Via CRDT for Kodiak

Environmental Assessment of the Alaskan Continental Shelf

Annual Reports of Principal Investigators for the year ending March 1977

Volume VI. Receptors—Fish, Littoral, Benthos

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

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Bureau of Land Management

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Outer Continental Shelf Environmental Assessment Program

Boulder, Colorado

March 1977

U.S. DEPARTMENT OF COMMERCE
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VOLUME VI

RECEPTORS - FISH

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* indicates final report

ANNUAL REPORT

Contract No. 03-5-022-68, Task Order 5
Research Unit #6
Reporting Perid: 1 April 1976-31 March 1977

The distribution, abundance, diversity and productivity of the western Beaufort Sea benthos.

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March 16, 1976

John J. Dickinson

I. Summary of Objectives, Conclusions and Implications with Respect to OCS Oil and Gas Development.

Extensive oil and gas development on the Alaskan and Canadian north slope has the potential to significantly influence the marine environment of the Beaufort Sea continental shelf. It is impossible with our present knowledge to accurately predict the consequences of petroleum development on the marine benthos. The goal of this study is to begin acquiring the knowledge of the ecology of benthic invertebrate faunas of the Beaufort Sea continental shelf necessary to evaluate the consequences of petroleum development. The spatial and temporal variability of benthic communities are being examined in detail, and will provide a baseline from which future changes in the benthic environment and community structure can be evaluated.

II. Introduction

A. General nature and scope of the problem.

The distribution, abundance and natural variability of benthic macro-infauna will be described on the southwestern Beaufort Sea continental shelf. Patterns of faunal distributions will be described and characterized using suitable bio-indices and multivariate techniques. Seasonal changes in the structure of benthic populations will be studied by sampling four times within a single year.

B. Specific Objectives

We propose to describe the benthic infauna of the western Beaufort Sea continental shelf including studies of both geographic and seasonal variability. Data are to be obtained on the faunal composition and abundance to form baselines to which potential future changes can be compared.

Specific objectives include the continuation of studies and analyses to:

1. Describe the distribution, species composition, numerical density, and biomass of the benthos in the area of interest.
2. Describe the spatial and seasonal variability of faunal distributions and abundances.
3. Describe the benthic communities present and delineate their geographical and environmental extent.

4. Describe the effect of seasons on population size and reproductivity activity of dominant species.
5. Determine the degree of correlation of species distributions and of various bio-indices with features of the benthic environment.

C. Relevance to Problems Associated with Petroleum Development.

Extensive drilling for oil and gas on the Alaskan and Canadian north slope has the potential to significantly influence the marine environment across the Beaufort Sea continental shelf. It is impossible with our present state of knowledge to accurately predict either the short or long term consequences of petroleum development on the marine benthos. Comprehensive descriptive studies of the benthic fauna in the Beaufort have only been initiated in the last few years. These studies are a necessary first step in providing a baseline from which any future changes in the benthic environment and community structure can be evaluated.

To date, little is known about the functioning of the benthic ecosystem in the Beaufort Sea. There have been no studies on the dynamics of the benthic populations in this region. No reliable estimates of natural mortality are available, and recruitment rates remain unknown. Little research has been done on the metabolism and growth rates of these organisms living under ice for a large part of the year. Lacking this information it is very difficult to predict how quickly benthic populations could recover from an extinction event caused by a large-scale oil spill or by other industry-related pollution.

The benthic invertebrates constitute a major source of food for the top level carnivores, including birds, seals, and occasional walrus. Any decrease in benthic populations caused by oil pollution might eventually be reflected in the populations of these larger animals. Nearshore areas would seem to be the most sensitive since it would be in these regions that pollutants would be most likely to mix to the benthic boundary.

The timing of environmental disturbances in this strongly seasonal environment may be extremely critical in determining the stresses experienced by the benthic community. For example, an oil spill in the winter on top of the pack ice could be cleaned up with little or no resultant damage to the marine benthos, while a spill of the same magnitude during a summer of open water might have significant impact. It remains to be determined if the bottom-dwelling invertebrates are more or less sensitive to oil related pollution during the summer months, but the pelagic larvae of the benthic organisms would be vulnerable to spills during periods of open water conditions.

It seems likely that the development of the oil and gas resources will bring about changes in the marine environment, but the extent of degradation in the benthic environment cannot be predicted. There remains a great scientific need for long term studies on the dynamics of the benthic populations, including year round sampling with measurements on growth, metabolism, and reproductive activity.

III. Current State of Knowledge.

The history of benthic sampling in the Beaufort Sea and the results of all previous studies was documented in great detail in the final report of Contract No. 03-5-022-68, Task Order No. 4 submitted to NOAA/BLM by the Benthic Ecology Group at Oregon State University under Dr. Andrew G. Carey, Jr.

IV. Study Area.

The Beaufort Sea is one of the seven satellite seas bordering the Arctic Ocean. In contrast to the other six shallow seas, the Beaufort is deep, has a limited continental shelf, and is physically and oceanographically a part of the Arctic Ocean (Coachman, 1963). It forms one of the boundaries for the Canada Basin and extends along the northern coast of Alaska to the western edge of the Canadian Archipelago.

The continental shelf in this region is very narrow with a break that averages 70 meters in depth in the southwestern portion (Carsola, 1954; Carsola et al., 1961). The continental shelf in general is covered with mud (Carsola, 1954), although sands occur nearshore and patches of gravel are found particularly near the shelf break (Barnes and Reimnitz, 1975). The sediments in the region of the shelf off Prudhoe Bay are unusually patchy, are highly oxidized and contain low amounts of organic carbon (Carsola, 1954; Naidu and Mowatt, 1975).

Ice forms on the surface of the southern Beaufort Sea in September and October and covers the continental shelf until June or July (Barnes and Reimnitz, 1975). Shorefast ice increases in thickness until the end of May and extends seaward to a water depth of 10-20 m where it impinges on the main polar ice pack. Beyond this shear zone the pack moves in a generally westward direction as part of the clockwise polar gyre. During the short arctic summer the ice breaks up and the edge of the pack usually recedes beyond the shelf break, though its location is highly variable from year to year (U.S. Navy Hydrographic Office, 1958). Drifting and grounded ice floes can be present on the continental shelf throughout the summer. From the work of Kovacks and Mellor (1975), Reimnitz and Barnes (1975), and Barnes and Reimnitz (1975), it is evident that grounded sea ice is a major process influencing the shelf sediments. Offshore beyond the shear zone, grounded pressure ridge keels and ice islands plow along the shelf at random intervals and rework the sediments to a significant extent.

Hydrographically, the Beaufort Sea contains three major identifiable water masses: (1) a mixed Arctic surface water (0-250 m), (2) an intermediate Atlantic water layer (250-900 m) with temperatures slightly above 0°C, and (3) the Arctic bottom water (below 900 m) with uniform salinities and temperatures always below 0°C (Coachman and Barnes, 1961; Coachman, 1963). The surface layer is a mixture of continental runoff, seasonal ice melt, and intrusions of water from the Bering and Chukchi Seas. The surface water may occusionally be enriched by coastal upwelling in certain areas; it has been detected at the shelf edge north of the Barter Island region during open water conditions (Hufford, 1975; Mountain, 1975).

Because of the highly stratified water column, the Beaufort Sea is thought to support very low levels of annual primary production (English, 1961; Meguro et al., 1966). The short summer season coupled with high variability in ice cover and insolation should contribute toward a low carbon input to the ecosystem. However, recent work has demonstrated a significant population of under-ice diatoms in polar regions (Meguro et al., 1966; Bunt and Lee, 1970; Horner and Alexander, 1972; Horner, 1974). These shade-adapted species, in conjunction with recently detected upwelling, may support higher annual production levels adjacent to the continent than previously anticipated (McRoy et al., 1972).

V. Sources, Methods and Rationale of Data Collection.

A. General

In order to examine the spatial and temporal variability of the Beaufort Sea continental shelf benthos, two transect lines were sampled seasonally. This sampling strategy enabled us to obtain samples from benthic infauna populations from all seasons and from the full range of depths represented on the continental shelf. These two transect lines were selected because they were located in areas of potential importance to petroleum development (see Figure 1).

B. Field Sampling

The field techniques utilized in this study have been described in detail in previous reports to NOAA/BLM and will therefore be presented only in summary fashion here. A 0.1 m^2 Smith-McIntyre grab has been used exclusively to collect quantitative samples of benthic infauna populations. Summer sampling was done off the U.S.C.G.C. GLACIER and the R/V ALUMIAK. Sampling during the other seasons involved the use of a helicopter and special "through-the-ice" sampling techniques. At all stations occupied at least five biological samples and one sediment sample were collected. The biological samples were processed using a Cascading Multiple Siever System retaining all animals larger than 0.42 mm. The animals were preserved in buffered formalin and shipped back to O.S.U. for further processing.

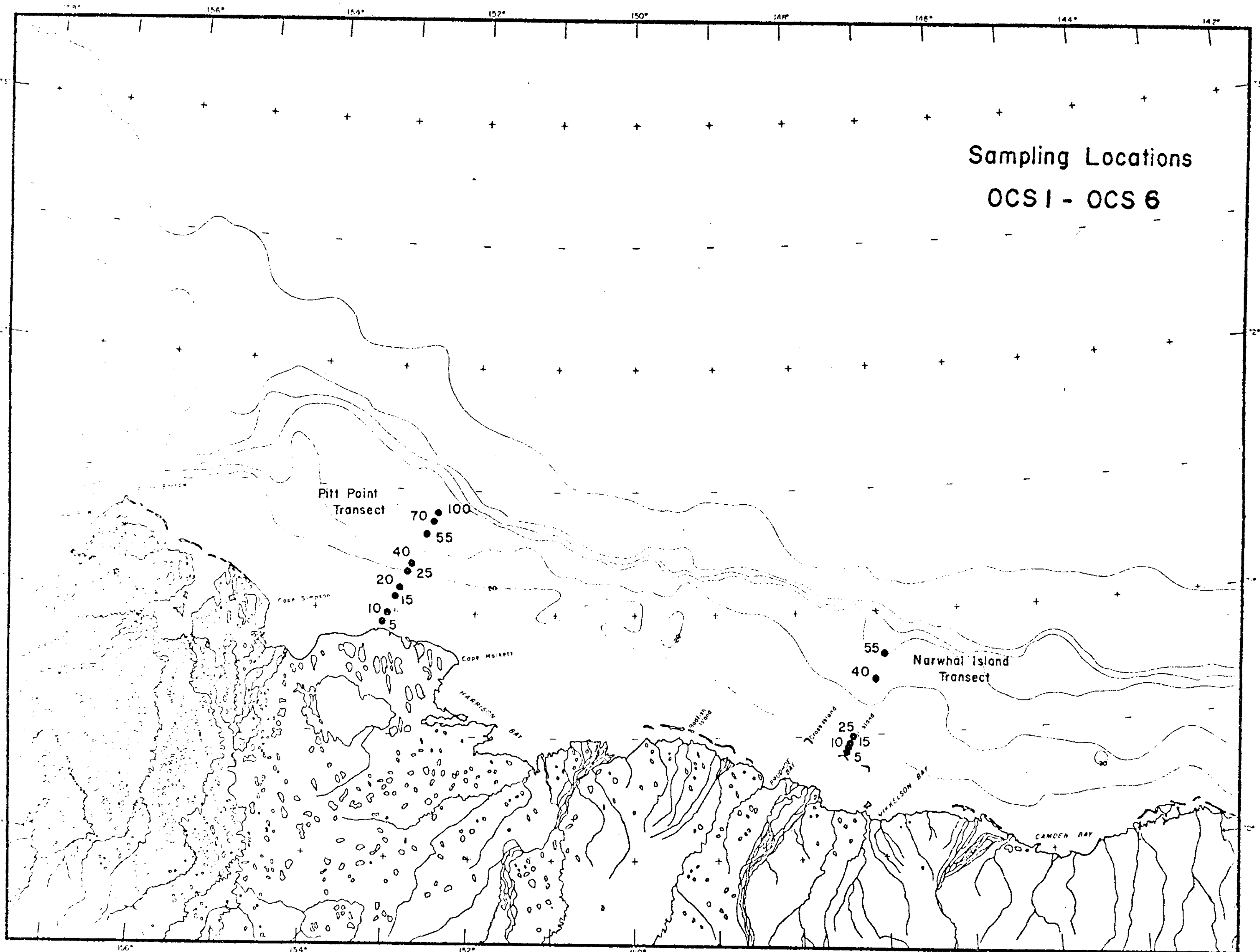

Figure 1. Station Location Map.

C. Laboratory Methods

The processing of infaunal samples in the laboratory is a time consuming process involving the picking of all the animals from the sediment debris of the 1 mm fraction. The picked animals are sorted to phylum, weighed, and counted. The animals are stored in 70% ethanol while awaiting species identification. Presently, the gammarid amphipods are being identified. It is hoped that the molluscs, polychaetes, and other crustaceans will be identified in the future. The data from these infaunal samples is being tabulated and keypunched in order to be submitted to NOAA/BLM. Further details of sample workup have been reported in previous reports to NOAA/BLM.

VI. Results

Over two hundred grab samples have been collected during the six OCS field trips (Table 1). The major sampling effort was directed toward obtaining a complete set of seasonal samples from the Pitt Point Stations between 25 and 100 meters. Sample picking and sorting, as well as subsequent determinations of animal density and biomass have been completed for all samples collected through OCS-4. The density and biomass data are summarized in Tables 2 and 3. Detailed data for individual grab samples have been reported in previous quarterly reports (see October 1976, December 1976, and March 1977).

The gammarid amphipods from OCS-1, OCS-2, and OCS-3 have been identified to species. Tables 4-8 list the dominant species at each station for each field trip. Complete species lists for the amphipods may be found in quarterly reports for December 1976 and March 1977.

Table 1. A List of Benthic Biological Samples Collected During the Six Field Trips Sponsored by the OCS Program.

PPB-5	OCS-1 Oct. 75	OCS-2 Mar. 76	OCS-3 May 76	OCS-4 Aug. 76	OCS-5 Aug. 76	OCS-6 Nov. 76
10					5	
15					5	
20					5	
25	5	9	10	5	5	5
40		6	10	5		
55	5	10	10	5		5
70		5	10	5		5
100	5	10	10	5		5
NIB-5					5	
10					5	
15					5	
25				5		
40			7			
55			7			

Table 2. Mean animal densities per meter squared for the benthic macro-infauna. Number in parenthesis represents the number of samples from which the density values were derived.

	OCS-1 October 1975	OCS-2 March 1976	OCS-3 May 1976	OCS-4 August 1976
PPB-25	1390 (5)	1190 (10)	1120 (5)	1510 (5)
PPB-40	---	650 (5)	1370 (5)	3280 (5)
PPB-55	4800 (5)	4690 (6)	9530 (6)	4500 (5)
PPB-70	---	8680 (5)	7750 (5)	7440 (5)
PPB-100	6540 (4)	4470 (10)	16,010 (5)	8830 (5)
NIB-25				950 (5)
NIB-40			5150 (5)	
NIB-55			2300 (5)	

Table 3. Mean wet preserved weight in grams per meter squared for the benthic macro-infauna. Number in parenthesis represents the number of samples from which the density values were derived.

	OCS-1 October 1975	OCS-2 March 1976	OCS-3 May 1976	OCS-4 August 1976
PPB-25	44.5 (5)	24.4 (10)	26.1 (5)	22.0 (5)
PPB-40	---	11.8 (6)	85.6 (5)	110.7 (5)
PPB-55	38.1 (5)	37.5 (10)	67.0 (6)	151.8 (5)
PPB-70	---	64.4 (5)	71.0 (5)	193.7 (5)
PPB-100	68.7 (4)	45.0 (10)	187.0 (5)	66.3 (5)
NIB-25				23.9 (5)
NIB-40			44.1 (5)	
NIB-55			29.0 (5)	

Table 4. Dominant Amphipod Species Collected During OCS-2 and OCS-3 From PPB-40. S = Number of Species N=Number of specimens.

OCS-2	OCS-3
Byblis arcticus	*Harpinia kobjakouae*
Harpinia kabjakouae	*Aceroides latipes*
Ampelisca eschricti	*Ampelisca eschricti*
Monoculopsis longicornis	*Arrhinopsis longicornis*
Aceroides latipes	*Gammarus* sp. AA
Protomedeia fasciata	*Byblis arcticus*
Haploops tubicola	
Byblis gaimardi	
Haploops laeuis	
S = 15	S = 11
N = 52	N = 42

Table 5. Dominant Amphipod Species Collected During OCS-1, OCS-2 and OCS-3 from PPB-25. S = Number of Species; N=Number of Specimens.

OCS-1	OCS-2	OCS-3
Haploops tubicola	Aceroides latipes	Gammarus sp. AA
Arrhis phyllonyx	Roxinate fragilis	Byblis gaimardi
Aceroides latipes	Monoculodes packardi	Harpinia kobjakouae
Pontogeneia sp. A	Monoculopsis longicornis	Haploops laeuis
Gammarus sp. A	Onisimus litoralis	
Ampelisca eschricti		
Byblis gaimardi		
S= 12	S= 10	S= 13
N= 31	N= 35	N= 26

Table 6. Dominant Amphipod Species Collected During OCS-1, OCS-2, and OCS-3 From PPB-55. S=Number of Species; N = Number of Species.

OCS-1	OCS-2	OCS-3
Photis vinogradova	*Unciola leucopsis*	*Photis vinogradova*
Unciola leucopis	*Photis vinogradova*	*Tiron spinifera*
Tiron spinifera	*Paraphoxus oculatus*	*Byblis arcticus*
Haploops setosa	*Tiron spinifera*	*Harpinia serrata*
Harpinia serrata	*Guernea nordenskioldi*	*Paraphoxus oculatus*
Goesia depressa	*Haploops setosa*	*Photis rheinhardi*
Paraphoxus oculatus	*Harpinia serrata*	*Guernea nordenskioldi*
Guernea nordenskioldi	*Ampelisca eschricti*	*Unciola leucopis*
Podoceropsis lindhaldi	*Podoceropsis lindhaldi*	*Westwoodilla megalops*
Protomedeia fasciata	*Byblis arcticus*	*Byblis* sp. BB
S = 38	S = 34	S = 34
N = 350	N = 547	N = 810

Table 7. Dominant Amphipod Species Collected During OCS-1, OCS-2, and OCS-3 for From PPB-100. S = Number of Species; N = Number of Specimens.

OCS-1	OCS-2	OCS-3
Haploops laeuis	*Unciola leucopis*	*Unciola leucopis*
Harpinia serrata	*Harpinia serrata*	*Guernea nordenskioldi*
Hippomedon abyssi	*Photis vinogradova*	*Podoceropsis inaequistylis*
Unciola leucopis	*Hippomedon abyssi*	*Photis rheinhardi*
Guernea nordenskioldi	*Guernea nordenskioldi*	*Tiron spinifera*
Anonyx nugax	*Photis rheinhardi*	*Podoceropsis lindhaldi*
Pontogeneia sp. A	*Protomedeia fasciata*	*Photis vinogradova*
Pontoporeia femorata	*Pontoporeia femorata*	*Harpinia serrata*
Monoculodes latimanus	*Anonyx nugax*	*Protomedeia fasciata*
	Paraphoxus oculatus	*Ischyrocerus megalops*
S = 23	S = 31	S = 38
N = 197	N = 743	N = 826

Table 8. Dominant Amphipod Species Collected During OCS-2 and OCS-3 from PPB-70. S = Number of Species; N = Number of Specimens.

OCS-2	OCS-3
Unciola leucopis	*Unciola leucopis*
Photis vinogradova	*Photis vinogradova*
Tiron spinifera	*Tiron spinifera*
Podocerapsis inaequistylis	*Podoceropsis lindhaldi*
Goesia depressa	*Ampelisca birulai*
Ampelisca birulai	*Lembos arcticus*
Podocerapsis lindhaldi	*Protomedeia fasciata*
Protomedeia fasciata	*Paraphoxus oculatus*
Ericthonius megalops	*Photis rheinhardi*
S = 42	S = 37
N = 1041	N = 755

VII. Discussion

A. Animal Densities and Biomass on the Pitt Point Transect.

Since samples have now been processed for the first four OCS field trips, it is possible to evaluate the degree to which benthic populations fluctuate throughout an annual cycle on the Pitt Point transect. Careful examination of Tables 2 and 3 reveals that at most stations the benthic infaunal populations seem very stable with rather similar values of animal abundance from season to season. There is little indication of any significant die-off of the benthos during the winter months. A few anomalous values in animal densities are recorded, particularily at the deeper stations taken during May, 1976. However, it is difficult to interpret whether these values are indicative of real seasonal trends, or if they are merely reflecting spatial rather than temporal variability. An additional series of benthic samples during the winter and spring months would go far toward elucidating the effects of seasonality on the benthos. Also, additional analysis of the existing samples at the species level may be helpful in interpreting the density values.

The biomass values (grams wet preserved weight) also exhibit no order of magnitude changes, indicative of a stable benthic populations through time.

B. Distribution of the Gammarid Amphipods on the Pitt Point Transect.

Careful examination of Tables 4-8 reveals several trends in the distribution of the dominant species of gammarid amphipods collected on the Pitt Point Transect during the three field trips. Station PPB-25 was characterized by low numbers of amphipods and low similarities of the dominant species when comparing the three collections. The four deeper stations (PPB-40, PPB-55, PPB-70 and PPB-100) have both larger numbers of amphipods and much higher within station similarities. The variability at the inner shelf station probably reflects the much higher environmental heterogenity found in this area due to the disturbances of ice impinging on the bottom. The data from the deeper stations suggests that these areas are sufficiently homogeneous that the same communities can be sampled repeatedly.

In comparing the amphipod faunas from the different depths, there seems to be clear evidence of depth zonation. Three amphipod assemblages seem to be identifiable by comparing the dominant species: 1) an inner shelf group found at PPB-25 and PPB-40; 2) a mid-shelf group found at PPB-55 and PPB-70; and 3) an outer-shelf fauna found at PPB-100. The validity of these three assemblages will be tested in the near future through the use of multivariate techniques such as cluster analysis.

Conclusions

The amount of data presently available make any conclusions rather tenuous, but there are a few significant trends in the data sets.

1) Benthic infaunal populations of the Beaufort Sea Continental Shelf show little evidence of strong seasonal fluctuations in abundance. In fact, temporal variability seems much less than spatial variability.

2) The gammarid amphipod fauna of the Beaufort Sea Continental Shelf shows clear depth zonation with a inner-, mid-, and outer-shelf assemblages being identifiable.

IX. Needs for Further Study

Present knowledge of the benthic ecosystem of the Beaufort Sea is still very much in the descriptive phase. There is a great need for future research if we are going to access and predict the impact of petroleum development in this area. In particular, there is a need to study the dynamic processes of the benthic ecosystem. Such studies should include a description of the benthic food web, and measurement of reproductive and repopulation rates of dominant species.

X. Summary of 4th Quarter Operations.

A. Ship and Laboratory Activities

1. Field Work

No field work has been undertaken this quarter. Plans have been initiated for a cruise on the USCGC GLACIER this summer to study the benthic components of the food web in the Beaufort Sea.

2. Laboratory Activities

a. Personnel

1. Andrew G. Carey, Jr. — Principal Investigator, Associate Professor

Responsibilities: coordination, evaluation, analysis, and reporting.

2. John J. Dickinson — Research Associate Postdoctoral

Responsibilities: direction of laboratory personnel, gammarid amphipod systematics, sample processing, data compilation and analysis, and field collection.

3. R. Eugene Ruff — Research Assistant

Responsibilities: species list compilation, reference museum curation, and field collection.

4. James B. Gish — Research Assistant

Responsibilities: data management, statistical analysis, and field collection.

5. Paul Montagna — Research Assistant

Responsibilities: sample processing, biomass, and Harpacticoid Copepod systematics.

b. Methods

The techniques for sample processing have not been altered this quarter.

c. Data analyzed

During this quarter, 40 Smith-McIntyre grabs have been processed including 15 samples from the Narwhal Island Transect and 25 samples from the Pitt Point Transect. These samples were sorted to phyla, and determinations of animal density and biomass have also been completed (see Tables 9-18). Fifty-five samples from OCS-5 and OCS-6 remain to be sorted to phyla.

The gammarid amphipods from OCS-2 and OCS-3 have been identified to species (see Tables 19-28).

B. Problems Encountered

No new problems have developed this quarter.

C. Estimate of Funds Expended. Contract No. 03-5-022-68 (FY76 + 77) Task Order No. 5 R.U. #6.

	Budget	Spent	Committed	Balance
Salaries	94,128	53,151	30,977	-
Materials & Services	16,595	18,380	750	<2,535>
Travel	9,300	8,022		1,278
Equipment	47,617	47,224		393
Payroll Assessment	14,260	7,691	6,946	-
Overhead	45,260	24,671	20,589	-
TOTAL	227,537	159,139	59,262	<864>

DATA MANAGEMENT
PROGRESS CHART

01 March 77

	Processed	Coded	Keypunched	Final Verification	Expected Submission	FILE ID
WEBSEC 1971					FEB. 1977	WBSC71
WEBSEC 1972					FEB. 1977	WBSC72
OCS 1						
Station					MARCH 1977	OCS-1
Taxonomic						
OCS 2						
Station					MARCH 1977	OCS-2
Taxonomic						
OCS 3						
Station					01 APRIL 1977	
Taxonomic					01 JULY 1977	
OCS 4						
Station					01 APRIL 1977	
Taxonomic					01 OCT. 1977	
OCS 5						
Station					01 MAY 1977	
Taxonomic					01 OCT. 1977	
OCS 6						
Station					01 MAY 1977	
Taxonomic					01 OCT. 1977	

No dates for the expected submission of information have been changed.

Table 9. Animal densities for NIB-40 (OCS-3) collected on 1 June 1976.

	Grab Number					
Phylum: Class: Order	1198	1199	1200	1202	1204	Total
Cnidaria: Anthozoa	3	7	1	6	4	21
Nematoda	318	230	139	20	171	878
Nemertinea	4	5	3		8	20
Annelida: Polychaeta	140	150	148	46	172	656
Sipuncula					1	1
Echiura	1					1
Arthropoda: Crustacea: Amphipoda	115	15	20	14	21	185
Harpacticoida	8	3				11
Isopoda	5	5	1		7	18
Ostracoda	89	83	17	3	63	255
Tanaidacea	20	4	1	1	11	37
Cumacea	21	6	6		6	39
Mollusca: Bivalvia	65	88	115	82	67	417
Gastropoda	1	3	2	1		7
Brachiopoda	1	2			1	4
Echinodermata: Holothuroidea	1					1
Ophiuroidea	4		7	1		12
Hemichordata	2	2	2	1	2	9
TOTAL	798	603	462	175	534	2573

Table 10. Animal densities for NIB-55 (OCS-3) collected on 1 June 1976.

Phylum: Class: Order	Grab Number 1192	1193	1194	1195	1197	Total
Cnidaria: Anthozoa	1	7	5	1	1	15
Nematoda	35	54	156	40	61	346
Nemertinea	1	1	6	2	2	12
Annelida: Polychaeta	77	65	145	81	83	451
Sipuncula			1	1	1	3
Arthropoda: Crustacea: Amphipoda	7	3	12	11	2	34
Harpacticoida		1	2			3
Isopoda		2				2
Ostracoda	3	7	43	6	1	60
Tanaidacea	3					3
Cumacea	1	5	17	1	1	25
Mollusca: Bivalvia	16	43	95	19	11	184
Gastropoda			3	2	1	6
Polyplacophora			1			1
Brachiopoda		1	1			2
Echinodermata: Holothuroidea		1				1
Ophiuroidea				1		1
TOTAL	144	190	487	165	164	1150

Table 11. Animal densities for NIB-25 (OCS-4) collected on 25 August 1976.

Phylum: Class: Order	Grab Number 1294	1295	1296	1297	1298	Total
Cnidaria: Anthozoa		6		2		8
Nematoda	1	10	5	10	7	33
Nemertinea		9	7	6	9	31
Annelida: Polychaeta	4	51	33	72	31	191
Sipuncula		3				3
Priapulida			1	3	1	5
Arthropoda: Crustacea: Amphipoda	5	13	1	10	12	41
Isopoda		2	2	1		5
Ostracoda	1		1		1	3
Tanaidacea		9	2	1	3	15
Cumacea	6	14	4	12	6	42
Pycnogonida			1			1
Mollusca: Bivalvia		34	7	11	14	66
Gastropoda		1	1	6	3	11
Echinodermata: Holothuroidea			1		1	2
Ophiuroidea	1	4	3	2	3	13
Chordata: Urochordata: Ascidacea		3				3
TOTAL	18	159	69	136	91	473

Table 12. Animal densities for PPB-25 (OCS-4) collected on 1 September 1976.

Phylum: Class: Order			Grab Number				
			1360	1361	1362	1363	1364	Total

Phylum:	Class:	Order	1360	1361	1362	1363	1364	Total
Cnidaria:	Anthozoa				1			1
Nematoda			9		2	1	7	19
Nemertinea			2	4			2	8
Annelida:	Polychaeta		113	143	69	55	80	460
	Oligochaeta						1	1
Sipuncula							2	2
Echiura			1					1
Arthropoda:	Crustacea:	Amphipoda	5	4	7	5	6	27
		Harpacticoida	1			2		3
		Isopoda		2	2	2	1	7
		Ostracoda		2			3	5
		Tanaidacea	2		3		1	6
		Cumacea	4		3		1	8
Mollusca:	Bivalvia		50	32	25	32	35	174
	Gastropoda		3	6	4	8	4	25
Echinodermata:	Holothuroidea		1					1
	Ophiuroidea		2		3	1		6
TOTAL			193	193	119	106	143	754

Table 13. Animal densities for PPB-40 (OCS-4) collected on 31 August 1976.

Phylum: Class: Order			Grab Number					
			1353	1354	1355	1356	1357	Total
Cnidaria: Anthozoa			4	9	7	1	7	28
Nematoda			55	30	59	31	73	248
Nemertinea			3	3	4	3	2	15
Annelida:	Polychaeta		88	103	198	121	152	662
Sipuncula				1	1		4	6
Echiura				1				1
Arthropoda:	Crustacea:	Amphipoda	55	93	71	76	41	336
		Isopoda					1	1
		Ostracoda	14	19	13	16	15	76
		Tanaidacea	14	15	3	10	6	48
		Cumacea	25	30	26	38	12	131
Mollusca:	Bivalvia		3	12	12	5	23	55
	Gastropoda		3	1	5	4	5	18
	Aplacophora				1			1
Echinodermata:	Ophiuroidea		1	2	3	3	3	12
TOTAL			265	319	403	308	344	1638

Table 14. Animal densities for PPB-55 (OCS-4) collected on 31 August 1976.

			Grab Number			
Phylum: Class: Order	1330	1335	1336	1340	1541	Total
Cnidaria: Anthozoa	5	2	2	4	5	18
Nematoda	71	97	51	38	128	385
Nemertinea	8	8	3	8	3	30
Annelida: Polychaeta	240	227	182	152	145	946
Sipuncula	8	7	4	1	6	26
Echiura	2	1				3
Priapulida					2	2
Arthropoda: Crustacea: Amphipoda	49	63	63	23	43	241
Harpacticoida	3	5	2	2	1	13
Isopoda		1	1	1		3
Ostracoda	35	95	34	18	66	248
Tanaidacea	13	12	10	9	10	54
Cumacea	26	27	22	15	27	117
Decapoda	1					1
Mollusca: Bivalvia	12	36	18	11	13	90
Gastropoda	7	7	5	5	11	35
Aplacophora		2	1			3
Echinodermata: Holothuroidea	1				2	3
Ophiuroidea	5	3	2	1	5	16
Hemichordata	2	2	6		3	13
Chordata: Urochordata: Ascidacea		1				1
TOTAL	488	596	406	288	470	2248

Table 15. Animal densities for PPB-70 (OCS-4) collected on 31 August 1976.

Phylum: Class: Order	Grab Number 1325	1326	1327	1328	1329	Total
Cnidaria: Anthozoa	5	24	8	7	7	51
Nematoda	115	179	164	149	226	833
Nemertinea	4	3	3	4	6	20
Annelida: Polychaeta	335	409	298	370	217	1629
Sipuncula	4	4	1	1	4	14
Echiura			1			1
Anthropoda: Crustacea: Amphipoda	81	135	85	61	96	458
Cirripedia		1				1
Harpacticoida					1	1
Isopoda	6	5	4	34	14	63
Ostracoda	35	37	43	25	22	162
Tanaidacea		11	3	3	5	22
Cumacea	36	37	31	16	21	141
Pycnogonida	5	6				11
Mollusca: Bivalvia	55	55	27	51	59	247
Gastropoda	11	10	2	1	5	29
Aplacophora		3				3
Polyplacophora	2	3	3		1	9
Brachiopoda	3	2		1		6
Echinodermata: Holothuroidea	1					1
Ophiuroidea	2	2	4	1	2	11
Hemichordata	1	3				4
Chordata: Urochordata: Ascidacea		1			2	3
TOTAL	701	930	677	724	688	3720

Table 16. Animal densities for PPB-100 (OCS-4) collected on 30 August 1976.

Phylum: Class: Order	Grab Number 1318	1319	1320	1322	1323	Total
Cnidaria: Anthozoa	12	9	15	14	13	63
Nematoda	275	168	545	95	146	1229
Nemertinea	9	5	12	5	6	37
Annelidea: Polychaeta	311	281	309	261	259	1421
Sipuncula	3	5	8	1	3	20
Priapulida					1	1
Arthropoda: Crustacea: Amphipoda	116	137	212	151	117	733
Cirripedia					1	1
Harpacticoida	7	1	10	1	2	21
Isopoda	6	8	8	7	6	35
Ostracoda	96	64	108	53	64	385
Tanaidacea	4	4	9	2	6	25
Cumacea	29	30	59	14	38	170
Pycnogonida	3	3	2	2	1	11
Mollusca: Bivalvia	35	25	35	27	40	162
Gastropoda	6	8	9	5	10	38
Aplacophora				1	1	2
Brachiopoda	2	2		2	1	7
Echinodermata: Holothuroidea	1	1		1		3
Ophiuroidea	5	3	6	5	7	26
Hemichordata	3		1	1	1	6
Chordata: Urochordata: Ascidacea	5	4	3		5	17
TOTAL	928	758	1351	648	728	4413

Table 17. Wet Weight in Grams of Major Groups, for NIB stations cruises OCS-3 and OCS-4.

Station	Grab	Anthozoa	Sipuncula	Polychaeta	Arthropoda	Mollusca	Ophiuroidea	Misc. Phyla	Total
NIB-55	1192	.39		.65	.11	.59		.02	1.76
	1193	.58		.62	.83	1.05		.02	3.10
	1194	.30	.02	2.16	.26	.84		.09	3.67
	1195	.15	.01	.96	.50	.62	.54	.54* (.01)	3.32
	1197	.20	.01	1.21	.06	1.14		.03	2.65
NIB-40	1198	.48	.01	1.39	1.18	1.65	.28	.04	5.03
	1199	.35		1.76	.38	1.50		.02	4.01
	1200	.09		3.29* (2.60)	.13	4.34* (1.59)	.16	.05	8.06
	1202	.19		3.10	.43	4.25	.01	.04	8.02
	1204	.20		2.33	.30	2.09		.04	4.96
NIB-25	1294			.01	.10		.07	.01	.19
	1295	.24	.03	1.25	.19	2.06	.08	.20* (.04)	4.05
	1296			.68* (.12)	.19	3.92	.57	.07	5.43
	1297	.05		.98* (.30)	.17	.32	.07	.03	1.62
	1298			.08	.09	.40	.05	.02	.64

* Weight biased by a large and rare organism, number in parenthesis is weight with bias excluded.

Table 18. Wet Weight in Grams of Major Groups, for PPB Stations Taken During Cruise OCS-4.

Station	Grab	Anthozoa	Sipuncula	Polychaeta	Arthropoda	Mollusca	Ophiuroidea	Misc. Phyla	Total
PPB-100	1318	.56	.03	2.13	.65	3.25* (.92)	.08	.16	6.96
	1319	.72	.05	2.13	.64	.37	.14	.10	4.15
	1320	.44	.02	2.99	1.30	.57	.47	.21	6.00
	1322	.15	.01	3.01	.70	6.99* (.60)	.14	.39	11.39
	1323	.29	.01	2.56	.44	1.15	.09	.11	4.65
PPB-70	1325	1.47* (.43)	.08	3.24	1.02	14.06	.01	.46	20.34
	1326	.92	.02	2.66	.61	8.60	.01	.06	12.88
	1327	.73	.01	6.47	.34	13.65	.02	.18	21.40
	1328	.11		7.70	.39	11.85	.0	.21	20.33
	1329	2.54	.03	5.75	.27	12.82	.06	.45	21.92
PPB-55	1330	.04	2.40* (.15)	5.03	.93	2.24	.27	.08	10.99
	1335	.54	.25	3.82	1.52	12.84* (1.70)	.07	.09	19.13
	1336	.19	.01	4.36	1.27	3.03	.01	3.56* (.26)	12.43
	1340	.25	.01	5.73	1.80* (.80)	2.71	.20	.04	10.74
	1341	.13	10.04* (.02)	4.18	.90	6.83* (1.48)	.49	.04	22.61
PPB-40	1353	.43		2.40	.81	.92* (1.23)	.01	.41* (.05)	4.98
	1354	.33	.01	3.22	1.56	.63	.27	.12	6.14
	1355	.06	.01	5.82	.54	.11	.32	.02	6.88
	1356	.08		3.69	.79	2.46	.77	.02	7.81
	1357	.52	.01	11.69* (5.14)	5.96* (2.46)	11.23	.07	.08	29.56
PPB-25	1360			.56	.61	1.62	.54	.02	3.35
	1361			.90	.16	.67		.02	1.75
	1362	.06		.44	.16	1.09	.01	.01	1.77
	1363			1.27	.03	.57			1.87
	1364		.02	1.07	.16	1.00		.01	2.26

* Weight biased by a large and rare organism, number in parenthesis is weight with bias excluded.

Table 19. The Gammarid Amphipods from PPB-25 Collected During OCS-3. 13 Species were Reported in the 26 Specimens.

Family	Mean Number/m^2	Frequency	Rank
Ampeliscidae			
Ampelisca eschricti	1	1/9	4
Byblis gaimardi	3	3/9	2
Haploops laevis	2	1/9	3
Haploops sibirica	1	1/9	4
Corophiidae			
Geosia depressa	1	1/9	4
Eusiridae			
Rozinante fragilis	1	1/9	4
Gammaridae			
Gammarus sp. AA	10	7/9	1
Haustoriidae			
Pontoporeia femorata	1	1/9	4
Ischyroceridae			
Ischyrocerus sp. AA	1	1/9	4
Lysianasidae			
Hippomedon abyssi	1	1/9	4
Onisimus littoralis	1	1/9	4
Oedicerotidae			
Aceroidea latipes	3	1/9	2
Phoxocephalidae			
Harpinia kobjakovae	1	1/9	4

Table 20. The Gammarid Amphipods from PPB-40 Collected During OCS-3. 19 Species were Reported in the 42 Specimens.

Family	Mean Number/m^2	Frequency	Rank
Ampeliscidae			
Ampelisca eschricti	2	1/5	7
Byblis affinis	4	1/5	6
Byblis gaimardi	2	1/5	7
Haploops tubicola	2	1/5	7
Argissidae			
Argissa hamatipes	2	1/5	7
Corophiidae			
Podoceropsis inaequistylus	2	1/5	7
Unciola leueopis	2	1/5	7
Gammaridae			
Gammarus sp. A	4	2/5	5
Ischyroceridae			
Ischyrocerus chamissoni	2	1/5	7
Lysianassidae			
Anonyx sp. AA	2	1/5	7
Anonyx nugax	2	1/5	7
Tryphosella sp. AA	2	1/5	7
Oedicerotidae			
Aceroides latipes	10	3/5	2
Arrinopsis longicornis	6	2/5	4
Arrhis phyllanyx	2	1/5	7
Bathymedon obtusifrons	2	1/5	7
Phoxocephalidae			
Harpinia kobjakovae	26	5/5	1
Harpinia serrata	2	1/5	1
Pleustidae			
Pleusymtes karianus	2	1/5	1

Table 21. The Gammarid Amphipods from PPB-55 Collected During OCS-3. 34 Species were Represented in the 810 Specimens.

Family	Mean Number/m^2	Frequency	Rank
Ampeliscidae			
Ampelisca birulai	22	4/6	13
Ampelisca eschricti	7	2/6	19
Byblis arcticus	150	6/6	3
Byblis sp. BB	32	2/6	20
Haploops laeuis	5	3/6	20
Haploops setosa	10	2/6	18
Haploops sibirica	2	1/6	21
Aoridae			
Lembos arcticus	10	2/6	18
Argissidae			
Argissa hamatipes	15	5/6	16
Corophiidae			
Corophium clarencense	13	5/6	17
Goesia depressa	20	4/6	14
Photis rheinhardi	67	5/6	6
Photis vinogradova	350	6/6	1
Podoceropsis inaequistylus	10	4/6	18
Podoceropsis Lindhaldi	23	4/6	12
Protomedia fasciata	25	4/6	11
Unciola leucopsis	62	6/6	8
Dexaminidae			
Gurnea nordenskioldi	63	6/6	7
Eusiridae			
Rhachotropis aculeta	2	1/6	21
Gammaridae			
Gammarus sp. AA	2	1/6	21
Maera danae	17	1/6	15
Lysianassidae			
Anonyx nugax	10	3/6	18
Boeckonesimus platus	2	1/6	21
Onisimus littoralis	2	1/6	21
Oedicerotidae			
Aceroides latipes	2	1/6	21
Bathymedon obtusifrons	3	2/6	20
Monoculodes diamesus	2	1/6	21
Monoculodes tuberculatus	2	1/6	21
Westwoodilla megalops	35	5/6	9

Table 21. (cont.)

Family	Mean Number/m^2	Frequency	Rank
Paradaliscidae			
Paradaliscella lauroui	2	1/6	21
Phoxocephalidae			
Harpinia serrata	87	6/6	4
Paraphoxus oculatus	75	6/6	5
Pleustidae			
Pleusymtes karianus	2	1/6	21
Synopiidae			
Tiron spinifera	220	6/6	2

Table 22. The Gammarid Amphipods from PPB-70 Collected During OCS-3. 37 Species were Represented in the 755 Specimens.

Family	Mean Number/m^2	Frequency	Rank
Ampeliscidae			
Ampelisca birulai	96	5/5	5
Ampelisca eschricti	2	1/5	20
Ampelisca macrocephala	4	2/5	19
Byblis arcticus	10	3/5	16
Byblis gaimardi	2	1/5	20
Haploops laevis	2	1/5	20
Haploops setosa	2	1/5	20
Haploops tubicola	6	2/5	18
Aoridae			
Lembos arcticus	82	4/5	6
Argissidae			
Argissa hamatipes	4	2/5	19
Corophiidae			
Corophium clarencense	20	4/5	14
Erichthonius megalops	24	3/5	12
Goesia depressa	26	5/5	11
Photis rheinhardi	44	5/5	10
Photis vinogradova	216	5/5	2
Podoceropsis inequistylis	26	5/5	11
Podoceropsis lindhaldi	172	5/5	4
Protomedia fasciata	54	4/5	8
Unciola leucopis	318	5/5	1
Dexaminidae			
Guernea nordenskioldii	56	5/5	7
Gammaridae			
Gammarus sp. AA	2	1/5	20
Marae danae	22	3/5	13
Melita dentata	24	5/5	12
Haustoriidae			
Pontoporeia femorata	2	1/5	20
Ischyroceridae			
Ischyrocerus commensalis	4	2/5	19
Ischyrocerus megalops	2	1/5	20
Lysianassidae			
Anonyx nugax	4	1/5	19

Table 22. (cont.)

Family	Mean Number/m^2	Frequency	Rank
Oedicerotidae			
Aceroides latipes	4	1/5	19
Arrhinopsis longicornis	4	2/5	19
Bathymedon obtusifrons	8	3/5	17
Monoculodes diamesus	4	1/5	19
Monoculodes tuberculatus	8	2/5	17
Westwoodilla megalops	12	3/5	15
Phoxocephalidae			
Harpinia serrata	46	5/5	9
Paraphoxus oculatus	10	3/5	16
Pleustidae			
Pleusymtes karianus	2	1/5	20
Synopiidae			
Tiron spinifera	186	5/5	3

Table 23. The Gammarid Amphipods from PPB-100 Collected During OCS-3. 38 Species were Represented in the 825 Specimens.

Family	Mean Number/m^2	Frequency	Rank
Acanthonotozomatidae			
Odius kelleri	4	1/5	19
Ampeliscidae			
Ampelisca birulai	2	1/5	20
Ampelisca eschricti	2	1/5	20
Byblis affinis	6	1/5	18
Byblis arcticus	2	1/5	20
Byblis sp. BB	2	1/5	20
Haploops tubicola	4	2/5	19
Aoridae			
Lembos arcticus	2	1/5	20
Argissidae			
Argissa hamatipes	2	1/5	20
Corophiidae			
Corophium clarencense	4	2/5	20
Ericthonius megalops	6	1/5	18
Goesia depressa	30	4/5	12
Photis rheinhardi	116	5/5	4
Photis vinogradova	72	4/5	6
Podoceropsis inaequistylis	176	5/5	3
Podoceropsis lindhaldi	76	5/5	5
Protomedia fasciata	64	5/5	8
Unciola leucopis	444	5/5	1
Dexaminidae			
Guernea nordenskioldi	242	5/5	2
Haustoriidae			
Pontoporeia femorata	20	3/5	14
Ischyroceridae			
Ischyrocerus megacheir	14	2/5	16
ischyrocerus megalops	38	3/5	9
Lysianassidae			
Anonyx sp. AA	2	1/5	20
Anonyx nugax	6	1/5	18
Hippomedon abyssi	26	4/5	13

Table 23. (cont.)

Family	Mean Number/m^2	Frequency	Rank
Oedicerotidae			
Aceroides latipes	2	1/5	20
Arrhinopsis longicornis	4	2/5	19
Bathymedon obtusifrons	32	5/5	11
Bathymedon sp. AA	2	1/5	20
Monoculodes diamesus	14	4/5	16
Westwoodilla megalops	10	3/5	17
Phoxocephalidae			
Harpinia kobjakovae	2	1/5	20
Harpinia serrata	68	5/5	7
Paraphoxus oculatus	16	5/5	15
Pleustidae			
Pleusymtes karianus	2	1/5	20
Podoceridae			
Dulichia falcata	24	2/5	13
Paradulichia typica	2	1/5	20
Synopiidae			
Tiron spinifera	76	5/5	5

Table 24. The Gammarid Amphipods From PPB-25 Collected During OCS-2. 10 Species Reported in the 35 Specimens.

Family	mean number/m^2	Frequency	Rank
Ampeliscidae			
Haploops sibirica	1	1/10	5
Eusiridae			
Rozinate fragilis	8	3/10	2
Gammaridae			
Gammarus sp. AA	1	1/10	5
Lysianasidae			
Onisimus litoralis	4	3/10	4
Oedicerotidae			
Aceroides latipes	9	4/10	1
Monoculodes borealis	1	1/10	5
Monoculodes longicornis	4	3/10	4
Monoculodes packardi	5	3/10	3
Pleustidae			
Pleusymtes varianus	1	1/10	5
Stenothidae			
Metopa tenuimana	1	1/10	5

Table 25. The Gammarid Amphipods From PPB-40 Collected During OCS-2. 15 Species were Represented in the 52 Specimens.

Family	mean Number/m^2	Frequency	Rank
Ampeliscidae			
Ampelisca eschricti	10	3/6	3
Byblis arcticus	22	5/6	1
Byblis gaimardi	3	2/6	8
Haploops laevis	3	2/6	9
Haploops tubicola	5	2/6	7
Argissidae			
Angissa hamatipes	2	2/6	9
Corophiidae			
Goesia depressa	2	1/6	9
Protomedia fasciata	5	3/6	6
Eusiridae			
Rozinante fragilis	2	1/6	9
Gammaridae			
Maera danae	2	1/6	9
Oedicerotidae			
Aceroides latipes	7	3/6	5
Monoculopsis longicornis	8	2/6	4
Phoxocephalidae			
Harpinia kobjakovae	13	4/6	2
Paraphoxus oculatus	2	1/6	9

Table 26. The Gammarid Amphipods from PPB-55 Collected During OCS-2. 34 Species were represented in the 547 Specimens.

Family	Mean Number/m^2	Frequency	Rank
Acanthonotozomatidae			
Odius kelleri	1	1/10	17
Ampeliscidae			
Ampelisca birulai	5	4/10	13
Ampelisca eschrichti	14	5/10	6
Byblis affinis	7	4/10	11
Byblis gaimardi	2	2/10	16
Haploops laeuis	1	1/10	17
Haploops setosa	14	2/10	6
Haploops tubicola	25	3/10	4
Argissidae			
Argissa hamatipes	2	1/10	16
Corophiidae			
Corophium clarencense	4	2/10	14
Goesia depressa	10	3/10	9
Photis rheinhardi	8	2/10	10
Photis vinogradova	143	7/10	2
Podoceropsis inaequistylis	6	2/10	12
Podoceropsis lindhaldi	10	3/10	9
Protomedia fasciata	11	2/10	8
Unciolo leucopis	182	9/10	1
Dexaminidae			
Guernea nordenskioldi	12	4/10	7
Eusiridae			
Rozanante fragilis	1	1/10	17
Gammaridae			
Maera danae	3	2/10	15
Lysianssidae			
Anonyx sp. AA	1	1/10	11
Anonyx nugax	1	1/10	17
Oedicerotidae			
Aceroides latipes	5	3/10	13
Bathymedon obtusifrons	2	2/10	16
Monoculodes diamesus	1	1/10	17
Monoculodes latimonus	1	1/10	12
Westwoodilla megalops	3	2/10	15

Table 26. (cont.)

Family	Mean Number/m^2	Frequency	Rank
Paradaliscidae			
Halice sp. AA	1	1/10	17
Phoxocephalidae			
Harpinia kobjakouae	2	2/10	16
Harpinia serrata	10	4/10	9
Paraphoxus oculatus	43	6/10	3
Pleustidae			
Pleusymtes karianus	1	1/10	17
Synopiidae			
Tiron spinifera	15	4/10	5

Table 27. The Gammarid Amphipods from PPB-70 Collected During OCS-2. 42 Species were Represented in the 1041 Specimens.

Family	Mean Number/m^2	Frequency	Rank
Acanthonotozomatidae			
Odius kelleri	2	1/5	24
Ampeliscidae			
Ampelisca birulai	44	5/5	8
Ampelisca eschricti	6	3/5	22
Byblis affinis	6	3/5	22
Haploops setosa	2	1/5	24
Haploops tubicola	32	4/5	12
Amphilochidae			
Gitana rostrata	2	1/5	24
Aoridae			
Lembos arcticus	10	2/5	20
Argissidae			
Argissa hamatipes	6	2/5	22
Atylidae			
Atylus bruggeni	2	1/5	24
Corophiidae			
Corophium clarencense	44	3/5	8
Erichtonius megalops	36	4/5	11
Goesia depressa	40	5/5	9
Photis rheinhardi	90	5/5	3
Photis vinogradova	454	5/5	2
Podoceropsis inaequistylis	30	2/5	13
Podoceropsis lindhaldi	24	3/5	14
Protomedia sp. AA	12	1/5	19
Protomedia fasciata	78	4/5	5
Unciola leucopis	712	5/5	1
Calliopiidae			
Apherusa glacialis	2	1/5	24
Dexaminidae			
Guernea nordenskioldi	62	4/5	6
Eusiridae			
Rozinante fragilis	12	4/5	19
Rhactropis inflata	2	1/5	24

Table 27. (cont.)

Family	Mean Number/m^2	Frequency	Rank
Gammaridae			
Melita dentata	16	3/5	17
Melita formosa	4	1/5	23
Ischyroceridae			
Ischyrocerus commensalis	48	1/5	7
Ischyrocerus latipes	14	2/5	18
Lysianssidae			
Anoyx sp. AA	8	3/5	21
Anonyx nugax	6	3/5	22
Orchomene minuta	2	1/5	24
Oedicerotidae			
Aceroides latipes	82	5/5	4
Bathymedon obtusifrons	12	3/5	19
Monoculodes diamesus	2	1/5	24
Monoculodes longicornis	2	1/5	24
Monoculodes tuberculatus	4	1/5	23
Westwoodilla megalops	22	4/5	15
Phoxocephalidae			
Harpinia serrata	38	5/5	10
Paraphoxus oculatus	20	4/5	16
Pleustidae			
Pleusymtes karianus	2	1/5	24
Stenothidae			
Metopella longimana	4	2/5	23
Synopiidae			
Tiron spinifera	84	4/5	4

Table 28. The Gammarid Amphipods from PPB-100 Collected During OCS-2. 31 Species were represented in the 743 specimens.

Family	Mean Number/m^2	Frequency	Rank
Ampeliscidae			
Ampelisca eschricti	2	1/10	18
Byblis arcticus	3	2/10	17
Haploops setosa	1	1/10	19
Haploops tubicola	3	3/10	17
Argissidae			
Argissa hamatipes	2	2/10	18
Corophiidae			
Goesia depressa	9	7/10	13
Photis rheinhaldi	44	6/6	6
Photis vinogradova	64	8/10	3
Podoceropsis inequistylis	16	5/10	10
Podoceropsis lindhaldi	4	2/10	15
Protomedia fasciata	26	9/10	7
Unciola leucopis	204	10/10	1
Dexaminidae			
Guernea nordenskioldi	51	7/10	5
Eusiridae			
Rozinante fragilis	5	4/10	15
Gammaridae			
Maera danae	1	1/10	19
Haustoriidae			
Pontoporeia femorata	23	9/10	8
Ischyroceridae			
Ichyrocerus megalops	4	4/10	16
Lysianassidae			
Anonyx nugox	21	5/10	9
Hippomedon abyssi	62	9/10	4
Onisimus litoralis	4	4/10	15
Oedicerotidae			
Aceroides latipes	4	3/10	15
Bathymedon obtusifrons	15	4/10	11
Monoculodes diamesus	3	2/10	17
Monoculodes packardi	13	6/10	12
Perioculodes longimanus	2	2/10	18
Westwoodilla megalops	6	6/10	14

Table 28. (cont.)

Family	Mean Number/m^2	Frequency	Rank
Phoxocephalidae			
Harpinia kobjakovae	3	2/10	17
Harpinia serrata	125	10/10	2
Paraphoxus oculatus	20	8/10	10
Pleustidae			
Pleusymtes karianus	2	2/10	18
Synopiidae			
Syrrhoe crenulata	1	1/10	19

FINAL REPORT

Contract No. 03-5-022-68
Task Order No. 4
1 April 1975 - 31 March 1976

Summarization of existing literature and unpublished data on the distribution, abundance, and life histories of benthic organisms

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General Introduction

The following document is the final report of Research Contract No. 03-5-022-68 (Task Order No. 4) completed by the Oregon State University Benthic Ecology Group for the National Oceanic and Atmospheric Administration under the auspices of the Bureau of Land Management. This final report is a summary of the present state of knowledge of the benthic ecology of the outer continental shelf of the Beaufort Sea. The report is divided into four volumes:

I. A narrative which summarizes the present state of knowledge of the structure and composition of benthic communities living on the Beaufort Sea continental shelf.

II. A list which summarizes from published and unpublished literature the benthic invertebrate species reported from the Beaufort Sea.

III. An atlas of distribution charts summarizing the distributions of selected benthic organisms reported by investigators recently active in the Beaufort Sea.

IV. An annotated bibliography summarizing the existing scientific literature on the Beaufort Sea benthos.

The total length of this final report is 789 pages.

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ABSTRACT

Quantitative benthic sampling has only recently been initiated across the Beaufort Sea continental shelf. Initial results outline a diverse benthic fauna occurring in overlapping bands which tend to follow the depth contours. Highs in biomass and numerical abundance are reported from the outer shelf below the area subject to impinging ice and dilution effects, and from the very shallow protected bays near the mouth of the Mackenzie River. Continued work is indicated to adequately describe the benthic fauna, and particularly the infaunal organisms smaller than 1.00 mm. Basic information is needed on the metabolism and reproductive rates of the bottom-dwelling invertebrates. An understanding of the dynamics of the benthic ecosystem is necessary to predict the ultimate impact of a developing petroleum industry in the region.

Section I. NARRATIVE

1. History of the Benthic Sampling in the Beaufort Sea

Until recently, few samples of the benthic fauna had been obtained from the Beaufort Sea. The lack of early extensive marine research in this area could be directly attributed to the great difficulties and expenses involved in sampling this ice dominated and relatively inaccessible portion of the Arctic Ocean. As a result, knowledge of the benthic community structure and species composition lagged far behind that of comparable northern areas such as the White Sea or the waters around Greenland. With the discovery and planned utilization of petroleum resources across the north Alaska coast, however, the need for additional intensive biological and oceanographic research has become readily apparent.

Benthic invertebrate samples were collected in the early 1880's by the U.S. Coast and Geodetic Survey schooner YUKON (1880), by the revenue steamer CORWIN (1884 and 1885), and by members of the International Polar Expedition to Point Barrow (1881-1883). These early qualitative samples yielded only a limited number of species of echinoderms, worms, crustaceans, and molluscs. The samples served as a guide to some of the more commonly encountered marine invertebrates, but did little to elucidate the ecology of the region.

The next major sampling effort occurred during the Canadian Arctic Expedition of 1913-1918. The southern party passed along the northern coast of Alaska en route to the Canadian Archipelago, and benthic samples were obtained along the Beaufort Sea continental shelf at intervals between Point Barrow and the Mackenzie River delta. These numerous collections of marine organisms were forwarded to a number of taxonomic specialists who produced a series of reports printed by the Canadian government between the years 1919 and 1924. Volumes VII through IX of these reports recorded taxonomic descriptions with notes on natural history for arctic species representing the majority of the invertebrate phyla.

Little additional sampling was accomplished in the Beaufort Sea until the late 1940's, when Dr. G.E. MacGinitie initiated an extensive study to decribe the benthic invertebrate fauna in the Point Barrow region (MacGinitie, 1955). Between 1948 and 1950, MacGinitie sampled during both summer and winter months using dredges as well as small bottom grabs and under-ice traps. Observations were made on the natural history of the benthic organisms, including notes on distribution, abundances and reproductive activity. These data, confined to the limited area around Point Barrow, have provided the only overview of the benthic processes available from the Alaskan arctic. Until very recently, these few observations have had to suffice for all ecological generalizations made across the entire Beaufort Sea.

Only sporatic benthic sampling was undertaken during the 1950's and 1960's. The CGMV CANCOLIN occupied a single station on the continental shelf in 1951-52. Trawl samples were obtained in Beaufort coastal waters in 1953 during a U.S. Coast and Geodetic Survey cruise aboard the LCM RED. Orange peel grab samples and beam trawl collections were taken by Neave in 1954 aboard the USCGC NORTHWIND as part of the Canadian-United States Beaufort Sea Expedition in 1954. Cruises by the Canadians on the M/V SALVELINUS and M/V CALANUS were used to sample extensively throughout the Canadian arctic and several times into the Beaufort Sea (Curtis, 1975). The Fisheries Research Board of Canada conducted trawling surveys with the M/V SALVELINUS as far westward as Herschel Island near the U.S. -Canadian border. Most of these trawl hauls were at depths between 10 and 60 meters, although some were as deep as 200 meters (Squires,1969).

The only collections of the benthos made at abyssal depths were taken from the U.S. ice stations Bravo and T-3 (George and Paul, 1970; Paul and Menzies, 1974). These samples were collected in the Alpha Cordillera region of the high arctic north of Ellesmere Island as the stations drifted in the Beaufort gyre. This area is beyond the generally described limits of the Beaufort Sea, but they provide data on components of the deep-sea fauna that can be expected to appear as sampling progresses into the deeper sectors of the Beaufort.

Recently, as a result of the petroleum discoveries along the Alaskan north slope, there has been a marked increase in the oceanographic investigations throughout the Beaufort Sea. The exploration and planned development of large oil and gas deposits have directly stimulated marine environmental research, including detailed work on benthic ecology and systematics. As the shelf waters of the Beaufort have become more and more accessible, investigators in both the U.S. and Canada have become engaged in describing the benthic ecosystem.

Extensive sampling of the benthic invertebrate fauna was initiated by Carey in 1971 and 1972 during the Western Beaufort Sea Ecological Cruises aboard the USCGC GLACIER (Carey, et al., 1974; Carey and Ruff, unpubl. ms.). Grab stations were occupied across the shelf and down the continental slope to depths exceeding 2000 meters between Cape Halkett and Barter Island

(Fig. 1). Additional stations were occupied where open water conditions permitted the use of otter trawls from the icebreaker (Fig. 2). Near-shore benthic sampling surveys have been undertaken by several groups, especially in regions of immediate pollution concern. These areas have included the lagoons and barrier islands around the mouth of the Colville River sampled by the University of Alaska with otter and beam trawls (Crane and Cooney, 1974; Crane, 1974). Particular emphasis has been placed on the Prudhoe Bay area. Feder sampled in and around the bay using divers, traps, a Fager corer and an airlift system (Feder, Shaw, and Naidu, 1976). Woodward-Clyde Consultants have collected additional samples from the area adjacent to the ARCO causeway (personal communication, letter Nov. 8, 1976).

Research has also progressed in the Canadian sector of the Beaufort Sea. Beginning in 1971, the Canadian Dept. of the Environment has occupied stations throughout the Mackenzie River delta, the Eskimo Lakes region east of the Tuktoyaktuk Peninsula, and across much of the south-eastern continental shelf (Fig. 3). Quantitative benthic sampling under the direction of J.W. Wacasey has been accomplished at these stations from a variety of research vessels, and has included observations made from the research submersible PISCES IV (Wacasey, 1975).

Figure 1. Sampling stations occupied with a Smith-McIntyre grab in 1971 from the USCGC GLACIER

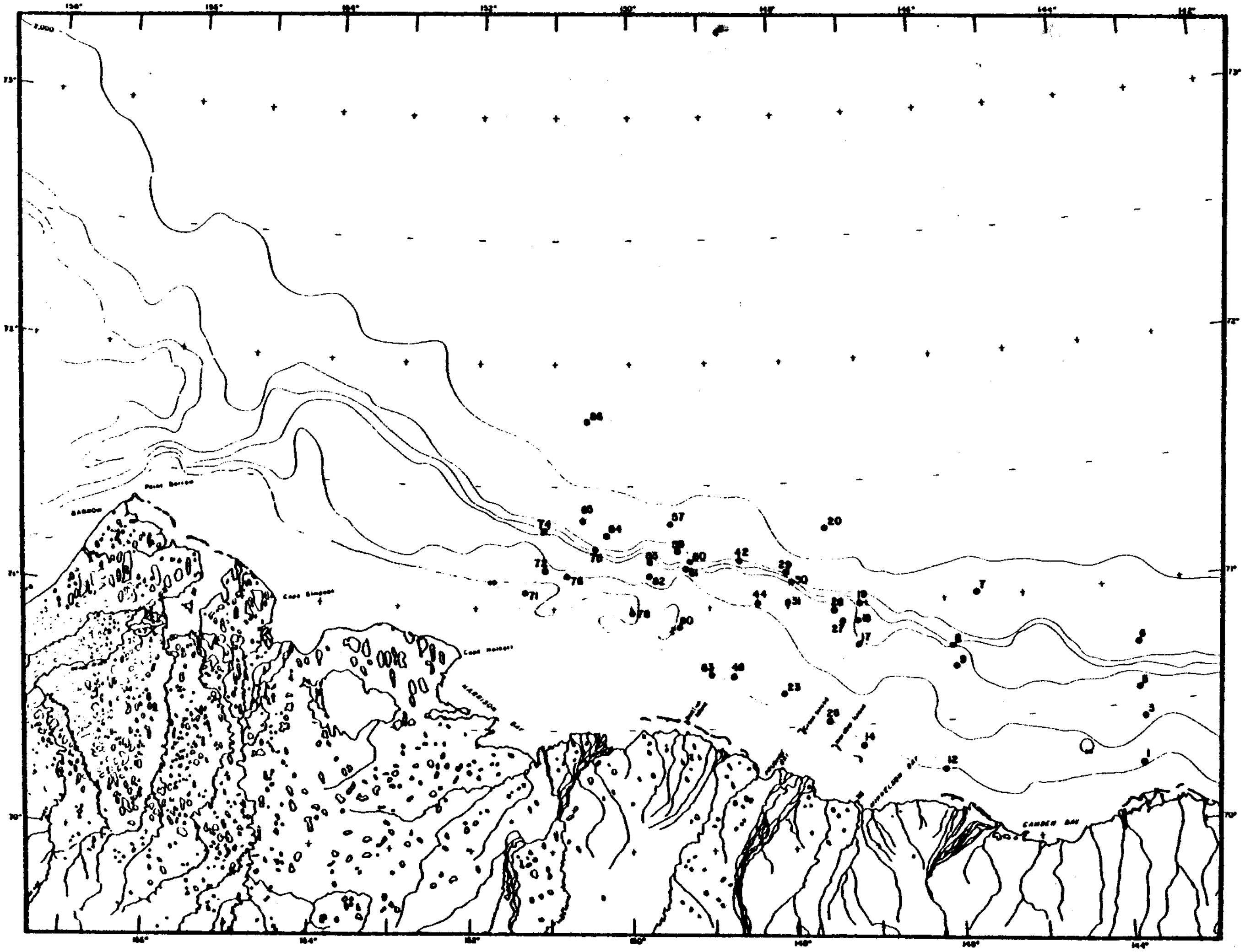


Figure 2. Otter trawl sampling locations occupied in 1971 and 1972 from the USCGC GLACIER.

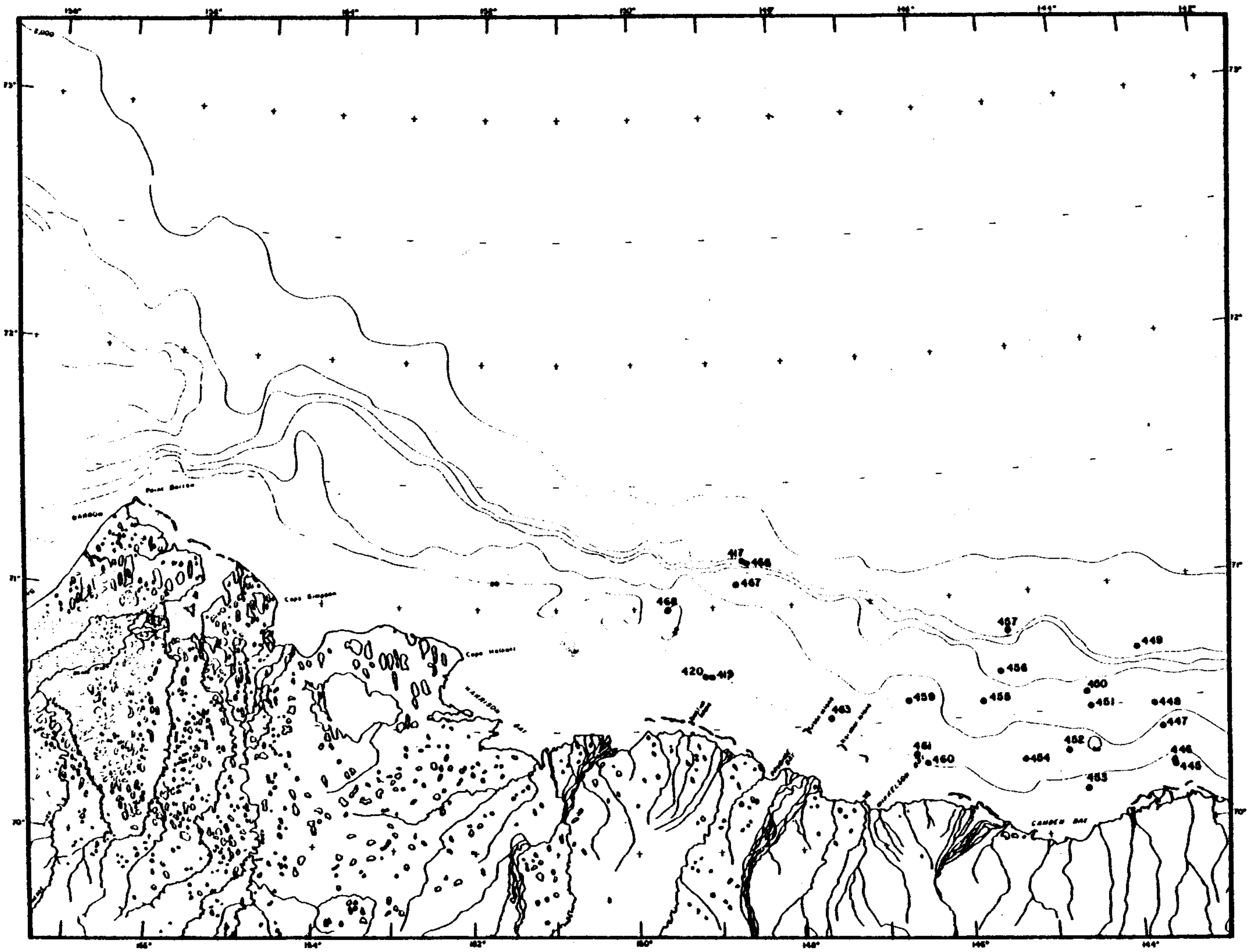
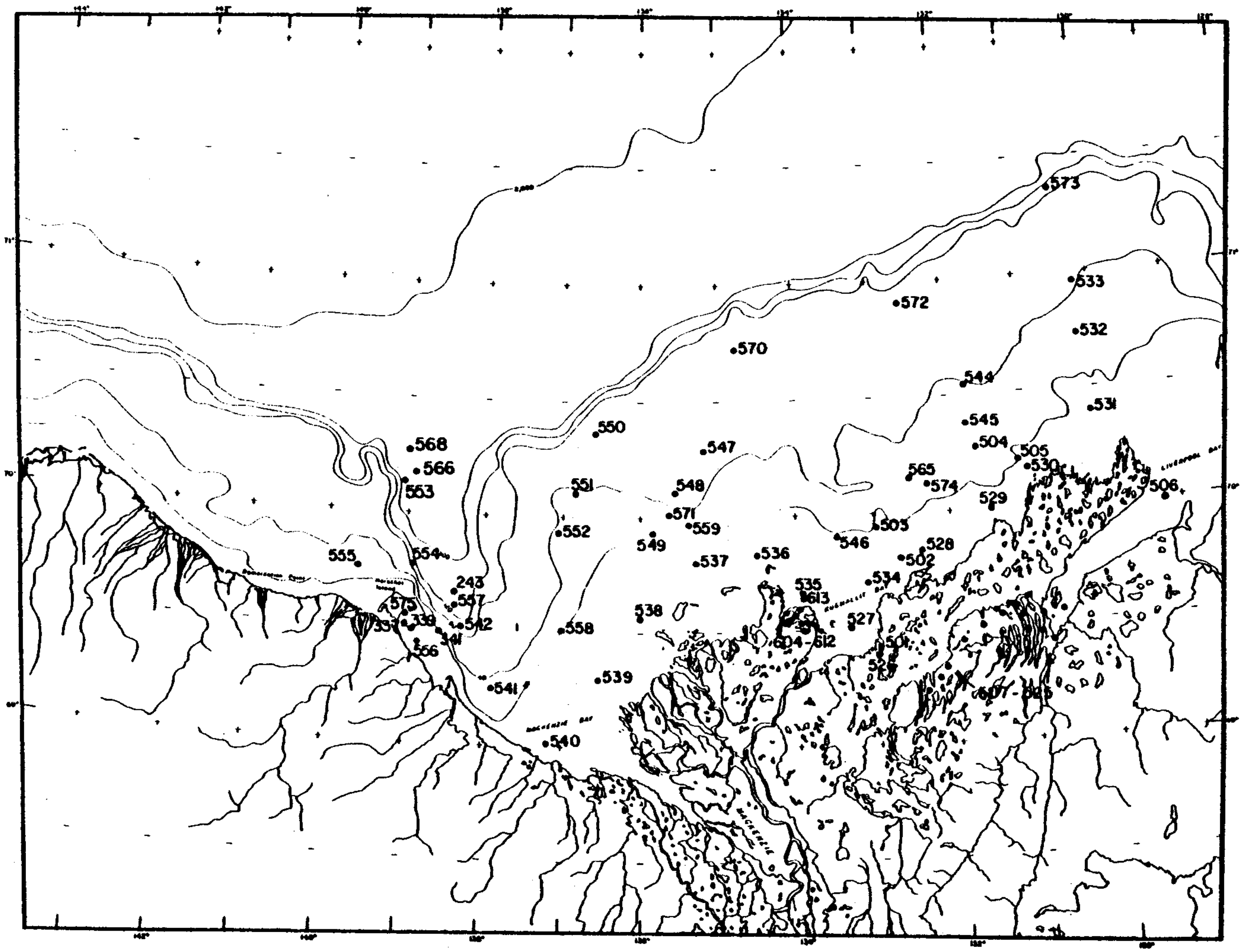


Figure 3. Sampling stations occupied by J.W. Wacasey from small vessels and the research submersible PISCES IV.



2. Recent Work on Benthic Community Structure and Composition

Prior to 1971, benthic sampling in the Beaufort Sea was both sporatic and qualitative in nature. The information derived constituted a faunistic survey, and did little to elucidate the ecology of the region. With the initiation of more recent projects, however, investigators have begun to take a closer look at the community structure and composition of the benthos across the Beaufort.

In 1974, Feder examined the benthic infauna in the nearshore marine environment in Prudhoe Bay. Much of the area is covered with ice for a large part of the year, and no macrofaunal marine invertebrates were reported in the intertidal zone or within the beach sediments. In general, very low total benthic biomass was encountered, although the numbers of organisms, biomass, and species diversity did increase with increasing distances from shore. Feder suggested that the broad distribution of shallow invertebrate species along the Alaskan coast pointed toward a widely dispersed stock available for the immediate repopulation of ice stressed areas.

Carey sampled across the Beaufort Sea continental shelf using trawls and a quantitative grab sampler in depths as shallow as 20 meters. Results from grabs taken in 1971 between Cape Halkett and Barter Island indicated high numbers of benthic infaunal organisms on the outer portion of the continental shelf and over the shelf break (Table 1). These values were comparable with other arctic and subarctic regions. Both biomass and numbers of organisms dropped to low values further down the continental slope, and were also depressed in the shallowest shelf stations, suggesting the possible destructive effects of grounding ice floes.

Table 1. Average numerical densities and biomass reported for the benthic macro-infauna in the southwestern Beaufort Sea at stations occupied by Carey in 1971. All invertebrates retained on a 1.00 mm sieve are included with the exception of single organisms weighing more than 5.0 grams. Biomass is recorded as wet preserved weight, and includes shells and worm tubes.

Station	Depth (m)	Number of Samples	Density (No./m^2)	Standard Deviation	Biomass (g/m^2)	Standard Deviation
1	33	2	2060	110	120	42
5	106	4	1280	490	59	9
6	495	5	1490	250	14	4
7	460	5	1730	420	20	3
8	84	5	1400	310	89	25
9	57	5	1830	600	111	73
12	26	4	1850	610	45	22
14	27	5	1620	1510	27	13
17	46	5	1990	520	52	11
18	146	2	1800	200	38	10
19	635	3	1960	840	18	10
20	2600	3	270	90	4	3
23	27	5	910	240	11	6
25	26	5	1120	920	26	29
27	50	5	1870	370	38	3
28	107	3	2130	530	65	31
29	360	5	2380	950	82	28
30	100	4	2300	2000	79	38
31	52	2	1760	850	36	12
42	140	3	2570	1170	227	117
44	47	3	2750	1110	66	22
48	25	2	880	960	102	38
57	1700	3	1730	590	17	16

Table 1. (continued)

Station	Depth (m)	Number of Samples	Density (No./m^2)	Standard Deviation	Biomass (g/m^2)	Standard Deviation
58	700	5	4330	1280	90	44
61	50	5	2260	950	59	25
63	23	5	1570	1350	49	39
71	21	5	780	200	28	25
72	45	5	1950	340	61	8
74	101	1	4450	---	194	---
75	135	5	2730	460	88	27
76	47	5	2900	590	57	24
78	27	5	600	400	9	7
80	30	5	1740	840	41	25
82	44	5	2260	450	60	22
83	200	5	3010	1270	82	23
84	750	5	4210	2720	46	33
86	2300	1	330	---	16	---

Results from trawls taken by Carey in 1971 and 1972 indicated that many of the larger epifaunal organisms were found in depth zones which occurred in bands with overlapping distributions across the shelf. Possible correlations with environmental parameters were suggested, including the fresh water or food input from rivers, effects of oceanic water masses, and the local substrate encountered.

Benthic studies have also been conducted in the south eastern portion of the Beaufort Sea since 1971. Results reported by Wacasey from stations ranging from 1 to 400 meters (Table 2) have indicated that the area can be divided into four distinct areas:

Estuarine zone - characterized by lowered nutrient values and unstable temperature and salinity conditions. This nearshore region is greatly influenced by the freshwater runoff from coastal rivers.

Transitional zone - exhibits smaller temperature and salinity fluctuations, but is the area of most intense ice scour.

Marine zone - occupies the outer portion of the continental shelf, and is a region with much more stable conditions.

Continental slope zone - occurs beyond the shelf break and down the slope. This zone is defined by the presence of benthic species that are rare or absent from the shallower water. The depth of this zone was not determined, but it may coincide with the intermediate layer of Atlantic water encountered between 200 and 900 meters.

Comparison of benthic infauna data obtained by Carey and Feder in the western Beaufort and Wacasey in the southeastern sector reveals an overall similarity in trends of numerical abundance and biomass (Figs. 4-7). Wacasey reports very low species diversity and a total biomass averaging less than $2 g/m^2$ from depths less than 15 meters. Although Carey did not sample in this shallow zone, these results are in good agreement with the values obtained by Feder in Prudhoe Bay at similar depths. Both investigators noted that the values tended to increase with increasing depth and

Table 2. Average numerical densities and biomass reported for the benthic invertebrates in the southeastern Beaufort Sea at stations sampled by Wacasey between 1971 and 1975. Abundance figures include all organisms larger than 0.50 mm. Biomass is reported as dry organic weight excluding tubes and calcareous shells.

Station	Depth (m)	Number of Samples	Density (No./m^2)	Biomass (g/m^2)
501	24	6	2125	0.04
502	10	6	2270	1.89
503	19	6	1185	2.59
504	38	6	1088	13.57
505	17	6	1665	2.67
506	13	6	5095	15.89
507	25	5	16,434	141.61
508	20	28	7829	5.70
509	72	6	9712	3.37
510	58	17	6866	12.90
511	16	6	12,735	4.19
512	29	5	2616	4.73
513	25	5	753	0.27
514	43	5	2322	0.96
515	43	15	2546	1.94
516	11	5	22,662	297.08
517	7	5	9219	1.89
518	12	5	2118	2.61
519	43	5	1593	5.37
520	43	5	10,581	7.58
521	7	5	12,501	4.23
522	23	5	7149	3.54
523	9	5	4686	1.39
524	6	5	3513	1.37
525	9	5	7446	4.40

Table 2. (continued)

Station	Depth (m)	Number of Samples	Density (No./m^2)	Biomass (g/m^2)
526	8	5	4752	0.95
527	5	5	1360	1.77
528	7	5	1456	0.40
529	12	5	4916	7.28
530	9	5	5336	1.42
531	15	5	3064	3.90
532	36	5	12,296	51.25
533	42	5	8724	71.37
534	7	5	4908	3.52
535	6	5	5944	6.39
536	9	5	4320	5.40
537	9	5	4344	0.88
538	5	5	432	1.35
539	3	5	88	0.02
540	4	5	1012	0.14
541	34	5	1756	5.44
542	94	5	5764	11.79
544	41	4.5	4963	31.20
545	37	4	2044	12.53
546	21	4	1828	4.30
547	56	4	1744	3.01
548	44	4	2008	1.32
549	24	4	1052	7.86
550	58	4	1372	1.66
551	42	4	1052	2.70
552	40	4	1256	1.86
553	215	3.5	1125	3.76
554	106	3.5	552	1.03

Table 2. (continued)

Station	Depth (m)	Number of Samples	Density (No./m^2)	Biomass (g/m^2)
555	34	3.5	1218	5.50
556	54	4	904	1.87
557	125	3	3970	10.22
558	23	4	1296	1.95
559	32	4	1304	2.32
565	31	4	312	7.96
566	318	4	1356	3.57
568	408	4	1293	7.68
569	441	3	1024	0.82
570	55	3	244	6.40
571	37	3	492	1.74
572	65	3	11	37.53
573	70	3	2944	18.68
574	32	3	168	0.78
575	10	3	1320	4.28
604	4	4	8964	8.31
605	15	4.5	2849	0.04
606	15	4.5	14,175	1.26
607	26	4.5	770	0.06
608	4	4.5	4021	2.63
609	11	4.5	1229	0.90
610	18	4.5	7144	0.54
611	3	4.5	11,441	20.73
612	7	4.5	1501	7.93
613	4	4.5	4434	1.77

Figure 4. Numerical abundance of the benthic infaunal organisms found at stations occupied on the Beaufort Sea continental shelf and slope by Carey in 1971, and in Prudhoe Bay by Feder in 1974. All invertebrates retained on a 1.00 mm mesh sieve are reported.

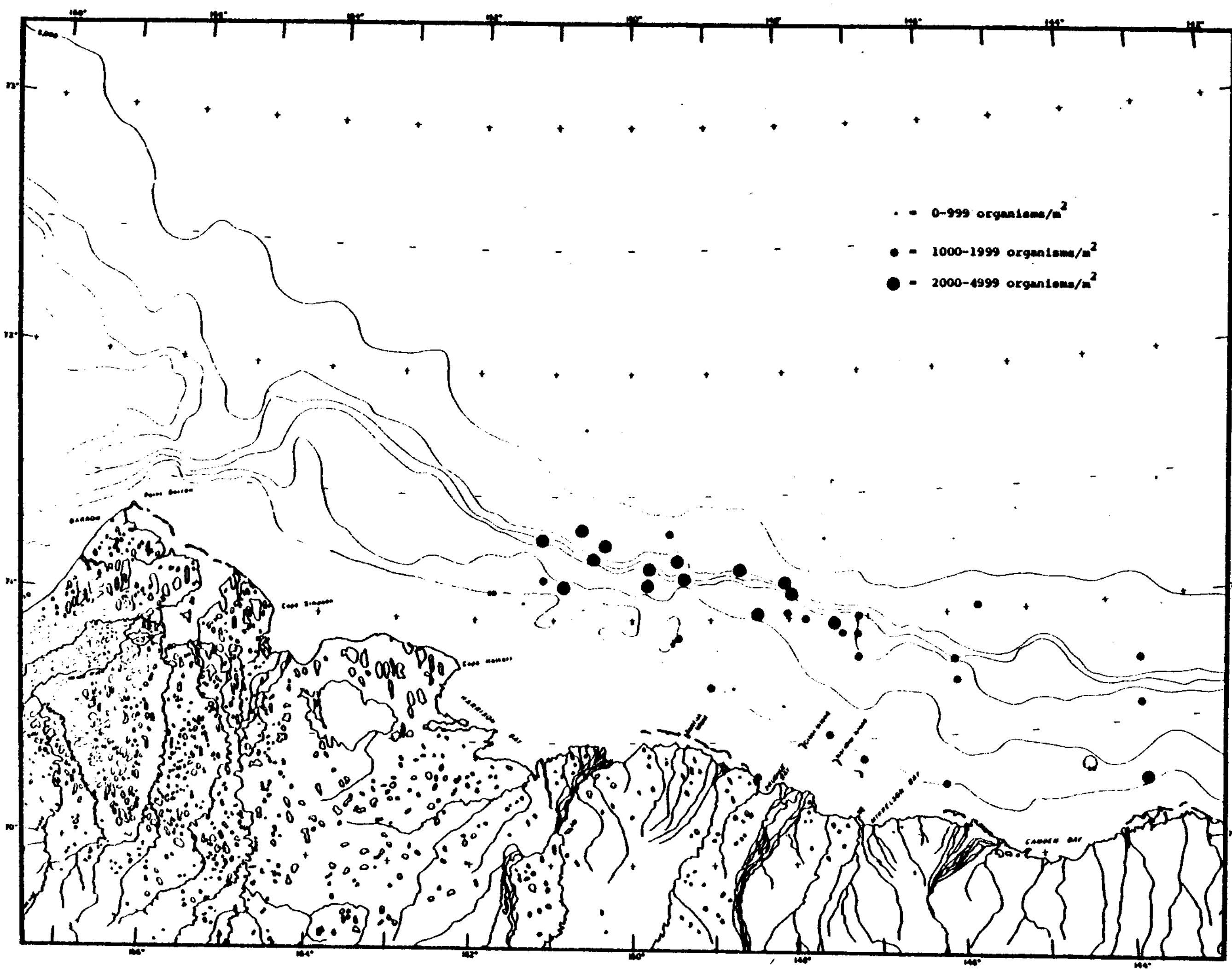


Figure 5. Biomass of the benthic infaunal organisms found at stations occupied across the continental shelf and slope by Carey in 1971, and in Prudhoe Bay by Feder in 1974. Values reported by Carey in in grams/m^2 wet preserved weight, and include tubes, shells, and other hard parts, but exclude the rare, single organisms weighing more than 5.00 g.

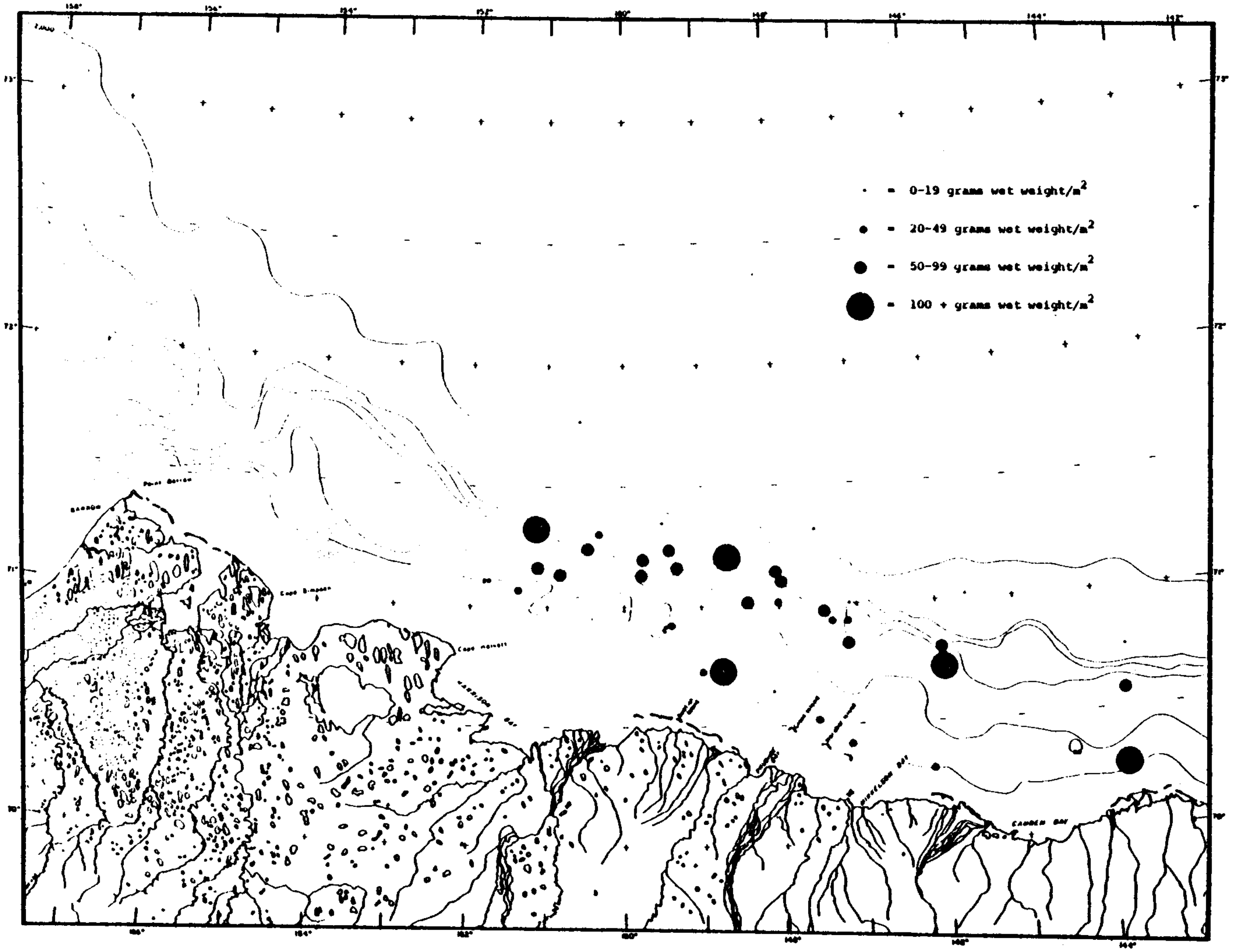


Figure 6. Numerical abundance of the benthic invertebrates occurring at stations near the Mackenzie River delta occupied by Wacasey between 1971 and 1975. All organisms larger than 0.50 mm are included.

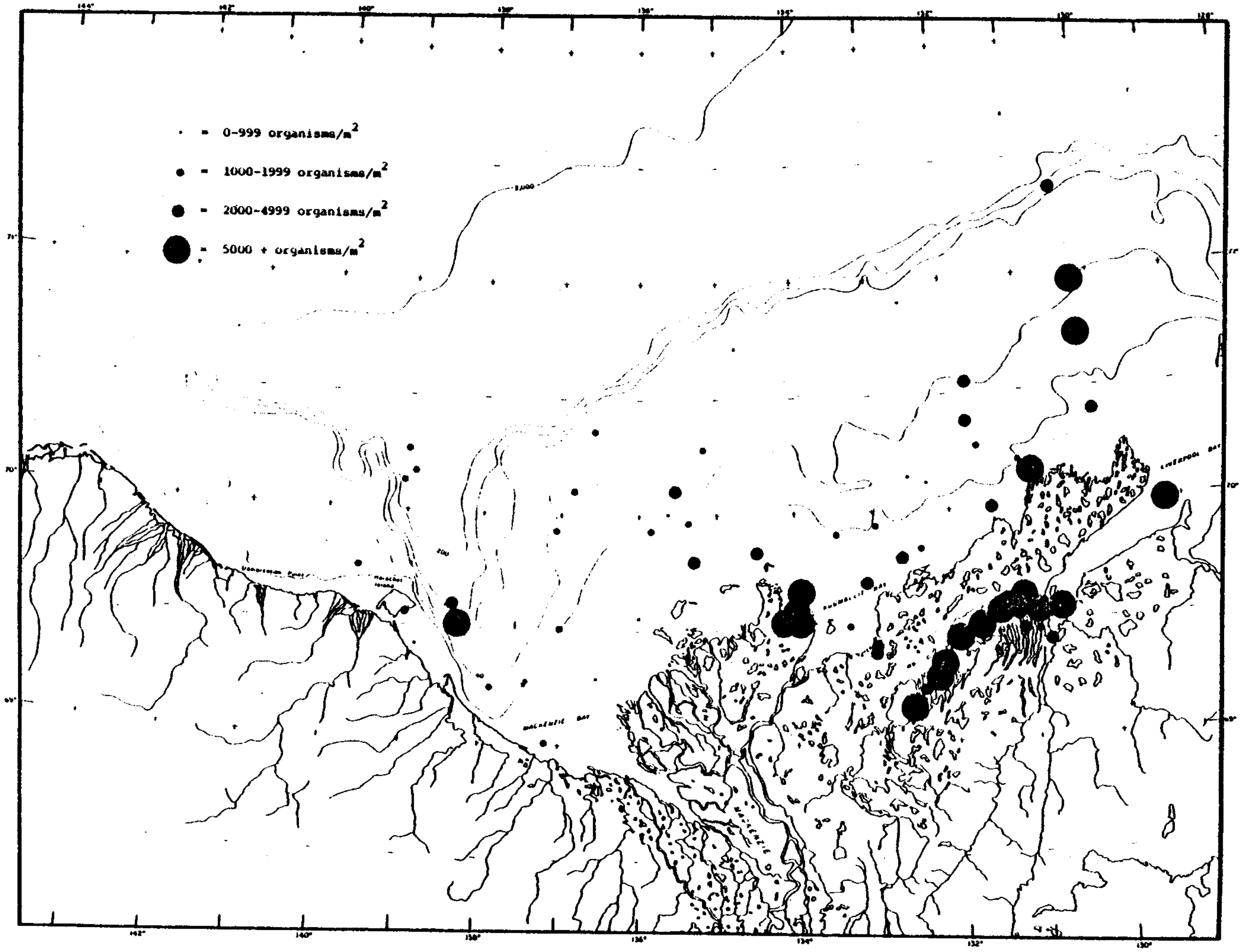
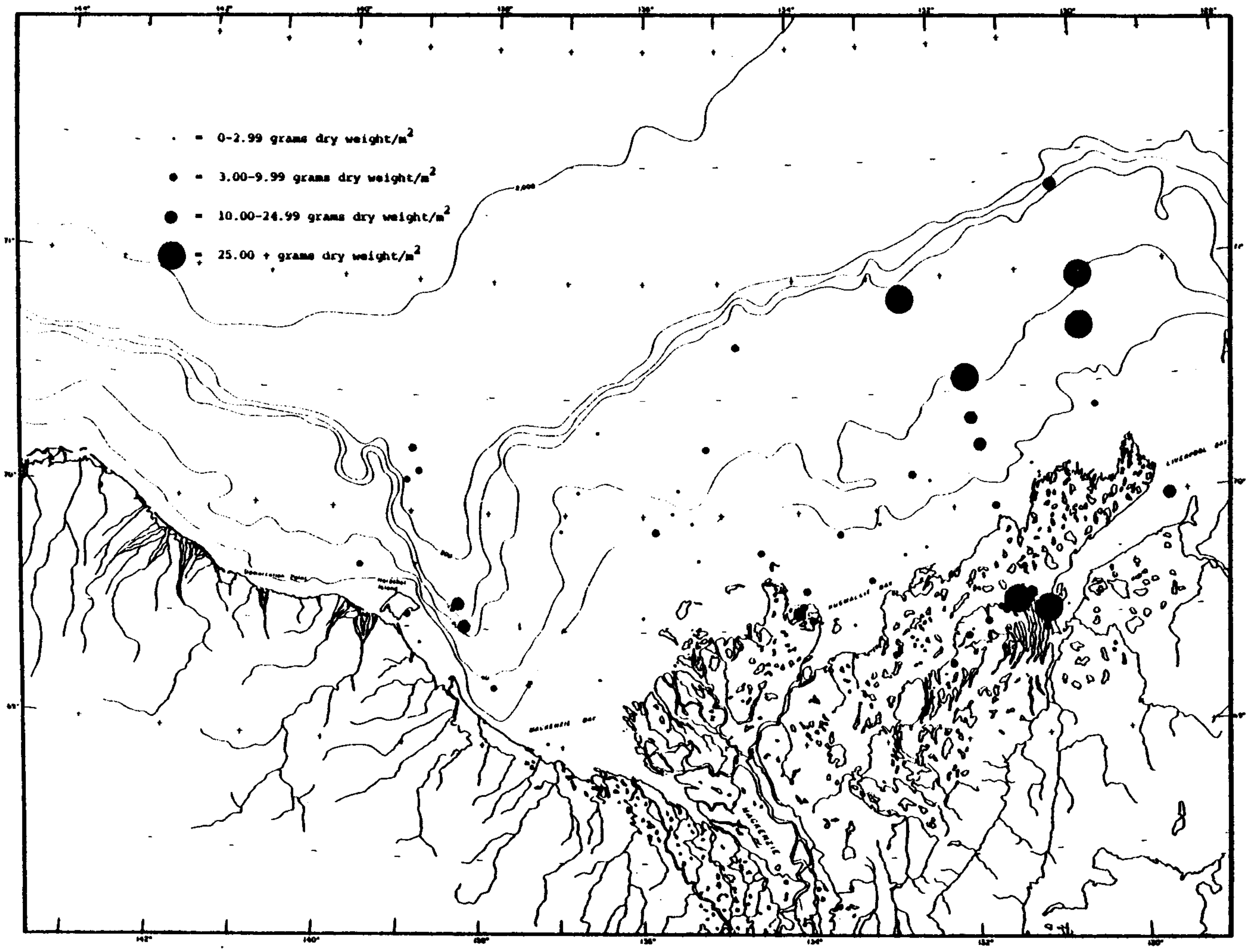


Figure 7. Biomass of the benthic invertebrates occurring at stations near the Mackenzie River delta occupied by Wacasey between 1971 and 1975. Values are reported in grams/m^2 dry organic weight excluding shells and worm tubes.



distance from shore. Wacasey also noted very high density and biomass values in the shallow bays and lakes around the Mackenzie River mouth. These results may reflect local nutrient enrichment, or the benthic community may be responding to the relatively stable conditions encountered in these protected water.

Higher values for total biomass and species diversity, and increased numerical abundance were recorded from the continental shelf in depths from 15 to 20 meters. Wacasey suggested that ice scour in this region may remove a significant portion of the substrate from production, thus depressing the productivity below values found further out on the shelf. Carey also inferred the destructive influence of grounding ice, and noted lowered values for both biomass and numerical density at comparable depths.

The highest values for total benthic biomass, numerical abundance and species diversity have been reported from the outer regions of the continental shelf, corresponding to Wacasey's Marine Zone. Carey, however, also recorded high numerical densities beyond the shelf break to depths of 700 meters on the upper slope west of Prudhoe Bay. Nutrient input coupled with the lack of ice disruption has been postulated to explain the relatively high values encountered in this deeper region. Beyond this, both investigators have found that numbers and biomass decrease to low levels at stations further down the continental slope.

Although there is agreement in the trends reported by recent benthic investigators, the results cannot be compared directly. It should be noted that there is no standardization of oceanographic techniques, and that each investigator has his own methodology. For example, Feder, Carey and Wacasey all used different sampling equipment which took differing areas and volumes of the bottom sediments. Wacasey sieved the sediments through a 0.50 mm screen and subsequently examined all of the retained organisms. Carey initially washed the sediments through a 0.42 mm sieve, but he only identified and counted the invertebrates from the fraction larger than 1.00 mm. Wacasey reported dry organic weight for all organisms exclusive of worm tubes and mollusc shells. Carey measured preserved wet weight including tubes and shells, but excluding the occasional rare, large organism which would significantly bias the data from a particular station. From this it can be seen that direct comparison of the data derived from these recent studies is not feasible, and all information on the benthic community structure and composition in the Beaufort Sea must be examined relative to the methods and techniques employed by the observer.

3. Analysis of WEBSEC samples

Part of the research effort supported by the NOAA/BLM contract involved further analysis of samples collected by the O.S.U. Benthic Ecology Group during the Western Beaufort Sea Ecological Cruise in 1971. This work included:

a. the identification of the harpacticoid copepods from the WEBSEC-71 grabs samples
b. the picking and sorting of selected meiofaunal samples
c. a cluster analysis of the available species data from the WEBSEC-71 grab samples.

a. Harpacticoida (Crustacea, Copepoda)

The harpacticoid copepods collected during the WEBSEC-71 cruise aboard the USCGC GLACIER have been examined and identified (Table 3). These animals are from the macro-infauna fraction (1.00 mm and larger) of the Smith-McIntyre grab samples. A total of 356 animals were found in 71 of 199 grabs taken. It is expected that if the larger meiofauna fraction (between 0.42 and 1.00 mm) is completely picked and sorted, the number of harpacticoids found will increase by as much as ten fold.

The harpacticoid fauna of the Beaufort Sea is not well known. The only reported specimens from the Beaufort Sea were taken during the Canadian Arctic Expedition of 1913-18 (Willey, 1920). Consequently, of the 17 species found, 7 were unidentifiable. Of these it is likely the unknown genera of Cerviniidae and D'Arcythompsoniidae are new to science, as are the unknown species of Bradya and Halectinosoma. The unknown female from the Diosaccidae cannot be identified without a companion male.

Table 3. Harpacticoid copepods examined from grab samples taken across the southwestern Beaufort Sea continental shelf in 1971 between Cape Halkett and Barter Island. Station numbers refer to locations indicated in Figure 1.

Identification	Total	Found at Stations:
Cerviniidae		
Cervinia bradya Norman, 1878	3	30, 85
Cervinia synarthra Sars, 1903	25	03, 08, 17, 18, 28, 30, 61, 76
unknown species 'A'	74	01, 03, 12, 18, 23, 25, 28, 30, 42, 44, 60, 61, 74, 75, 76, 82
Ectinosomadae		
Bradya confluens Lang, 1936	3	08, 30
Bradya unknown species 'B'	5	44, 61, 76
Halectinosoma unknown species 'C'	5	03, 14, 30, 60, 76
Harpacticidae		
Harpacticus superflexus Willey, 1920	186	01, 03, 08, 12, 14, 17, 23, 25, 28, 30, 31, 42, 44, 48, 60, 61, 63, 72, 76, 78, 80, 82
D'Arcythompsoniidae		
Unknown species 'D'	3	29, 84
Diosaccidae		
Amphiacus propinquus Sars, 1910	1	42
Paramphiascopsis giesbrechti (Sars, 1910)	5	19, 30, 42, 61
Paramphiascopsis longirostris (Claus, 1863)	2	03, 19
Typhlamphiascus confusus (T. Scott, 1902)	1	83
Paramphiascella unknown species 'E'	1	44
Amphiascoides unknown species 'F'	1	31
Unknown species 'G'	1	14
Cletodidae		
Argestes mollis Sars, 1902	5	30, 42, 60, 61
Paranannopus echinatus Smirnov, 1946	35	29, 30, 42, 61, 75, 76, 82

Harpacticus superflexus comprised 52% of all organisms found, and it's distribution also covered the broadest range in area (see distribution charts). H. superflexus is predominatly a shallow water form, and 54% of them were found in depths surrounding 25 meters. Their abundance decreased with an increasing depth: 34% were found at depths of 50 meters, and none were found deeper than 125 meters.

The second most abundant group belonged to an unknown genus from the family Cerviniidae. All three species belonging to this family were morphologically similar. The distribution pattern of Cervinia synarthra and the unidentified species are similar to one another, but the range of the unknown species does extend further to the east. They are both most abundant at 50 meters. Whereas C. Synarthra does not occur deeper than 130 meters, 20% of the unknown species numbers were found between depths of 125-150 meters. C. bradya occurred at 90 and 1100 meters.

Paranannopus echinatus comprised 10% of all organisms found. Though this species did occur at 50 and 430 meters, 60% of them came from depths between 95-140 meters.

The unknown specimen of the family D'Arcthompsoniidae was the only exclusively deep water form, and was found at depths of 360, 750, and 930 meters.

Some community distribution patterns seem apparent by comparing the species distribution charts. H. superflexus and the unknown species of Cerviniidae show very similar distributions. They both cover the full range of the study area, and are found in shallow water near the barrier islands off Prudhoe Bay. C. synarthra seems to share this broad range of distribution except that it is not found near the barrier islands.

Argestes mollis, Paramphiascopsis giesbrechti and Paranannopus echinatus all occur in a similar narrow range located slightly east of the Colville River delta, and in deeper water.

b. Benthic Meiofauna

Samples taken with a 0.1 m^2 Smith-McIntyre grab during the WEBSEC-71 cruise aboard the USCGC GLACIER were separated into two fractions - the macro-infauna (those organisms caught on a 1.00 mm sieve), and the larger meiofauna (those organisms which pass through the 1.00 screen but which are retained on a 0.42 mm sieve). All the macro-infauna sampled have been sorted and many of the invertebrates have been identified to provide a picture of the benthic infaunal community. Recently, processing of the meiofauna fraction has been initiated on samples taken near Prudhoe Bay. This area was selected since it is of particular interest in terms of assessing the benthic community structure and monitoring the possible ramifications of oil pollution. Six samples have been sorted, including three from station CG 29 (338 meters depth), and three from station CG 30 at 100 meters depth (Table 4).

The number of organisms recorded from the meiofauna fraction (0.42 - 1.00 mm) is higher than the counts derived from all of the larger organisms (>1.00 mm) found in the sample (Table 5). Adding the meiofauna counts to the totals reported for the benthic macro-infauna results in a 269% increase at the shallower location. This large increase in animal density is due to the addition of numerous individuals from a few specific groups, including the nematodes, annelids, and selected classes from the phylum Arthropoda. The number of nematodes increased dramatically to 309% of

Table 4. Animal densities in the meiofauna fraction (0.42 - 1.00 mm) of grab samples taken in 1971 near Prudhoe Bay. A '+' indicates presence, although no counts of the particular organism were made.

Taxonomic Group			Station CG 29 338 m. Grab 915	Grab 916	Grab 917	Total	Station CG 30 100 m. Grab 918	Grab 920	Grab 921	Total
Protozoa:	Rhizopoda:	Foraminiferida	+	+	+	++	+	+	+	++
Cnidaria:	Hydrozoa		+	+	+	++	+	+	+	++
	Anthozoa		1	---	5	6	---	3	1	4
Nematoda			281	241	532	1054	10	48	100	158
Nemertinea			---	1	3	4	---	3	---	3
Annelida:	Polychaeta		115	89	95	299	3	27	69	99
Echiura			---	---	---	----	---	1	---	1
Priapulida			---	1	---	1	---	---	---	----
Arthropoda:	Crustacea:	Amphipoda	5	12	6	23	---	3	11	14
		Cirripedia	---	---	---	----	---	---	14	14
		Harpacticoida	10	9	11	30	3	22	52	77
		Isopoda	---	---	---	----	---	---	1	1
		Ostracoda	23	---	5	28	66	193	208	467
		Tanaidacea	8	3	1	12	1	35	39	75
		Cumacea	1	---	1	2	---	2	1	3
Mollusca:	Pelecypoda		28	20	21	69	8	36	52	96
	Gastropoda		---	1	3	4	---	---	8	8
Bryozoa			---	+	---	++	+	+	+	++
Echinodermata:	Ophiuroidea		1	---	---	1	---	1	5	6
Totals-			473	377	683	1533	91	374	561	1026

Table 5. Comparison of the total animal densities recorded from the macrofaunal (>1.00 mm) and meiofaunal (0.42 - 1.00 mm) fractions of the grabs taken off Prudhoe Bay in 1971.

Taxonomic Group	Station CG 29 338 m.			Station CG 30 100 m.		
	Macro-Fraction	Meio-Fraction	Total	Macro-Fraction	Meio-Fraction	Total
Cnidaria: Anthozoa	4	6	10	---	4	4
Nematoda	363	1054	1417	218	158	376
Annelida: Polychaeta	456	299	755	221	99	320
Arthropoda: Crustacea: Amphipoda	13	23	36	63	14	77
Cirripedia	---	---	----	---	14	14
Harpacticoida	---	30	30	46	77	123
Isopoda	---	---	----	---	1	1
Ostracoda	25	28	53	131	467	598
Tanaidacea	5	12	17	39	75	114
Cumacea	1	2	3	10	3	13
Mollusca: Pelecypoda	24	69	93	201	96	297
Aplacophora	1	---	1	1	---	1
Gastropoda	1	4	5	5	8	13
Polyplacophora	3	---	3	---	---	----
Brachiopoda	---	---	----	1	---	1
Echinodermata: Ophiuroidea	6	1	7	22	6	28
Asteroidea	1	---	1	---	---	----
Total	903	1528	2431	958	1022	1980

the total number reported from the macro-infaunal fraction alone. Polychaete worm and pelecypod mollusc counts also showed an increase. Three groups of arthropods were significantly affected: harpacticoid copepod counts rose 333%, tanaids increased 298%, and ostracod counts rose to a level 417% above the total reported from the larger size fraction.

The examination of the meiofauna has demonstrated that the aperature of the sieve used during sample washing will have a substantial effect on the estimates of standing stock, and that total community composition will change significantly with the addition of this smaller fraction (Table 6). Since there is no standardization of sampling methodology, conclusions concerning benthic community structure or species composition must be interpreted in view of the sieve size used to screen the fauna. Although there is probably a negligible effect on the total biomass per square meter of ocean bottom, the total numerical density may double or triple as the smaller animals are included. Meiofaunal energy turnover rates are higher than the corresponding rates for the larger organisms. Consequently, the meiofauna contribute substantially to the total energy flow in the ecosystem, and are an integral part of the benthic community. Much additional work is required on the meiofaunal component to gain a better understanding of the functioning of the benthos in the arctic environment.

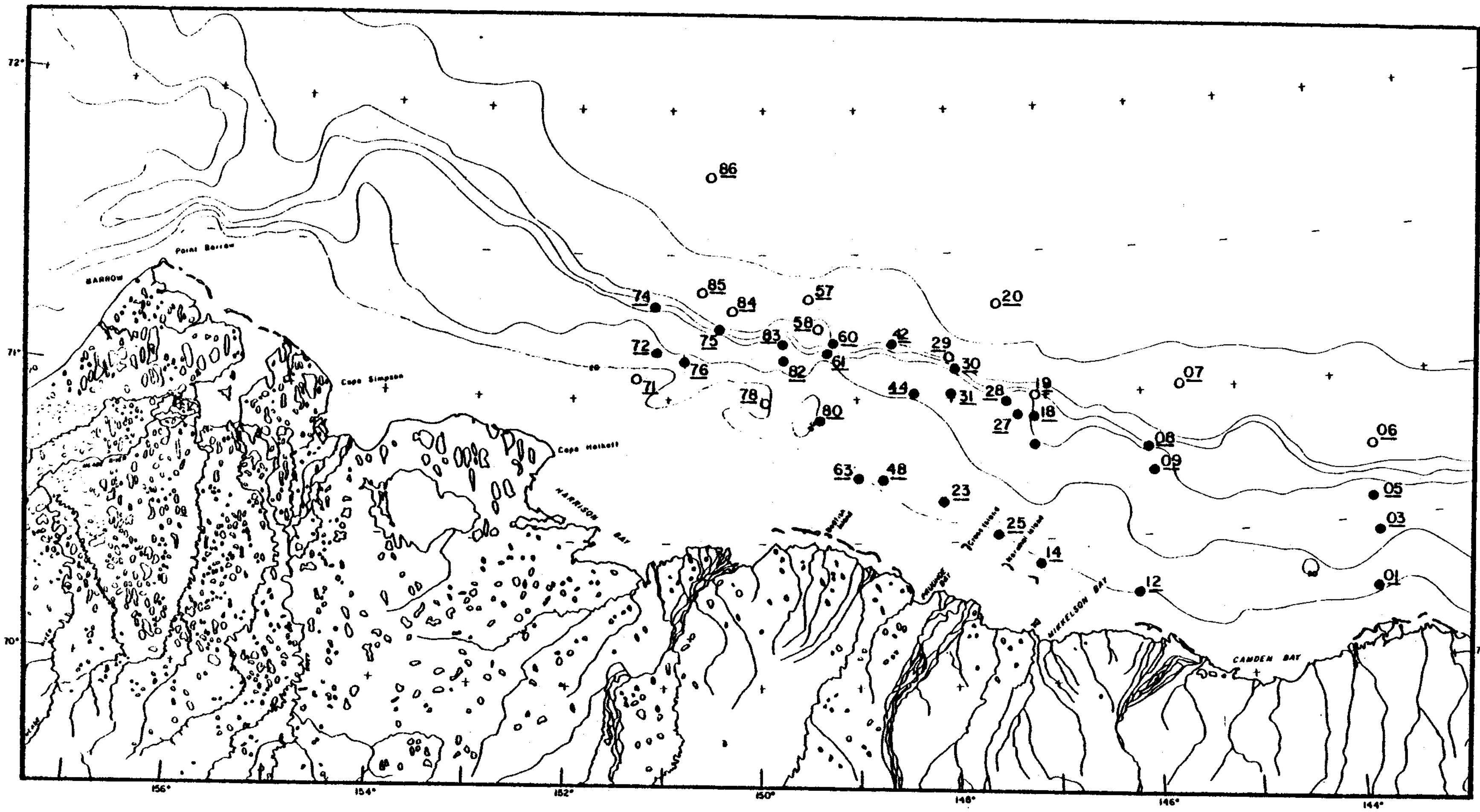
c. Cluster Analysis - Southwestern Beaufort Sea Infauna

A total of 158 benthic species were examined for analysis from 191 grabs taken at 40 stations in the southwestern Beaufort Sea (Fig. 8). A species was included in the final analysis if it was found in a minimum of 10% of these grab samples. This criterion was satisfied by 30 species,

Table 6. Benthic infauna community composition by major taxonomic group expressed first separately for the macrofaunal (>1.00 mm) and meiofaunal (0.42 - 1.00 mm) components, and then for the combination of these two fractions.

Taxonomic Group	Station CG 29 338 meters			Station CG 30 100 meters		
	Macrofauna Fraction	Meiofauna Fraction	Total	Macrofauna Fraction	Meiofauna Fraction	Total
Nematoda	40%	69%	58%	23%	15%	19%
Polychaeta	50%	20%	31%	23%	10%	16%
Crustacea	5%	6%	6%	30%	64%	47%
Mollusca	3%	5%	4%	22%	10%	16%
Others	2%	--	1%	2%	--	2%

Figure 8. Stations occupied by Carey in 1971 which were examined for the cluster analysis. Open circles represent stations which were excluded from the final data matrix.



including 12 gammarid amphipods, 11 cumaceans and 7 pelecypods (Table 7). In spite of this reduction no stations were eliminated, although the species richness at some stations was substantially reduced. A station-species matrix was generated in the second step by averaging the species counts of any replicate grabs taken at a station. The third step imposed a limit on the species richness for any station in the matrix, and a station was dropped from the analysis if it had less than 9 species present. Thirteen stations did not meet this requirement. Of these 13 stations, 11 were at depths greater than 200 meters and the remaining two were less than 30 meters. The resulting station-species matrix contained 27 stations (rows) and 30 species (columns) from which the analysis below was performed. The similarity index SIMI (Stander, 1970) was calculated for all stations and species. A matrix of these indices was then clustered using a complete linkage algorithm (Sneath and Sokal, 1973), and phenograms were generated to visually present the results of the clustering techniques (Figs. 9 and 10). SIMI is a similarity measure between two attribute vectors, X and Y. These can be defined as a station vector having elements which represent the abundance of all species at that station, and a species vector having elements which represent the abundance of the particular species at all stations. This index was chosen for its conservative properties when rare organisms are added to the analysis, and for the fact that it operates independent of absolute magnitudes, responding only to proportional changes in composition.

$$\mathrm{SIMI} = \frac{\Sigma xi^2 + \Sigma yi^2 - \Sigma(xi - yi)^2}{2\sqrt{\Sigma xi^2}\ \sqrt{\Sigma yi^2}}$$

Table 7. Benthic invertebrate species included in the cluster analysis.

Phylum Arthropoda:

Amphipoda-

Aceroides latipes (Sars, 1892)
Ampelisca eschrichti Kroyer, 1842
Anonyx nugax (Phipps, 1774)
Bathymedon obtusifrons (Hansen, 1887)
Byblis gaimardi (Kroyer, 1846)
Haploops laevis Hoek, 1882
Haploops tubicola Liljeborg, 1855
Paraphoxus oculatus G. Sars, 1879
Photis reinhardi Kroyer, 1842
Protomedeia fasciata Kroyer, 1842
Protomedeia grandimana Bruggen, 1905
Unciola leucopis (Kroyer, 1845)

Cumacea-

Brachydiastylis nimia Hansen, 1920
Cumella carinata (Hansen, 1887)
Diastylis edwardsi (Kroyer, 1841)
Diastylis goodsiri (Bell, 1855)
Diastylis oxyrhyncha Zimmer, 1926
Diastylis scorpioides (Lepechin, 1780)
Eudorella emarginata (Kroyer, 1846)
Leucon acutirostris G. Sars, 1865
Leucon nasica (Kroyer, 1841)
Leucon nasicoides Liljeborg, 1855
Diastylis rathkei (Kroyer, 1841)

Phylum Mollusca

Pelecypoda-

Astarte montagui (Dillwyn, 1817)
Cyclopecten greenlandicus (Sowerby, 1842)
Nucula bellotii Adams, 1856
Nuculana pernula (Muller, 1779)
Portlandia arctica (Gray, 1824)
Portlandia frigida (Torell, 1859)
Portlandia lenticula (Moller, 1842)

Figure 9. Station phenogram generated by a complete linkage (farthest neighbor) classification algorithm using SIMI for the similarity matrix. Groups 'A' through 'D' are indicated.

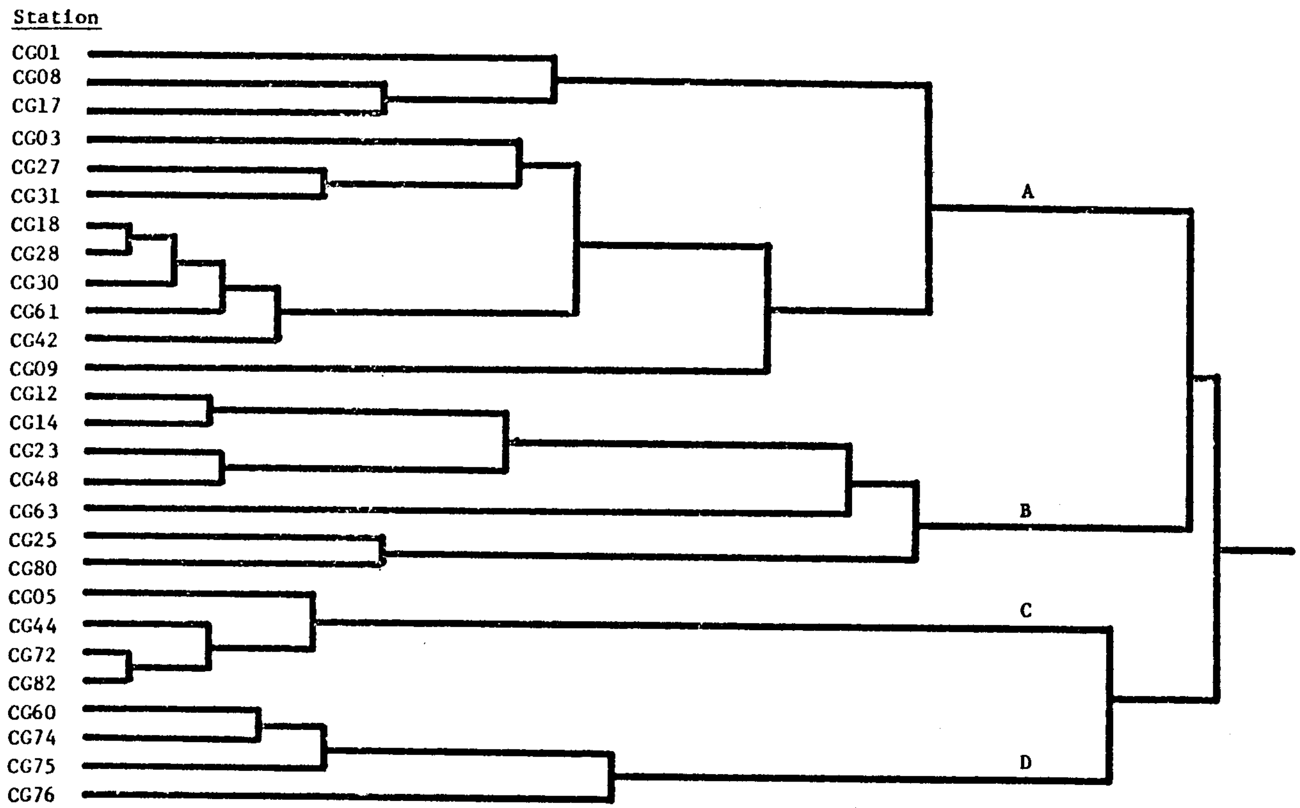
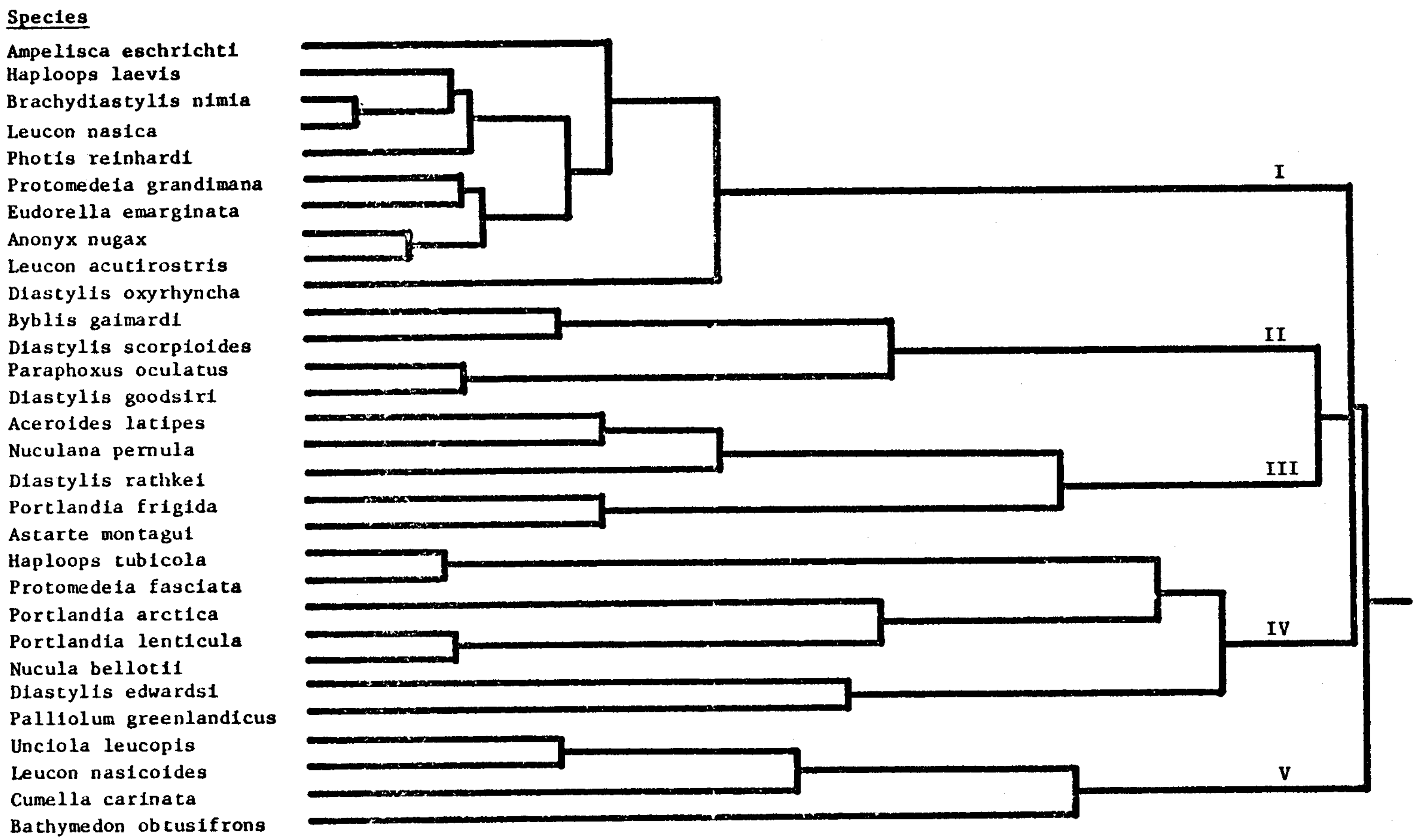


Figure 10. Species phenogram generated by a complete linkage (Farthest neighbor) classification algorithm using SIMI for the similarity matrix. Groups I through V are indicated.



Station groupings -

Four groups of stations, labeled 'A' through 'D', were generated by the clustering proceedure with a convergence level for SIMI placed at less than 0.2 (Table 8). In general, these groups occur in bands with east-west axes, and are distributed with depth across the continental shelf as a nearshore group ('B'), and a midshelf group ('A'), with an intermediate group ('C') in between. Group 'D' is confined to the western portion of the study area and appears analagous to group 'A'. An additional group is formed of the deeper stations down the continental slope which were excluded from the analysis (Fig. 11).

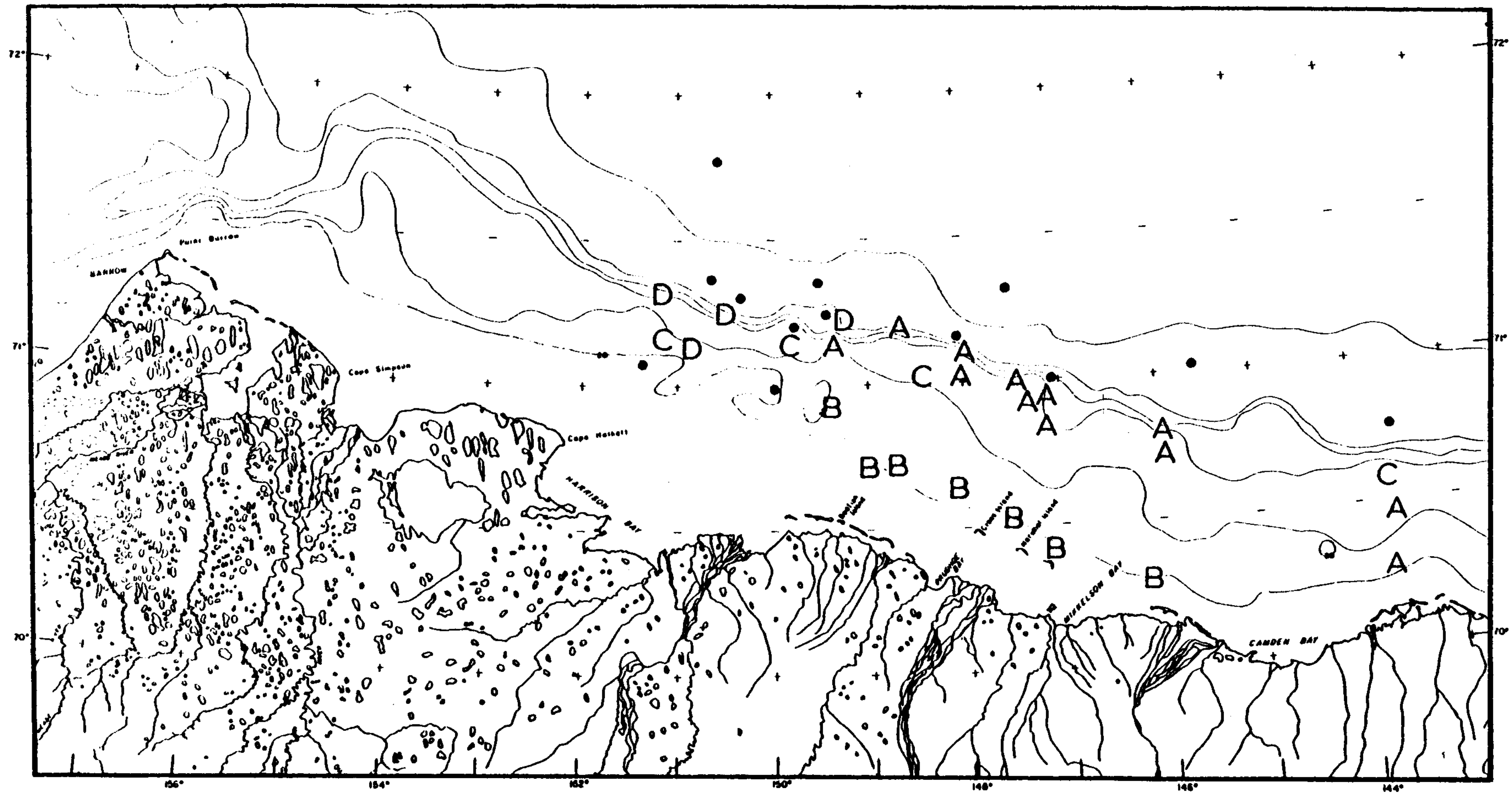
Station group 'A' consists of 12 sites with depths ranging between 33 and 142 meters. This group extends from approximately 150° west longitude to the eastern margin of the study area. Group 'B' is made up of seven nearshore stations shallower than 40 meters and in the central portion of the study area. The 'C' station group has representatives over the entire width of the study region, and confined within a narrow depth band (44-49 meters) with the exception of a single station (CG 05) off Barter Island at 106 meters depth. Finally, group 'D' is restricted to the area close to the Colville River, although it does overlap slightly with the 'A' group. The depth of the stations in this final group varies between 47 and 136 meters, comparable to the range of group 'A'.

Some additional subjective information can be inferred from the stations which were excluded from the cluster analysis by the imposition of specific limitations. Eleven of these stations occurred down the continental slope, indicating that the elimination of the rare species and the lower limit on the species richness of a station has neatly sorted out

Table 8. Benthic sampling stations on the southwestern Beaufort Sea continental shelf which tend to group together using a statistical clustering technique.

Station	Depth (Meters)
Group 'A'	
CG 01	33
CG 03	48
CG 08	84
CG 09	57
CG 17	46
CG 18	146
CG 27	50
CG 28	107
CG 30	100
CG 31	52
CG 42	140
CG 61	50
Group 'B'	
CG 12	26
CG 14	27
CG 23	27
CG 25	26
CG 48	25
CG 63	23
CG 80	30
Group 'C'	
CG 05	106
CG 44	47
CG 72	45
CG 82	44
Group 'D'	
CG 60	64
CG 74	101
CG 75	135
CG 76	47

Figure 11. Distribution of the stations grouped in a cluster analysis across the shelf. Dots represent stations which were excluded from the analysis.



the deeper stations. The two other stations excluded from the final data matrix were shallow locations near the Colville River in the same area where 'A' station grouping has been replaced by the 'D' group. Further sampling is needed to elucidate the biological processes occurring in this area. Additional sampling is also indicated at the eastern boundary of the study area around Barter Island where no nearshore station group was encountered and where a station in group 'C' was found 50 meters deeper than all similar stations to the west.

Species groupings -

The same species-station data matrix employed to group the stations was used to cluster the 30 benthic invertebrate species. Five species groups were found using a convergence level of 0.1 for the similarity index SIMI (Table 9). The benthic organisms representing species group I are cosmopolitan, although these species are more commonly found at the deeper stations and in the area around the Colville River. The species in group II are also found at the deeper stations, and they rarely occur in the shallower waters or in the Colville area. Organisms represented in species group III are found at most stations east of 150° west longitude. These species have a broad depth range, but they tend to be absent from the Colville River area. The species constituting group IV are part of a shallow water fauna which becomes very rare or disappears from the deeper stations, and which is also rarely encountered near the Colville. And finally, the species of group V are found consistently at stations off the Colville, but never occur in the nearshore waters represented by station group 'B'.

Table 9. Benthic invertebrate species from the southwestern Beaufort Sea continental shelf which tend to group together using a statistical clustering technique.

Group I -

Ampelisca eschrichti
Haploops laevis
Photis reinhardi
Protomedeia grandimana
Anonyx nugax
Brachydiastylis nimia
Diastylis oxyrhyncha
Eudorella emarginata
Leucon acutirostris
Leucon nasica

Group II -

Byblis gaimardi
Paraphoxus oculatus
Diastylis goodsiri
Diastylis scorpioides

Group III -

Aceroides latipes
Diastylis rathkei
Portlandia frigida
Nuculana pernula
Astarte montagui

Group IV -

Haploops tubicola
Protomedeia fasciata
Diastylis edwardsi
Portlandia arctica
Portlandia lenticula
Nucula bellotii
Cyclopecten greenlandicus

Group V -

Unciola leucopis
Bathymedon obtusifrons
Leucon nasicoides
Cumella carinata

The species groupings indicate that the southwestern continental shelf can be divided into a western area of interest off the Colville River, and an eastern region. The only species found with any regularity near the Colville River were those cosmopolitan species in group I and the organisms of group V. To the east, the region is again divisible into shallower and deeper benthic fauna. Representatives of species groups III and IV are found in the nearshore area, but species in group V are completely absent. The stations on the deeper shelf have a more cosmopolitan composition, and include representatives from groups I, II, III. and V.

4. Relevance to Problems Associated with Petroleum Development

Extensive drilling for oil and gas on the Alaskan and Canadian north slope has the potential to significantly influence the marine environment across the Beaufort Sea continental shelf. It is impossible with our present state of knowledge to accurately predict either the short or long term consequences of petroleum development on the marine benthos. Comprehensive descriptive studies of the benthic fauna in the Beaufort have only been initiated in the last few years. These studies are a necessary first step in providing a baseline from which any future changes in the benthic environment and community structure can be evaluated.

To date, little is known about the dynamics of the benthic ecosystem in the Beaufort Sea. There have been no studies on the dynamics of the benthic populations in this region. No reliable estimates of natural mortality are available, and recruitment rates remain unknown. Little research has been done on the metabolism and growth rates of these organisms living under ice for a large part of the year. Lacking this information it is very difficult to predict how quickly benthic populations could recover from an extinction event caused by a large-scale oil spill or by other industry-related pollution.

The benthic invertebrates constitute a major source of food for the top level carnivores, including birds, seals, and occasional walrus. Any decrease in benthic populations caused by oil pollution might eventually be reflected in the populations of these larger animals. Nearshore areas would seem to be the most sensitive since it would be in these regions that pollutants would be most likely to mix to the benthic boundary.

The timing of environmental disturbances in this strongly seasonal environment may be extremely critical in determining the stresses experienced by the benthic community. For example, an oil spill in the winter on top of the pack ice could be cleaned up with little or no resultant damage to the marine benthos, while a spill of the same magnitude during a summer of open water might have significant impact. It remains to be determined if the bottom-dwelling invertebrates are more or less sensitive to oil related pollution during the summer months, but the pelagic larvae of the benthic organisms would be vulnerable to spills during periods of open water conditions.

It seems likely that the development of the oil and gas resources will bring about changes in the marine environment, but the extent of degradation in the benthic environment cannot be predicted. There remains a great scientific need for long term studies on the dynamics of the benthic populations, including year round sampling with measurements on growth, metabolism, and reproductive activity.

5. Summary and Conclusions

Due to its remoteness and relatively harsh seasonal conditions, little biological sampling has been accomplished in the Beaufort Sea in the past. Benthic sampling lagged far behind comparable arctic areas, and quantitative work did not begin up until the present decade. In 1971, detailed investigations were launched by both the U.S. and Canada across the Beaufort Sea continental shelf and in the nearshore areas. Specific areas of interest included the Colville River delta, Prudhoe Bay, and the region around the Mackenzie River.

Results of these intital quantitative studies have outlined the general structure of the benthic community across the shelf. Maxima in both biomass and numerical abundance occur on the outer shelf or down the continental slope. Depressed values are found on the inner shelf, pointing to the possible effects of dilution caused by summer river runoff and the destructive influence of ice in the winter. Local highs in density and biomass occur in the very shallow embayments around the Mackenzie River where there may be higher inputs of food and where the organisms are not disrupted or destroyed by impinging ice.

Since oceanographic techniques of sample collecting and processing differ among various investigators, direct comparison of the data derived from the benthic community is not legitimate. The general trends in the data from separate studies can be compared, however. Information from the grabs taken along the southwestern shelf show that groups of invertebrate species tend to cluster into bands which roughly parallel the coastline. Similar bands are described from the southeastern sector around the Mackenzie River delta. It remains to be seen if the species composition within these bands is the same for these two areas. Anomalous regions are indicated around the Colville River and Barter Island where differences appear in the structure of the benthic community, and along the eastern margin of the Beaufort Sea where high biomass values are found. Further study is required to clarify the processes occurring in these regions.

Much additional work needs to be done on existing samples before the benthic communtiy is adequately described. Initial analysis of the meiofaunal fraction from several of the grab samples taken in 1971 has demonstrated the existence of large numbers of organisms which play a significant role in the dynamics of the benthic environment. Careful examination of the harpacticoid copepods from this fraction has shown that nearly half of the species are new to science. Similar results can be anticipated from the other major meiofaunal groups, emphasizing the need for much additional careful descriptive work. The necessary sorting of these large numbers of invertebrates from bottom sediments must be recognized as a tedious and time-consuming process, however.

In general, continued study of the benthic community is needed across the Beaufort Sea continental shelf. Information is required on the growth, metabolism, reproductive rates, recruitment, and mortality of the benthic organisms. Stations must be occupied at different times during the year to assess the responses of the invertebrates to an environment which is ice covered for nearly nine months. Accurate data on these aspects must be determined before the ultimate effects of oil related pollution on the benthic community can be meaningfully predicted.

6. Select References

The majority of the works referenced in this narrative can be found in the Annotated Bibliography in Volume IV, Part B. The few additional references not occurring in the bibliography are listed below.

Curtis, M.A. 1975. The marine benthos of the Arctic and sub-Arctic continental shelves. Polar Records 17(111):595-626.

Sneath, P.H. and R.R. Sokal, 1973. Numerical Taxonomy. W.H. Freeman and Co., San Francisco. 573 pp.

Stander, J.M. 1970. Diversity and similarity of benthic fauna off Oregon. M.S. Thesis, Oregon State University. 72 pp.

Willey, A. 1920. Marine Copepoda. Report of the Canadian Arctic Expedition 1913-1918. 7 (pt. K):24-42.

FINAL REPORT

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1 April 1975 - 31 March 1976

Summarization of existing literature and unpublished data on the distribution, abundance, and life histories of benthic organisms

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Oregon State University
Corvallis, Oregon 97331

1 January 1977

TABLE OF CONTENTS

VOLUME II

SPECIES LIST

The following list of 1083 species names comprises the benthic invertebrate organisms reported from the Beaufort Sea from sea level down to 3000+ meters.

Traditionally, the boundaries of the Beaufort Sea have been regarded as Point Barrow on the west and the edge of the Canadian Archipelago on the east. These limits have been expanded slightly for the purposes of this species list to include the most westerly regions of the Canadian Islands as well as the area west of Point Barrow adjacent to the Naval Arctic Research Laboratory. In addition, the benthic invertebrates collected from the ice island T-3 as it drifted north of Alaska in the Beaufort gyre have been included. It is expected that all of the species reported from these adjacent regions will also be encountered in the Beaufort Sea proper as more sampling is accomplished.

The majority of the benthic species listed are derived from current investigations, or were reported in publications which stemmed from the following works:

Point Barrow Expedition (1885)

Canadian Arctic Expedition (1913-1916)

Collections by George MacGinitie at the Naval Arctic Research Laboratory (1948-1950)

Ice Island collections in the Beaufort Gyre (1963, 1974)

Colville River delta investigations (1970-1971)

Current investigations of the Beaufort Sea biota include work by:

Dr. A.G. Carey, Jr., Oregon State University
-western Beaufort Sea between Point Barrow and Barter Island

Dr. H.M. Feder, University of Alaska
-area in and around Prudhoe Bay

Dr. J.W. Wacasey, Dept. of the Environment, Canada
-southeastern Beaufort Sea from Herschel Island to the Tuktoyaktuk Peninsula.

Many of the invertebrate organisms from areas within or adjacent to the Beaufort Sea have been examined in detail. Students interested in particular animal groups should consult the bibliographic index for a list of pertinent literature. The abbreviated index below includes some of the major works for many of the invertebrates:

Annelida - Polychaeta

Berkeley and Berkeley, 1956
Pettibone, 1954
Reish, 1965

Arthropoda - Amphipoda

Castillo, 1975
Laubitz, 1972
Shoemaker, 1955

Arthropoda - Cumacea

Castillo, 1975
Given, 1965

Arthropoda - Decapoda

Squires, 1969

Arthropoda - Isopoda and Tanaidacea

Bray, 1962
Gur'ianova, 1934d
Menzies and Mohr, 1962

Arthropoda - Ostracoda

Jones, 1960
Joy, 1974

Arthropoda - Pycnogonida

Hedgpeth, 1963

Bryozoa

Osburn, 1955

Cnidaria

Calder, 1970
Calder, 1972

Echinodermata - Asteroidea

Grainger, 1964
Grainger, 1966a

Echinodermata - Holothuroidea

Agatep, 1967

Mollusca - Gastropoda

Clark, 1963
MacGinitie, 1959
Macpherson, 1971

Mollusca - Pelecypoda

Clark, 1963
Lubinsky, 1972
MacGinitie, 1959

Nemertinea

Coe, 1952

Porifera

de Laubenfels, 1953

Protozoa - Foraminiferida

Loeblich and Tappan, 1953

Benthic organisms representing fifteen phyla are included within the the species list. As an aid in locating any particular animal, the phyla are arranged in alphabetical order, and the generic names are listed alphabetically within each phylum. Many of the species names are preceeded with an asterisk to emphasize those organisms which have been reported by the investigators currently working in the Beaufort Sea. A number of these species also have distributional data included in the next section, and these have been indicated with the letter "C" preceeding the asterisk.

ARCTIC SPECIES LIST

PHYLUM ANNELIDA

HIRUDINEA

CRANGONOBDELLA MURMANICA SELENSKY, 1914
OXYTONOSTOMA ARCTICA JOHANSSON, 1898
OXYTONOSTOMA TYPICA MALM, 1863
PLATYBDELLA ANARRHICHAE (DIESING, 1859)

ARCTIC SPECIES LIST

PHYLUM ANNELIDA

POLYCHAETA

C * AGLAOPHAMUS MALMGRENI (THEEL, 1879)
AMAGE ASIATICUS USCHAKOV, 1955
C * AMAGE AURICULA MALMGREN, 1866
C * AMPHARETE ACUTIFRONS (GRUBE, 1860)
C * AMPHARETE ARCTICA MALMGREN, 1866
AMPHARETE GOESI MALMGREN, 1865
AMPHARETE JOHANSENI CHAMBERLIN, 1920
AMPHARETE REDUCTA CHAMBERLIN, 1920
C * AMPHARETE VEGA (WIREN, 1883)
* AMPHICTEIS GUNNERI (SARS, 1835)
C * AMPHICTEIS SUNDEVALLI MALMGREN, 1866
AMPHITRITE CIRRATA MULLER, 1776
* ANAITIDES GROENLANDICA (OERSTED, 1842)
* ANAITIDES MUCOSA (OERSTED, 1843)
ANASPIO BOREUS CHAMBERLIN, 1920
* ANTINOELLA BADIA (THEEL, 1879)
C * ANTINOELLA SARSI MALMGREN, 1865
* APISTOBRANCHUS TULLBERGI (THEEL, 1879)
ARCTEOBIA ANTICOSTIENSIS (MCINTOSH, 1874)
ARENICOLA GLACIALIS MURDOCH, 1884
* ARICIDEA SUECICA ELIASON, 1920
C * ARTACAMA PROBOSCIDEA MALMGREN, 1866
ASABELLIDES LINEATA (BERKELEY + BERKELEY, 1943)
ASABELLIDES SIBIRICA (WIREN, 1883)
AUTOLYTUS ALEXANDRI MALMGREN, 1867
AUTOLYTUS FALLAX MALMGREN, 1867
AUTOLYTUS PRISMATICUS (FABRICIUS, 1780)
BRADA GRANULATA MALMGREN, 1867
BRADA INHABILIS (RATHKE, 1843)
* BRADA VILLOSA (RATHKE, 1843)
* BRANCHIOMMA INFARCATA (KROYER, 1856)
C * CAPITELLA CAPITATA (FABRICIUS, 1780)
C * CHAETOZONE SETOSA MALMGREN, 1867
* CHITINOPOMA GROENLANDICA (MORCH, 1863)
C * CHONE DUNERI MALMGREN, 1867
* CHONE INFUNDIBULIFORMIS KROYER, 1856
C * CIRRATULUS CIRRATUS (MULLER, 1776)
CIRROPHORUS NORDICA (STRELZOV, 1968)
C * COSSURA LONGOCIRRATA WEBSTER + BENEDICT, 1887
* DIPLOCIRRUS GLAUCUS (MALMGREN, 1867)
* DYSPONETUS PYGMAEUS LEVINSEN, 1879
ENIPO GRACILIS VERRILL, 1874
ETEONE (MYSTA) BARBATA (MALMGREN, 1865)
ETEONE FLAVA (FABRICIUS, 1780)
C * ETEONE LONGA (FABRICIUS, 1780)
ETEONE SPETSBERGENSIS MALMGREN, 1865
* EUCHONE ANALIS (KROYER, 1856)

ARCTIC SPECIES LIST

C * EUCHONE PAPILLOSA (SARS, 1851)
* EUCRANTA VILLOSA MALMGREN, 1865
EUMIDA MINUTA (CITLEVSEN, 1917)
EUNOE CLARKI PETTIBONE, 1951
EUNOE NODOSA (SARS, 1861)
EUNOE OERSTEDI MALMGREN, 1865
EUSYLLIS BLOMSTRANDI MALMGREN, 1867
EUSYLLIS MAGNIFICA (MOORE, 1906)
EXOGONE DISPAR (WEBSTER, 1879)
* EXOGONE NAIDINA OERSTED, 1845
FLABELLIGERA AFFINIS M. SARS, 1839
* FLABELLIGERA MASTIGOPHORA ANNENKOVA, 1952
* GATTYANA CILIATA MOORE, 1902
* GATTYANA CIRROSA (PALLAS, 1766)
GLYCERA CAPITATA OERSTED, 1843
GLYCINDE WIRENI ARWIDSSON, 1898
C * GLYPHANOSTOMUM PALLESCENS (THEEL, 1879)
* HARMOTHOE EXTENUATA (GRUBE, 1840)
C * HARMOTHOE IMBRICATA (LINNAEUS, 1767)
* HARMOTHOE (EUNOE) NODOSA (SARS, 1860)
* HARMOTHOE (EUNOE) OERSTEDI (MALMGREN, 1865)
* HARTMANIA MOOREI PETTIBONE, 1955
* HETEROMASTUS FILIFORMIS (CLAPAREDE, 1864)
IDANTHYRSUS ARMATUS KINBERG, 1867
LACYDONIA PAPILLATA USCHAKOV, 1958
LAEOSPIRA GRANULATUS (LINNAEUS, 1767)
LAGISCA MULTISETOSA MOORE, 1902
* LANASSA NORDENSKIOLDI MALMGREN, 1866
LANASSA VENUSTA (MALM, 1874)
* LANGERHANSIA CORNUTA (RATHKE, 1843)
C * LAONICE CIRRATA (M. SARS, 1851)
C * LAPHANIA BOECKI MALMGREN, 1865
* LEAENA ABRANCHIATA MALMGREN, 1865
C * LEIOCHONE POLARIS (THEEL, 1879)
C * LUMBRICLYMENE MINOR ARWIDSSON, 1907
C * LUMBRINERIS FRAGILIS (MÜLLER, 1776)
C * LUMBRINERIS MINUTA (THEEL, 1879)
* LUMBRINERIS TENUIS (VERRILL, 1873)
LUMBRINERIS ZONATA (JOHNSON, 1901)
C * LYSIPPE LABIATA MALMGREN, 1865
MACELLICEPHALA AFFINIS FAUVEL, 1914
C * MALACOCEROS FULIGINOSUS (CLAPAREDE, 1870)
C * MALDANE SARSI MALMGREN, 1865
* MELAENIS LOVENI MALMGREN, 1865
C * MELINNA CRISTATA (SARS, 1851)
MELINNEXIS SOMOVI USCHAKOV, 1957
C * MICRONEPHTHYS MINUTA (THEEL, 1879)
* MYRIOCHELE HEERI MALMGREN, 1867
MYSTIDES BOREALIS THEEL, 1879
MYXICOLA INFUNDIBULUM (RENIER, 1804)
* NEMIDIA TORELLI MALMGREN, 1865
* NEOAMPHITRITE GROENLANDICA (MALMGREN, 1865)

ARCTIC SPECIES LIST

C * NEPHTYS CILIATA (MULLER, 1776)
NEPHTYS DISCORS EHLERS, 1868
C * NEPHTYS LONGOSETOSA OERSTED, 1843
C * NEPHTYS PARADOXA MALM, 1874
C * NEREIMYRA APHRODITOIDES (FABRICIUS, 1780)
NEREIMYRA MULTIPAPILLATA (THEEL, 1879)
C * NEREIS ZONATA MALMGREN, 1867
NICOLEA VENUSTULA (MONTAGU, 1818)
C * NICOLEA ZOSTERICOLA (OERSTED, 1844)
NICOMACHE LUMBRICALIS (FABRICIUS, 1780)
NICOMACHE PERSONATA JOHNSON, 1901
C * NOTOPROCTUS OCULATUS ARCTICA ARWIDSSON, 1907
C * ONUPHIS (NOTHRIA) CONCHYLEGA SARS, 1835
C * ONUPHIS (ONUPHIS) QUADRICUSPIS M. SARS, 1872
C * OPHELINA ABRANCHIATA STOP-BOWITZ, 1948
OPHELINA AULOGASTER RATHKE, 1843
* OPHELINA BREVIATA (EHLERS, 1913)
C * OPHELINA CYLINDRICAUDATUS (HANSEN, 1879)
* OWENIA FUSIFORMIS DELLE CHIAJE, 1844
OXYDROMUS PROPINCUUS (MARION + BOBRETZKY, 1875)
* PARAONIS GRACILIS (TAUBER, 1879)
PECTINARIA (CISTENIDES) GRANULATA (LINNAEUS, 1767)
C * PECTINARIA (CISTENIDES) HYPERBOREA (MALMGREN, 1865)
C * PETALOPROCTUS TENUIS (THEEL, 1879)
* PHOLOE MINUTA (FABRICIUS, 1780)
C * PHYLLOCHAETOPTERUS CLAPAREDII MCINTOSH, 1885
PIONOSYLLIS COMPACTA MALMGREN, 1867
* PISTA MACULATA (DALYELL, 1853)
POLYCIRRUS MEDUSA GRUBE, 1855
C * POLYDORA CAECA (OERSTED, 1843)
* POLYDORA CAULLERYI MESNIL, 1897
C * POLYDORA QUADRILOBATA JACOBI, 1883
POLYPHYSIA CRASSA (OERSTED, 1843)
* POTAMILLA NEGLECTA (SARS, 1851)
* PRAXILLELLA AFFINIS (SARS, 1872)
C * PRAXILLELLA PRAETERMISSA (MALMGREN, 1866)
C * PRIONOSPIO CIRRIFERA WIREN, 1883
C * PRIONOSPIO MALMGRENI CLAPAREDE, 1870
* PRIONOSPIO STEENSTRUPI MALMGREN, 1867
C * PROCLEA GRAFFII (LANGERHANS, 1884)
PSEUDOPOTAMILLA RENIFORMIS (MULLER, 1788)
C * PYGOSPIO ELEGANS CLAPAREDE, 1863
* RHODINE LOVENI MALMGREN, 1865
SABELLA CRASSICORNIS M. SARS, 1851
C * SABELLIDES BOREALIS M. SARS, 1856
* SABELLIDES OCTOCIRRATA (SARS, 1835)
SAMYTHA SEXCIRRATA (SARS, 1856)
* SCALIBREGMA INFLATUM RATHKE, 1843
C * SCHISTOMERINGOS CAECA (WEBSTER + BENEDICT, 1884)
C * SCOLECOLEPIDES ARCTICUS CHAMBERLIN, 1920
C * SCOLOPLOS ACUTUS (VERRILL, 1873)
C * SCOLOPLOS ARMIGER (MULLER, 1776)

ARCTIC SPECIES LIST

C * SCOLOPLOS ELONGATA (JOHNSON, 1901)
C * SIGAMBRA TENTACULATA (TREADWELL, 1941)
SKADARIA FRAGMENTATA WESENBERG-LUND, 1951
* SPHAERODOROPSIS BISERIALIS (BERKELEY + BERKELEY, 1944)
C * SPHAERODOROPSIS MINUTA (WEBSTER + BENEDICT, 1887)
* SPHAERODORUM GRACILIS (RATHKE, 1843)
SPHAEROSYLLIS ERINACEUS CLAPAREDE, 1863
C * SPIO FILICORNIS (MULLER, 1776)
C * SPIO MIMUS CHAMBERLIN, 1920
C * SPIOCHAETOPTERUS TYPICUS M. SARS, 1856
SPIRORBIS SPIRILLUM (LINNAEUS, 1758)
C * STERNASPIS FOSSOR STIMPSON, 1853
* STERNASPIS SCUTATA (RENIER, 1807)
C * TEREBELLIDES STROEMI M. SARS, 1835
* THARYX ACUTUS WEBSTER + BENEDICT, 1887
THARYX MULTIFILIS MOORE, 1909
THELEPUS CINCINNATUS (FABRICIUS, 1780)
TRAVISIA BREVIS MOORE, 1923
TRAVISIA CARNEA VERRILL, 1873
C * TRAVISIA FORBESII JOHNSON, 1840
TRICHOBRANCHUS GLACIALIS MALMGREN, 1865
C * TROCHOCHAETA CARICA (BIRULA, 1879)
TYPOSYLLIS FASCIATA (MALMGREN, 1867)

ARCTIC SPECIES LIST

PHYLUM ARTHROPODA

AMPHIPODA

C * ACANTHONOTOZOMA INFLATUM (KROYER, 1842)
C * ACANTHONOTOZOMA SERRATUM (FABRICIUS, 1780)
* ACANTHOSTEPHEIA BEHRINGIENSIS (LOCKINGTON, 1877)
C * ACANTHOSTEPHEIA MALMGRENI (GOES, 1866)
C * ACEROIDES LATIPES (SARS, 1892)
* ACIDOSTOMA LATICORNE G. SARS, 1879
C * AMPELISCA BIRULAI BRUGGEN, 1909
C * AMPELISCA ESCHRICHTI KROYER, 1842
C * AMPELISCA MACROCEPHALA LILJEBORG, 1852
ANISOGAMMARUS MACGINITIEI SHOEMAKER, 1955
C * ANONYX DEBRUYNII HOEK, 1882
* ANONYX LILLJEBORGI BOECK, 1870
C * ANONYX NUGAX (PHIPPS, 1774)
ANONYX PACIFICUS GURJANOVA, 1962
* ANONYX SARSI STEELE + BRUNEL, 1968
* APHERUSA GLACIALIS (HANSEN, 1887)
C * APHERUSA MEGALOPS (BUCHHOLZ, 1874)
C * APHERUSA SARSI SHOEMAKER, 1930
C * ARGISSA HAMATIPES (NORMAN, 1869)
C * ARISTIAS TUMIDUS (KROYER, 1846)
* ARRHINOPSIS LONGICORNIS STAPPERS, 1911
C * ARRHIS LUTHKEI GURJANOVA, 1936
C * ARRHIS PHYLLONYX (M. SARS, 1858)
C * ATYLUS BRUGGENI (GURJANOVA, 1938)
C * ATYLUS CARINATUS (FABRICIUS, 1793)
C * ATYLUS SMITTI (GOES, 1866)
C * BATHYMEDON OBTUSIFRONS (HANSEN, 1887)
C * BOECKOSIMUS AFFINIS (HANSEN, 1886)
BOECKOSIMUS BOTKINI (BIRULA, 1897)
BOECKOSIMUS BREVICAUDATUS (HANSEN, 1886)
BOECKOSIMUS NORMANI (G. SARS, 1895)
C * BOECKOSIMUS PLAUTUS (KROYER, 1845)
C * BYBLIS GAIMARDI (KROYER, 1846)
CAPRELLA CARINA MAYER, 1903
CAPRELLA LINEARIS (LINNAEUS, 1767)
* CENTROMEDON CALCARATUS (G. SARS, 1879)
C * CENTROMEDON PUMILUS (LILJEBORG, 1865)
CERADOCUS TORELLI (GOES, 1866)
* CERCOPS HOLBOLLI KROYER, 1842
C * COROPHIUM ACHERUSICUM COSTA, 1857
C * COROPHIUM CLARENCENSE SHOEMAKER, 1949
CYAMUS CETI (LINNAEUS, 1758)
CYAMUS KESSLERI BRANDT, 1872
CYAMUS SCAMMONI DALL, 1872
DULICHIA ARCTICA MURDOCH, 1885
C * DULICHIA BISPINA GURJANOVA, 1930
C * DULICHIA FALCATA (BATE, 1857)

ARCTIC SPECIES LIST

C * DULICHIA PORRECTA (BATE, 1857)
DULICHIA SPINOSISSIMA KROYER, 1845
C * DULICHIA TUBERCULATA BOECK, 1871
C * EPIMERIA LORICATA G. SARS, 1879
ERICTHONIUS HUNTERI (BATE, 1862)
C * ERICTHONIUS MEGALOPS (G. SARS, 1879)
C * ERICTHONIUS TOLLI BRUGGEN, 1909
EURYTHENES GRYLLUS (LICHTENSTEIN, 1822)
C * EUSIRUS CUSPIDATUS KROYER, 1845
C * GAMMARACANTHUS LORICATUS (SABINE, 1821)
C * GAMMAROPSIS DENTATUS (HOLMES, 1909)
* GAMMAROPSIS MACULATUS (JOHNSTON, 1827)
C * GAMMAROPSIS MELANOPS (G. SARS, 1882)
C * GAMMARUS LOCUSTA (LINNAEUS, 1758)
C * GAMMARUS OCEANICUS SEGERSTRALE, 1947
C * GAMMARUS SETOSUS DEMENTIEVA, 1931
C * GAMMARUS ZADDACHI SEXTON, 1912
* GITANA ROSTRATA BOECK, 1871
GITANOPSIS ARCTICA G. SARS, 1892
C * GOESIA DEPRESSA (GOES, 1866)
C * GUERNEA NORDENSKJOLDI (HANSEN, 1887)
C * HALIRAGES QUADRIDENTATUS G. SARS, 1876
C * HAPLOOPS LAEVIS HOEK, 1882
C * HAPLOOPS SETOSA BOECK, 1871
* HAPLOOPS SIBIRICA GURJANOVA, 1929
C * HAPLOOPS TUBICOLA LILJEBORG, 1855
C * HARPINIA KOBJAKOVAE BULYCHEVA, 1936
C * HARPINIA MUCRONATA G. SARS, 1879
C * HARPINIA PECTINATA G. SARS, 1891
C * HARPINIA SERRATA G. SARS, 1879
C * HIPPOMEDON ABYSSI (GOES, 1866)
* HIPPOMEDON DENTICULATUS (BATE, 1857)
C * HIPPOMEDON GORBUNOVI GURJANOVA, 1930
C * HIPPOMEDON HOLBOLLI (KROYER, 1846)
* HIPPOMEDON PROPINQUUS G. SARS, 1890
C * ISCHYROCERUS COMMENSALIS CHEVREUX, 1900
* ISCHYROCERUS MEGALOPS G. SARS, 1894
C * ISCHYROCERUS LATIPES KROYER, 1842
C * LEMBOS ARCTICUS (HANSEN, 1887)
* LEPIDEPECREUM EOUM GURJANOVA, 1938
C * LEPIDEPECREUM UMBO (GOES, 1866)
C * LILJEBORGIA FISSICORNIS (M. SARS, 1858)
C * MAERA DANAE (STIMPSON, 1854)
C * MELITA DENTATA (KROYER, 1842)
C * MELITA FORMOSA MURDOCH, 1866
MELITA VALIDA SHOEMAKER, 1955
* MELITOIDES MAKAROVI GURJANOVA, 1934
MESOMETOPA GIBBOSA SHOEMAKER, 1955
MESOMETOPA NEGLECTA (HANSEN, 1887)
C * METOPA BRUZELII (GOES, 1866)
METOPA CLYPEATA (KROYER, 1842)
METOPA GLACIALIS (KROYER, 1842)

ARCTIC SPECIES LIST

METOPA LONGICORNIS BOECK, 1871
METOPA PROPINQUA G. SARS, 1892
C * METOPA ROBUSTA G. SARS, 1892
C * METOPA SPINICOXA SHOEMAKER, 1955
* METOPA TENUIMANA G. SARS, 1892
C * METOPELLA CARINATA (HANSEN, 1887)
METOPELLA LONGIMANA (BOECK, 1871)
C * METOPELLA NASUTA (BOECK, 1871)
METOPELLOIDES STEPHENSENI GURJANOVA, 1938
METOPELLOIDES TATTERSALLI GURJANOVA, 1938
C * MONOCULODES BOREALIS BOECK, 1871
* MONOCULODES DIAMESUS GURJANOVA, 1936
C * MONOCULODES LATIMANUS (GOES, 1866)
C * MONOCULODES LONGIROSTRIS (GOES, 1866)
C * MONOCULODES PACKARDI BOECK, 1871
C * MONOCULODES SCHNEIDERI G. SARS, 1895
C * MONOCULODES TUBERCULATUS BOECK, 1871
C * MONOCULOPSIS LONGICORNIS (BOECK, 1871)
C * NEOHELA MONSTRATA (BOECK, 1861)
C * NEOPLEUSTES BOECKI (HANSEN, 1887)
C * NEOPLEUSTES PULCHELLUS (KROYER, 1846)
C * ODIUS CARINATUS (BATE, 1862)
* ODIUS KELLERI BRUGGEN, 1907
C * OEDICEROS SAGINATUS KROYER, 1842
ONISIMUS BIRULAI (GURJANOVA, 1929)
C * ONISIMUS GLACIALIS (G. SARS, 1900)
* ONISIMUS LITORALIS (KROYER, 1845)
ONISIMUS NANSENI (G. SARS, 1900)
ORCHOMENE GROENLANDICA (HANSEN, 1887)
C * ORCHOMENE MINUTA (KROYER, 1846)
* ORCHOMENE PINGUIS (BOECK, 1861)
C * ORCHOMENE SERRATA (BOECK, 1861)
ORCHOMENE TRIANGULUS (STEPHENSEN, 1925)
C * PARADULICHIA TYPICA BOECK, 1870
C * PARALIBROTUS SETOSUS STEPHENSEN, 1923
C * PARAMPITHOE HYSTRIX (ROSS, 1835)
C * PARAMPITHOE POLYACANTHA (MURDOCH, 1885)
C * PARAPHOXUS OCULATUS G. SARS, 1879
C * PARAPLEUSTES ASSIMILIS (G. SARS, 1882)
C * PARAPLEUSTES GRACILIS (BUCHHOLZ, 1874)
C * PARDALISCA ABYSSI BOECK, 1871
C * PARDALISCA CUSPIDATA KROYER, 1842
C * PARDALISCA TENUIPES G. SARS, 1893
C * PARDALISCELLA LAVROVI GURJANOVA, 1934
C * PARDALISCELLA MALYGINI GURJANOVA, 1936
C * PAROEDICEROS LYNCEUS (M. SARS, 1858)
C * PAROEDICEROS PROPINQUUS (GOES, 1866)
C * PARONESIMUS BARENTSI STEBBING, 1894
* PERIOCULODES LONGIMANUS (BATE + WESTWOOD, 1868)
C * PHOTIS REINHARDI KROYER, 1842
* PHOTIS VINOGRADOVA GURJANOVA, 1953
PLEUSTES MEDIUS (GOES, 1866)

ARCTIC SPECIES LIST

C * PLEUSTES PANOPLA (KROYER, 1838)
C * PLEUSYMTES KARIANUS (STAPPERS, 1911)
PLEUSYMTES PULCHELLUS (G. SARS, 1876)
PLEUSYMTES UNCIGERA (GURJANOVA, 1938)
C * PODOCEROPSIS LINDAHLI HANSEN, 1887
C * PONTOPOREIA AFFINIS (LINDSTROM, 1855)
C * PONTOPOREIA FEMORATA KROYER, 1842
* PRISCILLINA ARMATA (BOECK, 1861)
PROBOLOIDES NORDMANNI (STEPHENSEN, 1931)
PROTHAUMATELSON CARINATUM SHOEMAKER, 1955
C * PROTOMEDEIA FASCIATA KROYER, 1842
C * PROTOMEDEIA GRANDIMANA BRUGGEN, 1905
PROTOMEDEIA STEPHENSENI SHOEMAKER, 1955
C * RHACHOTROPIS ACULEATA (LEPECHIN, 1780)
C * RHACHOTROPIS HELLERI (BOECK, 1871)
C * RHACHOTROPIS INFLATA (G. SARS, 1882)
C * ROZINANTE FRAGILIS (GOES, 1866)
C * SOCARNES BIDENTICULATA (BATE, 1858)
STEGOCEPHALOPSIS AMPULLA (PHIPPS, 1774)
C * STEGOCEPHALUS INFLATUS KROYER, 1842
C * STENOPLEUSTES ELDINGI GURJANOVA, 1930
STENOTHOE BARROWENSIS SHOEMAKER, 1955
STENOTHOIDES ANGUSTA SHOEMAKER, 1955
C * SYRRHOE CRENULATA GOES, 1866
C * TIRON SPINIFERUM (STIMPSON, 1854)
C * TMETONYX CICADA (FABRICIUS, 1780)
TMETONYX GULOSUS (KROYER, 1845)
* TRYPHOSELLA GROENLANDICA (SCHELLENBERG, 1935)
C * TRYPHOSELLA PUSILLA (G. SARS, 1869)
C * TRYPHOSELLA RUSANOVI (GURJANOVA, 1933)
C * TRYPHOSELLA SCHNEIDERI (STEPHENSEN, 1921)
C * UNCIOLA LEUCOPIS (KROYER, 1845)
* WESTWOODILLA BREVICALAR (GOES, 1866)
* WESTWOODILLA CAECULA (BATE, 1856)
C * WESTWOODILLA MEGALOPS G. SARS, 1882
C * WEYPRECHTIA HEUGLINI (BUCHHOLZ, 1874)
C * WEYPRECHTIA PINGUIS (KROYER, 1838)

ARCTIC SPECIES LIST

PHYLUM ARTHROPODA

CIRRIPEDIA

BALANUS BALANUS (LINNAEUS, 1758)
* BALANUS CRENATUS BRUGUIERE, 1789
BALANUS ROSTRATUS APERTUS PILSBRY, 1911

ARCTIC SPECIES LIST

PHYLUM ARTHROPODA

COPEPODA

C * AMPHIASCUS PROPINQVUS G. SARS, 1906
C * ARGESTES MOLLIS G. SARS, 1910
C * BRADYA CONFLUENS LANG, 1936
BRADYA TYPICA BOECK, 1872
CANUELLA FURCIGERA G. SARS, 1903
C * CERVINIA BRADYA NORMAN, 1878
C * CERVINIA SYNARTHRA G. SARS, 1903
CHONIOSTOMA MIRABILE HANSEN, 1886
DANIELSSENIA FUSIFORMIS (BRADY + ROBERTSON, 1875)
DANIELSSENIA STEPANSSONI WILLEY, 1920
ECHINOPSYLLUS NORMANI G. SARS, 1909
HAEMOBAPHES CYCLOPTERINA (FABRICIUS, 1780)
HALECTINOSOMA FINMARCHICUM (T. SCOTT, 1903)
C * HARPACTICUS SUPERFLEXUS WILLEY, 1920
HERPYLLOBIUS ARCTICUS STEENSTRUP + LUTKEN, 1878
LONGIPEDIA CORNUTA CLAUS, 1863
MICROARTHRIDION LITTORALE (POPPE, 1881)
OITHONA SIMILIS CLAUS, 1866
C * PARAMPHIASCOPSIS GIESBRECHTI (G. SARS, 1910)
C * PARAMPHIASCOPSIS LONGIROSTRIS (CLAUS, 1863)
C * PARANANNOPUS ECHINATUS SMIRNOV, 1946
PROAMIERA HIDDENSOENSIS (SCHAFER, 1936)
SACCOPSIS TEREBELLIDIS LEVINSEN, 1878
SARSOCLETODES TYPICUS (G. SARS, 1920)
SCHIZOPROCTUS INFLATUS AURIVILLIUS, 1885
STENHELIA NUWUKENSIS WILSON, 1965
C * TYPHLAMPHIASCUS CONFUSUS (T. SCOTT, 1902)

ARCTIC SPECIES LIST

PHYLUM ARTHROPODA

CUMACEA

C * BRACHYDIASTYLIS NIMIA HANSEN, 1920
C * BRACHYDIASTYLIS RESIMA (KROYER, 1846)
CAMPYLASPIS AFFINIS G. SARS, 1870
C * CAMPYLASPIS RUBICUNDA (LILJEBORG, 1855)
C * CUMELLA CARINATA (HANSEN, 1887)
C * DIASTYLIS ASPERA CALMAN, 1912
C * DIASTYLIS BIDENTATA CALMAN, 1912
DIASTYLIS DALLI CALMAN, 1912
* DIASTYLIS ECHINATA BATE, 1865
C * DIASTYLIS EDWARDSI (KROYER, 1841)
C * DIASTYLIS GLABRA (ZIMMER, 1900)
C * DIASTYLIS GOODSIRI (BELL, 1855)
DIASTYLIS LAEVIS NORMAN, 1869
C * DIASTYLIS NUCELLA CALMAN, 1912
C * DIASTYLIS OXYRHYNCHA ZIMMER, 1926
DIASTYLIS POLARIS G. SARS, 1871
C * DIASTYLIS POLITA SMITH, 1879
C * DIASTYLIS RATHKEI (KROYER, 1841)
C * DIASTYLIS SCORPIOIDES (LEPECHIN, 1780)
C * DIASTYLIS SPINULOSA HELLER, 1875
C * DIASTYLIS SULCATA CALMAN, 1912
DIASTYLIS SULCATA STUXBERGI ZIMMER, 1926
C * DIASTYLIS TUMIDA (LILJEBORG, 1855)
C * EUDORELLA ARCTICA HANSEN, 1920
C * EUDORELLA EMARGINATA (KROYER, 1846)
C * EUDORELLA GRACILIS G. SARS, 1871
C * EUDORELLA GROENLANDICA ZIMMER, 1926
* EUDORELLA HISPIDA G. SARS, 1871
C * EUDORELLA PARVULA HANSEN, 1920
* EUDORELLA PUSILLA G. SARS, 1871
C * EUDORELLA TRUNCATULA (BATE, 1856)
* EUDORELLOPSIS DEFORMIS (KROYER, 1846)
EUDORELLOPSIS DERZHAVINI LOMAKINA, 1952
C * EUDORELLOPSIS INTEGRA (SMITH, 1879)
HEMILAMPROPS CRISTATA (G. SARS, 1870)
C * LAMPROPS FASCIATA G. SARS, 1863
LEPTOSTYLIS LONGIMANA (SARS, 1869)
C * LEUCON ACUTIROSTRIS G. SARS, 1865
C * LEUCON FULVUS G. SARS, 1865
C * LEUCON LATICAUDA LOMAKINA, 1952
C * LEUCON NASICA (KROYER, 1841)
C * LEUCON NASICOIDES LILJEBORG, 1855
C * LEUCON NATHORSTI OHLIN, 1901
C * LEUCON PALLIDUS G. SARS, 1865
C * PETALOSARSIA DECLIVIS (G. SARS, 1864)

ARCTIC SPECIES LIST

PHYLUM ARTHROPODA

DECAPODA--NATANTIA

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        ARGIS DENTATA  RATHBUN, 1902
C   *   ARGIS LAR  (OWEN, 1839)
        CRANGON COMMUNIS  RATHBUN, 1899
        EUALUS FABRICII  (KROYER, 1841)
C   *   EUALUS GAIMARDII  (MILNE-EDWARDS, 1837)
C   *   EUALUS MACILENTUS  (KROYER, 1879)
        EUALUS SUCKLEYI  (STIMPSON, 1864)
        HEPTACARPUS FLEXUS  (RATHBUN, 1902)
C   *   LEBBEUS GROENLANDICUS  (FABRICIUS, 1793)
C   *   LEBBEUS POLARIS  (SABINE, 1824)
        PANDALUS BOREALIS  KROYER, 1838
C   *   PANDALUS GONIURUS  STIMPSON, 1860
    *   SABINEA SEPTEMCARINATA  (SABINE, 1824)
    *   SCLEROCRANGON BOREAS  (PHIPPS, 1774)
        SCLEROCRANGON FEROX  (G. SARS, 1877)
        SPIRONTOCARIS ARCUATA  RATHBUN, 1902
C   *   SPIRONTOCARIS DALLI  RATHBUN, 1902
C   *   SPIRONTOCARIS PHIPPSII  (KROYER, 1841)
C   *   SPIRONTOCARIS SPINUS  (SOWERBY, 1805)
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ARCTIC SPECIES LIST

PHYLUM ARTHROPODA

DECAPODA--REPTANTIA

CHIONOCETES OPILIO (FABRICIUS, 1788)
HYAS COARCTATUS LEACH, 1815
C * HYAS COARCTATUS ALUTACEUS BRANDT, 1851
PAGURUS SPLENDESCENS OWEN, 1839
PAGURUS TRIGONOCHEIRUS (STIMPSON, 1858)
PARALITHODES CAMTSCHATICUS (TILESIUS, 1812

ARCTIC SPECIES LIST

PHYLUM ARTHROPODA

ISOPODA

ARCTURUS BAFFINI (SABINE, 1824)
ARGEIA PUGETTENSIS DANA, 1852
BOPYROIDES HIPPOLYTES (KROYER, 1838)
DAJUS MYSIDIS KROYER, 1842
* DESMOSOMA LINEARE G. SARS, 1864
EUGERDA INTERMEDIA (HULT, 1936)
* EUGERDA TENUIMANA (G. SARS, 1868)
EURYCOPE COMPLANATA BONNIER, 1896
EURYCOPE MUTICA G. SARS, 1864
* EURYCOPE PYGMAEA G. SARS, 1870
GNATHIA ALBESCENS HANSEN, 1916
* GNATHIA ELONGATA (KROYER, 1846)
* GNATHIA STYGIA (G. SARS, 1864)
HEMIARTHRUS ABDOMINALIS (KROYER, 1840)
JANIRA ALASCENS (BENEDICT, 1905)
* MACROSTYLIS SPINIFERA G. SARS, 1864
C * MESIDOTEA ENTOMON. (LINNAEUS, 1767)
C * MESIDOTEA SABINI (KROYER, 1847)
* MESIDOTEA SIBIRICA (BIRULA, 1896)
MIRABILICOXA BIRSTEINI (MENZIES, 1962)
MIRABILICOXA FLETCHERI PAUL + MENZIES, 1974
* MUNNOPSIS TYPICA M. SARS, 1861
OECIDIOBRANCHUS PLEBEJUM (HANSEN, 1916)
PLEUROPRION MURDOCHI (BENEDICT, 1898)
ROCINELA BELLICEPS (STIMPSON, 1864)
C * SYNIDOTEA BICUSPIDA (OWEN, 1839)
SYNIDOTEA LAEVIS BENEDICT, 1897
SYNIDOTEA MURICATA (HARFORD, 1877)
SYNIDOTEA PICTA BENEDICT, 1897

ARCTIC SPECIES LIST

PHYLUM ARTHROPODA

OSTRACODA

ASTEROPE MARIAE (BAIRD, 1850)
CONCHOECIA MAXIMA (BRADY + NORMAN, 1896)
* CYPRIDEIS SORBYANA (JONES, 1856)
* CYTHEREIS DUNELMENSIS NORMAN, 1865
CYTHERIDEA PUNCTILLATA BRADY, 1865
* PHILOMEDES GLOBOSUS (LILJEBORG, 1853)

ARCTIC SPECIES LIST

PHYLUM ARTHROPODA

PYCNOGONIDA

ACHELIA BOREALIS (SCHIMKEWITSCH, 1895)
ACHELIA SPINOSA (STIMPSON, 1853)
NYMPHON BREVITARSE KROYER, 1838
* NYMPHON GROSSIPES (FABRICIUS, 1784)
NYMPHON HIRTIPES BELL, 1853
NYMPHON LONGITARSE KROYER, 1844
NYMPHON MIXTUM KROYER, 1844
NYMPHON SLUITERI HOEK, 1881
OROPALLENE POLARIS HEDGPETH, 1963
PHOXICHILIDIUM QUADRIDENTATUM HILTON, 1942
PSEUDOPALLENE CIRCULARIS (GOODSIR, 1842)
TANYSTYLUM ANTHOMASTI HEDGPETH, 1949

ARCTIC SPECIES LIST

PHYLUM ARTHROPODA

TANAIDACEA

* LEPTOGNATHIA LONGIREMIS (LILJEBORG, 1865)
* PSEUDOTANAIS MACROCHELES G. SARS, 1899
* SPHYRAPUS ANOMALUS (G. SARS, 1869)
* TYPHOTANAIS FINMARCHICUS G. SARS, 1882
LEPTOGNATHIA ARMATA HANSEN, 1913

ARCTIC SPECIES LIST

PHYLUM BRACHIOPODA

* CRYPTOPORA GNOMON JEFFREYS, 1869
  DIESTOTHYRIS SPITZBERGENSIS (DAVIDSON, 1852)
* HEMITHYRUS PSITTACEA (GMELIN, 1792)

ARCTIC SPECIES LIST

PHYLUM BRYOZOA

ALCYONIDIUM DISCIFORME (SMITT, 1871)
ALCYONIDIUM ENTEROMORPHA SOULE, 1951
ALCYONIDIUM GELATINOSUM (LINNAEUS, 1767)
ALCYONIDIUM PEDUNCULATUM ROBERTSON, 1902
ALCYONIDIUM POLYCUM (HASSELL, 1841)
AMPHIBLESTRUM TRIFOLIUM (WOOD, 1850)
BIDENKAPIA SPITSBERGENSIS (BIDENKAP, 1897)
BIDENKAPIA SPITSBERGENSIS ALASKENSIS OSBURN, 1950
BORGIOLA PUSTULOSA OSBURN, 1950
BOWERBANKIA GRACILIS AGGREGATA O DONOGHUE, 1926
CALLOPORA AURITA (HINCKS, 1877)
CALLOPORA CRATICULA (ALDER, 1857)
CALLOPORA WHITEAVESI NORMAN, 1903
CARBASEA CARBASEA (SOLANDER, 1786)
CAULORAMPHUS CYMBAEFORMIS (HINCKS, 1877)
CELLEPORINA SURCULARIS (PACKARD, 1863)
CELLEPORINA VENTRICOSA (LORENZ, 1886)
COSTAZIA NORDENSKJOLDI (KLUGE, 1929)
COSTAZIA SURCULARIS (PACKARD, 1863)
COSTAZIA VENTRICOSA (LORENZ, 1886)
CRIBRILINA ANNULATA (FABRICIUS, 1780)
CRISIA CRIBRARIA STIMPSON, 1853
CRISIA EBURNEA (LINNAEUS, 1758)
CYLINDROPORELLA TUBULOSA (NORMAN, 1868)
CYSTISELLA BICORNIS OSBURN, 1950
CYSTISELLA SACCATA (BUSK, 1856)
DENDROBEANIA MURRAYANA (JOHNSTON, 1847)
DIAPEROECIA INTERMEDIA (O DONOGHUE, 1923)
DIAPEROECIA JOHNSTONI (HELLER, 1867)
DIPLOSOLEN OBELIUM (JOHNSTON, 1838)
DORYPORELLA SPATHULIFERA (SMITT, 1867)
ELECTRA ARCTICA BORG, 1931
EMBALLOTHECA STYLIFERA (LEVINSEN, 1886)
ESCHARELLA CONNECTENS (RIDLEY, 1881)
ESCHARELLA VENTRICOSA (HASSALL, 1842)
ESCHAROIDES JACKSONI (WATERS, 1900)
EUCRATEA LORICATA (LINNAEUS, 1758)
EURITINA ARCTICA OSBURN, 1950
FLUSTRELLA CORNICULATA (SMITT, 1871)
FLUSTRELLA GIGANTEA SILEN, 1947
HEMICYCLOPORA POLITA (NORMAN, 1864)
HINCKSINA GOTHICA OSBURN, 1953
HINCKSINA NIGRANS (HINCKS, 1882)
HINCKSIPORA SPINULIFERA (HINCKS, 1889)
HIPPODIPLOSIA CANCELLATA (SMITT, 1867)
HIPPODIPLOSIA RETICULATO-PUNCTATA (HINCKS, 1877)
HIPPOPORELLA HIPPOPUS (SMITT, 1867)
HIPPOPORINA CANCELLATA (SMITT, 1867)
HIPPOTHOA DIVARICATA LAMOUROUX, 1821

ARCTIC SPECIES LIST

HIPPOTHOA EXPANSA DAWSON, 1859
HIPPOTHOA HYALINA (LINNAEUS, 1767)
LEPRALIELLA CONTIGUA (SMITT, 1867)
LICHENOPORA CANALICULATA (BUSK, 1876)
LICHENOPORA VERRUCARIA (FABRICIUS, 1780)
MICROPORELLA ARCTICA (NORMAN, 1903)
MEMBRANIPORA SERRULATA (BUSK, 1878)
MEMBRANIPORELLA CRASSICOSTA HINCKS, 1888
MICROPORINA ARTICULATA (FABRICIUS, 1824)
MICROPORINA BOREALIS (BUSK, 1855)
MUCRONELLA LABIATA LEVINSEN, 1886
MUCRONELLA MICROSTOMA (NORMAN, 1868)
MYRIAPORA SUBGRACILE (D ORBIGNY, 1853)
MYRIOZOELLA PLANA (DAWSON, 1859)
ONCOUSOECIA CANADENSIS OSBURN, 1933
ONCOUSOECIA DIASTOPORIDES (NORMAN, 1868)
PACHYEGIS BRUNNEA (HINCKS, 1889)
PACHYEGIS PRODUCTA (PACKARD, 1863)
PARASMITTINA ALASKENSIS OSBURN, 1950
PARASMITTINA JEFFREYSI (NORMAN, 1876)
PARASMITTINA TRISPINOSA (JOHNSTON, 1838)
PLAGIOECCIA AMBIGUA OSBURN, 1950
PLAGIOECIA GRIMALDII (JULLIEN, 1903)
PORELLA ACUTIROSTRIS SMITT, 1867
PORELLA COMPRESSA (SOWERBY, 1805)
PORELLA CONCINNA (BUSK, 1854)
PORELLA MINUTA (NORMAN, 1869)
POSTERULA SARSI (SMITT, 1867)
PROBOSCINA INCRASSATA (SMITT, 1866)
RAGIONULA ROSACEA (BUSK, 1856)
REGINELLA SPITSBERGENSIS (NORMAN, 1903)
RHAMPHOSTOMELLA BILAMINATA (HINCKS, 1877)
RHAMPHOSTOMELLA COSTATA LORENZ, 1886
RHAMPHOSTOMELLA FORTISSIMA BIDENKAP, 1900
RHAMPHOSTOMELLA GIGANTEA OSBURN, 1950
RHAMPHOSTOMELLA HINCKSI NORDGAARD, 1906
RHAMPHOSTOMELLA OVATA (SMITT, 1867)
RHAMPHOSTOMELLA SPINIGERA LORENZ, 1886
SCHIZOMAVELLA PORIFERA (SMITT, 1867)
SCHIZOPORELLA STYLIFERA (LEVINSEN, 1886)
SCRUPOCELLARIA SCABRA (VAN BENEDEN, 1848)
SCRUPOCELLARIA SCABRA PAENULATA NORMAN, 1903
SMITTINA ARCTICA (NORMAN, 1894)
SMITTINA BELLA (BUSK, 1860)
SMITTINA MAJUSCULA (SMITT, 1867)
STEPHANOSELLA BIAPERTA (MICHELIN, 1845)
STOMACHETOSELLA CRUENTA (NORMAN, 1864)
STOMACHETOSELLA DISTINCTA OSBURN, 1950
STOMACHETOSELLA SINUOSA (BUSK, 1860)
TEGELLA ARCTICA (D ORBIGNY, 1851)
TEGELLA ARMIFERA (HINCKS, 1880)
TEGELLA MAGNIPORA OSBURN, 1950

ARCTIC SPECIES LIST

TEGELLA UNICORNIS (FLEMING, 1828)
TERMINOFLUSTRA MEMBRANACEO-TRUNCATA (SMITT, 1867)
TRICELLARIA ERECTA (ROBERTSON, 1900)
TUBULIPORA FLABELLARIS (FABRICIUS, 1780)
UMBONULA ARCTICA (M. SARS, 1851)
UMBONULA PATENS (SMITT, 1867)
VESICULARIA FASCICULATA SOULE, 1953

ARCTIC SPECIES LIST

PHYLUM CHORDATA

AMAROUCIUM FRAGILE REDIKORZEV, 1927
APLIDIOPSIS PANNOSUM (RITTER, 1899)
ASCIDIA CALLOSA STIMPSON, 1852
BOLTENIA ECHINATA (LINNAEUS, 1767)
* BOLTENIA OVIFERA (LINNAEUS, 1767)
CHELYOSOMA MACLEAYANUM BRODERIP + SOWERBY
CNEMIDOCARPA RHIZOPUS (REDIKORZEV, 1907)
DENDRODOA GROSSULARIA (VAN BENEDEN, 1846)
DENDRODOA PULCHELLA (VERRILL, 1871)
DIDEMNUM ALBIDUM (VERRILL, 1871)
EUGYRA GLUTINANS (MOLLER, 1842)
* HALOCYNTHIA AURANTIUM (PALLAS, 1787)
MOLGULA COMPLANATA ALDER + HANCOCK, 1870
MOLGULA GRIFFITHSI (MACLEAY, 1825)
MOLGULA RETORTIFORMIS VERRILL, 1871
MOLGULA OREGONIA RITTER, 1913
MOLGULA SIPHONALIS M. SARS, 1859
* PELONAIA CORRUGATA GOODSIR + FORBES, 1841
POLYCARPA FIBROSA (STIMPSON, 1852)
* RHIZOMOLGULA GLOBULARIS (PALLAS, 1776)
STYELA CORIACEA (ALDER + HANCOCK, 1848)
STYELA RUSTICA MACRENTERON RITTER, 1913

ARCTIC SPECIES LIST

PHYLUM CNIDARIA

ANTHOZOA

CERIANTHUS BOREALIS VERRILL, 1873
GERSEMIA FRUTICOSA (M. SARS, 1860)
* GERSEMIA RUBIFORMIS (PALLAS)
HALCAMPA DUODECIMCIRRATA (M. SARS, 1851)
PSEUDOPHELLIA ARCTICA VERRILL, 1869
STOMPHIA COCCINEA (MULLER, 1776)
URTICINA CRASSICORNIS (MULLER, 1776)

ARCTIC SPECIES LIST

PHYLUM CNIDARIA

HYDROZOA

CAMPANULARIA GROENLANDIA LEVINSEN, 1893
CORYMORPHA GROENLANDICA (ALLMAN, 1876)
FILELLUM SERPENS (HASSALL, 1848)
GONOTHYRAEA LOVENI (ALLMAN, 1859)
GRAMMARIA IMMERSA NUTTING, 1901
HYDRACTINA ALLMANI BONNEVIE, 1898
LAFOEA GRACILLIMA (ALDER, 1856)
LAFOEINA MAXIMA LEVINSEN, 1893
OBELIA LONGISSIMA (PALLAS, 1766)
OPERCULARELLA LACERATA (JOHNSTON, 1847)
SERTULARELLA TRICUSPIDATA (ALDER, 1856)
THUIARIA ALTERNITHECA LEVINSEN, 1893
THUIARIA ELEGANS KIRCHENPAUER,
THUIARIA LONCHITIS (ELLIS + SOLANDER, 1786
TUBULARIA INDIVISA LINNAEUS, 1758
* TUBULARIA REGALIS BOECK, 1860

ARCTIC SPECIES LIST

PHYLUM ECHINODERMATA

ASTEROIDEA

C * BATHYBIASTER VEXILLIFER (THOMSON, 1873)
C * CROSSASTER PAPPOSUS (LINNAEUS, 1767)
C * CTENODISCUS CRISPATUS (RETZIUS, 1805)
HENRICIA SANGUINOLENTA (MULLER, 1776)
C * HYMENASTER PELLUCIDUS THOMSON, 1873
* ICASTERIAS PANOPLA (STUXBERG, 1878)
LEPTASTERIAS ARCTICA (MURDOCH, 1885)
LEPTASTERIAS GROENLANDICA (STEENSTRUP, 1857)
LEPTASTERIAS POLARIS (MULLER + TROSCHEL, 1842)
C * LEPTYCHASTER ARCTICUS (M. SARS, 1851)
C * LOPHASTER FURCIFER (DUBEN + KOREN, 1846)
PONTASTER TENUISPINUS (DUBEN + KOREN, 1846)
PORANIOMORPHA BIDENS MORTENSEN, 1932
C * PORANIOMORPHA TUMIDA (STUXBERG, 1878)
PORANIOMORPHA TUMIDA TUBERCULATA DANIELSSEN + KOREN, 1884
C * PTERASTER OBSCURUS (PERRIER, 1891)
SOLASTER DAWSONI VERRILL, 1880
* SOLASTER ENDECA (LINNAEUS, 1771)
C * URASTERIAS LINCKI (MULLER + TROSCHEL, 1842)

ARCTIC SPECIES LIST

PHYLUM ECHINODERMATA

CRINOIDEA

C * HELIOMETRA GLACIALIS (OWEN, 1833)
BATHYCRINUS CARPENTERI (DANIELSSEN + KOREN, 1877)

ARCTIC SPECIES LIST

PHYLUM ECHINODERMATA

ECHINOIDEA

C * STRONGYLOCENTROTUS DROEBACHIENSIS (MULLER, 1776)
STRONGYLOCENTROTUS PALLIDUS (G. SARS, 1871)

ARCTIC SPECIES LIST

PHYLUM ECHINODERMATA

HOLOTHUROIDEA

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          CUCUMARIA FRONDOSA  (GUNNERUS, 1770)
          ELPIDIA GLACIALIS  THEEL, 1876
          KOLGA HYALINA  DANIELSSEN + KOREN, 1882
          MOLPADIA BOREALE  (M. SARS, 1861)
   C   *  MYRIOTROCHUS RINKII  STEENSTRUP, 1851
          PSOLUS FABRICII  (DUBEN + KOREN, 1846)
   C   *  PSOLUS PERONI  BELL, 1882
   C   *  PSOLUS PHANTAPUS  (STRUSSENFELDT, 1767)
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ARCTIC SPECIES LIST

PHYLUM ECHINODERMATA

OPHIUROIDEA

C * AMPHIODIA CRATERCOMETA CLARK, 1911
C * AMPHIURA PSILOPORA CLARK, 1911
C * AMPHIURA SUNDEVALLI (MULLER + TROSCHEL, 1842)
C * GORGONOCEPHALUS ARCTICUS (LEACH, 1819)
* GORGONOCEPHALUS CARYI (LYMAN, 1860)
C * OPHIACANTHA BIDENTATA (RETZIUS, 1805)
C * OPHIOCTEN SERICEUM (FORBES, 1852)
* OPHIOPHOLIS ACULEATA (LINNAEUS, 1766)
C * OPHIOPLEURA BOREALIS DANIELSSEN + KOREN, 1877
* OPHIOSCOLEX GLACIALIS MULLER + TROSCHEL, 1842
* OPHIURA NODOSA LUTKEN, 1854
* OPHIURA ROBUSTA (AYRES, 1851)
C * OPHIURA SARSII LUTKEN, 1854

ARCTIC SPECIES LIST

PHYLUM ECHIUROIDEA

ECHIURUS ECHIURUS (PALLAS, 1774)
ECHIURUS ECHIURUS ALASKANUS FISHER, 1946
HAMINGIA ARCTICA DANIELSSEN + KOREN, 1881

ARCTIC SPECIES LIST

PHYLUM ENTOPROCTA

BARENTSIA GORBUNOVI KLUGE, 1946
CORIELLA STOLONATA KLUGE, 1946

ARCTIC SPECIES LIST

PHYLUM MOLLUSCA

AMPHINEURA

AMICULA VESTITA BRODERIP + SOWERBY, 1829
ISCHNOCHITON ALBUS (LINNAEUS, 1767)
TONICELLA MARMOREA (FABRICIUS, 1780)
TONICELLA RUBRA (LINNAEUS, 1767)

ARCTIC SPECIES LIST

PHYLUM MOLLUSCA

CEPHALOPODA

BENTHOCTOPUS HOKKAIDENSIS (BERRY, 1921)
GONATUS FABRICII (LICHENSTEIN, 1818)
OCTOPUS ARCTICUS PROSCH, 1847

ARCTIC SPECIES LIST

PHYLUM MOLLUSCA

GASTROPODA--OPISTHOBRANCHIA

AEOLIDIA PAPILLOSA (LINNAEUS, 1761)
ALDISA ZETLANDICA (ALDER + HANCOCK, 1854)
CORYPHELLA SALMONACEA (COUTHOUY, 1839)
C * CYLICHNA ALBA (BROWN, 1827)
C * CYLICHNA OCCULTA MIGHELS + ADAMS, 1842
DENDRONOTUS DALLI BERGH, 1879
DENDRONOTUS FRONDOSUS (ASCANIUS, 1774)
C * DIAPHANA MINUTA BROWN, 1827
* HAMINOEA SOLITARIA (SAY, 1822)
ODOSTOMIA CASSANDRA DALL + BARTSCH, 1913
C * PHILINE FINMARCHICA M. SARS, 1878
C * PHILINE LIMA (BROWN, 1827)
C * PHILINE PRUINOSA (CLARK, 1827)
C * RETUSA OBTUSA (MONTAGU, 1807)
RETUSA UMBILICATA (MONTAGU, 1803)

ARCTIC SPECIES LIST

PHYLUM MOLLUSCA

GASTROPODA--PROSOBRANCHIA

ACMAEA RUBELLA (FABRICIUS, 1780)
ACMAEA TESTUDINALIS (MULLER, 1776)
C * ADMETE COUTHOUYI (JAY, 1839)
ADMETE REGINA DALL, 1911
* ALVANIA CRUENTA
C * ALVANIA JANMAYENI (FRIELE, 1878)
ALVANIA KAPLINI CLARKE, 1963
ALVANIA WYVILLETHOMSONI (FRIELE, 1877)
C * AMAUROPSIS PURPUREA DALL, 1871
AQUILONARIA TURNERI DALL, 1887
C * BERINGIUS BEHRINGII (MIDDENDORFF, 1848)
BERINGIUS MALLEATUS (DALL, 1884)
BERINGIUS STIMPSONI (GOULD, 1860)
BOREOTROPHON BERINGI (DALL, 1902)
C * BOREOTROPHON CLATHRATUS (LINNAEUS, 1758)
C * BOREOTROPHON MURICIFORMIS (DALL, 1877)
* BOREOTROPHON PACIFICUS (DALL, 1902)
BOREOTROPHON TRUNCATUS STROM, 1768
C * BUCCINUM ANGULOSUM GRAY, 1839
BUCCINUM CILIATUM FABRICIUS, 1780
BUCCINUM CYANEUM (BRUGUIERE, 1792)
BUCCINUM FRINGILLUM DALL, 1877
C * BUCCINUM GLACIALE LINNAEUS, 1761
BUCCINUM HYDROPHANUM HANCOCK, 1846
BUCCINUM MALTZANI PFEFFER, 1886
BUCCINUM MOERCHI FRIELE, 1877
BUCCINUM NORMALE DALL, 1885
BUCCINUM ONISMATOPLEURA DALL, 1919
C * BUCCINUM PLECTRUM STIMPSON, 1865
BUCCINUM PHYSEMATUM DALL, 1919
BUCCINUM POLARE GRAY, 1839
C * BUCCINUM SCLARIFORME MOLLER, 1843
* BUCCINUM TENUE GRAY, 1839
BUCCINUM UNDATUM LINNAEUS, 1758
BULBUS SMITHII (BROWN, 1839)
CAPULACMAEA RADIATA (M. SARS, 1851)
* CINGULA CASTANEA (MOLLER, 1842)
CINGULA MOERCHI COLLIN, 1887
COLUS CAPPONIUS (DALL, 1919)
COLUS (ANOMALOSIPHO) DAUTZENBERGII (DALL, 1916)
COLUS ESYCHUS (DALL, 1907)
COLUS HUNKINSI CLARKE, 1962
COLUS (ANOMALOSIPHO) MARTENSI (KRAUSE, 1885)
C * COLUS PUBESCENS (VERRILL, 1882)
C * COLUS ROSEUS (DALL, 1877)
C * COLUS SPITZBERGENSIS (REEVE, 1855)
C * COLUS TOGATUS (MORCH, 1869)

ARCTIC SPECIES LIST

		CREPIDULA GRANDIS MIDDENDORFF, 1849
C	*	EPITONIUM GREENLANDICUM (PERRY, 1811)
	*	HYDROBIA TOTTENI MORRISON, 1954
C	*	LEPETA CAECA (MULLER, 1776)
		MARGARITES AVENOSOOKI MACGINITIE, 1959
C	*	MARGARITES COSTALIS (GOULD, 1841)
		MARGARITES FRIGIDUS DALL, 1919
C	*	MARGARITES GIGANTEUS (LECHE, 1878)
C	*	MARGARITES HELICINUS (PHIPPS, 1774)
	*	MARGARITES OLIVACEUS (BROWN, 1827)
		MARGARITES PRIBILOFFENSIS DALL, 1919
		MARGARITES UMBILICALIS (BRODERIP + SOWERBY, 1829)
		MARGARITES VAHLI (MOLLER, 1842)
C	*	MARGARITES VORTICIFERA (DALL, 1873)
C	*	MARSENINA GLABRA (COUTHOUY, 1838)
		MOELLERIA COSTULATA (MOLLER, 1842)
C	*	NATICA CLAUSA BRODERIP + SOWERBY, 1829
		NEPTUNEA BERINGIANA (MIDDENDORFF, 1849)
C	*	NEPTUNEA HEROS (GRAY, 1850)
		NEPTUNEA LYRATA (GMELIN, 1791)
C	*	NEPTUNEA VENTRICOSA (GMELIN, 1791)
C	*	OENOPOTA ARCTICA (ADAMS, 1855)
C	*	OENOPOTA BICARINATA (COUTHOUY, 1838)
		OENOPOTA CINEREA (MOLLER, 1842)
C	*	OENOPOTA DECUSSATA (COUTHOUY, 1839)
C	*	OENOPOTA ELEGANS (MOLLER, 1842)
C	*	OENOPOTA HARPA (DALL, 1885)
		OENOPOTA HARPULARIA (COUTHOUY, 1838)
C	*	OENOPOTA IMPRESSA (MORCH, 1869)
	*	OENOPOTA INCISULA (VERRILL, 1882)
C	*	OENOPOTA INEQUITA (DALL, 1919)
		OENOPOTA NAZANENSIS (DALL, 1919)
C	*	OENOPOTA NOVAJASEMLIENSIS (LECHE, 1878)
		OENOPOTA OBLIQUA (G. SARS, 1878)
		OENOPOTA PYRAMIDALIS (STROM, 1788)
C	*	OENOPOTA RETICULATA (BROWN, 1827)
		OENOPOTA TENUICOSTATA (G. SARS, 1878)
	*	OENOPOTA TURRICULA (MONTAGU, 1803)
		ONCHIDIOPSIS GLACIALIS (M. SARS, 1851)
		PLICIFUSUS JOHANSENI DALL, 1919
C	*	PLICIFUSUS KROYERI (MOLLER, 1842)
		PLICIFUSUS VERKRUZENI (KOBELT, 1876)
C	*	POLINICES PALLIDUS (BRODERIP + SOWERBY, 1829)
C	*	PROPEBELA GOULDII (VERRILL, 1882)
		PROPEBELA MITRULA (DALL, 1919)
		PROPEBELA MURDOCHIANA (DALL, 1885)
		PROPEBELA TENUILIRATA (DALL, 1871)
C	*	PTYCHATRACTUS OCCIDENTALIS STEARNS, 1873
		PUNCTURELLA NOACHINA (LINNAEUS, 1771)
C	*	SOLARIELLA OBSCURA (COUTHOUY, 1838)
C	*	SOLARIELLA VARICOSA (MIGHELS + ADAMS, 1842)
C	*	TACHYRHYNCHUS EROSUS (COUTHOUY, 1838)

ARCTIC SPECIES LIST

C * TACHYRHYNCHUS RETICULATUS (MIGUELS + ADAMS, 1842)
TARANIS AMOENA (SARS, 1878)
TRICHOTROPIS BICARINATA (SOWERBY, 1825)
C * TRICHOTROPIS BOREALIS BRODERIP + SOWERBY, 1829
TRICHOTROPIS KROYERI PHILIPPI, 1848
TRIPHORA PERVERSA (LINNAEUS, 1758)
TURRITELLOPSIS ACICULA (STIMPSON, 1851)
VELUTINA LANIGERA MOLLER, 1842
C * VELUTINA PLICATILIS (MULLER, 1776)
C * VELUTINA UNDATA (BROWN, 1839)
C * VELUTINA VELUTINA (MULLER, 1776)
VOLUTOPSIUS BEHRINGI (MIDDENDORFF, 1849)
C * VOLUTOPSIUS CASTANEAS (MORCH, 1858)
C * VOLUTOPSIUS (PYRULOFUSUS) DEFORMIS (REEVE, 1847)
VOLUTOPSIUS STEFANSSONI DALL, 1919

ARCTIC SPECIES LIST

PHYLUM MOLLUSCA

PELECYPODA

ASTARTE (ASTARTE) ALASKENSIS DALL, 1903
C * ASTARTE (TRIDONTA) BOREALIS (SCHUMACHER, 1817)
C * ASTARTE (ASTARTE) CRENATA (GRAY, 1824)
C * ASTARTE (RICTOCYMA) ESQUIMALTI (BAIRD, 1863)
C * ASTARTE (TRIDONTA) MONTAGUI (DILLWYN, 1817)
ASTARTE (ASTARTE) POLARIS DALL, 1903
* ASTARTE VERNICOSA DALL, 1903
* AXINOPSIDA ORBICULATA (G. SARS, 1878)
AXINOPSIDA SERRICATA (CARPENTER, 1864)
BATHYARCA FRIELEI (FRIELE, 1877)
C * BATHYARCA GLACIALIS (GRAY, 1824)
C * BATHYARCA RARIDENTATA (WOOD, 1840)
CHLAMYS ISLANDICA (MULLER, 1776)
CHLAMYS RUBIDA (HINDS, 1845)
C * CLINOCARDIUM CILIATUM (FABRICIUS, 1780)
C * CRENELLA DECUSSATA (MONTAGU, 1808)
C * CUSPIDARIA GLACIALIS (G. SARS, 1878)
C * CUSPIDARIA SUBTORTA (G. SARS, 1878)
CYCLOCARDIA BOREALIS (CONRAD, 1831)
CYCLOCARDIA CRASSIDENS (BRODERIP + SOWERBY, 1829)
C * CYCLOCARDIA (CYCLOCARDIA) CREBRICOSTATA (KRAUSE, 1885)
C * CYCLOPECTEN GREENLANDICUS (SOWERBY, 1842)
C * CYRTODARIA KURRIANA DUNKER, 1862
C * DACRYDIUM (DACRYDIUM) VITREUM (MOLLER, 1842)
DIPLODONTA ALEUTICA DALL, 1901
C * HIATELLA ARCTICA (LINNAEUS, 1767)
HYALOPECTEN FRIGIDUS (JENSEN, 1912)
LIOCYMA BECKII DALL, 1870
C * LIOCYMA FLUCTUOSA (GOULD, 1841)
C * LIMATULA HYPERBOREA JENSEN, 1905
C * LIOCYMA VIRIDIS DALL, 1871
C * LYONSIA (LYONSIA) ARENOSA (MOLLER, 1842)
LYONSIA NORWEGICA (GMELIN, 1790)
C * LYONSIELLA (POLICORDIA) USCHAKOVI GORBUNOV, 1946
C * MACOMA BALTHICA (LINNAEUS, 1758)
C * MACOMA (MACOMA) CALCAREA (GMELIN, 1791)
MACOMA LAMA BARTSCH, 1929
C * MACOMA (MACOMA) LOVENI (JENSEN, 1905)
MACOMA MIDDENDORFFI DALL, 1884
C * MACOMA (MACOMA) MOESTA (DESHAYES, 1855)
MACOMA MOESTA ALASKANA DALL, 1900
MACOMA OBLIQUA (SOWERBY, 1817)
* MACOMA TORELLI (STEENSTRUP, 1882)
C * MALLETIA ABYSSOPOLARIS CLARKE, 1960
C * MONTACUTA DAWSONI JEFFEREYS, 1863
C * MUSCULUS (MUSCULUS) DISCORS (LINNAEUS, 1767)
C * MUSCULUS (MUSCULUS) CORRUGATUS (STIMPSON, 1851)

ARCTIC SPECIES LIST

```
C  * MUSCULUS (MUSCULUS) NIGER  (GRAY, 1824)
     MYA ELEGANS  (EICHWALD, 1871)
     MYA JAPONICA  JAY, 1856
C  * MYA (MYA) PSEUDOARENARIA  SCHLESCH, 1931
C  * MYA (MYA) TRUNCATA  LINNAEUS, 1758
C  * MYSELLA MALTZANI  VERKRUZEN, 1876
C  * MYSELLA (MYSELLA) PLANATA  (DALL, 1885)
C  * MYSELLA (ROCHEFORTIA) TUMIDA  (CARPENTER, 1864)
C  * MYTILUS ECULIS  LINNAEUS, 1758
     NEAEROMYA COMPRESSA  (DALL, 1899)
C  * NUCULA (LEIONUCULA) BELLOTII  ADAMS, 1856
   * NUCULA TENUIS  (MONTAGU, 1908)
C  * NUCULA (NUCULA) ZOPHOS  CLARKE, 1960
C  * NUCULANA (NUCULANA) MINUTA  (FABRICIUS, 1776)
C  * NUCULANA (NUCULANA) PEPNULA  (MULLER, 1779)
C  * NUCULANA (NUCULANA) RADIATA  (KRAUSE, 1885)
C  * PANDORA (PANDORELLA) GLACIALIS  LEACH, 1819
     PANOMYA AMPLA  DALL, 1898
     PANOMYA ARCTICA  (LAMARCK, 1818)
     PENITELLA GABBI  (TRYON, 1863)
   * PERIPLOMA ABYSSORUM  BUSH, 1893
C  * PORTLANDIA (PORTLANDIA) ARCTICA  (GRAY, 1824)
C  * PORTLANDIA (YOLDIELLA) FRIGIDA  (TORELL, 1859)
C  * PORTLANDIA (YOLDIELLA) FRATERNA  (VERRILL + BUSH, 1898)
     PORTLANDIA GLACIALIS  (GRAY, 1828)
C  * PORTLANDIA (YOLDIELLA) INTERMEDIA  (M. SARS, 1865)
C  * PORTLANDIA (YOLDIELLA) LENTICULA  (MOLLER, 1842)
C  * PORTLANDIA (LEDELLA) TAMARA  GORBUNOV, 1946
C  * SERRIPES GROENLANDICUS  (BRUGUIERE, 1789)
     THRACIA (LAMPEIA) ADAMSI  MACGINITIE, 1959
C  * THRACIA (THRACIA) DEVEXA  G. SARS, 1878
C  * THRACIA (THRACIA) MYOPSIS  MOLLER, 1842
   * THYASIRA (THYASIRA) EQUALIS  (VERRILL + BUSH, 1898)
C  * THYASIRA (THYASIRA) GOULDII  (PHILIPPI, 1845)
C  * YOLDIA (YOLDIA) HYPERBOREA  TORELL, 1859
     YOLDIA LIMATULA  (SAY, 1831)
   * YOLDIA (YOLDIA) MYALIS  (COUTHOUY, 1838)
C  * YOLDIA (CNESTERIUM) SCISSURATA  DALL, 1897
```

ARCTIC SPECIES LIST

PHYLUM MOLLUSCA

SCAPHOPODA

* SIPHONODENTALIUM LOBATUM (SOWERBY, 1860)

ARCTIC SPECIES LIST

PHYLUM NEMERTINEA

AMPHIPORUS ANGULATUS (FABRICIUS, 1774)
AMPHIPORUS FORMIDABILIS GRIFFIN, 1898
AMPHIPORUS GROENLANDICUS (OERSTED, 1844)
AMPHIPORUS IMPARISPINOSUS GRIFFIN, 1898
AMPHIPORUS LACTIFLOREUS (JOHNSTON, 1828)
AMPHIPORUS MACRANTHUS COE, 1905
AMPHIPORUS PACIFICUS COE, 1905
CEREBRATULUS FUSCUS (MCINTOSH, 1873)
CEREBRATULUS MARGINATUS RENIER, 1804
EMPLECTONEMA GRACILE (JOHNSTON, 1837)
LINEUS RUBER (MULLER, 1771)
MICRURA ALASKENSIS COE, 1901
MICRURA IMPRESSA (STIMPSON, 1857)
MICRURA PURPUREA (DALYELL, 1853)
NEMERTOPSIS GRACILIS COE, 1904
PARANEMERTES PEREGRINA COE, 1901
TETRASTEMMA ABERRANS COE, 1901
TETRASTEMMA BICOLOR COE, 1901
TETRASTEMMA CANDIDUM (MULLER, 1774)
TETRASTEMMA CORONATUM (QUATREFAGES, 1846)
TUBULANUS ALBOCINCTUS (COE, 1904)
TUBULANUS ANNULATUS (MONTAGU, 1804)
TUBULANUS CAPISTRATUS (COE, 1901)
TUBULANUS FRENATUS (COE, 1904)

ARCTIC SPECIES LIST

PHYLUM PLATYHELMINTHES

ACEROTISA ARCTICA HYMAN, 1953
NOTOPLANA ATOMATA (MULLER, 1776)

ARCTIC SPECIES LIST

PHYLUM PORIFERA

APLYSILLA GLACIALIS (MERCJKOWSKY, 1878)
CAULOPHACUS ARCTICUS HANSEN, 1885
CHOANITIES LUTKENII (SCHMIDT, 1870)
CLADORHIZA ARCTICA BURTON, 1946
CLADORHIZA GELIDA LUNDBECK, 1905
CRANIELLA CRANIANA DE LAUBENFELS, 1953
ECHINOCLATHRIA BERINGENSIS (HENTSCHEL, 1929)
FORCEPIA TOPSENTI LUNDBECK, 1905
GEODIA PHLEGRAEI (SOLLAS, 1880)
HALICHONDRIA LAMBEI BRONDSTED, 1933
* HALICLONA GRACILIS (MIKLUCHO-MACLAY, 1870)
* HALICLONA RUFESCENS (LAMBE, 1893)
LEUCONIA ALASKENSIS DE LAUBENFELS, 1953
LEUCONIA ANALAS (MONTAGU, 1818)
MYXILLA INCRUSTANS (JOHNSTON, 1842)
PELLINA SITIENS (SCHMIDT, 1870)
PHAKELLIA VARIABILIS (VOSMAER, 1882)
POLYMASTIA ANDRICA DE LAUBENFELS, 1949
POLYMASTIA SOL (SCHMIDT)
TENTORIUM SEMISUBERITES (SCHMIDT, 1870)
THENEA ABYSSORUM KOLTUN, 1964
TOPSENTIA DISPARILIS (LAMBE, 1894)
WIGGINSIA WIGGINSI DE LAUBENFELS, 1953

ARCTIC SPECIES LIST

PHYLUM PRIAPULIDA

* HALICRYPTUS SPINULOSUS VON SIEBOLD, 1849
* PRIAPULUS BICAUDATUS DANIELSSEN, 1868
* PRIAPULUS CAUDATUS LAMARCK, 1816
PRIAPULUS HUMANUS (LINNAEUS, 1758)

ARCTIC SPECIES LIST

PHYLUM PROTOZOA

FORAMINIFERIDA

ADERCOTRYMA GLOMERATUM (BRADY, 1878)
ALVEOLOPHRAGMIUM CRASSIMARGO (NORMAN, 1892)
ALVEOLOPHRAGMIUM JEFFREYSI (WILLIAMSON, 1858)
AMMOTIUM CASSIS (PARKER, 1870)
ANGULOGERINA FLUENS TODD, 1947
ASTACOLUS HYALACRULUS LOEBLICH + TAPPAN, 1953
ASTRONONION GALLOWAYI LOEBLICH + TAPPAN, 1953
BUCCELLA FRIGIDA (CUSHMAN, 1922)
BUCCELLA INUSITATA ANDERSEN, 1952
BULIMINA EXILIS BRADY, 1884
BULIMINA PYRULA D ORBIGNY, 1846
CASSIDULINA ISLANDICA NORVANG, 1945
CASSIDULINA CRASSA D ORBIGNY, 1839
CASSIDULINA LAEVIGATA D ORBIGNY, 1826
CASSIDULINA NORCROSSI CUSHMAN, 1933
CASSIDULINA TERETIS TAPPAN, 1951
CORNUSPIRA FOLIACEA (PHILIPPI, 1844)
CORNUSPIRA INVOLVENS (REUSS, 1850)
DENTALINA BAGGI GALLOWAY + WISSLER, 1927
DENTALINA FROBISHERENSIS LOEBLICH + TAPPAN, 1953
DENTALINA ITTAI LOEBLICH + TAPPAN, 1953
EGGERELLA ADVENA (CUSHMAN, 1922)
ELPHIDIELLA ARCTICA (PARKER + JONES, 1864)
ELPHIDIELLA GROENLANDICA (CUSHMAN, 1933)
ELPHIDIUM BARTLETTI CUSHMAN, 1933
ELPHIDIUM CLAVATUM CUSHMAN, 1930
ELPHIDIUM FRIGIDUM CUSHMAN, 1933
ELPHIDIUM ORBICULARE (BRADY, 1881)
ELPHIDIUM SUBARCTICUM CUSHMAN, 1944
FISSURINA CUCURBITASEMA LOEBLICH + TAPPAN, 1953
FISSURINA LUCIDA (WILLIAMSON, 1848)
FISSURINA MARGINATA (MONTAGU, 1803)
FISSURINA SEMIMARGINATA (REUSS, 1870)
FISSURINA SERRATA (SCHLUMBERGER, 1894)
FISSURINA VENTRICOSA (WIESNER, 1931)
GLANDULINA LAEVIGATA D ORBIGNY, 1826
GLOBOBULIMINA AURICULATA ARCTICA HOGLUND, 1947
GORDIOSPIRA ARCTICA CUSHMAN, 1933
HIPPOCREPINA INDIVISA PARKER, 1870
LAGENA APIOPLEURA LOEBLICH + TAPPAN, 1953
LAGENA FLATULENTA LOEBLICH + TAPPAN, 1953
LAGENA GRACILLIMA (SEQUENZA, 1862)
LAGENA LAEVIGATA (REUSS, 1849)
LAGENA LAEVIS (MONTAGU, 1803)
LAGENA MOLLIS CUSHMAN, 1944
LAGENA SEMILINEATA WRIGHT, 1886
LAGENA SETIGERA MILLETT, 1901

ARCTIC SPECIES LIST

LARYNGOSIGMA HYALASCIDIA LOEBLICH + TAPPAN, 1953
LARYNGOSIGMA WILLIAMSONI (TERQUEM, 1878)
MILIOLINELLA CHUKCHIENSIS LOEBLICH + TAPPAN, 1953
NODOSARIA AEQUALIS (REUSS, 1863)
NODOSARIA EMPHYSAOCYTA LOEBLICH + TAPPAN, 1953
NONION LABRADORICUM (DAWSON, 1860)
NONIONELLA AURICULA HERON-ALLEN + EARLAND, 1930
OOLINA CAUDIGERA (WIESNER, 1931)
OOLINA COSTATA (WILLIAMSON, 1858)
OOLINA HEXAGONA (WILLIAMSON, 1848)
OOLINA LINEATO-PUNCTATA (HERON-ALLEN + EARLAND, 1922)
OOLINA MELO D ORBIGNY, 1839
OOLINA SQUAMOSA (MONTAGU, 1893)
OOLINA STRIATOPUNCTATA (PARKER + JONES, 1865)
PARAFISSURINA HIMATIOSTOMA LOEBLICH + TAPPAN, 1953
PATELLINA CORRUGATA WILLIAMSON, 1858
PATEORIS HAUERINOIDES (RHUMBLER, 1936)
POLYMORPHINA LANCEOLATA REUSS, 1851
PROTOSCHISTA FINGENS (PARKER, 1870)
PYRGO WILLIAMSONI (SILVESTRI, 1923)
QUINQUELOCULINA AGGLUTINATA CUSHMAN, 1917
QUINQUELOCULINA ARCTICA CUSHMAN, 1933
QUINQUELOCULINA STALKERI LOEBLICH + TAPPAN, 1953
RECURVOIDES TURBINATUS (BRADY, 1881)
REOPHAX ARCTICA BRADY, 1881
REOPHAX CURTUS CUSHMAN, 1920
REOPHAX SCORPIURUS MONTFORT, 1808
ROBERTINOIDES CHARLOTTENSIS (CUSHMAN, 1925)
SCUTULORIS TEGMINIS LOEBLICH + TAPPAN, 1953
SPIROPLECTAMMINA BIFORMIS (PARKER + JONES, 1865)
TEXTULARIA TORQUATA PARKER, 1952
TRILOCULINA TRIHEDRA LOEBLICH + TAPPAN, 1953
TROCHAMMINA NANA (BRADY, 1881)
TROCHAMMINA ROTALIFORMIS WRIGHT, 1911
TRUNCATULINA LOBATULA WALKER + JACOB, 1798
TRUNCATULINA PYGMOEA HANTKEN, 1875

ARCTIC SPECIES LIST

PHYLUM SIPUNCULIDA

* GOLFINGIA MARGARITACEA (SARS, 1851)
* PHASCOLION STROMBI (MONTAGU, 1804)

FINAL REPORT

Contract No. 03-5-022-68
Task Order No. 4
1 April 1975 - 31 March 1976

Summarization of existing literature and unpublished data on the distribution, abundance, and life histories of benthic organisms

Andrew G. Carey, Jr., Principal Investigator
School of Oceanography
Oregon State University
Corvallis, Oregon 97331

1 January 1977

TABLE OF CONTENTS

VOLUME III Part A.

