)	1					1	100
25	G(X6)	1					1	100
26	G(X6)	4					4	100
27	G(X5)	4			2	50	2	50
28	G(X5)	1					1	100
29	G(X5)	1					1	100
30	G(X5)	1					1	100
31	G(X5)	2	2	100				

[1] OT = Otter trawl; BT = Balloon trawl; G = Grab (0.023-0.09 m^{-2})
D = 1 meter dredge; TR = Baited traps.

[2] Figure in parentheses indicates number of isopods other than Mesidotea sp. in samples.

[3] Includes both marine and freshwater variants; the latter are indicated by an asterisk.

Table 2. (continued)

Index no.	Collecting Gear	Total Isopods	M. entomon no.	M. entomon %	M. sibirica no.	M. sibirica %	M. sabini no.	M. sabini %
32	G(X5)	1					1	100
33	G(X5)	1(16)					1	100
34	G(X4)	2					2	100
35	G(X4)	3					3	100
36	G(X4)	1					1	100
37	G(X4)	1					1	100
38	G(X4)	2(1)					2	100
39	G(X4)	4					4	100
40	G(X4)	1					1	100
41	G(X4)	2					2	100
42	G(X4)	4(1)					4	100
43	G(X4)	3					3	100
44	G(X4)	1					1	100
45	G(X3)	1(1)					1	100
46	G(X3)	1					1	100
47	G(X3)	3					3	100
48	G(X3)	1					1	100
49	G(X3)	1					1	100
50	G(X4)	4	4	100				
51	G(X4.5)	2	2	100				
52	G(X4.5)	1	1	100				
53	G(X4.5)	4	4	100				
54	G(X4.5)	8	8	100				
55	G(X3)	1			1	100		
56	G(X3)	(4)						
57	G(X3)	1					1	100
58	G(X3)	1					1	100
59	G(X3)	1	1	100				
60	G(X10)	15	15	100				
61	G(X10)	3	3	100				
62	G(X10)	2	2	100				
63	G(X10)	3			1	33.0	2	67
64	G(X10)	2	2	100				
65	G(X10)	1	1	100				
66	G(X10)	2			2	100		
67	G(X10)	16	16	100				
68	G(X4)	3	3	100				
69	G(X4)	5	5	100				
70	G(X4)	2	2	100				
71	G(X4)	9	9	100				
72	G(X4)	4	4	100				
73	G(X4)	1	1	100				
74	G(X4)	24	24	100				

Table 2. (continued)

Index no.	Collecting Gear	Total Isopods	M. entomon		M. sibirica		M. sabini	
			no.	%	no.	%	no.	%
75	G(X4)	15	15	100				
76	G(X4)	11	11	100				
77	G(X4)	1	1	100				
78	OT	1055	389	37	634	60	30	3
79	OT	611	4	1	546	89	61	10
80	OT	184	2	1	137	74	45	25
81	TR(X3)	250	250	100				
82	TR(X3)	192	192	100				
83	TR(X3)	136	136	100				
84	TR(X3)	26	26	100				
85	TR(X3)	15	11	73	4	27		
86	TR(X3)	180			180	100		
87	TR(X3)	336			336	100		
88	TR(X3)	244			244	100		
89	TR(X3)	2	2	100				
90	TR(X3)	27	27	100				
91	TR(X1)	50*	50	100				
92	TR(X1)	66*	66	100				
93	TR(X3)	348*	348	100				
94	OT	330	330	100				
95	OT	217	217	100				
96	OT	36	36	100				
97	OT	24	24	100				
98	OT	594	594	100				
99	OT	2			1	50	1	50
100	OT	65			3	4	62	96
101	OT	11			3	27	8	73
102	OT	19			4	21	15	79
103	OT	264			8	3	256	97
104	OT	426					426	100
105	OT	140			102	73	38	27
106	OT(X2)	14	9	64			5	36
107	OT(X2)	2			2	100		
108	OT	2	2	100				
109	OT(X2)	5	3	60			2	40
110	OT	1					1	100
111	OT	(8)						
112	OT	1(93)					1	100
113	OT	(18)						
114	OT	1(149)			1	100		
115	OT	6					6	100
116	OT	1	1	100				

Table 2. (continued)

Index no.	Collecting Gear	Total Isopods	M. entomon		M. sibirica		M. subini	
			no.	%	no.	%	no.	%
117	OT	(2)						
118	OT	(1)						
119	OT	212	200	94	12	6		
120	OT(X3)	47			45	96	2	4
121	OT	422	412	98	10	2		
122	OT	336	334	99.4	1	0.3	1	0.3
123	OT	5	5	100				
124	OT	1505	1505	100				
125	OT	18	16	89			2	11
126	OT	56	19	34			37	66
127	OT	47	4	9	2	4	41	87
128	OT	76	2	3	9	12	65	86
129	OT	99			25	25	74	75
130	OT	311			38	12	273	88
131	OT	16	16	100				
132	OT	10	10	100				
133	OT	4	4	100				
134	OT	1	1	100				
135	OT	1	1	100				
136	OT	3	3	100				
137	OT	8	8	100				
138	TR(X2)	235*	235	100				
139	TR(X3)	215	215	100				
140	TR(X3)	268	268	100				
141	TR(X3)	43	43	100				
142	TR(X3)	23	23	100				
143	TR(X3)	36	35	97	1	3		
144	TR(X3)	76	71	93	5	7		
145	TR(X3)	121	99	81	22	18	1	1
146	TR(X3)	254			254	100		
147	TR(X3)	208			205	99	3	1
148	D	4(23)			1		3	
149	D	12(12)					12	
150	D	2					2	100

Table 3. Length-frequency distributions of Mesidotea entomon (marinus) males, females and juveniles collected at various locations in the southern Beaufort Sea.

Pivotal Length (mm)	Index 78			Index 81			Index 82			Index 83			Index 84			Index 85			Index 90		
	M	F	J	M	F	J	M	F	J	M	F	J	M	F	J	M	F	J	M	F	J
7.5																					
12.5																					
17.5																					
22.5						2															
27.5		1				4			2			2									
32.5	4	16		4			2	6		6									2	1	
37.5	31	65		14	28	2	6	12			16			1						1	
42.5	36	78		36	26		16	26		6	22			2						2	
47.5	29	47		18	42		22	42		12	22		2	4						1	
52.5	27	4		18	10		4	4		12	2		1	2		1			2	1	
57.5	11	2		26	2		14			10	2		3			1			1		
62.5	5			6			12			8			4			2			2		
67.5	3			6			8			6			2			3			2		
72.5	7			2			10			6			4			1			3		
77.5	17						4			4			1			1			6		
82.5	4			4			2									1			2		
87.5	2															1			1		
92.5																					
97.5																					
Subtotal	176	213	0	134	108	8	100	90	2	70	64	2	17	9	0	11	0	0	21	6	0
Total		389			250			192			136			26			11			27	

Table 3. (continued.)

Pivotal Length (mm)	Index 94			Index 95			Index 98			Index 119			Index 121			Index 122			Index 124		
	M	F	J	M	F	J	M	F	J	M	F	J	M	F	J	M	F	J	M	F	J
7.5																					8
12.5			6			2			12						4			10			648
17.5			120			47			282						5			217			680
22.5			120			103			228						29			93			96
27.5	2		44			43			39	1			5	4	83			13			32
32.5	4	6	10	4	7	1		12			2		20	31	80		1				
37.5	4	6		4	3		3	3		2	4	1	22	28	3					2	
42.5		2			1		6			15	11		14	15					1		
47.5		2		1	1		6			24	38		7	15							
52.5	2	2					3			31	21		8	16					1	2	
57.5										16	9		7	2						1	
62.5										9	2		3	4						1	
67.5										5			3	1							
72.5										4			1								
77.5										4			1						4		
82.5																			10		
87.5										1			1						17		
92.5																			2		
97.5																					
Subtotal	12	18	300	9	12	196	18	15	561	112	87	1	92	116	204	0	1	333	35	6	1464
Total		330			217			594			200			412			334			1505	

Table 3. (continued.)

Pivotal Length (mm)	Index 125			Index 126			Index 131			Index 132		
	M	F	J	M	F	J	M	F	J	M	F	J
7.5			2									
12.5			2			1						
17.5			5			1			8			1
22.5									6			2
27.5									2			3
32.5				1								
37.5		1								1	2	
42.5	3				1							
47.5				1	1					1		
52.5				3								
57.5				3	1							
62.5		1		1								
67.5												
72.5												
77.5												
82.5				1								
87.5	2			3								
92.5												
97.5				1								
Subtotal	5	2	9	14	3	2	0	0	16	2	2	6
Total		16			19			16			10	

Table 4. Length-frequency distributions of Mesidotea entomon (limnos) males, females and juveniles collected in Dolomite Lake.

Pivotal Length (mm)	Index 91			Index 92			Index 93			Index 138		
	M	F	J	M	F	J	M	F	J	M	F	J
17.5			1			1						
22.5								1	4	1	3	23
27.5	1			3			23	44	9	15	45	9
32.5	5	9		10	7		41	77		19	29	
37.5	4			11	1		51	1		29	4	
42.5	18			21			54			29		
47.5	11			12			33			22	1	
52.5	1						10			5		
82.5										1		
Subtotal	40	9	1	57	8	1	212	123	13	121	82	32
Total	50			66			348			235		

Table 5. Length-frequency distributions of Mesidotea sibirica males, females and juveniles collected at various locations in the southern Beaufort Sea.

Pivotal Length (mm)	Index 6			Index 78			Index 79			Index 80			Index 86			Index 87			Index 88		
	M	F	J	M	F	J	M	F	J	M	F	J	M	F	J	M	F	J	M	F	J
7.5						58			2			1									
12.5						60			2												
17.5			10			170			22			4									
22.5			17			198			61			2									
27.5			9	3		72	23	17	49												
32.5				3	2	6	27	47	2		4			2							
37.5	1				3		21	36		1	9		6	24							
42.5				2	2		18	31		5	5		6	26		4	8			2	
47.5		1		1	1		12	32		1	15		8	24		24	40		6	4	
52.5				1	5		17	21		3	11		8	20		24	20		14	12	
57.5	1	3			10		12	22		3	12		4	12		20	20		16	28	
62.5	1	2		1	17		13	19		8	15		6	12		24	24		20	16	
67.5	1	5		4	8		6	7		7	5		2			20	4		4		
72.5				2	1		8	2		2	3		8			20			36		
77.5				1			11			5			4			32			22		
82.5	1			2			2			4			2			32			30		
87.5				1			1			6									20		
92.5							3			4			6			8			12		
97.5																12			2		
102.5										2											
Subtotal	5	11	36	21	49	564	174	234	138	51	79	7	60	120	0	220	116	0	182	62	0
Total		52			634			546			137			180			336			244	

Table 5. (continued.)

Pivotal Length (mm)	Index 119			Index 120			Index 121			Index 129			Index 130		
	M	F	J	M	F	J	M	F	J	M	F	J	M	F	J
7.5						3			1						
12.5						21			3			6			
17.5			3			11			3			6			9
22.5			1			1			3			7			7
27.5			1			1						1		1	1
32.5					1									2	
37.5		1			2									3	
42.5				1	1								1		
47.5	1				1								1	1	
52.5		2			2								1		
57.5													1	1	
62.5	1	2									3			3	
67.5											2			5	
72.5														1	
77.5															
82.5															
87.5															
92.5															
97.5															
102.5															
Subtotal	2	5	5	1	7	37	0	0	10	0	5	20	4	17	17
Total		12			45			10			25			38	

Table 6. Length-frequency distributions of Mesidotea sabini males, females and juveniles collected at various locations in the southern Beaufort Sea.

Pivotal Length (mm)	Index 6			Index 7			Index 78			Index 79			Index 80			Index 104		
	M	F	J	M	F	J	M	F	J	M	F	J	M	F	J	M	F	J
7.5																		
12.5									2			1						
17.5									2			2			6			2
22.5												1			3			4
27.5									2			4			1			14
32.5		4									1				1			36
37.5		10			2		1			1					3			34
42.5	4	15			6		1	1		1				2		14	50	
47.5	8	14		28	42		2							2		40	58	
52.5	9	14		14	30		1	1		3	1		3	2		32	34	
57.5	11	13		58	52			1		5	4		1	2		36	20	
62.5	8	6		28	54		2	2		4	11		2	1		8	10	
67.5	3	5		50	58		1	1		4	5		1	4		12	8	
72.5	3			12	8		1			6	1		1	1			2	
77.5	4			18	4		3			2			1			2		
82.5	10			28	4		2			2			2			6		
87.5	12			30			4			2			4			2		
92.5	1			24									1			2		
97.5	1			8									1					
102.5				2														
Subtotal	74	81	0	300	260	0	18	6	6	30	23	8	17	14	14	154	182	90
Total		155			560			30			61			45			426	

Table 6. (continued.)

Pivotal Length (mm)	Index 126			Index 127			Index 128			Index 129			Index 130		
	M	F	J	M	F	J	M	F	J	M	F	J	M	F	J
7.5															
12.5															
17.5															
22.5			3			3			1			3			5
27.5		1	1						2			2			12
32.5		1							6			3			15
37.5								2	17			9		2	9
42.5					1	3	1	3		2				13	6
47.5		1			1		2	1					7	15	
52.5	1	1		3	4		3	4		4	2		12	26	
57.5		1		4	4		2	6		3			17	22	
62.5	3	3		6	1		2	3		6	12		15	17	
67.5	1	5		2			3	3		5	8		14	11	
72.5				5						4	1		18	1	
77.5	4			1			3			1			9		
82.5	5			2						6			14	1	
87.5	5						1			2			7		
92.5	2									1			4		
97.5													1		
Subtotal	21	11	5	24	11	6	17	22	26	34	23	17	118	108	47
Total	37			41			65			74			273		

Table 7. Length-frequency distributions of gravid females and females with well developed brood lamellae of M. entomon, M. sibirica and M. sabini; pooled data from several collections.

Pivotal Length (mm)	M. entomon (marinus)			M. entomon (limnos)			M. sibirica			M. sabini		
	GR.	B.L.	Σ*	GR.	B.L.	Σ	GR.	B.L.	Σ	GR.	B.L.	Σ
22.5												
27.5				2		2						
32.5	5		5	25	2	27						
37.5	7		7	2	1	3						
42.5	3		3									
47.5	8	12	20									
52.5	2	3	5				1		1			
57.5	2	1	3				7	1	8	1		1
62.5	2	4	6				27	3	30	3	8	11
67.5	1		1				16		16	4	10	14
72.5							2	1	3	1	2	3
77.5											1	1
82.5												
87.5											1	1
Total	30	20	50	29	3	32	53	5	58	9	22	31

* Number reproductively active, sum of GR. and B.L.

Table 8. Proportion of juvenile M. entomon in collections of isopods from various locations in the southern Beaufort Sea and in Dolomite Lake(*).

Index no.	No. Animals	No. Juveniles	% Juveniles
78	389	0	0
81	250	8	3.2
82	192	2	1.0
83	136	2	1.5
84	26	0	0
85	11	0	0
90	27	0	0
94	330	300	90.9
95	217	196	90.3
98	594	561	94.4
91*	50	1	2.0
92*	66	1	1.5
93*	348	13	3.7
138*	235	32	13.6
106	9	2	22.2
119	200	1	0.5
121	412	204	49.5
122	334	333	99.7
123	5	5	100.0
124	1505	1464	97.3
125	16	9	56.3
126	19	2	10.5
127	4	1	25.0
131	16	16	100.0
132	10	6	60.0
133	4	1	25.0
136	3	1	33.3
137	8	2	25.0
139	215	1	0.5
140	268	0	0
141	43	0	0
142	23	0	0
143	35	1	2.9
144	71	2	2.8
145	98	0	0

Table 9. Proportion of juvenile M. sibirica in collections of isopods from various locations in the southern Beaufort Sea.

Index no.	No. Animals	No. Juveniles	% Juveniles
6	52	36	69.2
78	634	564	89.0
79	546	138	25.3
80	137	7	5.1
86	180	0	0
87	336	0	0
88	244	0	0
119	12	5	41.7
120	45	37	82.2
121	10	10	100.0
127	2	2	100.0
128	9	5	55.6
129	25	20	80.0
130	38	17	44.7
144	5	2	40.0
145	22	1	4.5
146	254	17	6.7
147	205	9	4.4

Table 10. Proportion of juveniles of *M. sabini* in collections of isopods from various locations in the southern Beaufort Sea.

Index no.	No. Animals	No. Juveniles	% Juveniles
6	155	0	0
7	560	0	0
78	30	6	20.0
79	61	8	13.1
80	45	14	31.1
104	426	90	21.1
106	5	1	20.0
115	6	6	100.0
126	37	5	13.5
127	41	6	14.6
128	65	26	40.0
129	74	17	23.0
130	273	47	17.2

Table 11. Sex ratio and numbers and percentages of M. entomon females that were either gravid or had fully developed brood lamellae (B.L.) in collections of isopods from various locations in the southern Beaufort Sea and in Dolomite Lake(*).