SPECIES DISTRIBUTION

Distributional information has been included for 370 benthic organisms representing the following invertebrate groups:

Annelida	-Polychaeta
Arthropoda	-Amphipoda Copepoda (Harpacticoida) Cumacea Decapoda Isopoda
Echinodermata	-Asteroidea Crinoidea Echinoidea Holothuroidea Ophiuroidea
Mollusca	-Gastropoda Pelecypoda

Only the benthic invertebrates reported by investigators currently active in the Beaufort Sea were selected for plotting on distribution charts. These organisms include those collected by:

Dr. A.G. Carey, Jr. Oregon State University
-continental shelf and slope stations between Cape Halkett and Barter Island

Dr. H.M. Feder, University of Alaska
-Prudhoe Bay area

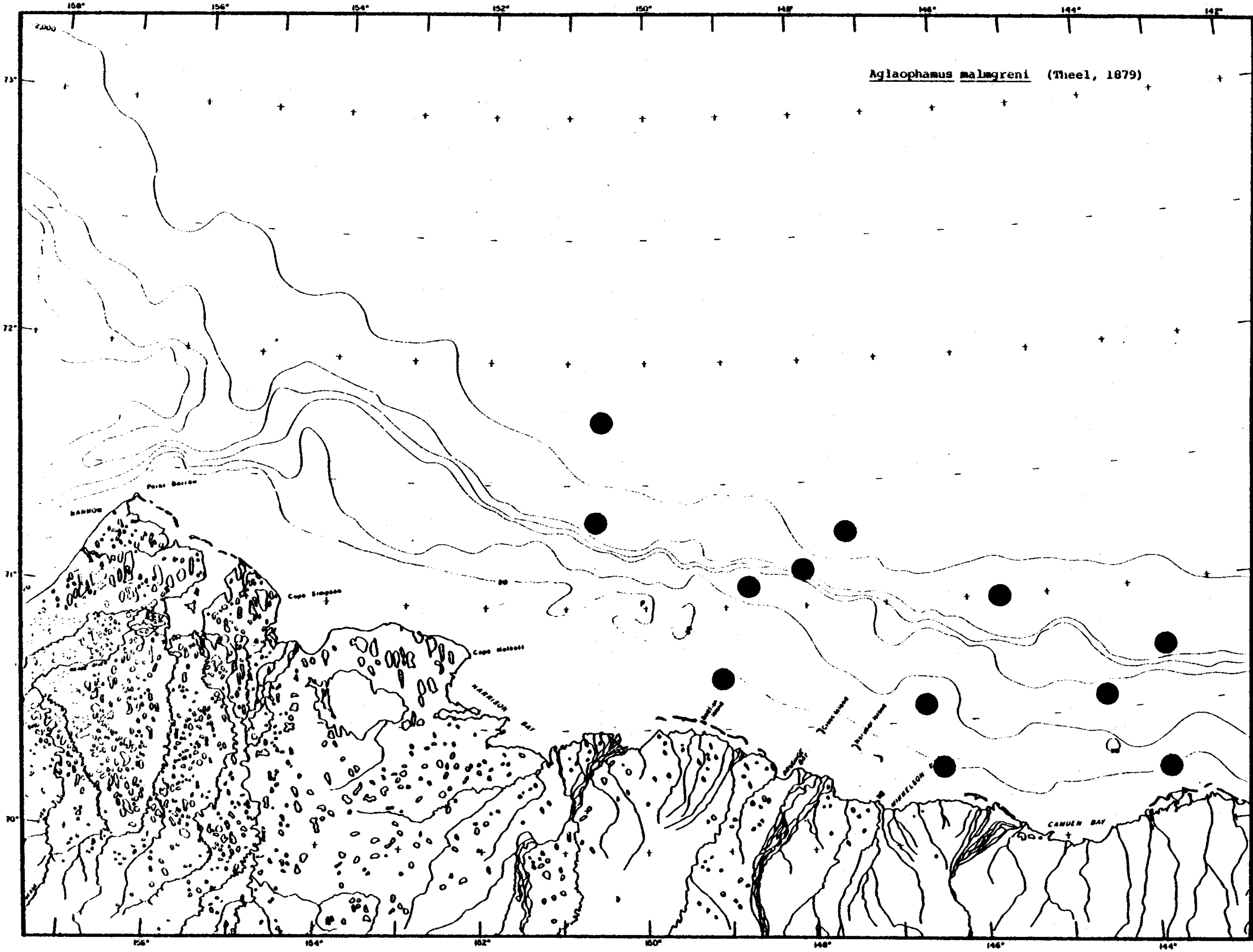
Dr. J.W. Wacasey, Dept. of Environment, Canada
-Eskimo Lakes region

Additional distributional information has been incorporated, however, for those invertebrates which have also been found by the University of Alaska around the Colville River delta, or which have been reported from collections made by Dr. G.E. MacGinitie near the Naval Arctic Research Laboratory at Point Barrow.

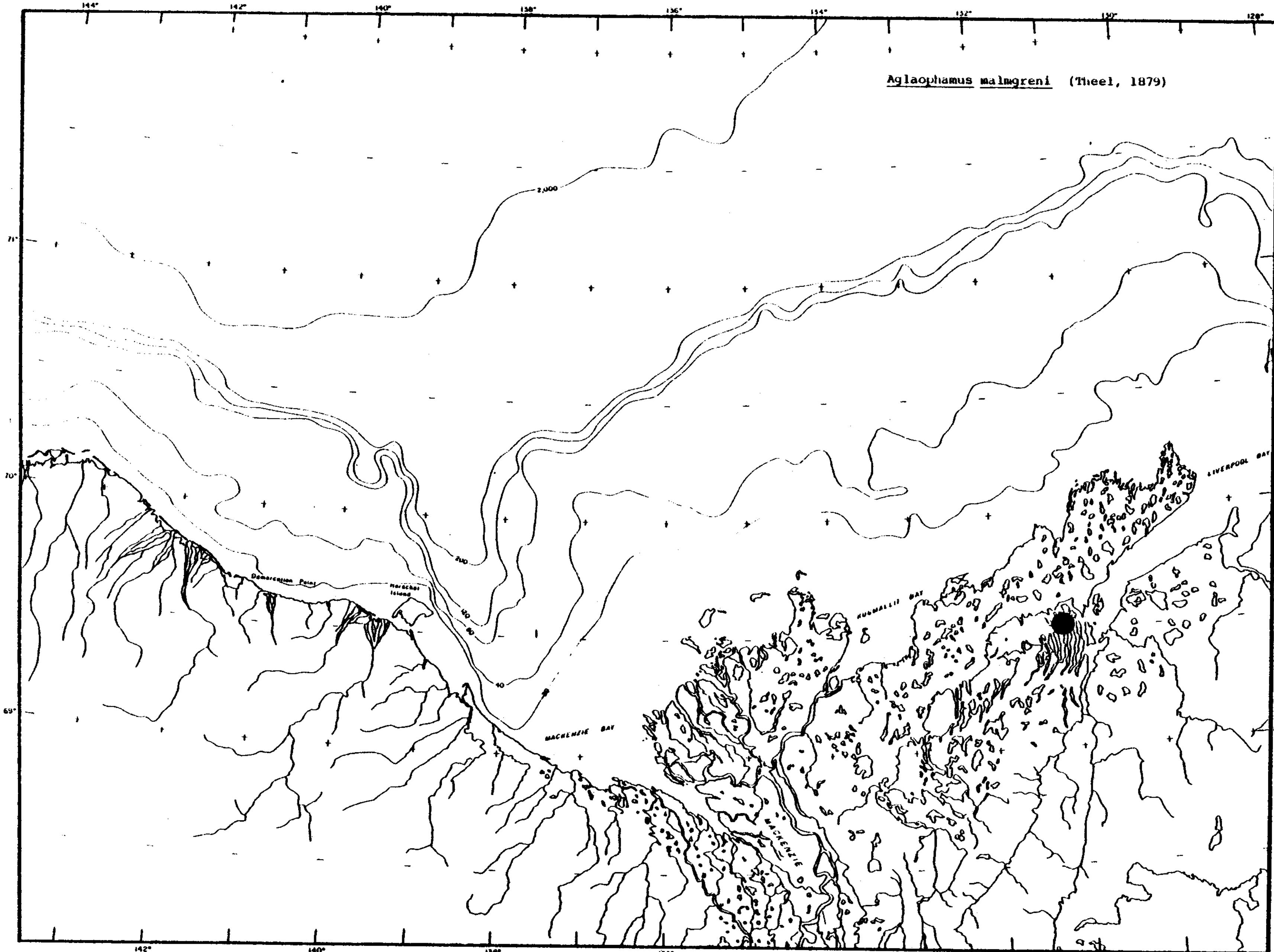
The organisms which have distribution charts have been indicated on the species list with a capital "C" preceeding the species name.

Species Distributions:

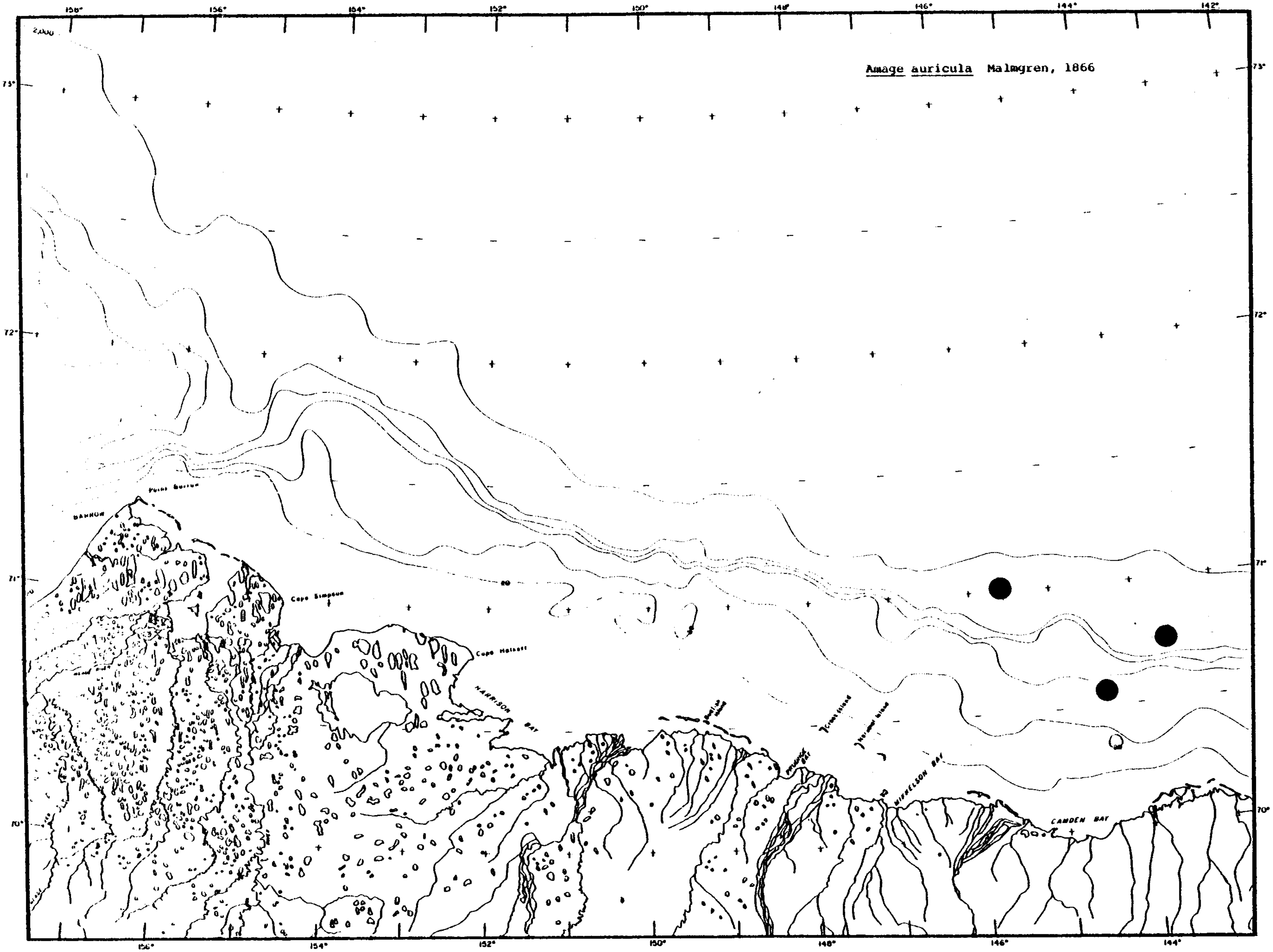
Annelida -- Polychaeta

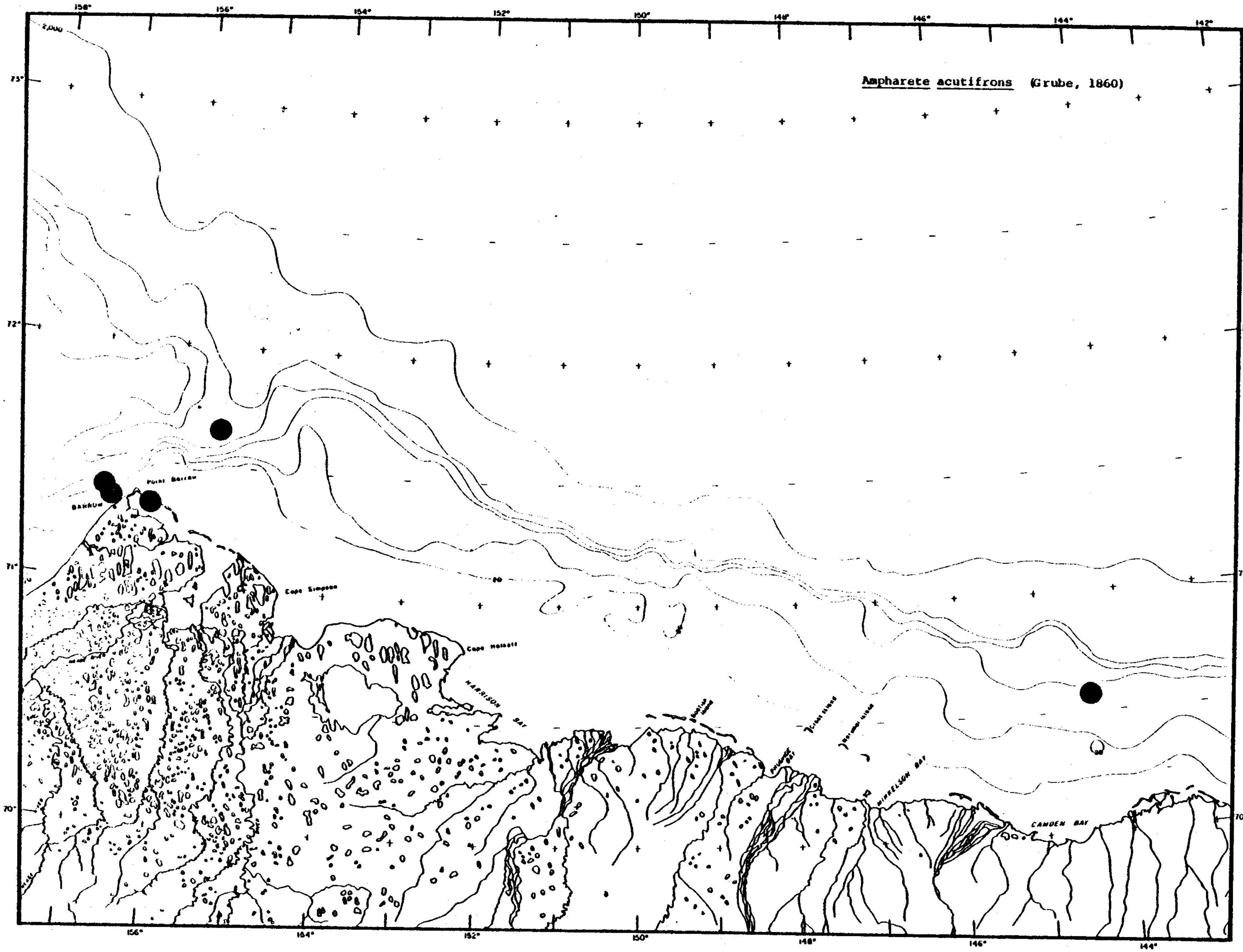


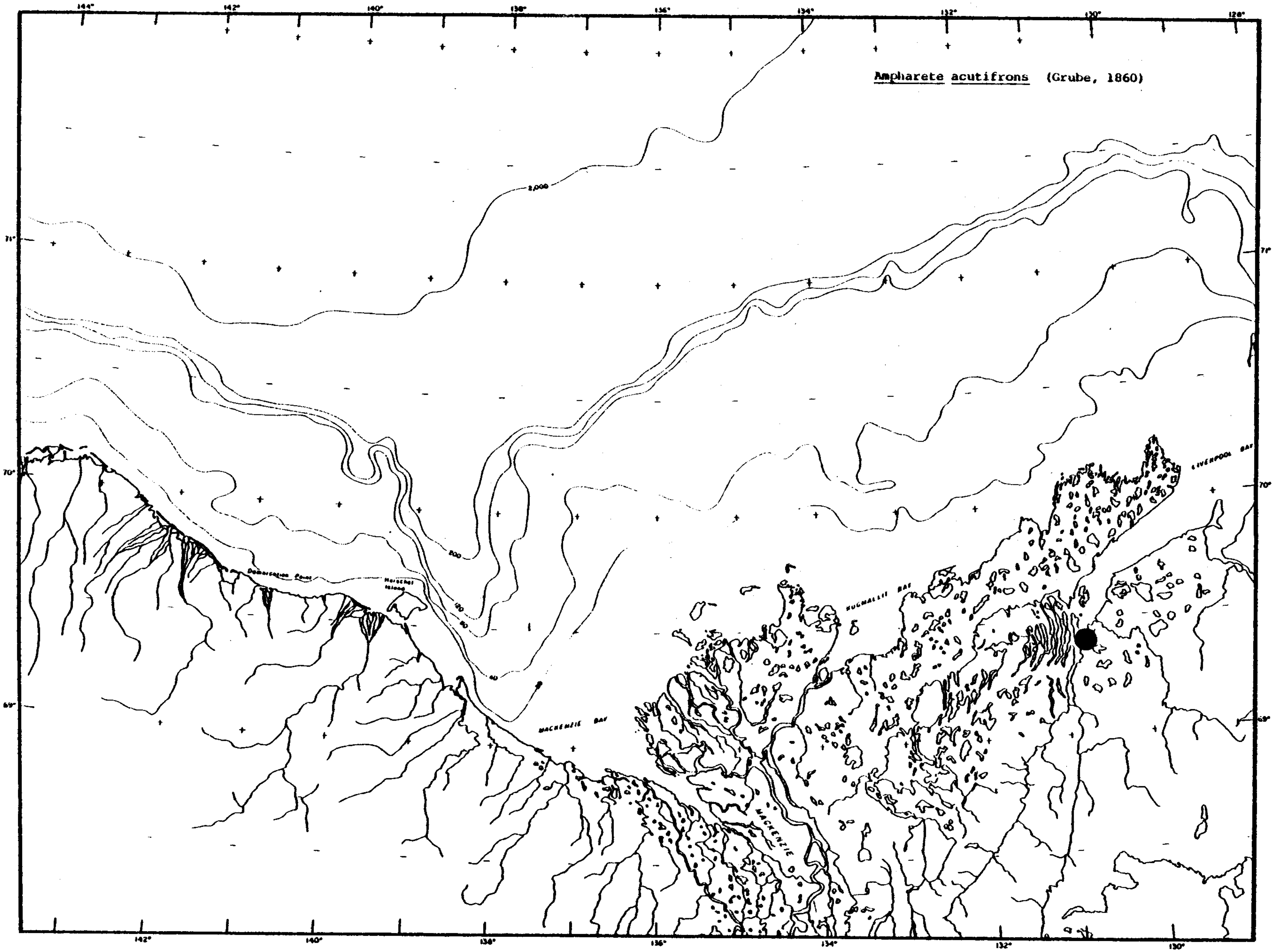
Aglaophamus malmgreni (Theel, 1879)

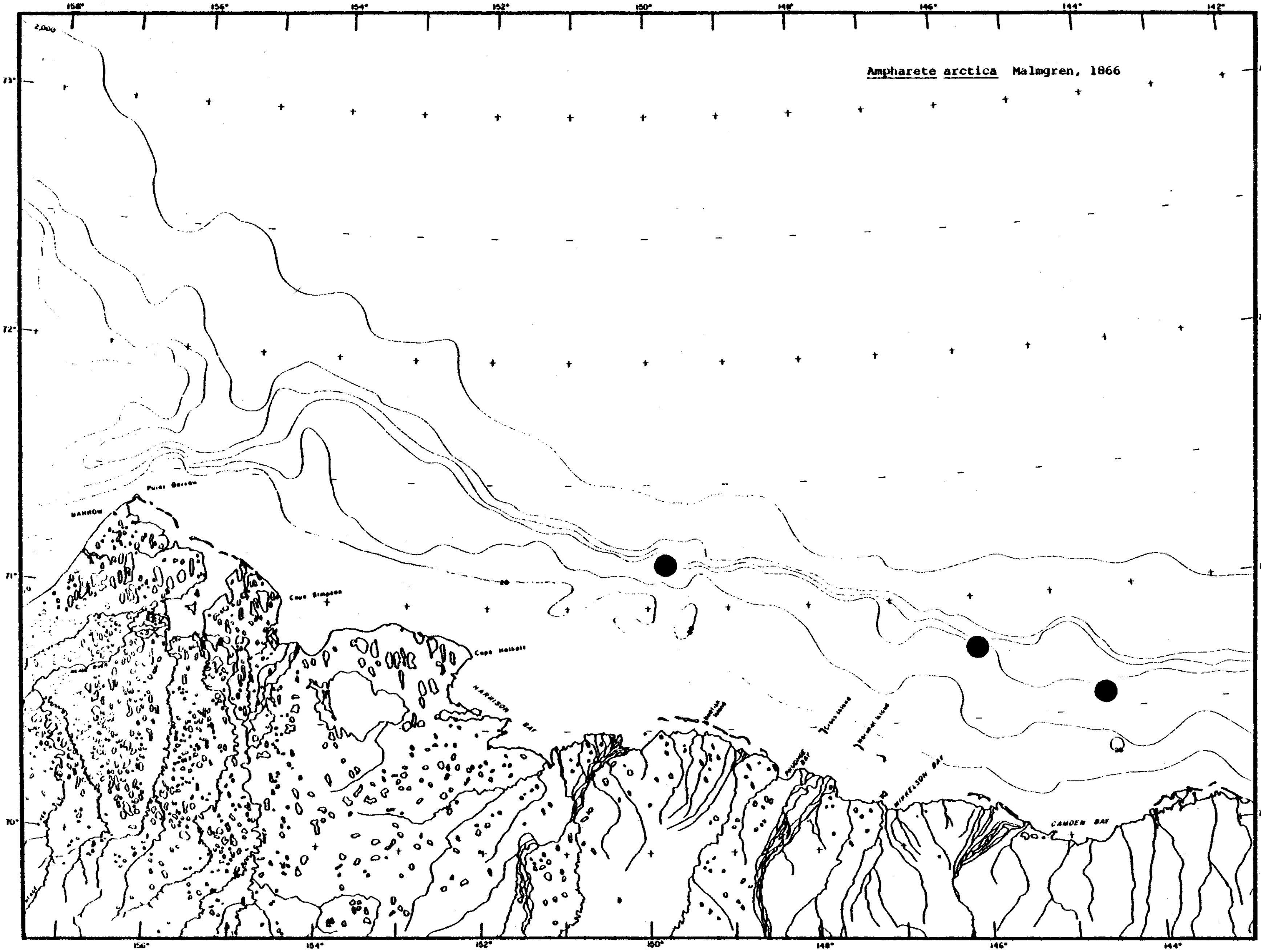

Aglaophamus malmgreni (Theel, 1879)
2,000
200
120
80
40
Demarcation Point
Herschel Island
MACKENZIE BAY
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE
144°
142°
140°
138°
136°
134°
132°
130°
128°
71°
70°
69°

4


Amage auricula Malmgren, 1866
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
BARROW
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Ampharete acutifrons (Grube, 1860)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Mikkelson Bay
Camden Bay


Ampharete acutifrons (Grube, 1860)
144°
142°
140°
138°
136°
134°
132°
130°
128°
71°
70°
69°
2,000
Demarcation Point
Herschel Island
MACKENZIE BAY
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE


Ampharete arctica Malmgren, 1866
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
73°
72°
71°
70°
158°
156°
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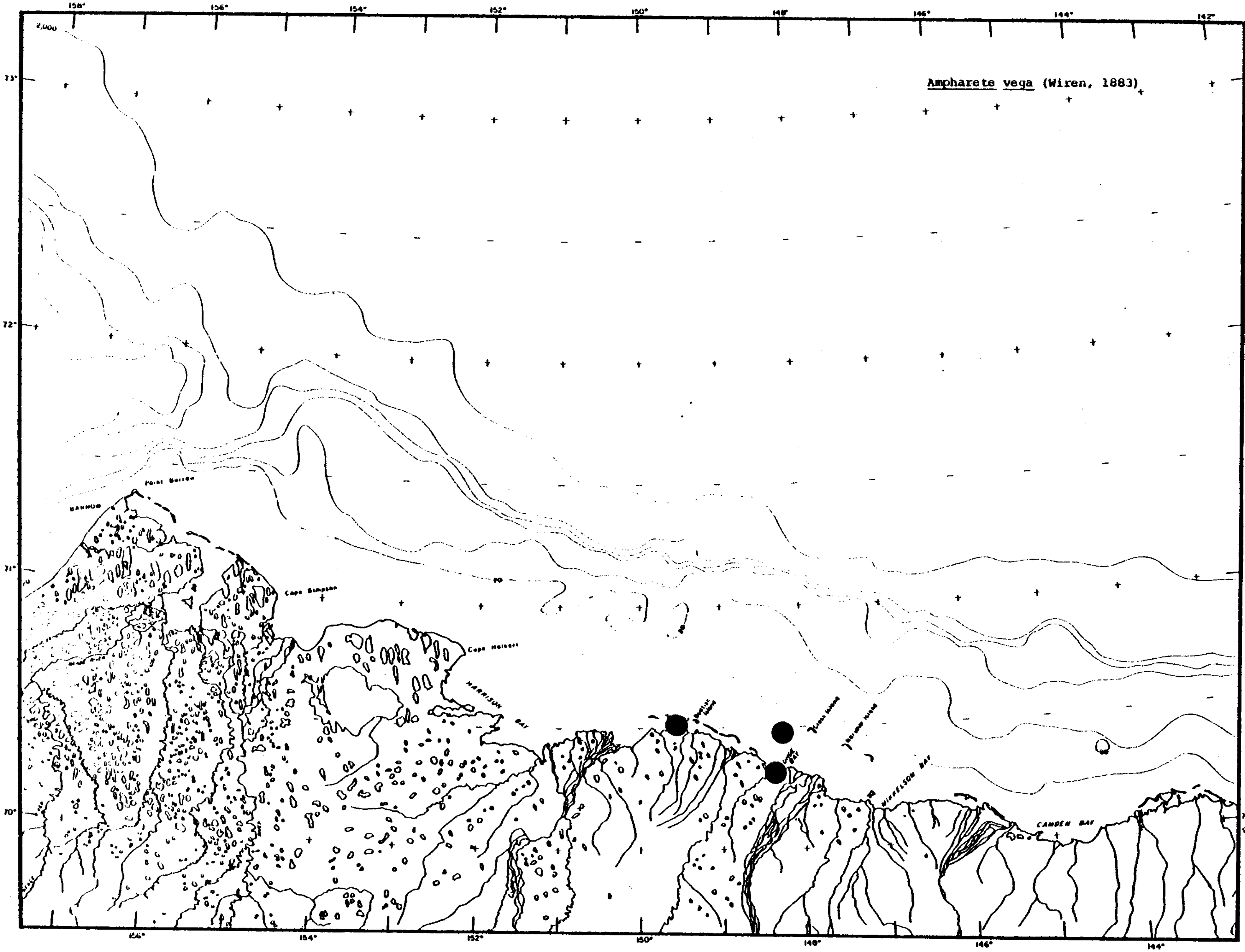
152°
150°
148°
146°
144°
142°


Ampharete vega (Wiren, 1883)
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
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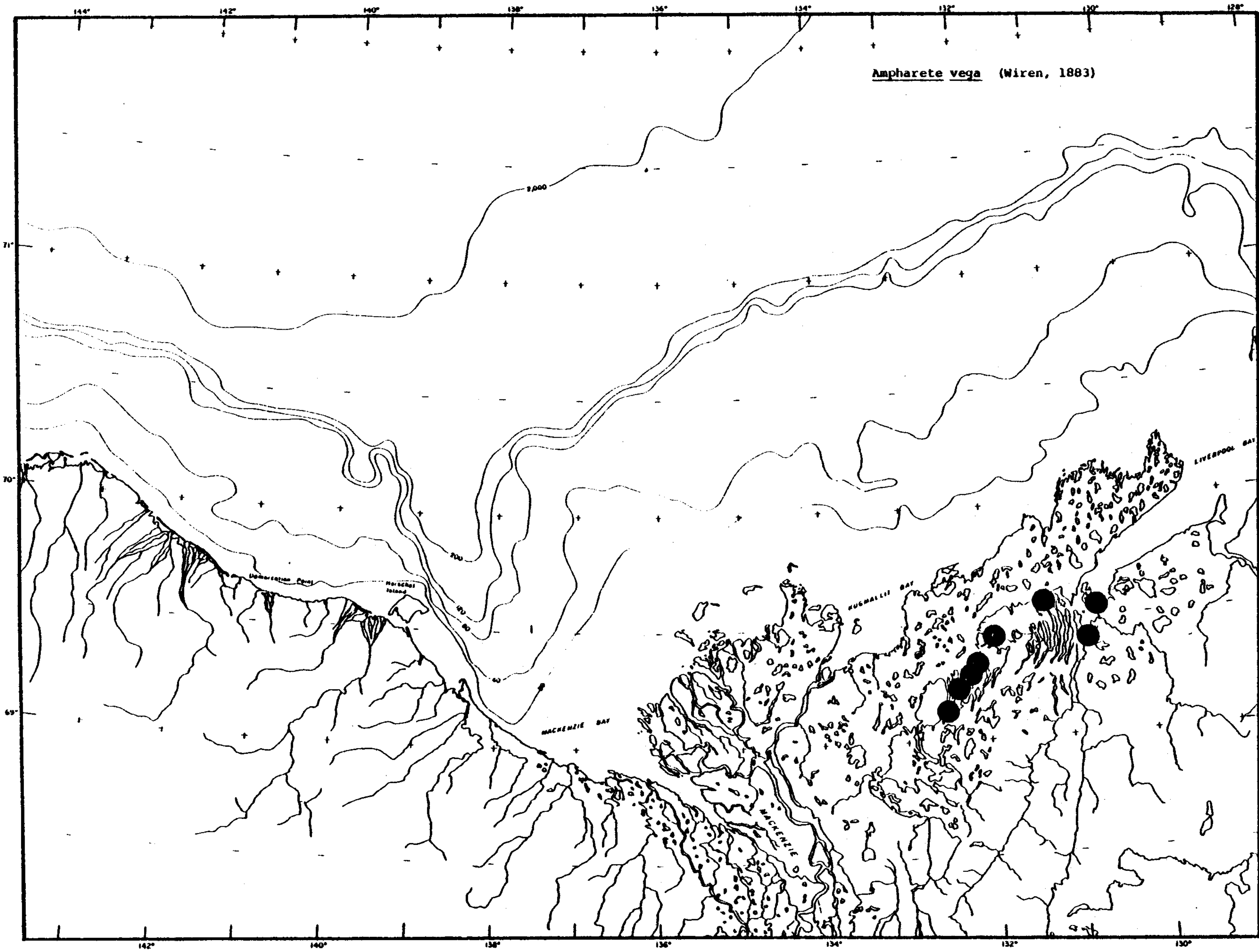
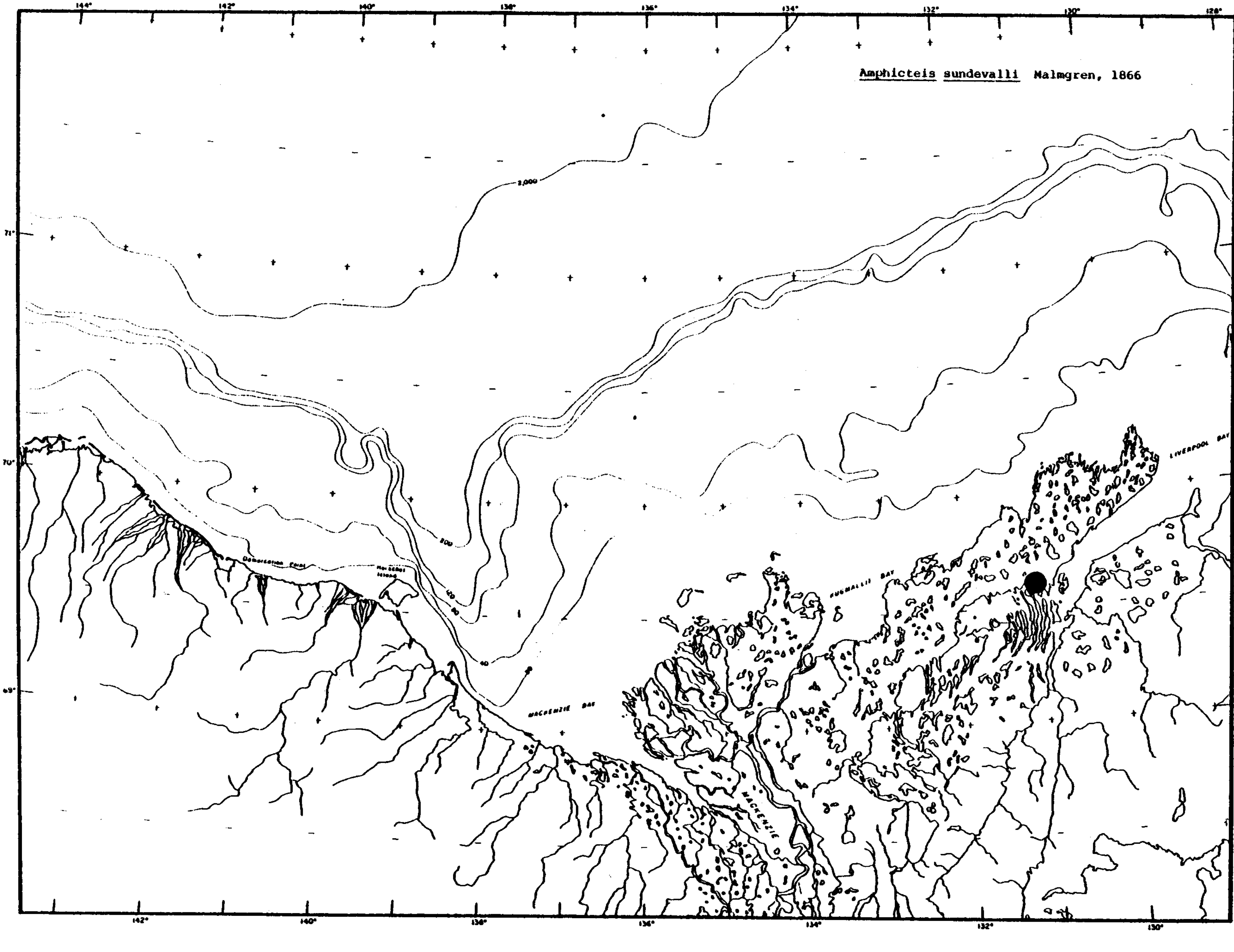
72°
71°
70°
158°
156°
154°
152°
150°
148°
146°
144°
142°

9


Ampharete vega (Wiren, 1883)
LIVERPOOL BAY
KUGMALLIT BAY
MACKENZIE BAY
MACKENZIE
2,000
200


Amphicteis sundevalli Malmgren, 1866
144°
142°
140°
138°
136°
134°
132°
130°
128°
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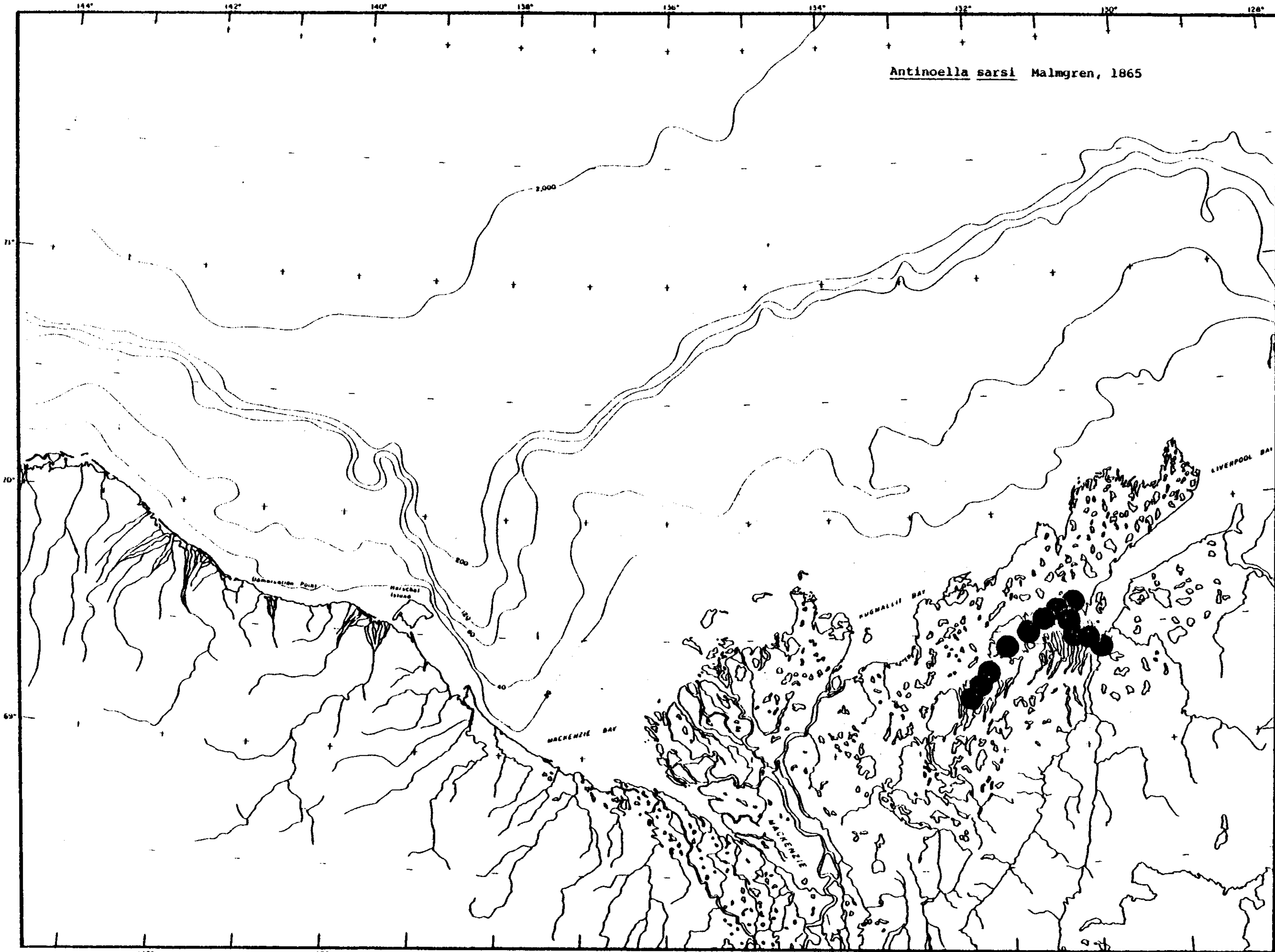
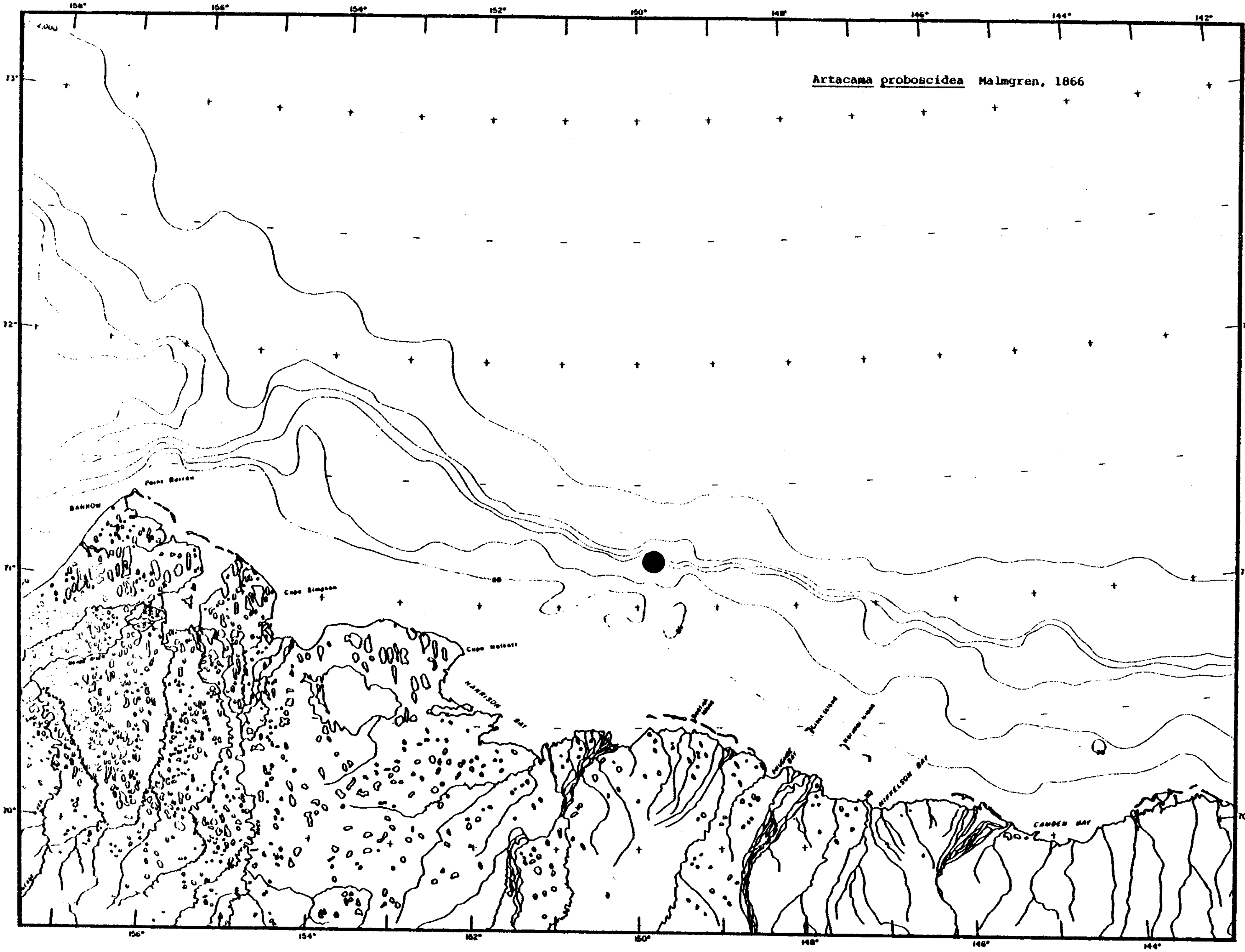
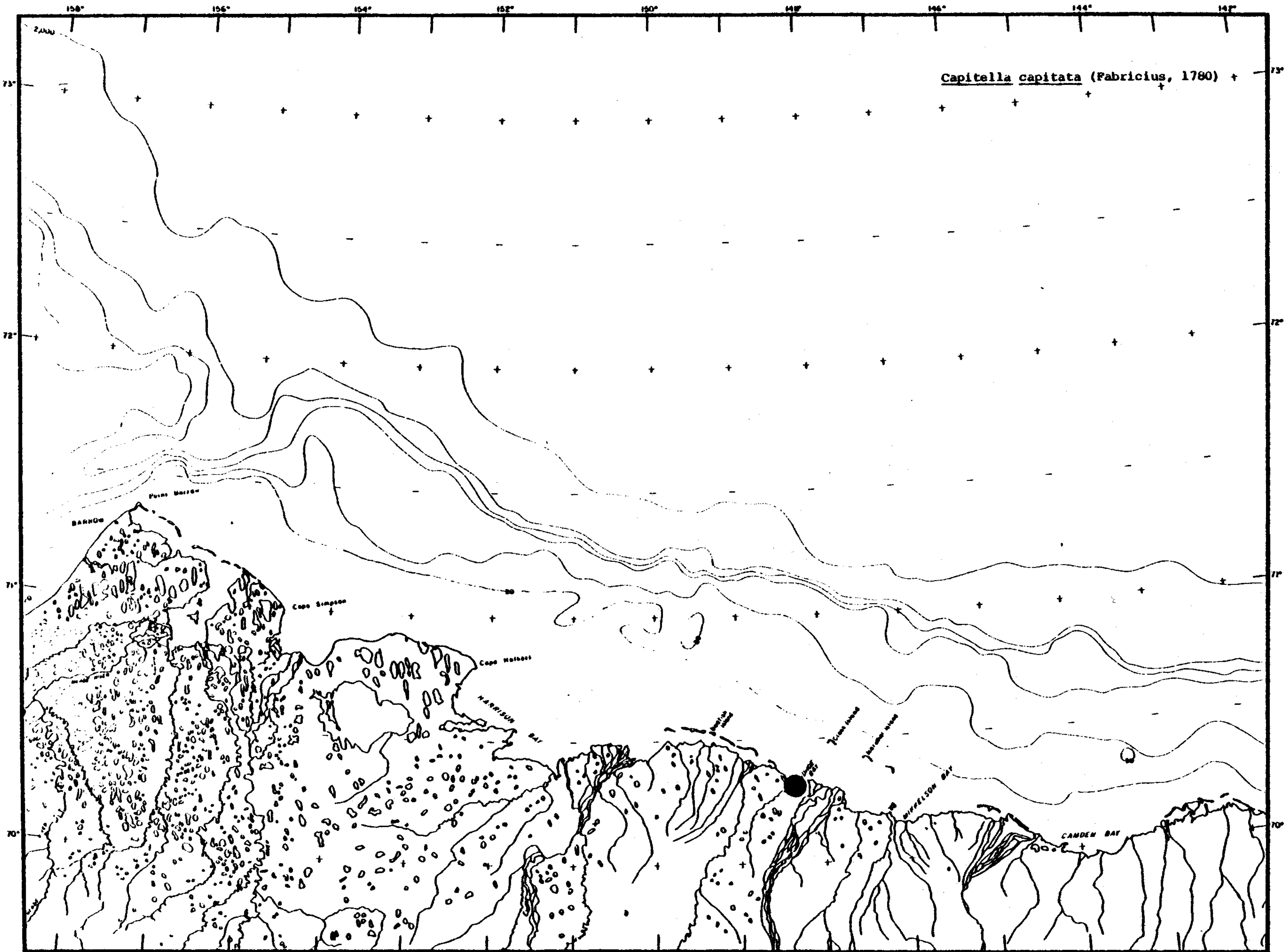
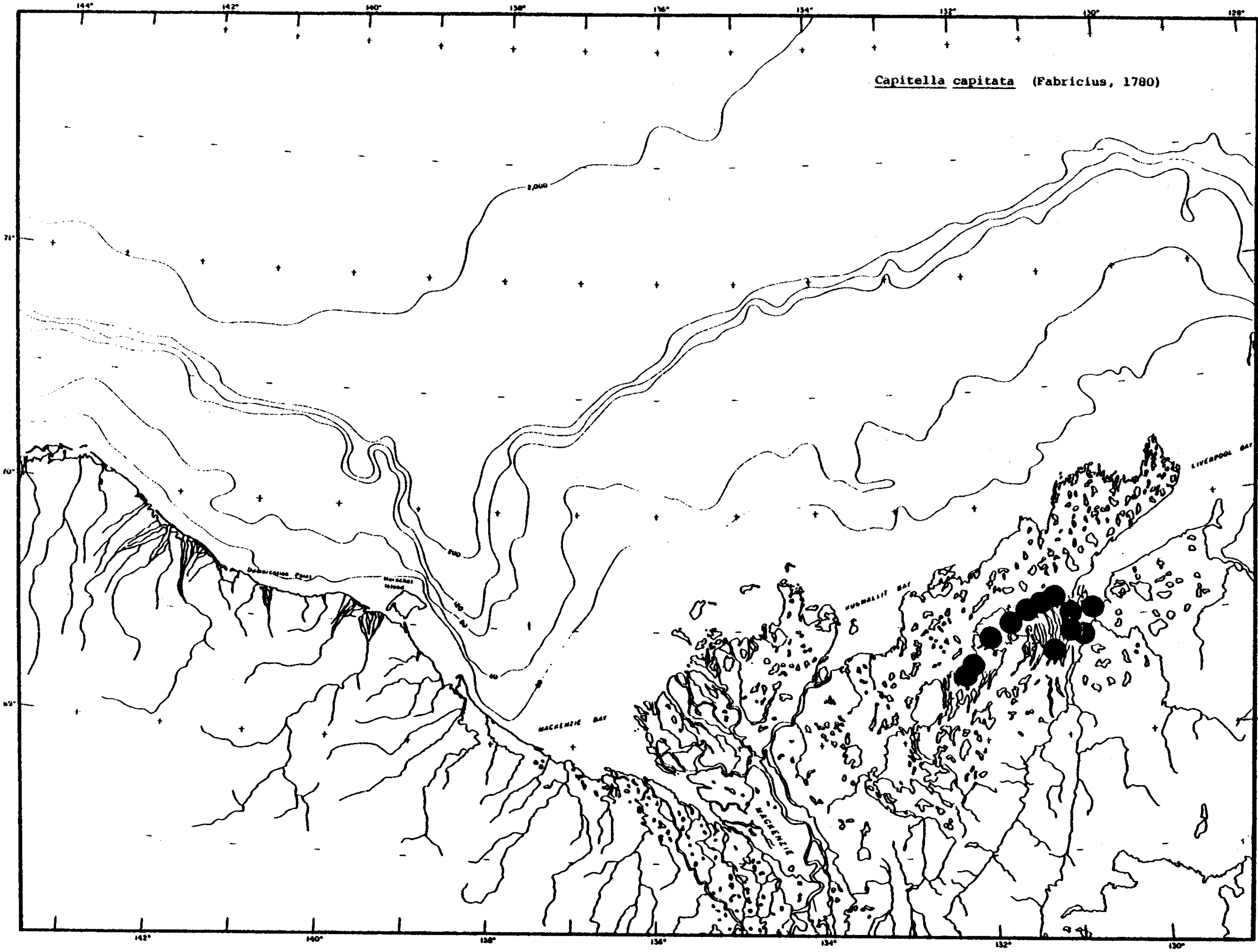
70°
69°
2,000
500
120
80
40
LIVERPOOL BAY
MACKENZIE BAY
MACKENZIE


Antinoella sarsi Malmgren, 1865
144°
142°
140°
138°
136°
134°
132°
130°
128°
71°
70°
69°
2,000
200
Demarcation Point
Herschel Island
MACKENZIE BAY
MACKENZIE
KUGMALLIT BAY
LIVERPOOL BAY


Artacama proboscidea Malmgren, 1866
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Capitella capitata (Fabricius, 1780) +
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Capitella capitata (Fabricius, 1780)
144°
142°
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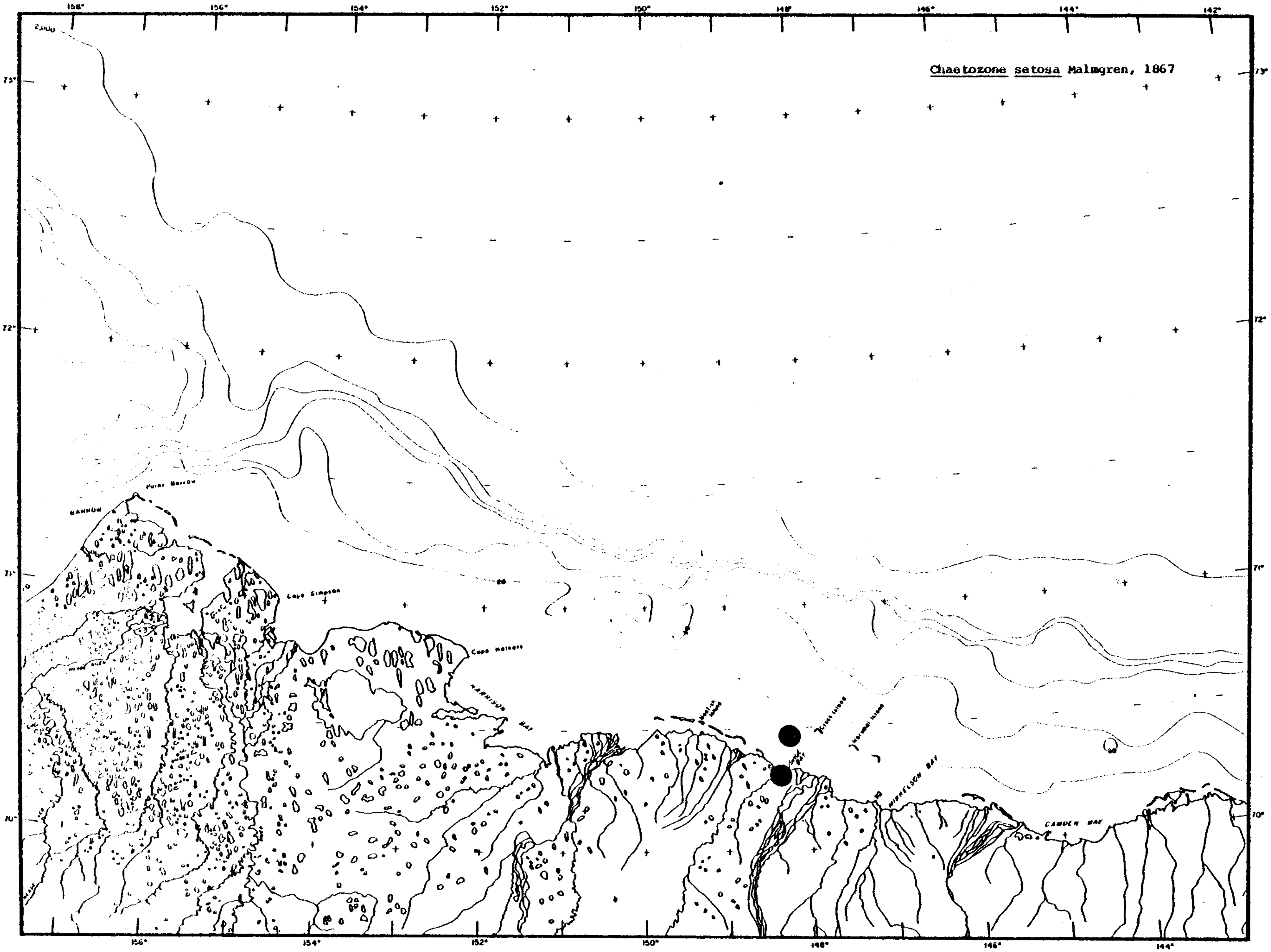
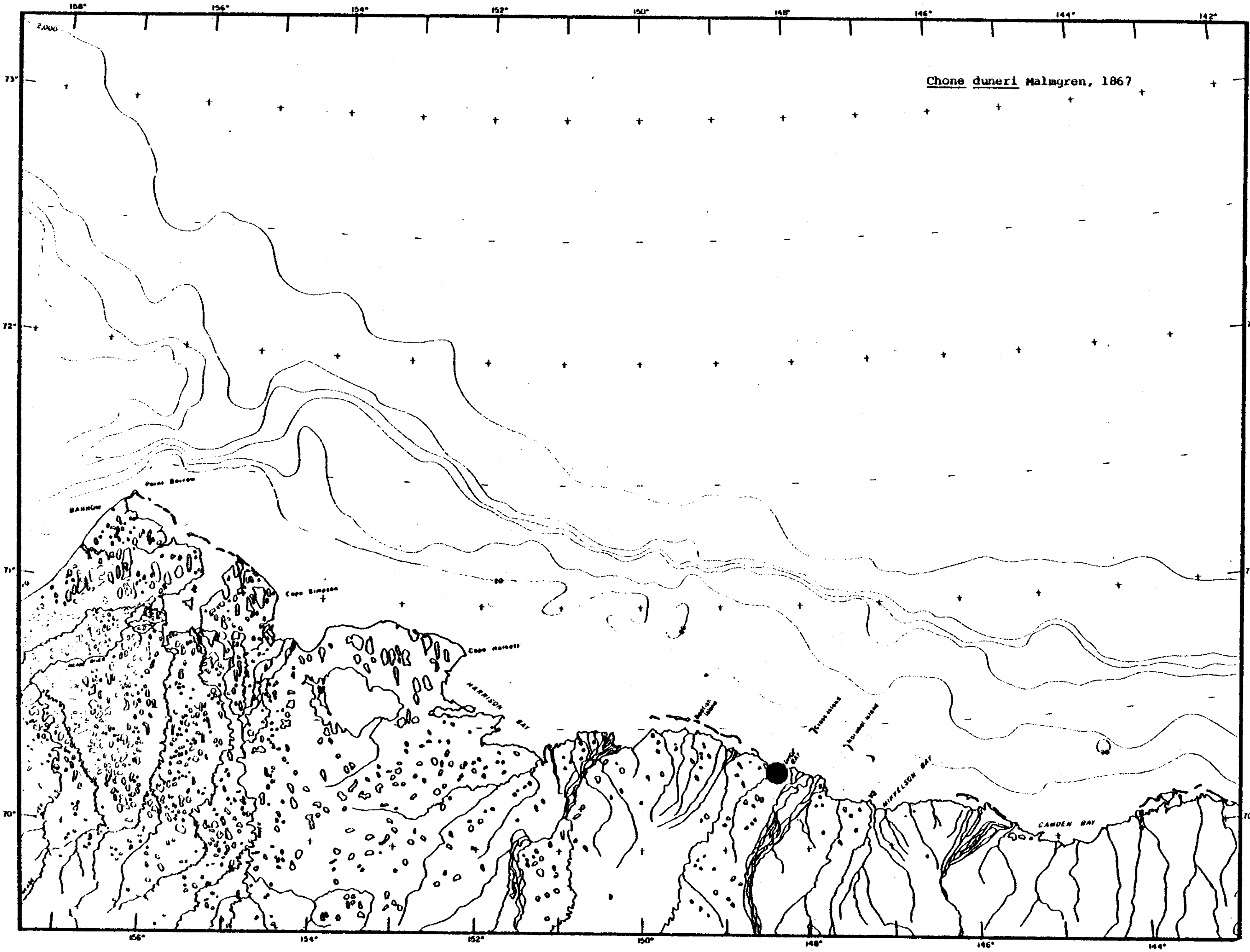
200
MACKENZIE BAY
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE


Chaetozone setosa Malmgren, 1867
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Chone duneri Malmgren, 1867
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
158°
156°
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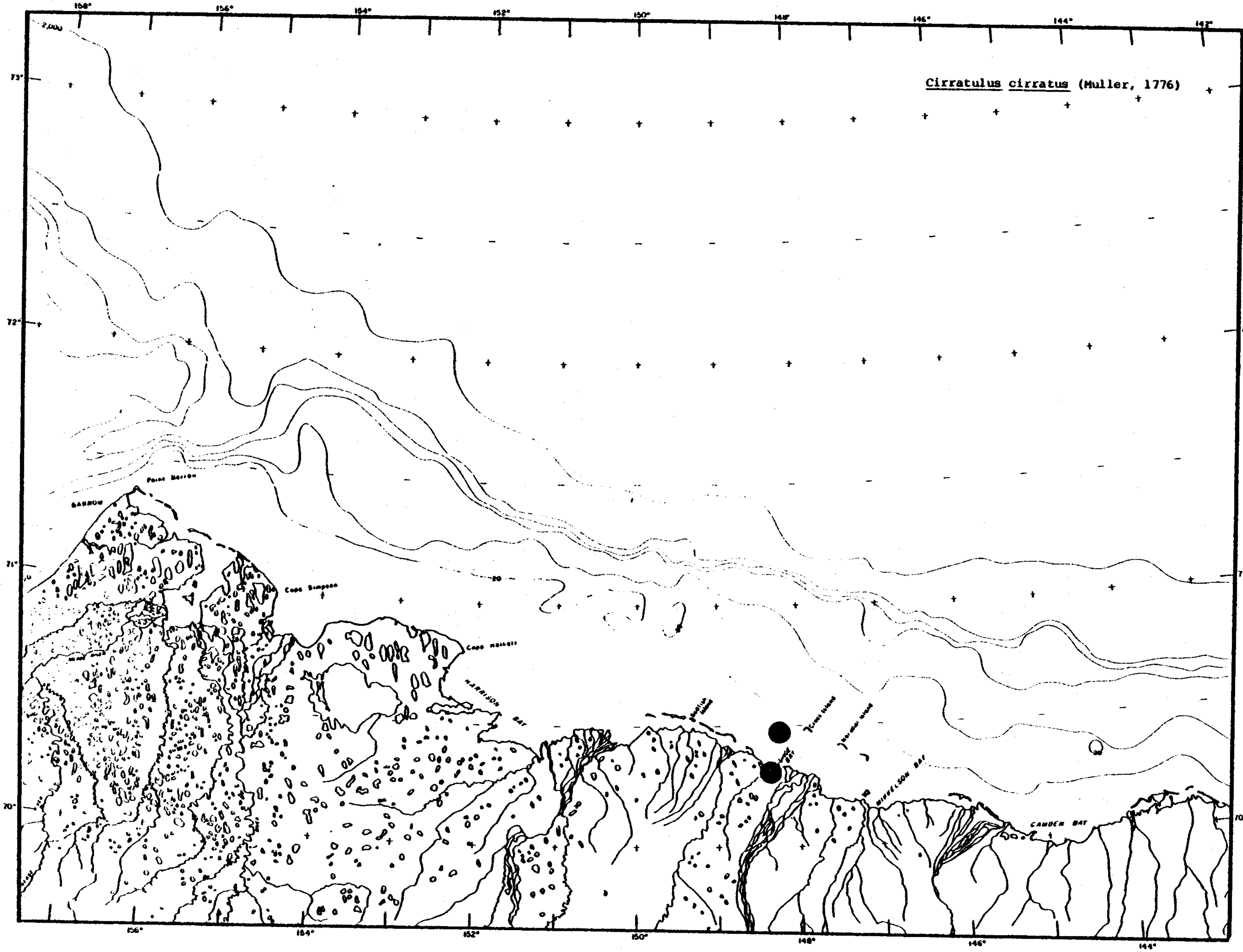
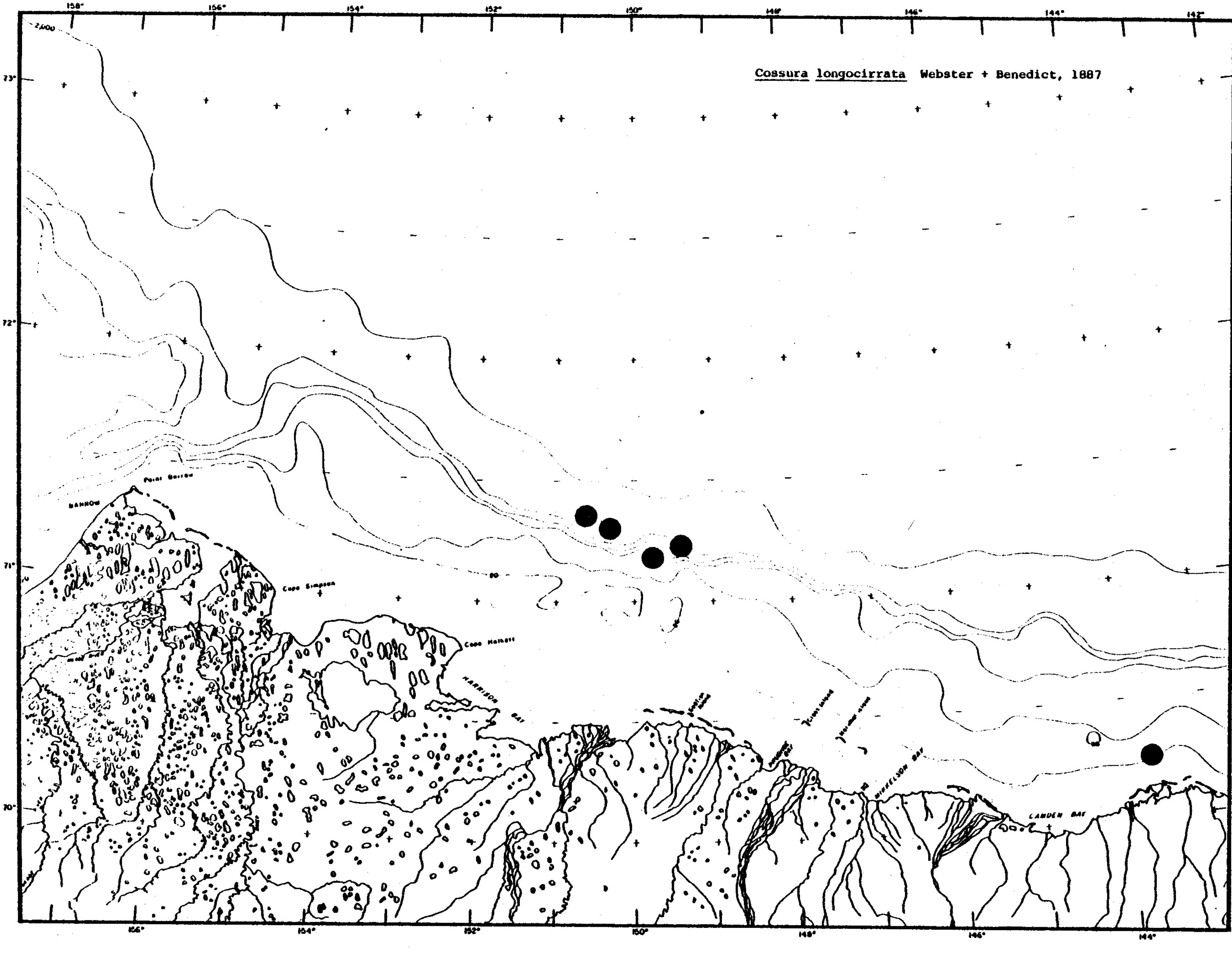
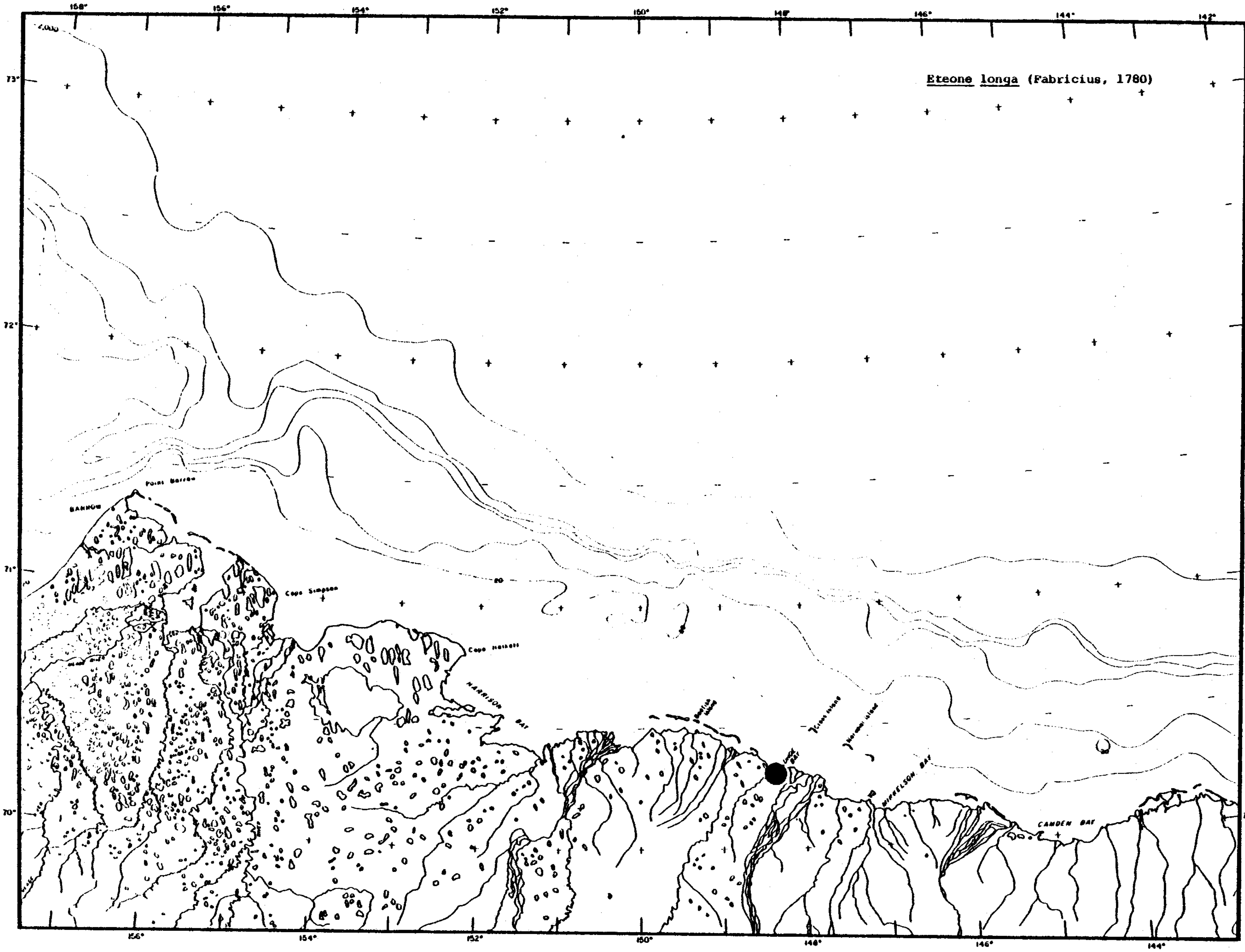


Cirratulus cirratus (Muller, 1776)

179


Cossura longocirrata Webster + Benedict, 1887
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°
158°
156°
154°
152°
150°
148°
146°
144°
142°

20


Eteone longa (Fabricius, 1780)
158°
156°
154°
152°
150°
148°
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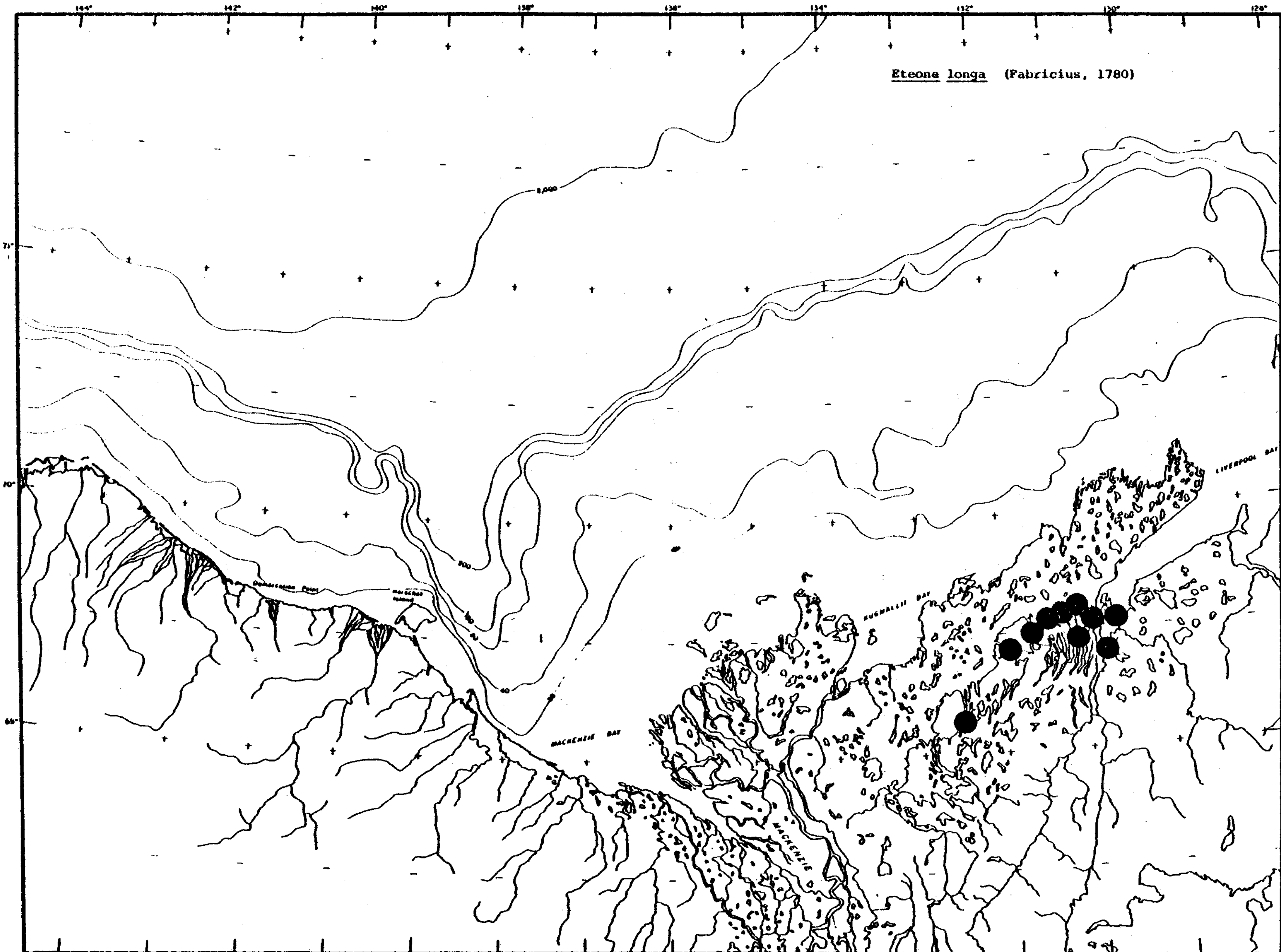
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Eteone longa (Fabricius, 1780)
LIVERPOOL BAY
KUGMALLIT BAY
MACKENZIE BAY
MACKENZIE
2,000
71°
70°
69°
142°
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136°
134°
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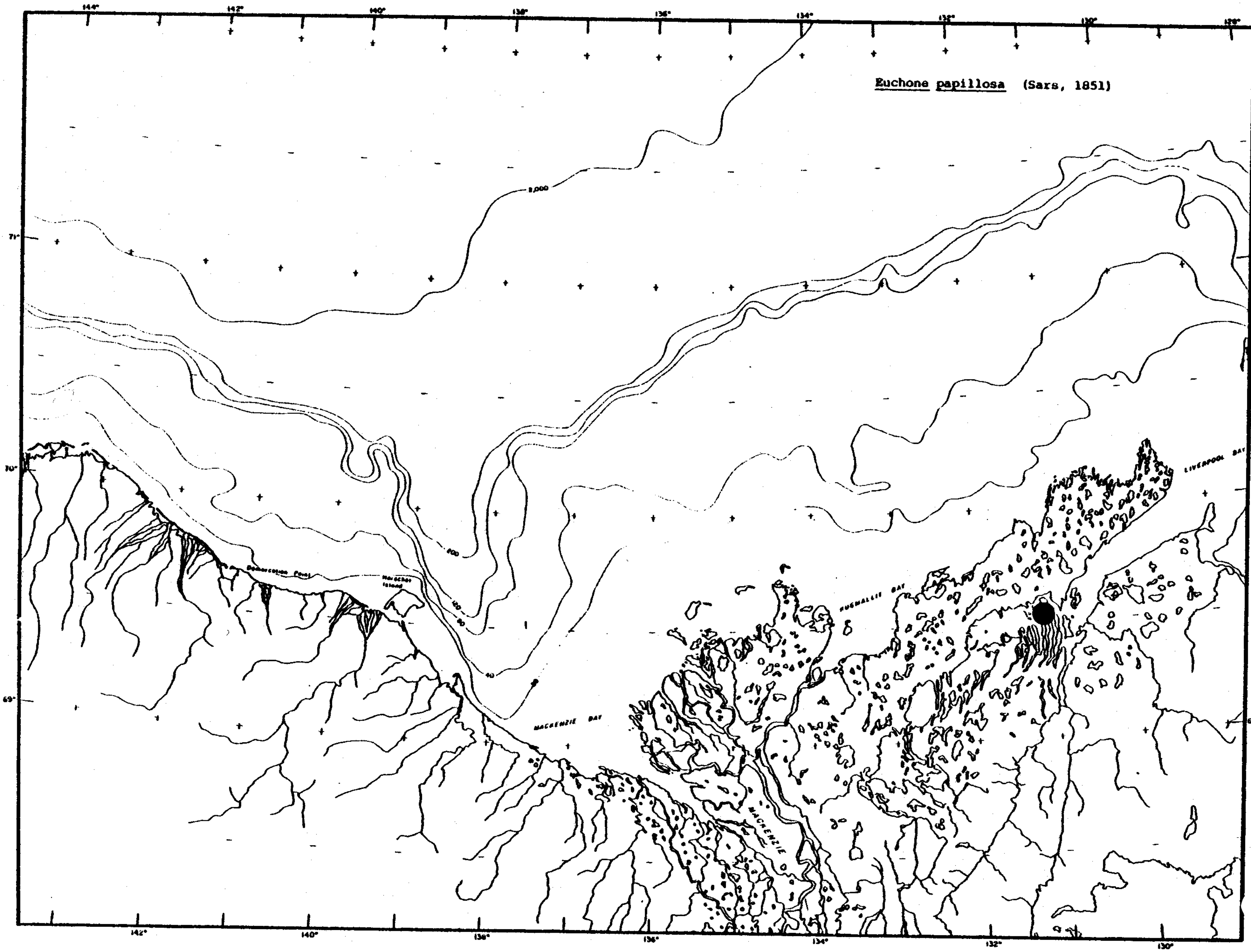
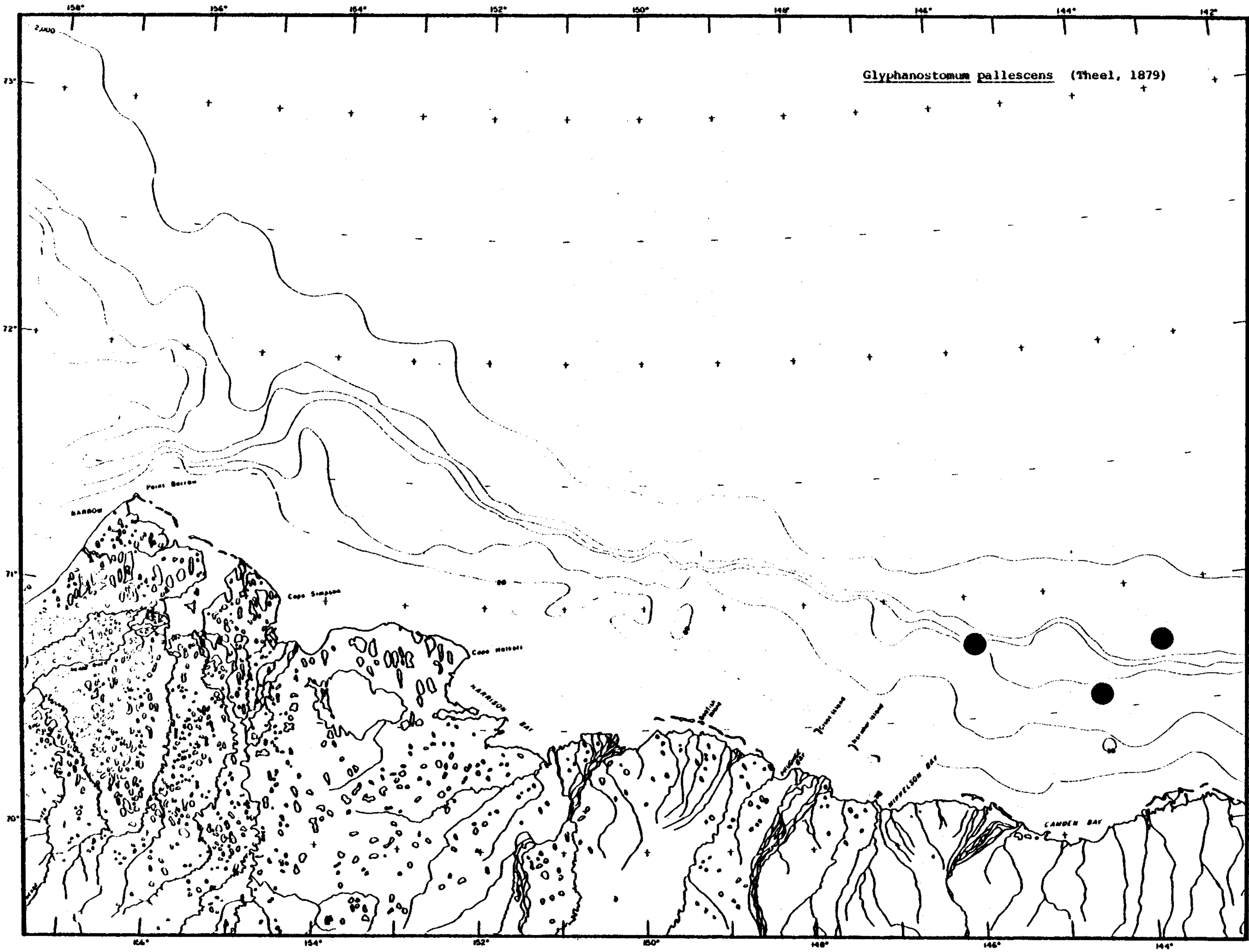
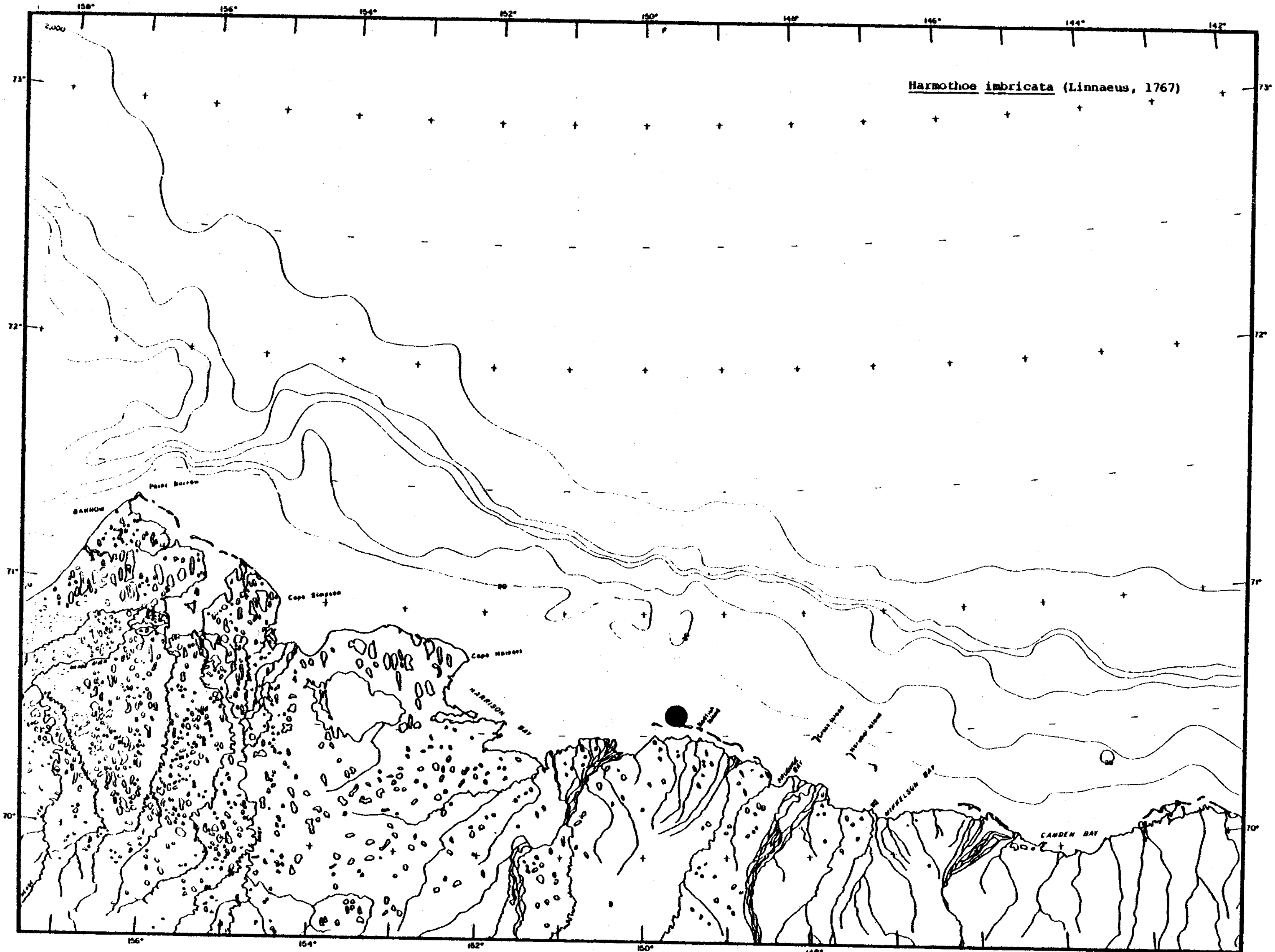
130°


Euchone papillosa (Sars, 1851)
MACKENZIE BAY
LIVERPOOL BAY
MACKENZIE


Glyphanostomum pallescens (Theel, 1879)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
73°
72°
71°
70°
158°
156°
154°
152°
150°
148°
146°
144°
142°


Harmothoe imbricata (Linnaeus, 1767)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
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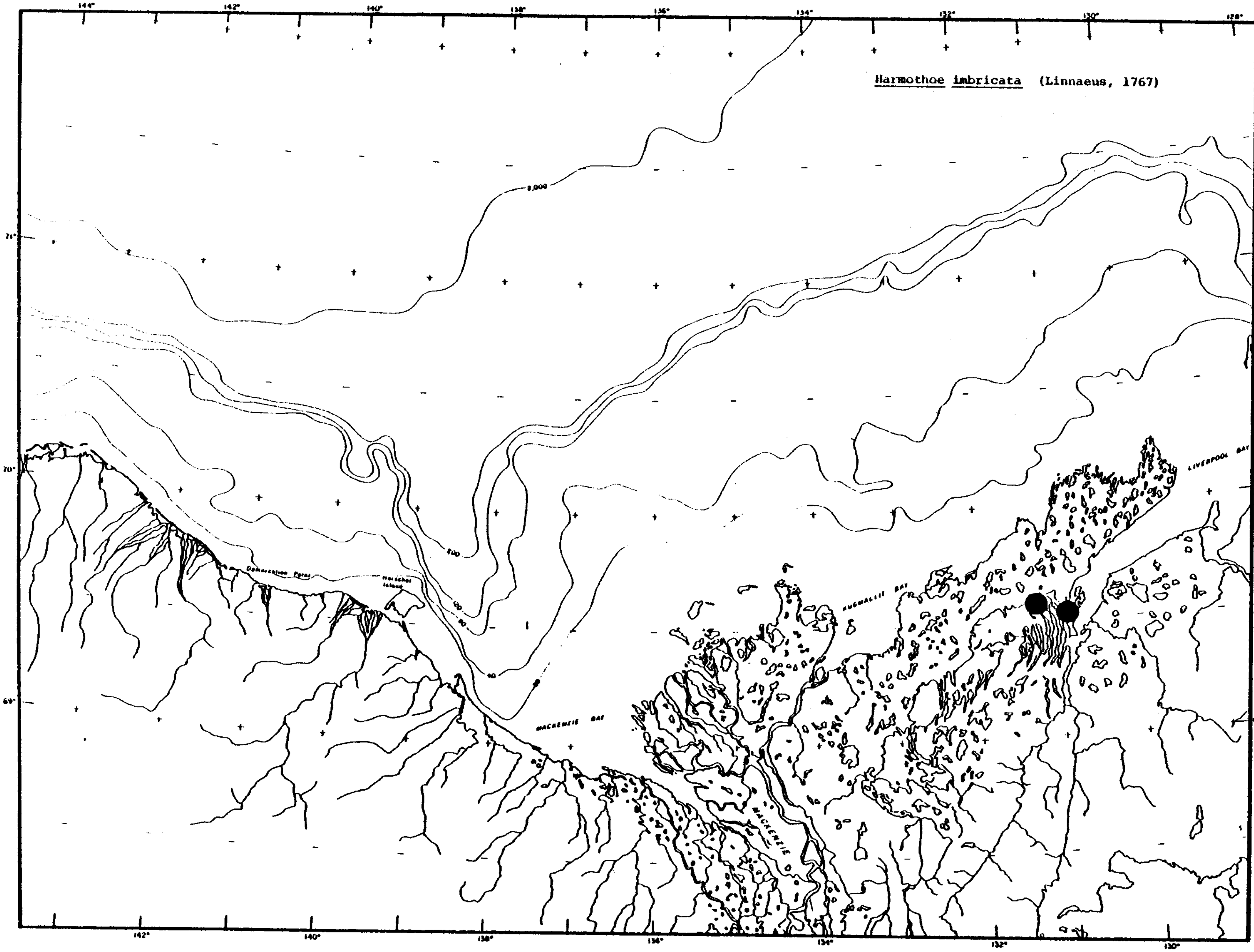
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSEN BAY
CAMDEN BAY

185


Harmothoe imbricata (Linnaeus, 1767)
144°
142°
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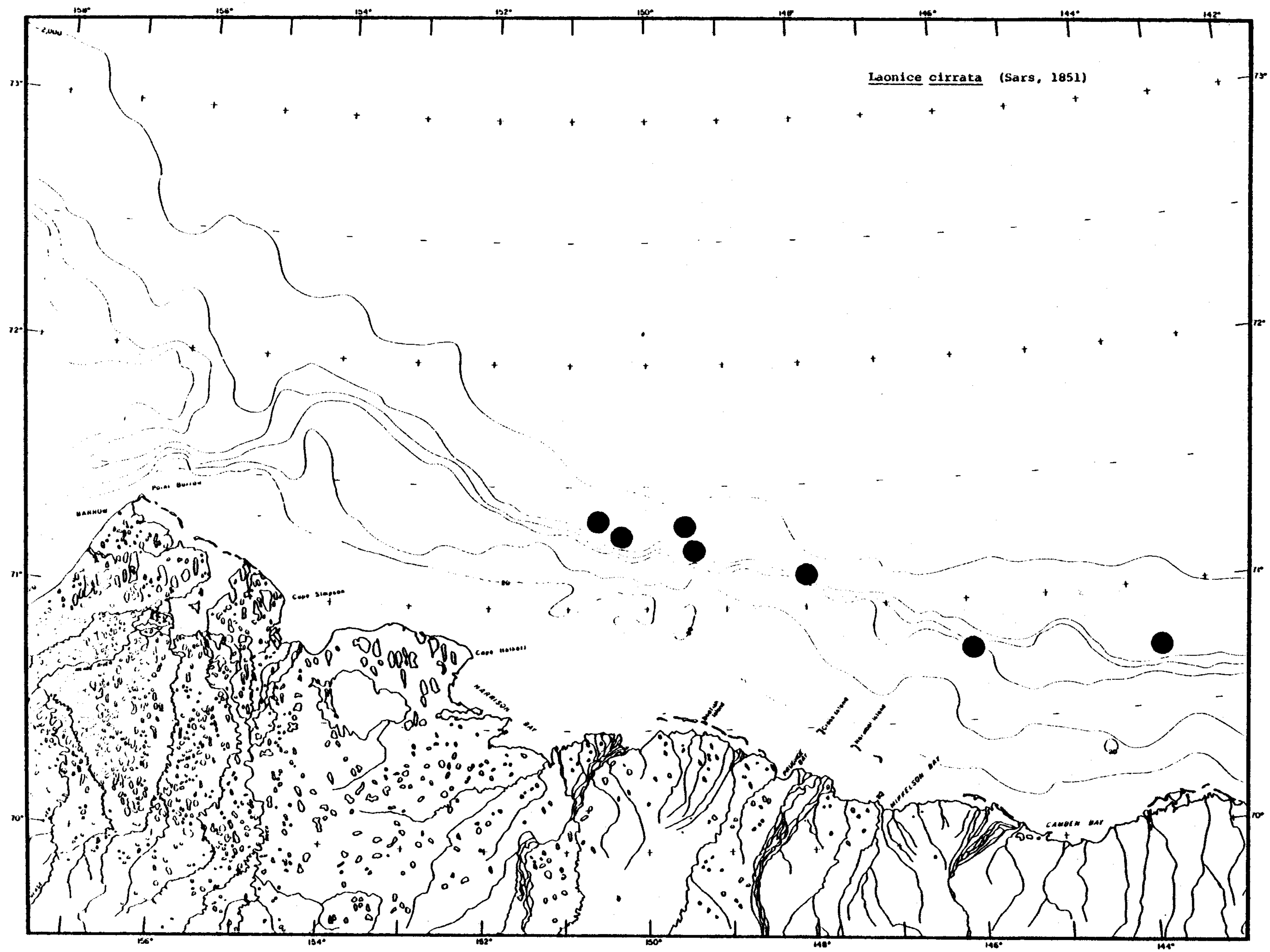
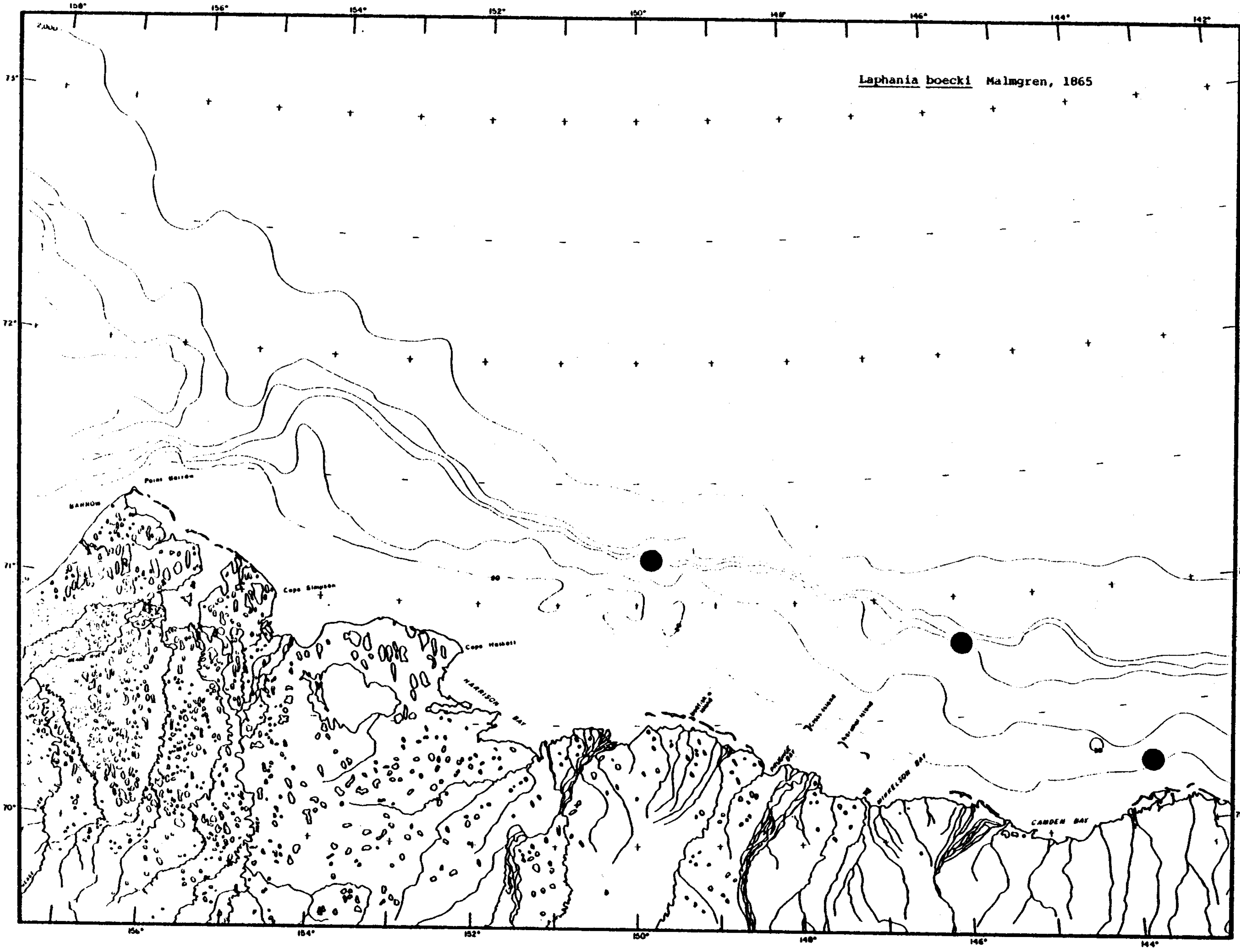
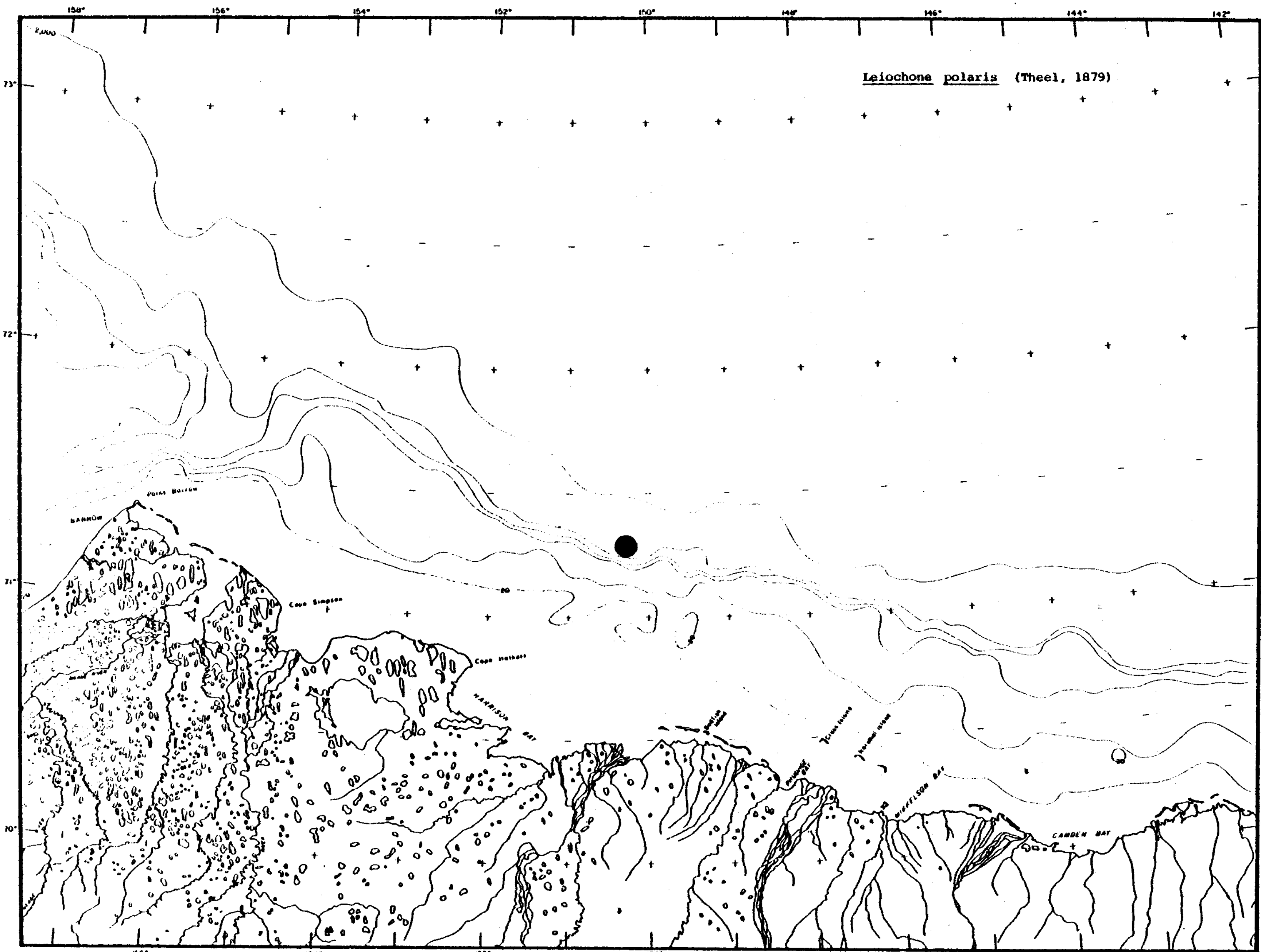
128°
71°
70°
69°
2,000
200
Demarcation Point
Herschel Island
MACKENZIE BAY
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE

26



Laonice cirrata (Sars, 1851)


Laphania boecki Malmgren, 1865
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°


Leiochone polaris (Theel, 1879)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
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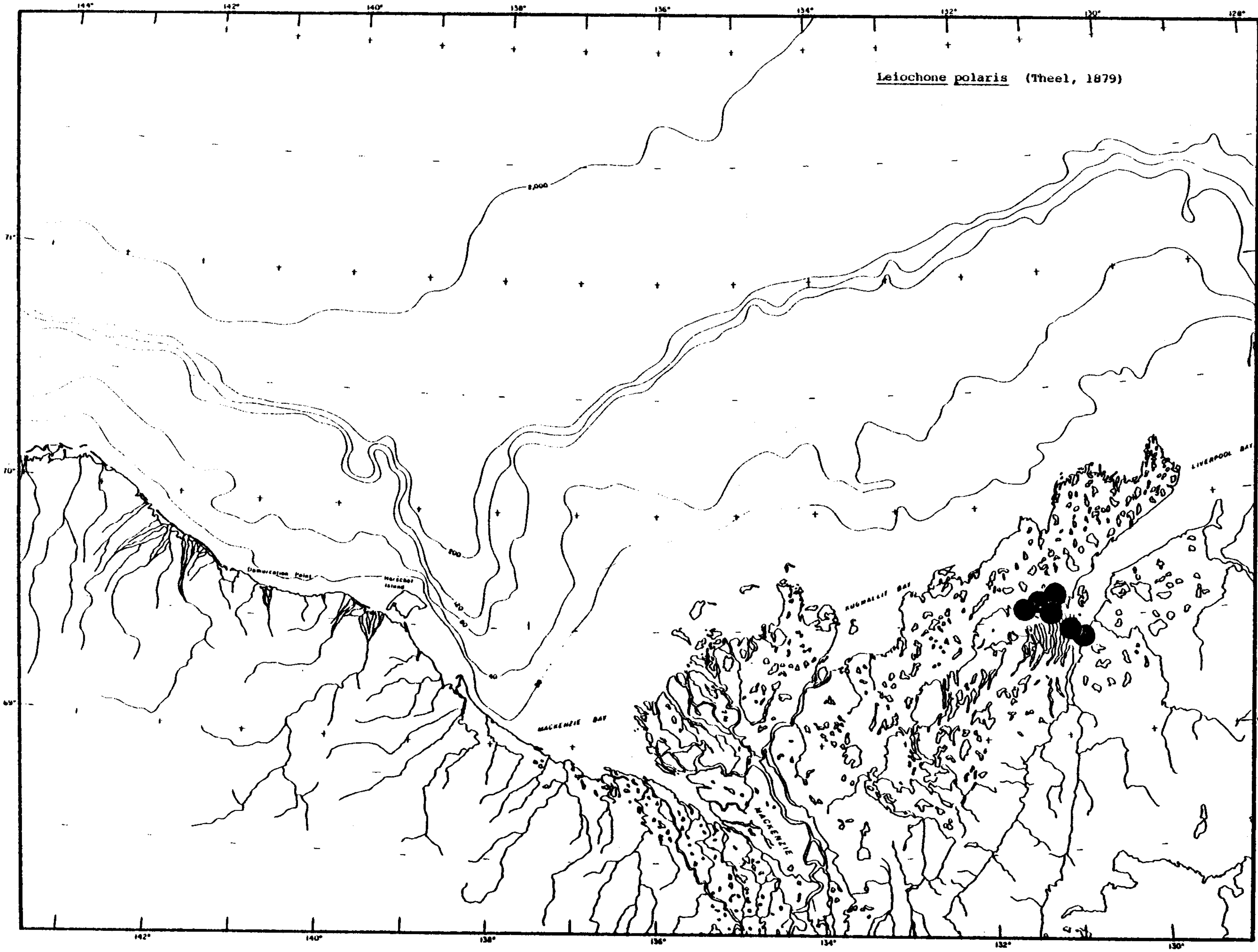
70°


Leiochone polaris (Theel, 1879)
144°
142°
140°
138°
136°
134°
132°
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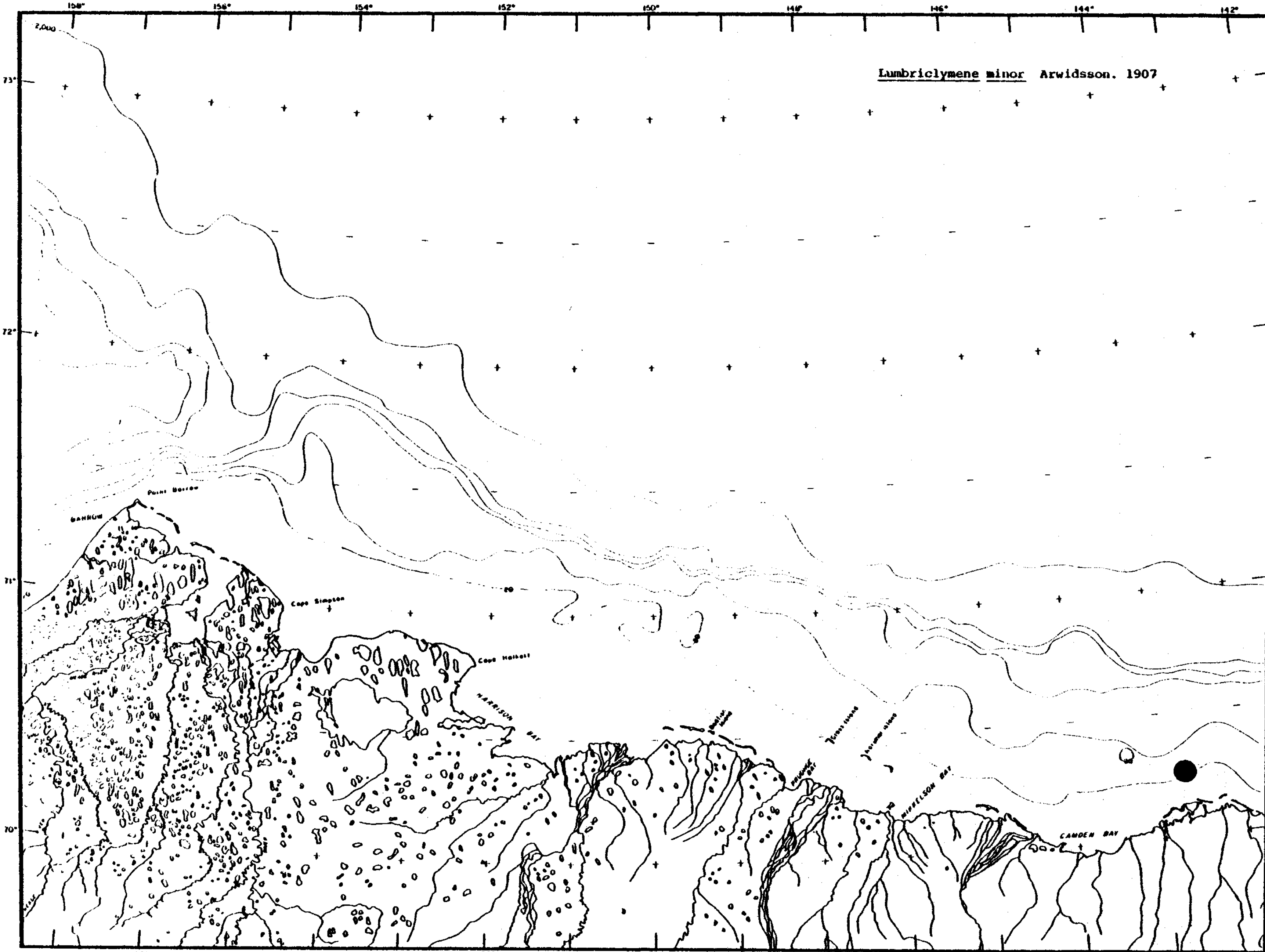
Demarcation Point
Herschel Island
MACKENZIE BAY
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE


Lumbriclymene minor Arwidsson. 1907
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
PRUDHOE BAY
MIKKELSON BAY
CAMDEN BAY
158°
156°
154°
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144°
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73°
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71°
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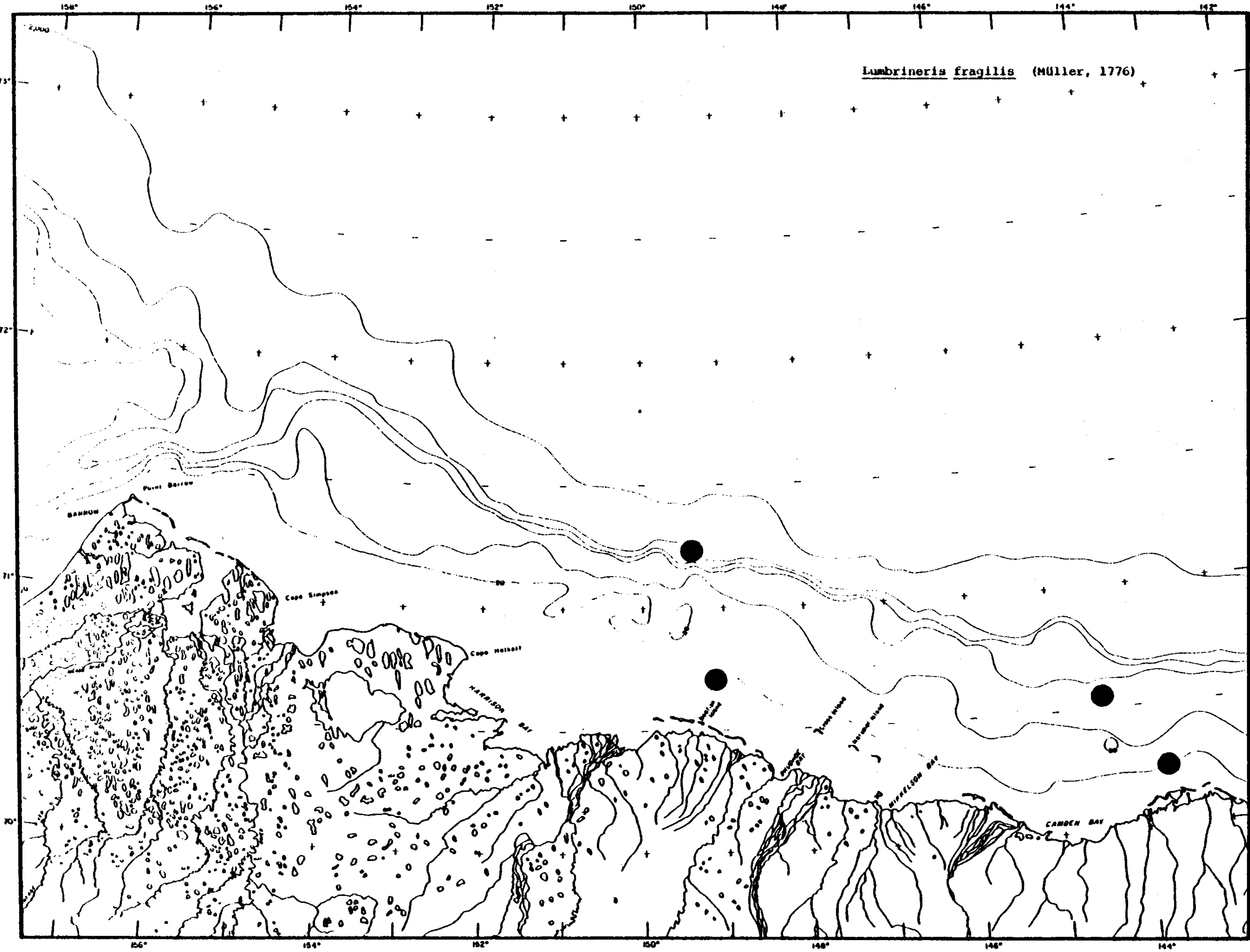
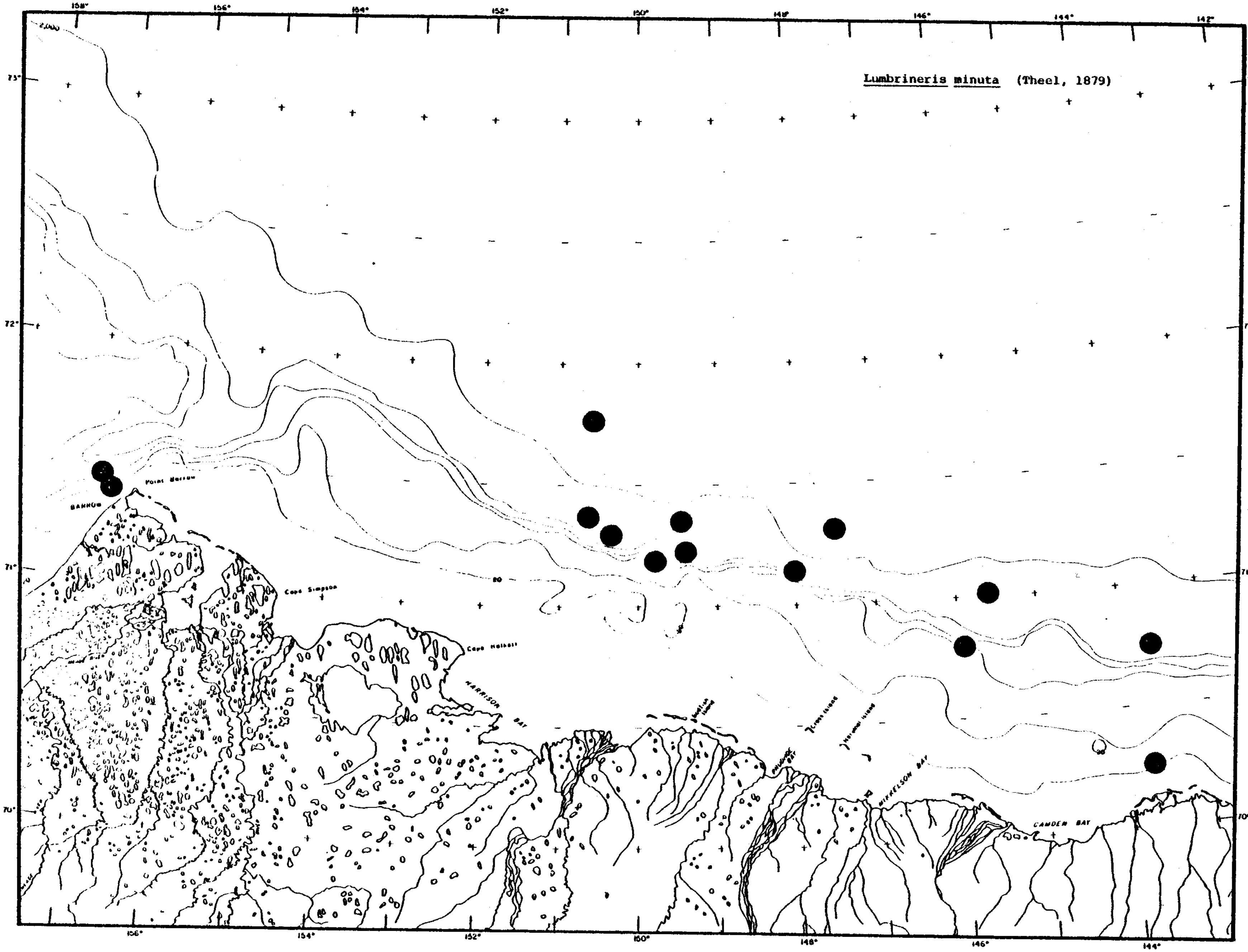

Lumbrineris fragilis (Müller, 1776)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Mikkelson Bay
Camden Bay


Lumbrineris minuta (Theel, 1879)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
73°
72°
71°
70°
158°
156°
154°
152°
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148°
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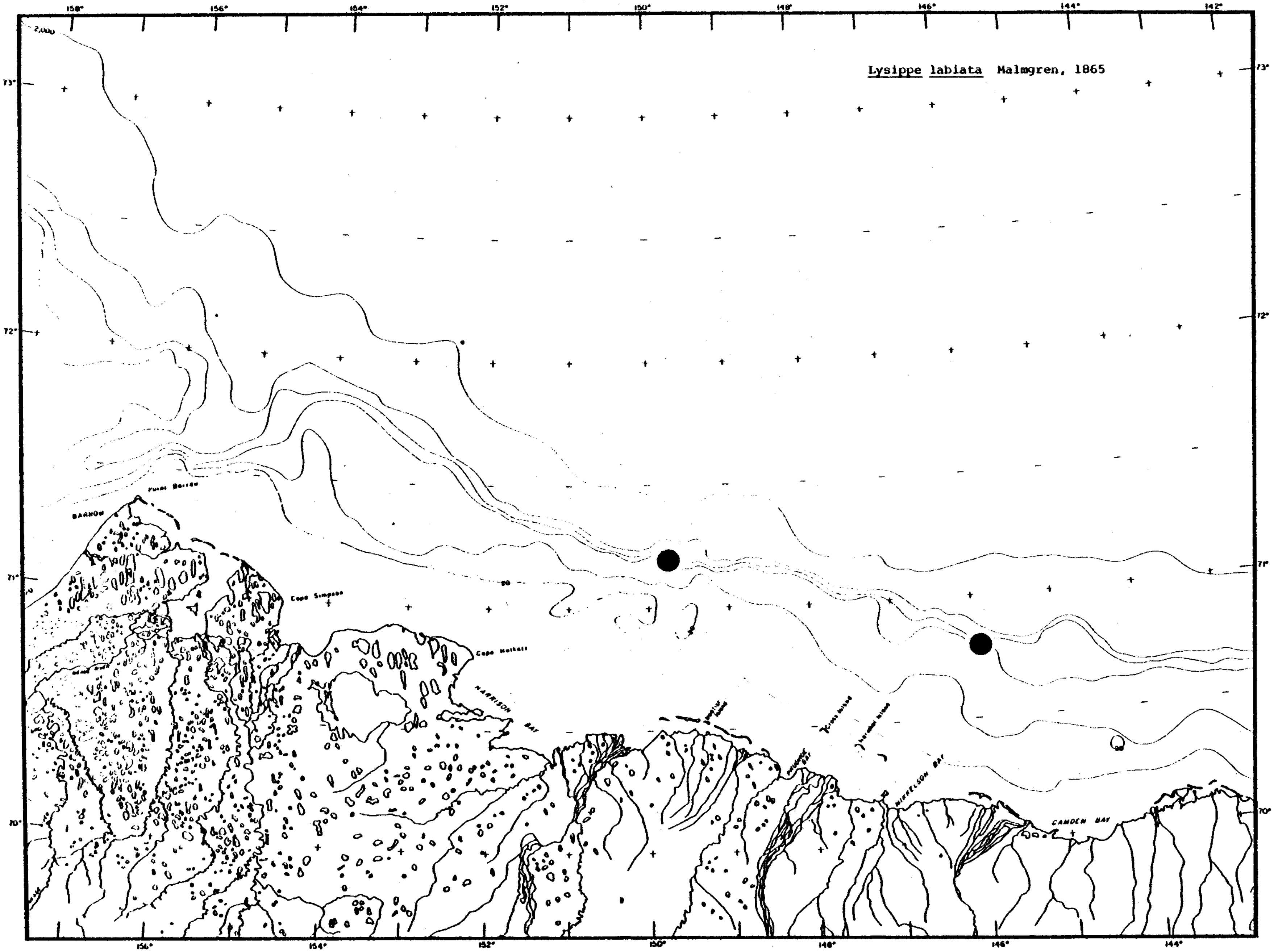
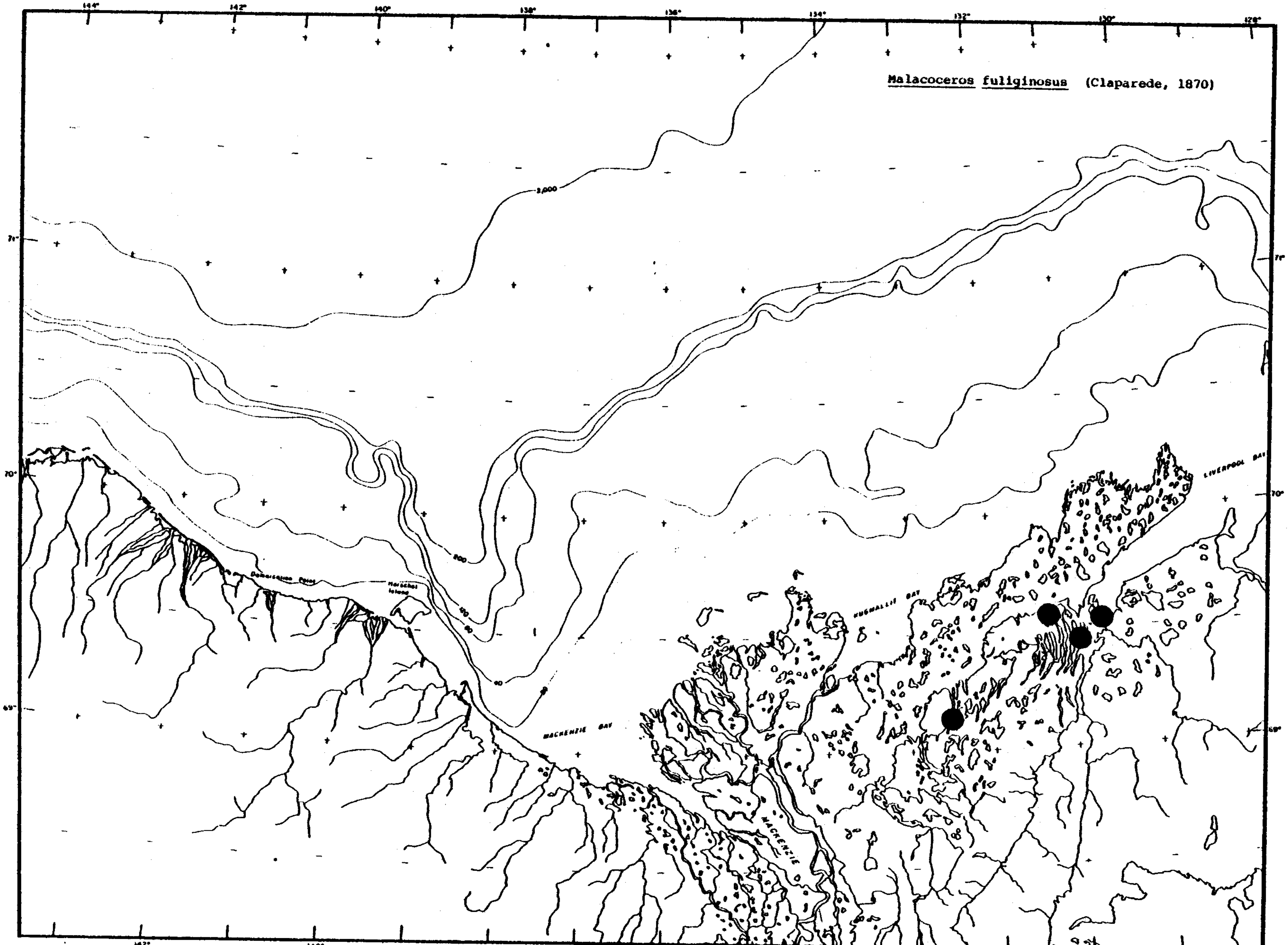
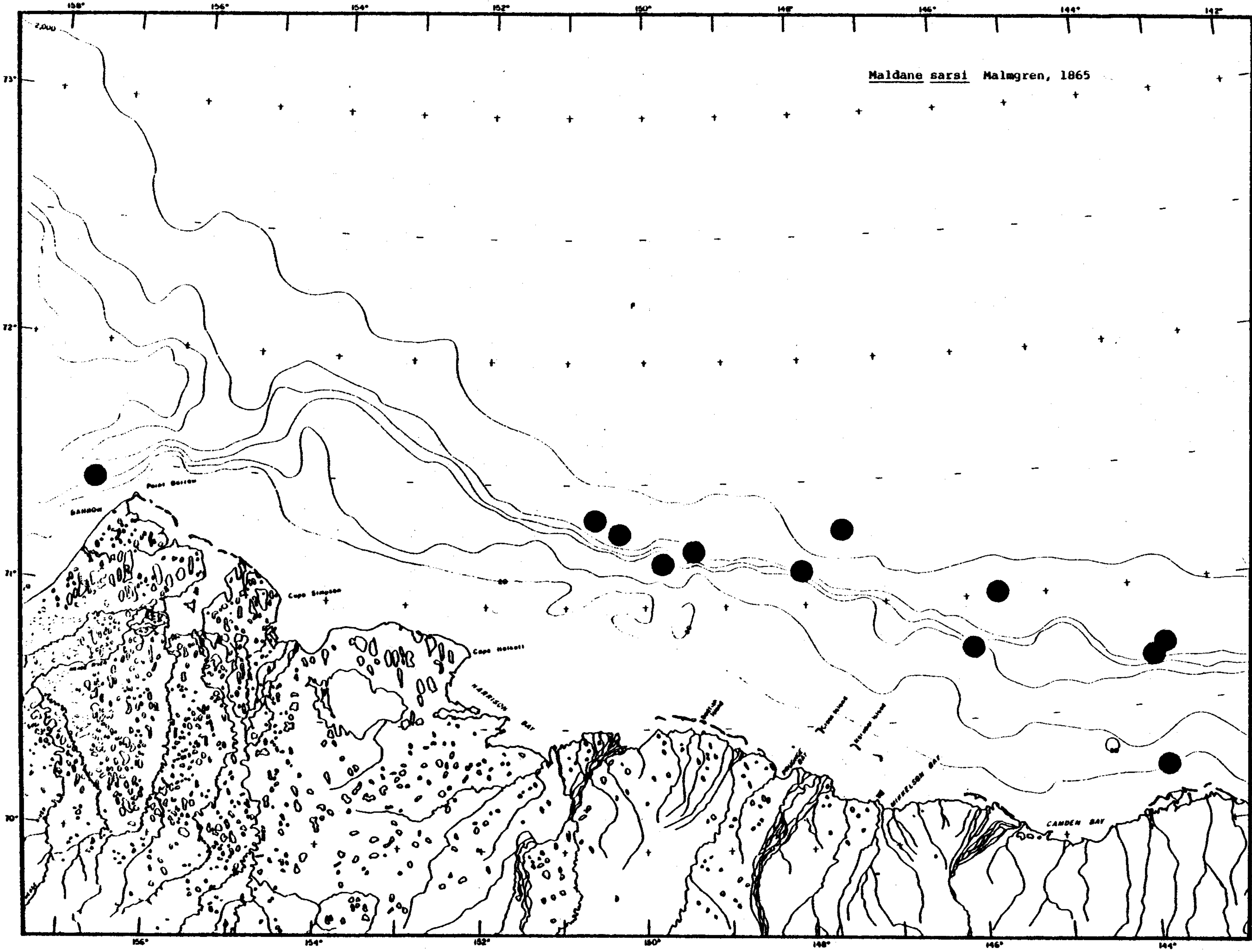
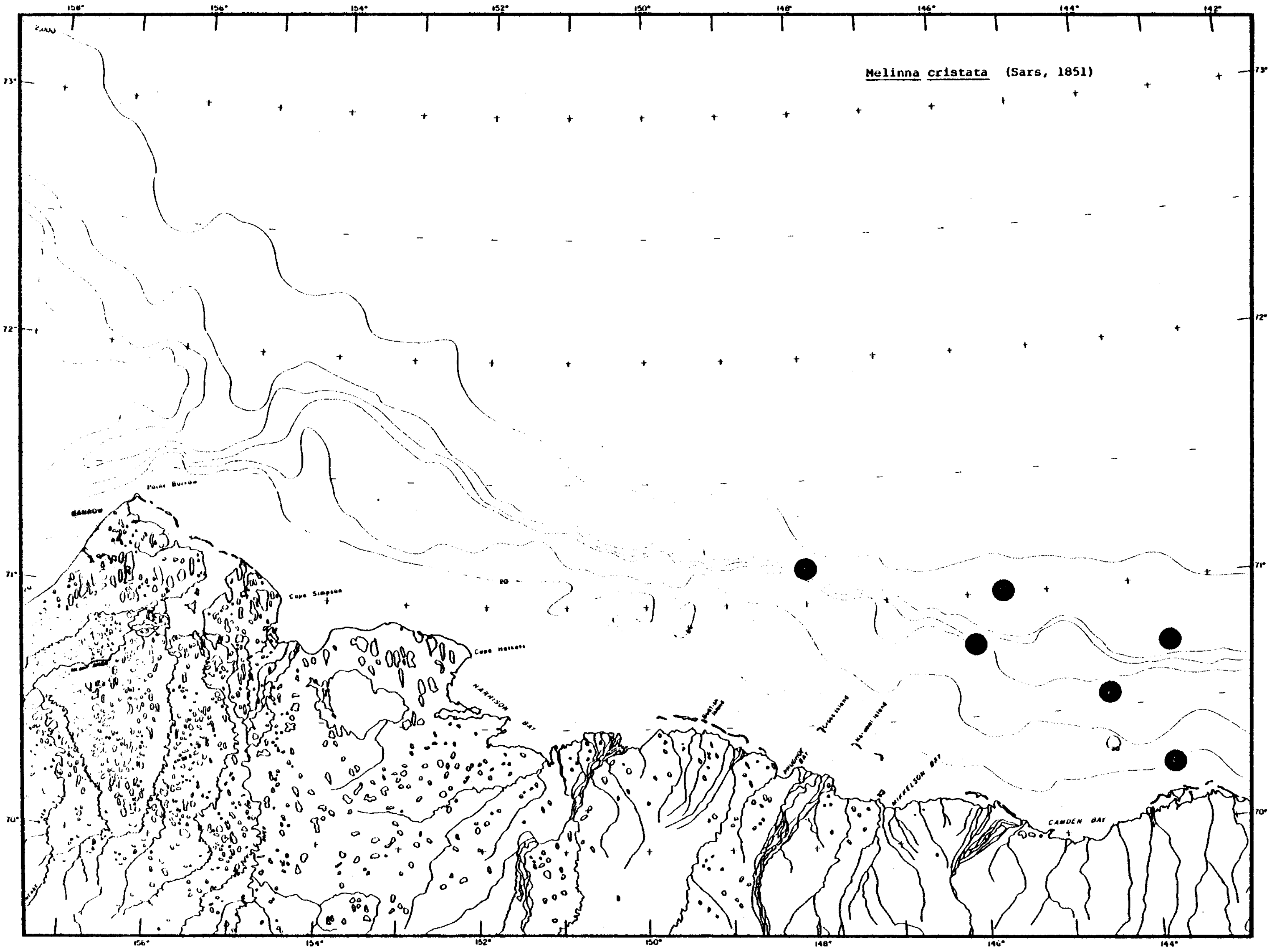
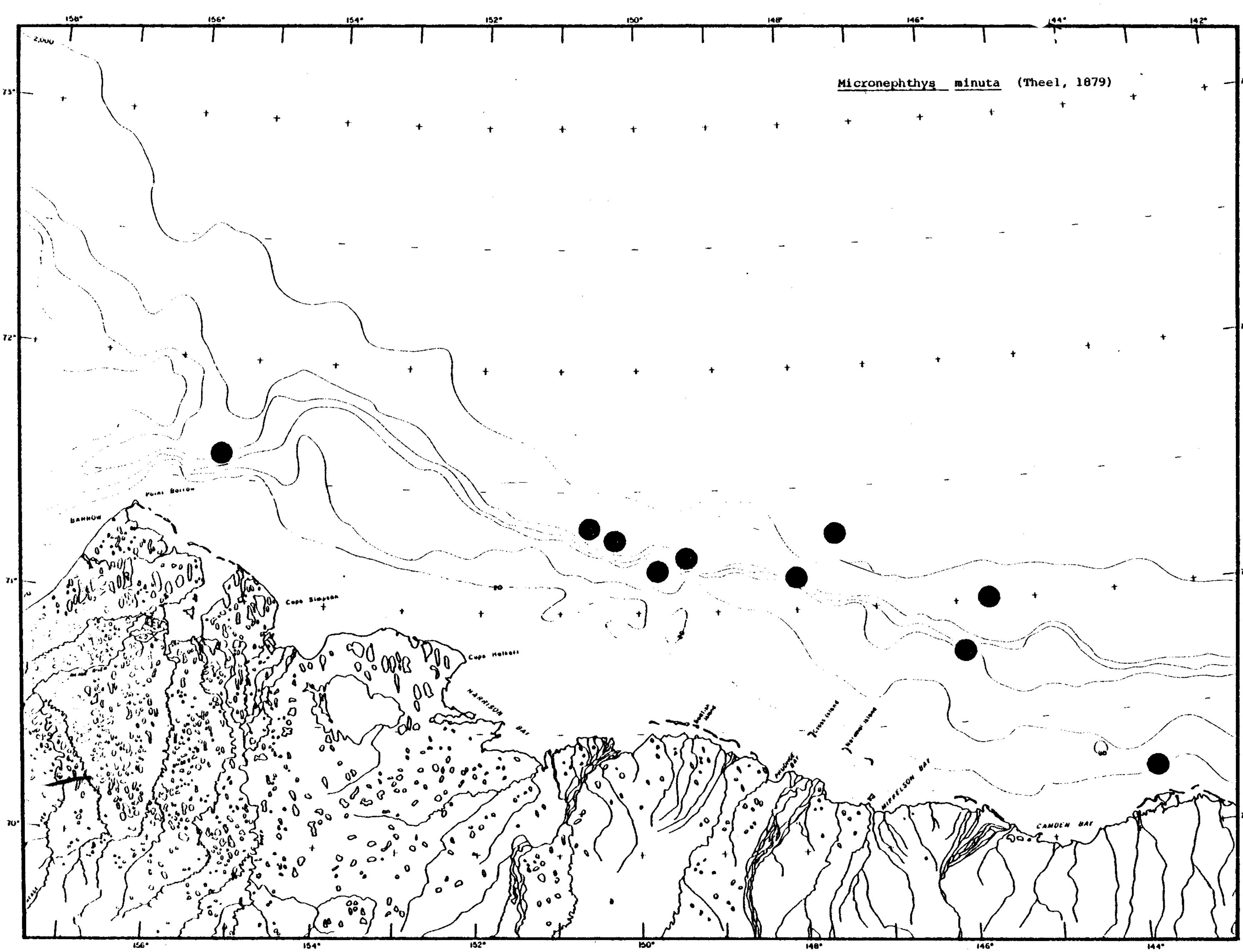
144°
142°


Lysippe labiata Malmgren, 1865
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
2,000
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Malacoceros fuliginosus (Claparede, 1870)
144°
142°
140°
138°
136°
134°
132°
130°
128°
71°
70°
69°
2,000
200
MACKENZIE BAY
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE
Herschel Island
Demarcation Point


Maldane sarsi Malmgren, 1865
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Melinna cristata (Sars, 1851)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Micronephthys minuta (Theel, 1879)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
158°
156°
154°
152°
150°
148°
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142°
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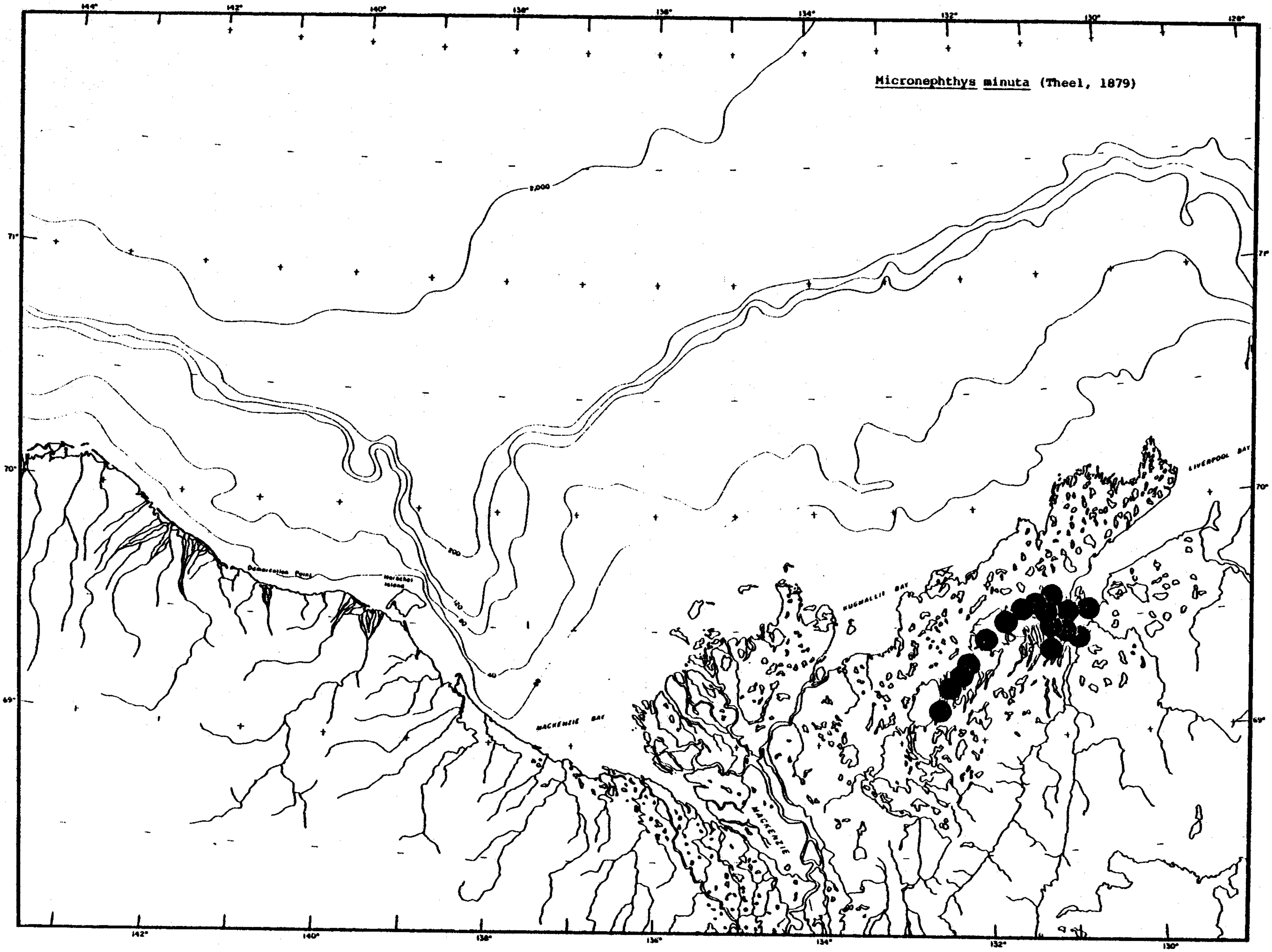
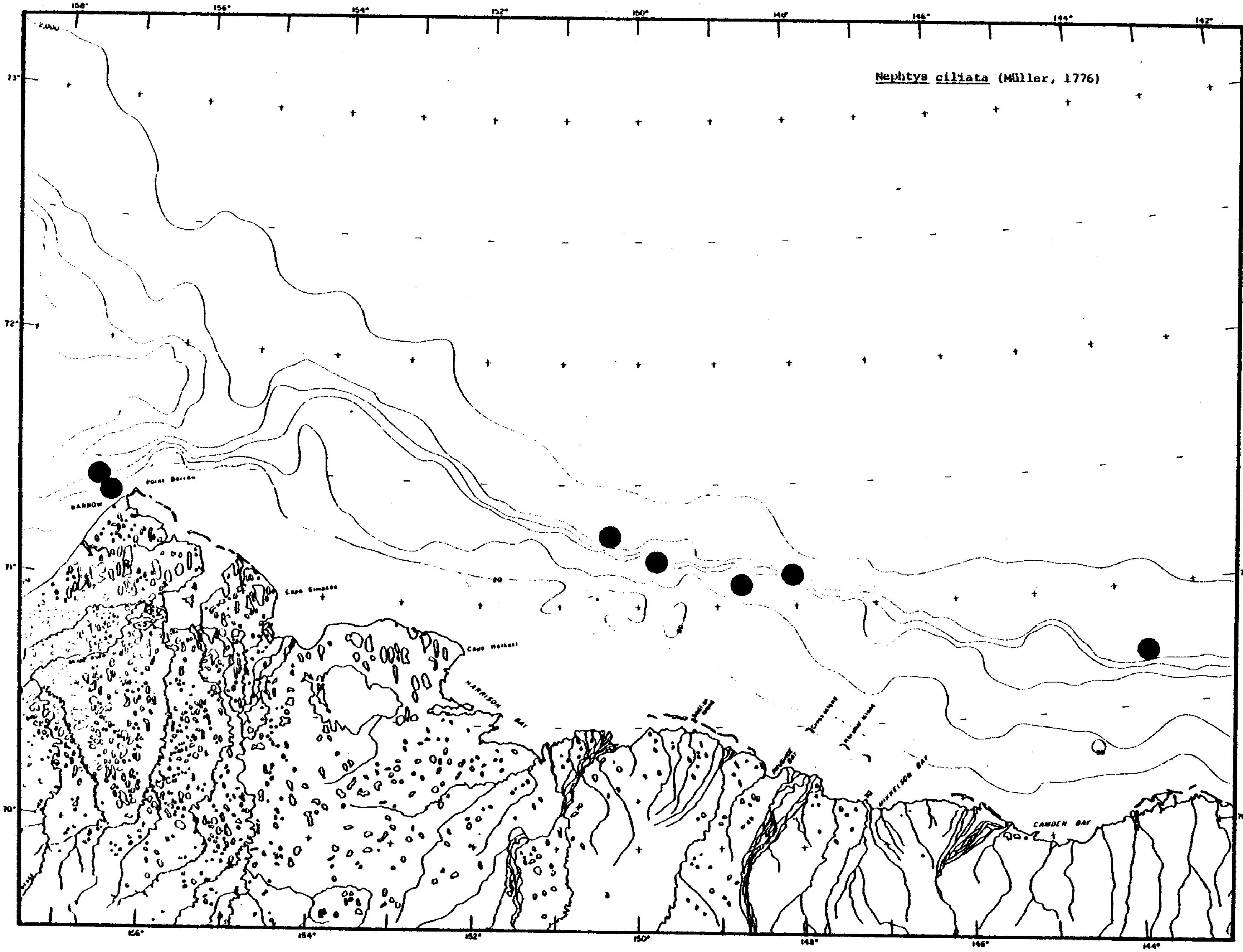

Micronephthys minuta (Theel, 1879)
LIVERPOOL BAY
KUGMALLIT BAY
MACKENZIE BAY
MACKENZIE
Demarcation Point
Herschel Island
2,000


Nephtys ciliata (Müller, 1776)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Mikkelson Bay
Camden Bay
158°
156°
154°
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150°
148°
146°
144°
142°
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72°
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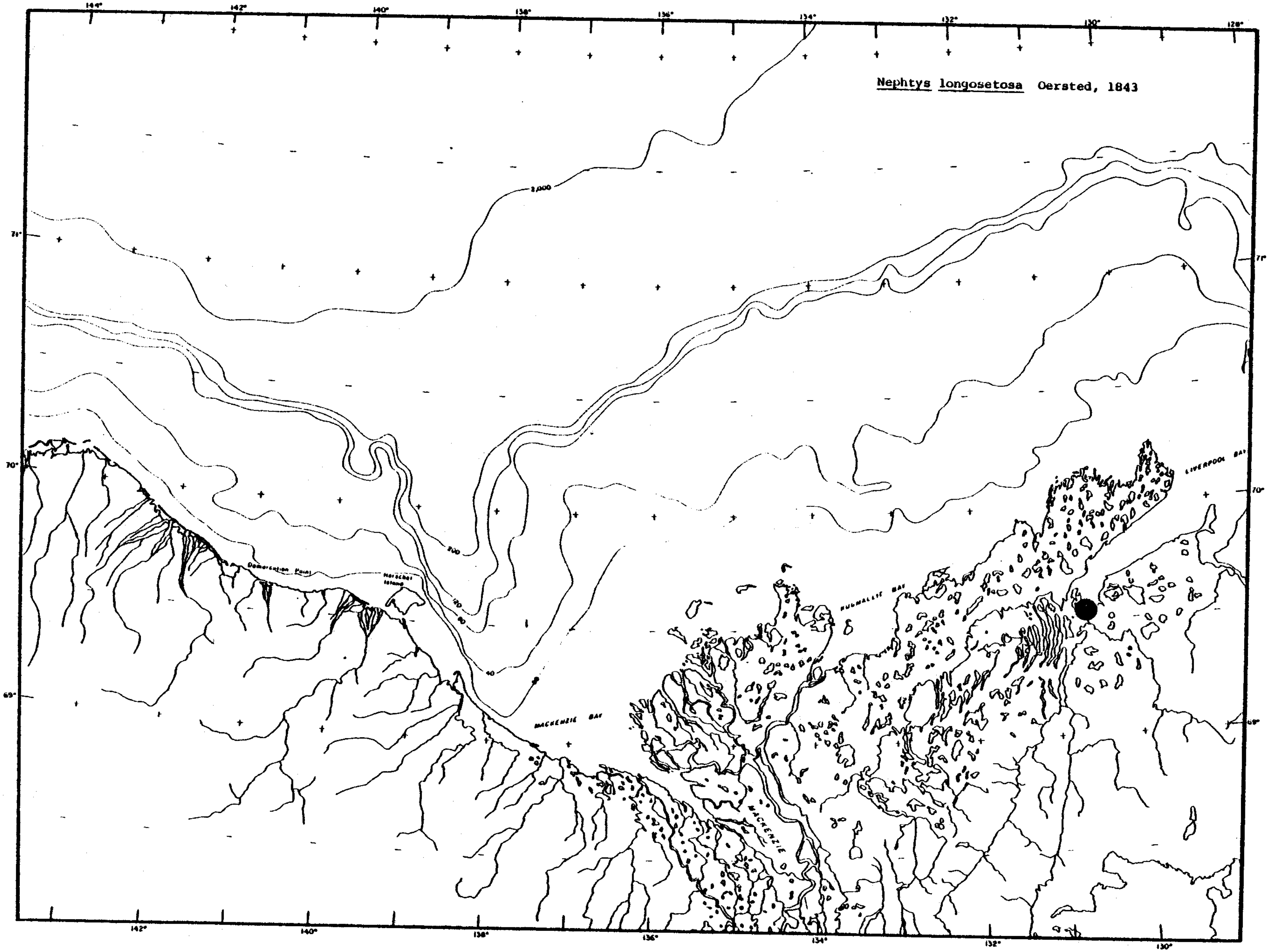
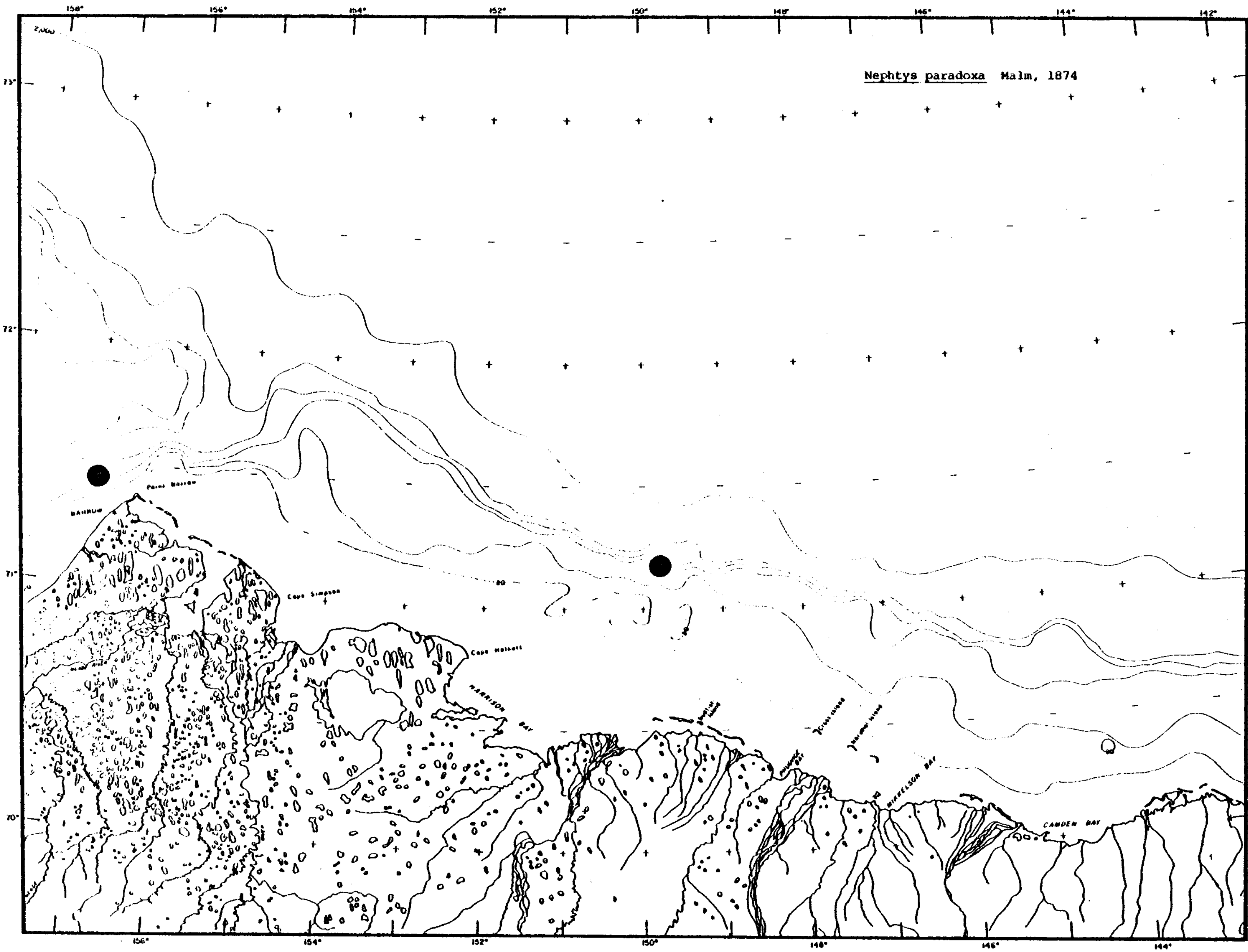
70°


Nephtys longosetosa Oersted, 1843
144°
142°
140°
138°
136°
134°
132°
130°
128°
71°
70°
69°
2,000
200
120
80
40
Demarcation Point
Herschel Island
Mackenzie Bay
Kugmallit Bay
Liverpool Bay
Mackenzie

201


Nephtys paradoxa Malm, 1874
158°
156°
154°
152°
150°
148°
146°
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142°
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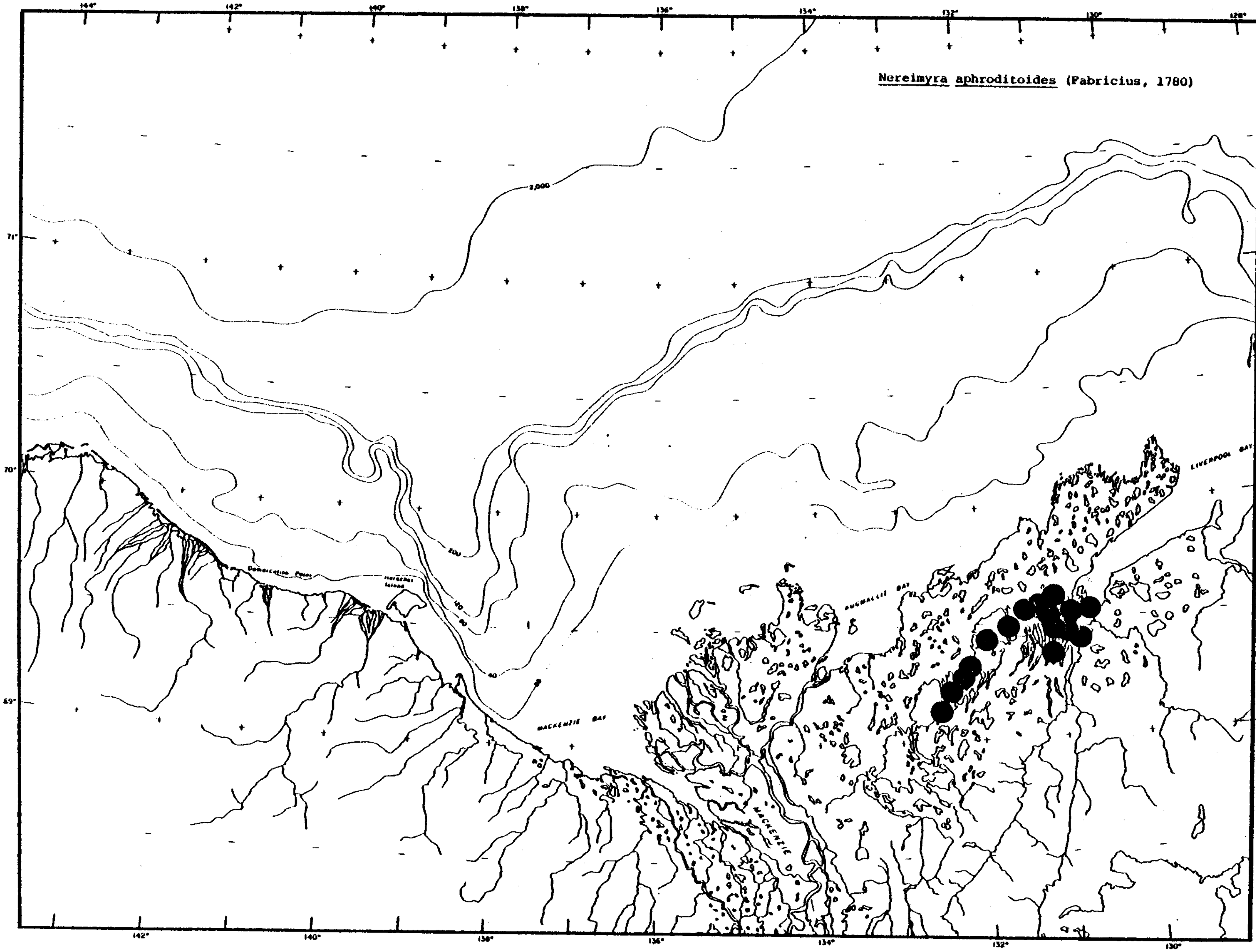
72°
71°
70°
Point Barrow
Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

42


Nereimyra aphroditoides (Fabricius, 1780)
144°
142°
140°
138°
136°
134°
132°
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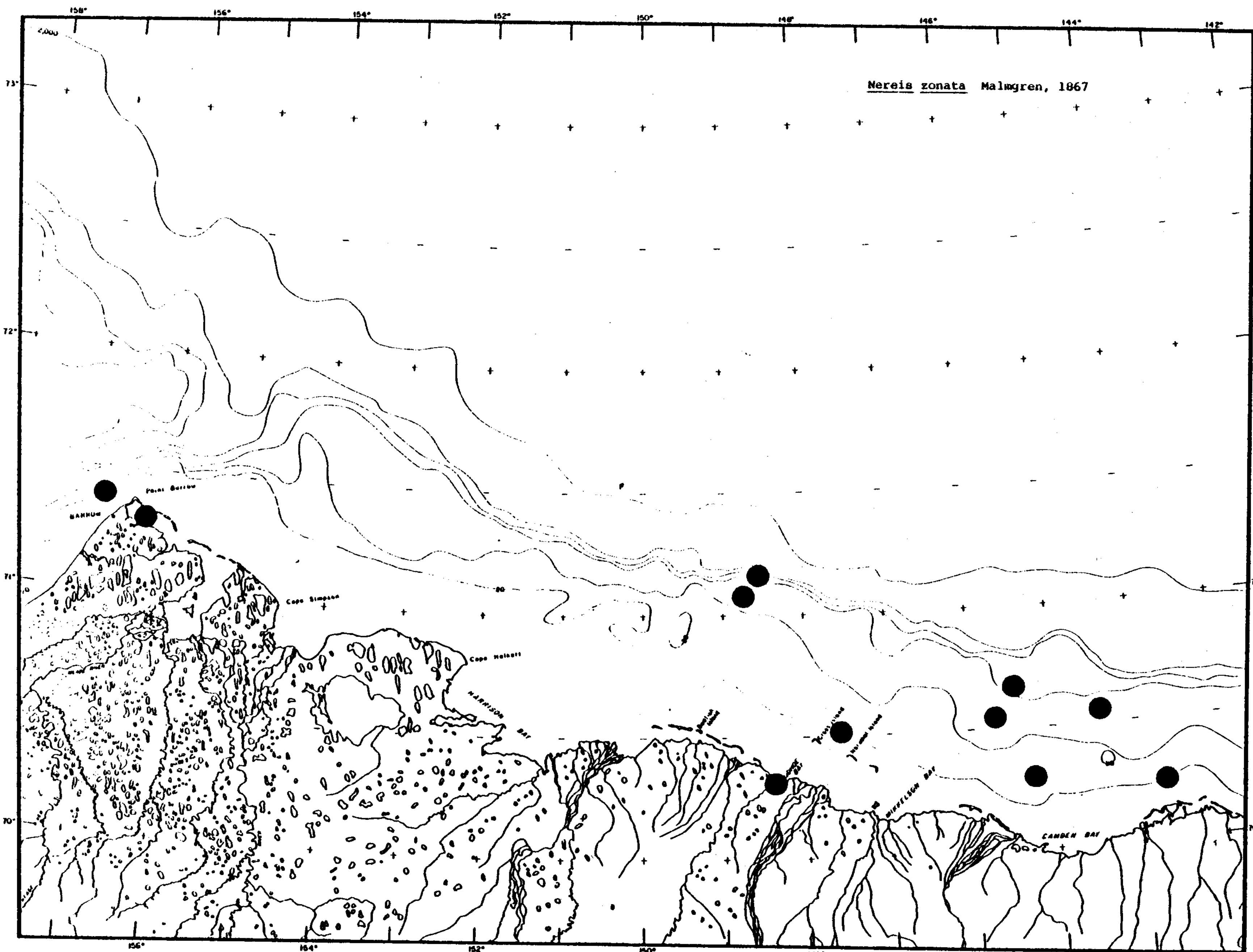
69°
2,000
LIVERPOOL BAY
MACKENZIE BAY
MACKENZIE
Demarcation Point
Herschel Island


Nereis zonata Malmgren, 1867
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
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158°
156°
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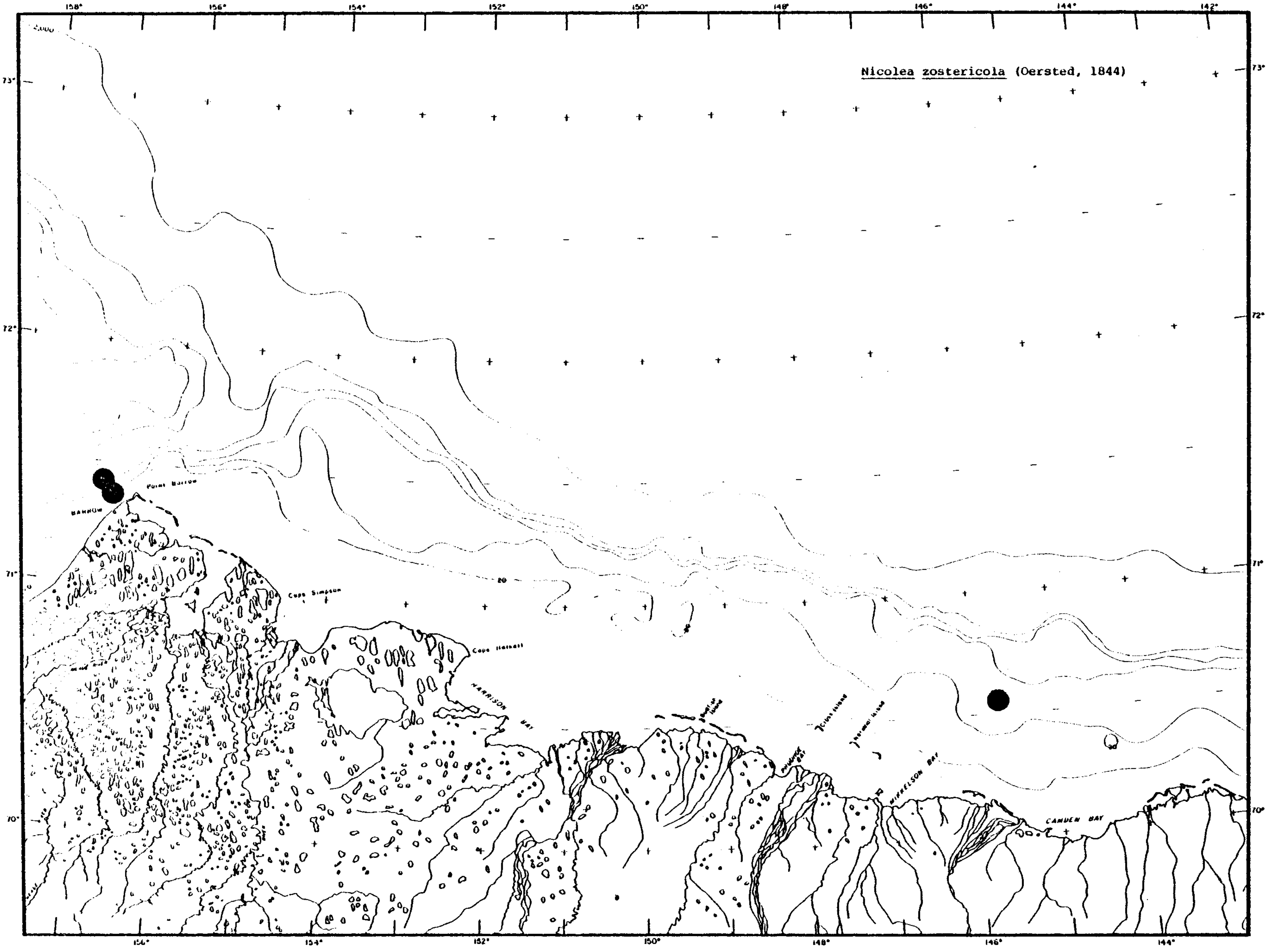
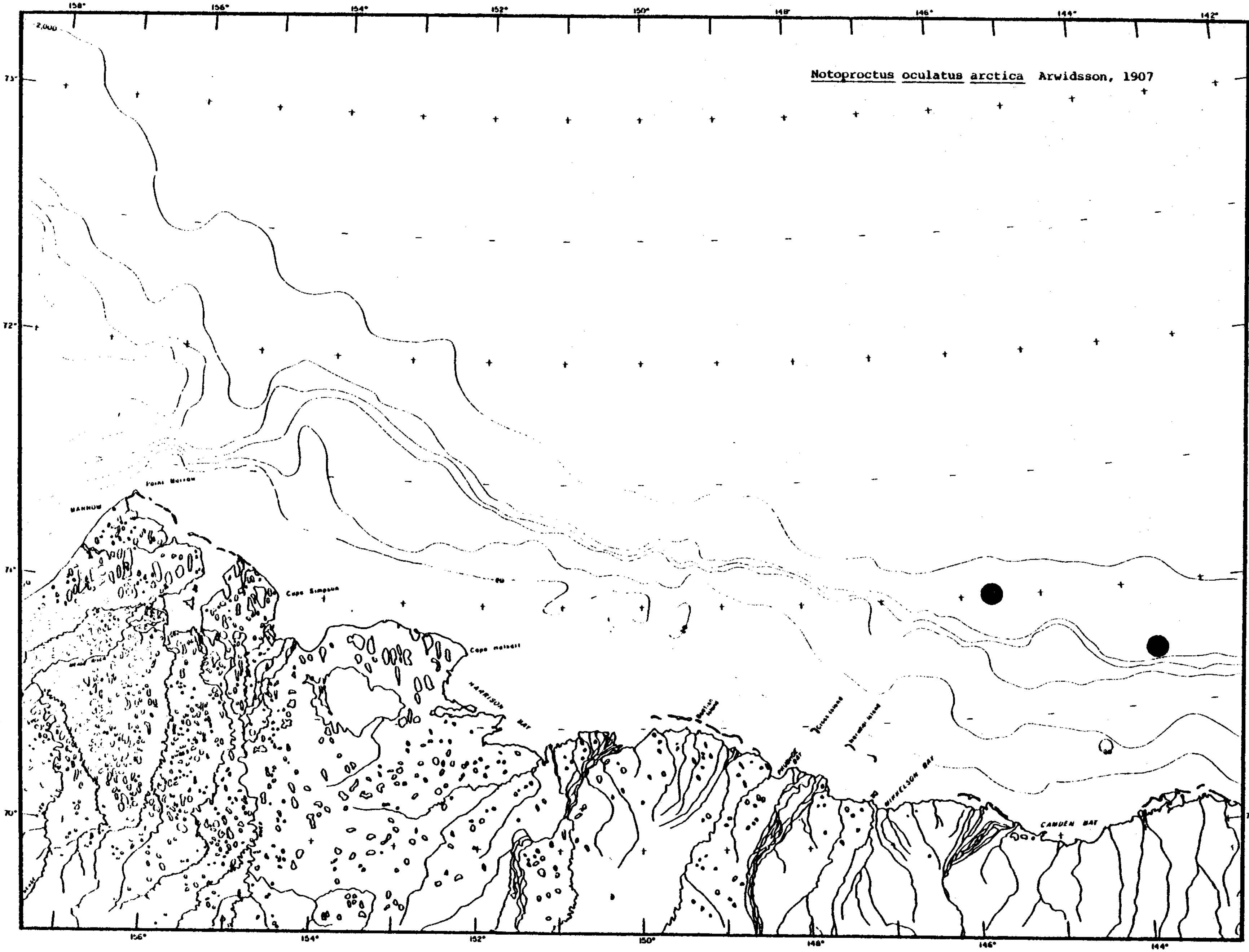
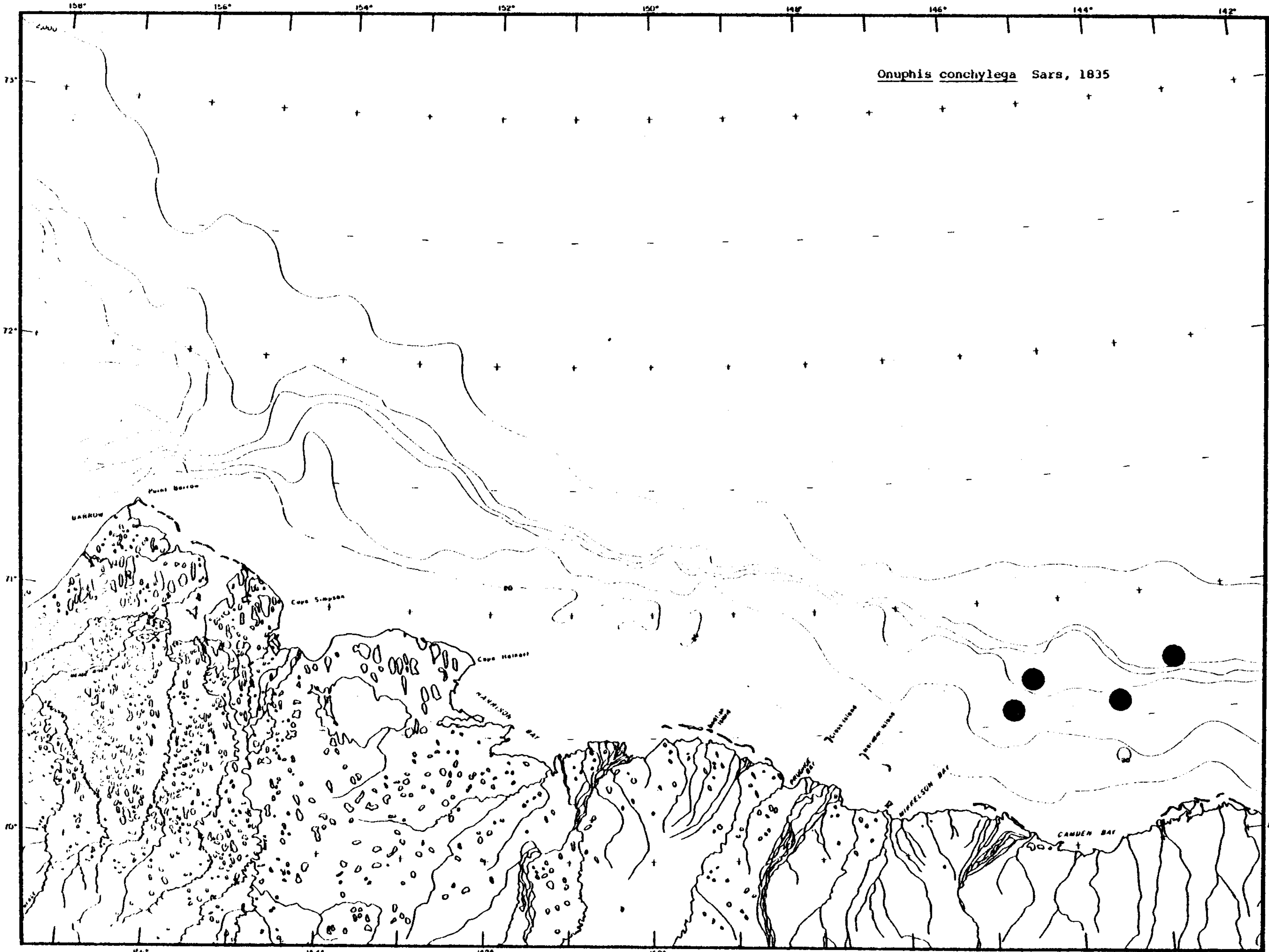


<u>Nicolea</u> <u>zostericola</u> (Oersted, 1844)



<u>Notoproctus</u> <u>oculatus</u> <u>arctica</u> Arwidsson, 1907


Onuphis conchylega Sars, 1835
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Mikkelson Bay
Camden Bay
73°
72°
71°
70°
156°
154°
152°
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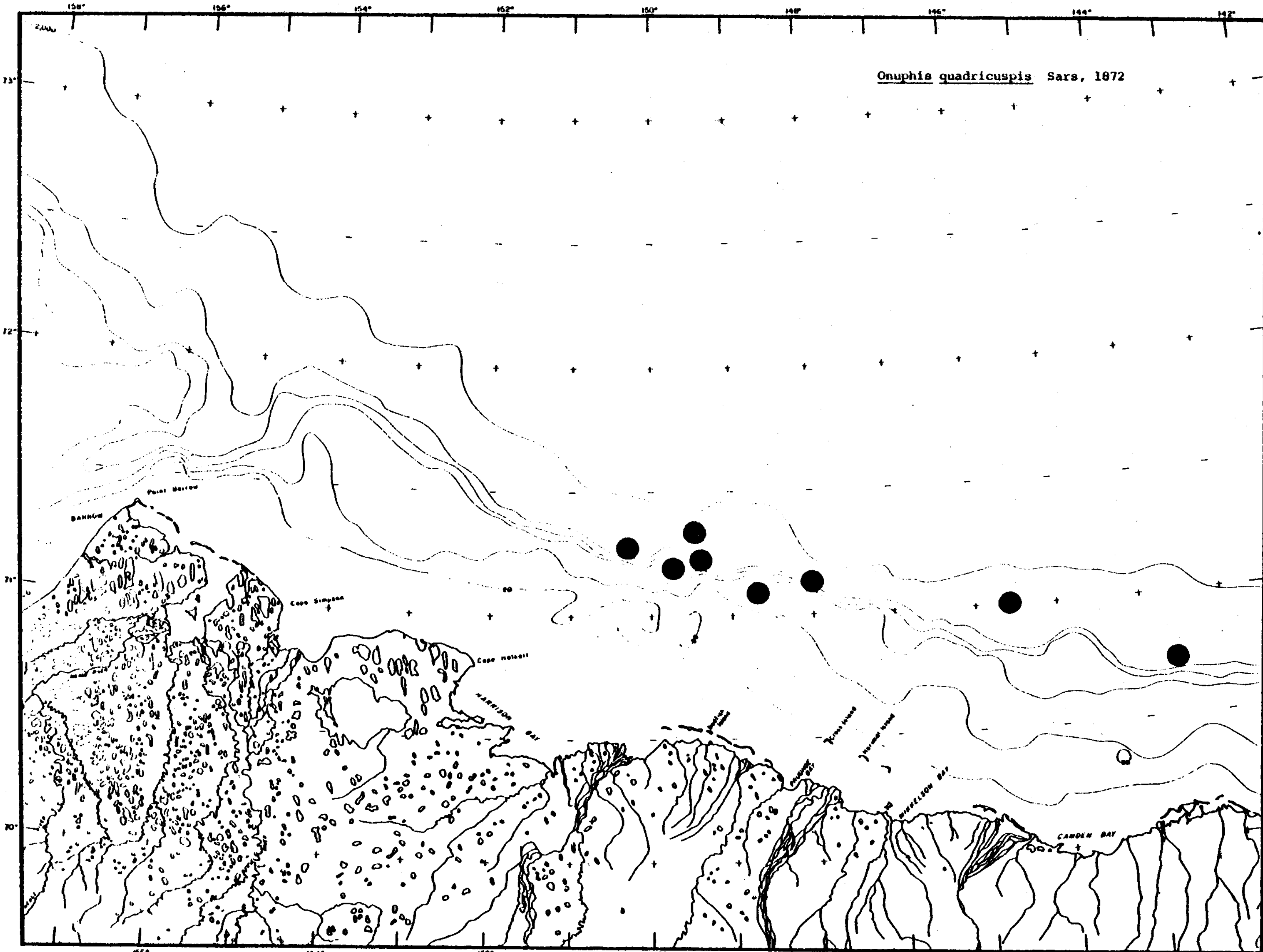
Onuphis quadricuspis Sars, 1872
158°
156°
154°
152°
150°
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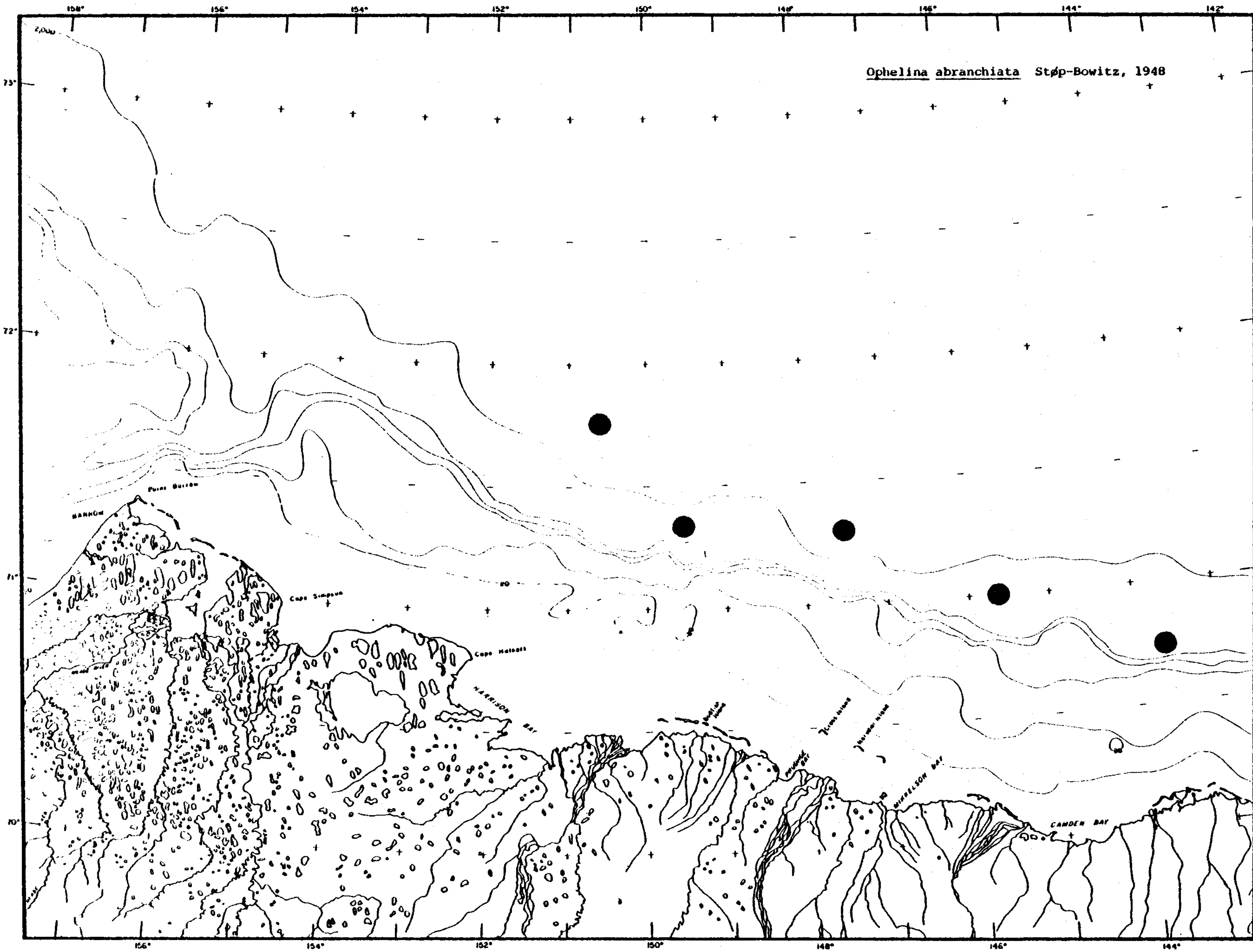
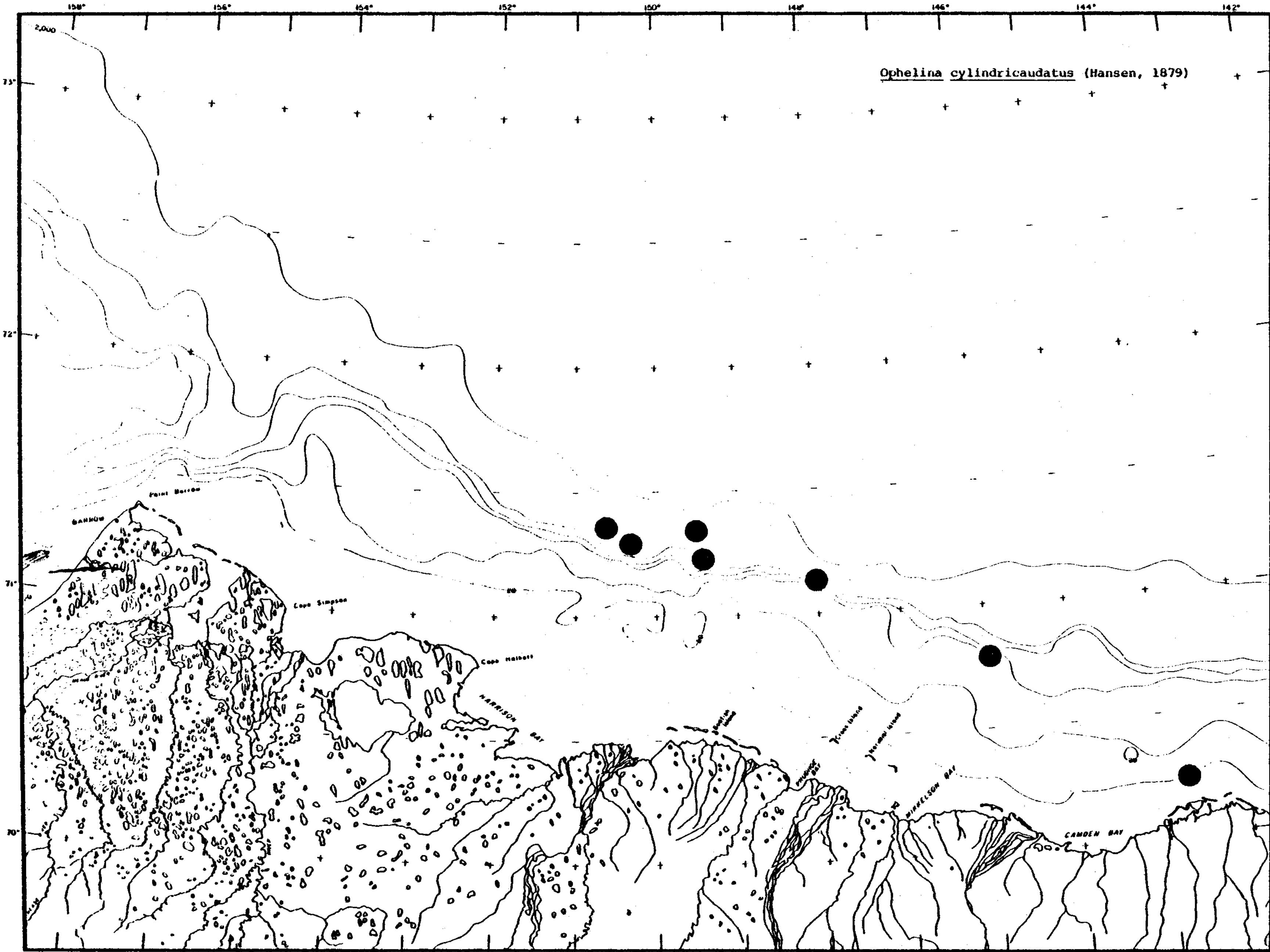
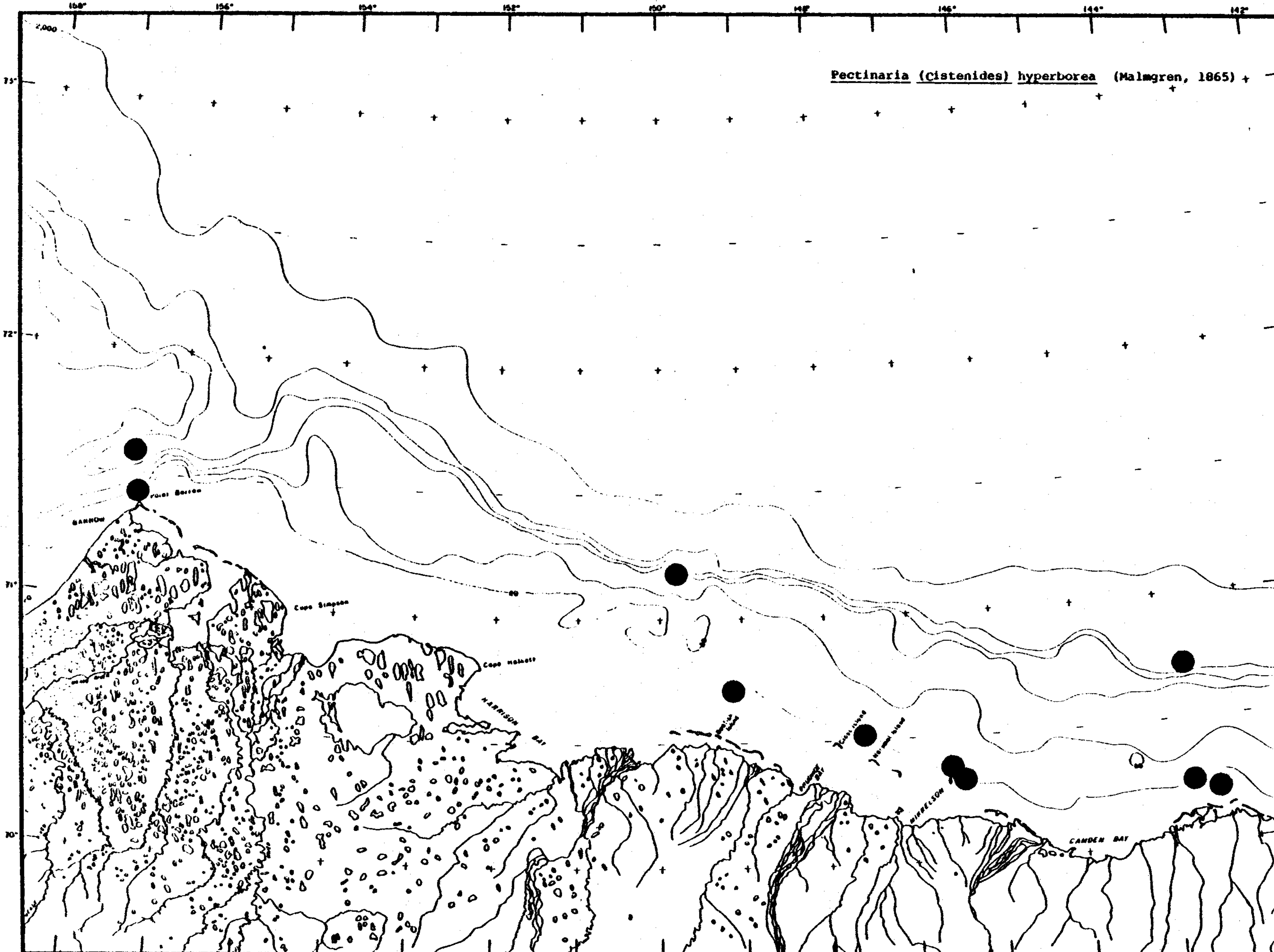
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Ophelina abranchiata Støp-Bowitz, 1948
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Mikkelson Bay
Camden Bay

209



Ophelina cylindricaudatus (Hansen, 1879)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°


Pectinaria (Cistenides) hyperborea (Malmgren, 1865)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
71°
72°
70°
156°
154°
152°
150°
148°
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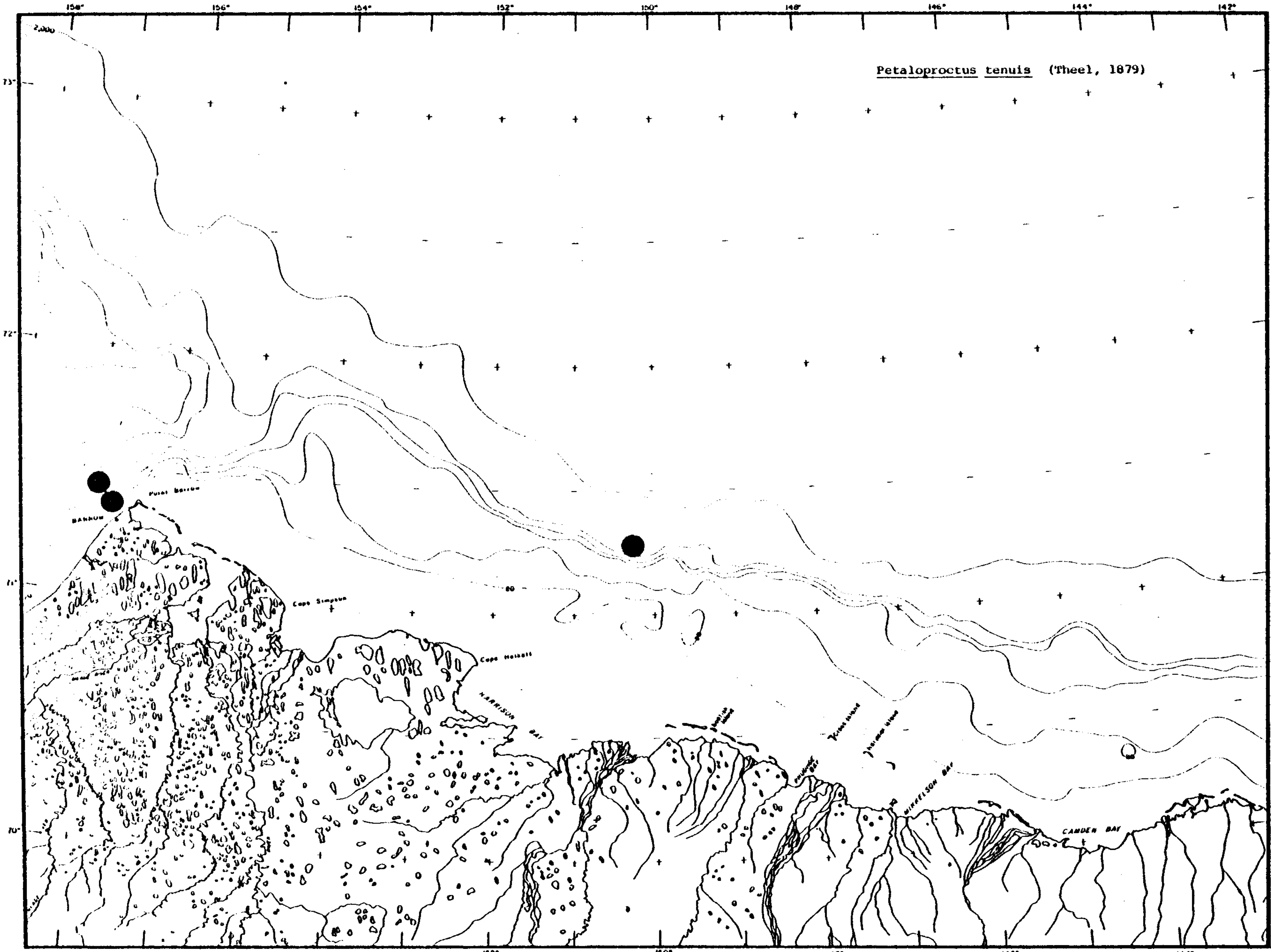
144°
142°


Petaloproctus tenuis (Theel, 1879)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
158°
156°
154°
152°
150°
148°
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144°
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73°
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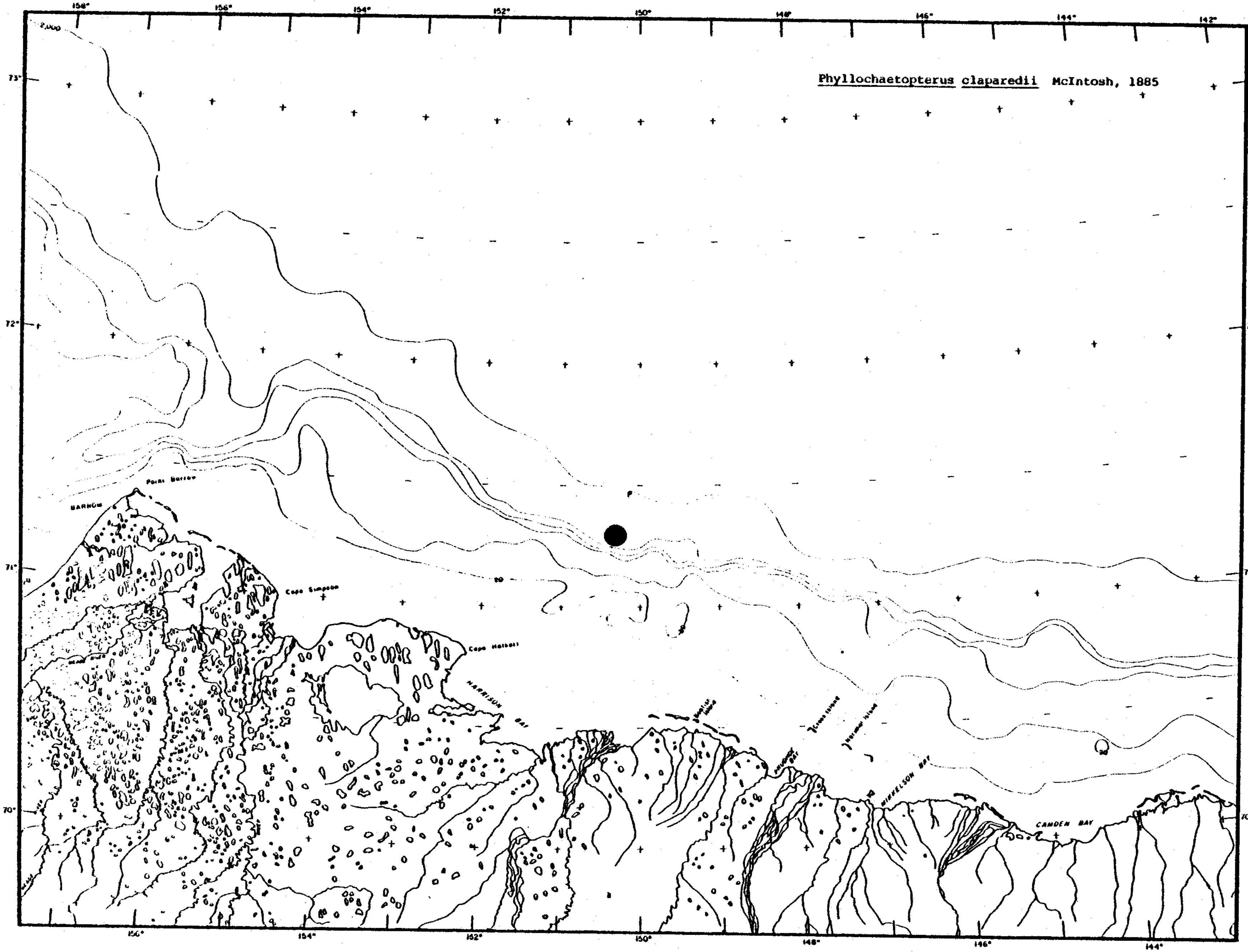
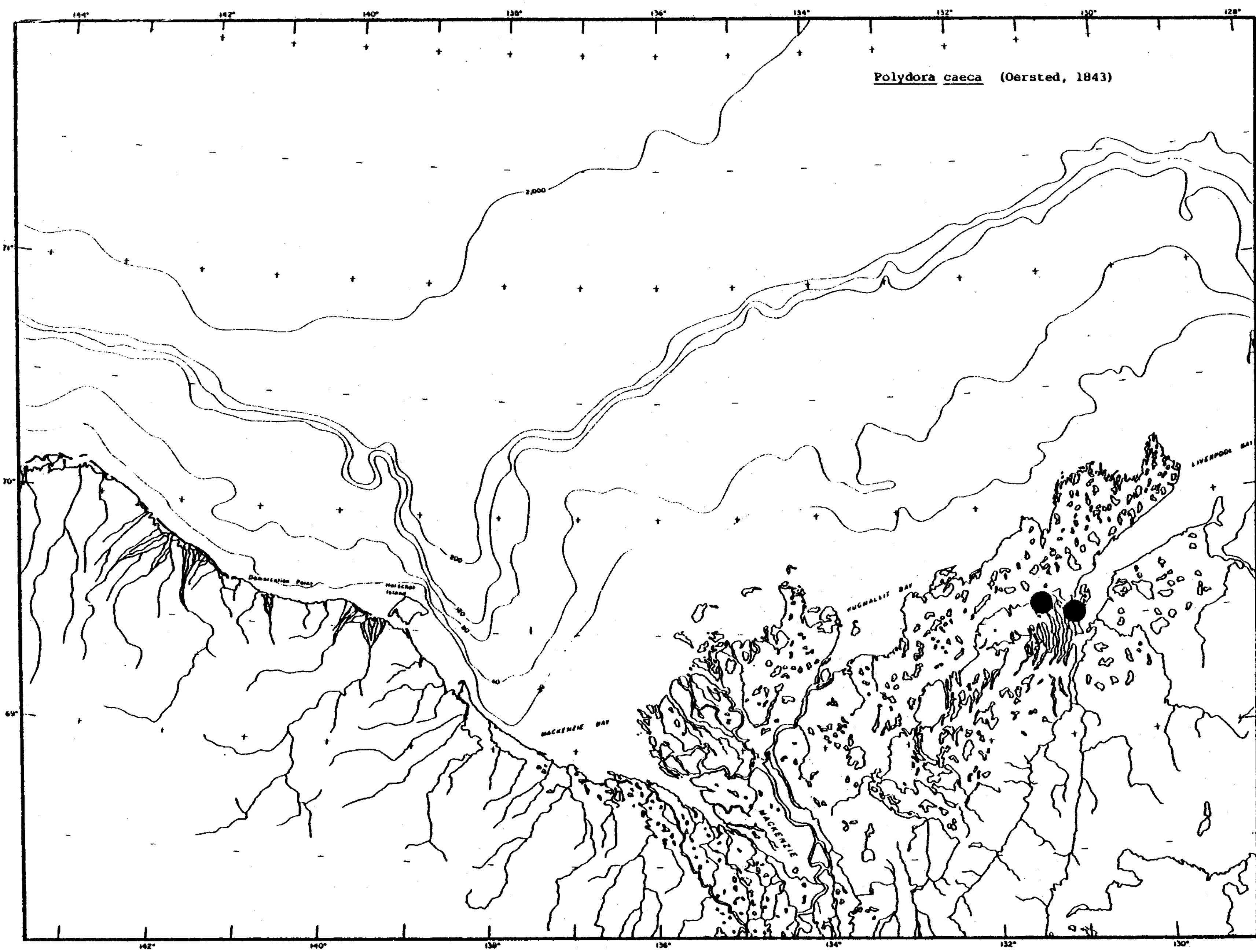
70°


Phyllochaetopterus claparedii McIntosh, 1885
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY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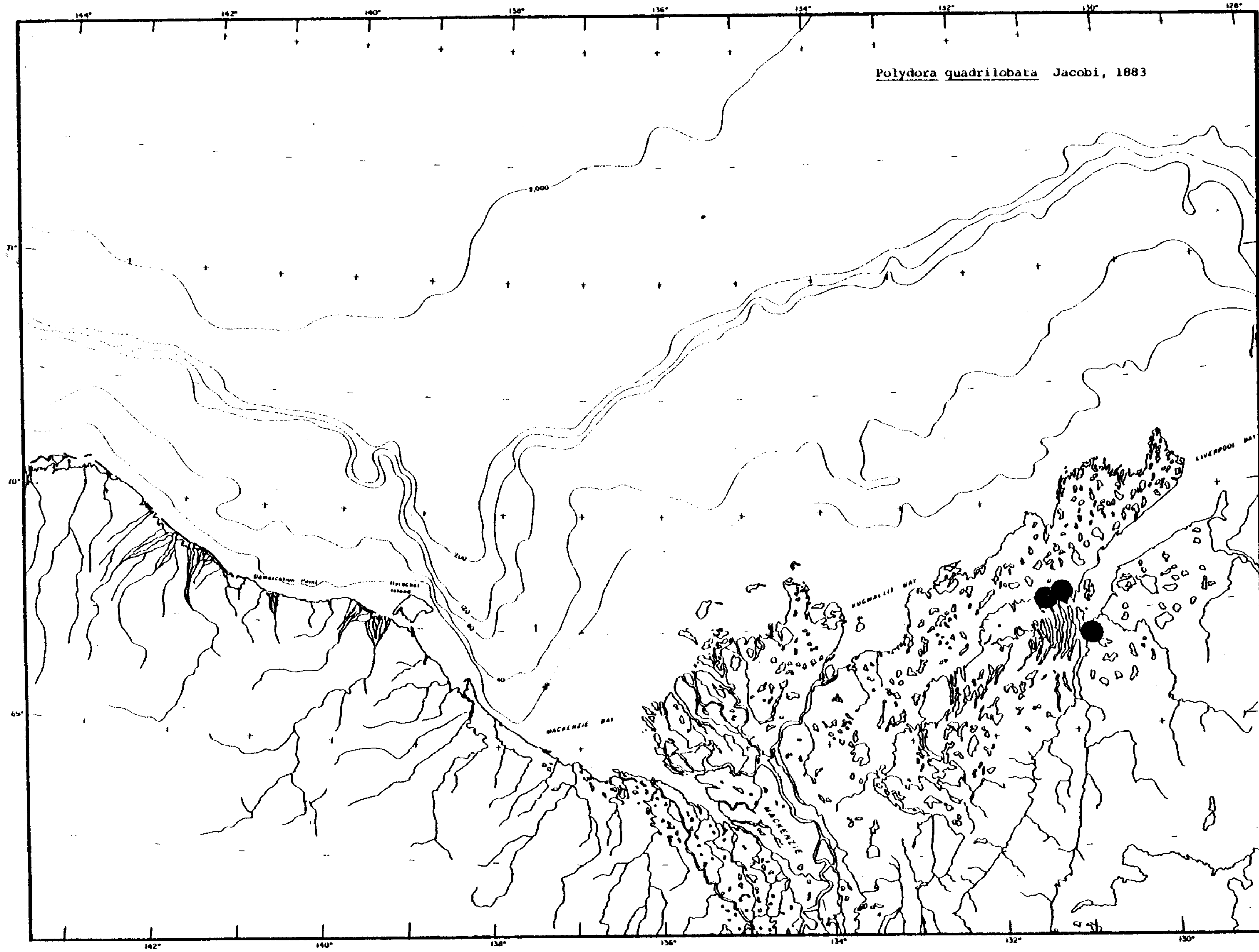
Herschel Island
Mackenzie Bay
Mackenzie
Liverpool Bay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Herschel Island
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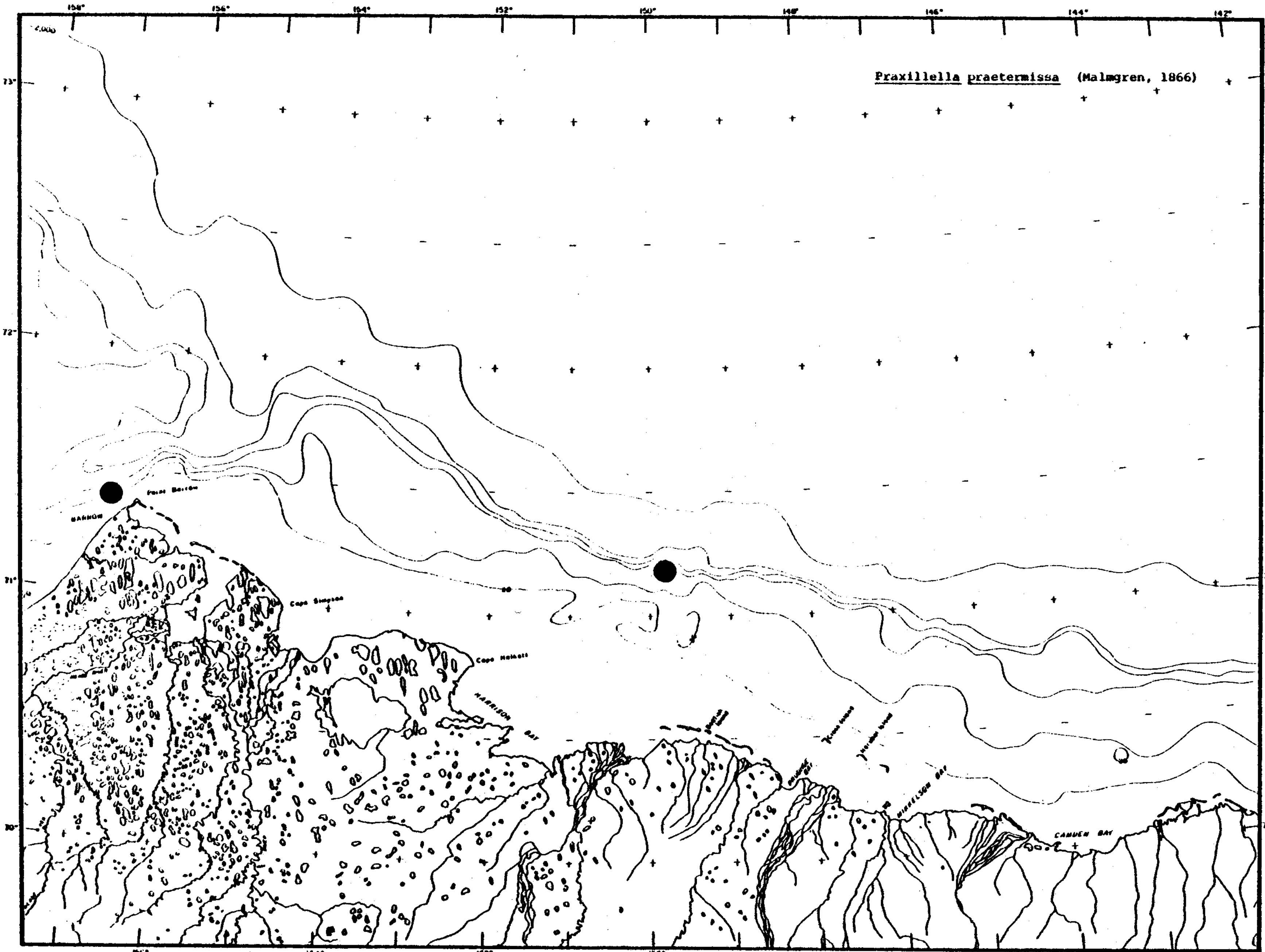
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE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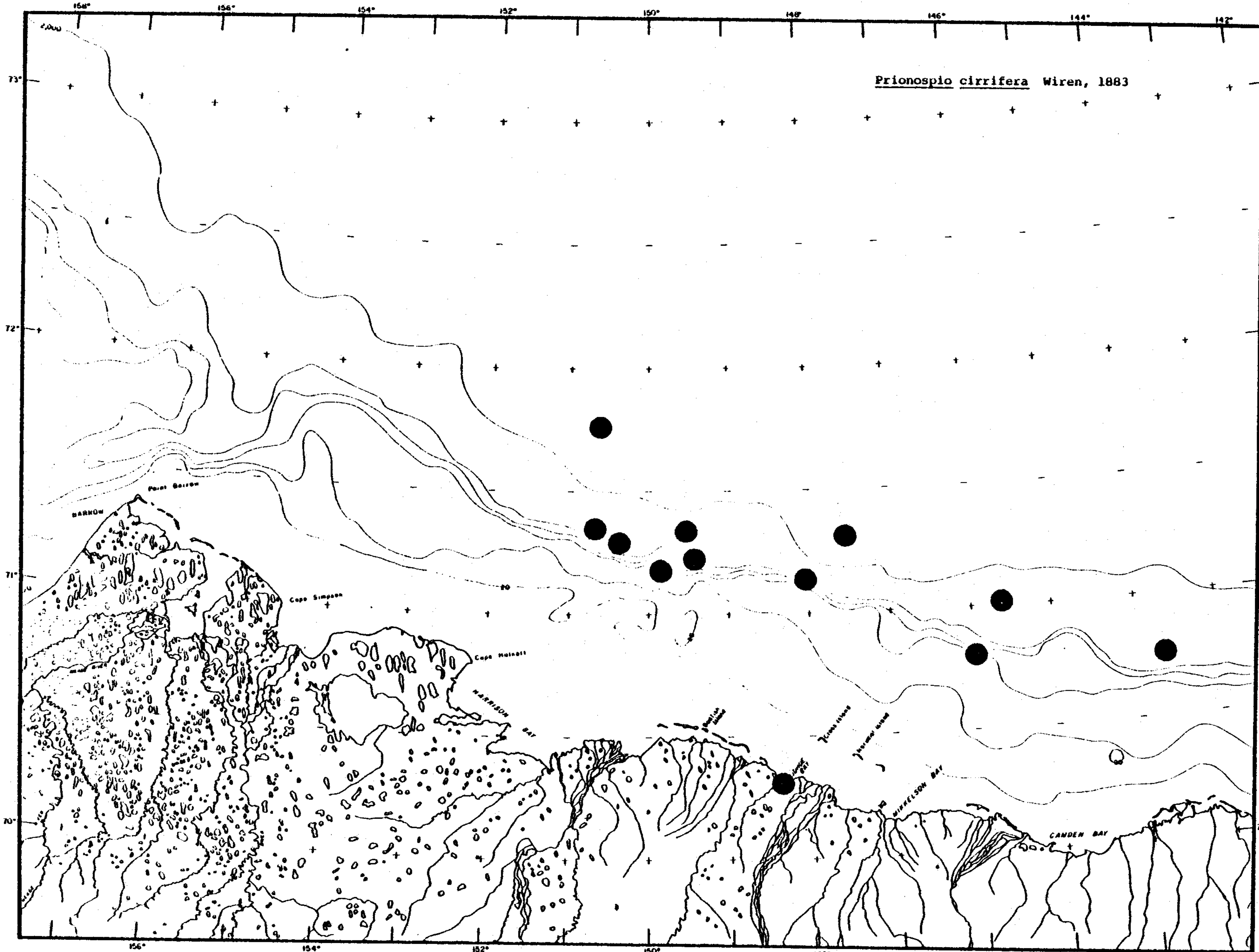
Camden Bay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BARROW
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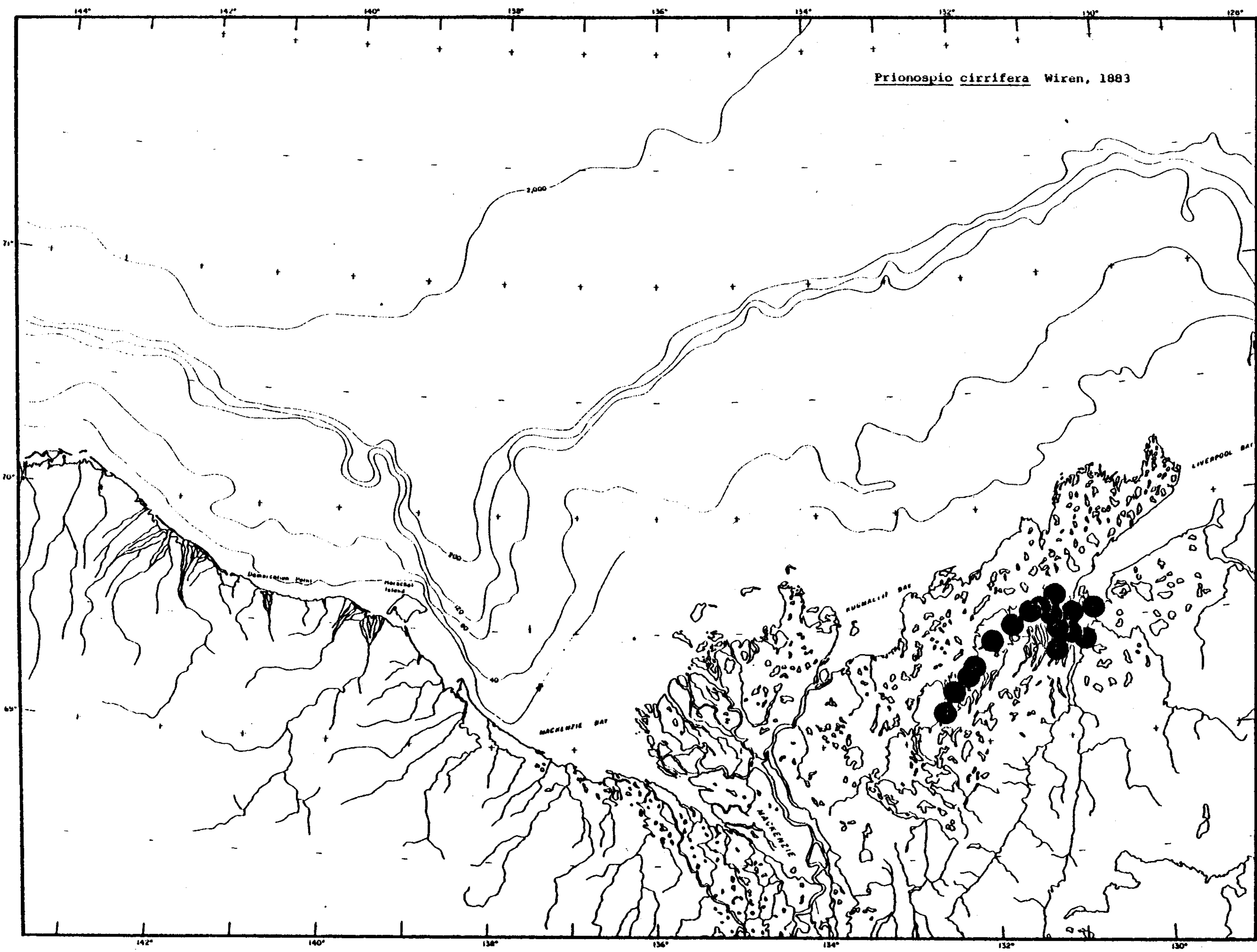
CAMDEN BAY


Prionospio cirrifera Wiren, 1883
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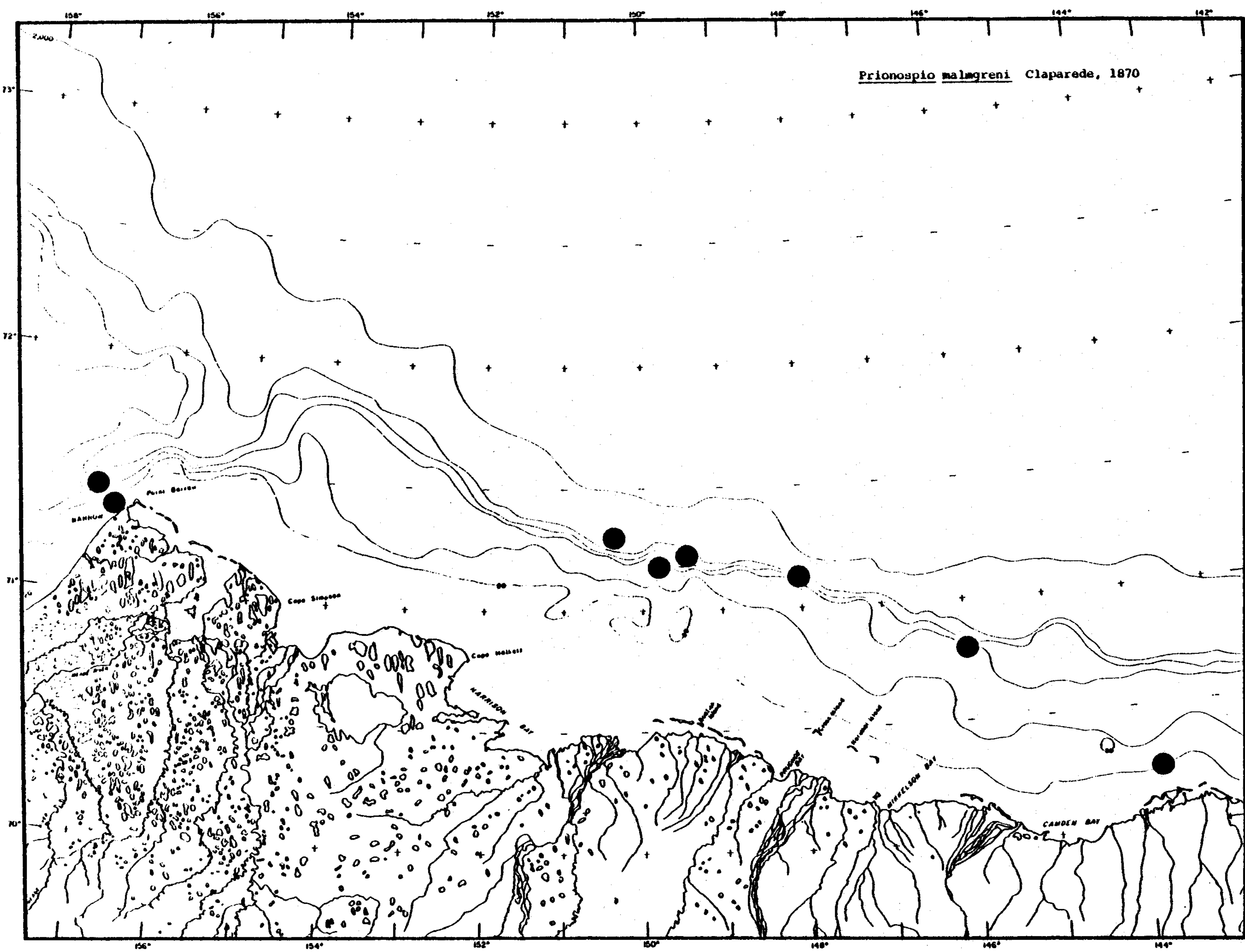
MACKENZIE


Prionospio malmgreni Claparede, 1870
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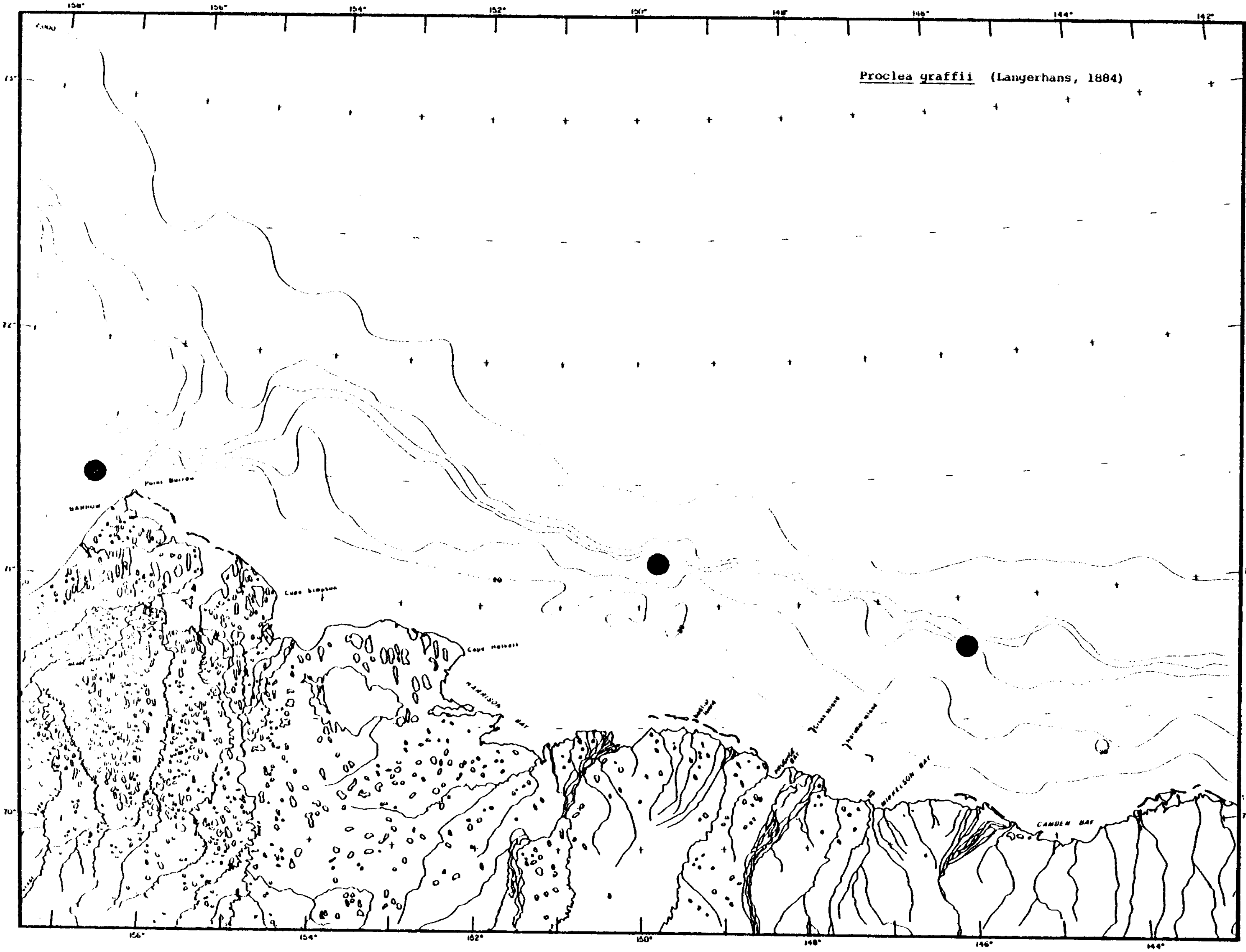
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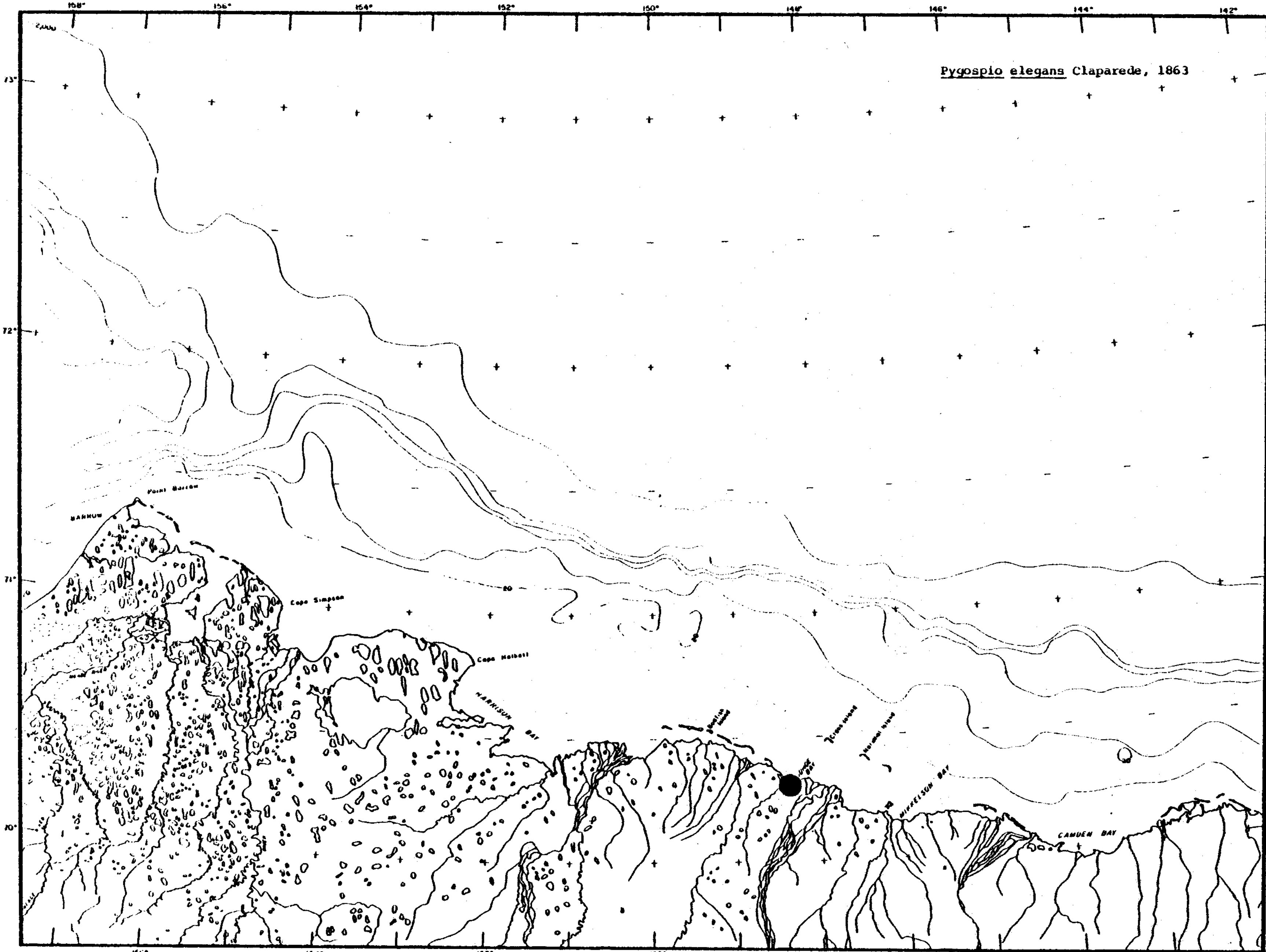
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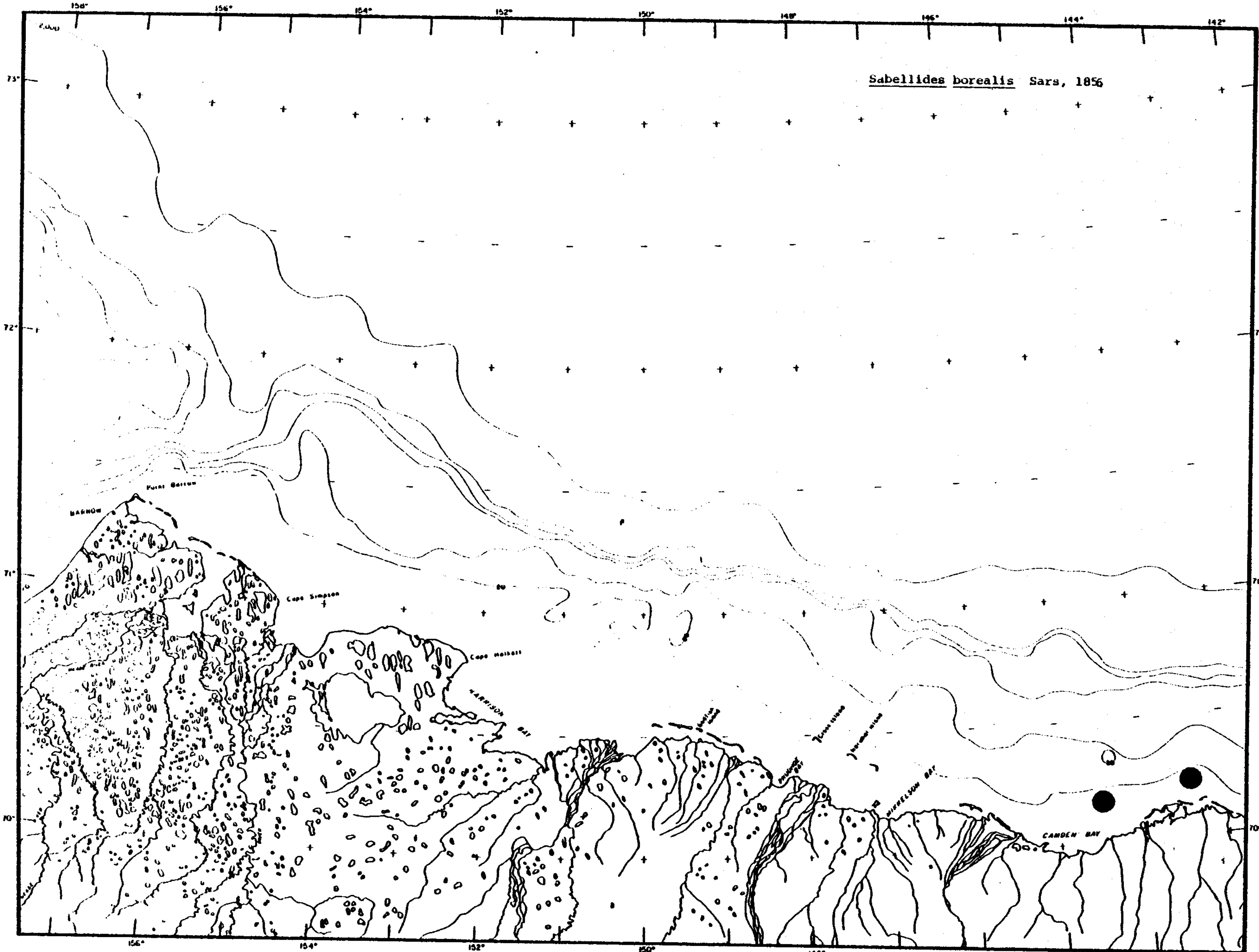
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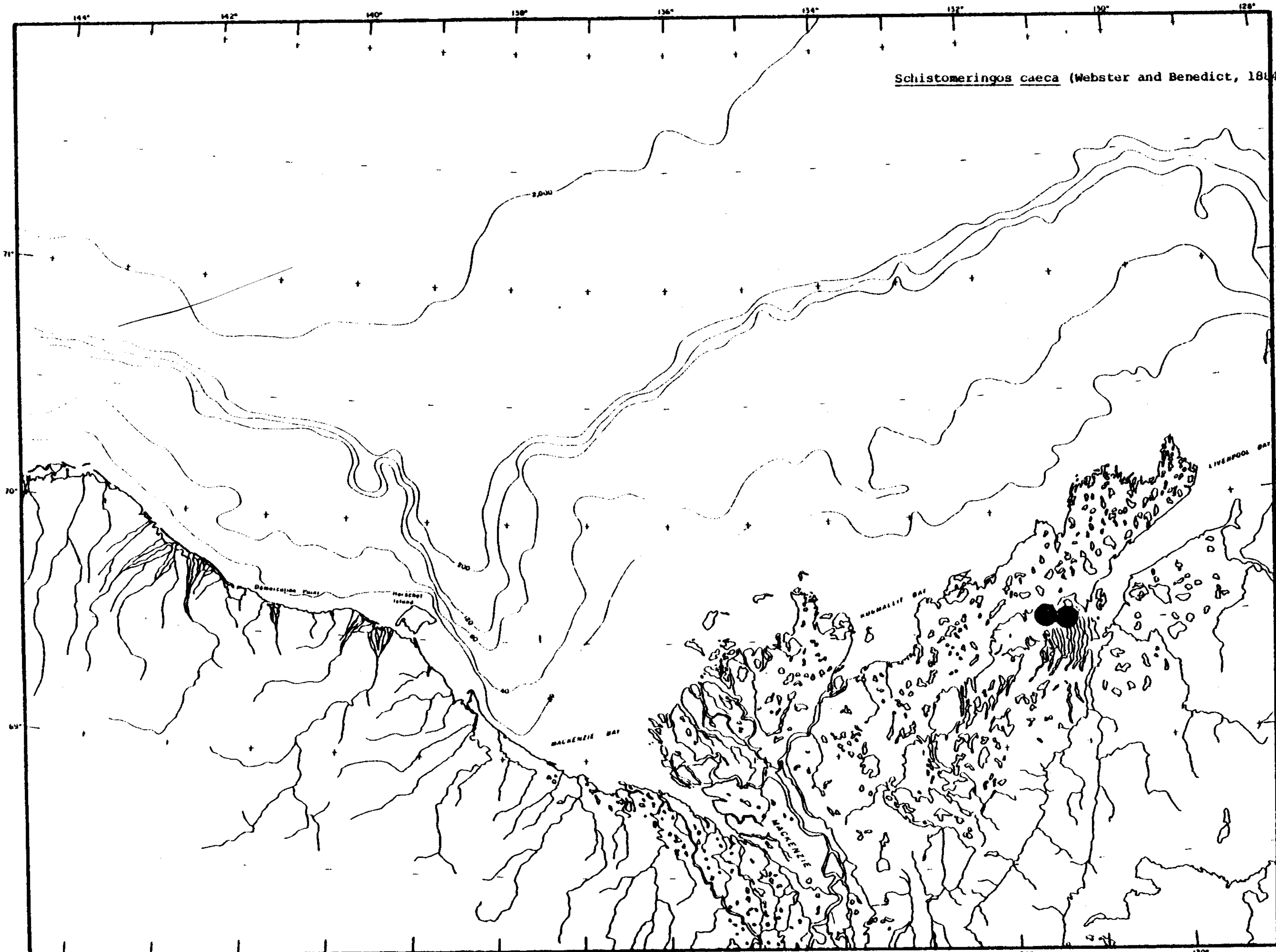
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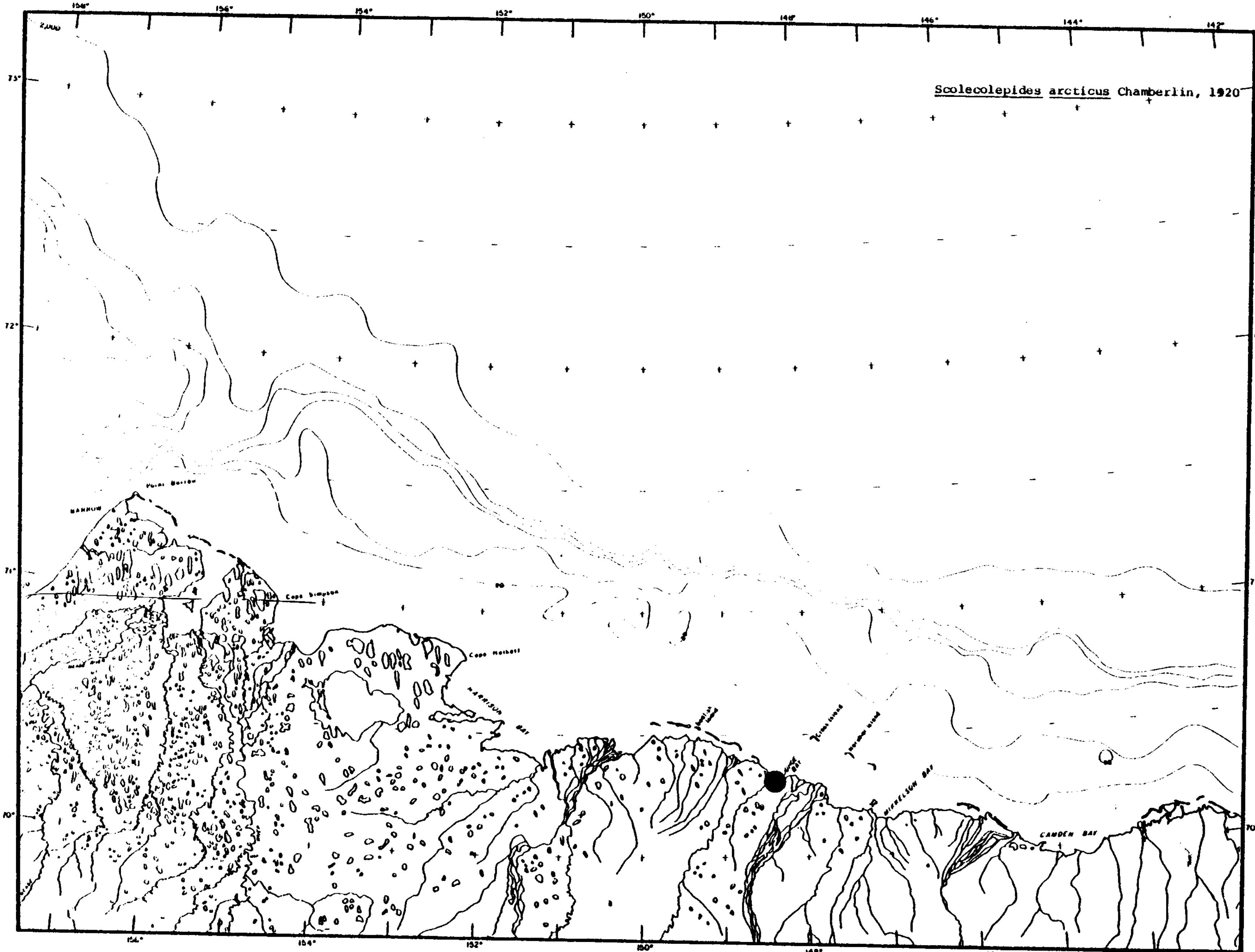
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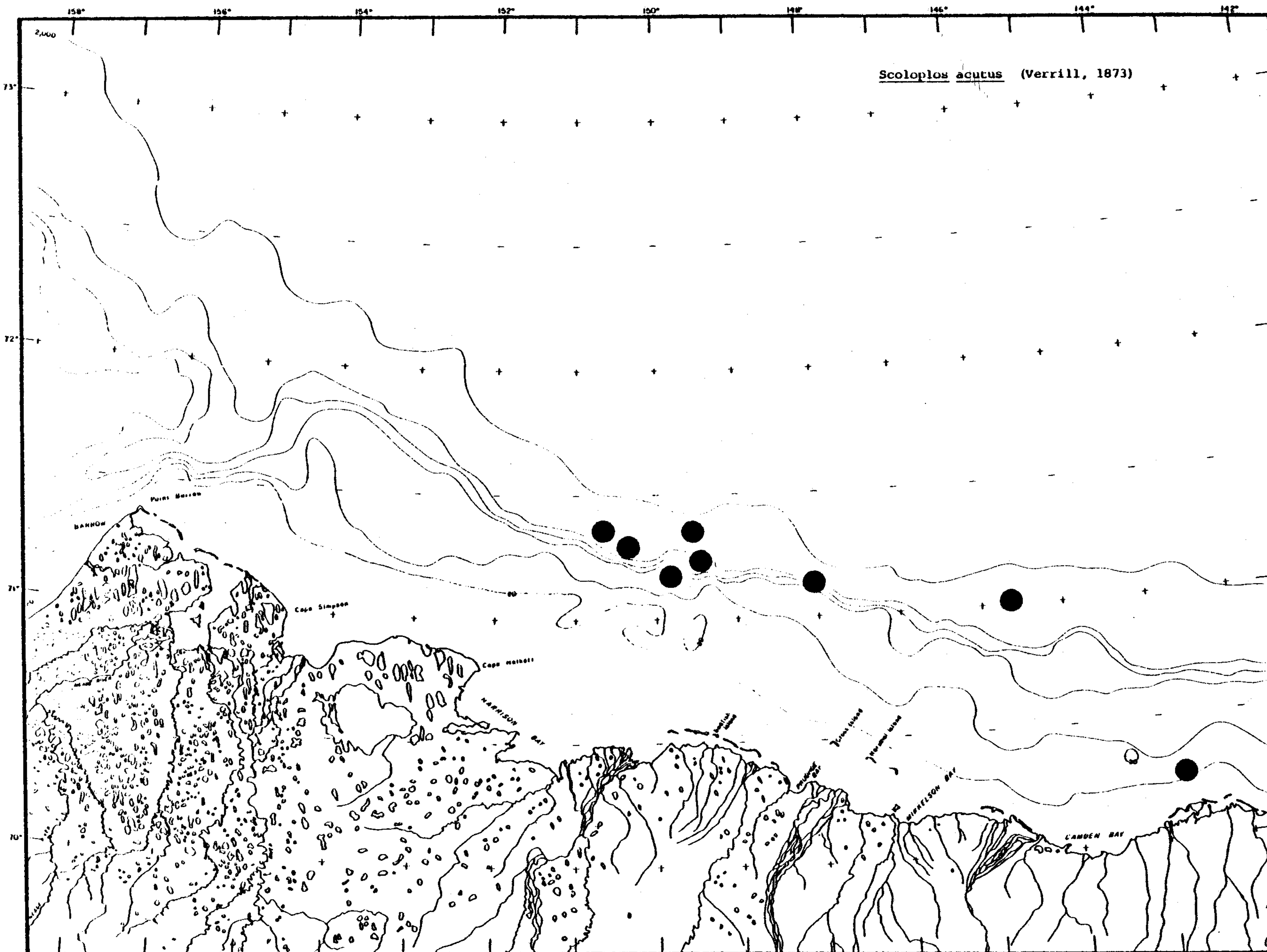
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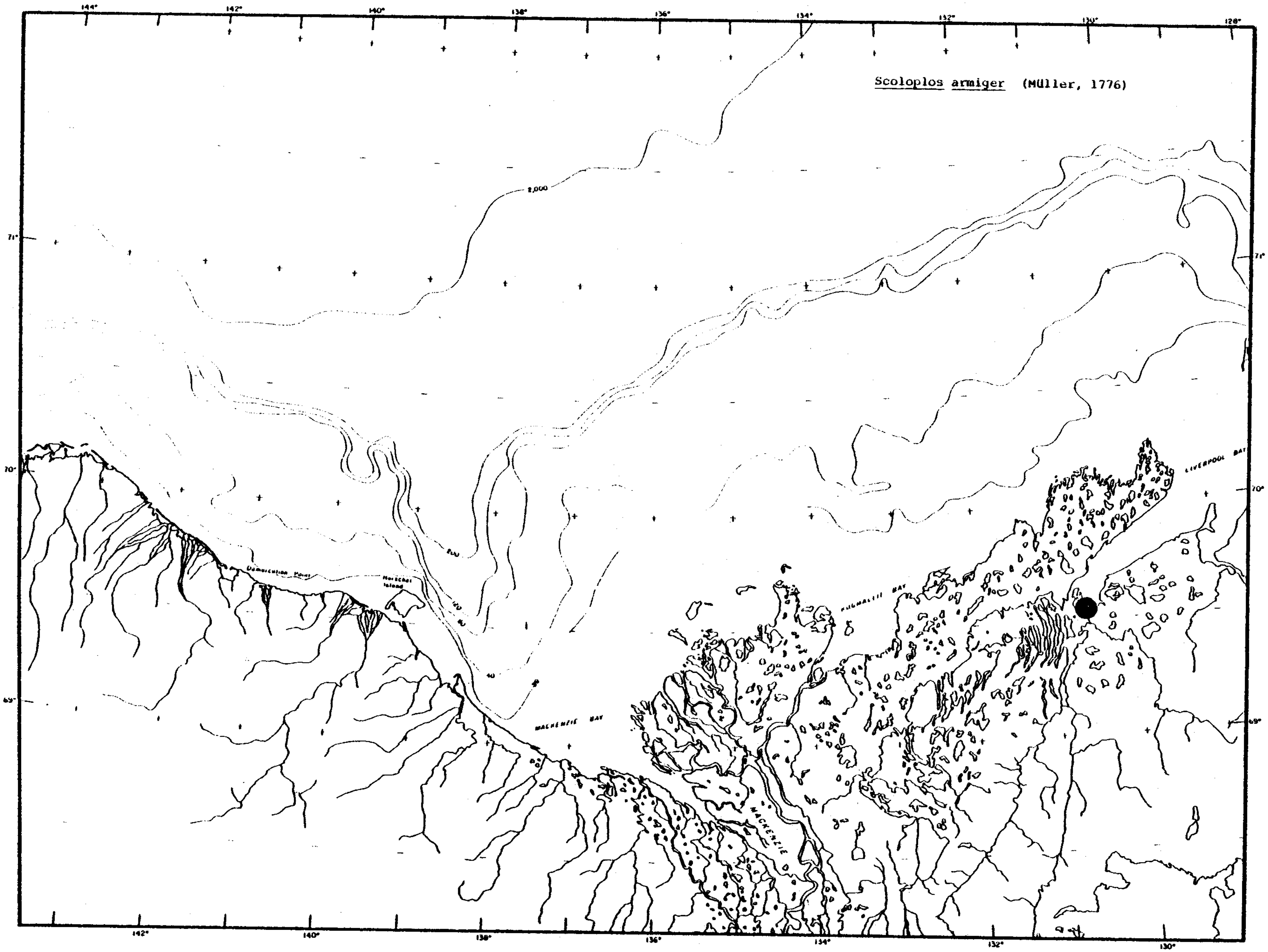
Camden Bay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Demarcation Point
Herschel Island
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KUGMALLIT BAY
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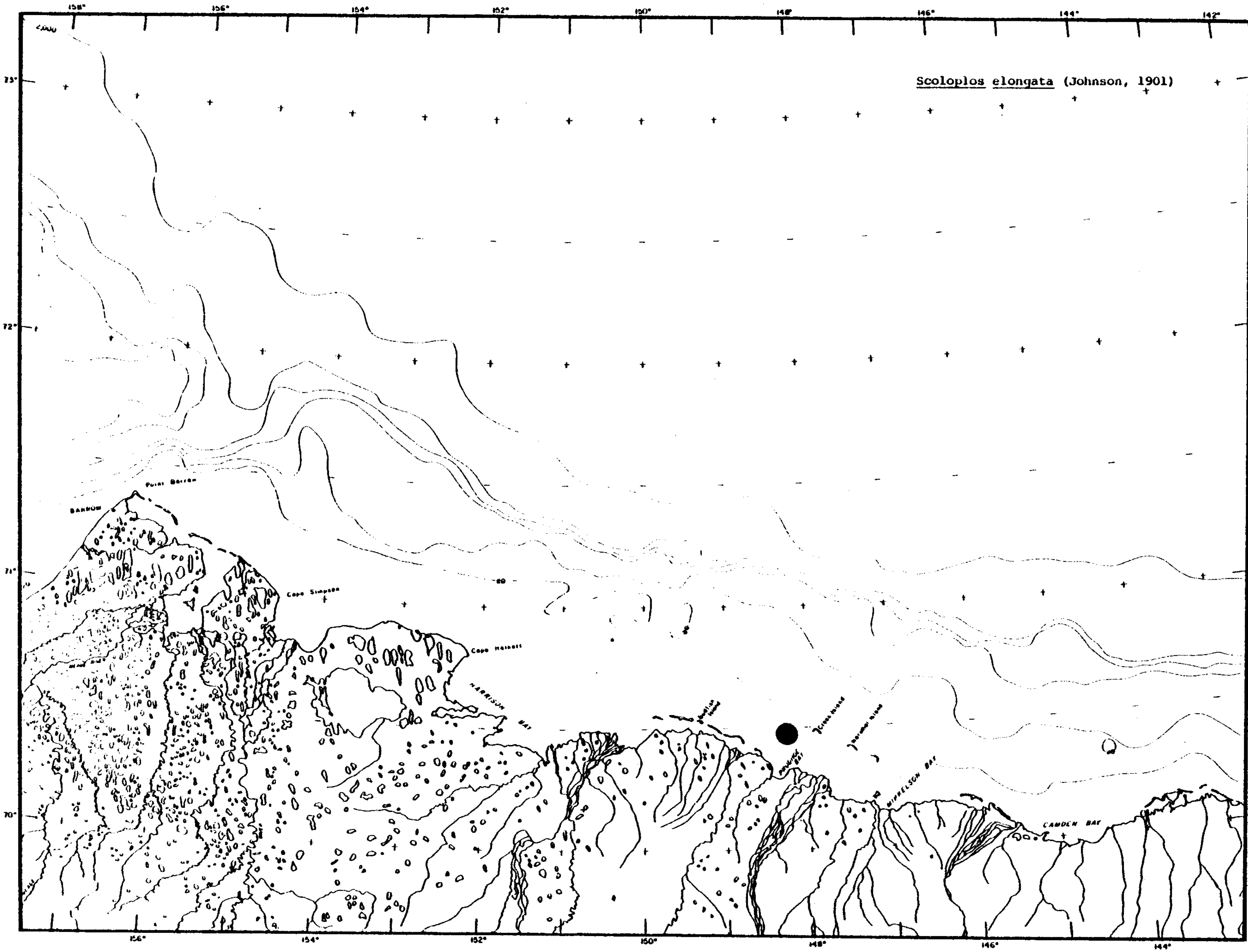
MACKENZIE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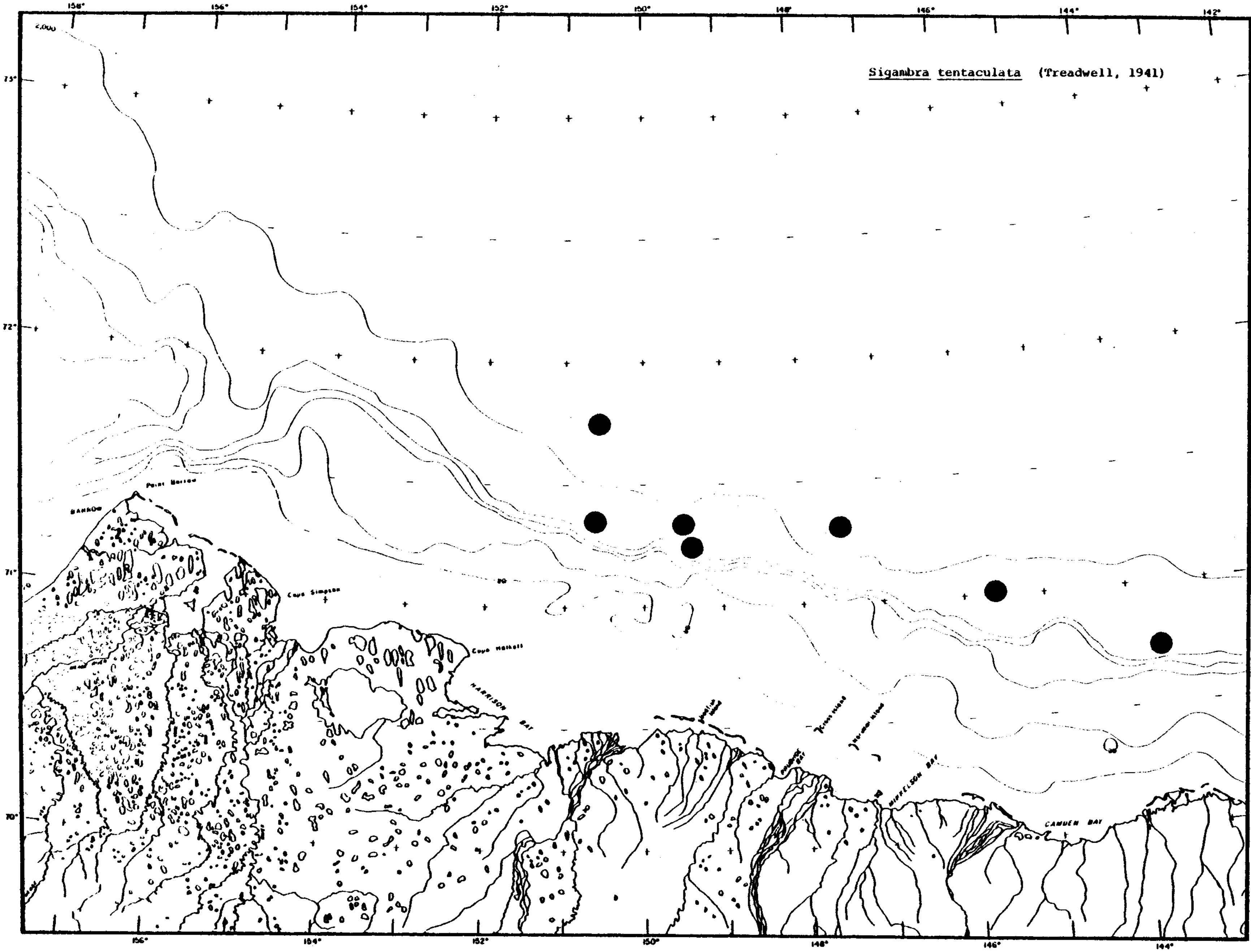
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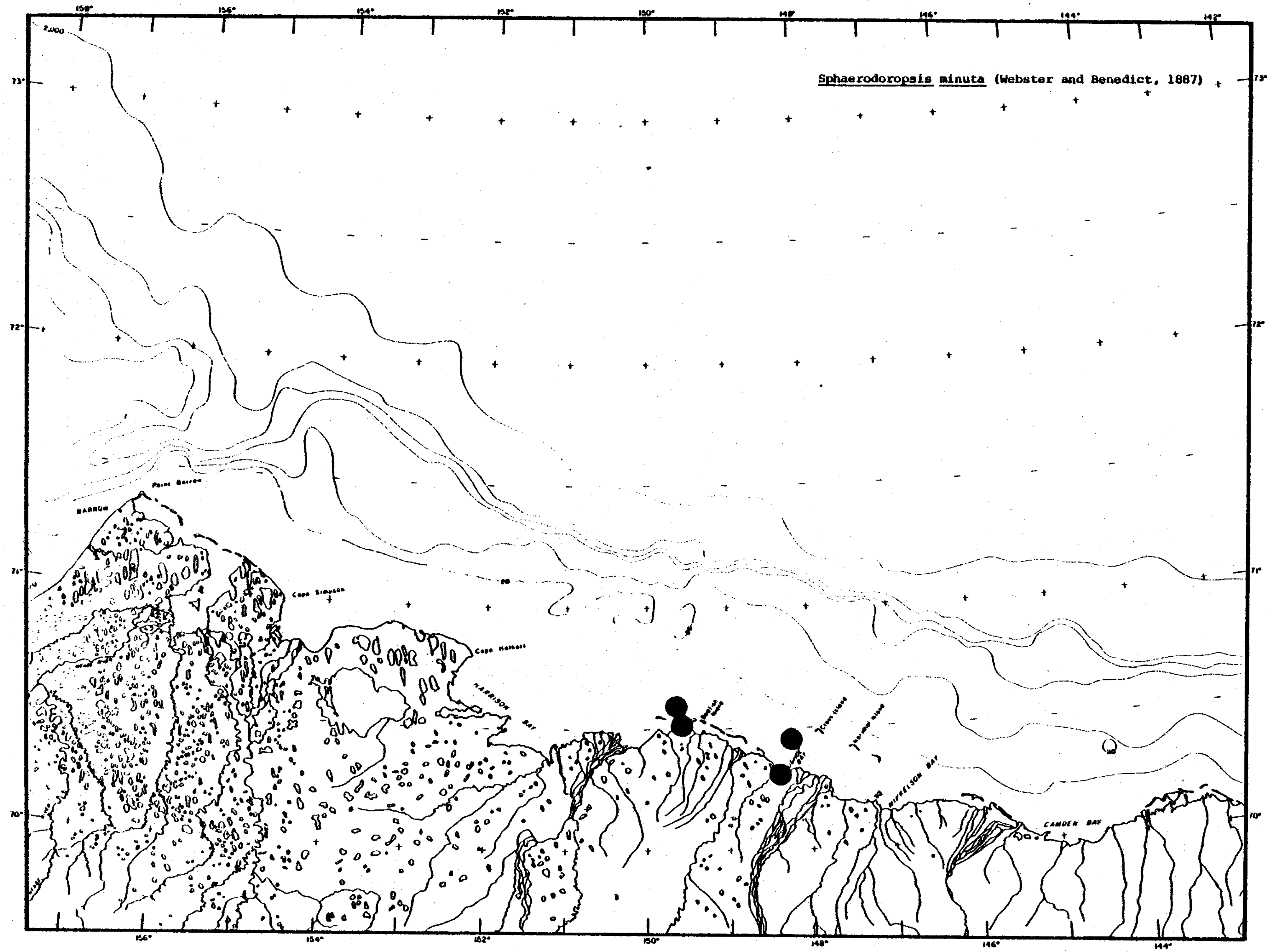
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2,000
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Cape Halkett
HARRISON BAY
CAMDEN BAY
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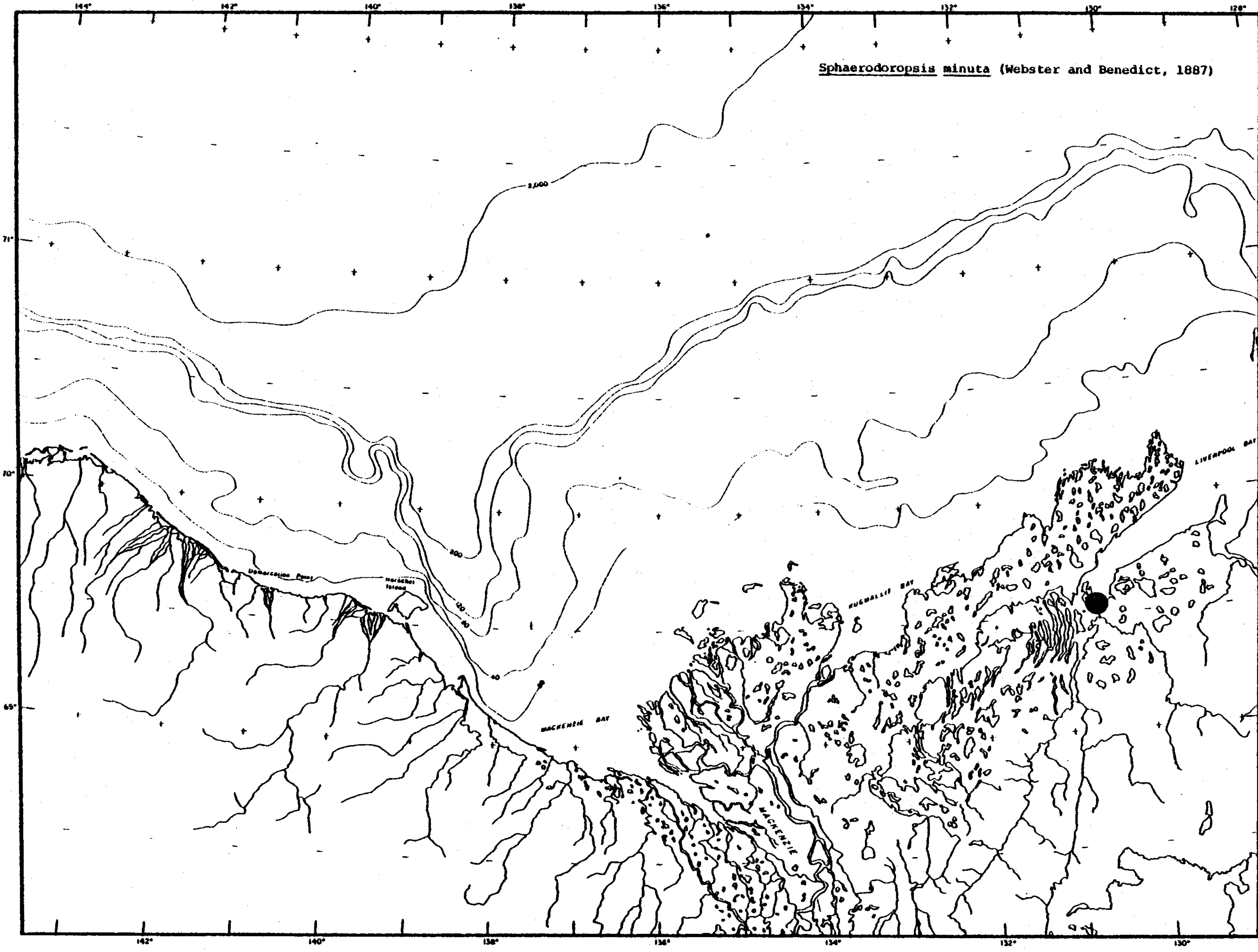
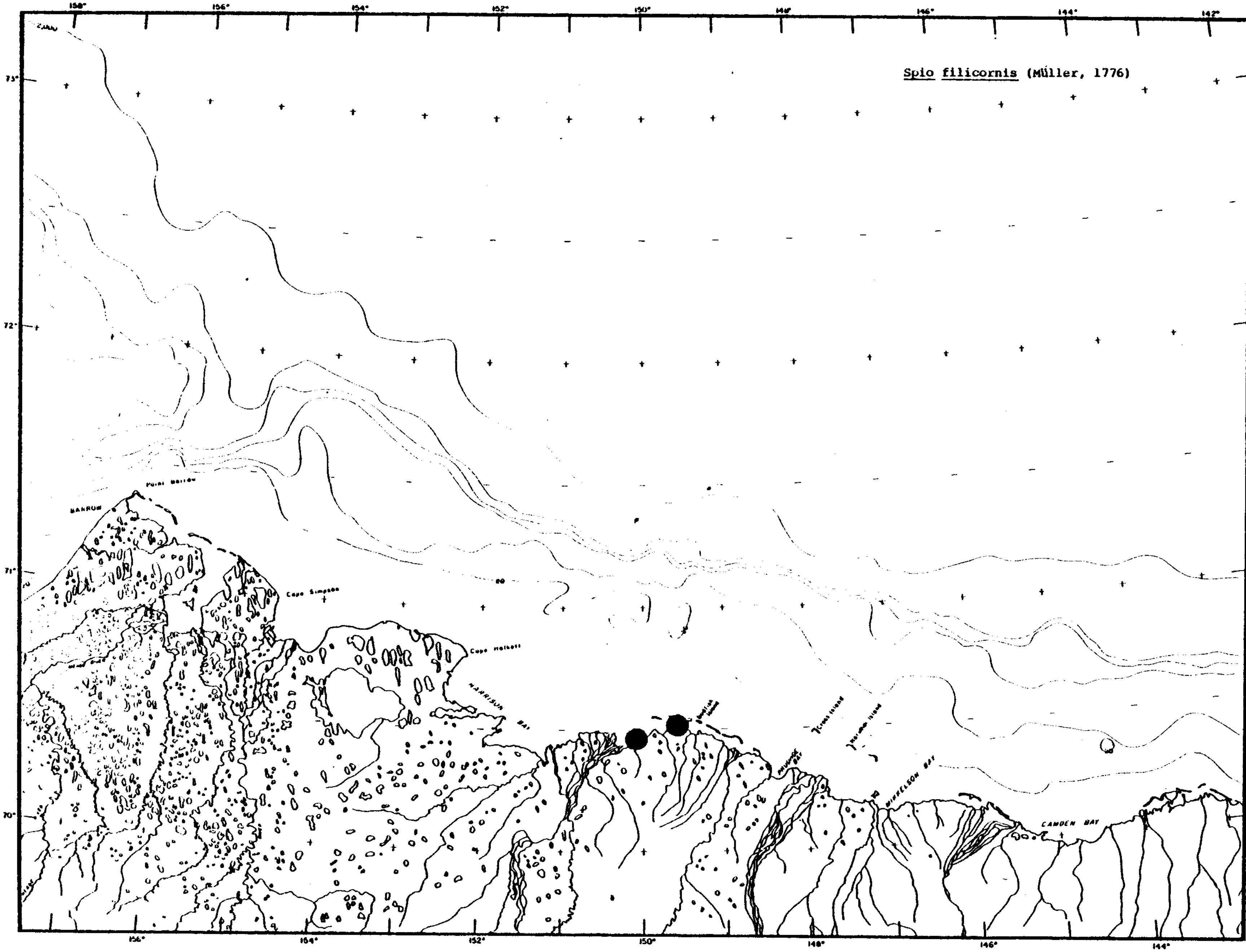


Sphaerodoropsis minuta (Webster and Benedict, 1887)


Spio filicornis (Müller, 1776)
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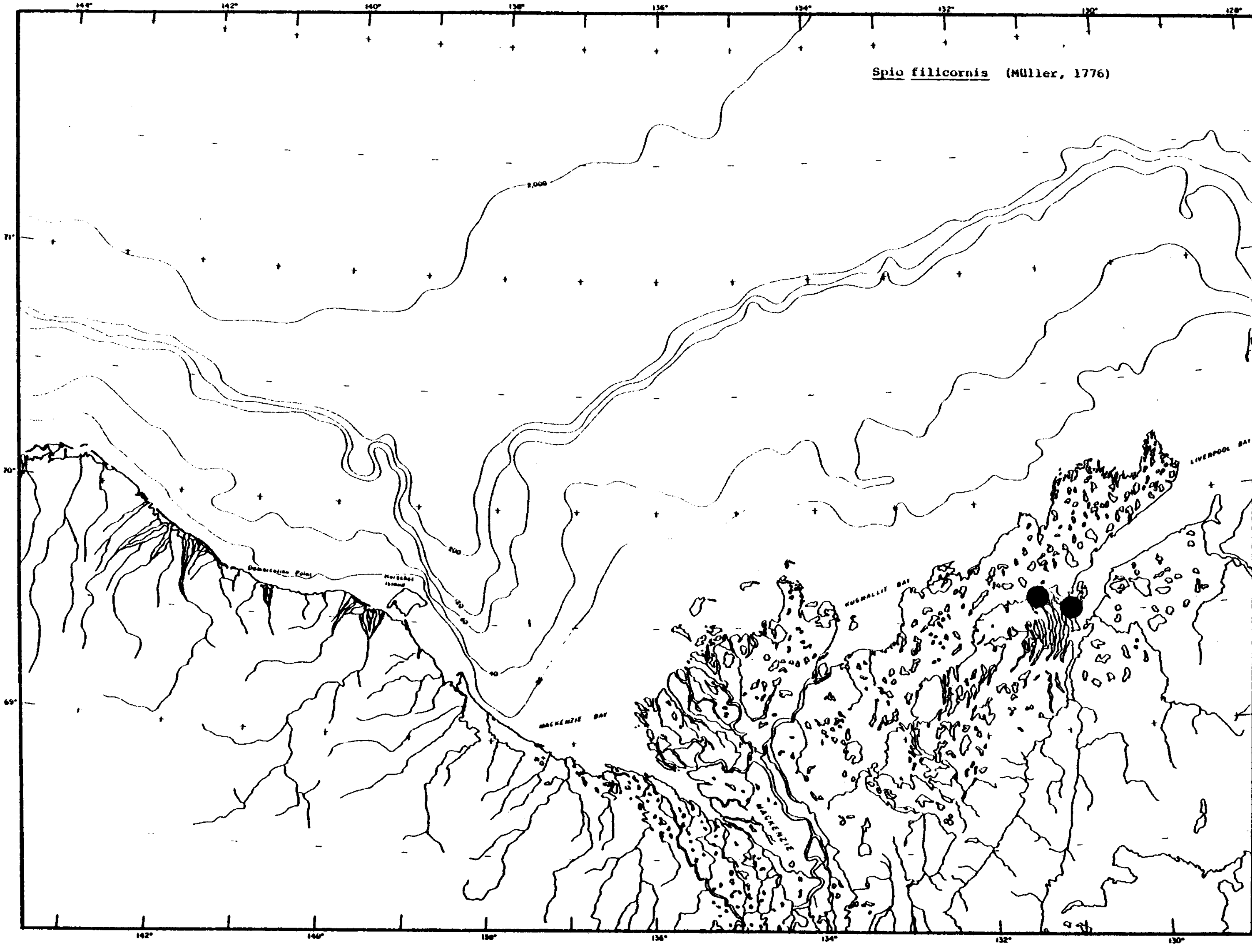
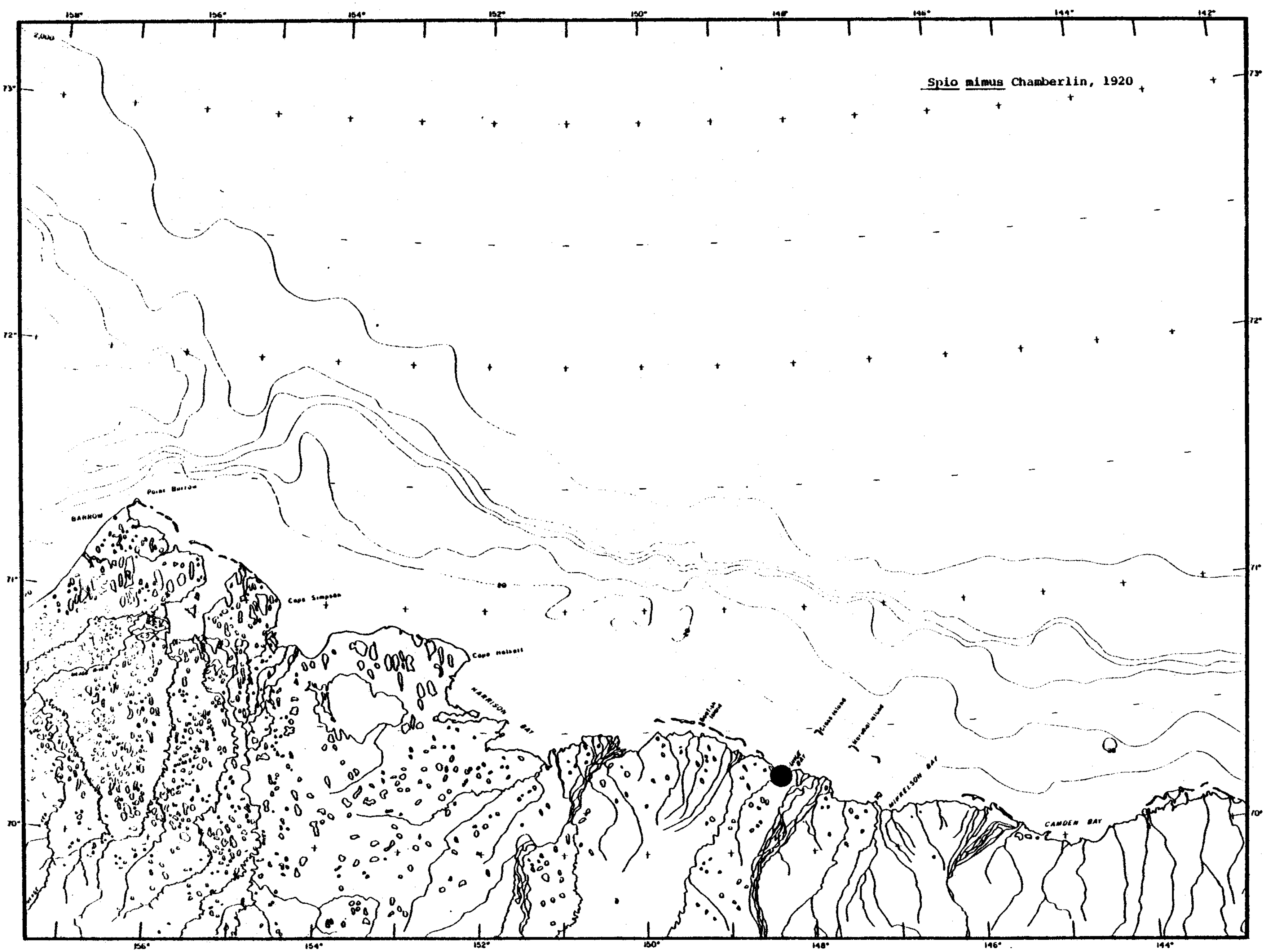
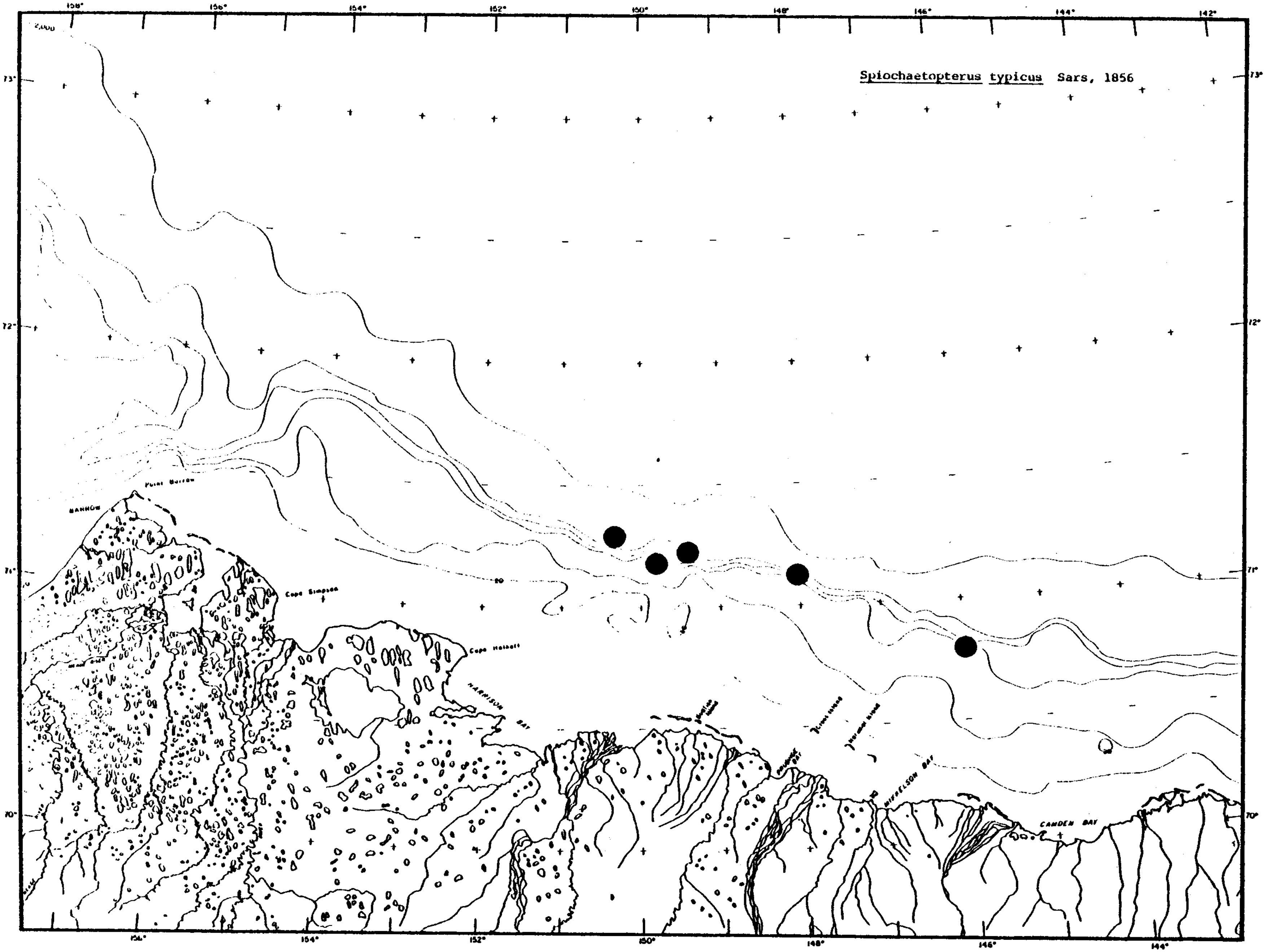

Spio filicornis (Müller, 1776)



Spio mimus Chamberlin, 1920


Spiochaetopterus typicus Sars, 1856
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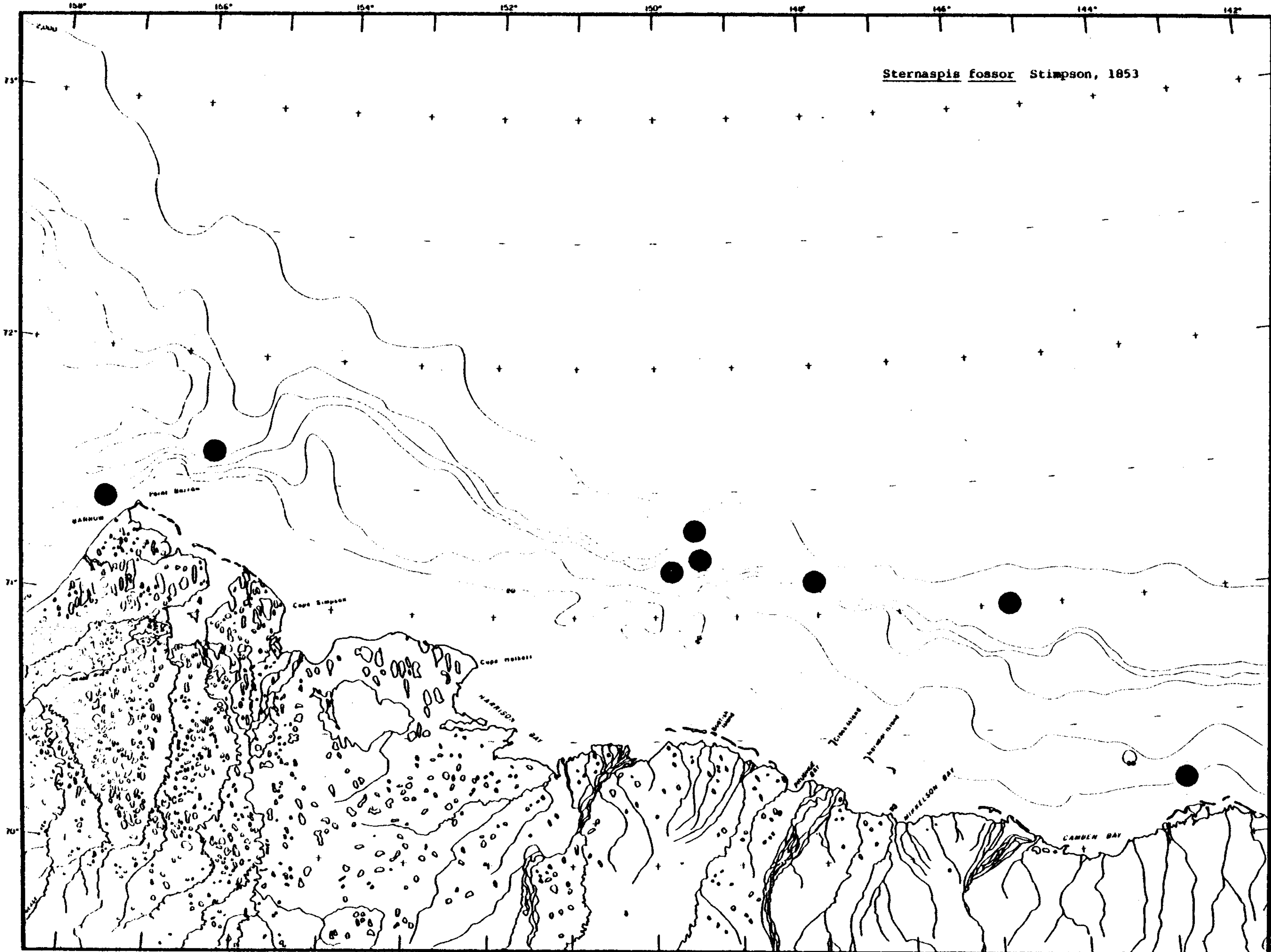

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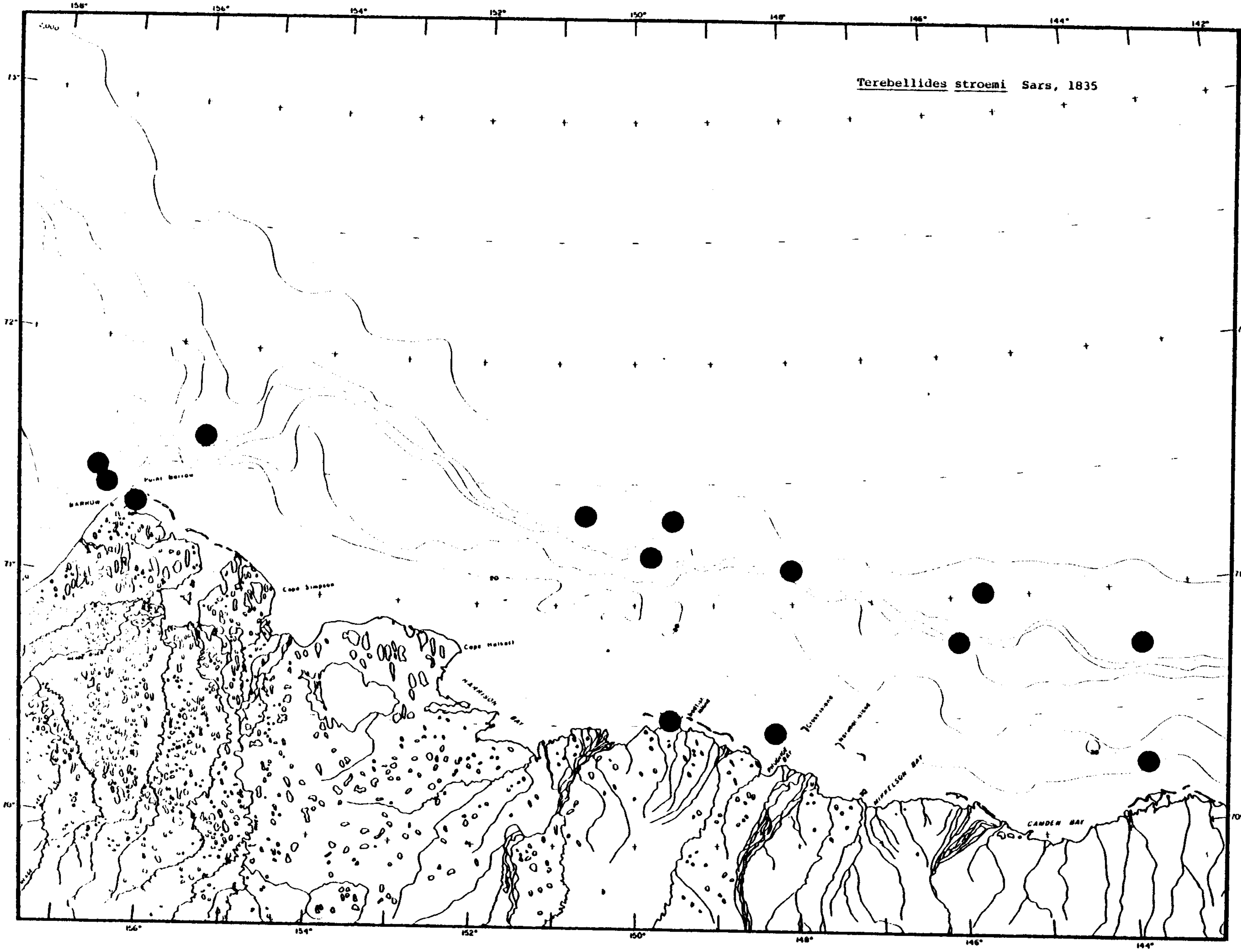
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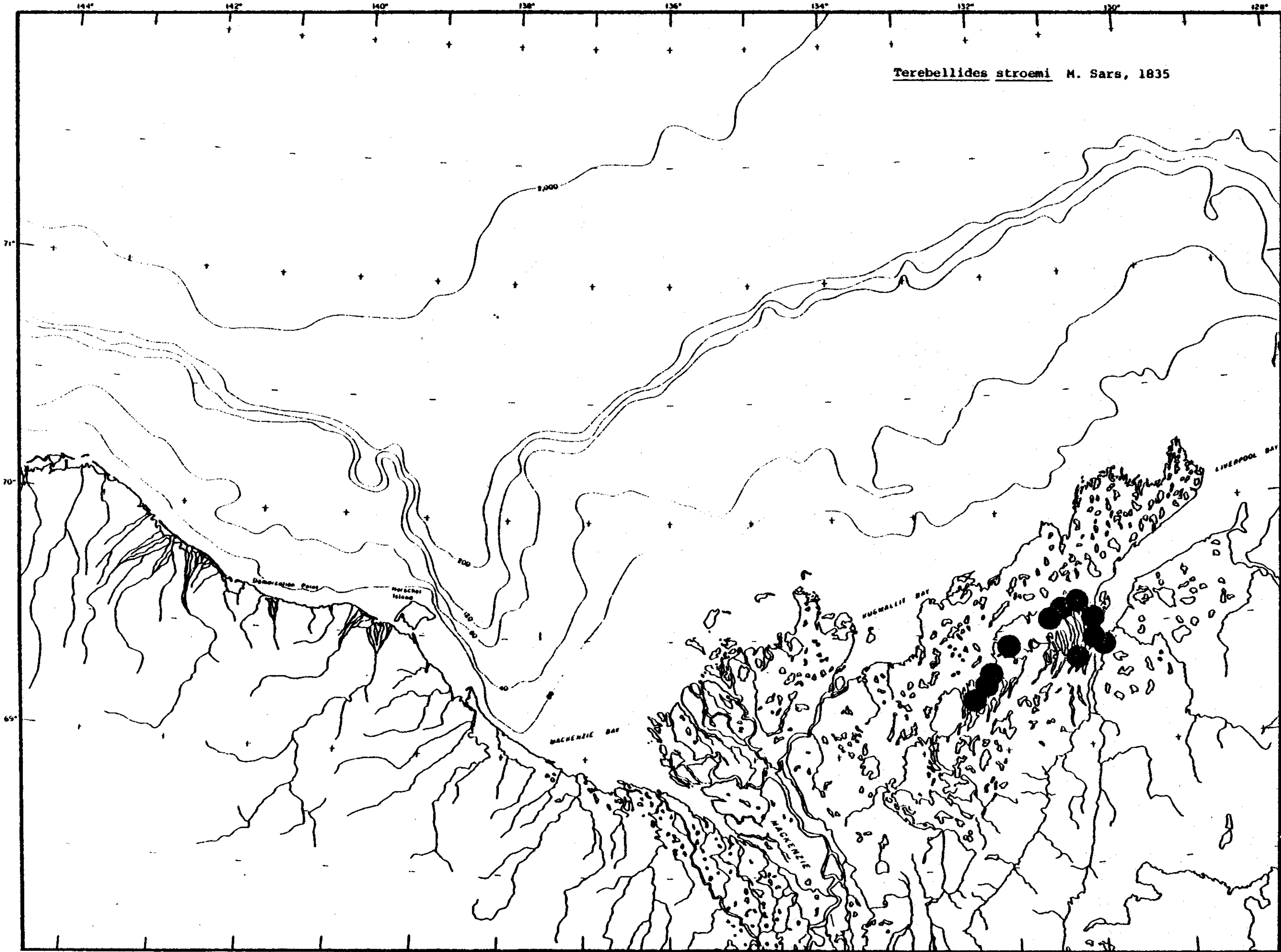
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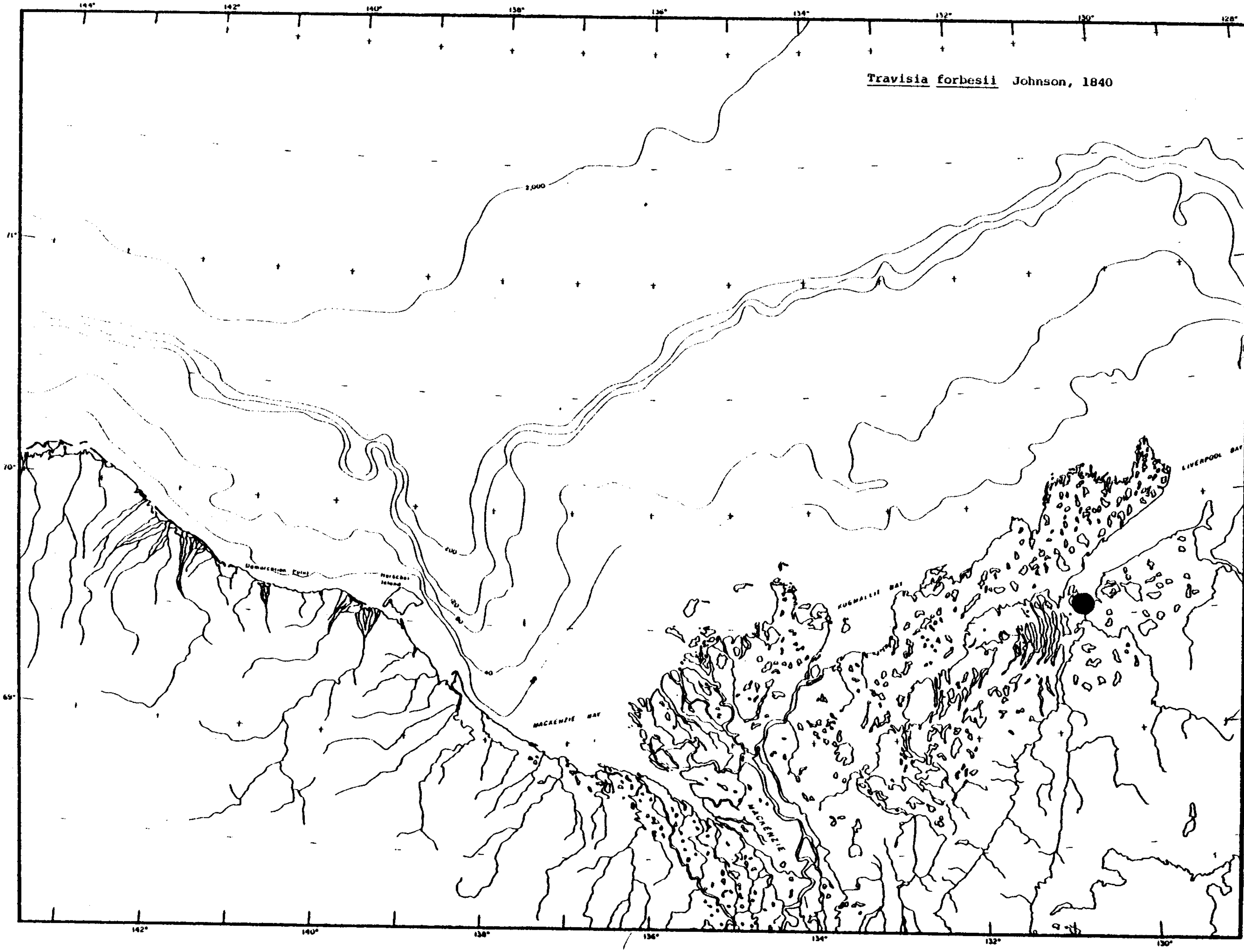
Travisia forbesii Johnson, 1840
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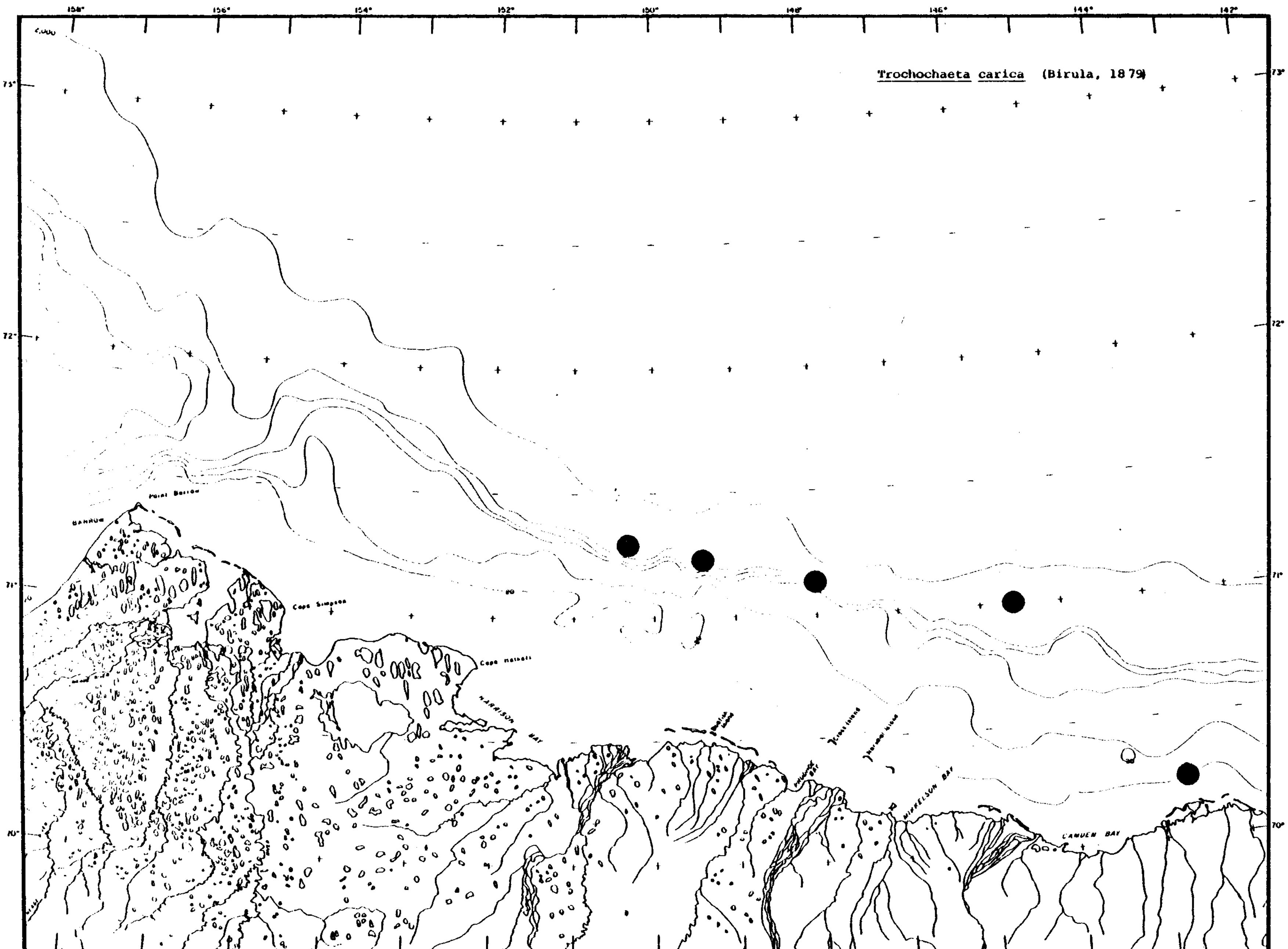
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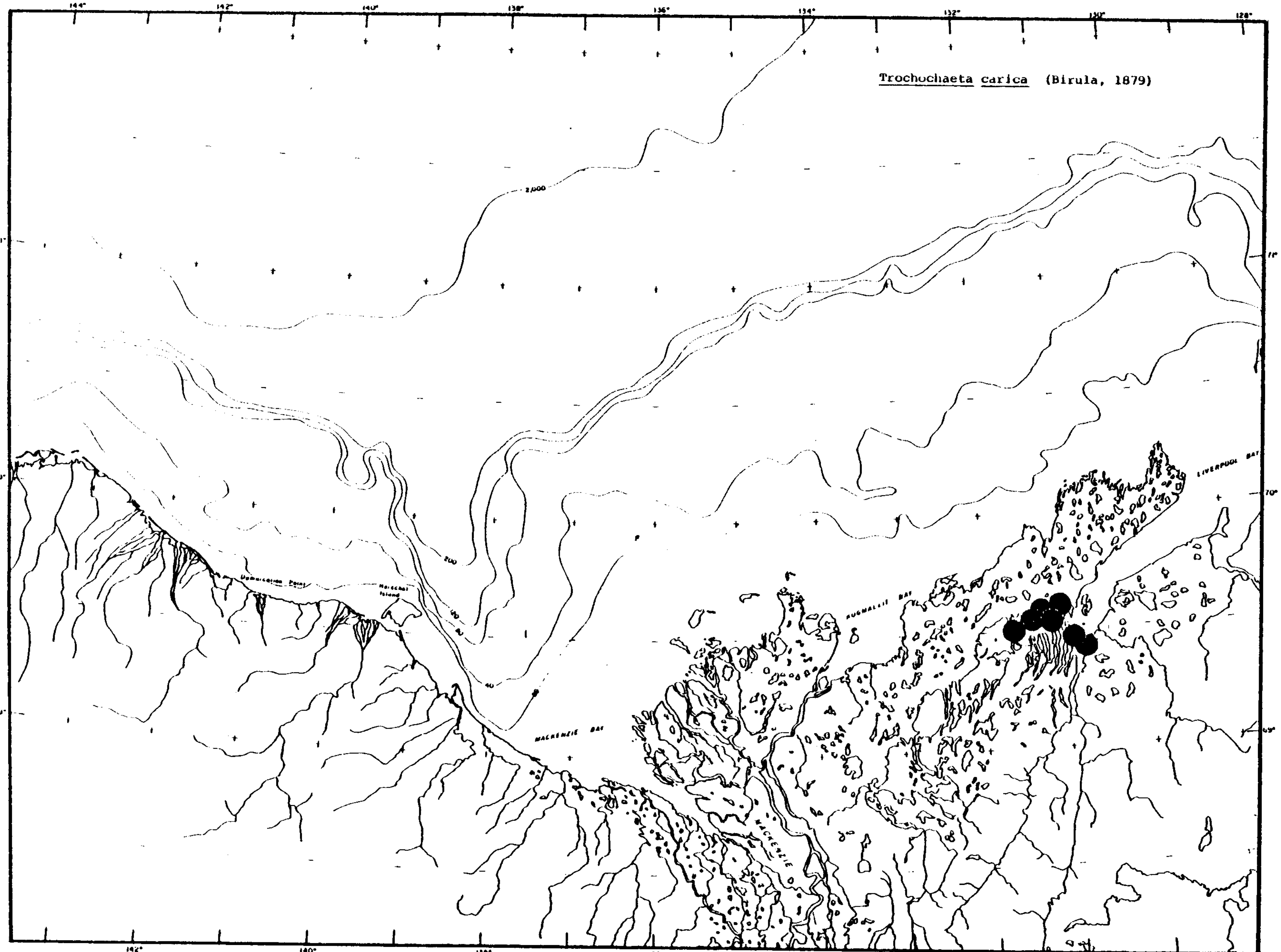
Trochochaeta carica (Birula, 1879)
2,000
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Demarcation Point
Herschel Island
MACKENZIE BAY
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE

FINAL REPORT

Contract No. 03-5-022-68
Task Order No. 4
1 April 1975 - 31 March 1976

Summarization of existing literature and unpublished data on the distribution, abundance, and life histories of benthic organisms

Andrew G. Carey, Jr., Principal Investigator
School of Oceanography
Oregon State University
Corvallis, Oregon 97331

1 January 1977

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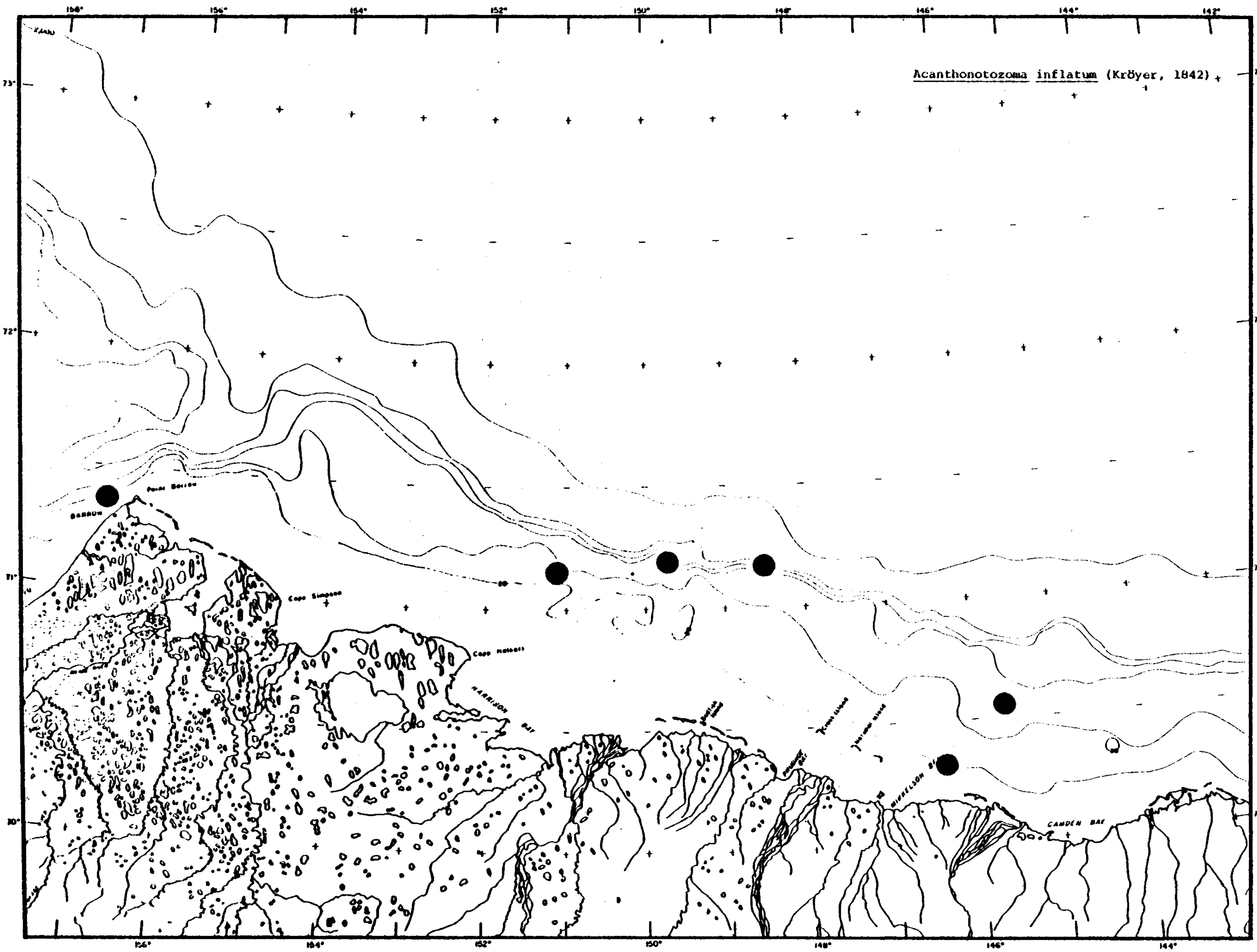
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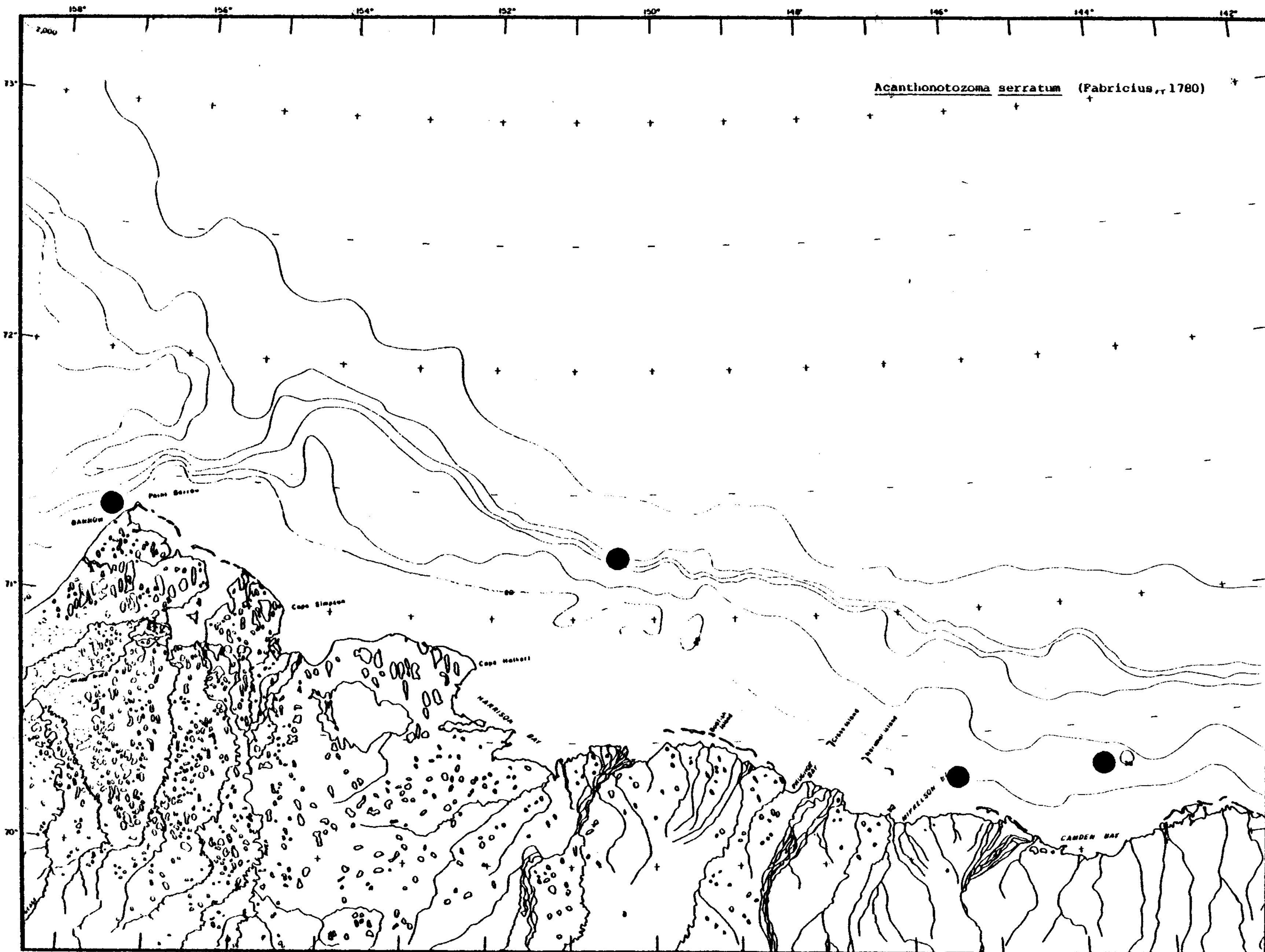
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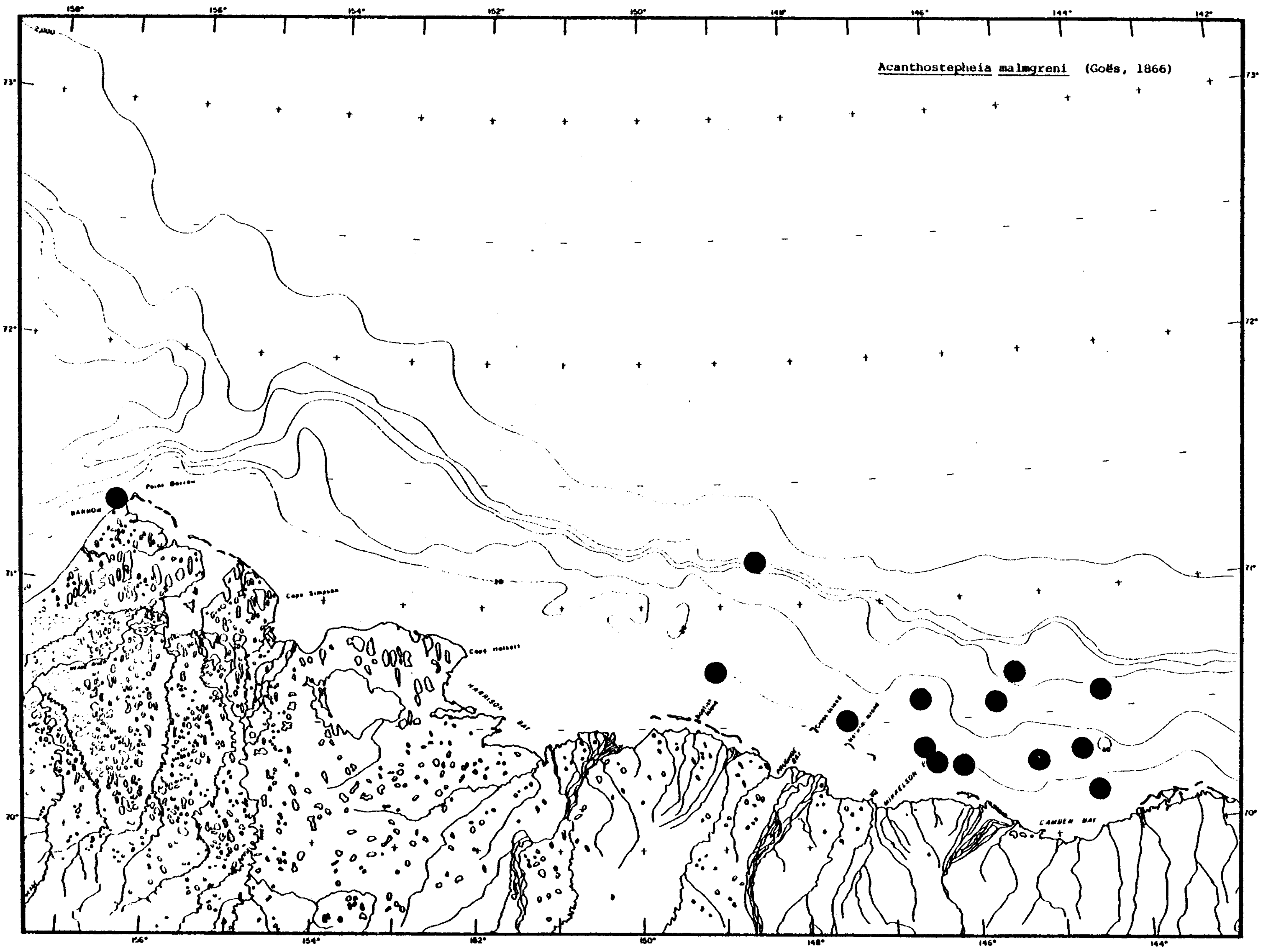
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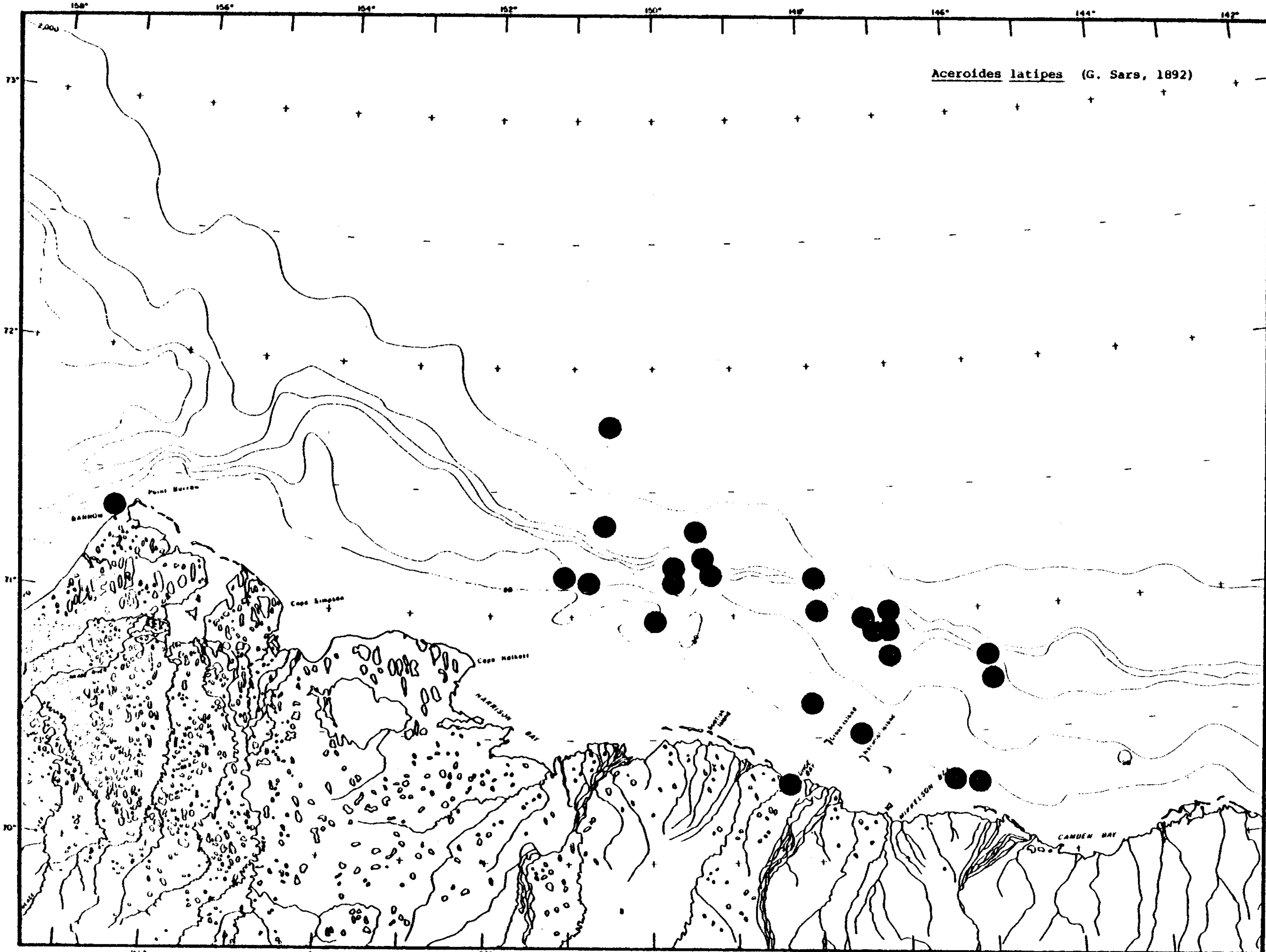
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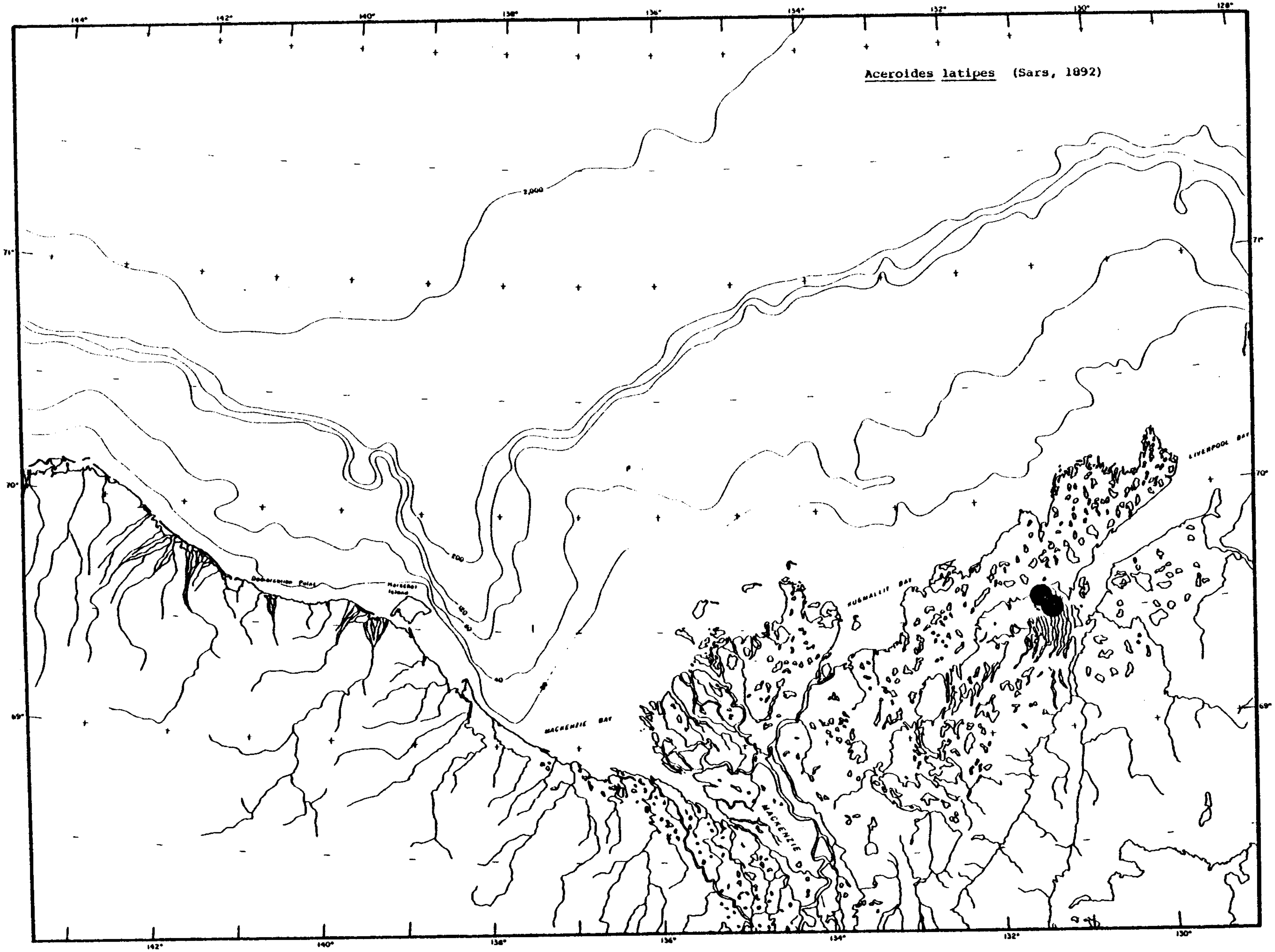
Aceroides latipes (Sars, 1892)
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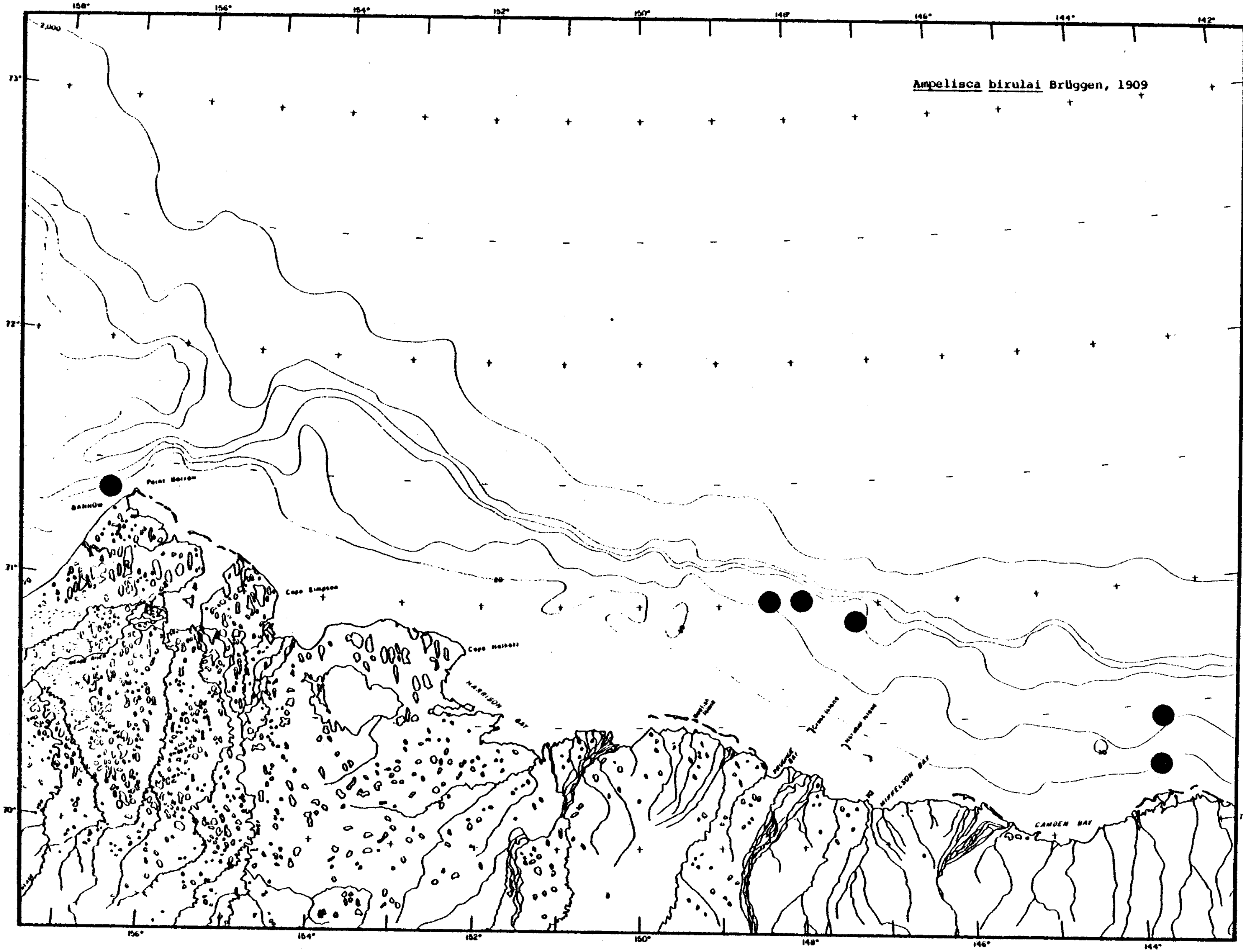
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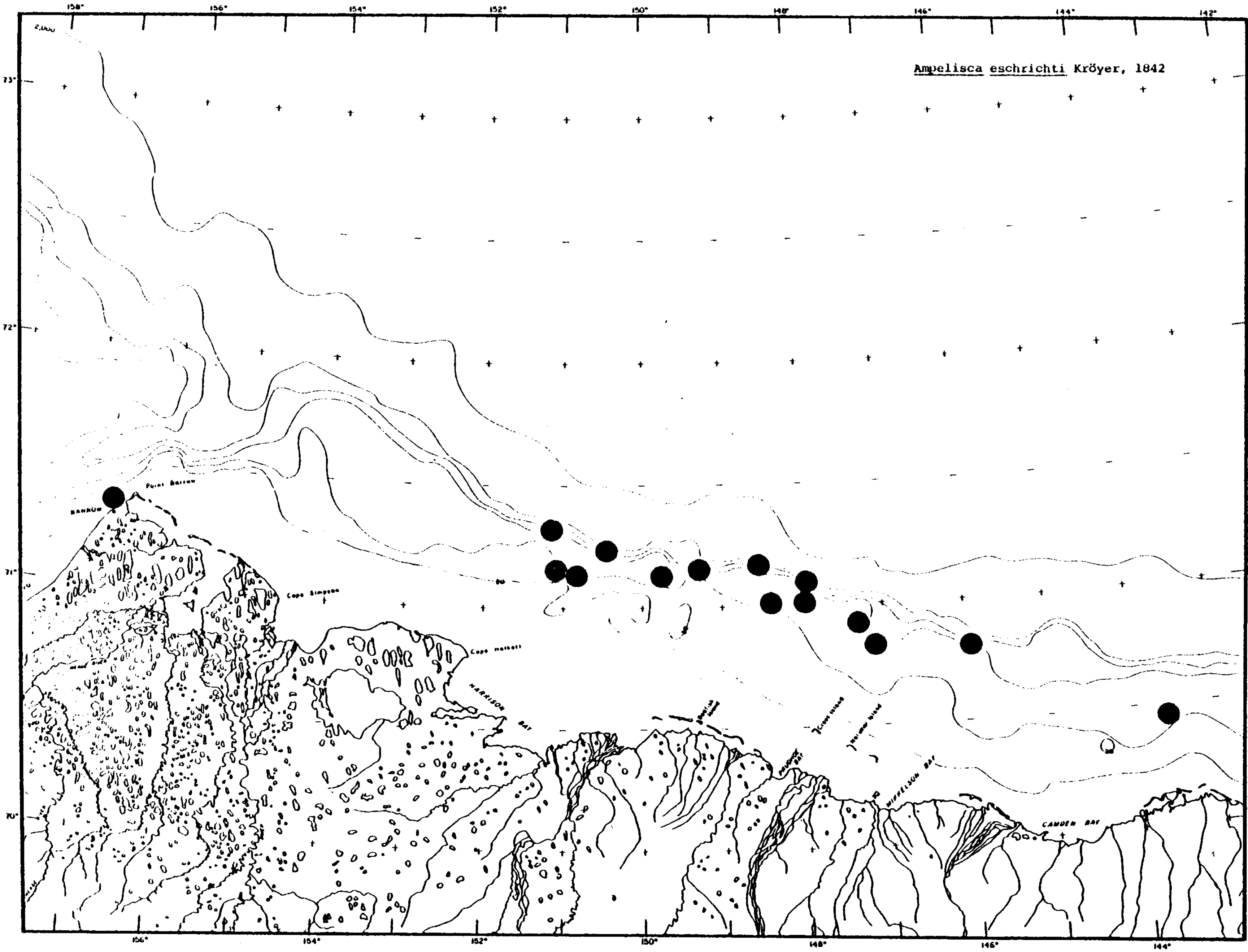
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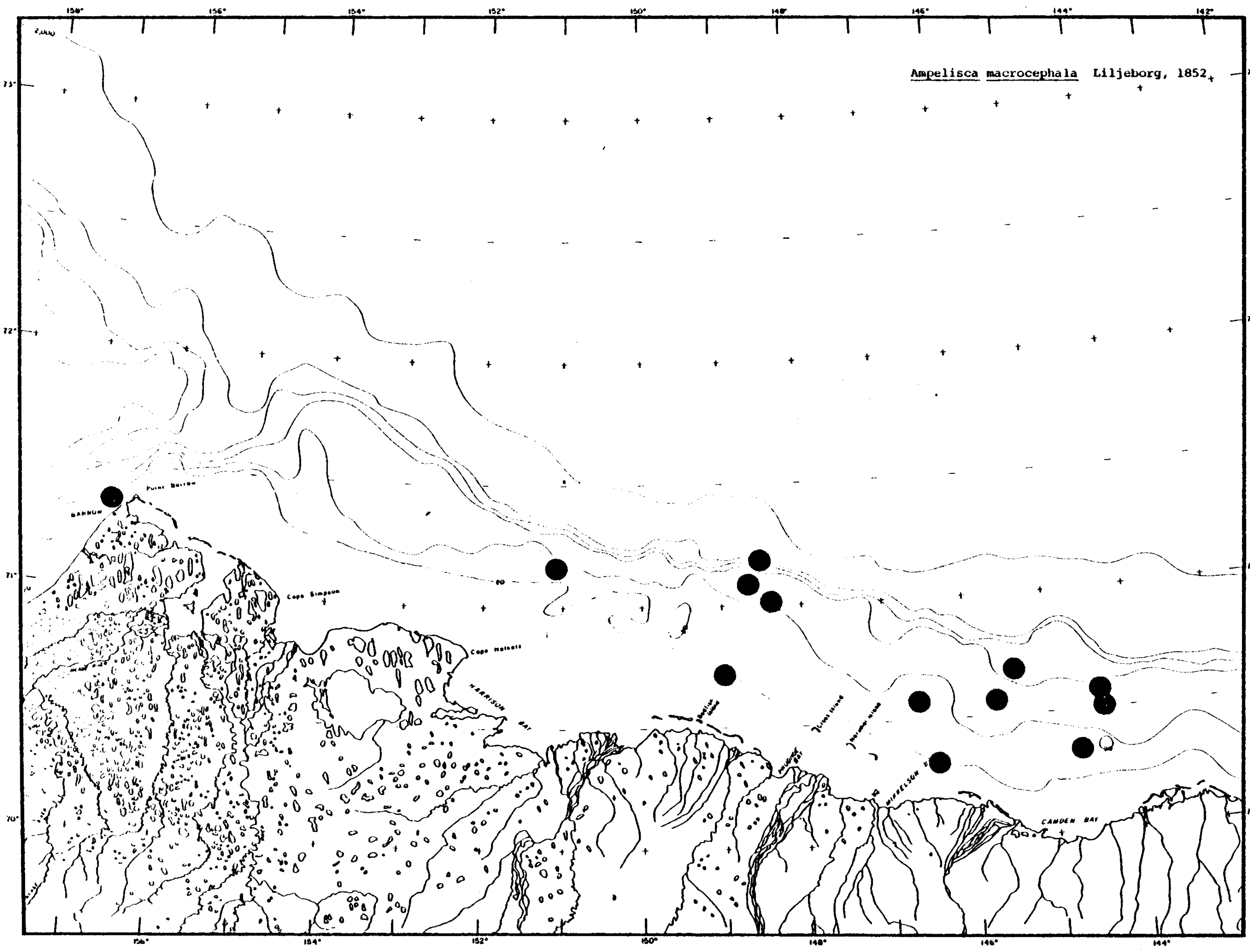
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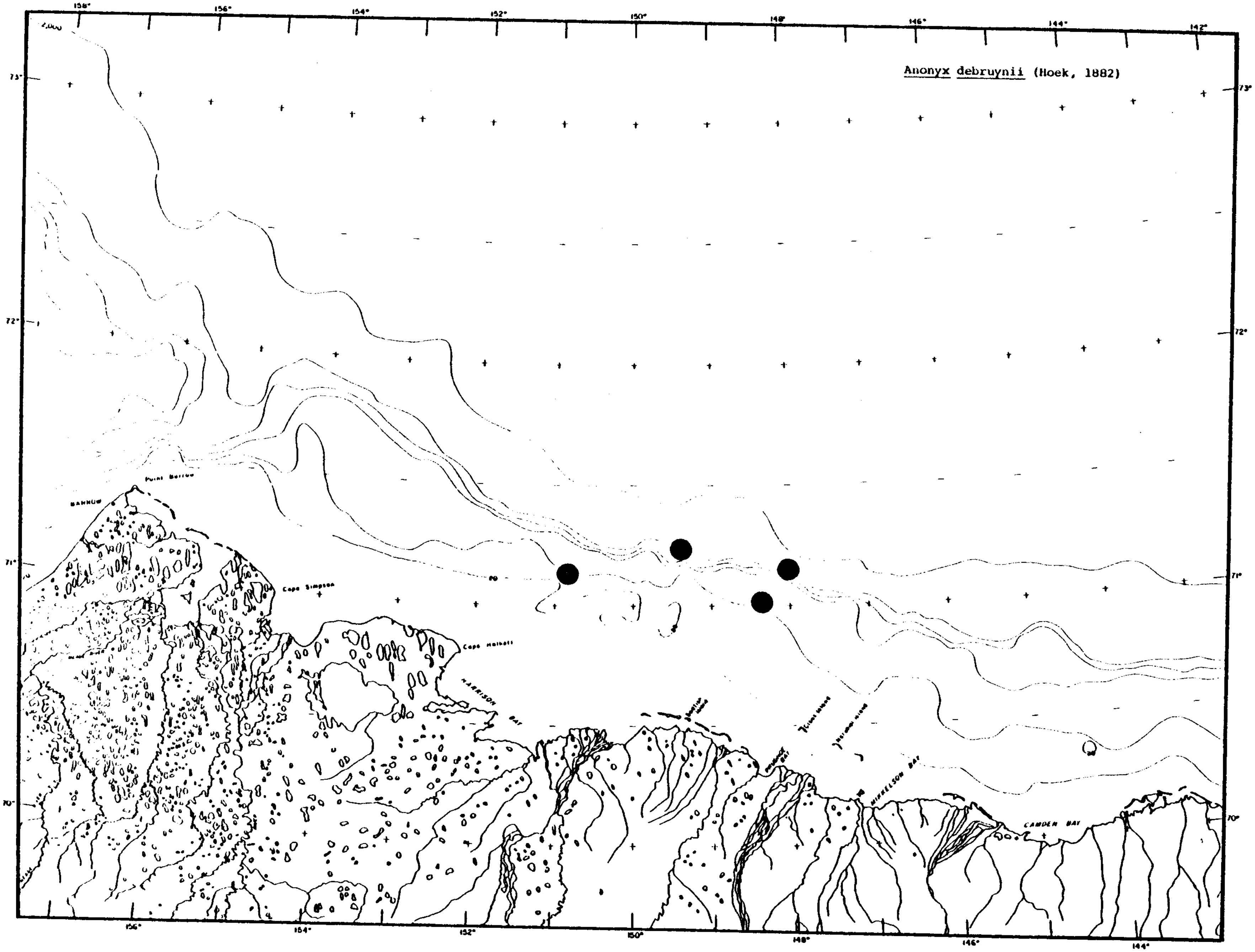
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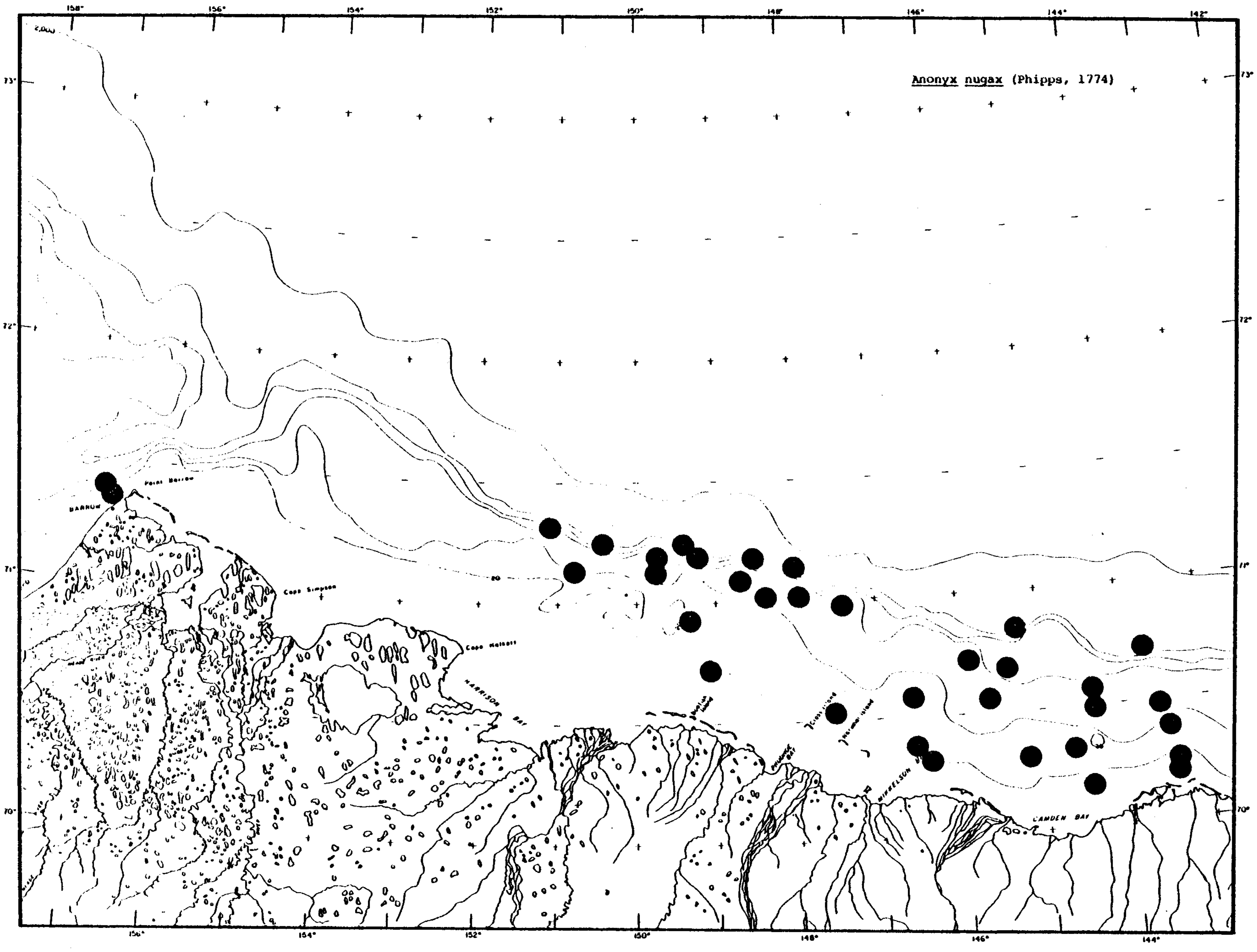
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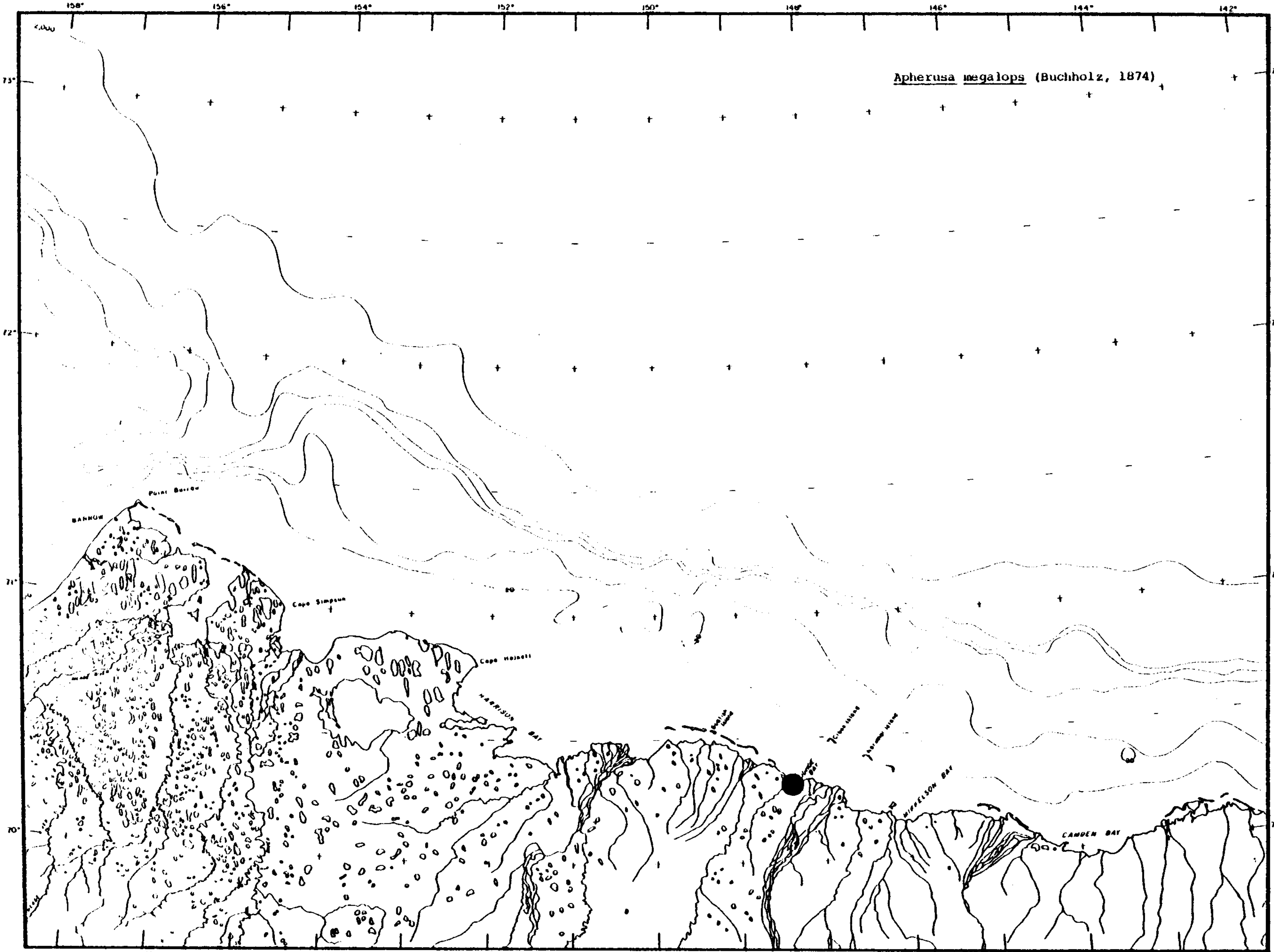
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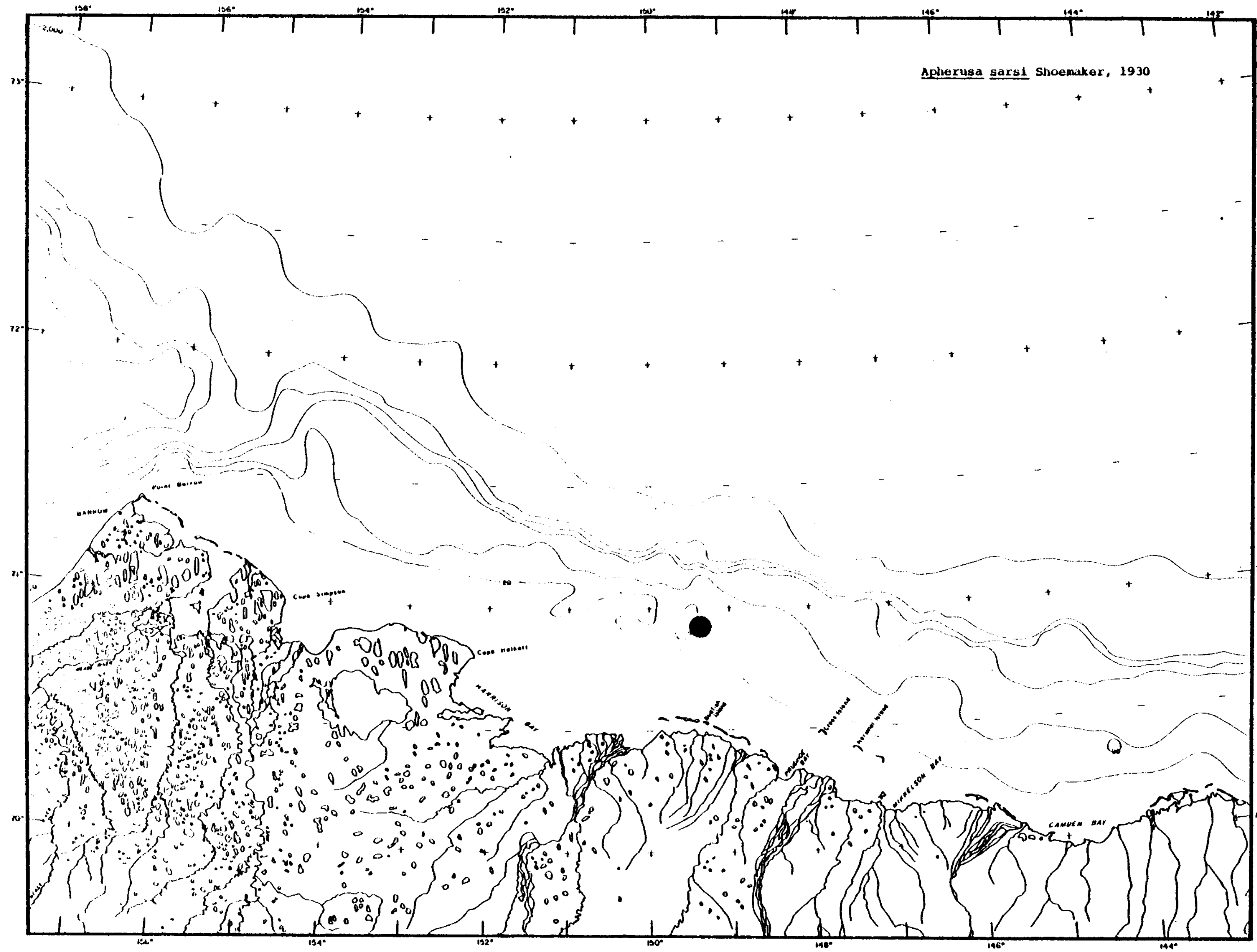
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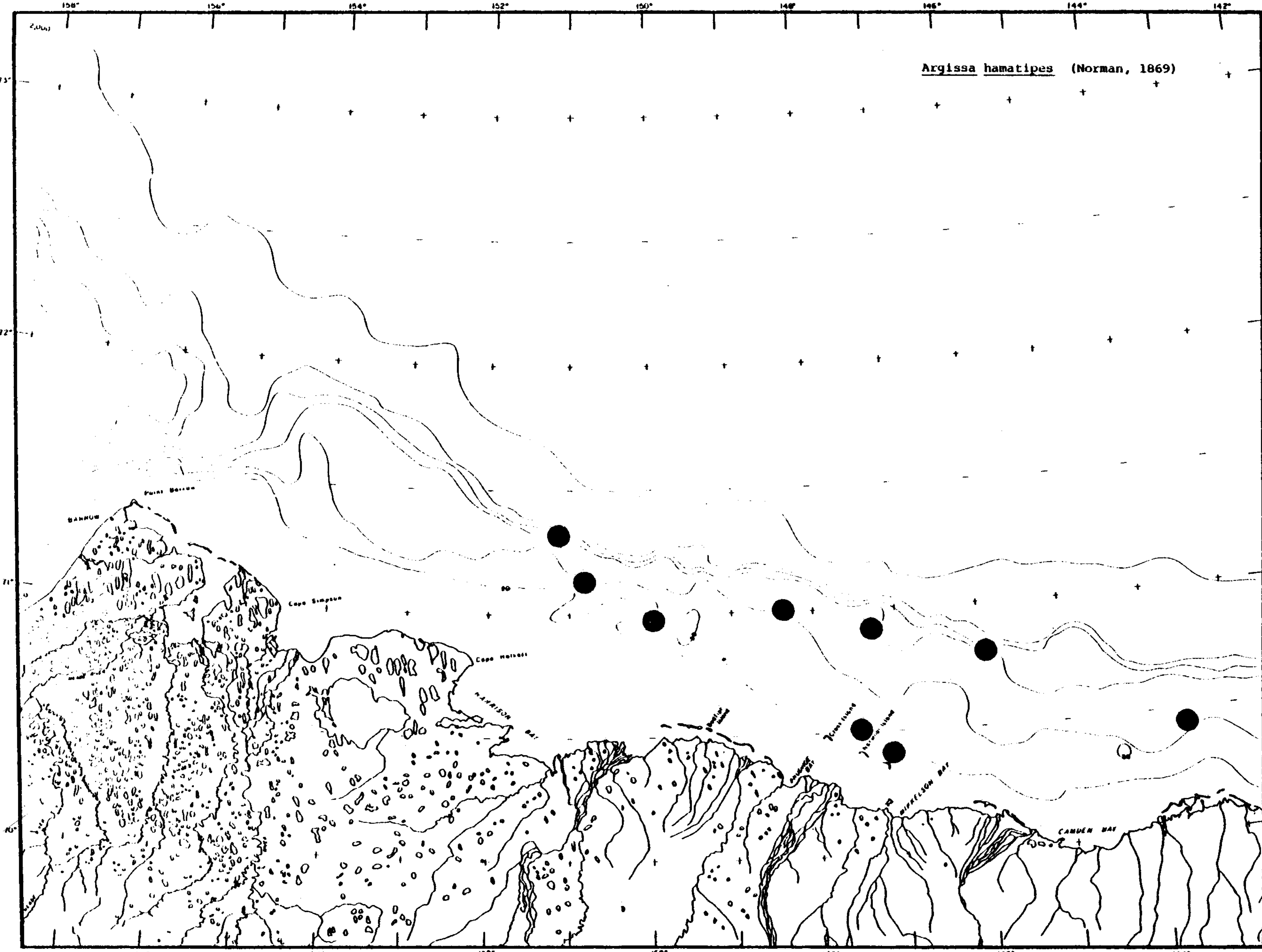
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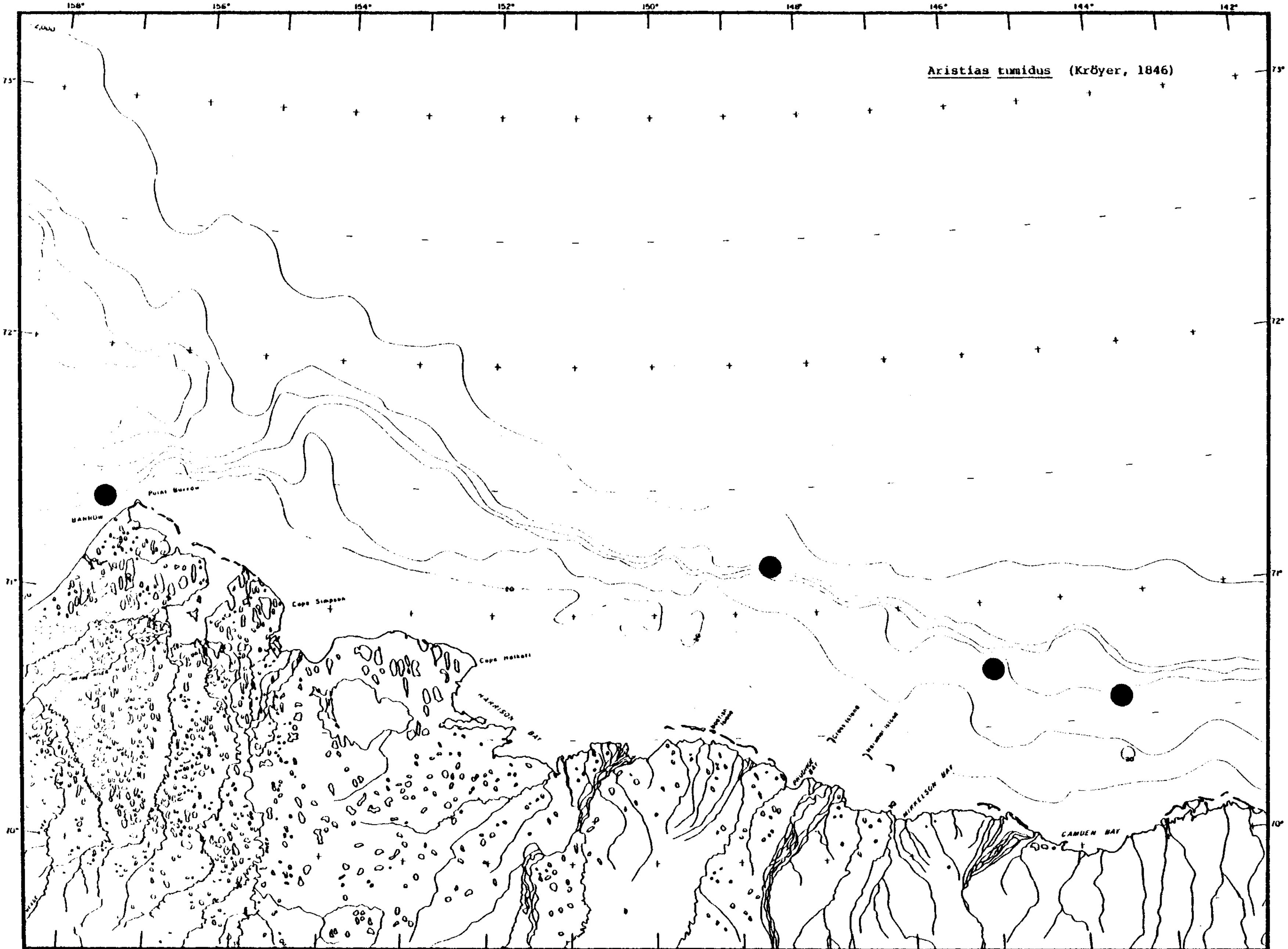
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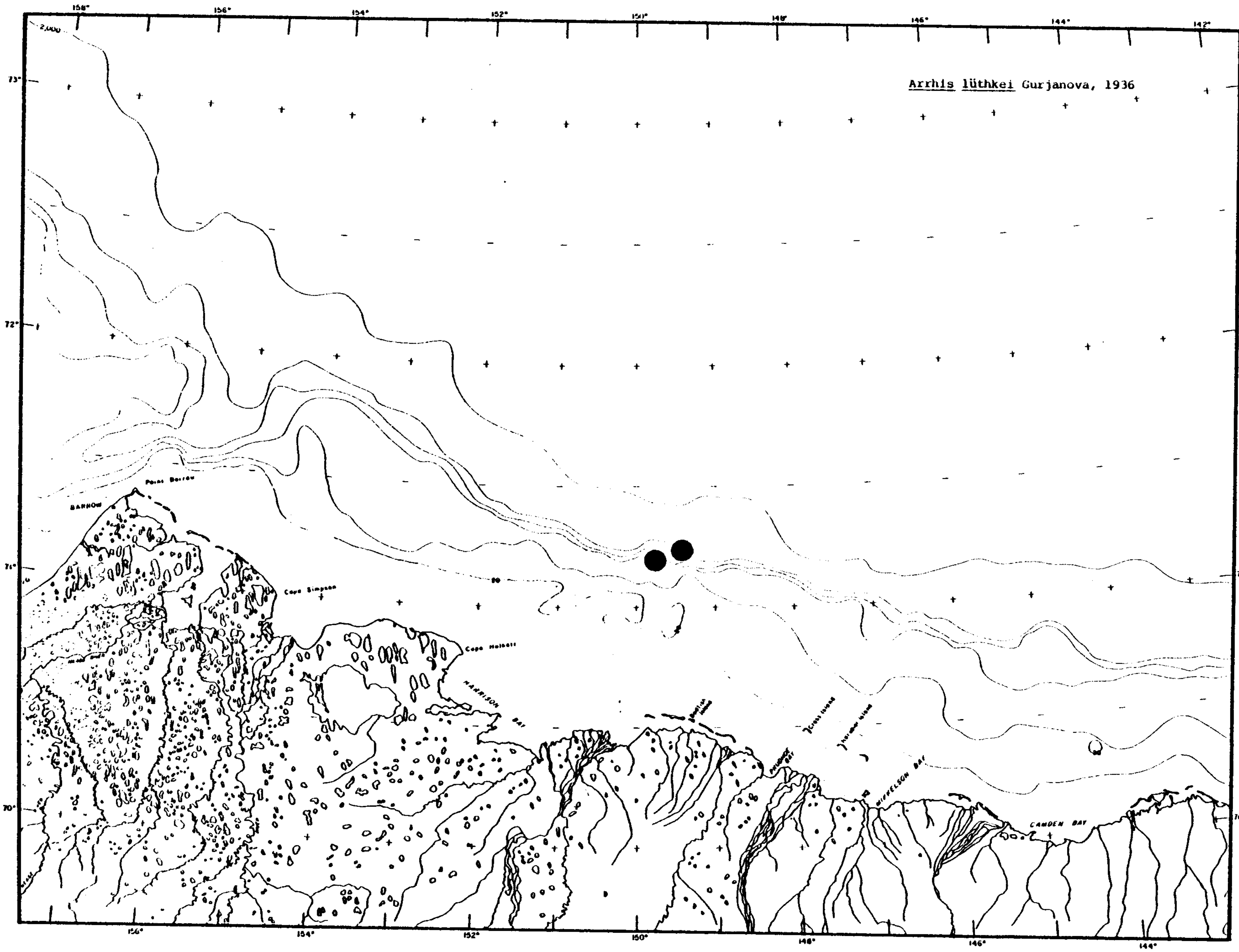
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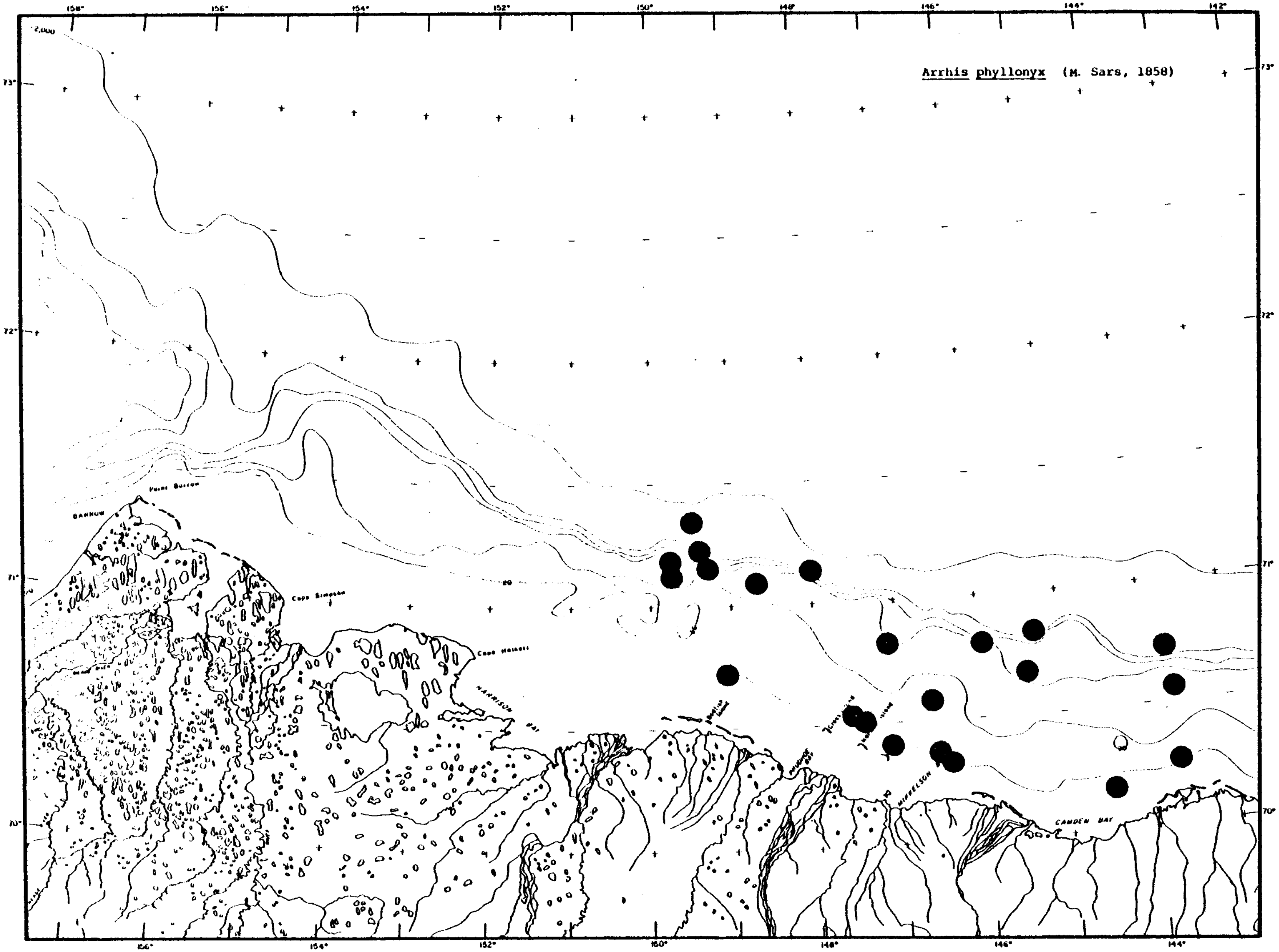
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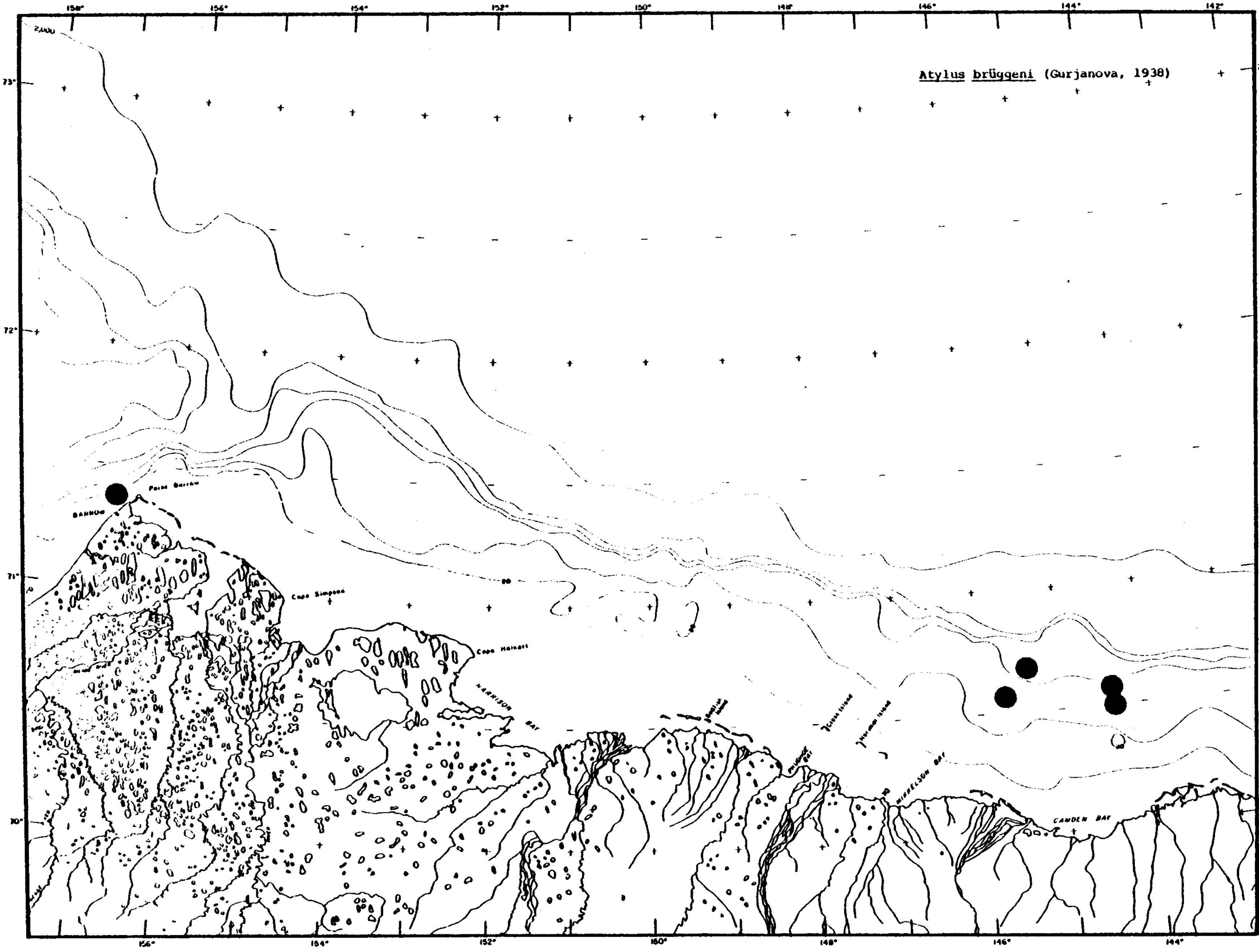
Harrison Bay
Camden Bay


Atylus brüggeni (Gurjanova, 1938)
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
156°
154°
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148°
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144°
142°
73°
72°
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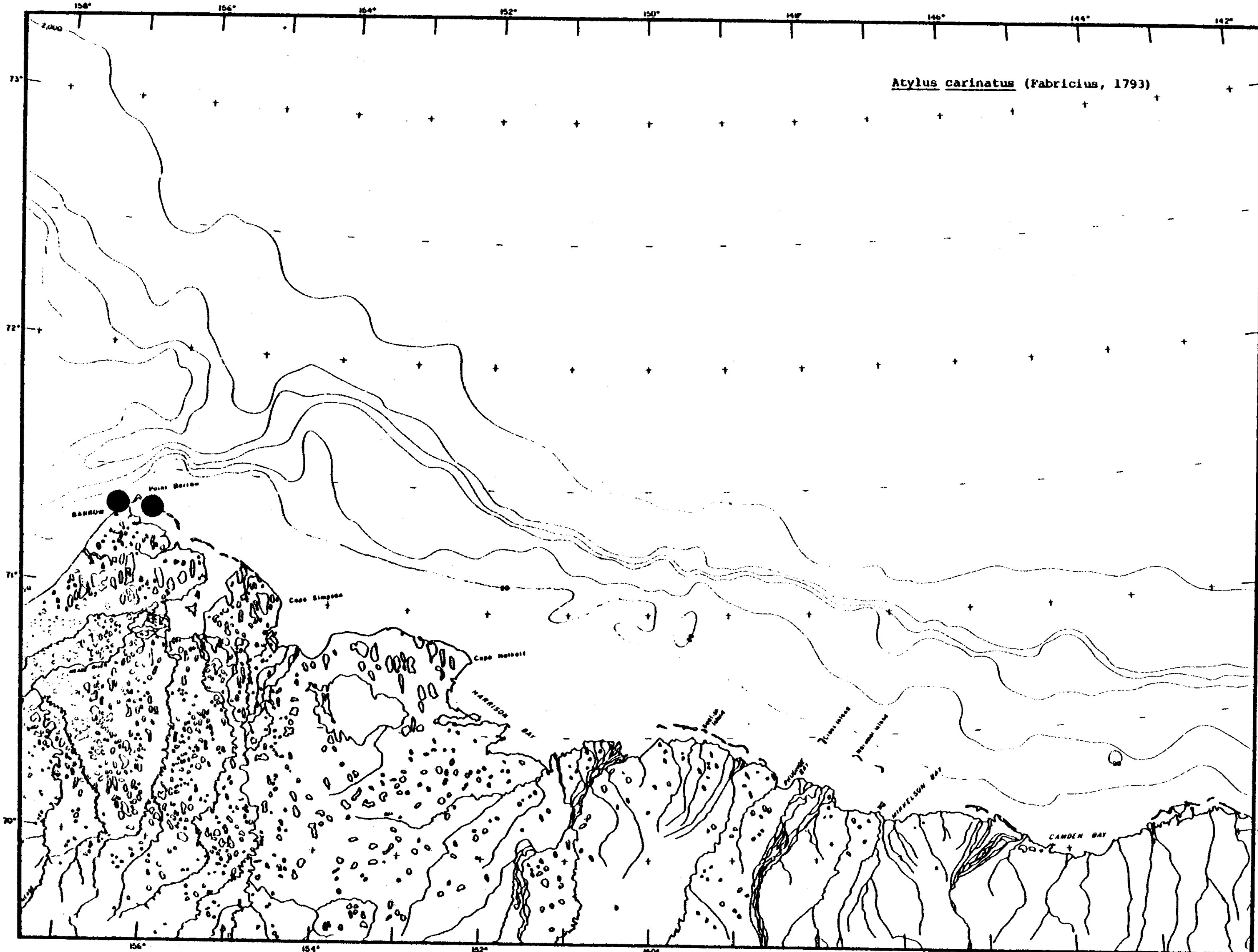
Atylus carinatus (Fabricius, 1793)
158°
156°
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148°
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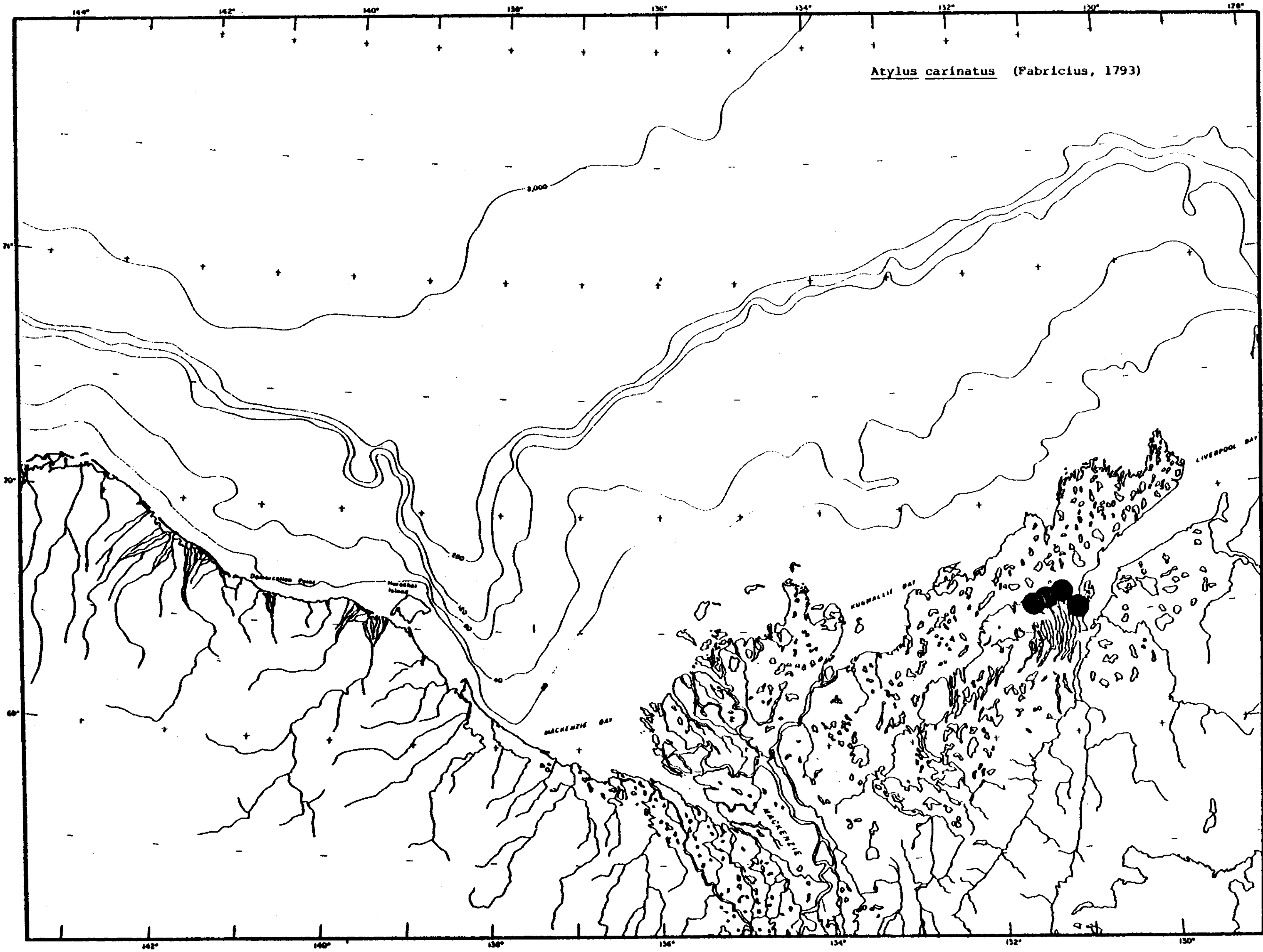
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
MIKKELSON BAY


Atylus carinatus (Fabricius, 1793)
144°
142°
140°
138°
136°
134°
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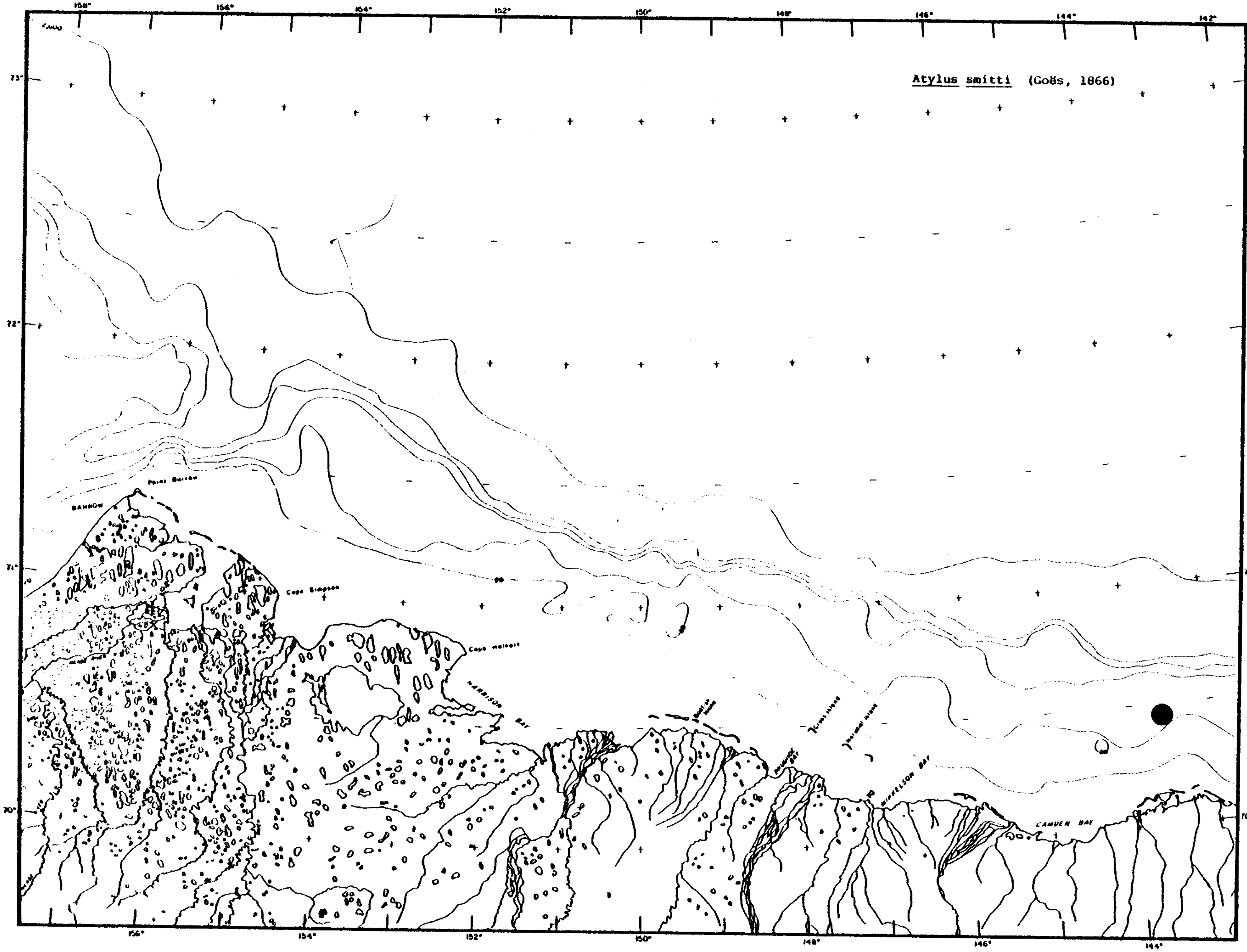
69°
2,000
MACKENZIE BAY
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE


Atylus smitti (Goës, 1866)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
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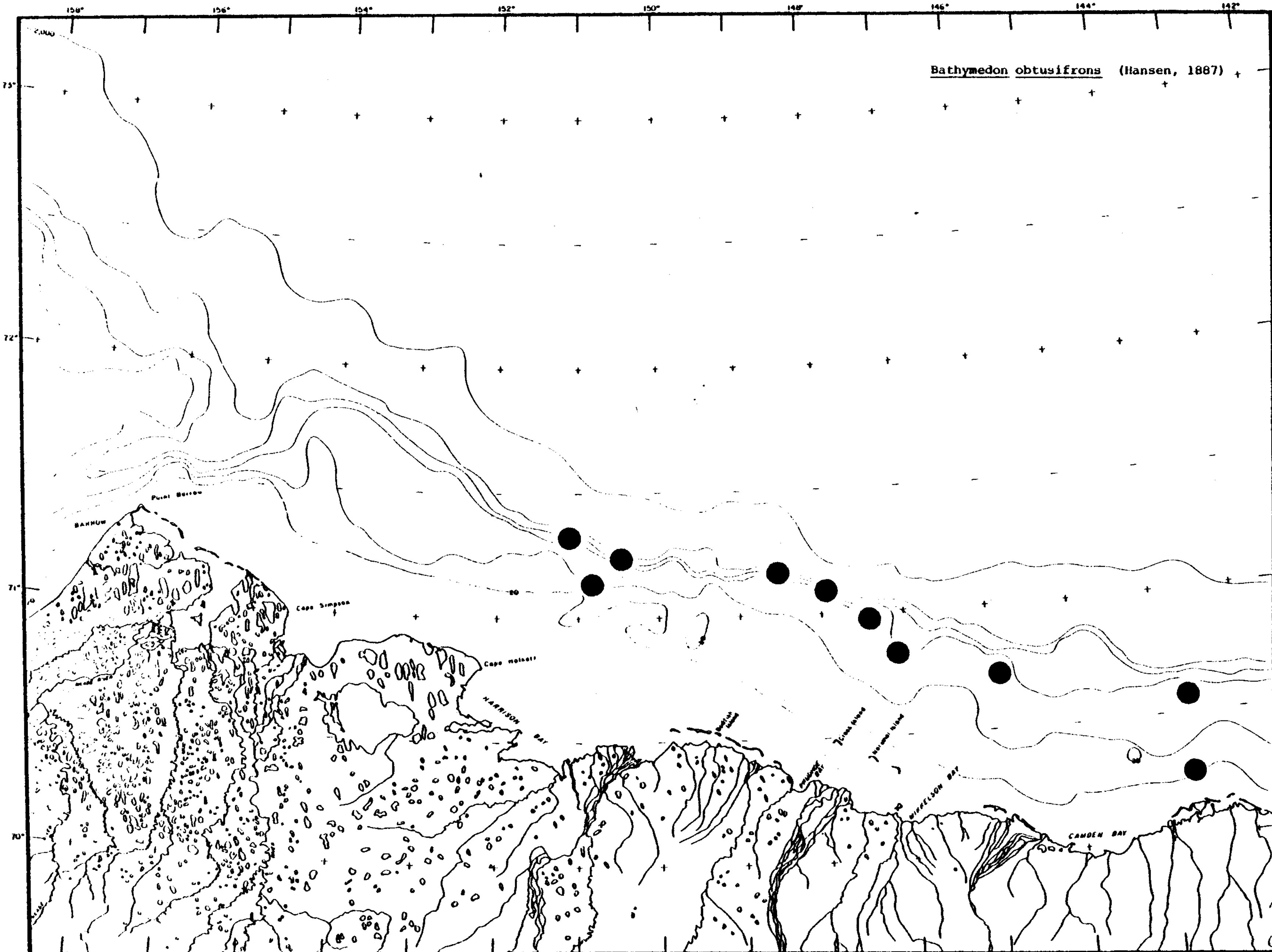
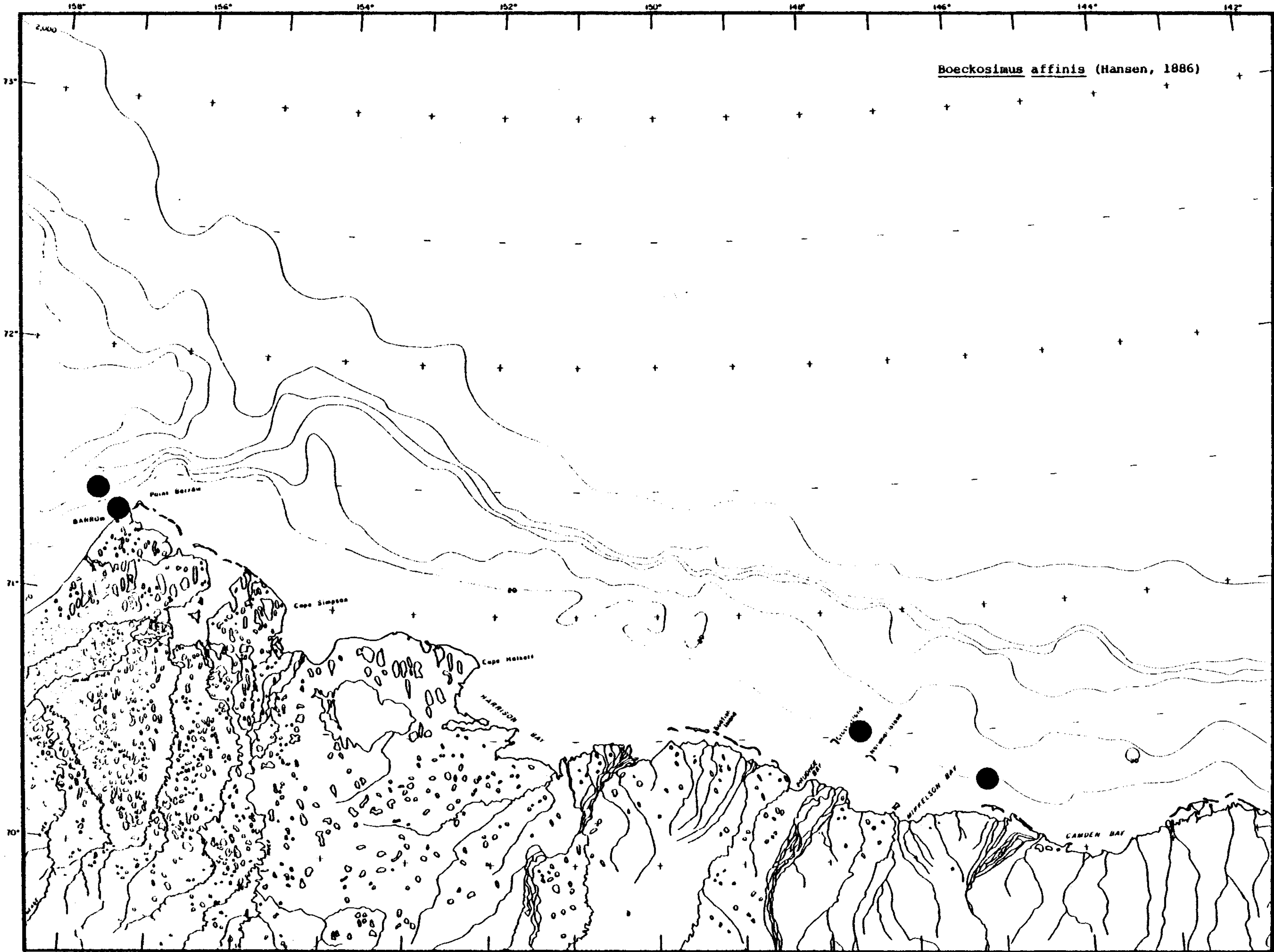

Bathymedon obtusifrons (Hansen, 1887)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Boeckosimus affinis (Hansen, 1886)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Prudhoe Bay
Mikkelson Bay
Camden Bay
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72°
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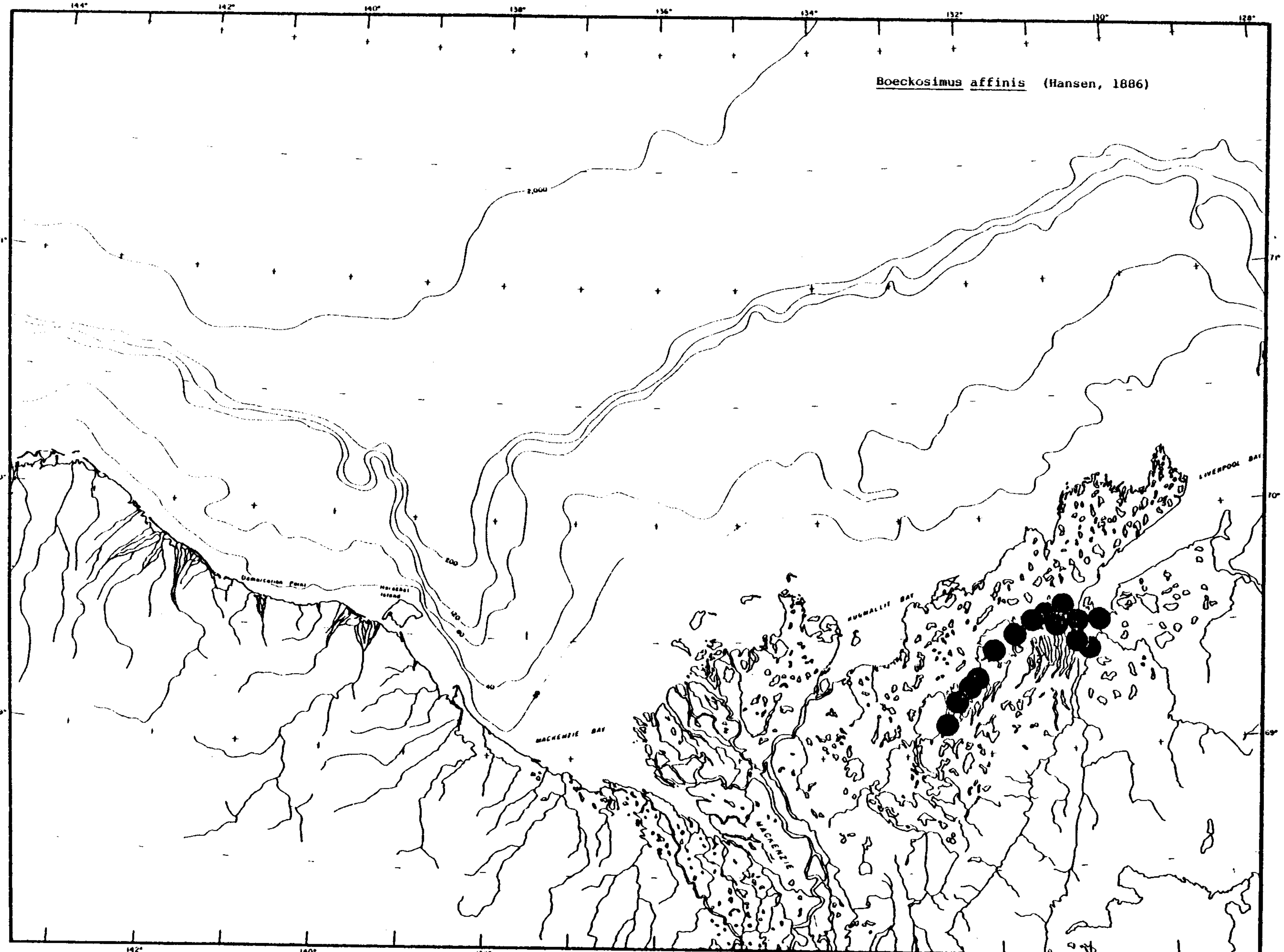
Boeckosimus affinis (Hansen, 1886)
Demarcation Point
Herschel Island
Mackenzie Bay
Kugmallit Bay
Liverpool Bay
Mackenzie
2,000
200
144°
142°
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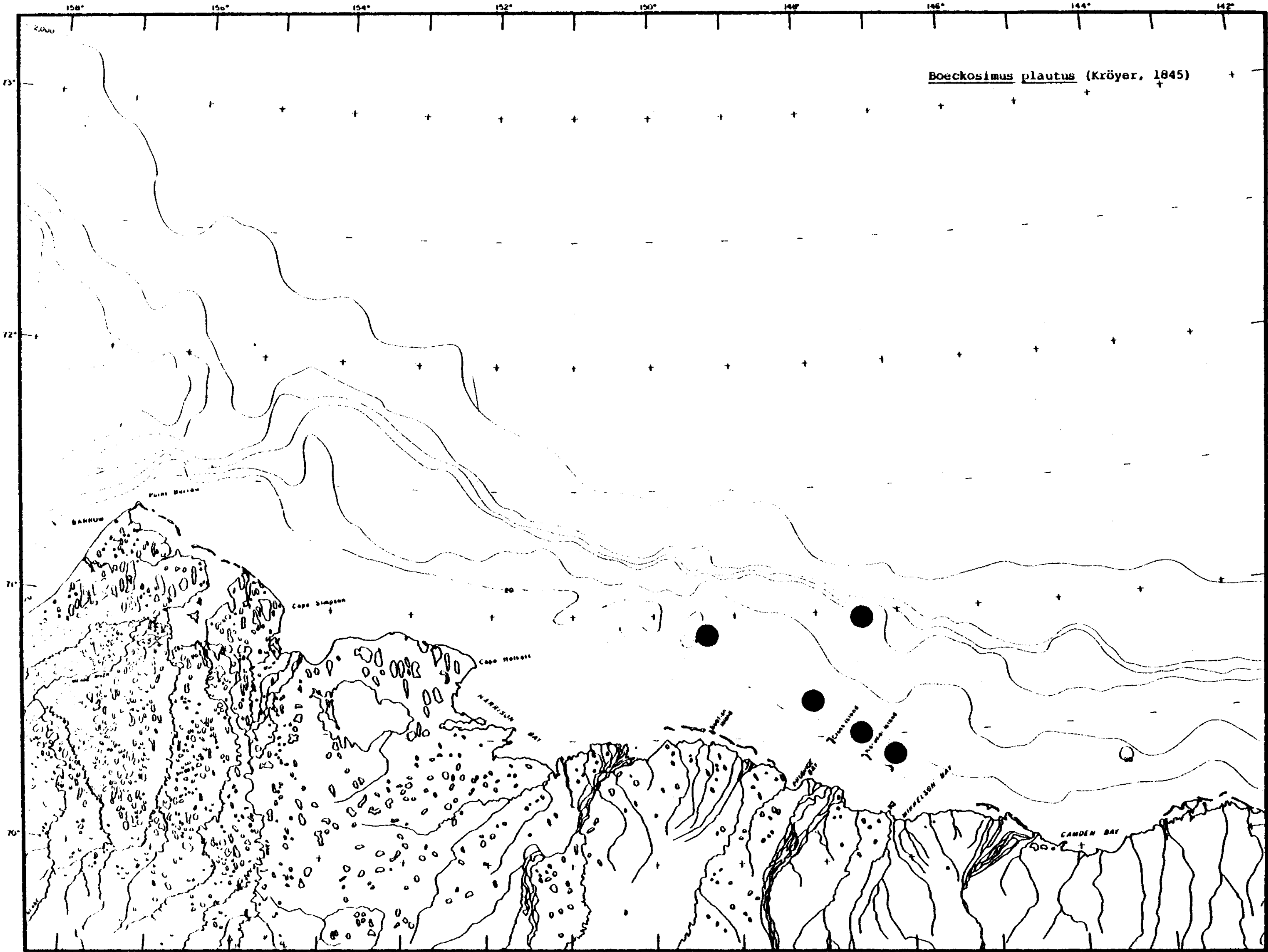
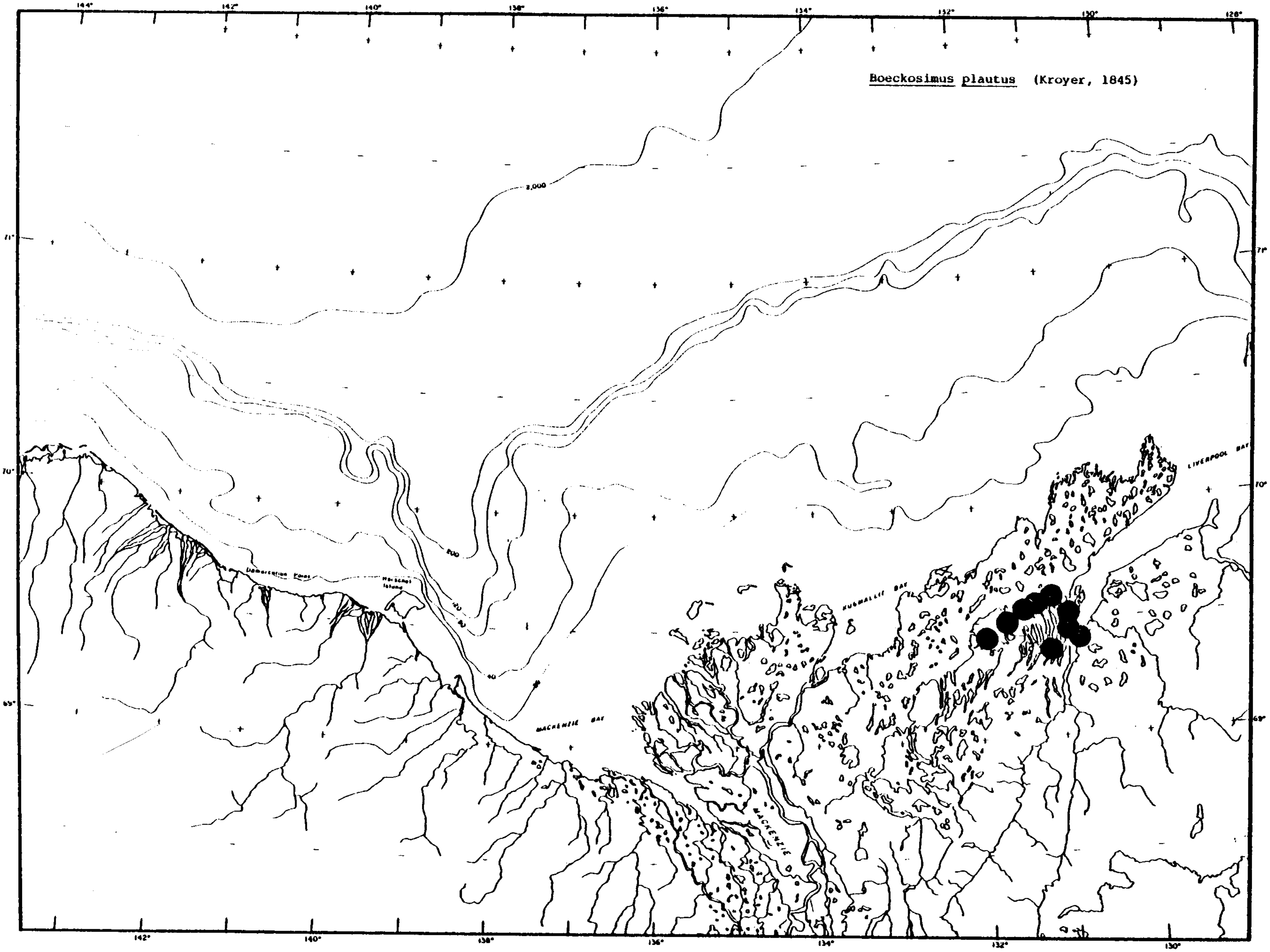

Boeckosimus plautus (Kröyer, 1845)
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Boeckosimus plautus (Kroyer, 1845)
Demarcation Point
Herschel Island
Mackenzie Bay
Kugmallit Bay
Liverpool Bay
Mackenzie
2,000
200
144°
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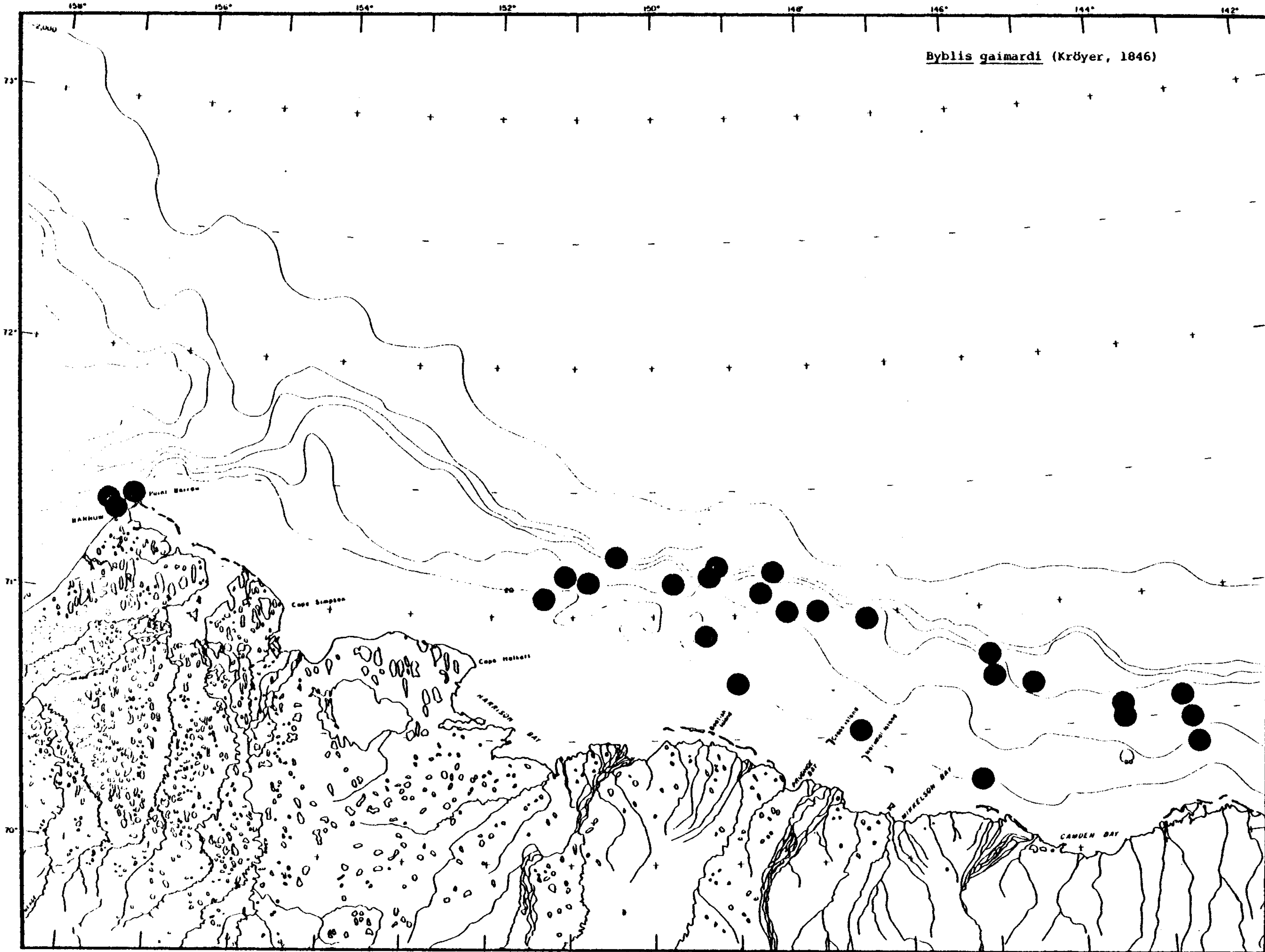
Byblis gaimardi (Kröyer, 1846)
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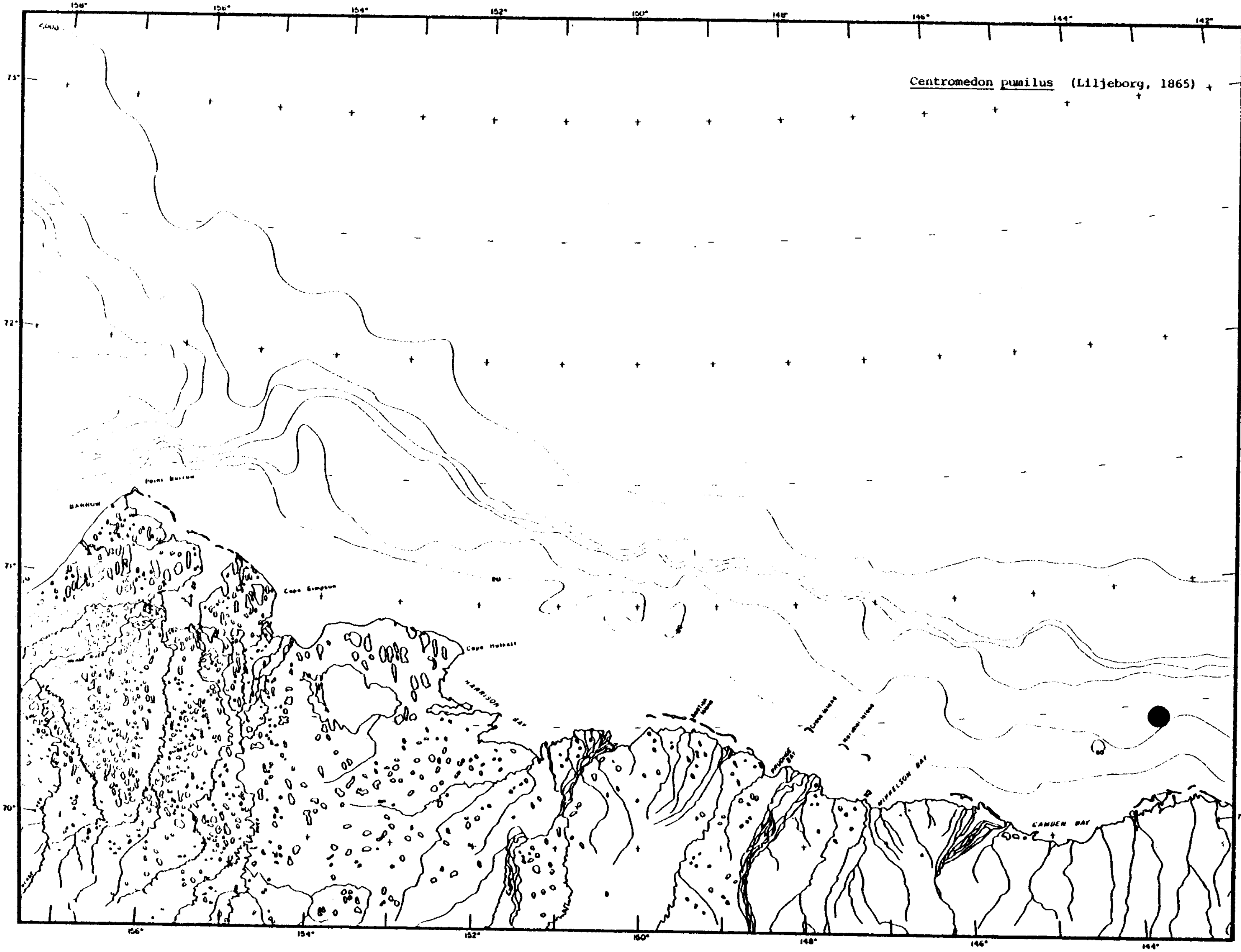
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Centromedon pumilus (Liljeborg, 1865)
158°
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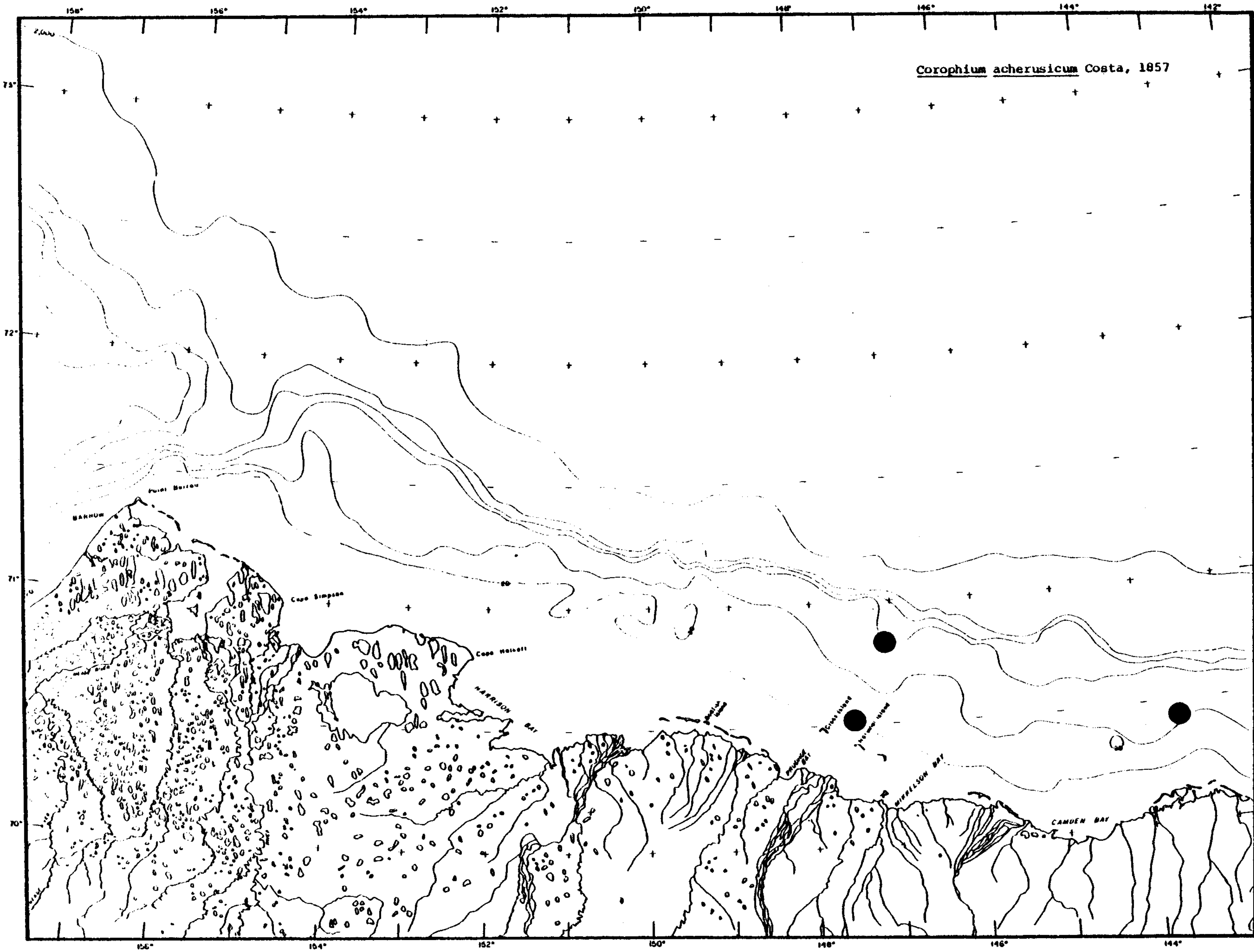
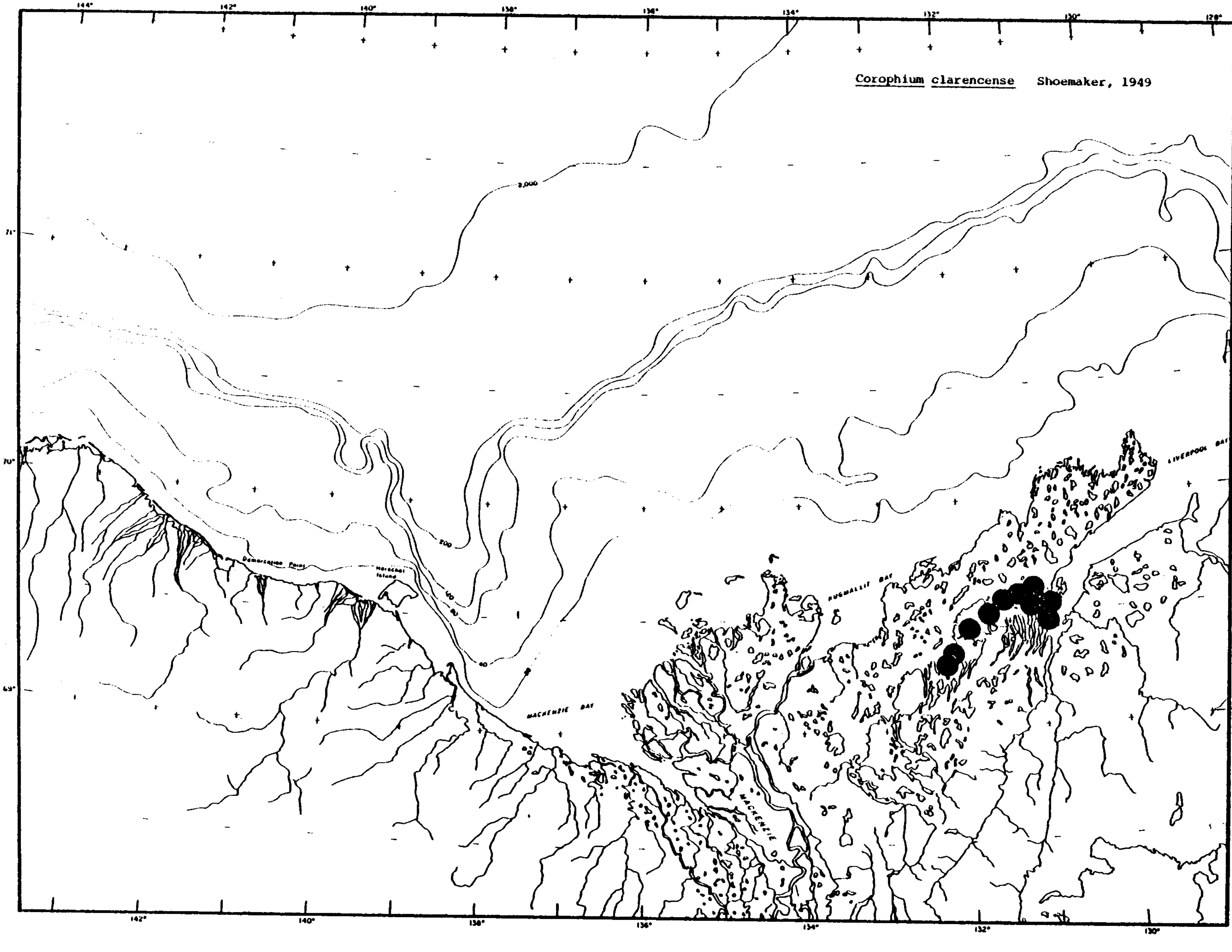
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Corophium acherusicum Costa, 1857
HARRISON BAY
CAMDEN BAY