Index no.	No. Sexable	No. Females	% Females	No. Grav.	No. B.L.	Total Reproductive	% Reproductive
78	389	213	54.8	0	0	0	0
81	242	108	44.6	2	0	2	1.9
82	190	90	47.4	6	0	6	6.7
83	134	64	47.8	4	0	4	6.3
84	26	9	34.6	0	0	0	0
85	11	0	0	0	0	0	0
90	27	6	22.2	0	0	0	0
94	30	18	60.0	16	0	16	88.9
95	21	12	57.1	7	0	7	58.3
98	33	15	45.5	3	0	3	20.0
91*	49	9	18.4	0	1	1	11.1
92*	65	8	12.3	0	0	0	0
93*	335	123	36.7	14	0	14	11.4
138*	203	82	40.4	15	0	15	18.3
119	199	87	43.5	0	1	1	1.1
121	412	116	28.2	0	1	1	0.9
124	41	6	14.6	2	0	2	33.3
125	7	2	28.6	0	0	0	0
126	17	3	21.4	0	0	0	0
132	4	2	50.0	0	0	0	0
133	3	0	0	0	0	0	0
137	6	4	66.7	1	0	1	25.0
139	214	75	35.0	6	4	10	13.3
140	268	88	32.8	21	5	26	29.5
141	43	4	9.3	1	2	3	75.0
142	23	5	21.7	1	0	1	20.0
143	34	8	23.5	1	0	1	12.5
144	69	13	18.8	0	0	0	0
145	98	15	15.3	0	0	0	0
Total	3193	1185	37.1	100	14	114	9.6

Table 12. Sex ratio and numbers and percentages of M. sabini females that were either gravid or had well developed brood lamellae (B.L.) in collections of isopods from various locations in the southern Beaufort Sea.

Index no.	No. Sexable	No. Females	% Females	No. Grav.	No. B.L.	Total Reproductive	% Reproductive
6	155	81	52.3	0	0	0	0
7	560	260	46.4	12	0	12	4.6
78	24	6	25.0	0	0	0	0
79	53	23	43.4	0	0	0	0
80	31	14	45.2	0	0	0	0
104	336	182	54.2	0	0	0	0
106	4	2	50.0	2	0	2	100
120	5	4	80.0	4	0	4	100
126	32	11	34.4	0	5	5	45.5
127	35	11	31.4	0	0	0	0
128	39	22	56.4	0	2	2	9.1
129	57	23	40.0	0	8	8	34.8
130	226	108	47.8	3	3	6	5.6
Total	1557	747	48.0	21	18	39	5.2

Table 13. Sex ratio and numbers and percentages of M. sibirica females that were either gravid or had well developed brood lamellae (B.L.) in collections of isopods from various locations in the southern Beaufort Sea.

Index no.	No. Sexable	No. Females	% Females	No. Grav.	No. B.L.	Total Reproductive	% Reproductive
6	16	11	68.8	0	0	0	0
78	70	49	70.0	9	0	9	18.4
79	408	234	57.4	9	0	9	3.8
80	130	79	60.8	3	0	3	3.8
86	180	120	66.7	0	0	0	0
87	336	116	34.5	0	0	0	0
88	244	62	25.4	0	0	0	0
119	7	5	71.4	1	0	1	20.0
128	4	4	100.0	2	2	4	100.0
129	5	5	100.0	5	0	5	100.0
130	21	17	81.0	5	3	8	47.1
144	3	1	33.3	0	0	0	0
145	21	16	76.2	1	7	8	50.0
146	237	130	54.9	5	26	31	23.8
147	193	75	38.9	2	9	11	14.7
Total	1875	924	49.3	42	47	89	9.6

Table 14. Fecundity in relation to body length of Mesidotea entomon collected in Ptarmigan Cove, Herschel Island on August 17, 1975 (A), and July 13, 1977 (B).

A.		B.	
Length (mm)	No. embryos	Length (mm)	No. embryos
42	334	51	317
51	530	45	372
51	532	52	501
48	366	53	422
47	318	55	390
52	412	48	409
51	429	55	489
51	461	51	352
51	456	48	290
51	516	50	306
50	534	51	455
52	602	49	443
46	415	52	384
50	402	51	390
51	514		
51	500		
53	686		
53	606		
N	18		14
$\bar{X}$ 50.1	479	50.8	394
Range 42-53	318-686	45-55	290-501

Table 15. Fecundity in relation to body length of Mesidotea entomon collected in Dolomite Lake, Mackenzie Delta on 11 July 1975 (A) and 25 July 1977 (B).

A.		B.	
Length (mm)	No. embryos	Length (mm)	No. embryos
31	90	33	97
30	89	32	78
29	74	32	108
33	133	31	73
38	156	33	105
33	142	37	124
32	98	29	57
35	143	32	91
40	180	32	111
37	172	34	115
		33	87
		32	90
		33	113
		32	103
		34	105
		35	116
		33	125
		29	71
		32	82
N	10		19
$\bar{X}$ 33.8	128	32.5	97.4
Range 29-40	74-180	29-37	57-125

Table 16. Fecundity in relation to body length of *Mesidotea sibirica* collected in Ptarmigan Cove, Herschel Island on 28-30 July 1975 (A) and 17-28 July 1977 (B)

A.		B.	
Length (mm)	No. embryos	Length (mm)	No. embryos
64	187	64	217
60	211	61	202
59	183	59	118
62	202	64	219
66	279	65	164
64	246	64	195
65	201	56	145
63	211	61	176
59	156	65	232
70	271	66	252
74	282	62	203
56	172	66	175
58	143	51	76
61	183	62	172
68	262	63	148
59	180		
61	217		
65	206		
60	191		
62	180		
65	227		
63	161		
65	242		
61	160		
60	184		
61	193		
60	151		
N	27		15
$\bar{X}$	62.6	206.7	61.9	179.6
Range	56-74	143-282	51-66	76-252

Table 17. Fecundity in relation to body length of *Mesidotea sabini* collected in Liverpool Bay on 10 August 1977. Specimens taken from preserved mass samples and some embryos may have been lost from brood pouch after collection.

Length (mm)	No. embryos
72	185
70	132
66	146
71	165
N	4
$\bar{X}$ 69.8	157
Range 66-72	132-185

Table 18. Linear and logarithmic regressions of number of embryos in the brood pouch on animal-length (mm) for *Mesidotea entomon*, *M. sibirica* and *M. sabini* from the southern Beaufort Sea.

Species	Type of Regression	N	Regression Coefficient	Intercept	S.E.R.[1]	S.E.E.[2]	Correlation Coefficient
Entomon (Mar.)	Linear	32	16.563	-392.714	5.561	83.878	0.478
Entomon (Mar.)	Log	32	1.842	-0.498	0.604	0.081	0.486
Entomon (Lim.)	Linear	29	10.096	-224.969	1.080	14.844	0.874
Entomon (Lim.)	Log	29	3.072	-2.642	0.342	0.060	0.866
Sibirica	Linear	42	8.687	-347.233	1.040	26.098	0.797
Sibirica	Log	42	3.055	-3.203	0.366	0.064	0.797
Sabini	Linear	4	5.263	-208.789	5.301	23.105	0.575
Sabini	Log	4	2.151	-1.770	2.389	0.066	0.537

1. Standard error of regression coefficient.

2. Standard error of estimate.

Table 19. Embryo sizes of M. entomon, M. sibirica and M. sabini. Each value is the mean length of 10 early stage embryos (except in the case of M. sabini for which only late stage embryos were available for examination) obtained from the brood pouch of a single animal.

	M. entomon (mar.)		M. entomon (lim.)		M. sibirica		M. sabini	
	Mean Length(mm)	S.D.	Mean Length(mm)	S.D.	Mean Length(mm)	S.D.	Mean Length(mm)	S.D.
	1.27	.08	1.36	.06	2.39	.09	4.26	.16
	1.27	.07	1.32	.05	2.47	.18	4.07	.22
	1.23	.03	1.30	.06	2.34	.09	4.26	.19
	1.25	.03	1.31	.05	2.47	.11	4.56	.14
	1.23	.05	1.35	.09	2.43	.06		
	1.23	.05	1.20	.08	2.32	.07		
	1.22	.05	1.34	.05	2.36	.13		
	1.23	.09	1.29	.08	2.37	.12		
	1.18	.07	1.39	.06	2.35	.09		
	1.20	.06	1.38	.06	2.30	.06		
N	10		10		10		4	
$\bar{X}$	1.23		1.32		2.38		4.29	
S.D.	.03		.05		.06		.20	

Table 20. Numbers of M. entomon, M. sibirica and M. sabini collected by trawl at different depths in Ptarmigan Cove, Herschel Island on 28-29, July 1975. Figures in parenthesis indicate numbers expressed as percentages of the total isopods in each sample.

Station no.	Index	Depth (m)	M. entomon	M. sibirica	M. sabini	Total Isopods
PC75-a	78	9	389 (37)	634 (60)	30 (3)	1053
PC75-b	79	13	4 (1)	546 (89)	61 (10)	611
PC75-c	80	30-40	2 (1)	137 (74)	45 (25)	184

Table 21. Sex and reproductive state of M. entomon, M. sibirica and M. sabini collected by trawl at different depths in Ptarmigan Cove on 28-29 July 1975.

Species and Station No.	Depth (m)	Male	Female	Juvenile	% Female	No. Gravid
M. entomon						
PC75-a	9	176	213	0	54.8	0
PC75-b	13	3	1	0	25.0	0
PC75-c	30-40	2	0	0	0.0	0
M. sibirica						
PC75-a	9	21	49	564	70.8	10
PC75-b	13	174	234	138	57.4	9
PC75-c	30-40	51	79	7	60.8	3
M. sabini						
PC75-a	9	18	6	6	25.0	1
PC75-b	13	30	23	8	43.4	0
PC75-c	30-40	17	14	14	45.2	0

Table 22. Bottom temperatures and salinities along transect in Ptarmigan Cove and Pauline Cove (*) at isopod trap locations on 4 - 5 August 1976.

Station No.	Date	Time	Depth(m)	Temp.(°C)	Salinity (°/₀₀)
PC76-1	4/8	1300	1	1.2	25.5
-2	4/8	1305	2	1.7	24.0
-3	4/8	1310	3	1.9	23.0
-4	5/8	1700	5	7.0	13.0
-5	5/8	1710	10	0.5	25.5
-6	4/8	1800	15	-1.4	32.0
-7	4/8	1810	20	-1.4	32.0
-8	4/8	1815	25	-1.4	32.5
-9*	5/8	1645	2	8.0	3.0
-10*	5/8	1650	6	3.6	17.0

Table 23. Numbers of *M. entomon*, *M. sibirica* and *M. sabini* collected in bottom traps at different depths in Ptarmigan Cove and Pauline Cove on 4-5, August 1976. Contents of 3 traps pooled for each depth.

Station No.	Depth(m)	*M. entomon*	*M. sibirica*	*M. sabini*
PC76-1	1	252	0	0
-2	2	192	0	0
-3	3	136	0	0
-4	5	26	0	0
-5	10	11	4	0
-6	15	0	360	0
-7	20	0	336	0
-8	25	0	244	0
-9	2	2	0	0
-10	6	27	0	0

Table 24. Sex and reproductive state of M. entomon collected in bottom traps at different depths in Ptarmigan Cove and Pauline Cove (*) on 4-5 August 1976.

Station No.	Depth (m)	Male	Female	Juvenile	Female %	Gravid	Brood Lamellae
PC76-1	1	134	110	8	45.1	4	14
-2	2	100	90	2	47.4	6	10
-3	3	70	64	2	47.8	4	2
-4	5	17	9	0	34.6	0	1
-5	10	11	0	0	0	0	0
-6	15	0	0	0	-	0	0
-7	20	0	0	0	-	0	0
-8	25	0	0	0	-	0	0
-9*	2	2	0	0	0	0	0
-10*	6	21	6	0	22.2	0	0

Table 25. Sex and reproductive state of M. sibirica collected in bottom traps at different depths in Ptarmigan Cove and Pauline Cove(*) on 4-5 August 1976.

Station No.	Depth (m)	Male	Female	Juvenile	Female %	Gravid	Brood Lamellae
PC76-1	1	0	0	0	-	0	0
-2	2	0	0	0	-	0	0
-3	3	0	0	0	-	0	0
-4	5	0	0	0	-	0	0
-5	10	1	2	1	66.7	0	0
-6	15	120	240	0	66.7	0	8
-7	20	220	116	0	34.5	0	0
-8	25	182	62	0	25.4	0	0
-9*	2	0	0	0	-	0	0
-10*	6	0	0	0	-	0	0

Table 26. Bottom temperatures and salinities along transect in Ptarmigan Cove at isopod trap locations on 13-14 July 1977

Station No.	Date	Time	Depth (m)	Temp. (°C)	Salinity (°/₀₀)
PC77-2	14/7	1915	0.5	9.9	2
-3	14/7	1140	1	6.8	2
-4	14/7	1150	2	5.4	2
-5	14/7	1200	3	4.7	2
-6	13/7	1515	4	4.4	2
-7	13/7	1520	6	4.1	3
-8	13/7	1525	8	-1.05	31.5
-9	14/7	1730	10	-1.3	32
-10	14/7	1740	12	-1.5	32

Table 27. Temperature and salinity profile with depth in Ptarmigan Cove near seaward end of 1977 transect, 14 July 1977.

Depth (m)	Temperature (°C)	Salinity (°/₀₀)
0	5.5	5.7
1	6.5	5.7
2	6.5	5.7
3	6.5	6.2
4	5.0	8.9
5	4.5	11.8
6	2.0	16.2
7	-1.5	24.5
8	-1.8	27.3
9	-1.8	28.9
10	-1.8	30.5
11	-1.8	30.7
12	-1.8	31.0
13	-1.8	31.3
14	-1.8	31.5

Table 28. Numbers of M. entomon, M. sibirica and M. sabini collected in bottom traps at different depths in Ptarmigan Cove on 13-14 July 1977. Contents of 3 traps pooled for each depth.

Station No.	Depth (m)	M. entomon	M. sibirica	M. sabini
PC77-2	0.5	215	0	0
-3	1	268	0	0
-4	2	43	0	0
-5	3	23	0	0
-6	4	35	1	0
-7	6	71	5	0
-8	8	99	22	1
-9	10	0	254	0
-10	12	0	205	3

Table 29. Sex and reproductive state of M. entomon collected in bottom traps at different depths in Ptarmigan Cove on 13-14 July 1977

Station No.	Depth (m)	Male	Female	Juvenile	Female %	Gravid	Brood Lamellae
PC77-2	0.5	139	75	1	35.0	6	4
-3	1	180	88	0	32.8	21	5
-4	2	39	4	0	9.3	1	2
-5	3	18	5	0	21.7	1	0
-6	4	26	8	1	23.5	1	0
-7	6	56	13	2	18.8	0	0
-8	8	83	15	0	15.3	0	0
-9	10	0	0	0	-	0	0
-10	12	0	0	0	-	0	0

Table 30. Sex and reproductive state of M. sibirica collected in bottom traps at different depths in Ptarmigan Cove on 13-14 July 1977.

Station No.	Depth (m)	Male	Female	Juvenile	Female %	Gravid	Brood Lamellae
PC77-2	0.5	0	0	0	-	0	0
-3	1	0	0	0	-	0	0
-4	2	0	0	0	-	0	0
-5	3	0	0	0	-	0	0
-6	4	0	0	1	-	0	0
-7	6	2	1	2	33.3	0	0
-8	8	5	16	1	76.2	1	7
-9	10	107	130	17	54.9	5	26
-10	12	118	75	9	38.9	2	9

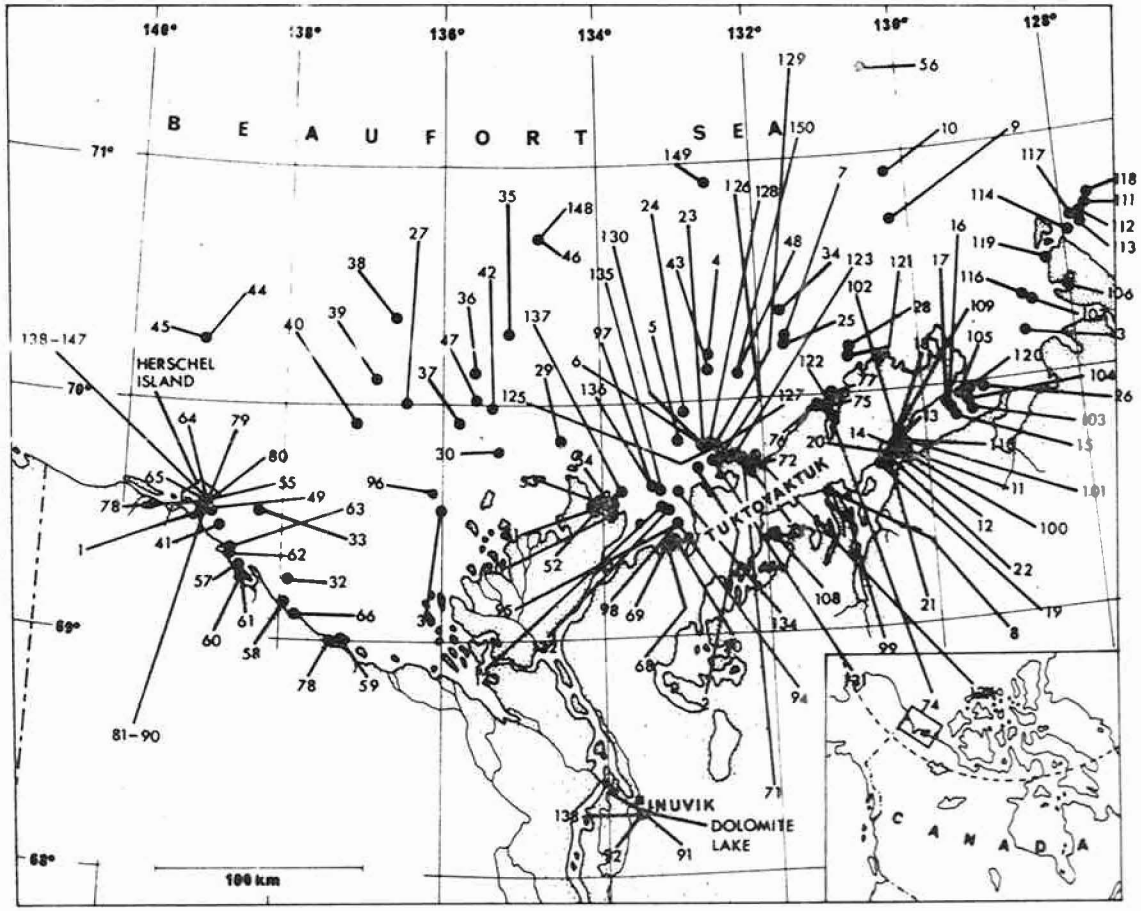

Fig. 1. Map showing locations of collections (excluding Herschel Island transect samples and Dolomite Lake samples). The indicated index numbers are keyed to the isopod collection data listed in table 1.