Corophium clarencense Shoemaker, 1949
LIVERPOOL BAY
KUGMALLIT BAY
MACKENZIE BAY
Demarcation Point
Herschel Island
MACKENZIE
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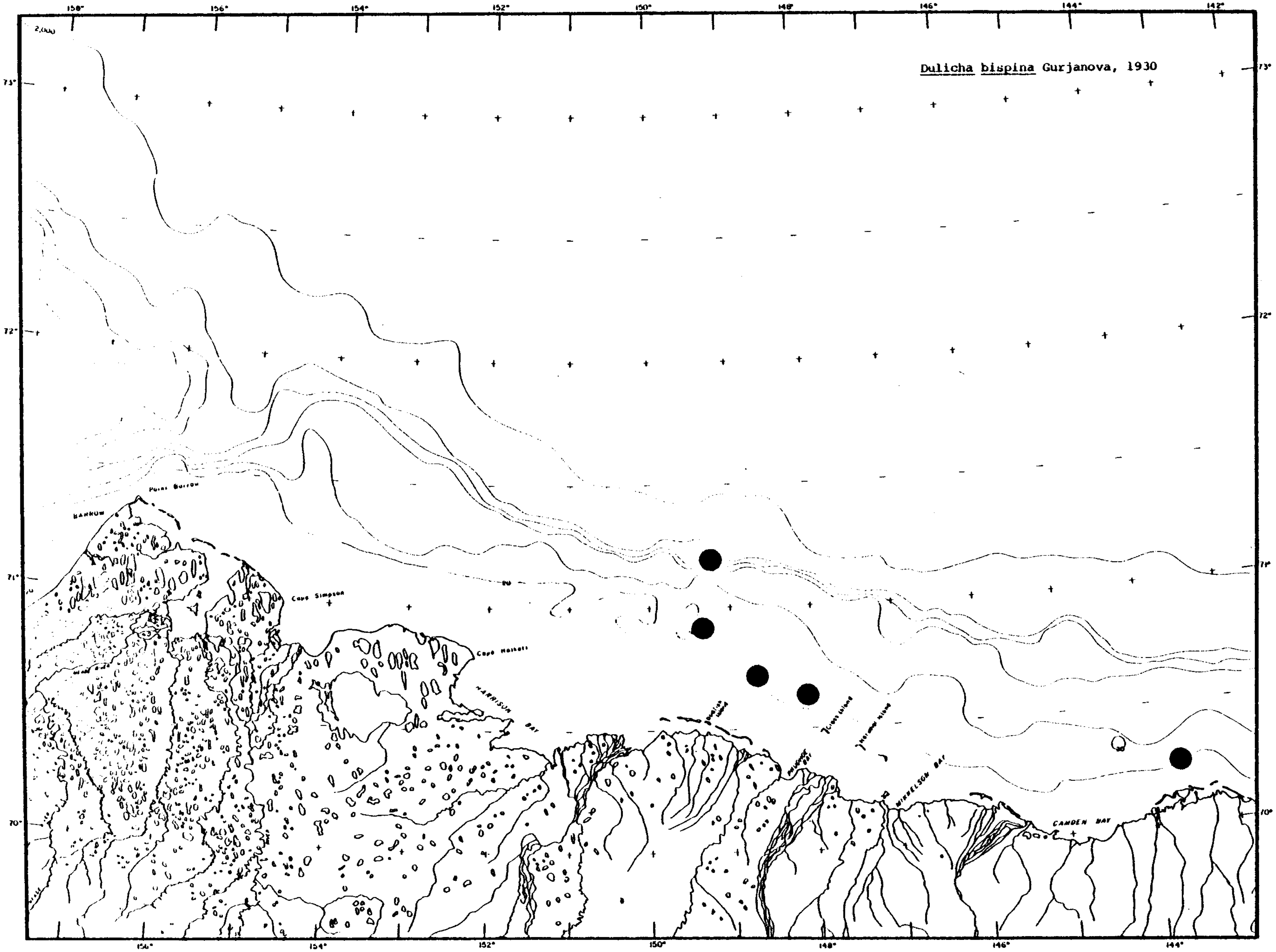
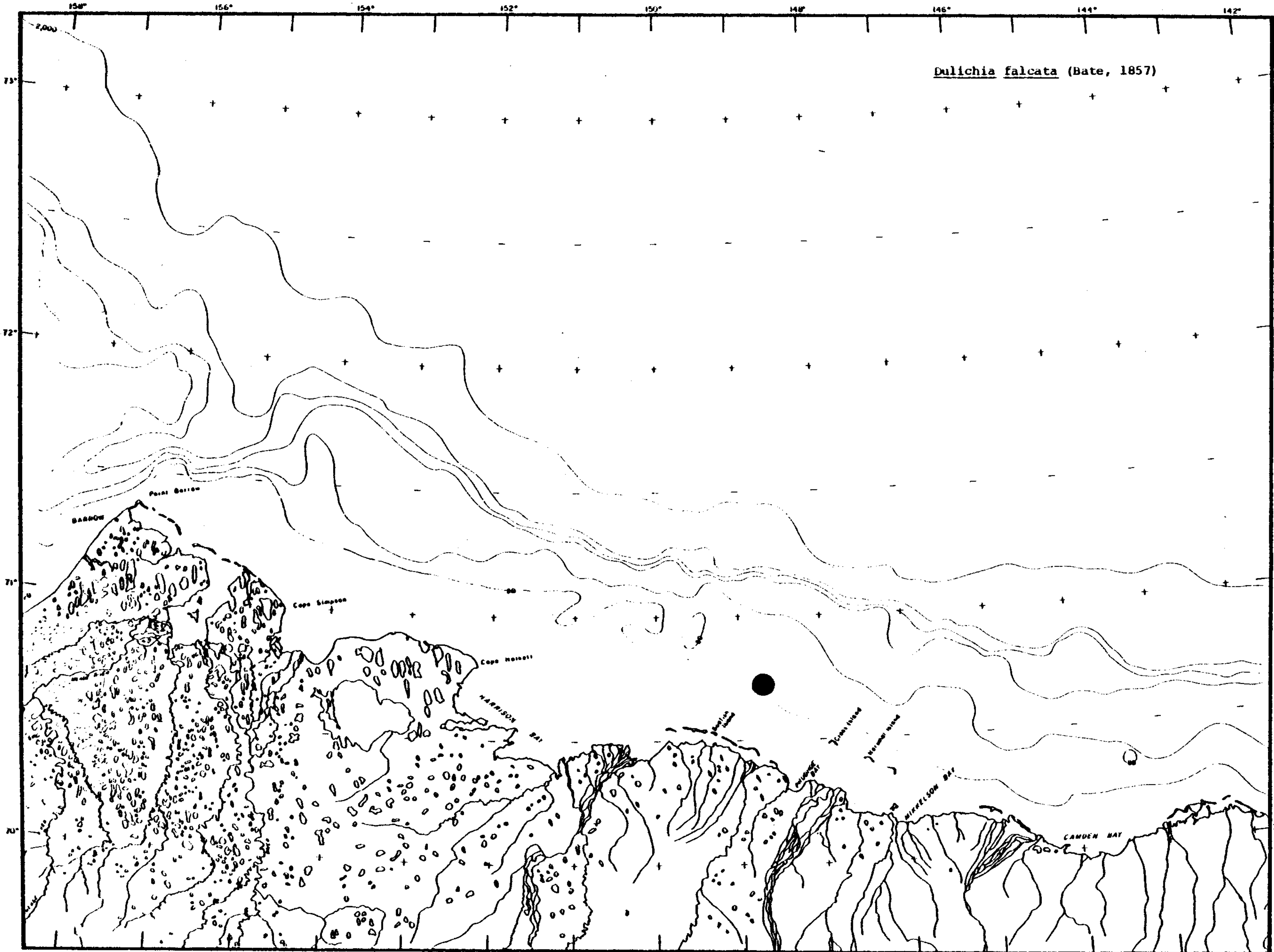
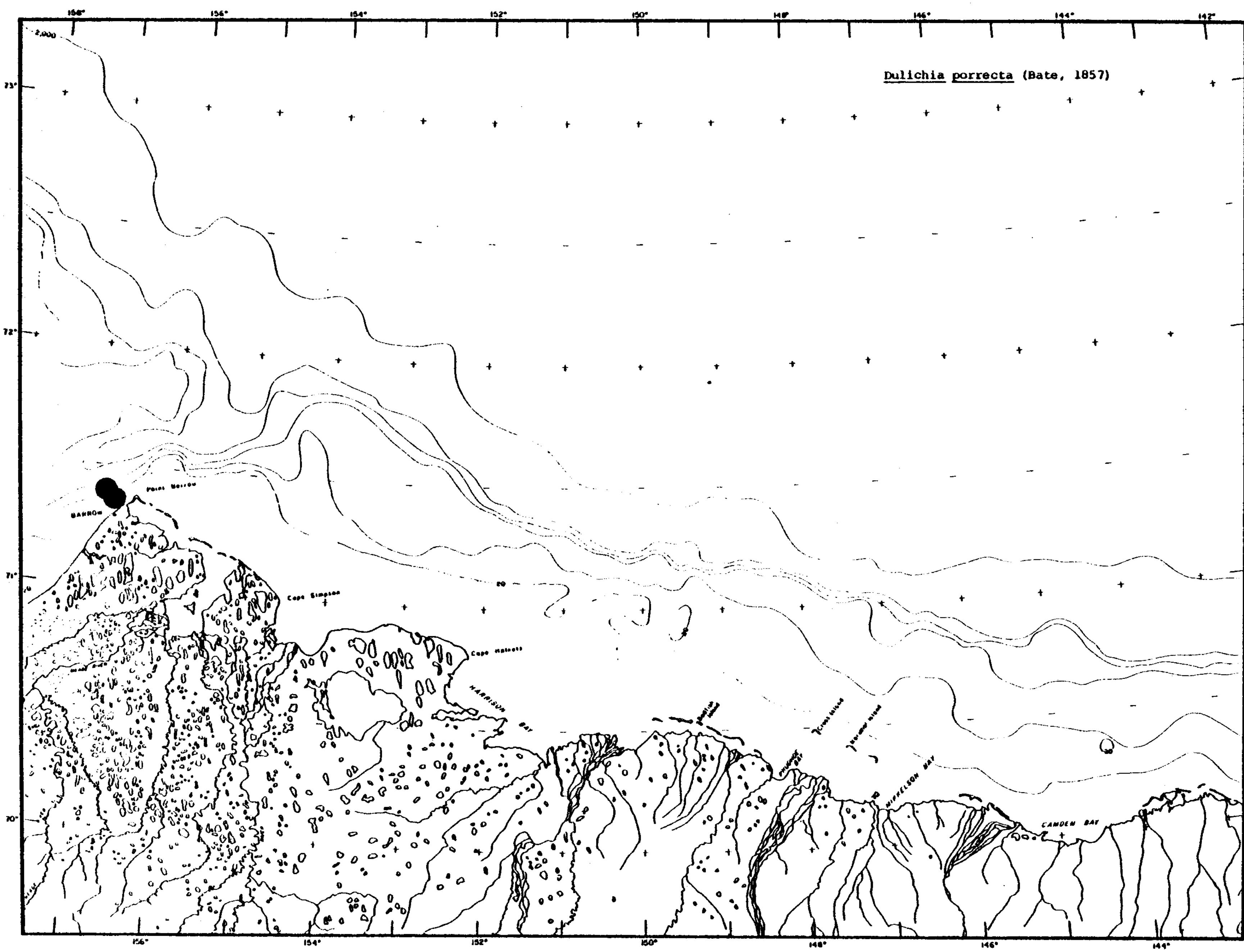

Dulicha bispina Gurjanova, 1930
BARROW
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Dulichia falcata (Bate, 1857)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
PRUDHOE BAY
MIKKELSON BAY
CAMDEN BAY


Dulichia porrecta (Bate, 1857)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
MIKKELSON BAY
158°
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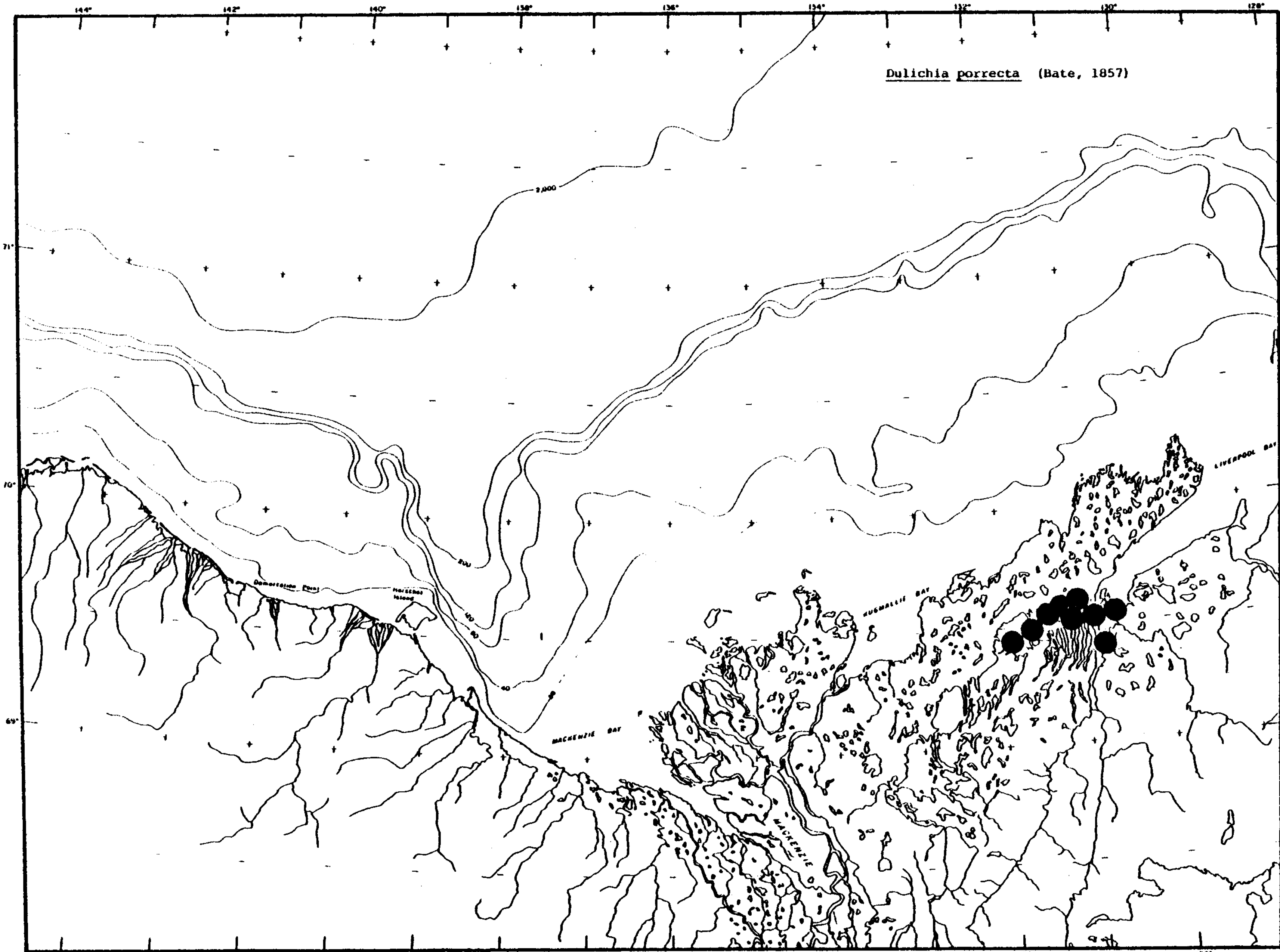
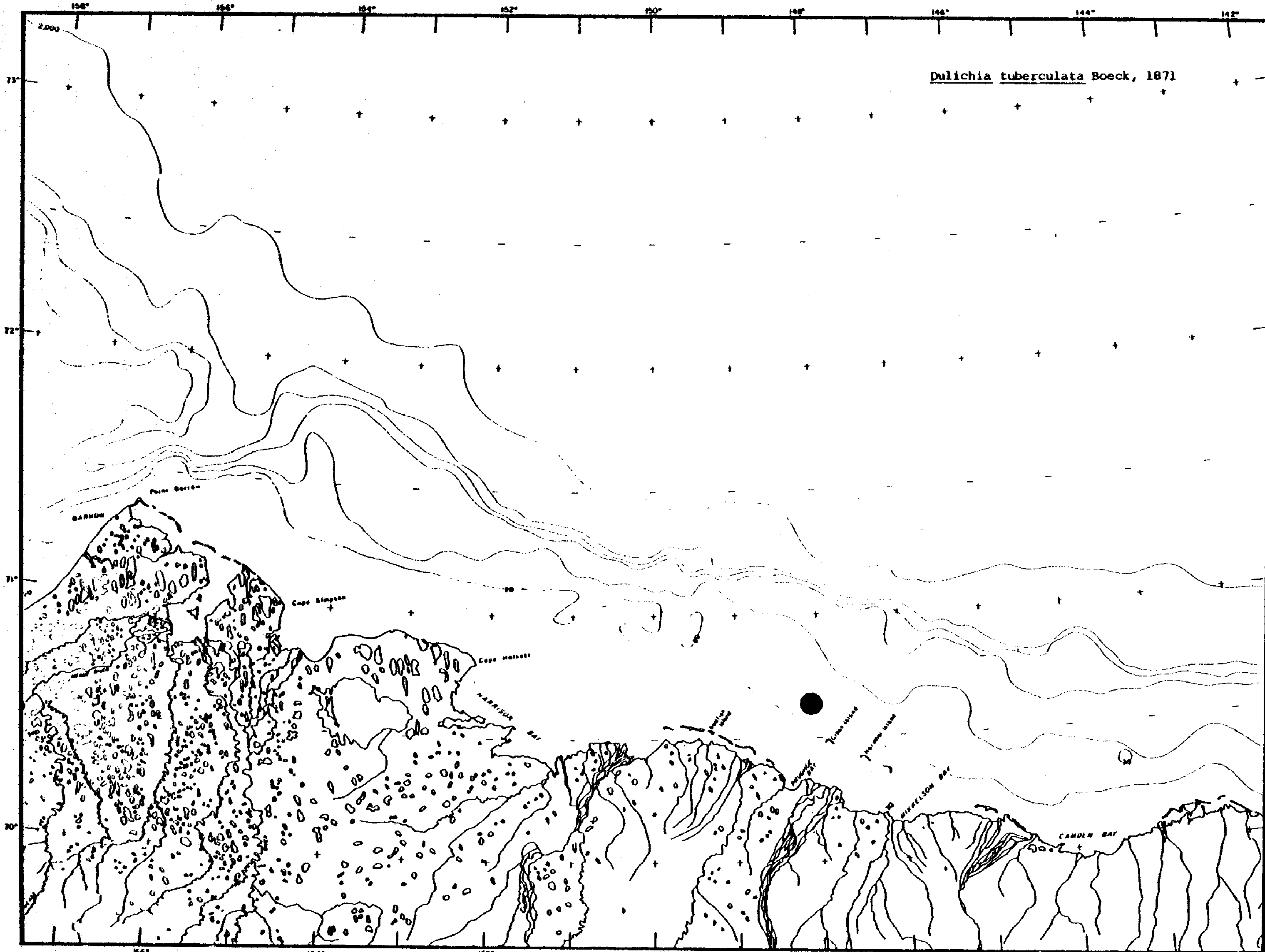

Dulichia porrecta (Bate, 1857)
2,000
MACKENZIE BAY
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE


Dulichia tuberculata Boeck, 1871
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
PRUDHOE BAY
MIKKELSON BAY
CAMDEN BAY
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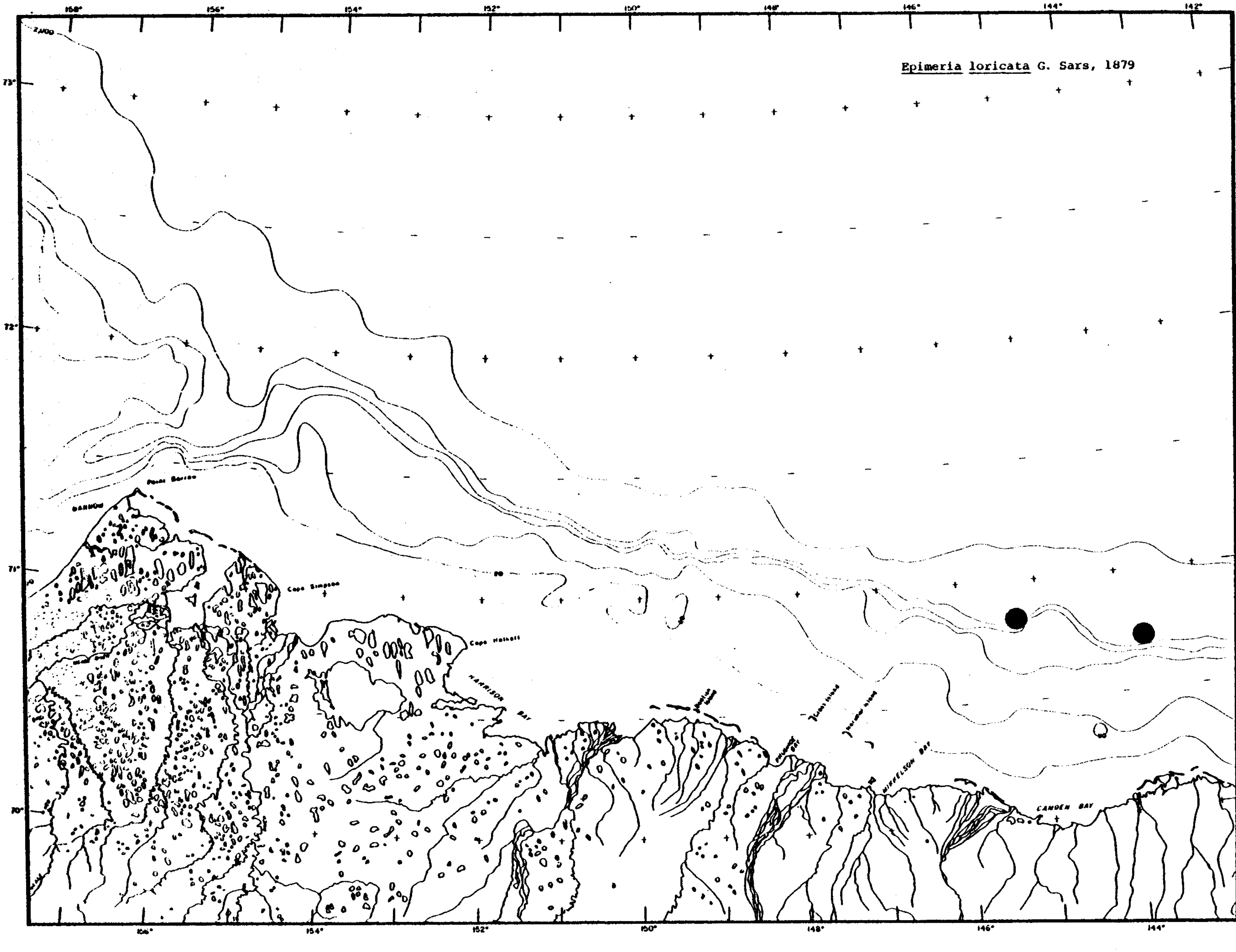
Epimeria loricata G. Sars, 1879
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
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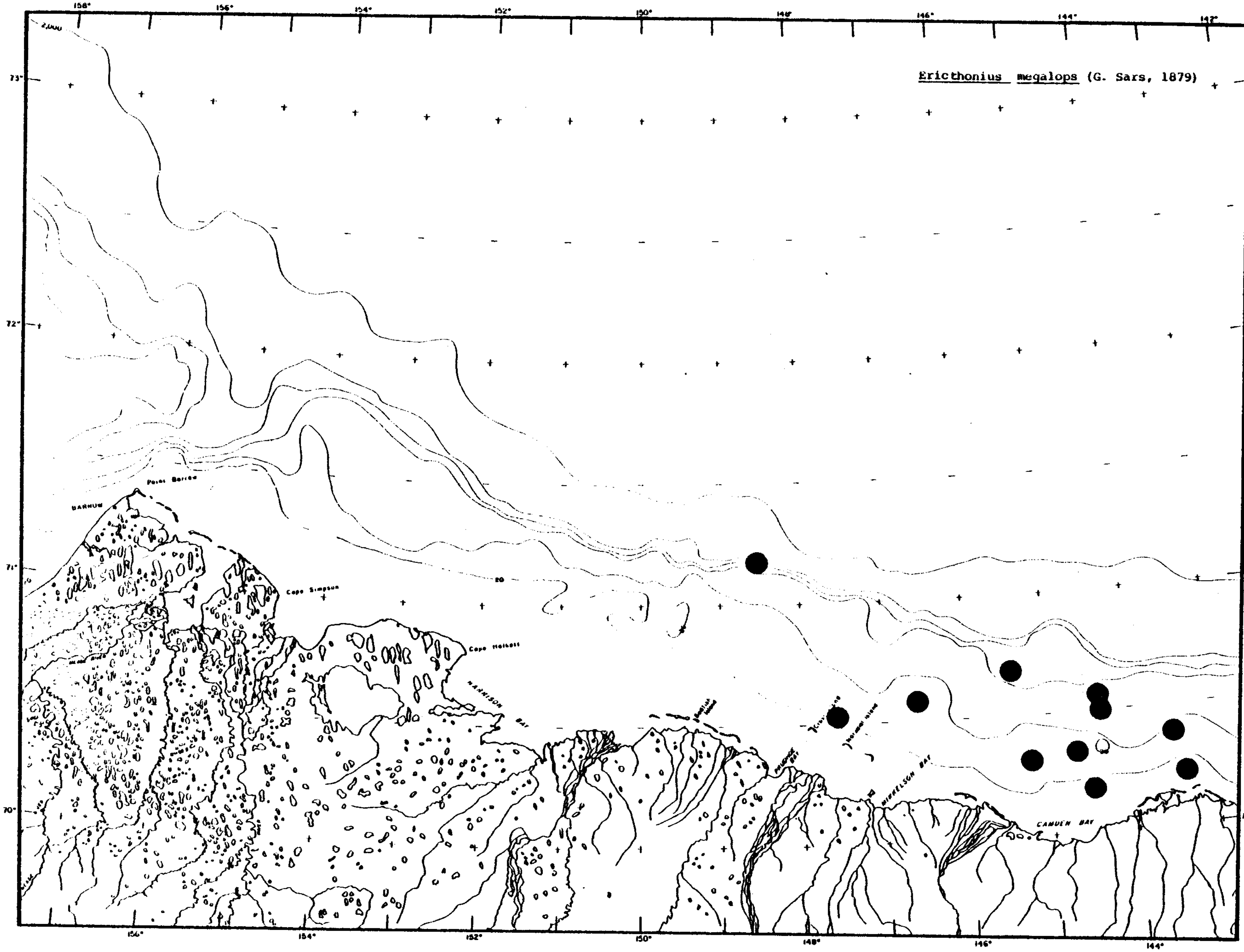
Ericthonius megalops (G. Sars, 1879)
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
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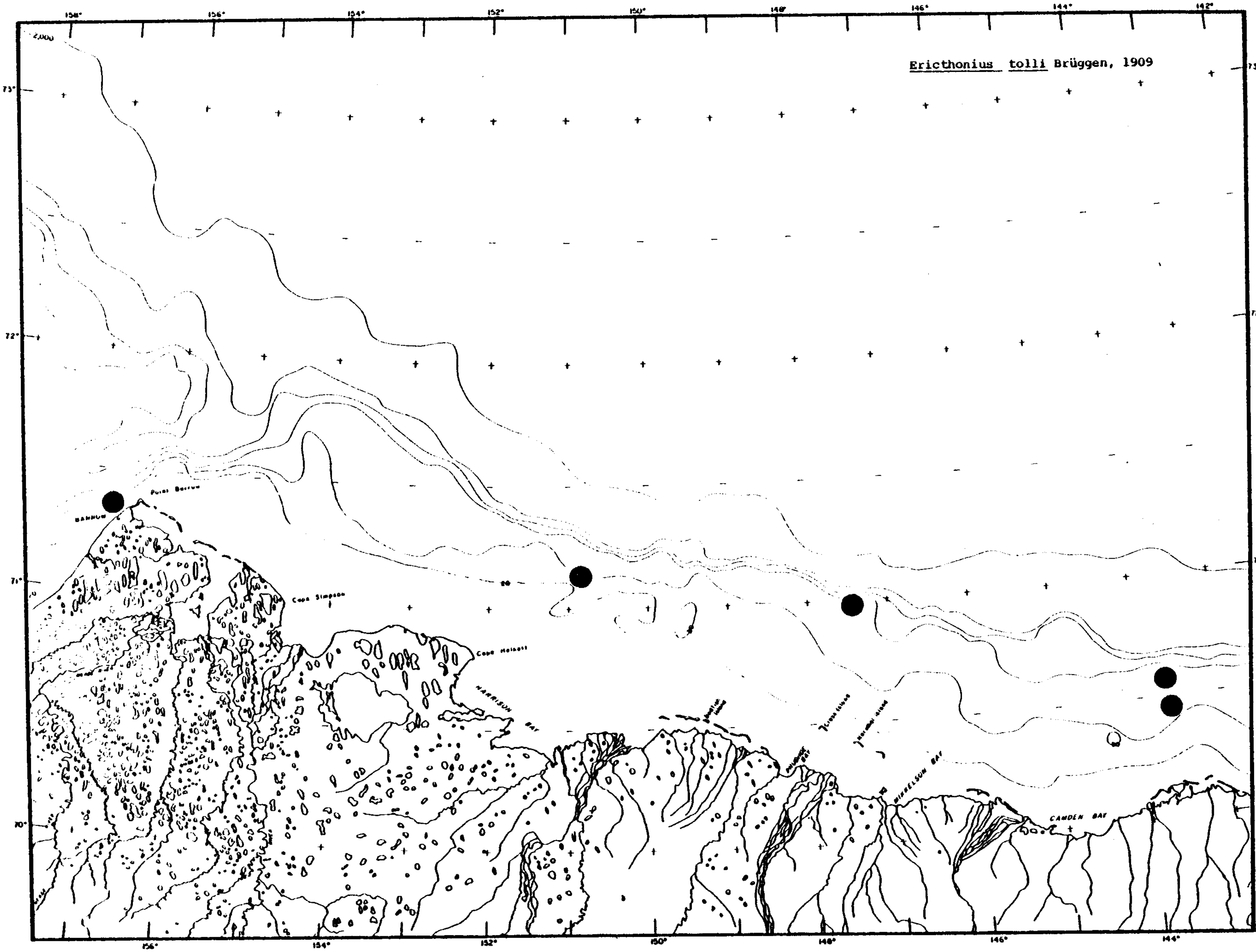
Ericthonius tolli Brüggen, 1909
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
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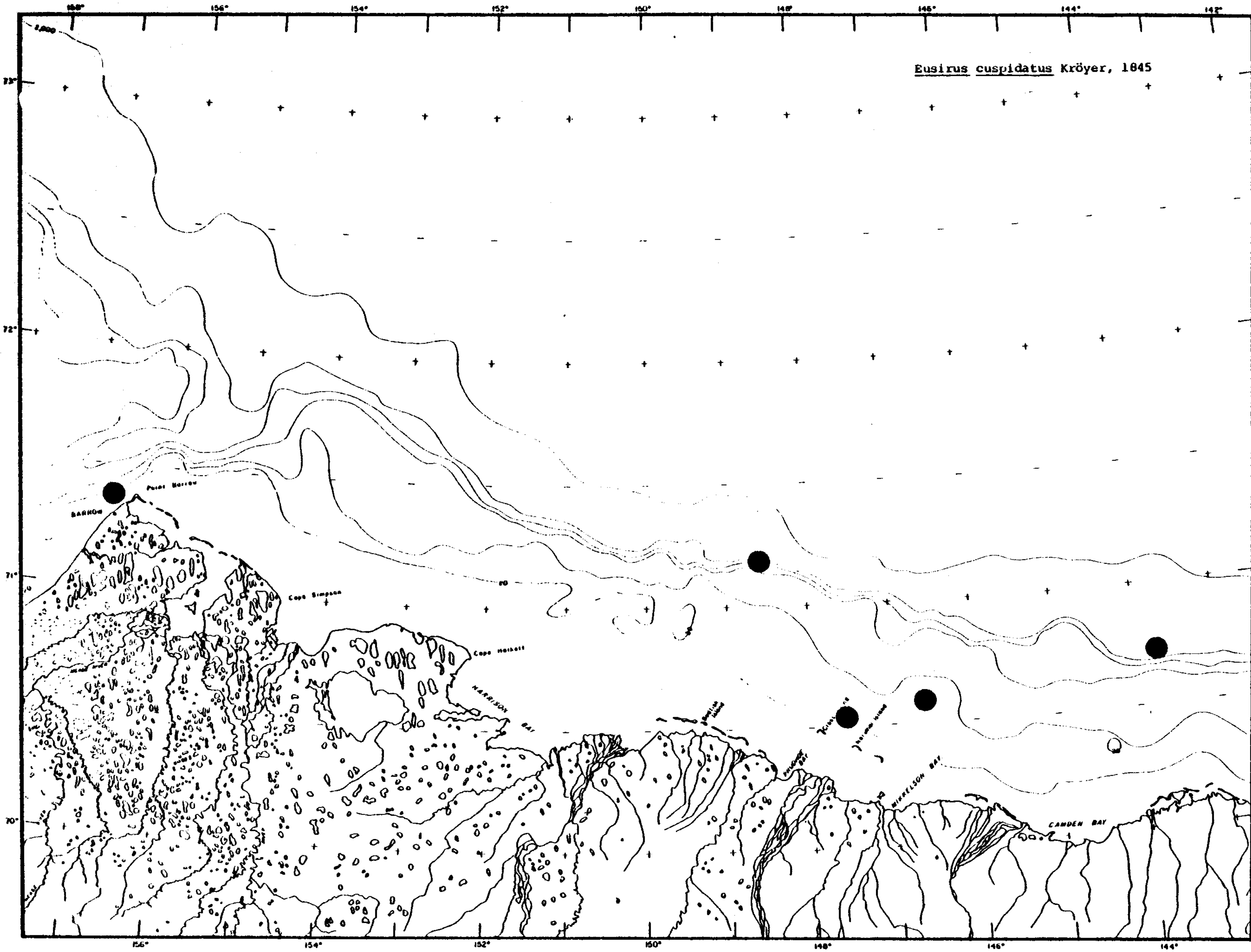
Eusirus cuspidatus Kröyer, 1845
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
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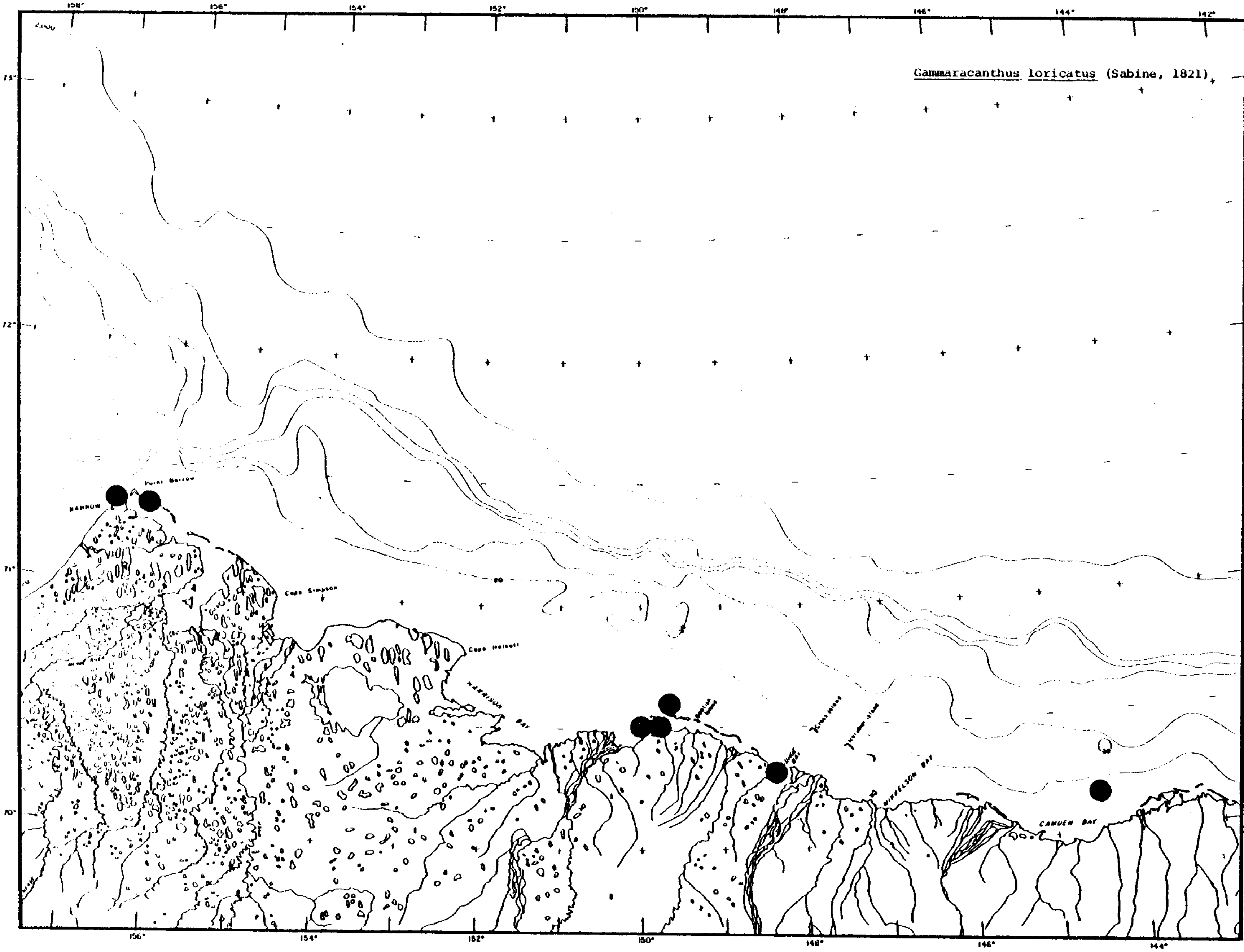
Gammaracanthus loricatus (Sabine, 1821)
158°
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Point Barrow
BARROW
Cape Simpson
Cape Halkett
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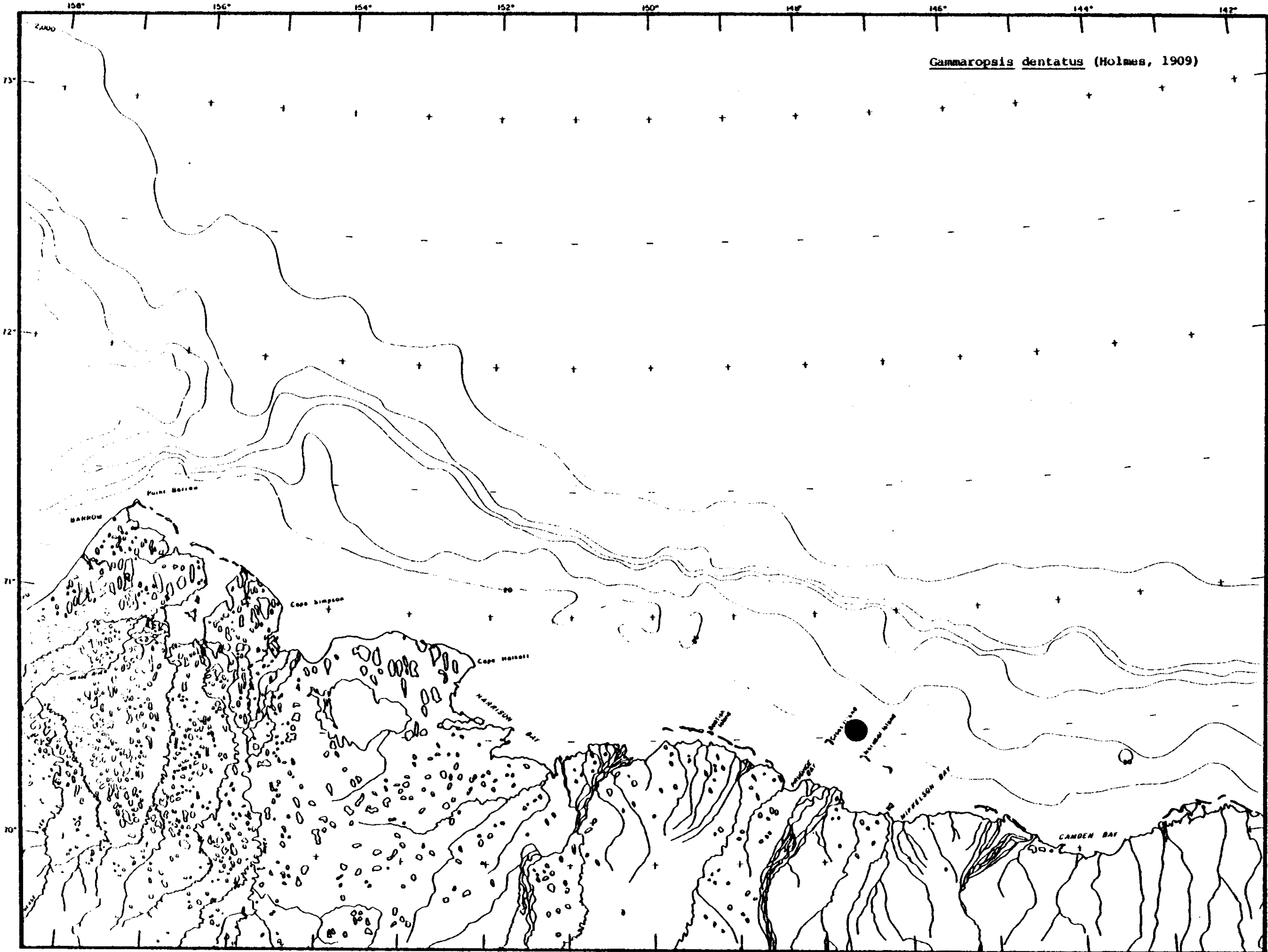
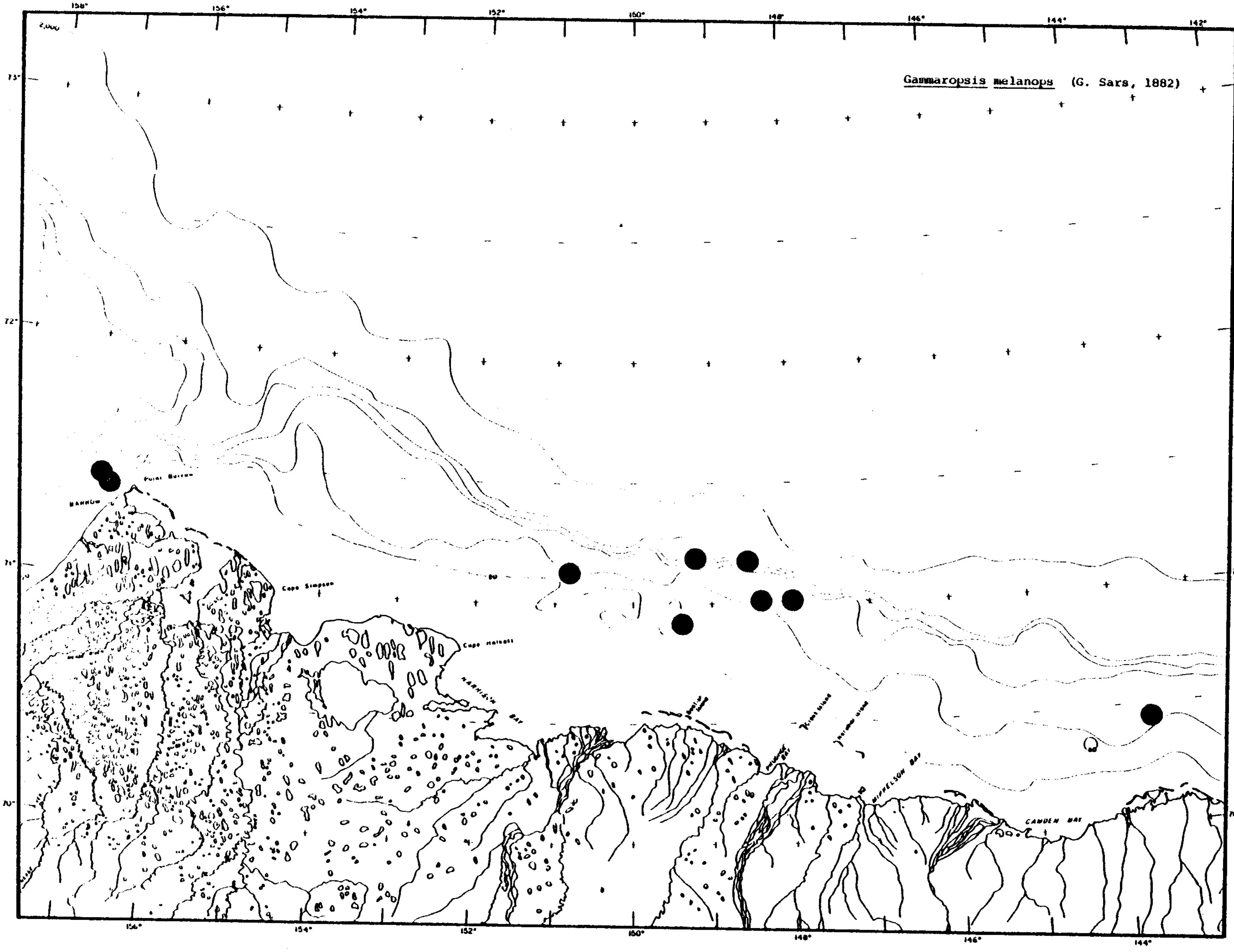
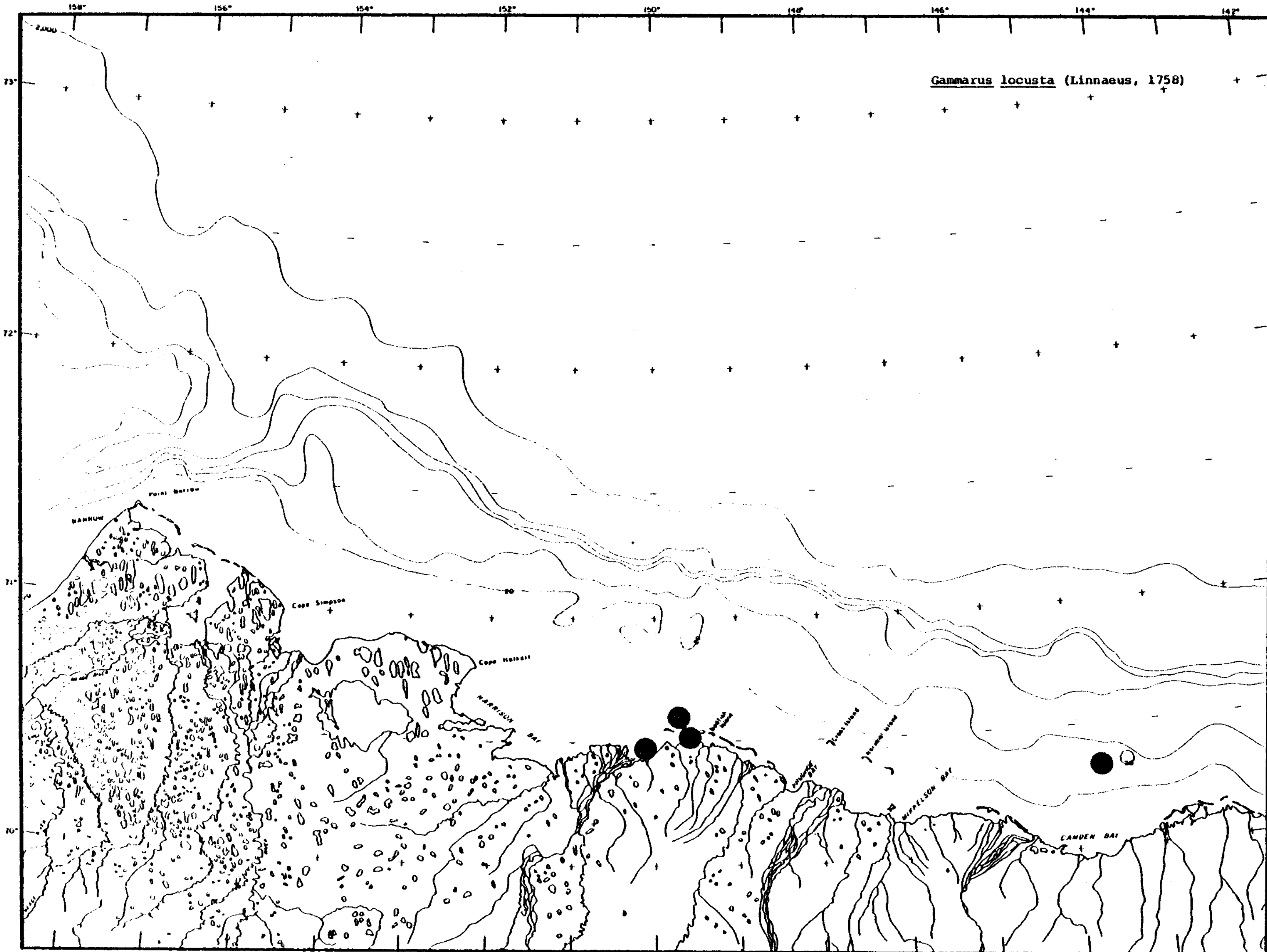
CAMDEN BAY



Gammaropsis dentatus (Holmes, 1909)


Gammaropsis melanops (G. Sars, 1882)
Cape Simpson
Cape Halkett
CAMDEN BAY


Gammarus locusta (Linnaeus, 1758)
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
73°
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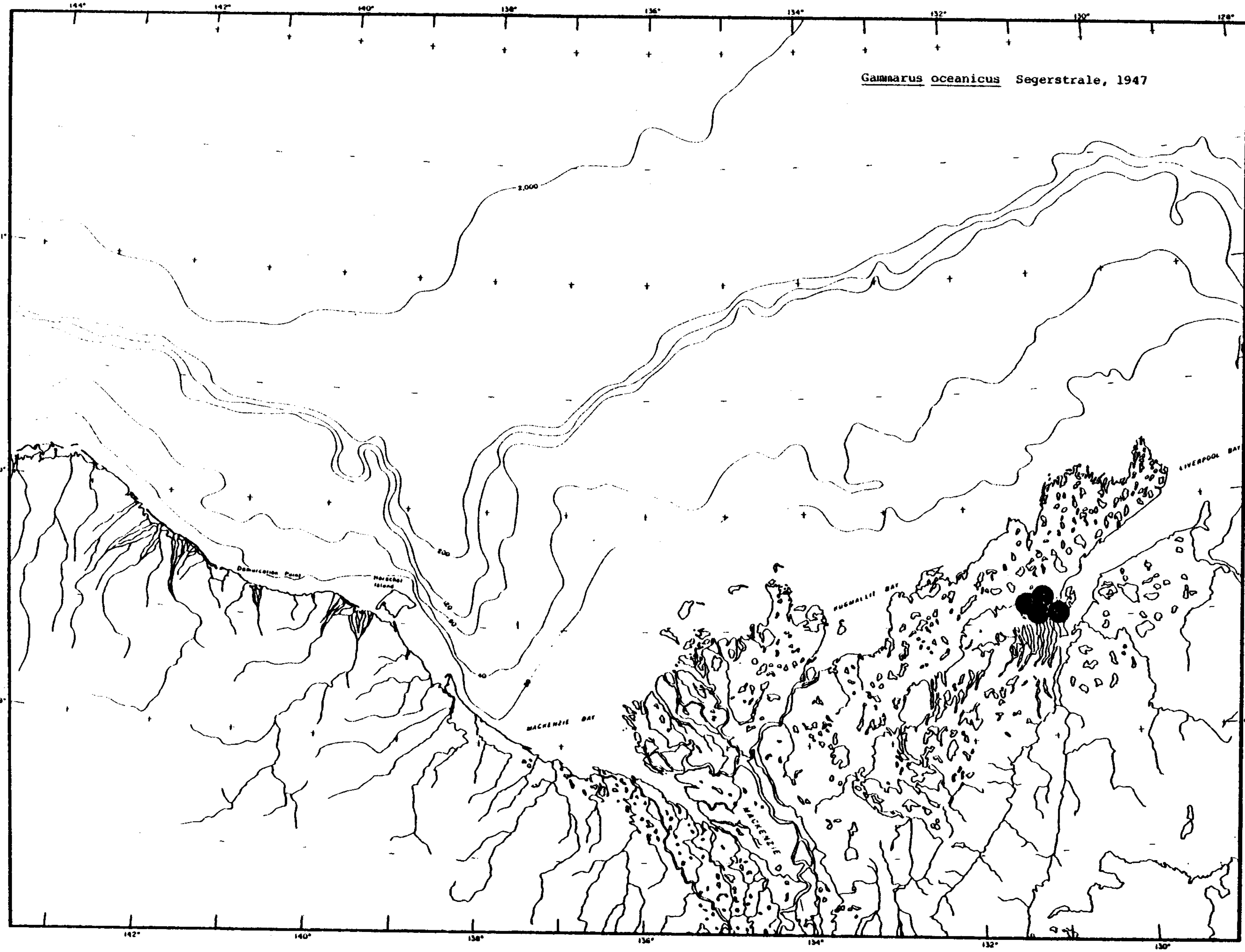
Gammarus oceanicus Segerstrale, 1947
144°
142°
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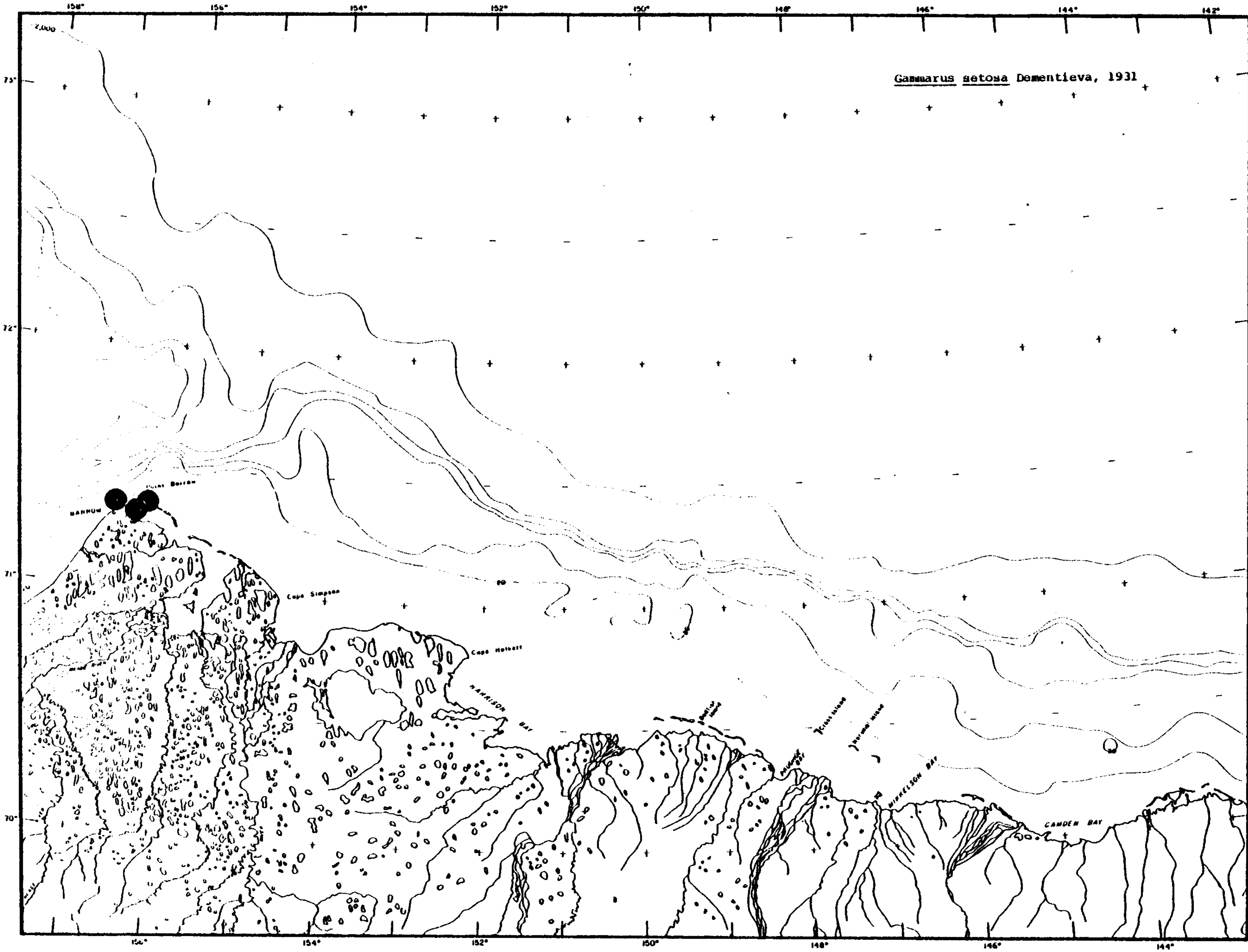
Demarcation Point
Herschel Island
MACKENZIE BAY
LIVERPOOL BAY
MACKENZIE


Gammarus setosa Dementieva, 1931
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
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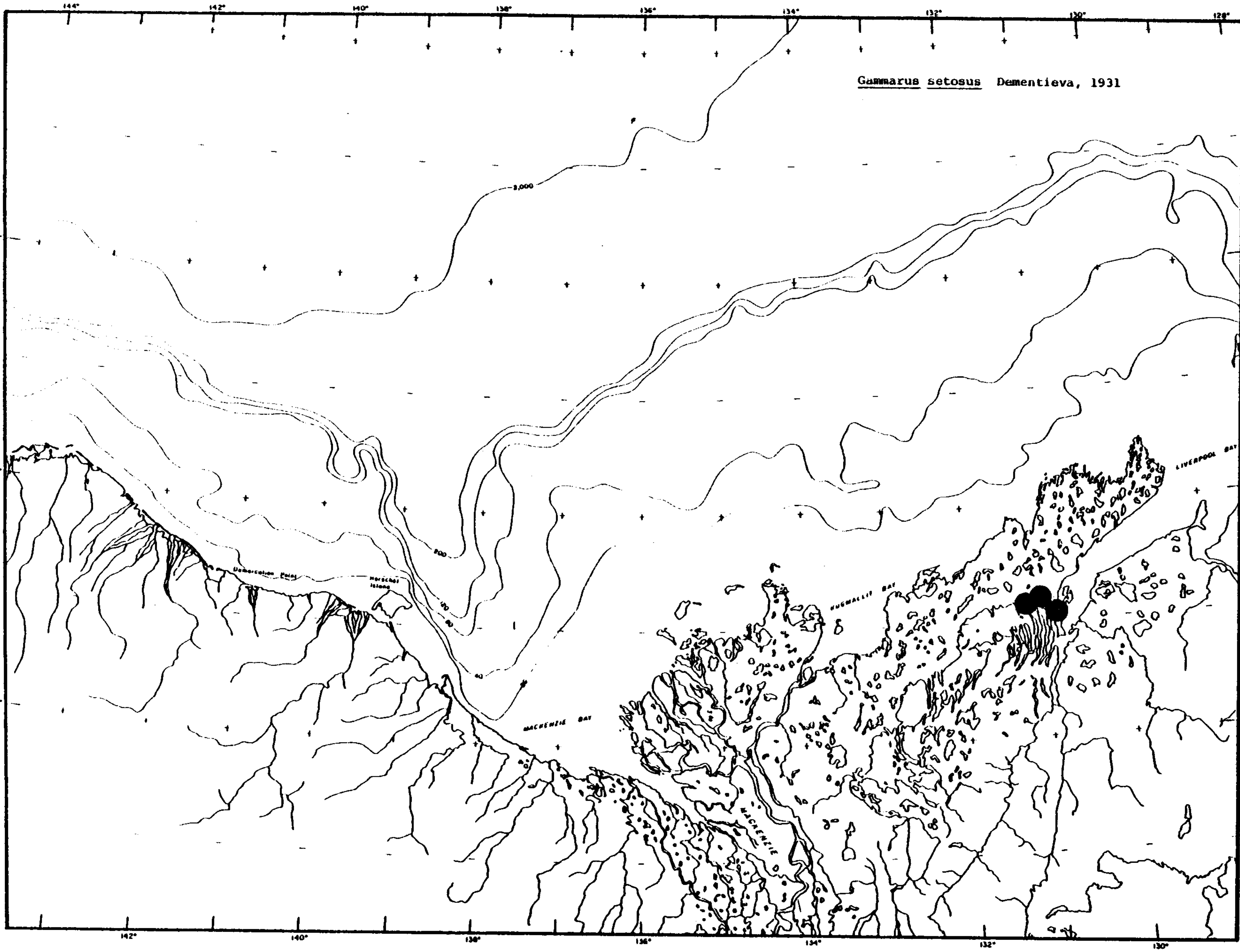
Gammarus setosus Dementieva, 1931
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Demarcation Point
Herschel Island
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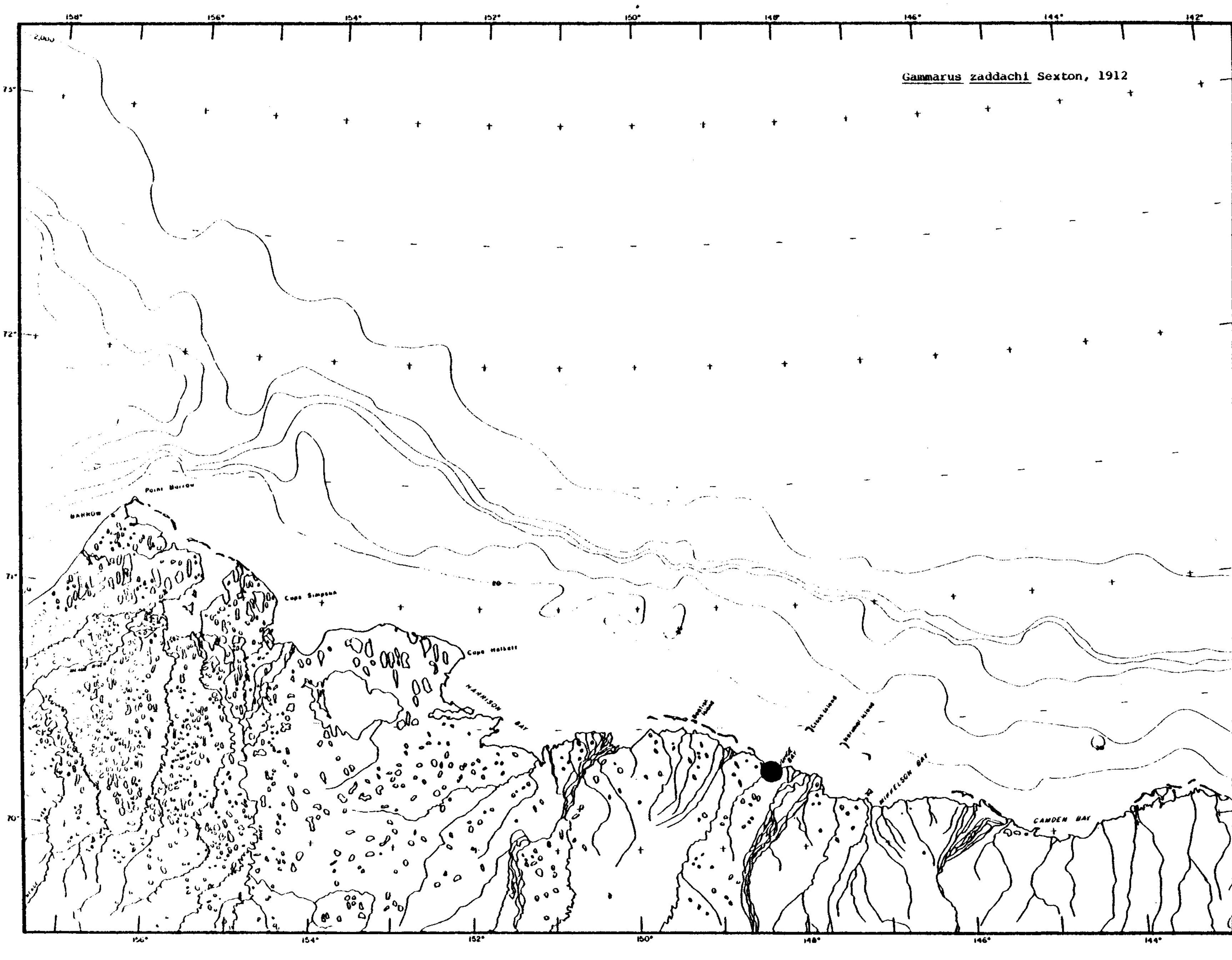
MACKENZIE
KUGMALLIT BAY
LIVERPOOL BAY


Gammarus zaddachi Sexton, 1912
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
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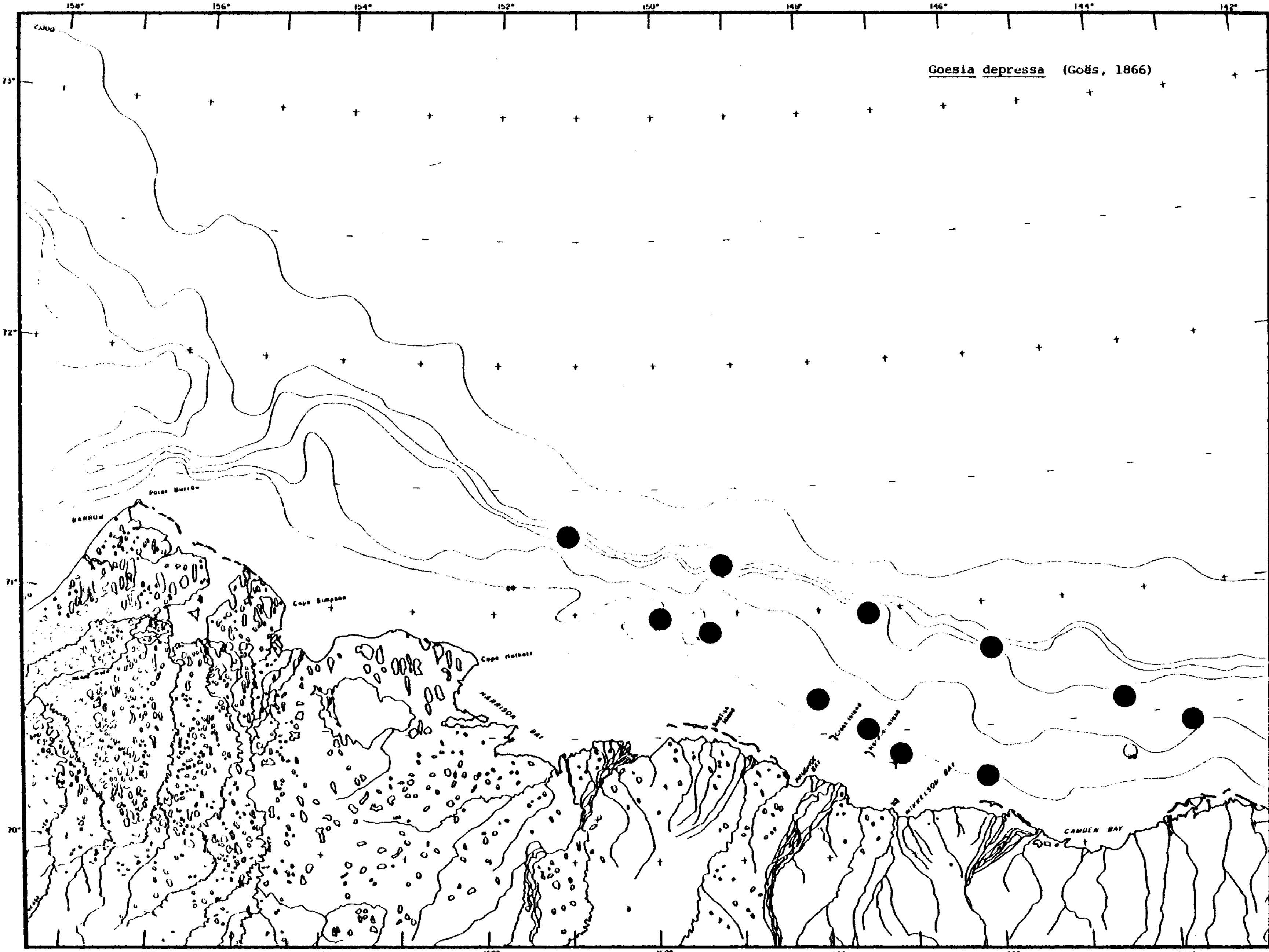
Goesia depressa (Goës, 1866)
158°
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Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
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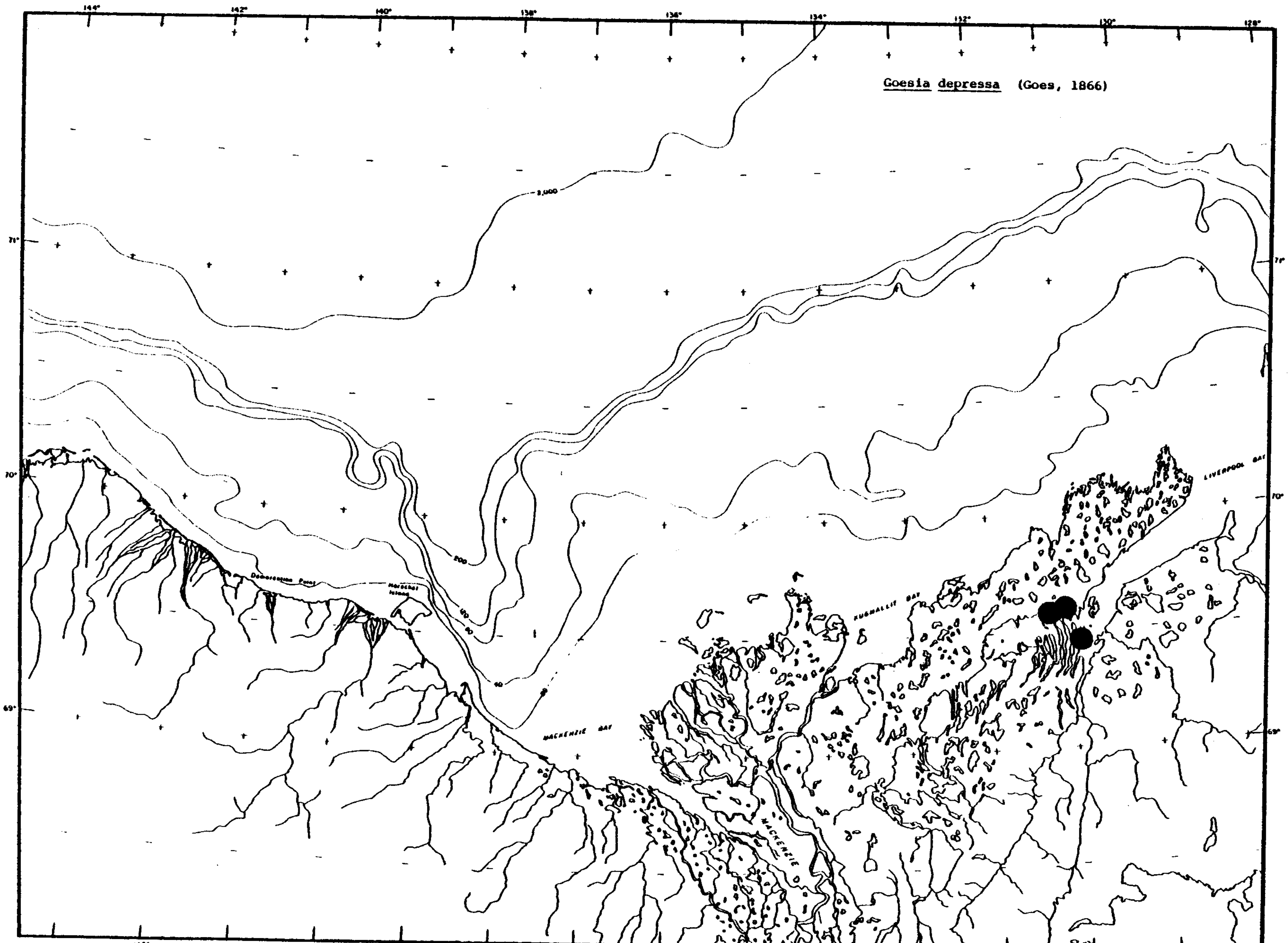
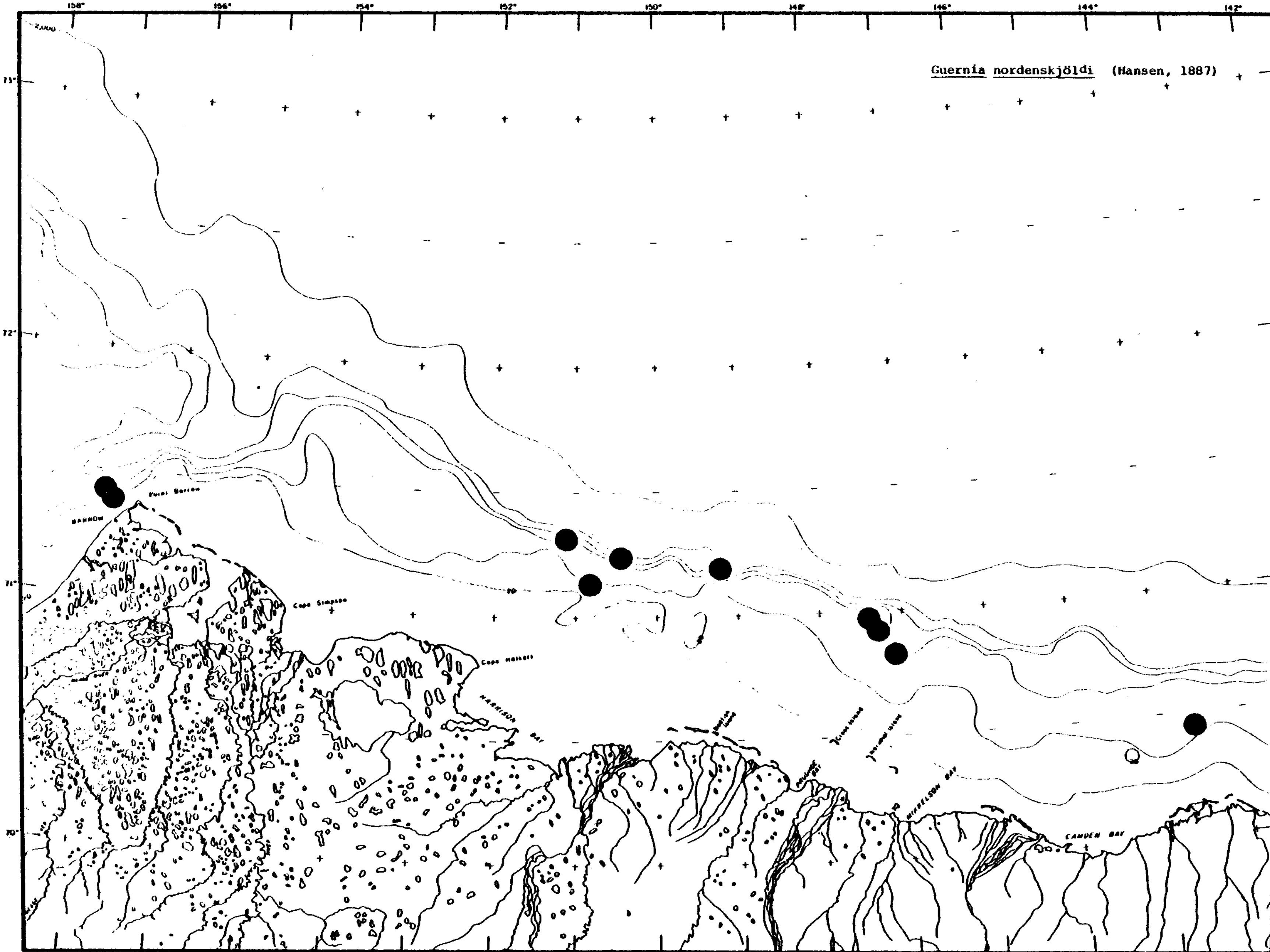
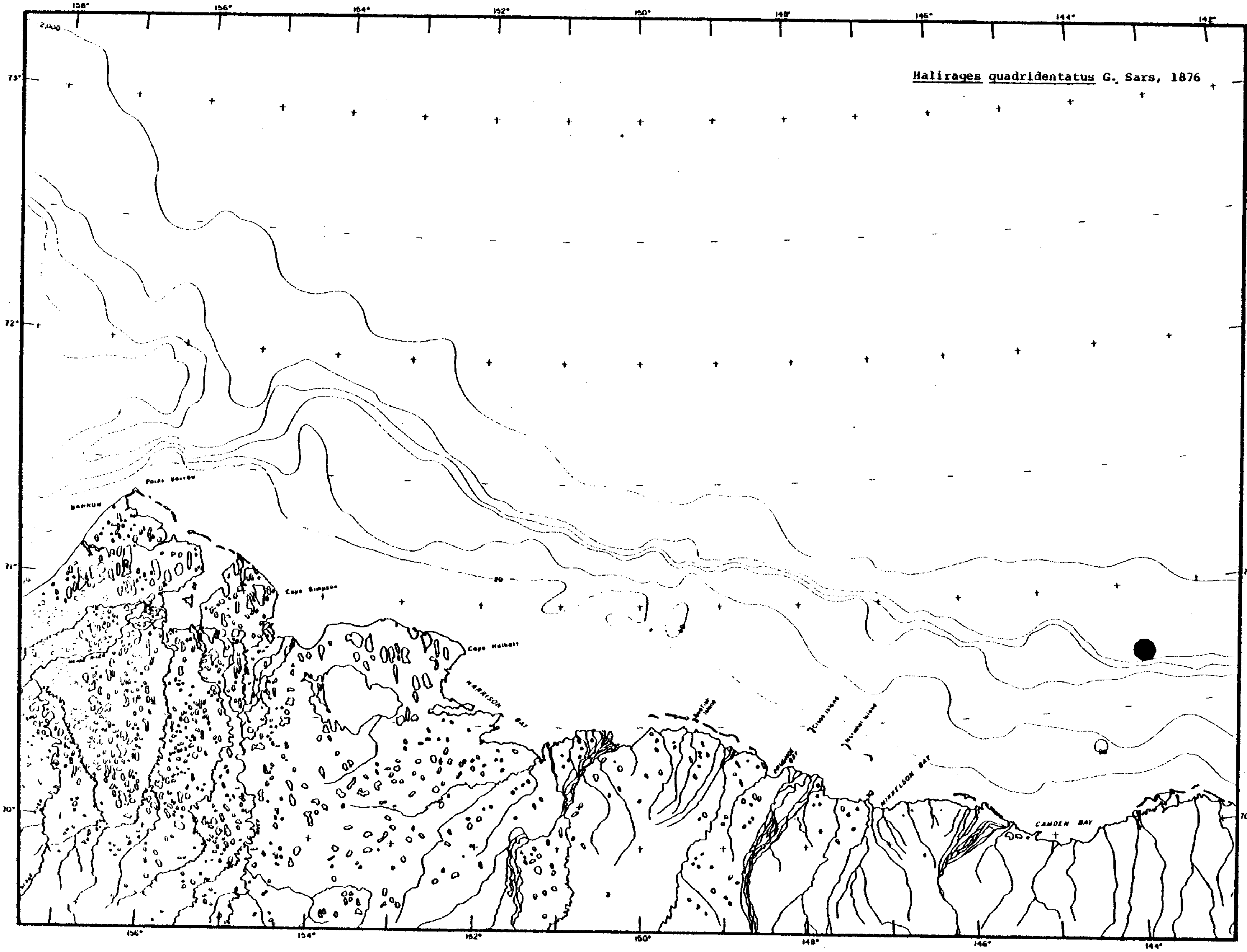
CAMDEN BAY



Goesia depressa (Goes, 1866)


Guernia nordenskjöldi (Hansen, 1887)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Halirages quadridentatus G. Sars, 1876
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Point Barrow
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Cape Simpson
Cape Halkett
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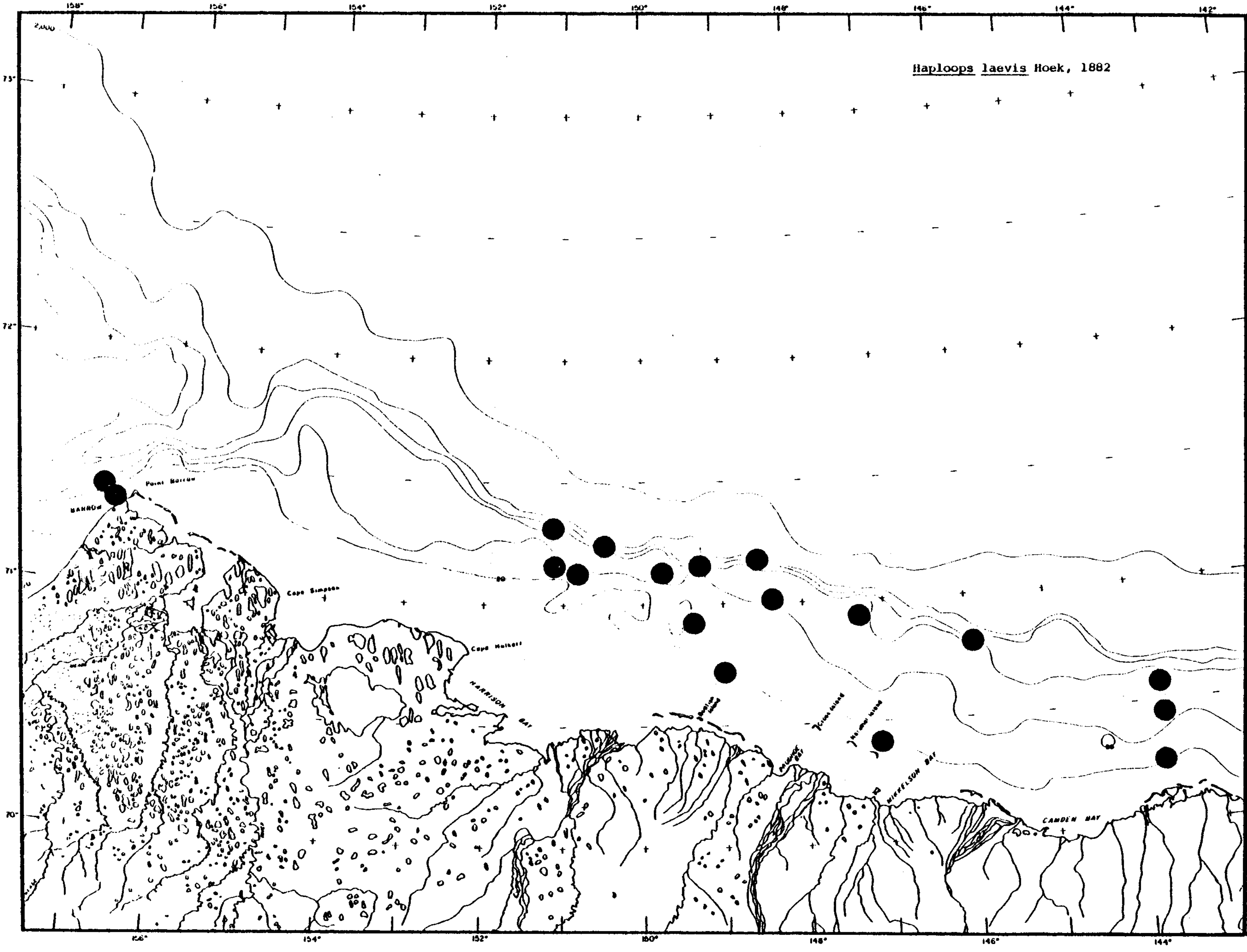
CAMDEN BAY


Haploops laevis Hoek, 1882
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
158°
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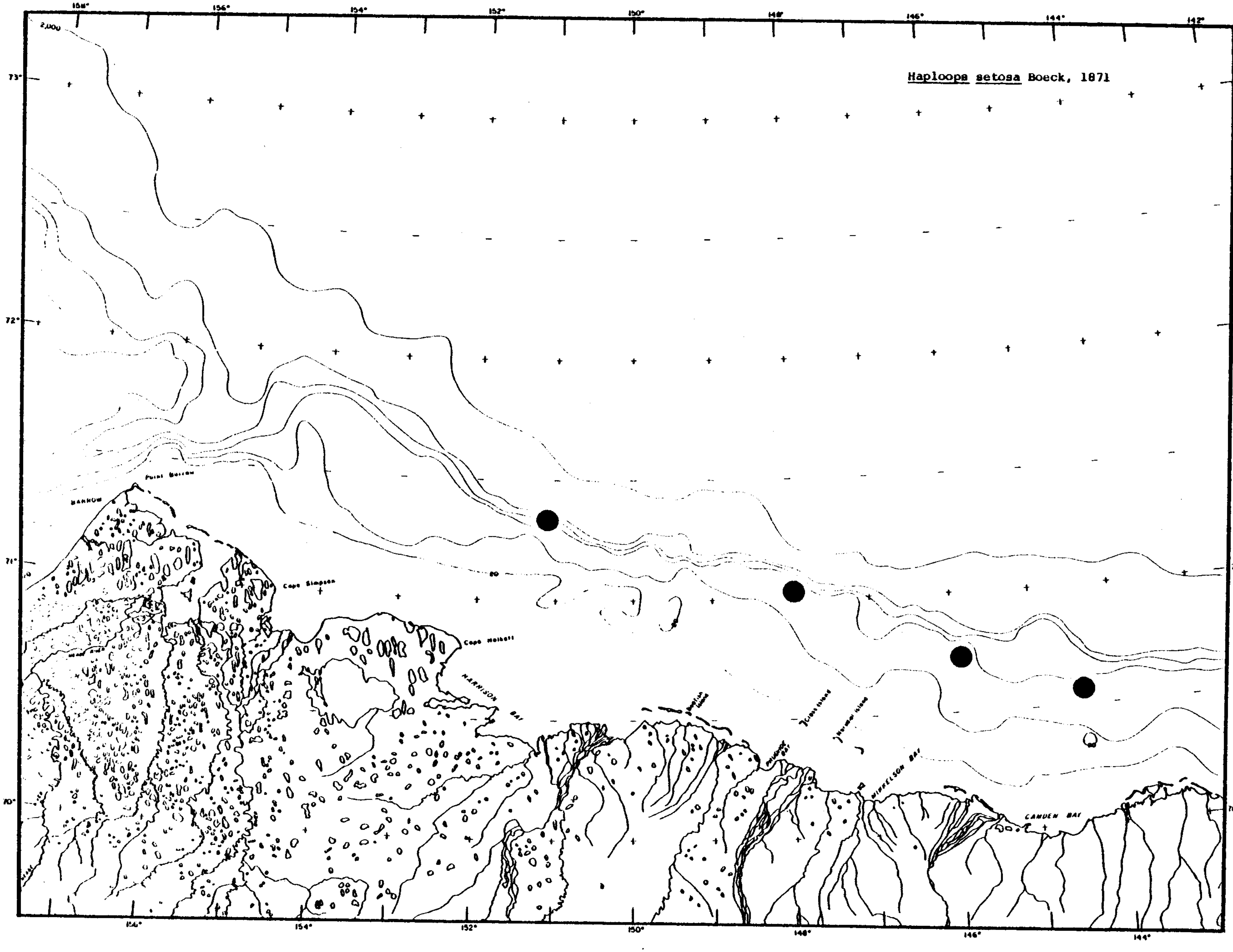
Haploops setosa Boeck, 1871
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
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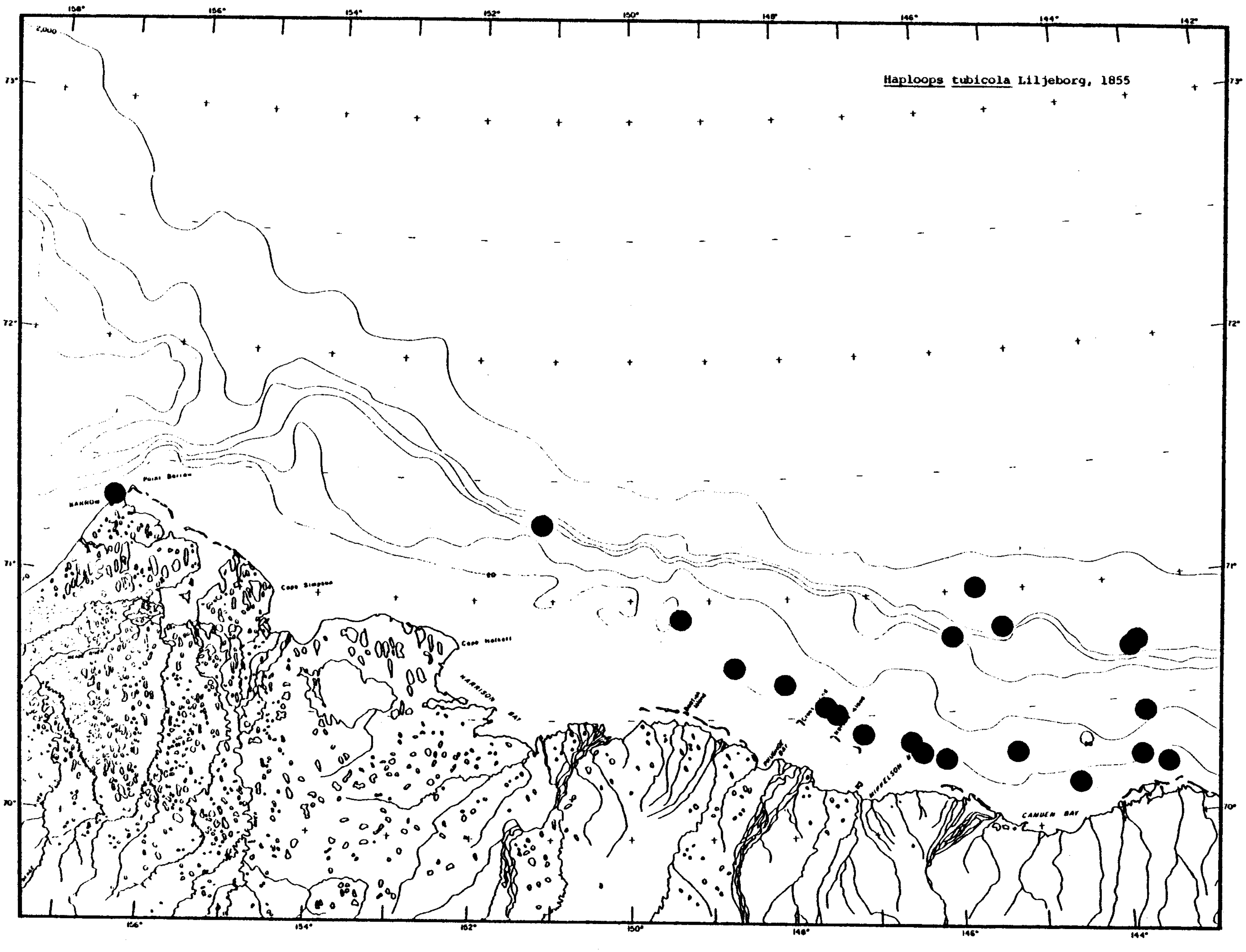
Haploops tubicola Liljeborg, 1855
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Point Barrow
BARROW
Cape Simpson
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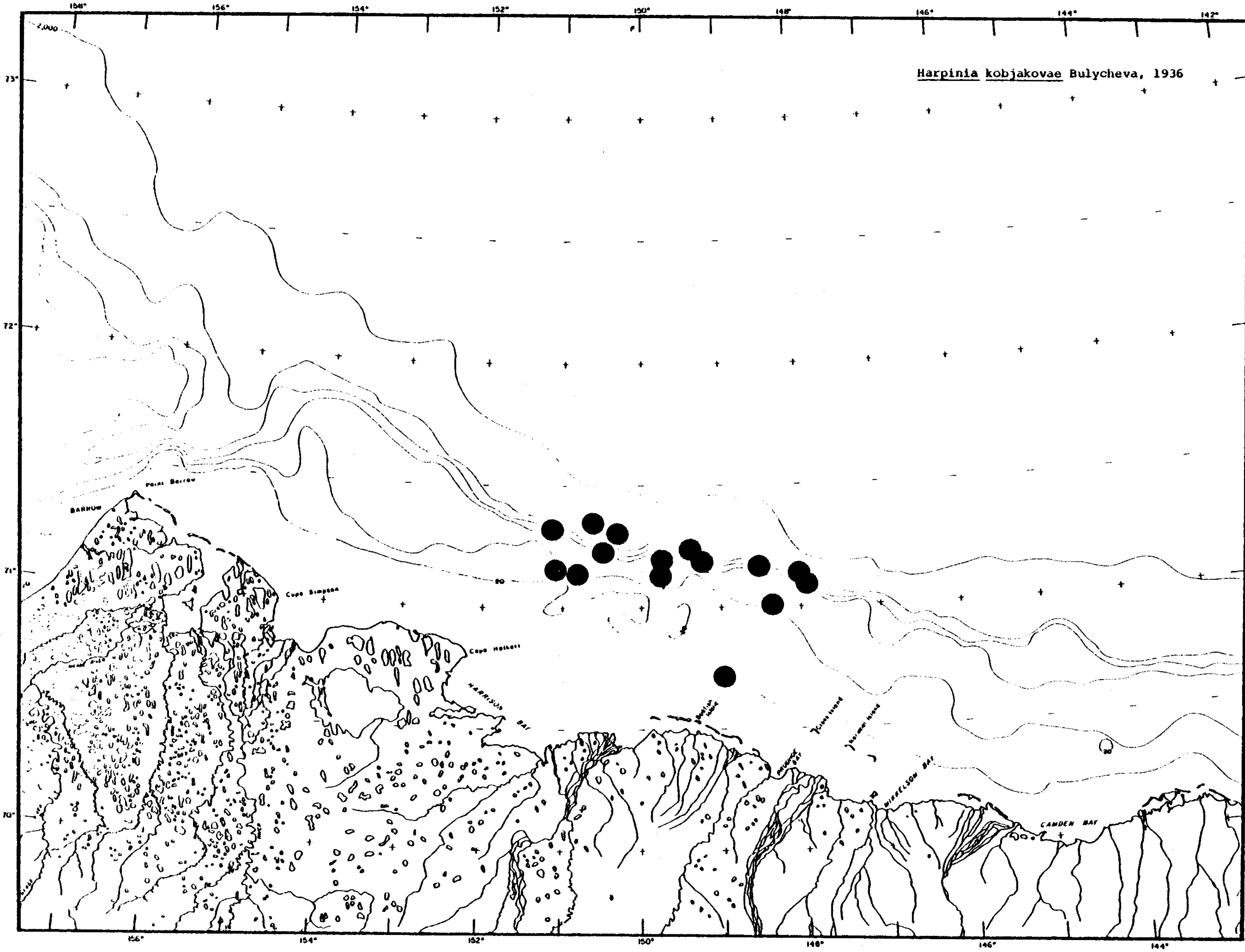
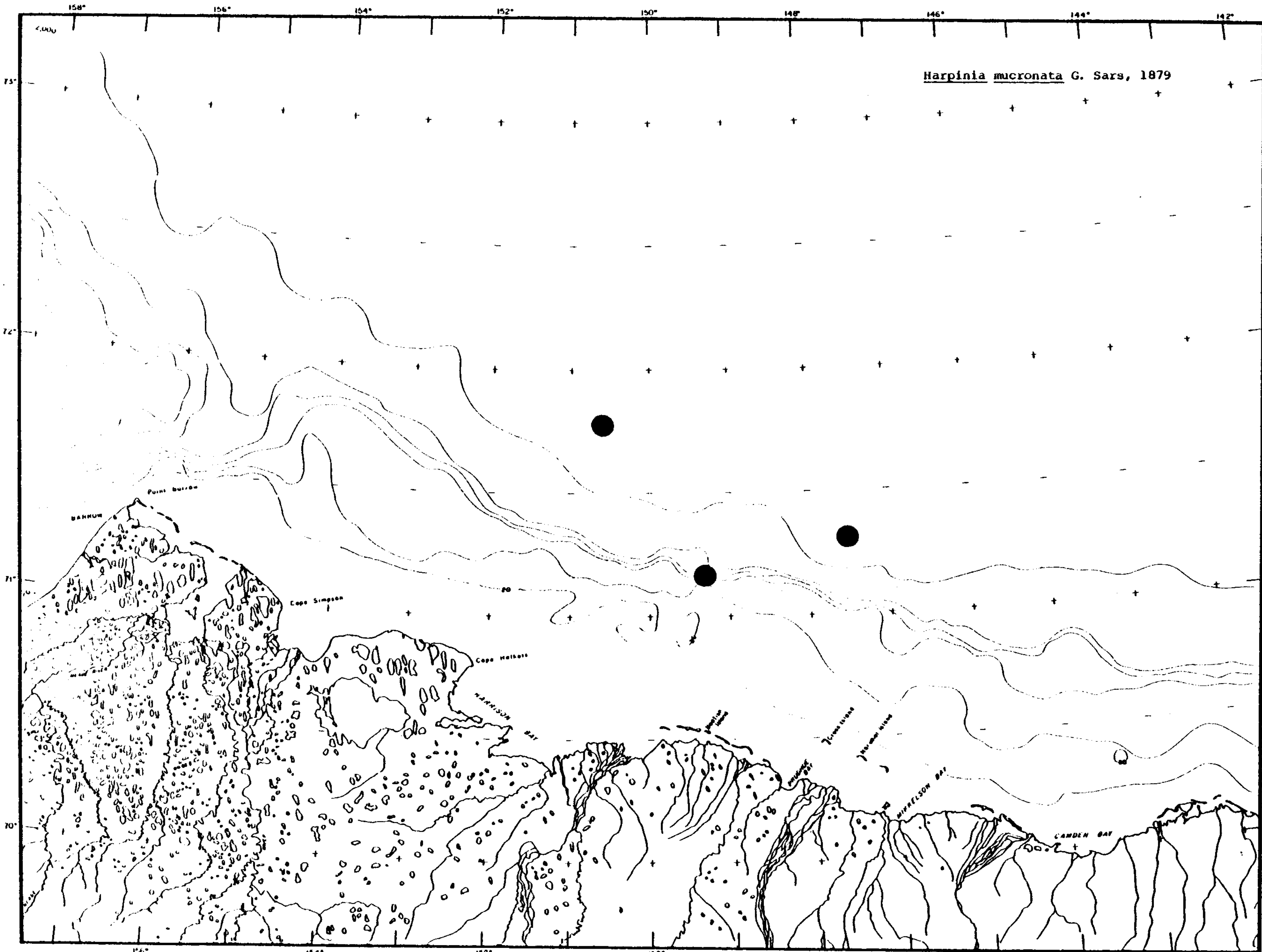


Harpinia kobjakovae Bulycheva, 1936



Harpinia mucronata G. Sars, 1879
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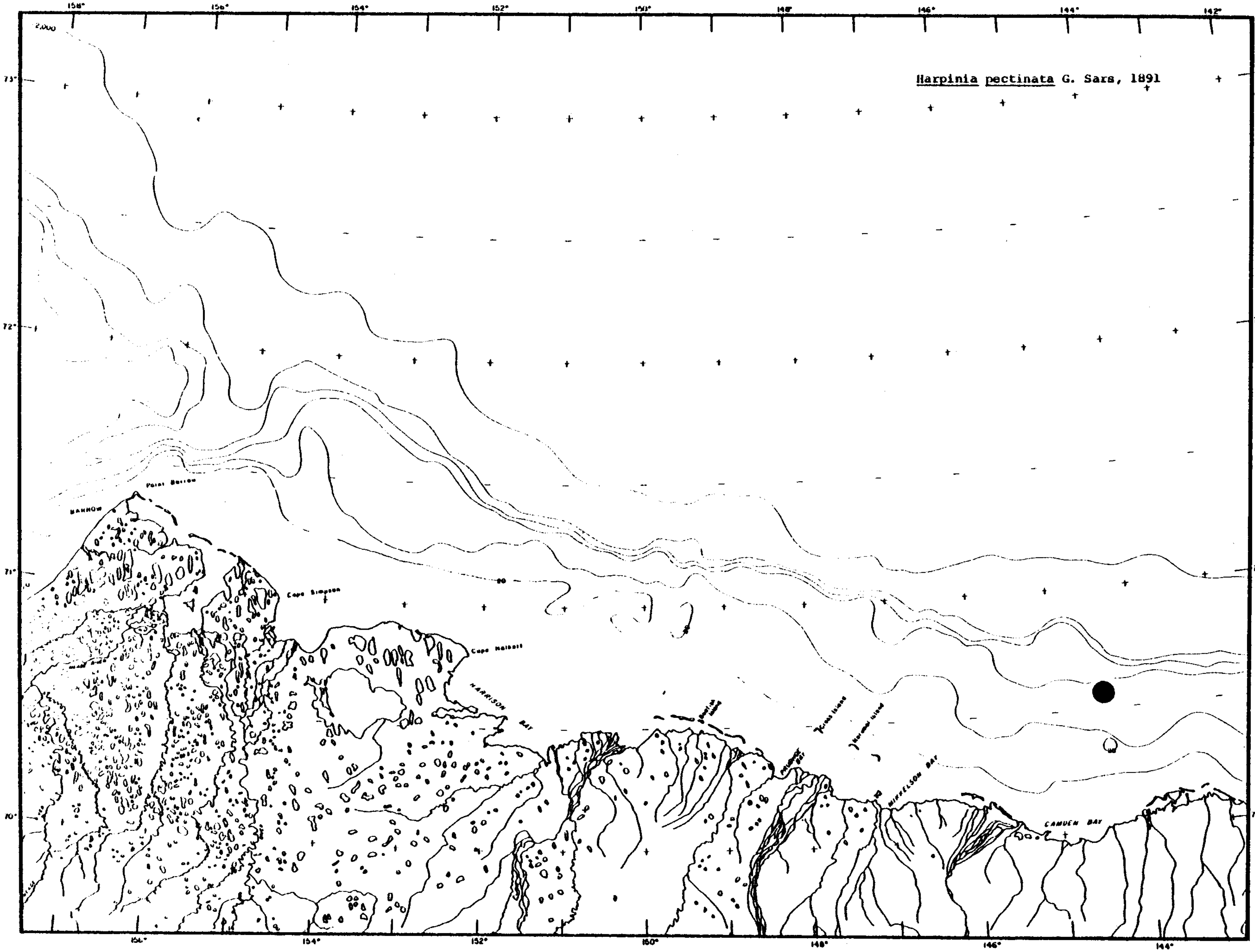
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Harpinia pectinata G. Sars, 1891
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
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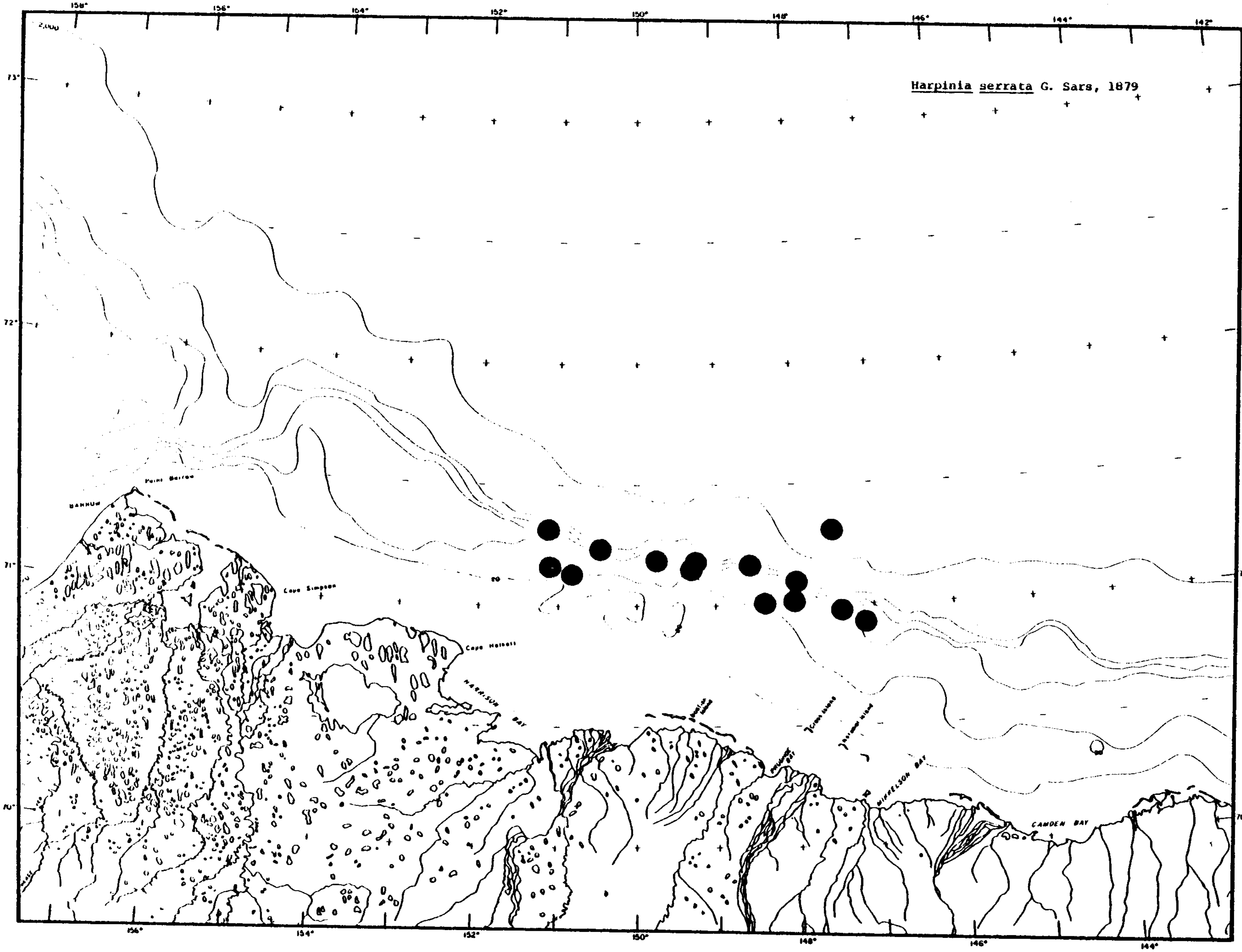
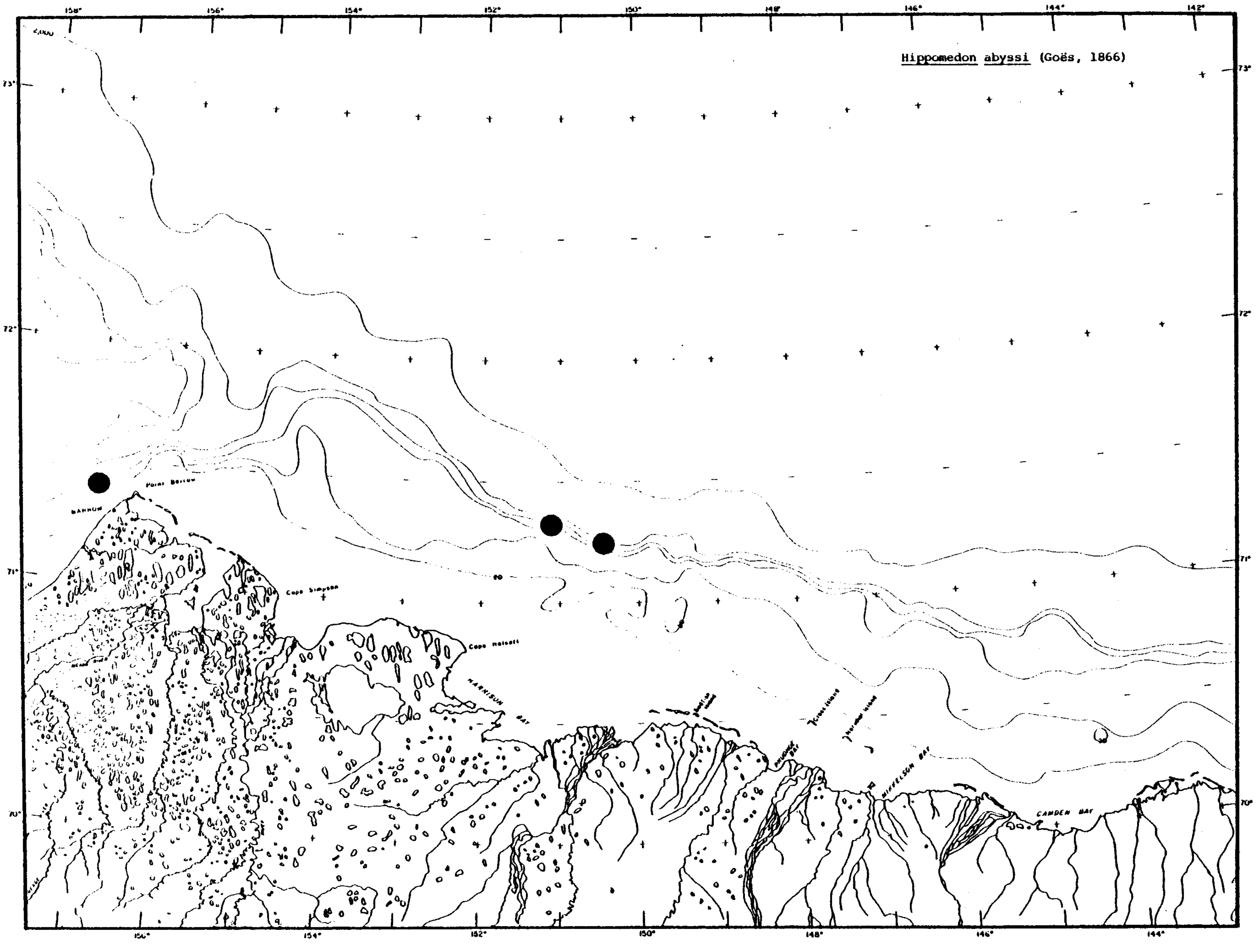


Harpinia serrata G. Sars, 1879


Hippomedon abyssi (Goës, 1866)
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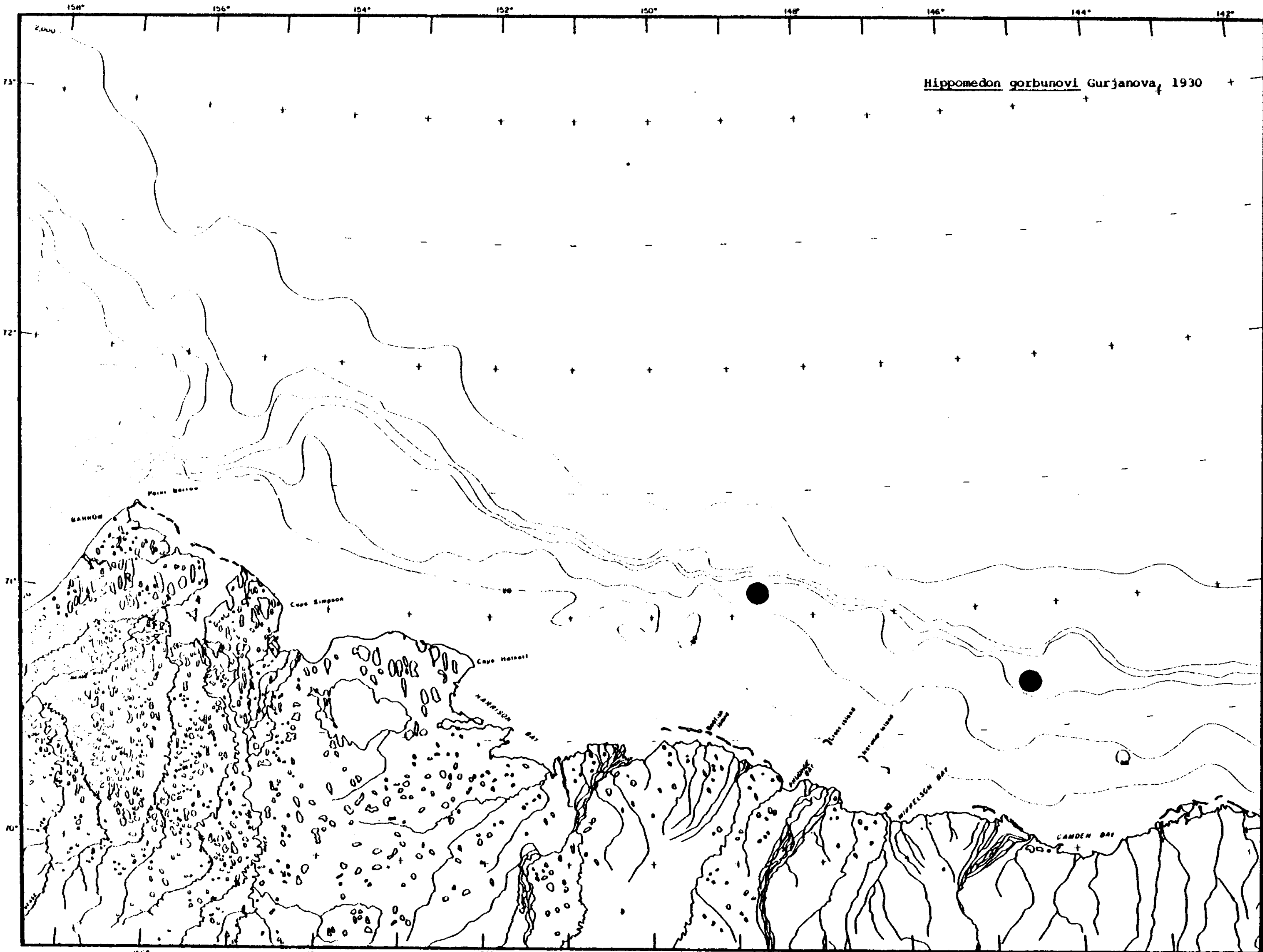
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
PRUDHOE BAY
CAMDEN BAY


Hippomedon gorbunovi Gurjanova, 1930
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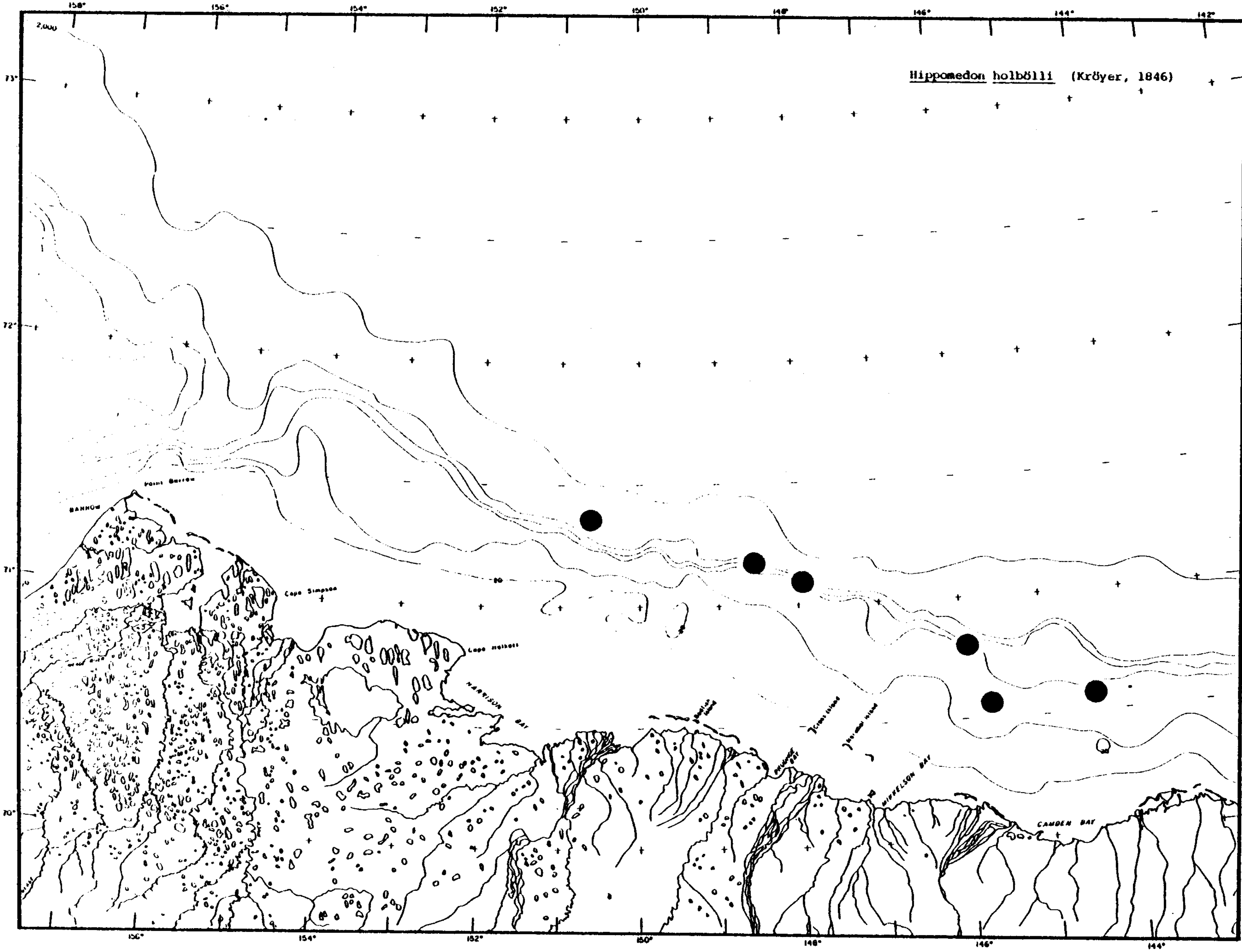
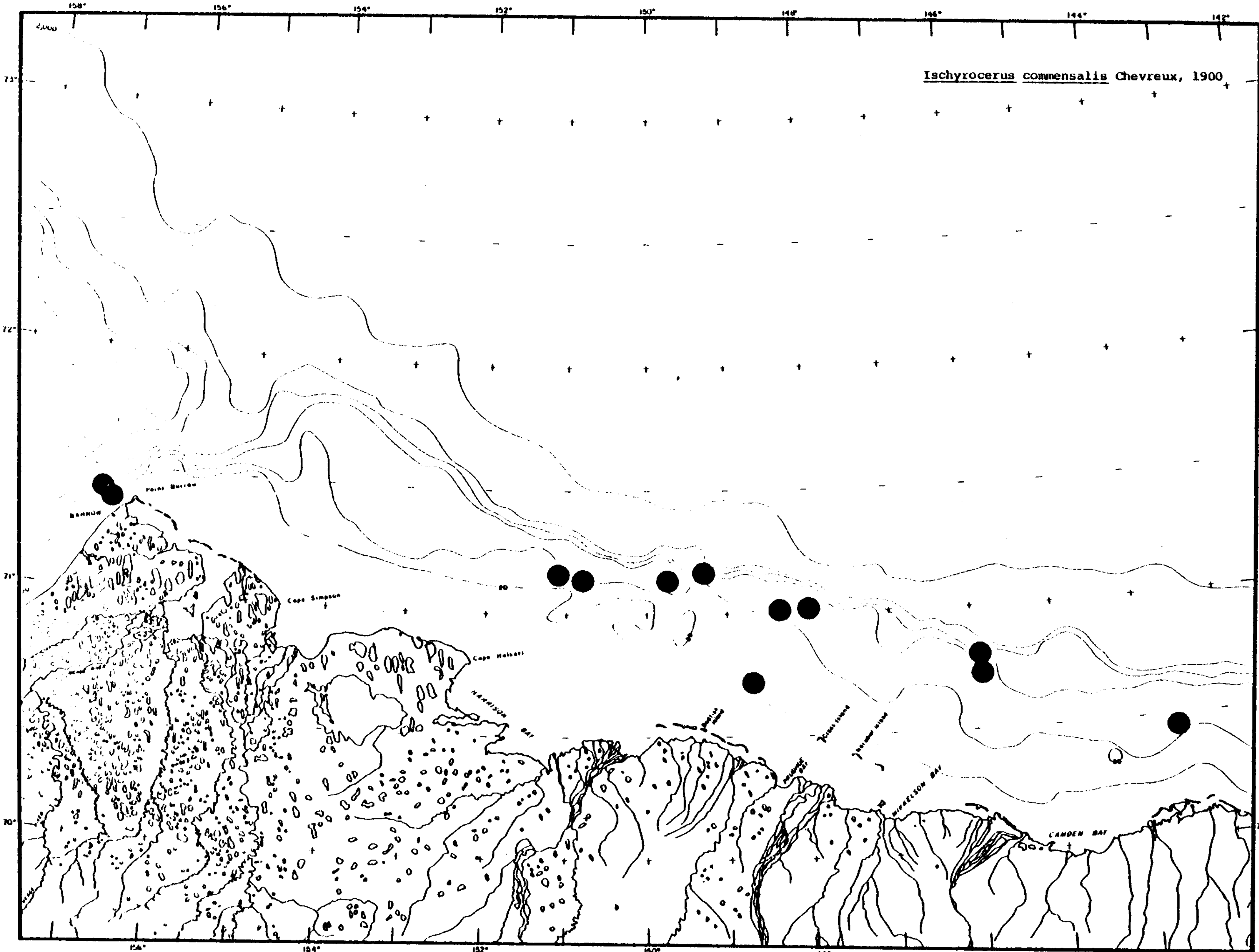
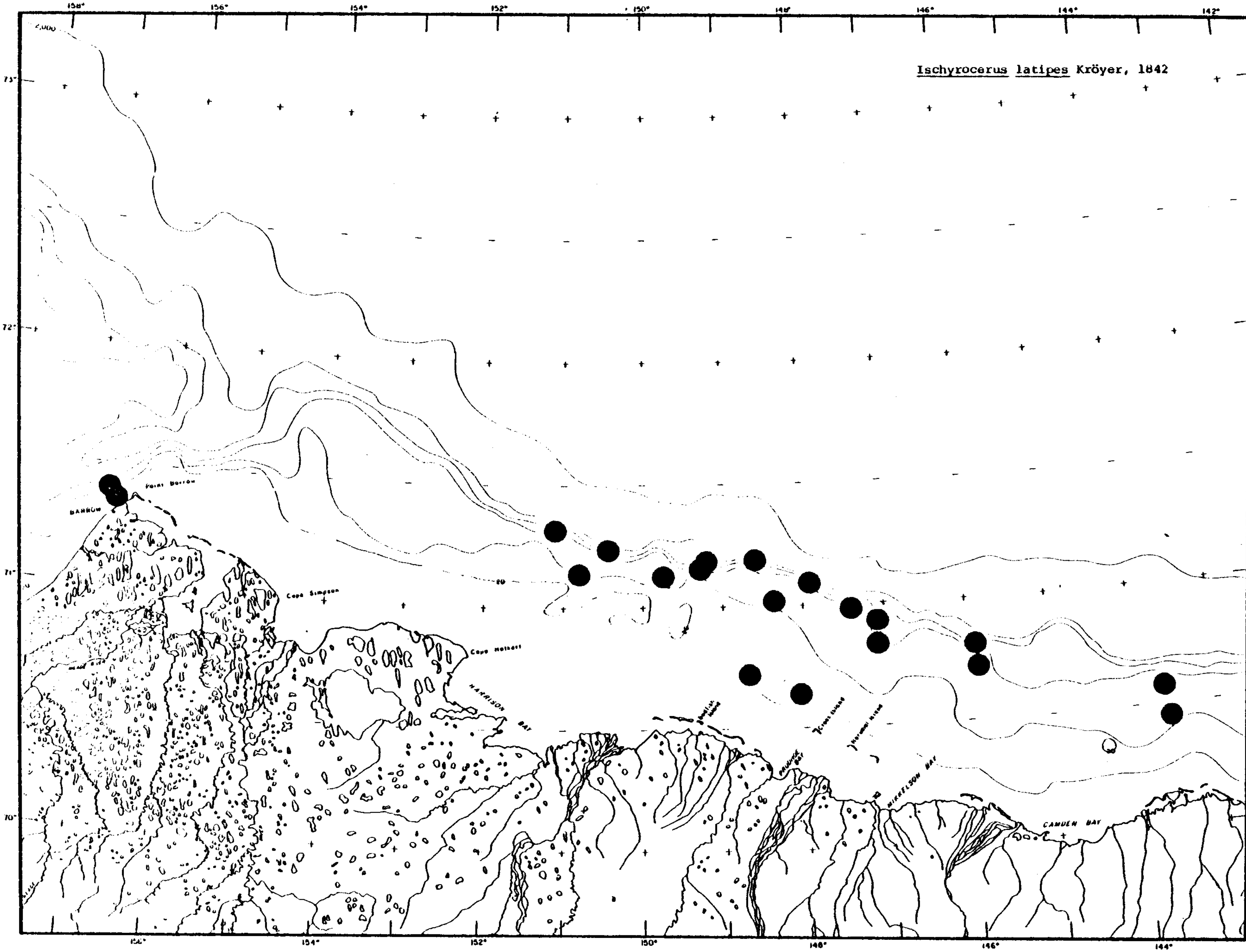
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Hippomedon holbölli (Kröyer, 1846)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°


Ischyrocerus commensalis Chevreux, 1900
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Ischyrocerus latipes Kröyer, 1842
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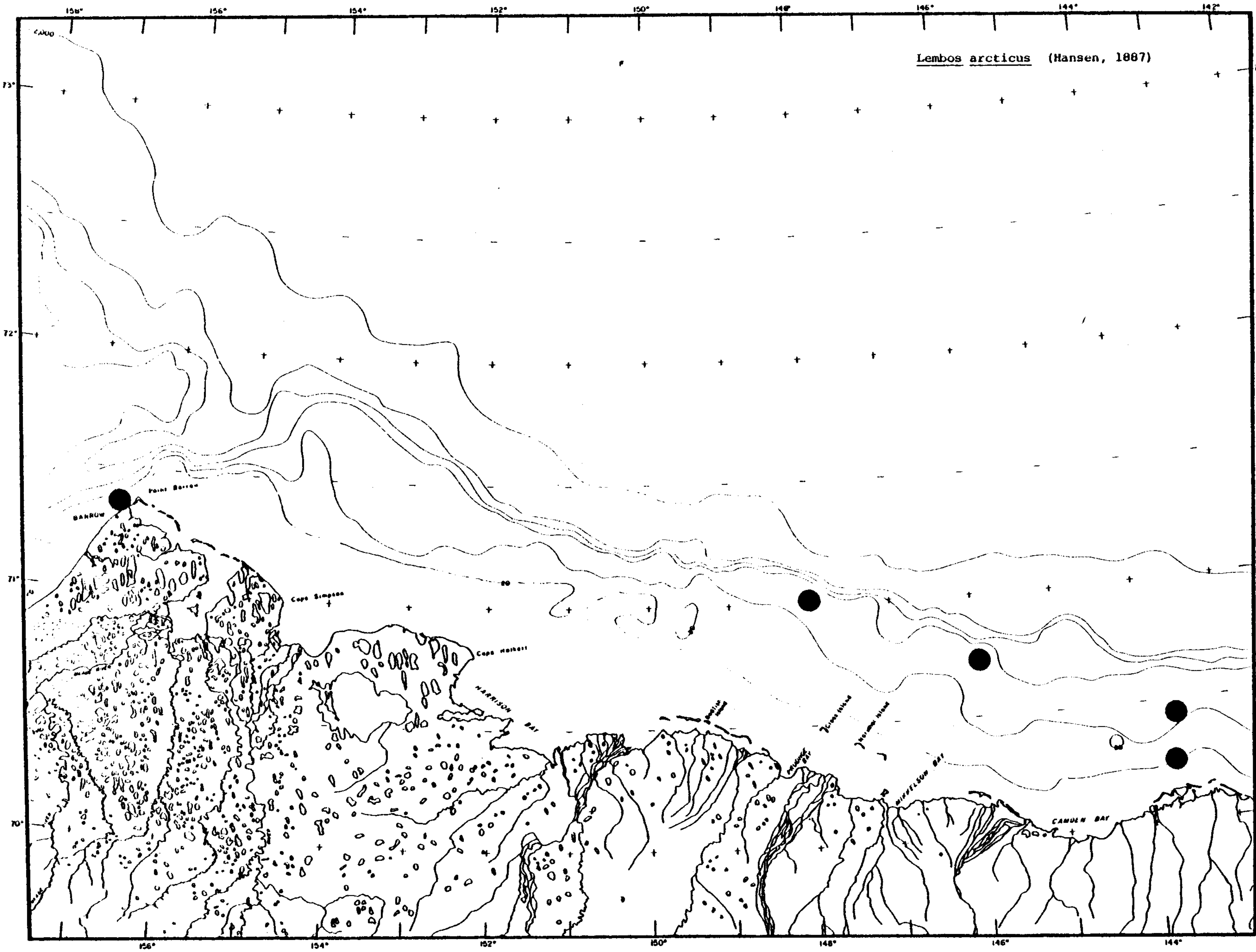
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Lembos arcticus (Hansen, 1887)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
156°
154°
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150°
148°
146°
144°
142°
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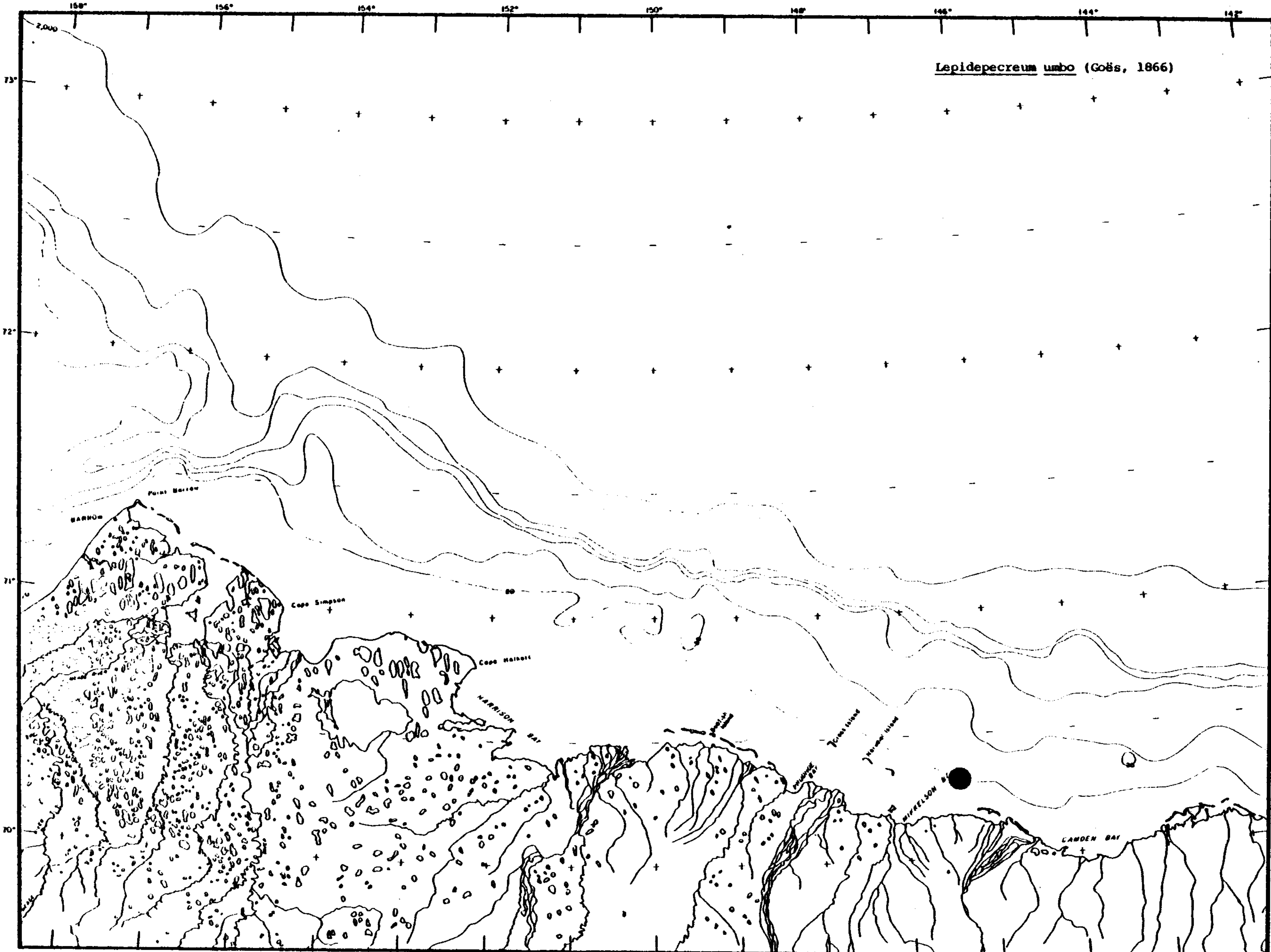
70°


Lepidepecreum umbo (Goës, 1866)
158°
156°
154°
152°
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148°
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144°
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71°
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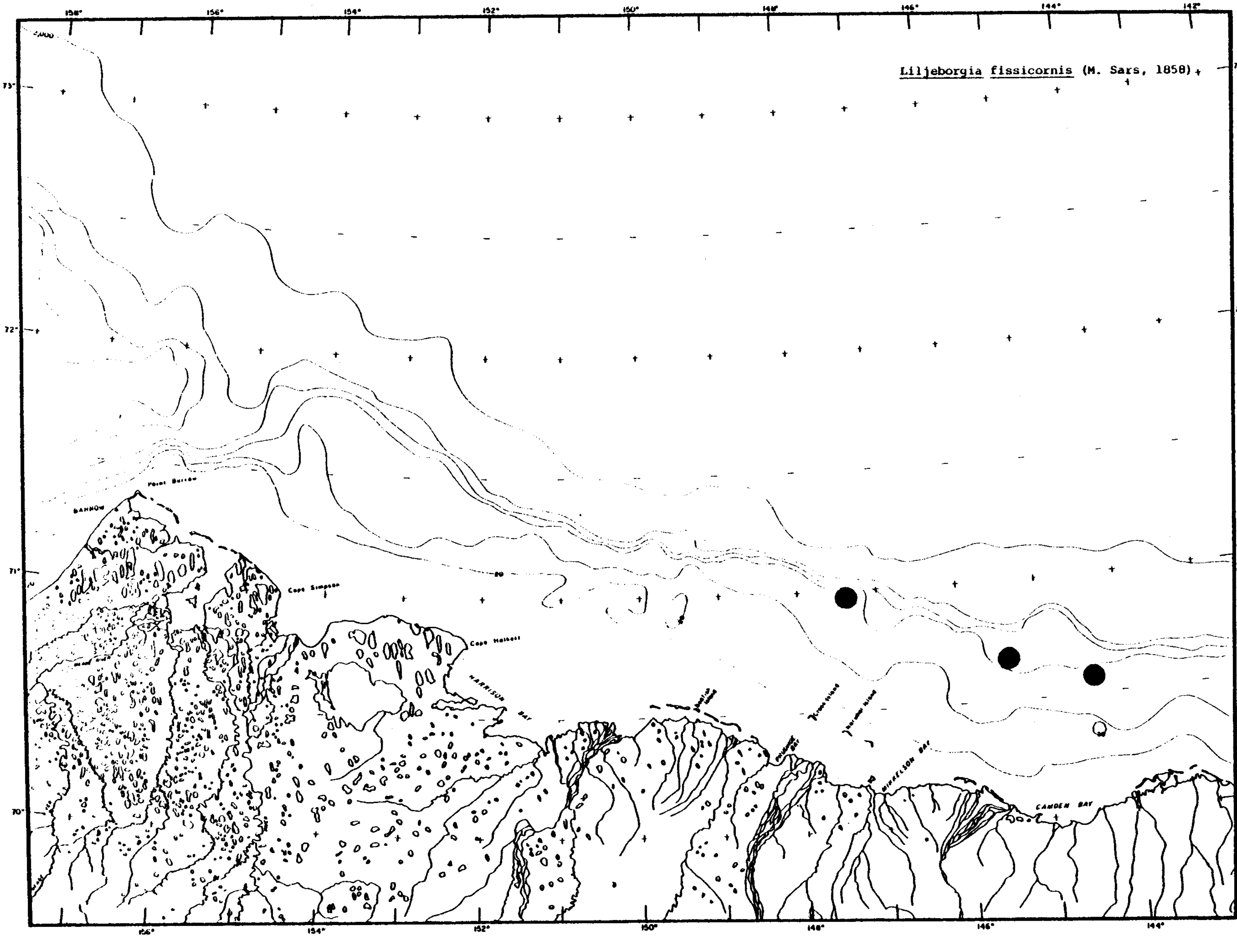
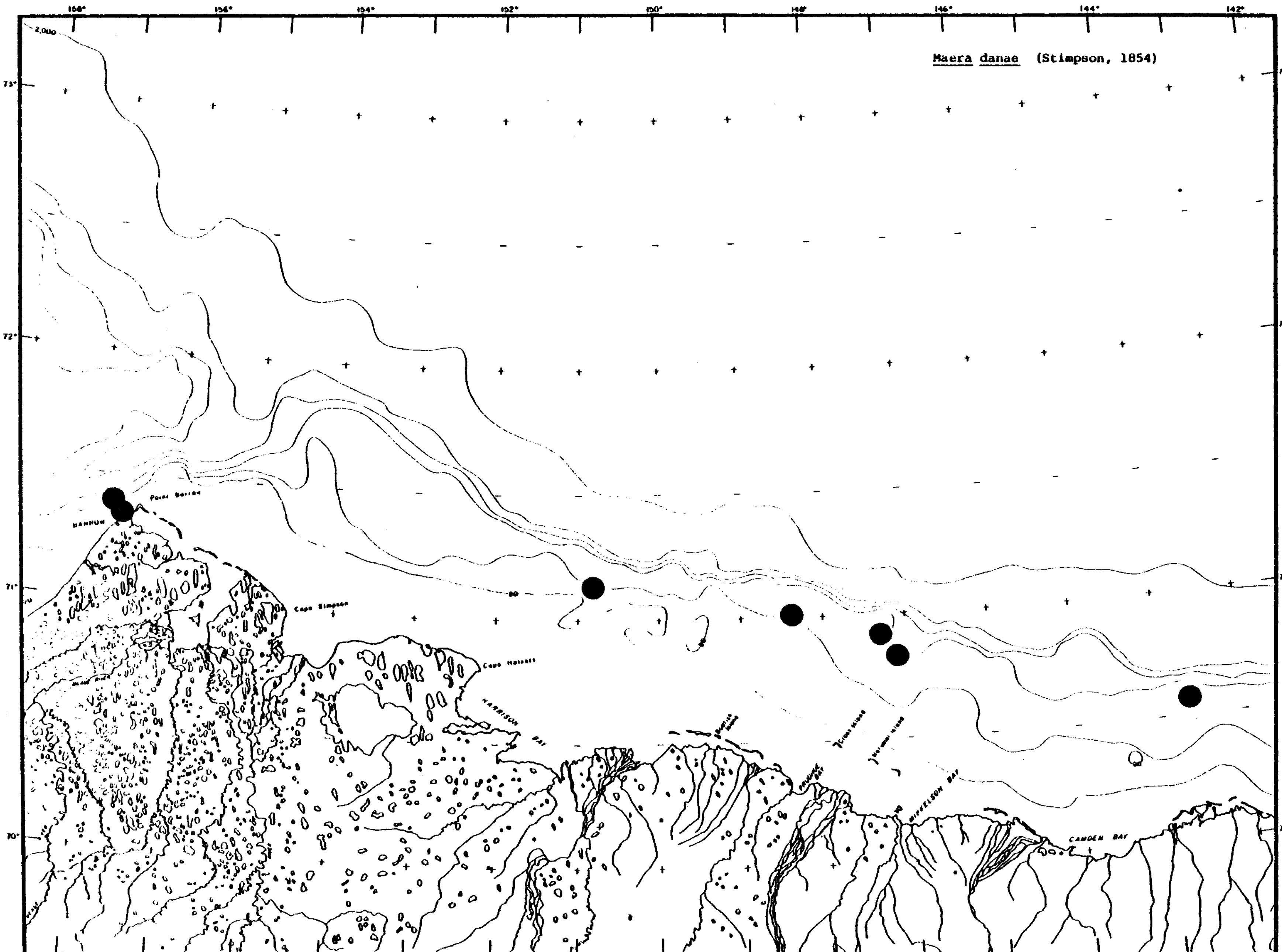
2,000
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Liljeborgia fissicornis (M. Sars, 1858)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Maera danae (Stimpson, 1854)
158°
156°
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152°
150°
148°
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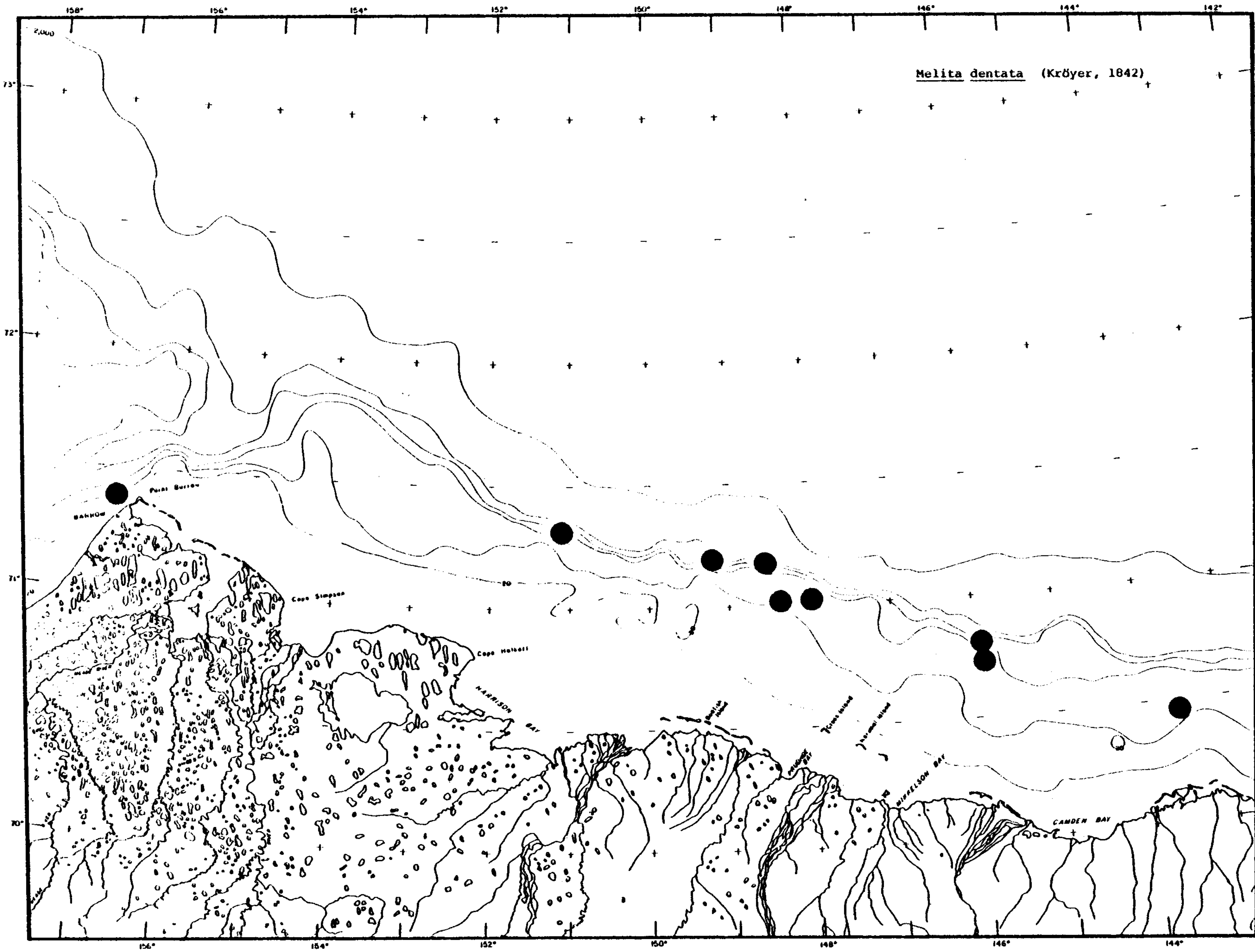
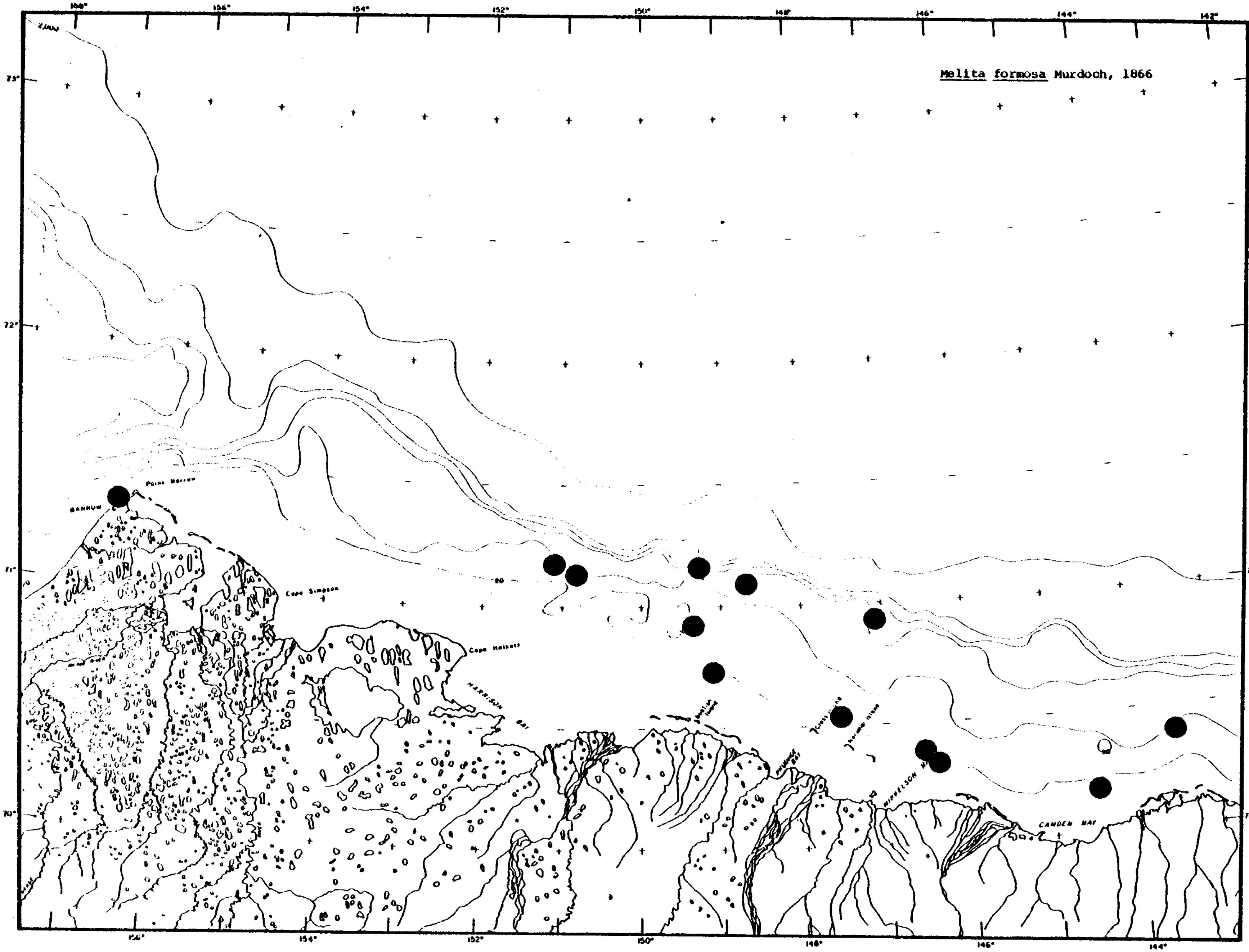
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
PRUDHOE BAY
MIKKELSON BAY
CAMDEN BAY

309


Melita dentata (Kröyer, 1842)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

148


Melita formosa Murdoch, 1866
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
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72°
71°
70°
158°
156°
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152°
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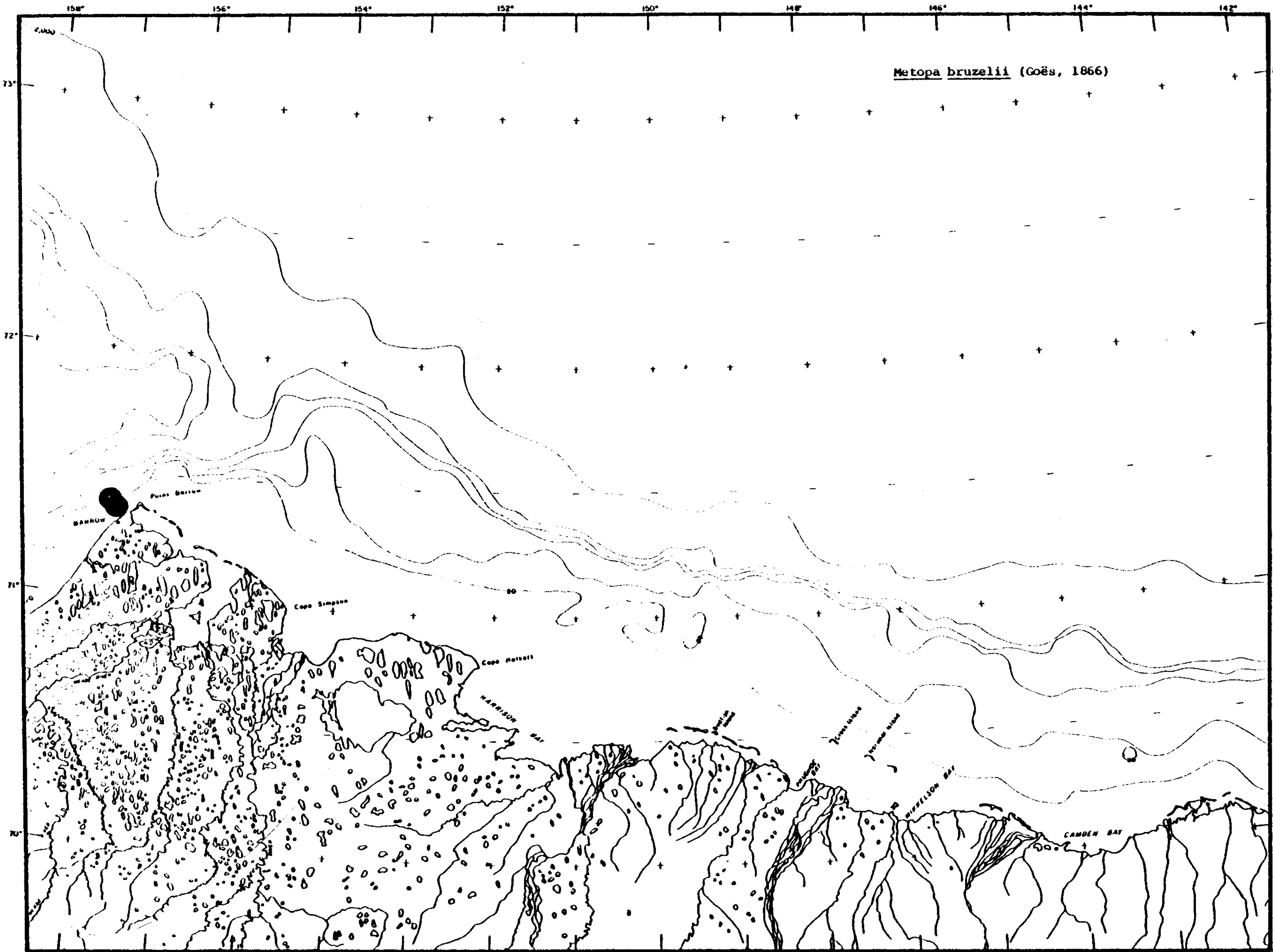
Metopa bruzelii (Goës, 1866)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
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158°
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154°
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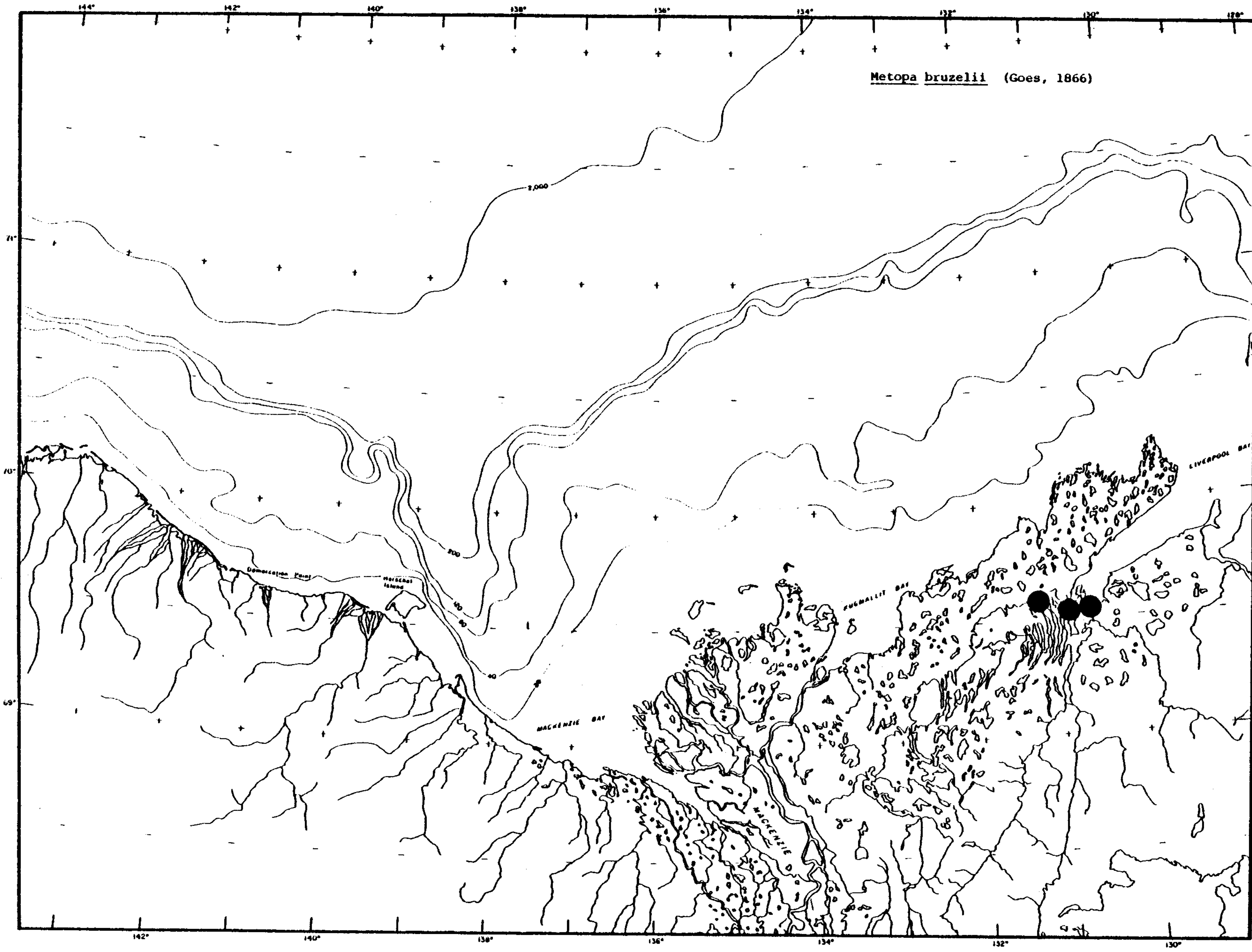
Metopa bruzelii (Goes, 1866)
144°
142°
140°
138°
136°
134°
132°
130°
128°
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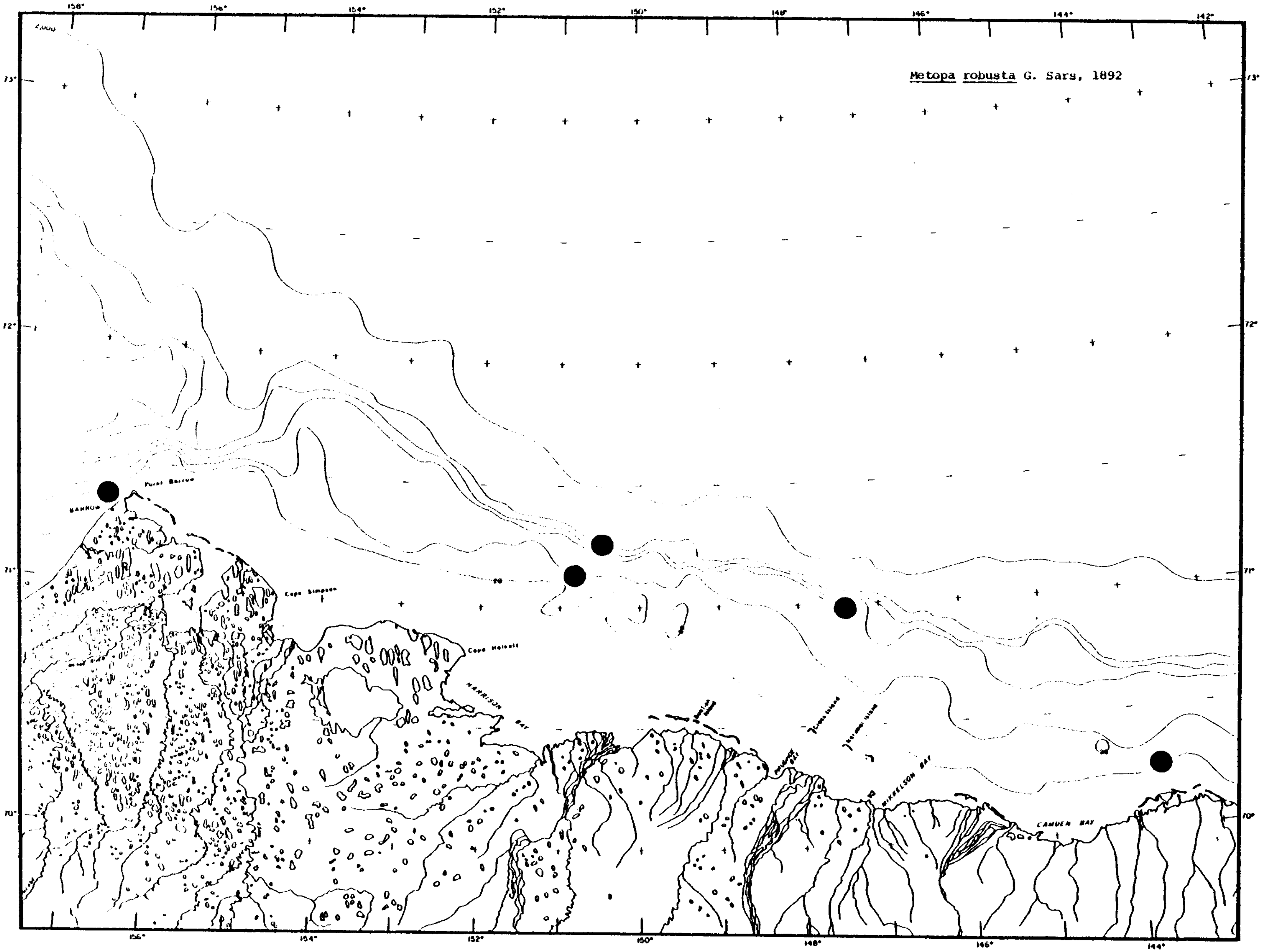
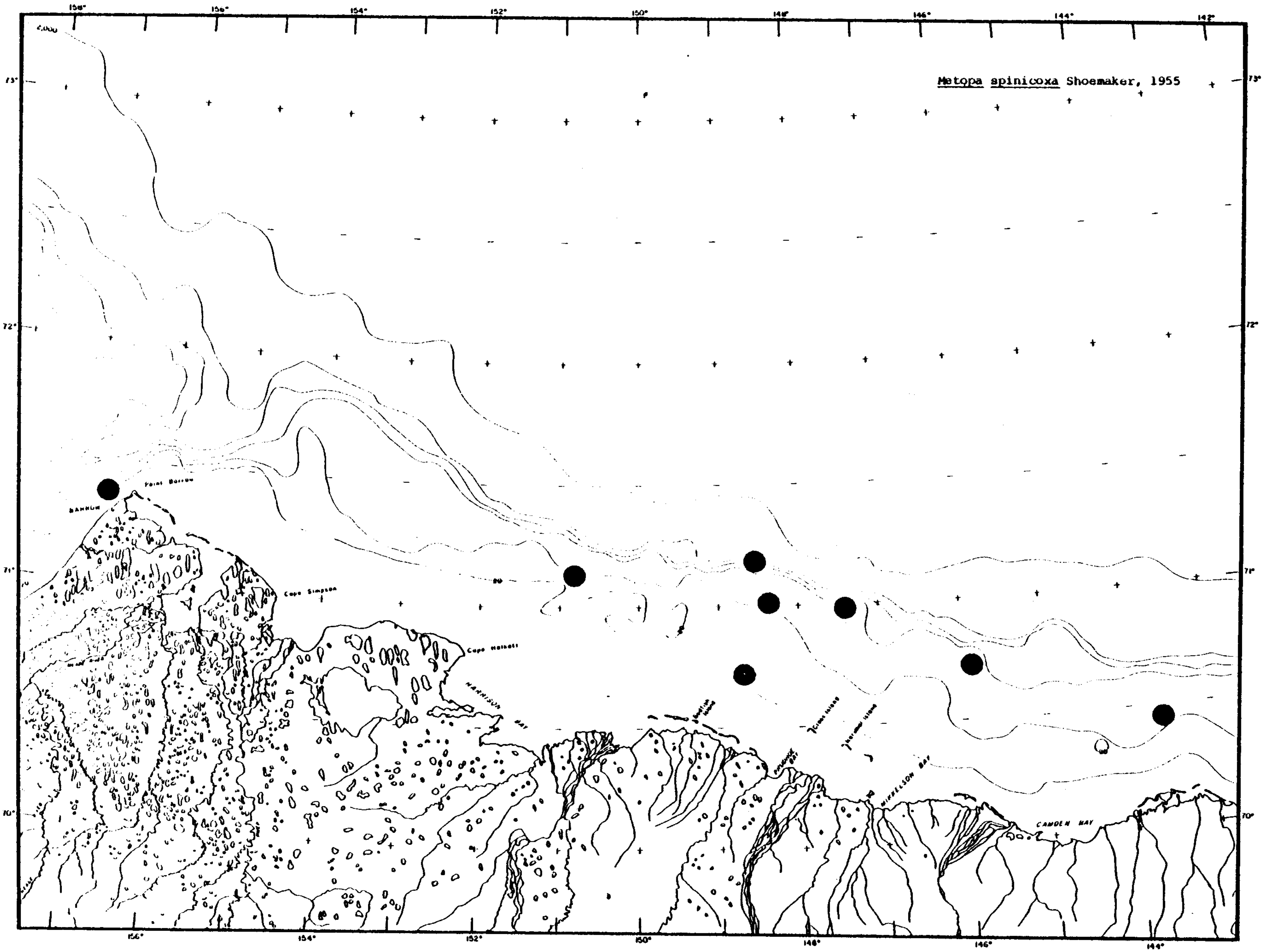
2,000
200
40
Demarcation Point
Herschel Island
MACKENZIE BAY
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE


Metopa robusta G. Sars, 1892
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Metopa spinicoxa Shoemaker, 1955
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
156°
154°
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148°
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73°
72°
71°
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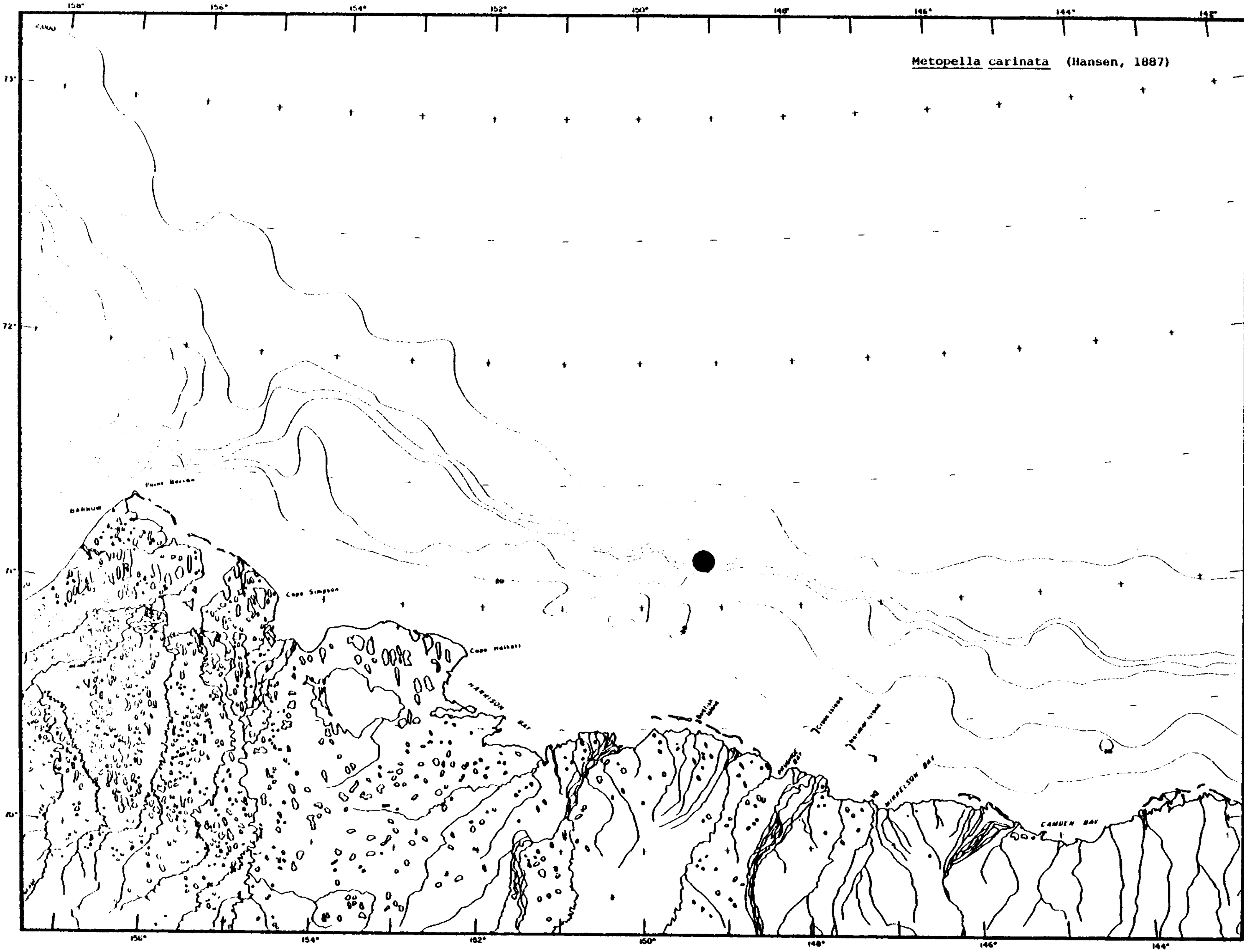
Metopella carinata (Hansen, 1887)
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°
156°
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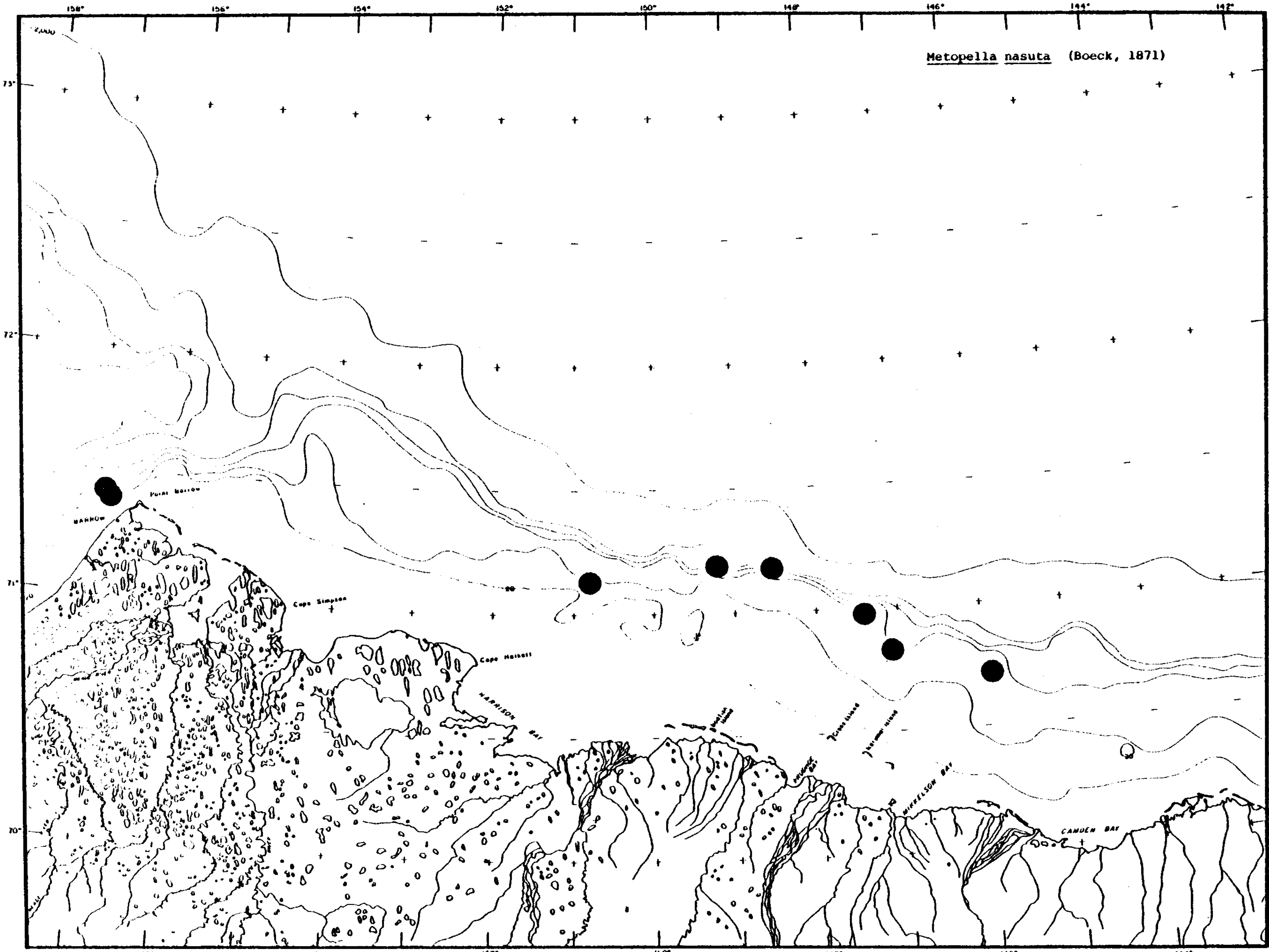
148°
146°
144°


Metopella nasuta (Boeck, 1871)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
158°
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154°
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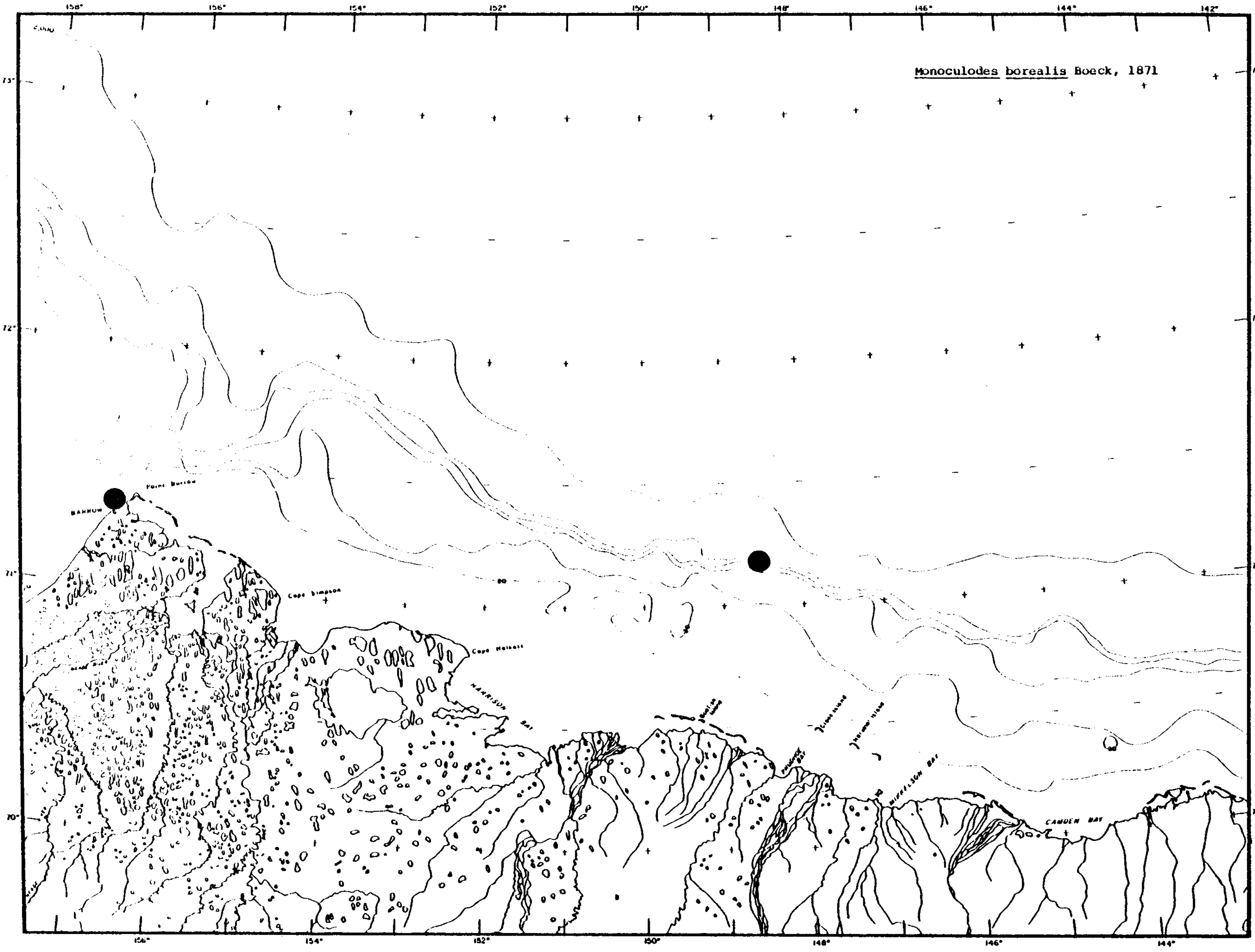
Monoculodes borealis Boeck, 1871
158°
156°
154°
152°
150°
148°
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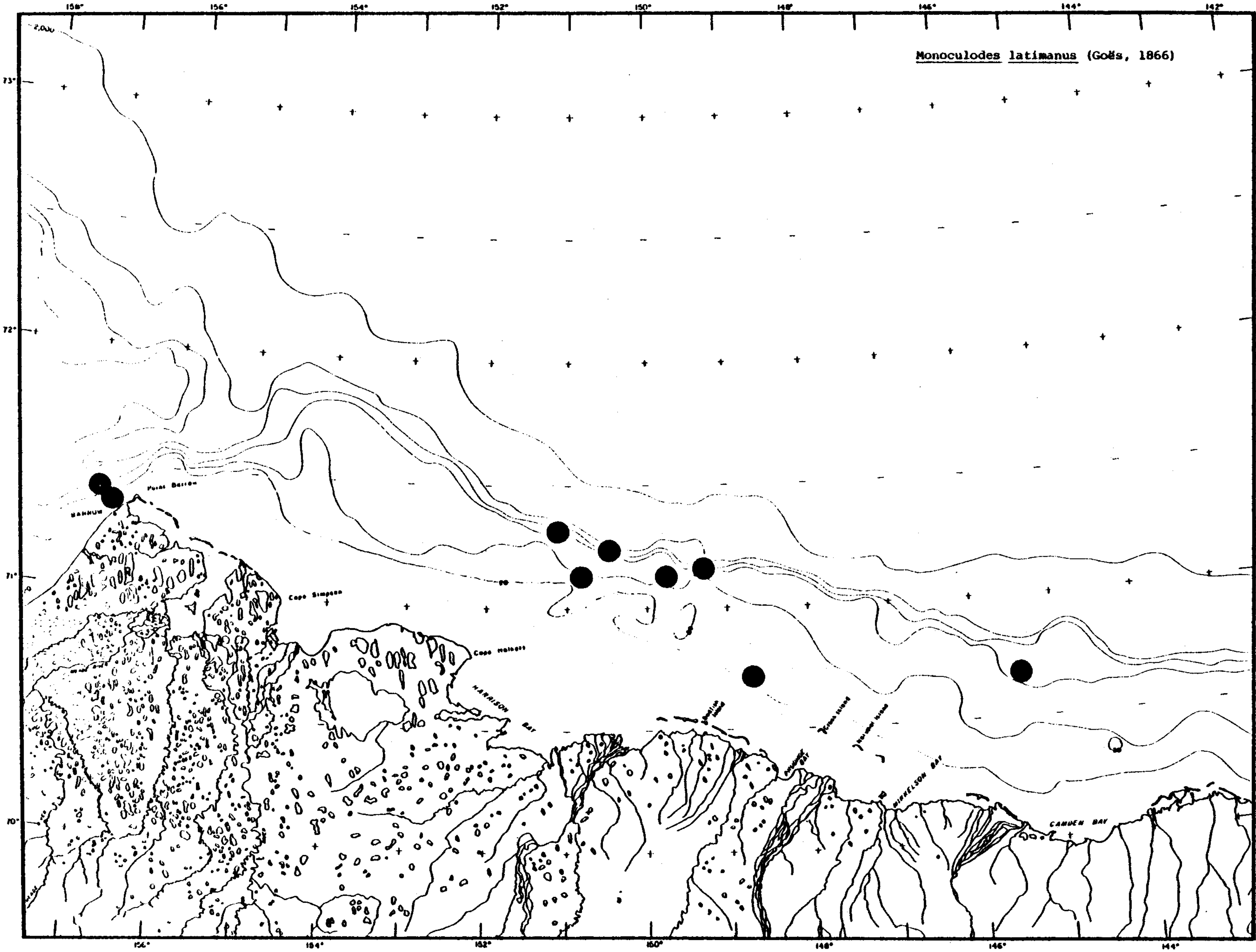
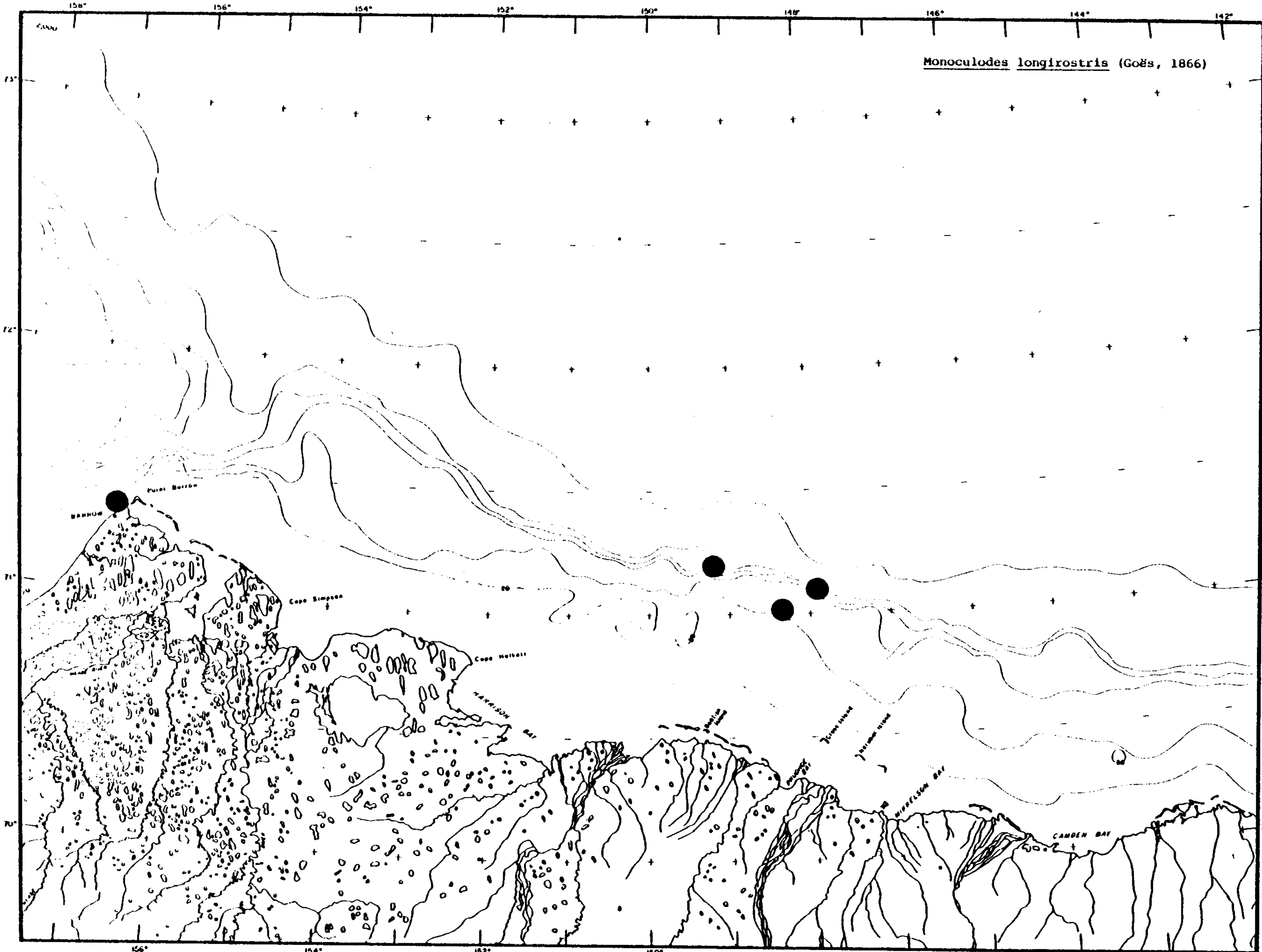
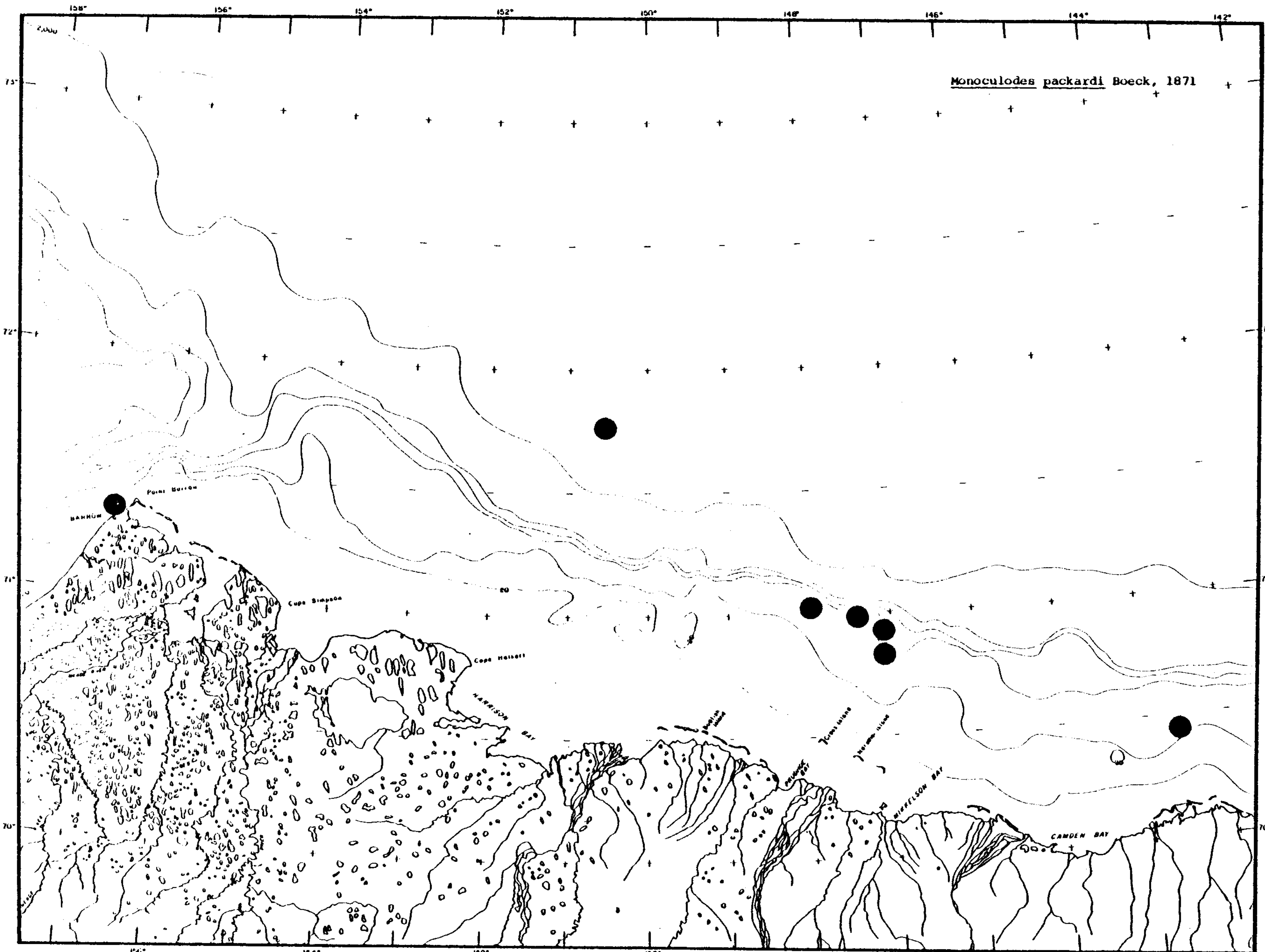
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Monoculodes latimanus (Goës, 1866)
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY



Monoculodes longirostris (Goës, 1866)


Monoculodes packardi Boeck, 1871
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
73°
72°
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158°
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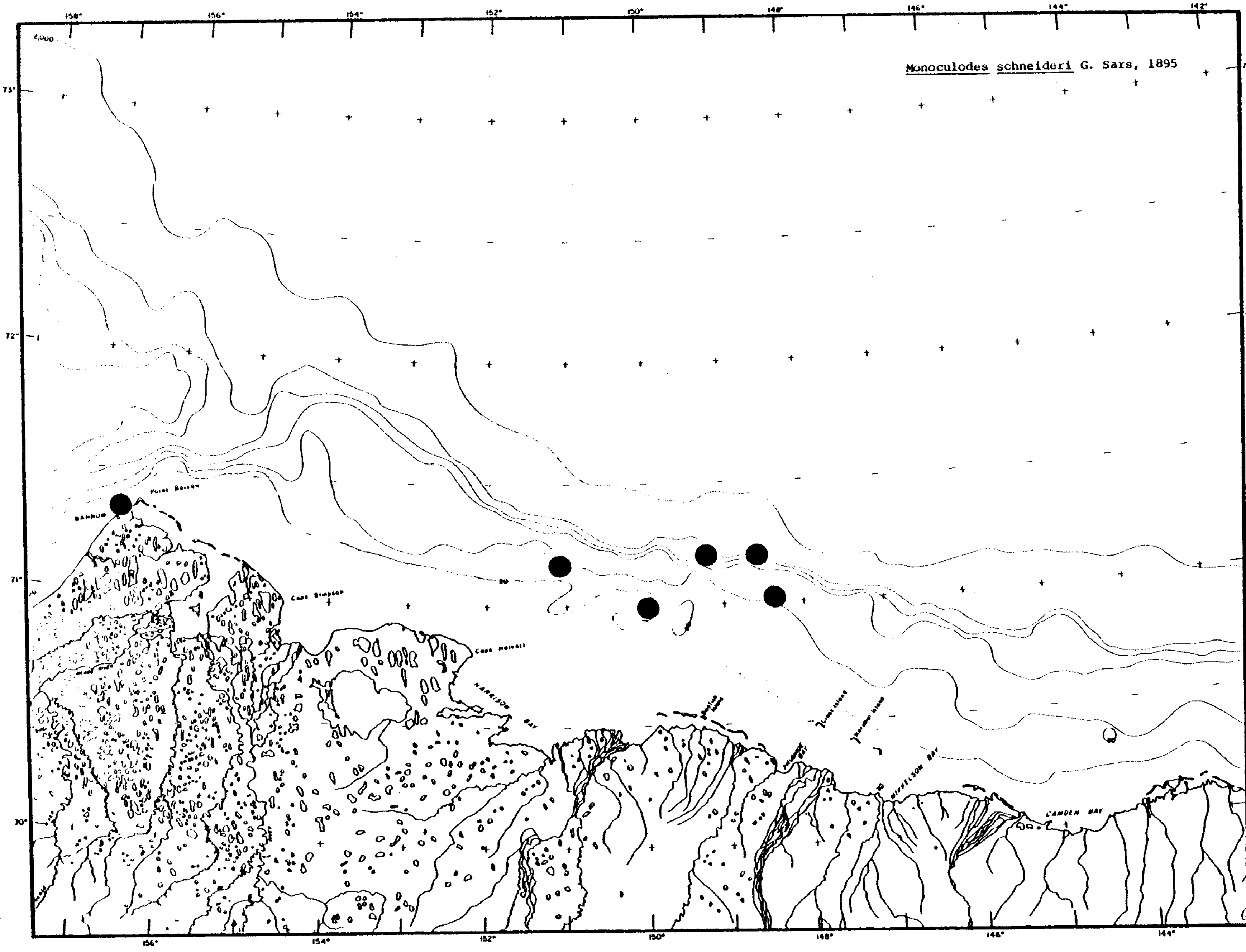
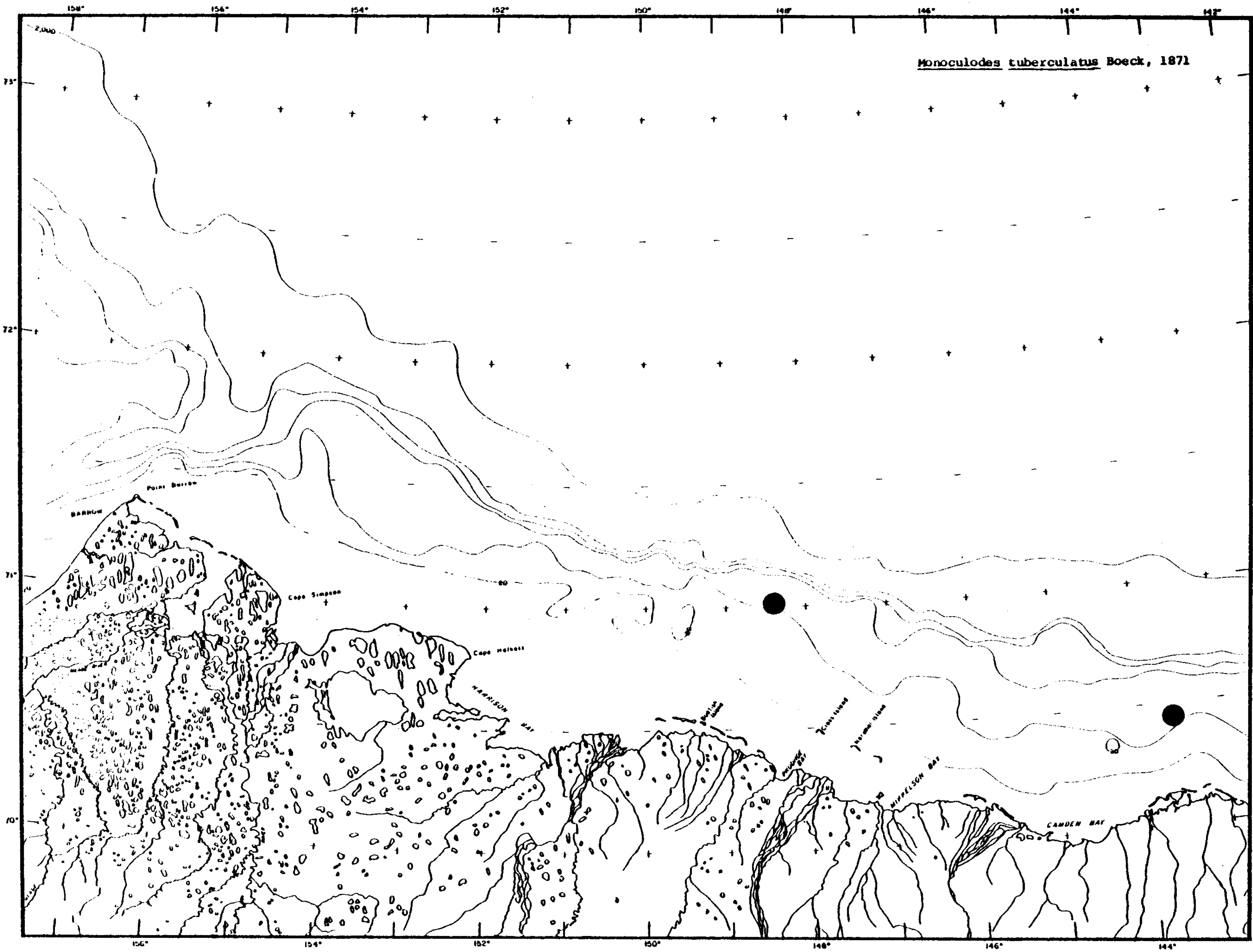


Monoculodes schneideri G. Sars, 1895


Monoculodes tuberculatus Boeck, 1871
158°
156°
154°
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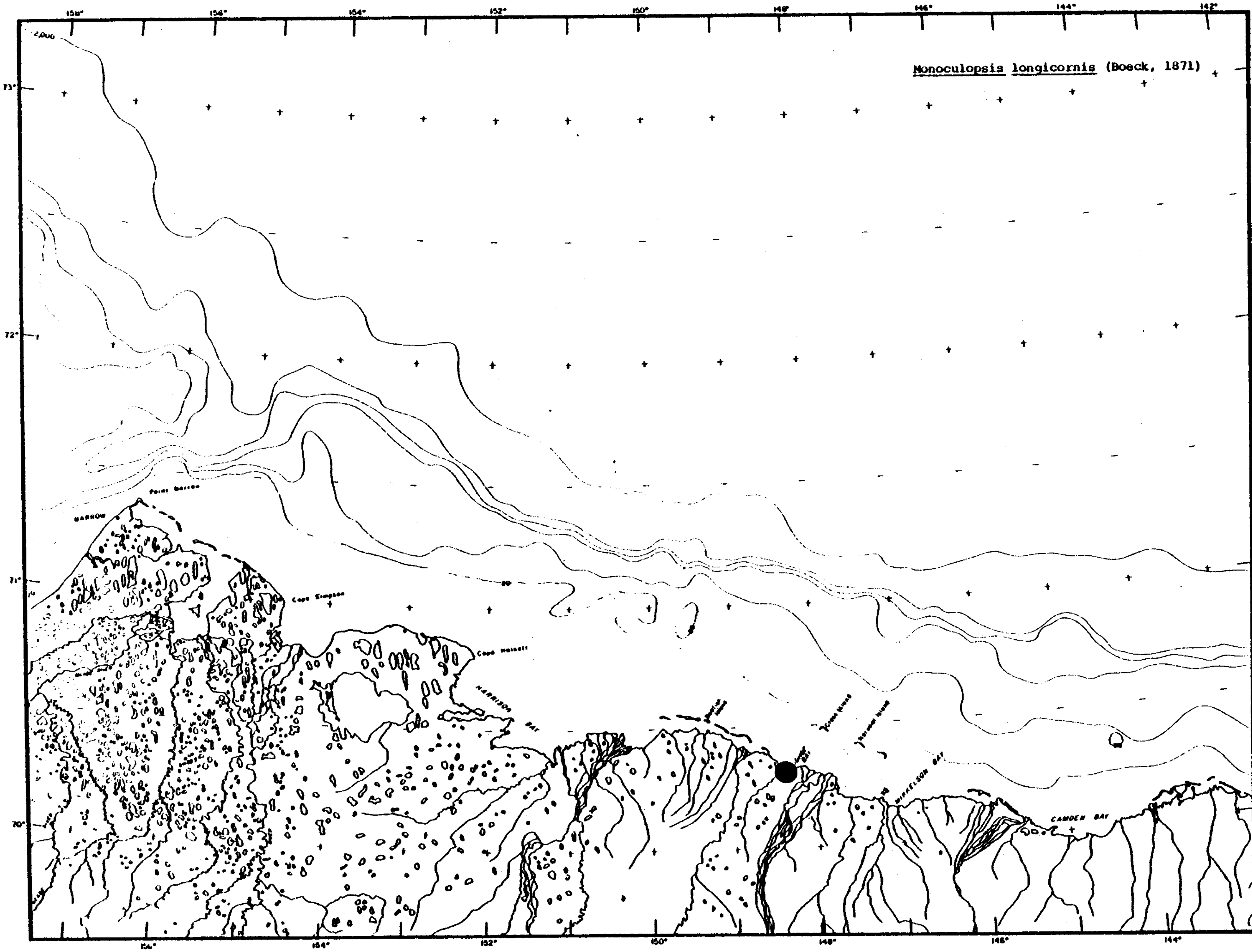
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Monoculopsis longicornis (Boeck, 1871)
BARROW
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
158°
156°
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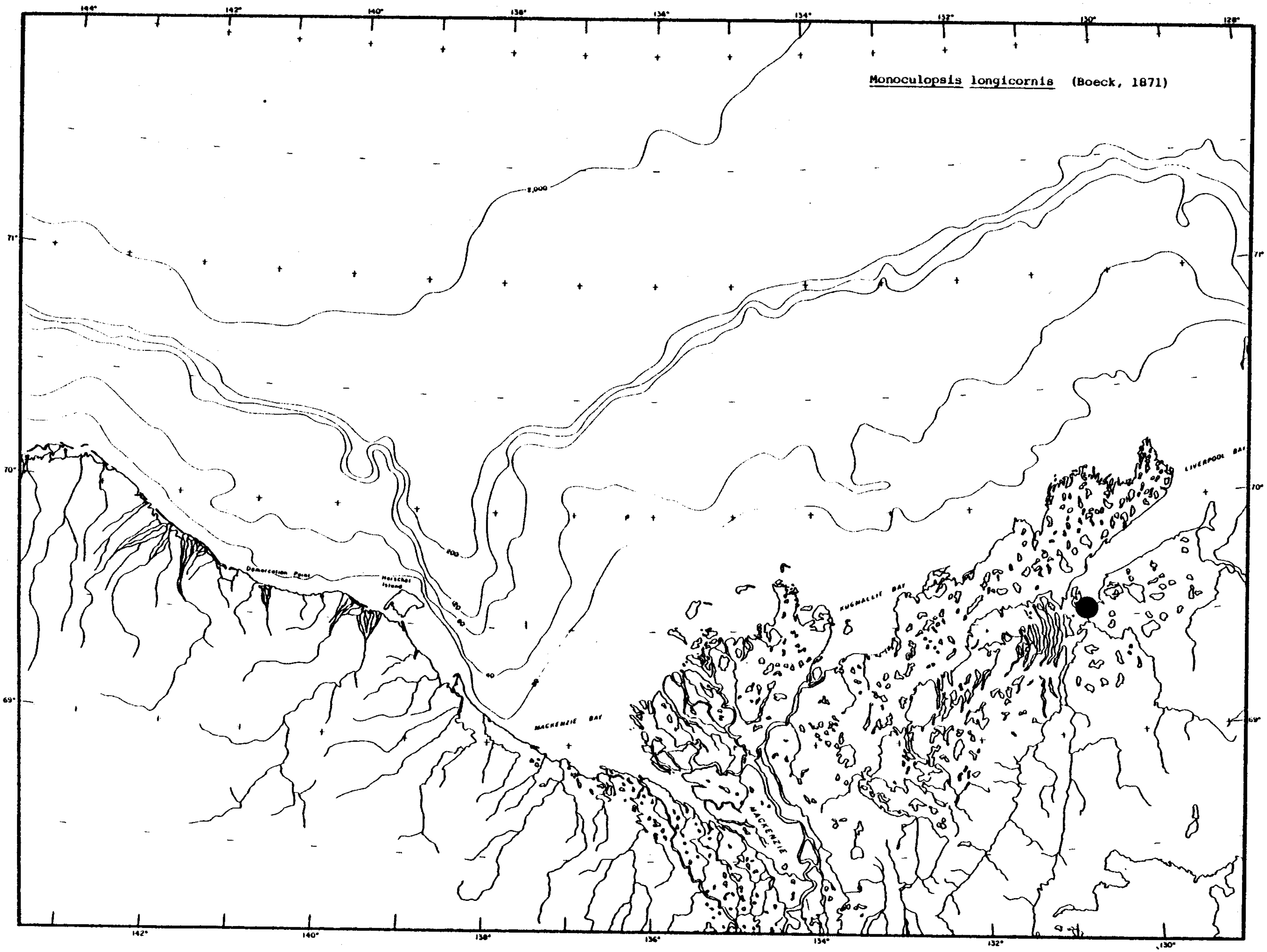
Monoculopsis longicornis (Boeck, 1871)
Demarcation Point
Herschel Island
MACKENZIE BAY
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE
2,000
71°
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69°
144°
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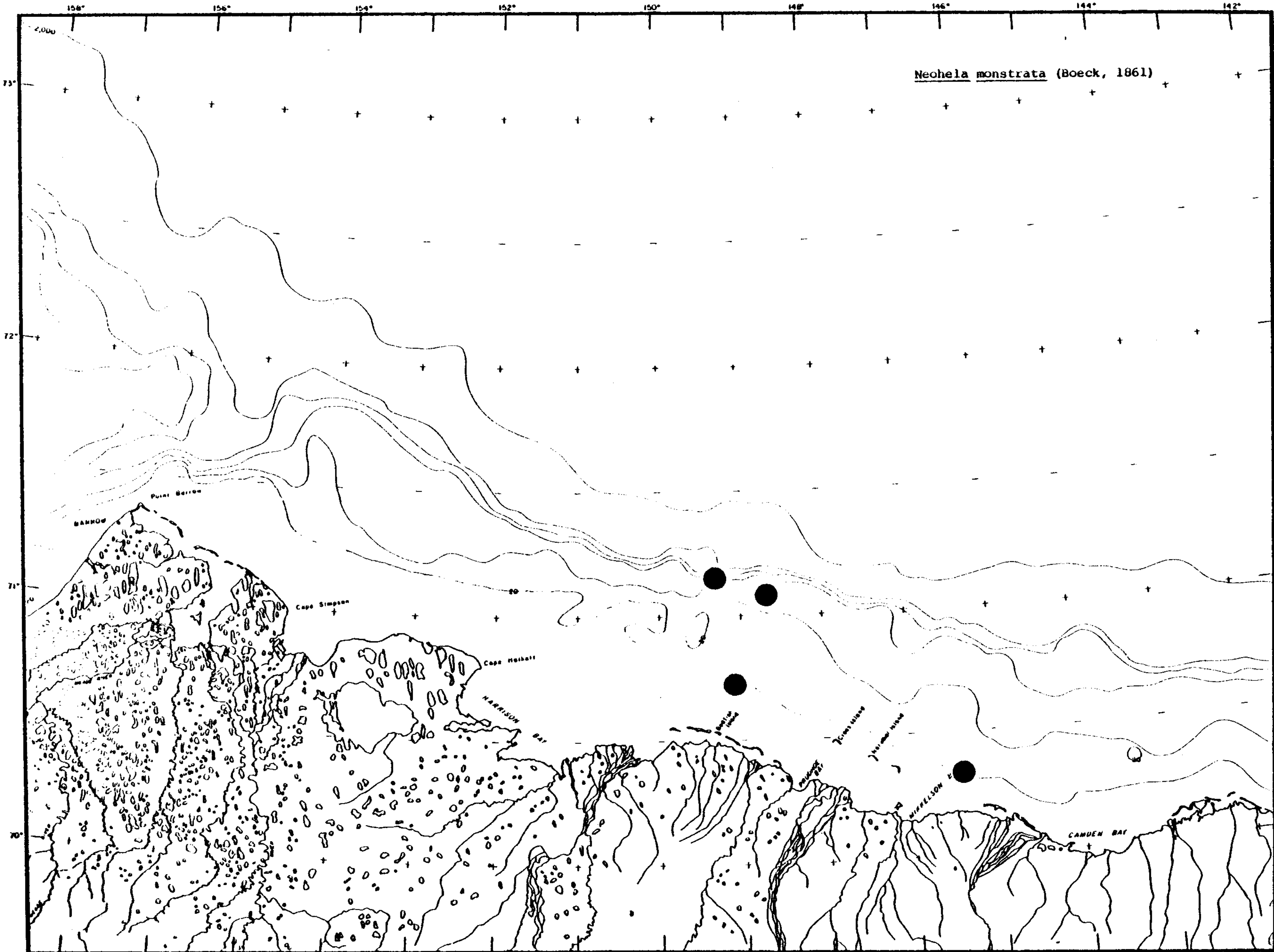
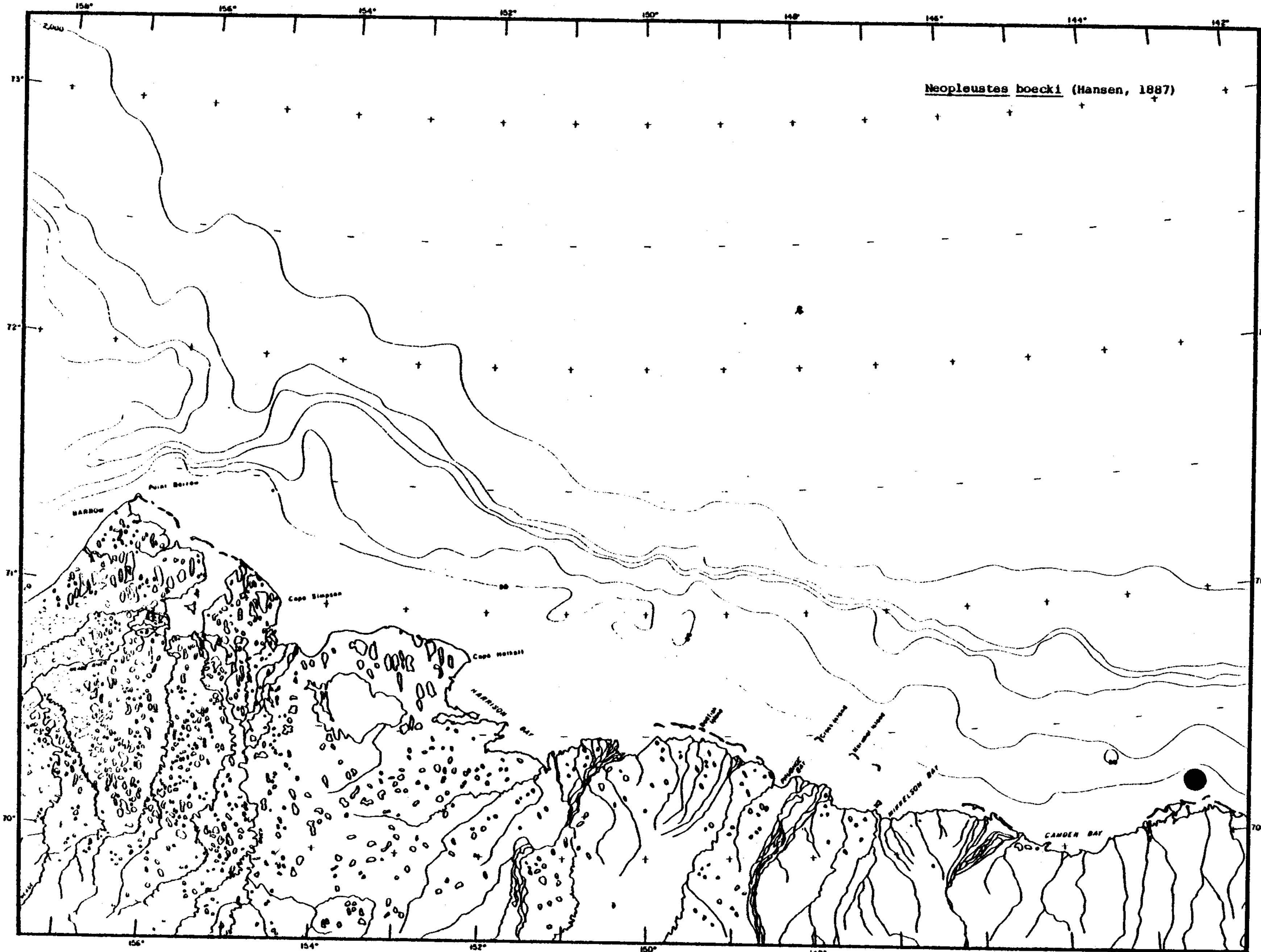
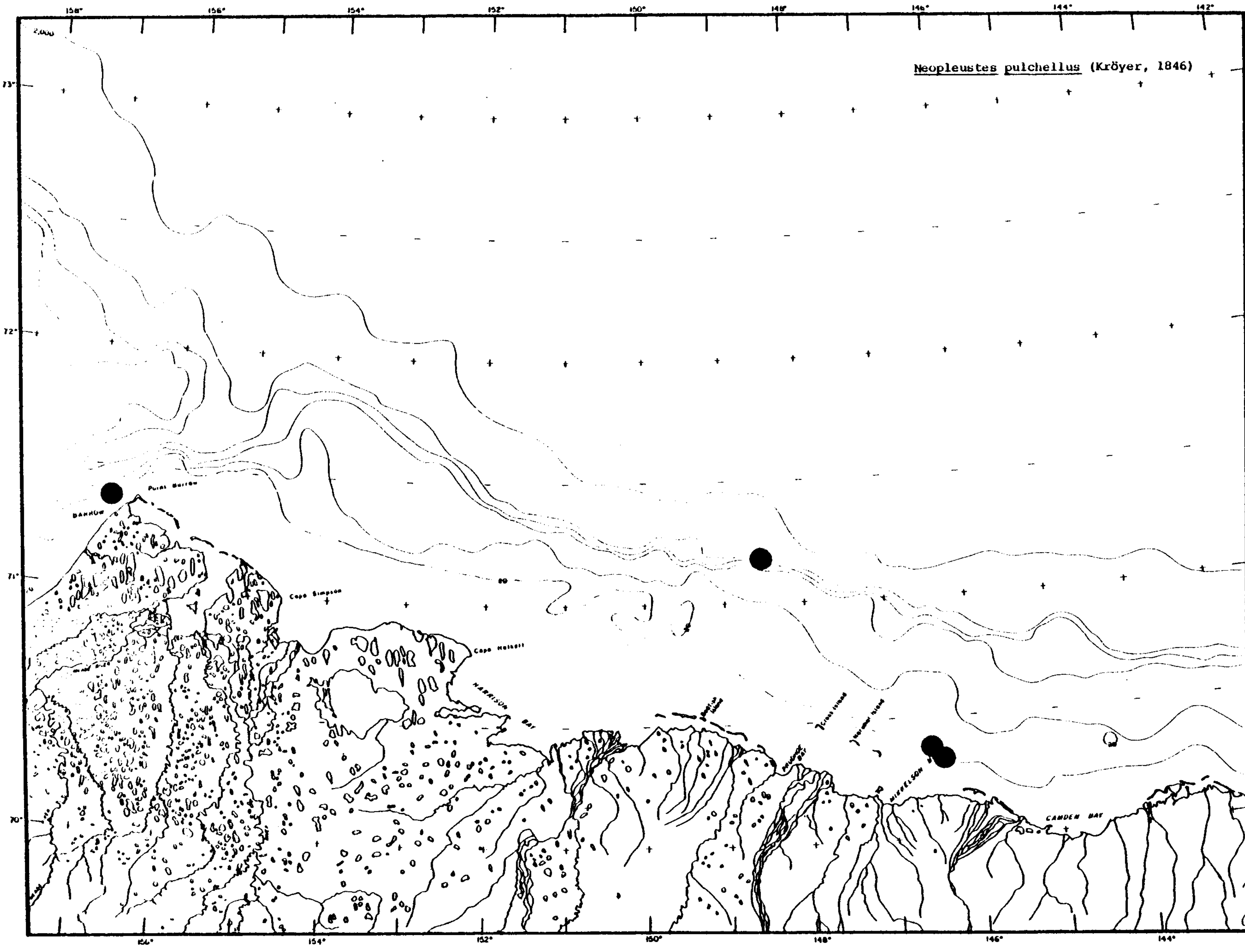
130°
128°