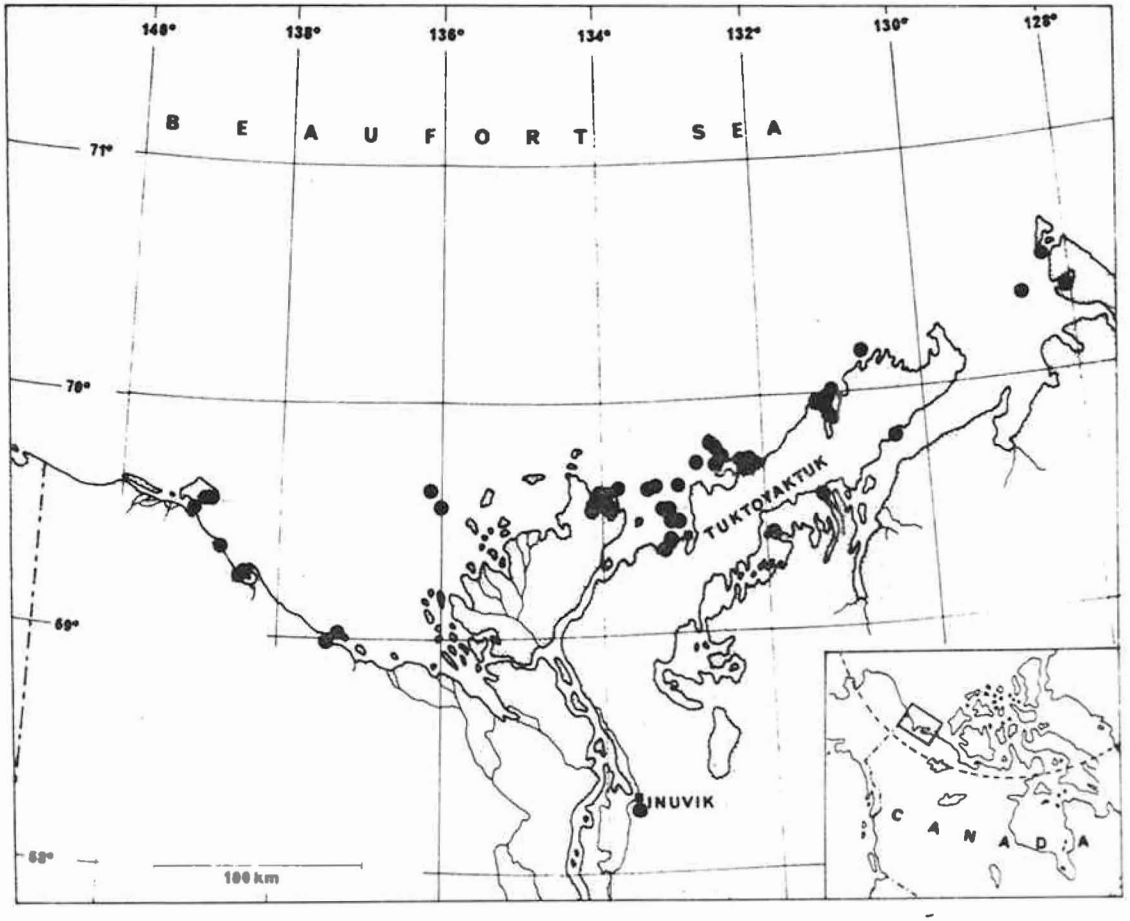

Fig. 2. Map showing locations of all collections in which M. entomon occurred (excluding Herschel Island transect and Dolomite Lake samples).

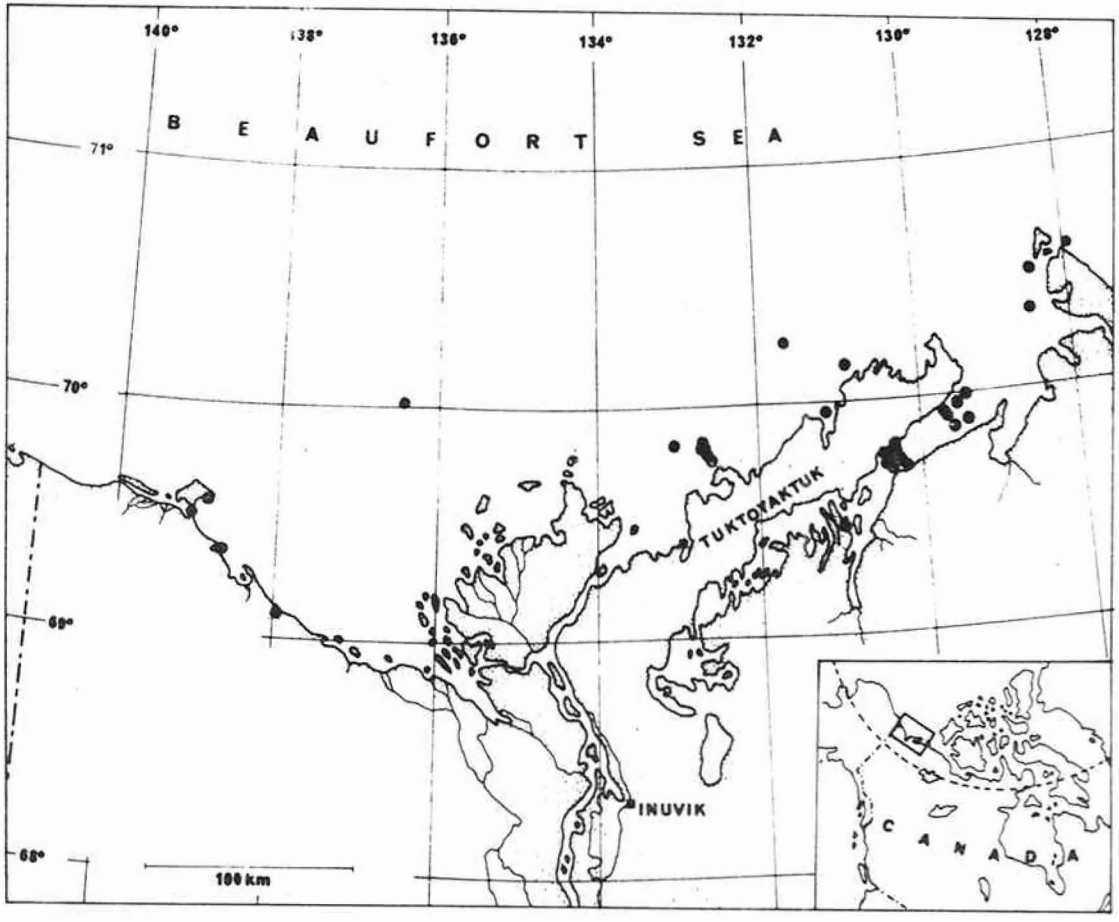

Fig. 3. Map showing locations of all collections in which M. sibirica occurred (excluding Herschel Island transect samples).

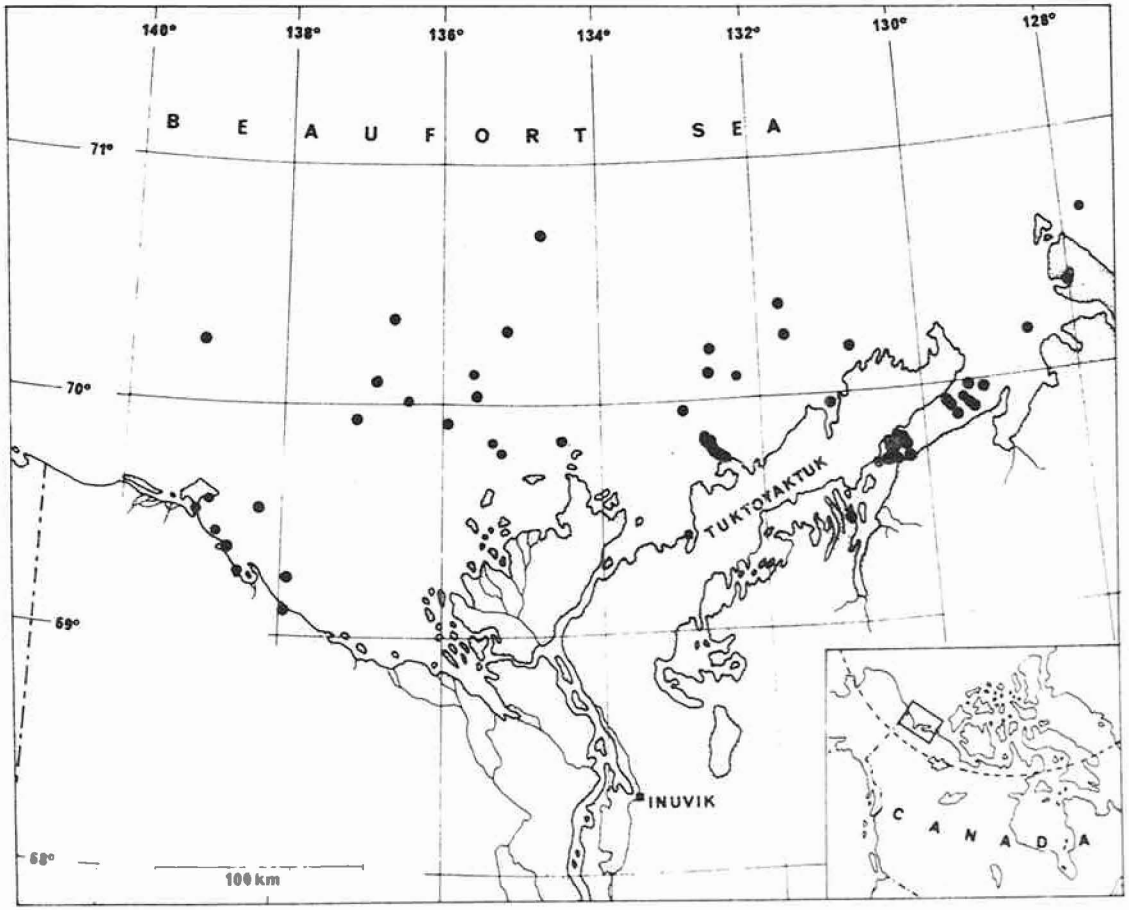

Fig. 4. Map showing locations of all collections in which M. sabini occurred (excluding Herschel Island transect samples).

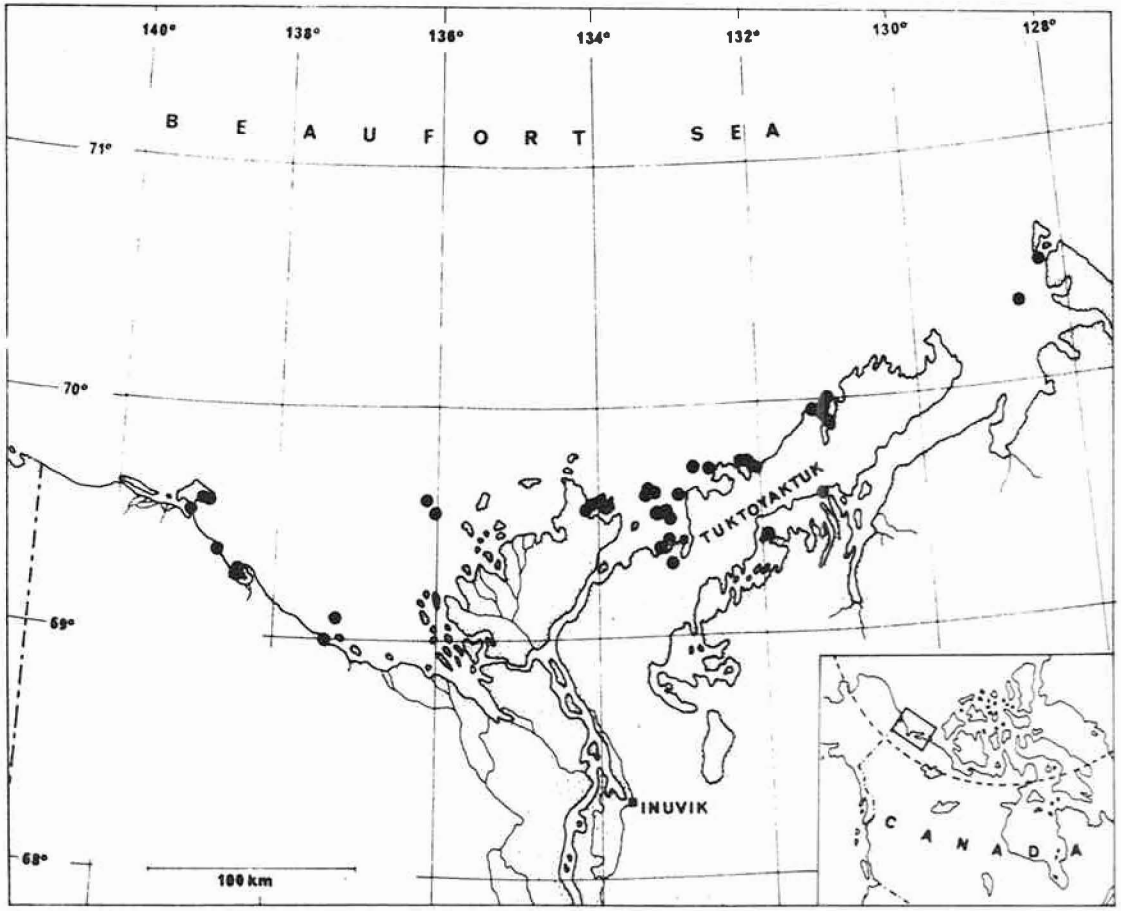

Fig. 5. Map showing locations of collections in which M. entomon comprised more than 90% of the number of isopods in the sample (excluding Herschel Island transect and Dolomite Lake samples).

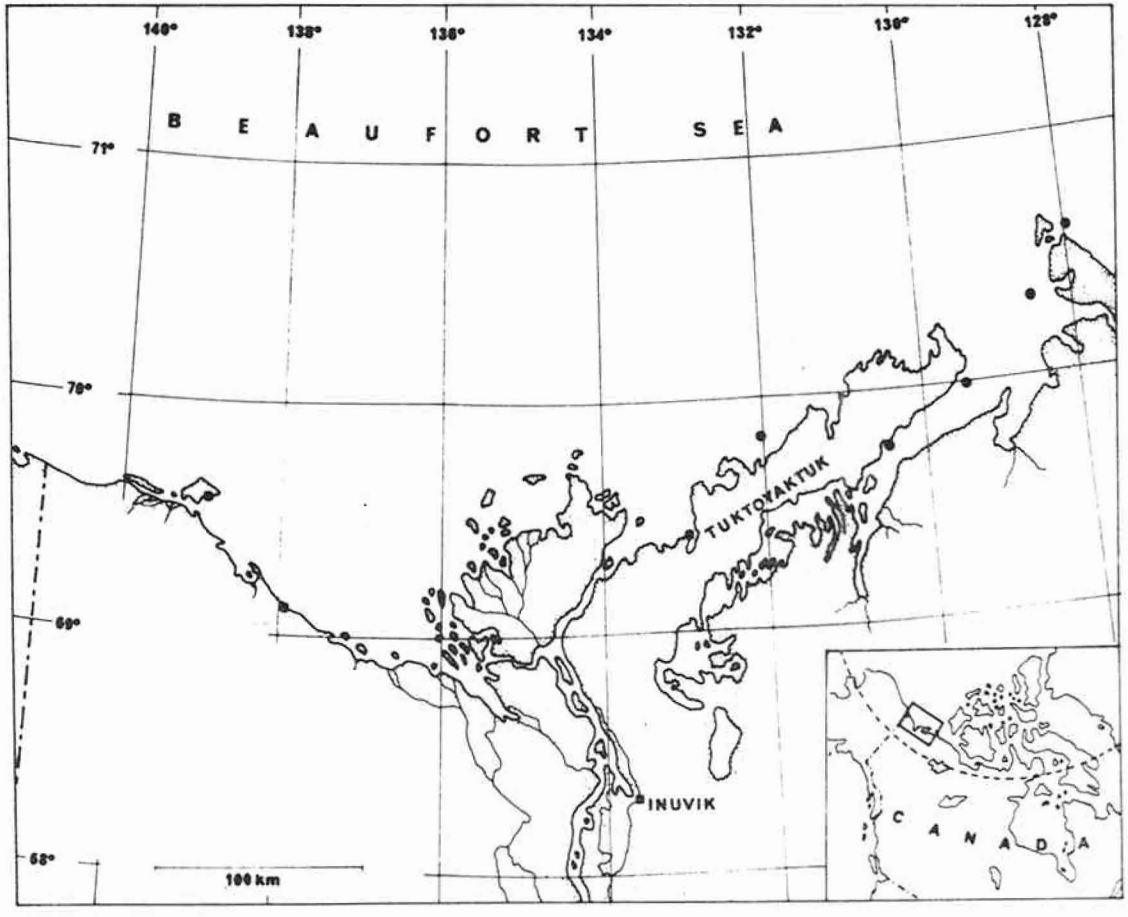

Fig. 6. Map showing locations of collections in which M. sibirica comprised more than 90% of the number of isopods in the sample (excluding Herschel Island transect samples).

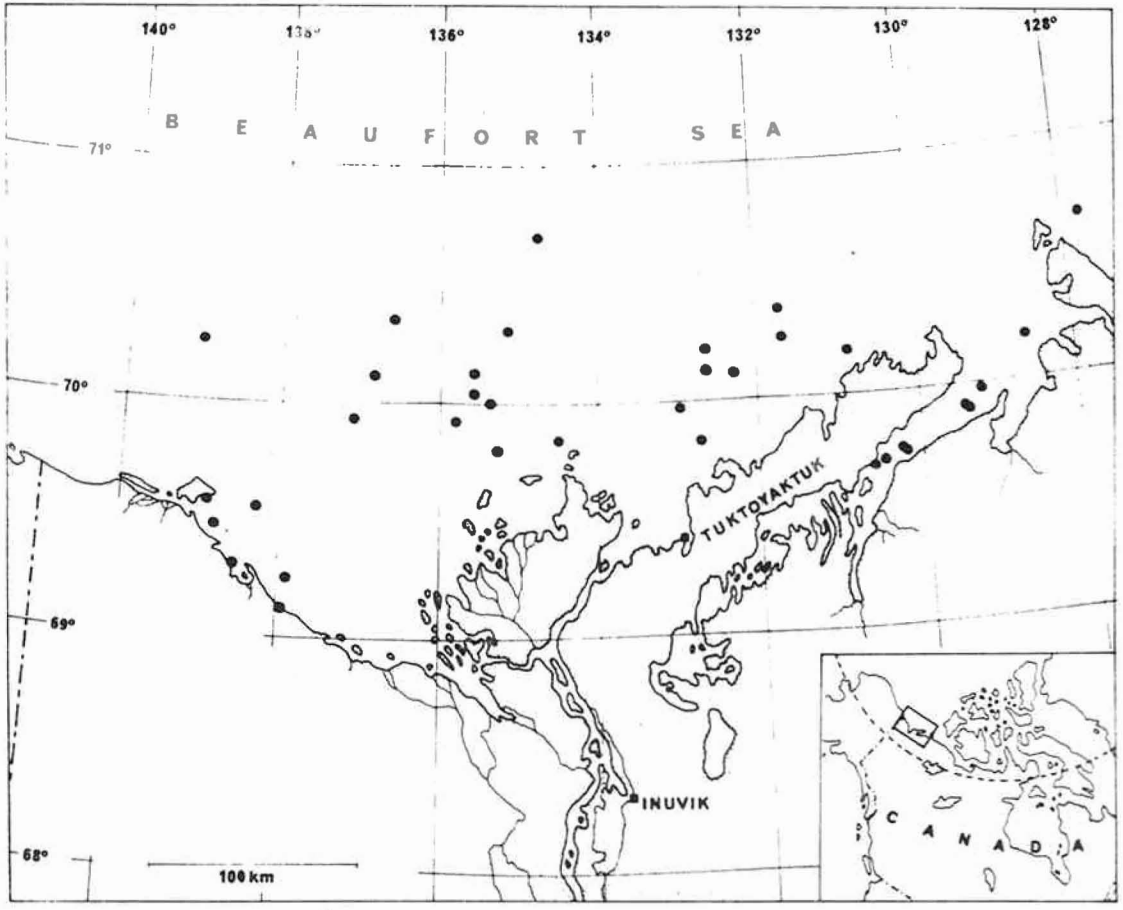

Fig. 7. Map showing locations of collections in which M. sabini comprised more than 90% of the number of isopods in the sample (excluding Herschel Island transect samples).

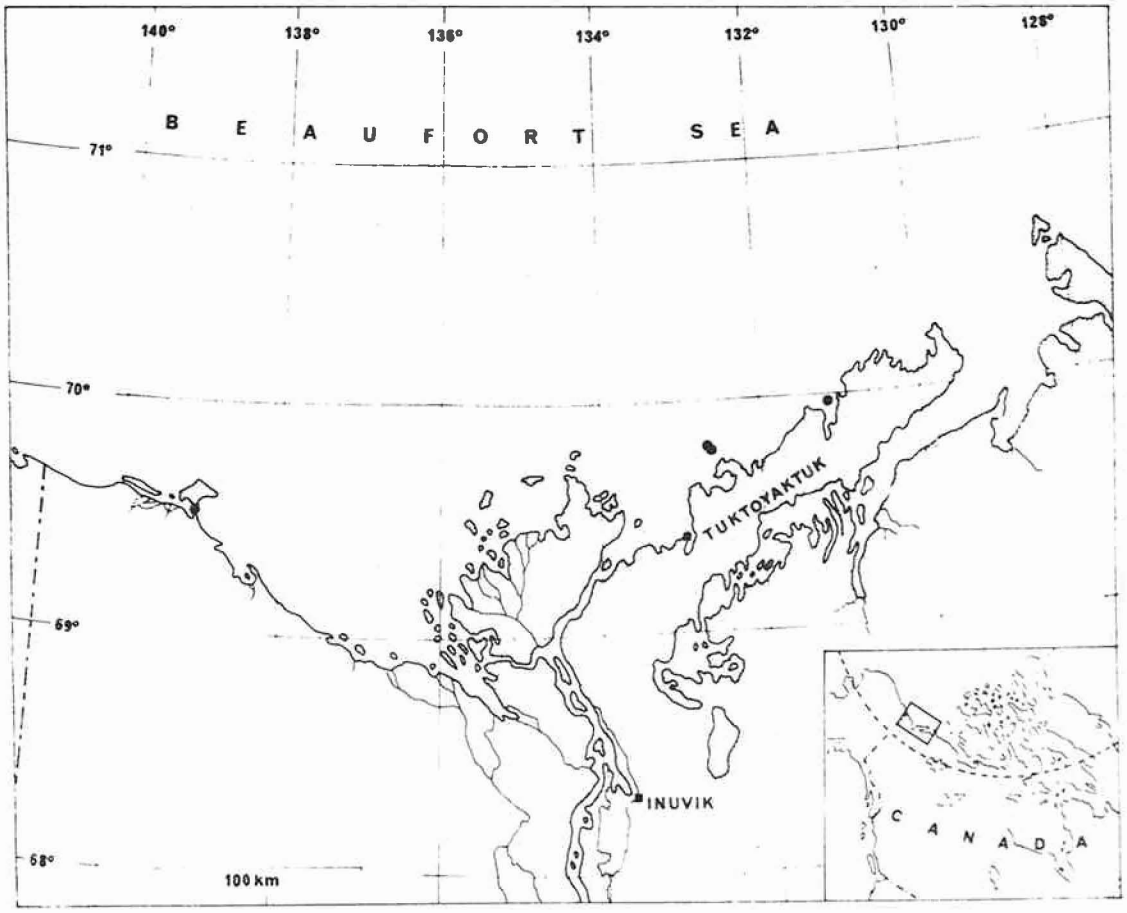

Fig. 8. Map showing locations of collections in which M. entomon, M. sibirica and M. sabini occur together (excluding Herschel Island transect samples).

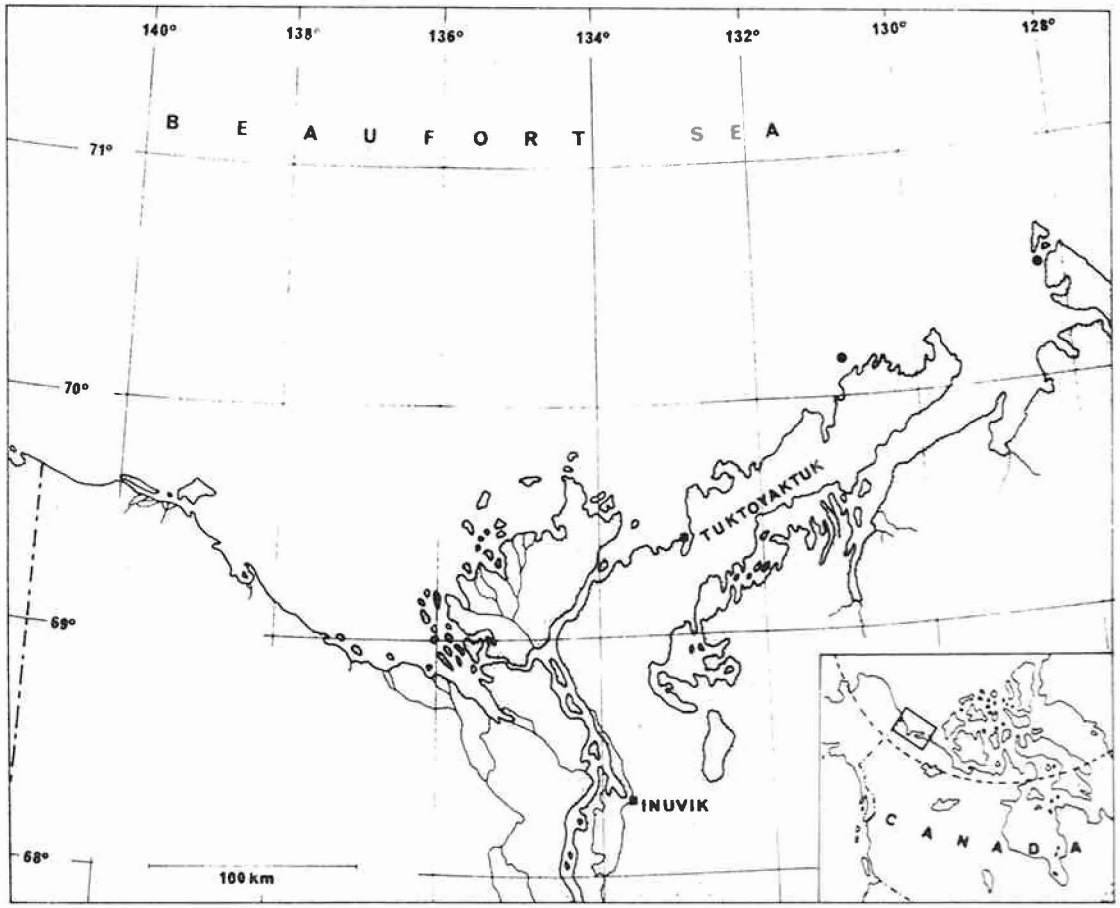

Fig. 9. Map showing locations of collections in which M. entomon and M. sibirica occur together (excluding Herschel Island transect samples).

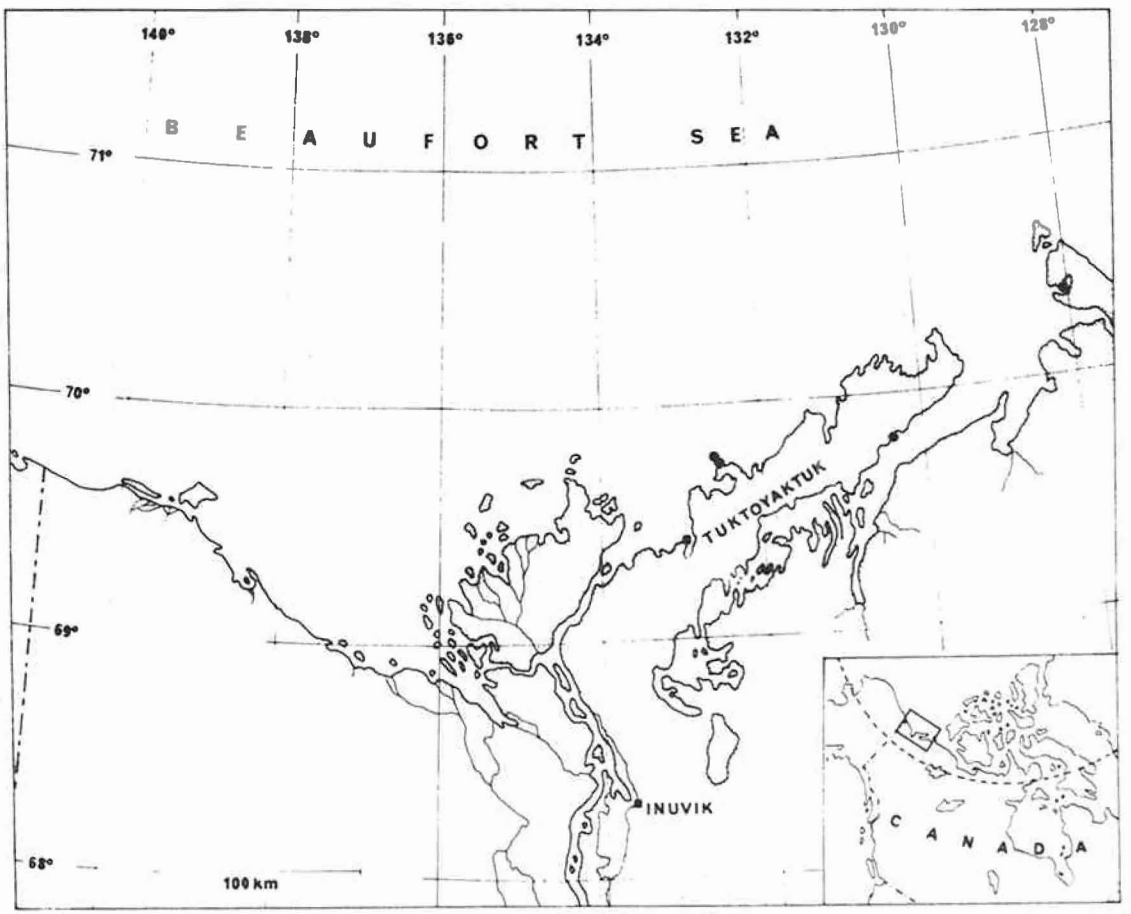

Fig. 10. Map showing locations of collections in which M. entomon and M. sabini occur together (excluding Herschel Island transect samples).

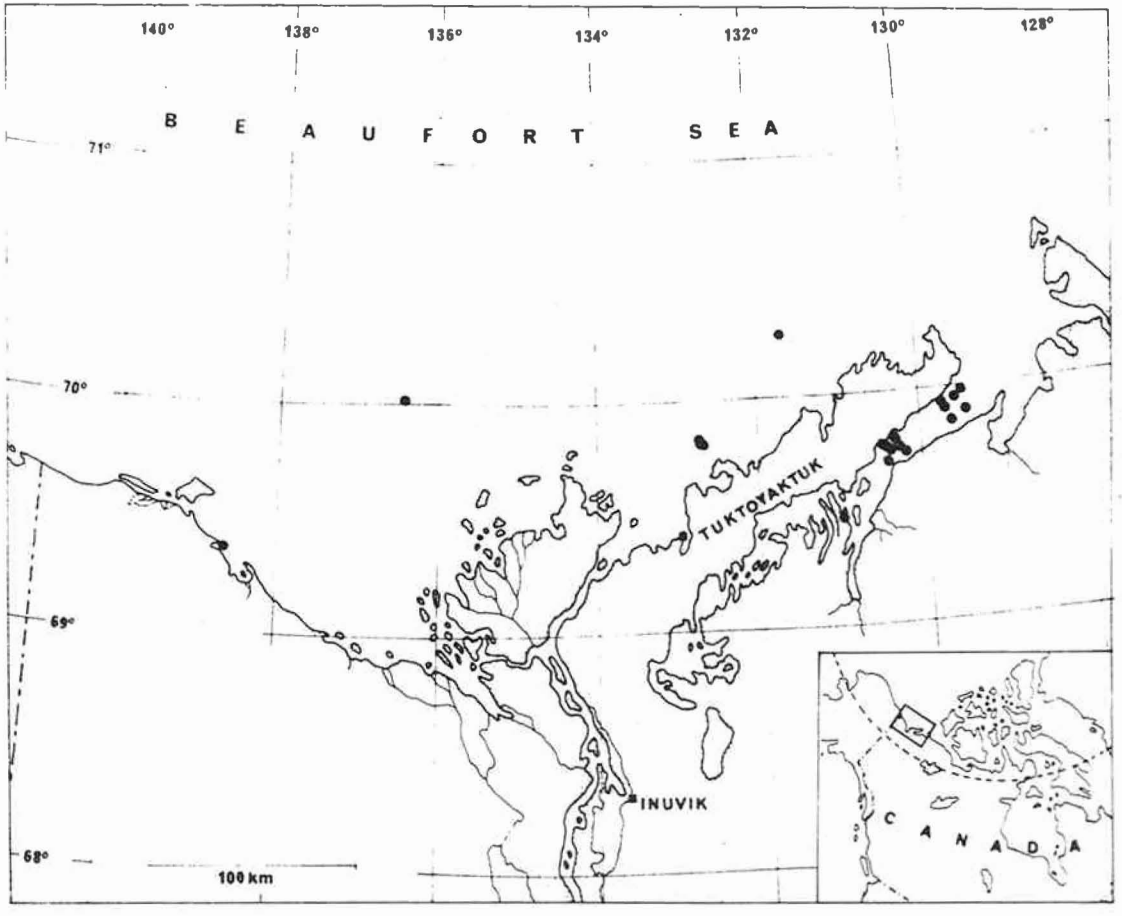

Fig. 11. Map showing locations of collections in which M. sibirica and M. sabini occur together (excluding Herschel Island transect samples).