Neohela monstrata (Boeck, 1861)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Neopleustes boecki (Hansen, 1887)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°


Neopleustes pulchellus (Kröyer, 1846)
73°
72°
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70°
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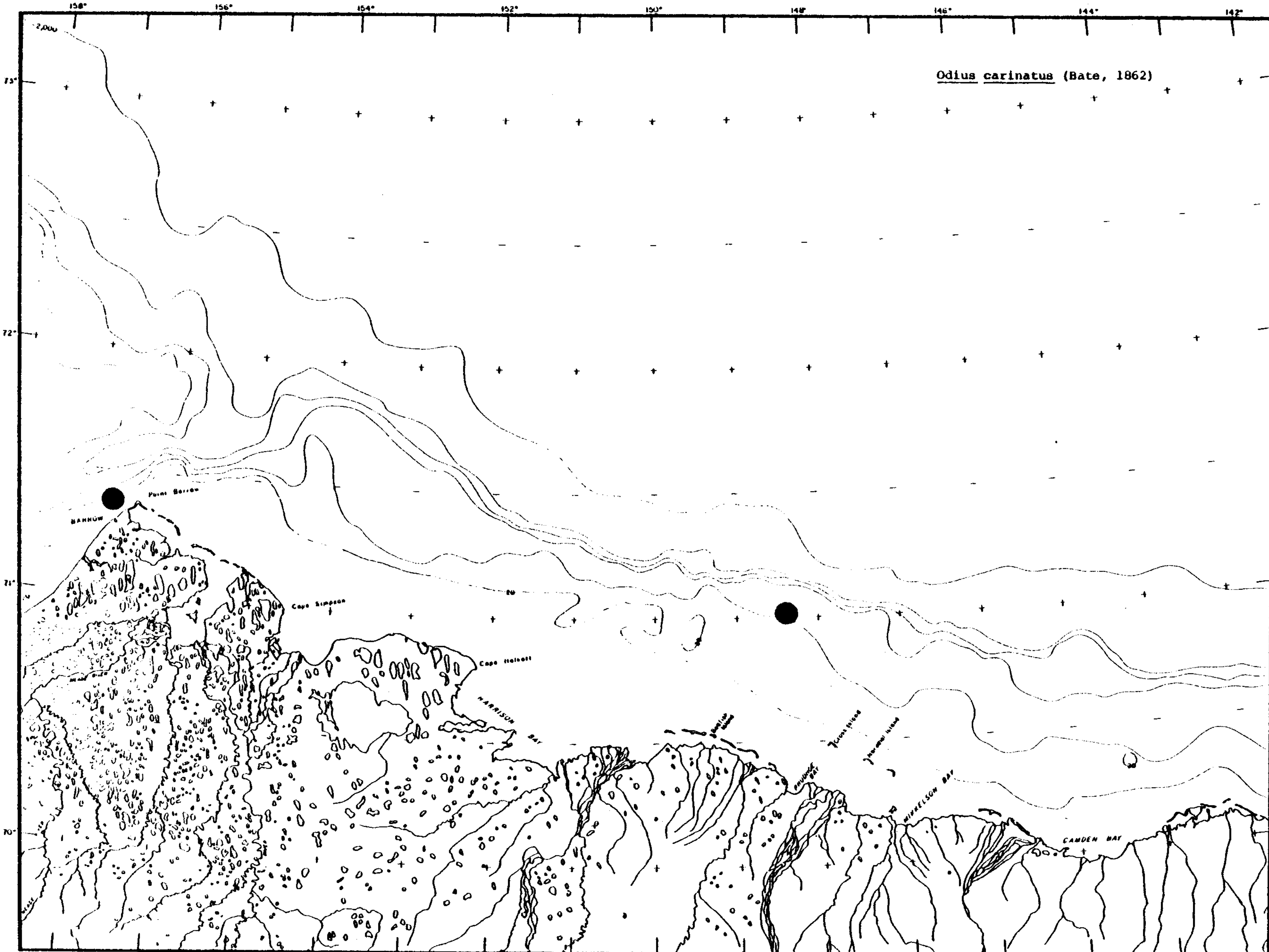
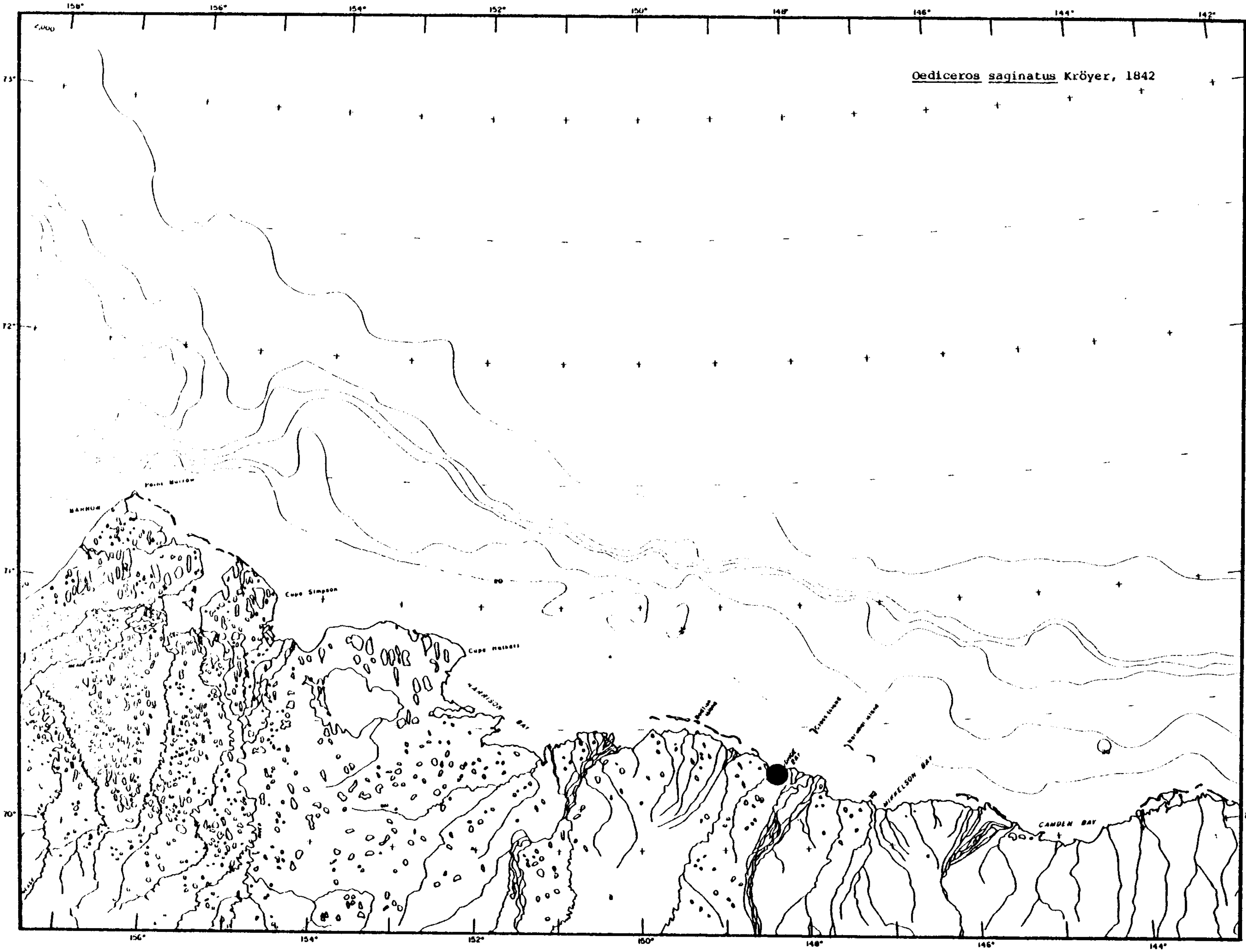
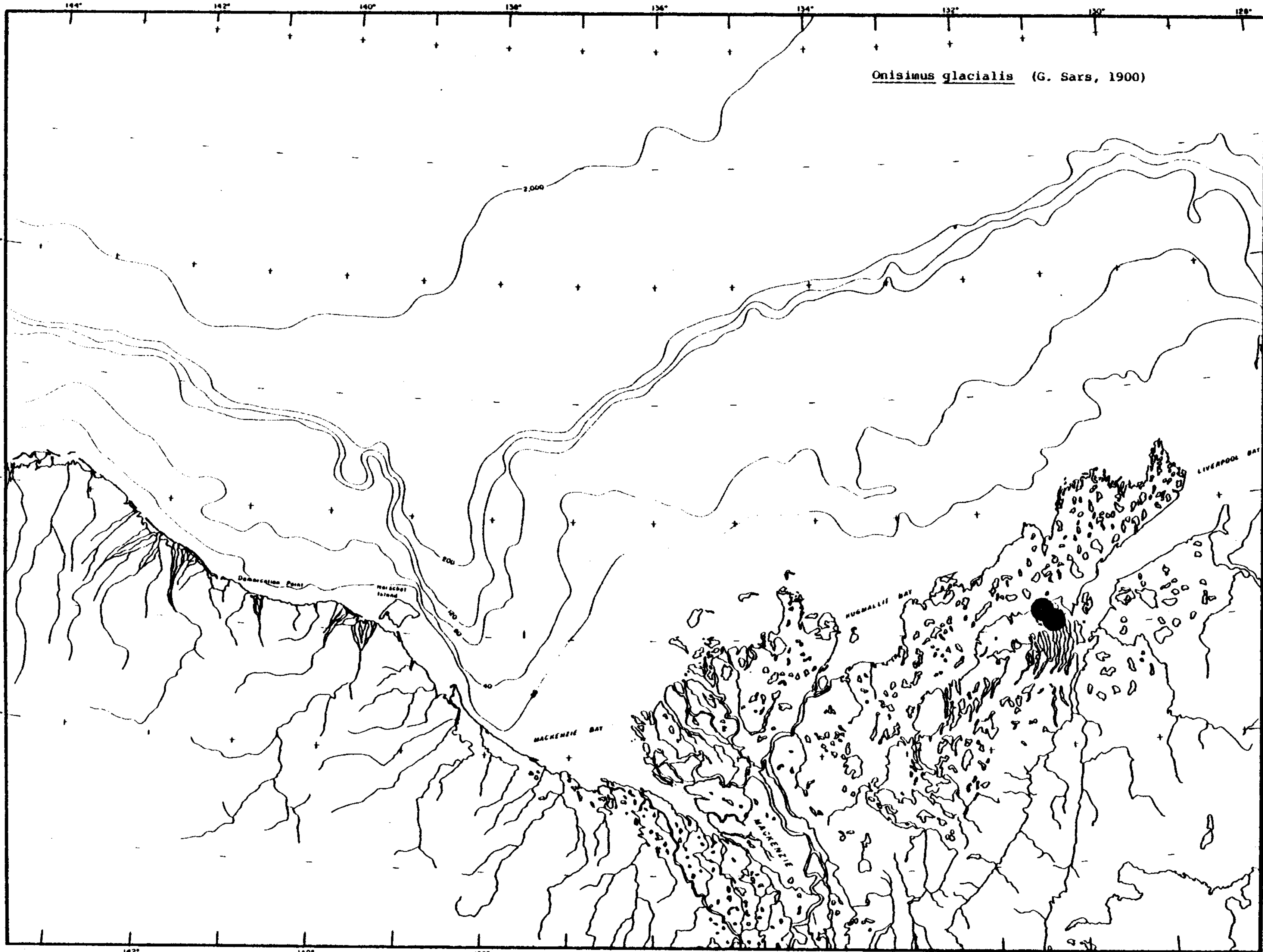
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

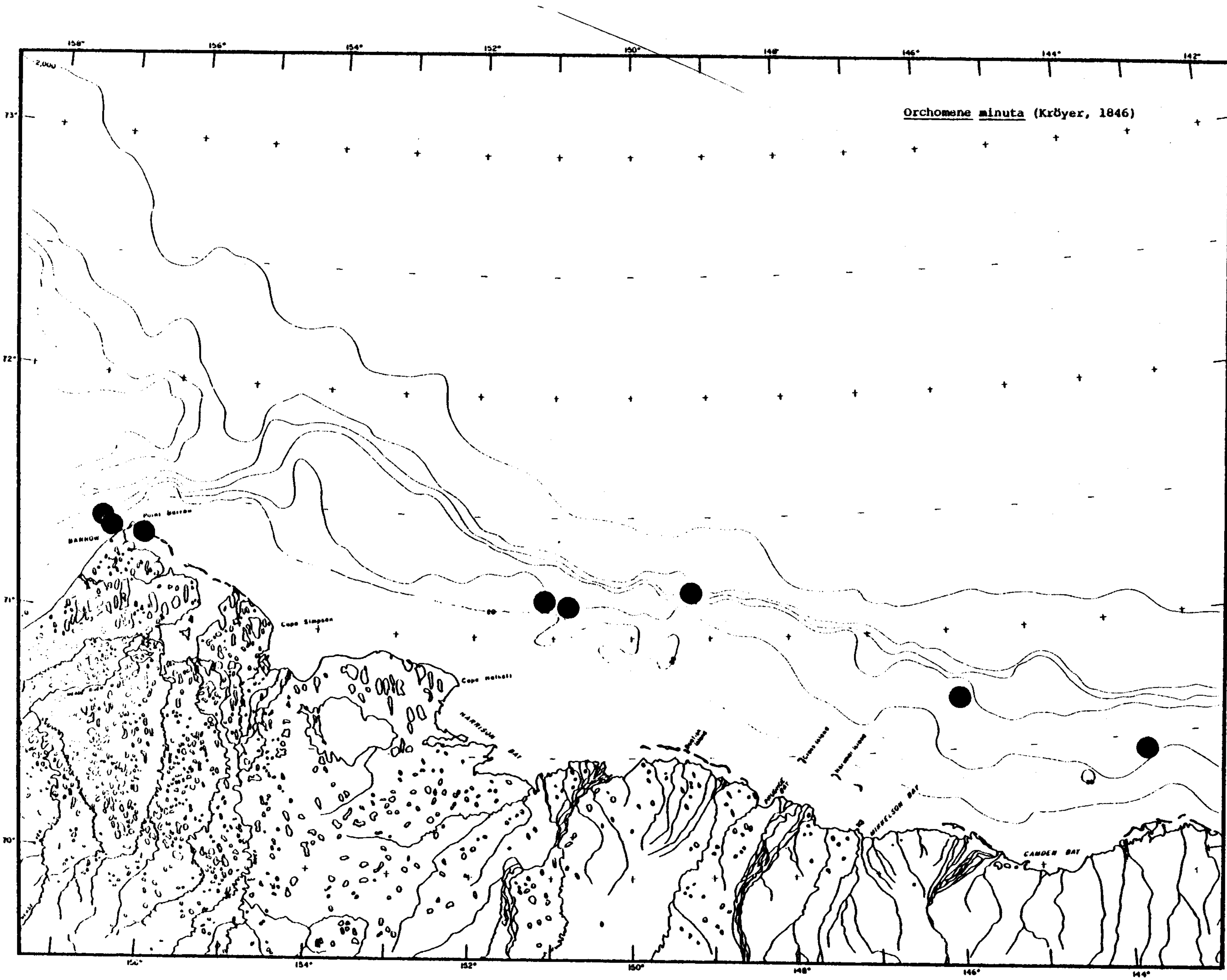


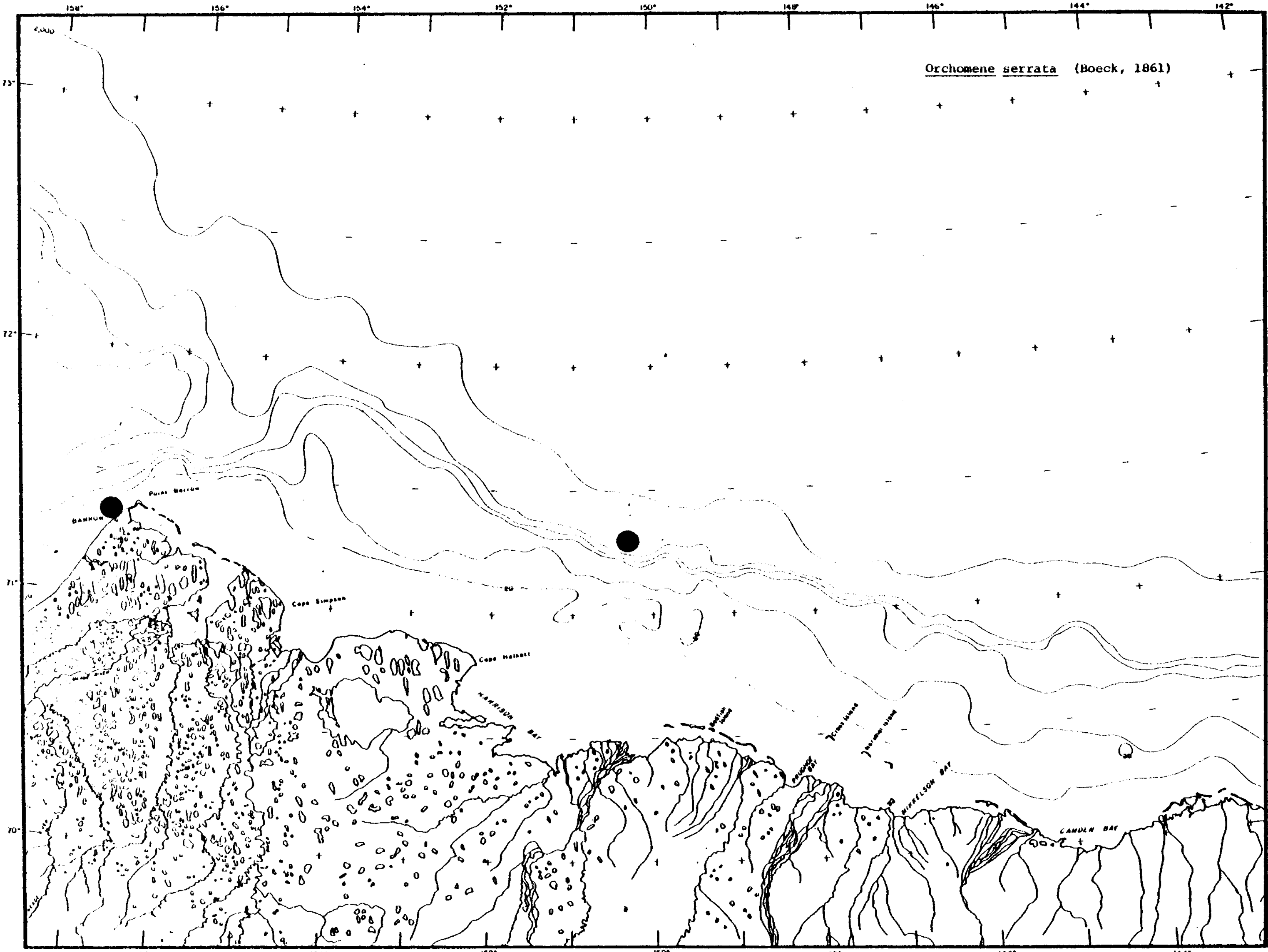
Odius carinatus (Bate, 1862)

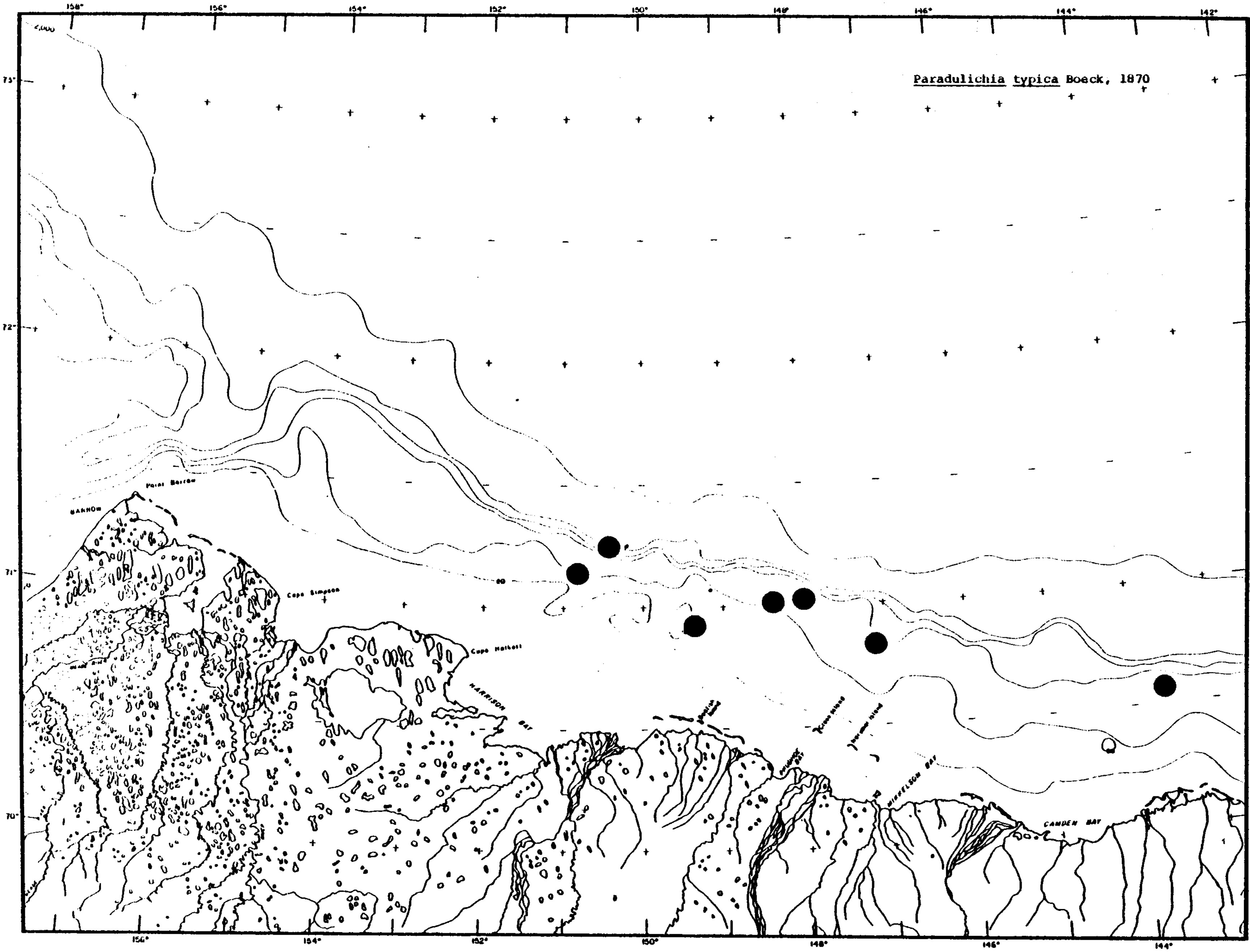


Oediceros saginatus Kröyer, 1842


Onisimus glacialis (G. Sars, 1900)
2,000
Demarcation Point
Herschel Island
MACKENZIE BAY
LIVERPOOL BAY
MACKENZIE


Orchomene minuta (Kröyer, 1846)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Orchomene serrata (Boeck, 1861)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Prudhoe Bay
Mikkelson Bay
Camden Bay


Paradulichia typica Boeck, 1870
158°
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154°
152°
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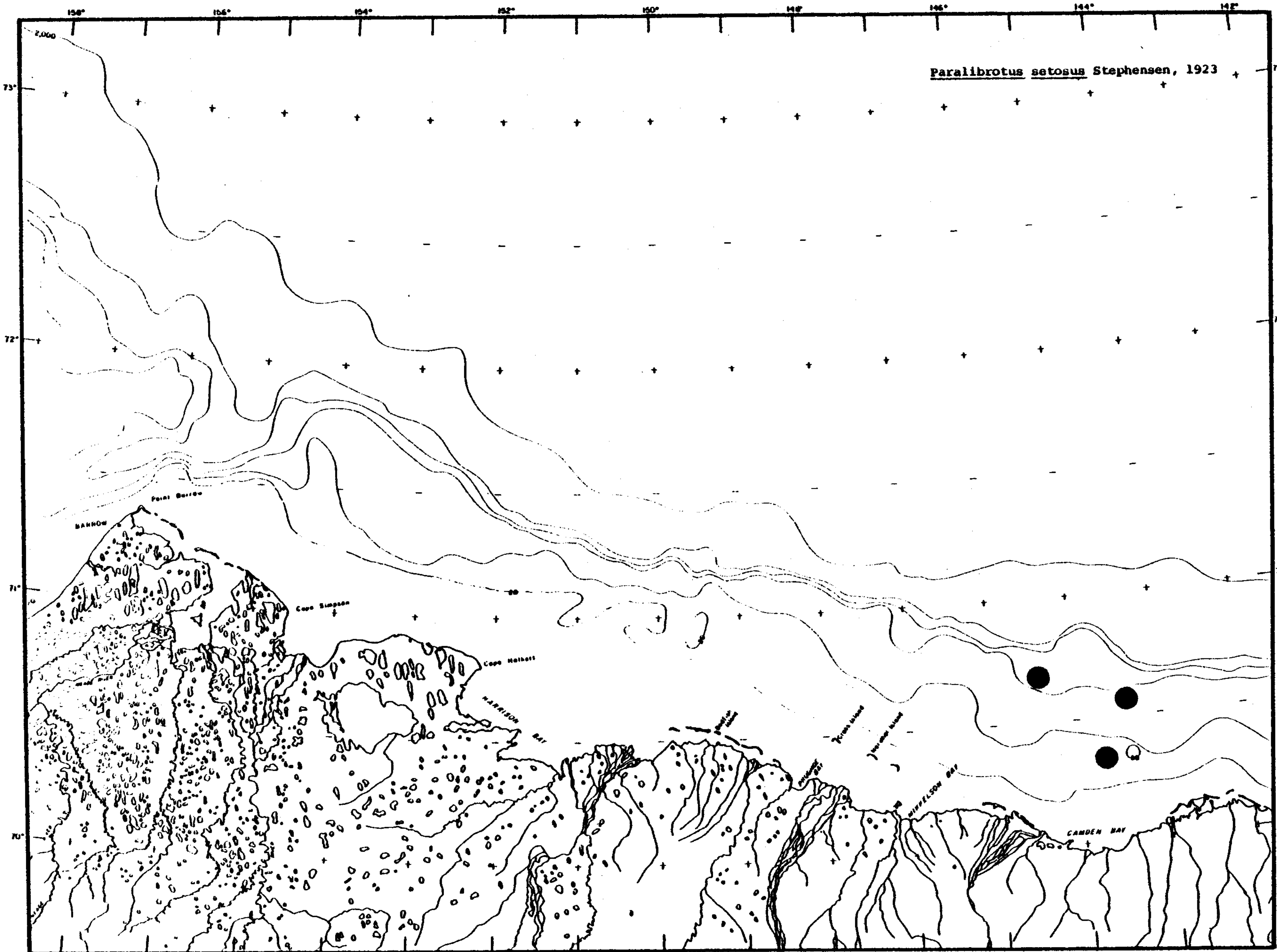
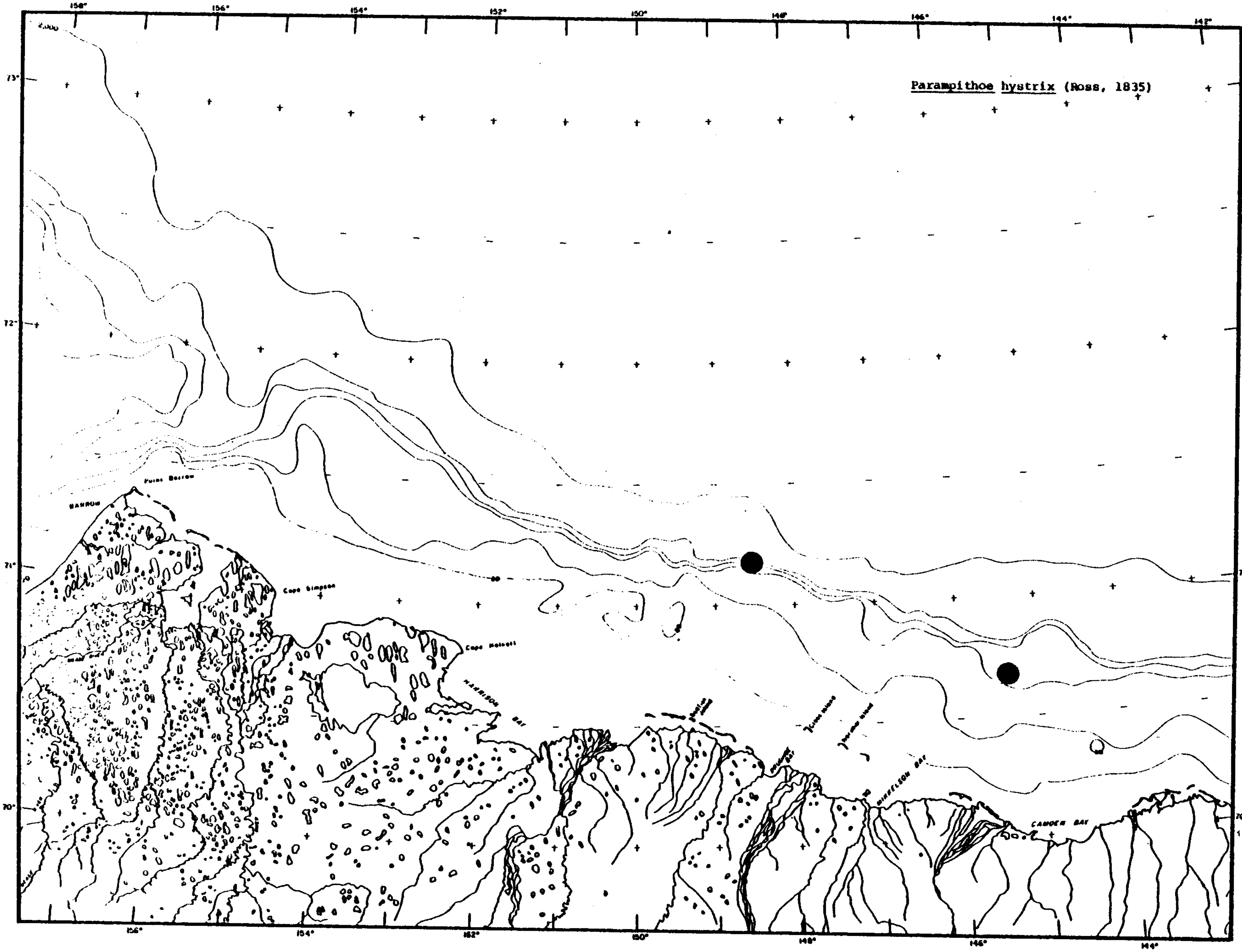
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Paralibrotus setosus Stephensen, 1923
2,000
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Parampithoe hystrix (Ross, 1835)
158°
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154°
152°
150°
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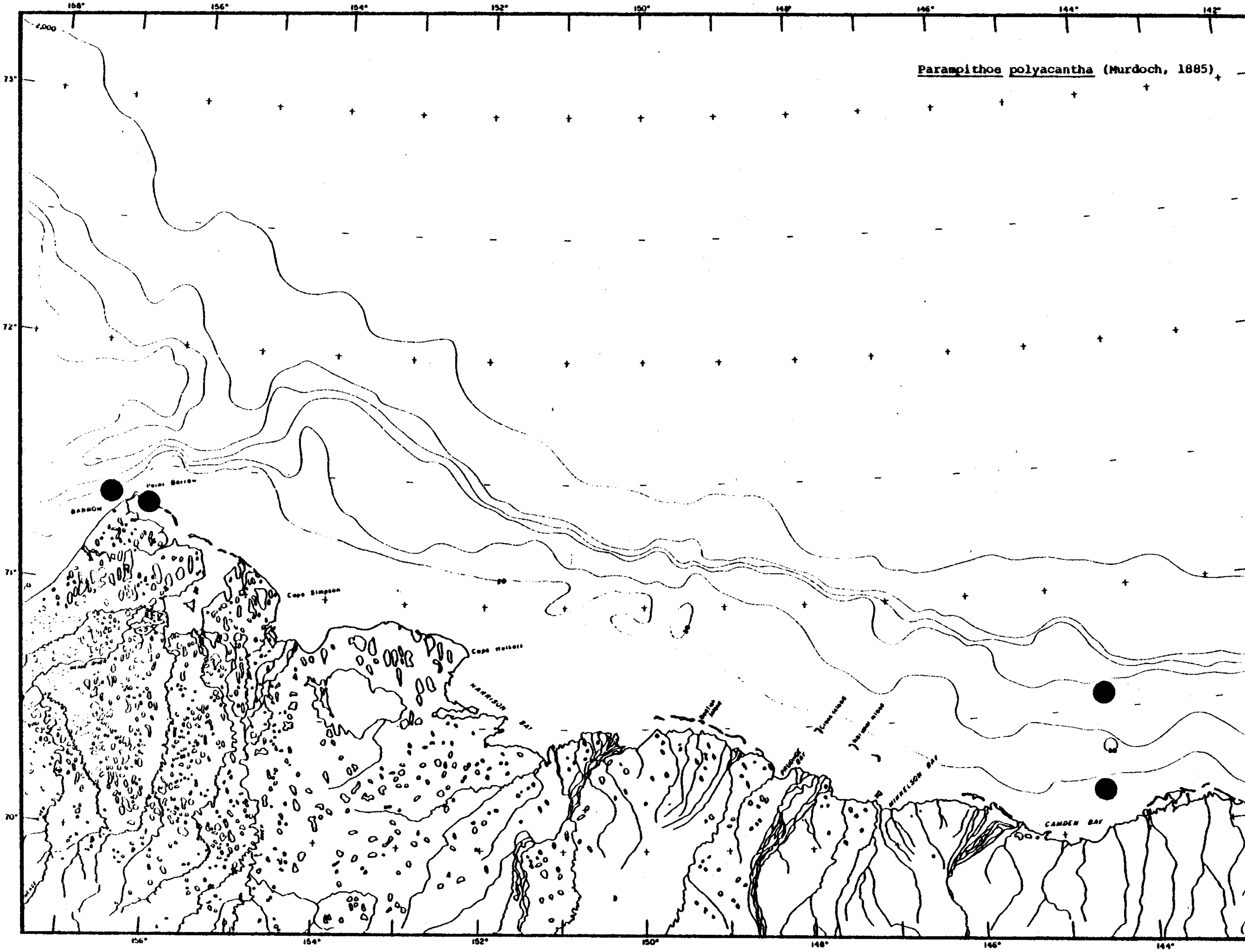
72°
71°
70°
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Parampithoe polyacantha (Murdoch, 1885)
158°
156°
154°
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150°
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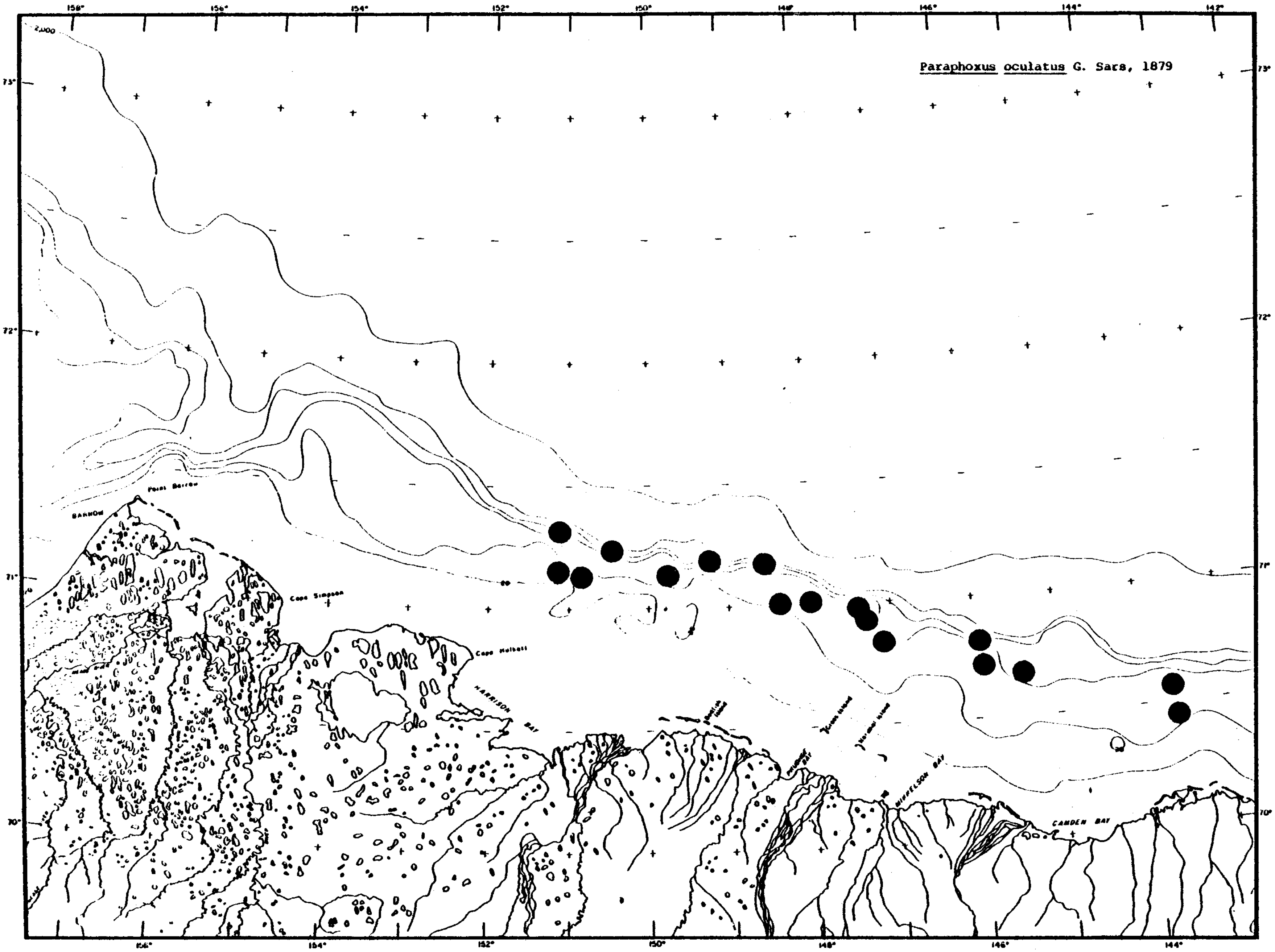
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY



Paraphoxus oculatus G. Sars, 1879
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
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154°
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150°
148°
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144°
142°
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72°
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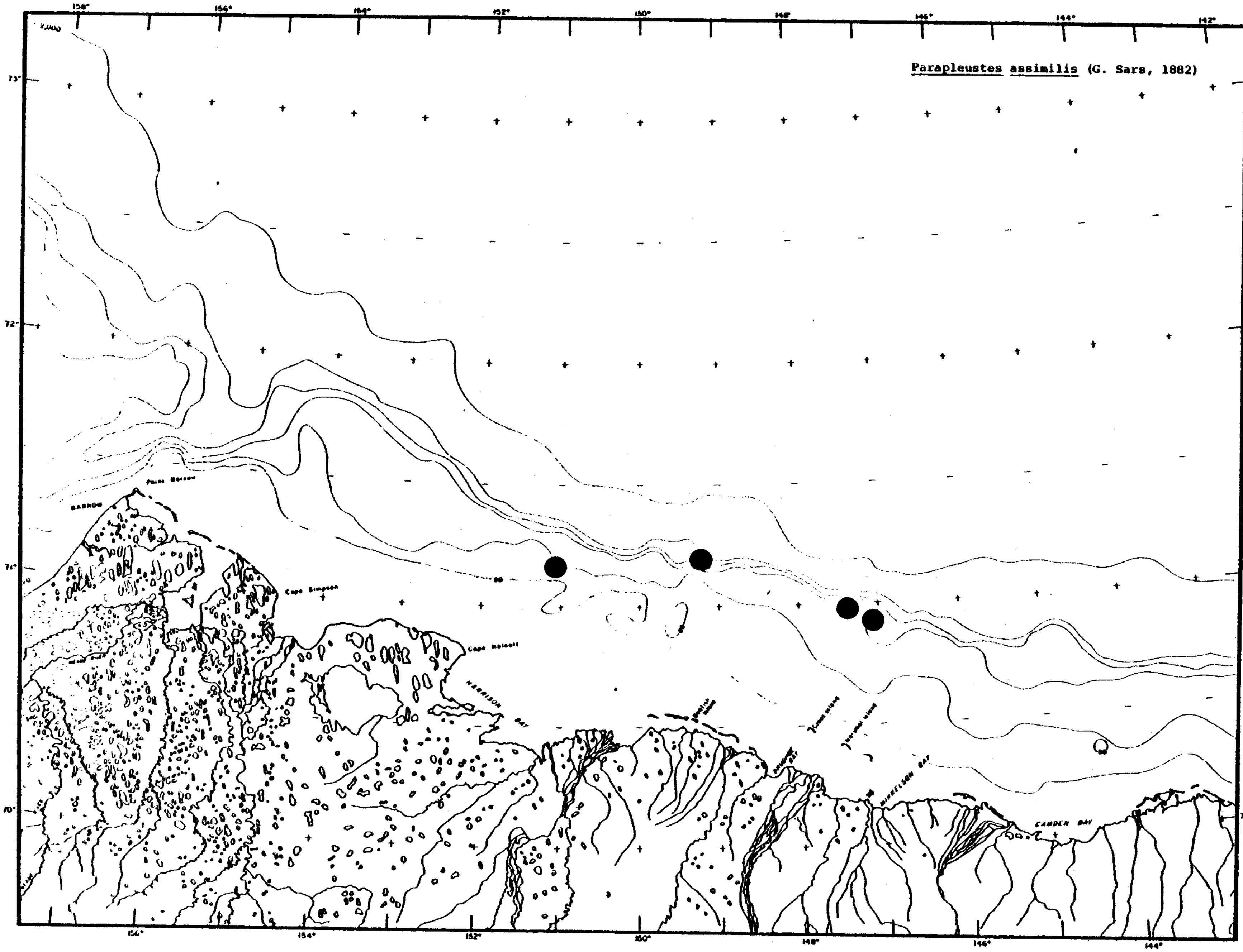
Parapleustes assimilis (G. Sars, 1882)
73°
72°
71°
70°
156°
154°
152°
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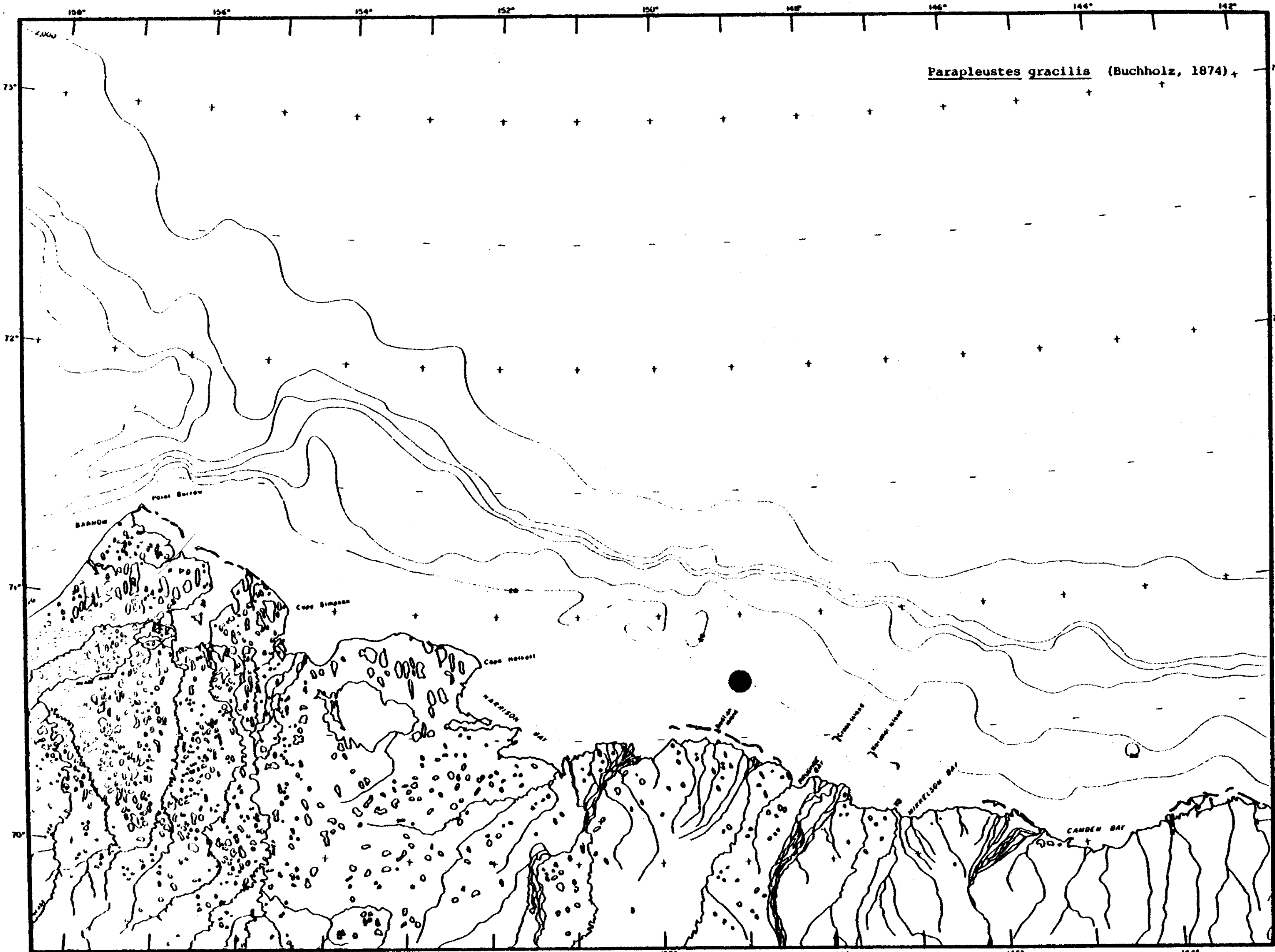
142°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Parapleustes gracilis (Buchholz, 1874)
158°
156°
154°
152°
150°
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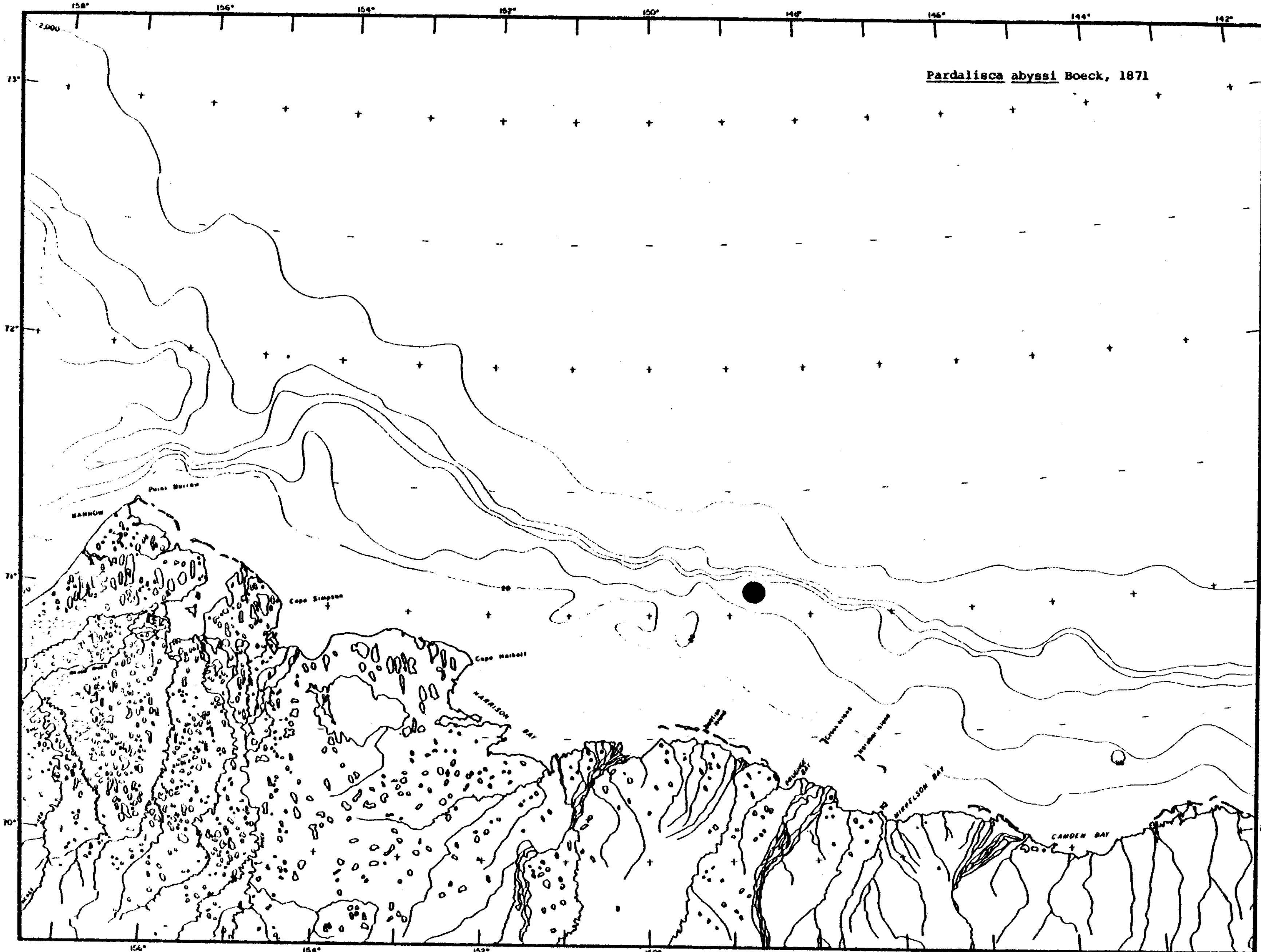
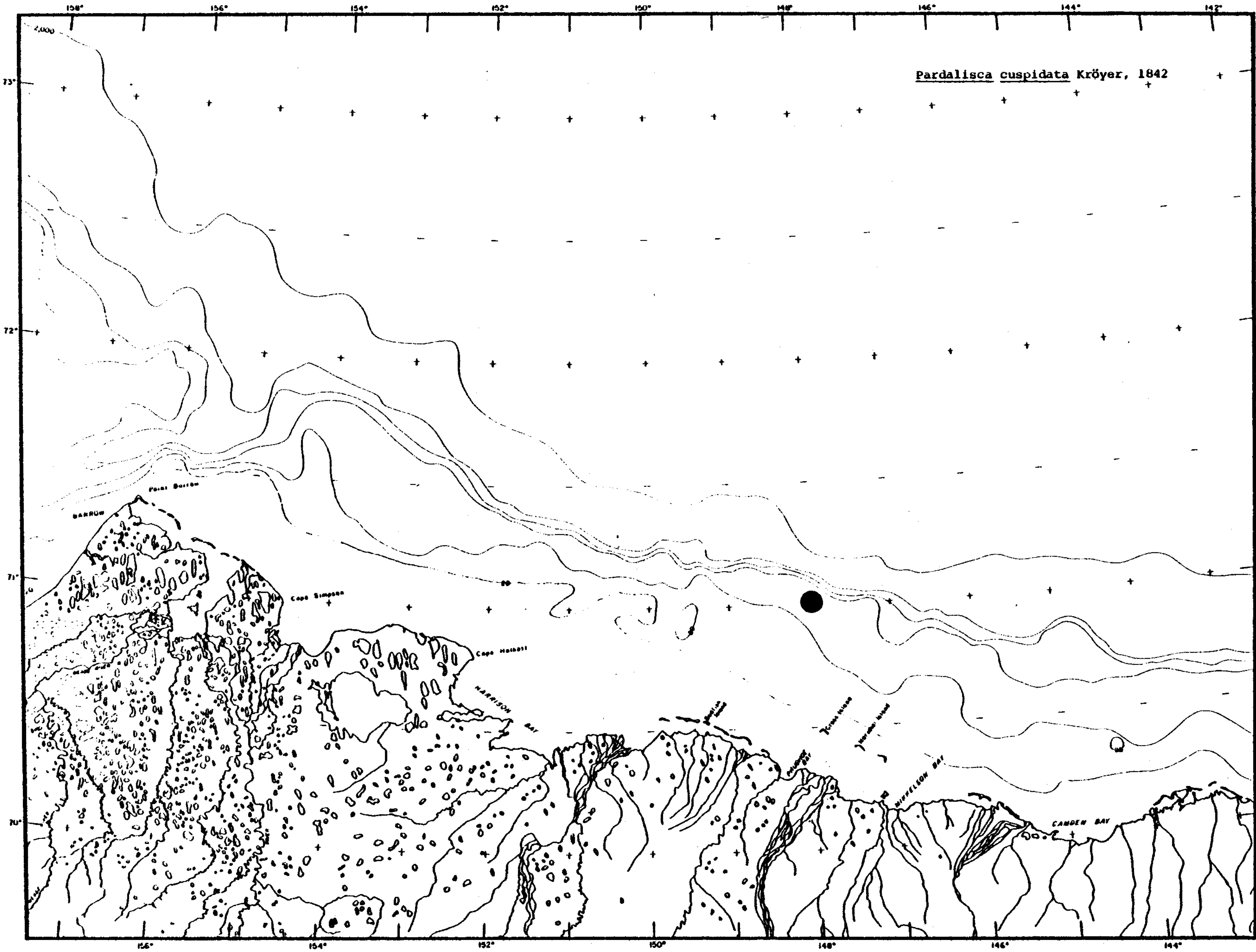
72°
71°
70°
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Pardalisca abyssi Boeck, 1871
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Pardalisca cuspidata Kröyer, 1842
158°
156°
154°
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148°
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144°
142°
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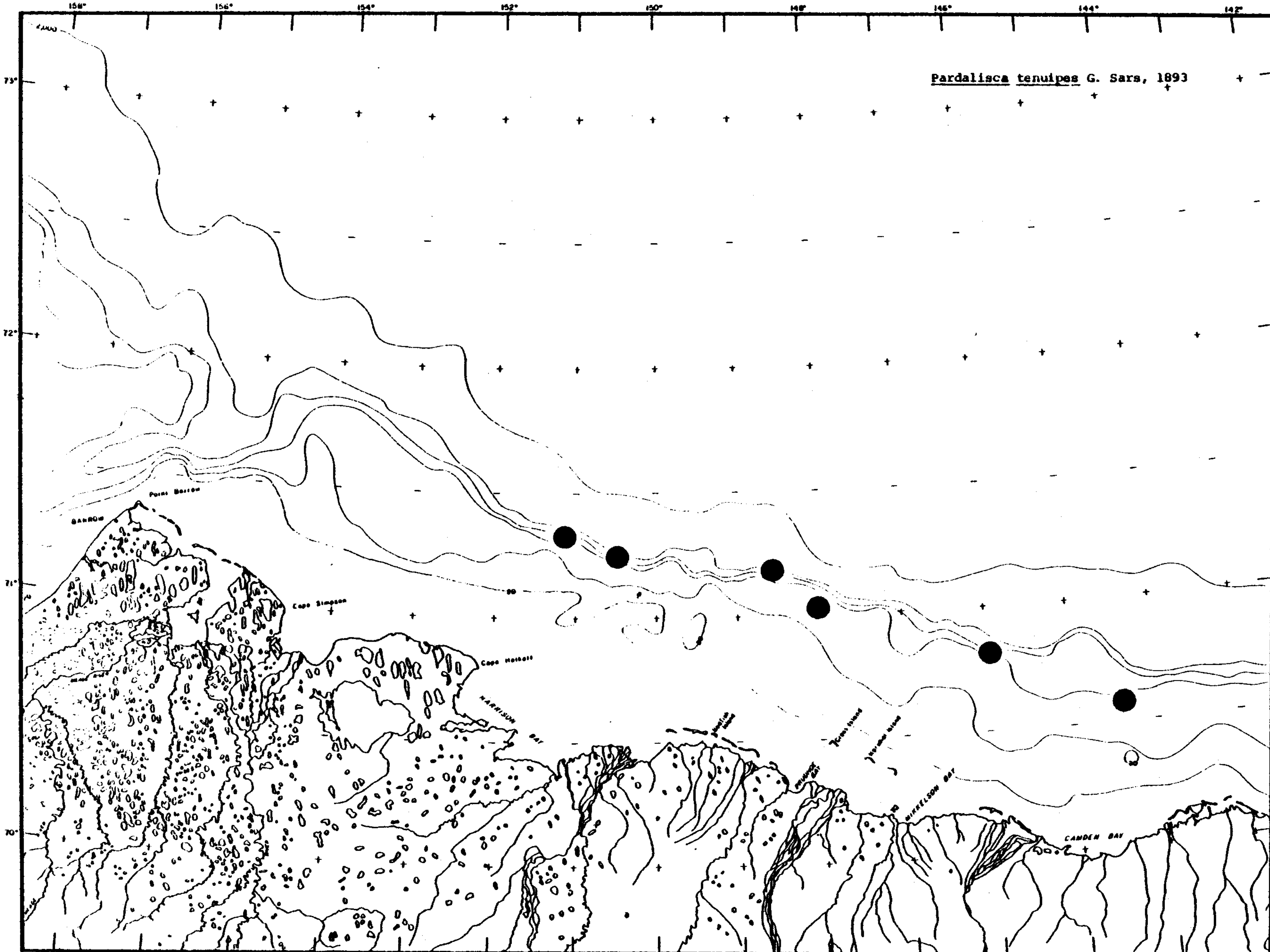
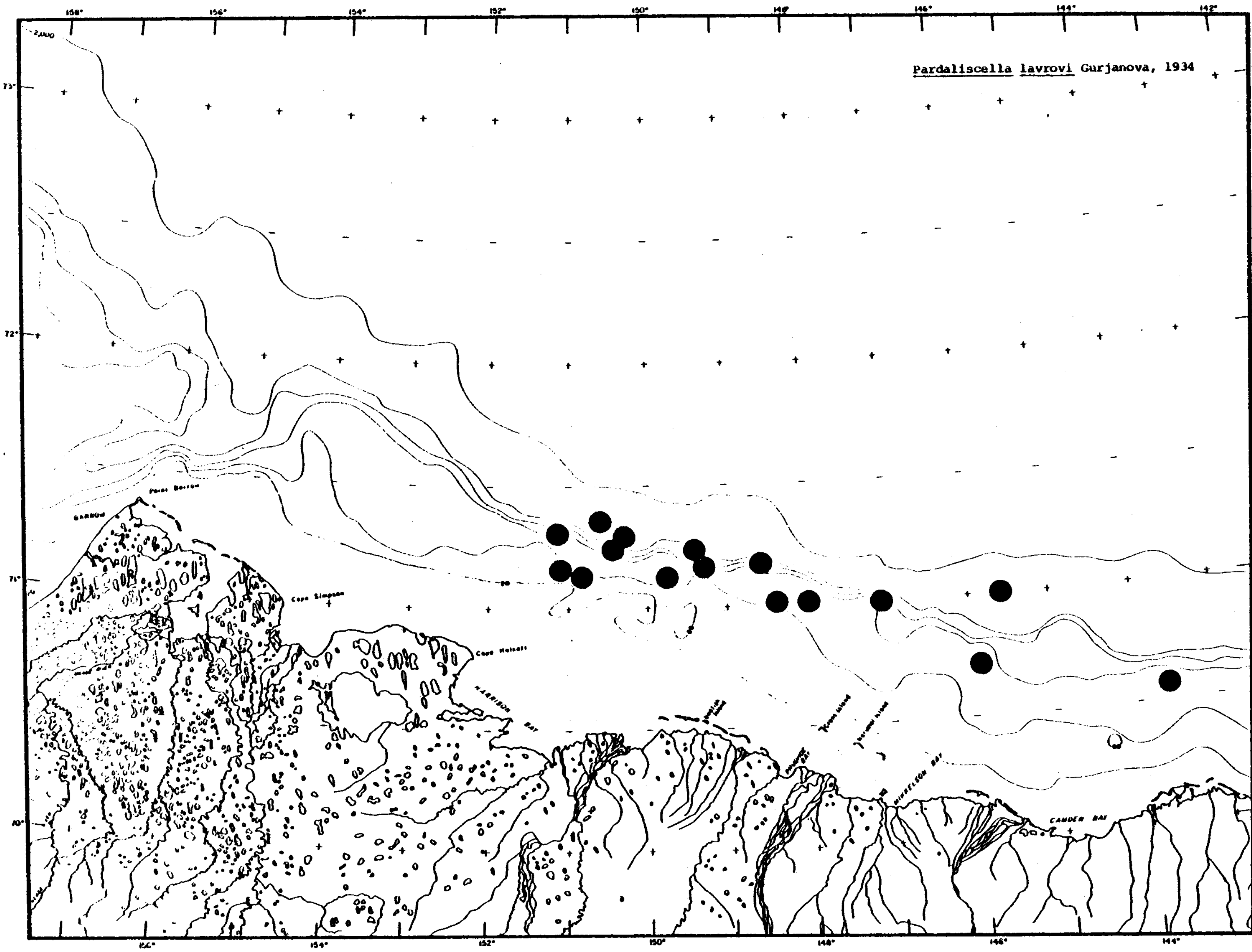
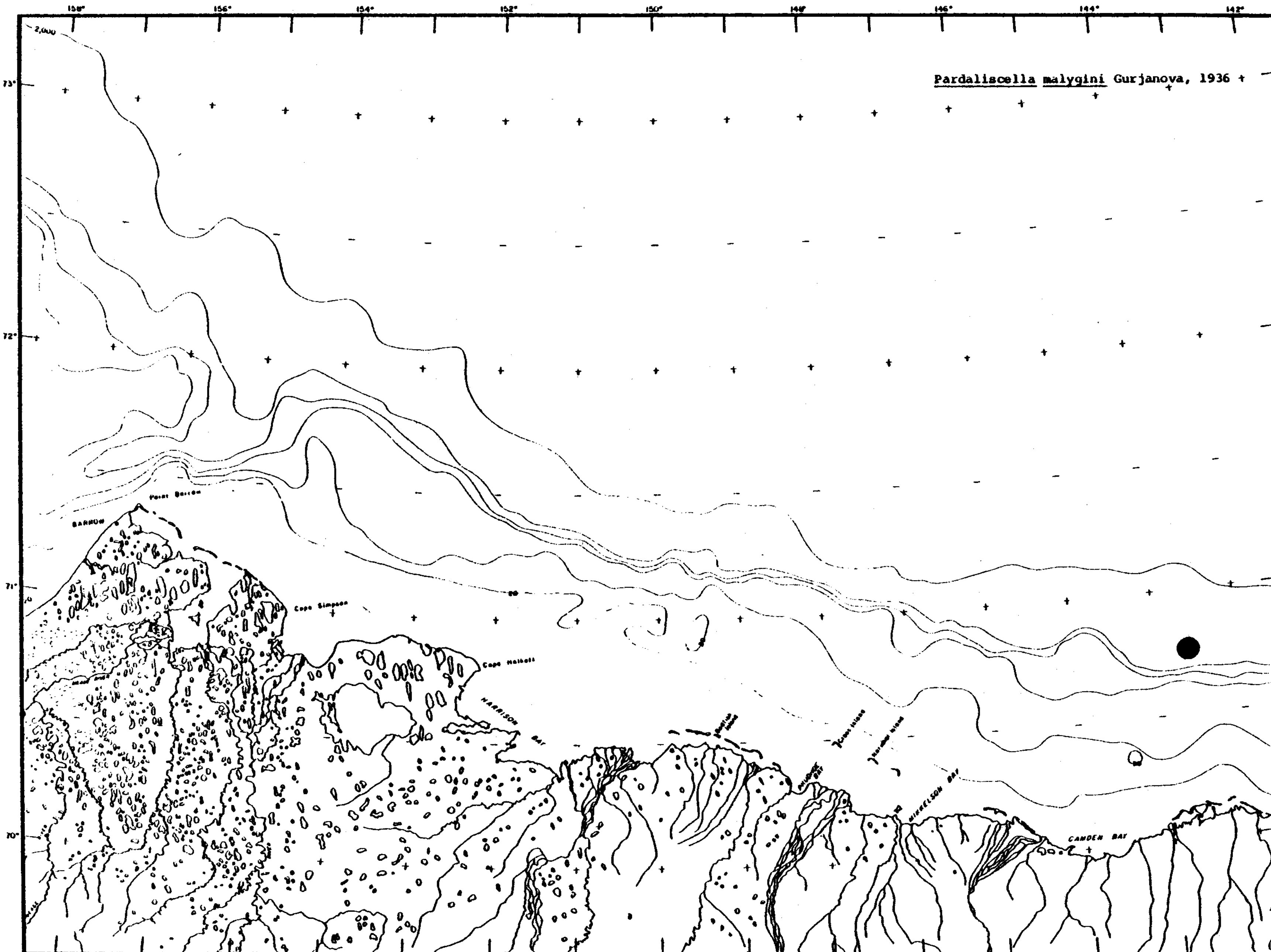
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSEN BAY
CAMDEN BAY

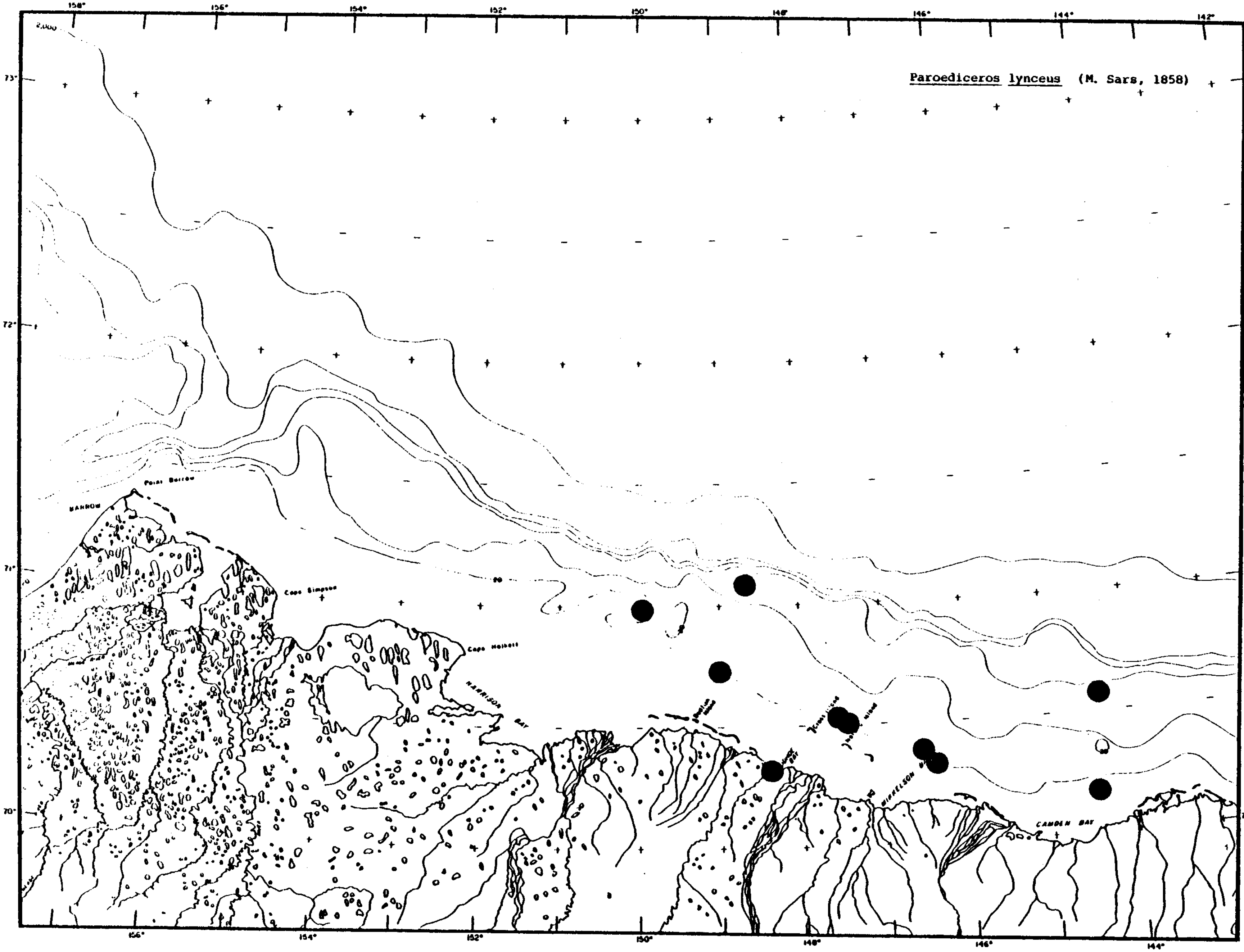


Pardalisca tenuipes G. Sars, 1893


Pardaliscella lavrovi Gurjanova, 1934
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay



Pardaliscella malygini Gurjanova, 1936 +
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Paroediceros lynceus (M. Sars, 1858)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°
158°
156°
154°
152°
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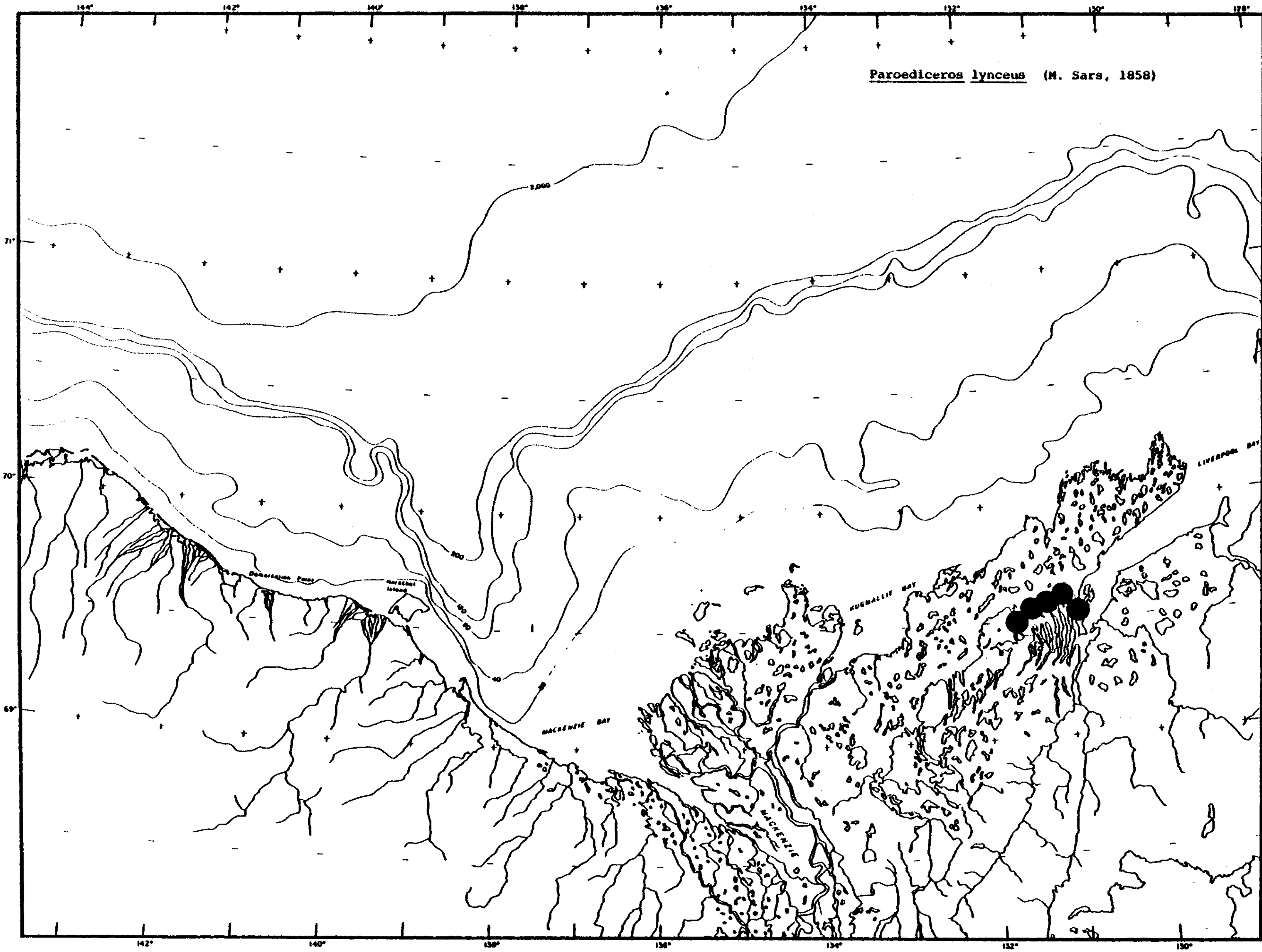
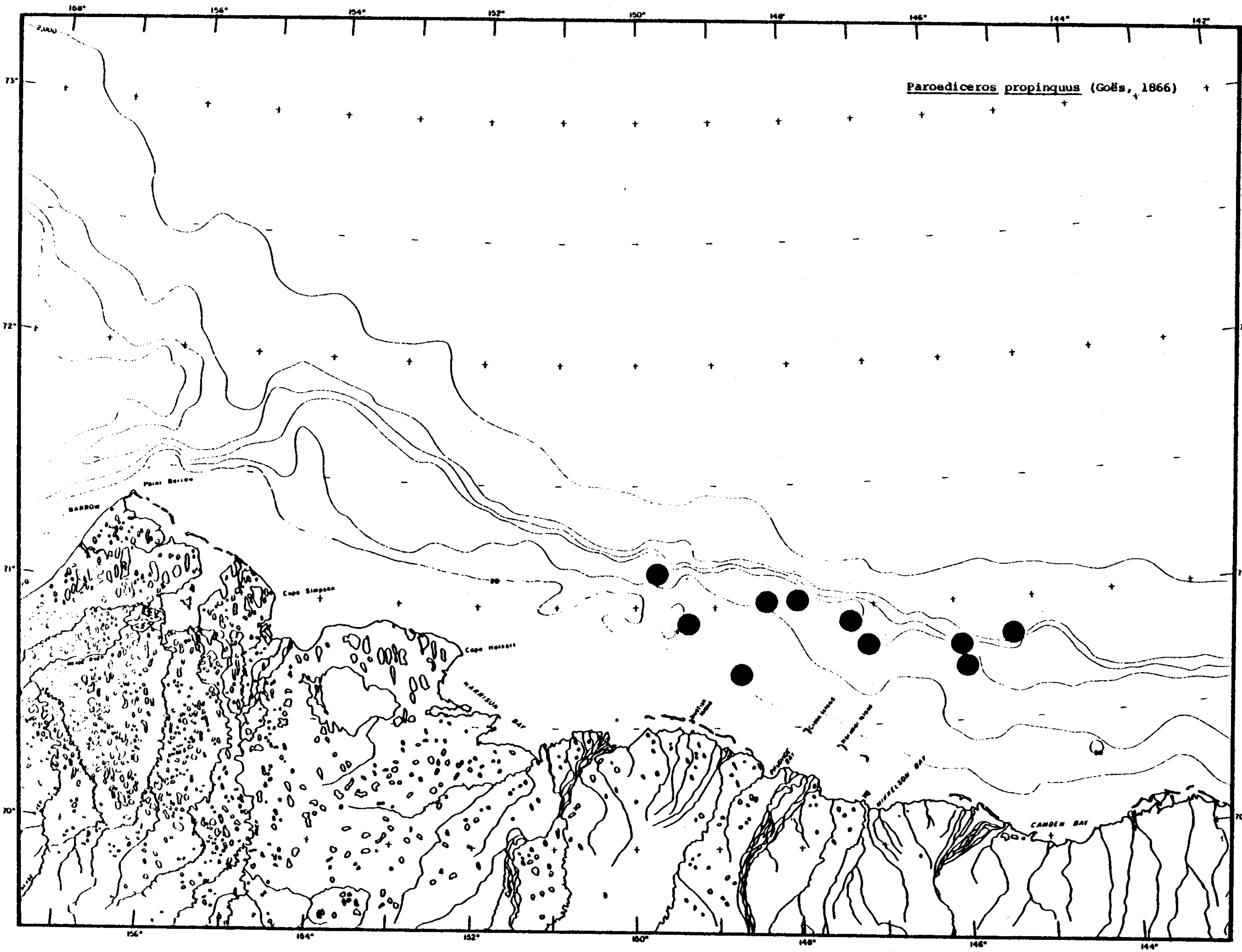


Paroediceros lynceus (M. Sars, 1858)


Paroediceros propinquus (Goës, 1866)
158°
156°
154°
152°
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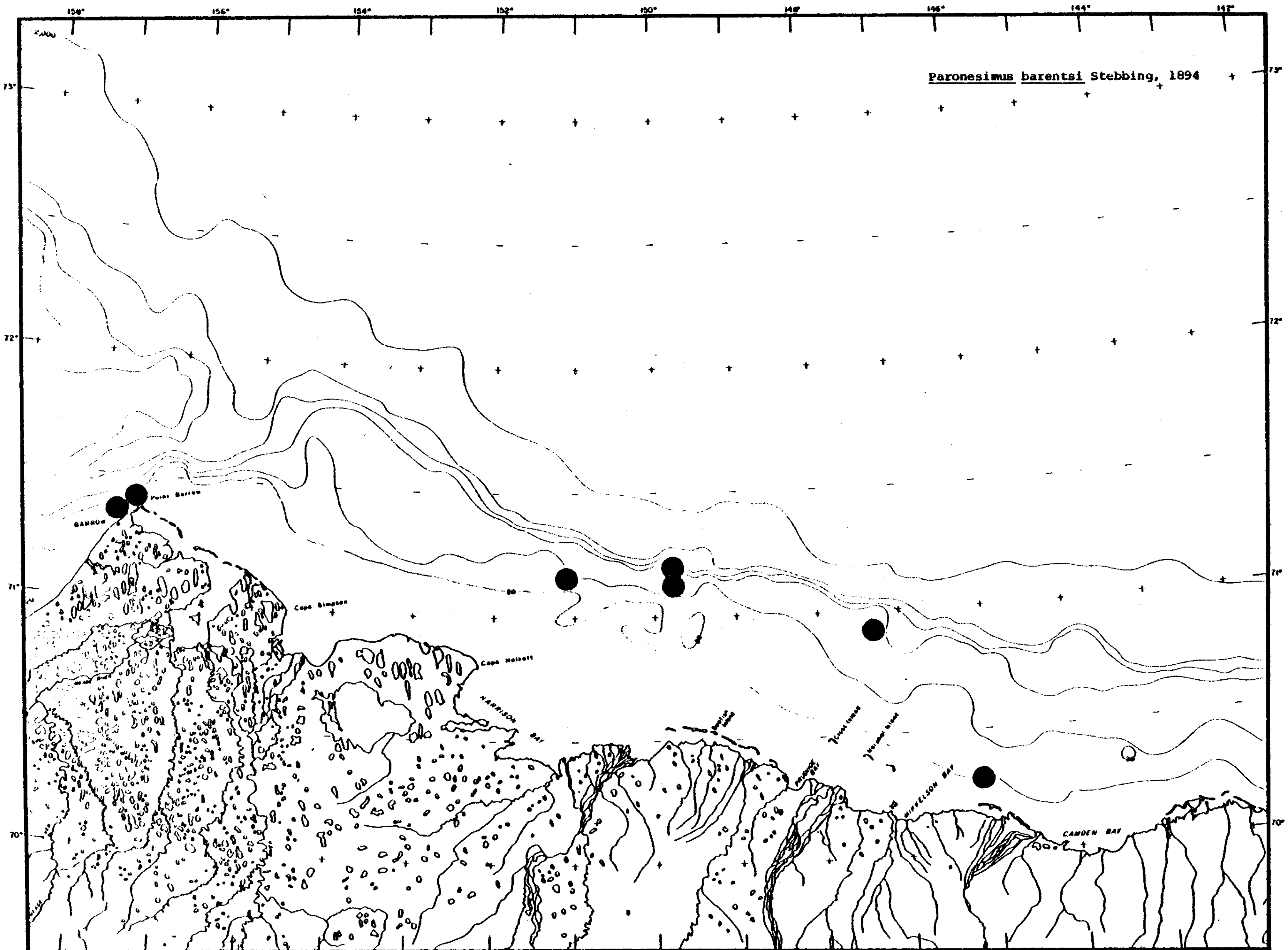
BARROW
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY



Paronesimus barentsi Stebbing, 1894
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
PRUDHOE BAY
MIKKELSON BAY
CAMDEN BAY
158°
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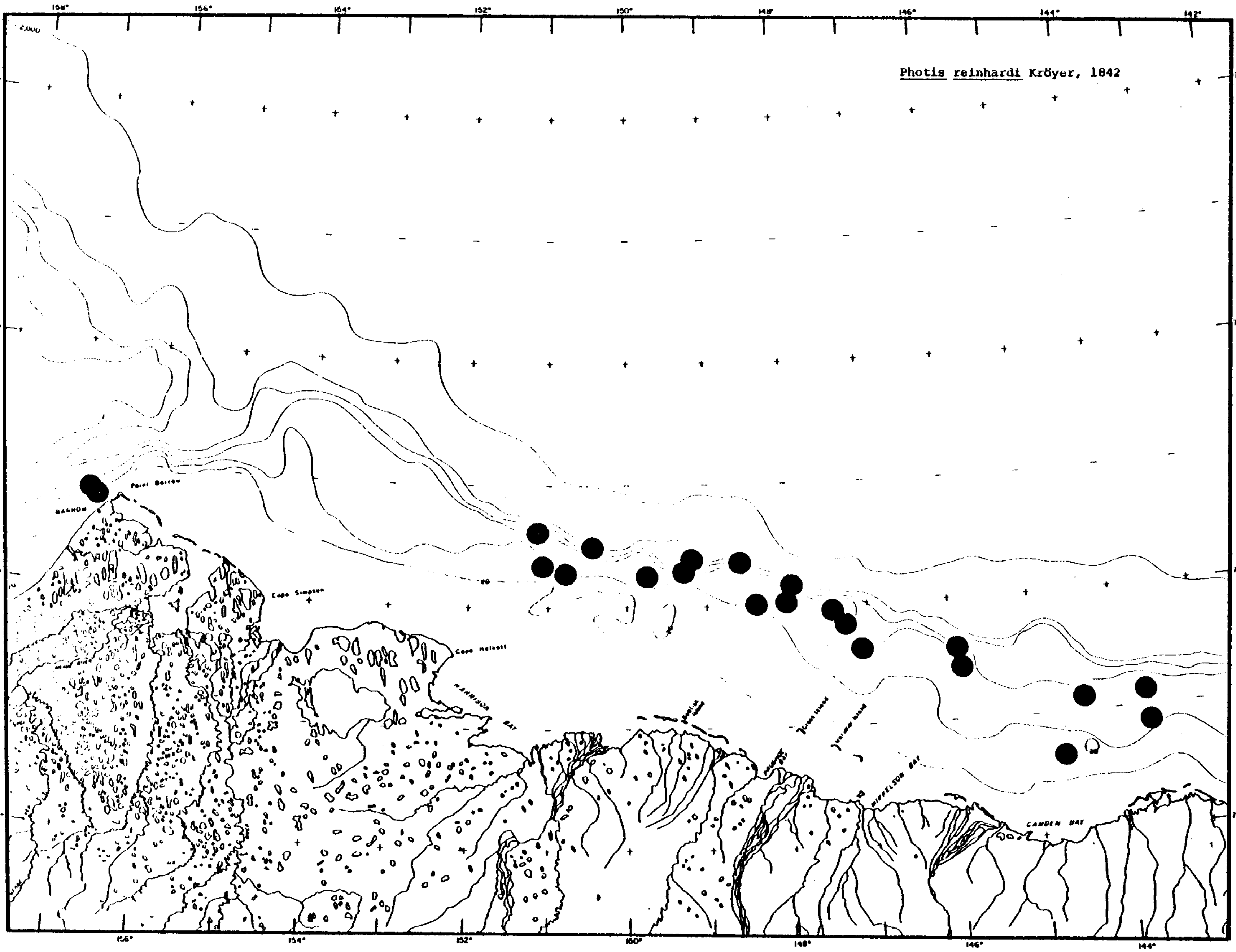
Photis reinhardi Kröyer, 1842
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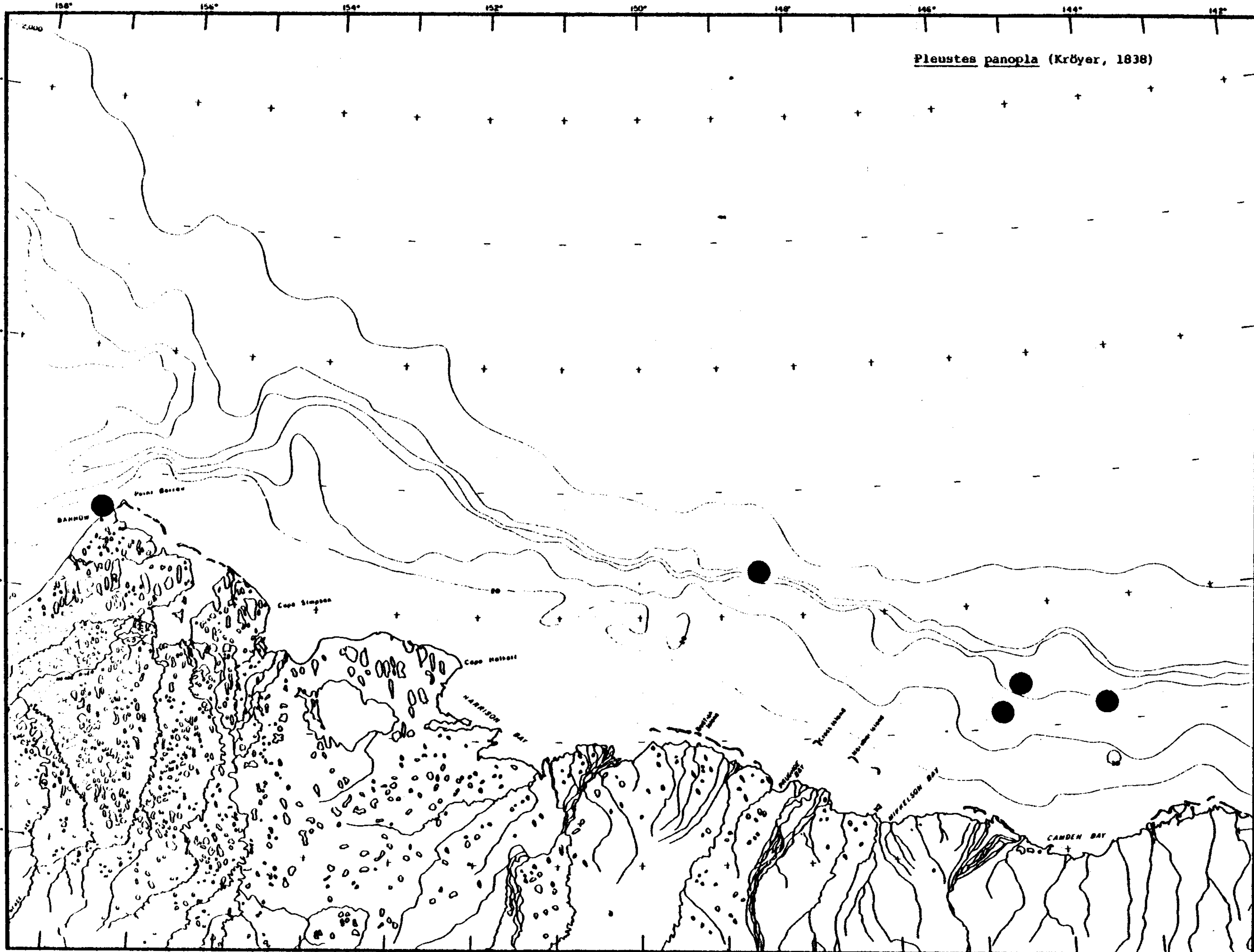
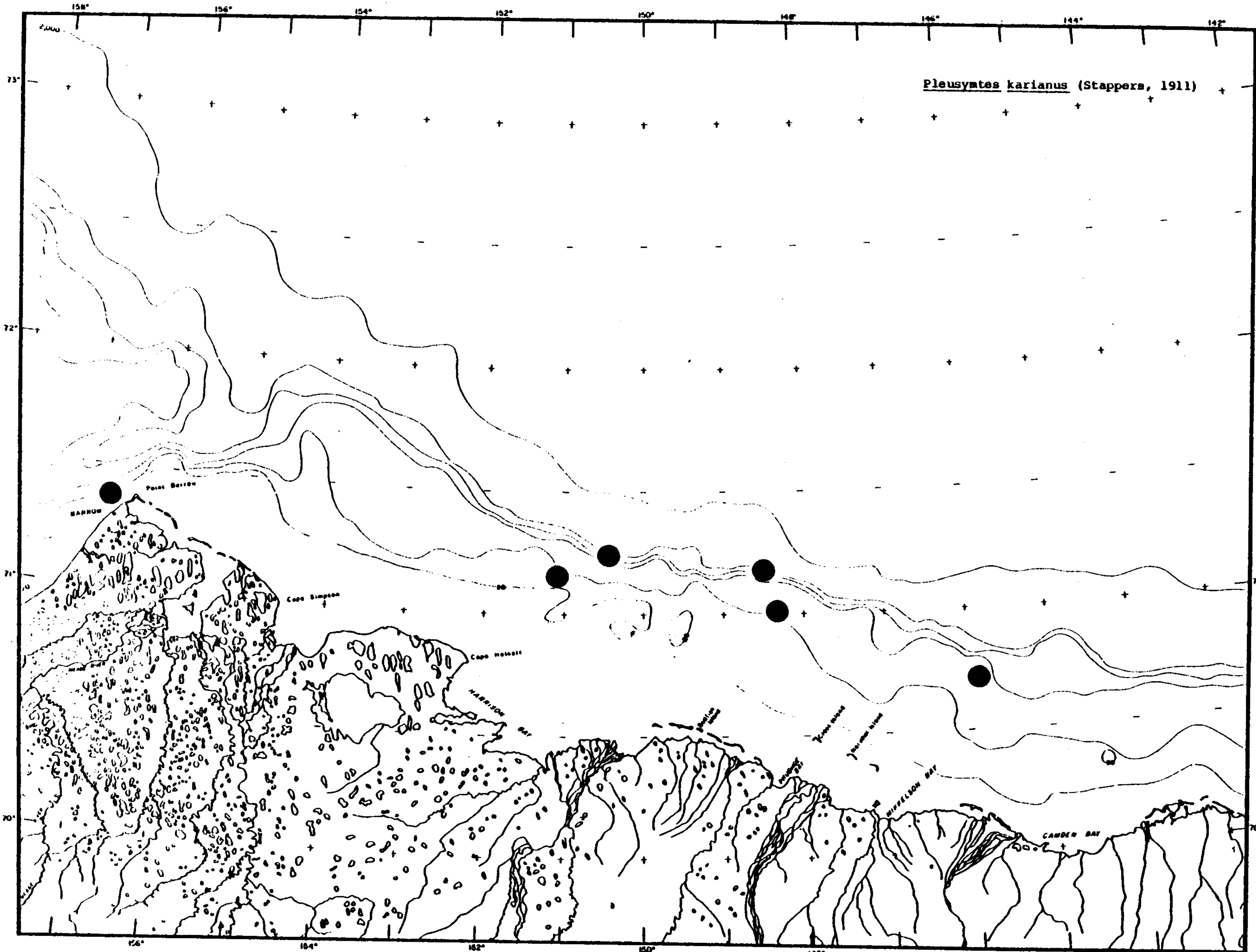
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Pleustes panopla (Kröyer, 1838)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Pleusymtes karianus (Stappers, 1911)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
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156°
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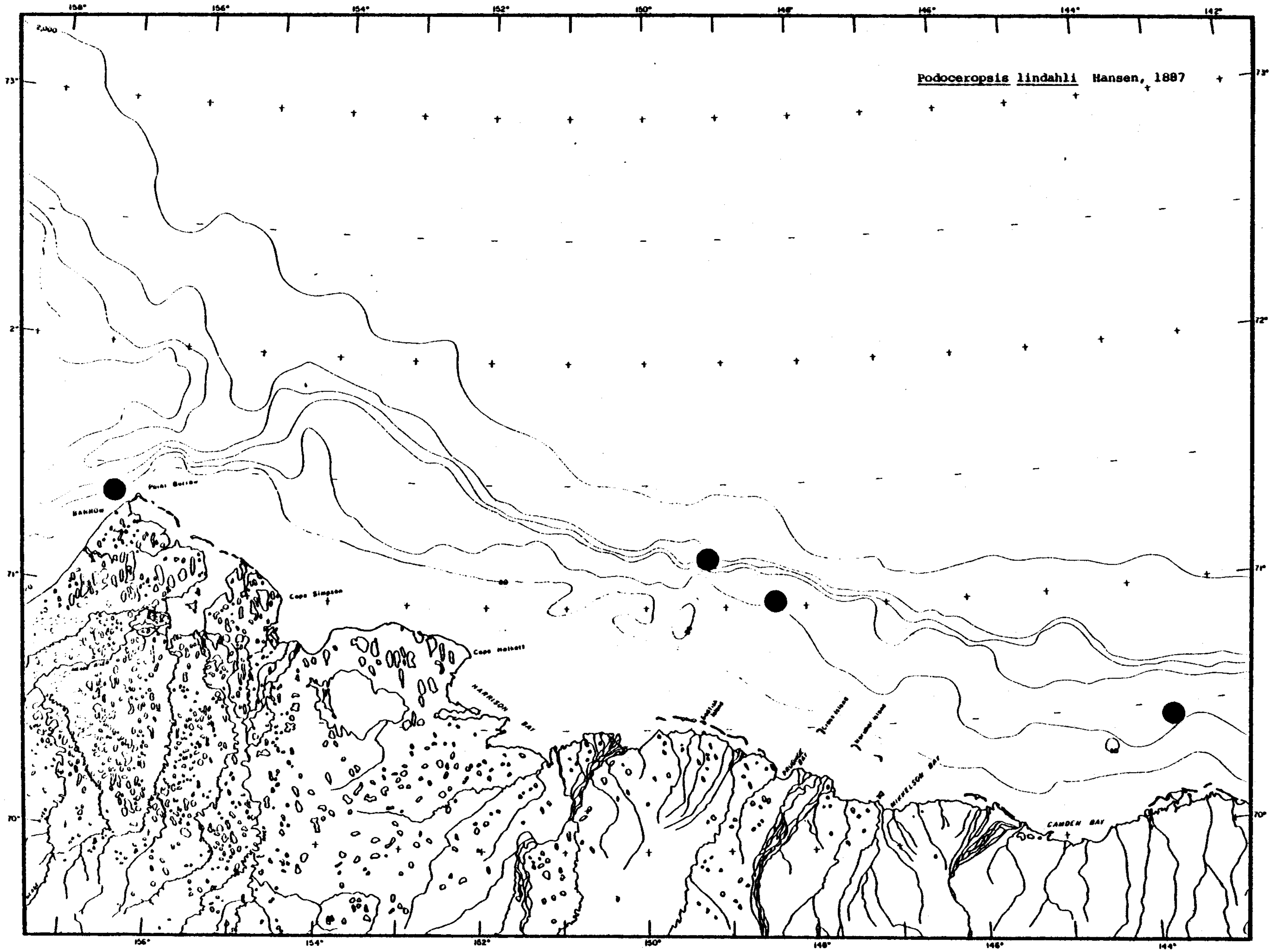
Podoceropsis lindahli Hansen, 1887
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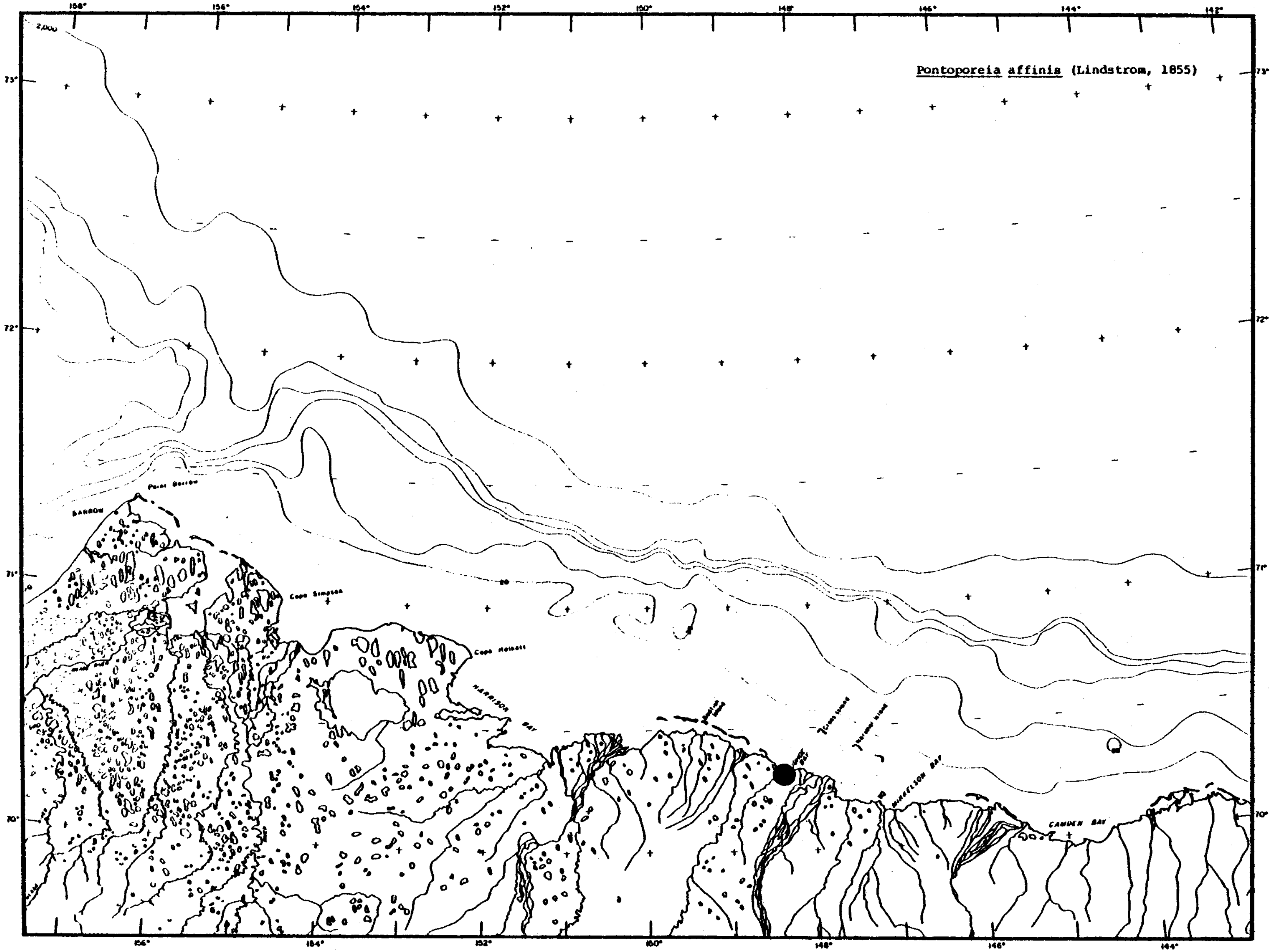
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Pontoporeia affinis (Lindstrom, 1855)
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150°
148°
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144°
142°
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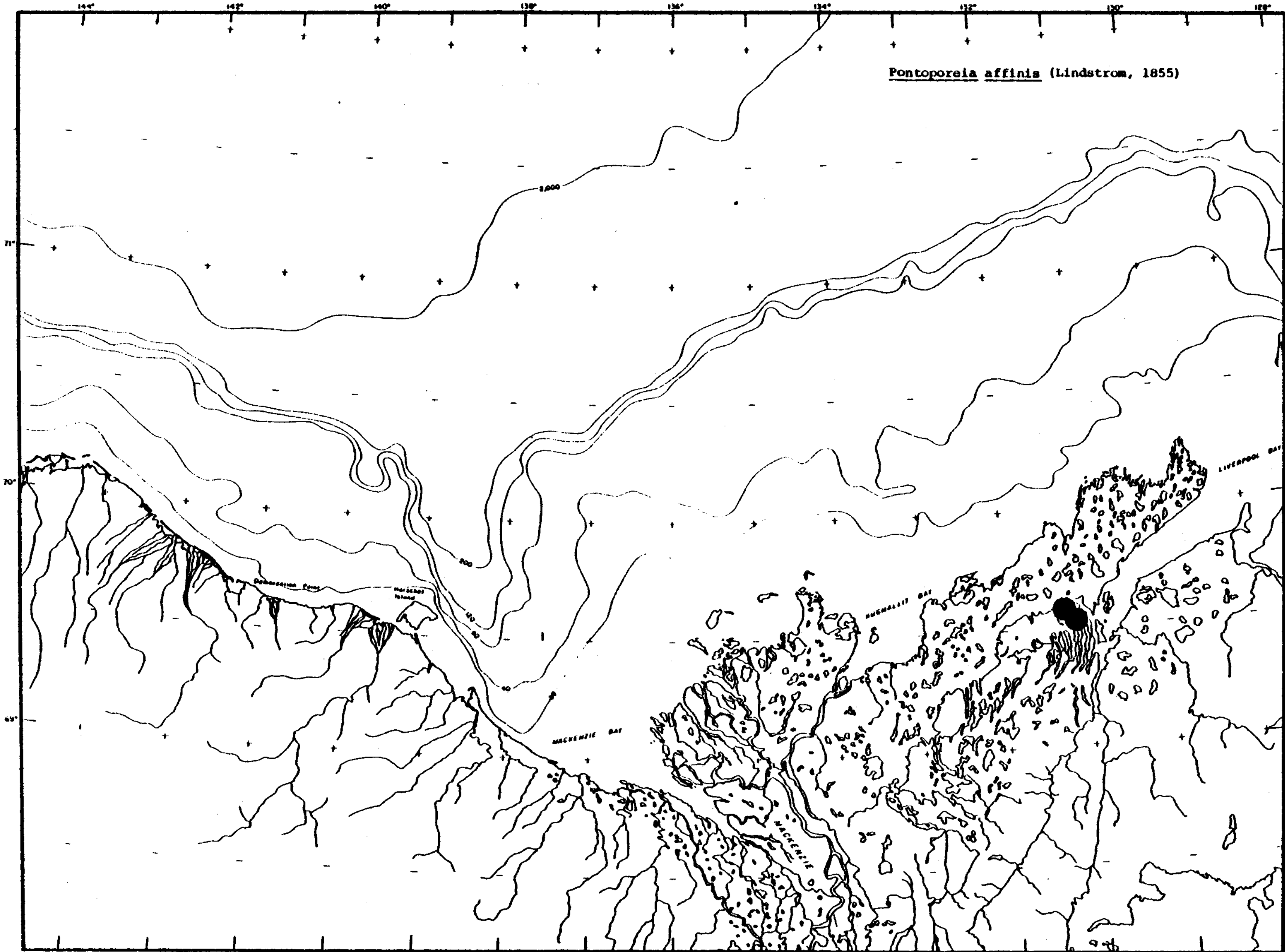
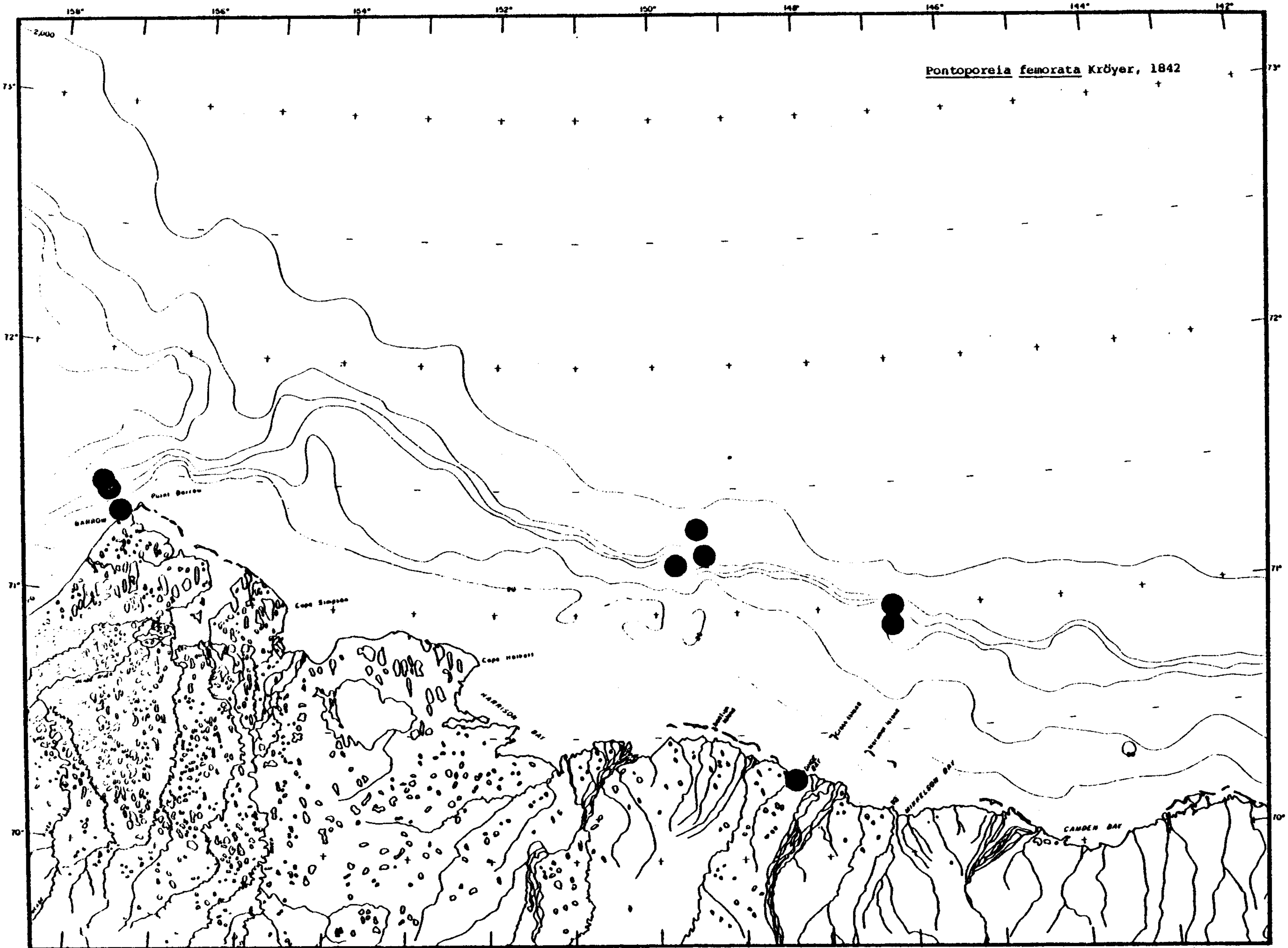
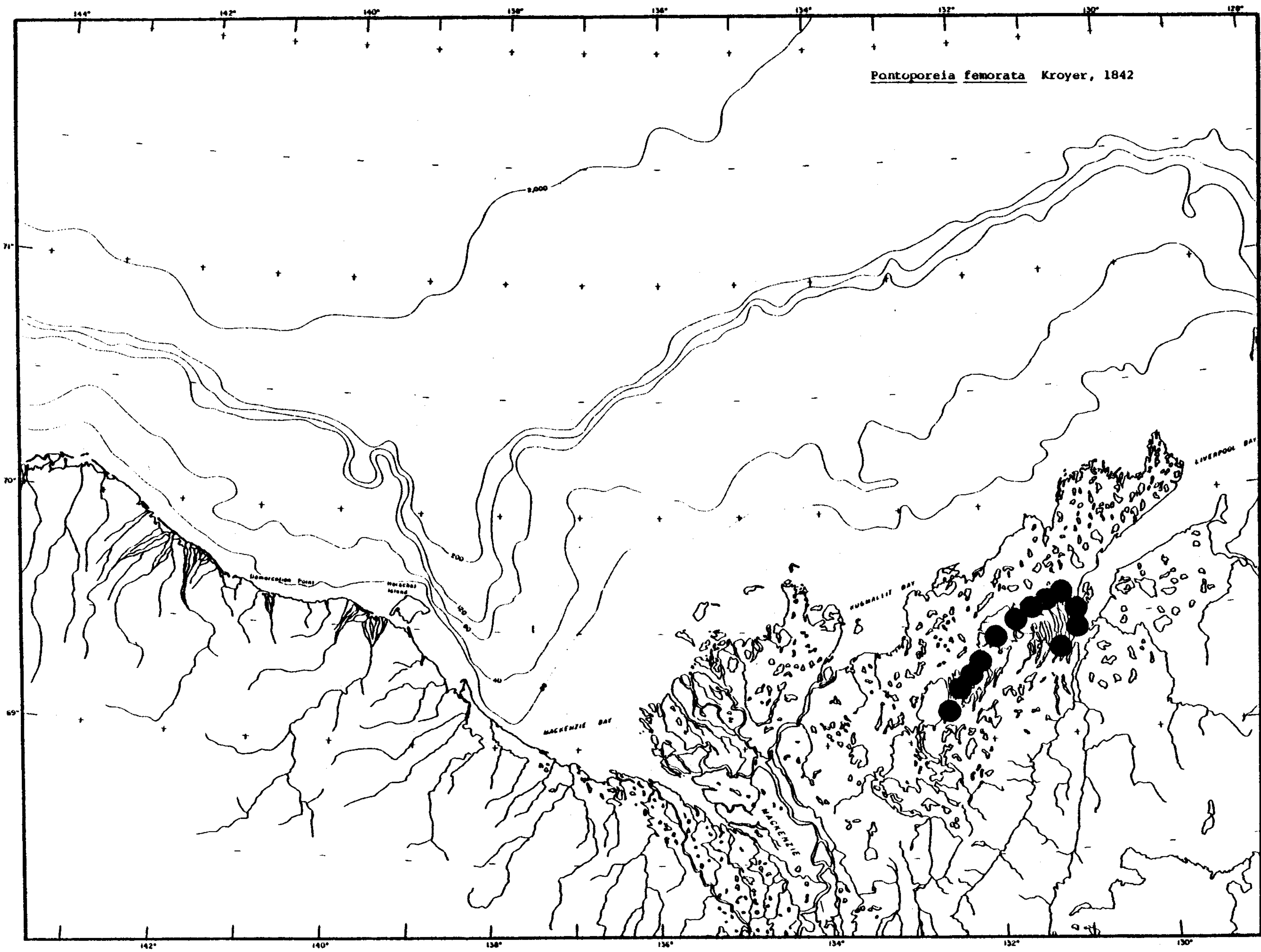
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Pontoporeia affinis (Lindstrom, 1855)
MACKENZIE BAY
LIVERPOOL BAY
MACKENZIE



Pontoporeia femorata Kröyer, 1842


Pontoporeia femorata Kroyer, 1842
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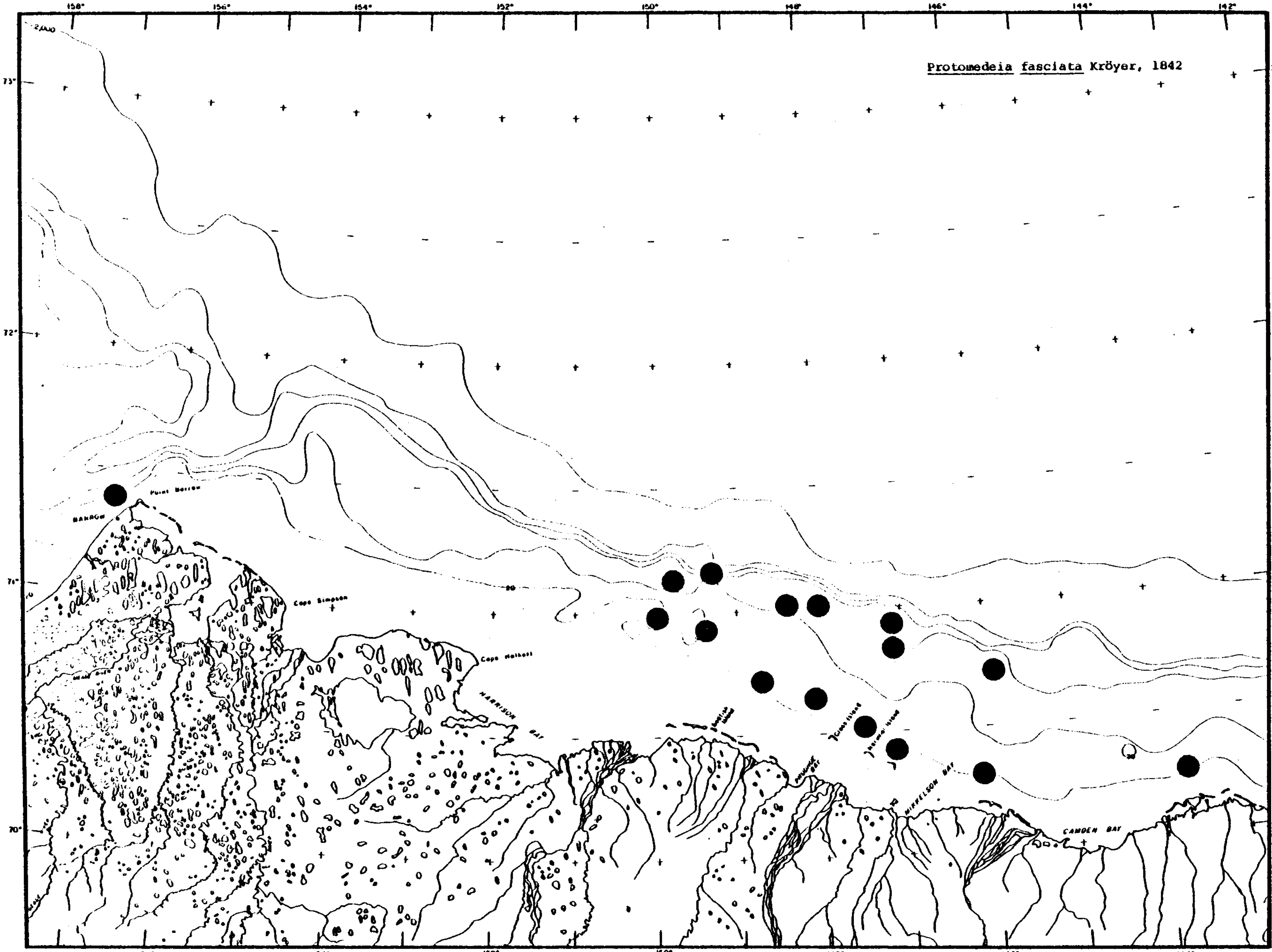
LIVERPOOL BAY
KUGMALLIT BAY
MACKENZIE BAY
MACKENZIE


Protomedeia fasciata Kröyer, 1842
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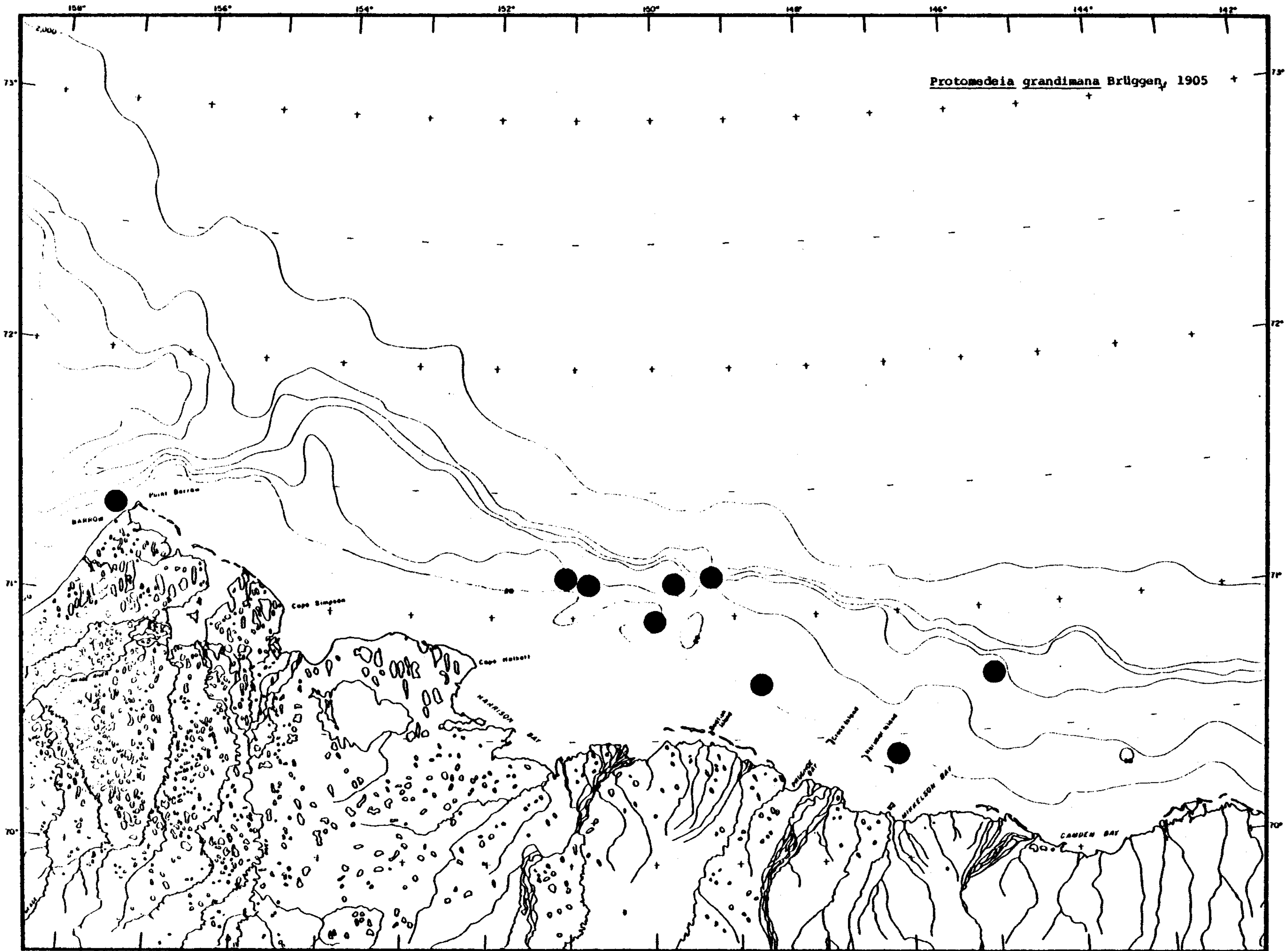
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Protomedeia grandimana Brüggen, 1905
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
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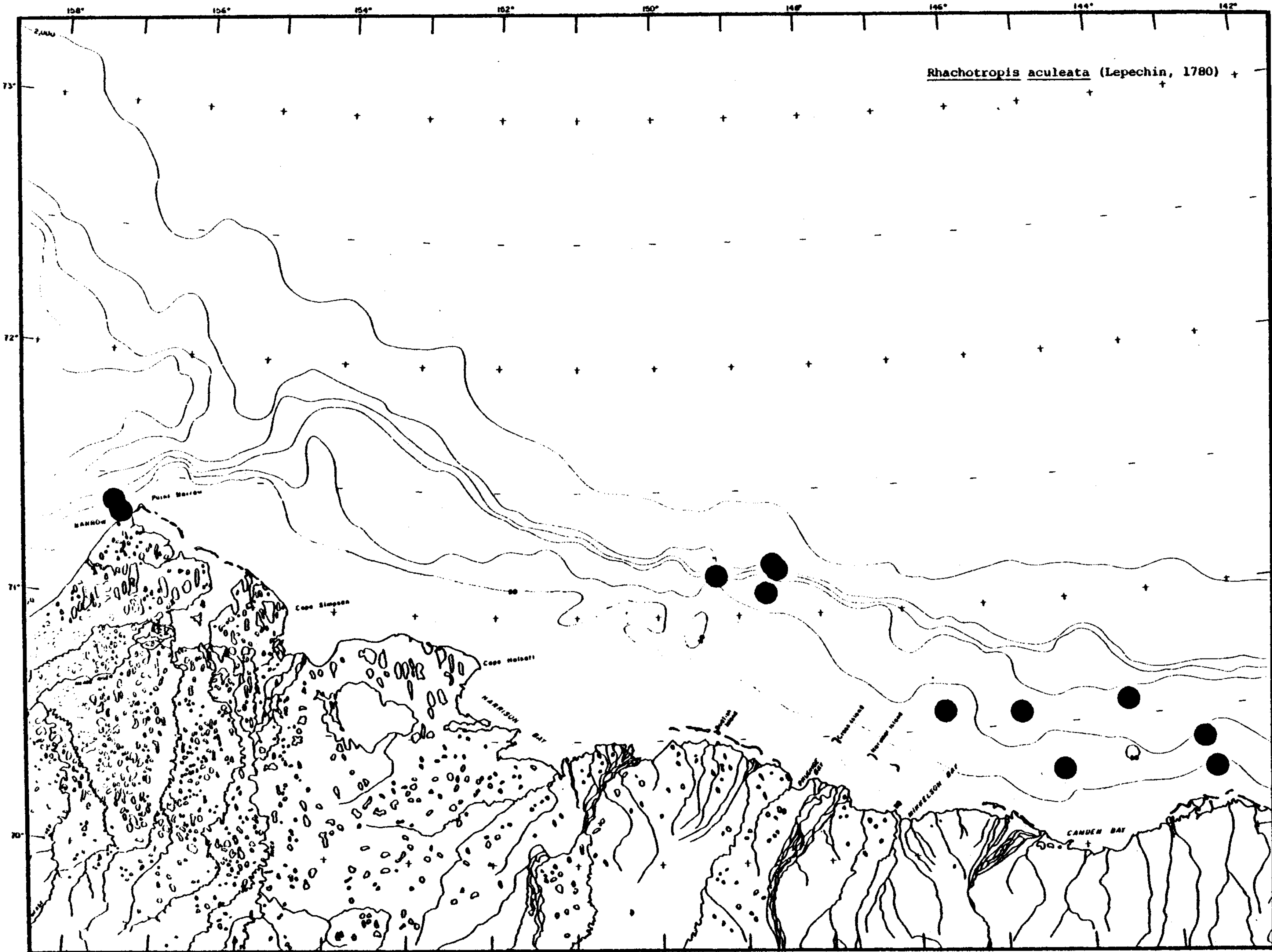
Rhachotropis aculeata (Lepechin, 1780)
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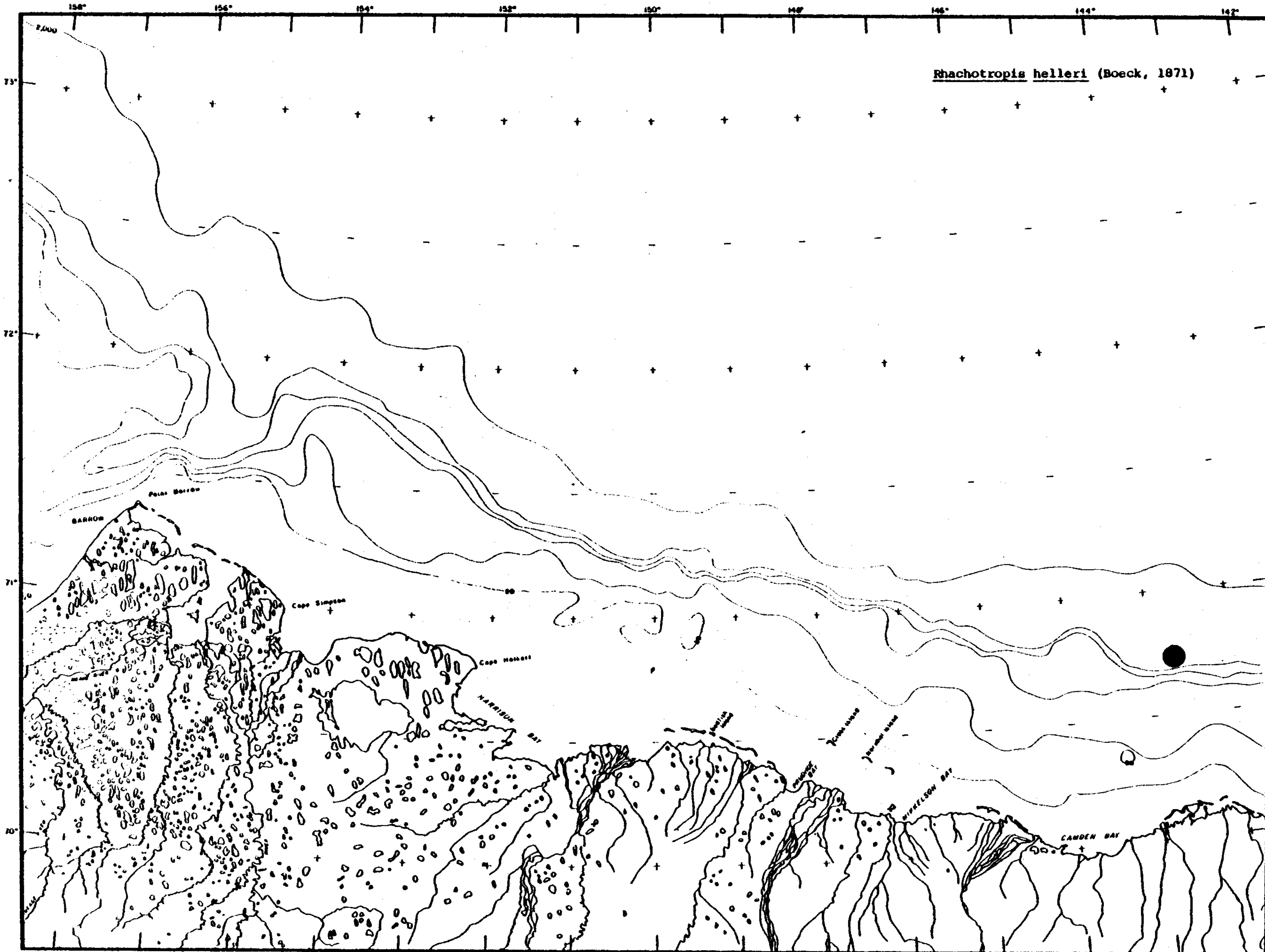
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Rhachotropis helleri (Boeck, 1871)
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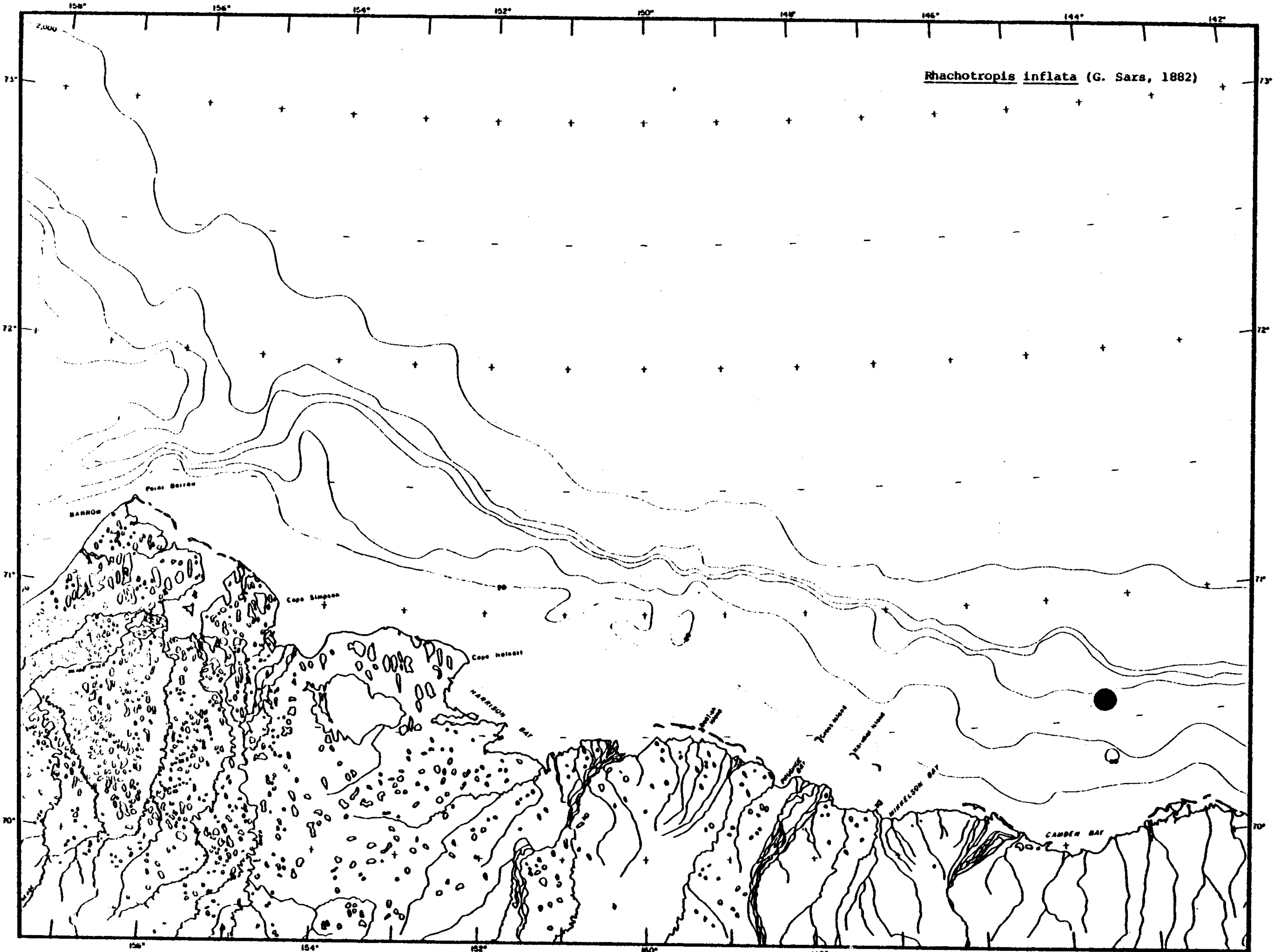
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Rhachotropis inflata (G. Sars, 1882)
158°
156°
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150°
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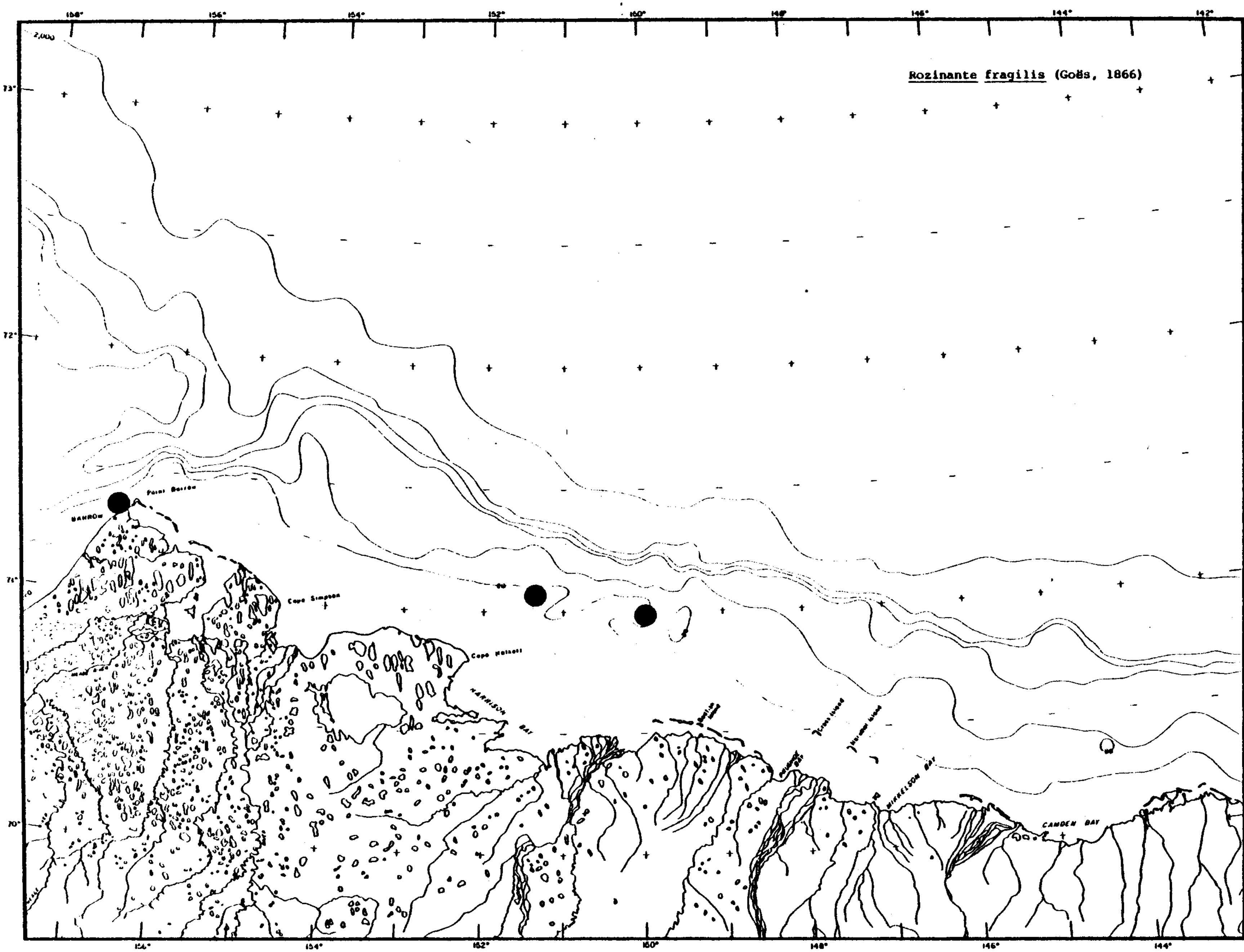
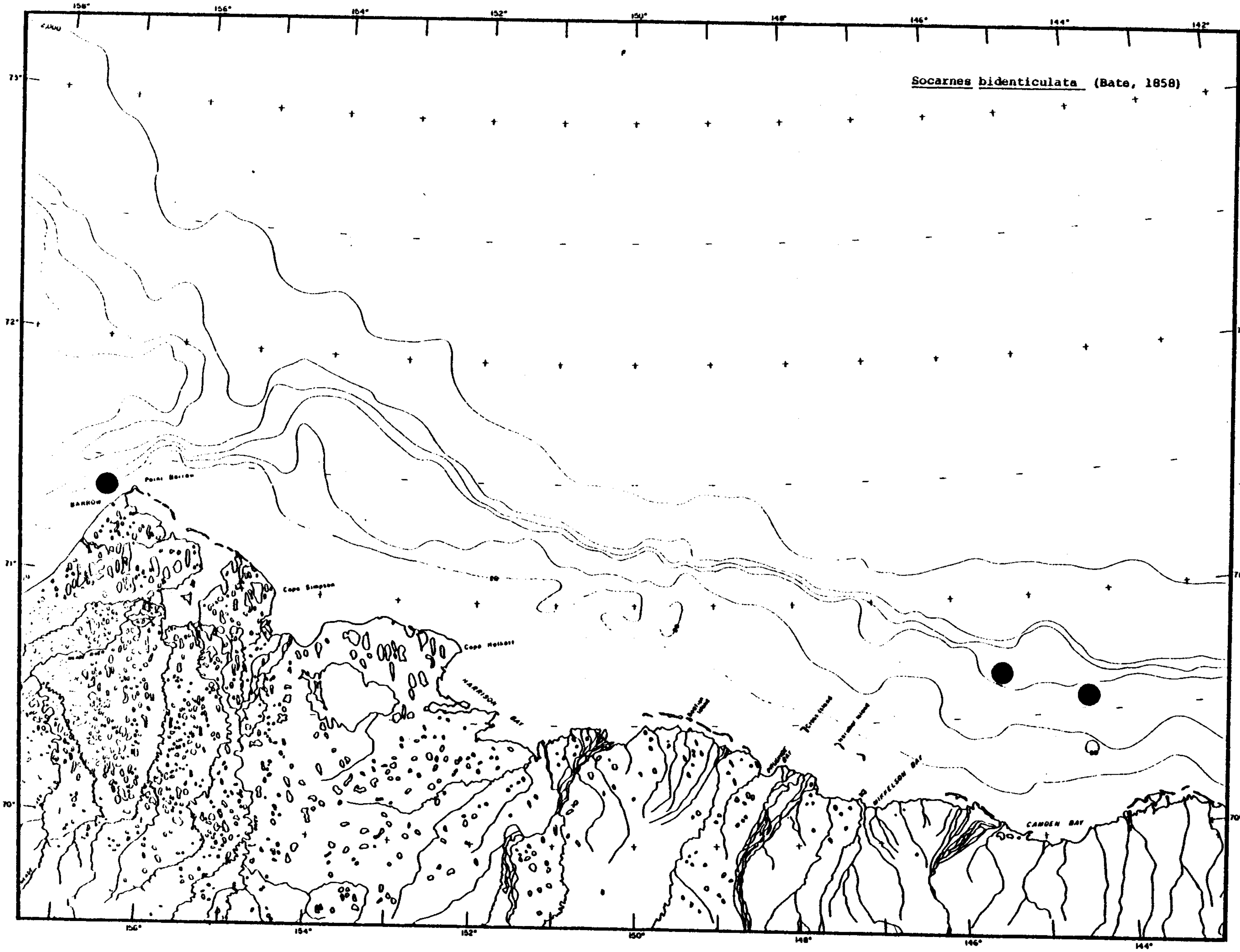
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

362


Rozinante fragilis (Goës, 1866)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

202


Socarnes bidenticulata (Bate, 1858)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
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154°
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150°
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144°
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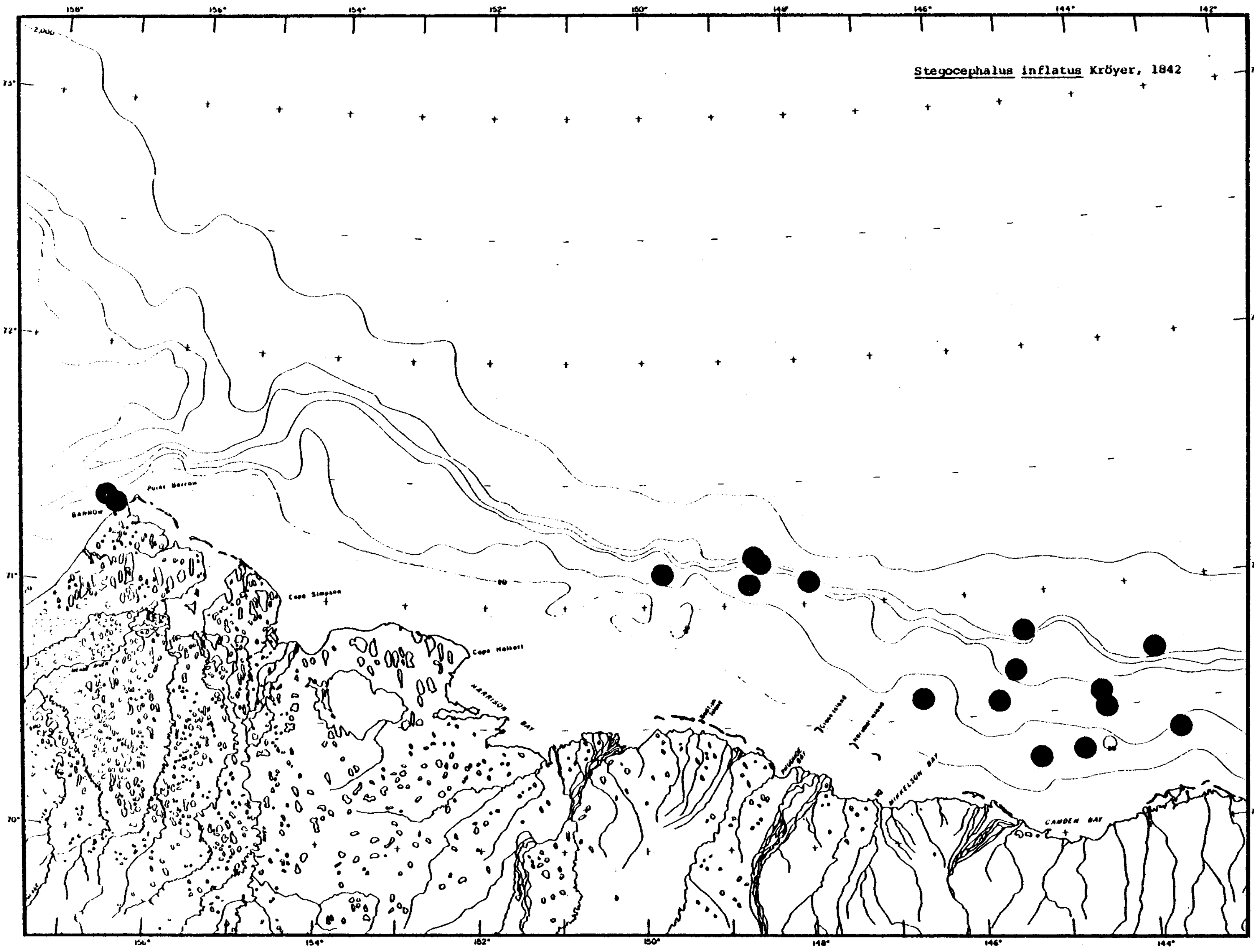
Stegocephalus inflatus Kröyer, 1842
158°
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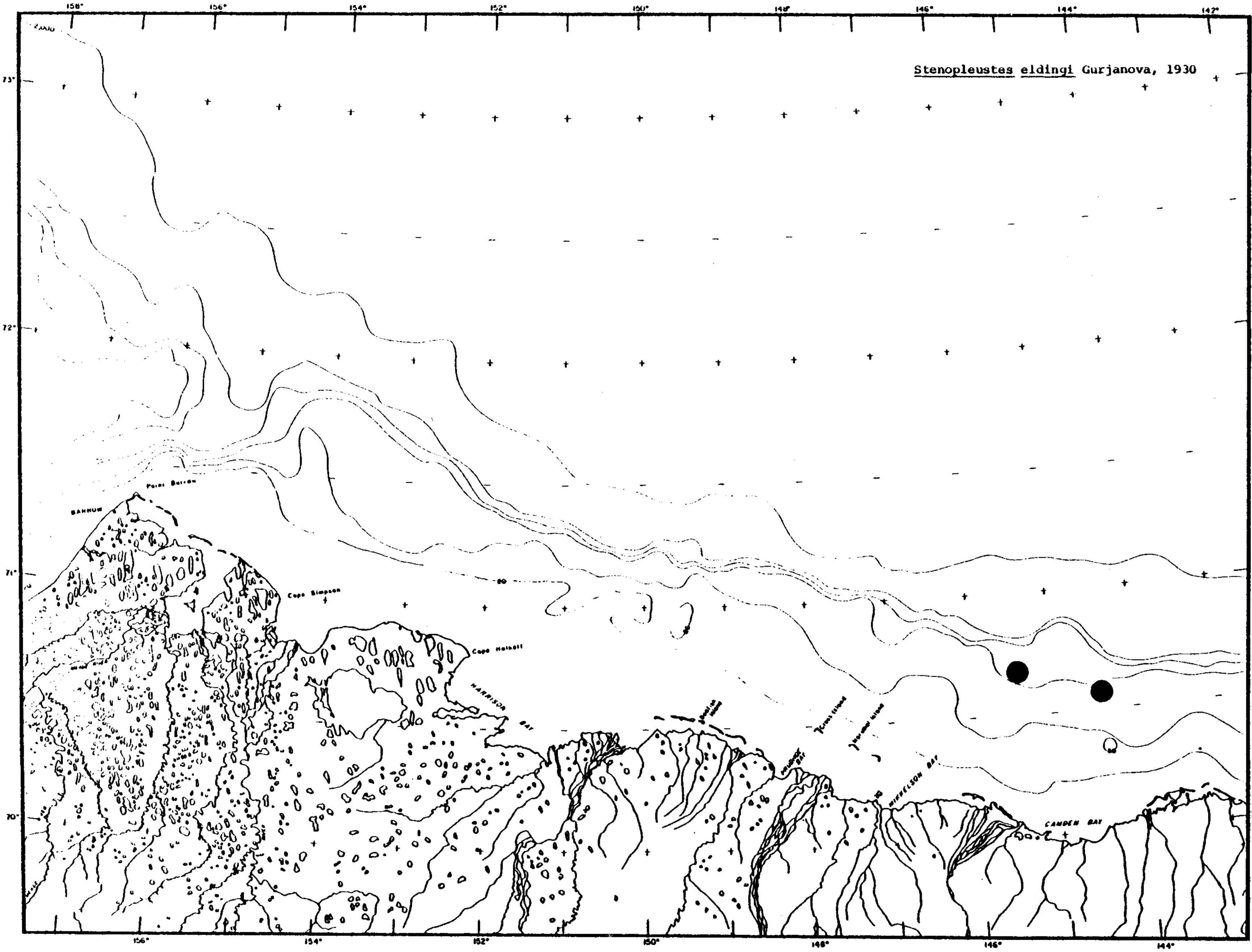
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Stenopleustes eldingi Gurjanova, 1930
158°
156°
154°
152°
150°
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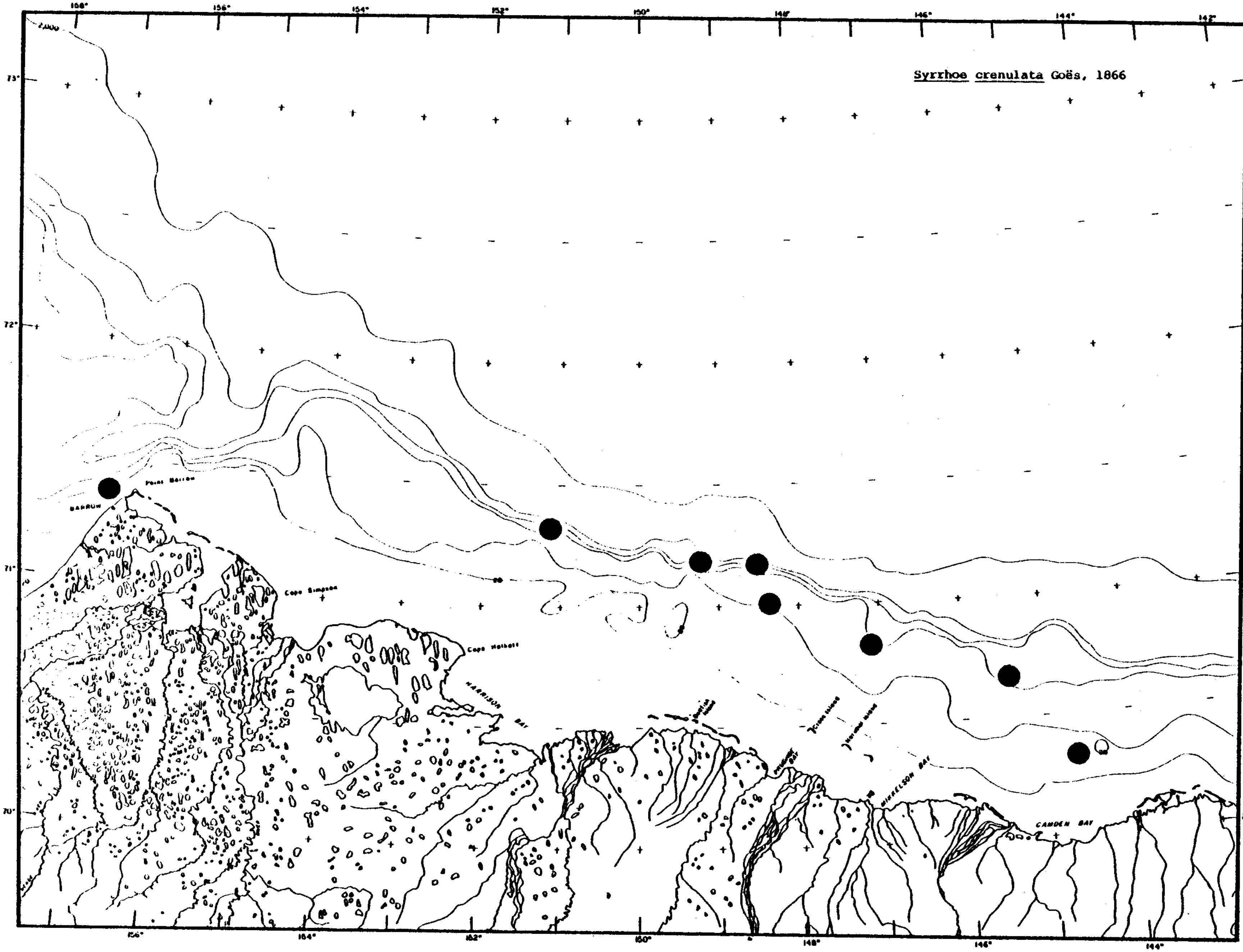
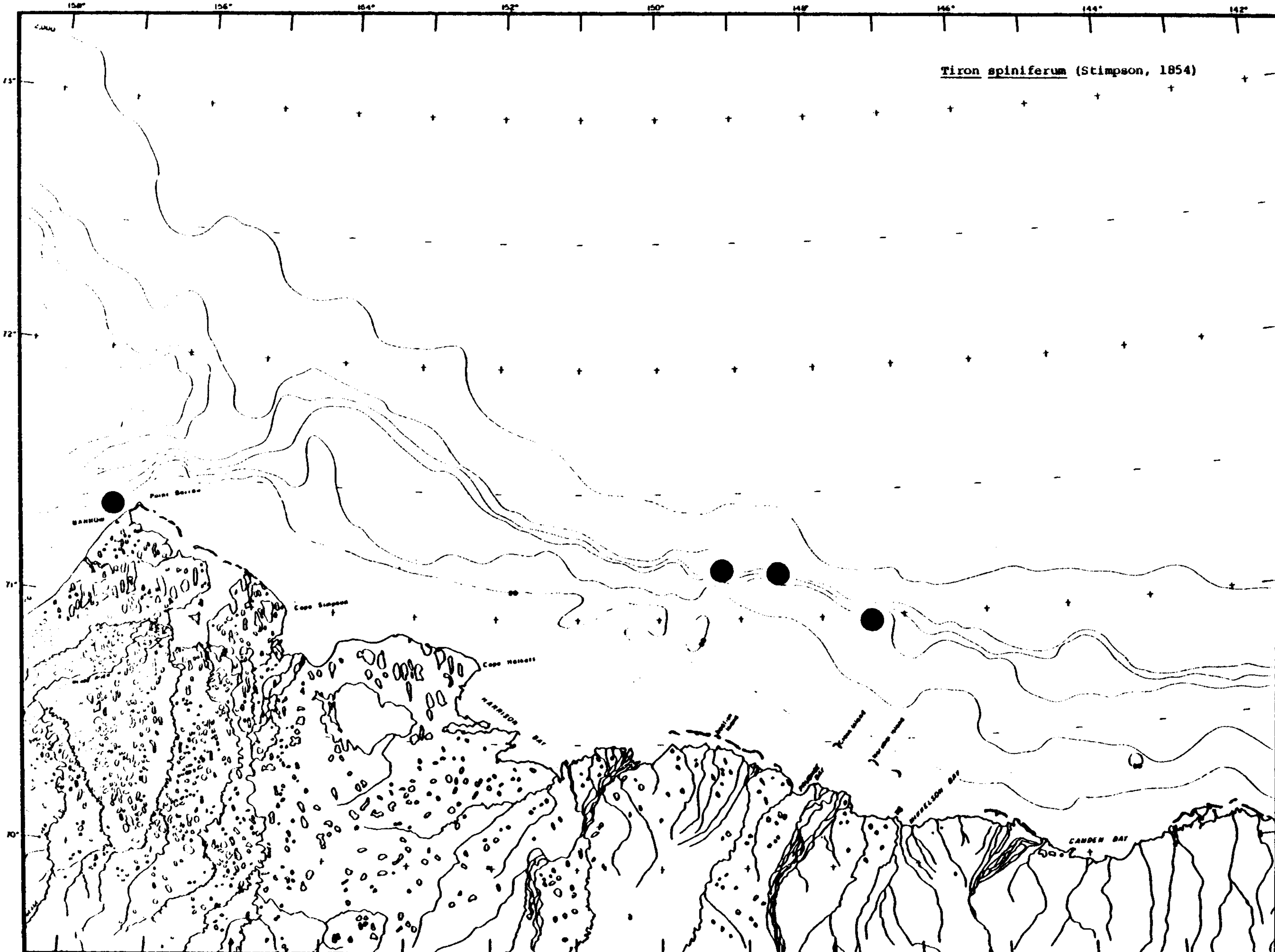
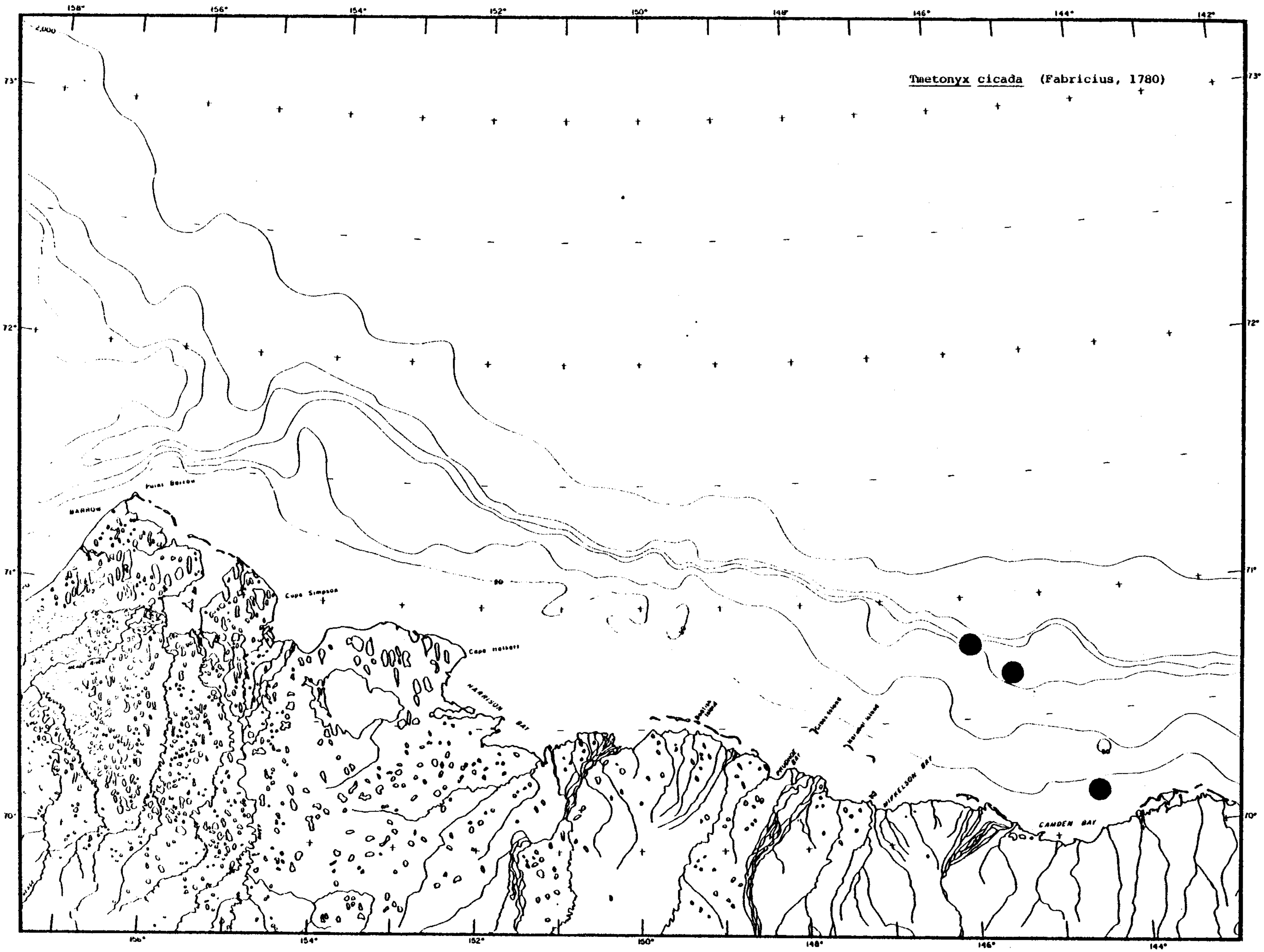
72°
71°
70°
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY



Syrrhoe crenulata Goës, 1866


Tiron spiniferum (Stimpson, 1854)
Cape Halkett
HARRISON BAY
CAMDEN BAY


Tmetonyx cicada (Fabricius, 1780)
158°
156°
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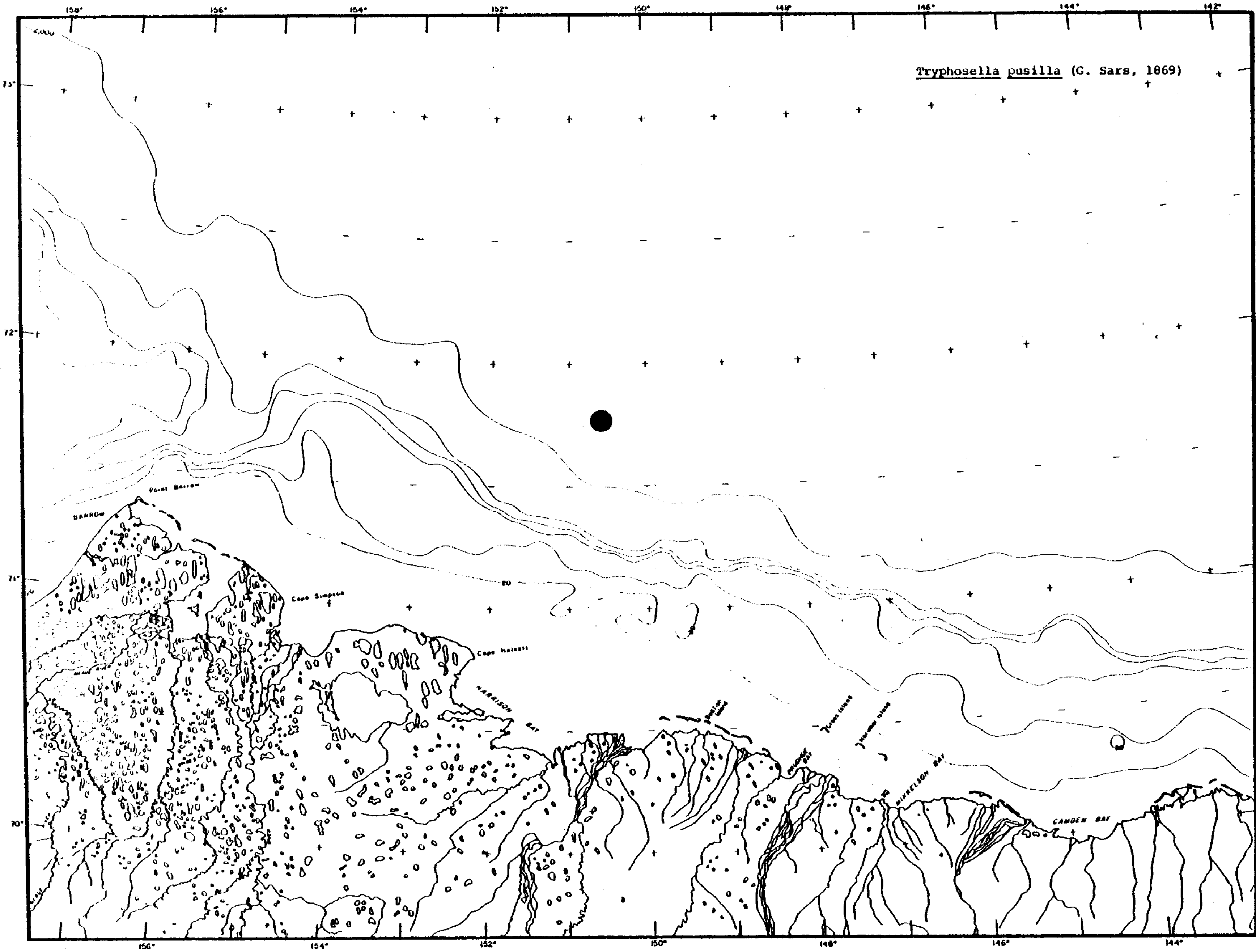
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
PRUDHOE BAY
MIKKELSON BAY
CAMDEN BAY


Tryphosella pusilla (G. Sars, 1869)
158°
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Point Barrow
BARROW
Cape Simpson
Cape Halkett
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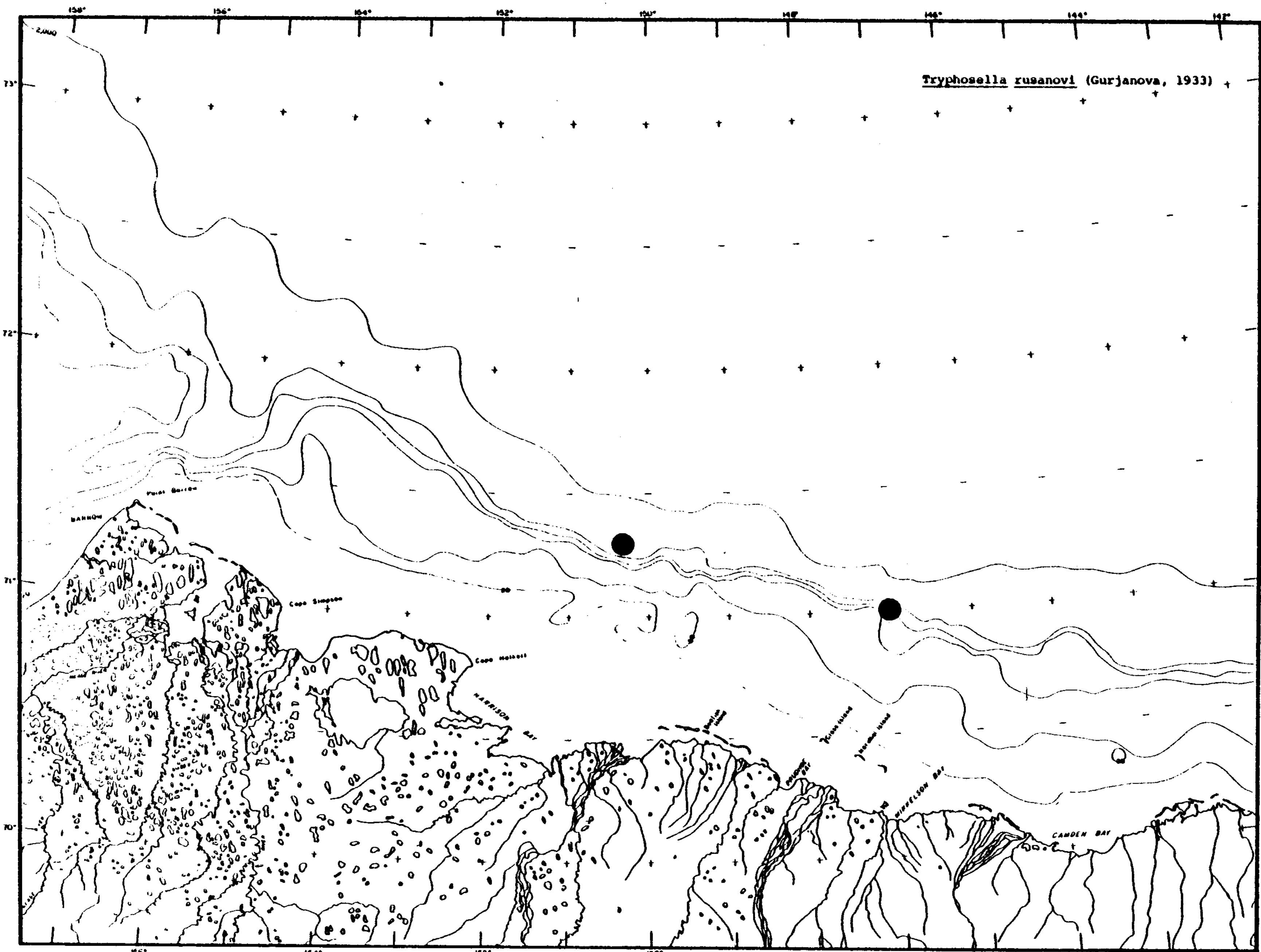
MIKKELSON BAY
CAMDEN BAY


Tryphosella rusanovi (Gurjanova, 1933)
HARRISON BAY
CAMDEN BAY
Cape Halkett
Cape Simpson
Point Barrow
BARROW
150°
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154°
156°
148°
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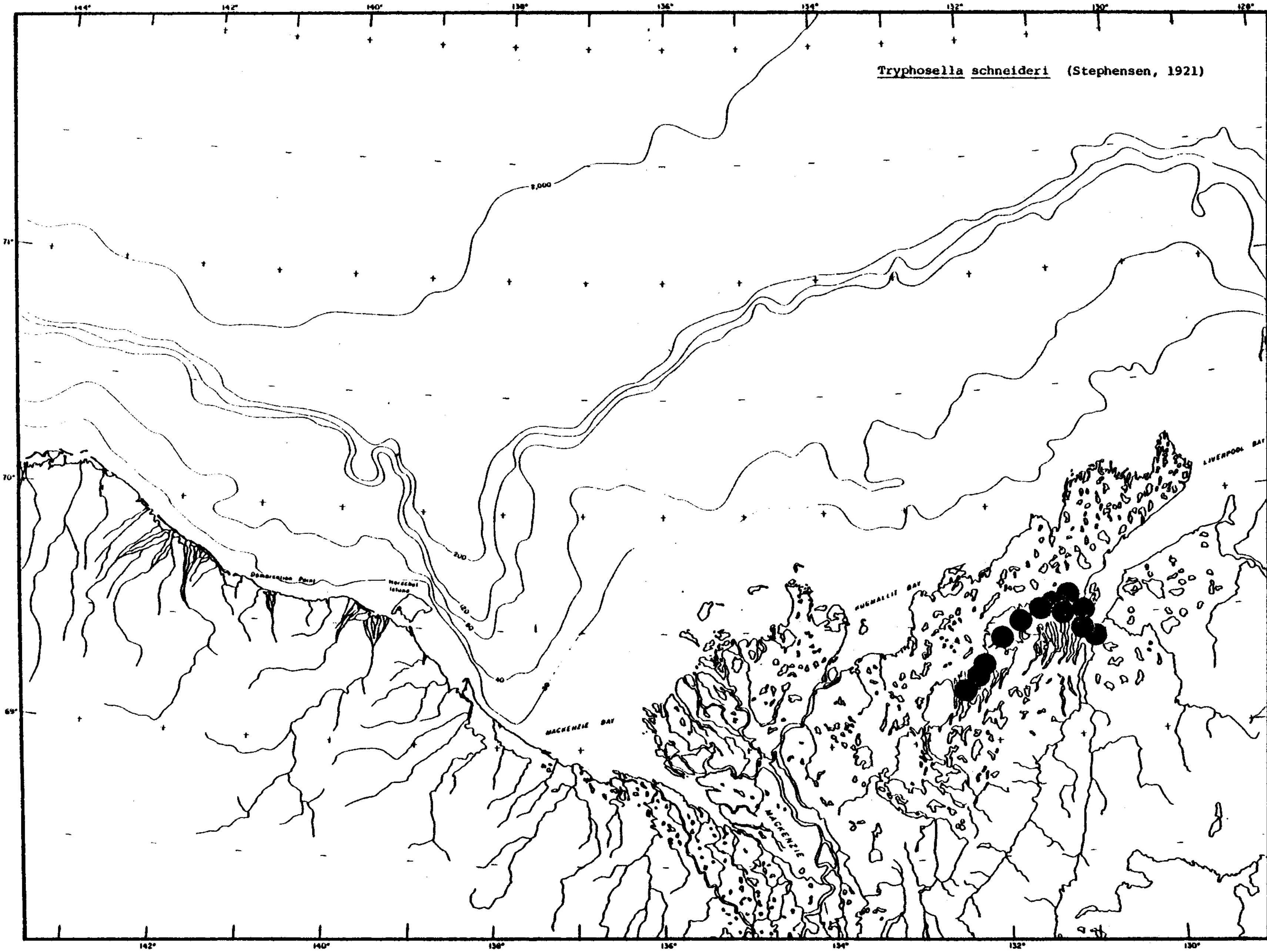
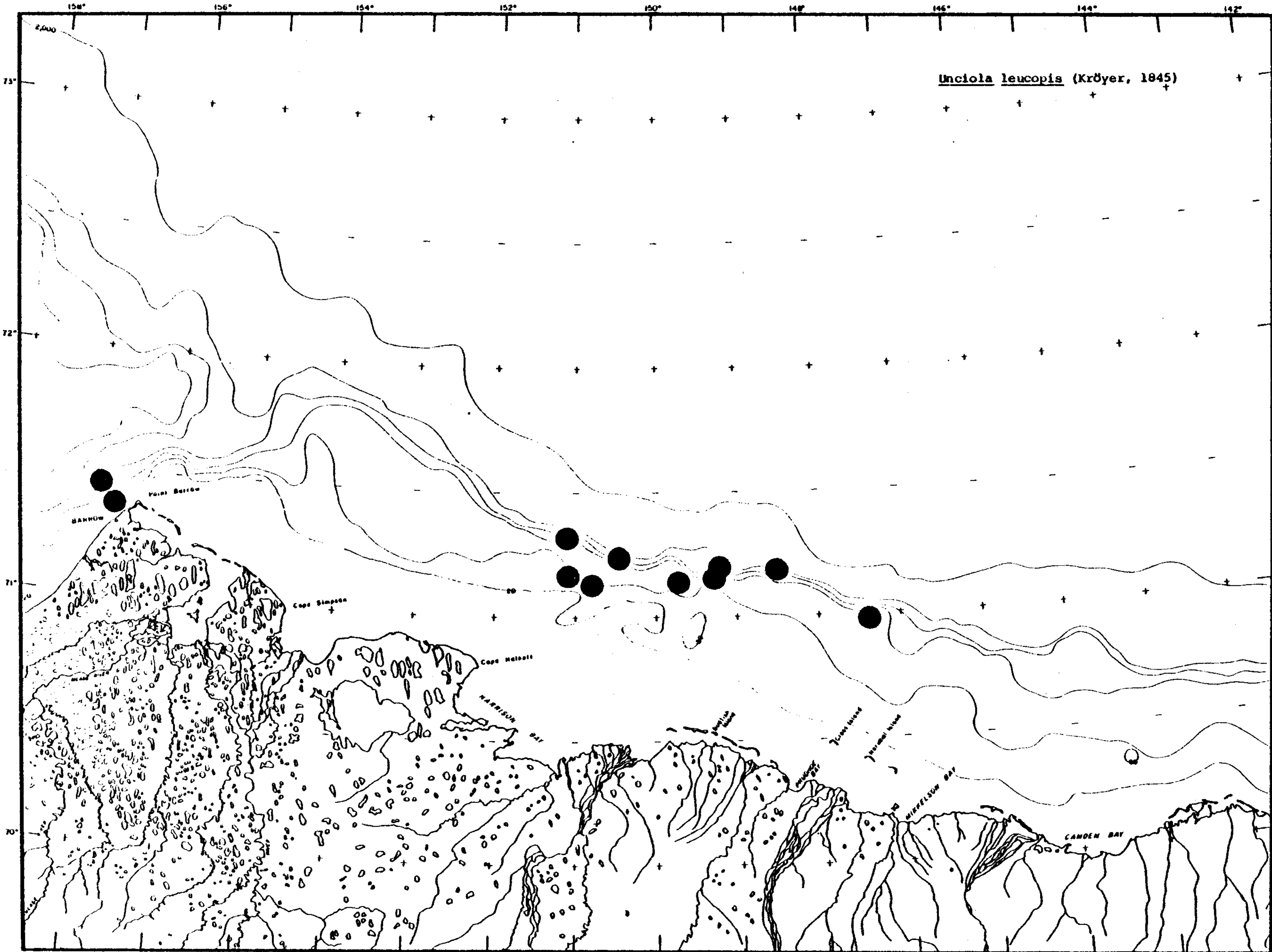


Tryphosella schneideri (Stephensen, 1921)


Unciola leucopis (Kröyer, 1845)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
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156°
154°
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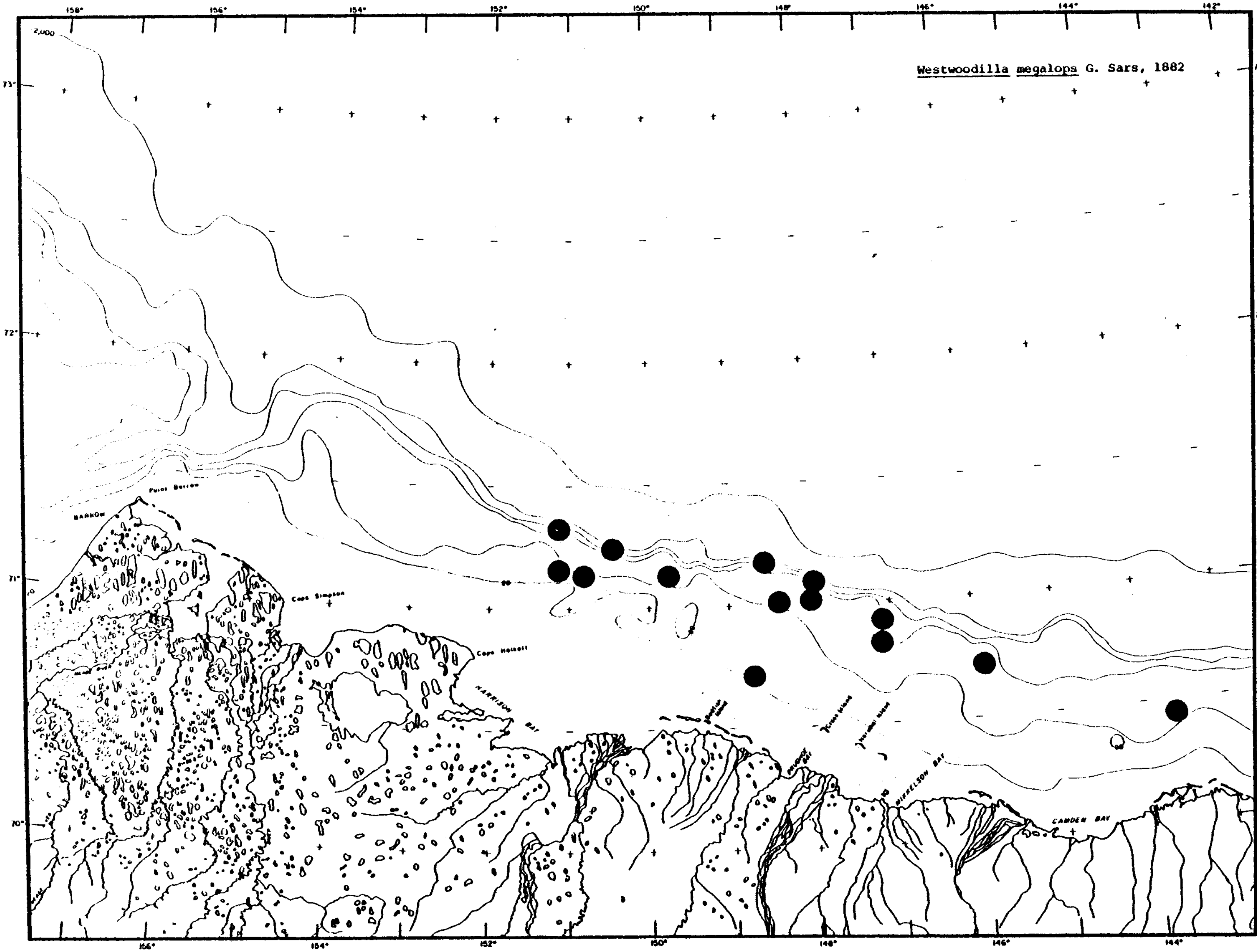
Westwoodilla megalops G. Sars, 1882
BARROW
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
73°
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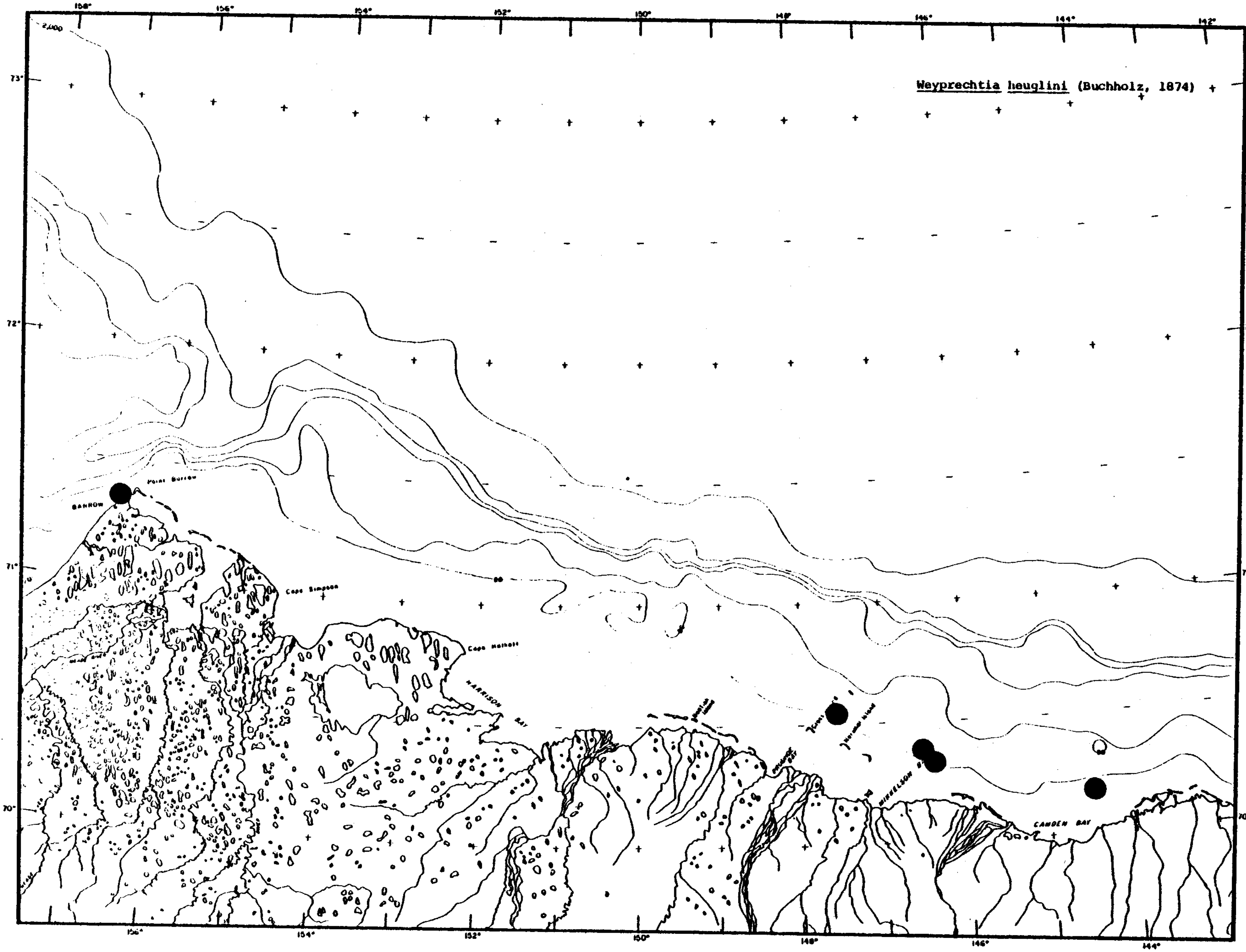
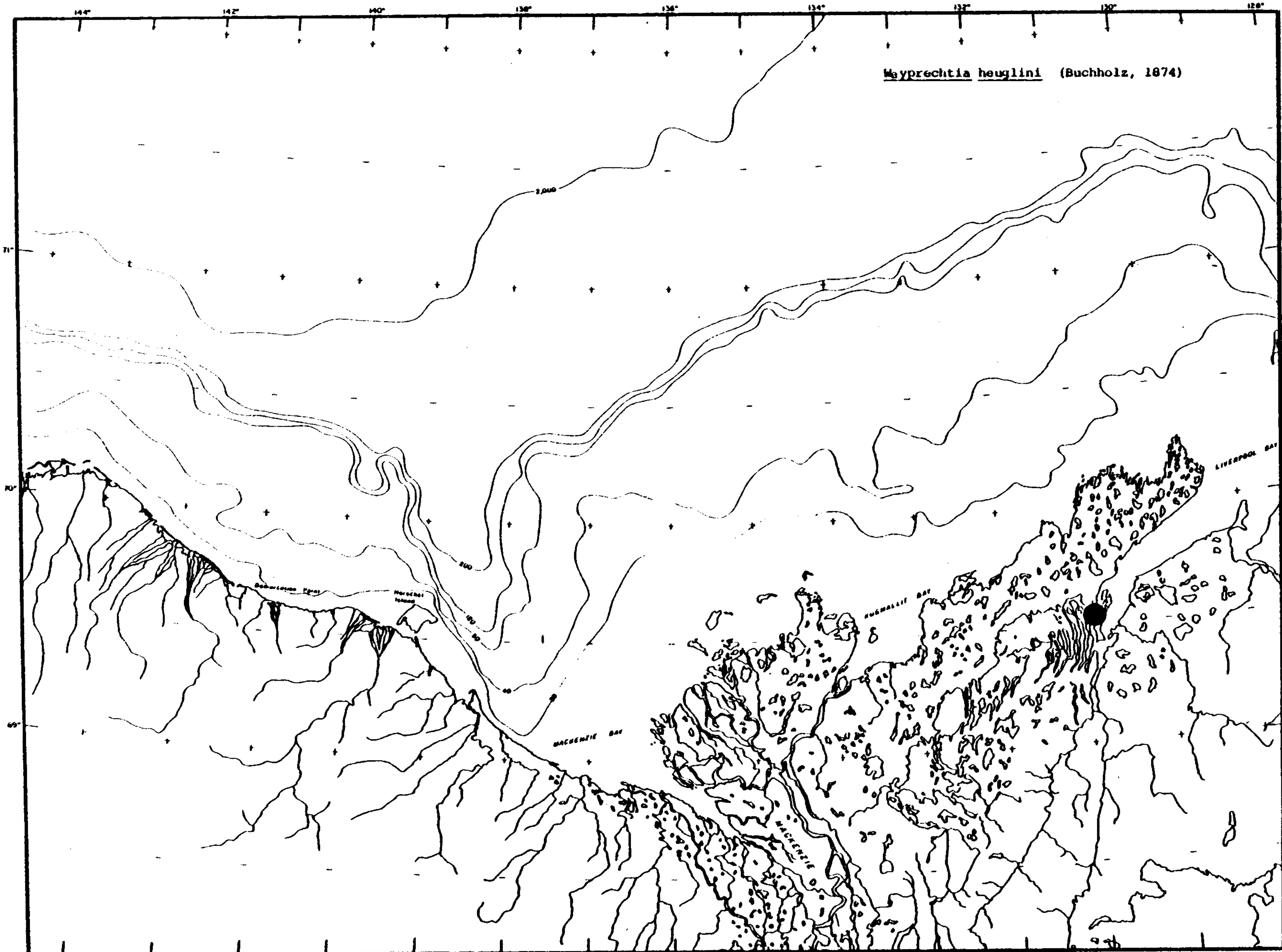
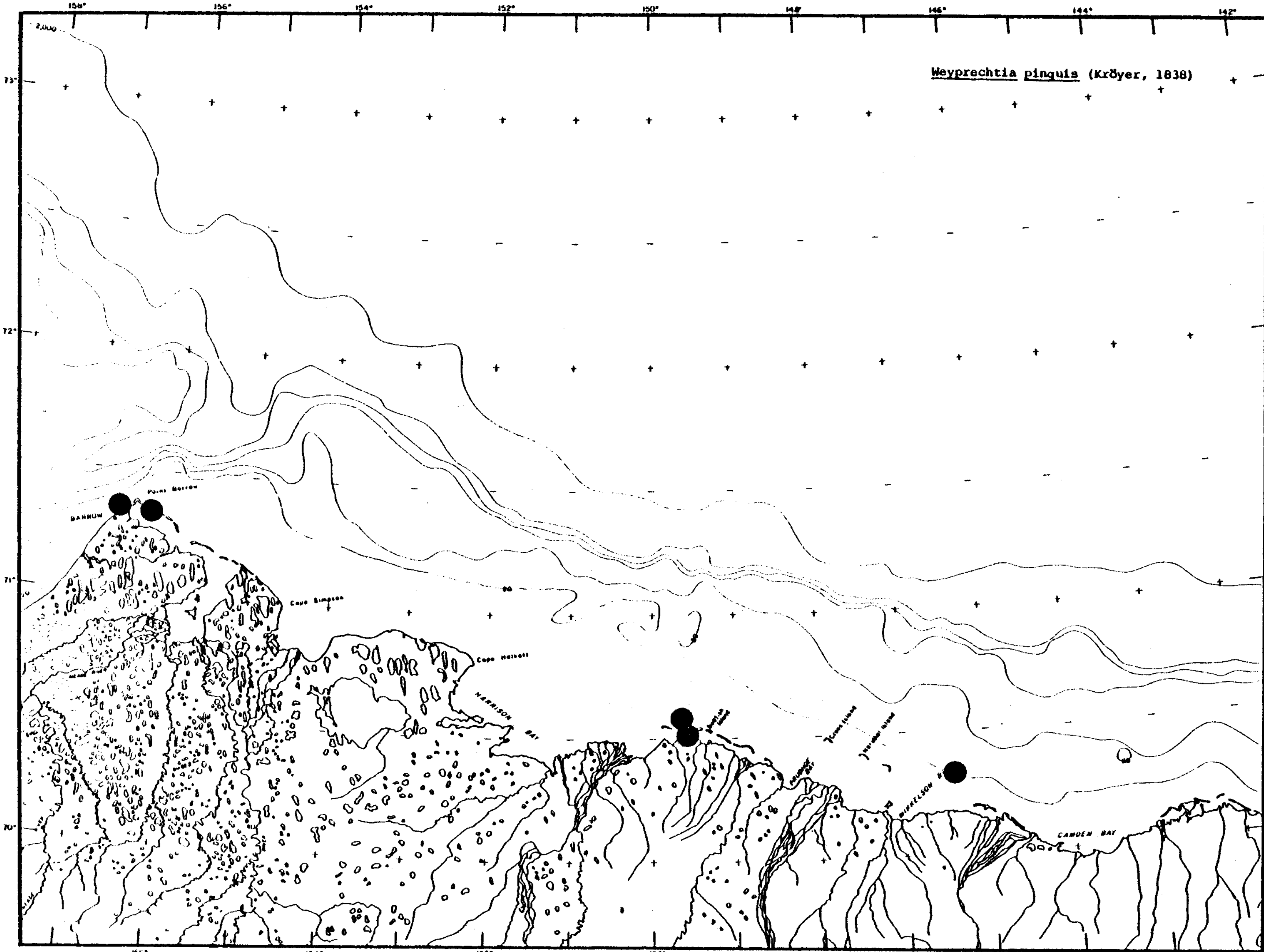

Weyprechtia heuglini (Buchholz, 1874)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
2,000
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Wayprechtia heuglini (Buchholz, 1874)
144°
142°
140°
138°
136°
134°
132°
130°
128°
71°
70°
69°
2,000
MACKENZIE BAY
LIVERPOOL BAY
MACKENZIE


Weyprechtia pinguis (Kröyer, 1838)
BARROW
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
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156°
154°
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150°
148°
146°
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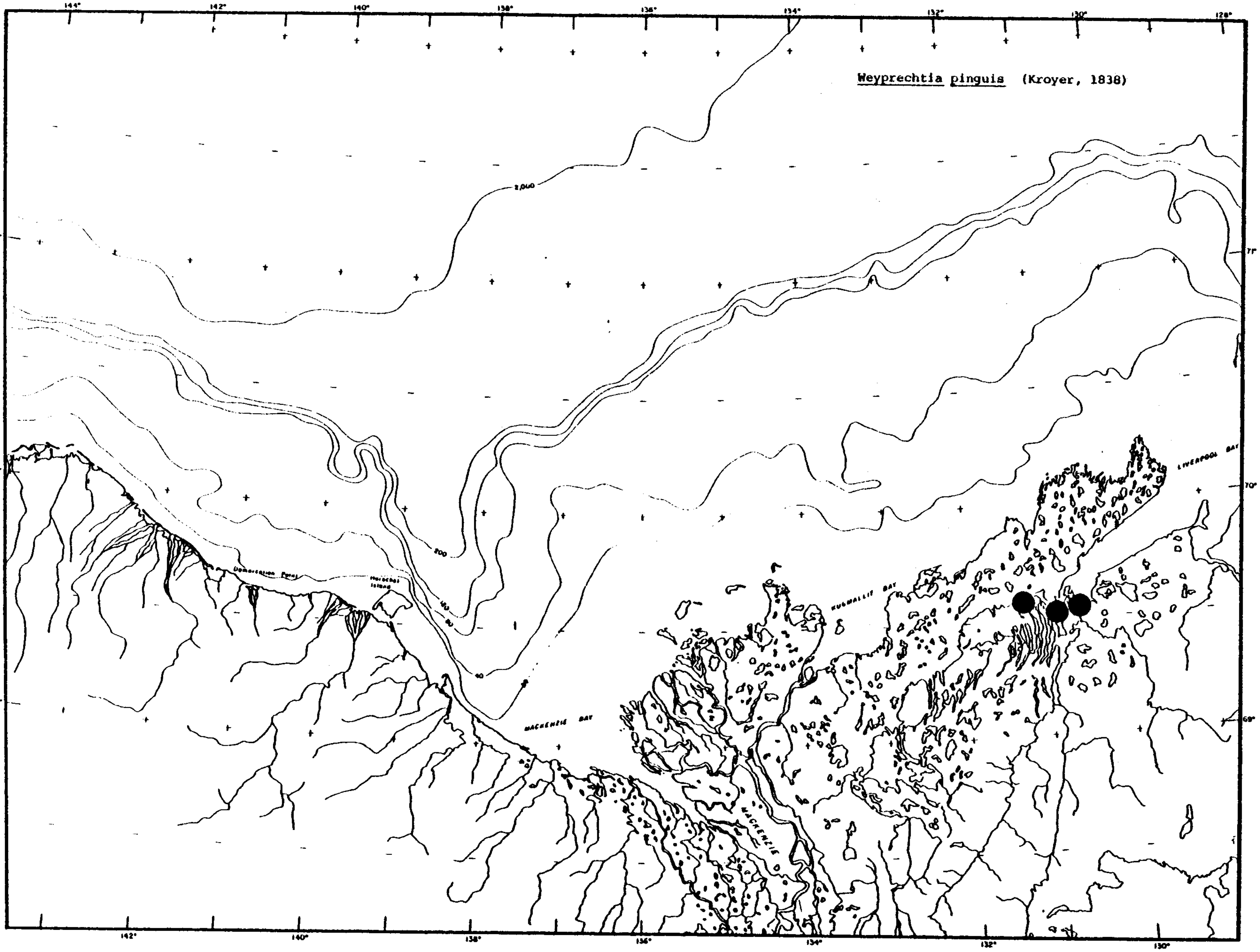
Weyprechtia pinguis (Kroyer, 1838)
2,000
200
Demarcation Point
Herschel Island
MACKENZIE BAY
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE
144°
142°
140°
138°
136°
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132°
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128°
71°
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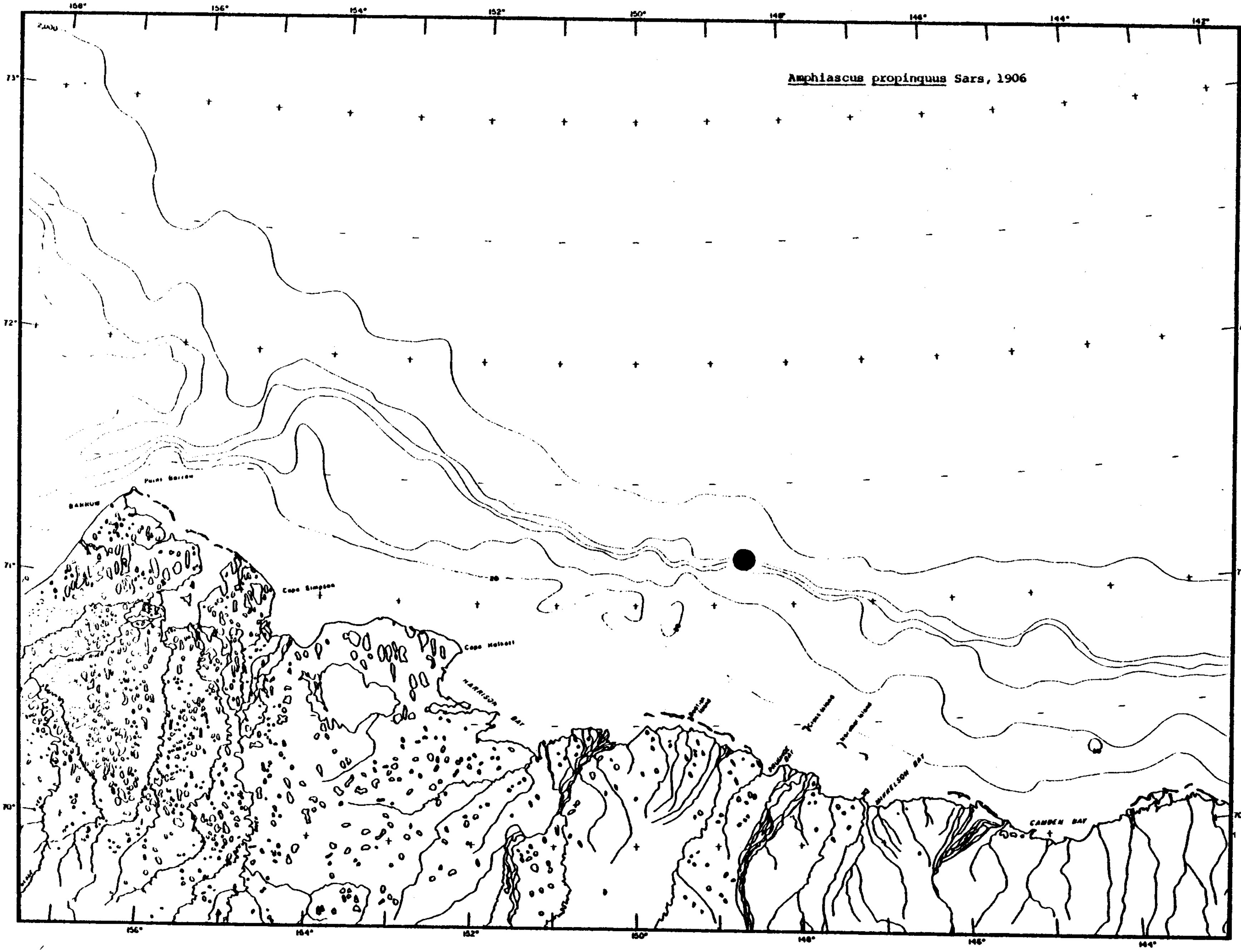
69°

Species Distributions:

Arthropoda -- Copepoda (Harpacticoida)