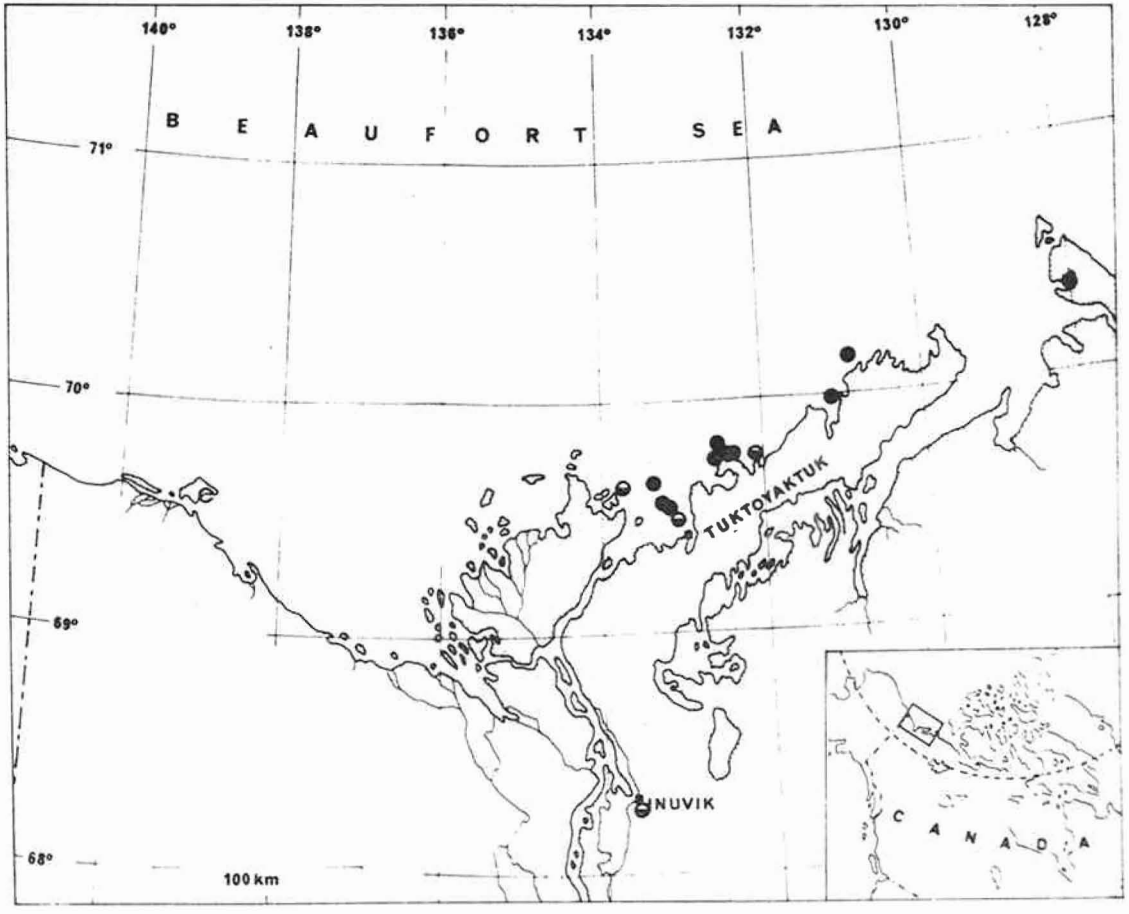

Fig. 12. Map showing locations of collections of M. entomon in which at least 10% of the animals were juvenile (•) or in which at least 10% of the females were gravid or had well-developed brood lamellae (o). Presence of both juveniles and gravid animals indicated by (⊙).

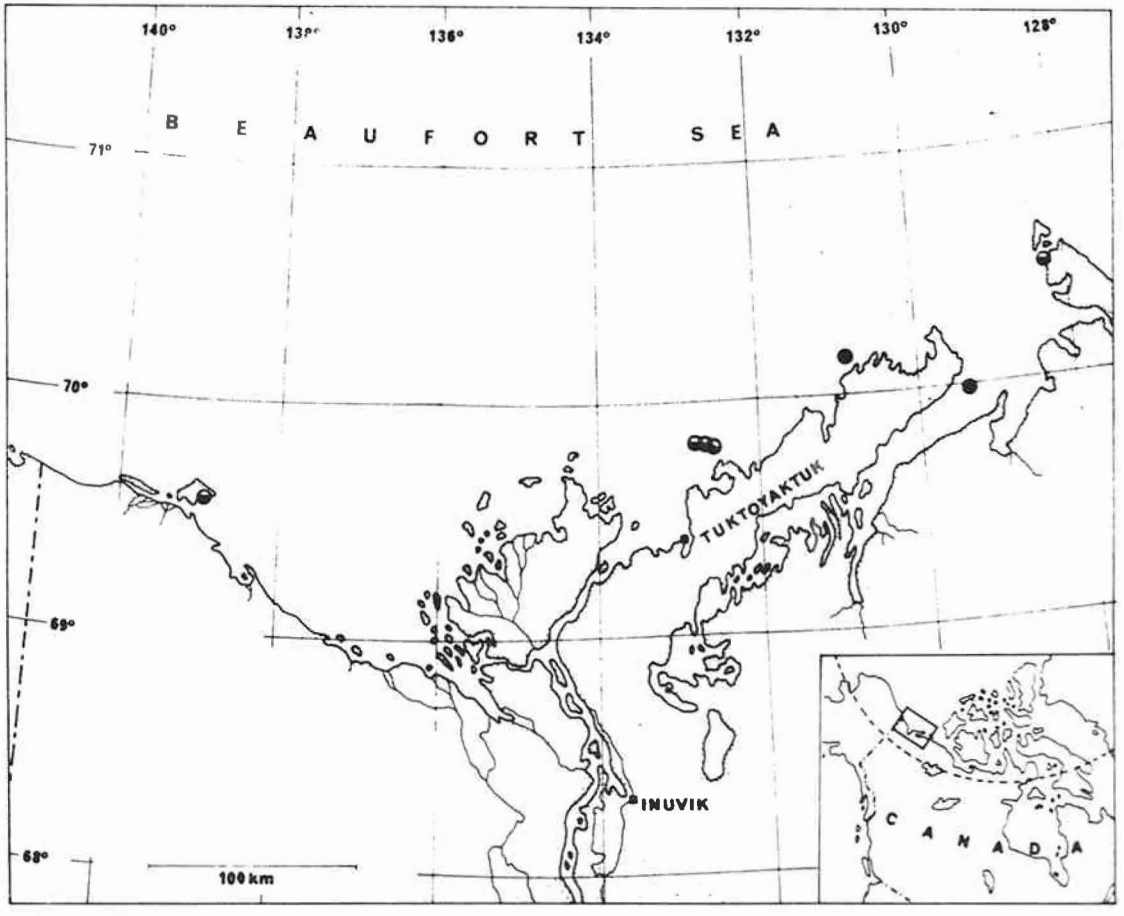

Fig. 13. Map showing locations of collections of M. sibirica in which at least 10% of the animals were juvenile (•), or in which at least 10% of the females were gravid or had well-developed brood lamellae (o). Presence of both juveniles and gravid animals indicated by (⊙).

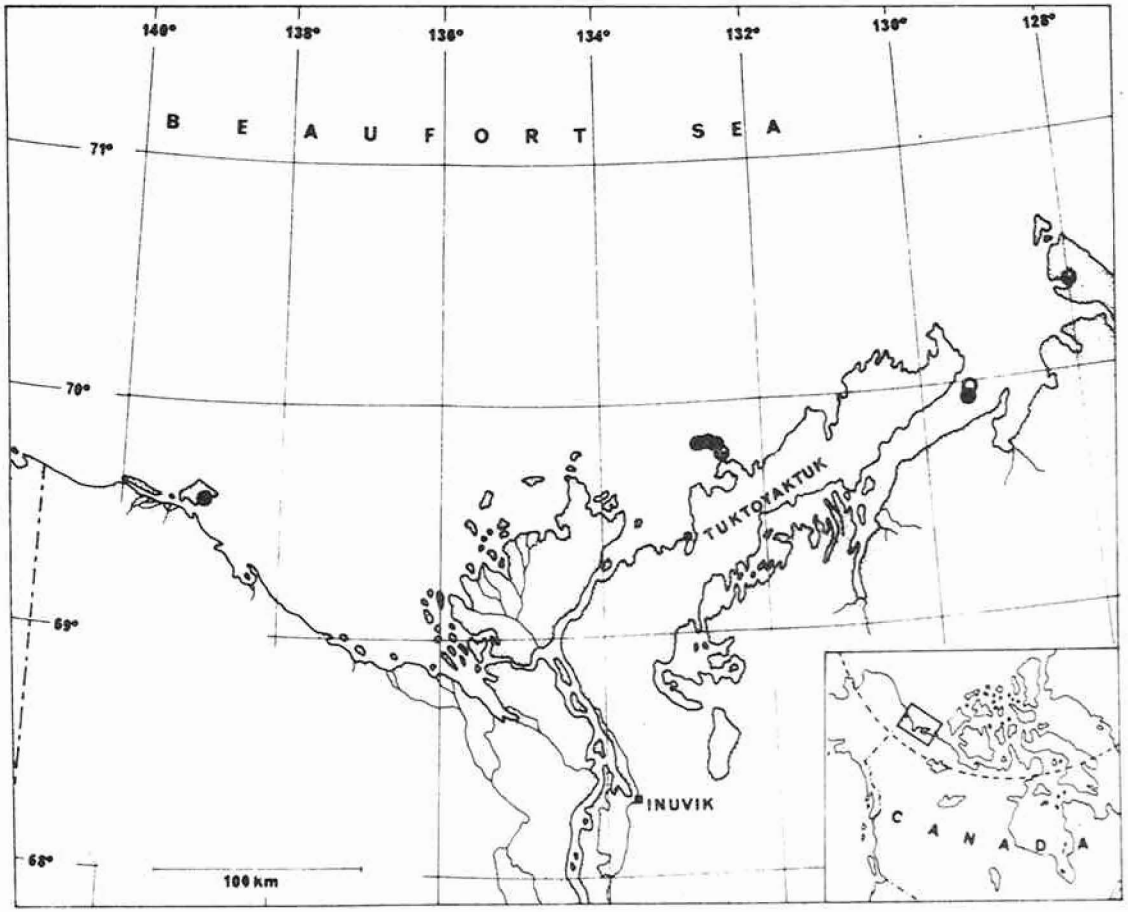

Fig. 14. Map showing locations of collections of M. sabini in which at least 10% of the animals were juvenile (•), or in which at least 10% of the females were gravid or had well-developed brood lamellae (o). Presence of both juveniles and gravid animals indicated by (◉).

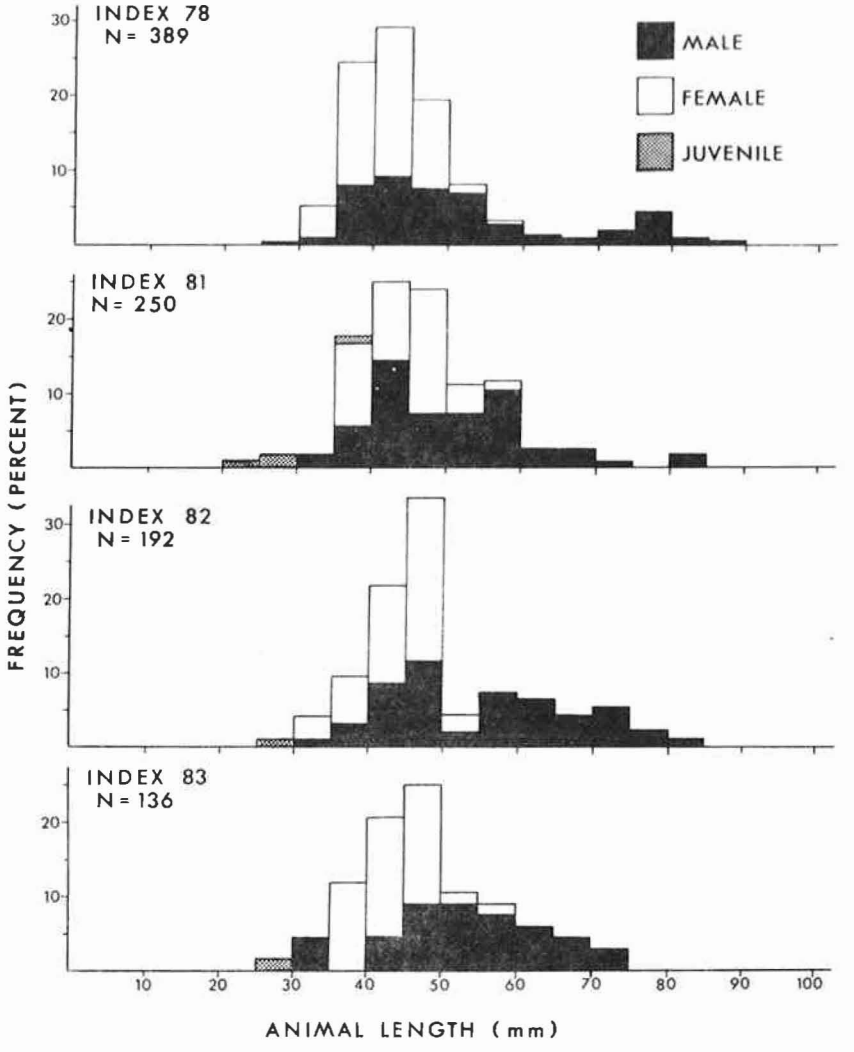

Fig. 15. Size frequency distributions of M. entomon (marinus) in collections from various locations in the Southern Beaufort Sea.

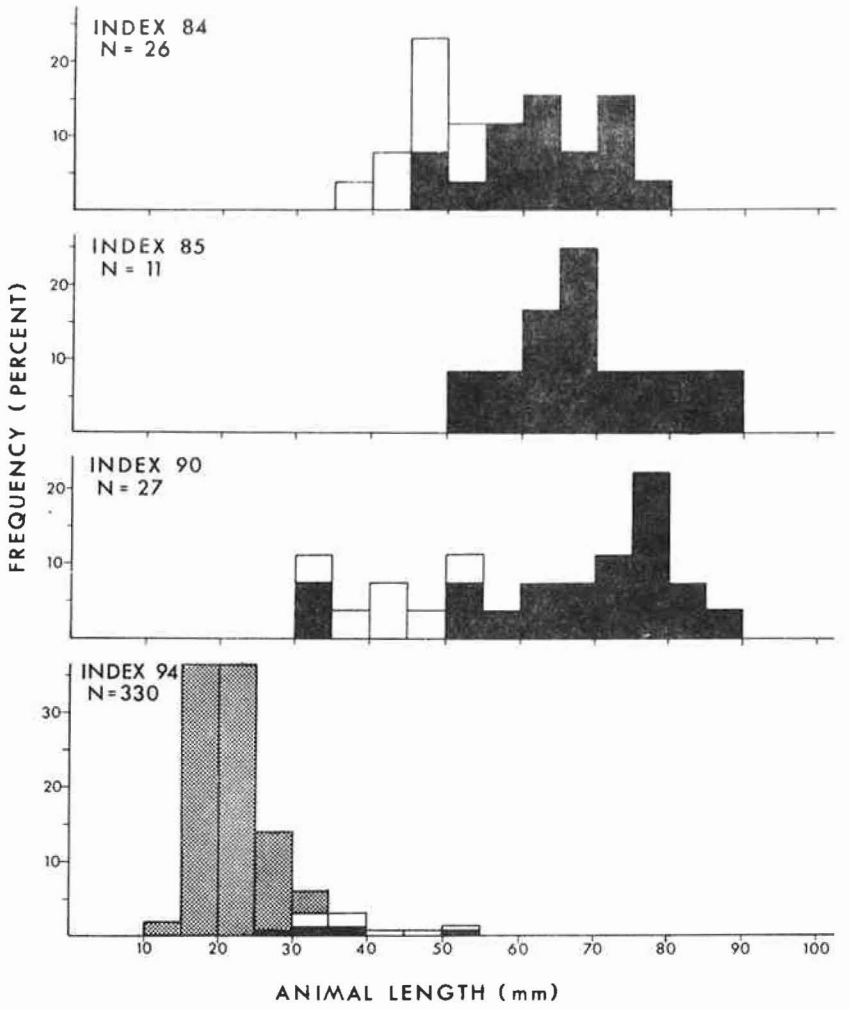

Fig. 15. (continued)

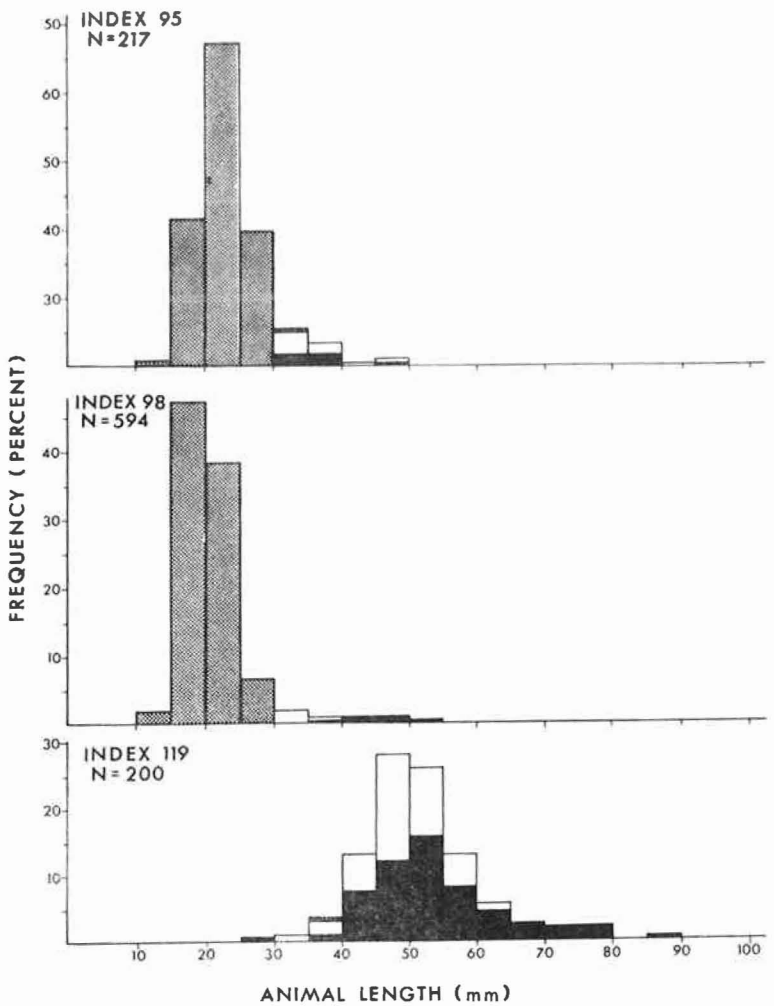

Fig. 15. (continued)

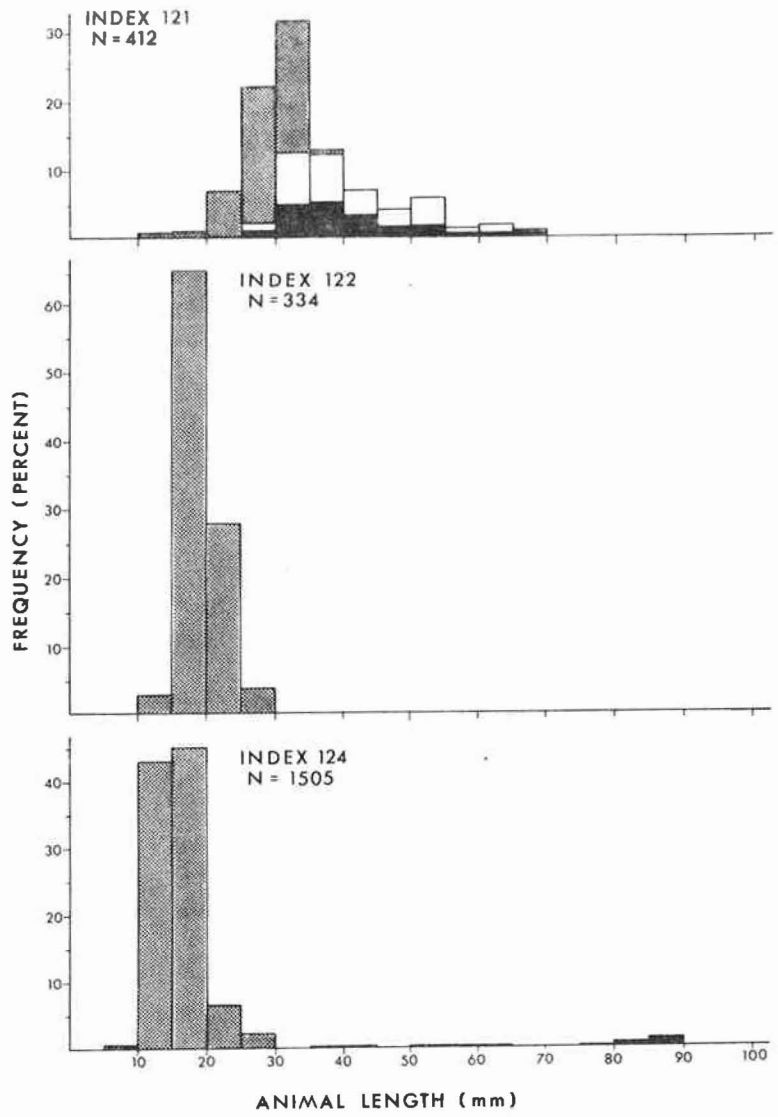

Fig. 15. (continued)

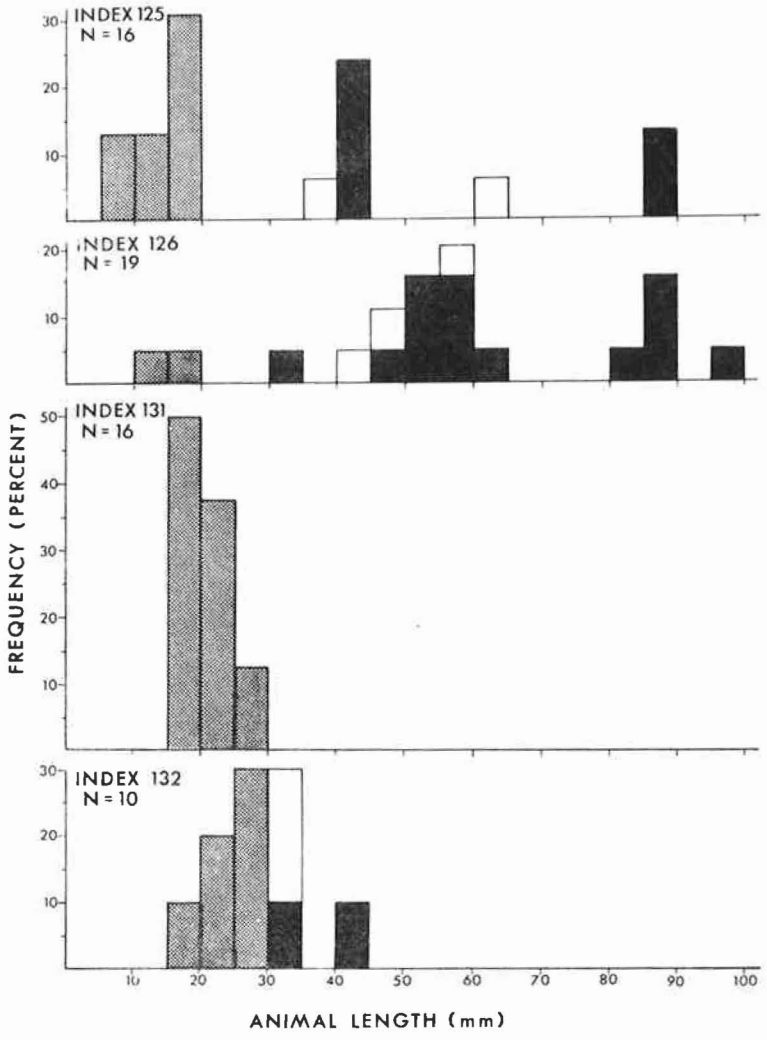

Fig. 15. (continued)

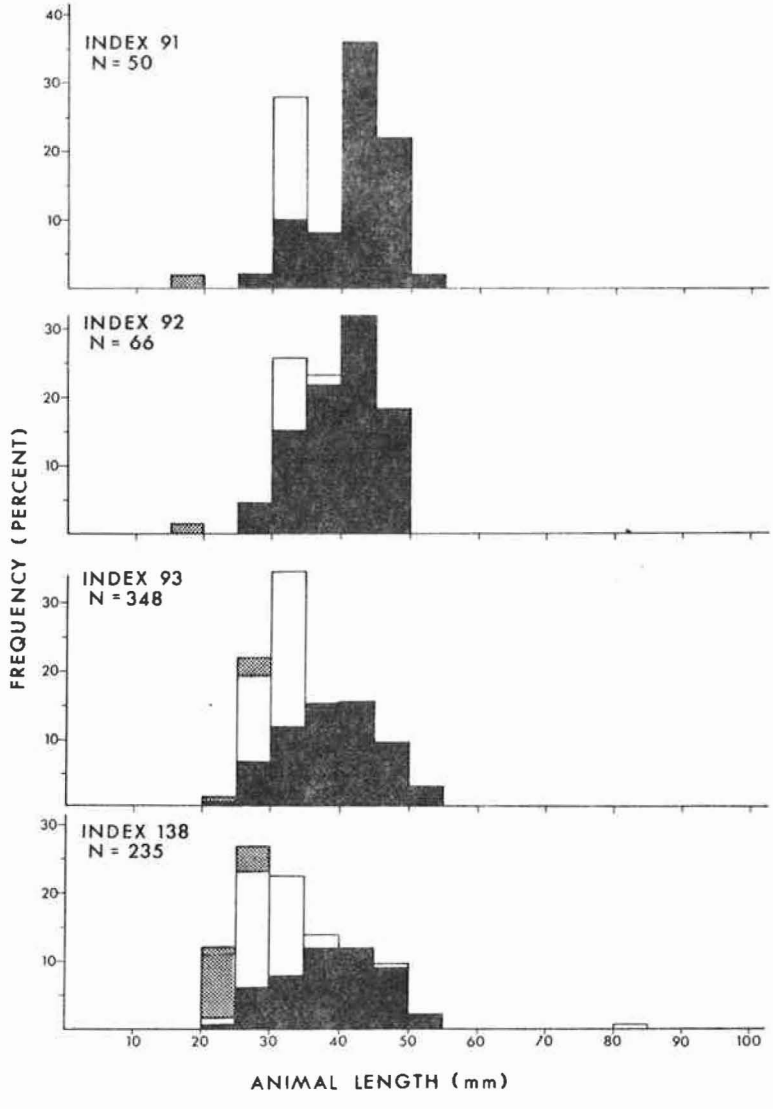

Fig. 16. Size frequency distributions of M. entomon (limnos) in collections made at various times in Dolomite Lake.

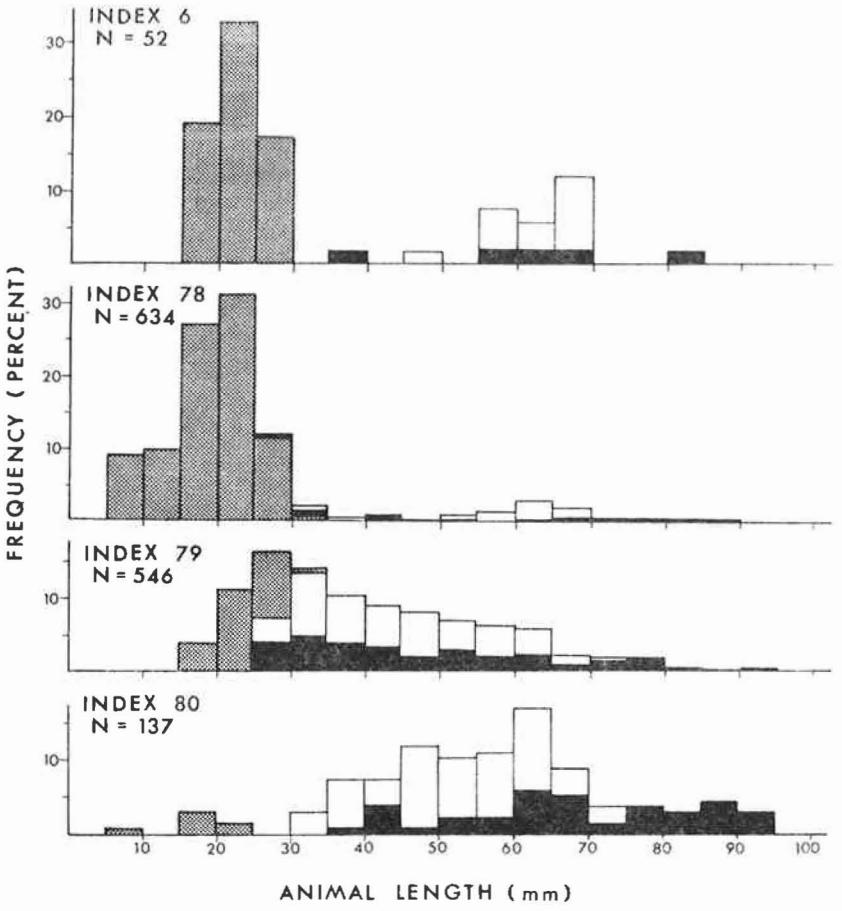

Fig. 17. Size frequency distributions of M. sibirica in collections from various locations in the Southern Beaufort Sea.

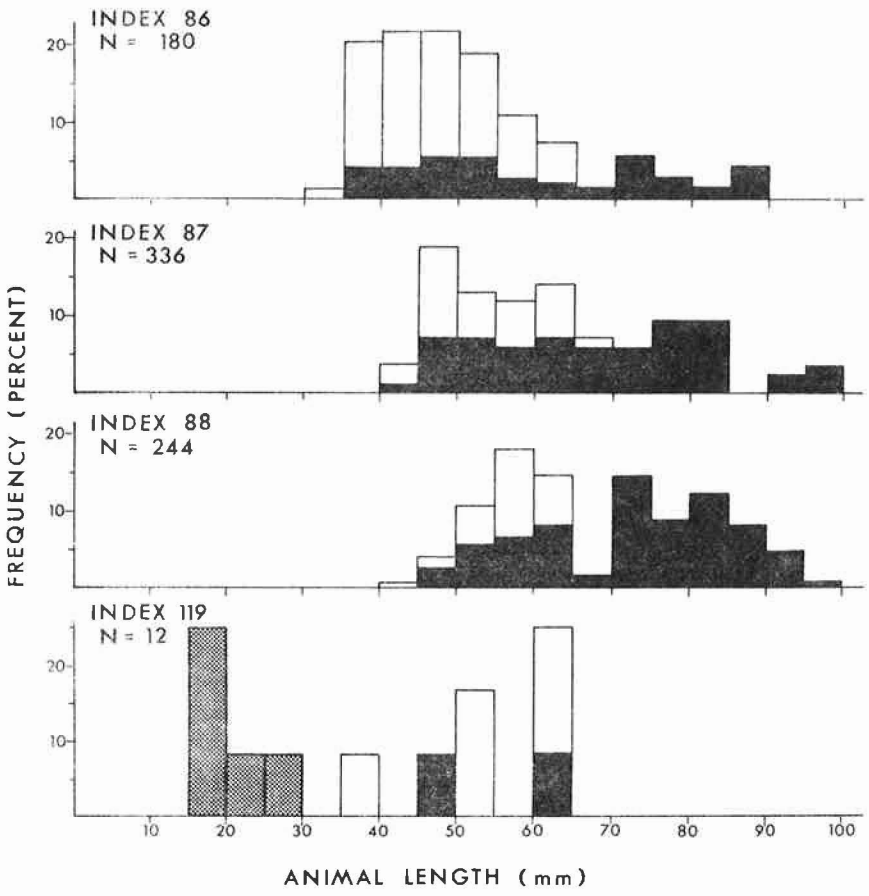

Fig. 17. (continued)