Amphiascus propinquus Sars, 1906
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
158°
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150°
148°
146°
144°
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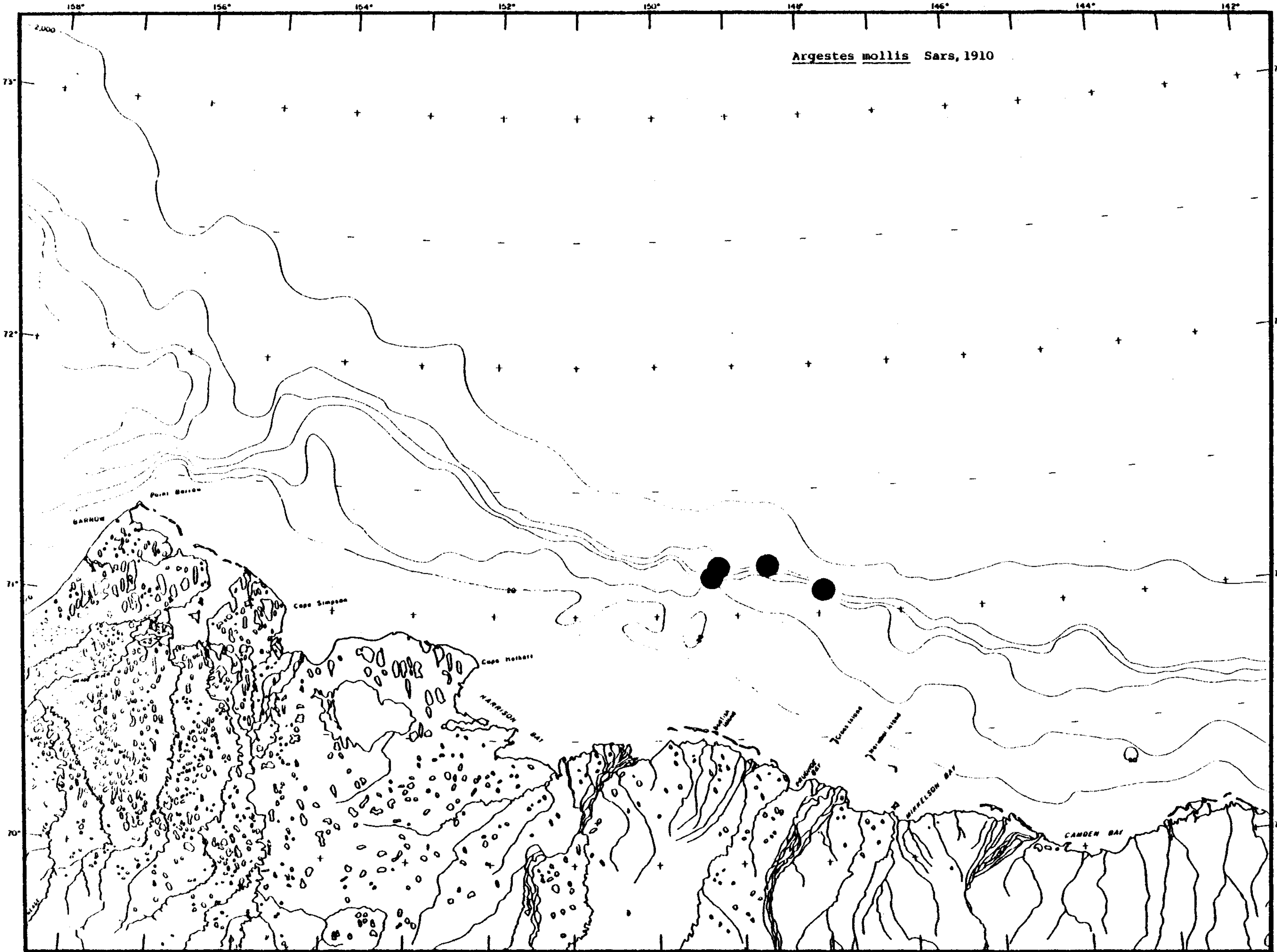
Argestes mollis Sars, 1910
158°
156°
154°
152°
150°
148°
146°
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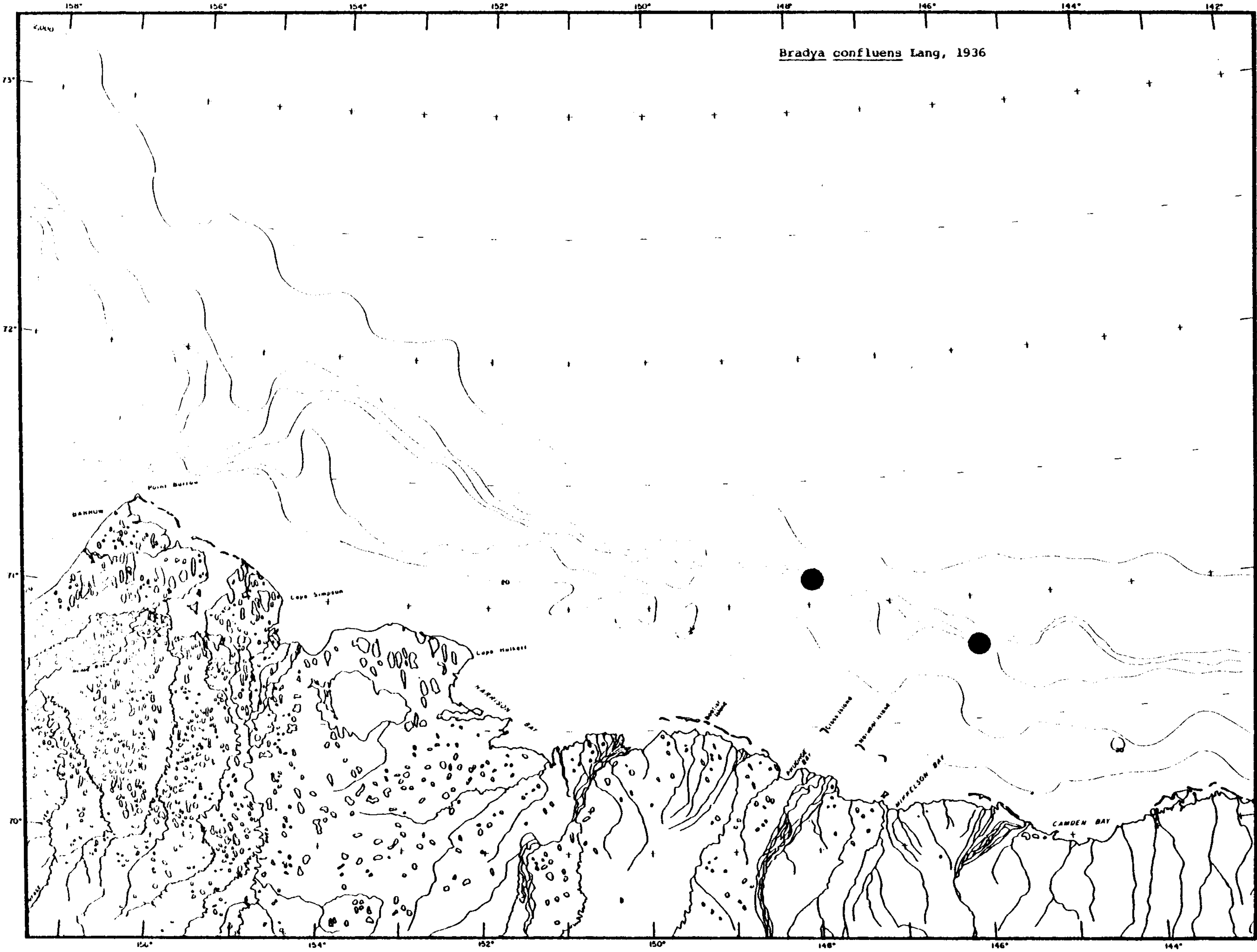
142°
73°
72°
71°
70°
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Bradya confluens Lang, 1936
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156°
154°
152°
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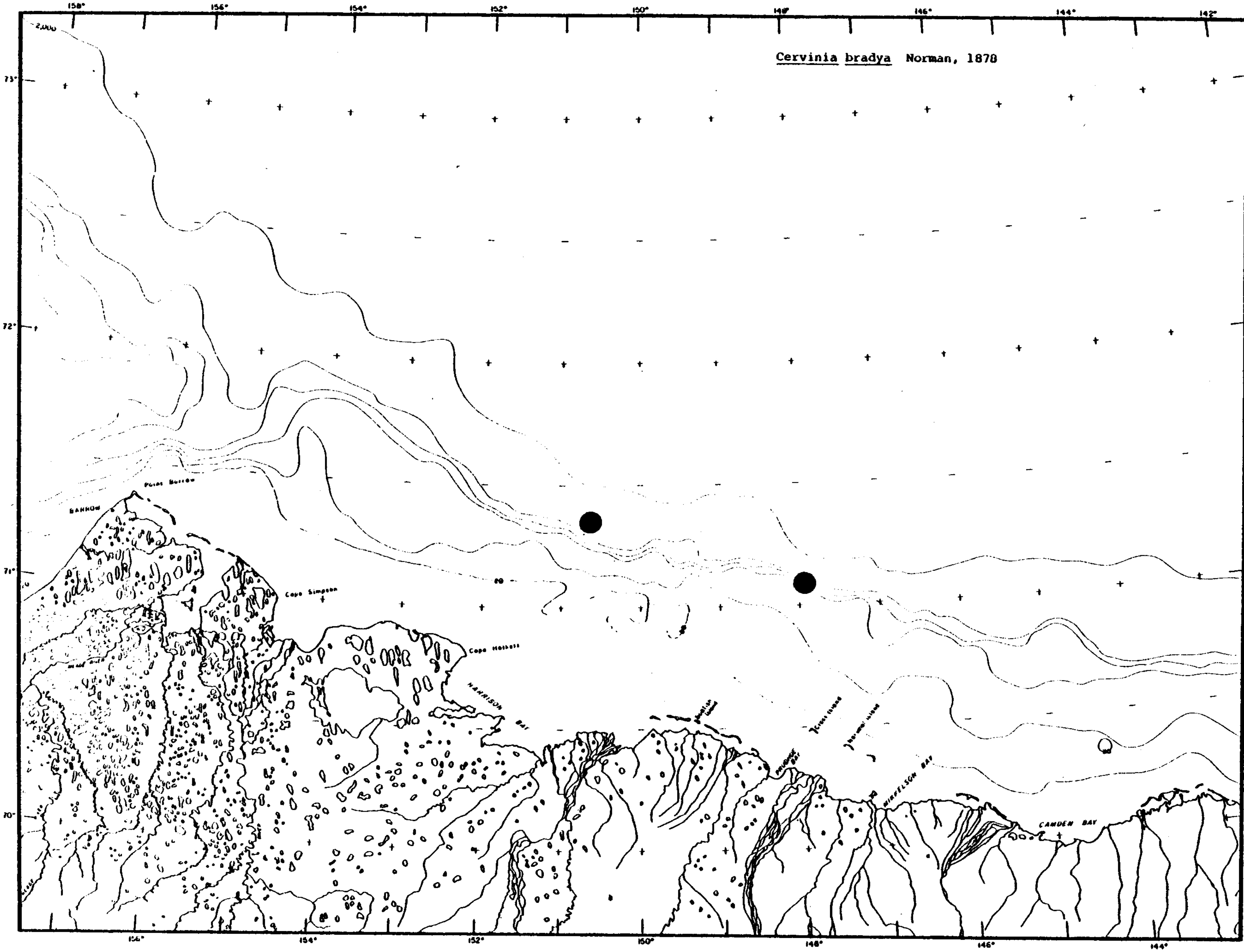
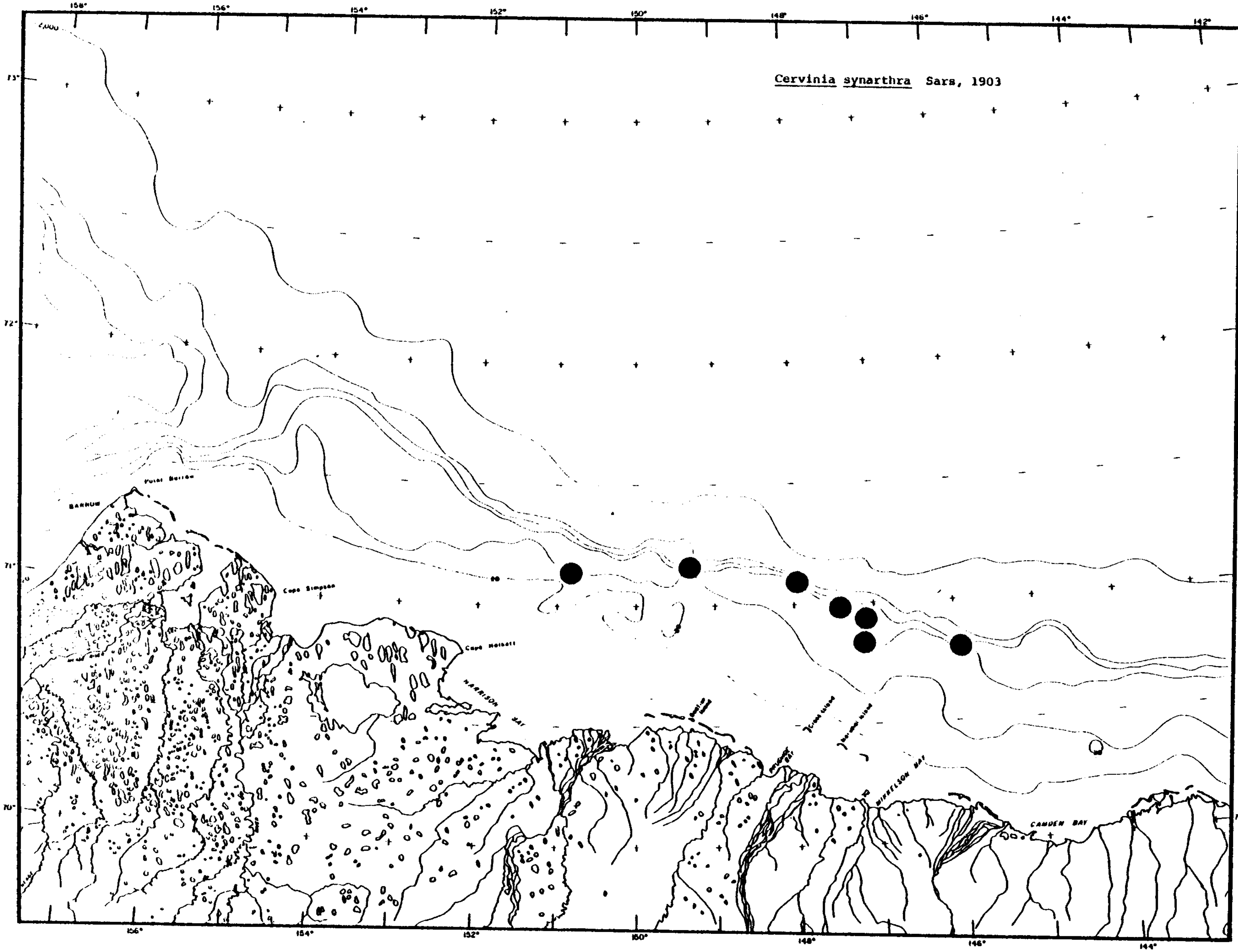
73°
72°
71°
70°
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Cervinia bradya Norman, 1878
CAMDEN BAY
HARRISON BAY


Cervinia synarthra Sars, 1903
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
73°
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158°
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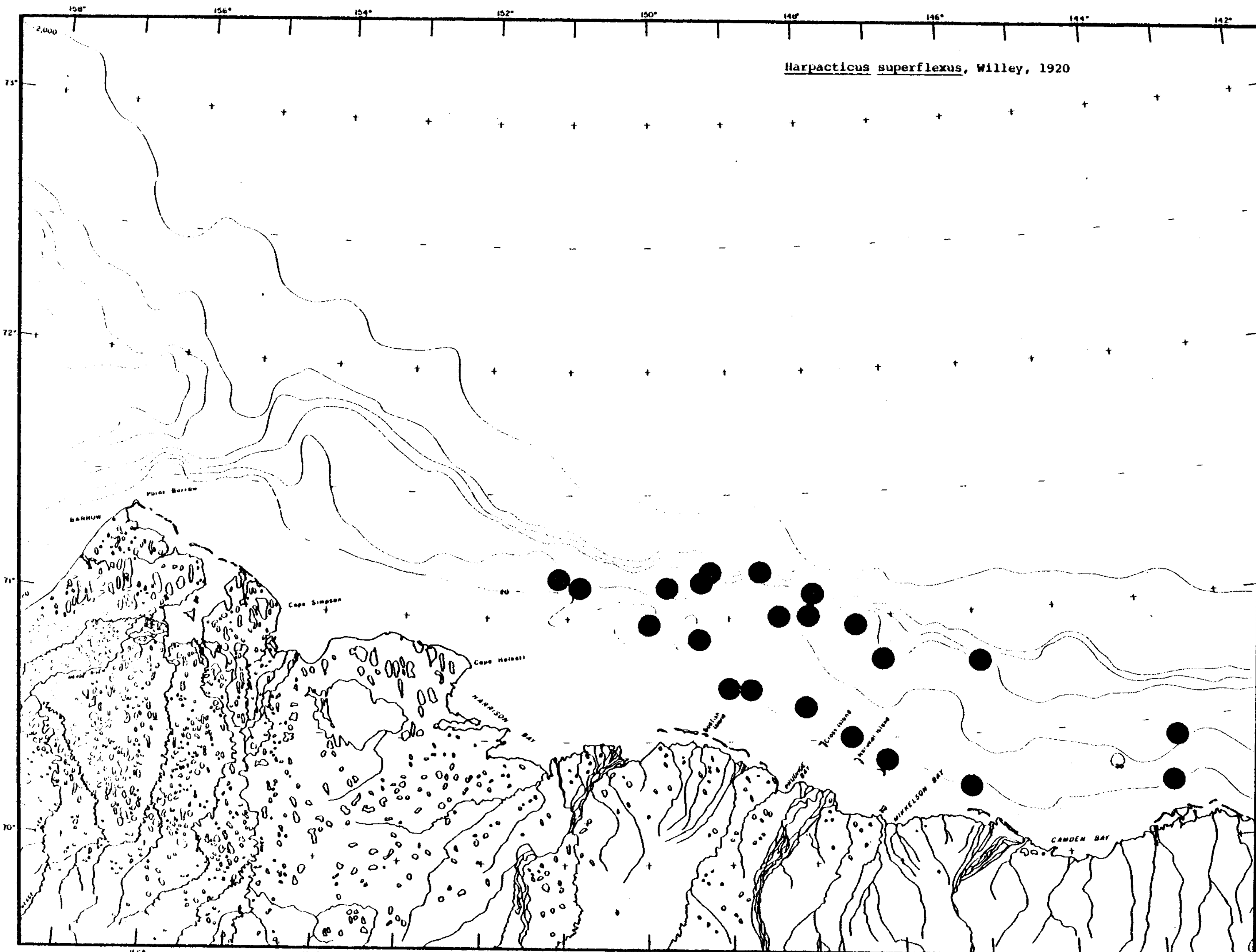
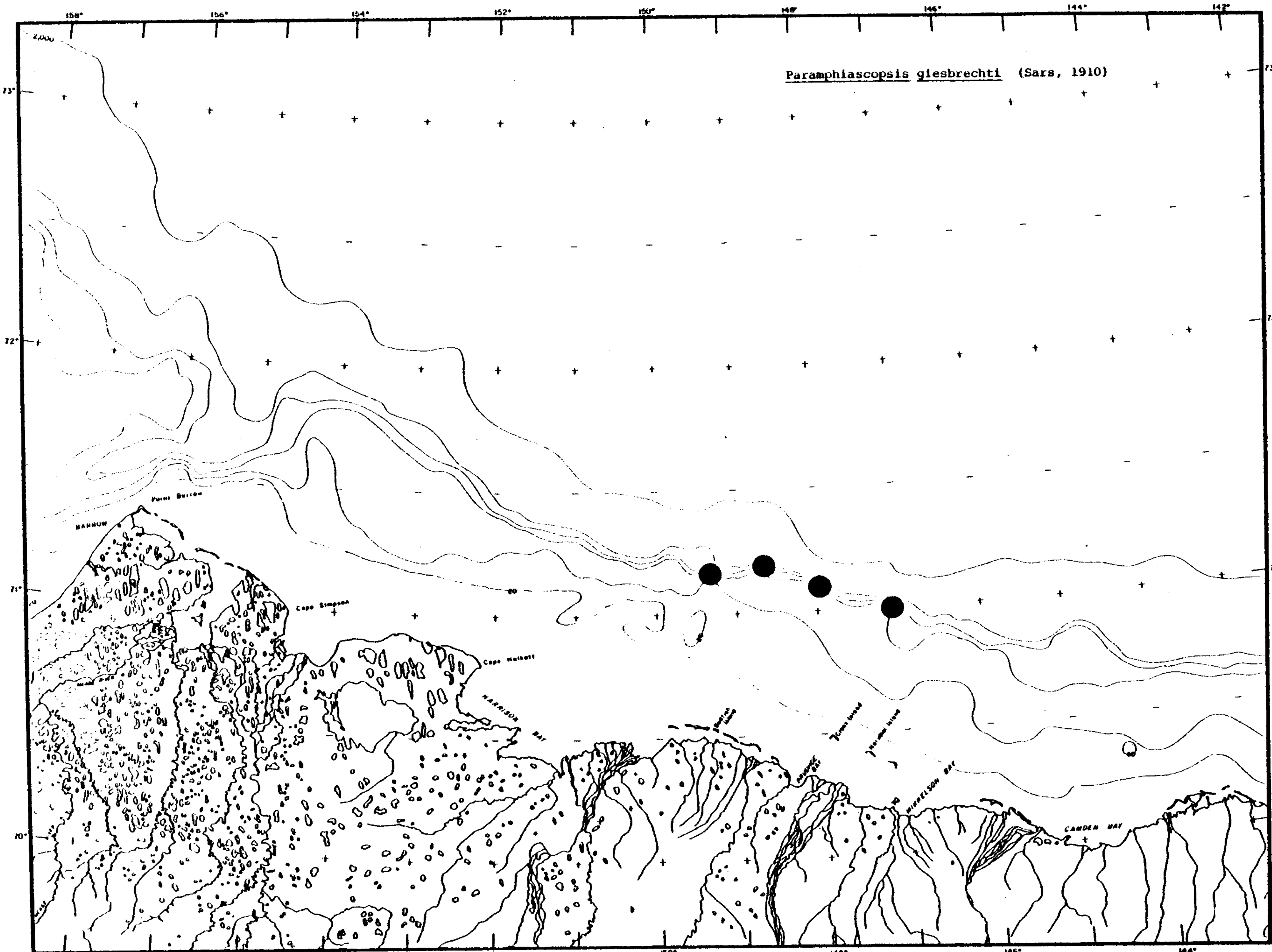

Harpacticus superflexus, Willey, 1920
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Prudhoe Bay
Mikkelson Bay
Camden Bay


Paramphiascopsis giesbrechti (Sars, 1910)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
73°
72°
71°
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158°
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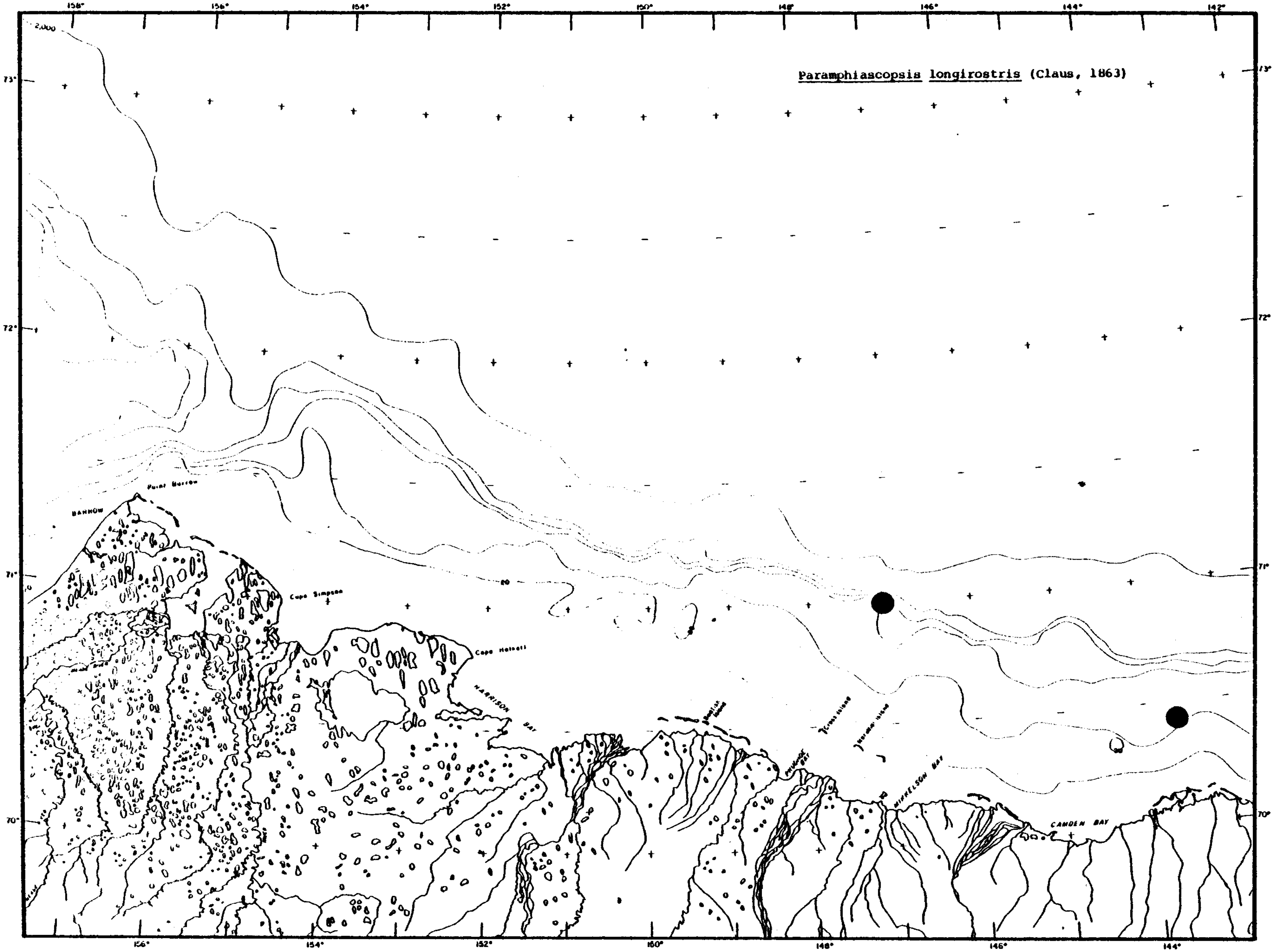
Paramphiascopsis longirostris (Claus, 1863)
158°
156°
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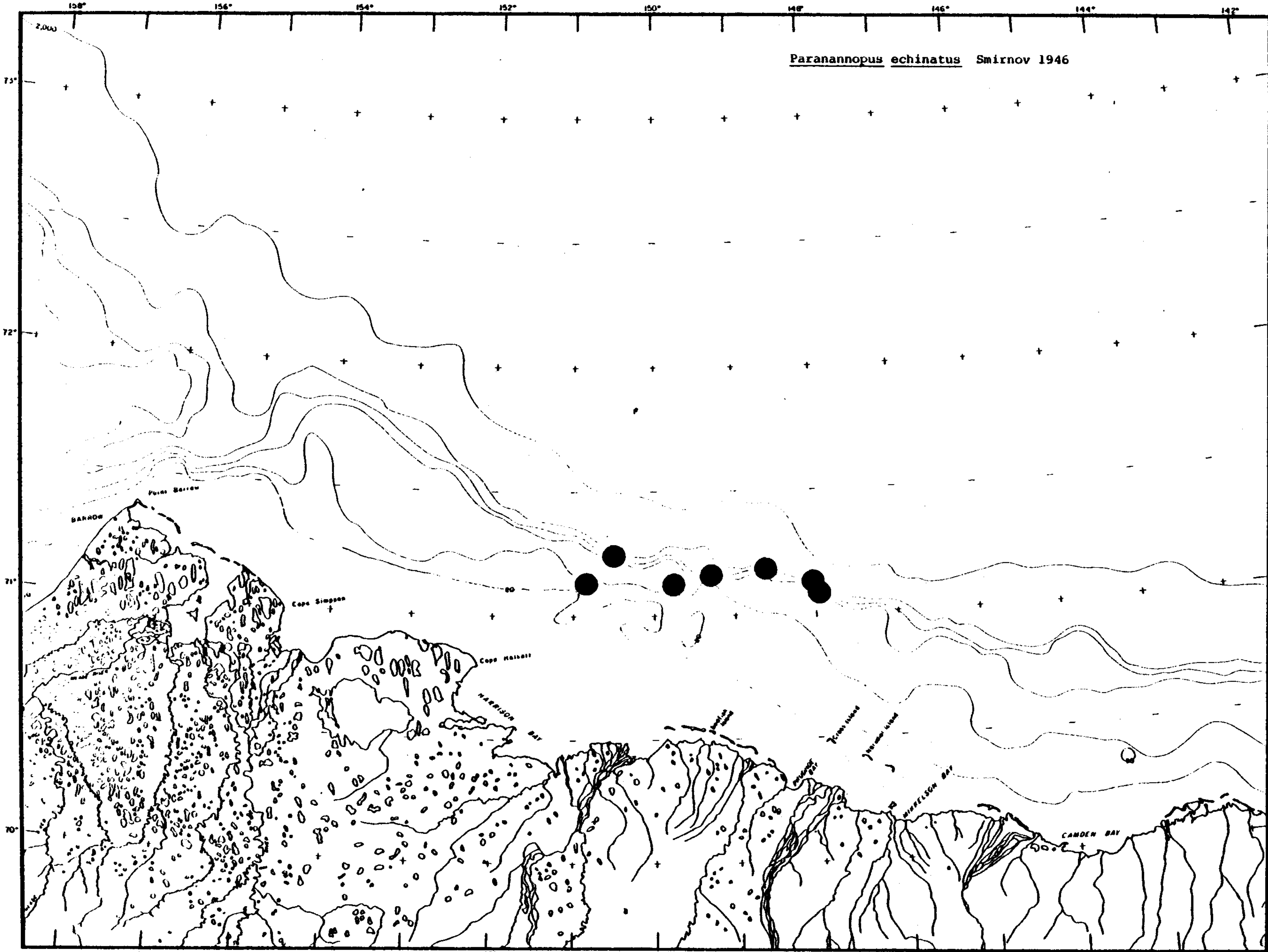
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Paranannopus echinatus Smirnov 1946
158°
156°
154°
152°
150°
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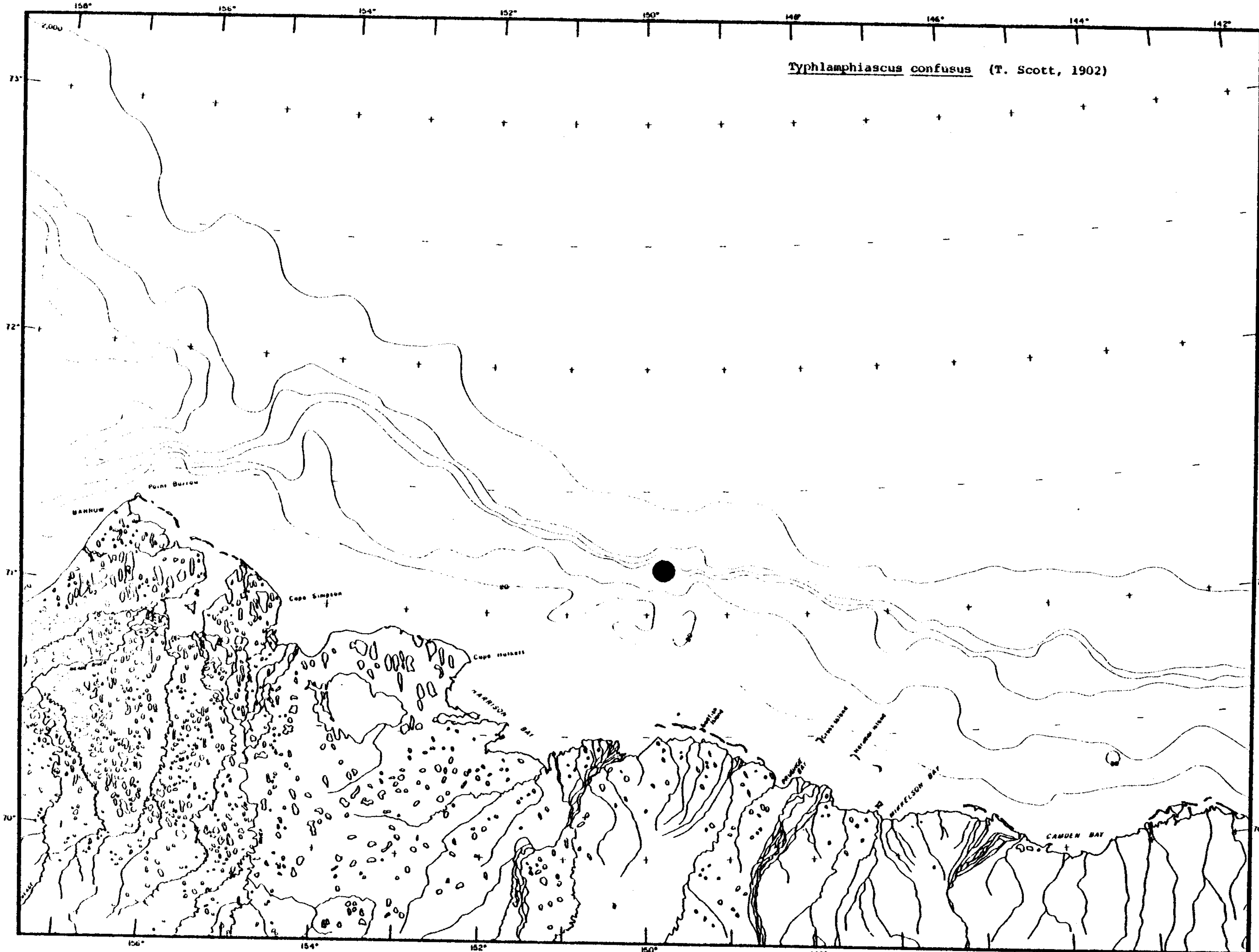
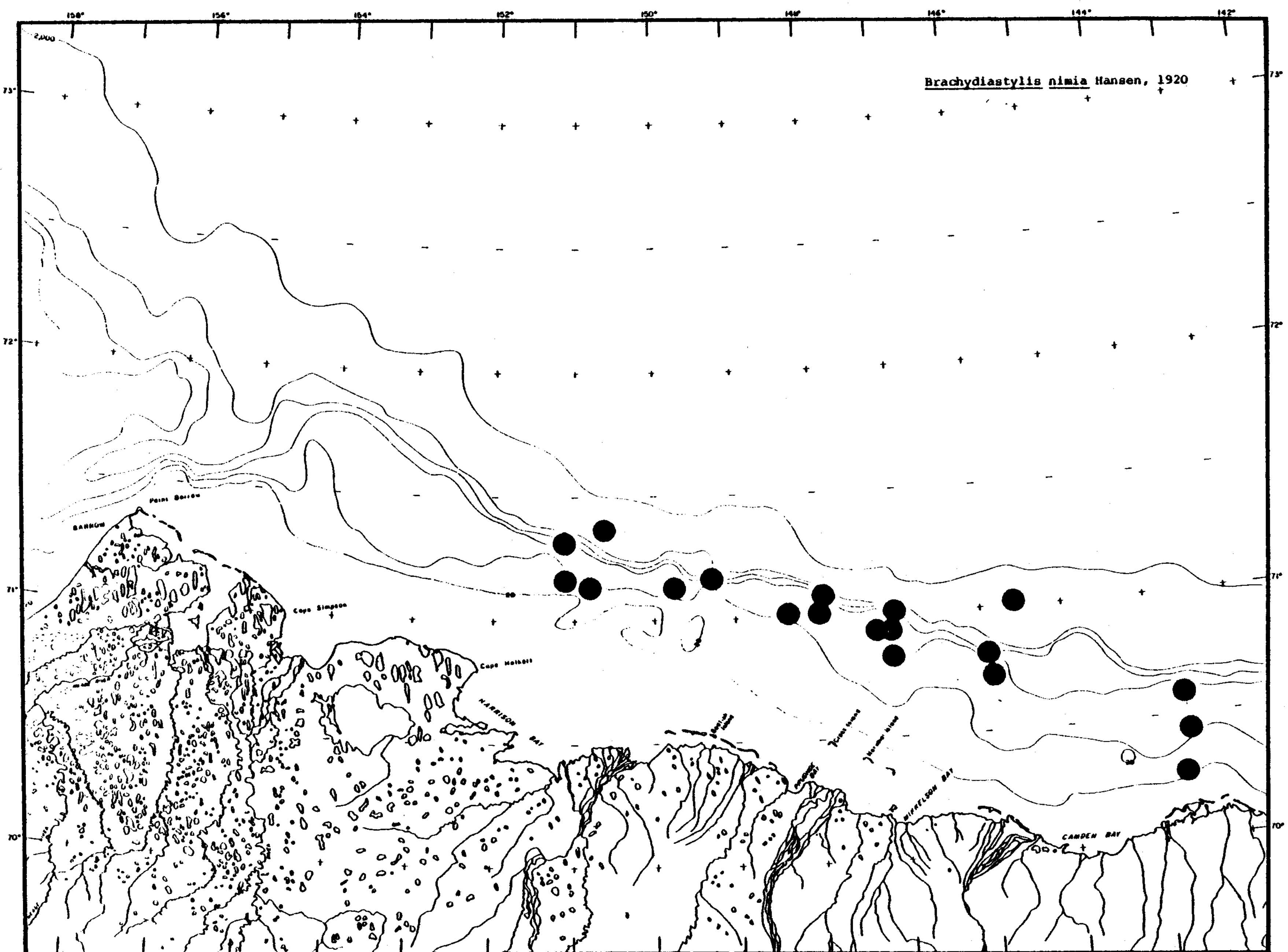
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY



Typhlamphiascus confusus (T. Scott, 1902)

Species Distributions:

<u>Arthropoda</u> -- Cumacea


Brachydiastylis nimia Hansen, 1920
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
158°
156°
154°
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150°
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144°
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73°
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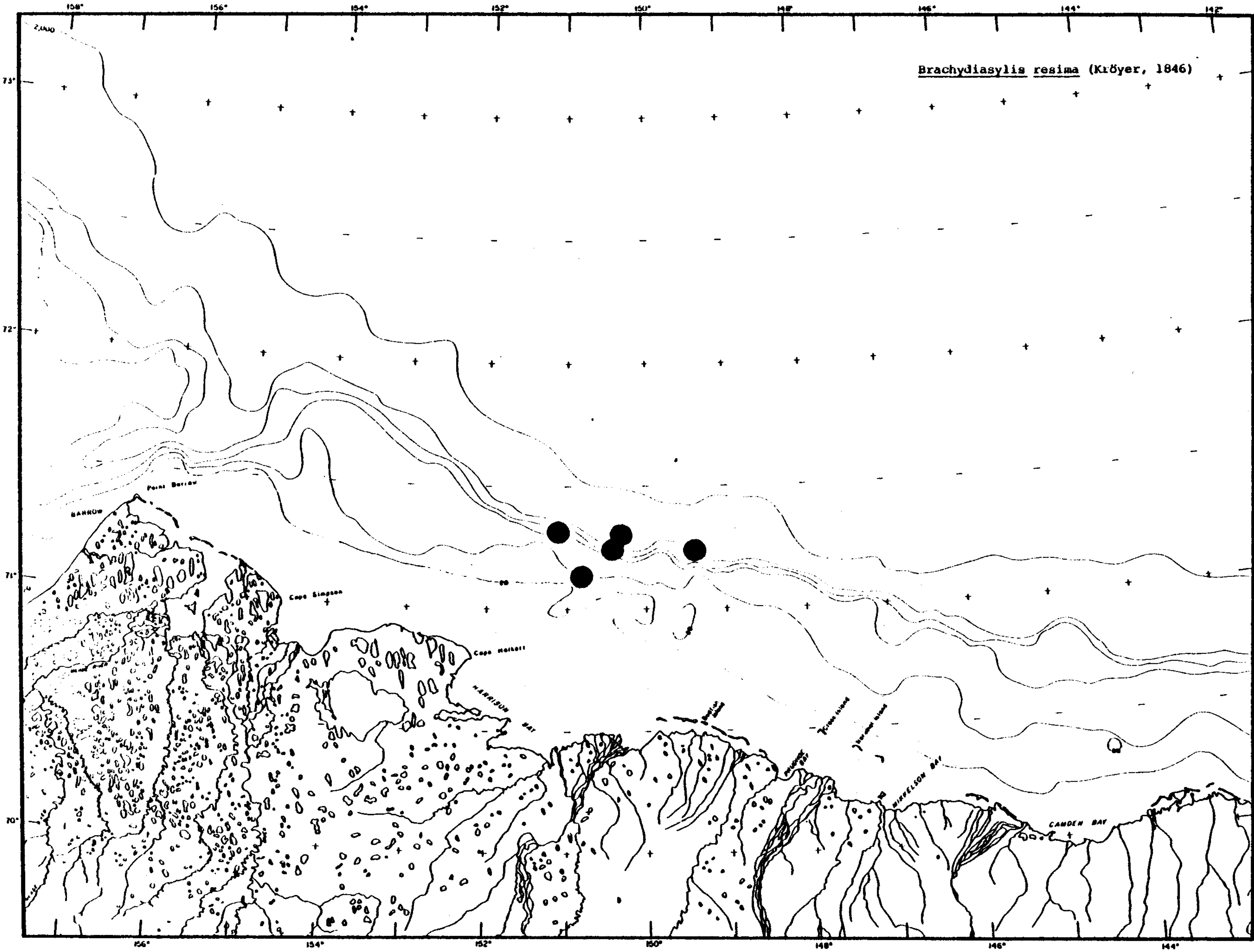
Brachydiasylis resima (Kröyer, 1846)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
156°
154°
152°
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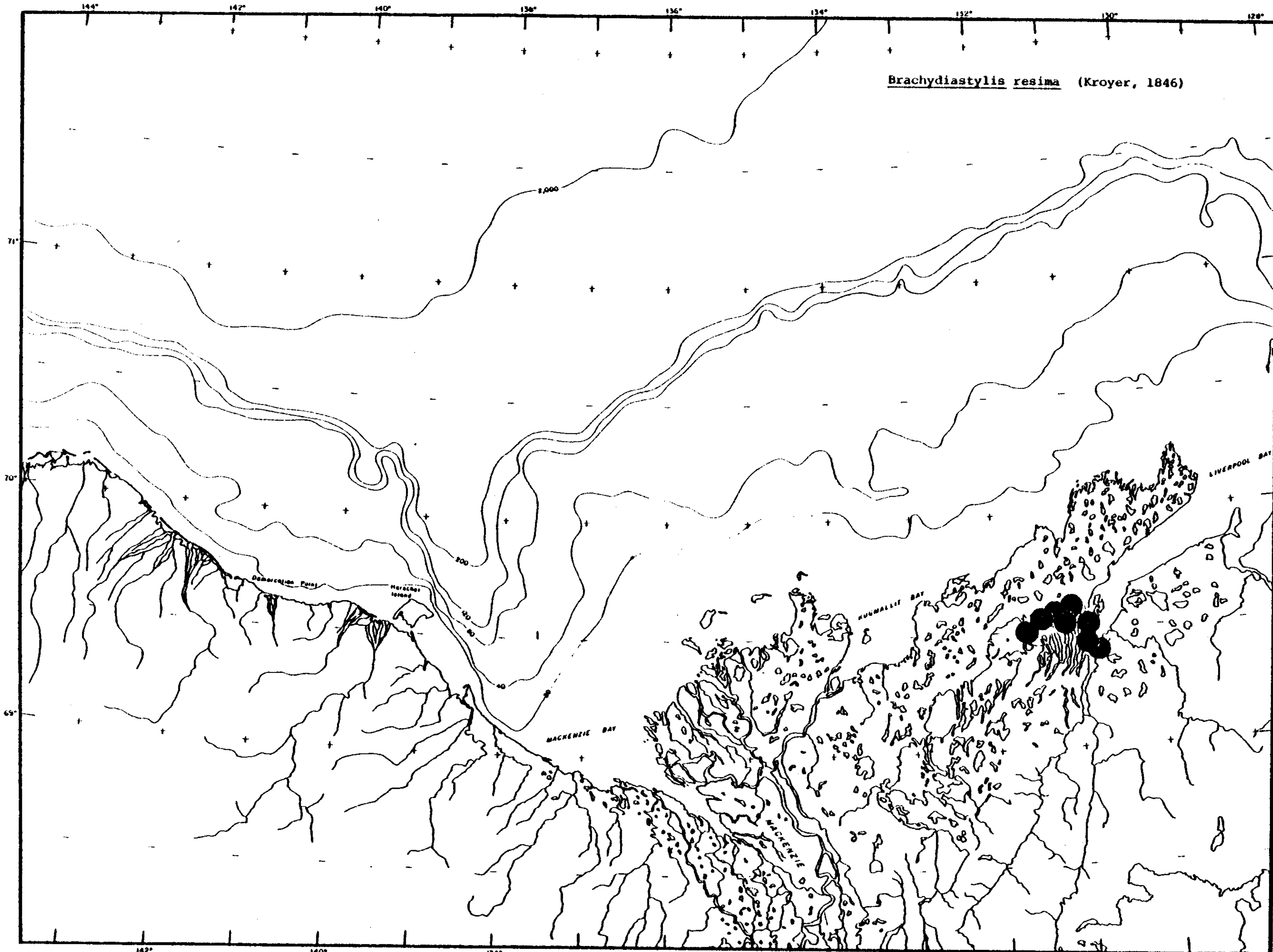
71°
70°


Brachydiastylis resima (Kroyer, 1846)
Demarcation Point
Herschel Island
Mackenzie Bay
Kugmallit Bay
Liverpool Bay
Mackenzie
2,000
200
40
71°
70°
69°
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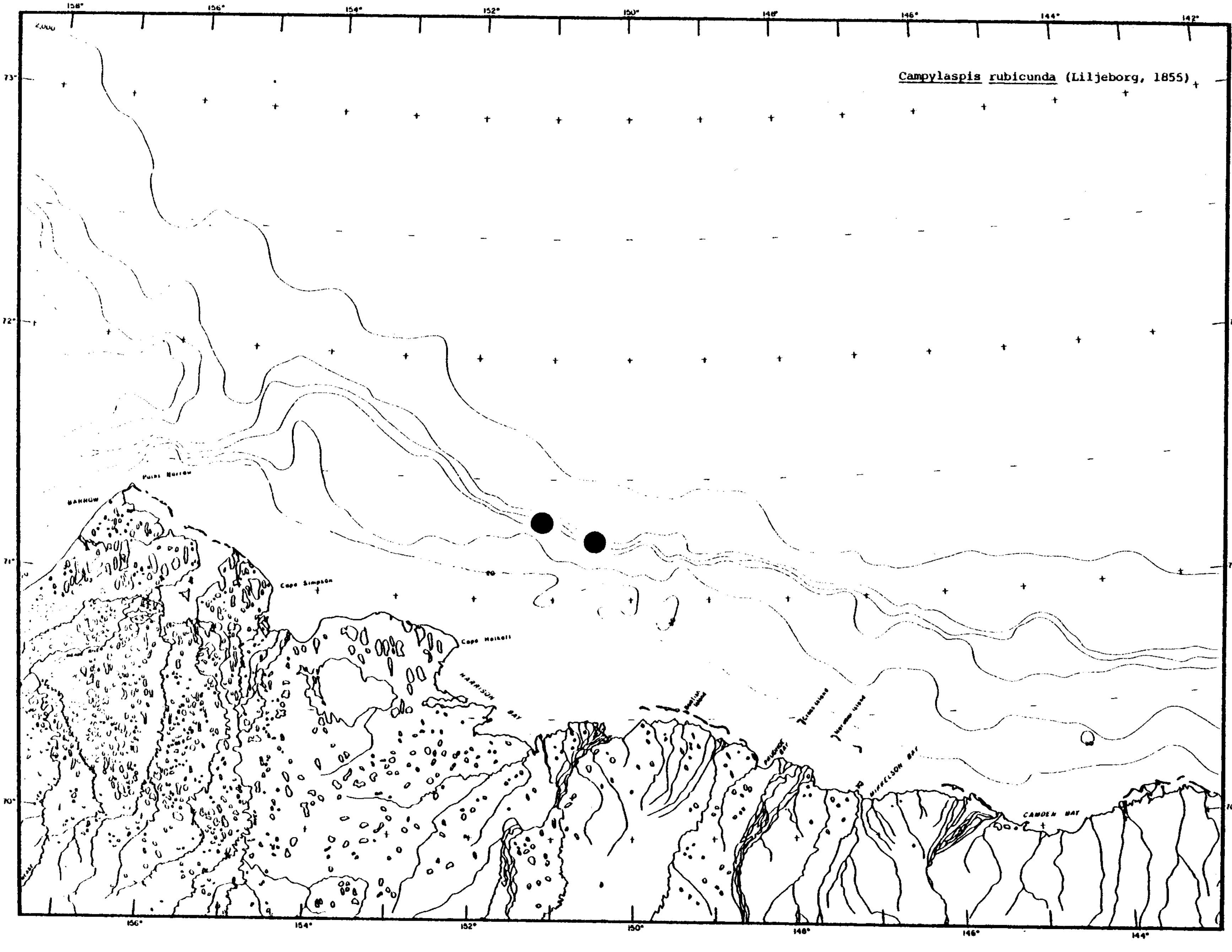
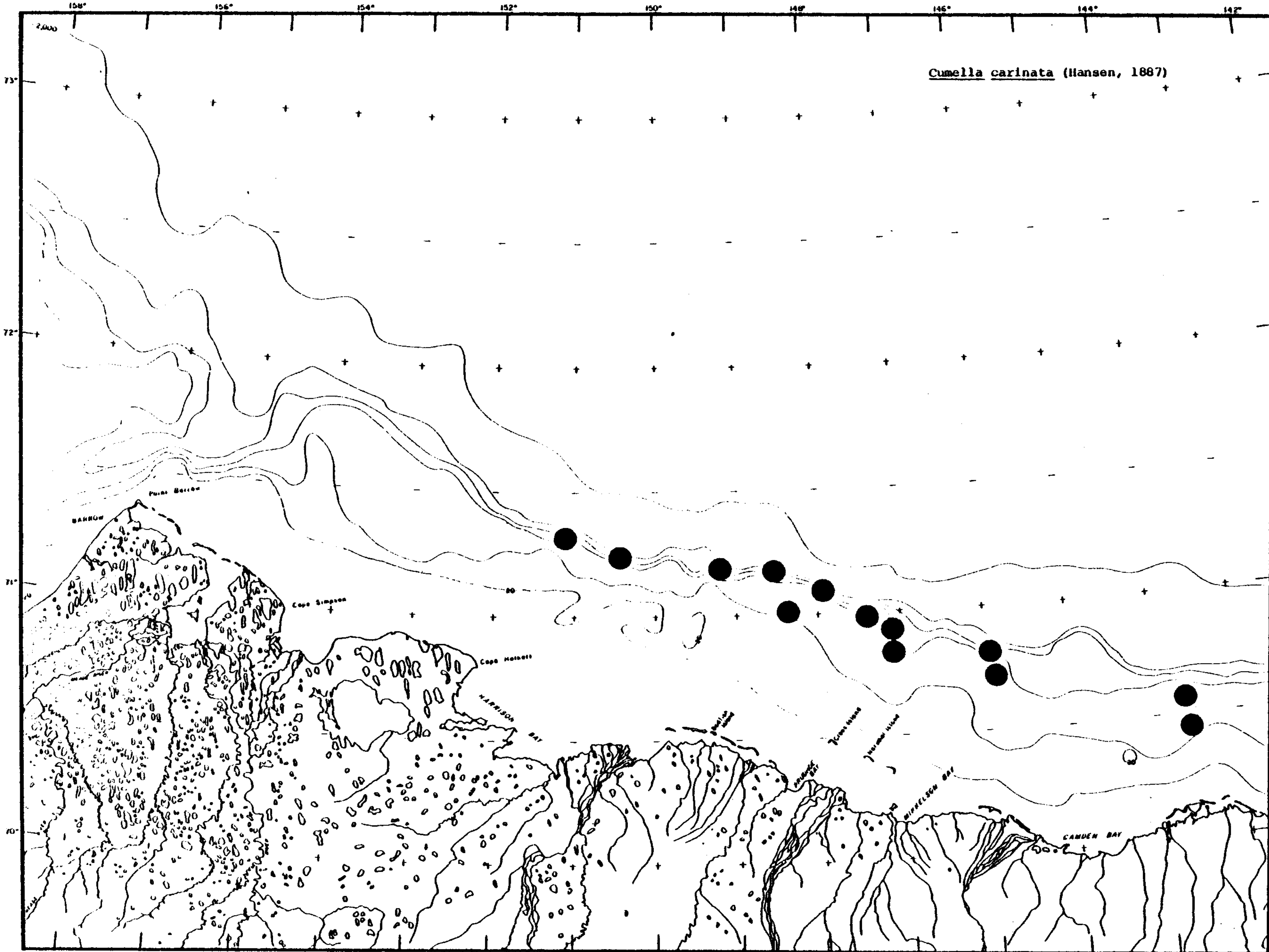

Campylaspis rubicunda (Liljeborg, 1855)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

394


Cumella carinata (Hansen, 1887)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
PRUDHOE BAY
MIKKELSEN BAY
CAMDEN BAY
158°
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154°
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148°
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142°
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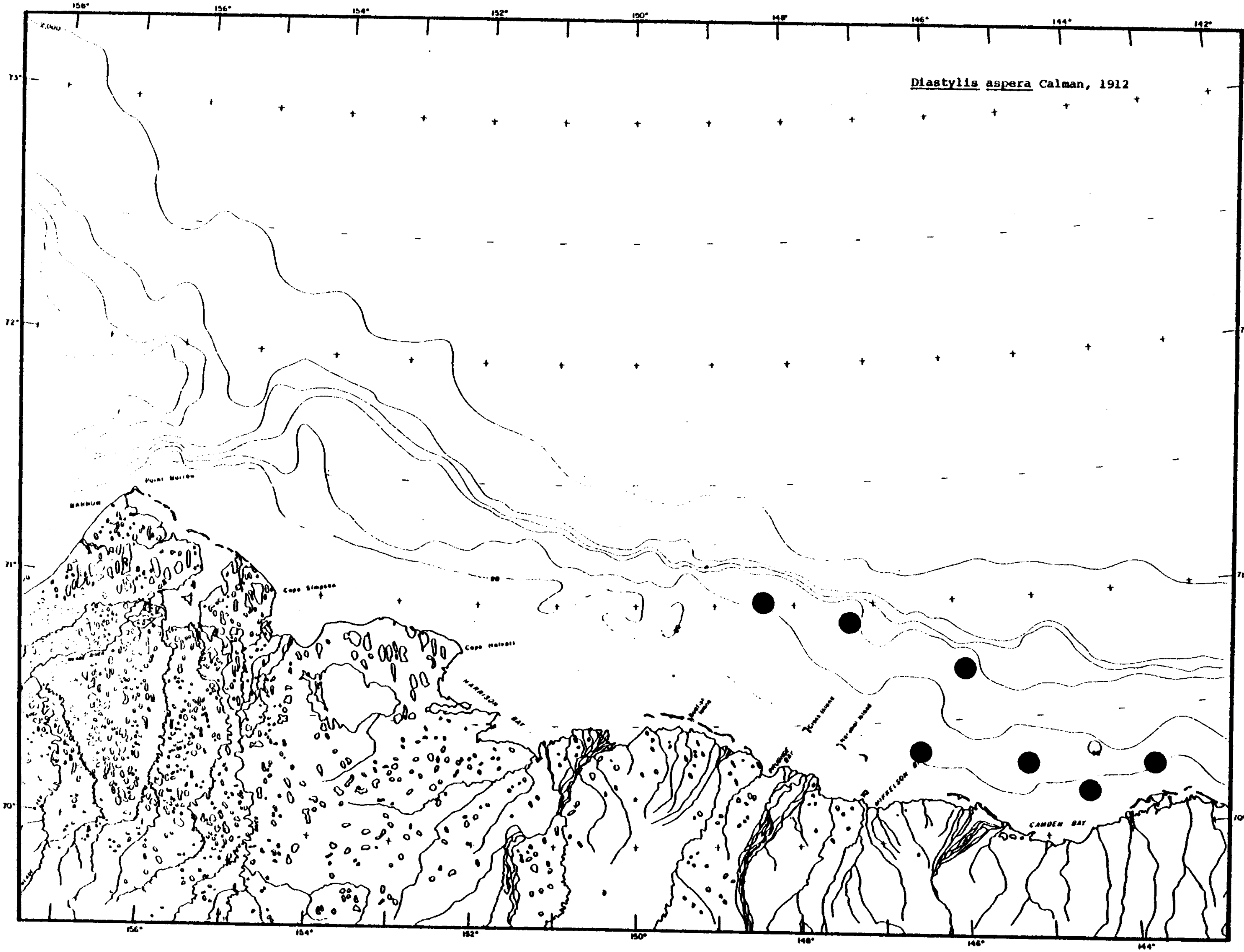
72°
71°
70°

234


Diastylis aspera Calman, 1912
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
73°
72°
71°
70°
156°
154°
152°
150°
148°
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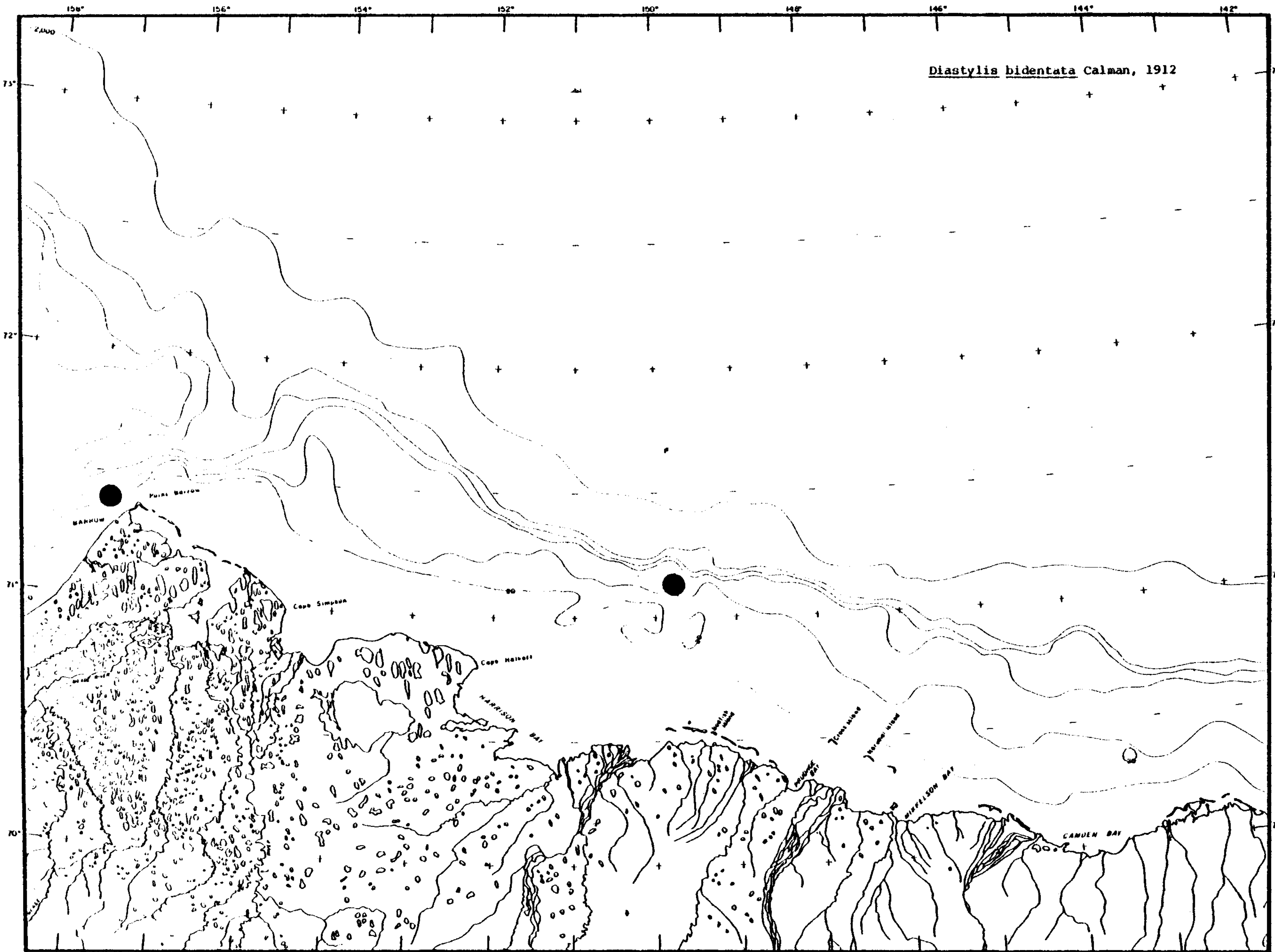
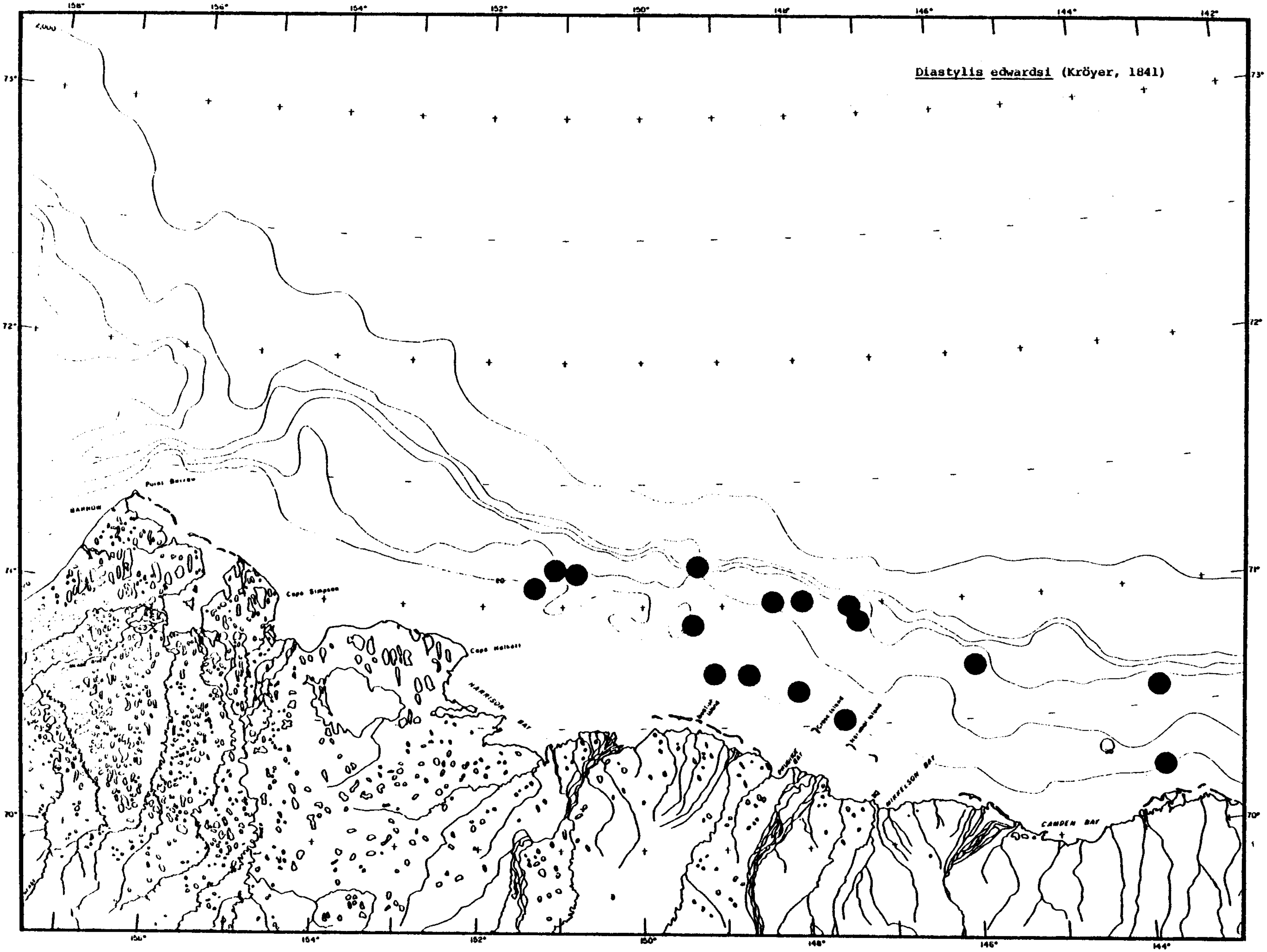

Diastylis bidentata Calman, 1912
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Diastylis edwardsi (Kröyer, 1841)
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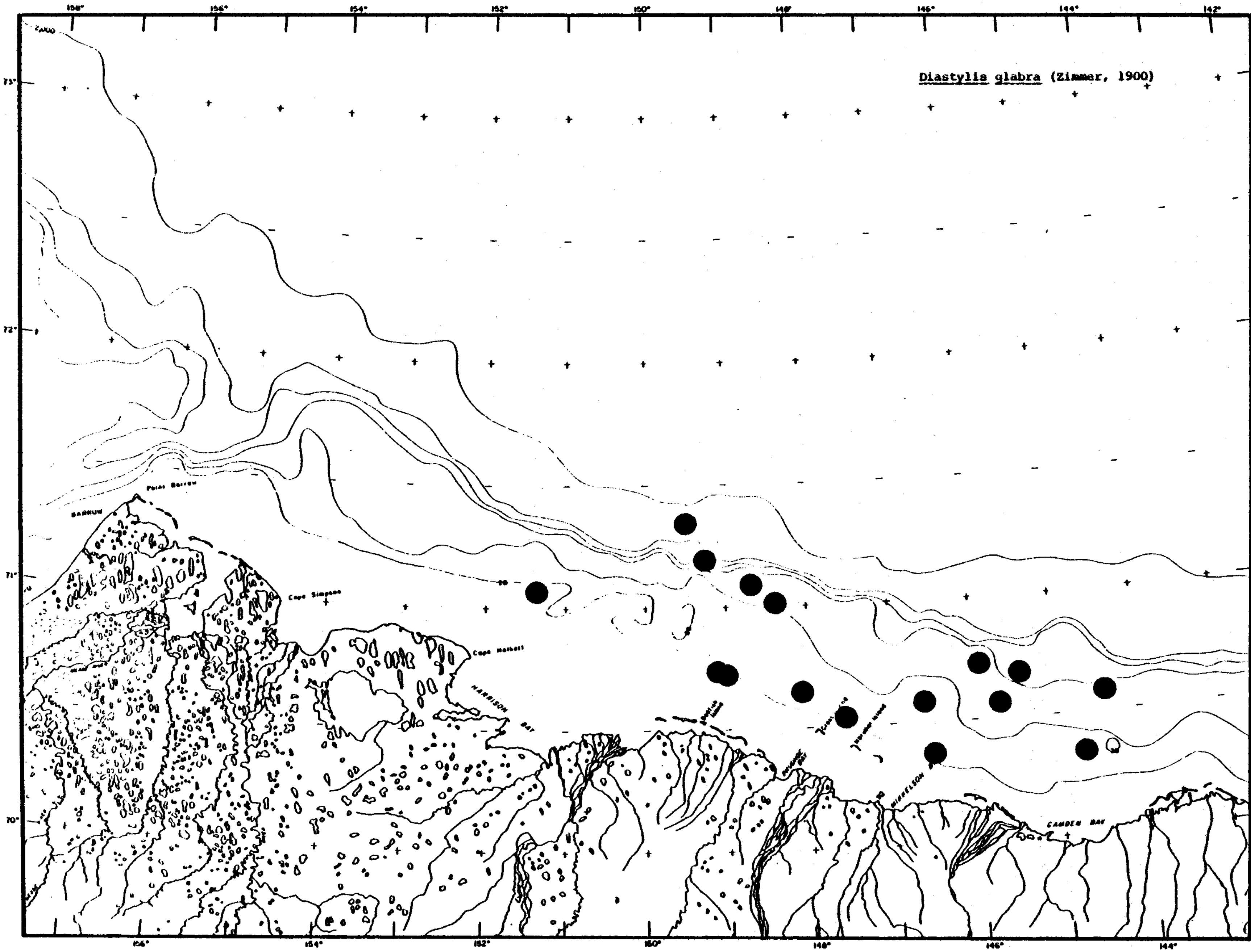
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Diastylis glabra (Zimmer, 1900)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
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72°
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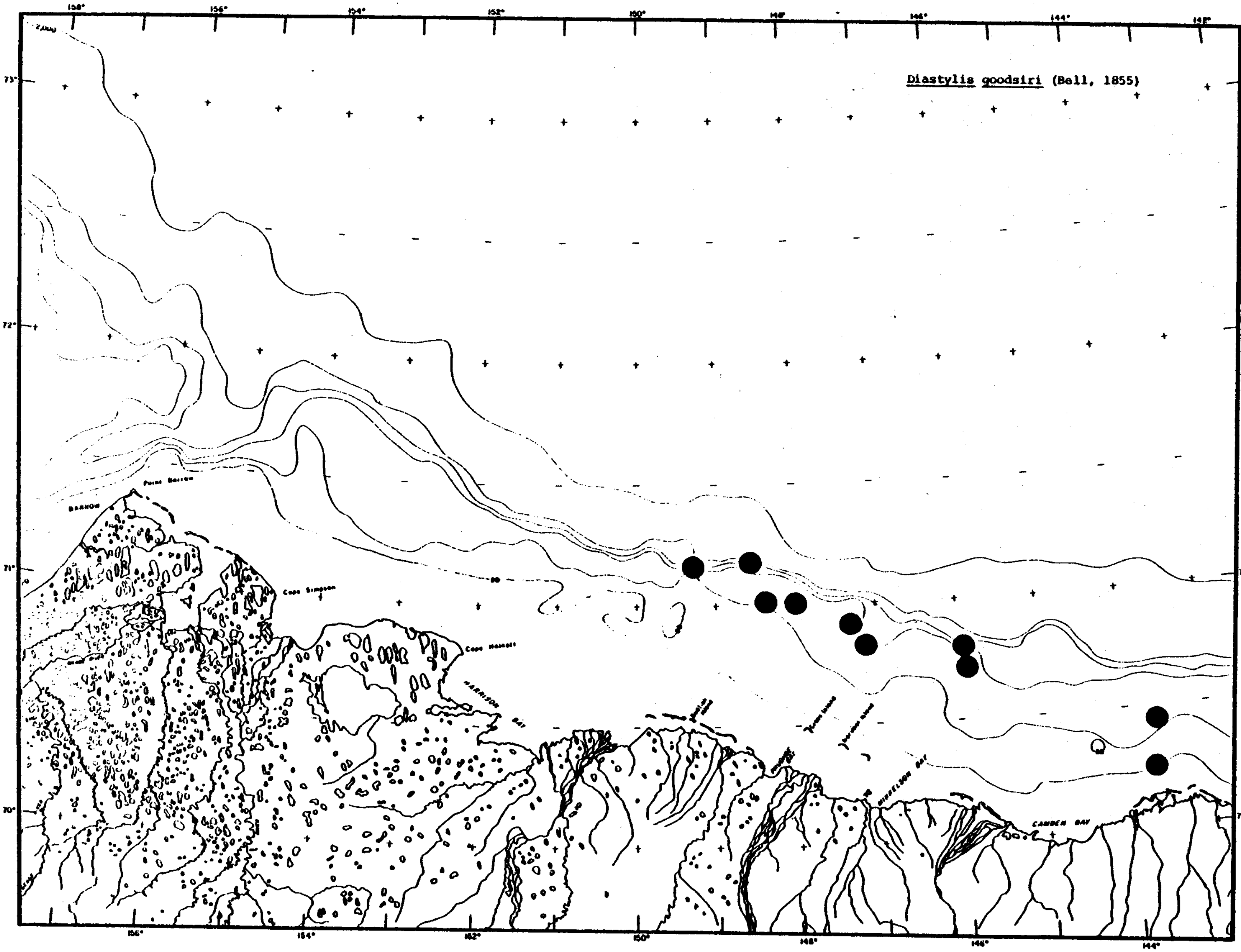
70°


Diastylis goodsiri (Bell, 1855)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
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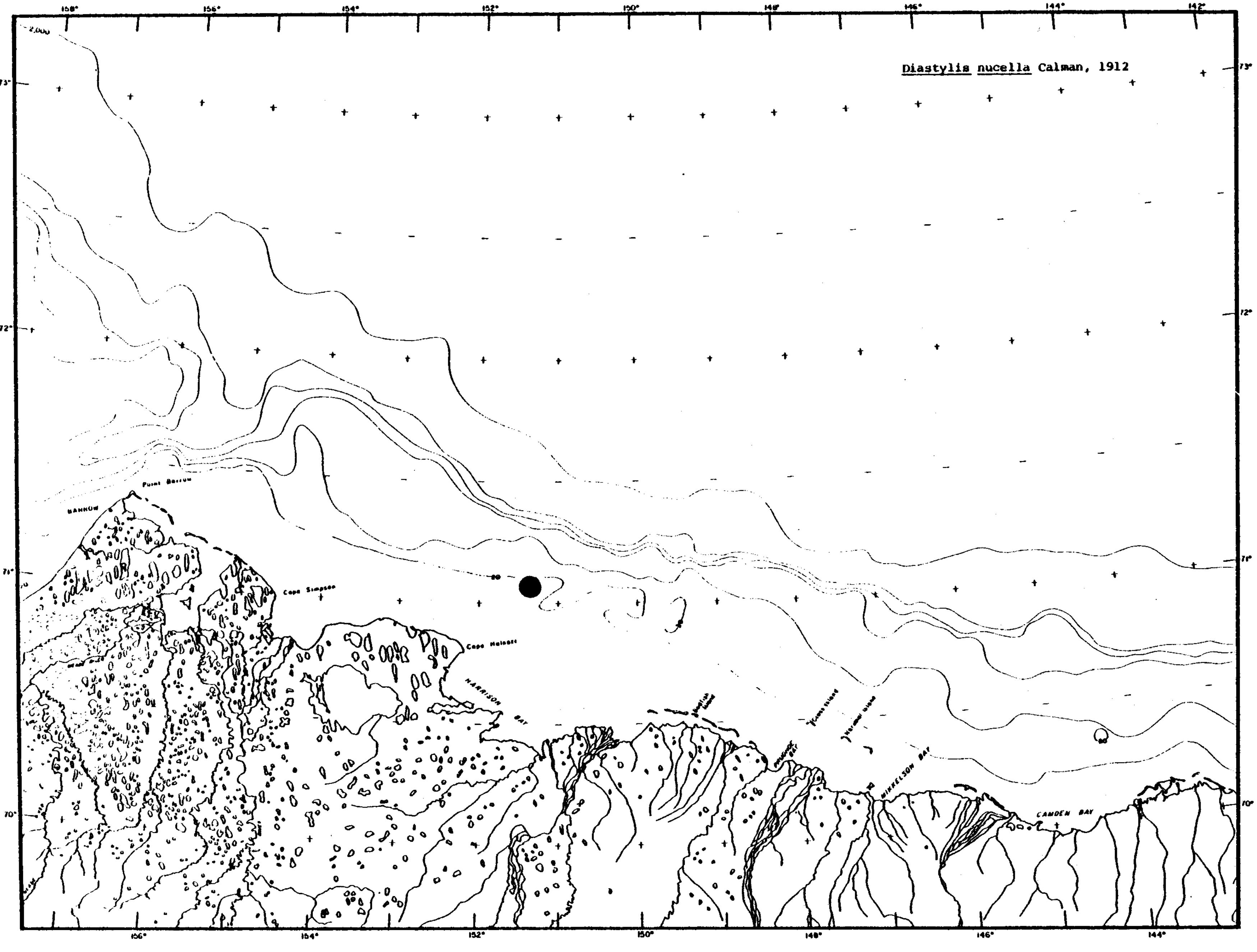
Diastylis nucella Calman, 1912
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Mikkelson Bay
Camden Bay
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154°
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150°
148°
146°
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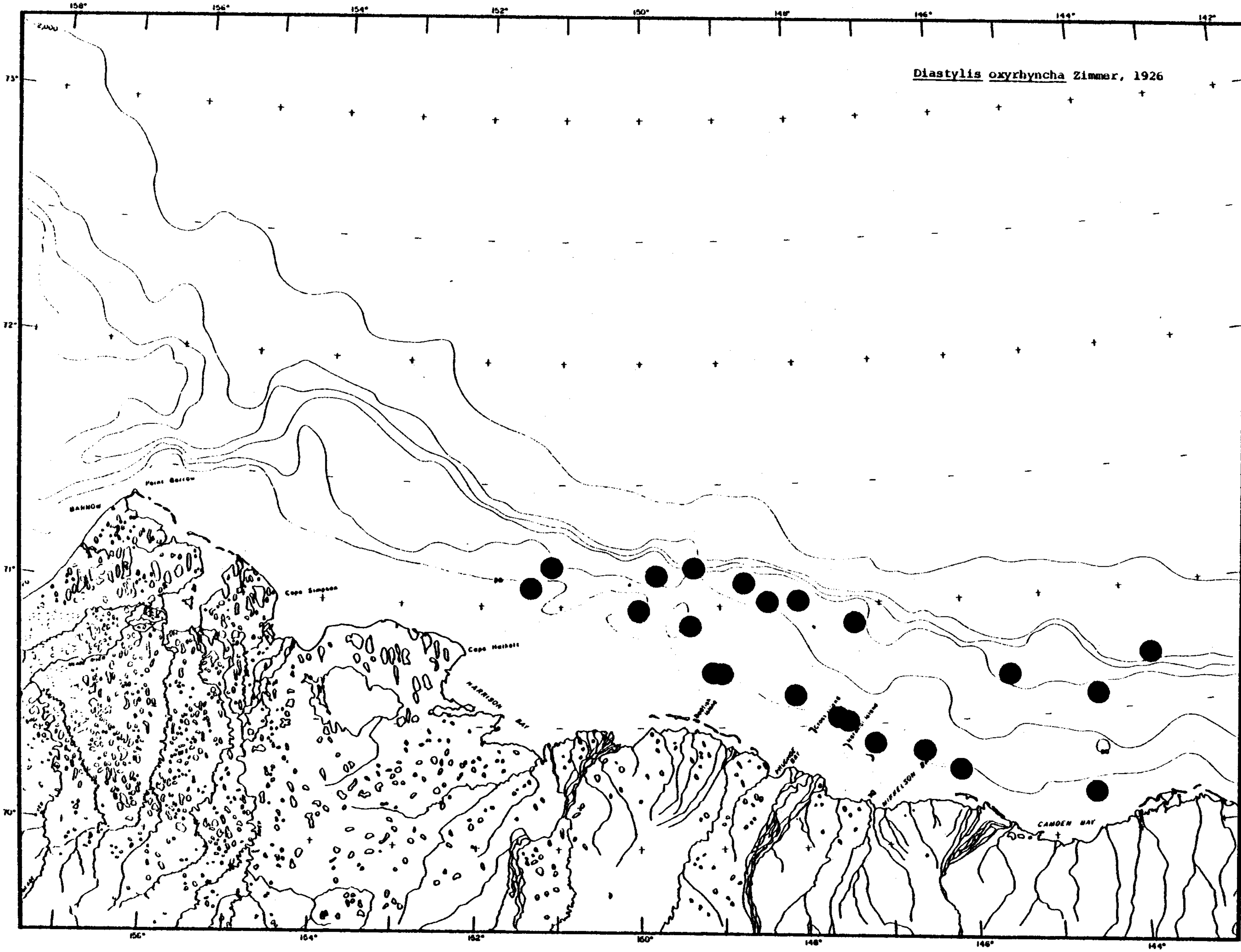
Diastylis oxyrhyncha Zimmer, 1926
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
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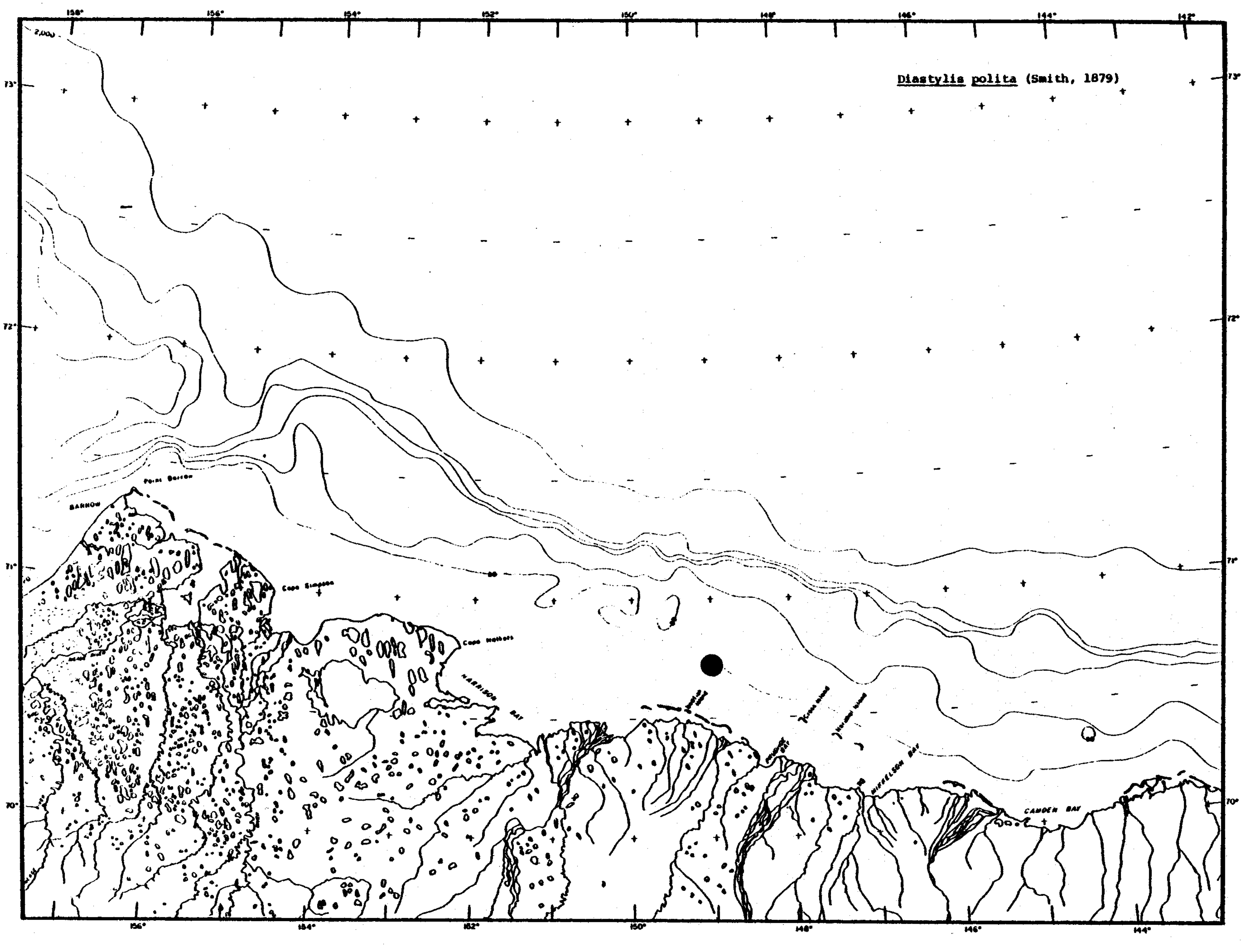
71°
70°


Diastylis polita (Smith, 1879)
158°
156°
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142°
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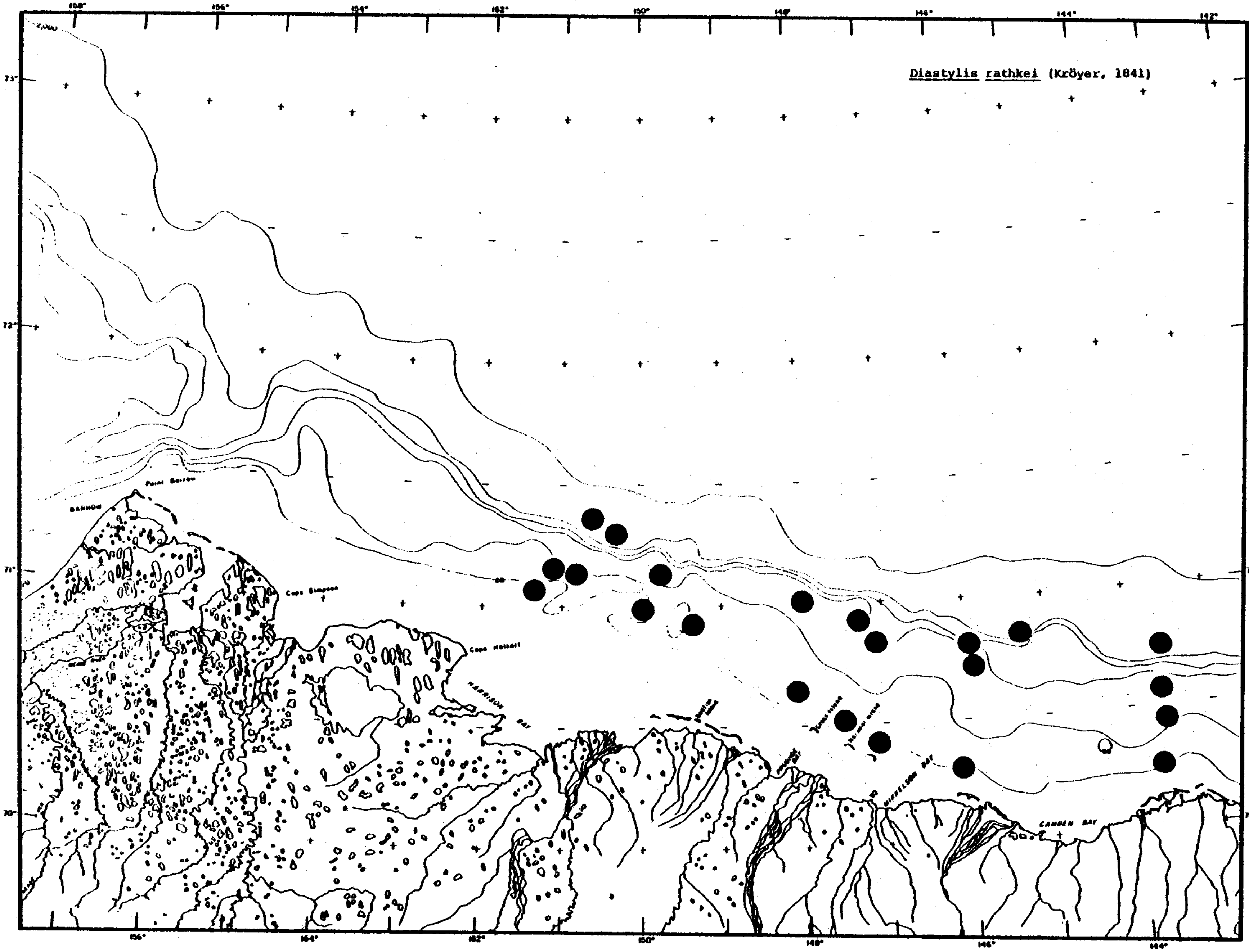
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSEN BAY
CAMDEN BAY


Diastylis rathkei (Kröyer, 1841)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
156°
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150°
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144°
142°
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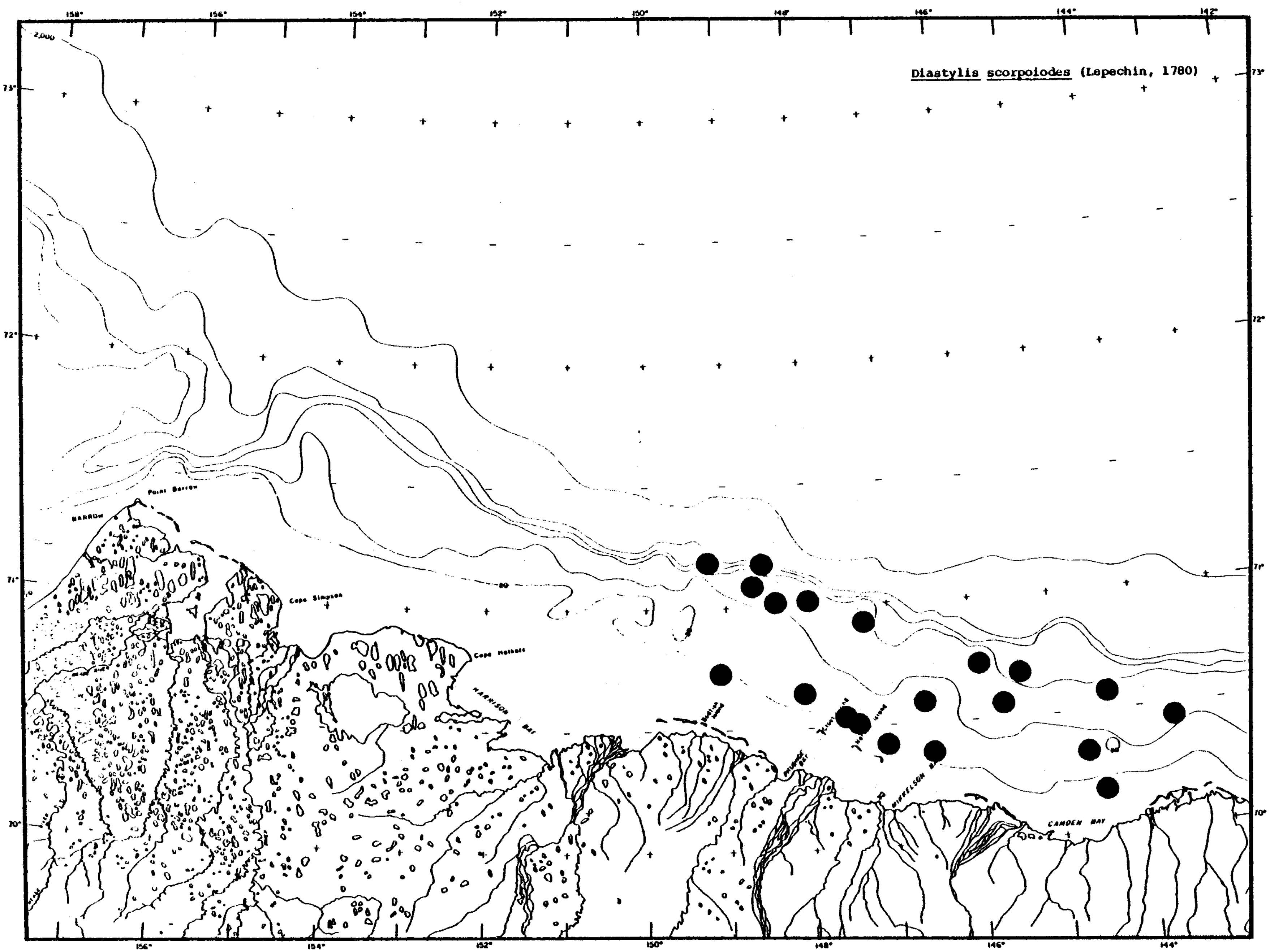
Diastylis scorpoiodes (Lepechin, 1780)
158°
156°
154°
152°
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148°
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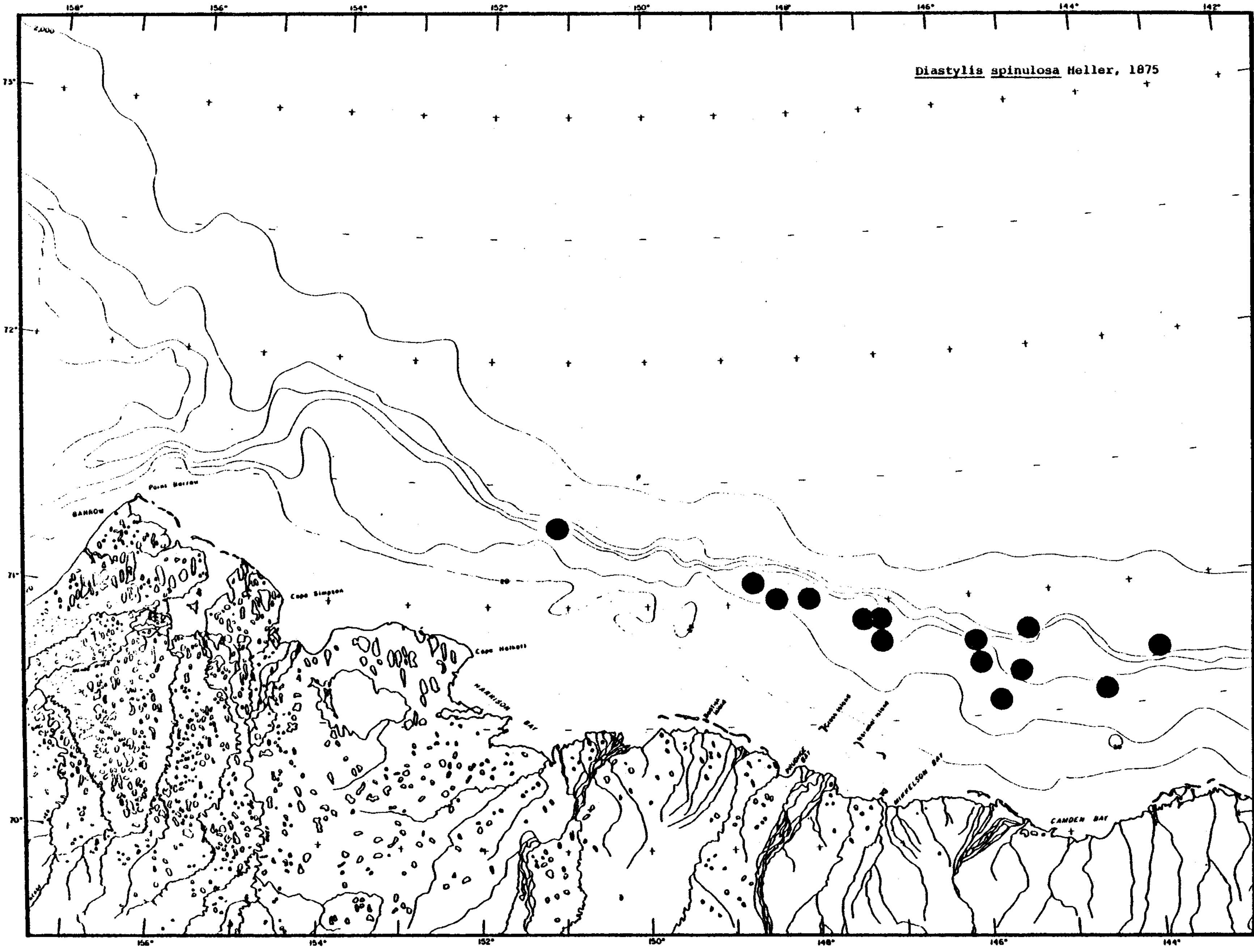
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Diastylis spinulosa Heller, 1875
BARROW
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
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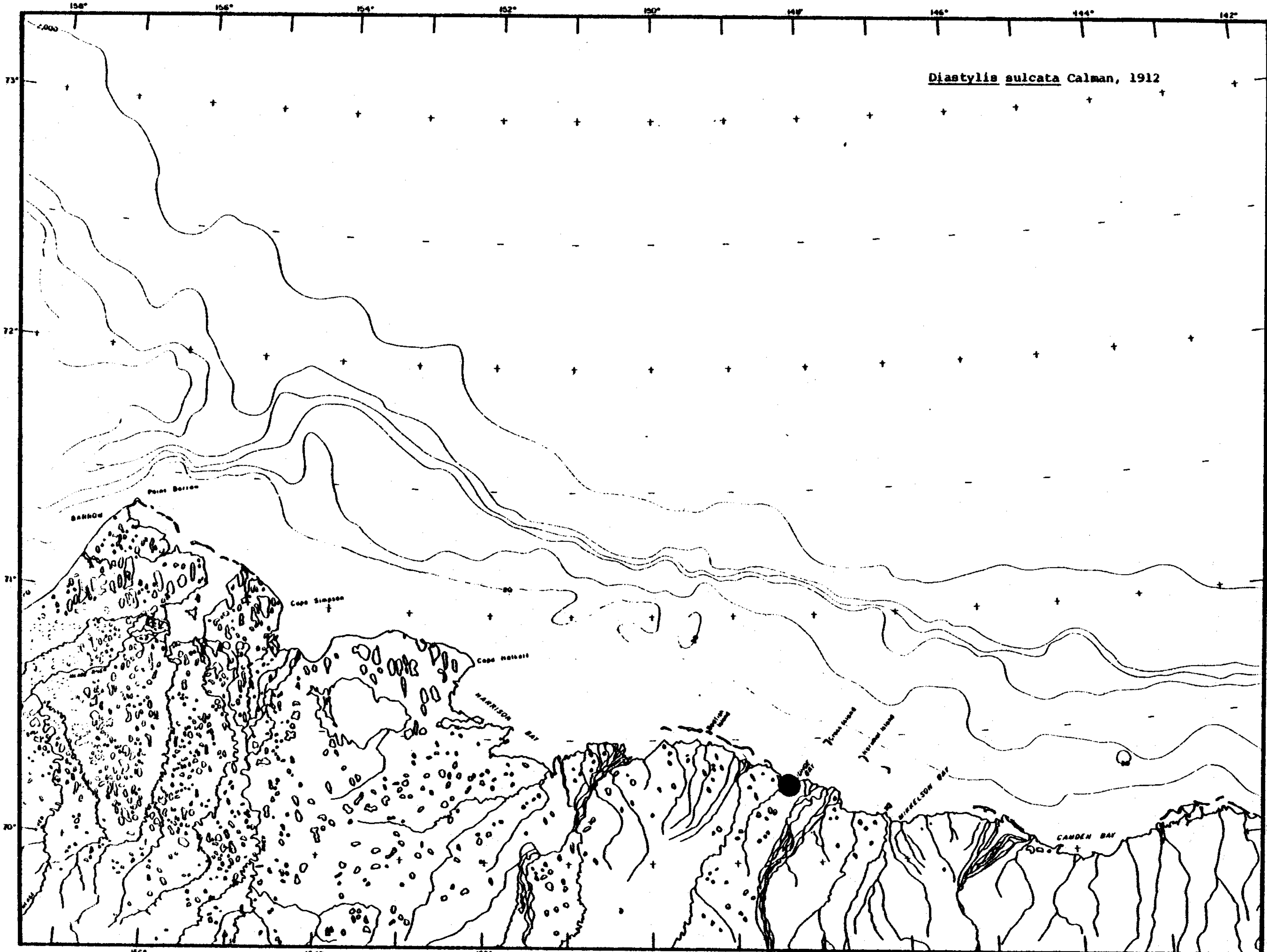
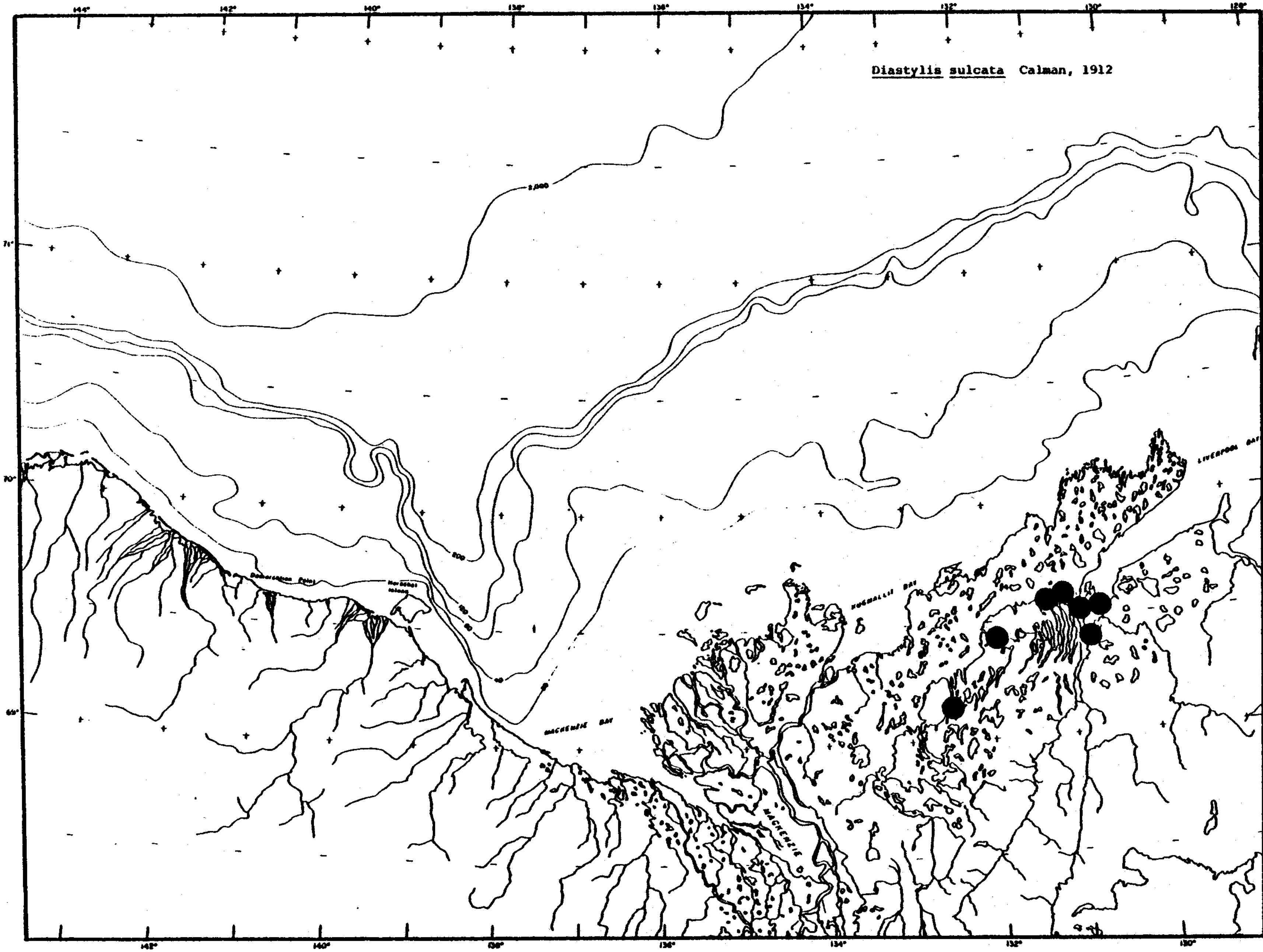
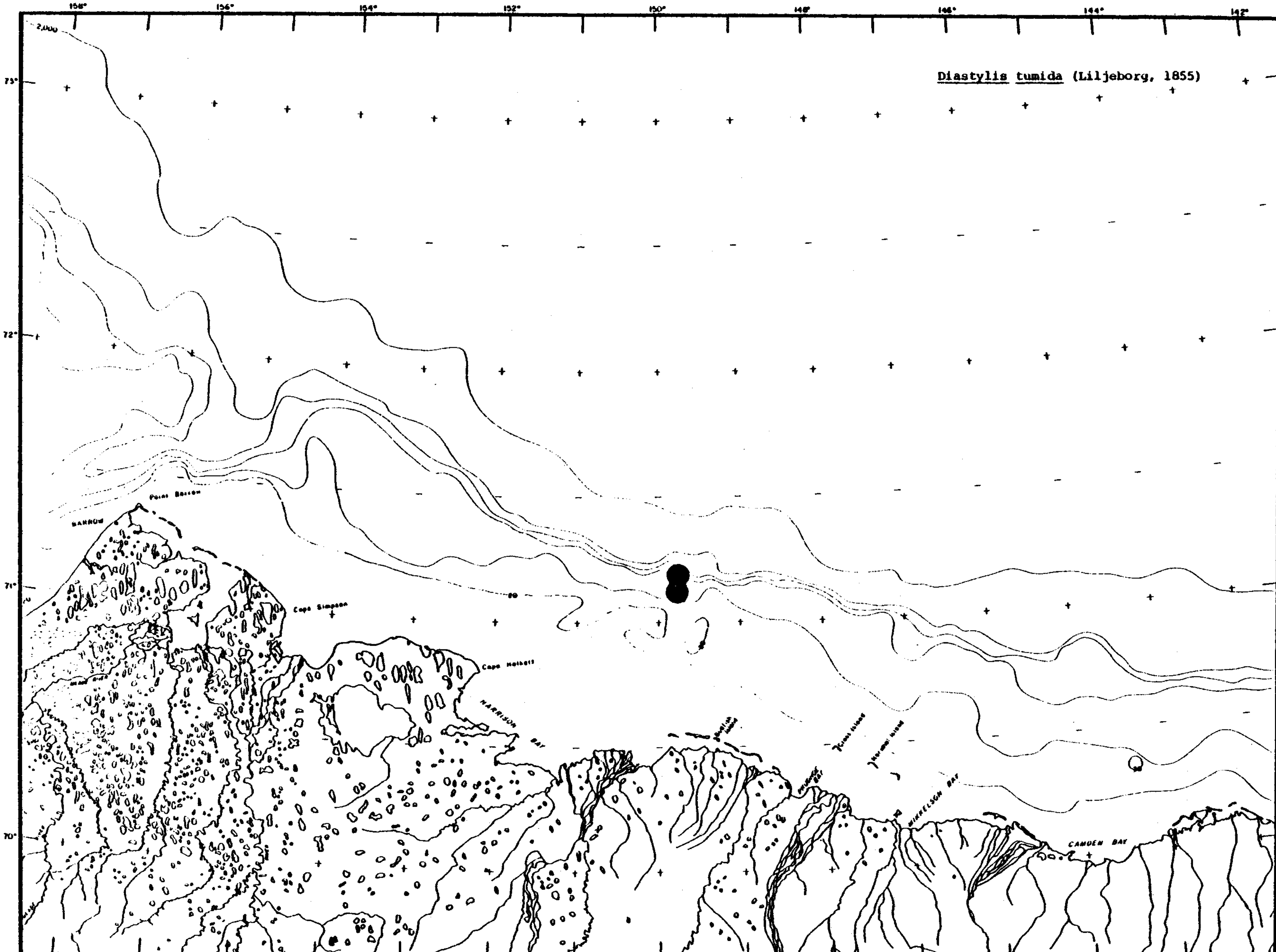

Diastylis sulcata Calman, 1912
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Diastylis sulcata Calman, 1912


Diastylis tumida (Liljeborg, 1855)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
158°
156°
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148°
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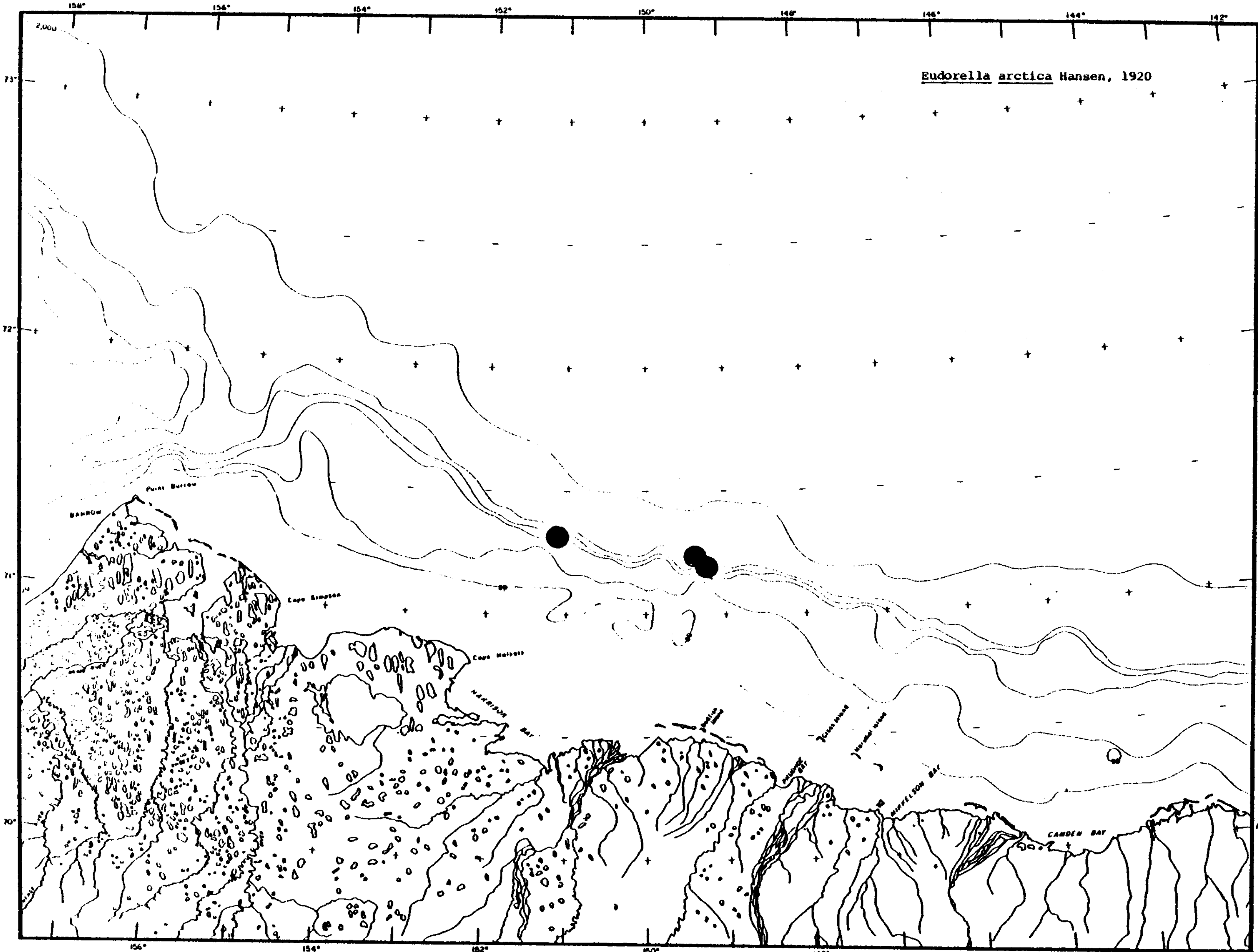
Eudorella arctica Hansen, 1920
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Mikkelson Bay
Camden Bay
73°
72°
71°
70°
156°
154°
152°
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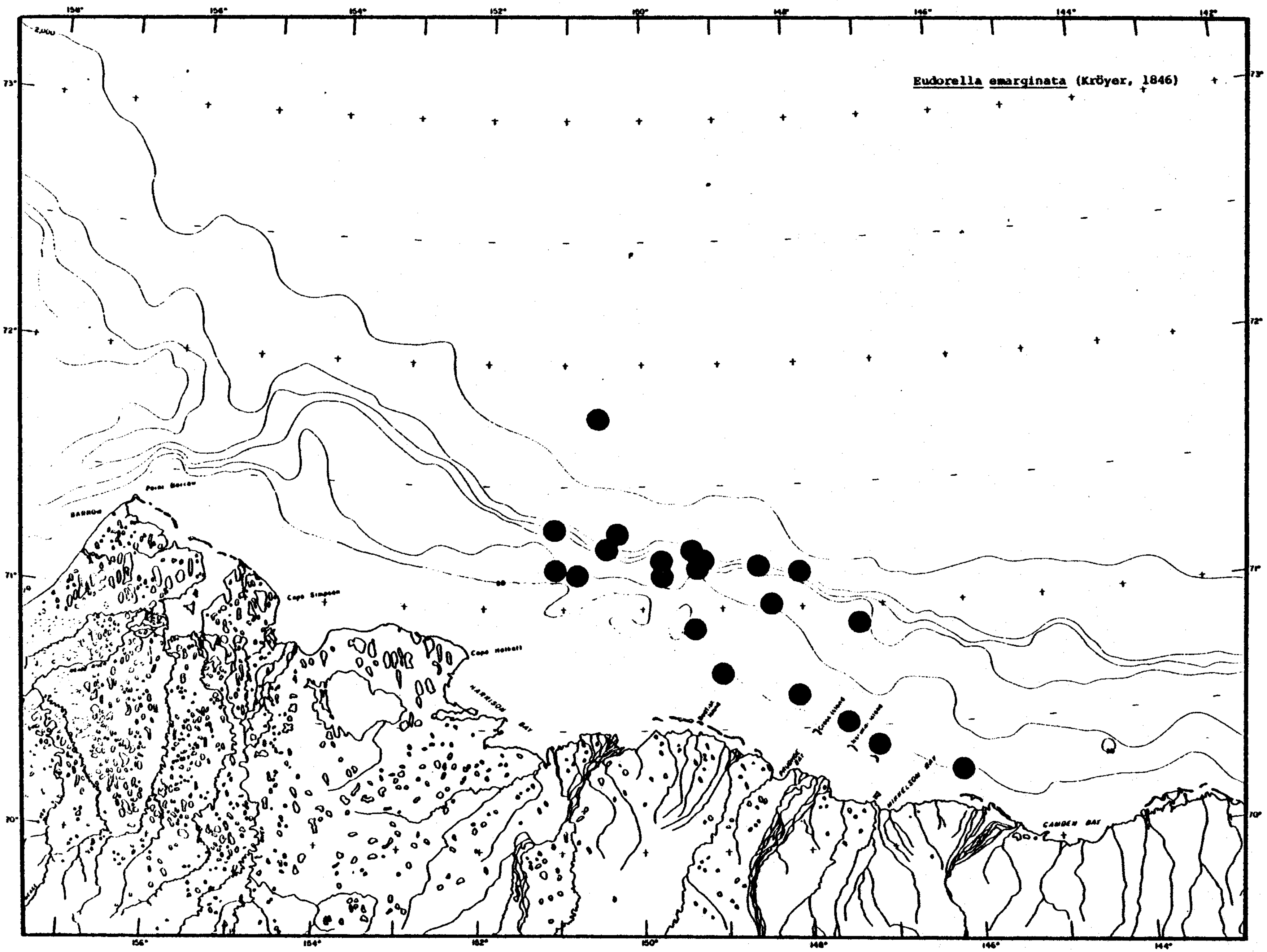
Eudorella emarginata (Kröyer, 1846)
158°
156°
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73°
72°
71°
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Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
156°
154°
152°
150°
148°
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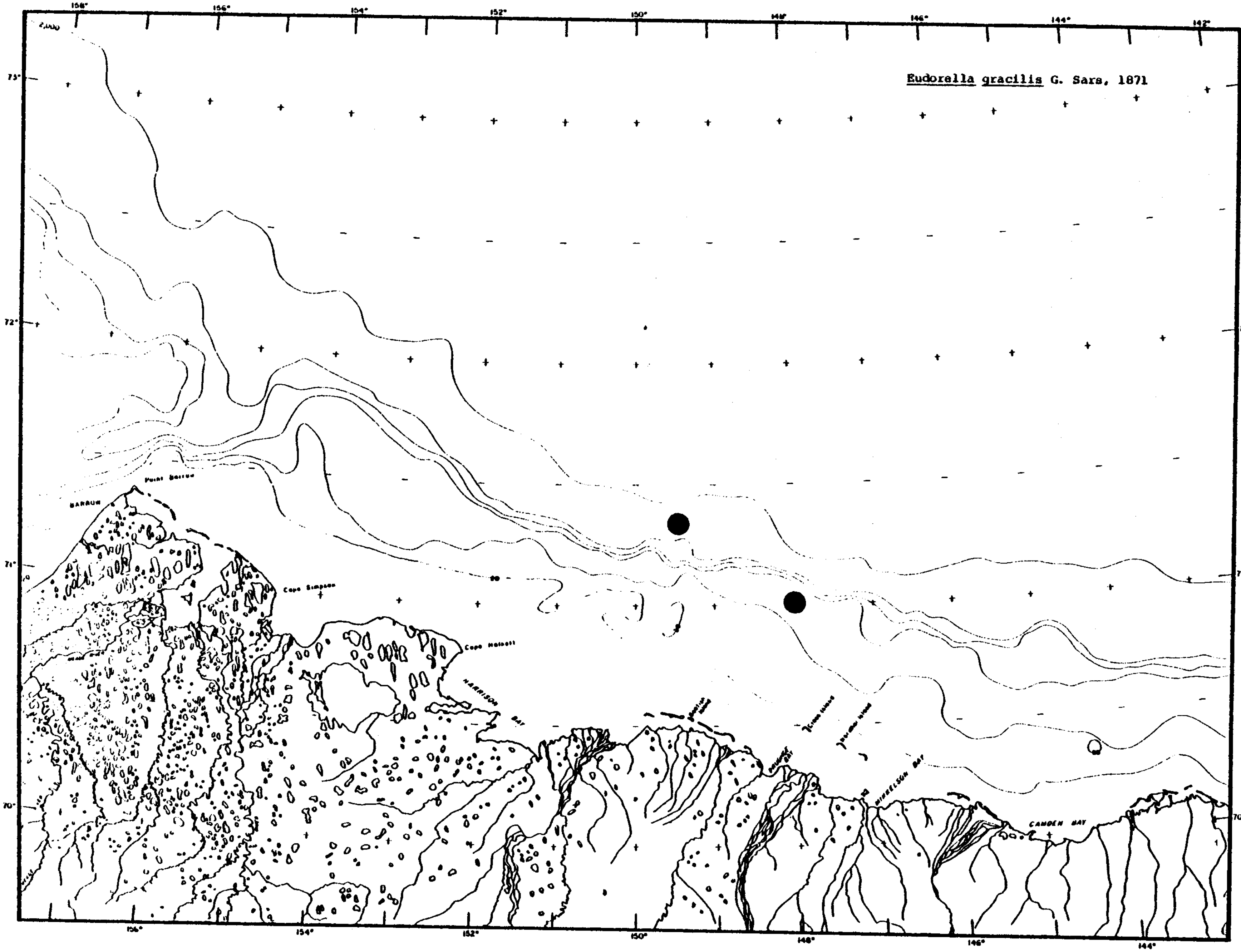
144°


Eudorella gracilis G. Sars, 1871
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152°
150°
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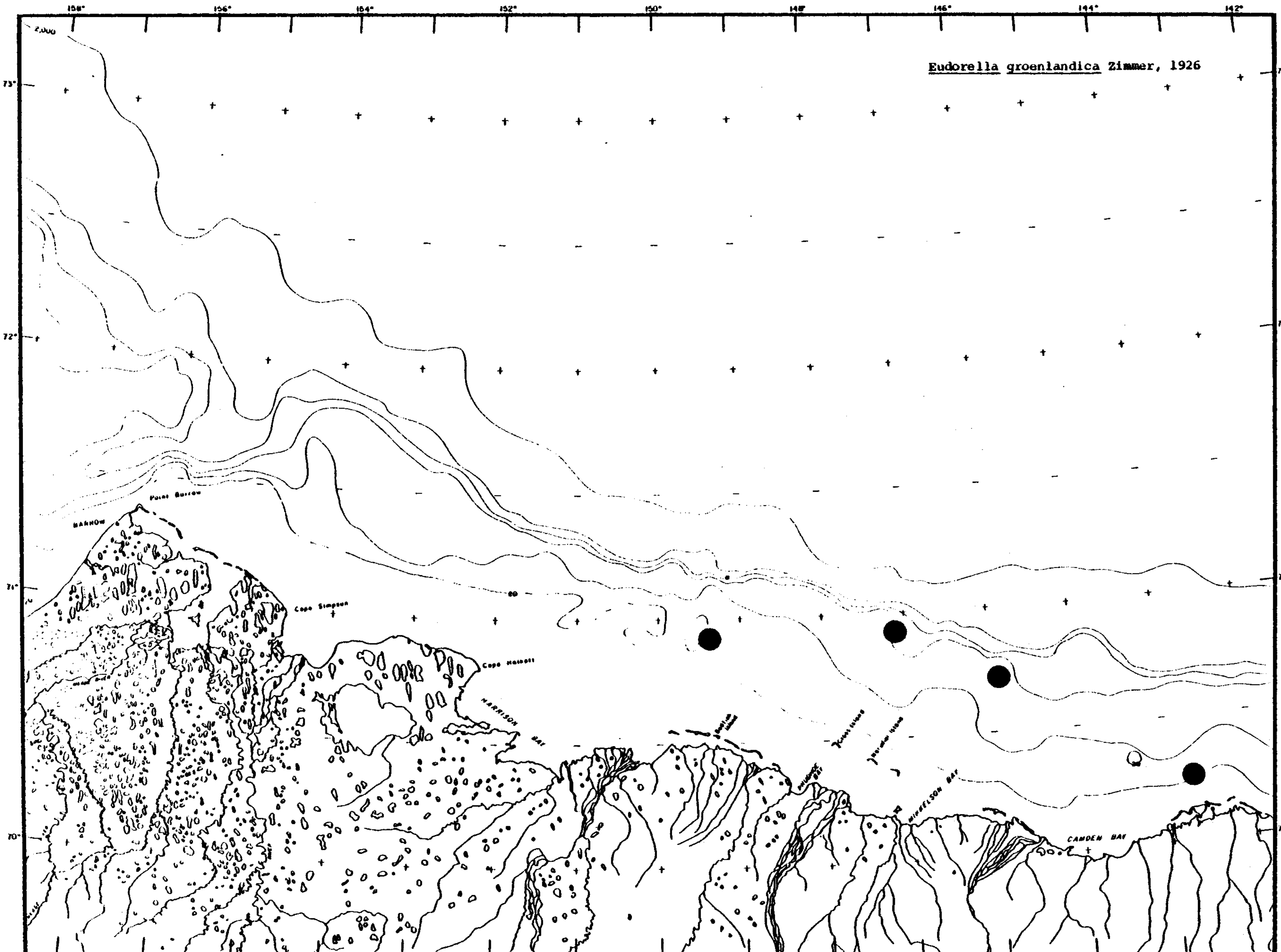
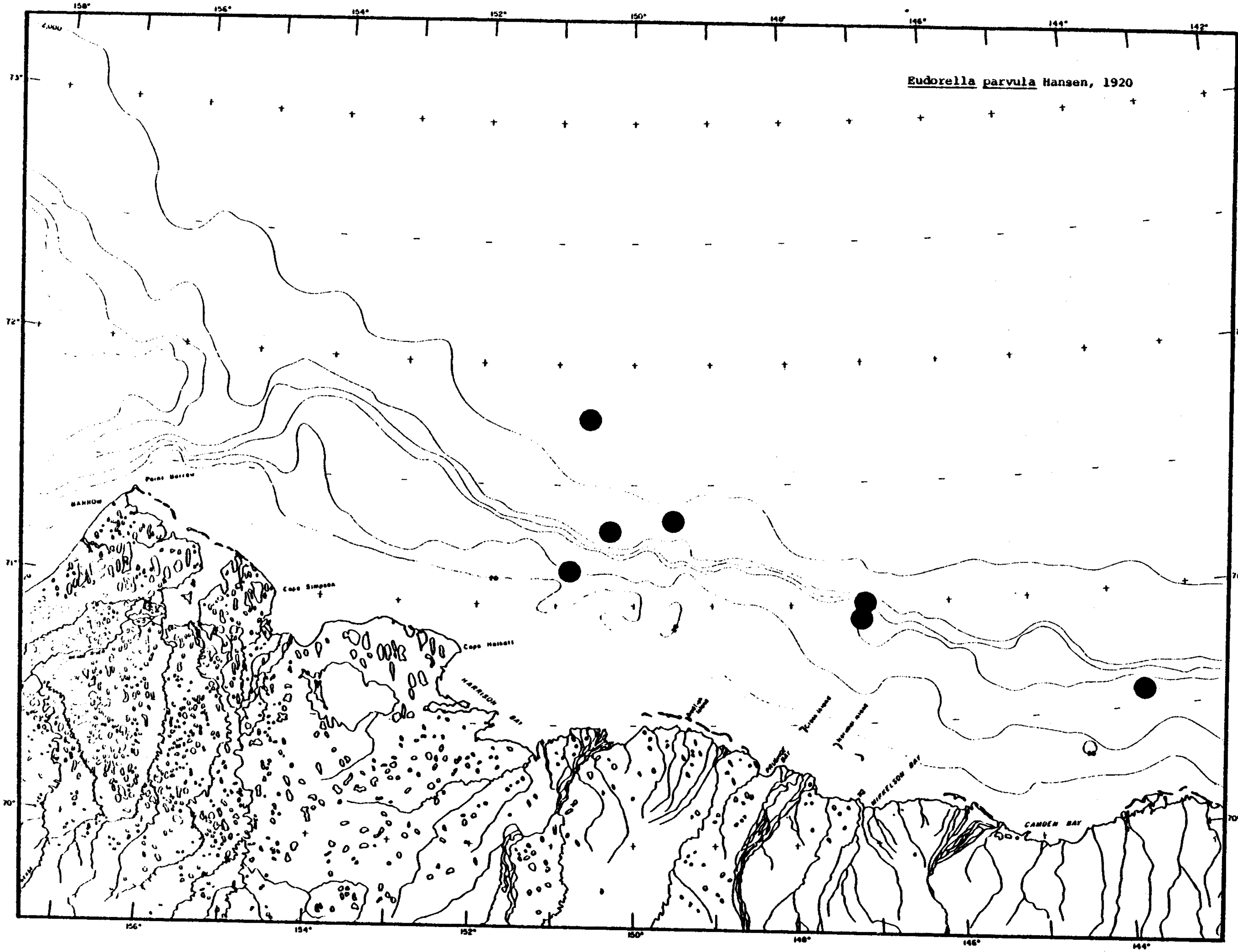
73°
72°
71°
70°
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Eudorella groenlandica Zimmer, 1926
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Eudorella parvula Hansen, 1920
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154°
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150°
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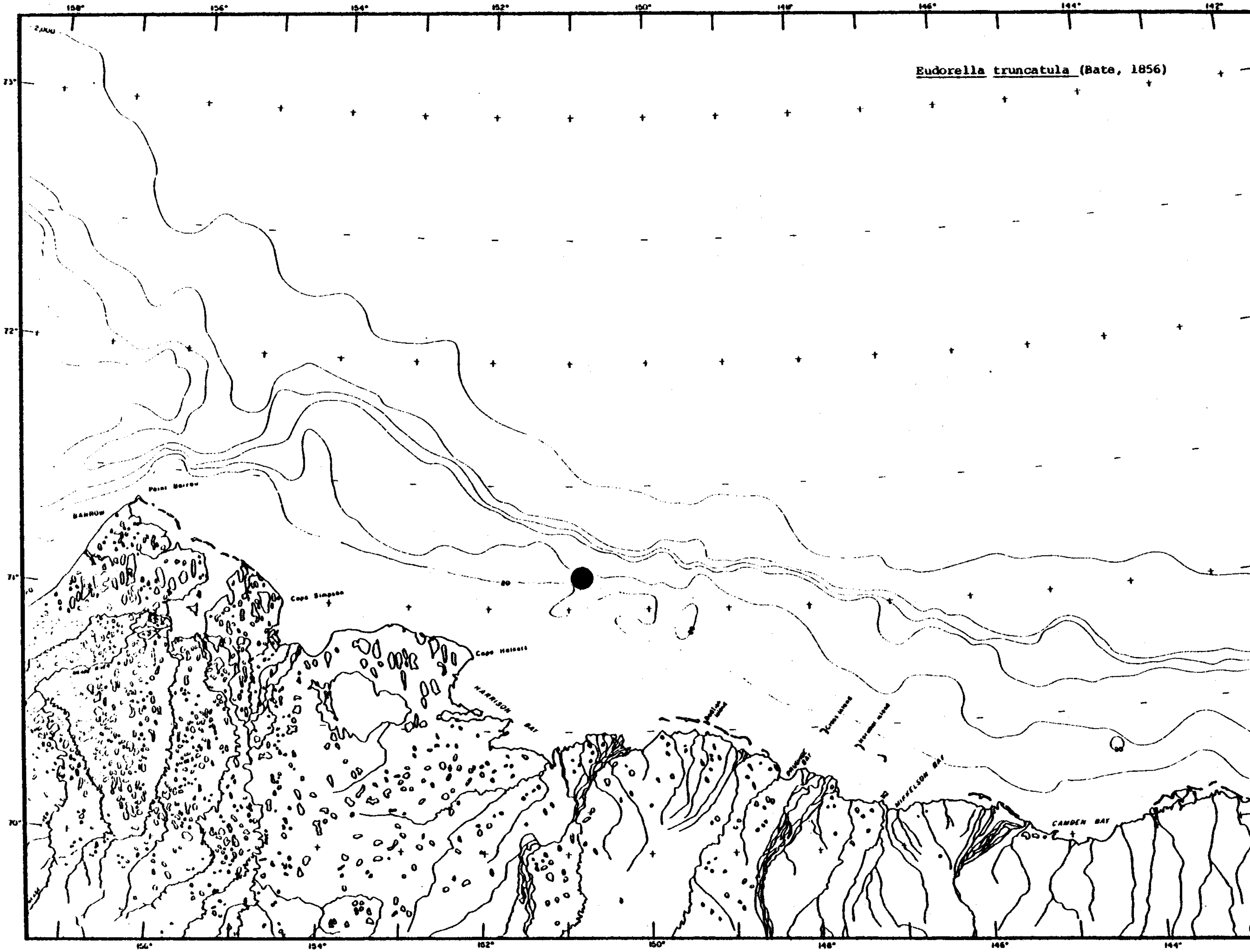
71°
70°
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Eudorella truncatula (Bate, 1856)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
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154°
152°
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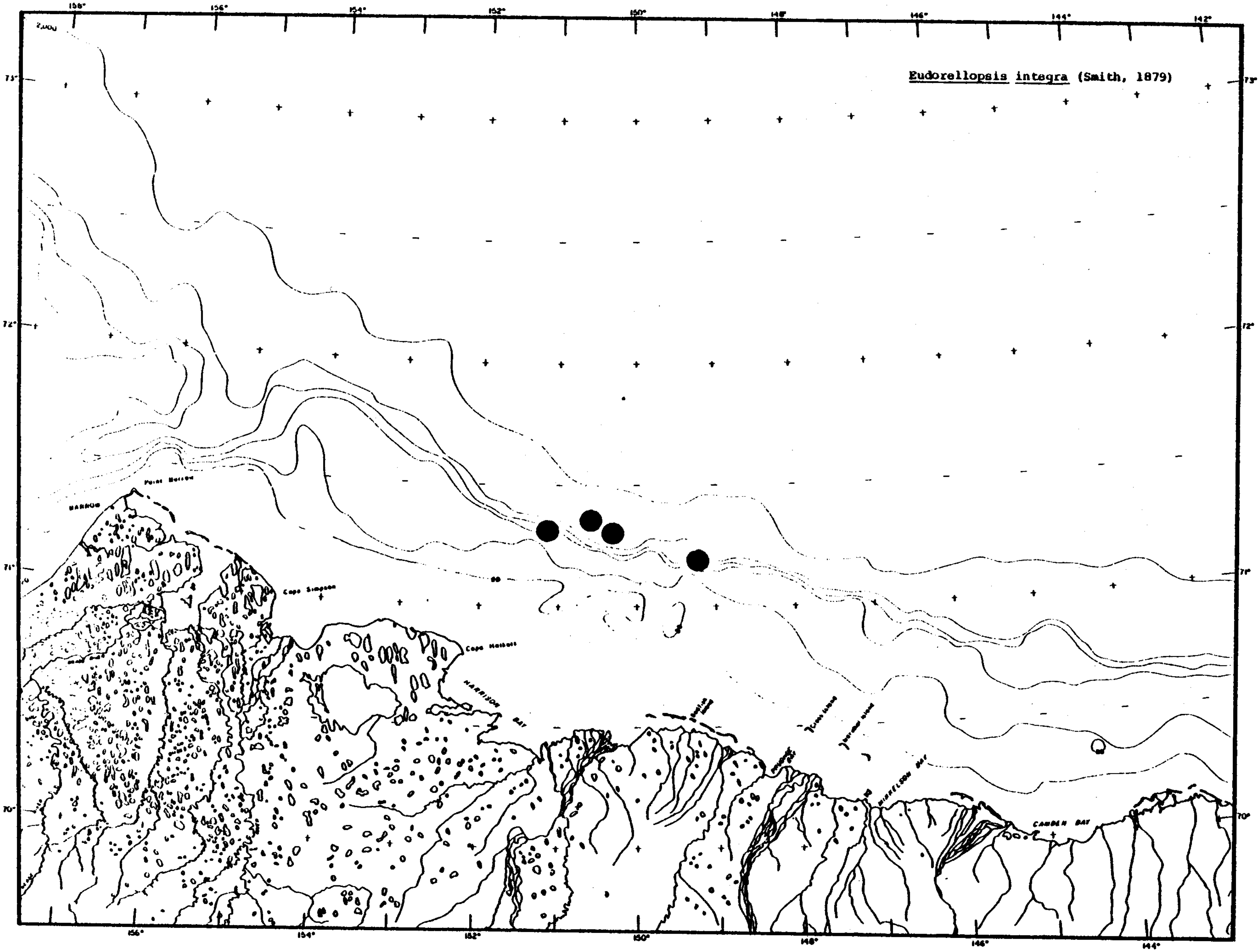
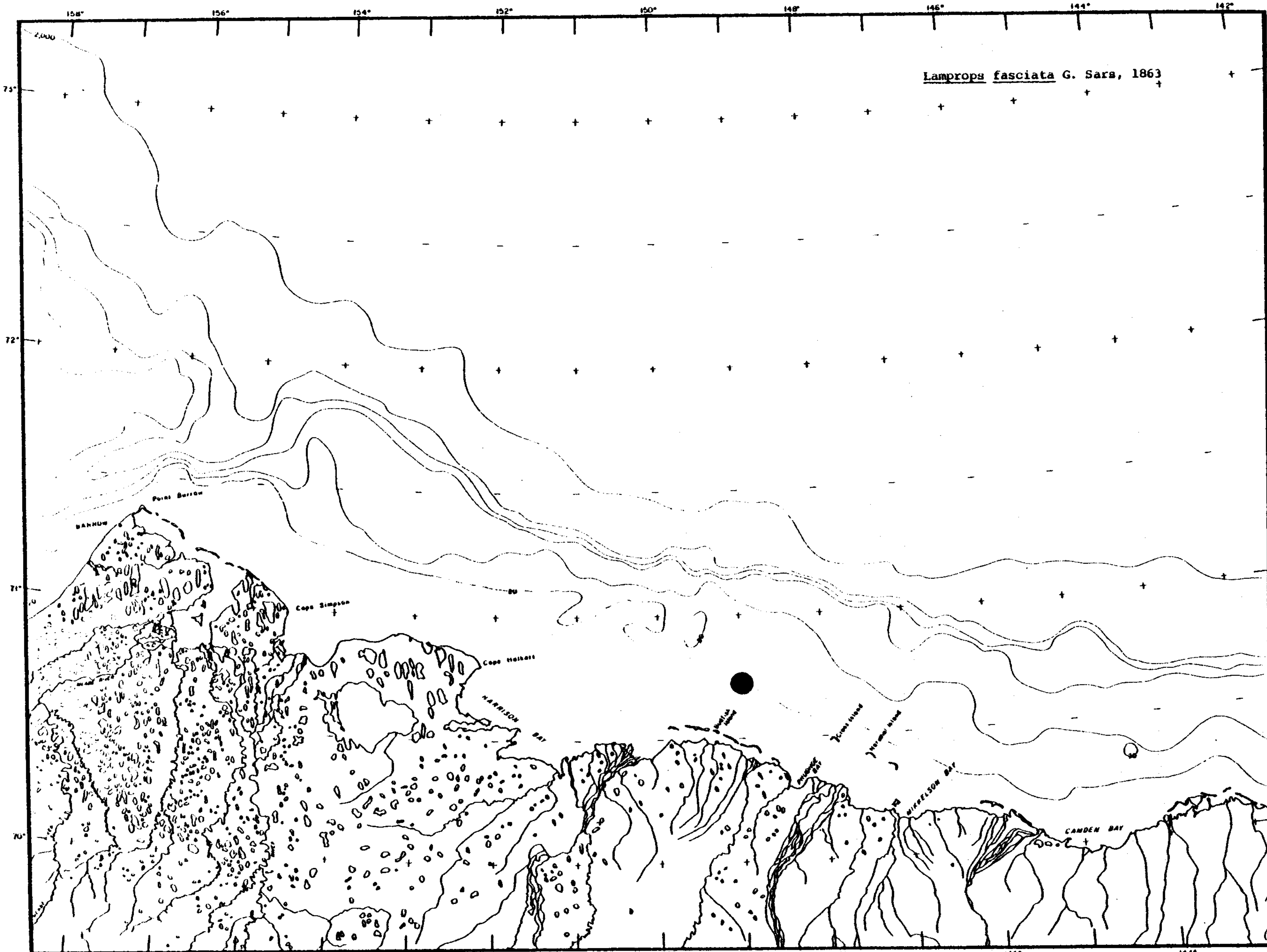

Eudorellopsis integra (Smith, 1879)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Lamprops fasciata G. Sars, 1863
158°
156°
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152°
150°
148°
146°
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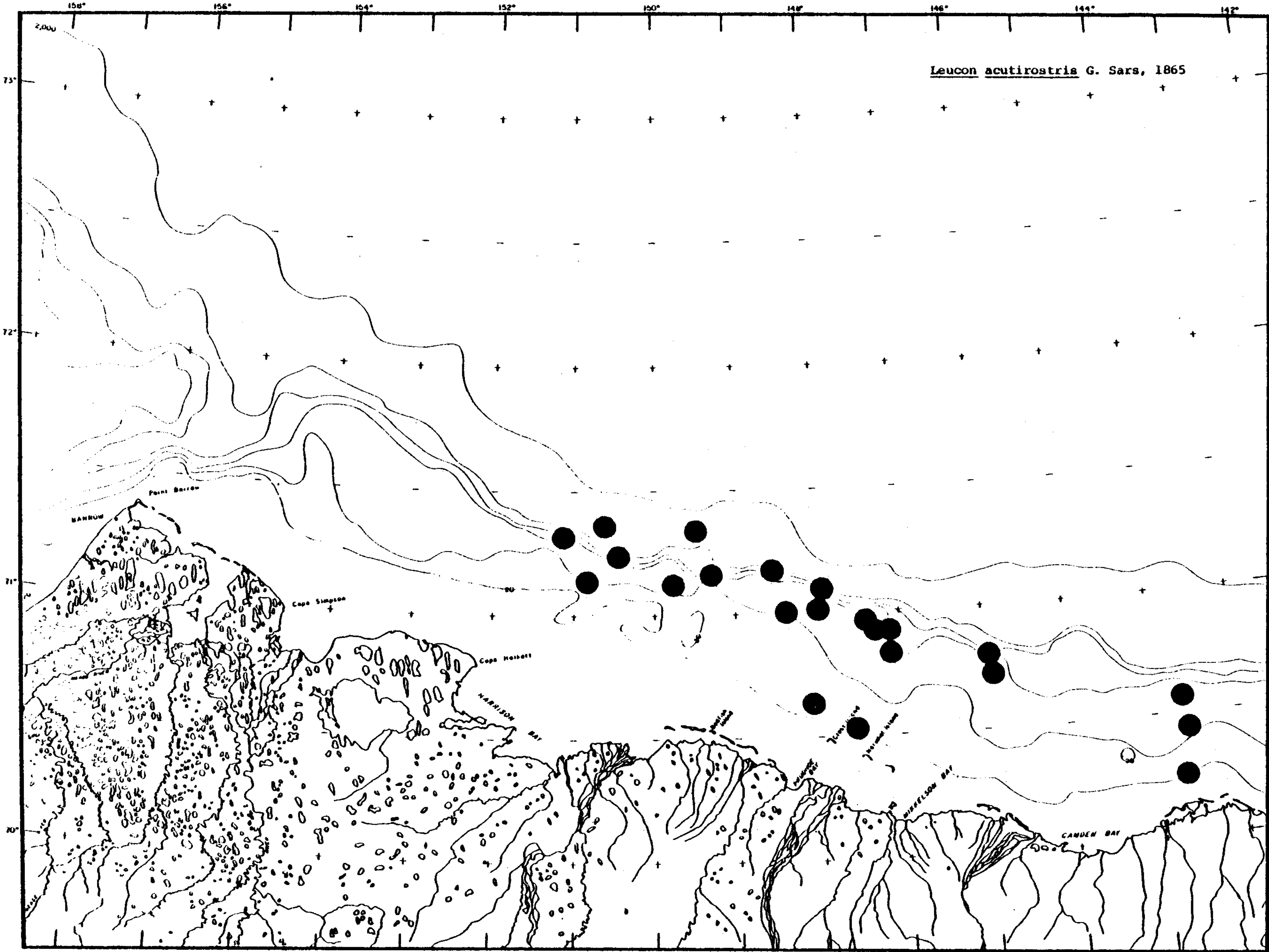
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Leucon acutirostris G. Sars, 1865
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
158°
156°
154°
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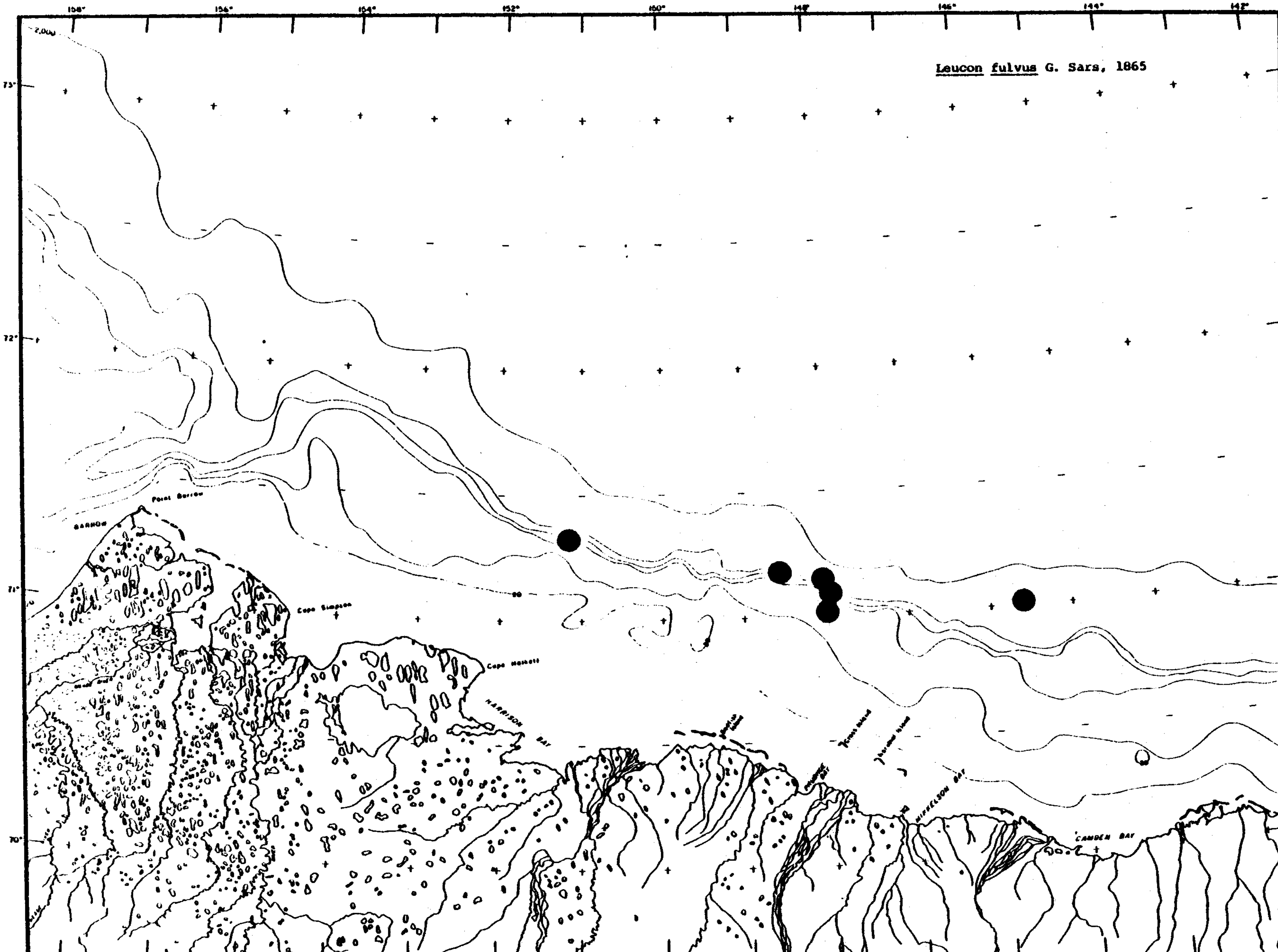
Leucon fulvus G. Sars, 1865
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
156°
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152°
150°
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146°
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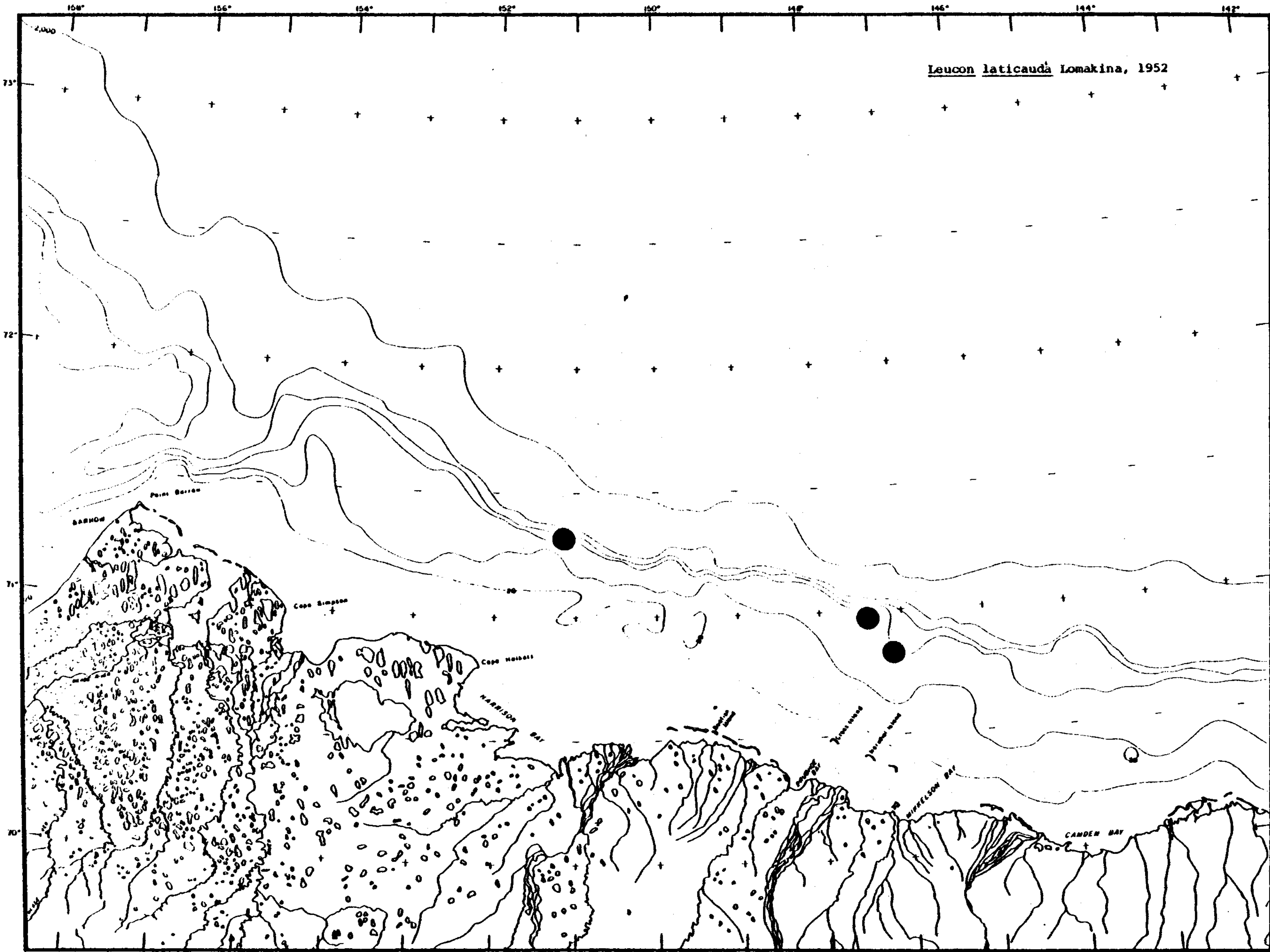
Leucon laticauda Lomakina, 1952
2,000
158°
156°
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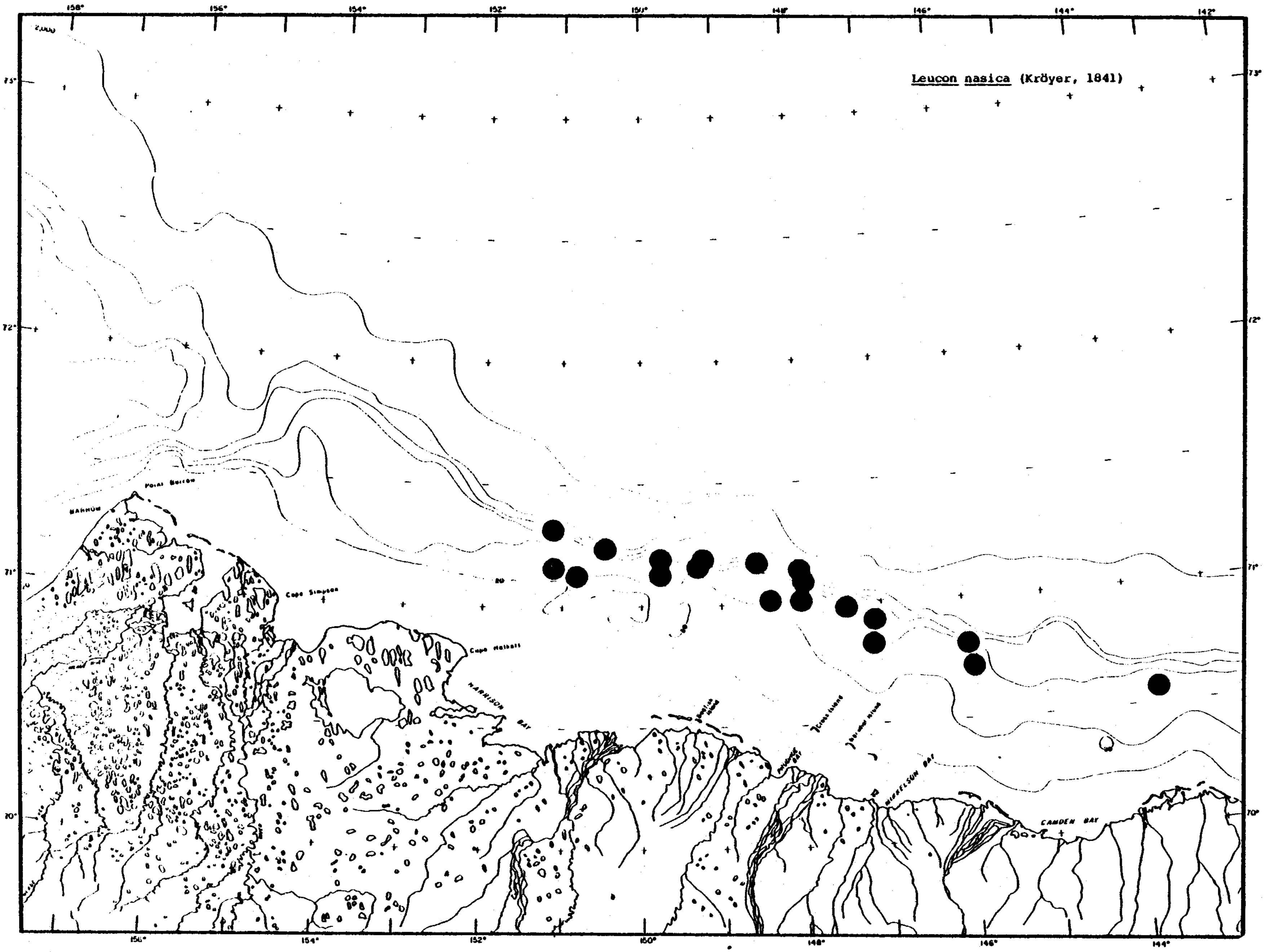
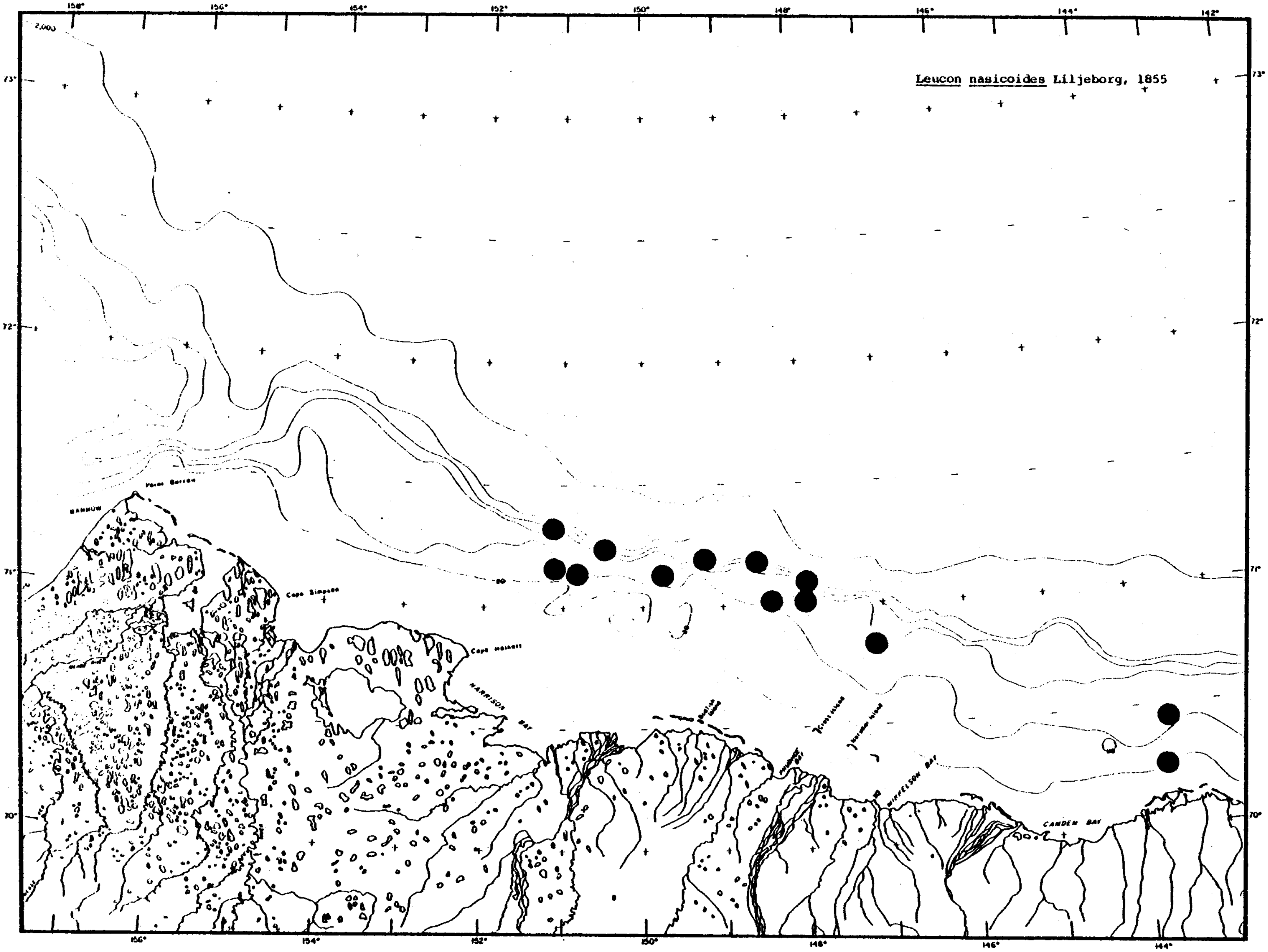
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
20


Leucon nasica (Kröyer, 1841)
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay



Leucon nasicoides Liljeborg, 1855
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156°
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152°
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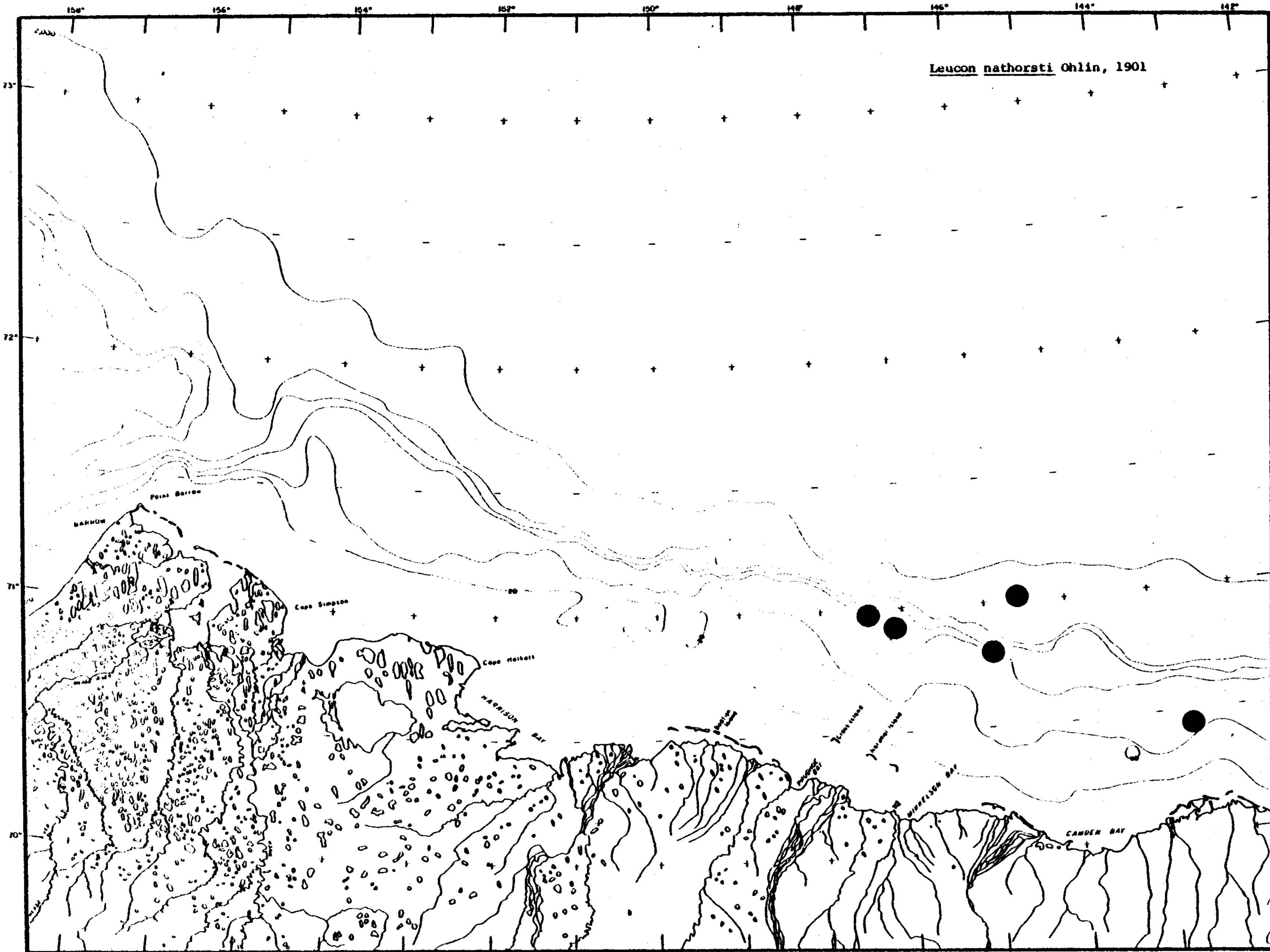
72°
71°
70°
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Leucon nathorsti Ohlin, 1901
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
73°
72°
71°
70°
156°
154°
152°
150°
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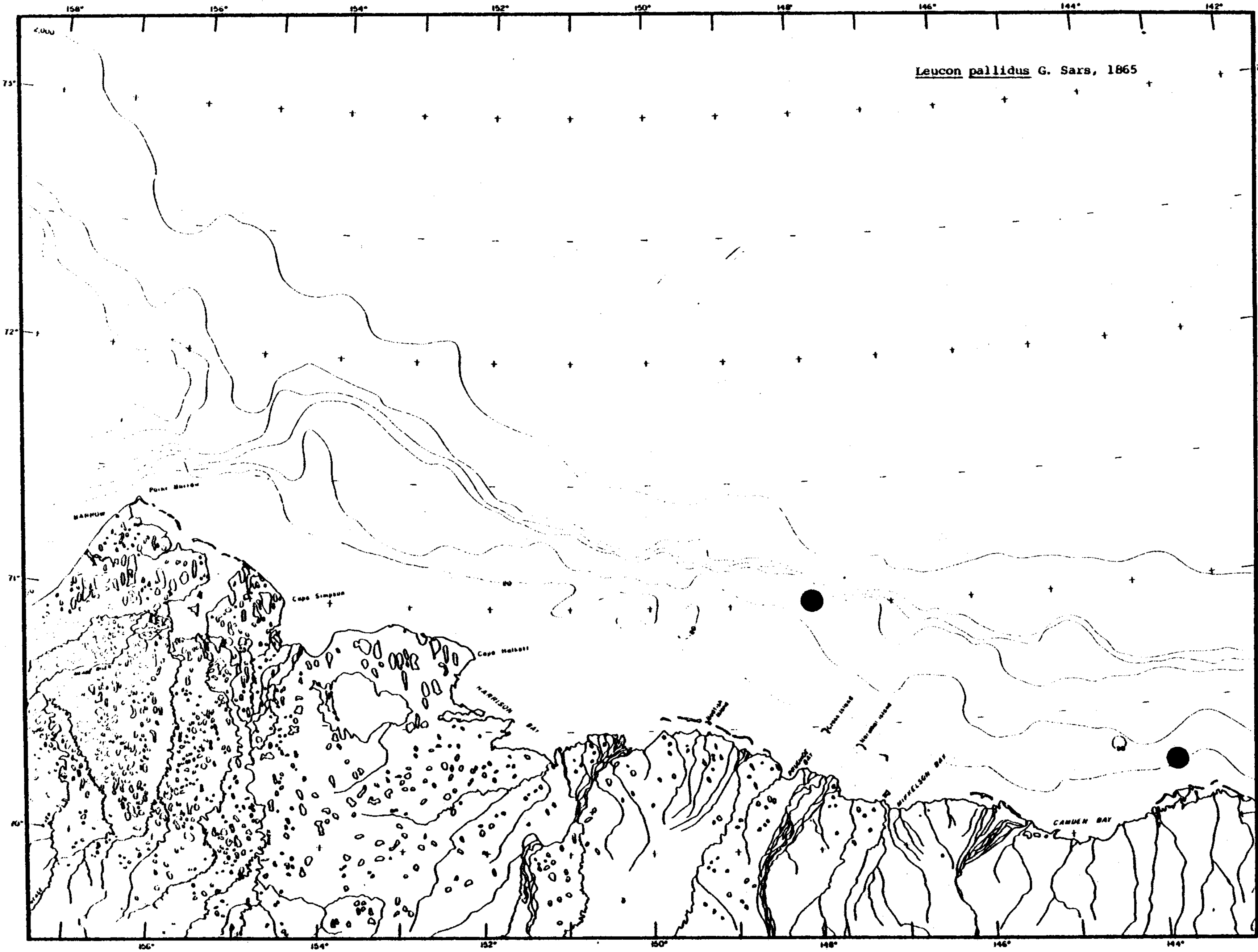
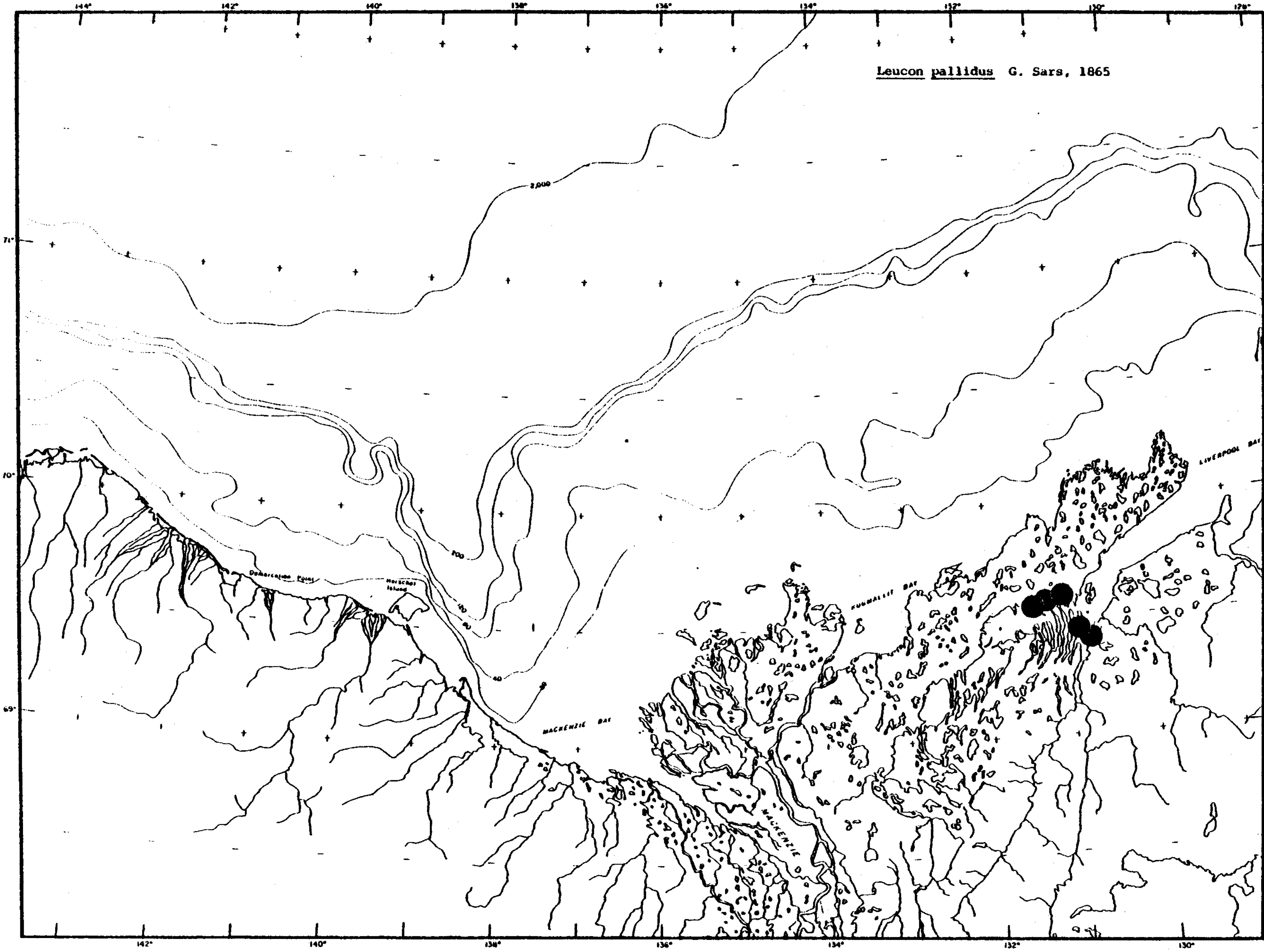
144°
142°


Leucon pallidus G. Sars, 1865
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Leucon pallidus G. Sars, 1865
144°
142°
140°
138°
136°
134°
132°
130°
128°
71°
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69°
2,000
200
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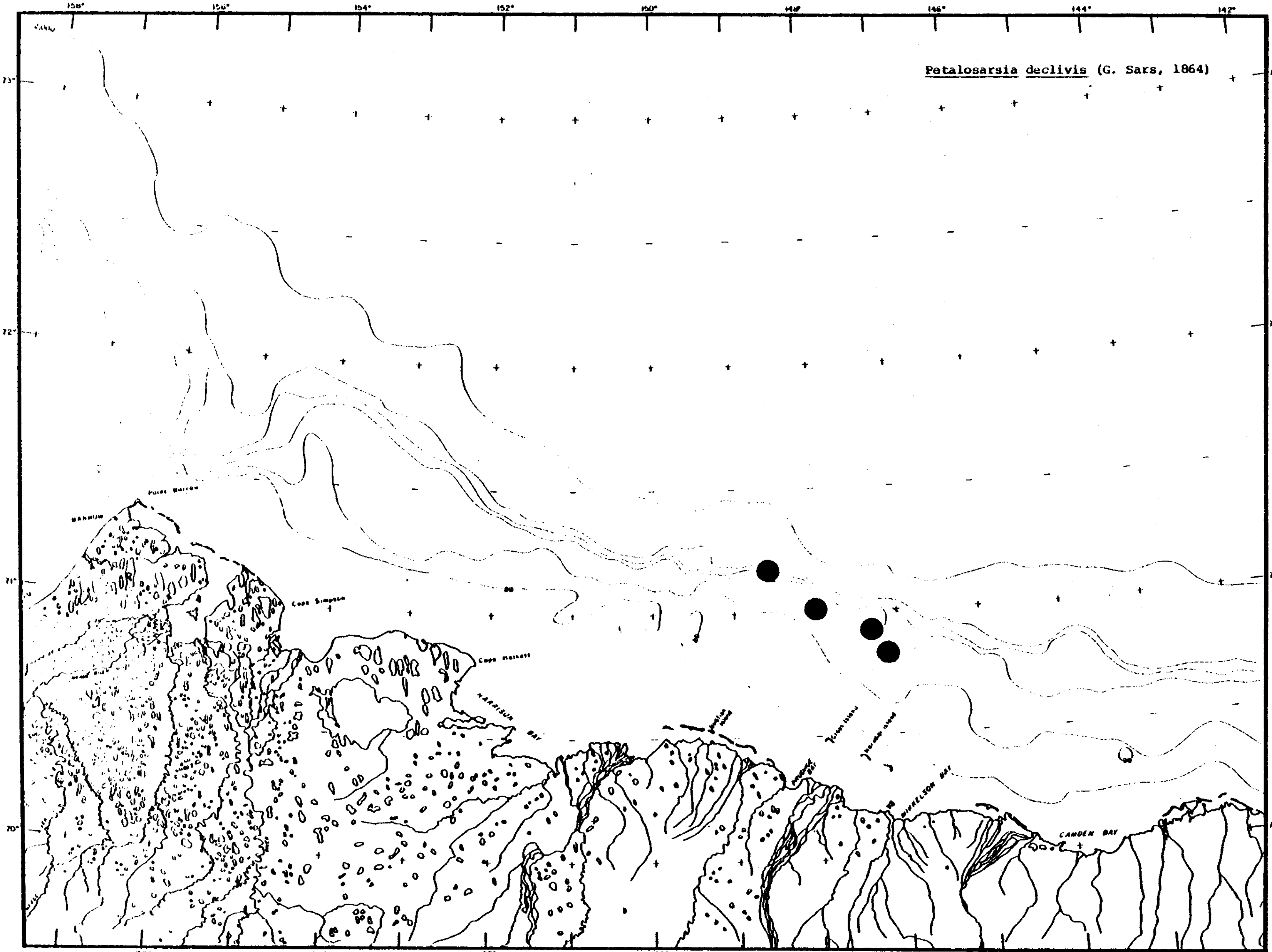
40
MACKENZIE BAY
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE


Petalosarsia declivis (G. Sars, 1864)
158°
156°
154°
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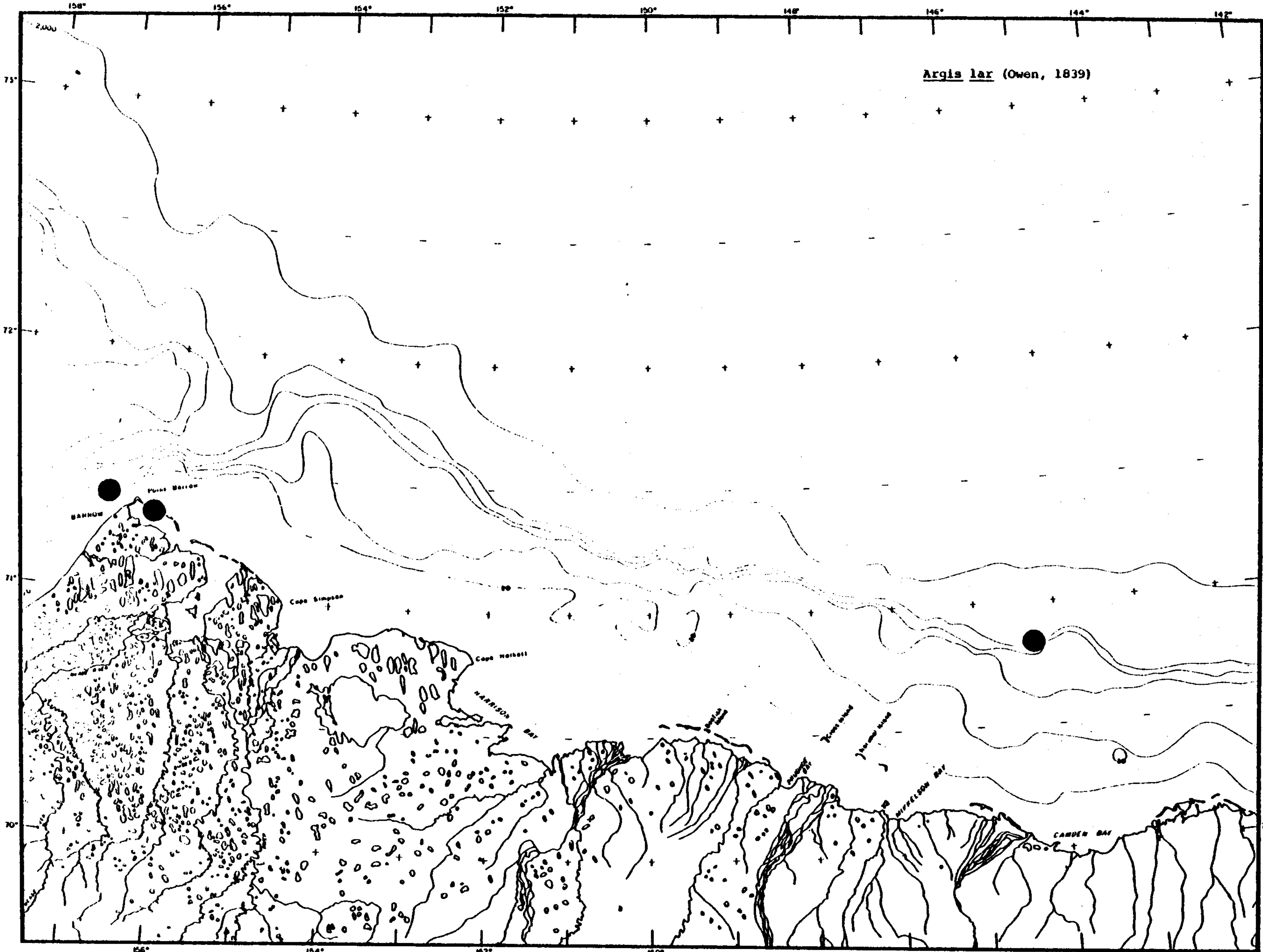
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY

Species Distributions:

Arthropoda -- Decapoda (Natantia)


Argis lar (Owen, 1839)
158°
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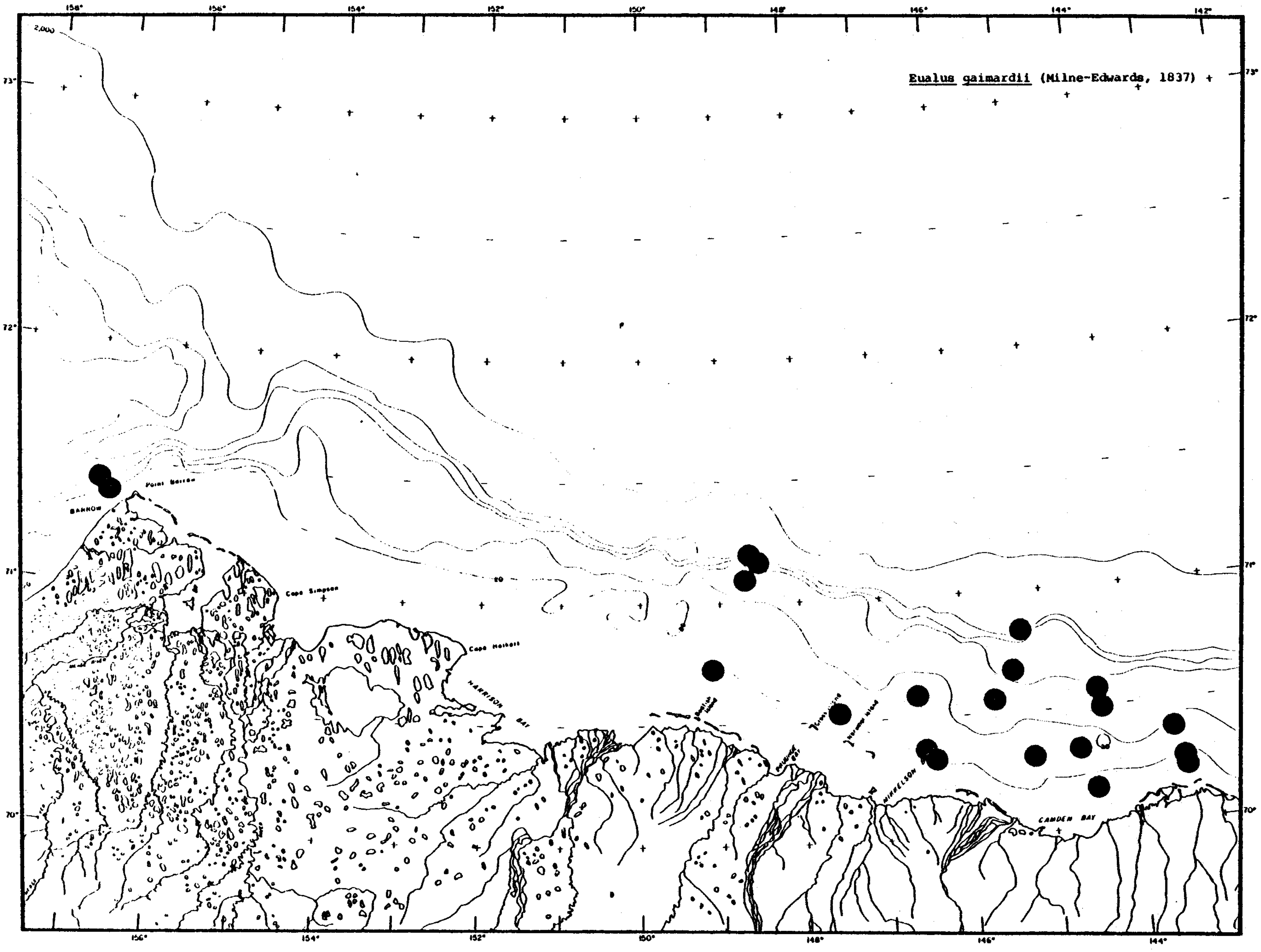
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Eualus gaimardii (Milne-Edwards, 1837)
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154°
152°
150°
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144°
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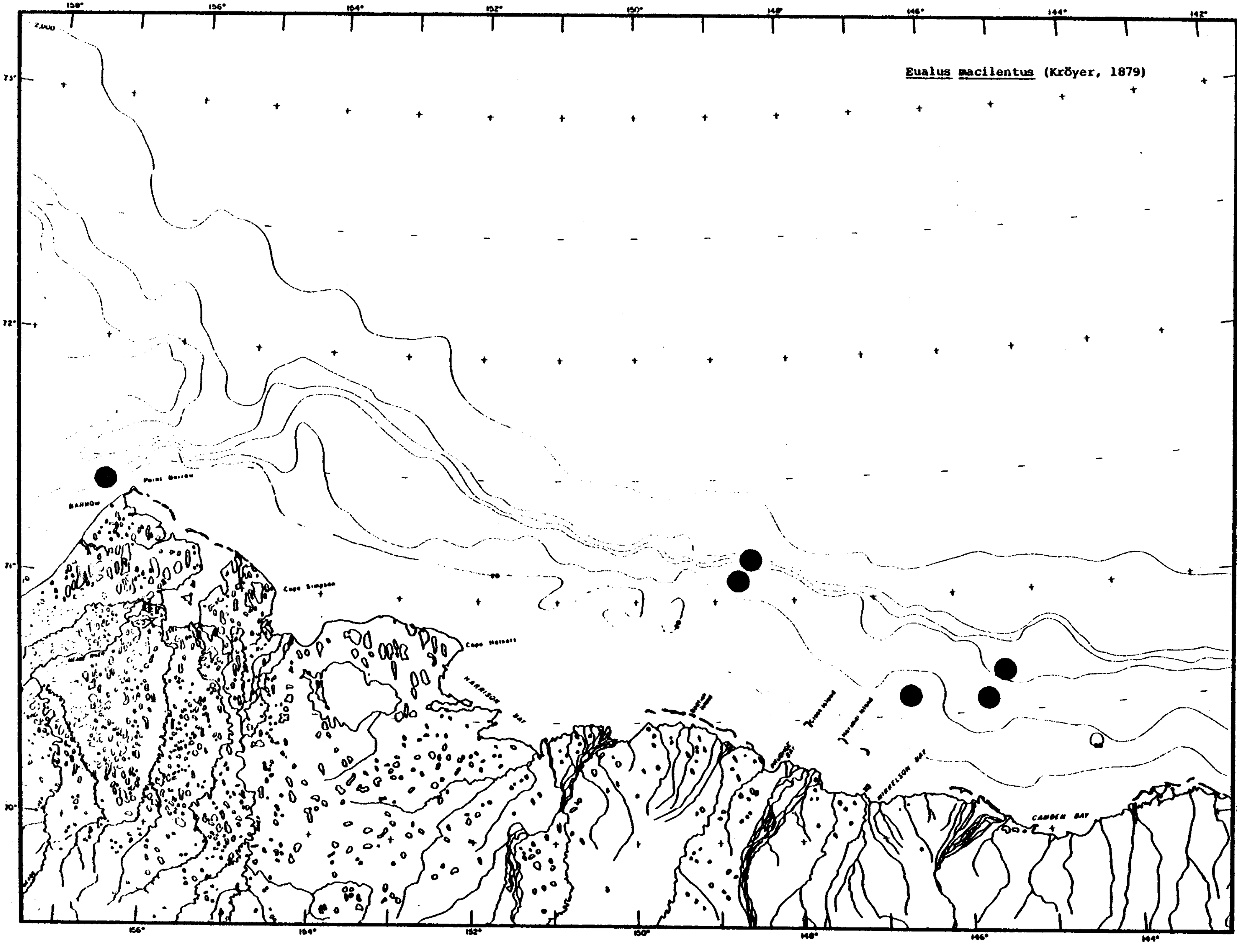
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Eualus macilentus (Kröyer, 1879)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
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72°
71°
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158°
156°
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152°
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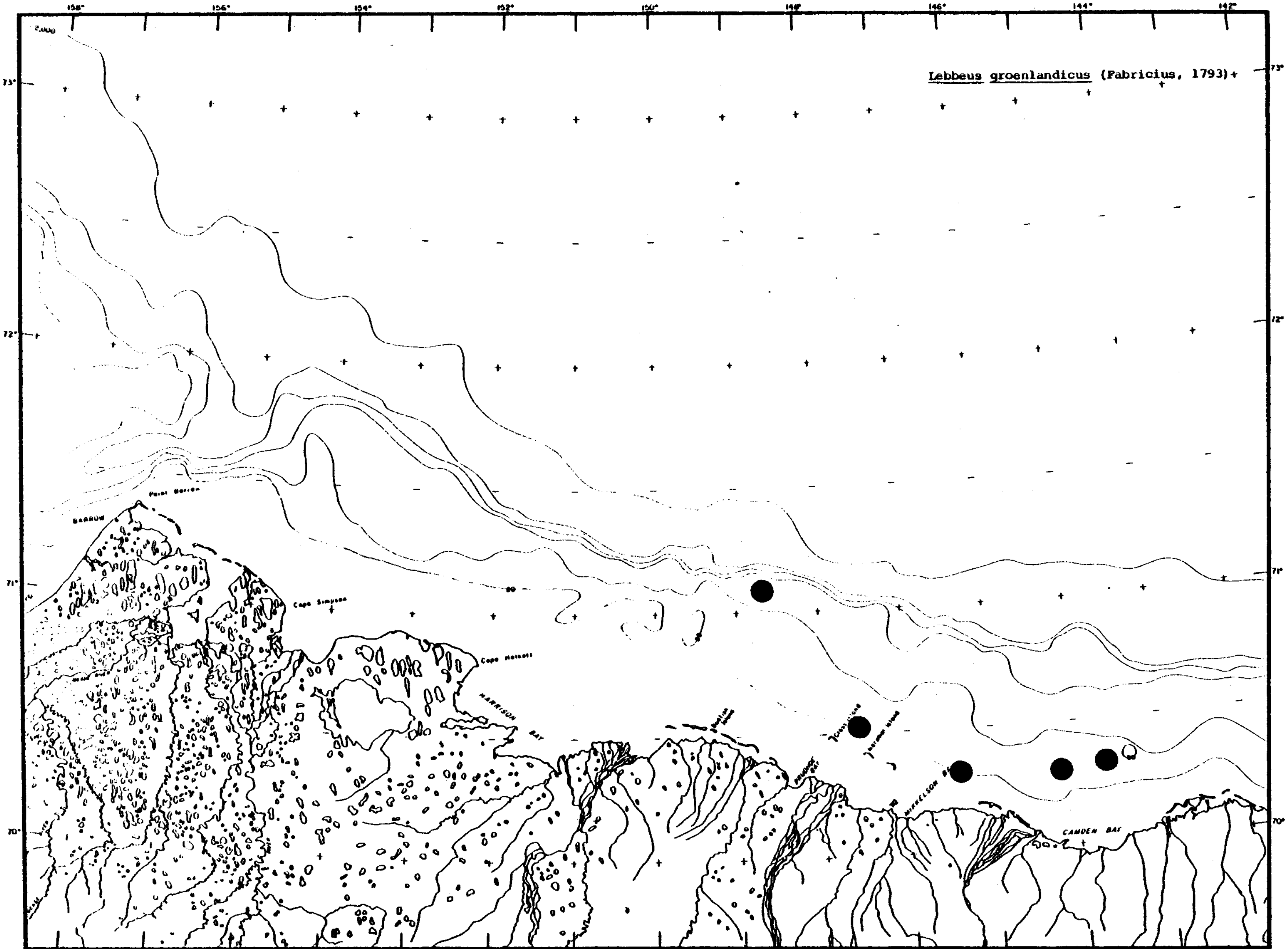
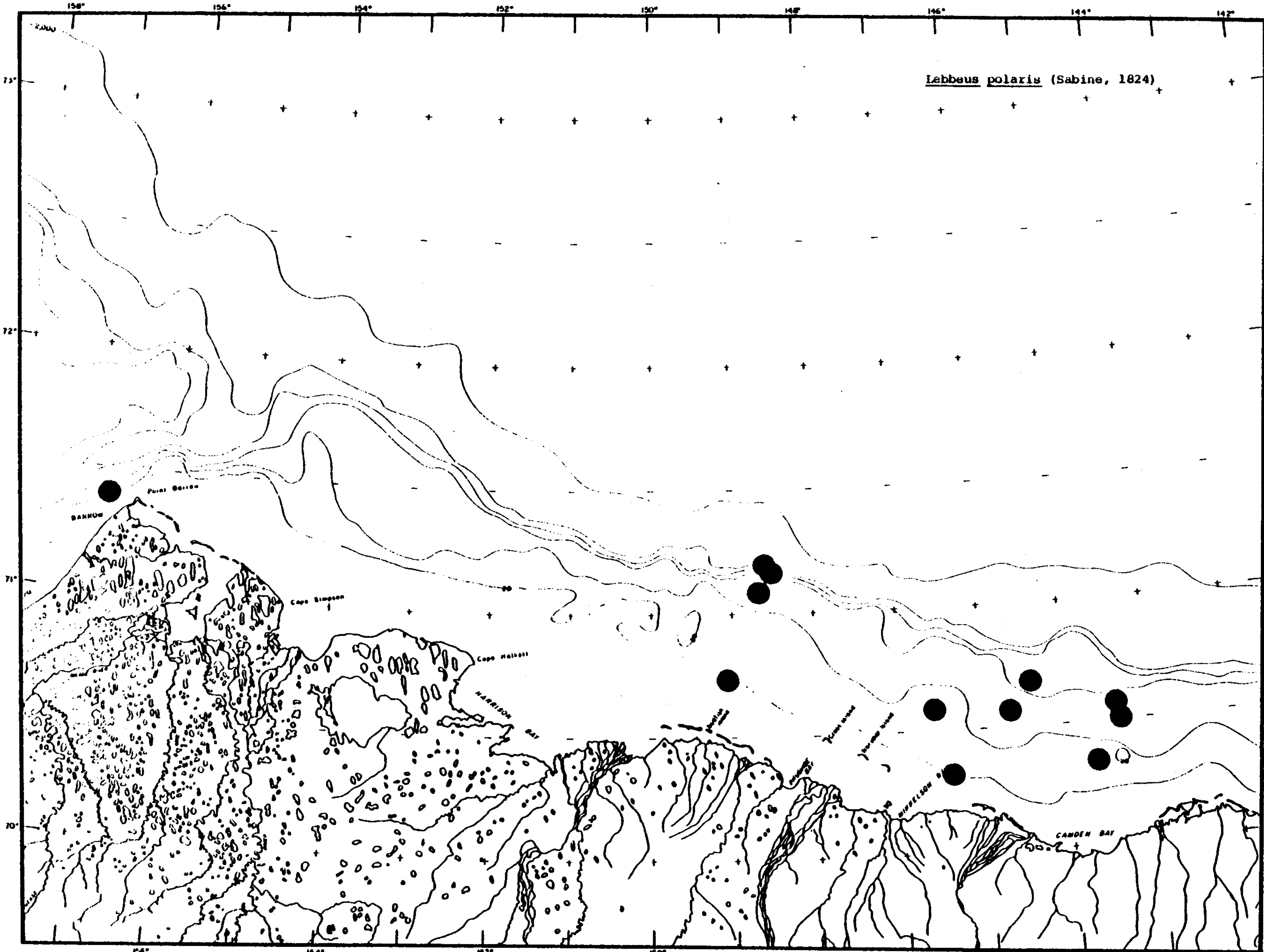
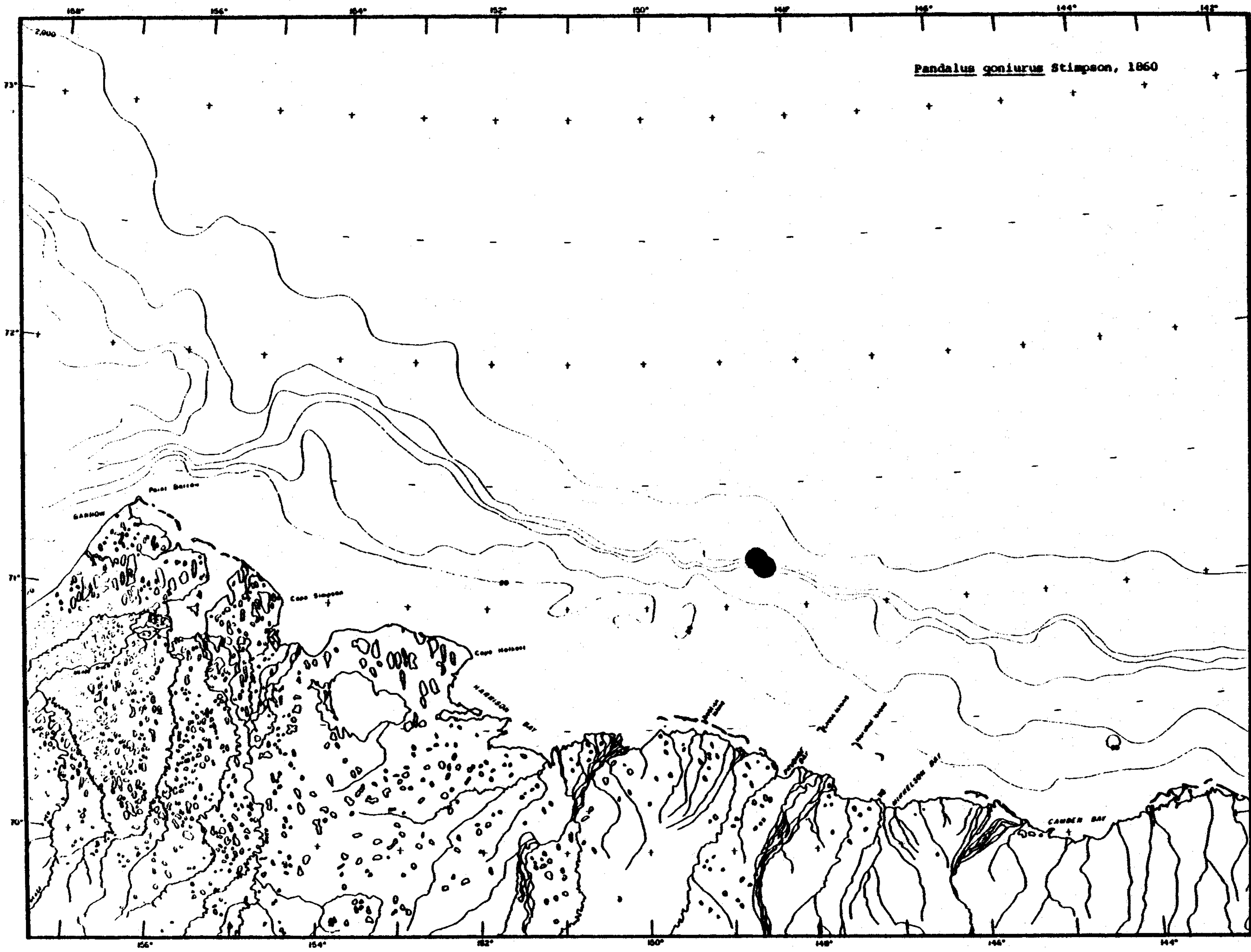
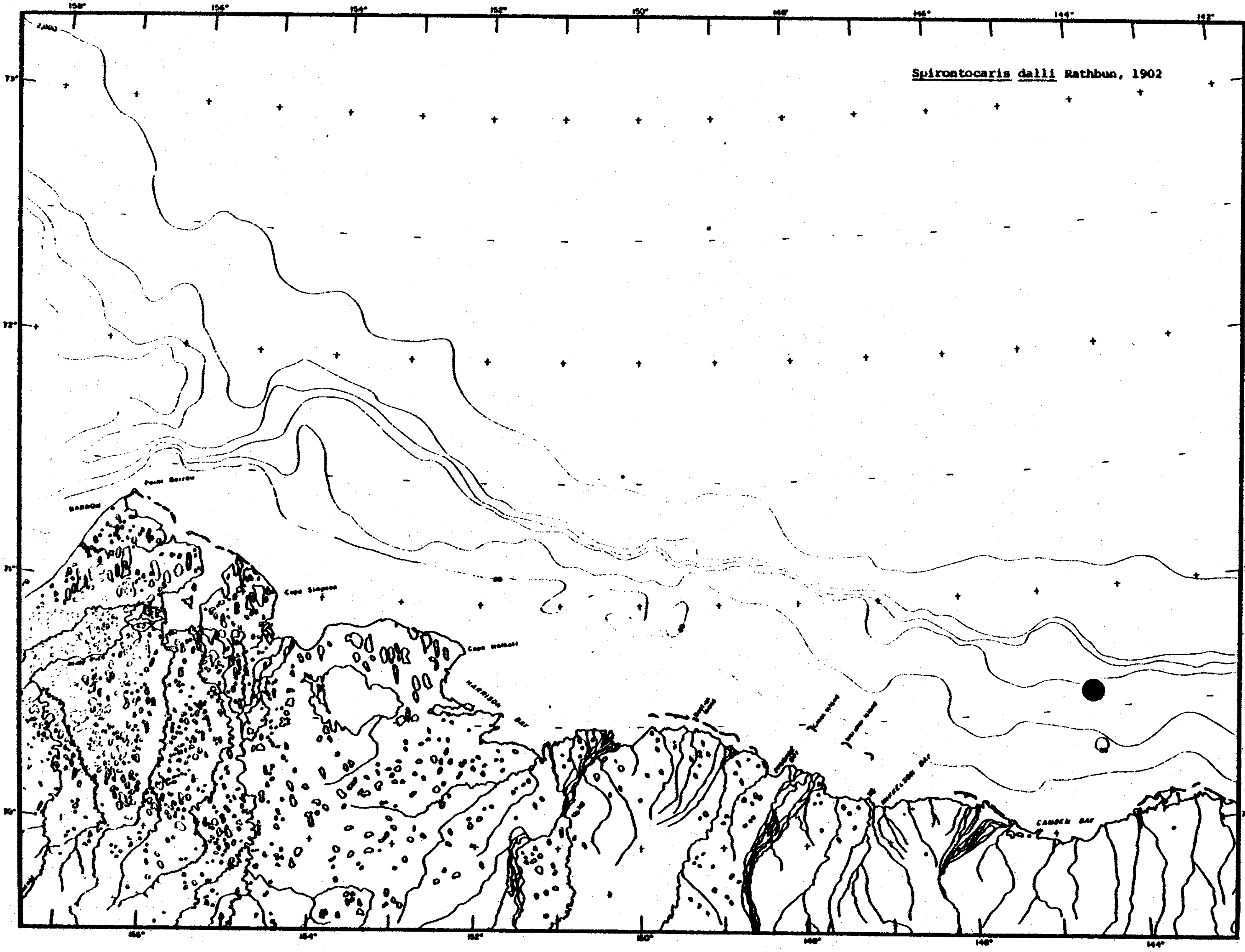
142°

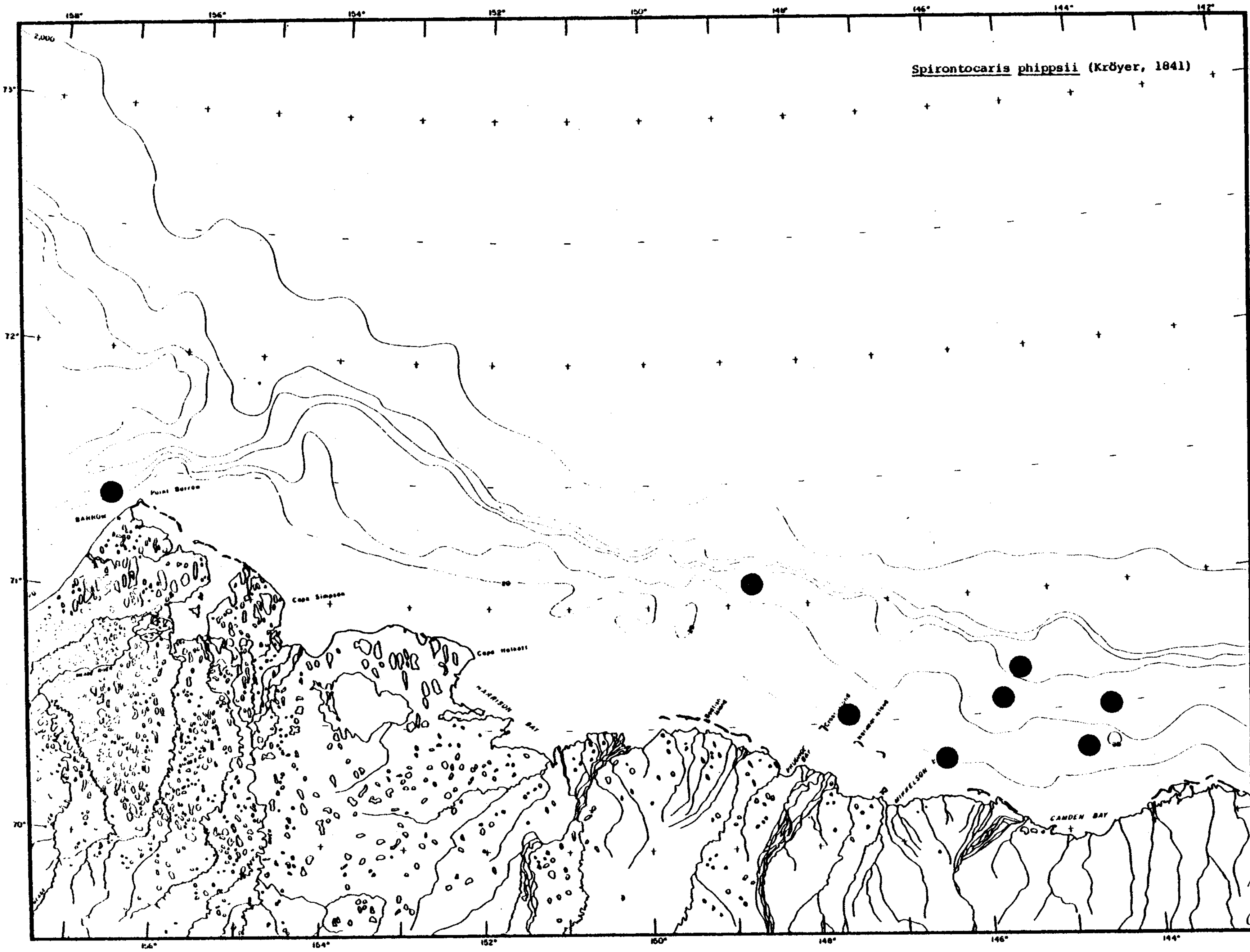

Lebbeus groenlandicus (Fabricius, 1793)+
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Lebbeus polaris (Sabine, 1824)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
71°
72°
70°


Pandalus goniurus Stimpson, 1860
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Mikkelsen Bay
Camden Bay

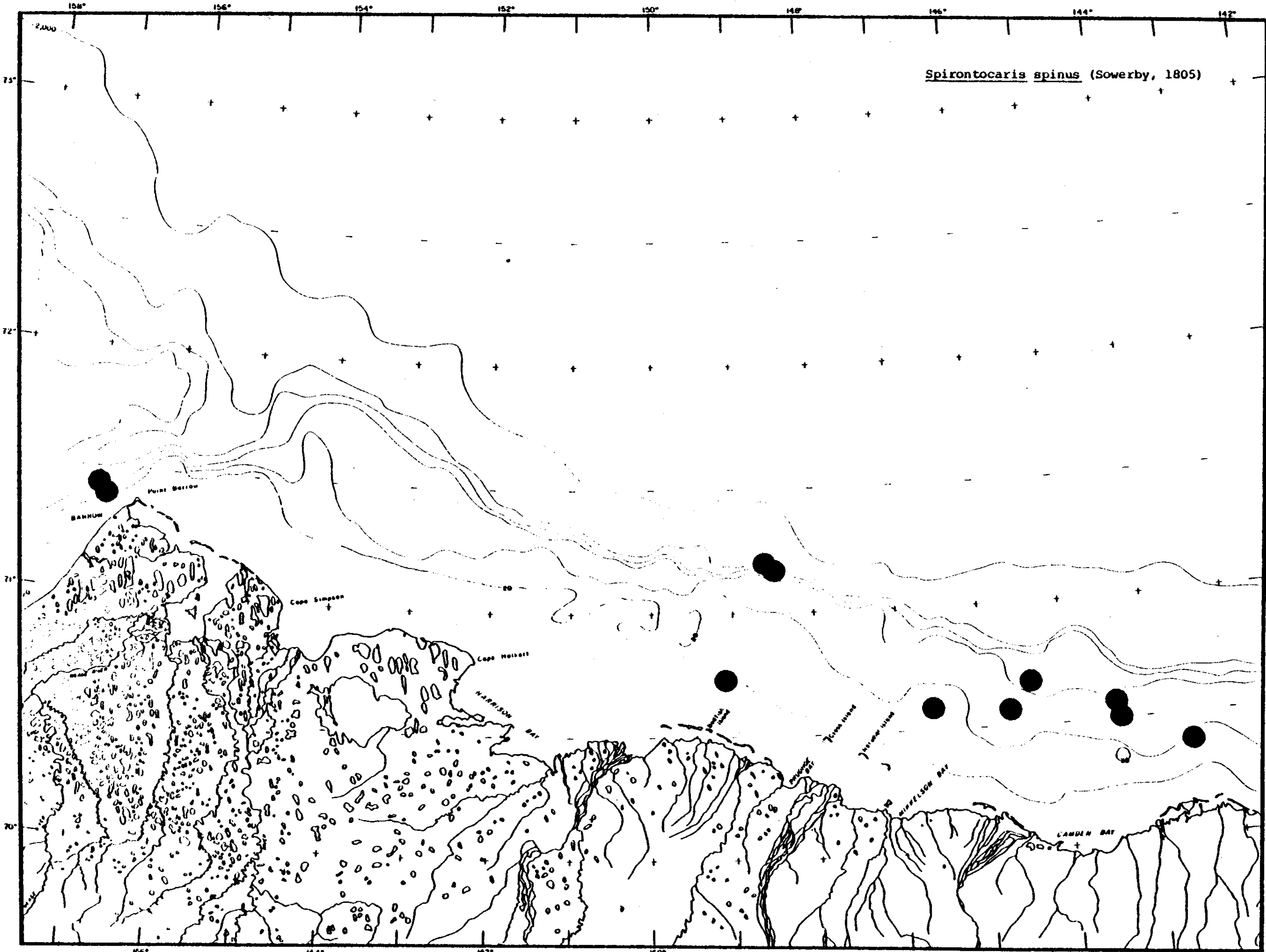

Spirontocaris dalli Rathbun, 1902
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay

434



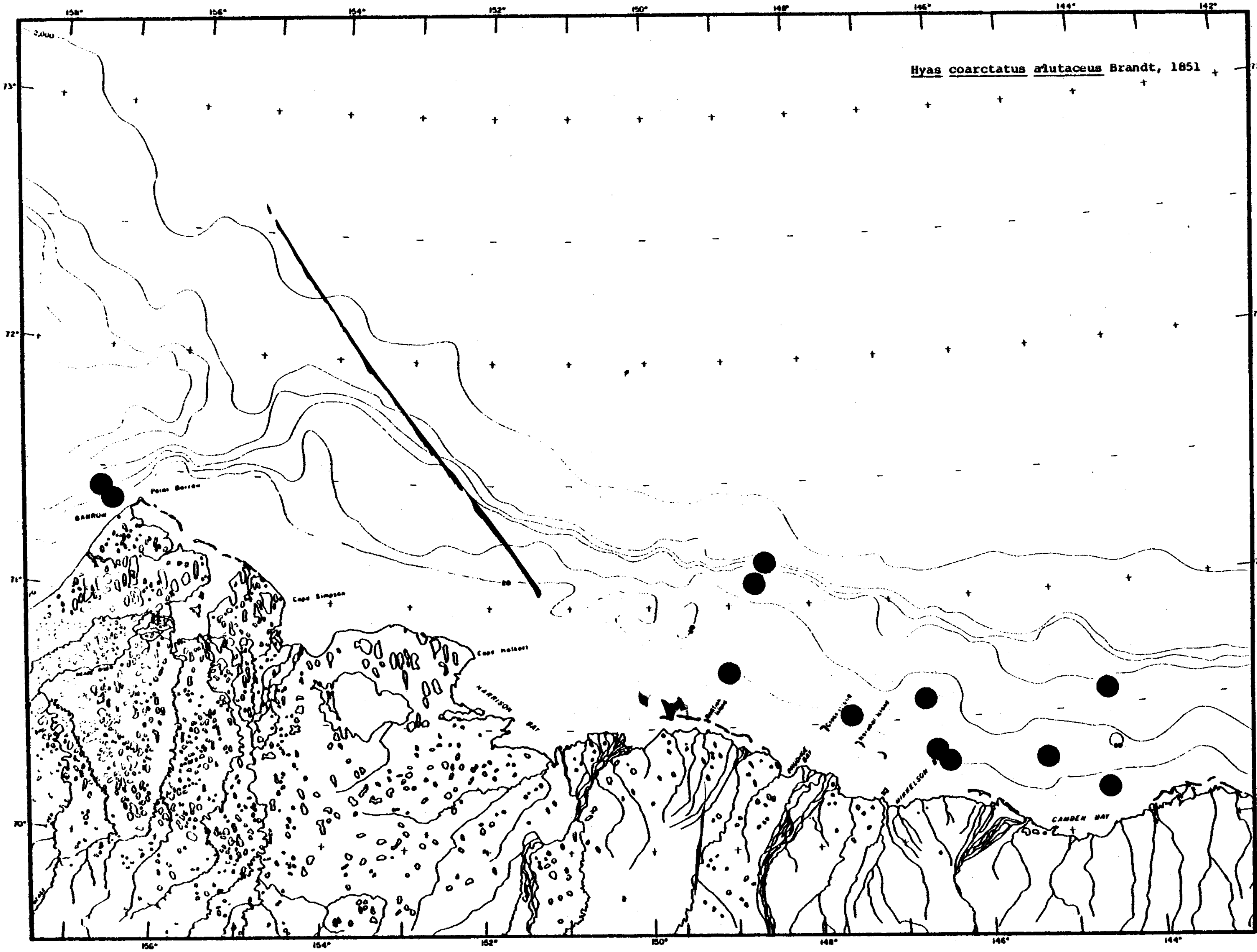
Spirontocaris phippsii (Kröyer, 1841)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
73°
72°
71°
70°

274


Spirontocaris spinus (Sowerby, 1805)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay

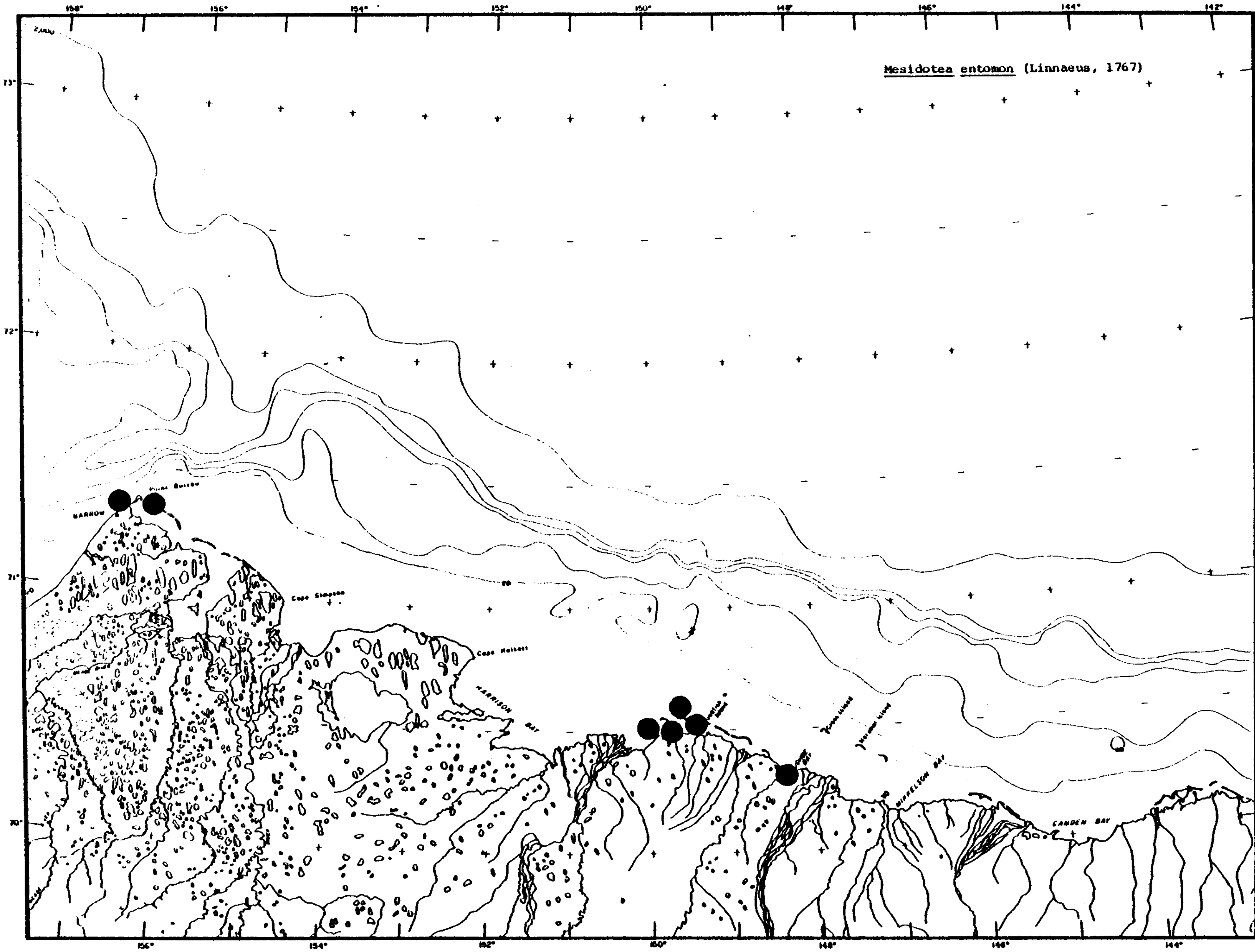
Species Distributions:

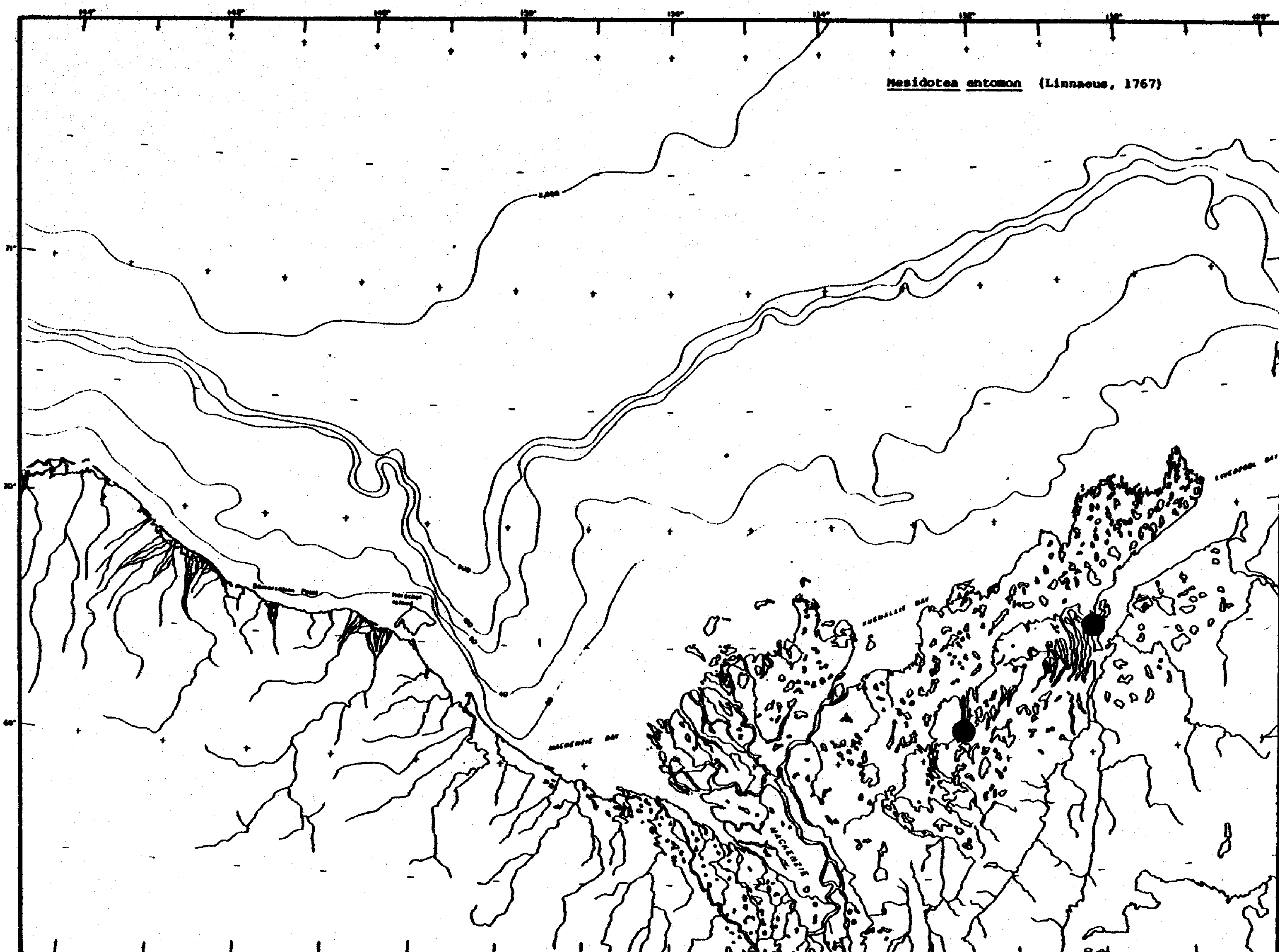
Arthropoda -- Decapoda (Reptantia)

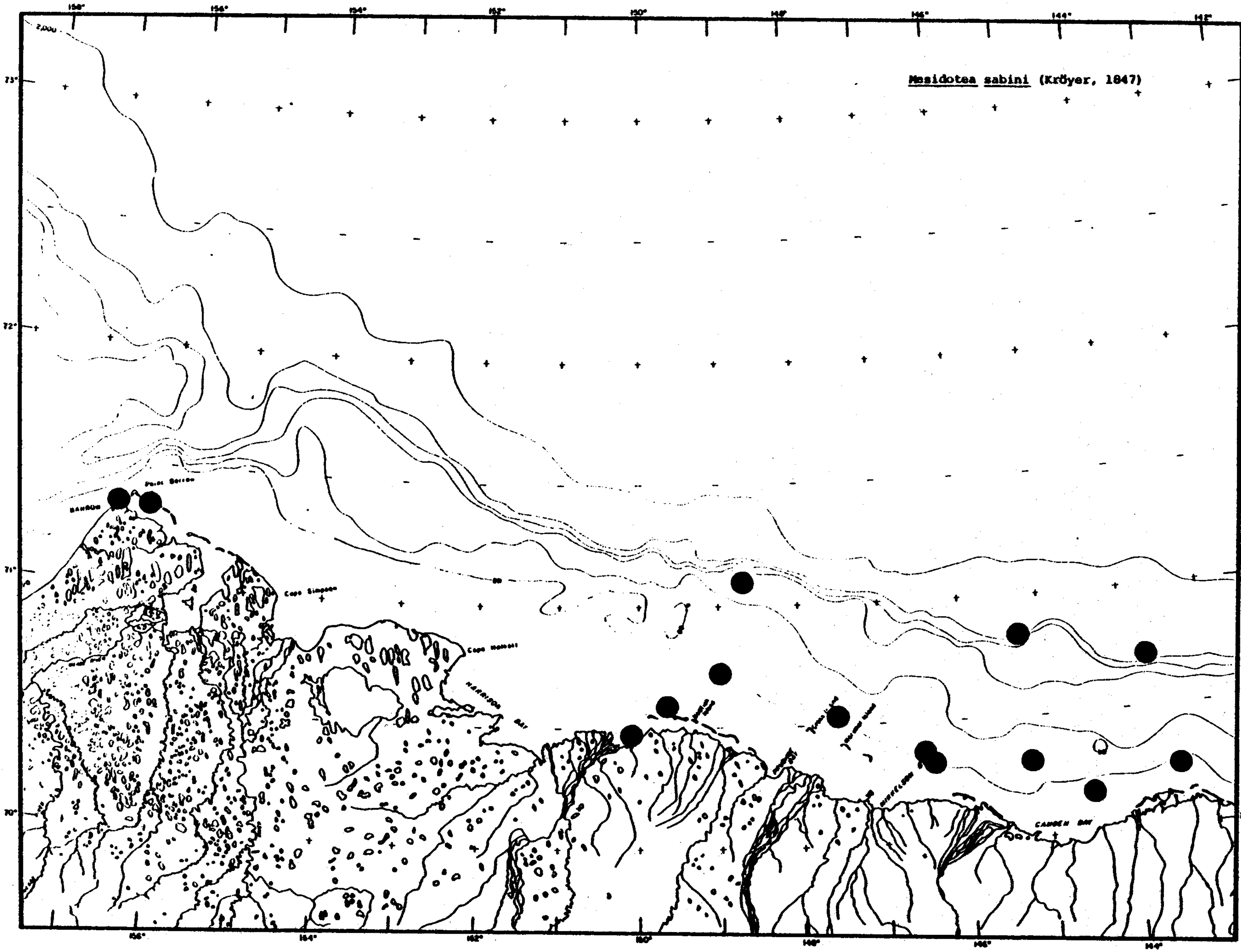

Hyas coarctatus alutaceus Brandt, 1851
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON
CAMDEN BAY
2,000
73°
72°
71°
70°
158°
156°
154°
152°
150°
148°
146°
144°
142°

Species Distributions:

Arthropoda -- Isopoda


Mesidotea entomon (Linnaeus, 1767)
BARROW
Cape Simpson
HARRISON BAY
CAMDEN BAY


Mesidotea entomon (Linnaeus, 1767)


Mesidotea sabini (Kröyer, 1847)
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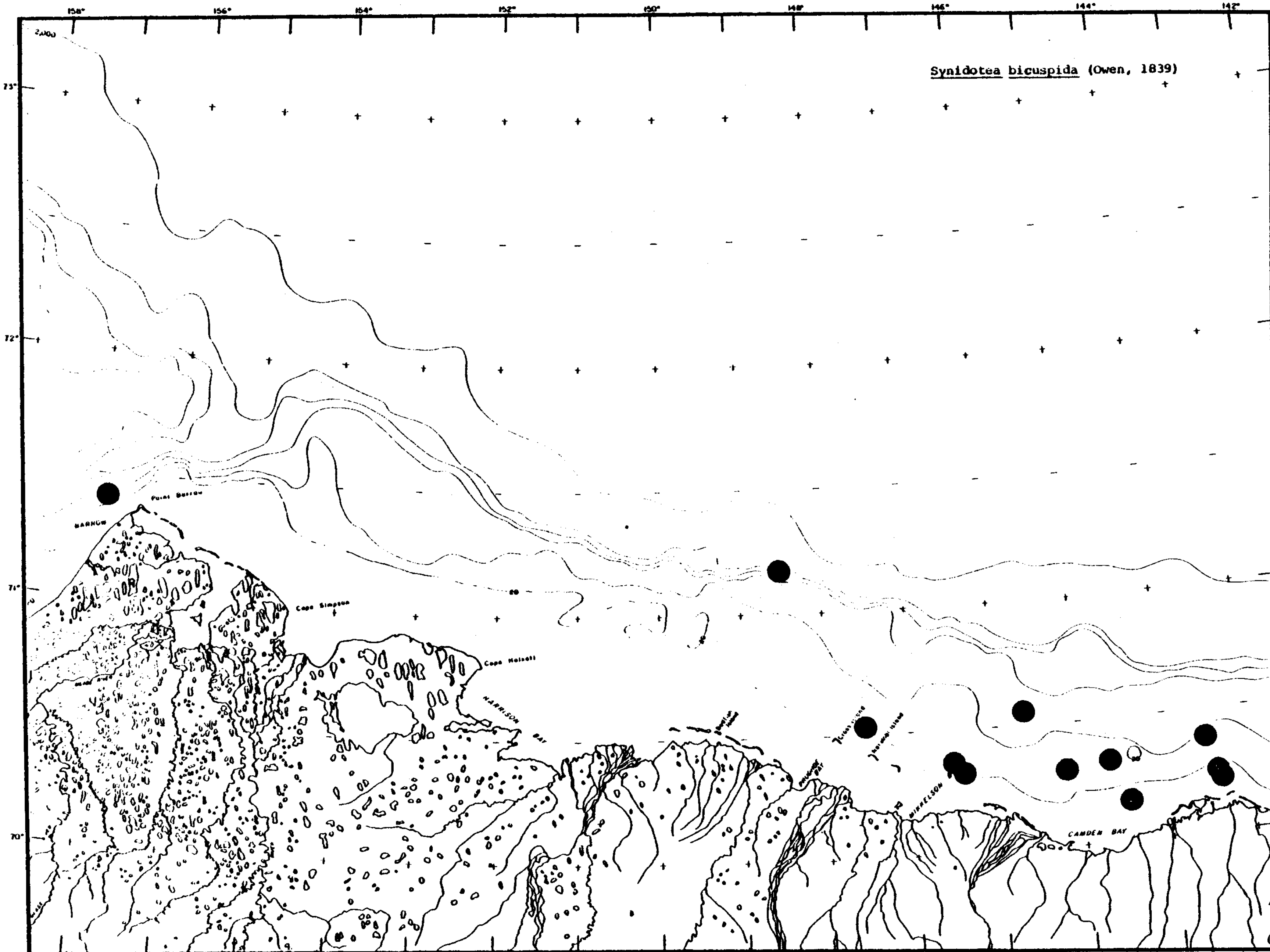
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Synidotea bicuspida (Owen, 1839)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

FINAL REPORT

Contract No. 03-5-022-68
Task Order No. 4
1 April 1975 - 31 March 1976

Summarization of existing literature and unpublished data on the distribution, abundance, and life histories of benthic organisms

Andrew G. Carey, Jr., Principal Investigator
School of Oceanography
Oregon State University
Corvallis, Oregon 97331

1 January 1977

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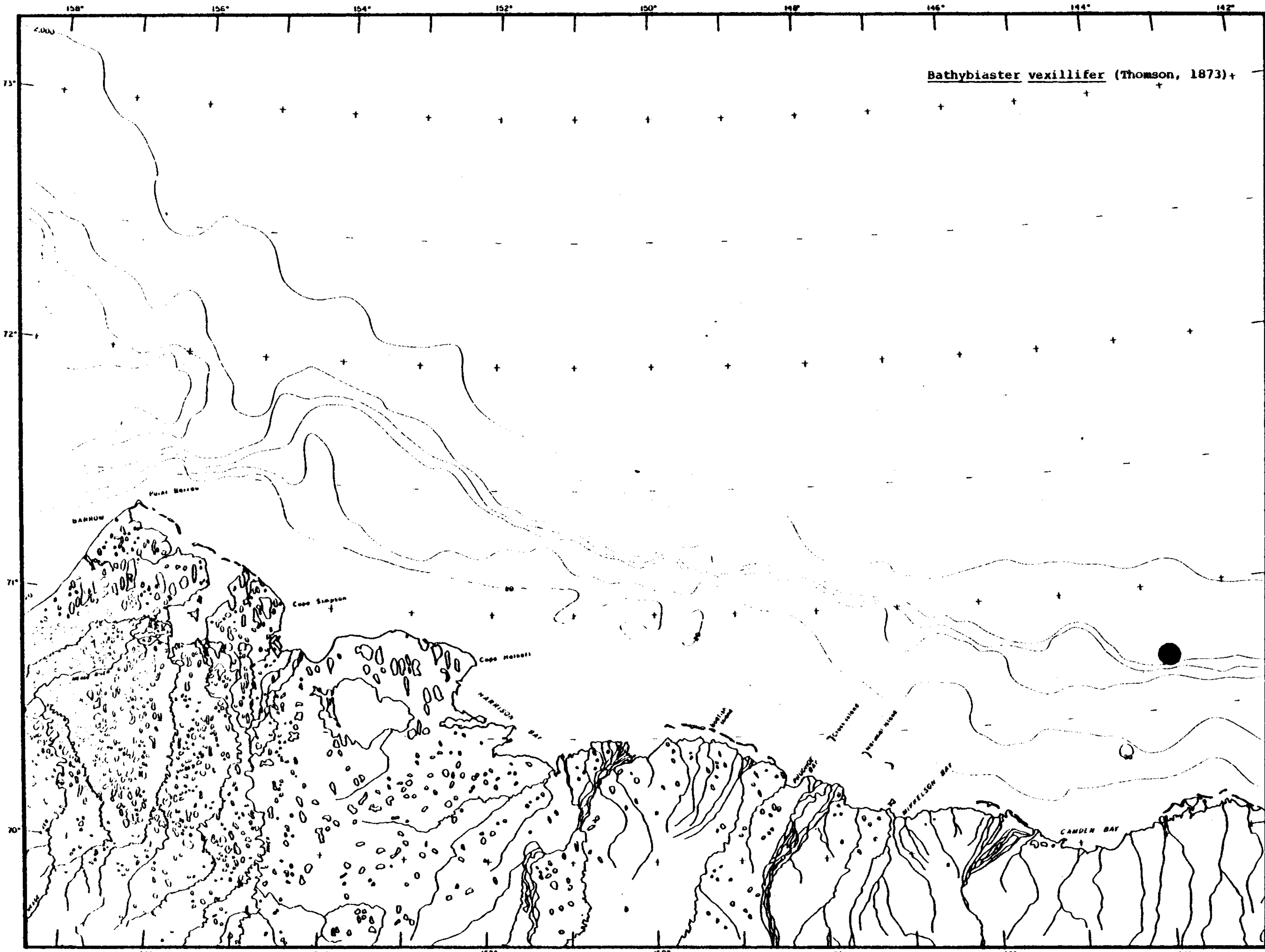
Bathybiaster vexillifer (Thomson, 1873)
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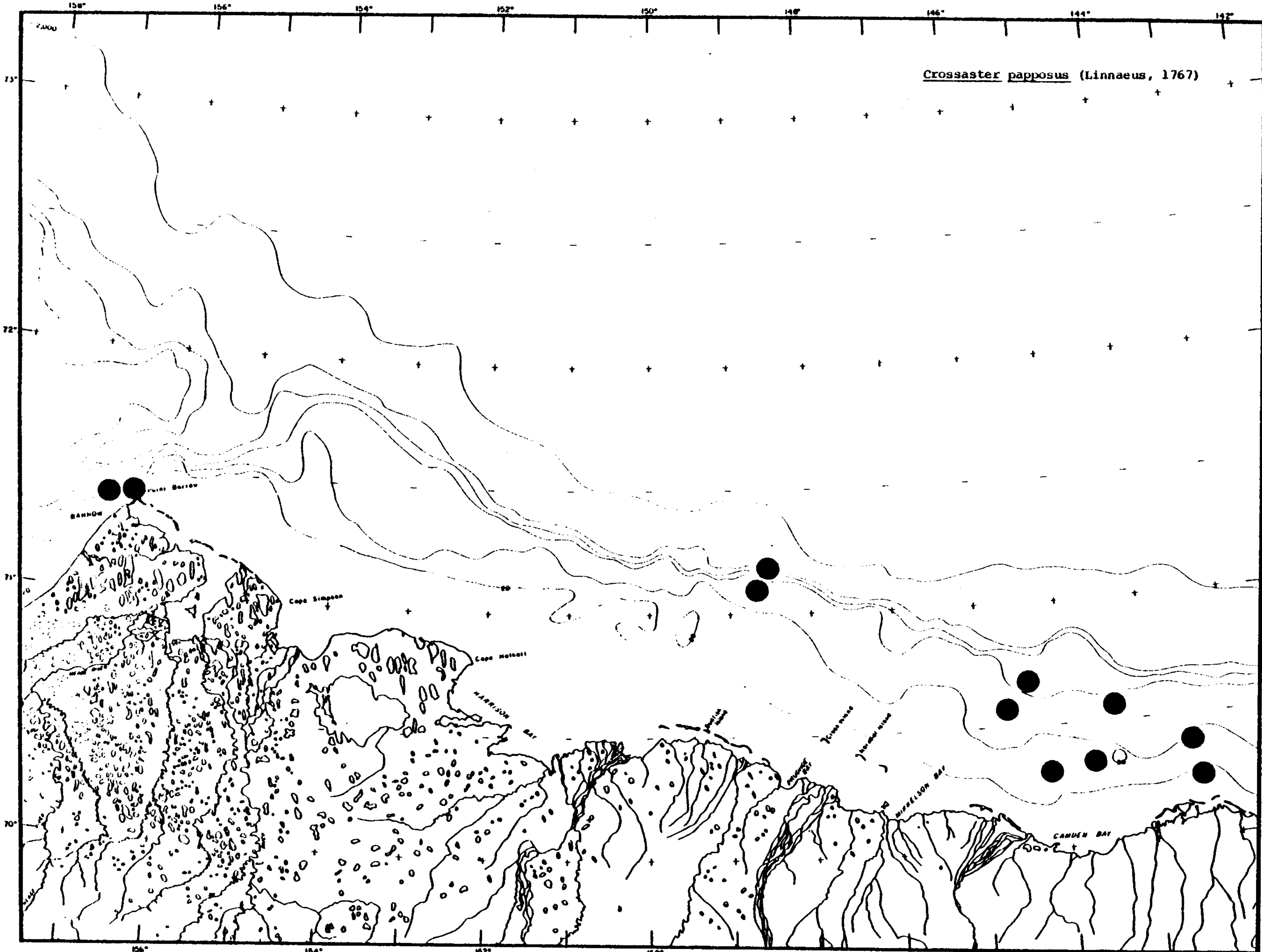
71°
70°
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Mikkelson Bay
Camden Bay



Crossaster papposus (Linnaeus, 1767)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Mikkelson Bay
Camden Bay
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148°
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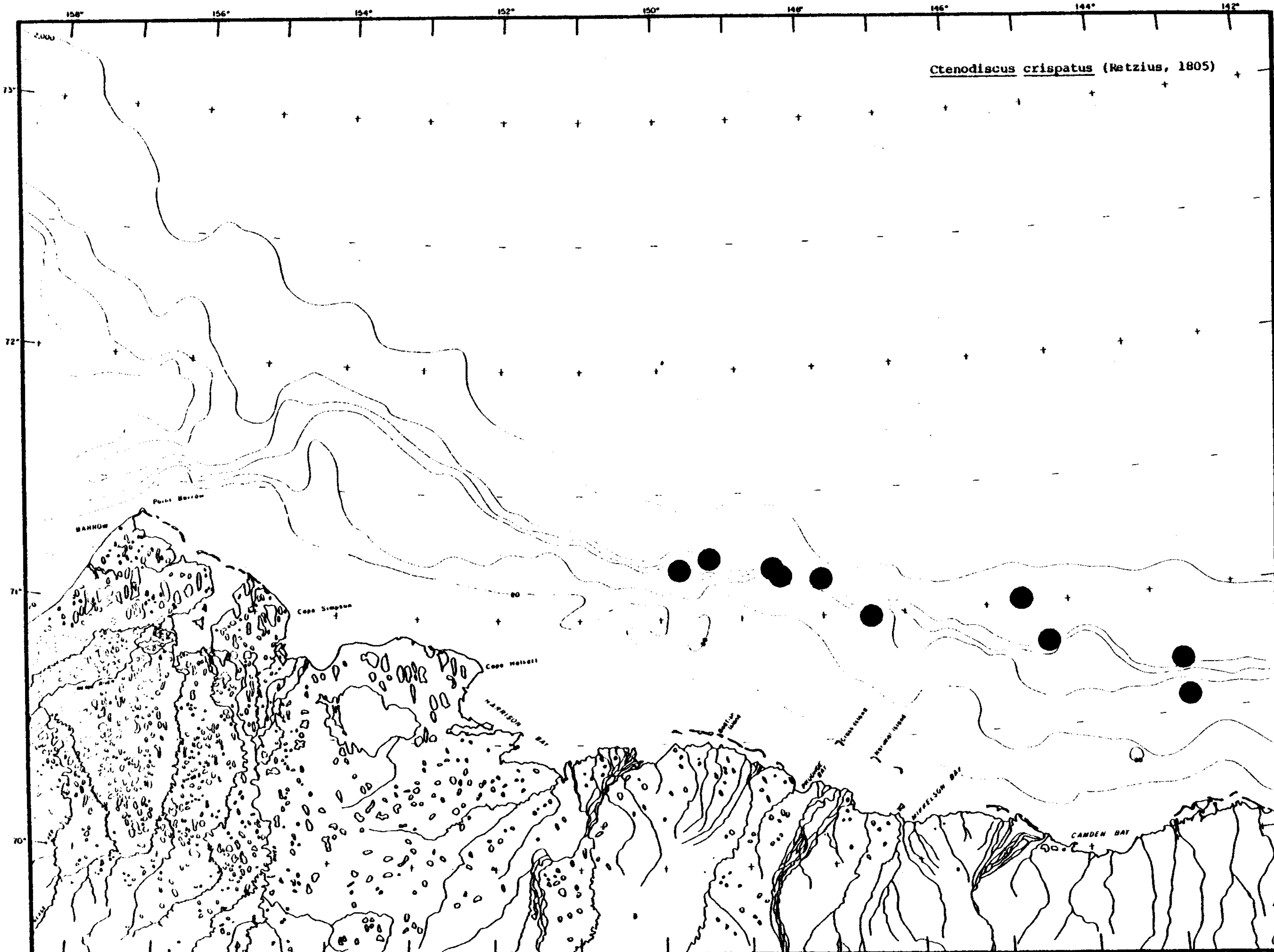
142°
73°
72°
71°
70°


Ctenodiscus crispatus (Retzius, 1805)
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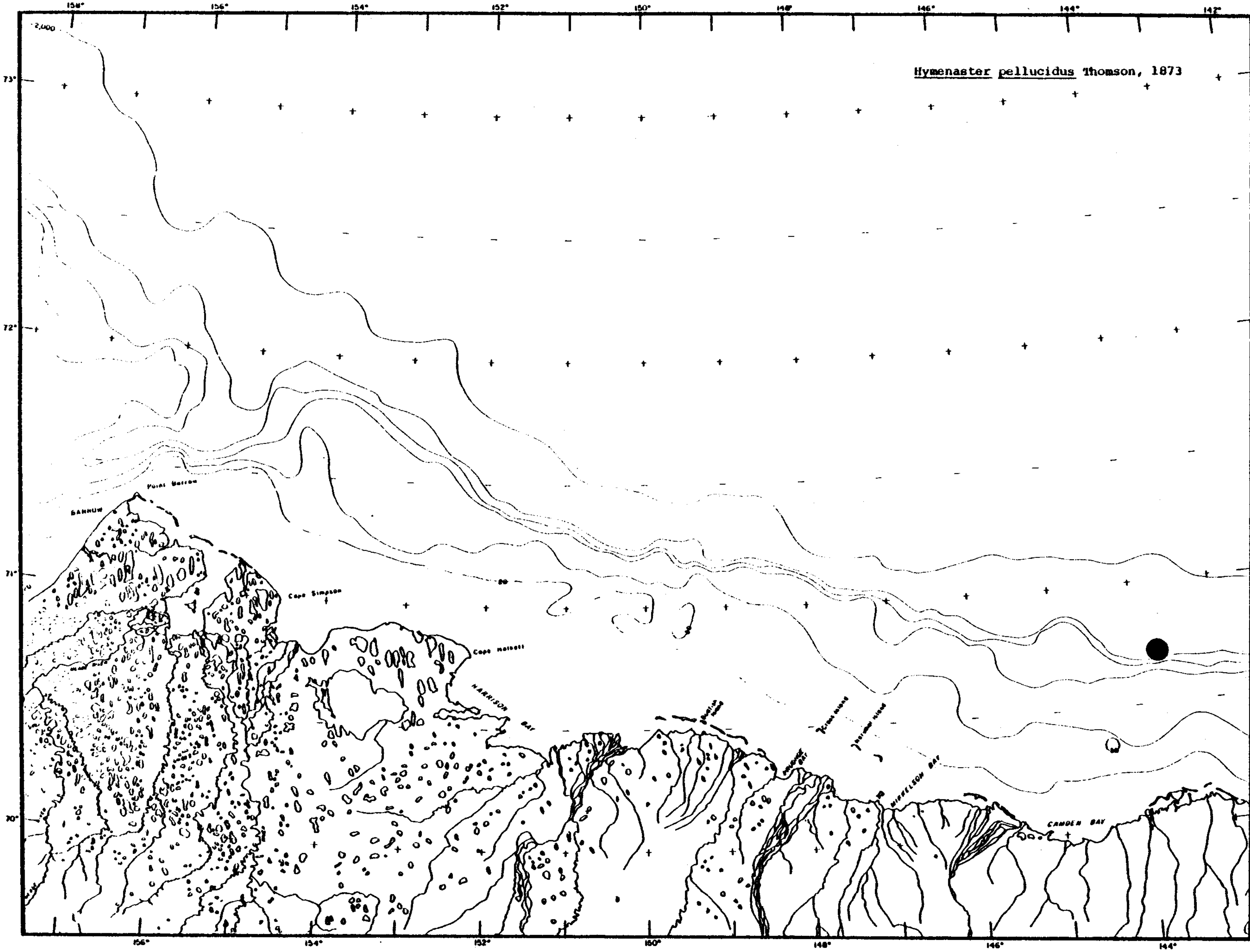
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Hymenaster pellucidus Thomson, 1873
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154°
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150°
148°
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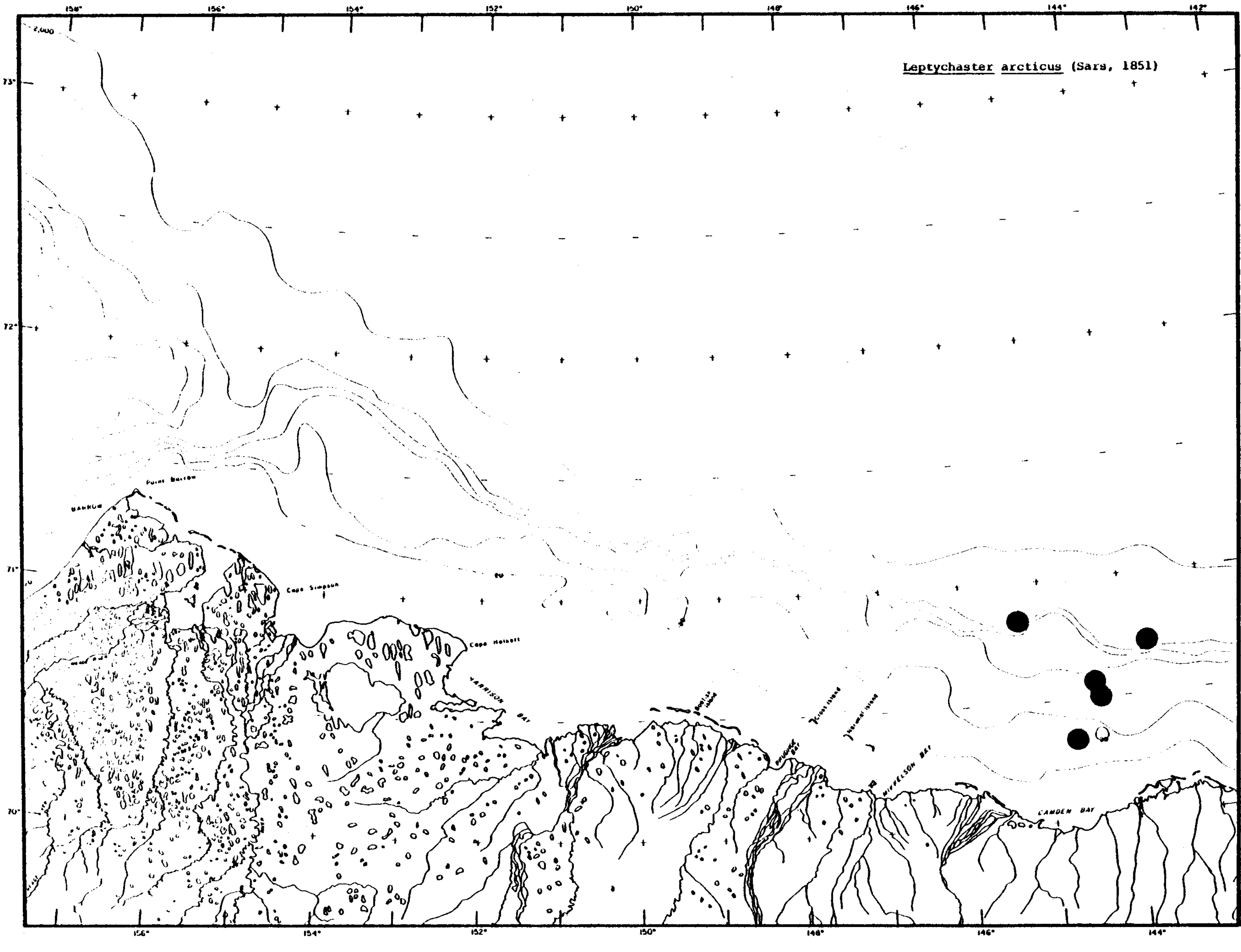
144°
142°
73°
72°
71°
70°
2,000
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY

449

287


Leptychaster arcticus (Sars, 1851)
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154°
152°
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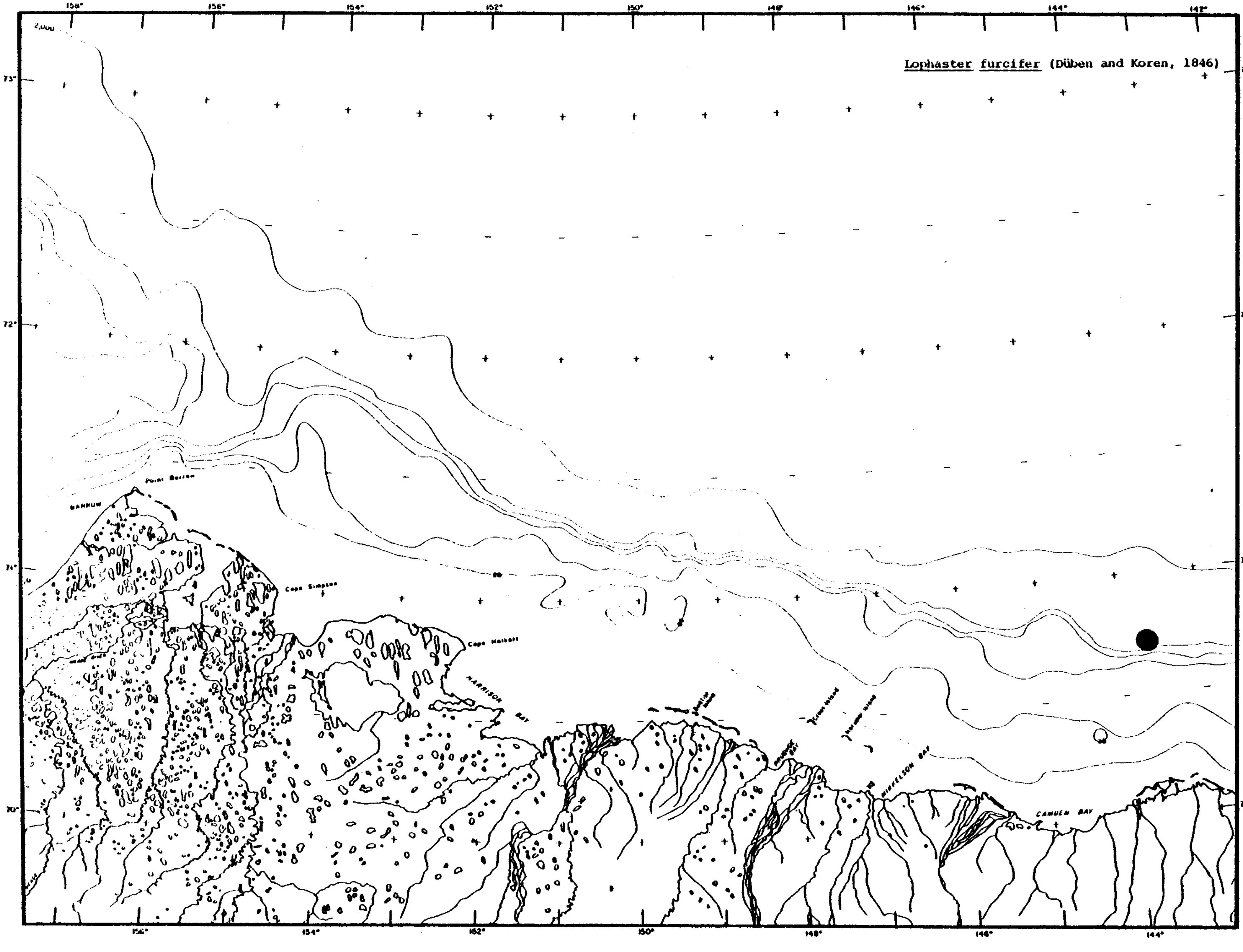
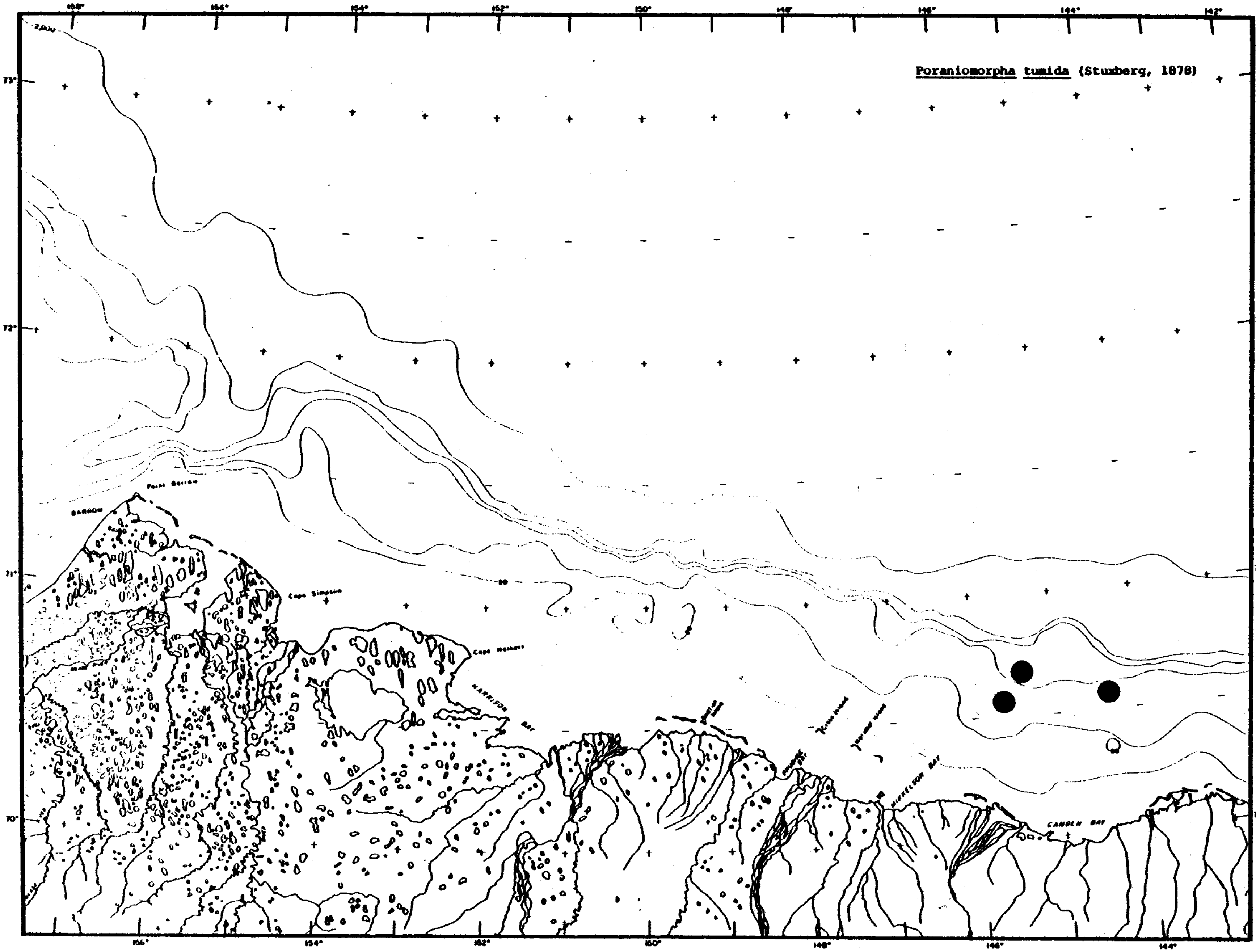
70°
2,000
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY



Lophaster furcifer (Düben and Koren, 1846)


Poraniomorpha tumida (Stuxberg, 1878)
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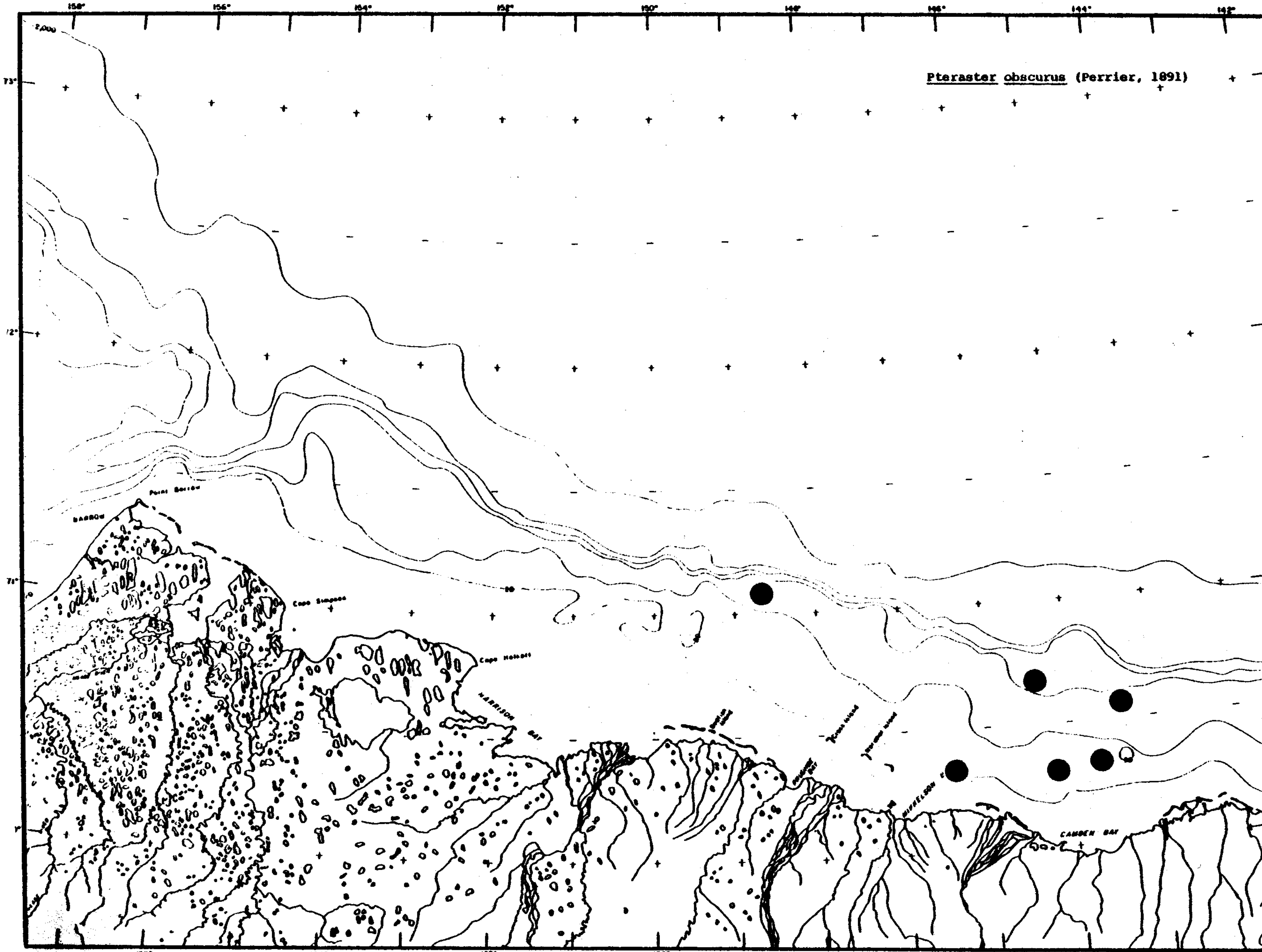
Harrison Bay
Camden Bay


Pteraster obscurus (Perrier, 1891)
Point Barrow
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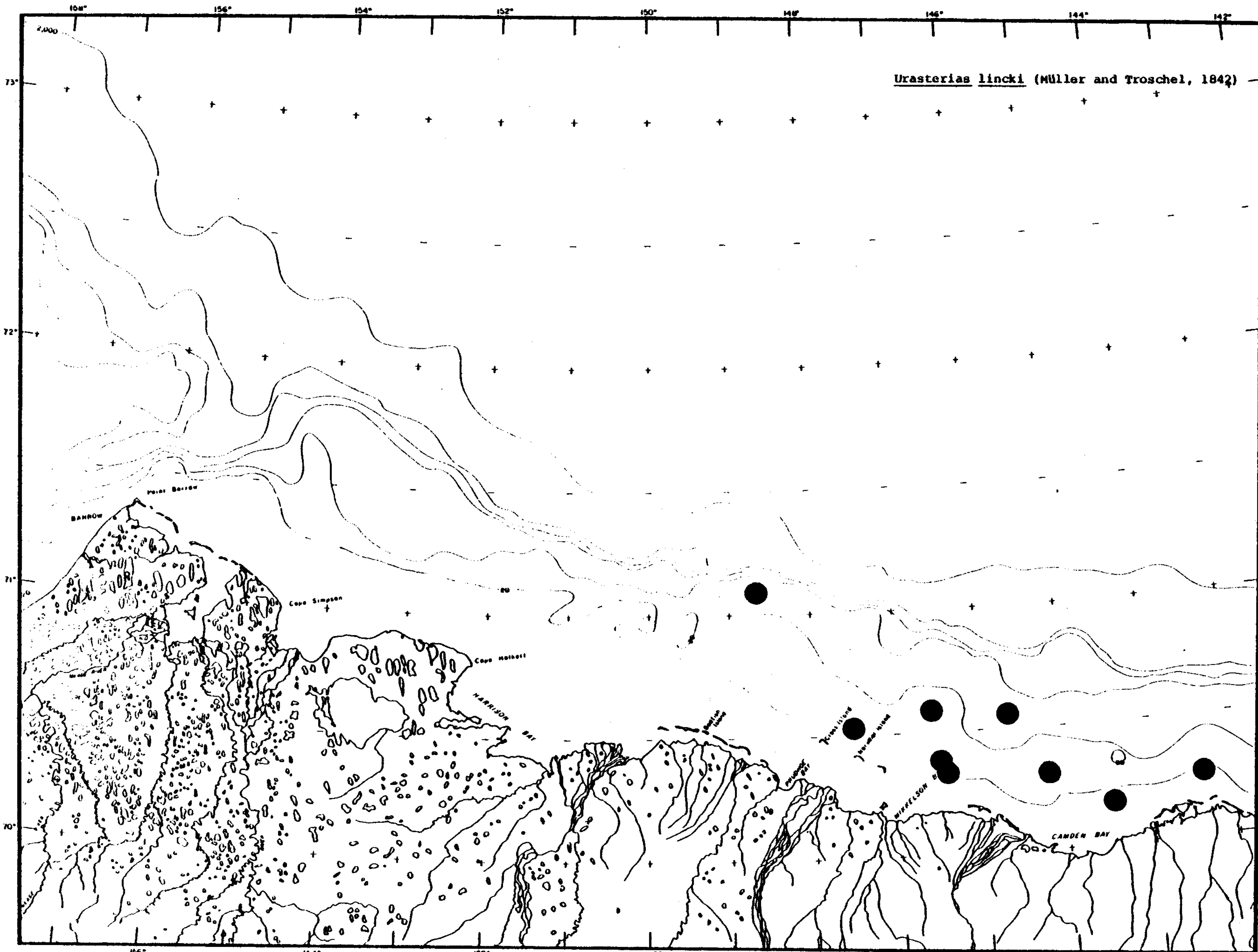
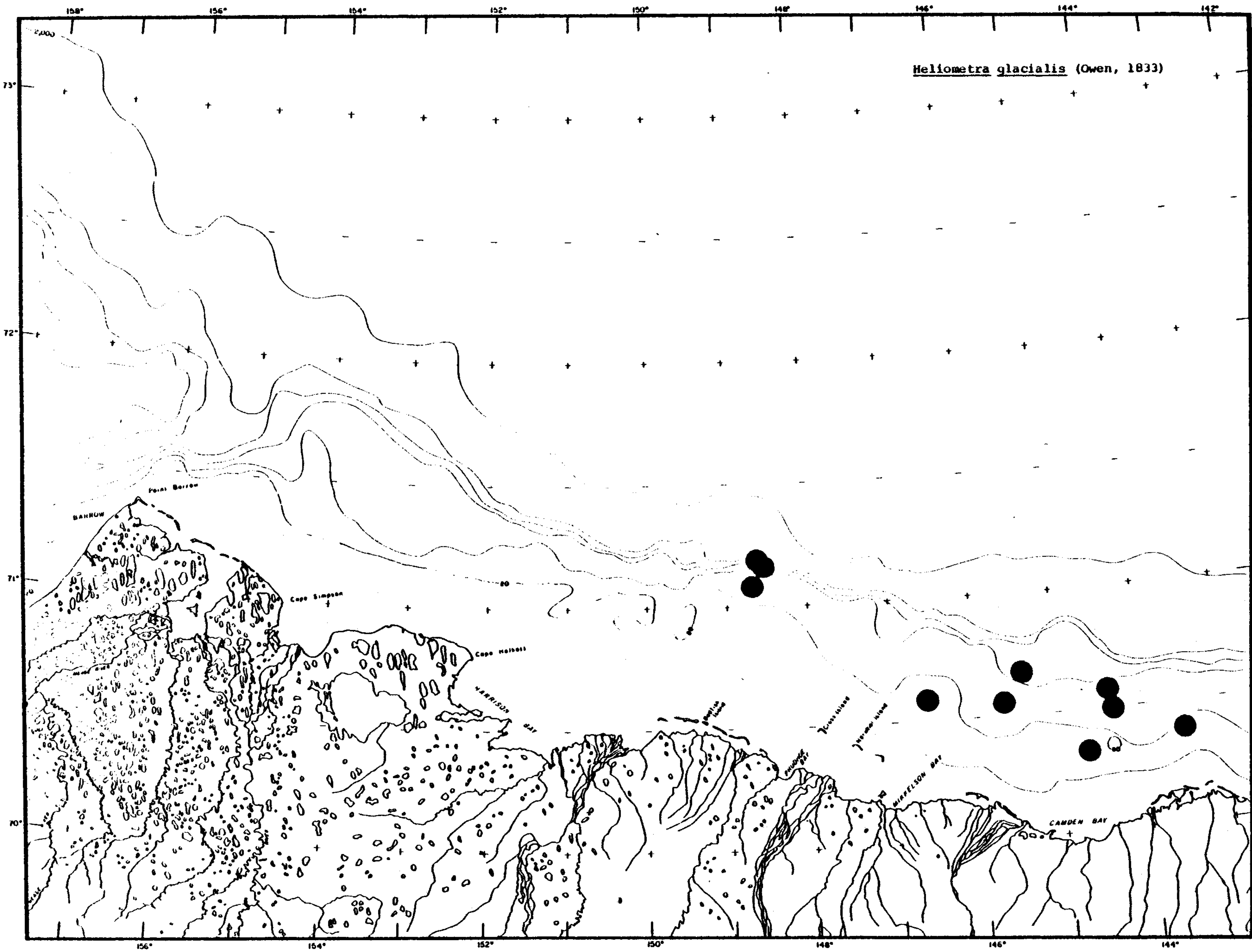
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Urasterias lincki (Müller and Troschel, 1842)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
BARROW
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

Species Distributions:

Echinodermata -- Crinoidea


Heliometra glacialis (Owen, 1833)
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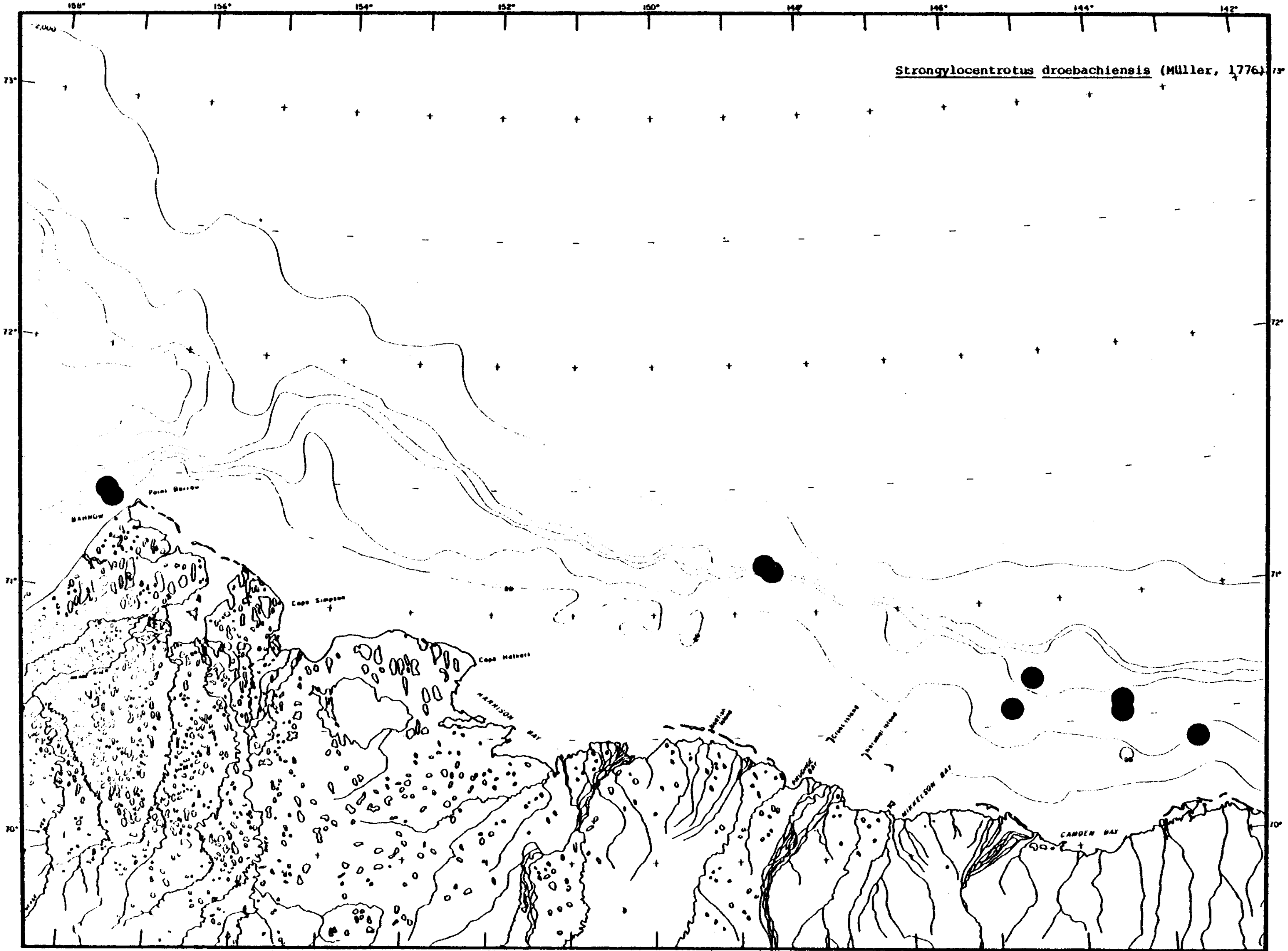
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
PRUDHOE BAY
MIKKELSON BAY
CAMDEN BAY

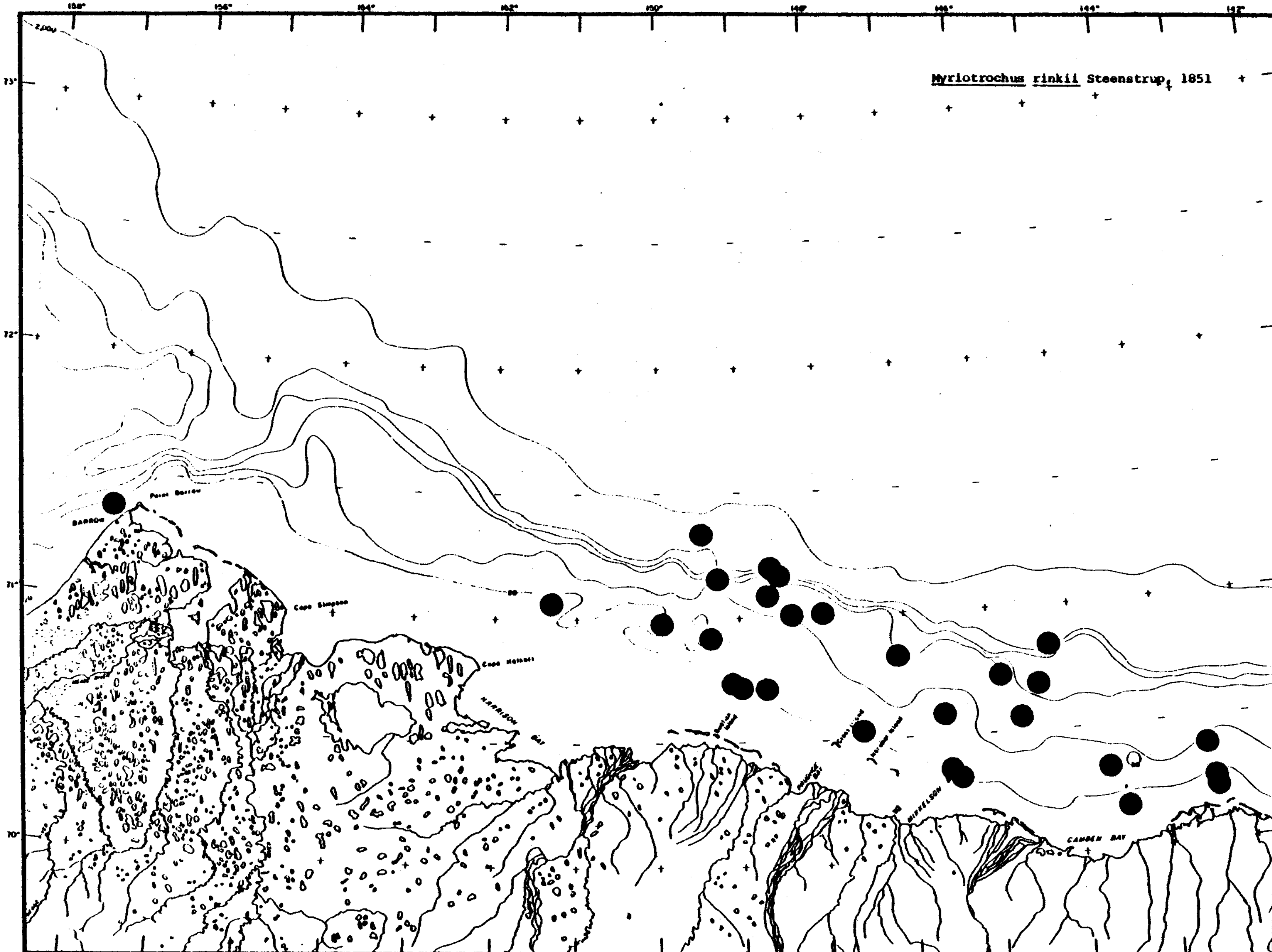
Species Distributions:

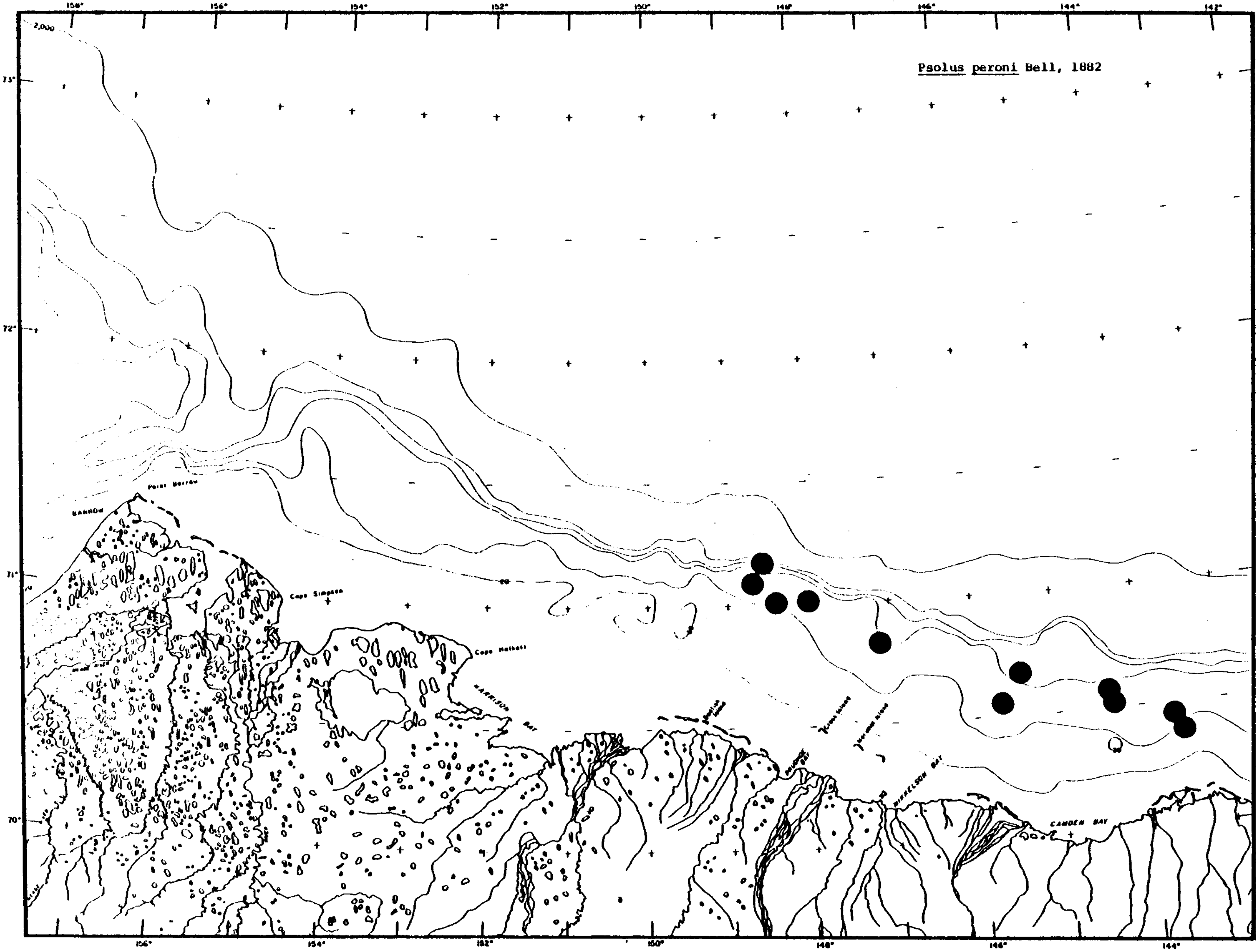
Echinodermata -- Echinoidea


Strongylocentrotus droebachiensis (Müller, 1776)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY

Species Distributions:

Echinodermata -- Holothuroidea


Myriotrochus rinkii Steenstrup, 1851
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Psolus peroni Bell, 1882
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
2,000
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156°
154°
152°
150°
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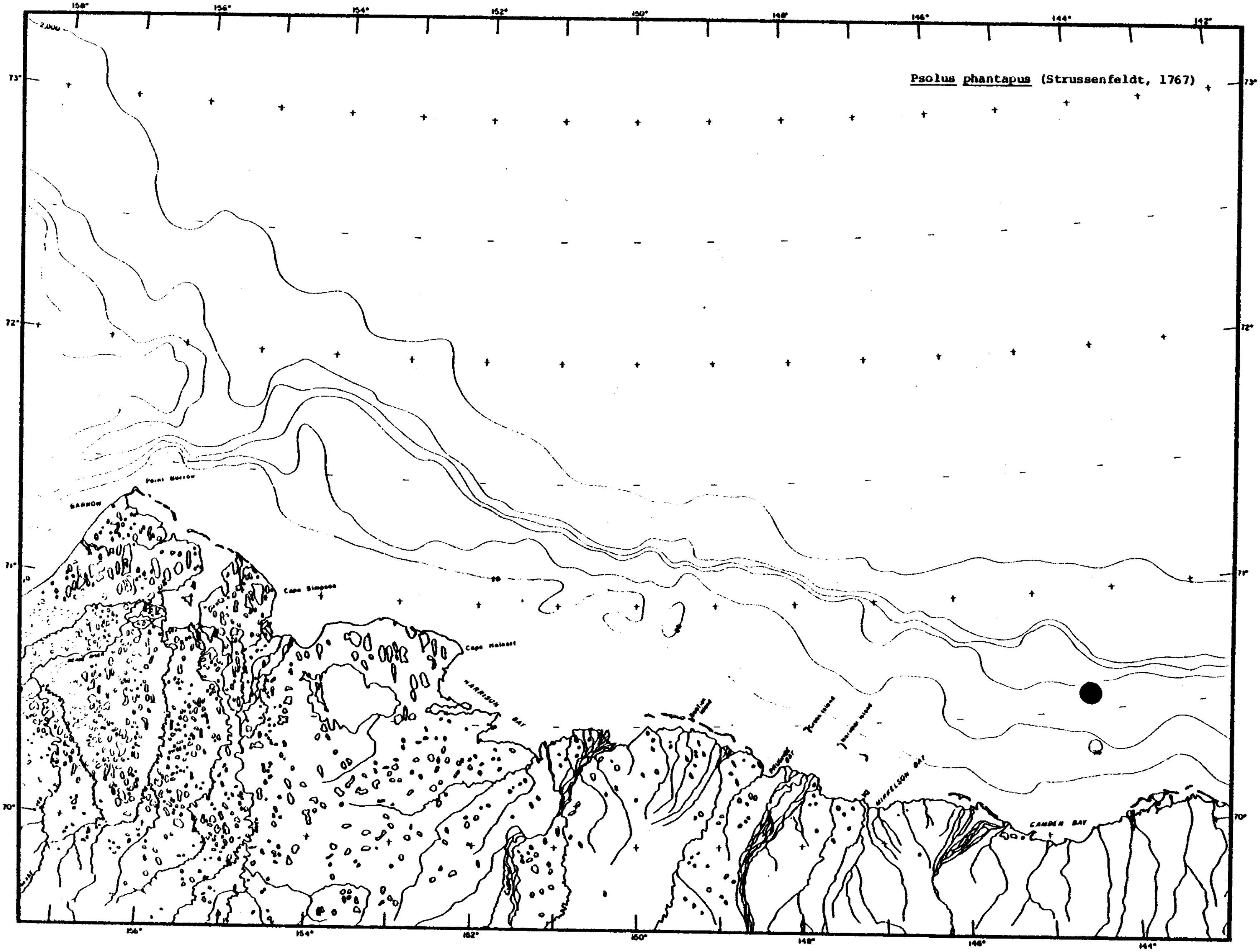
73°
72°
71°
70°


Psolus phantapus (Strussenfeldt, 1767)
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154°
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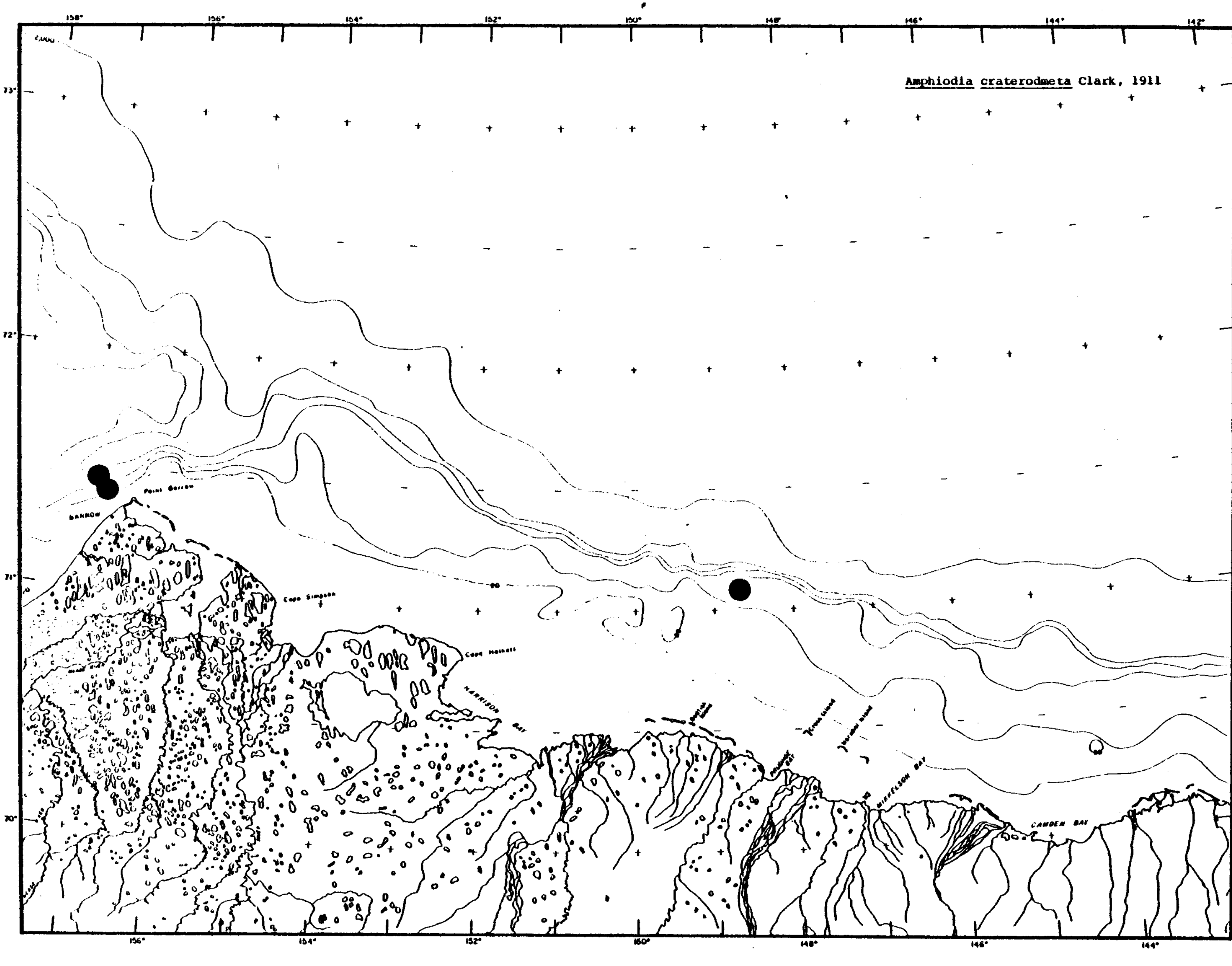
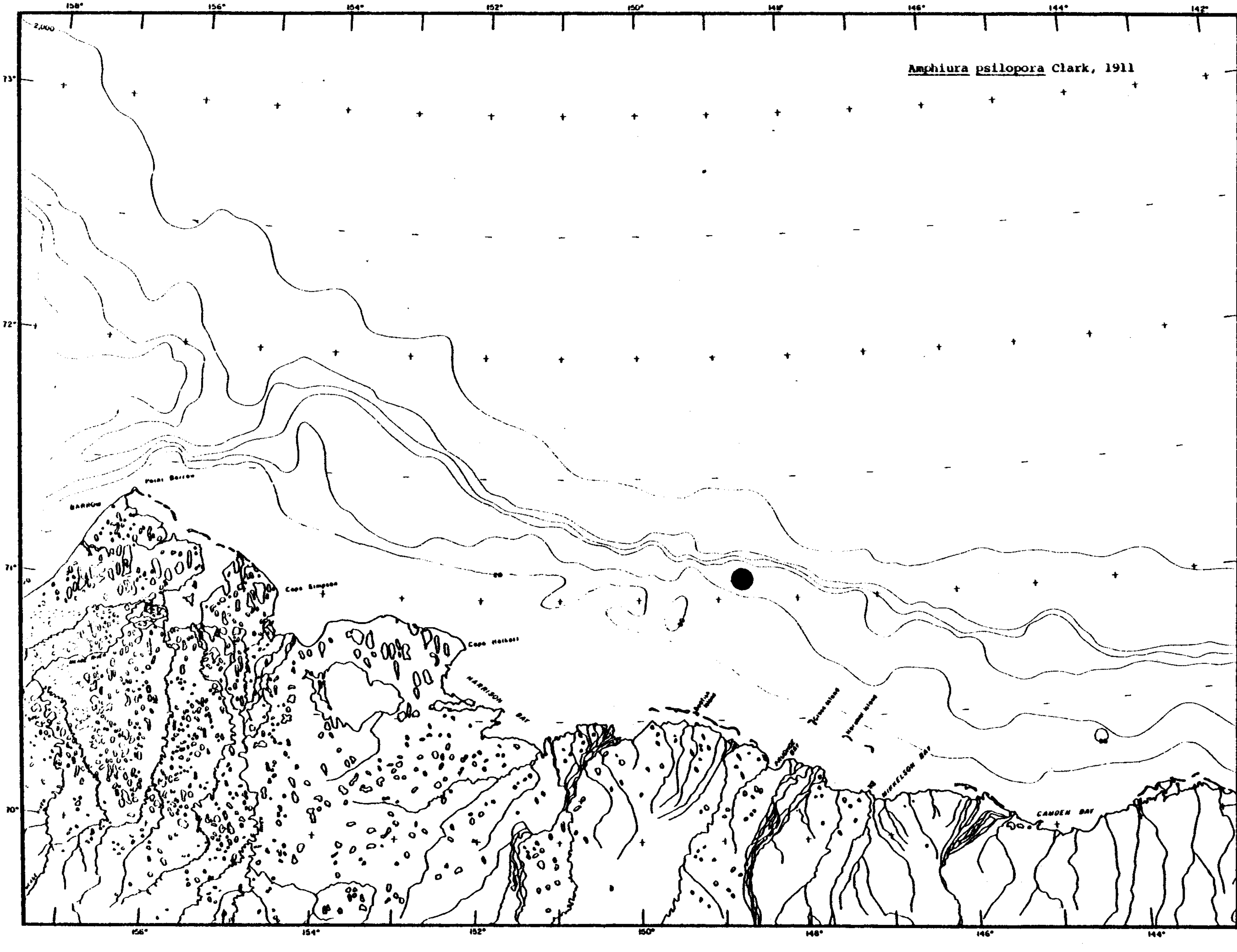
144°
142°
73°
72°
71°
70°
2,000
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY

Species Distributions:

<u>Echinodermata</u> -- Ophiuroidea


Amphiodia craterodmeta Clark, 1911
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
73°
72°
71°
70°


Amphiura psilopora Clark, 1911
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°
156°
154°
152°
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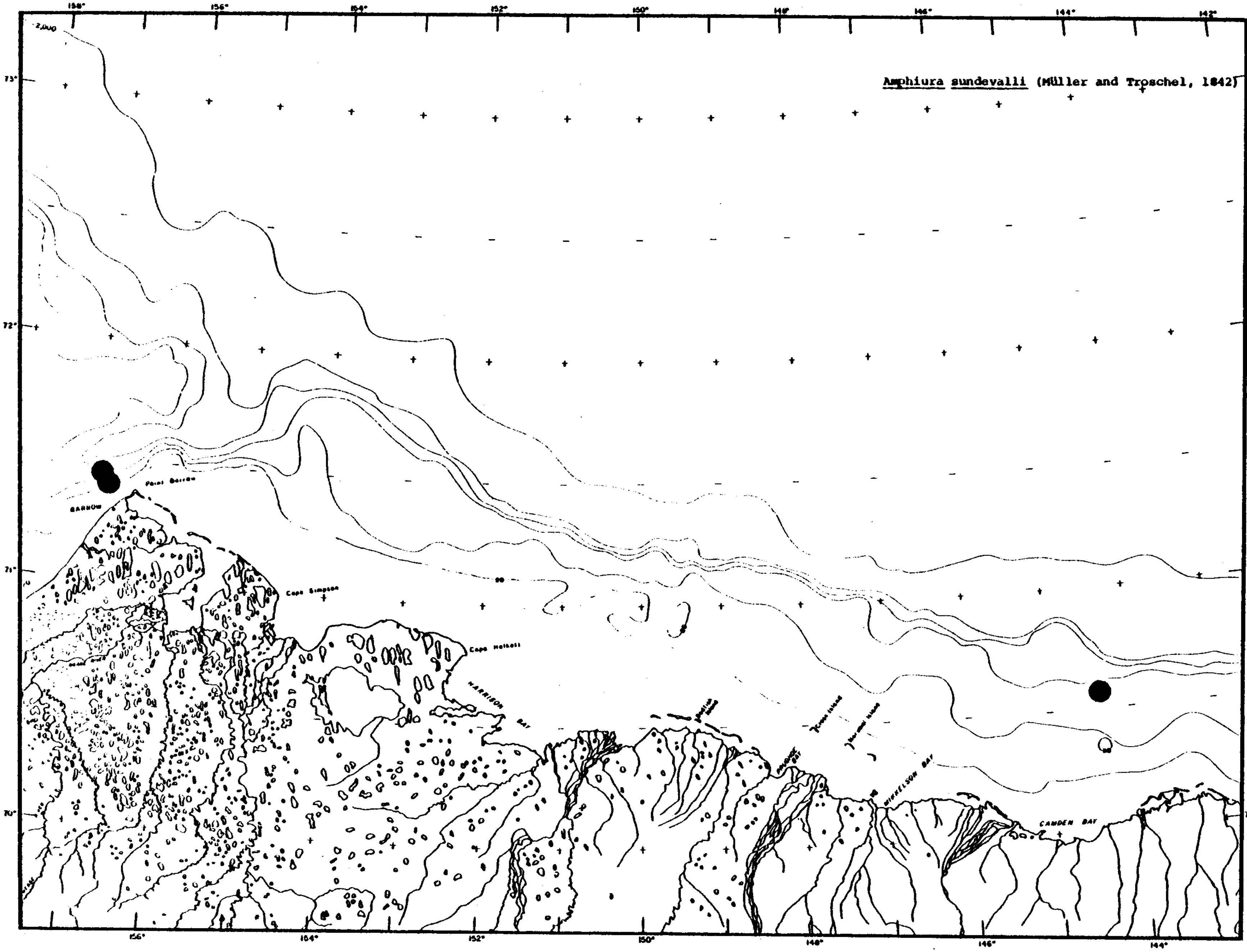
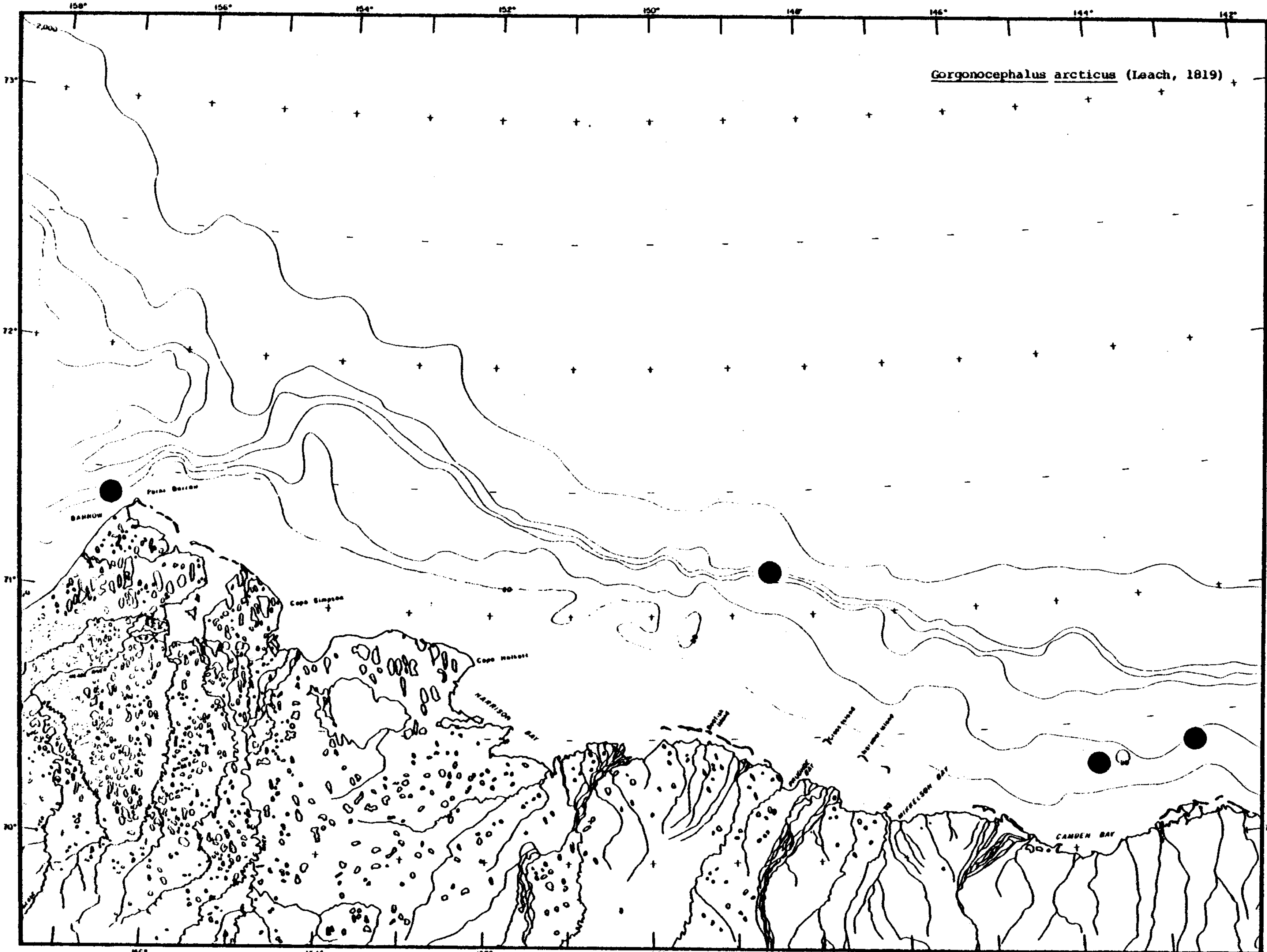
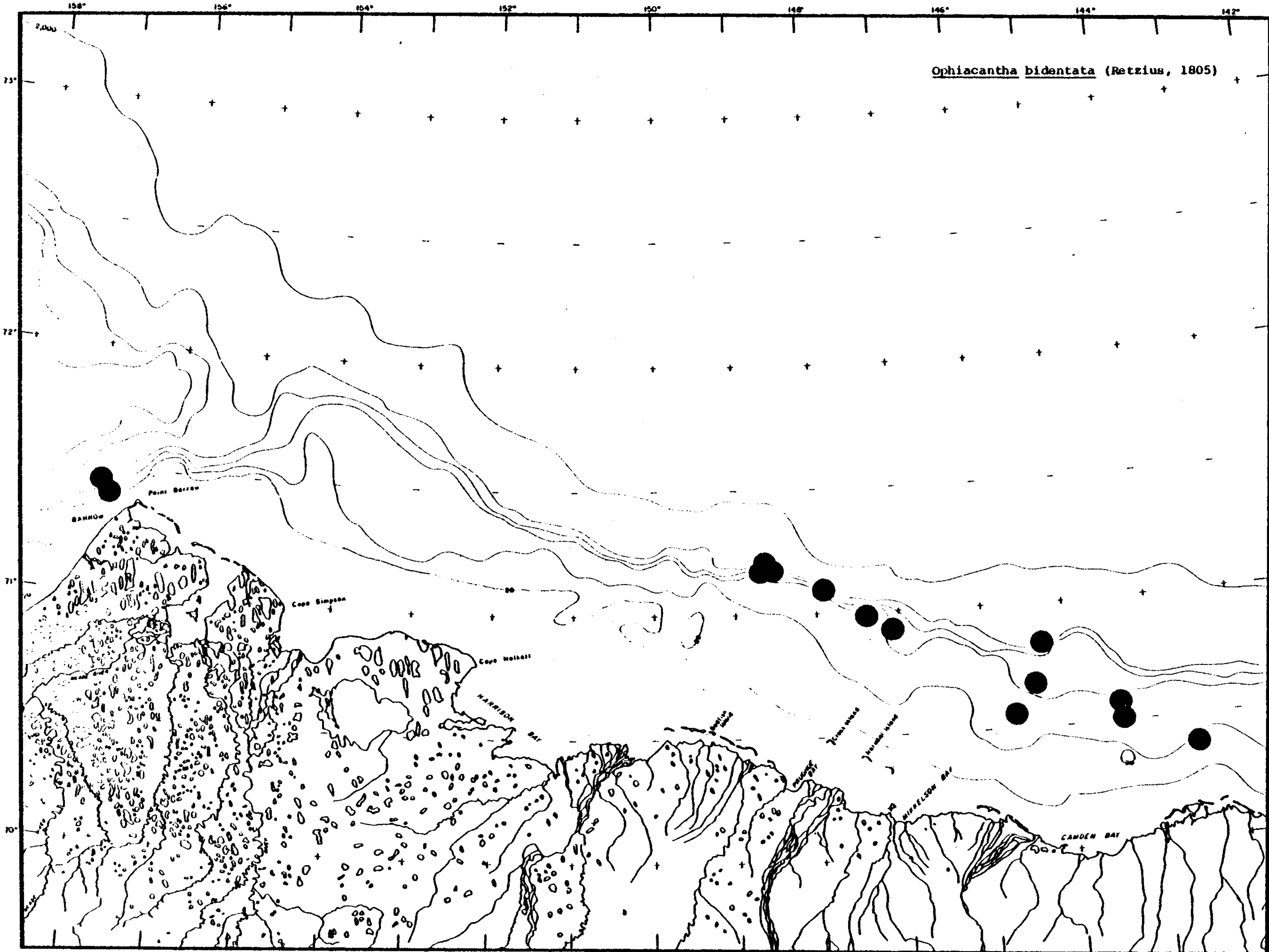
144°
142°


Amphiura sundevalli (Müller and Troschel, 1842)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
MIKKELSON BAY


Gorgonocephalus arcticus (Leach, 1819)
BARROW
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Ophiacantha bidentata (Retzius, 1805)
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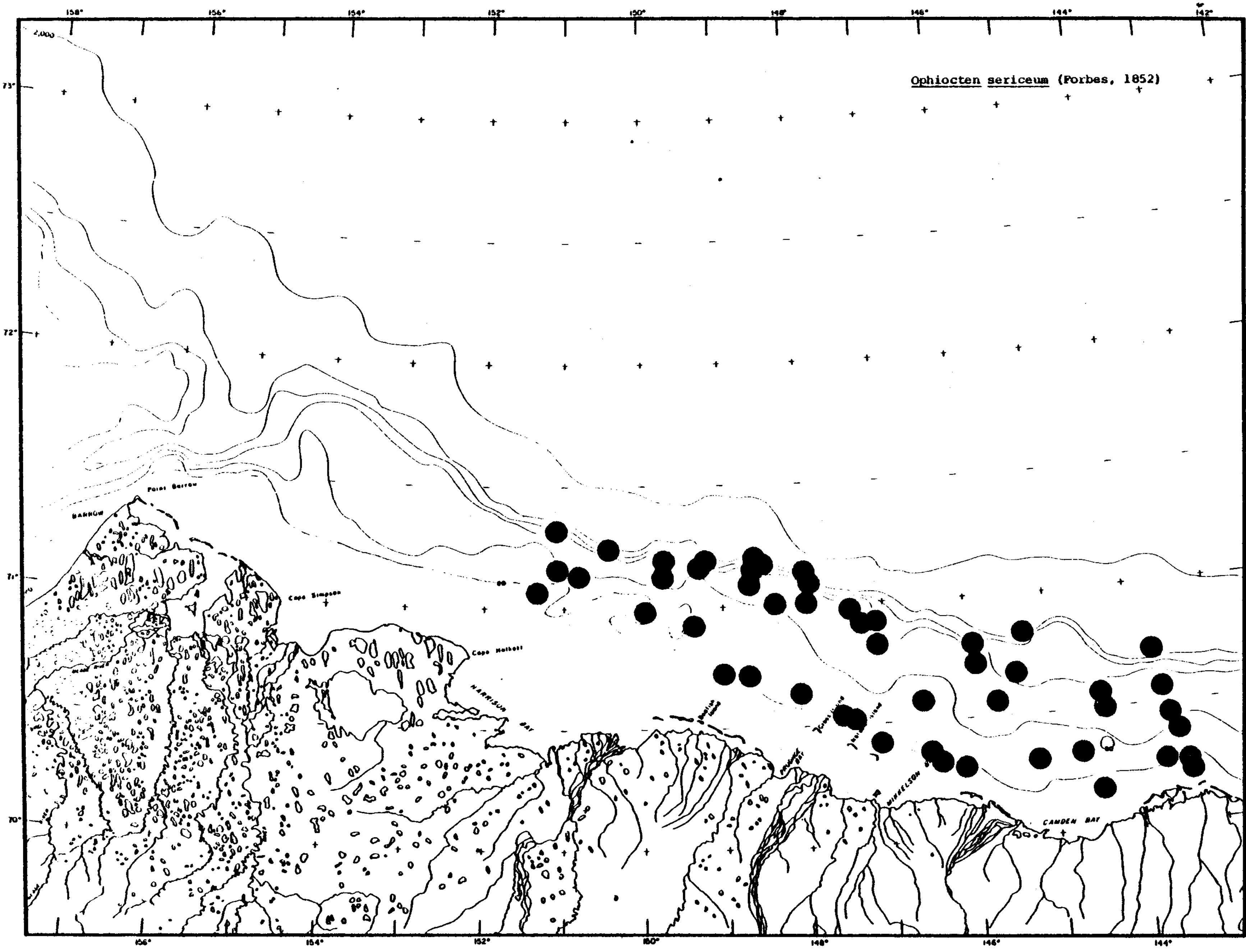
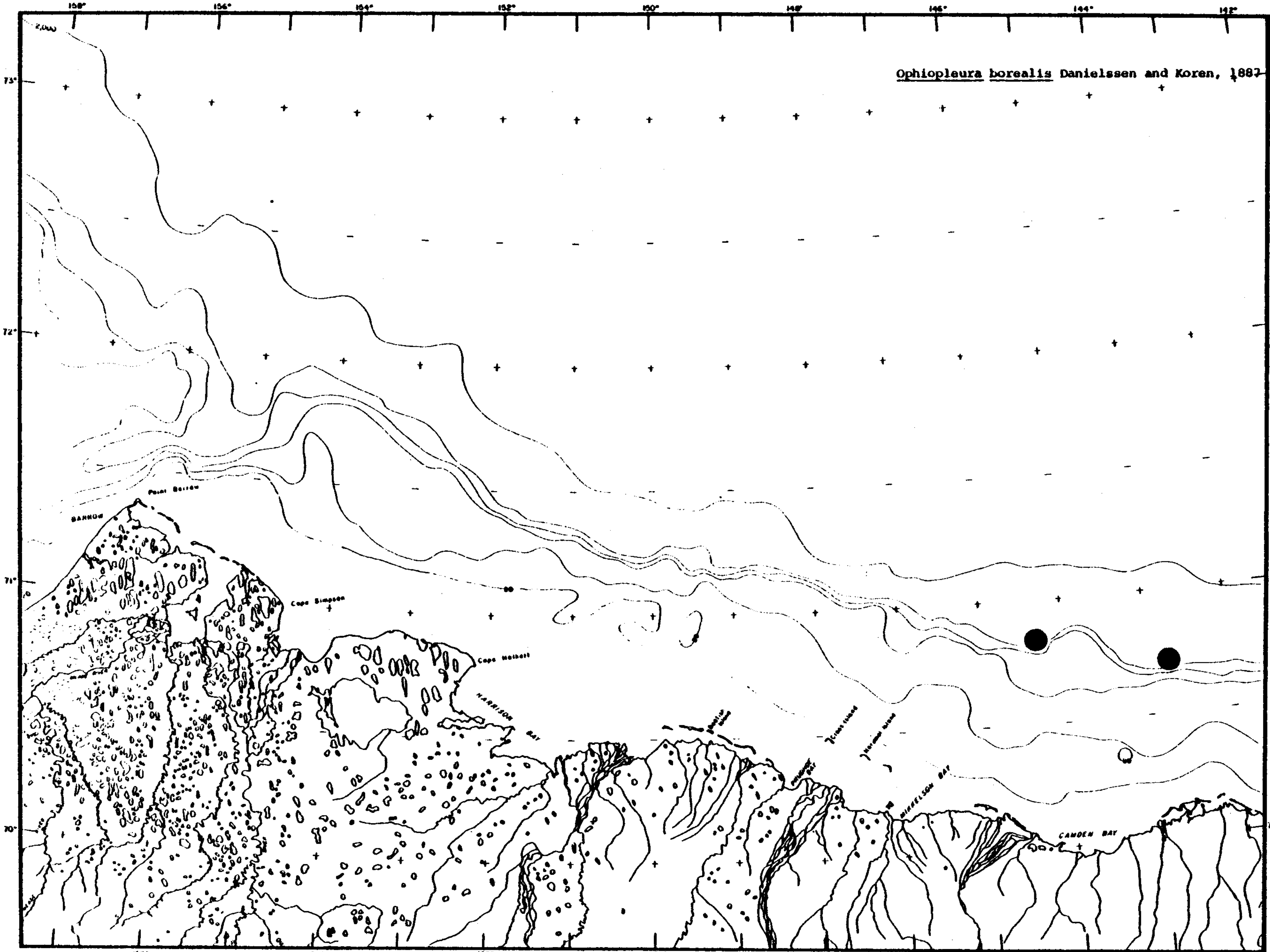
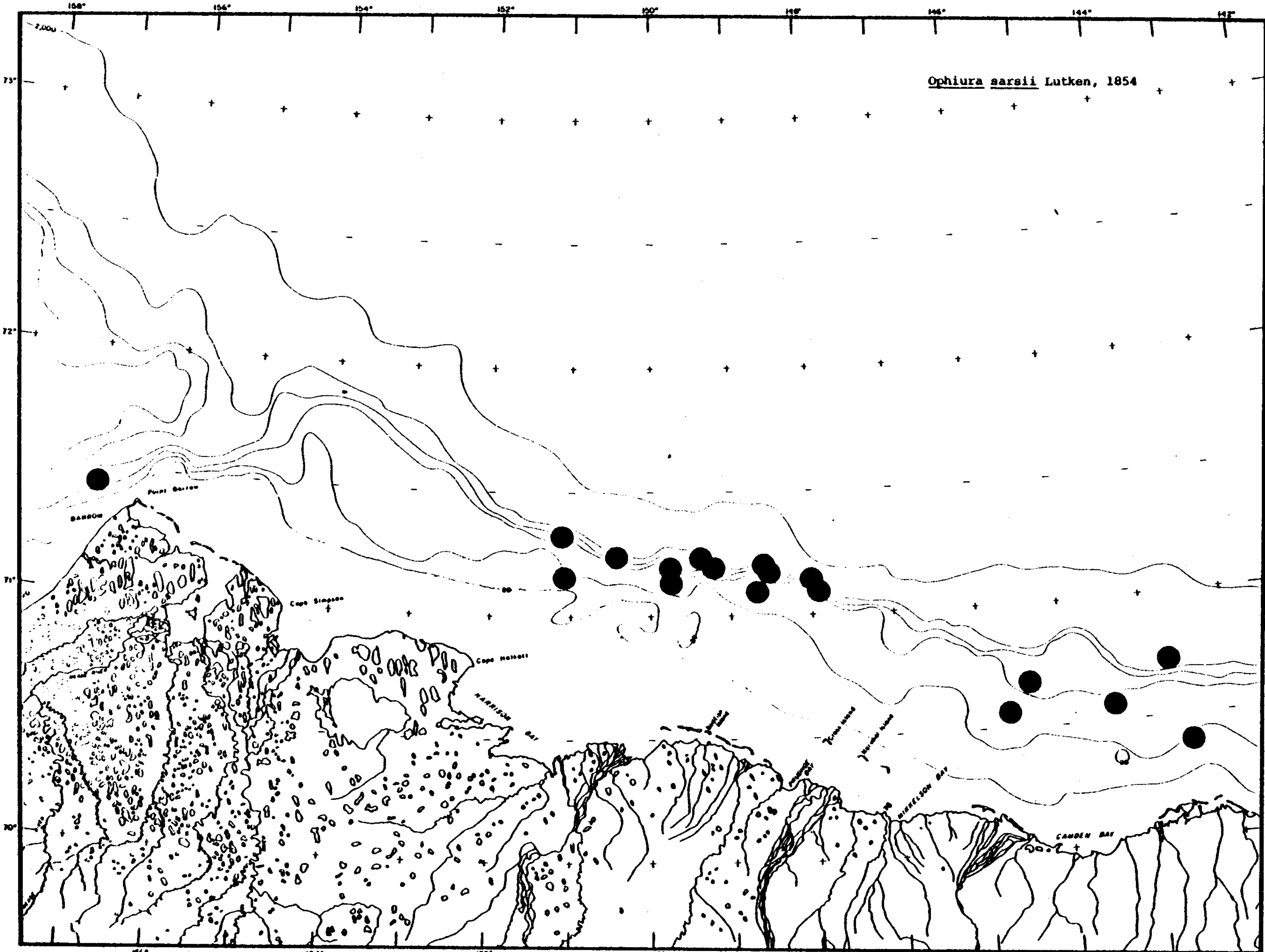
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
PRUDHOE BAY
MIKKELSON BAY
CAMDEN BAY


Ophiocten sericeum (Forbes, 1852)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
2,000
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY



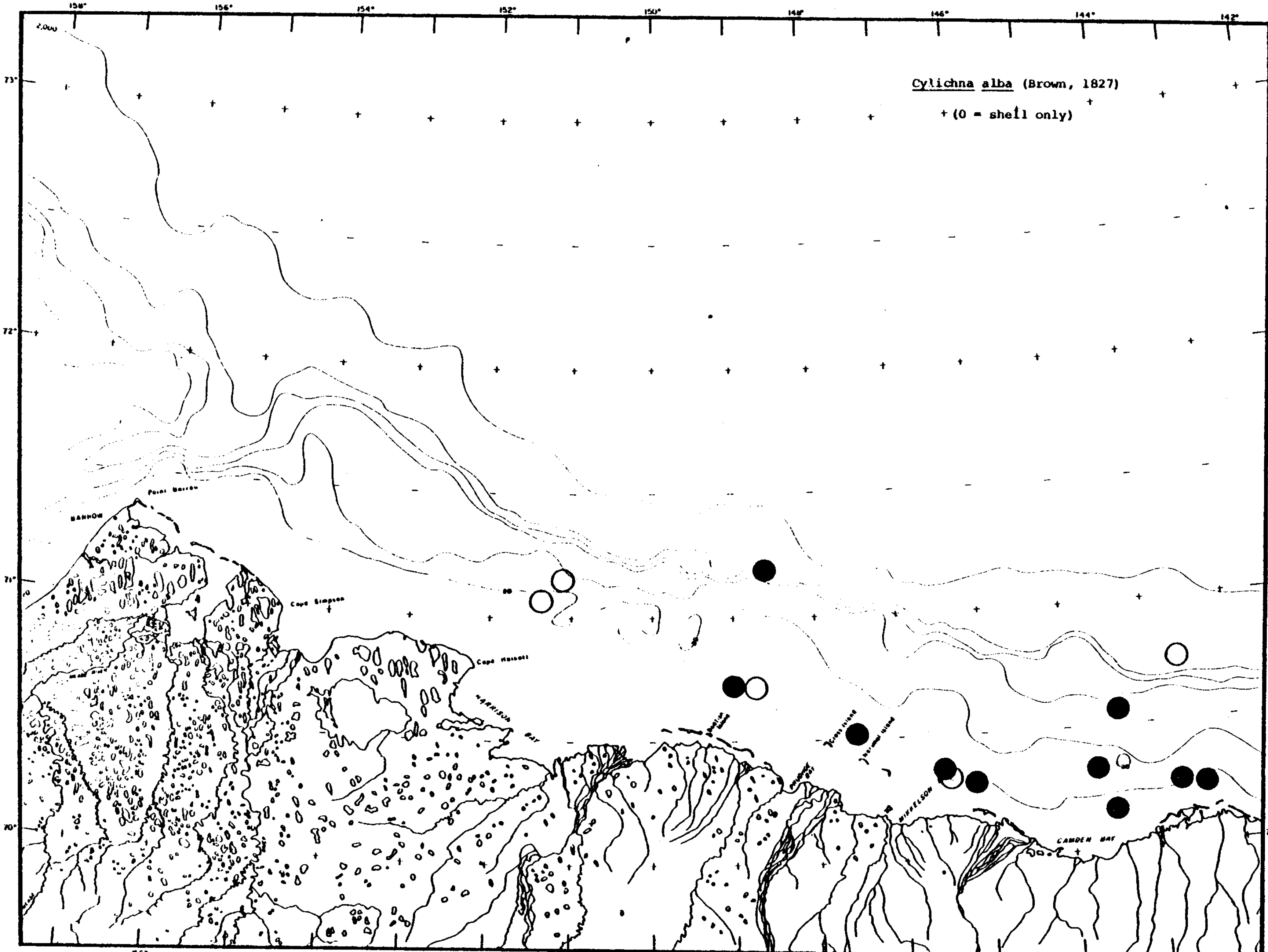
Ophiopleura borealis Danielssen and Koren, 1887
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
73°
72°
71°
70°
158°
156°
154°
152°
150°
148°
146°
144°
142°



Ophiura sarsii Lutken, 1854
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°
158°
156°
154°
152°
150°
148°
146°
144°
142°

Species Distributions:

Mollusca -- Gastropoda (Opisthobranchia)


Cylichna alba (Brown, 1827)
+ (O = shell only)
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
156°
154°
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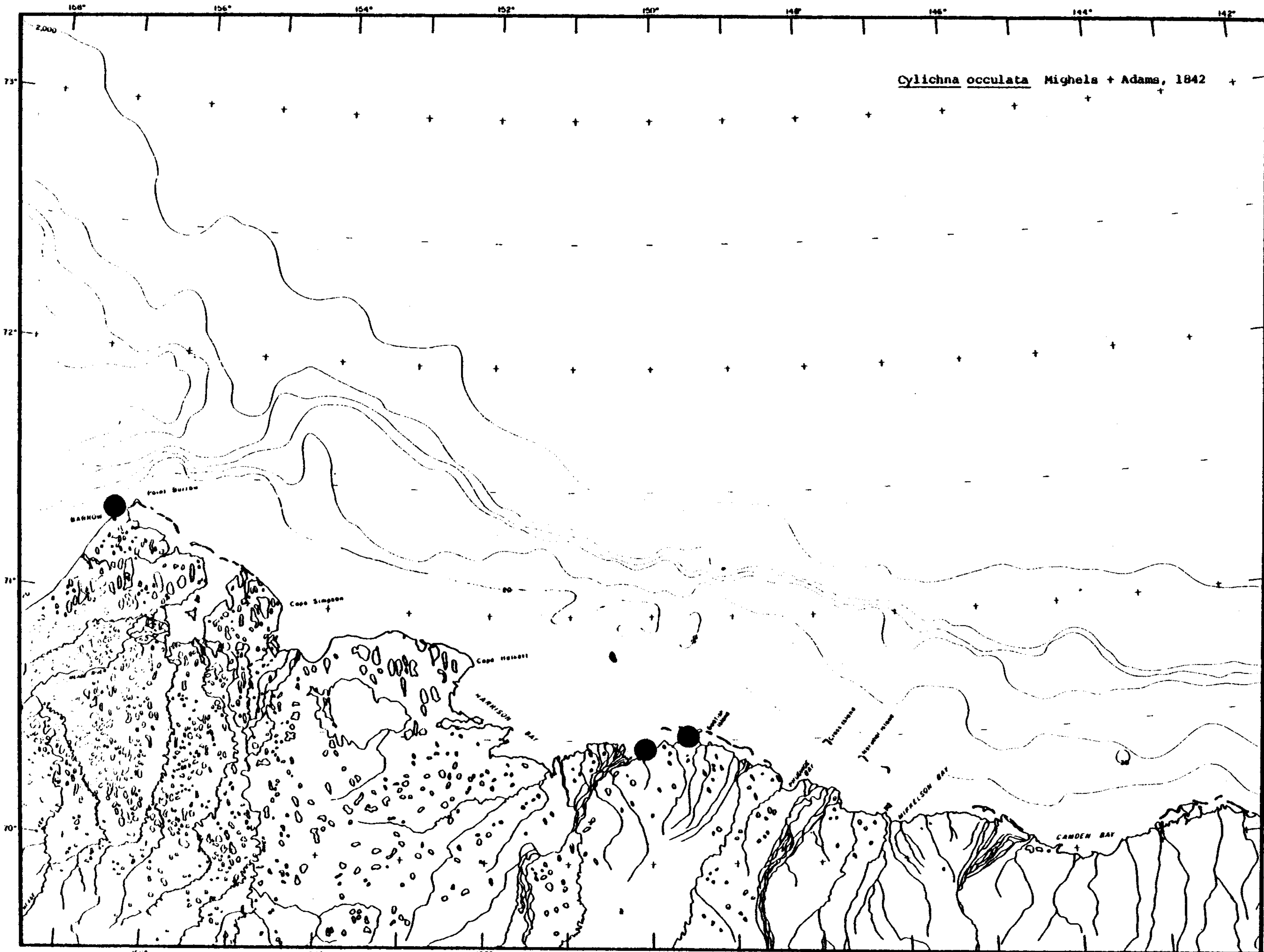
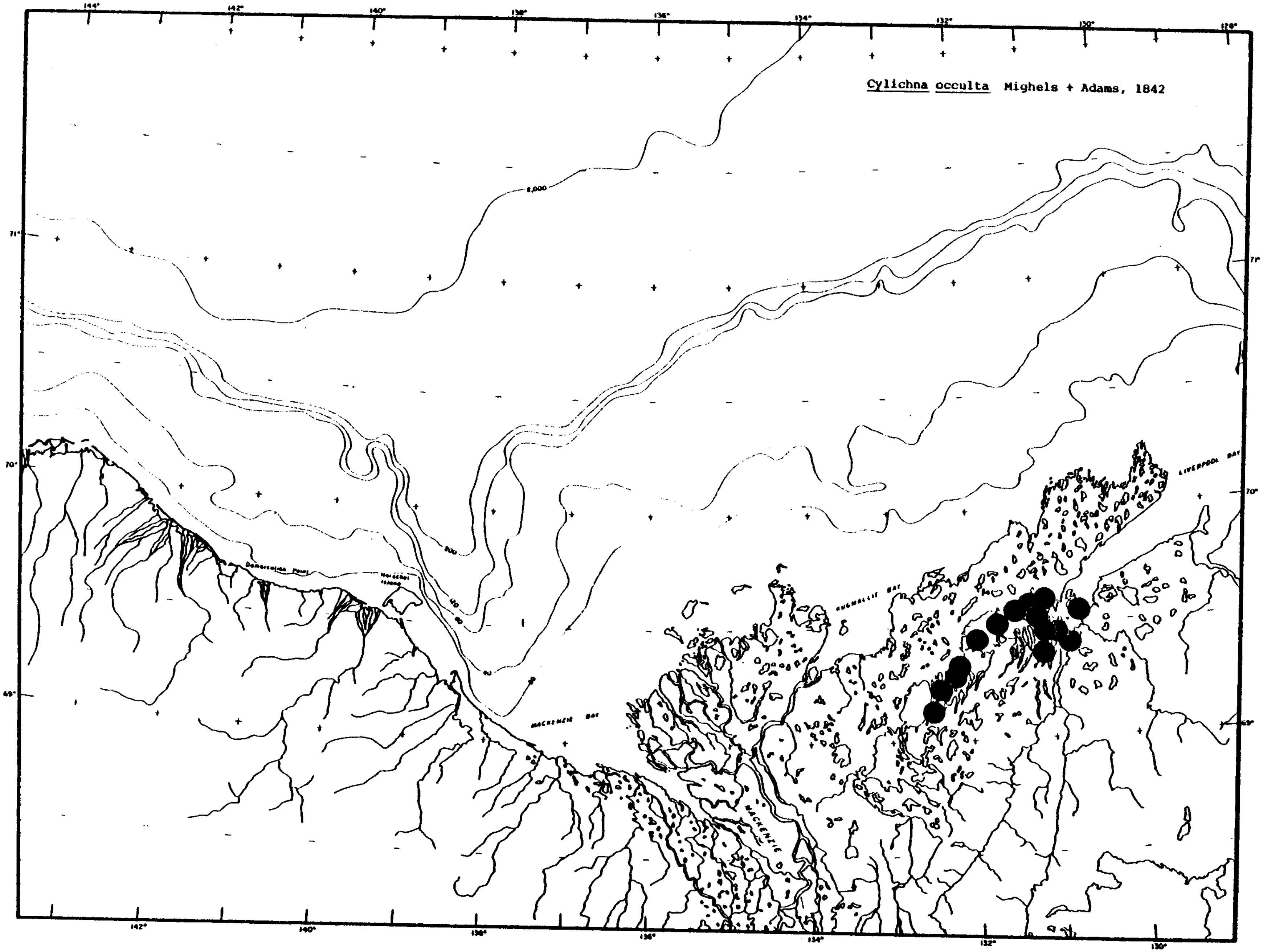
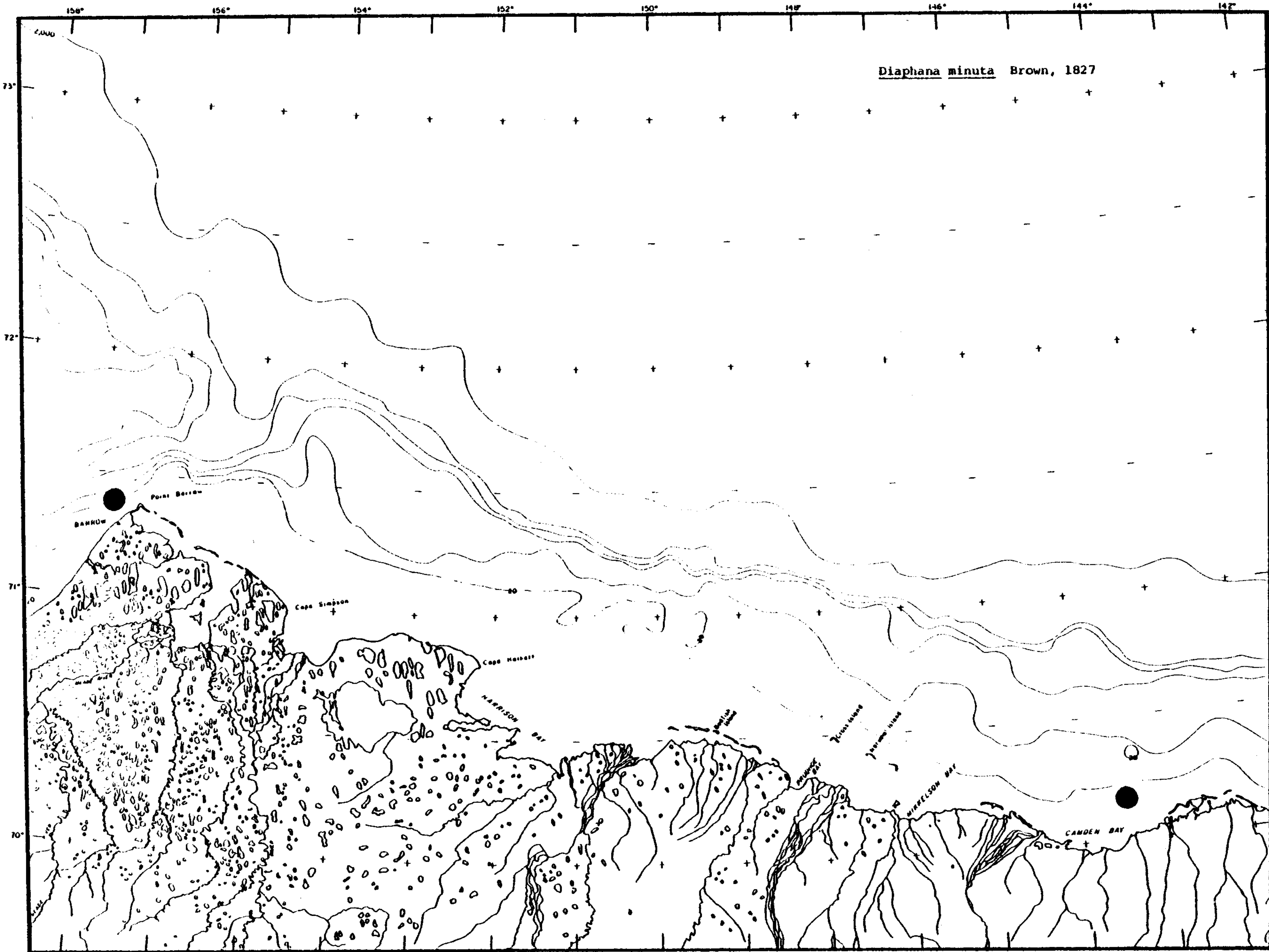
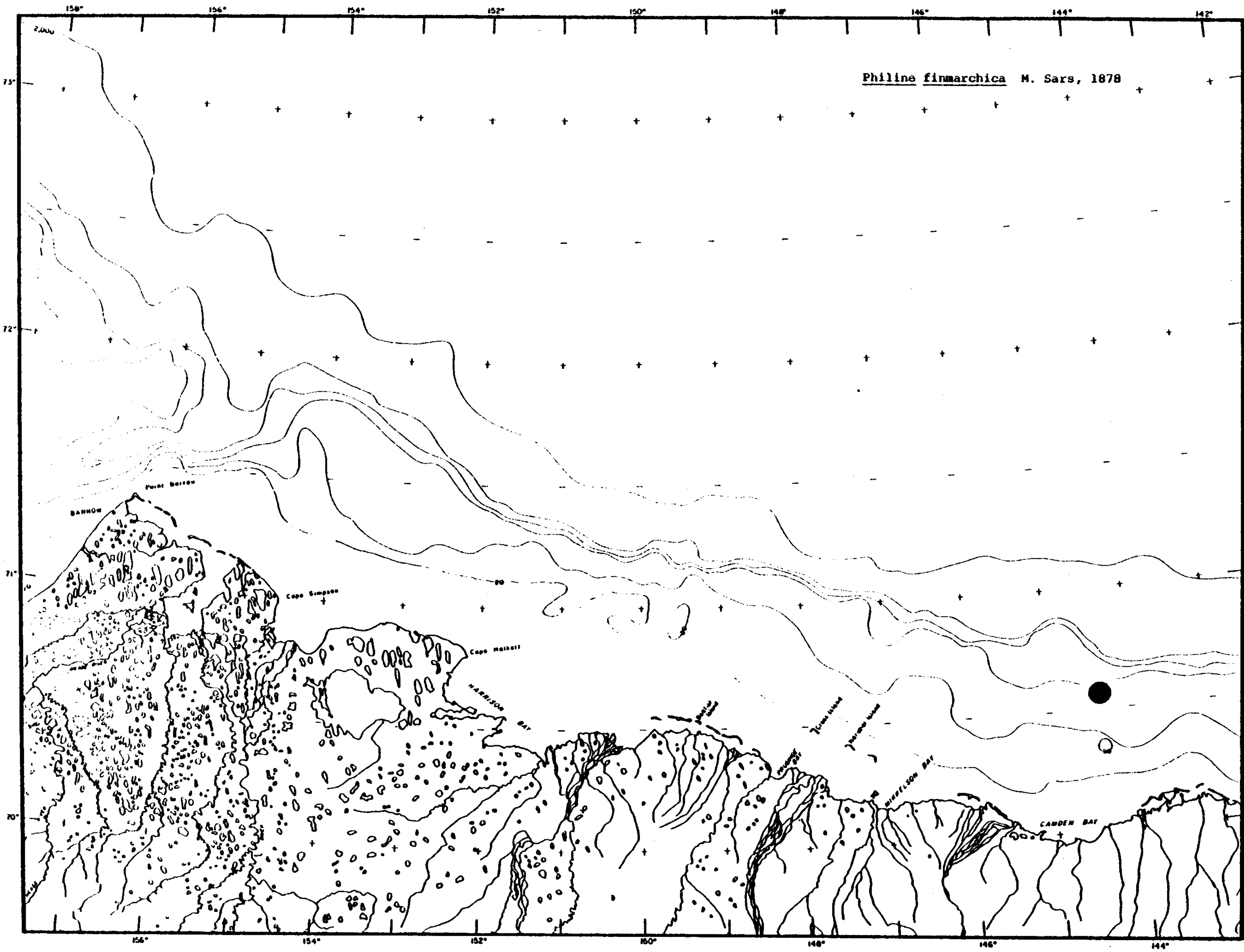
73°
72°
71°
70°


Cylichna occulata Mighels + Adams, 1842
Cape Simpson
CAMDEN BAY


Cylichna occulta Mighels + Adams, 1842
Liverpool Bay
Mackenzie Bay
Mackenzie
2,000


Diaphana minuta Brown, 1827
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY

477


Philine finmarchica M. Sars, 1878
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71°
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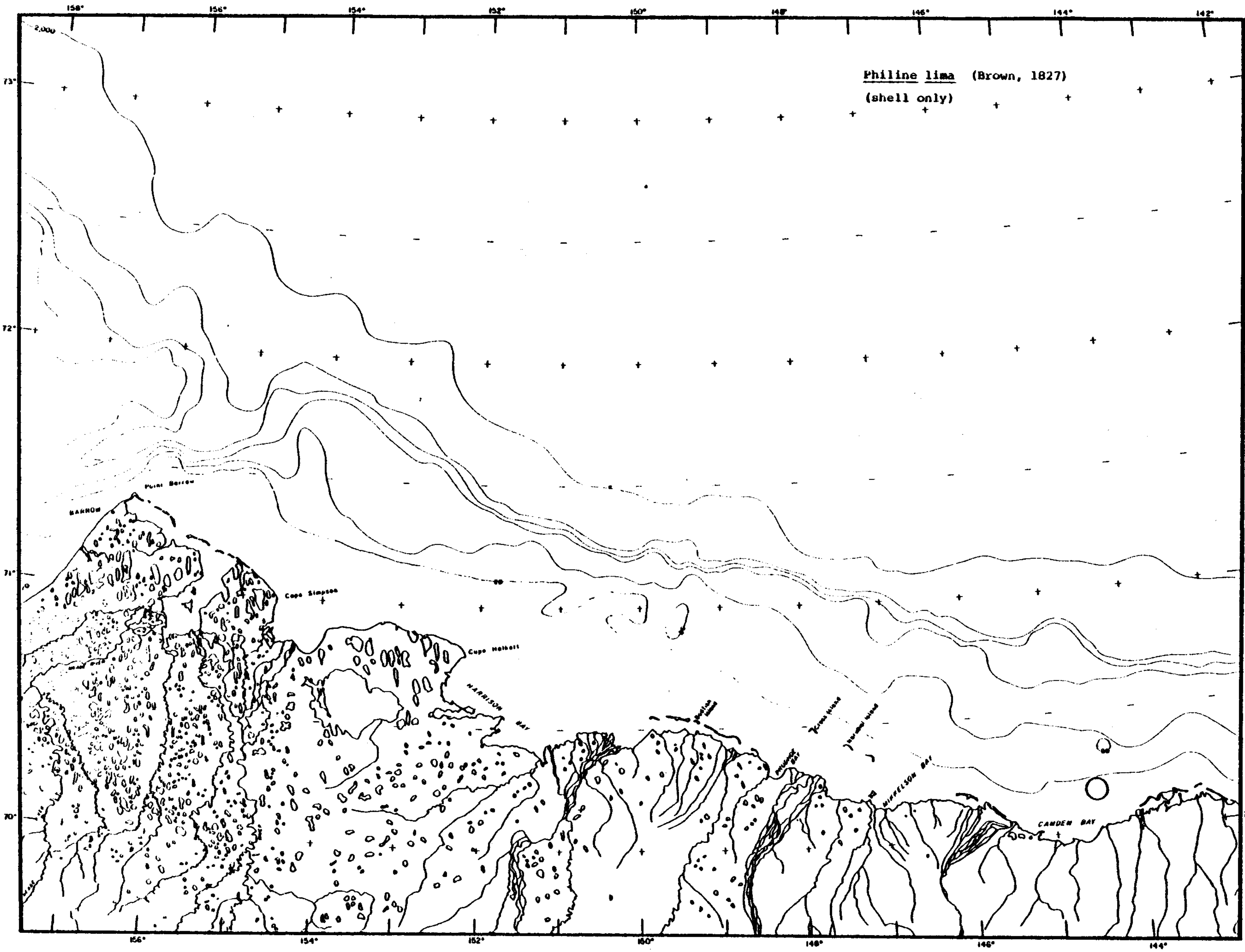
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

315


Philine lima (Brown, 1827)
(shell only)
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72°
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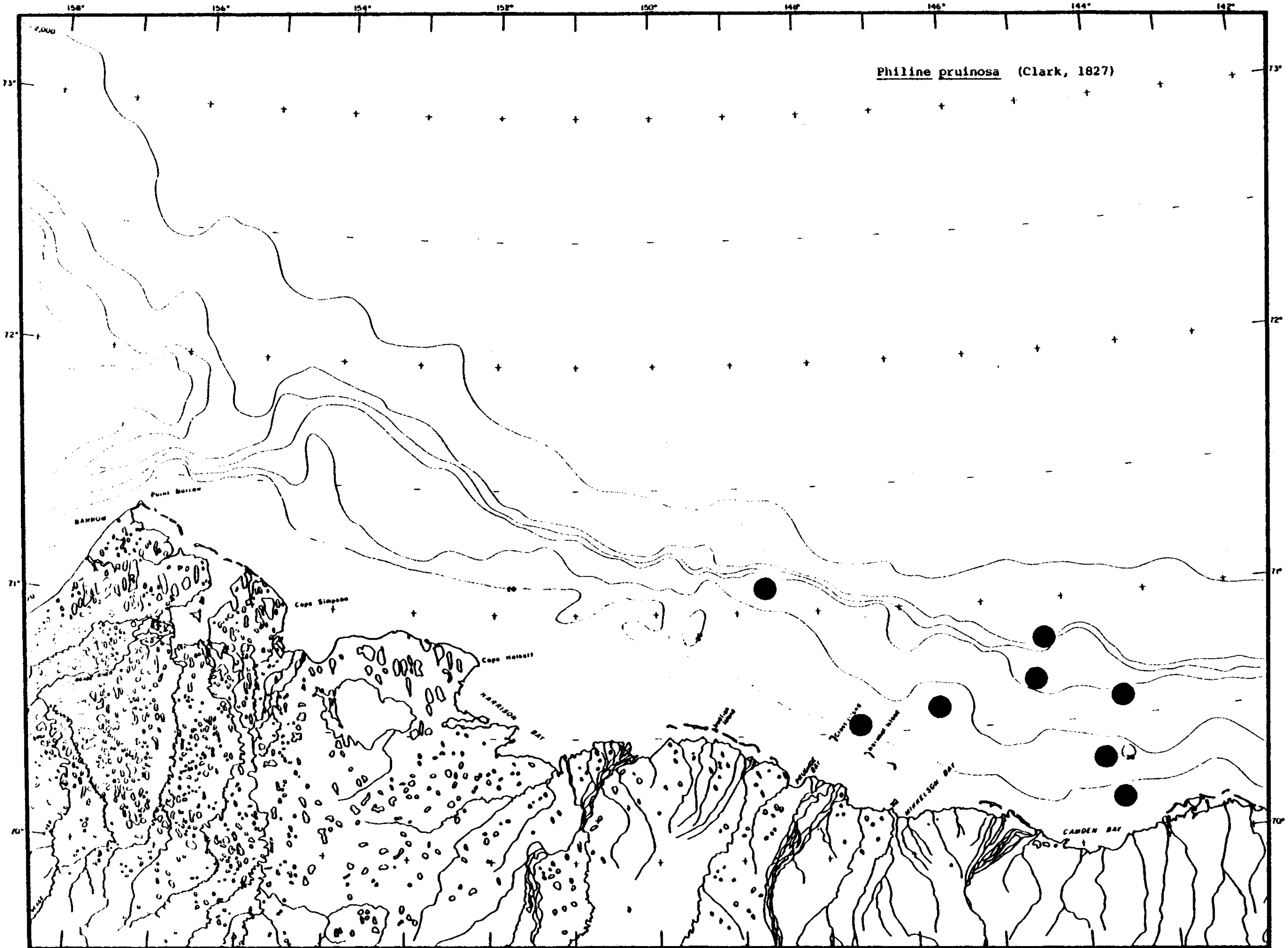
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
PRUDHOE BAY
MIKKELSON BAY
CAMDEN BAY


Philine pruinosa (Clark, 1827)
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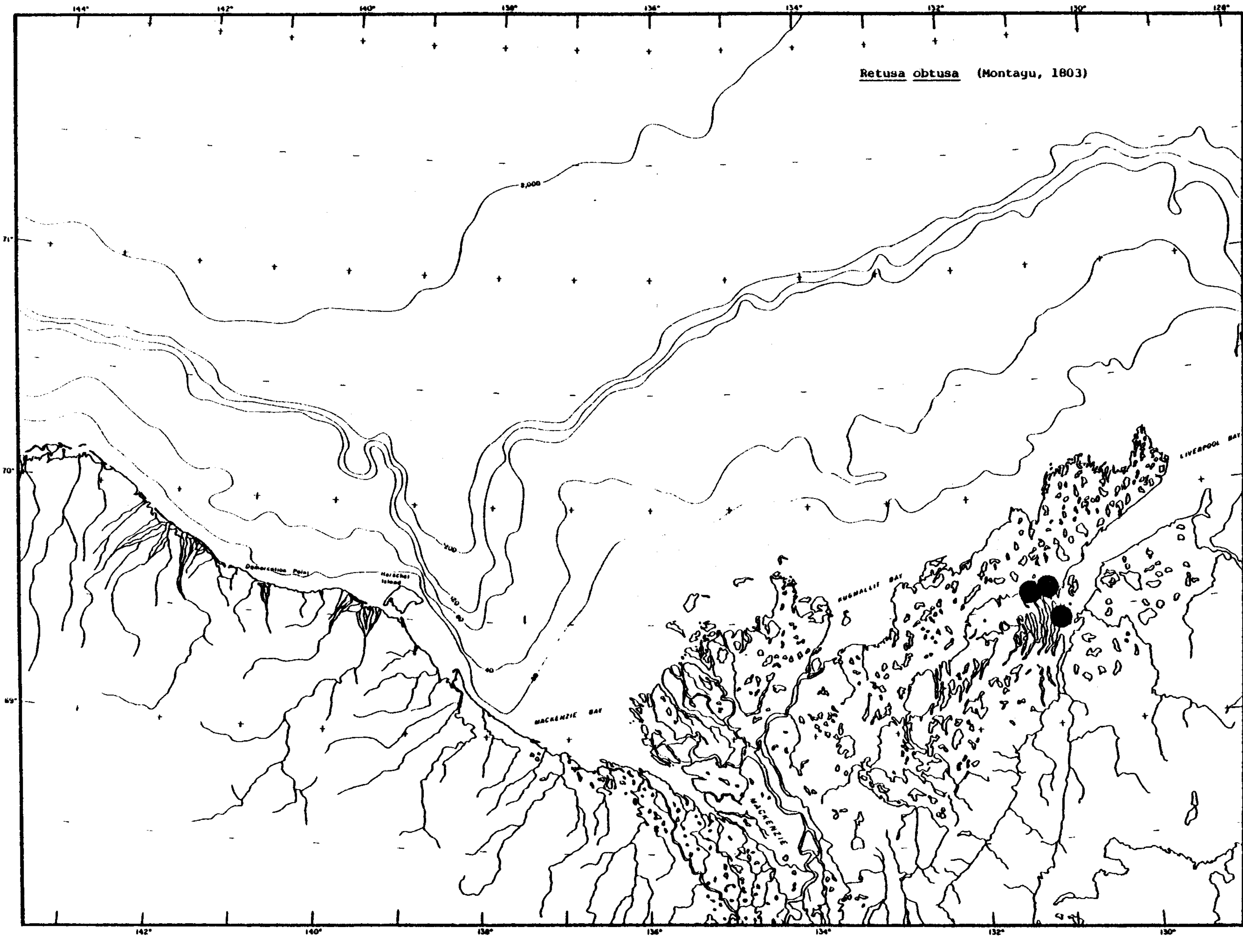
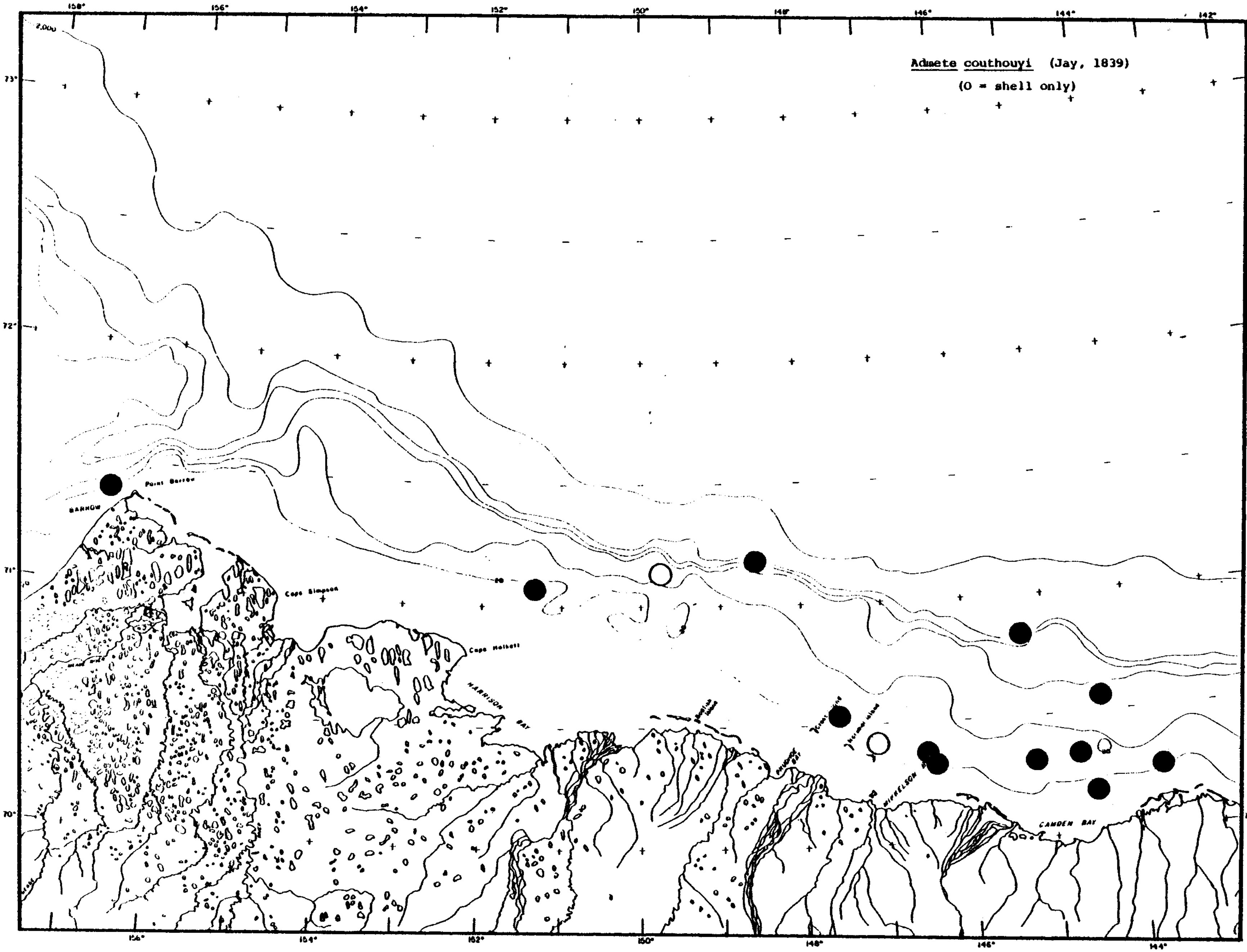
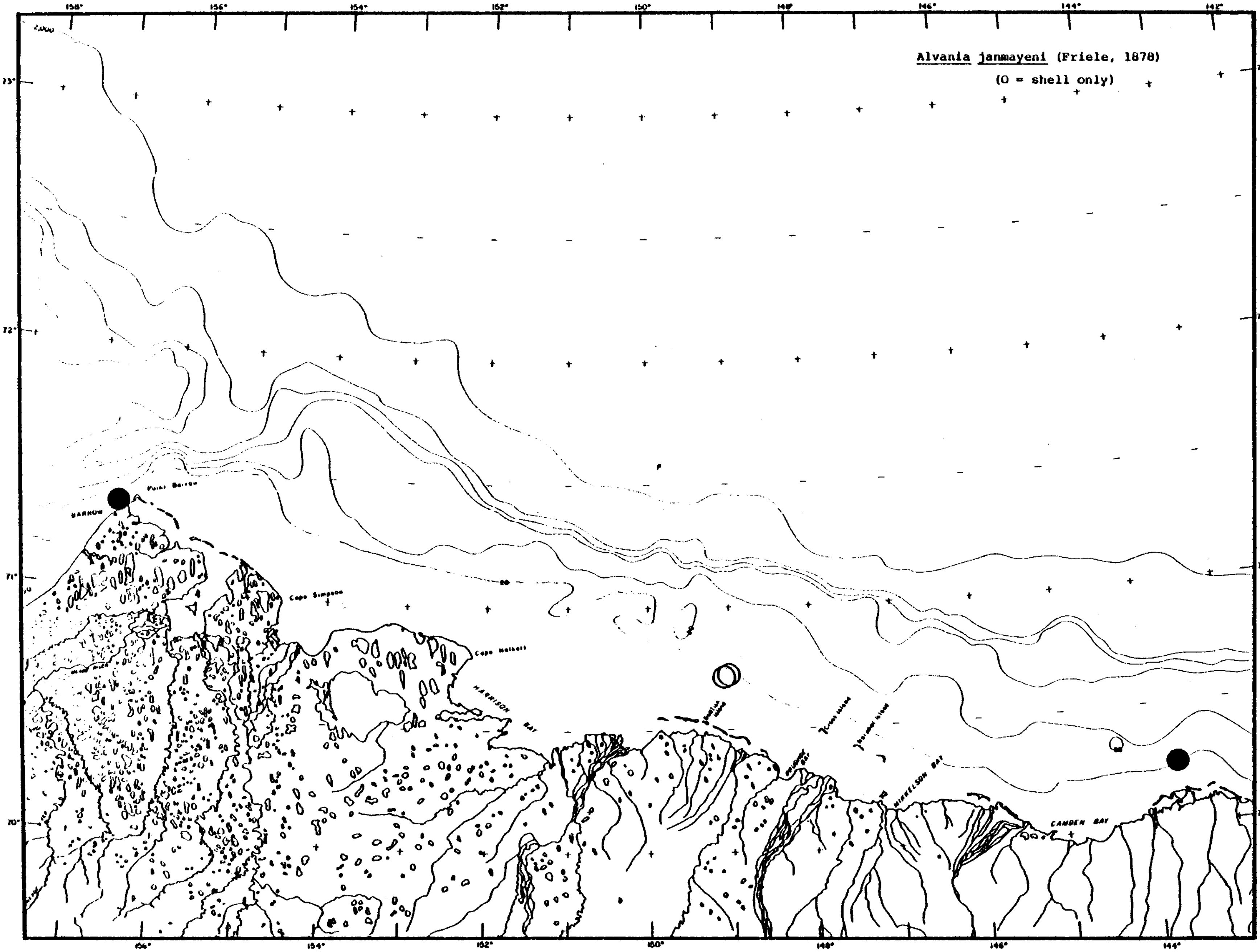
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°


Retusa obtusa (Montagu, 1803)
144°
142°
140°
138°
136°
134°
132°
130°
128°
71°
70°
69°
2,000
200
LIVERPOOL BAY
KUGMALLIT BAY
MACKENZIE BAY
MACKENZIE
Demarcation Point
Herschel Island

Species Distributions:

Mollusca -- Gastropoda (Prosobranchia)


Admete couthouyi (Jay, 1839)
(O = shell only)
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
73°
72°
71°
70°


Alvania janmayeni (Friele, 1878)
(O = shell only)
158°
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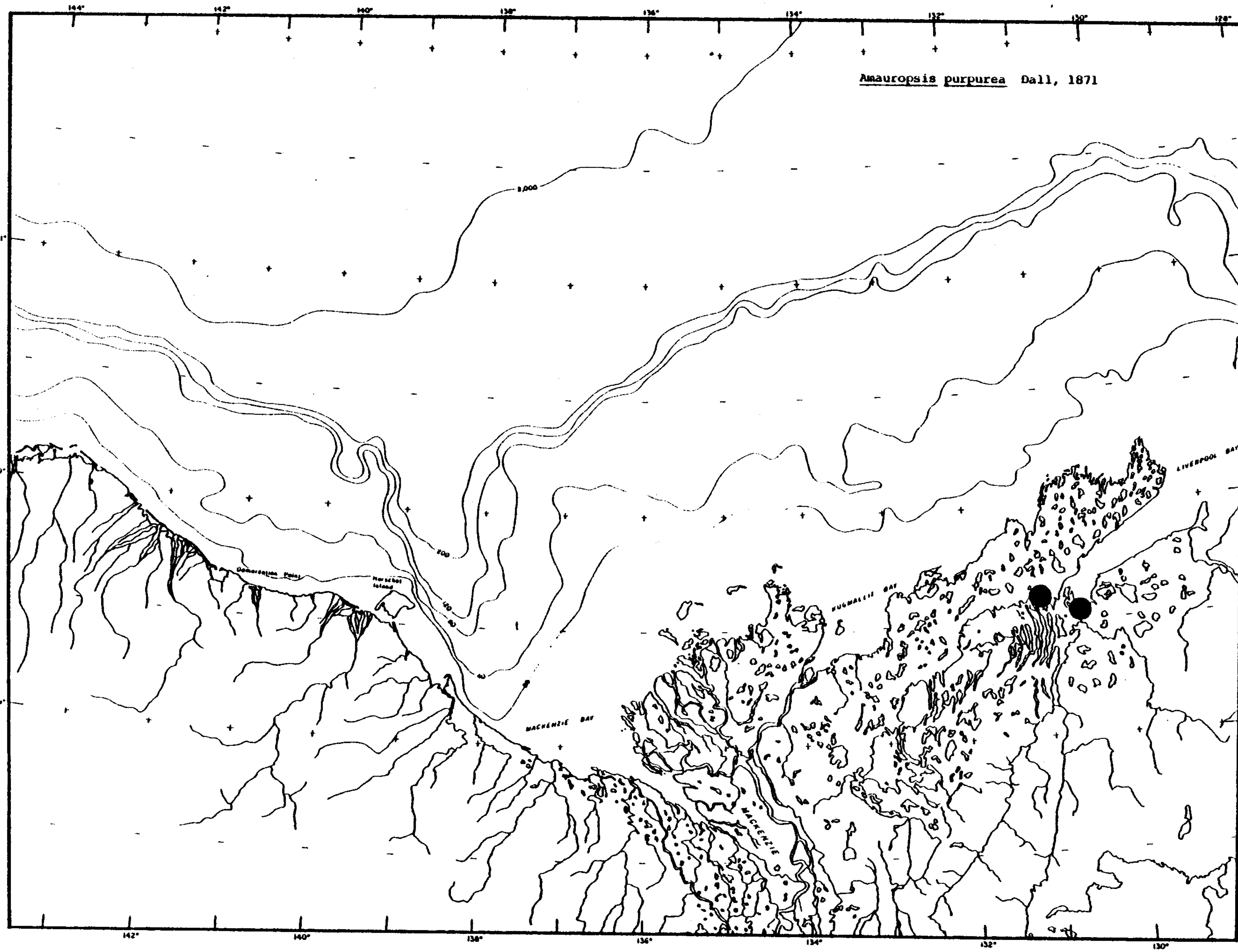
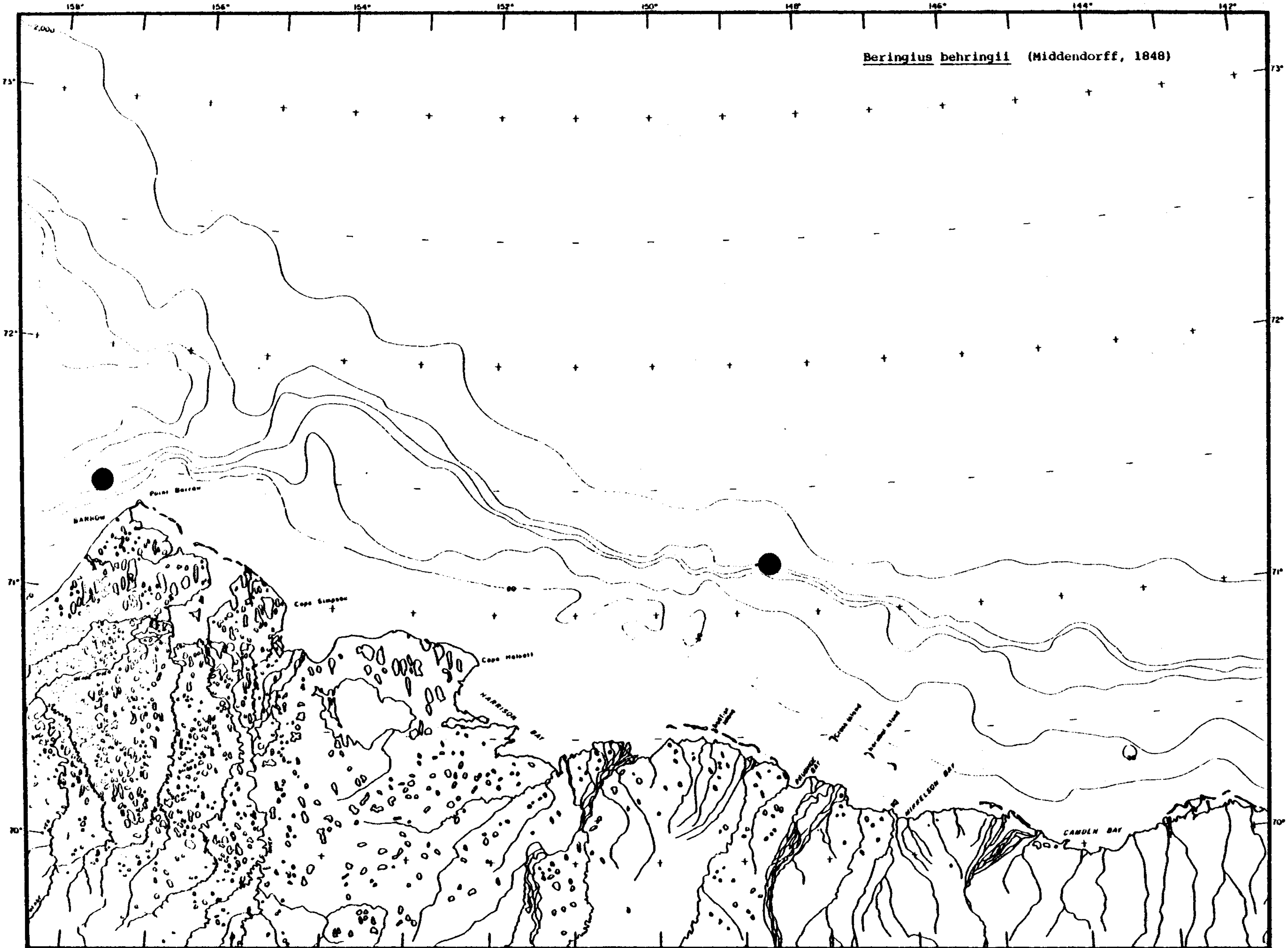
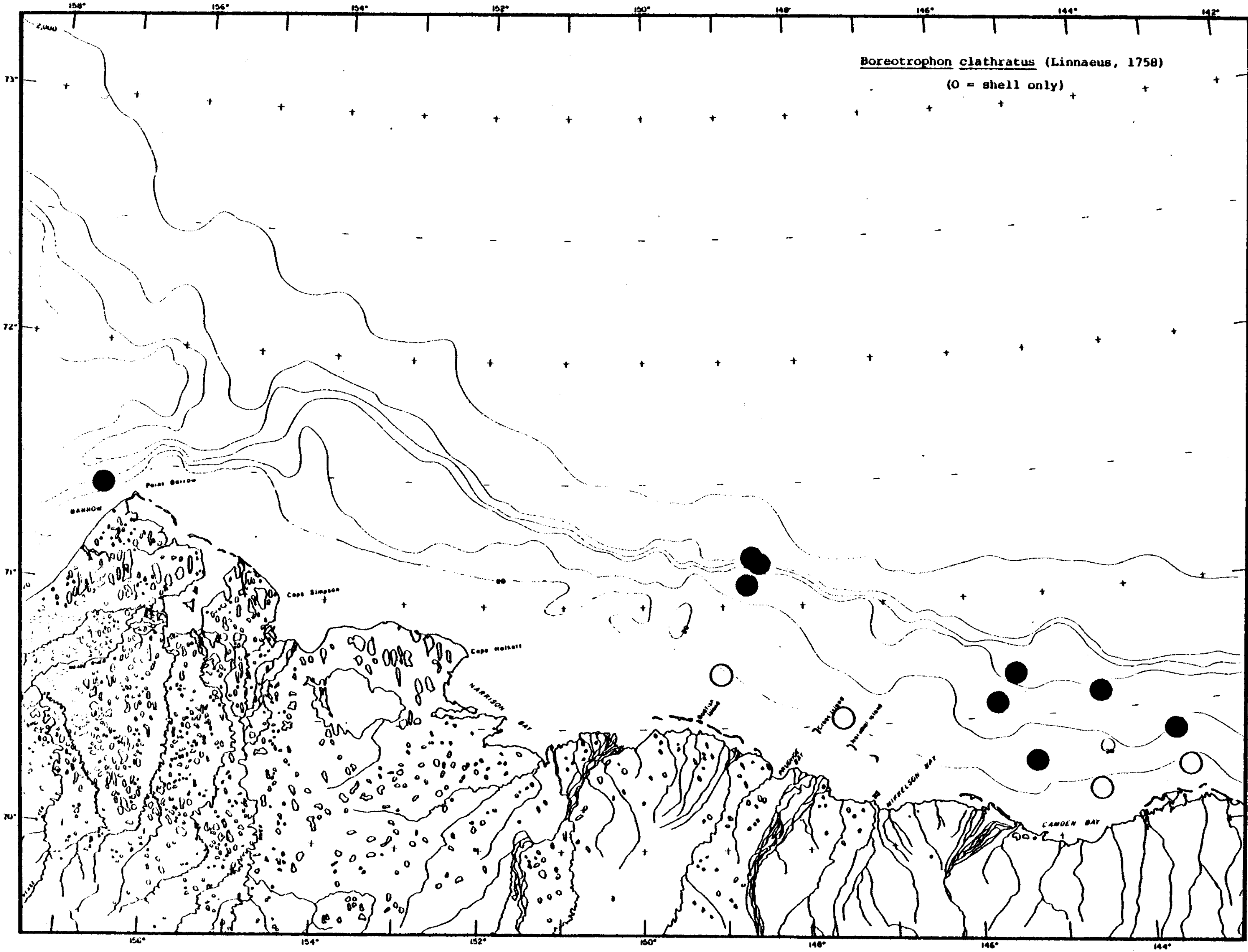
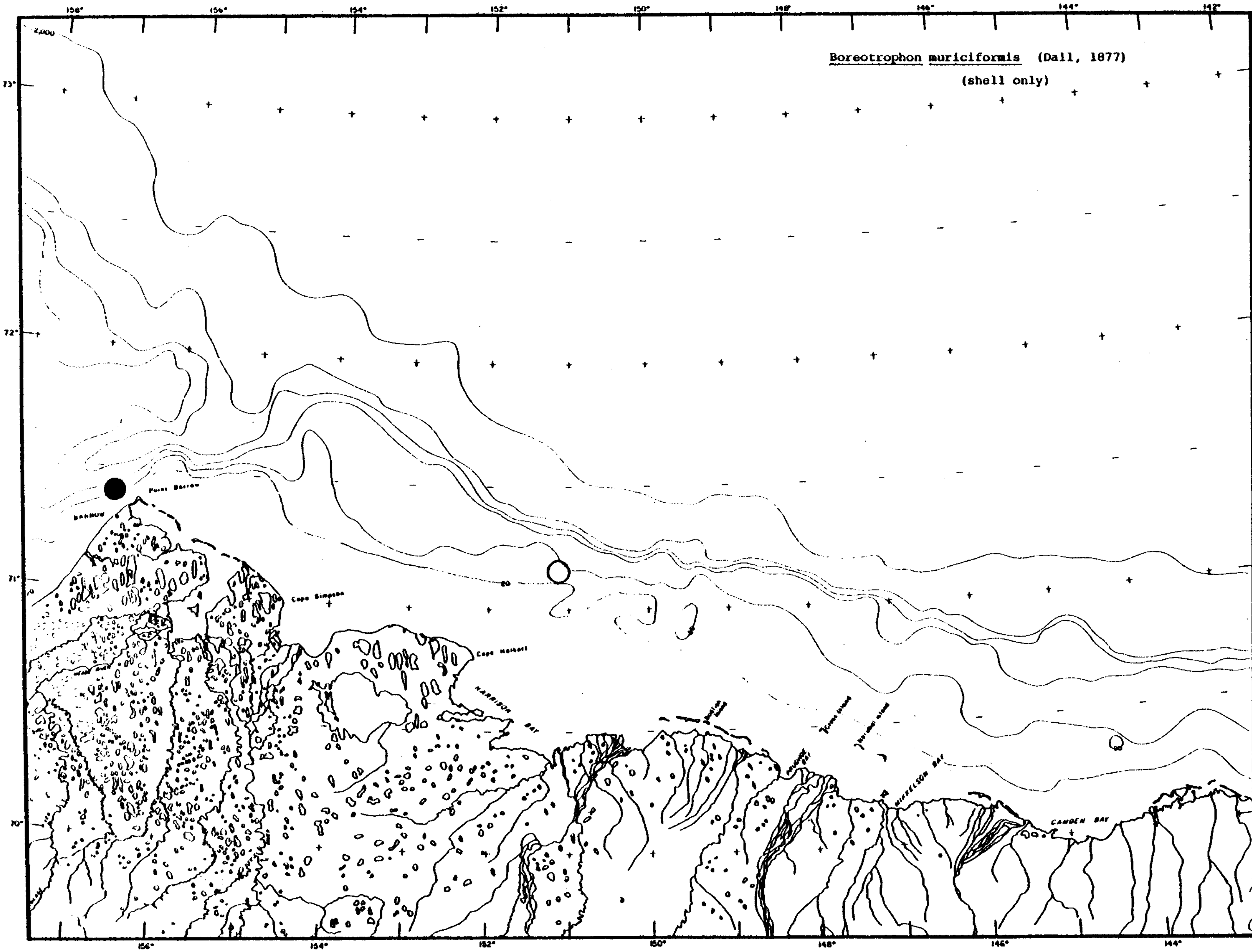
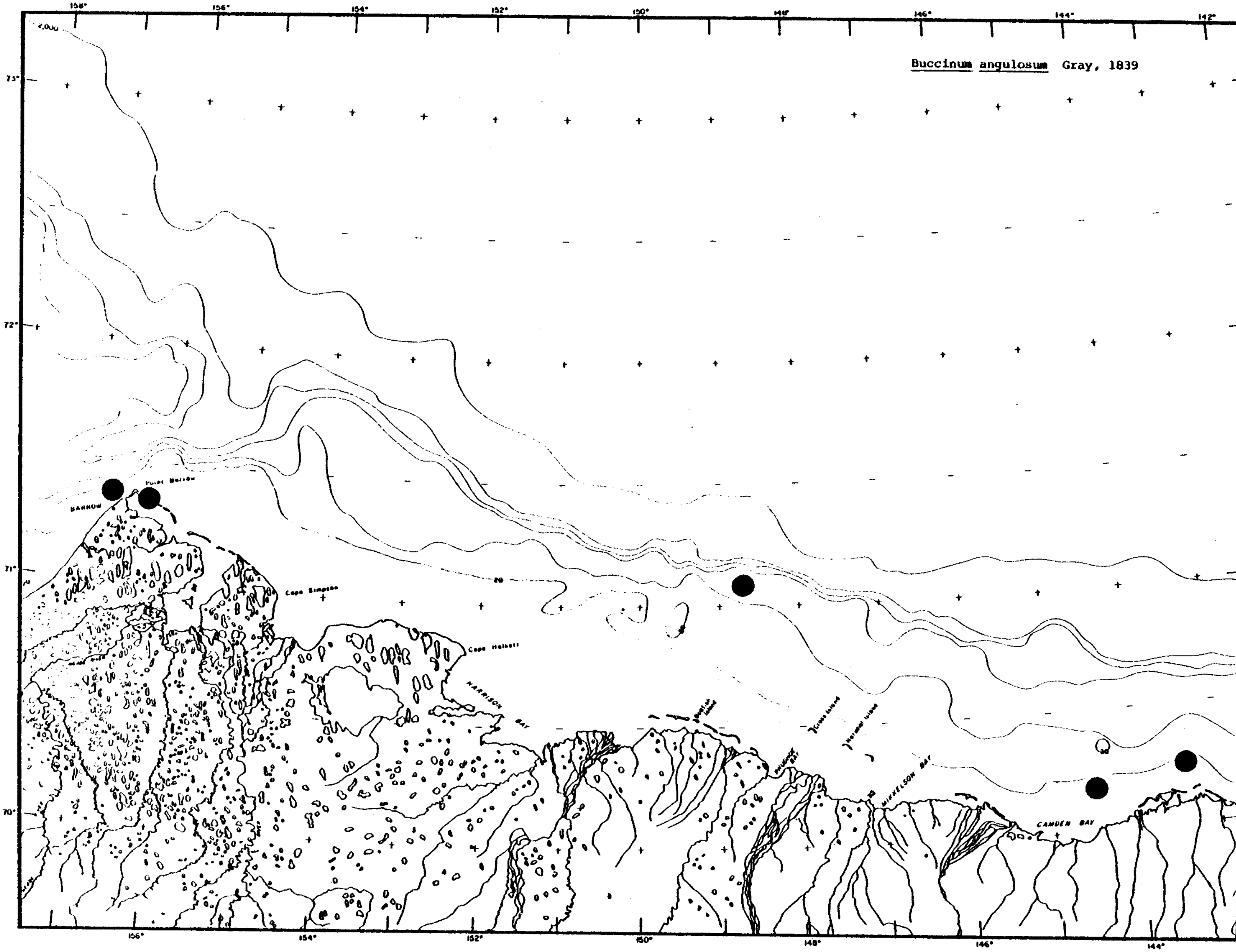
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

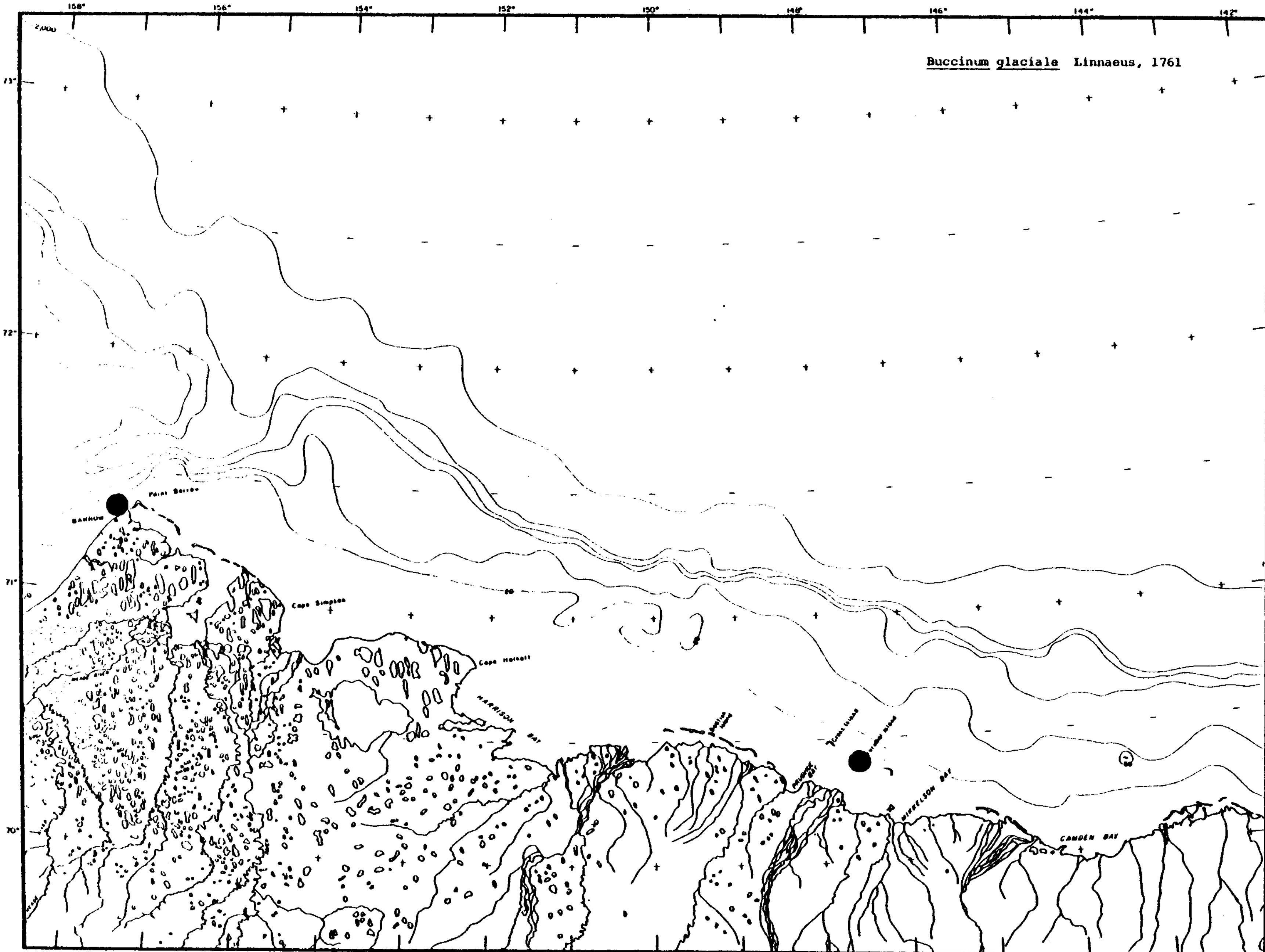

Amauropsis purpurea Dall, 1871
Demarcation Point
Herschel Island
MACKENZIE BAY
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE


Beringius behringii (Middendorff, 1848)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°

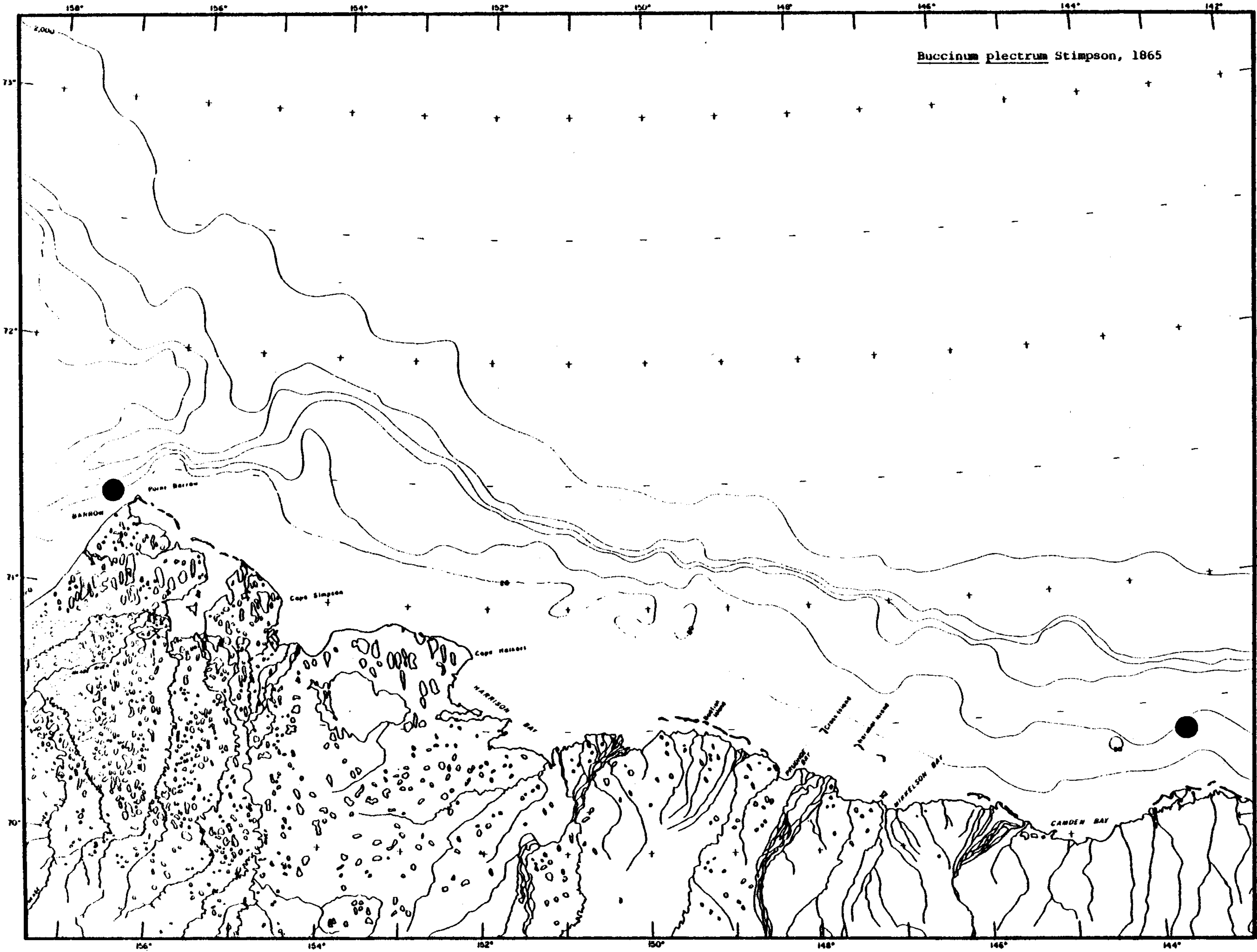

Boreotrophon clathratus (Linnaeus, 1758)
(O = shell only)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay

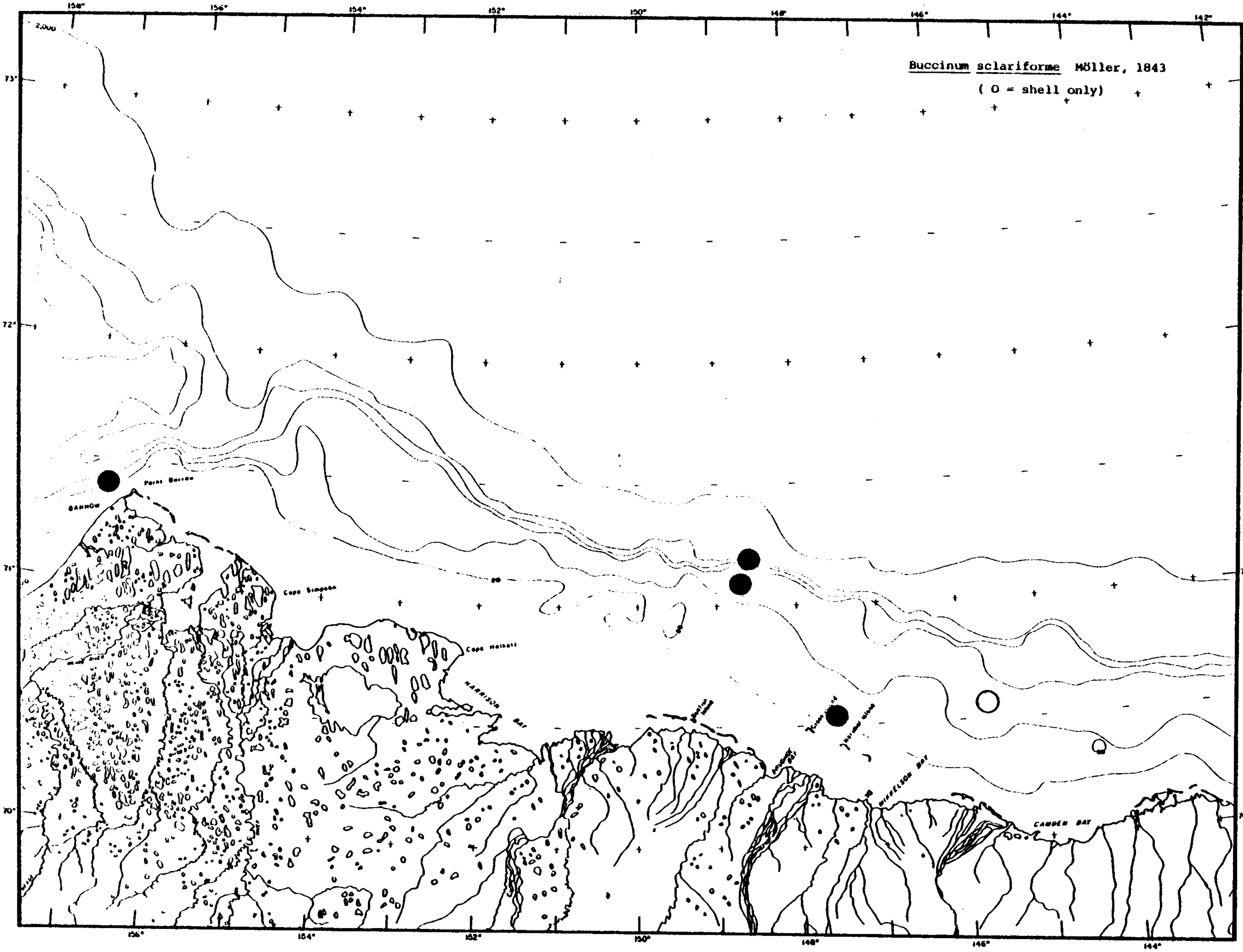

Boreotrophon muriciformis (Dall, 1877)
(shell only)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Prudhoe Bay
Mikkelson Bay
Camden Bay
73°
72°
71°
70°
158°
156°
154°
152°
150°
148°
146°
144°
142°


Buccinum angulosum Gray, 1839
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY

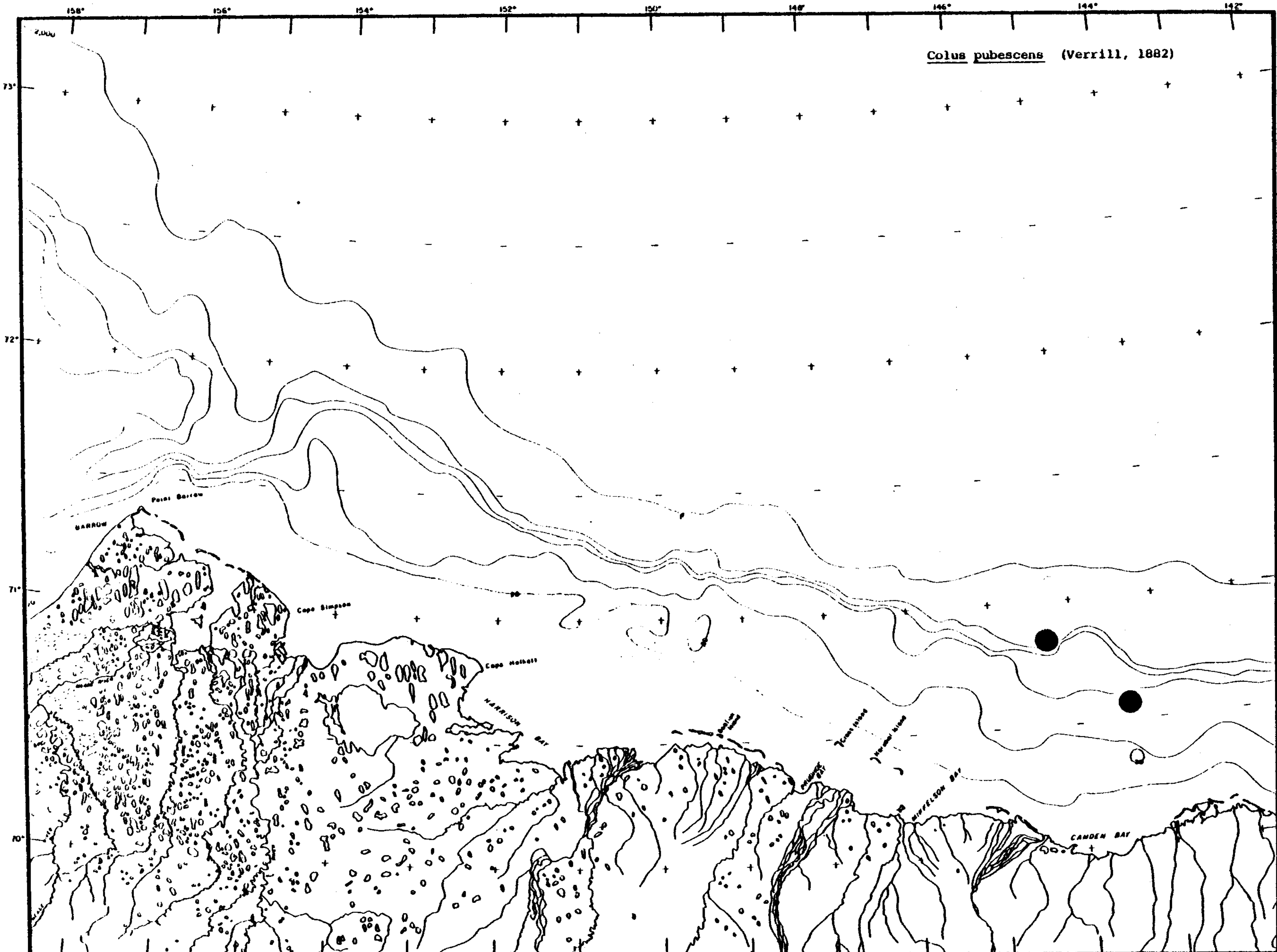


Buccinum glaciale Linnaeus, 1761
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Buccinum plectrum Stimpson, 1865
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
PRUDHOE BAY
MIKKELSON BAY
CAMDEN BAY
73°
72°
71°
70°
156°
154°
152°
150°
148°
146°
144°
142°



Buccinum sclariforme Möller, 1843
(O = shell only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Colus pubescens (Verrill, 1882)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
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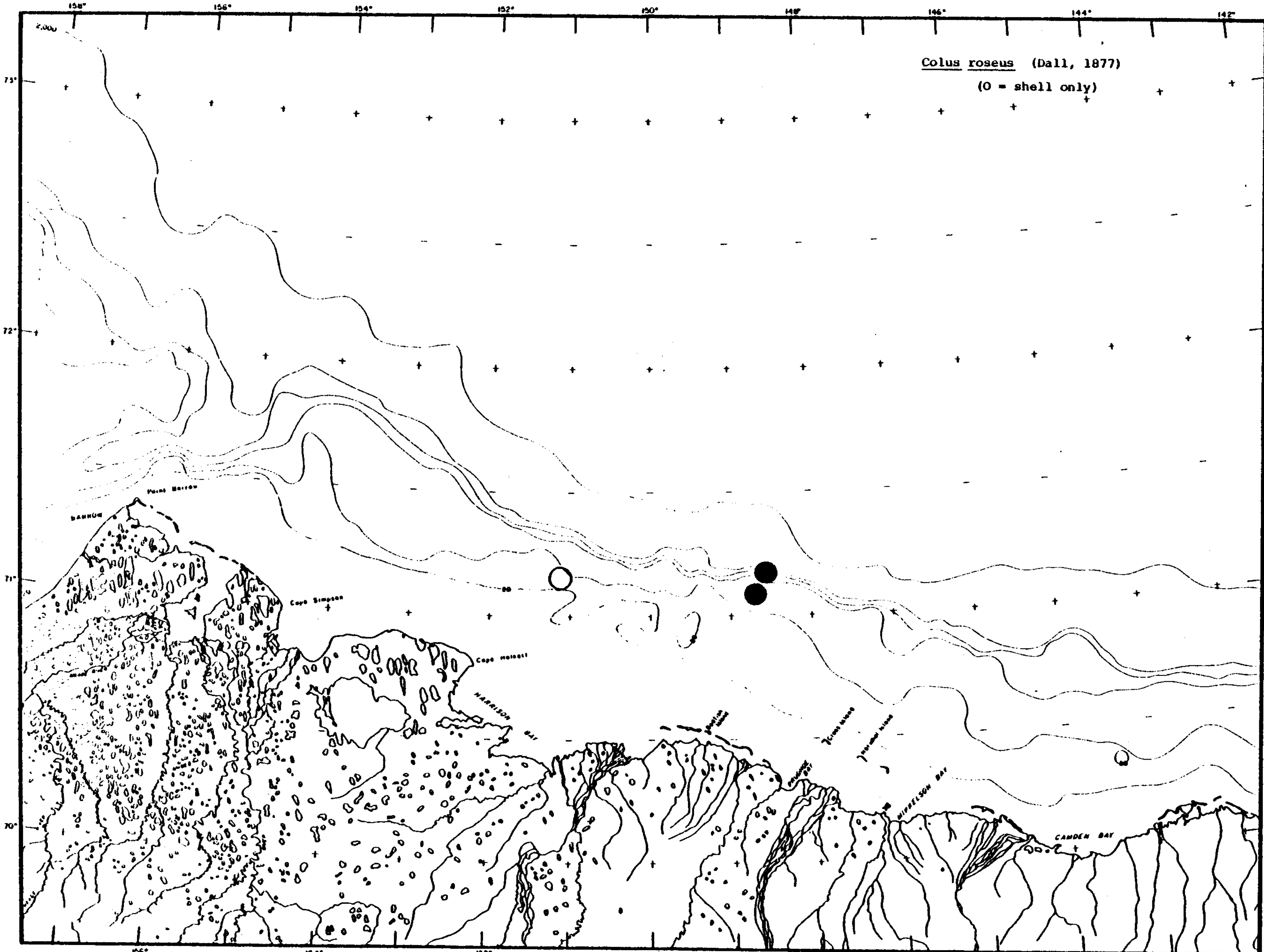
70°


Colus roseus (Dall, 1877)
(O = shell only)
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
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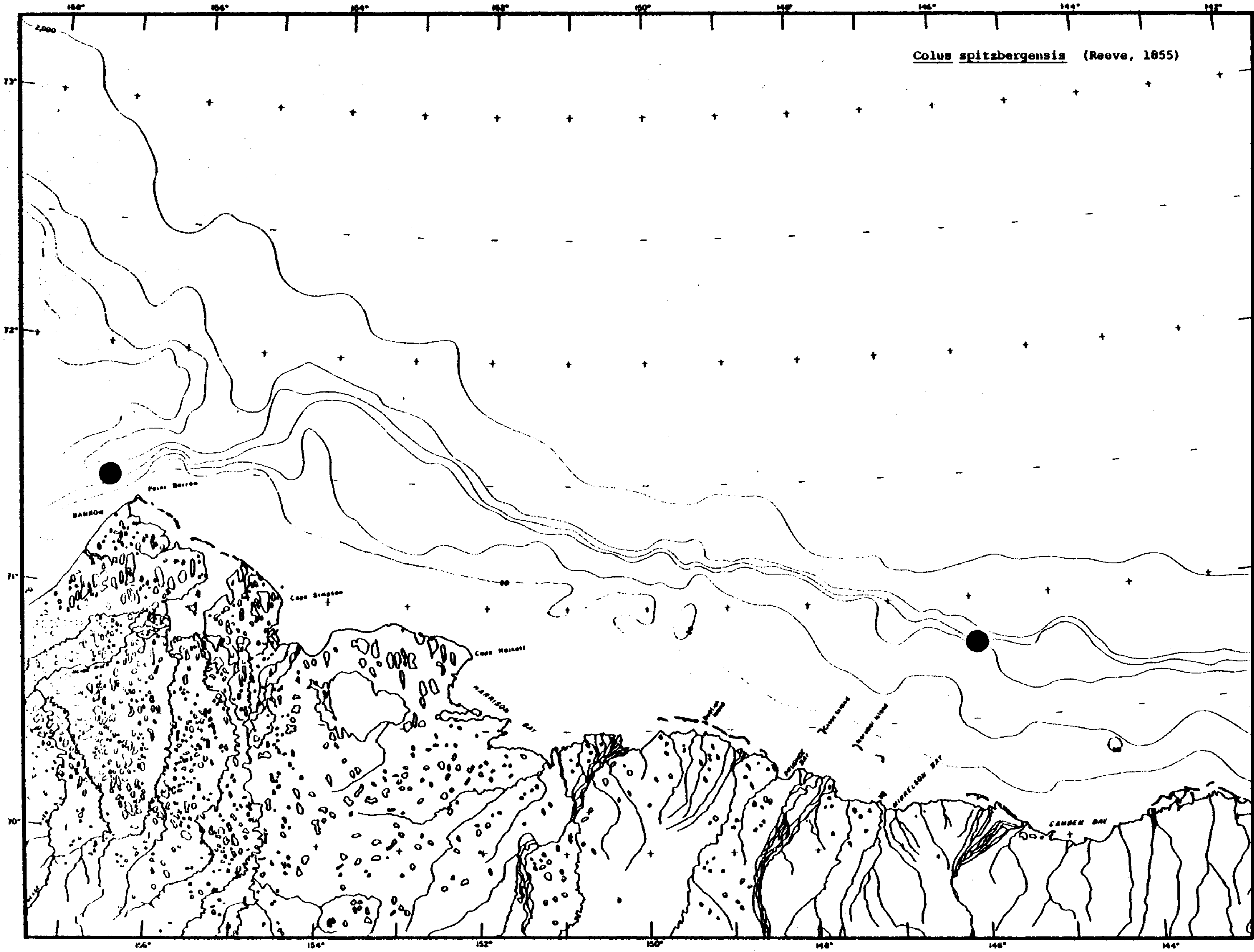
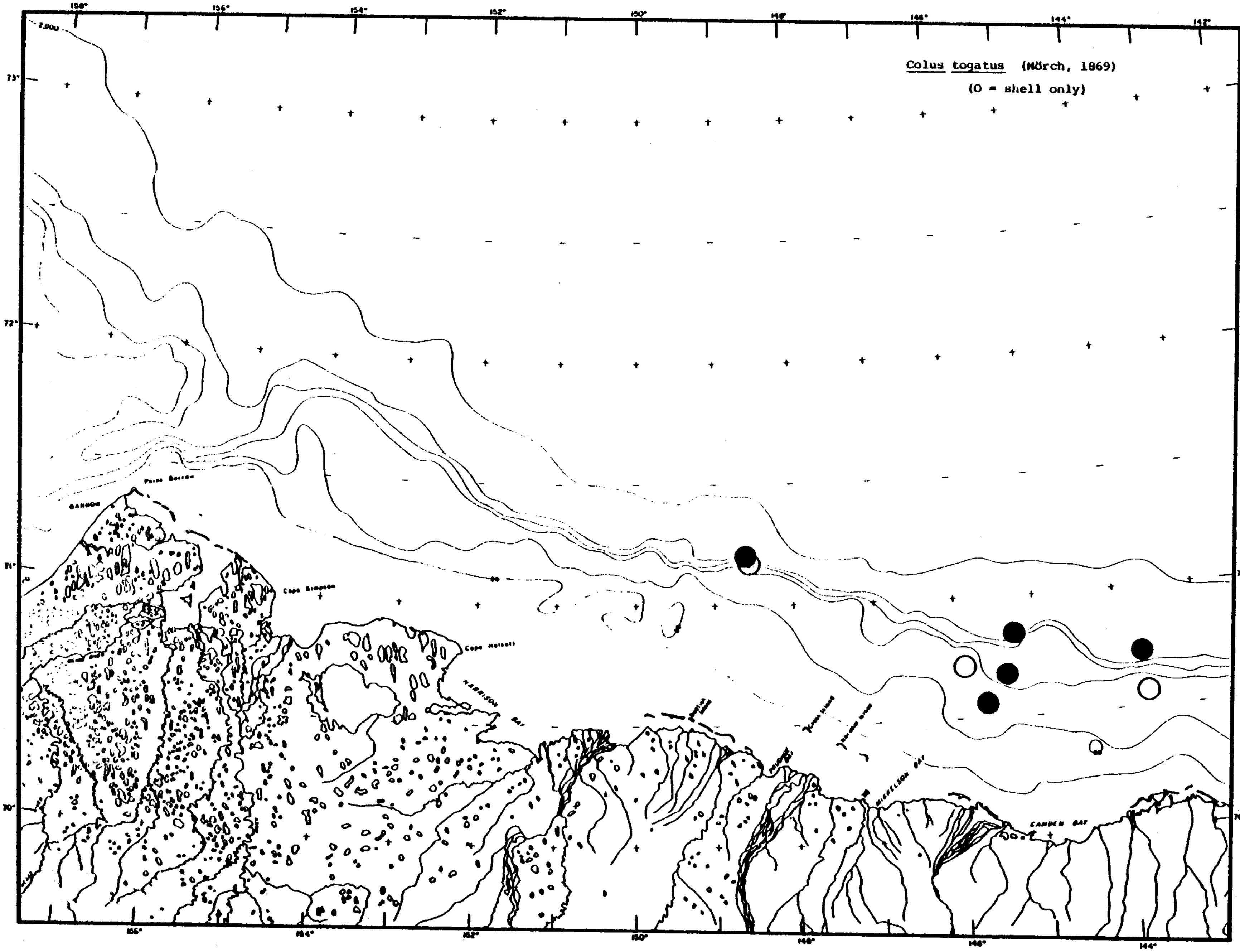


Colus spitzbergensis (Reeve, 1855)


Colus togatus (Mörch, 1869)
(O = shell only)
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
73°
72°
71°
70°
156°
154°
152°
150°
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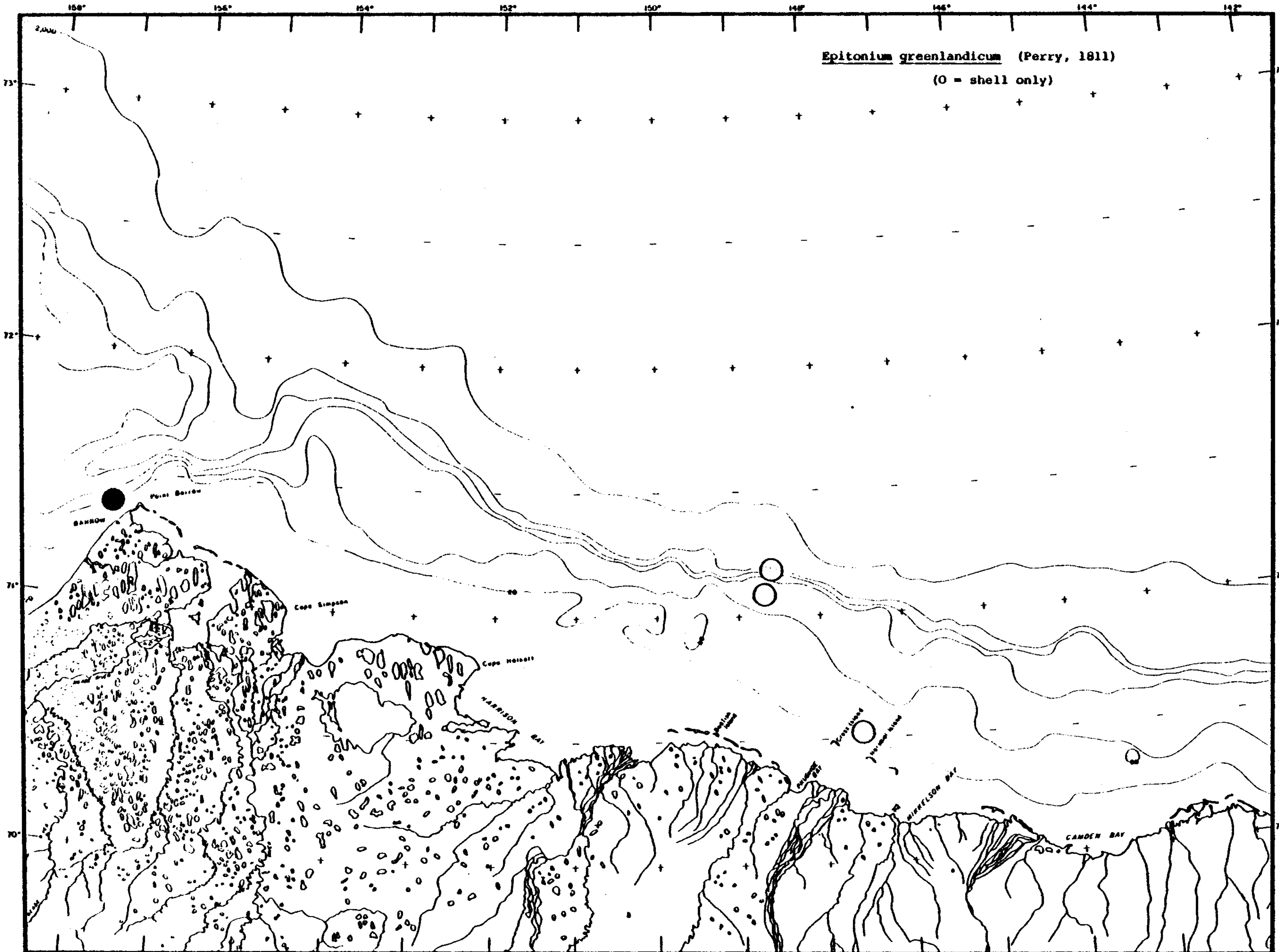
146°
144°
142°


Epitonium greenlandicum (Perry, 1811)
(O = shell only)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Mikkelson Bay
Camden Bay
158°
156°
154°
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144°
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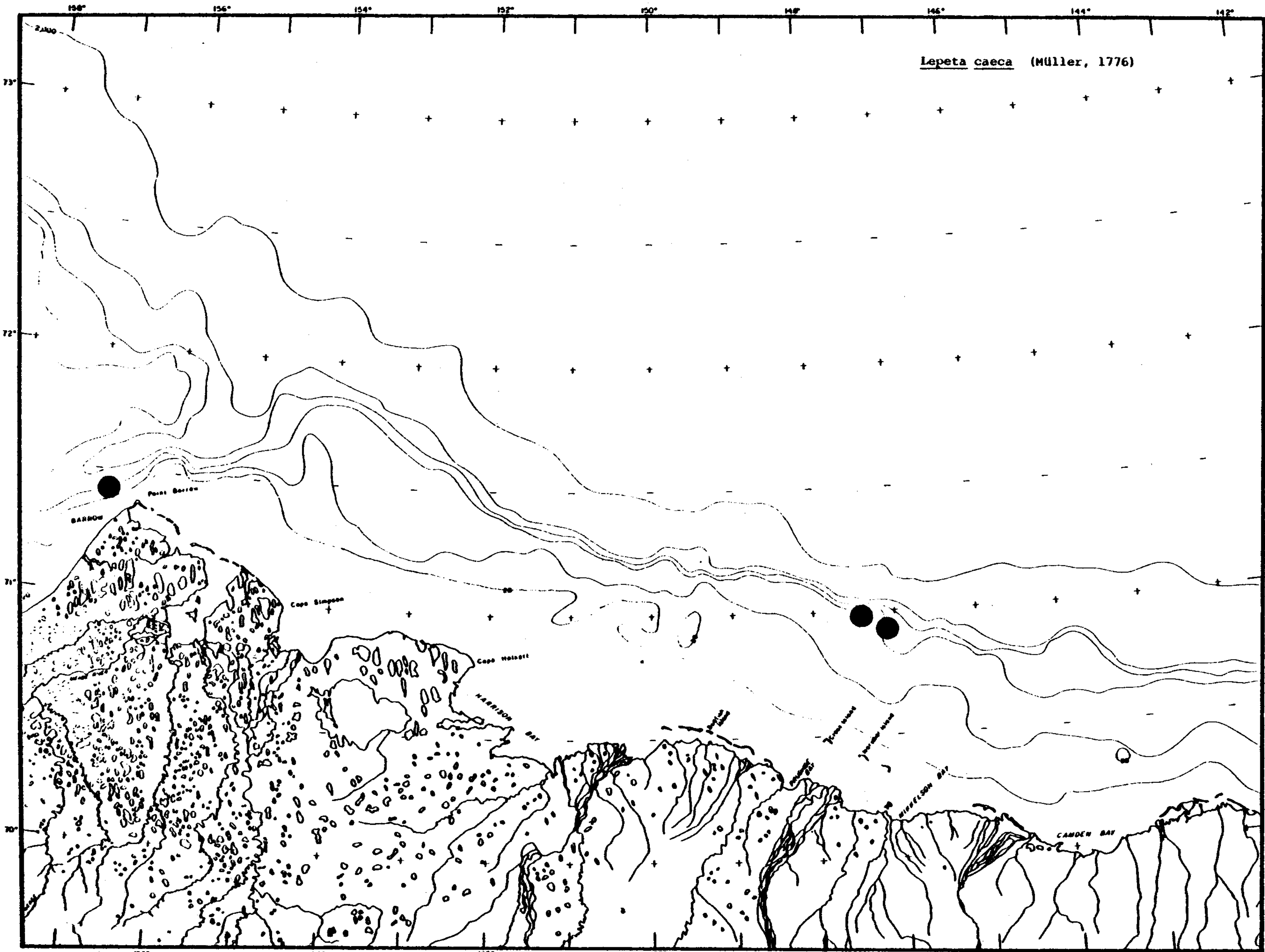
Lepeta caeca (Müller, 1776)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
158°
156°
154°
152°
150°
148°
146°
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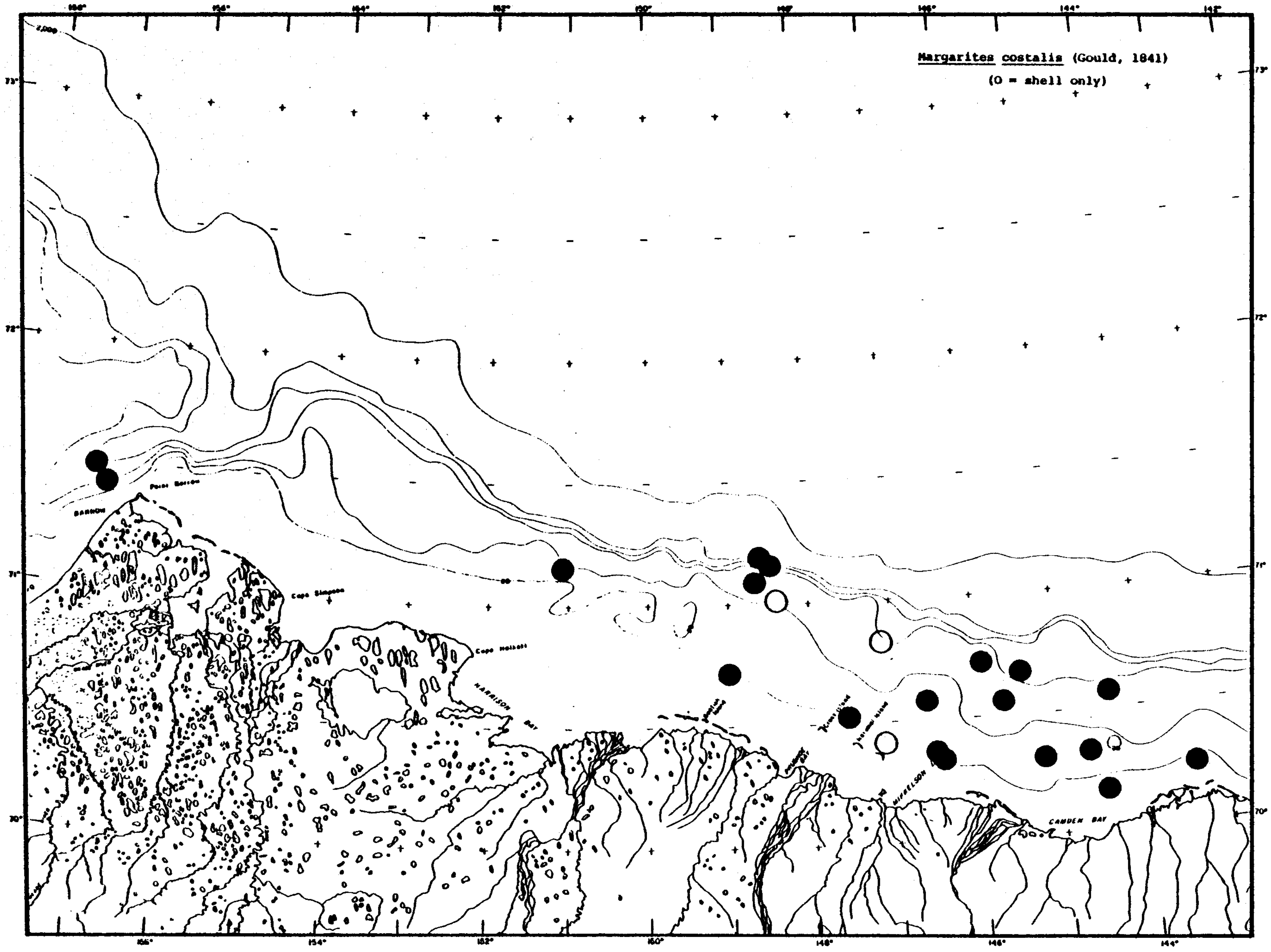
Margarites costalis (Gould, 1841)
(O = shell only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON
CAMDEN BAY
72°
71°
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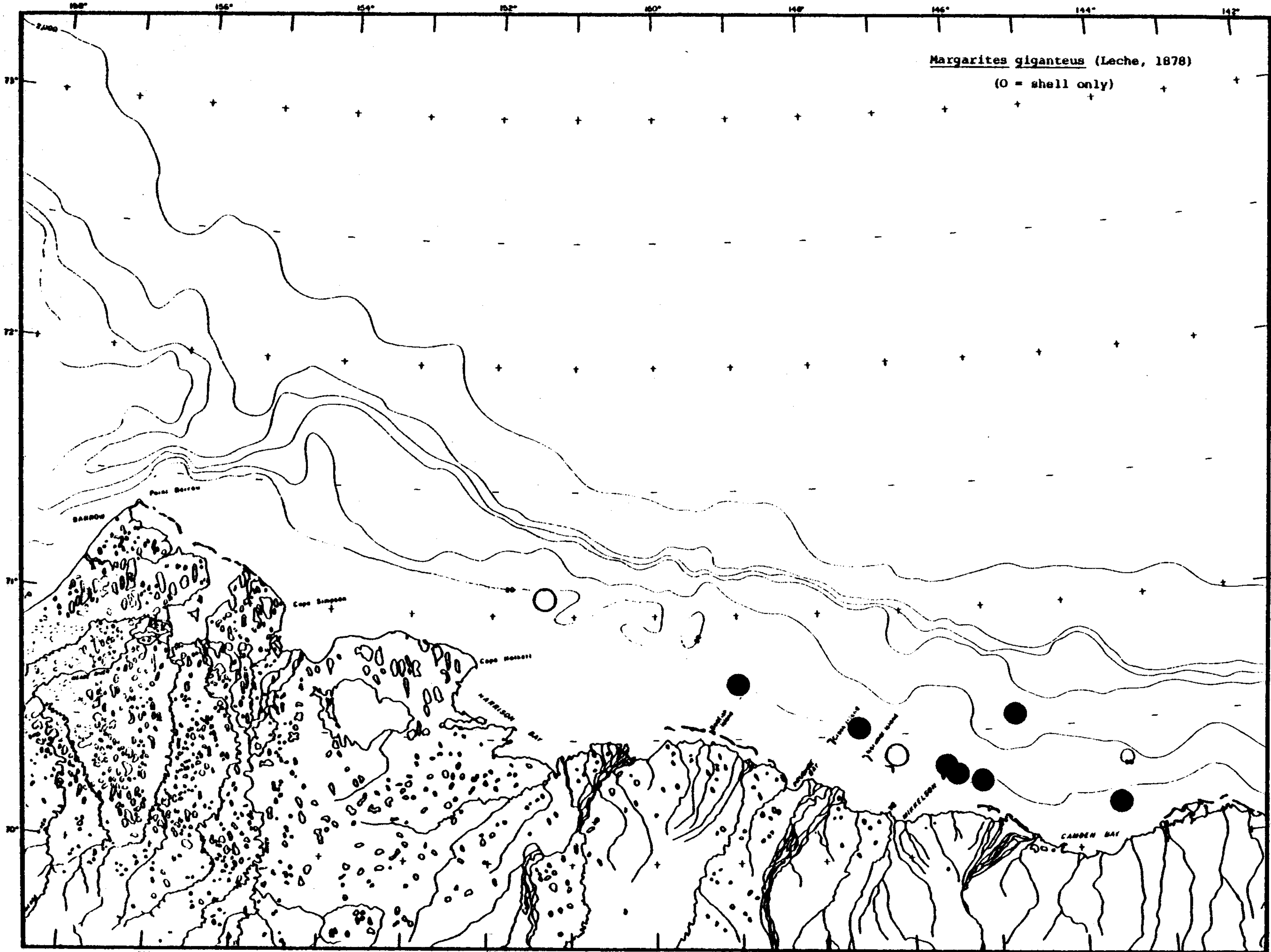
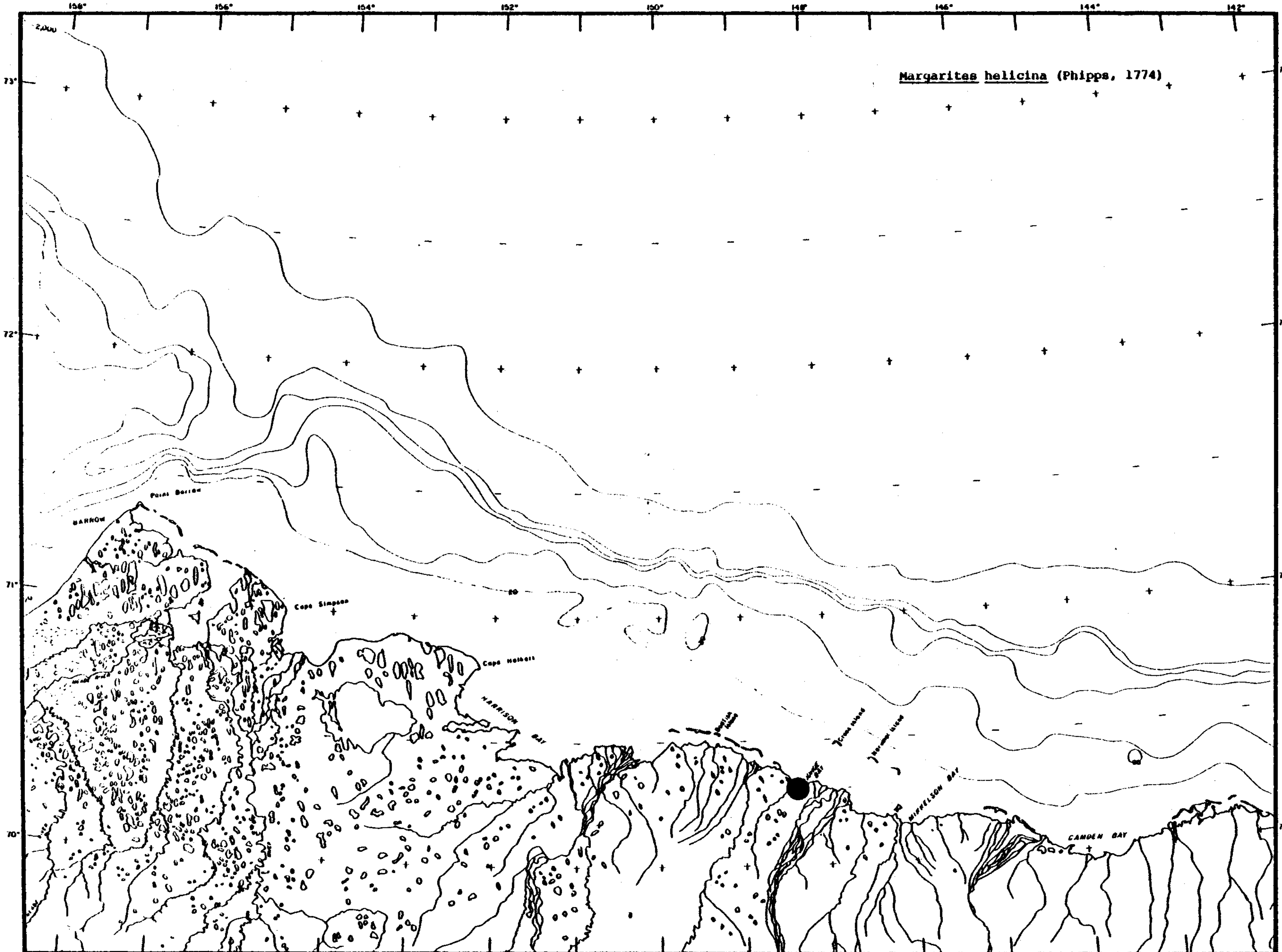
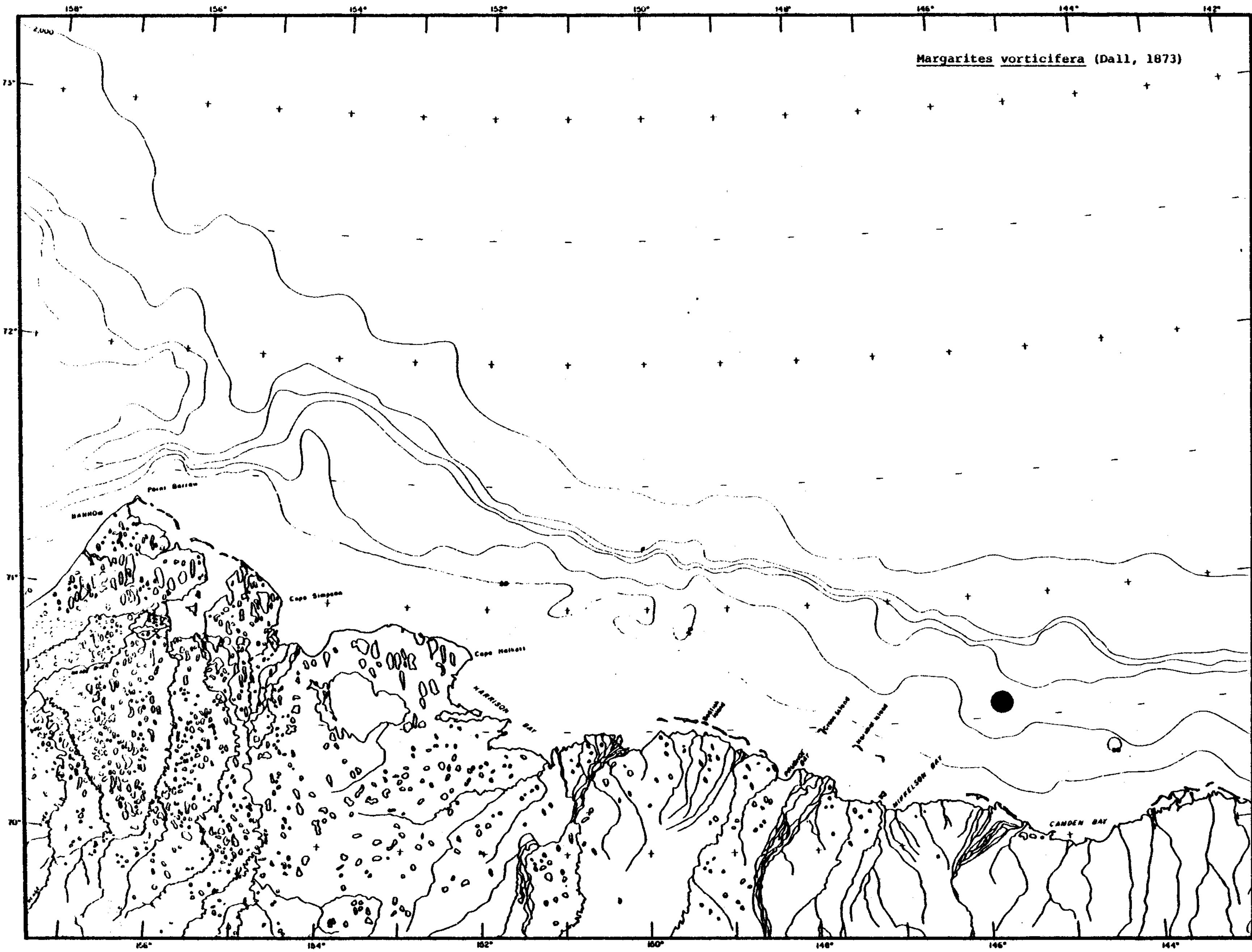
144°