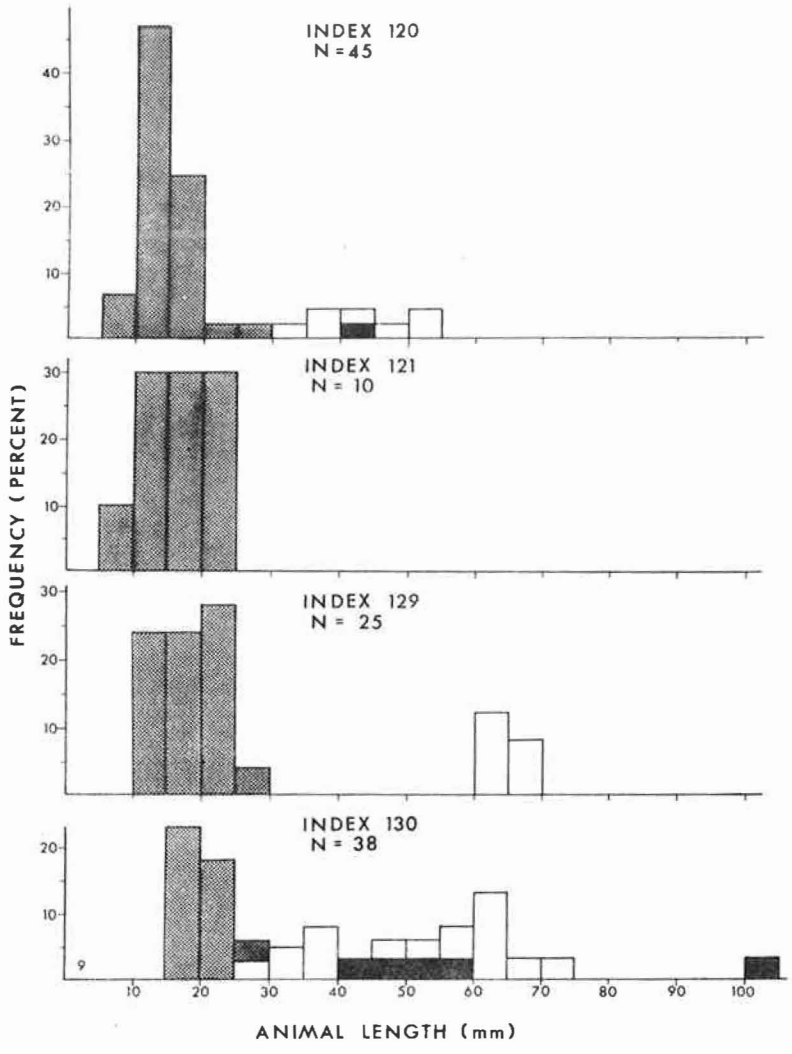

Fig. 17. (continued)

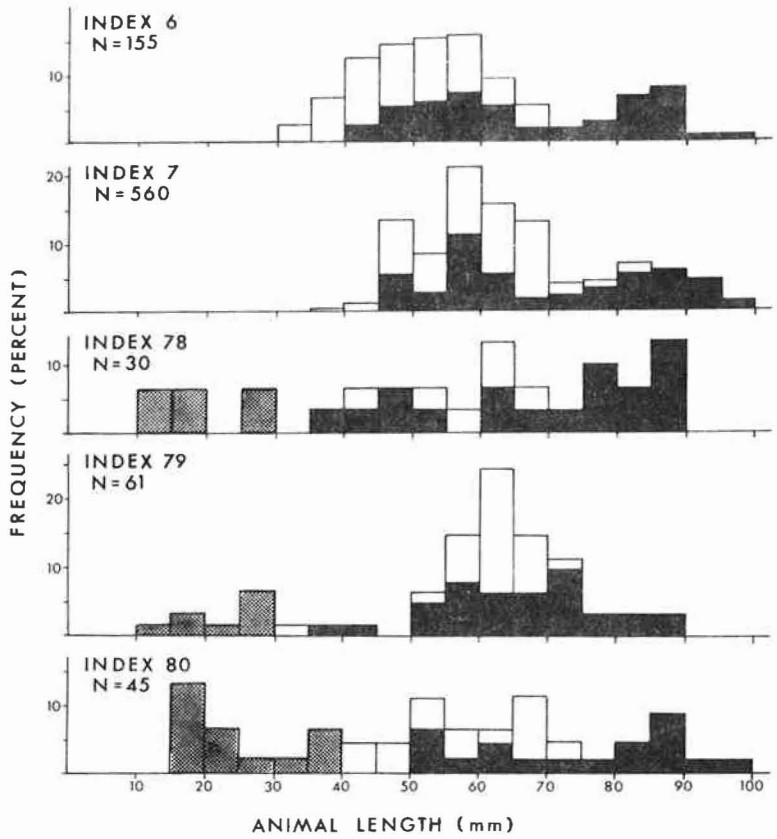

Fig. 18. Size frequency distributions of M. sabini in collections from various locations in the Southern Beaufort Sea.

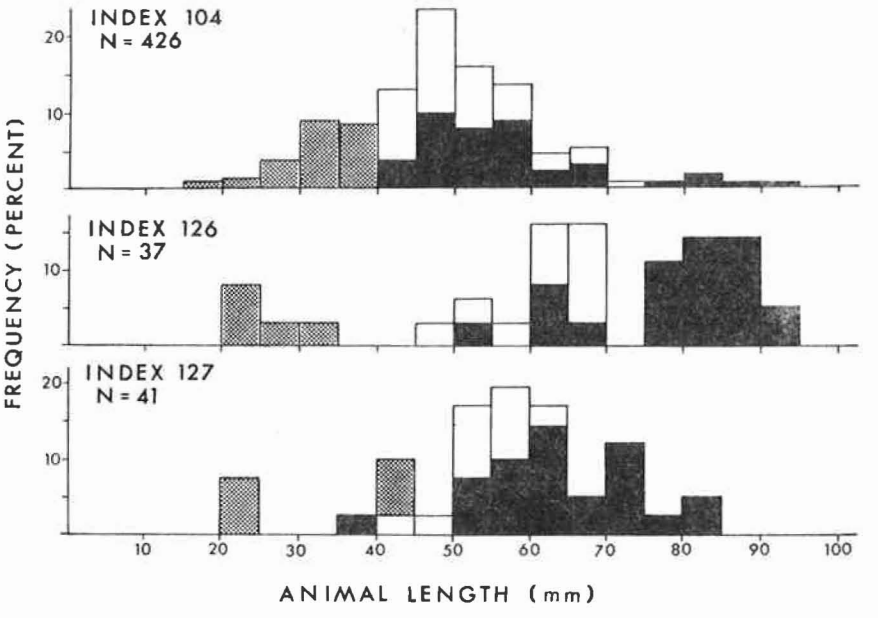

Fig. 18. (continued)

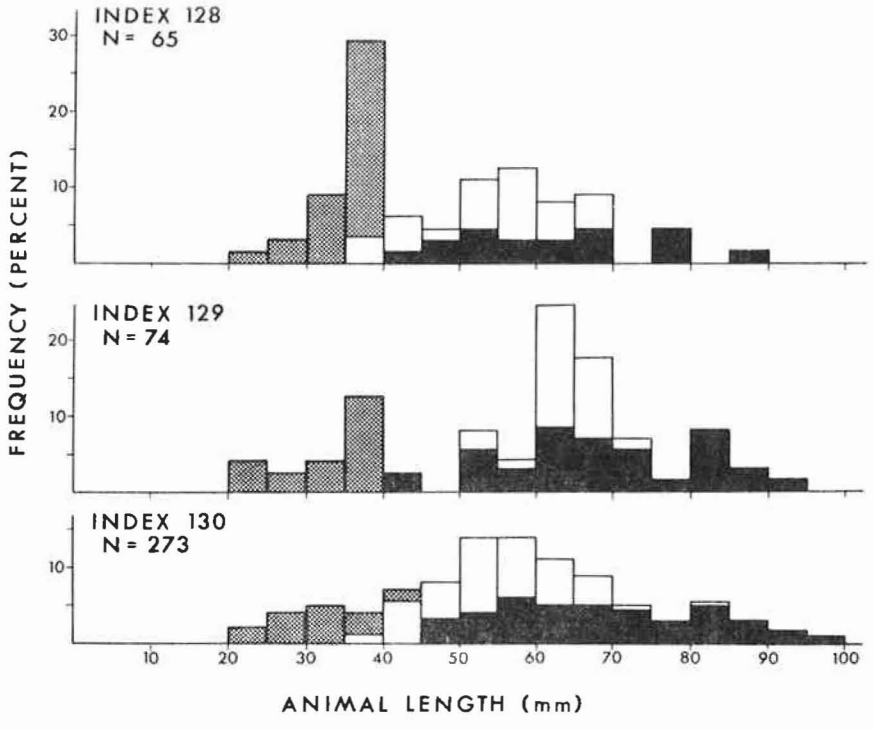

Fig. 18. (continued)

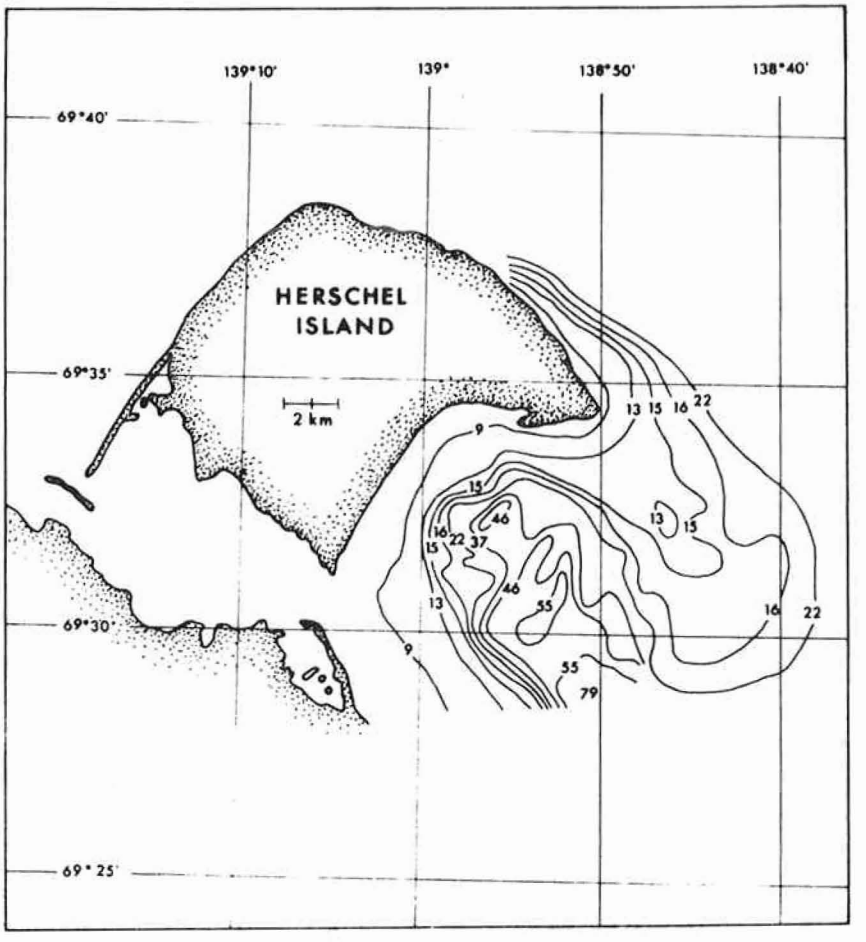

Fig. 19. Map showing bath/metry in the vicinity of the Ptarmigan Cove, Herschel Island collecting site.

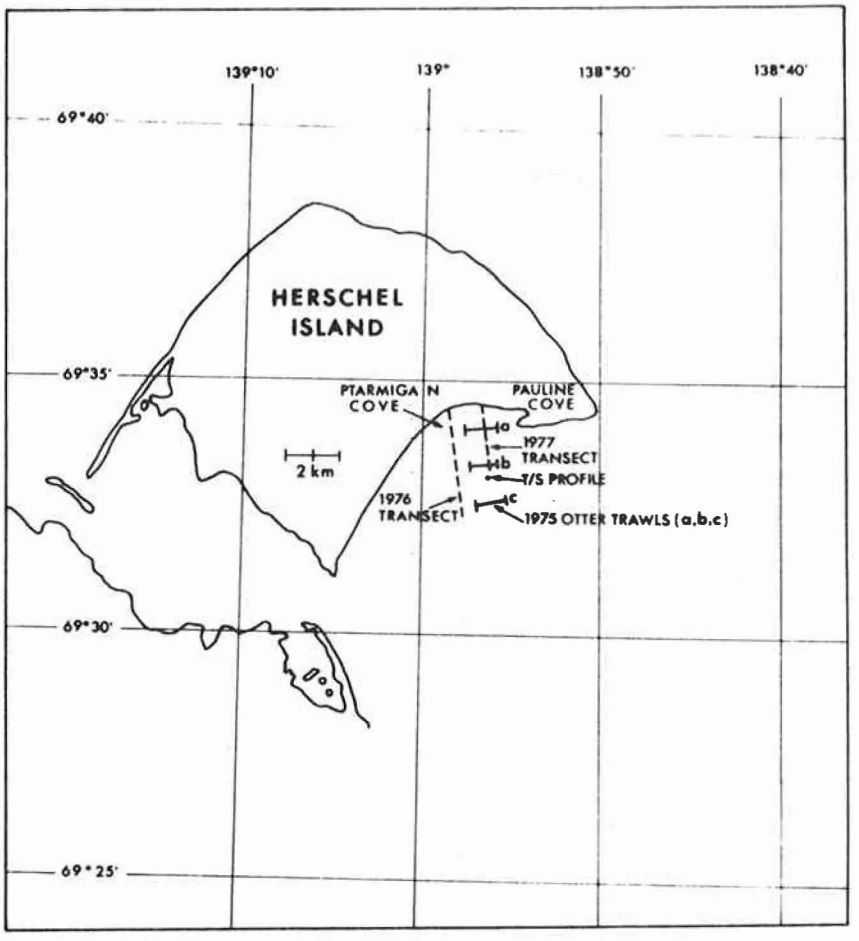

Fig. 20. Map showing locations of Herschel Island trap transects and bottom trawls.

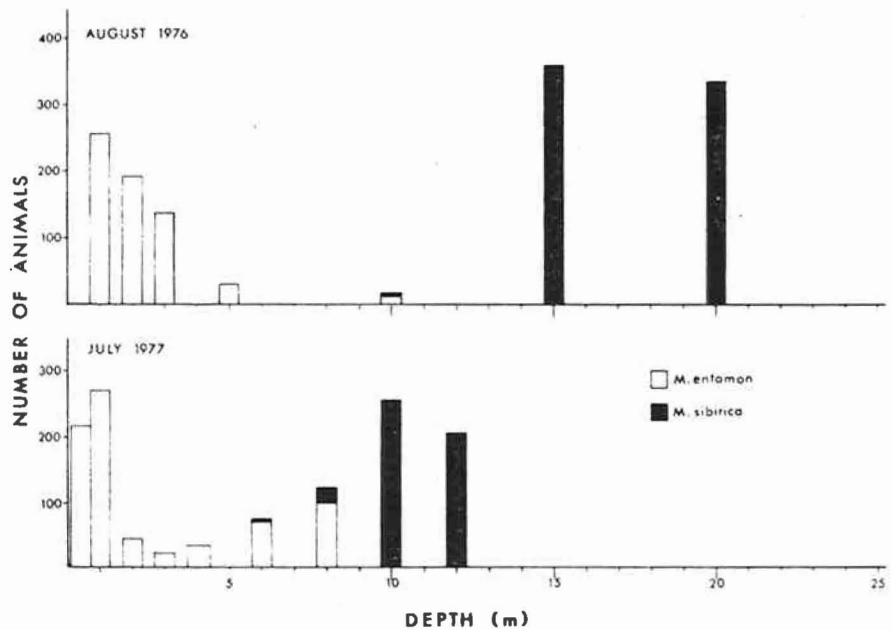

Fig. 21. Numbers of M. entomon and M. sibirica caught in traps at different depths along transects in Ptarmigan Cove during summers of 1976 and 1977. Figures represent total numbers caught in 3 traps set for 5 hours.

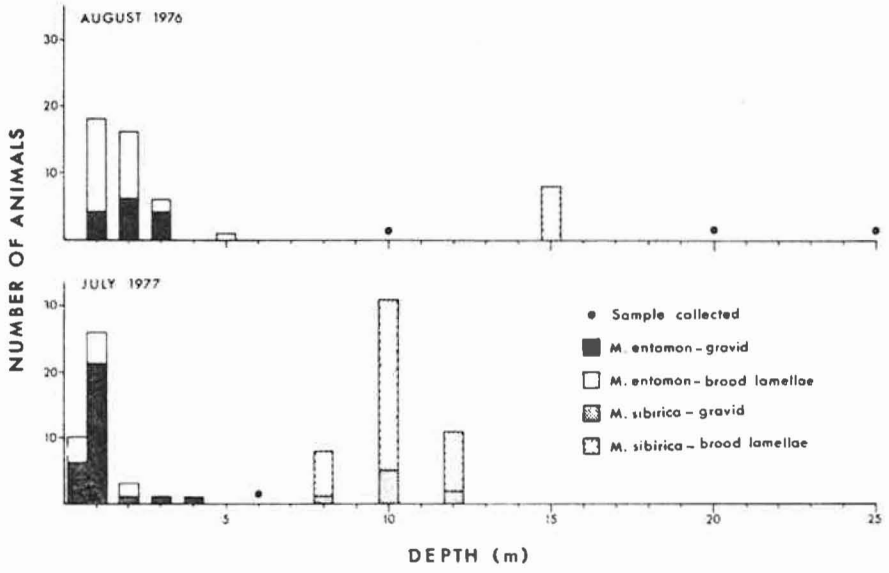

Fig. 22. Numbers of reproductively active females (either gravid or with well-developed brood lamellae) of M. entomon and M. sibirica caught in traps at different depths along transects in Ptarmigan Cove during summers of 1976 and 1977. Figures represent total numbers caught in 3 traps set for 5 hours.

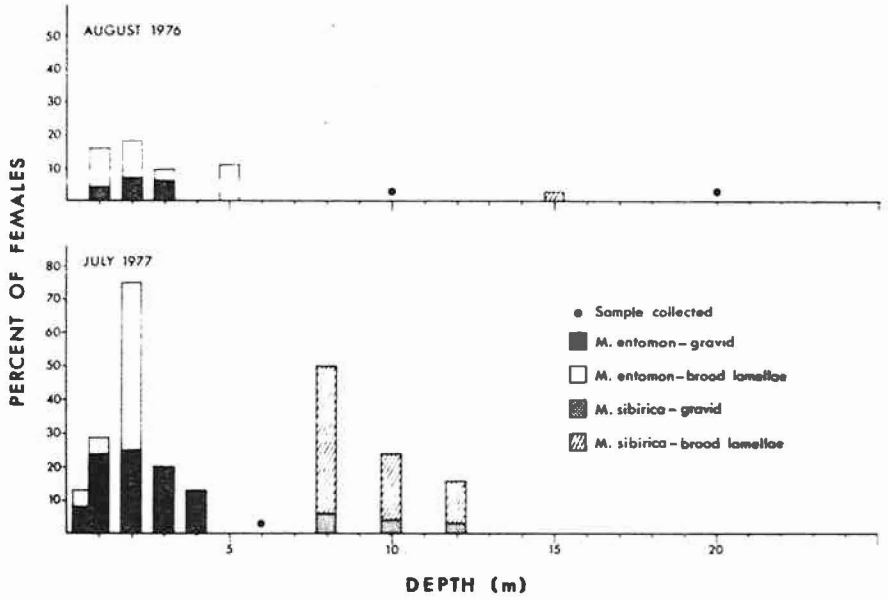

Fig. 23. Percentages of reproductively active females (either gravid or with well-developed brood lamellae) of M. entomon and M. sibirica caught in traps at different depths along transects in Ptarmigan Cove during summers of 1976 and 1977.

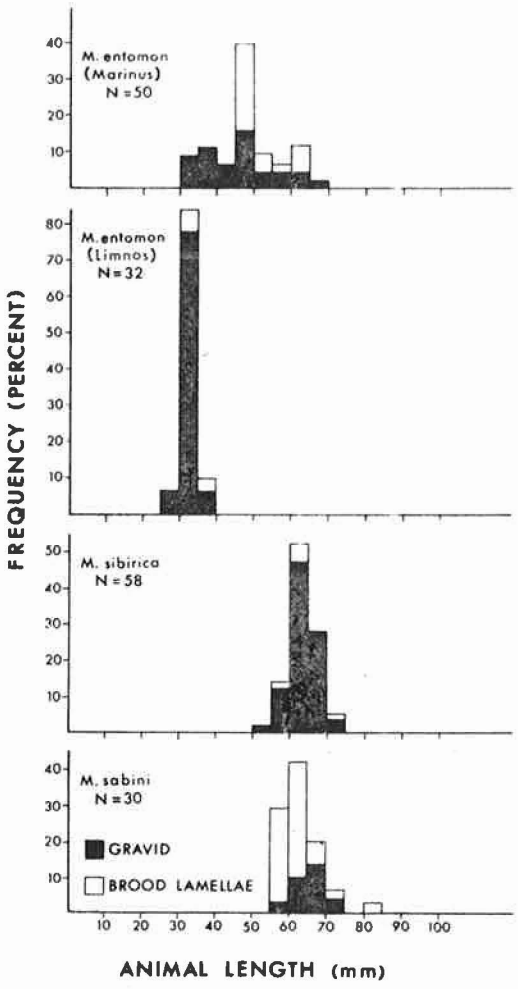

Fig. 24. Size frequency distributions of reproductively active females (gravid or with well-developed brood lamellae) of M. entomon (marinus), M. entomon (limnos), M. sibirica and M. sabini from the Southern Beaufort Sea. Samples pooled from several different collections.

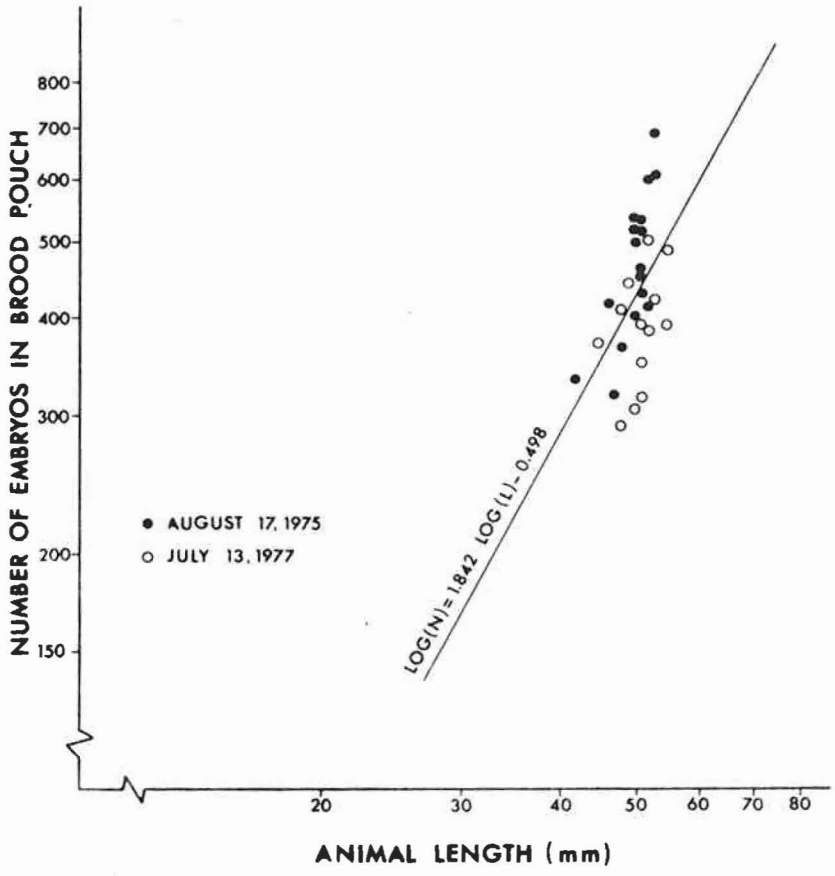

Fig. 25. Relationship between fecundity and body length of M. entomon collected in Ptarmigan Cove, Herschel Island (logarithmic regression equation for relationship indicated).

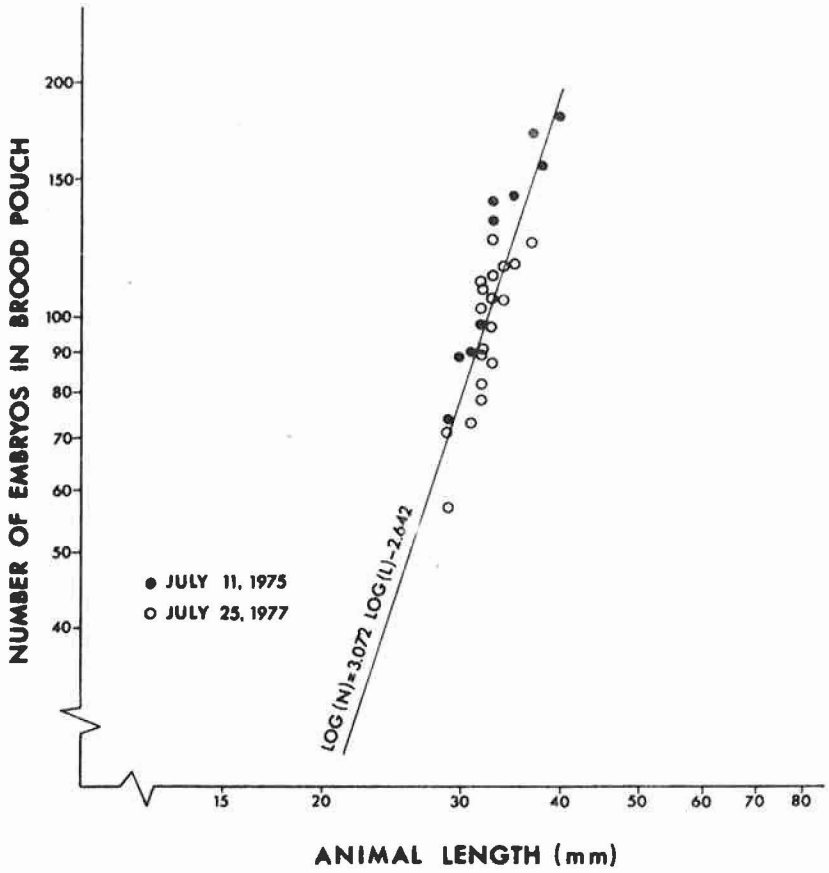

Fig. 26. Relationship between fecundity and body length of M. entomon collected in Dolomite Lake (logarithmic regression equation for relationship indicated).

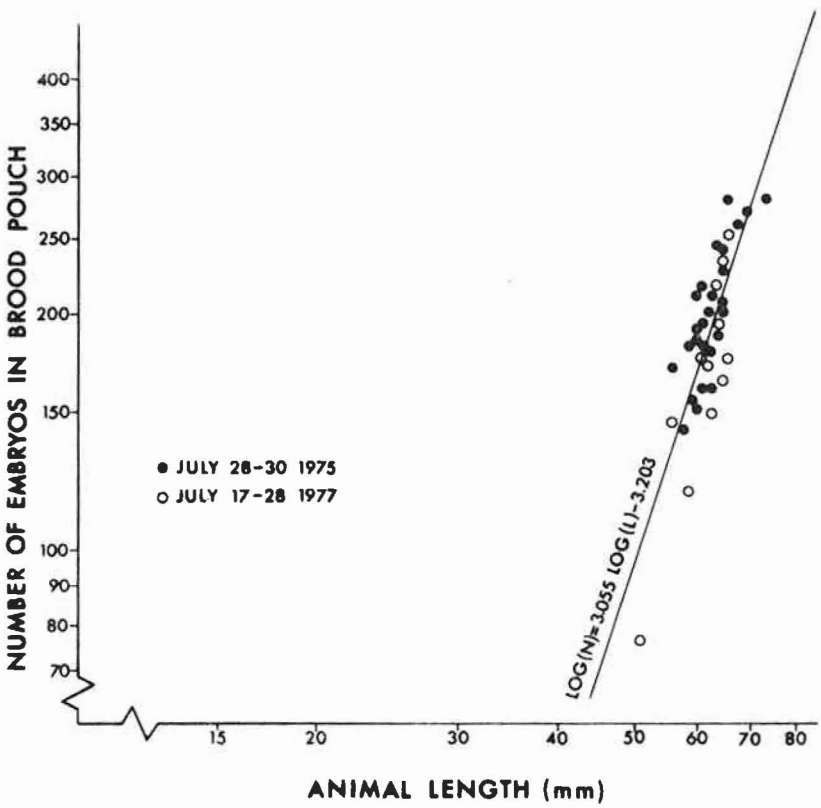

Fig. 27. Relationship between fecundity and body length of M. sibirica collected in Ptarmigan Cove (logarithmic regression equation for relationship indicated).

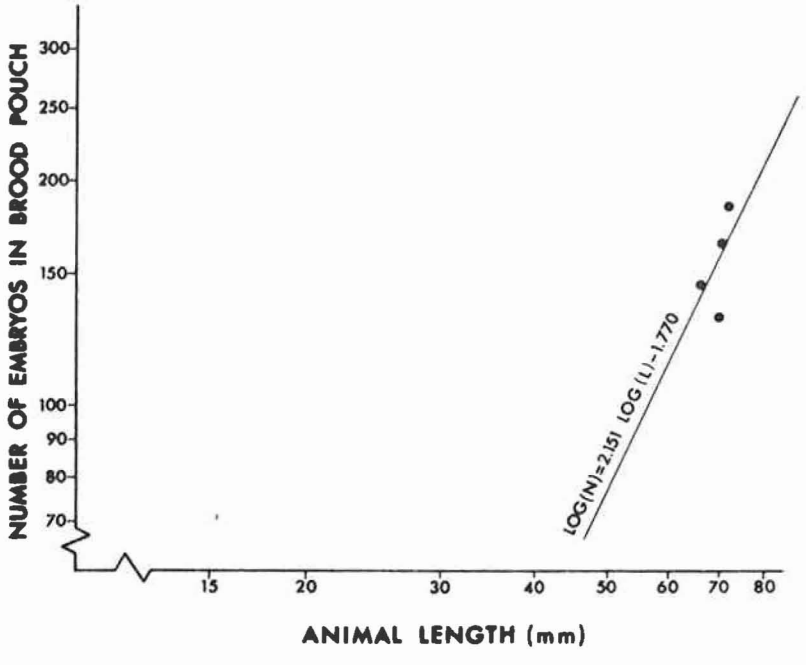

Fig. 28. Relationship between fecundity and body length of M. sabini collected in Liverpool Bay (logarithmic regression equation for relationship indicated).

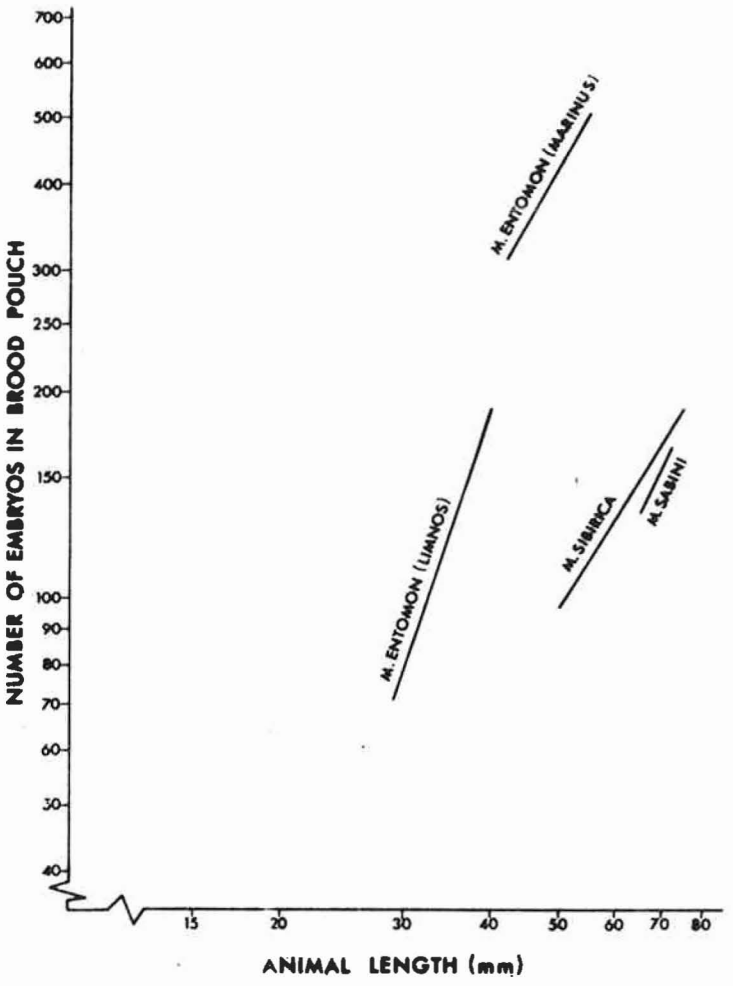

Fig. 29. Regression curves relating fecundity and body length of M. entomon (marinus), M. entomon (limnos), M. sibirica and M. sabini. The horizontal ranges of the lines are indicative of the size ranges of the animals contained in each of the samples.

Acknowledgements

We are grateful to Ms. T. Mullin, J. Walbridge and P. Vermette for assisting in the field work. We particularly wish to express our thanks to Mr. and Mrs. Mackenzie of Herschel Island for their gracious hospitality and invaluable assistance during our several visits to the island. We appreciate the assistance of Mr. R. Hill and Mr. J. Ostrick of the Inuvik Research Laboratory, Inuvik, N.W.T. for making laboratory facilities and field equipment available to us. The Polar Continental Shelf Project provided excellent aircraft support for our field operations. We thank Mr. G. Bruinsma, skipper of the M.V. Salvelinus, for assistance in the field. Our particular thanks to Dr. J. G. Hunter of the Arctic Biological Station for permitting us to examine the fisheries trawl collections and for obtaining additional isopod collections for us. We are grateful to Dr. J. W. Wacasey of the Arctic Biological Station for permitting us to use some of his unpublished isopod data. Thanks are also due to Mme G. Ferand who prepared the final figures and to F. Reid for typing the manuscript.

References

Bray, J. R. 1962. Zoogeography and systematics of isopoda of the Beaufort Sea. M.Sc. Thesis, McGill University. 138p.

Percy, J. A., P. Vermette, P. Bouchard and J. Fife. 1978. Osmoregulation and water permeability of Arctic marine isopods, Mesidotea entomon, M. sibirica and M. sabini. Fish. Mar. Serv. Data Rep. 76:163p.

Wacasey, J. W., E. G. Atkinson, L. Derick and A. Weinstein. 1977. Zoobenthos Data from the Southern Beaufort Sea, 1971-1975. Fish. Mar. Serv. Data Rep. 41, 187p.