Margarites giganteus (Leche, 1878)
(O = shell only)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
73°
72°
71°
70°



Margarites helicina (Phipps, 1774)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
MIKKELSON BAY


Margarites vorticifera (Dall, 1873)
158°
156°
154°
152°
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142°
73°
72°
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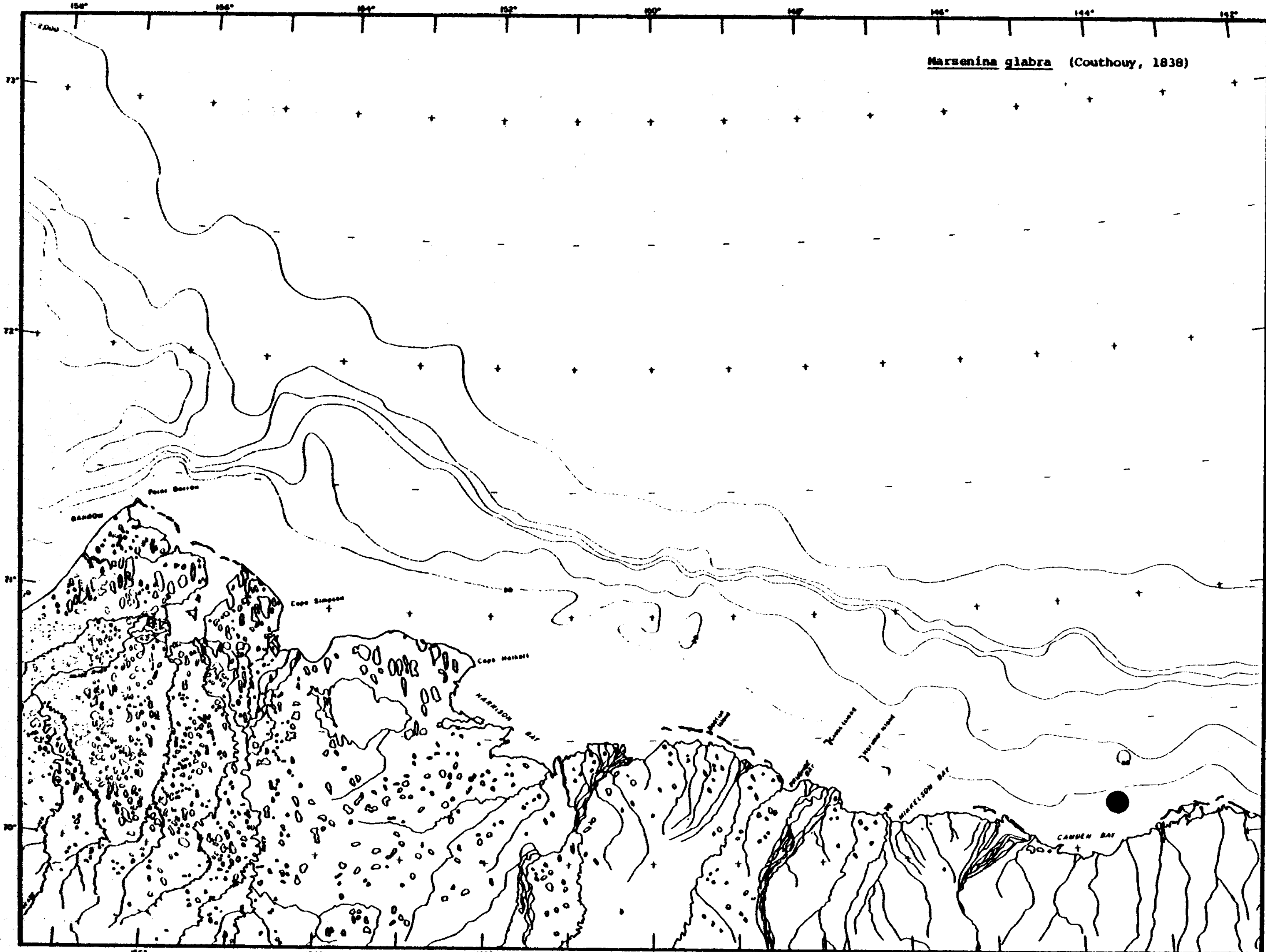
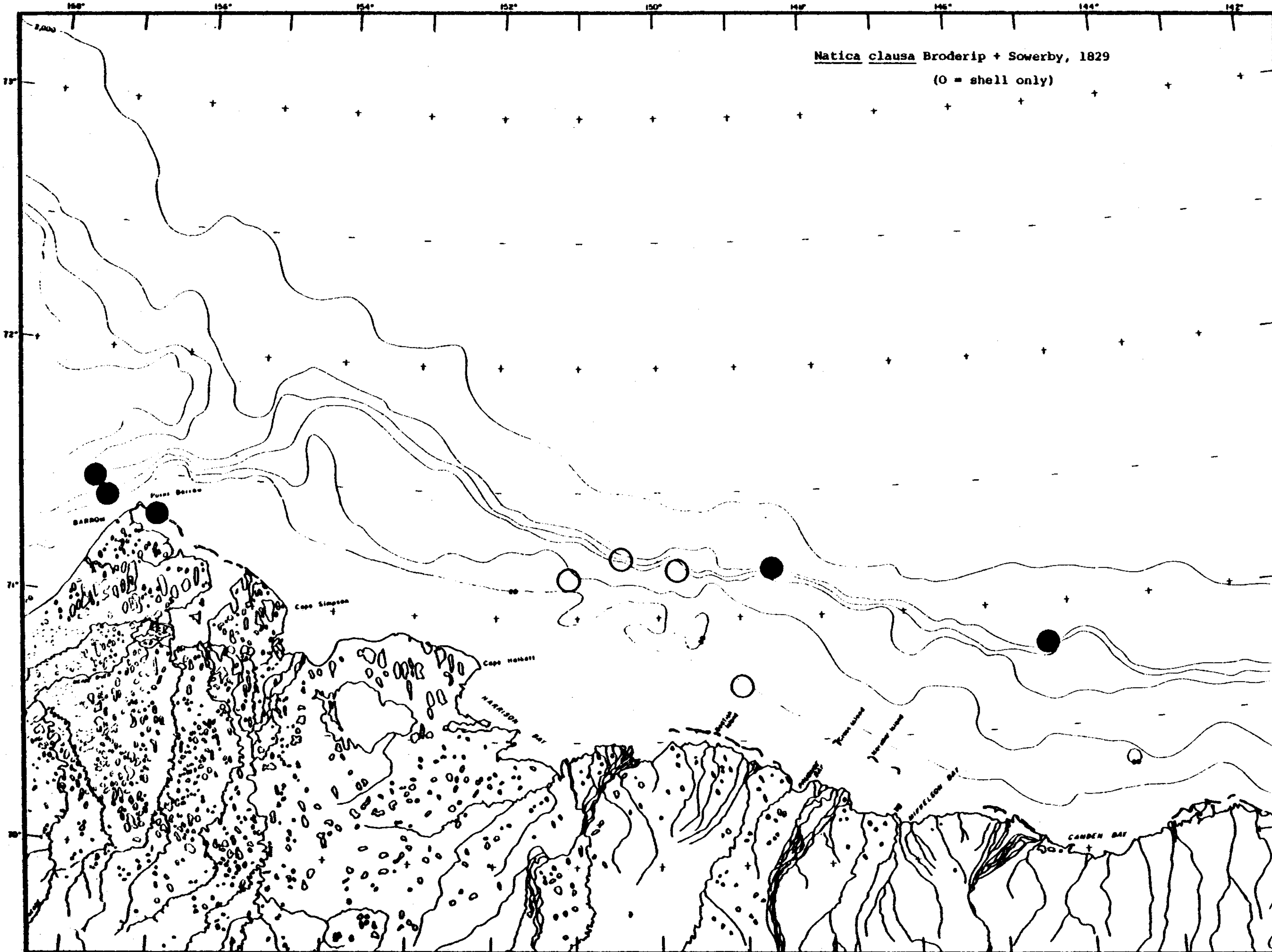
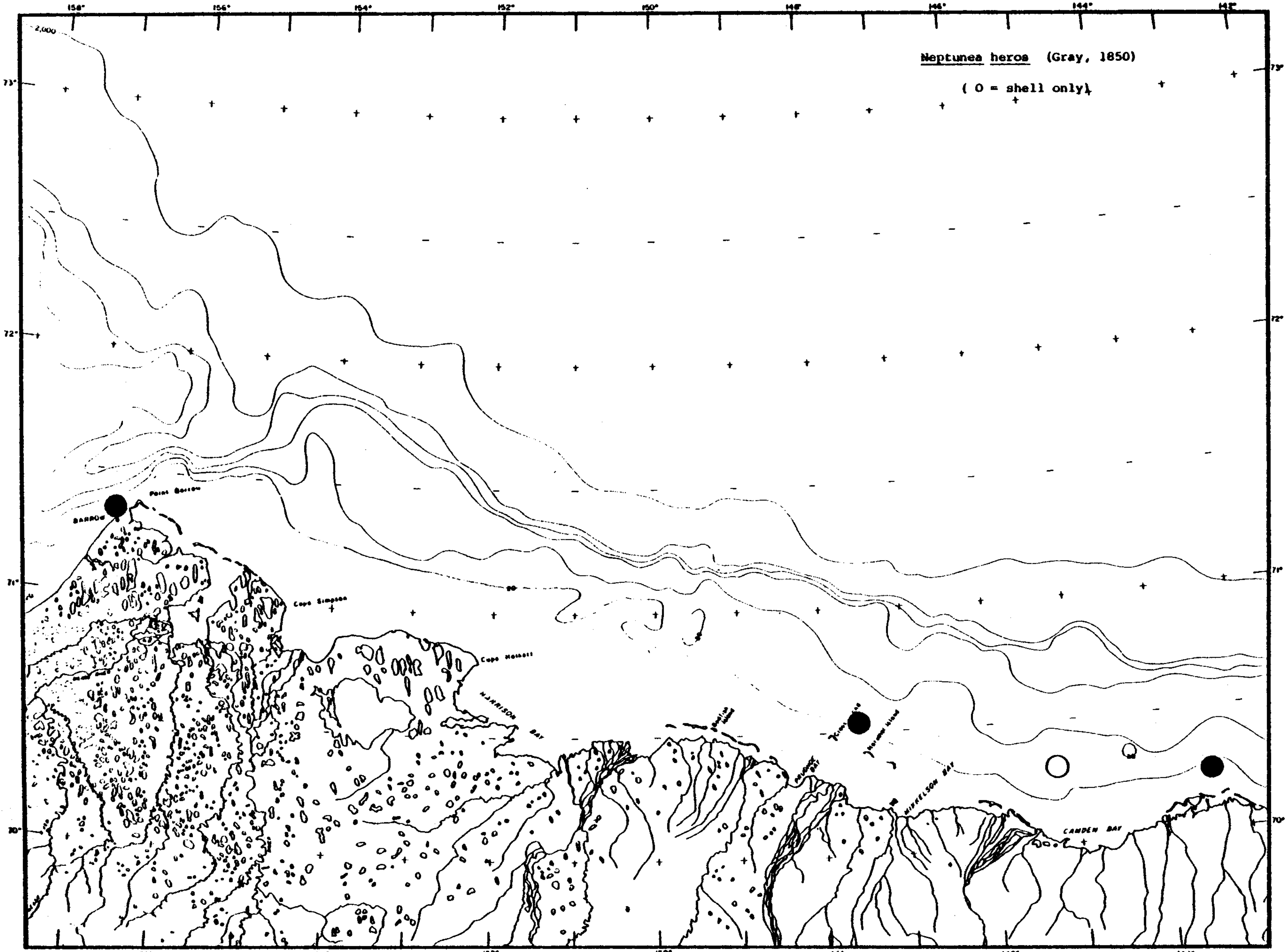
70°
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Marsenina glabra (Couthouy, 1838)
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Natica clausa Broderip + Sowerby, 1829
(O = shell only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Neptunea heros (Gray, 1850)
(O = shell only)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Mikkelson Bay
Camden Bay
158°
156°
154°
152°
150°
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146°
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73°
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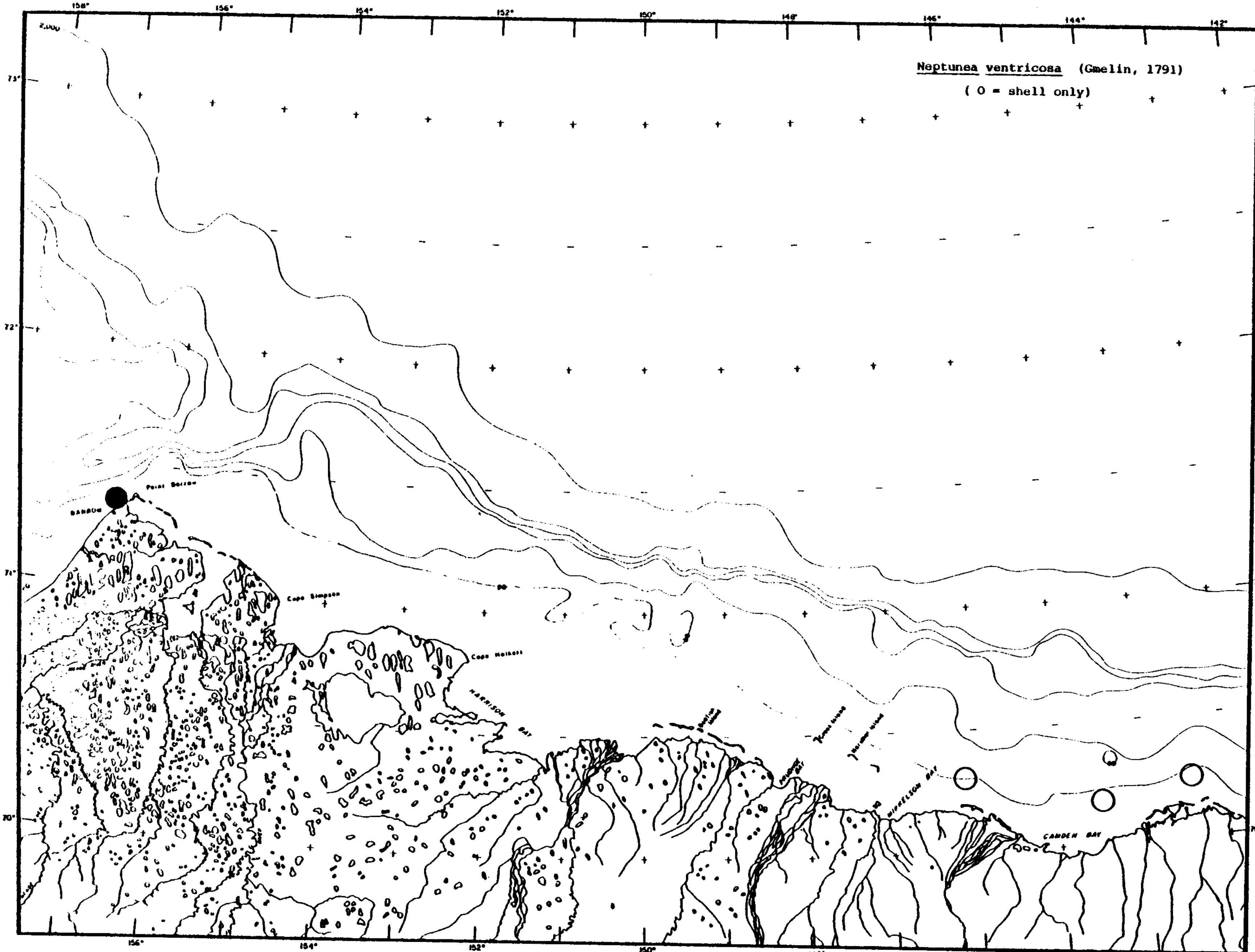
Neptunea ventricosa (Gmelin, 1791)
(O = shell only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
158°
156°
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150°
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142°
73°
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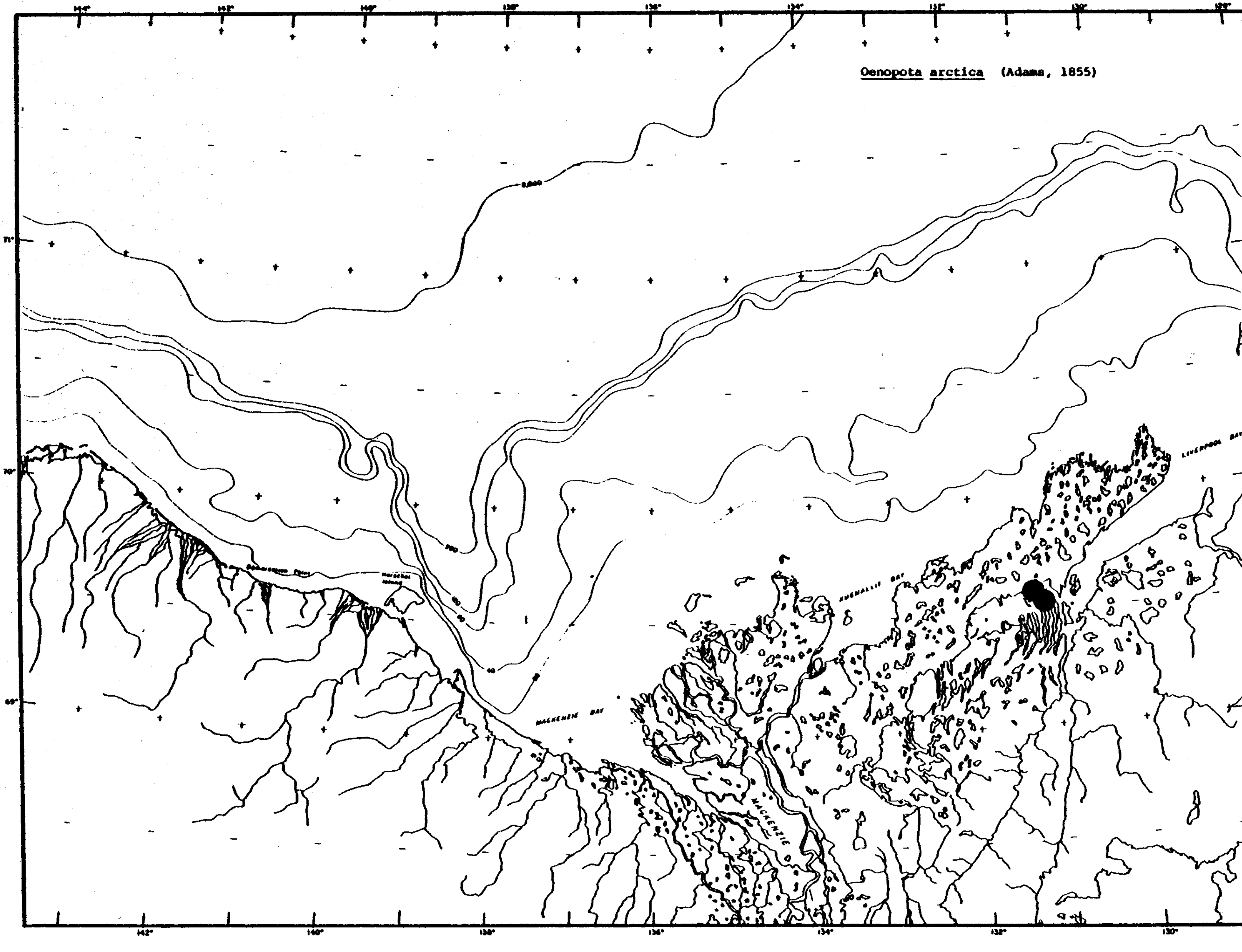
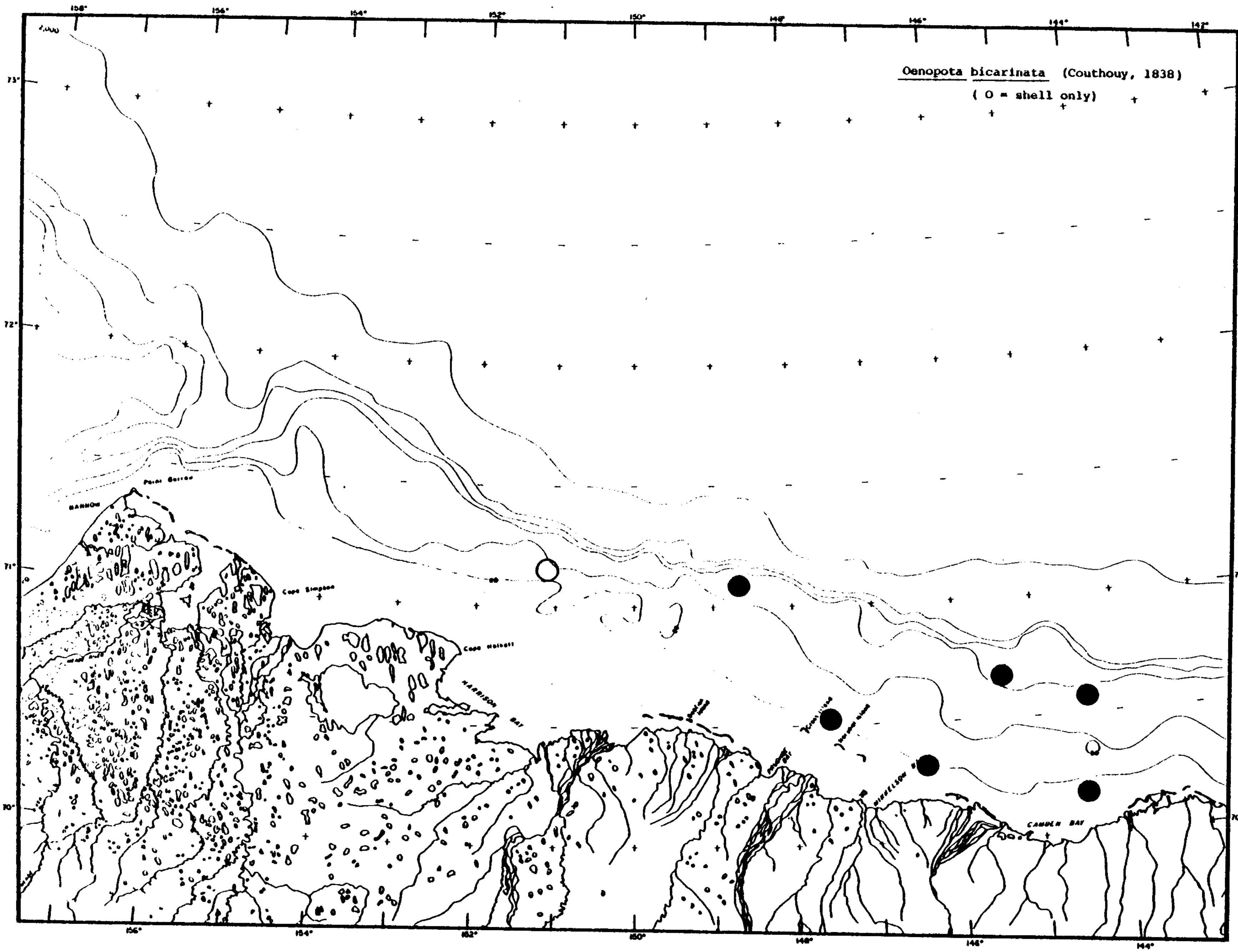

Oenopota arctica (Adams, 1855)
MACKENZIE BAY
LIVERPOOL BAY
MACKENZIE


Oenopota bicarinata (Couthouy, 1838)
(O = shell only)
158°
156°
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148°
146°
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142°
73°
72°
71°
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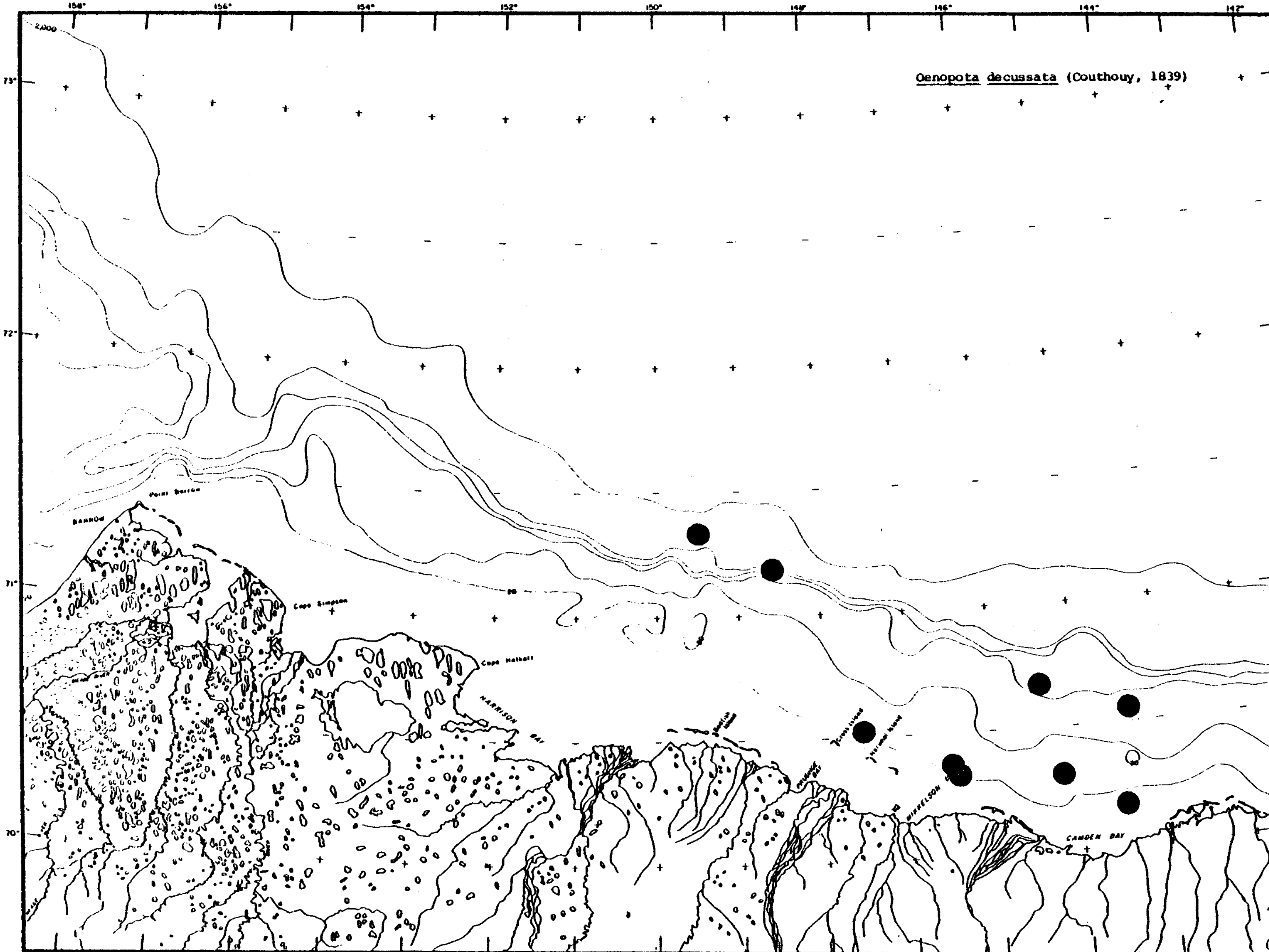
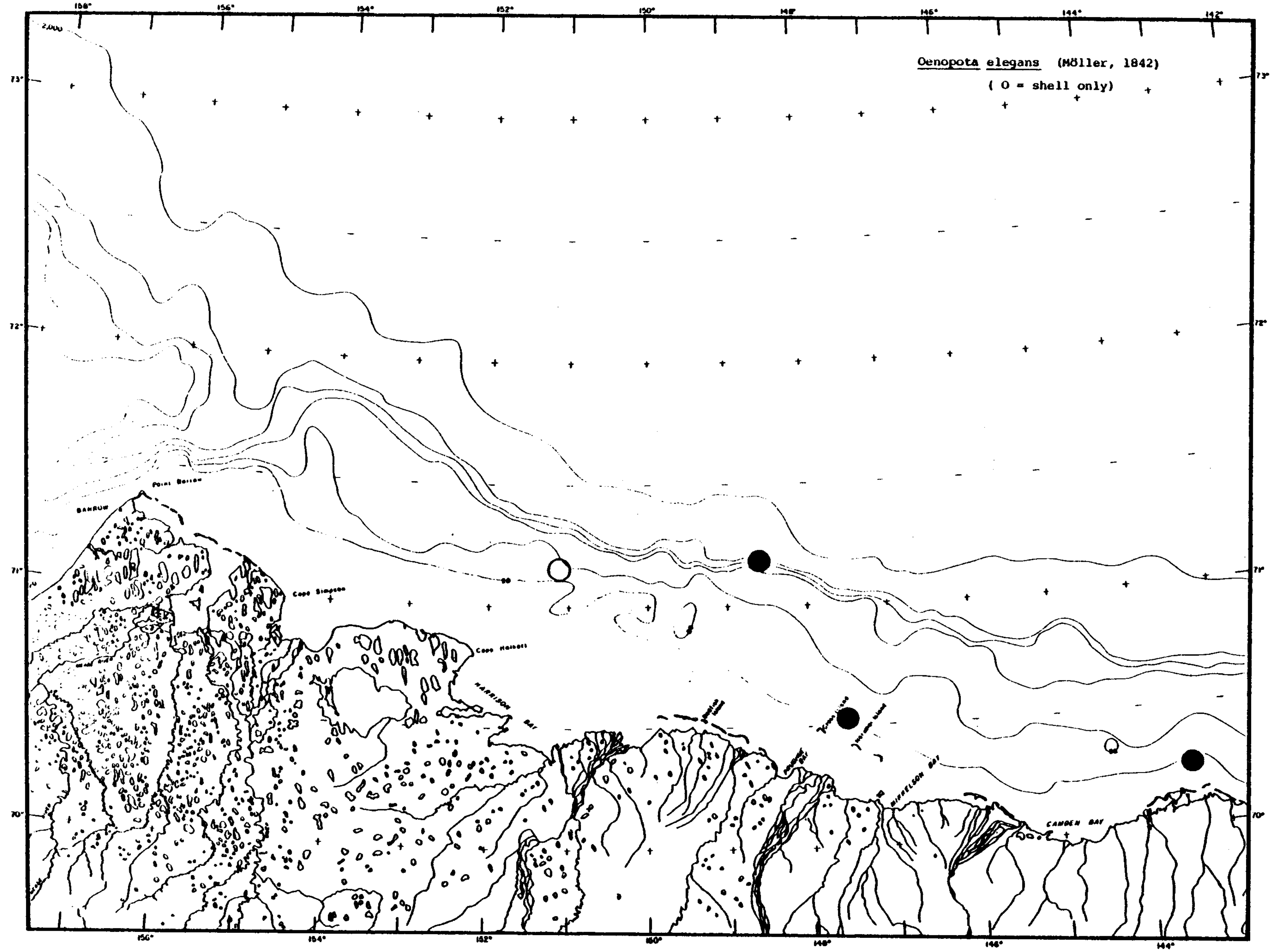
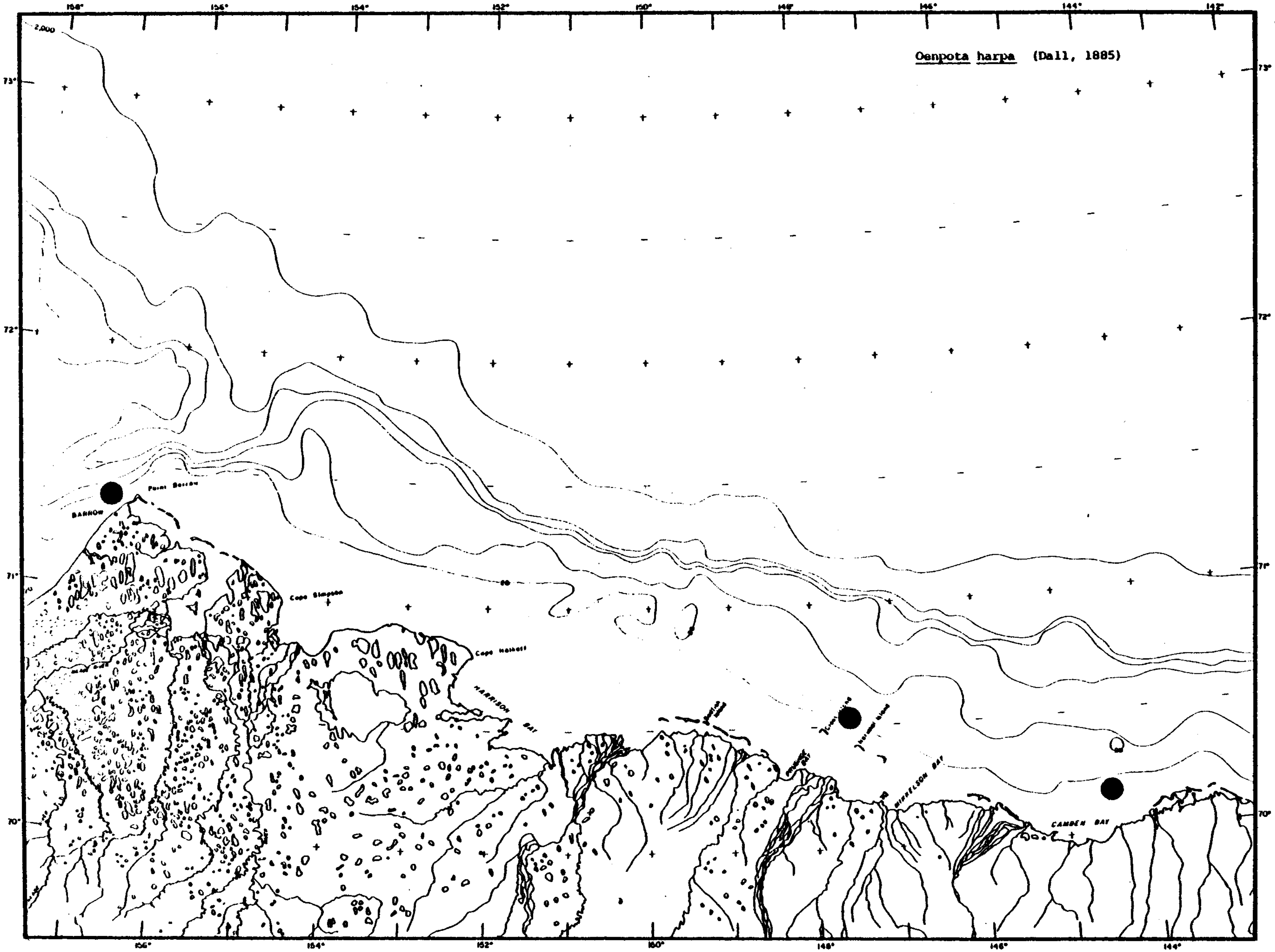
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Oenopota decussata (Couthouy, 1839)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°



Oenopota elegans (Möller, 1842)
(O = shell only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

510


Oenpota harpa (Dall, 1885)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
73°
72°
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158°
156°
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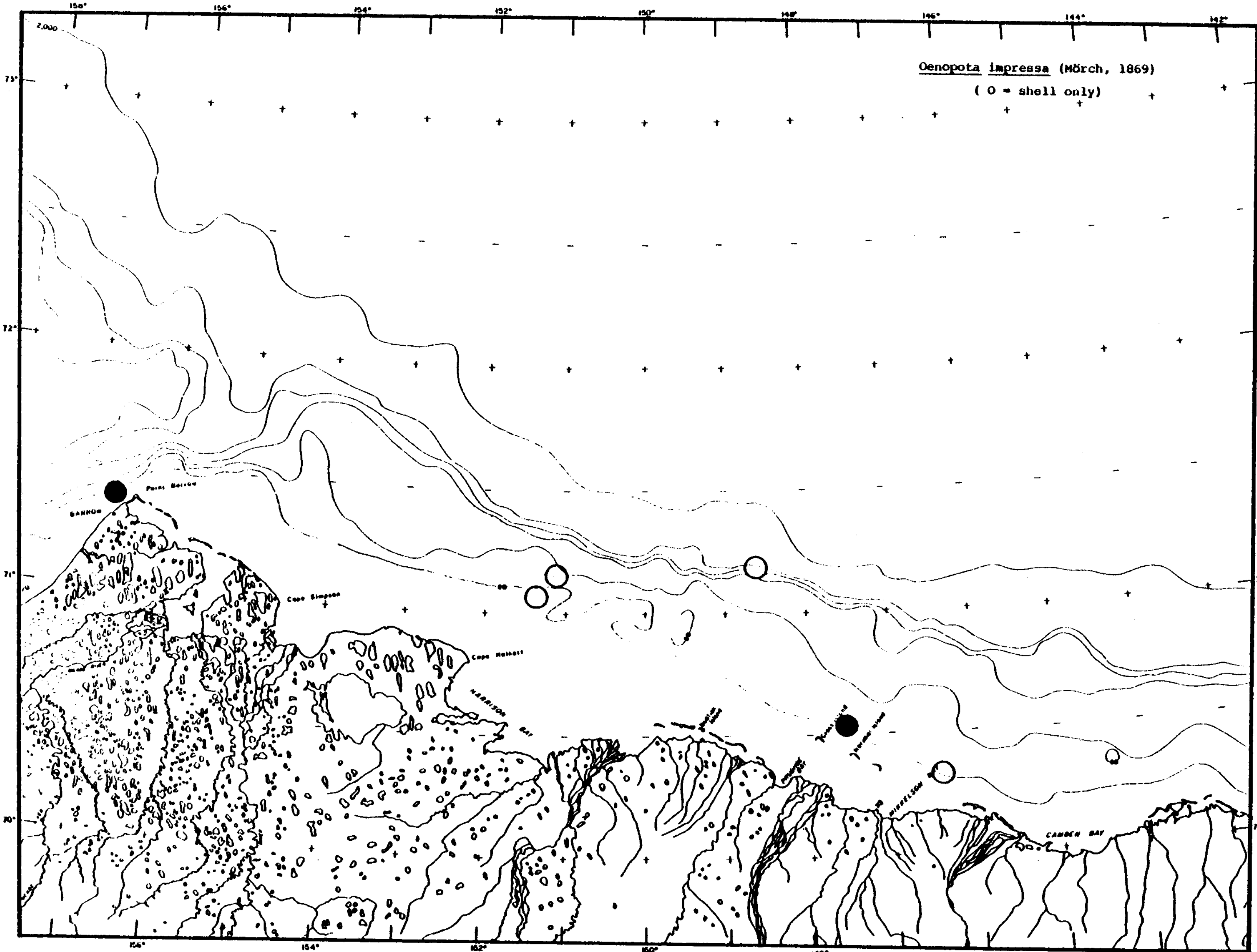
144°
142°

348


Oenopota impressa (Mörch, 1869)
(O = shell only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
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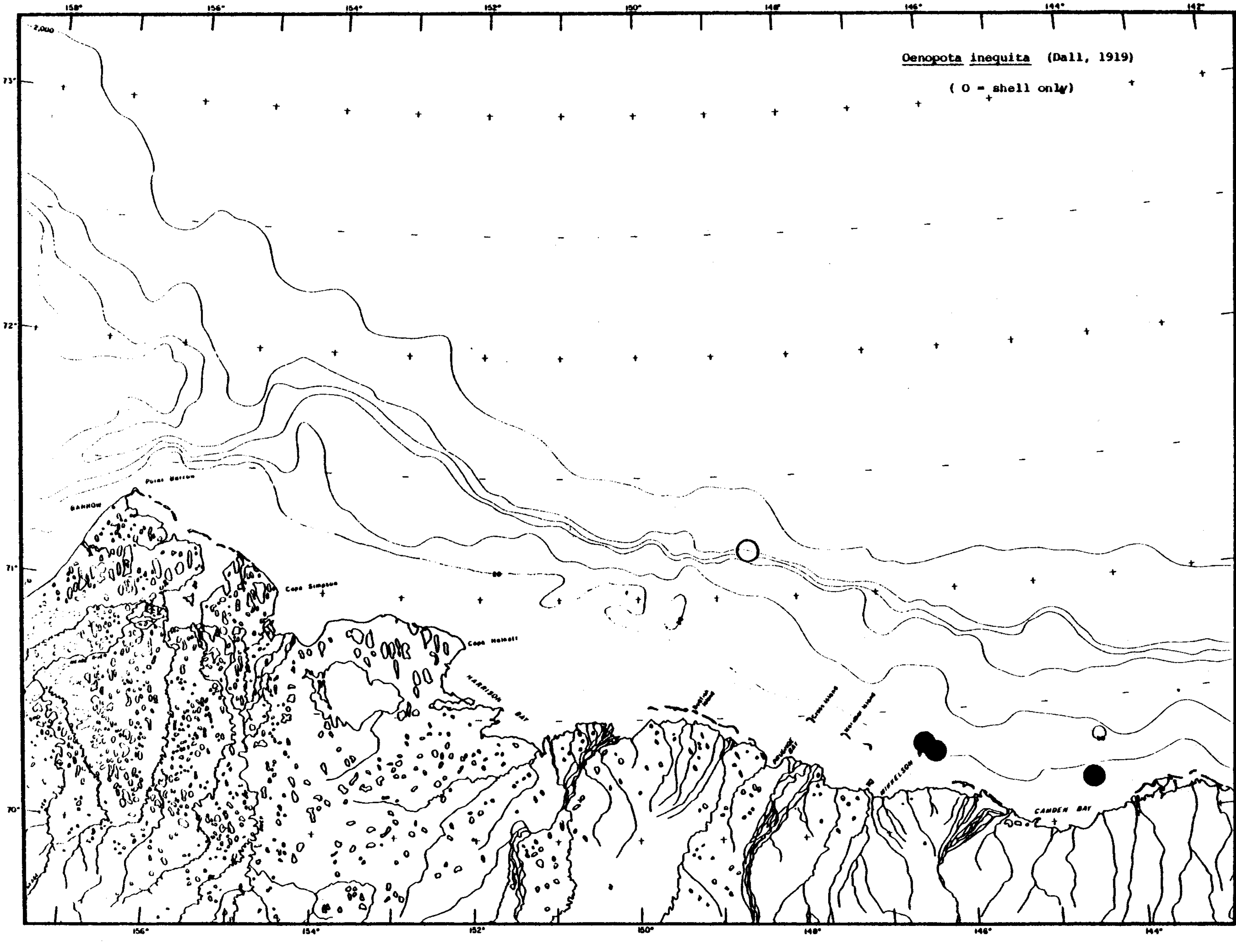
2,000


Oenopota inequita (Dall, 1919)
(O = shell only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
2,000
158°
156°
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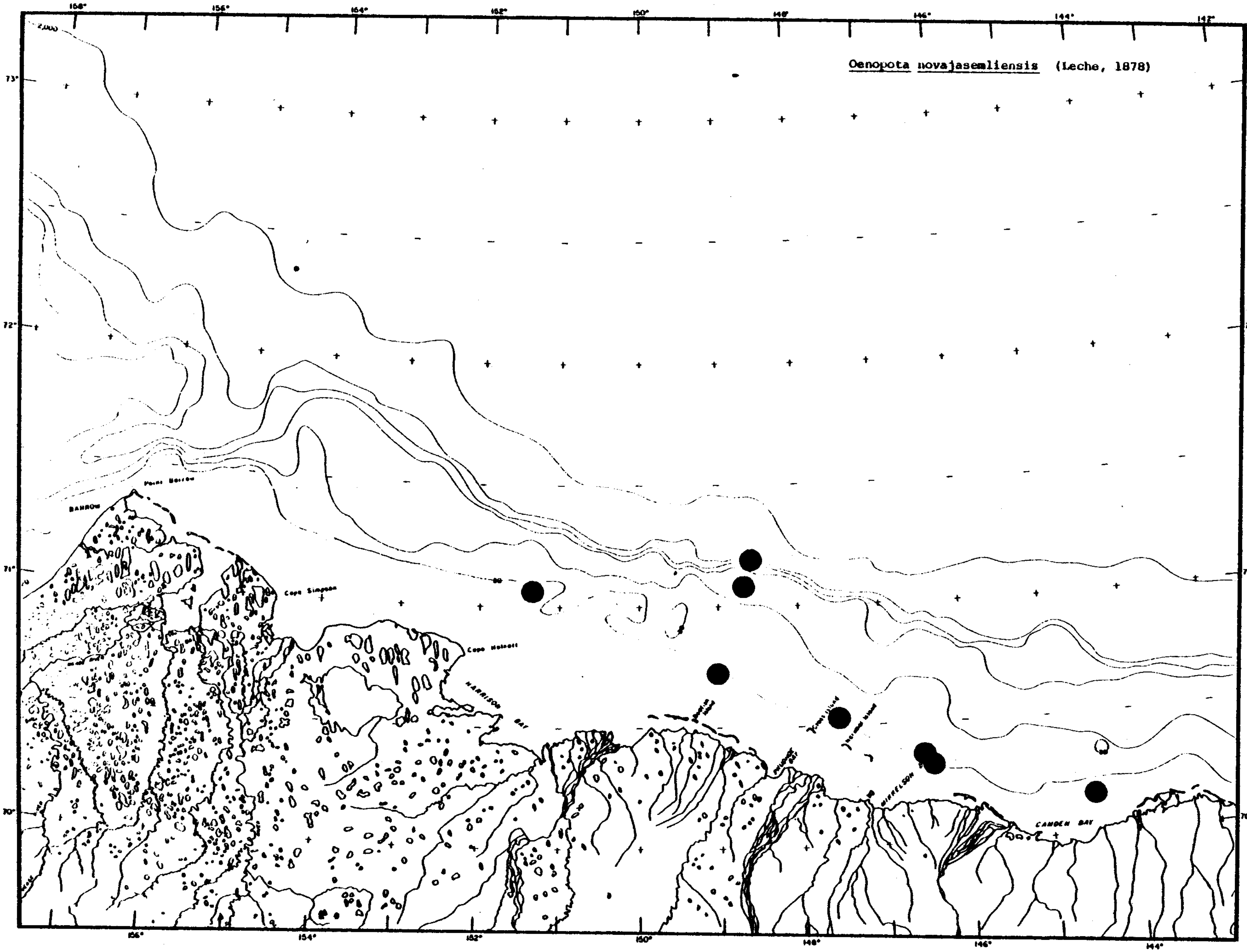
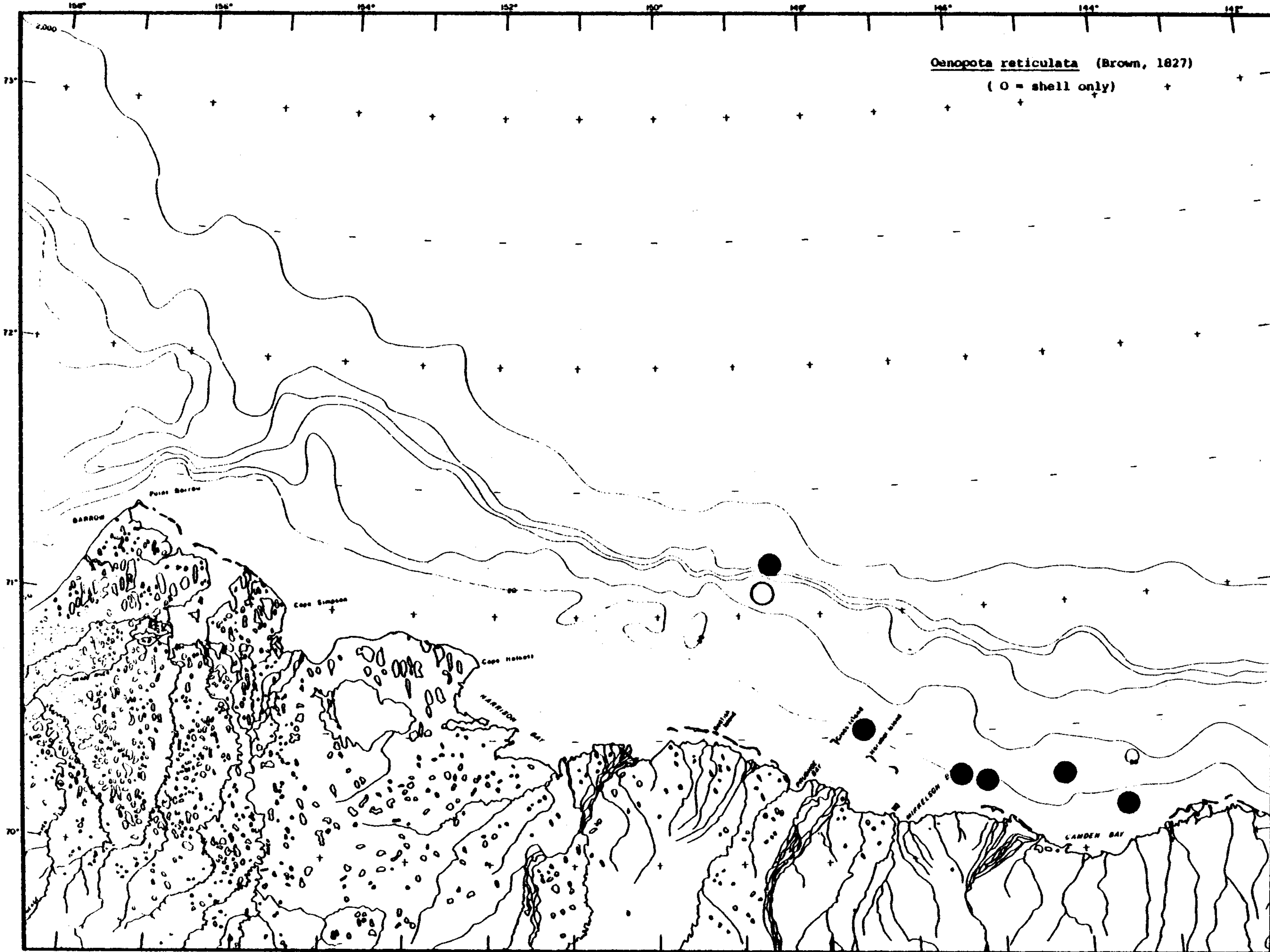
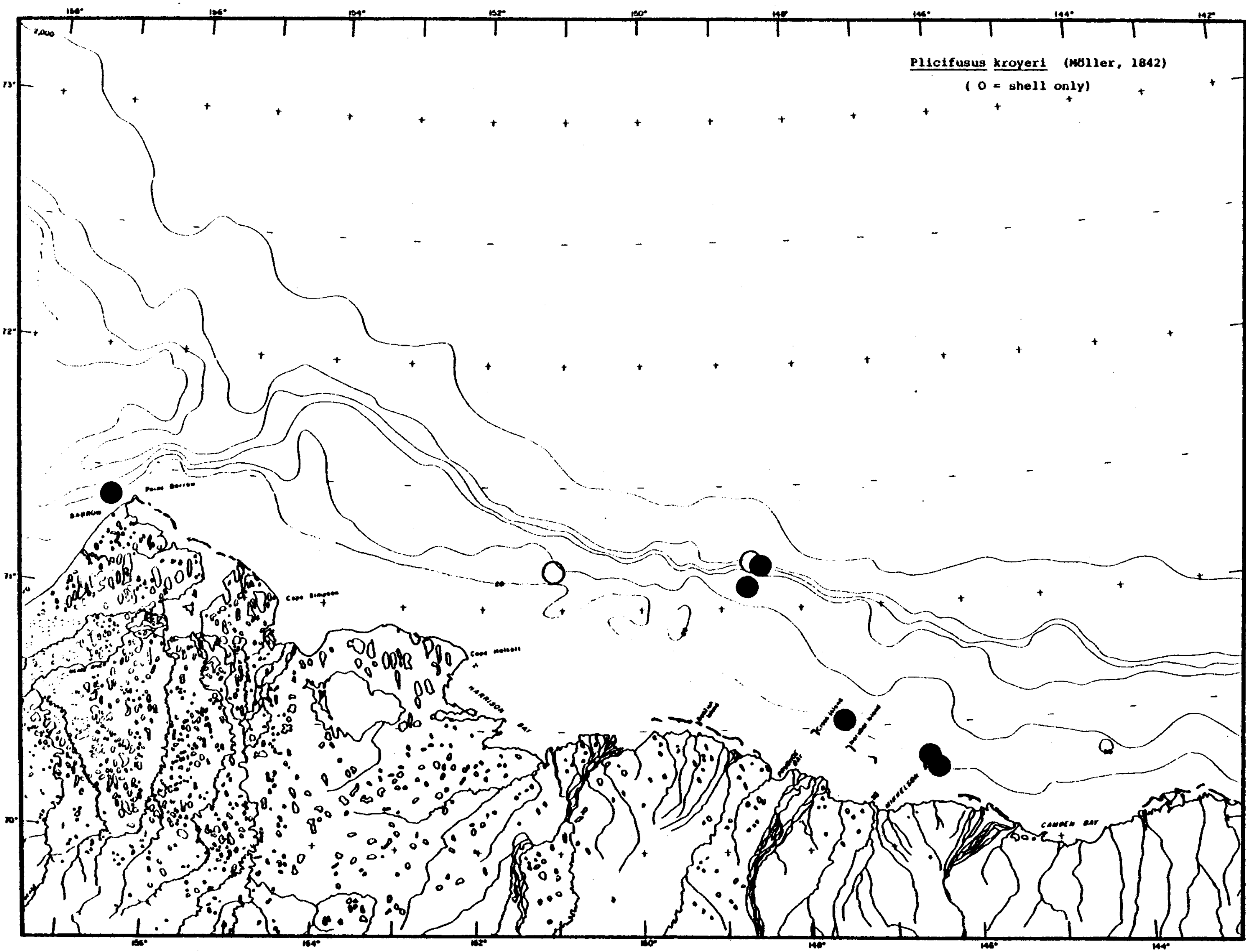
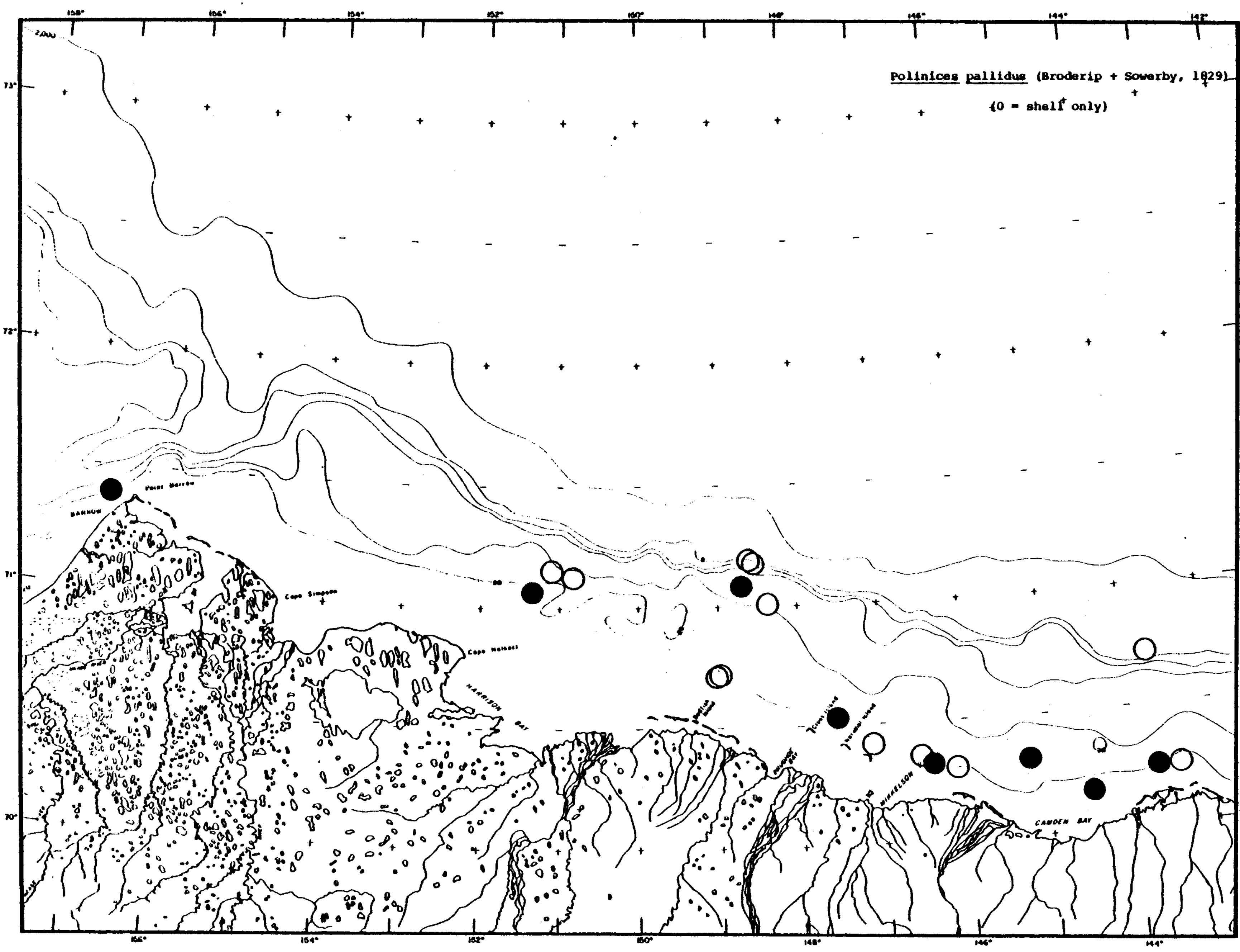

Oenopota novajasemliensis (Leche, 1878)
BARROW
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°


Oenopota reticulata (Brown, 1827)
(O = shell only)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Plicifusus kroyeri (Möller, 1842)
(O = shell only)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Polinices pallidus (Broderip + Sowerby, 1829)
(O = shell only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
156°
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148°
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144°
142°
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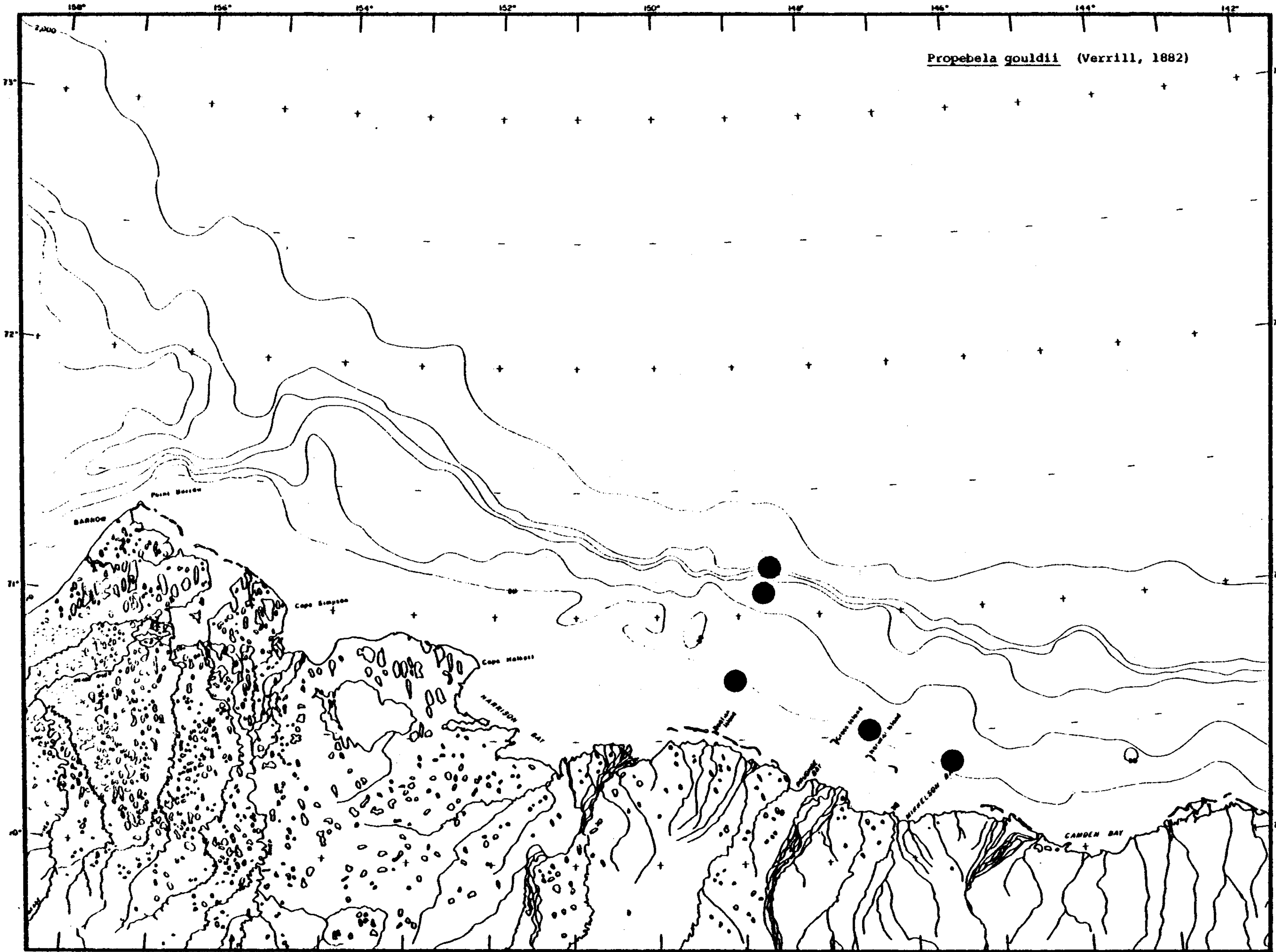

Propebela gouldii (Verrill, 1882)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
158°
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150°
148°
146°
144°
142°
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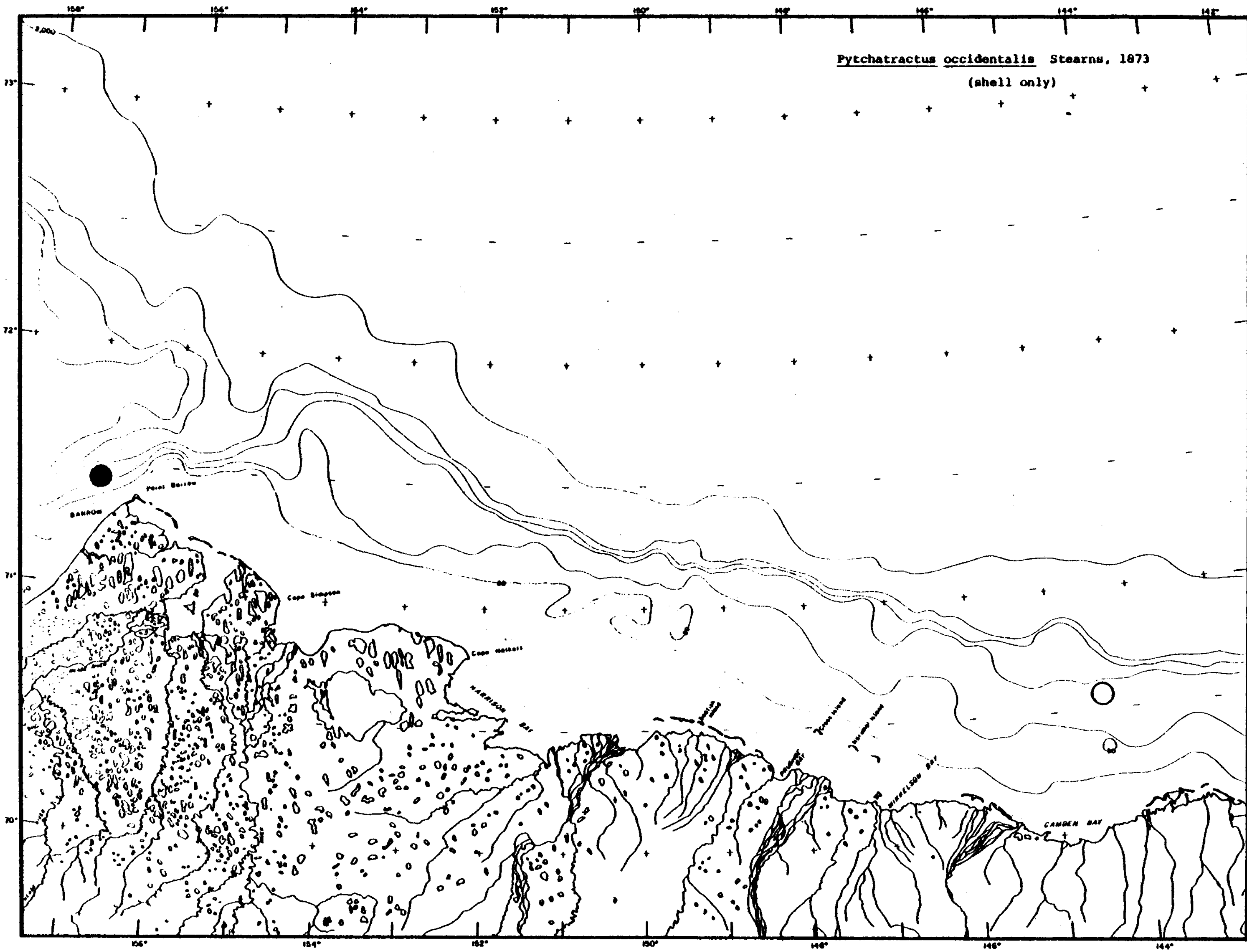
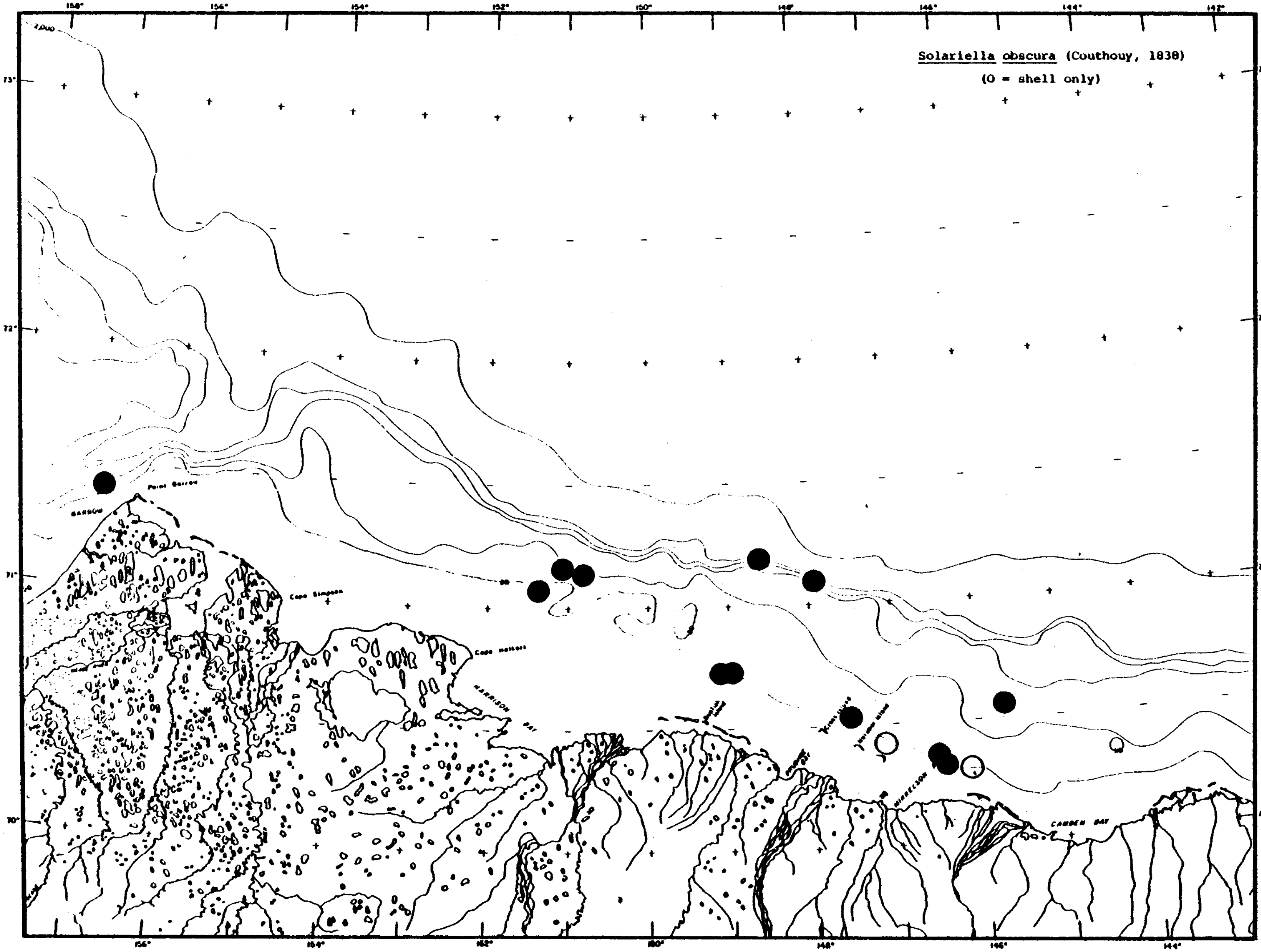

Pytchatractus occidentalis Stearns, 1873
(shell only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Solariella obscura (Couthouy, 1838)
(O = shell only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
158°
156°
154°
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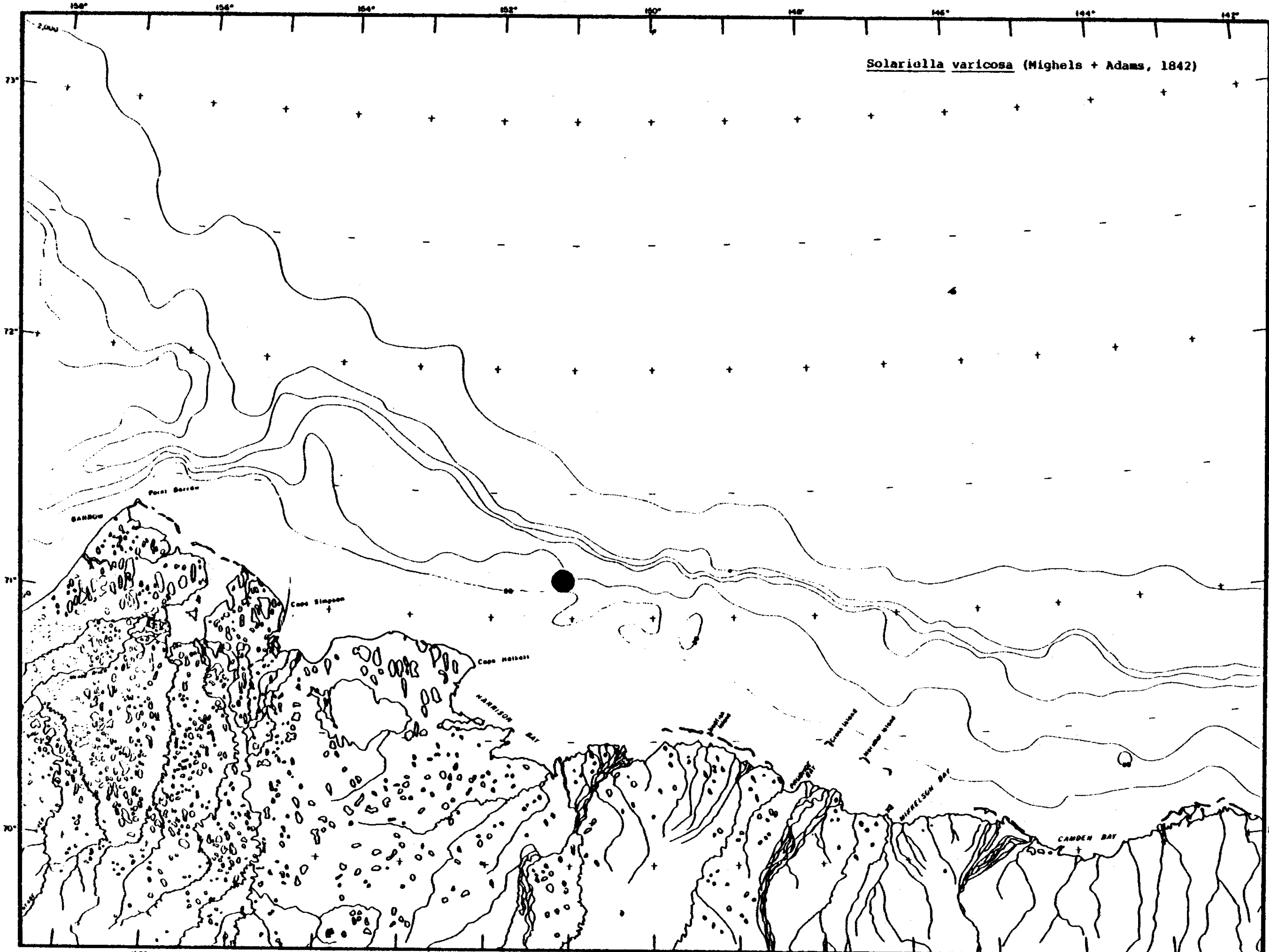
Solariella varicosa (Mighels + Adams, 1842)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°
156°
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152°
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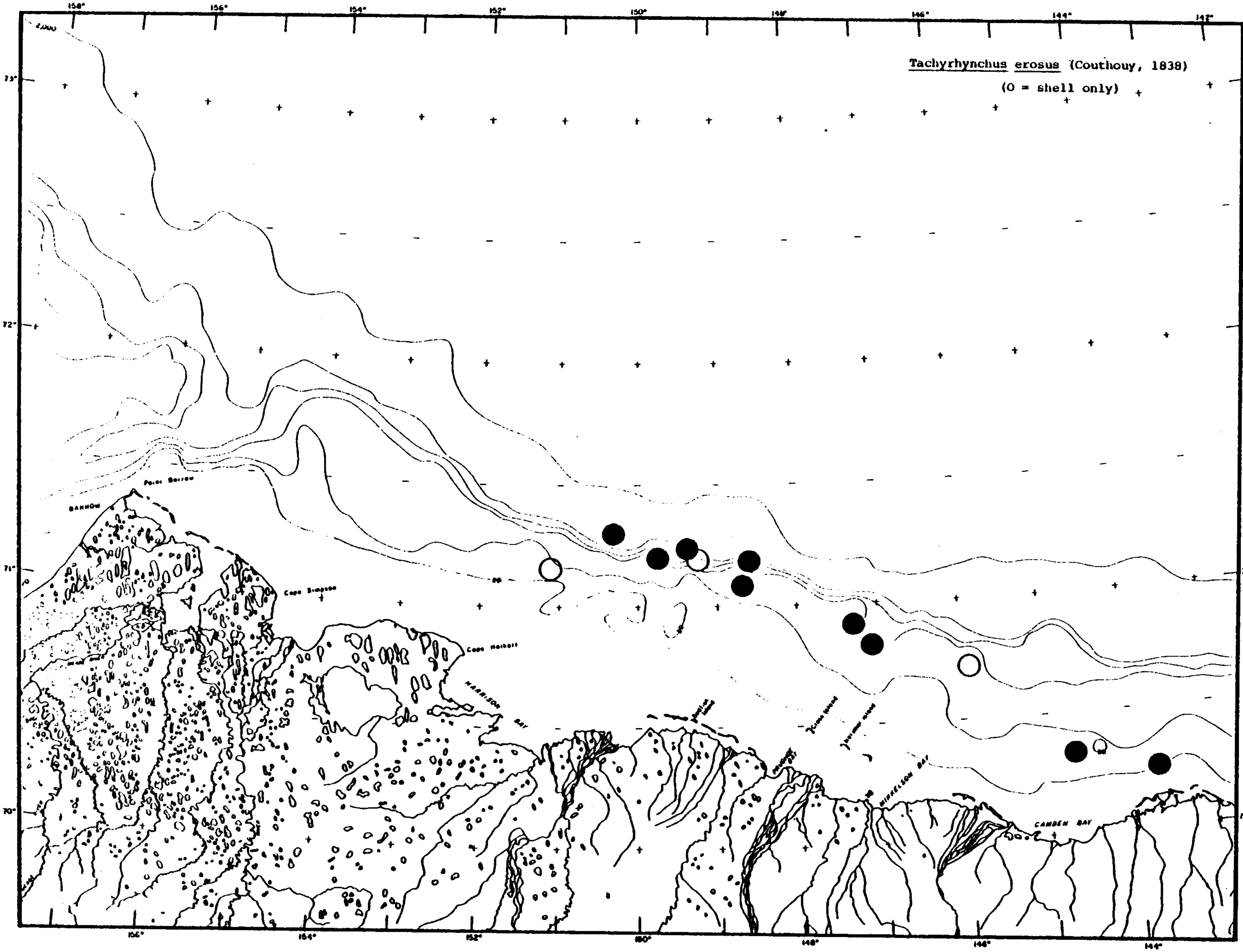
Tachyrhynchus erosus (Couthouy, 1838)
(O = shell only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
158°
156°
154°
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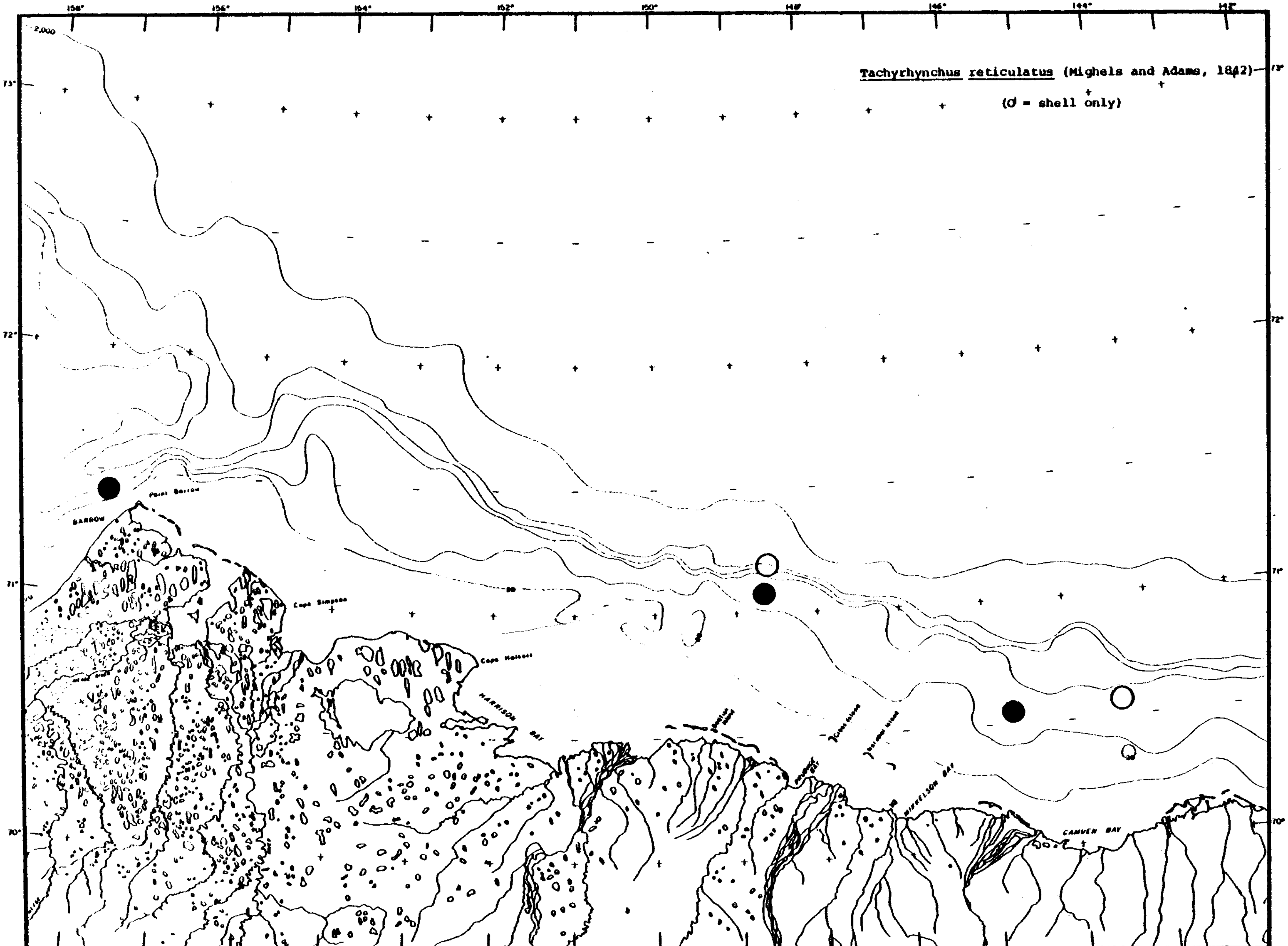
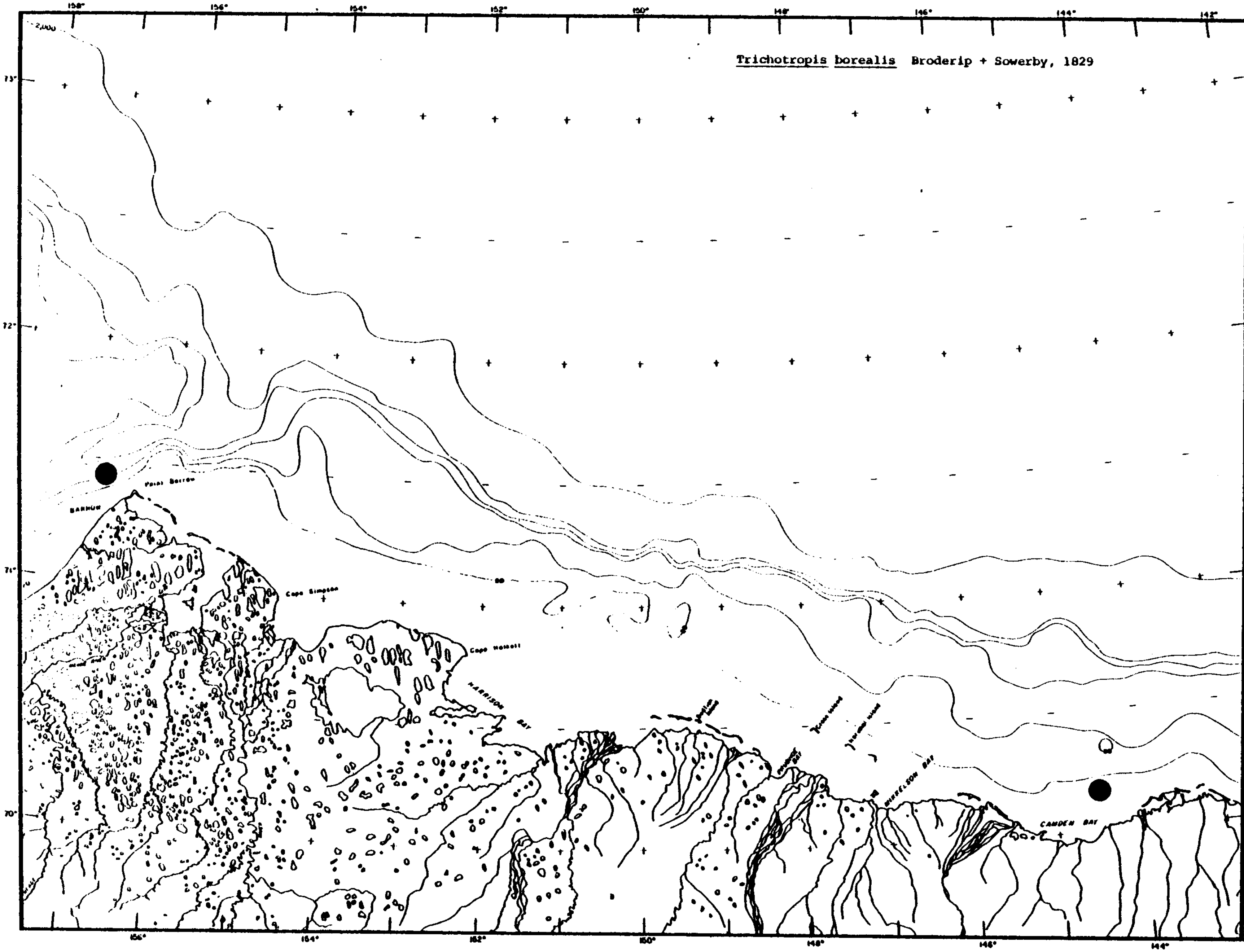

Tachyrhynchus reticulatus (Mighels and Adams, 1842)
(○ = shell only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Trichotropis borealis Broderip + Sowerby, 1829
158°
156°
154°
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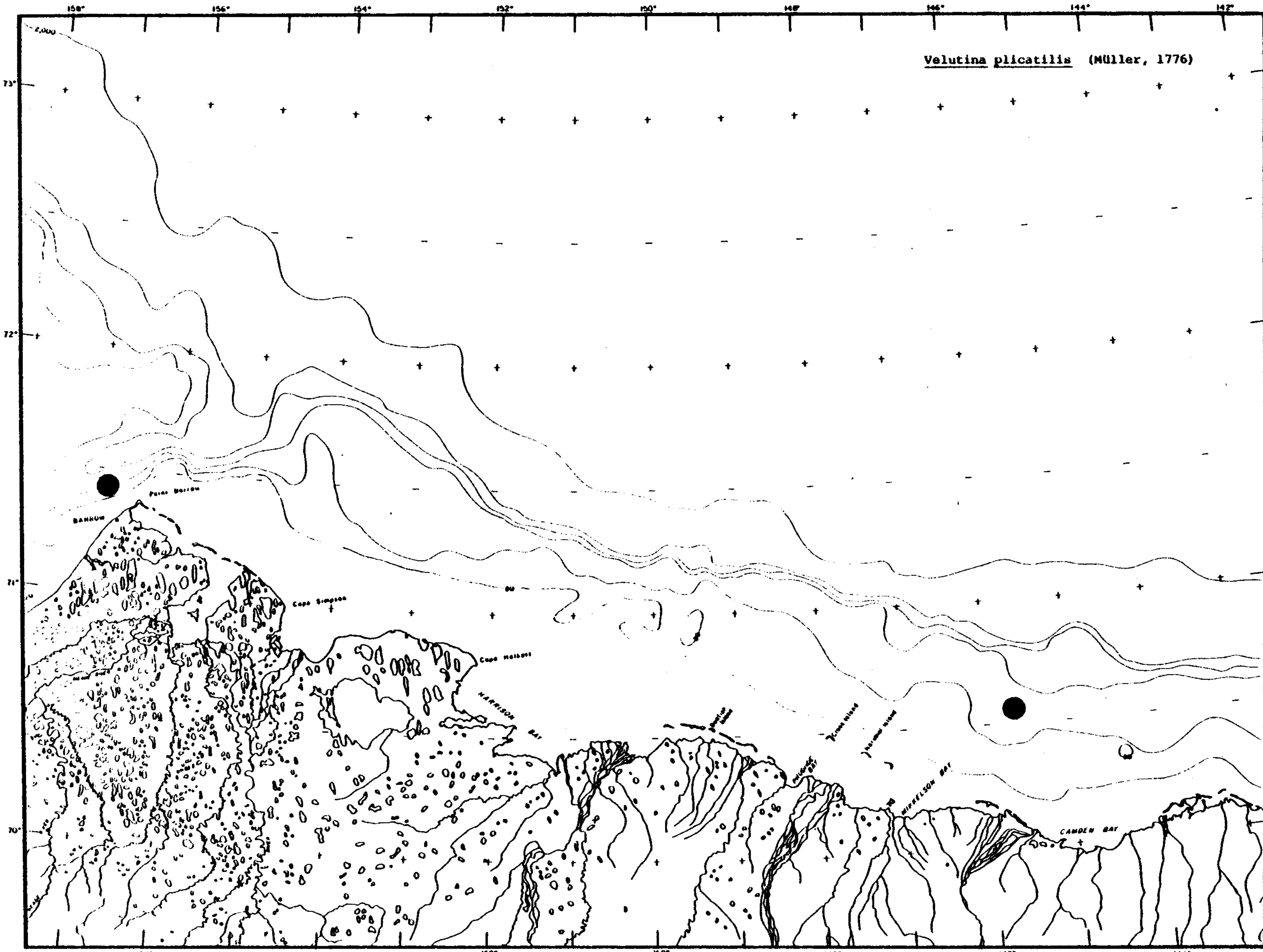
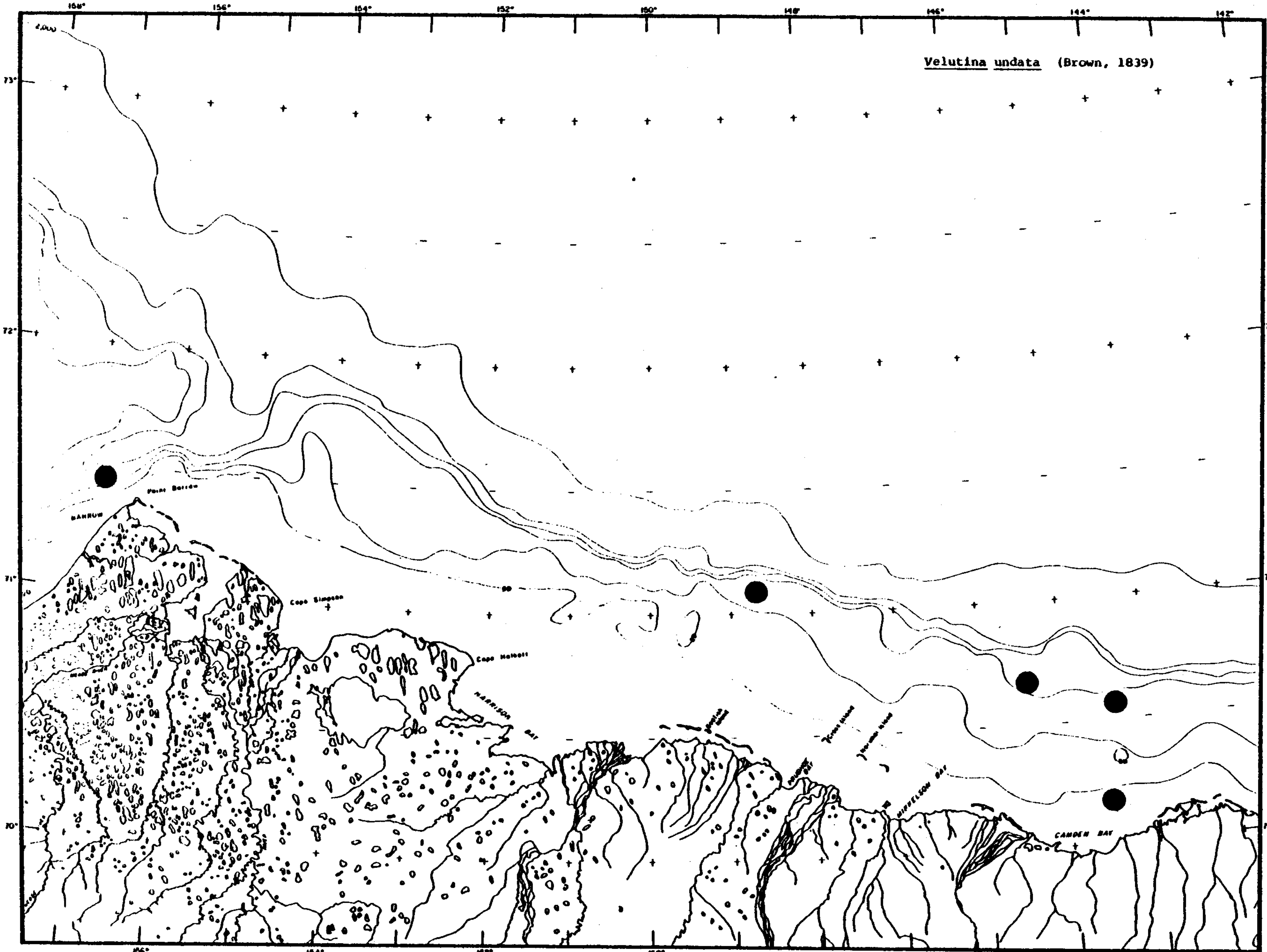
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Velutina plicatilis (Müller, 1776)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY


Velutina undata (Brown, 1839)
158°
156°
154°
152°
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148°
146°
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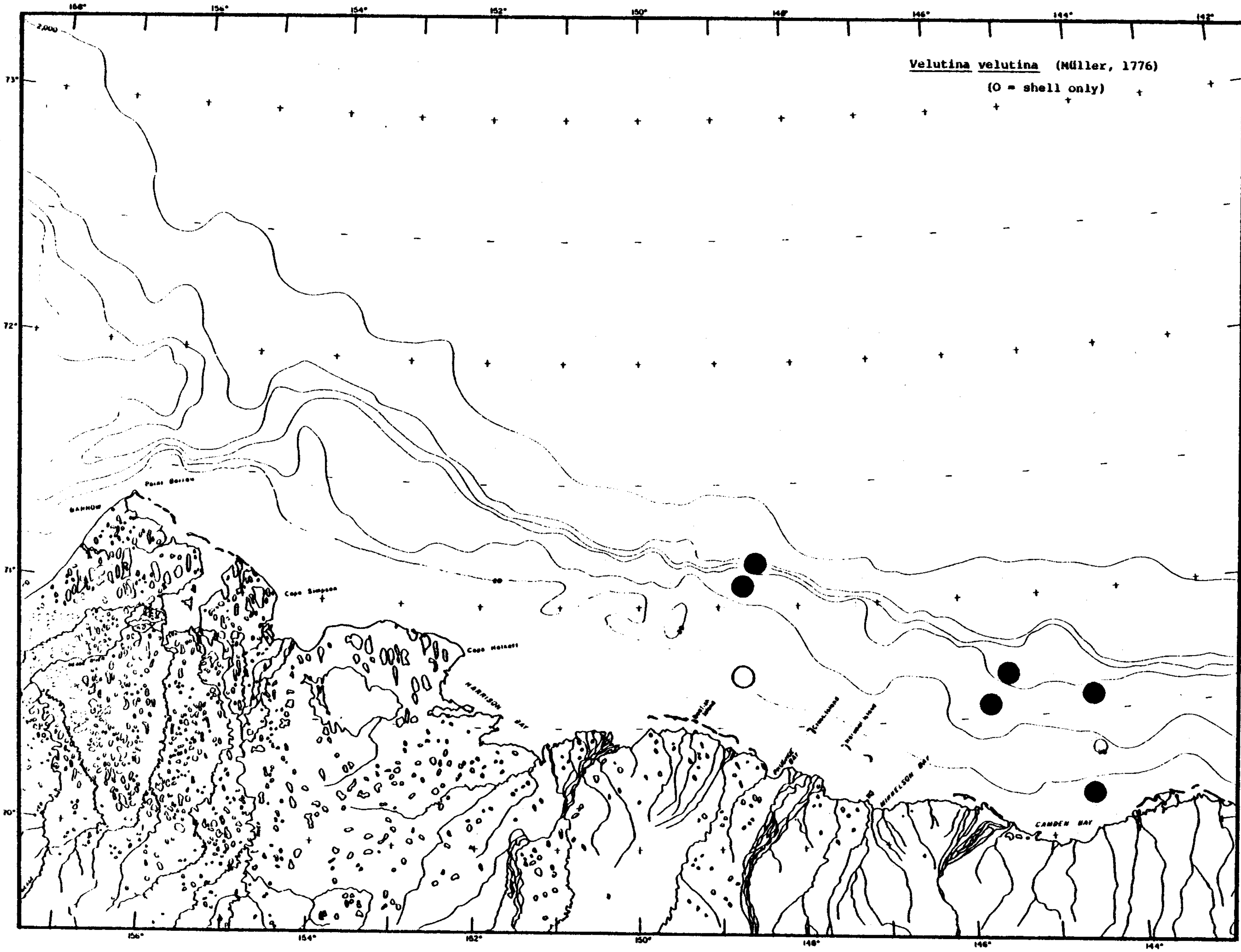
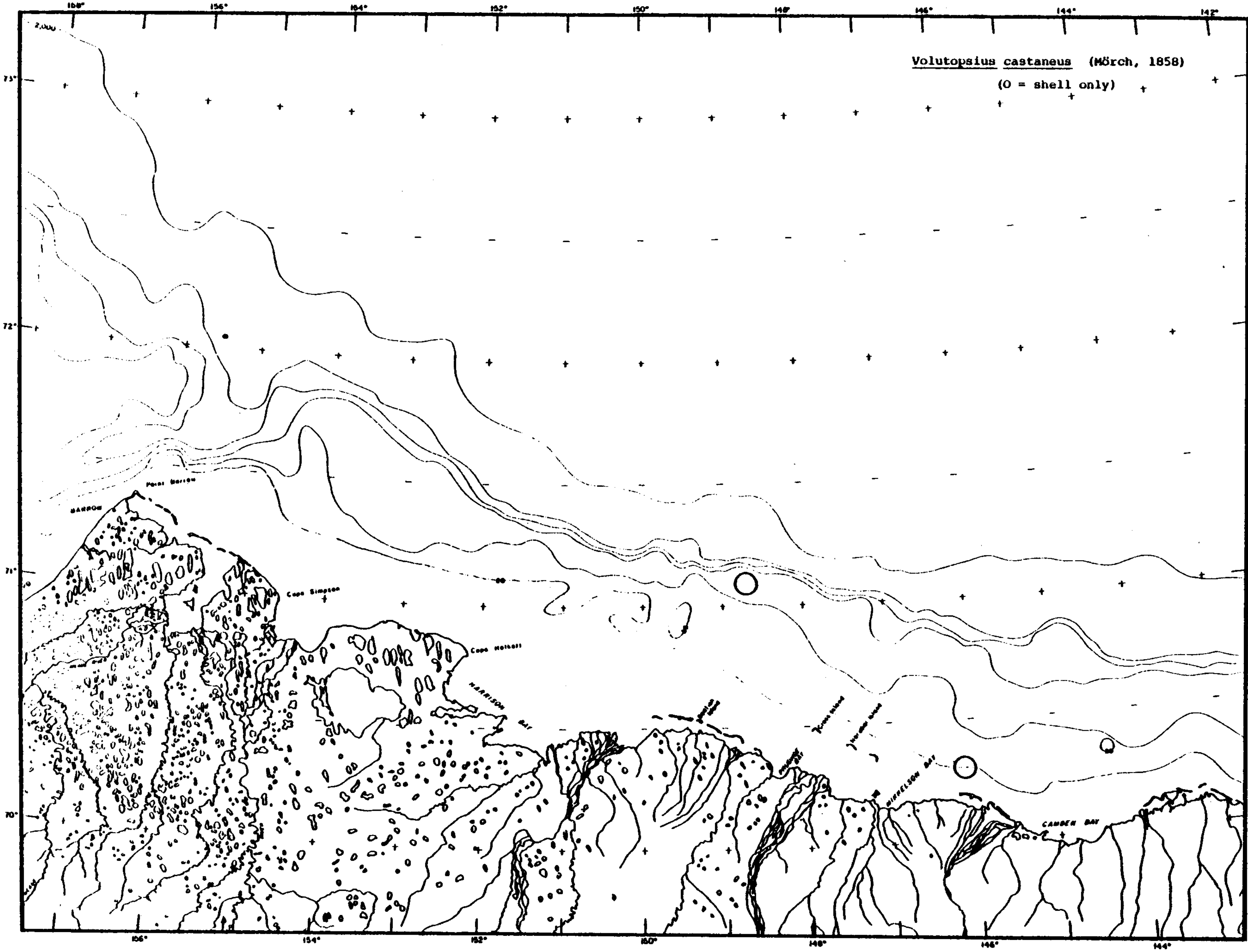
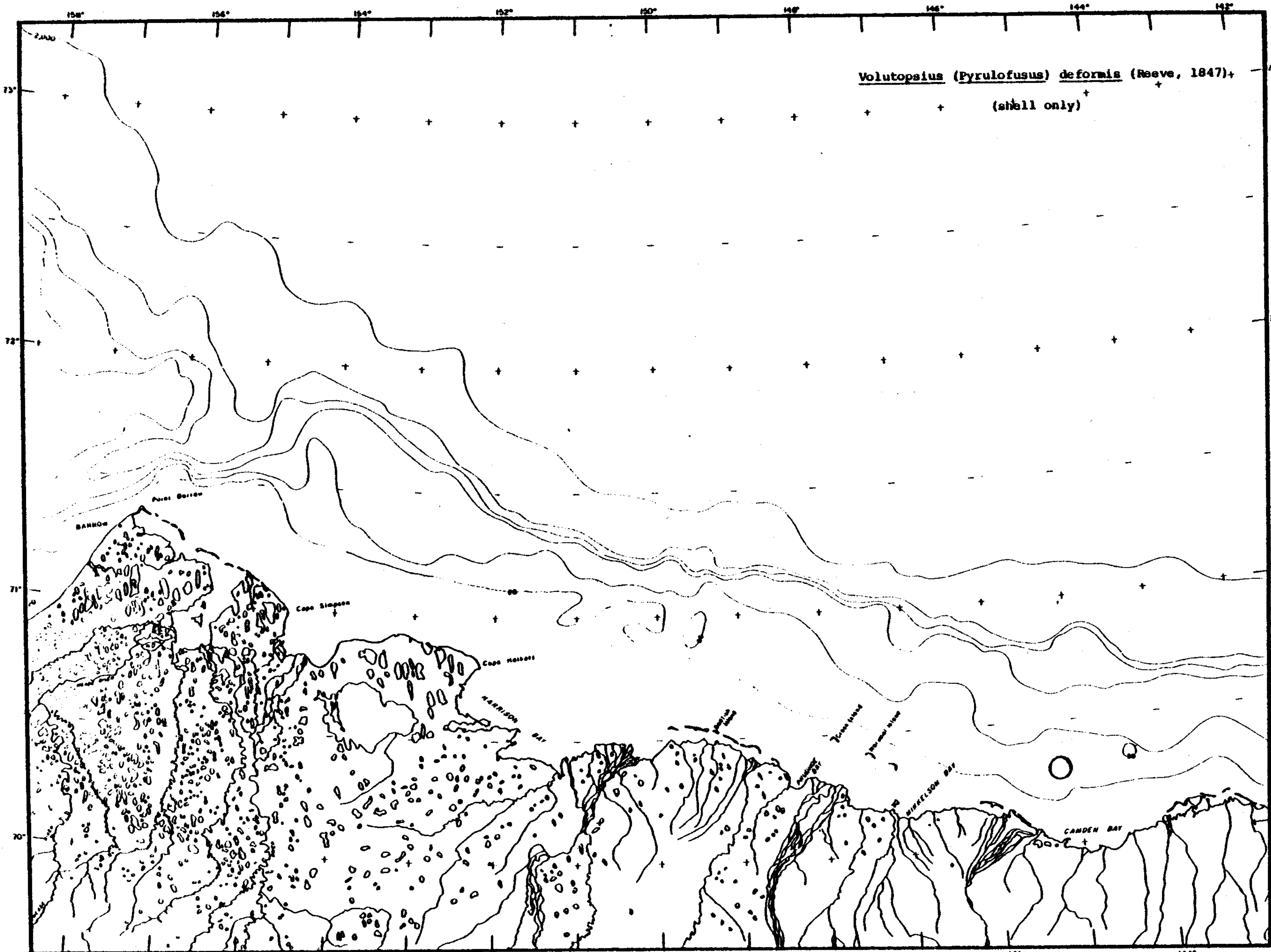
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Velutina velutina (Müller, 1776)
(O = shell only)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Mikkelson Bay
Camden Bay


Volutopsius castaneus (Mörch, 1858)
(O = shell only)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay


Volutopsius (Pyrulofusus) deformis (Reeve, 1847)
(shell only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
158°
156°
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152°
150°
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146°
144°
142°
73°
72°
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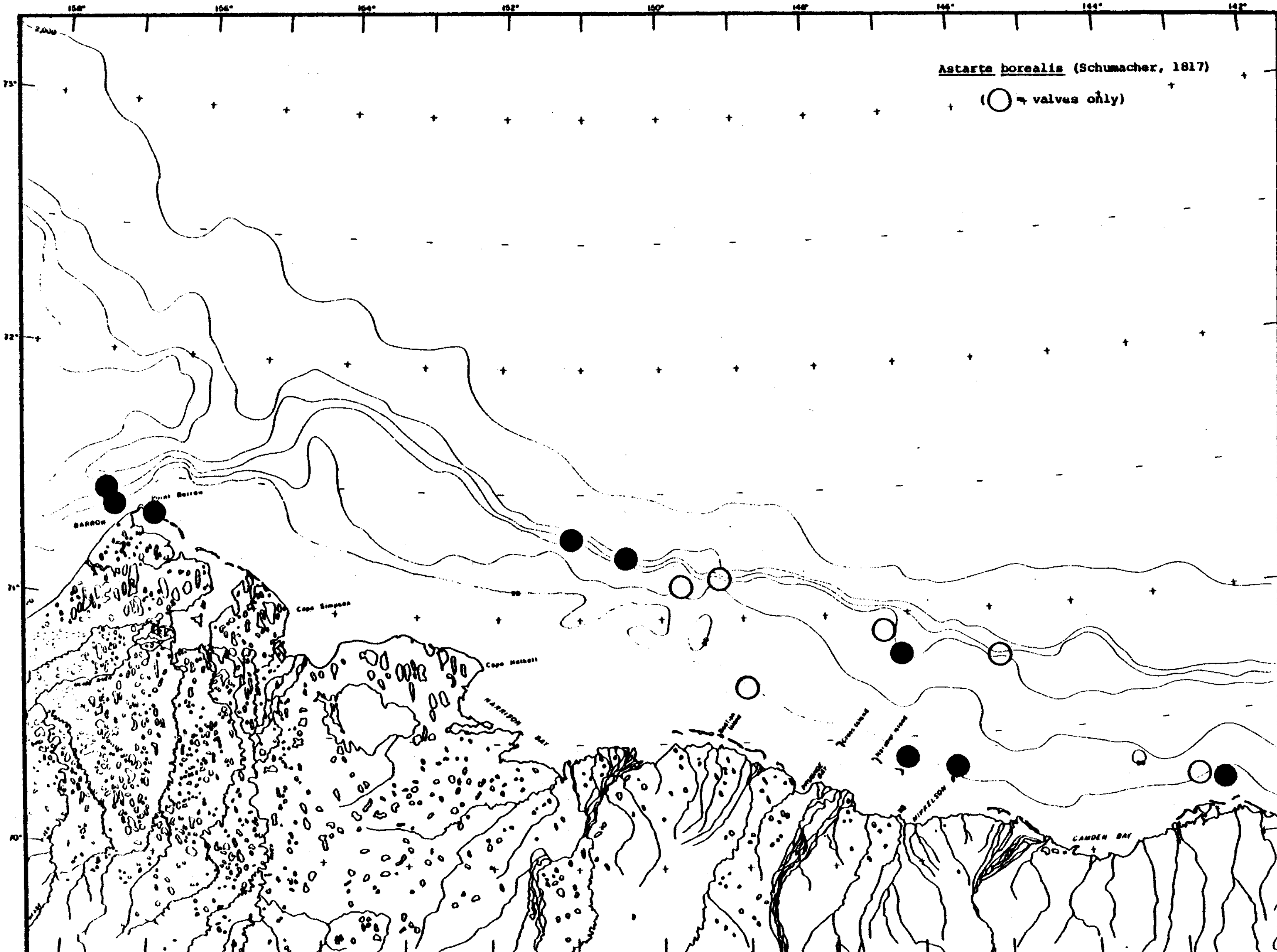
70°

Species Distributions:

Mollusca -- Pelecypoda


Astarte borealis (Schumacher, 1817)
(○ = valves only)
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
MIKKELSON
Barrow
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
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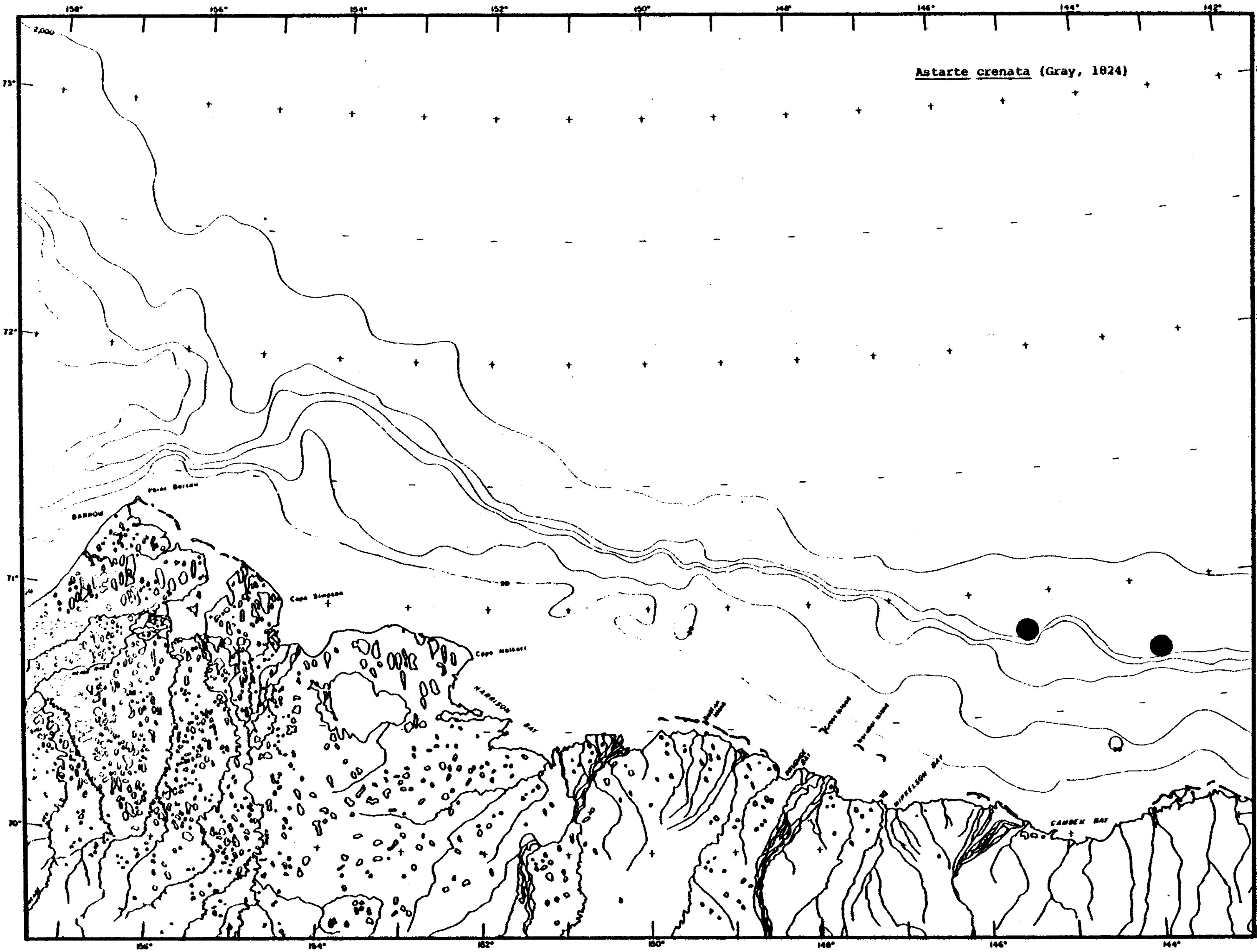
Astarte crenata (Gray, 1824)
2,000
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
73°
72°
71°
70°
158°
156°
154°
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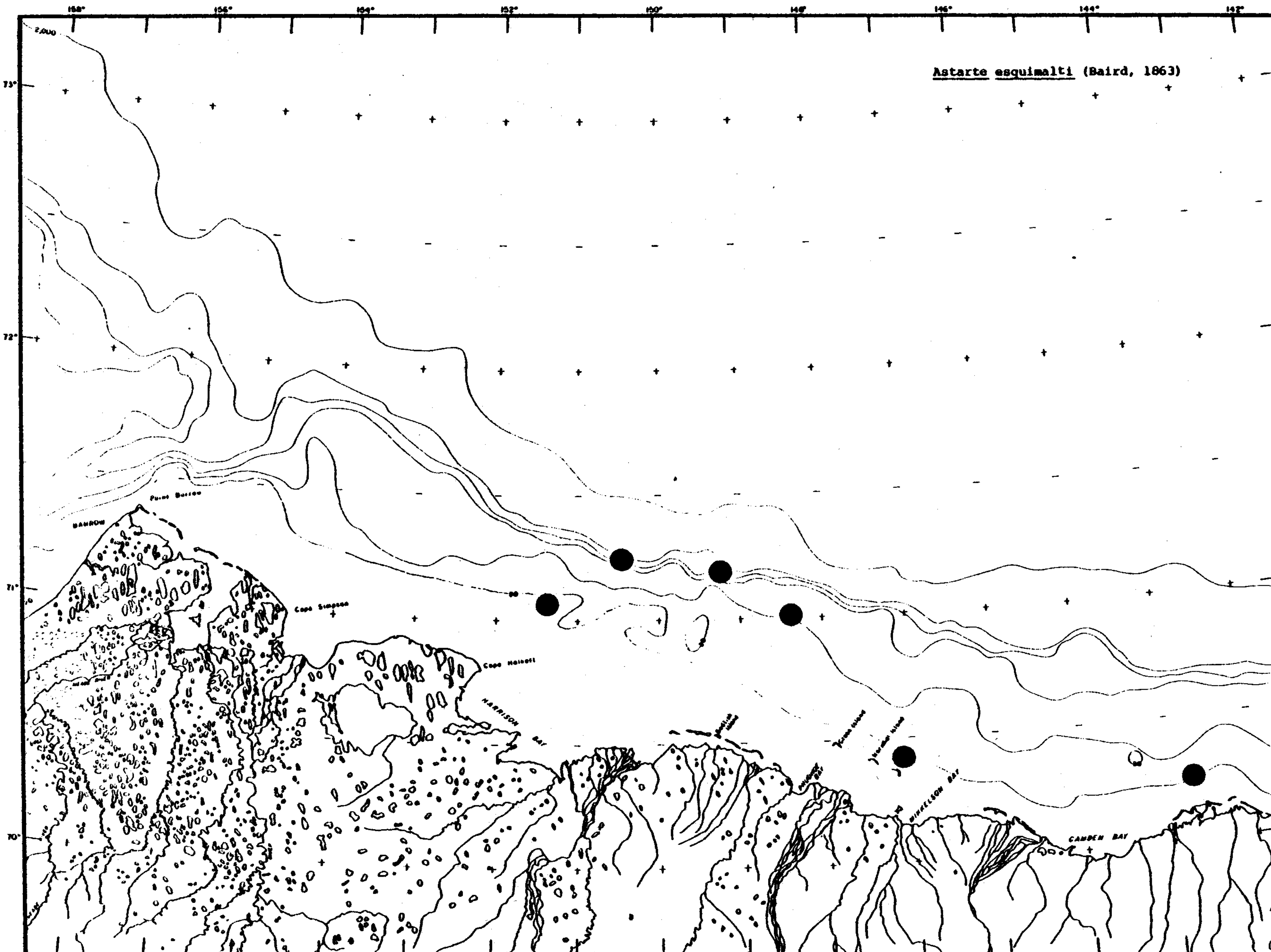
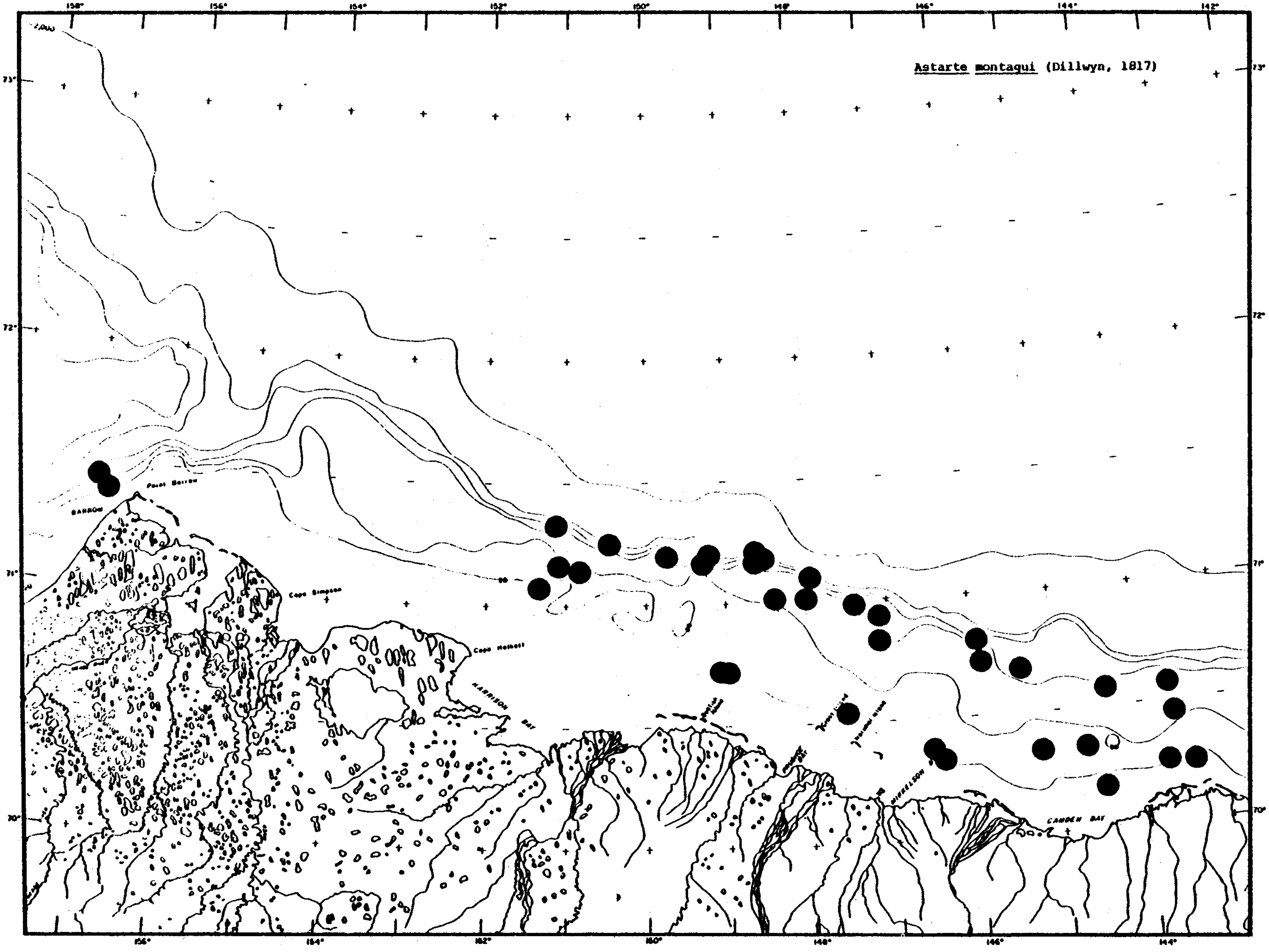
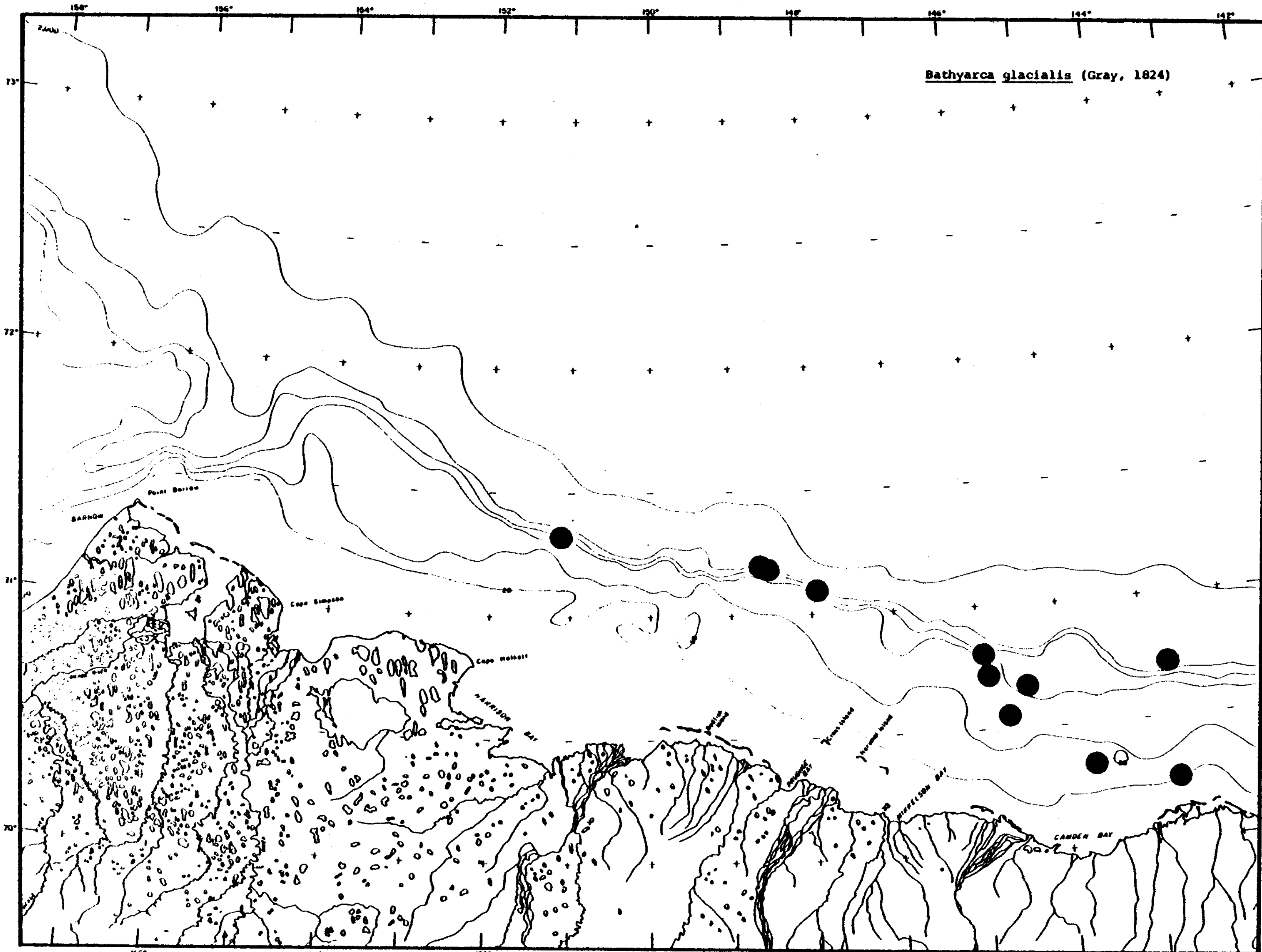
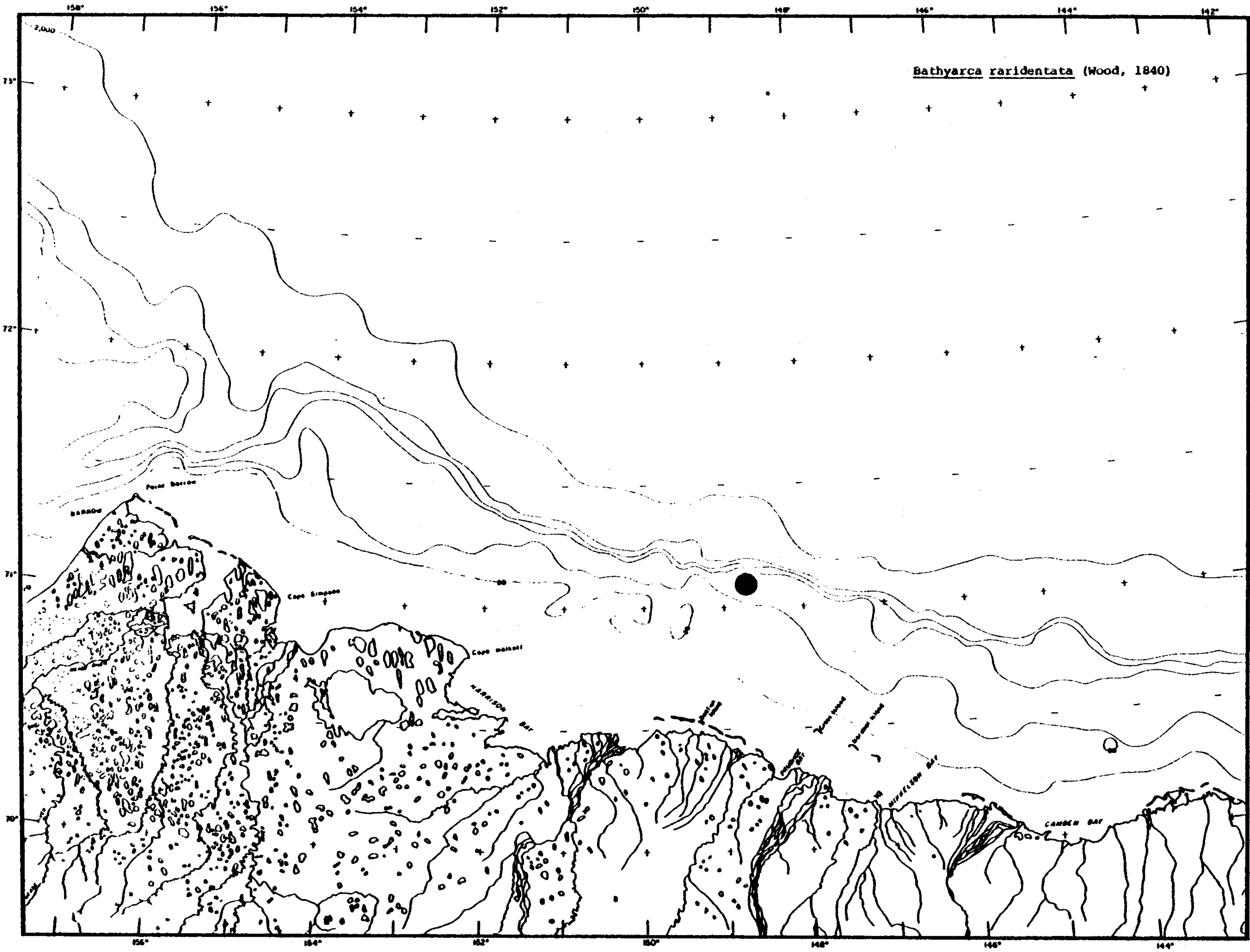
142°

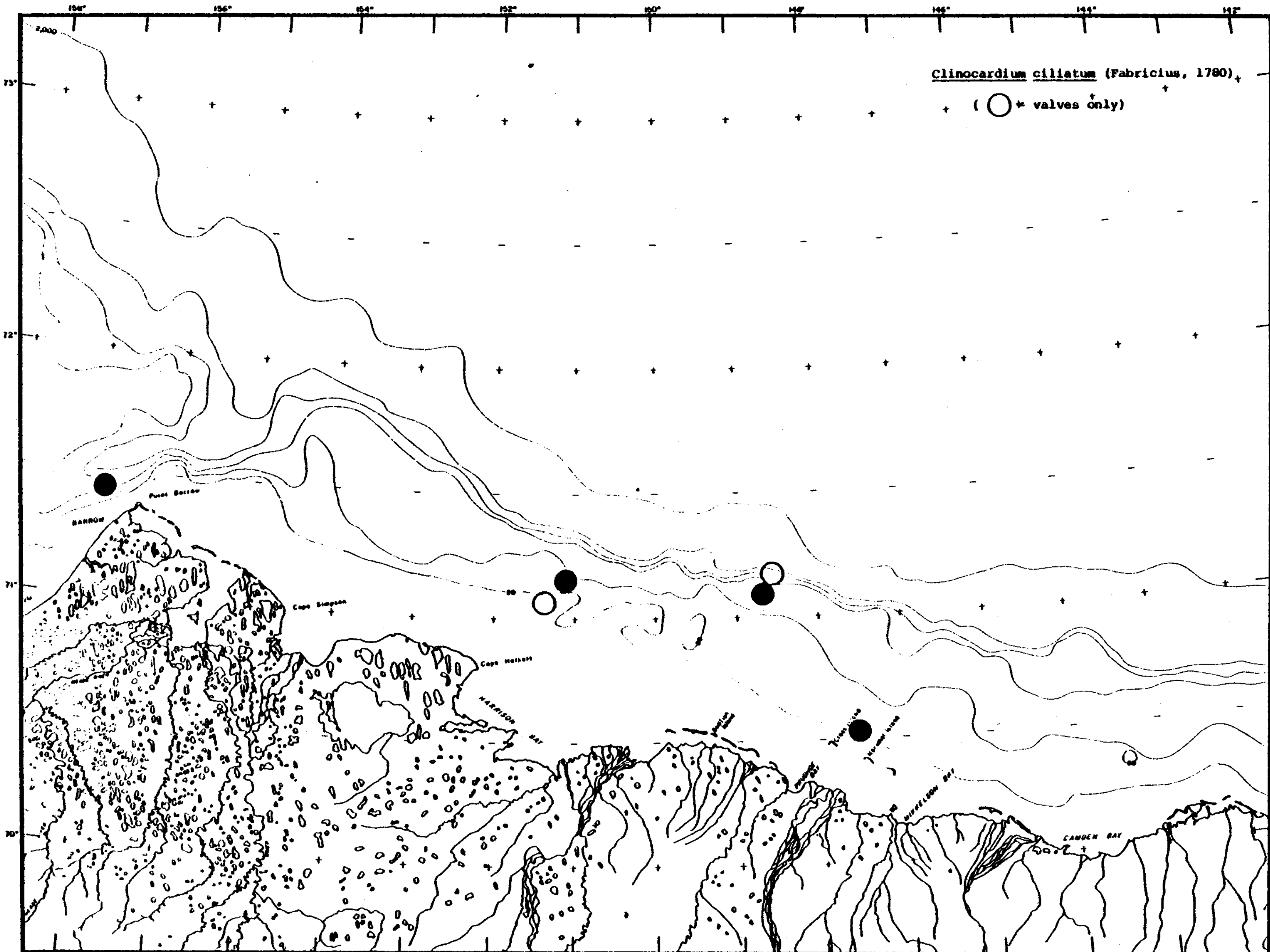

Astarte esquimalti (Baird, 1863)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

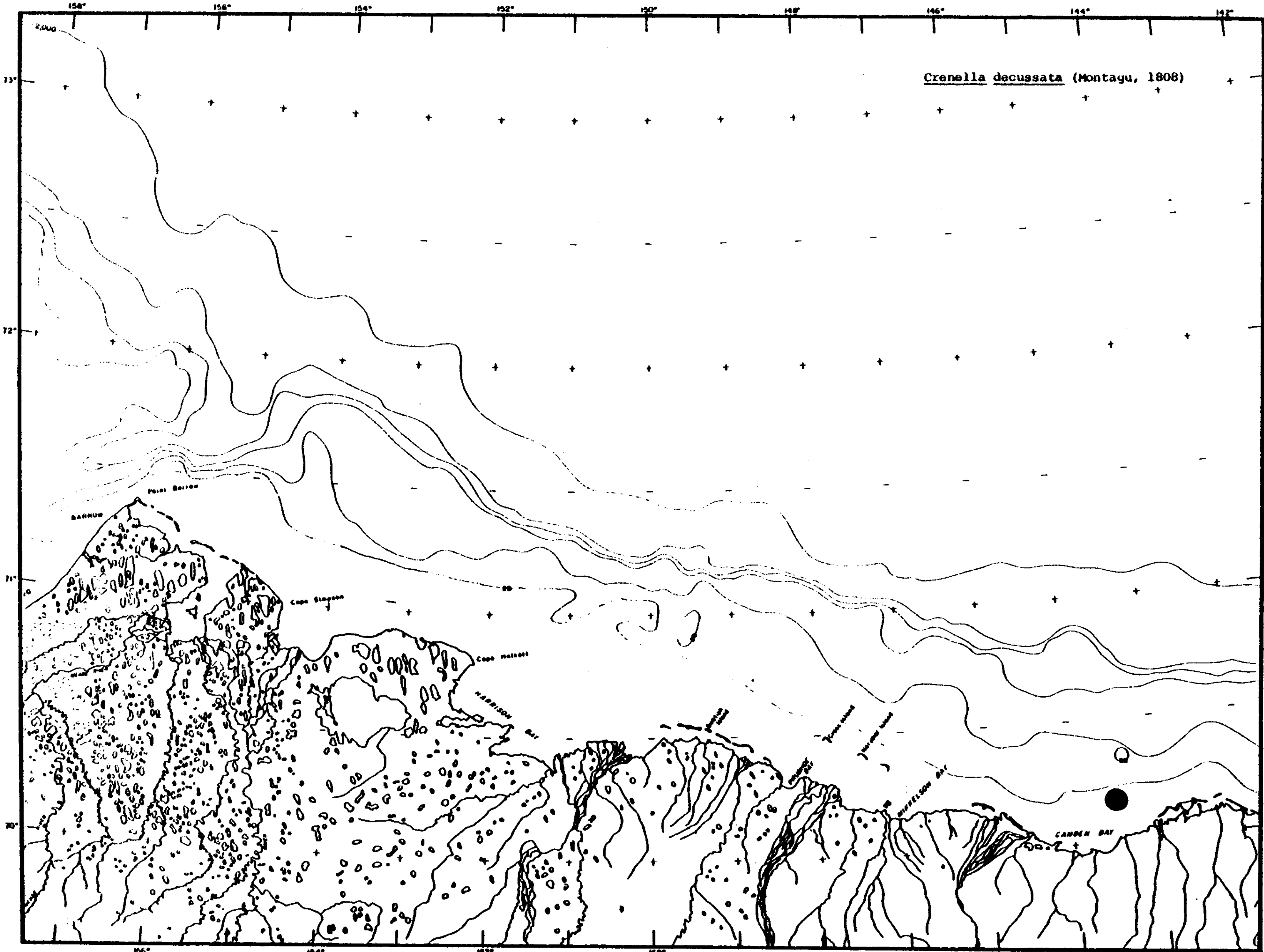

Astarte montagui (Dillwyn, 1817)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

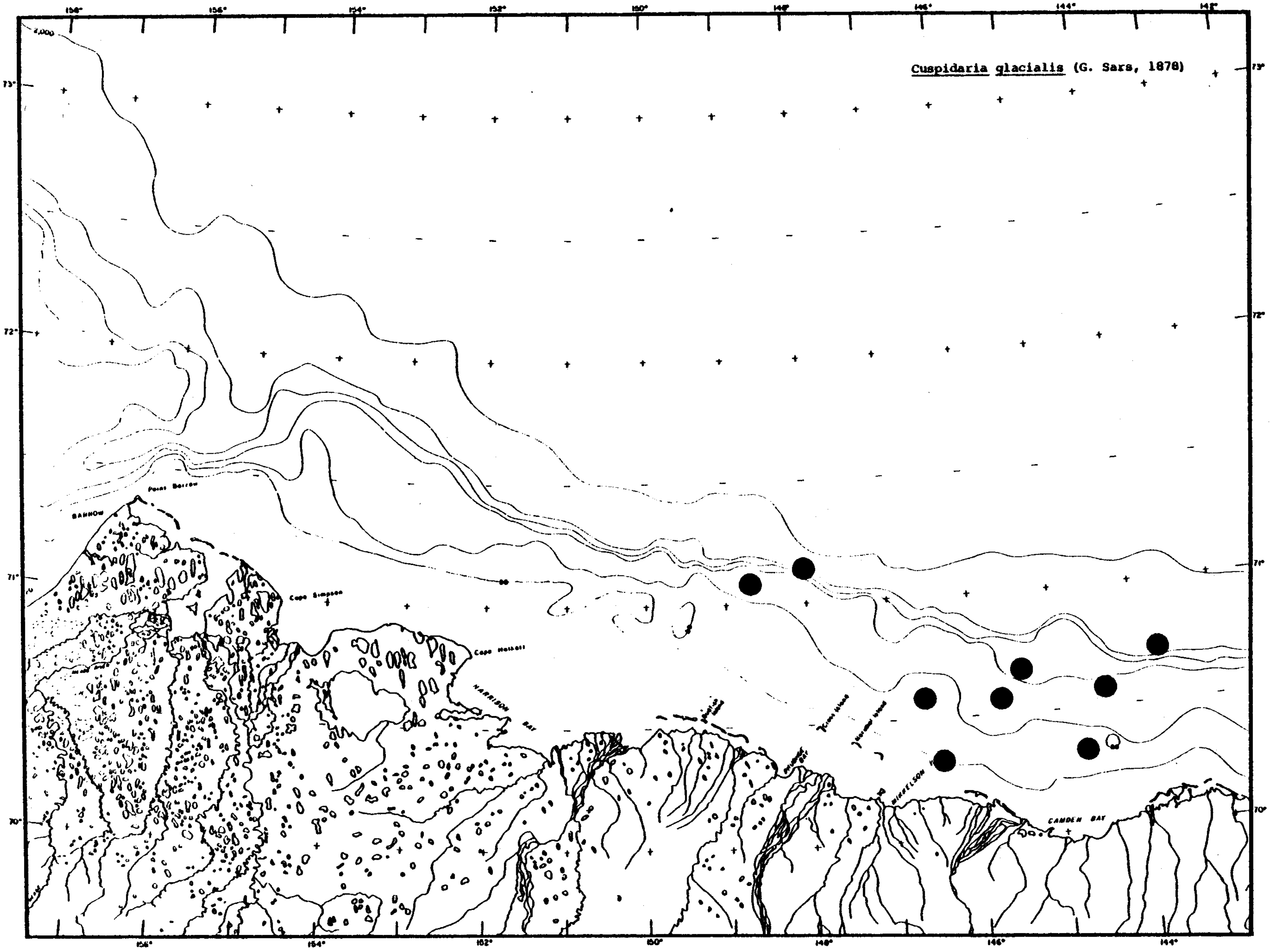

Bathyarca glacialis (Gray, 1824)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°

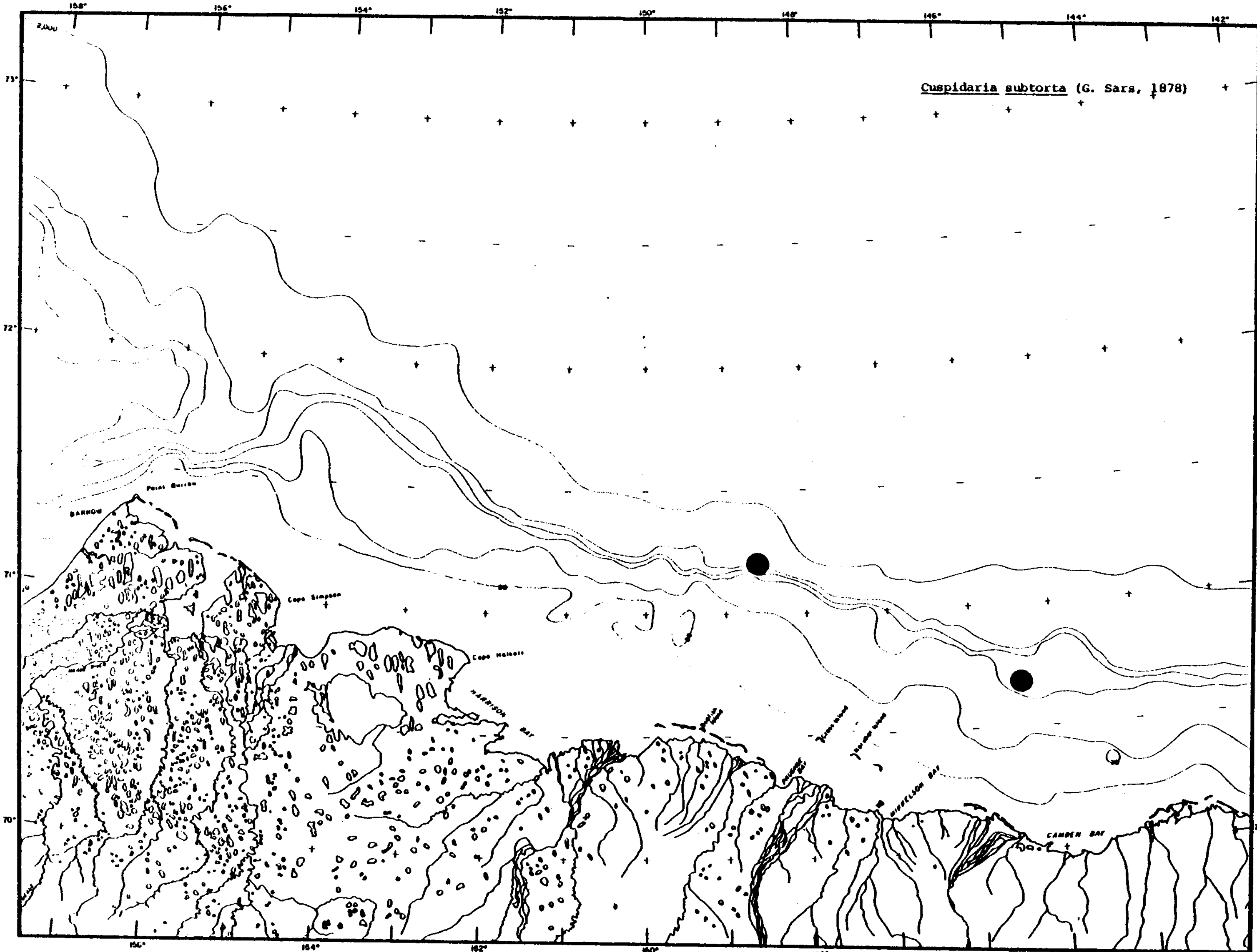


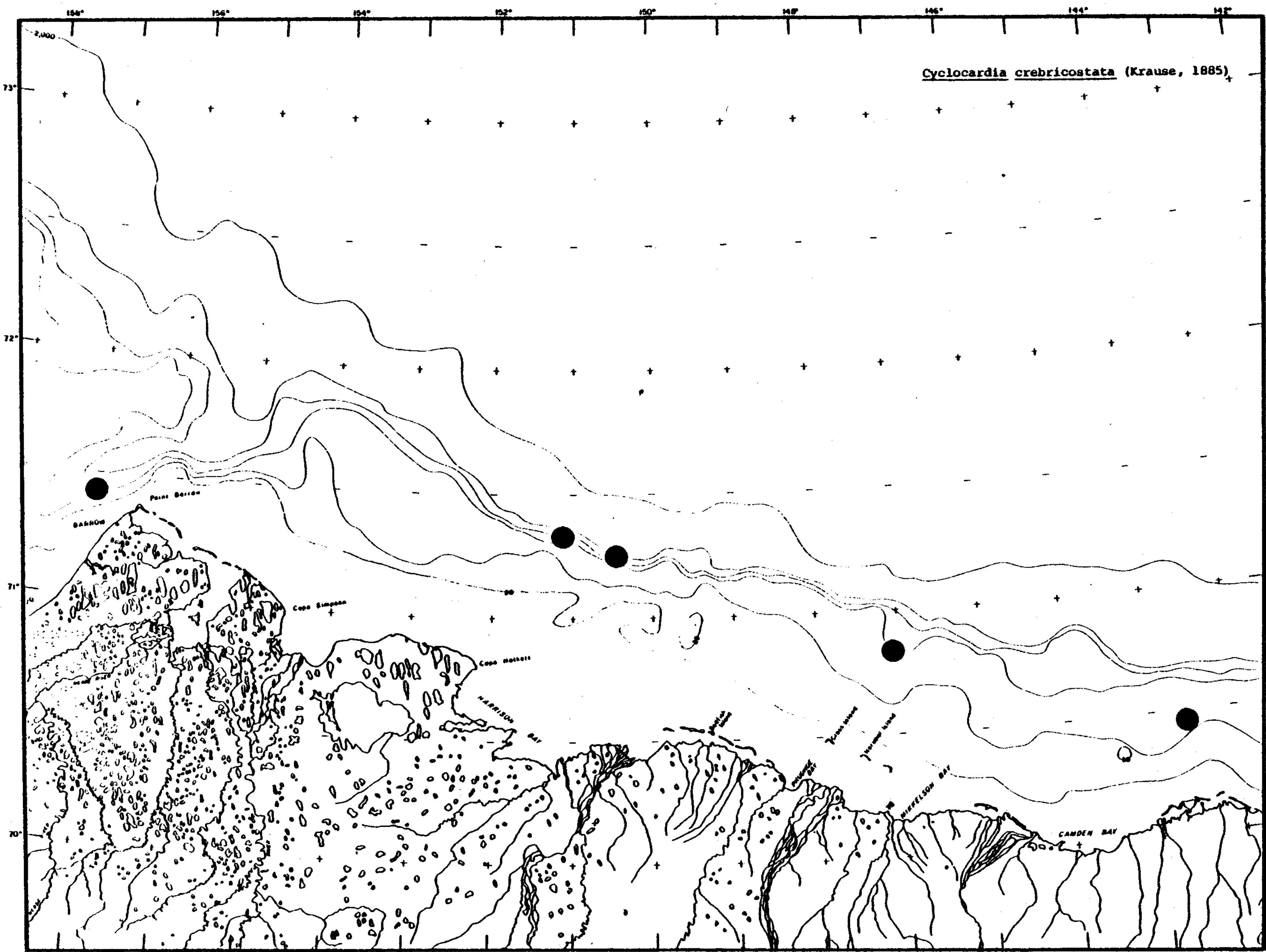
Bathyarca raridentata (Wood, 1840)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
2,000
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Clinocardium ciliatum (Fabricius, 1780)
(○ = valves only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

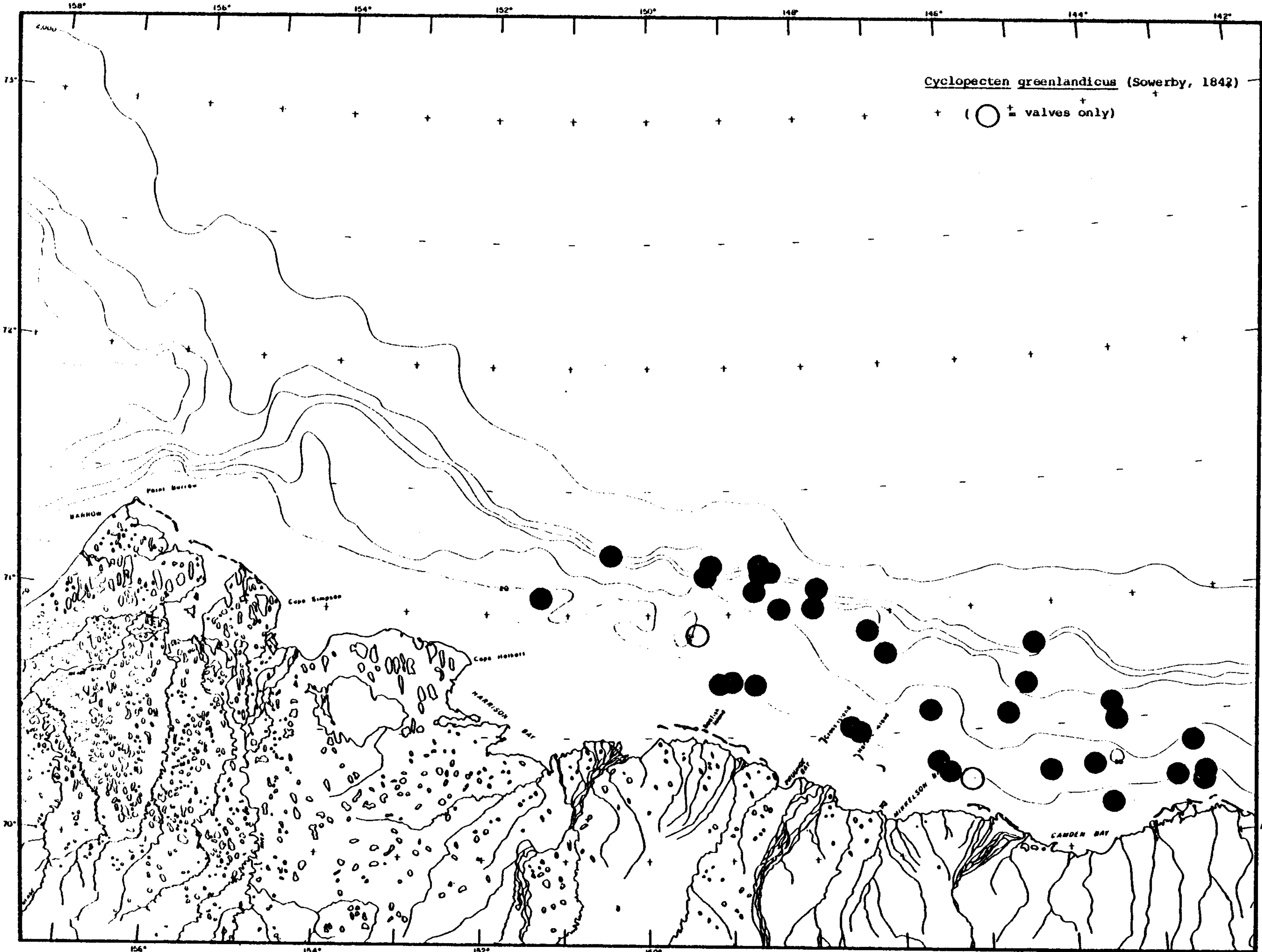

Crenella decussata (Montagu, 1808)
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

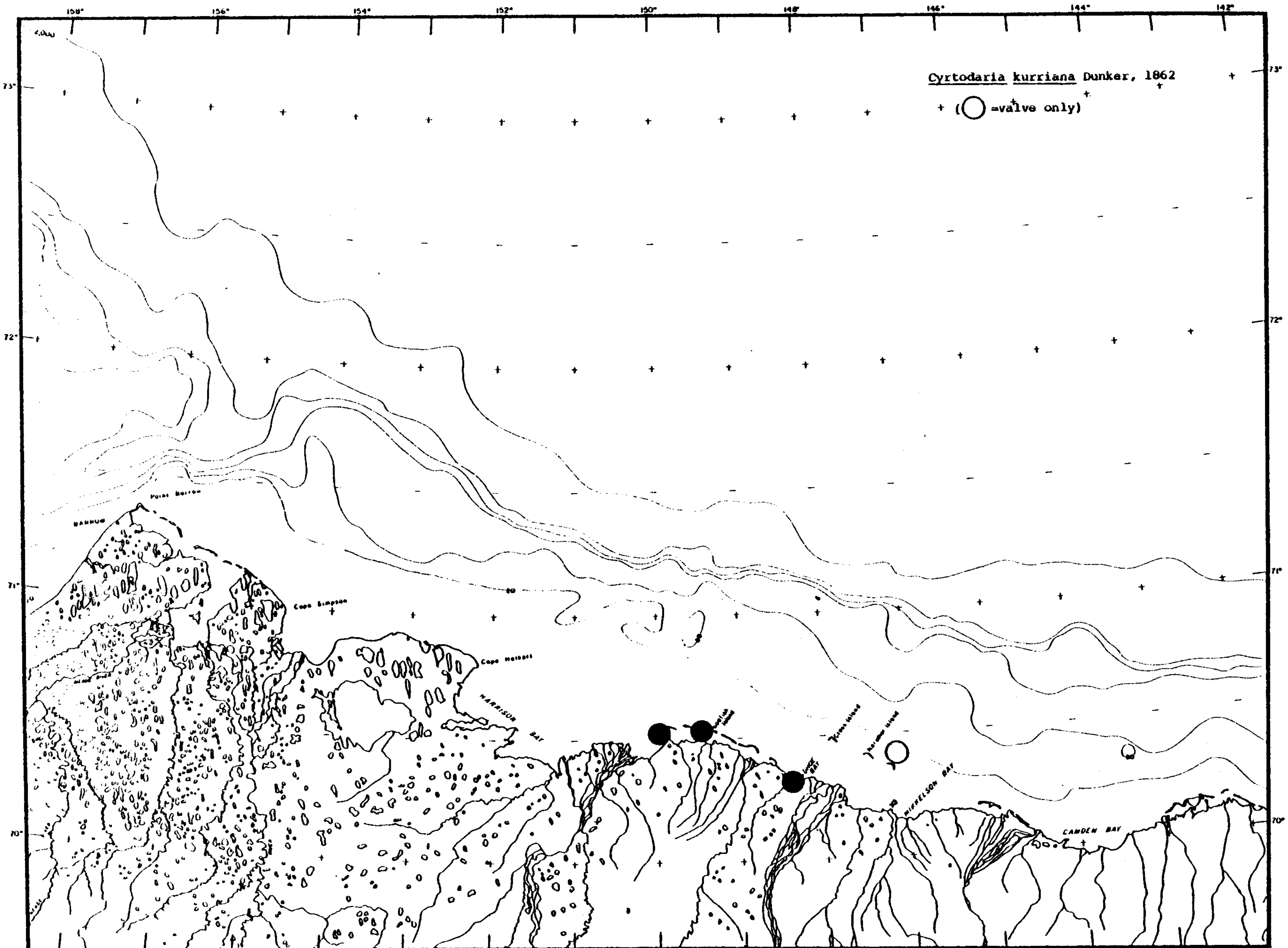

Cuspidaria glacialis (G. Sars, 1878)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

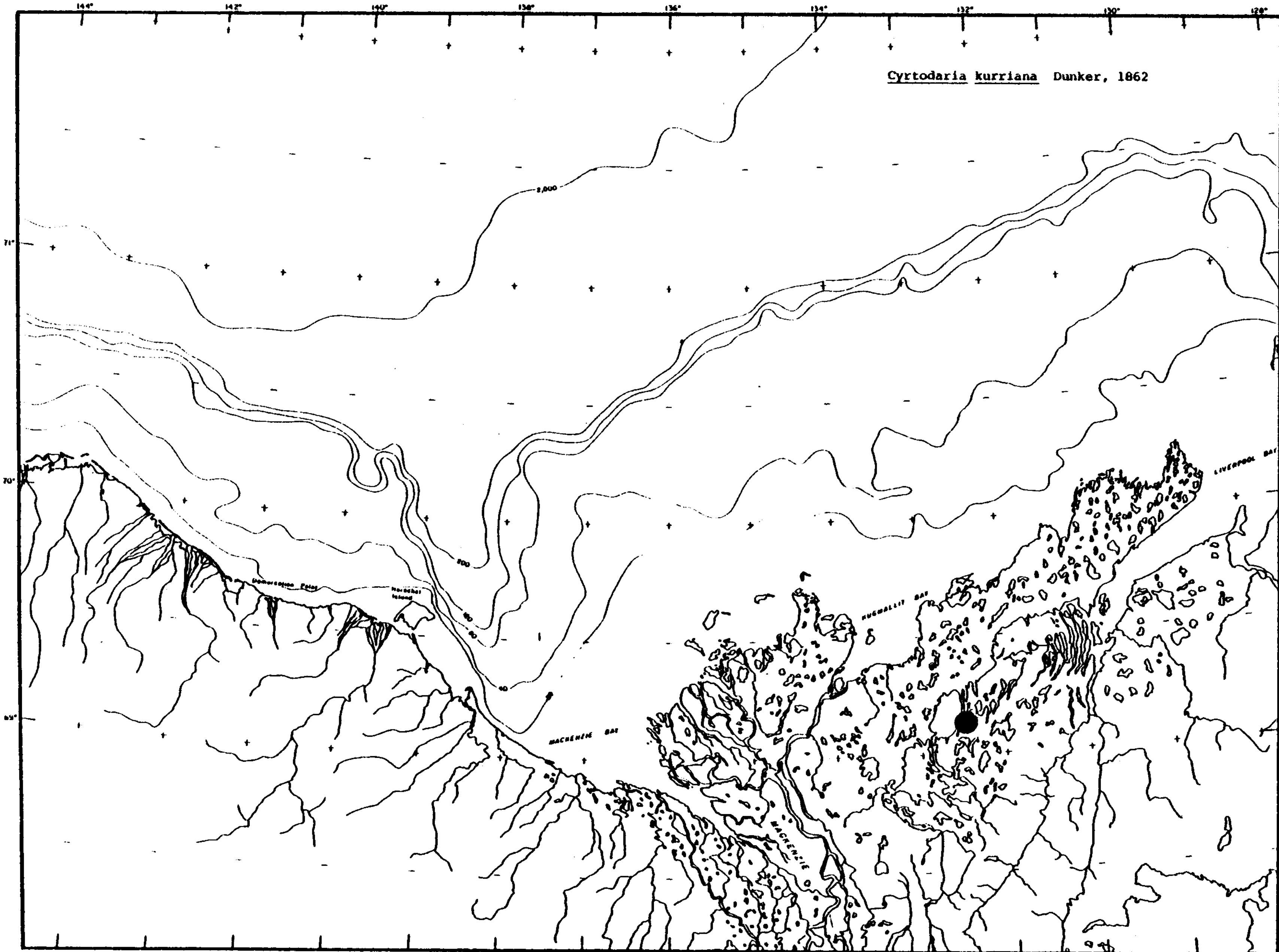

Cuspidaria subtorta (G. Sars, 1878)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°

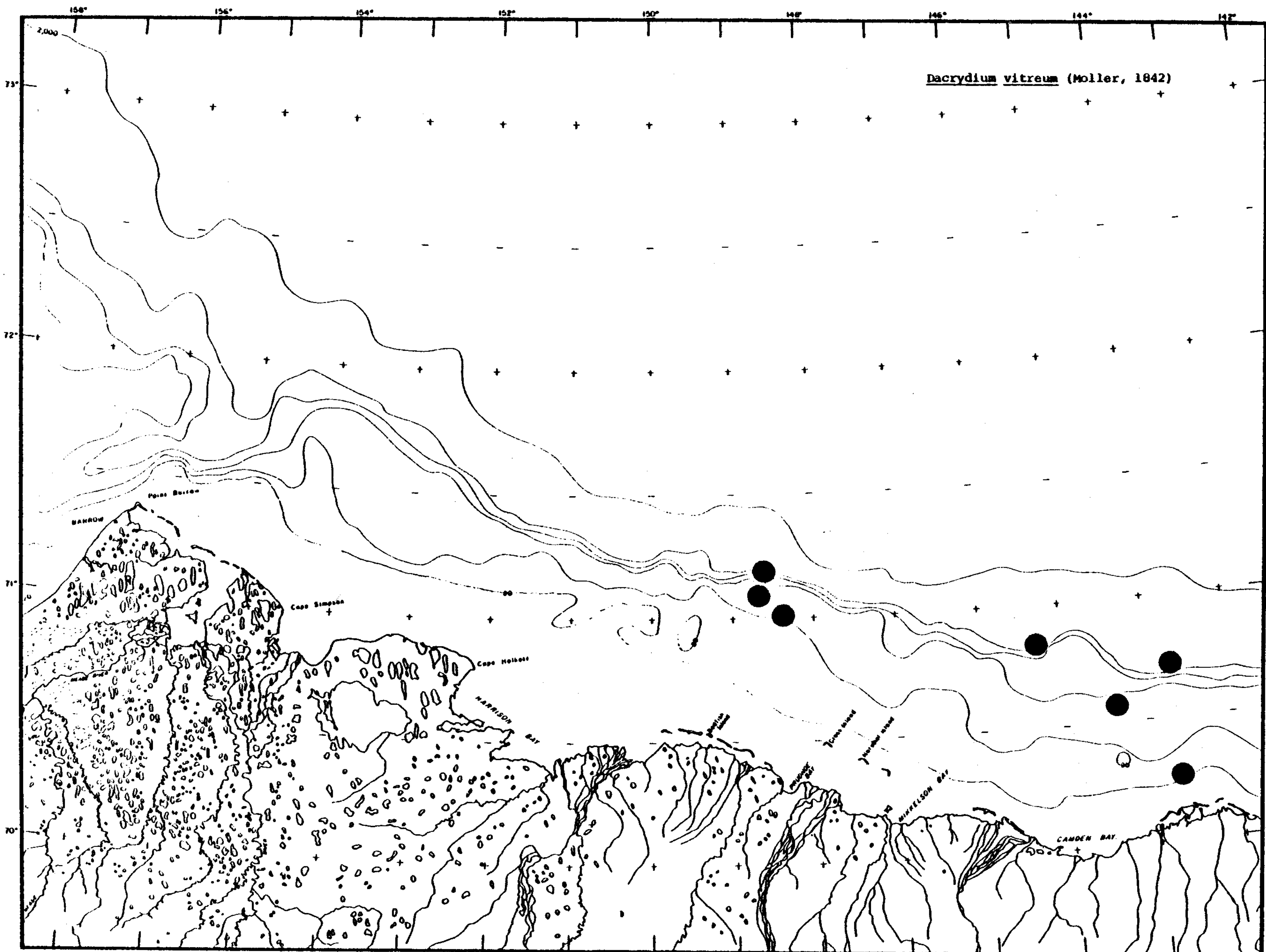


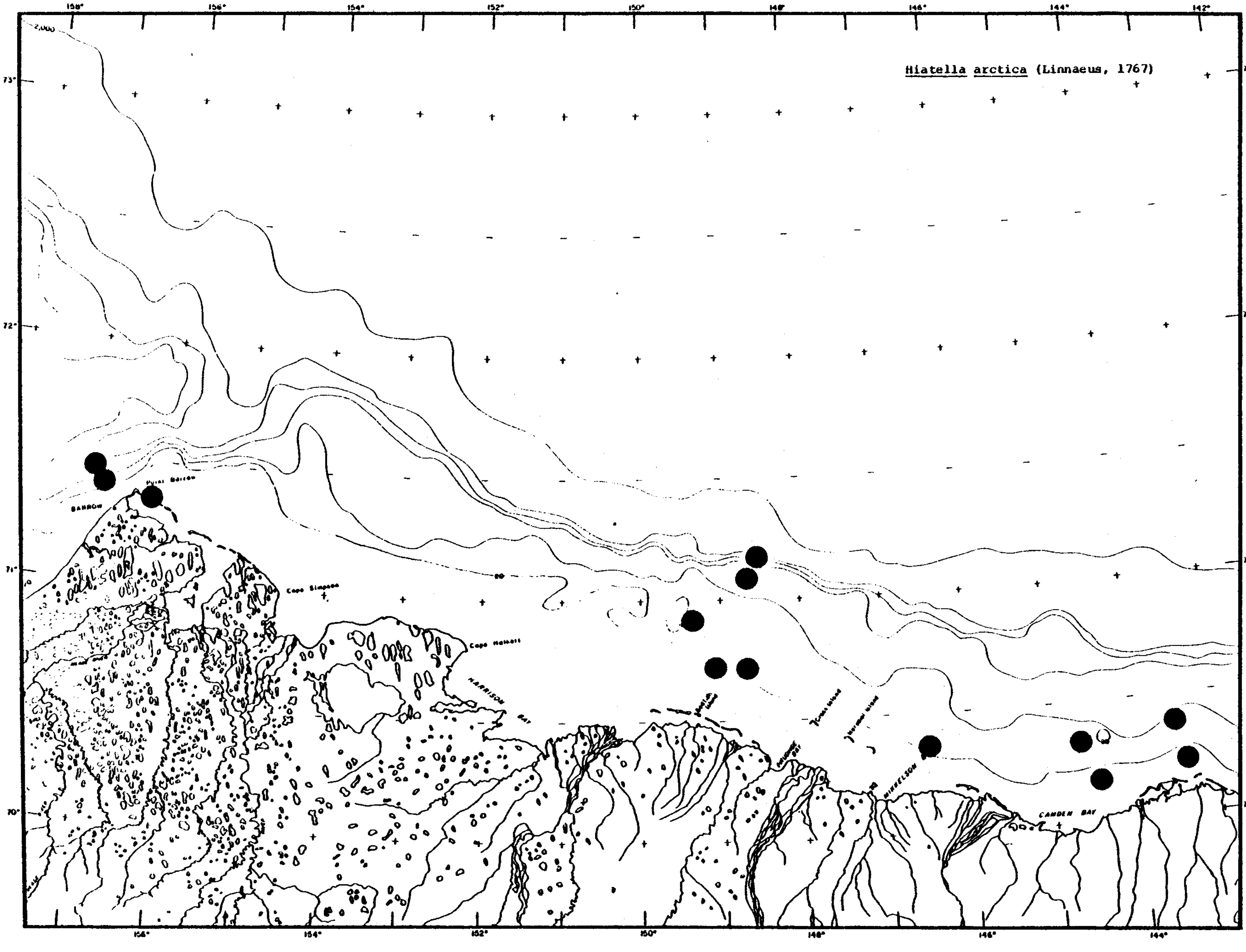
Cyclocardia crebricostata (Krause, 1885)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Cyclopecten greenlandicus (Sowerby, 1842)
(○ = valves only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°

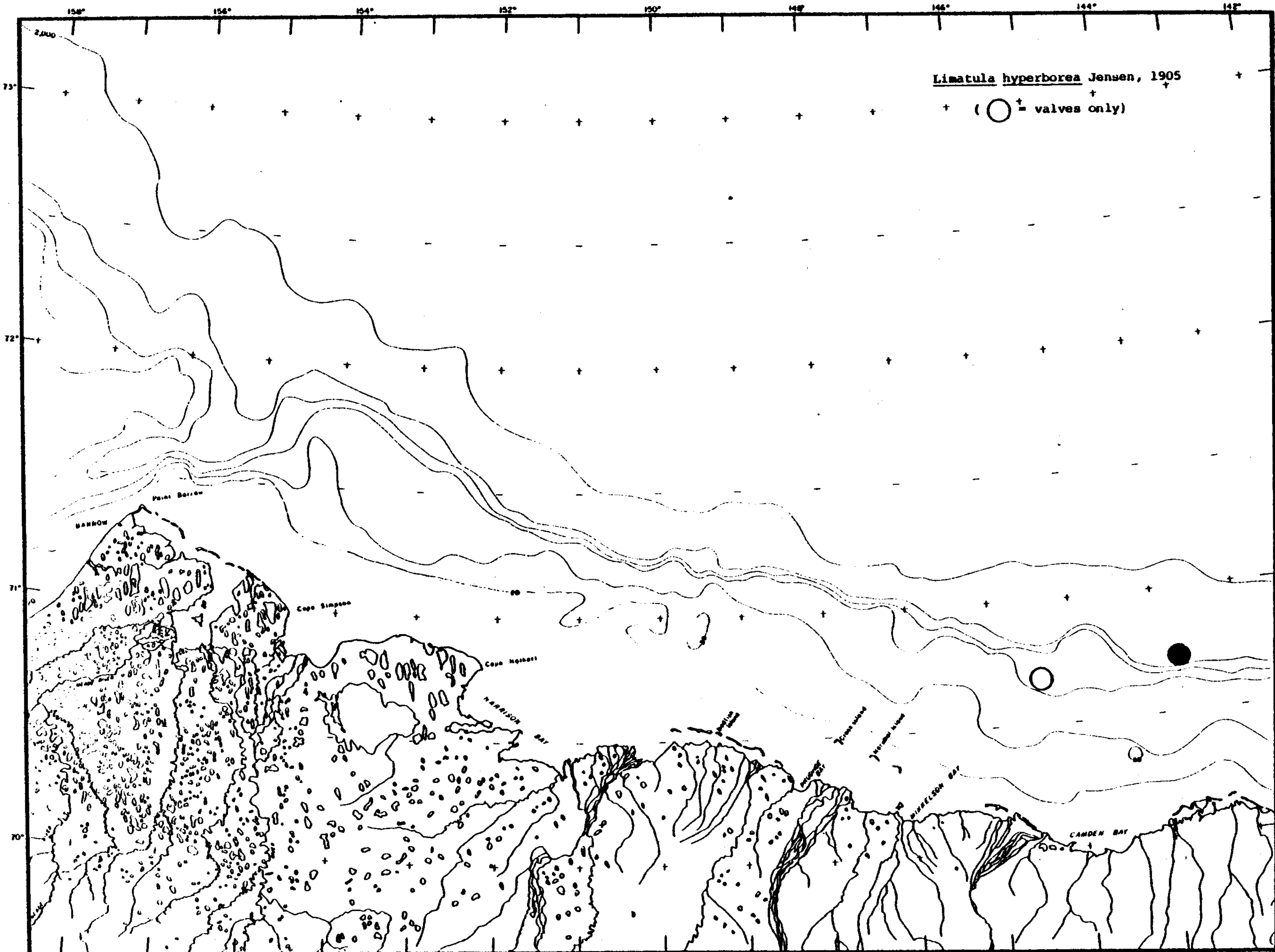

Cyrtodaria kurriana Dunker, 1862
+ (○ =valve only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°

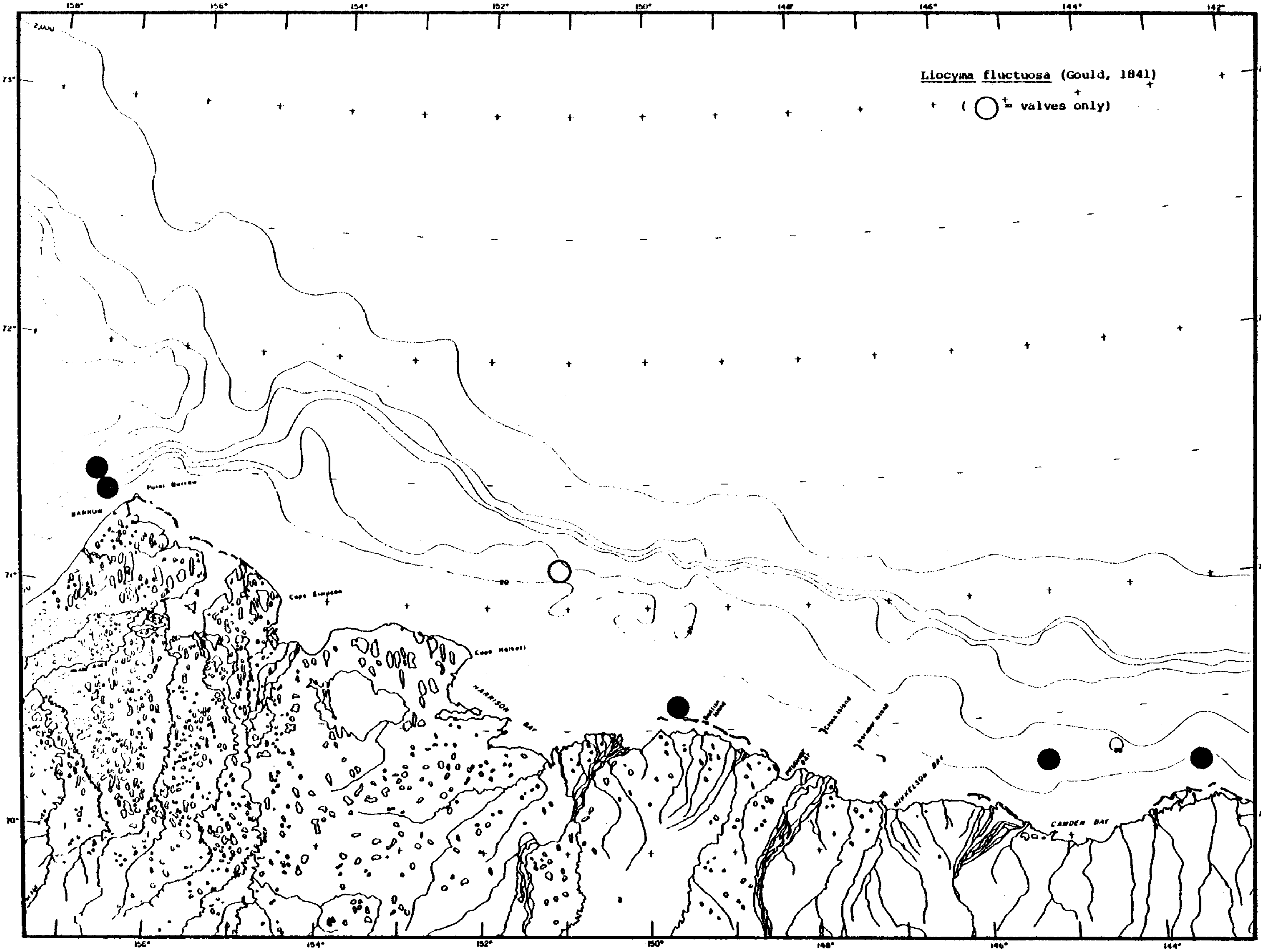

Cyrtodaria kurriana Dunker, 1862
144°
142°
140°
138°
136°
134°
132°
130°
128°
71°
70°
69°
2,000
200
80
40
LIVERPOOL BAY
KUGMALLIT BAY
MACKENZIE BAY
MACKENZIE
Herschel Island

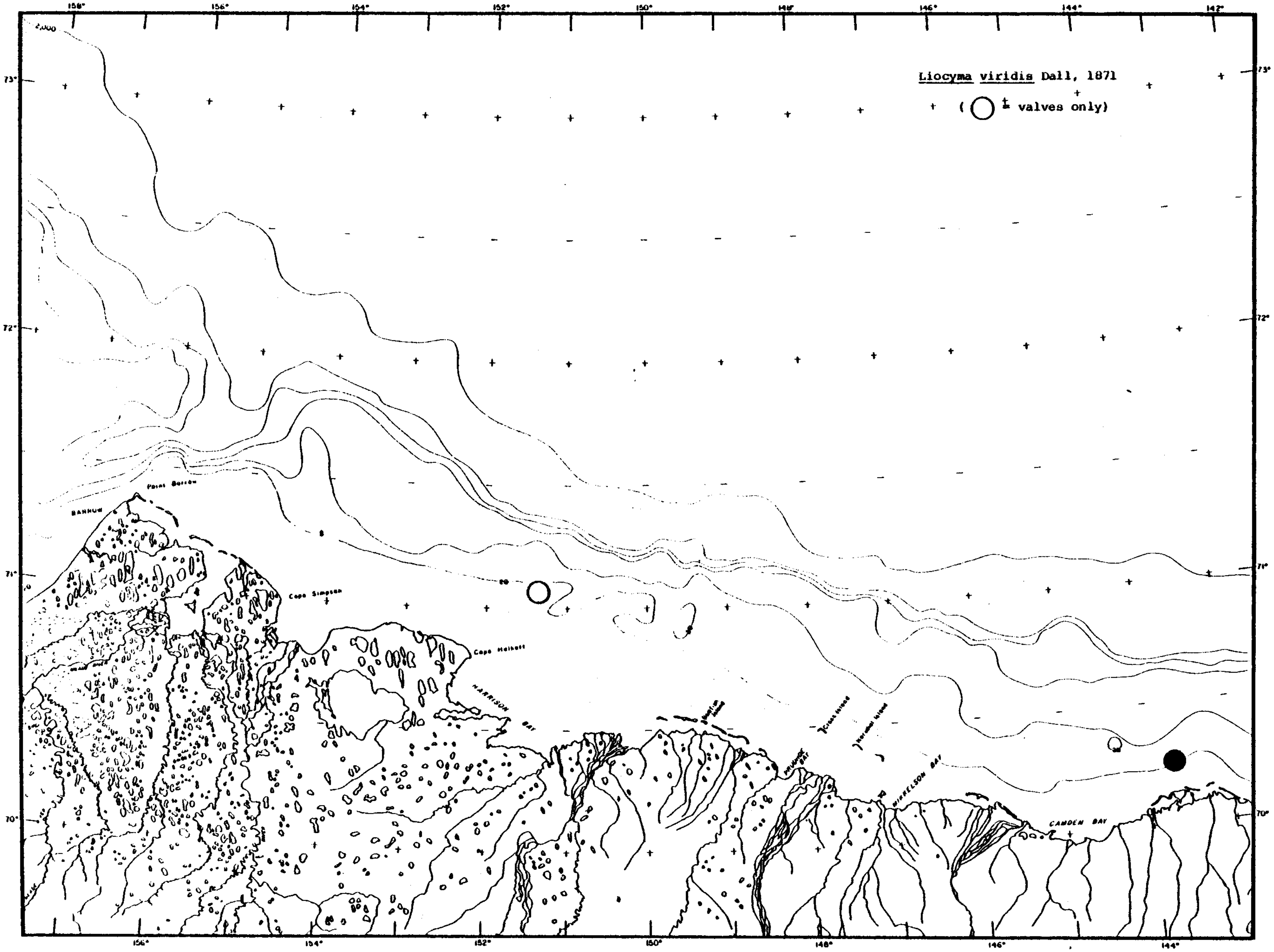

Dacrydium vitreum (Moller, 1842)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
PRUDHOE BAY
MIKKELSON BAY
CAMDEN BAY
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
2,000



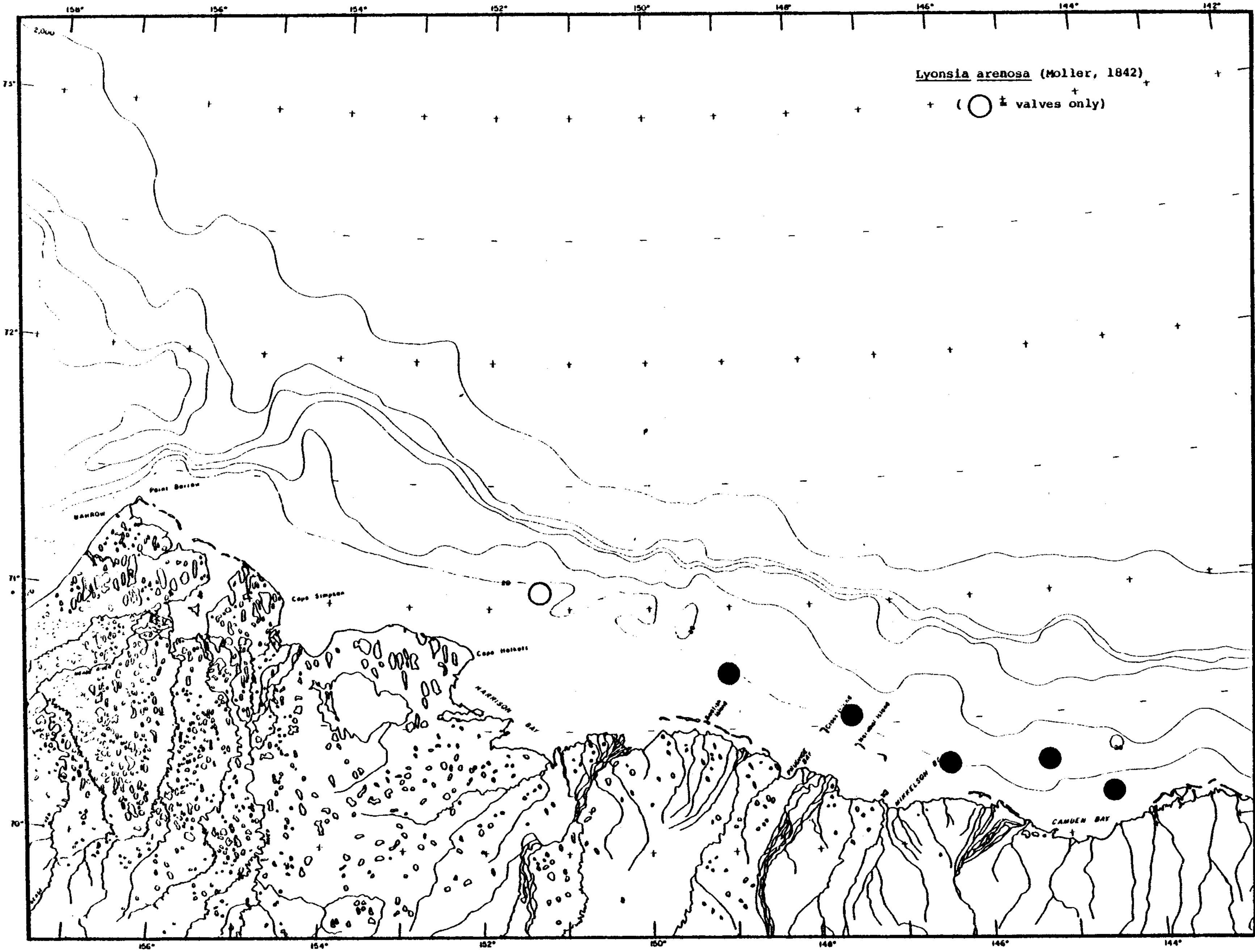
Hiatella arctica (Linnaeus, 1767)
BARROW
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON
CAMDEN BAY

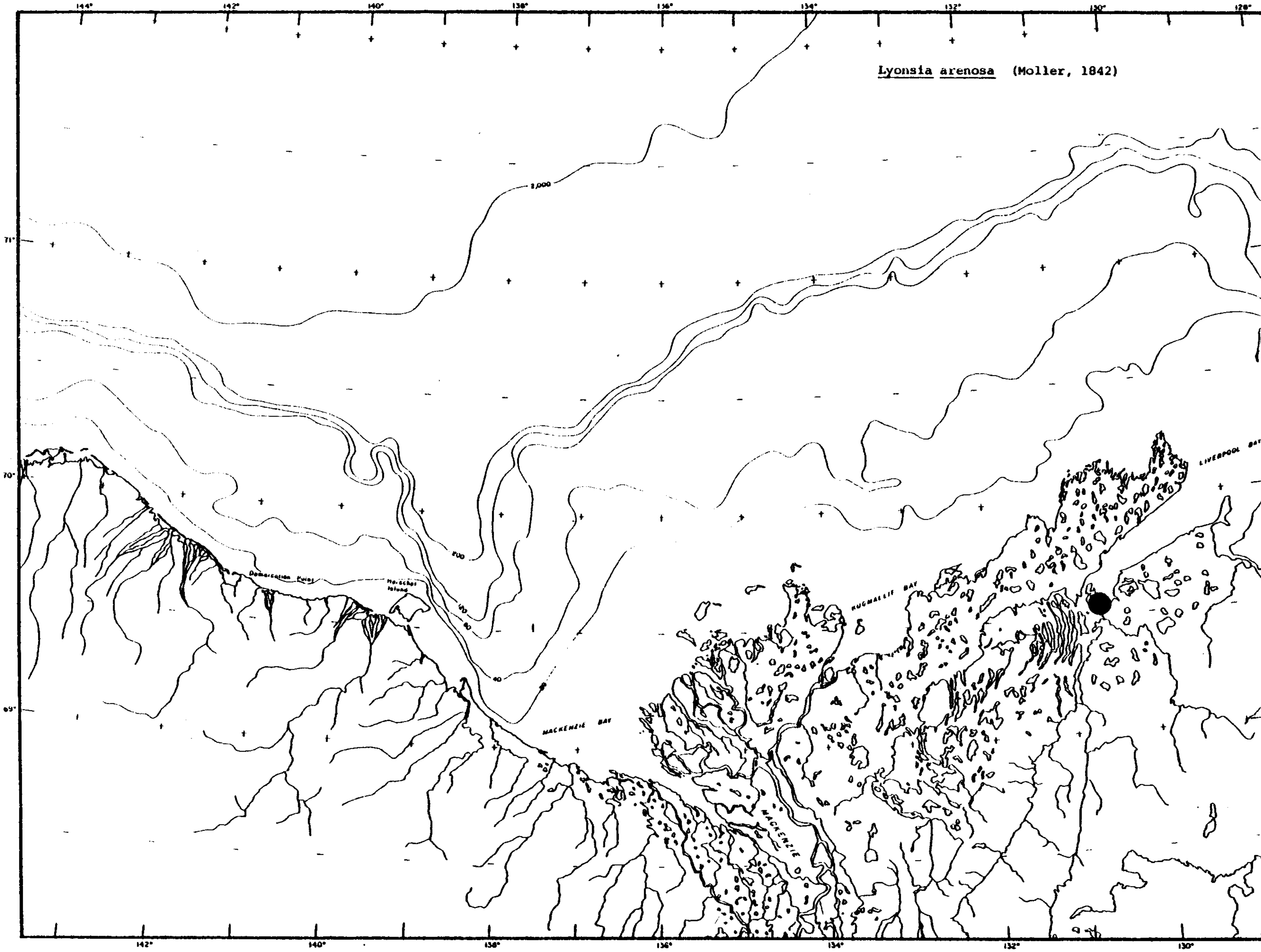

Limatula hyperborea Jensen, 1905
(○ = valves only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°

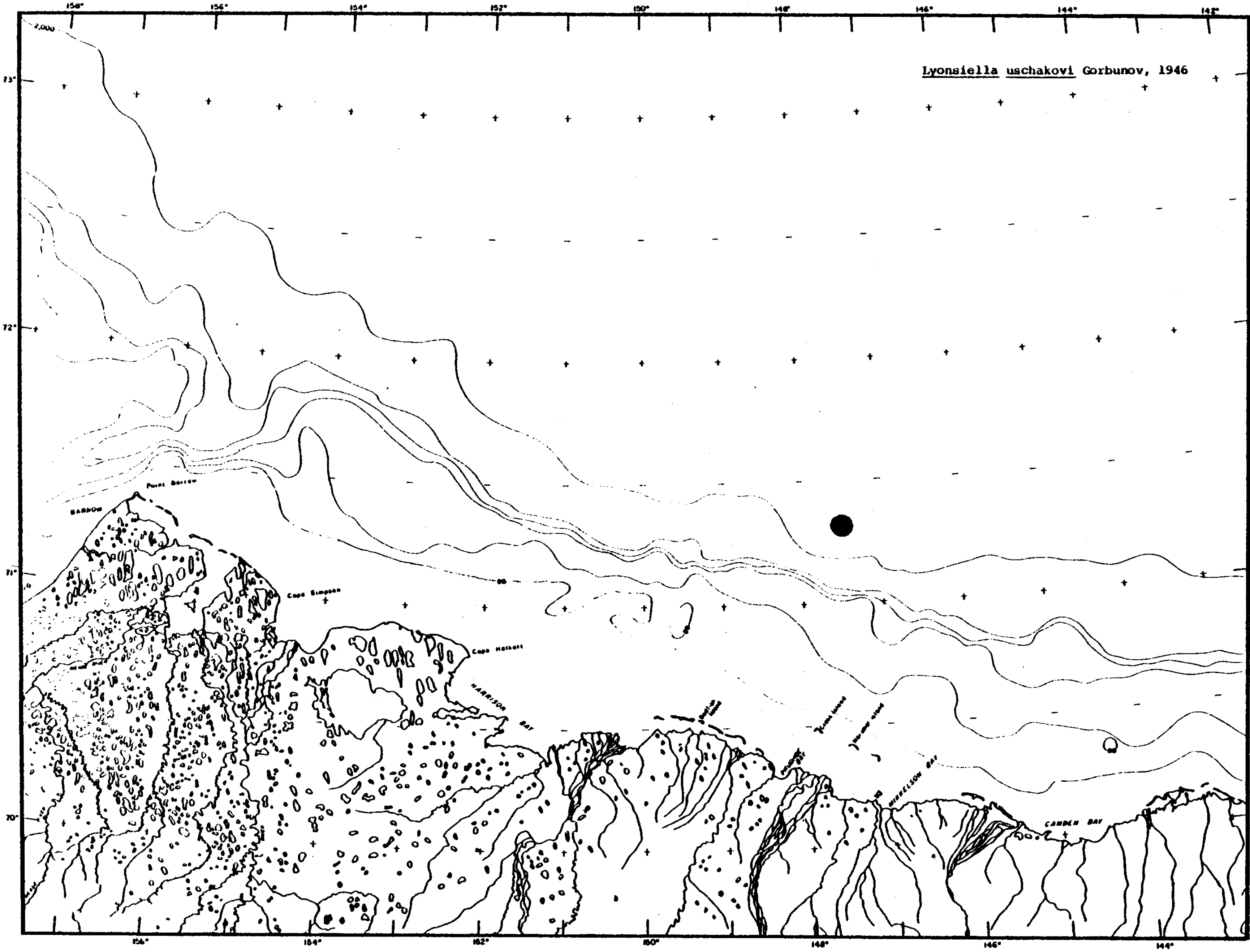

Liocyma fluctuosa (Gould, 1841)
(= valves only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

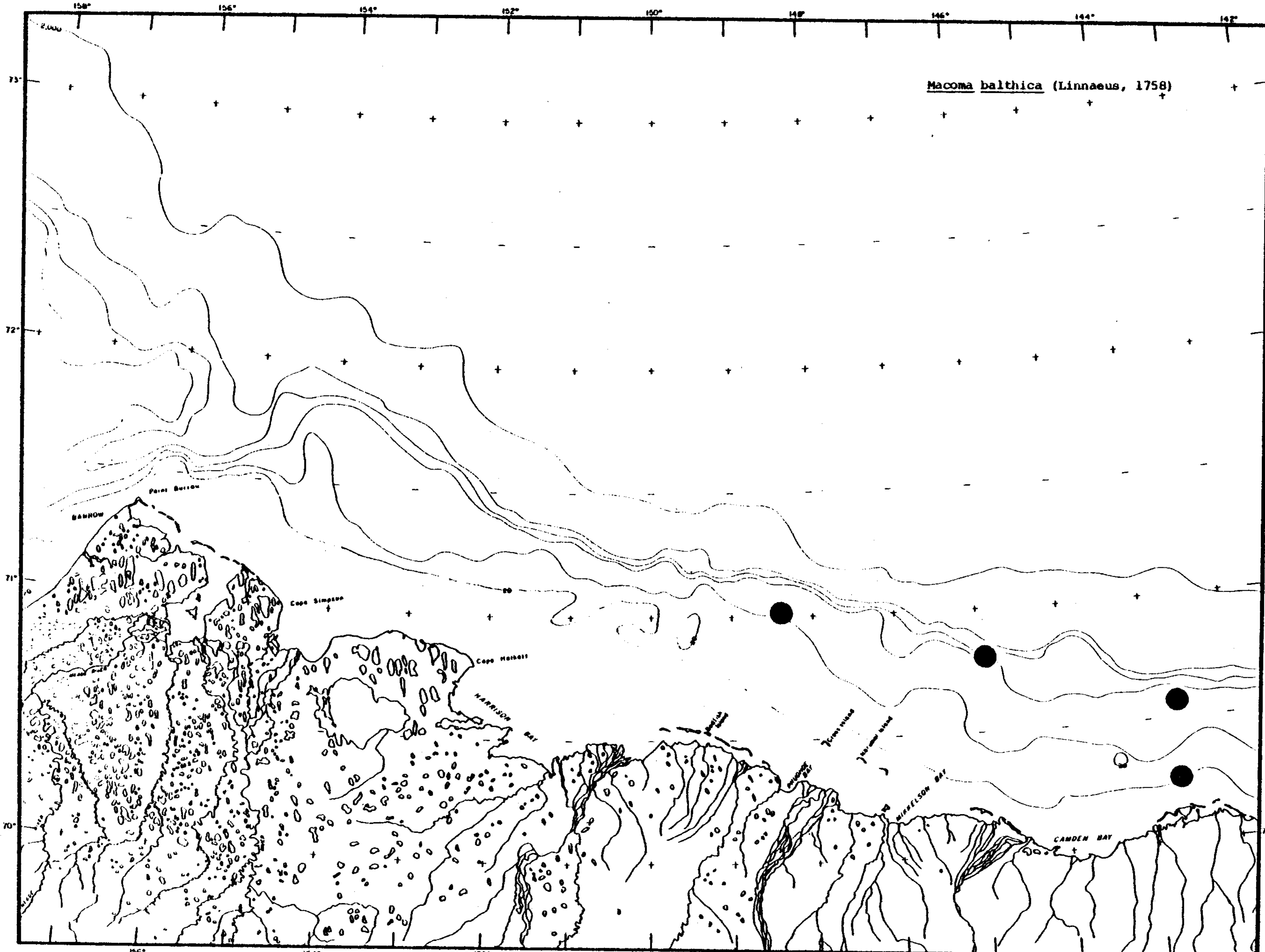


Liocyma viridis Dall, 1871
(○ = valves only)
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°

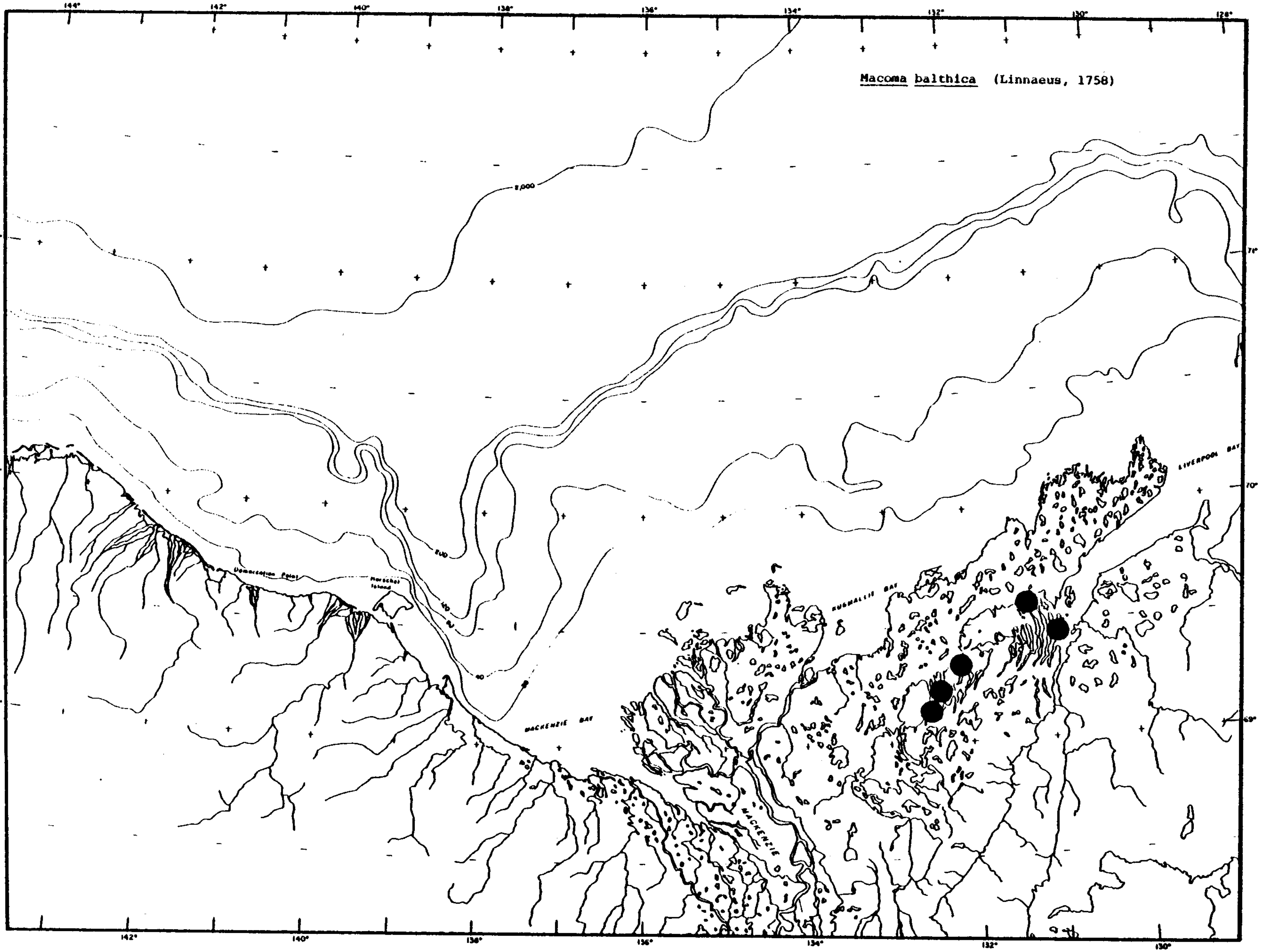

Lyonsia arenosa (Moller, 1842)
(○ ± valves only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°

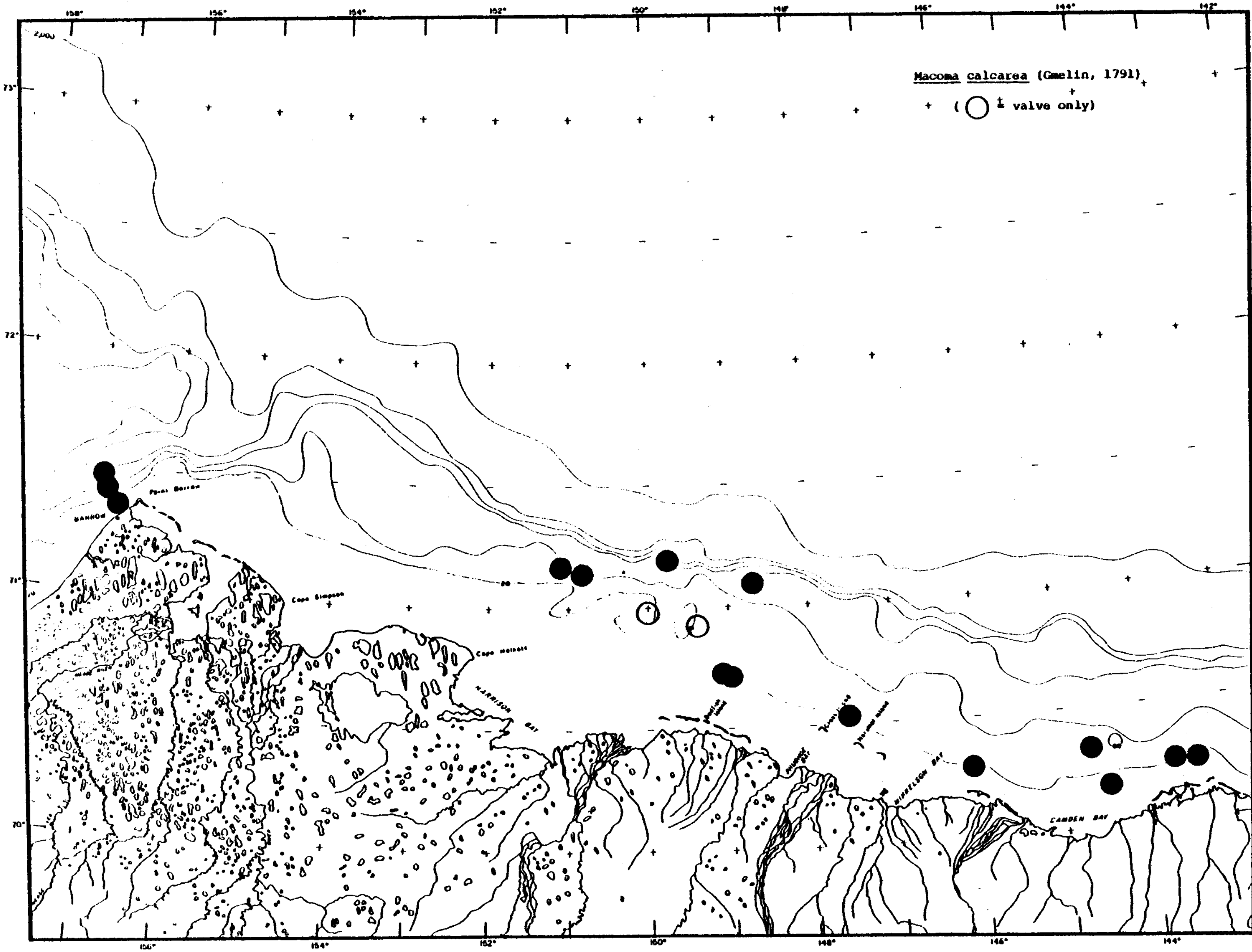

Lyonsia arenosa (Moller, 1842)
Demarcation Point
Herschel Island
MACKENZIE BAY
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE
1,000

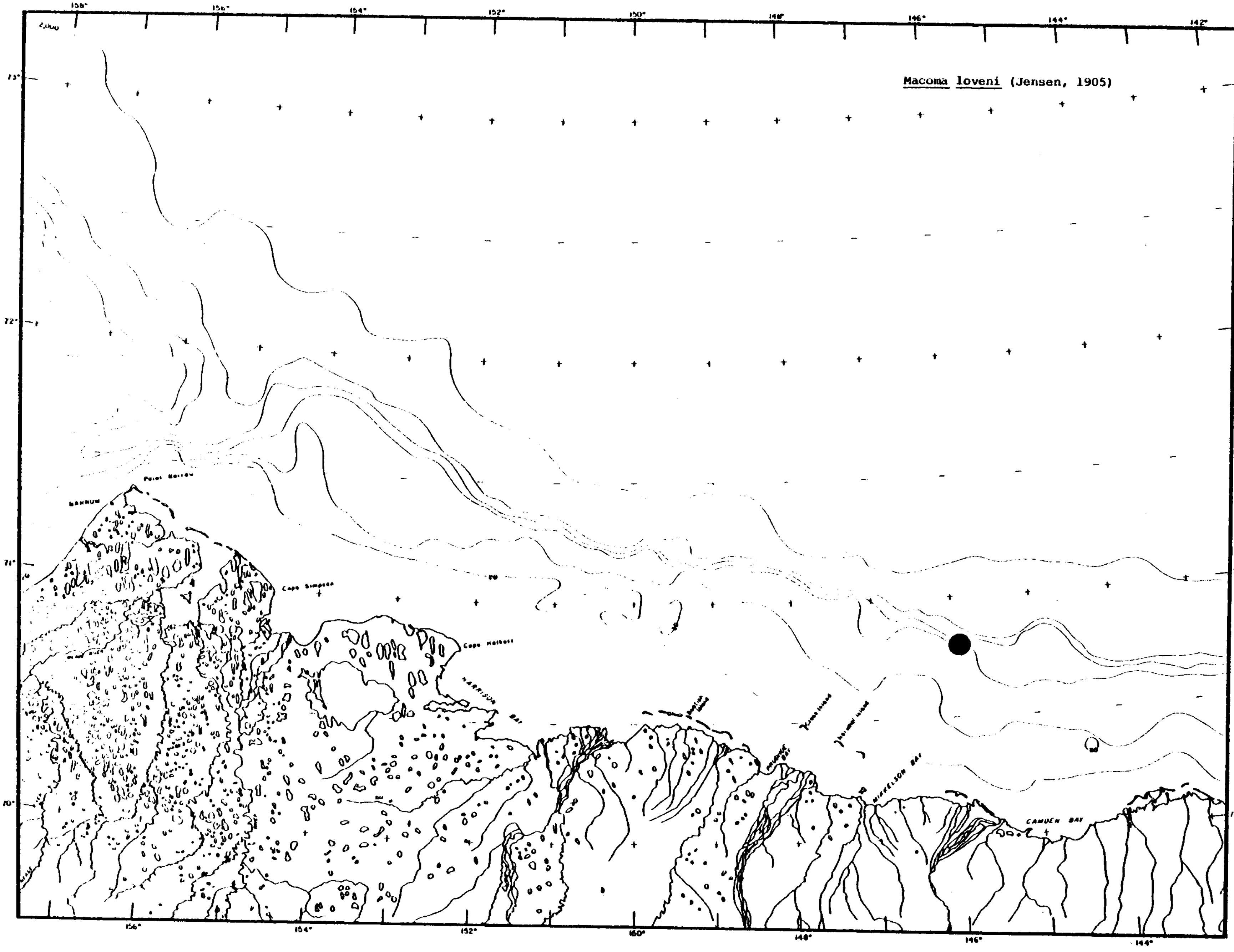

Lyonsiella uschakovi Gorbunov, 1946
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Mikkelson Bay
Camden Bay
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
2,000

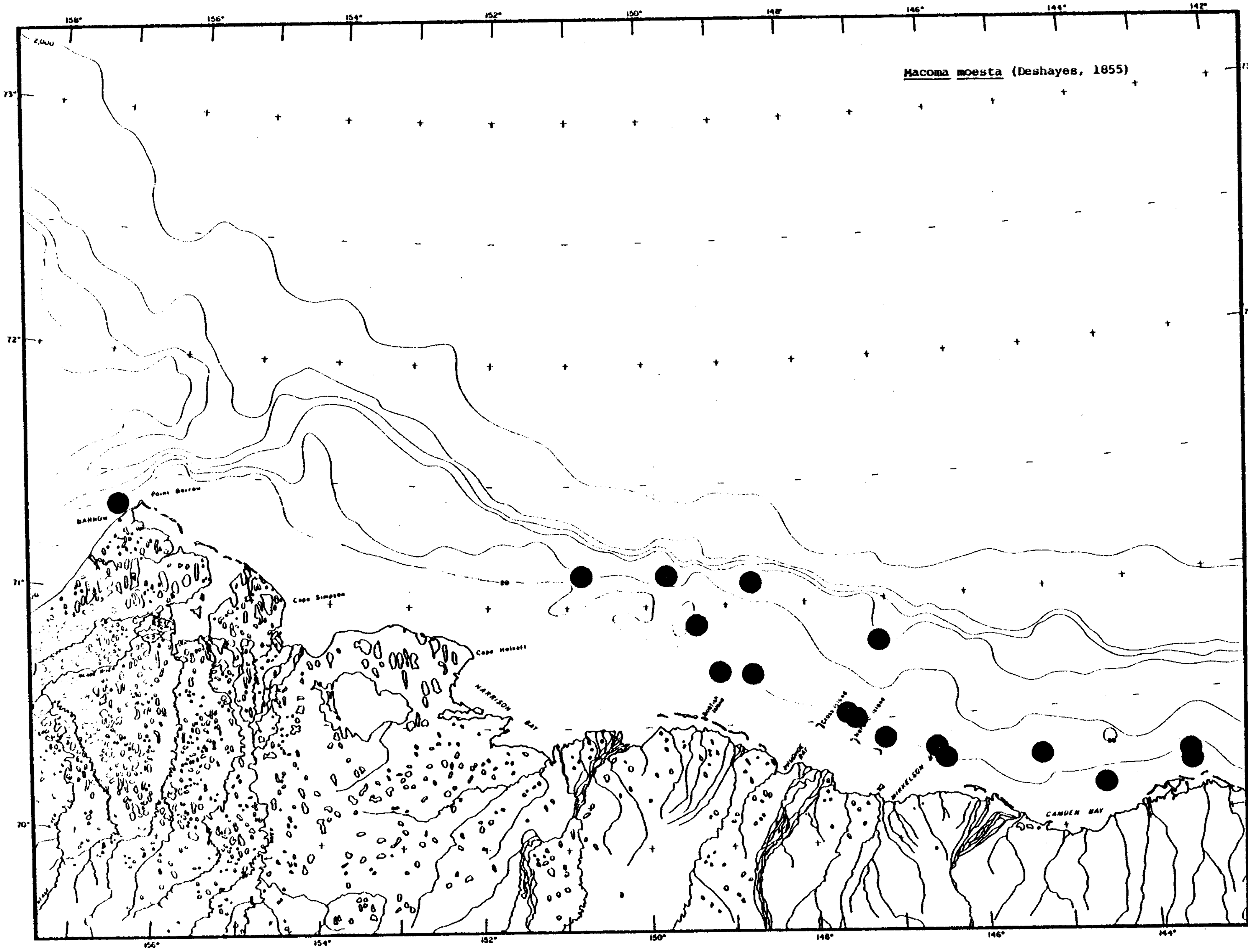


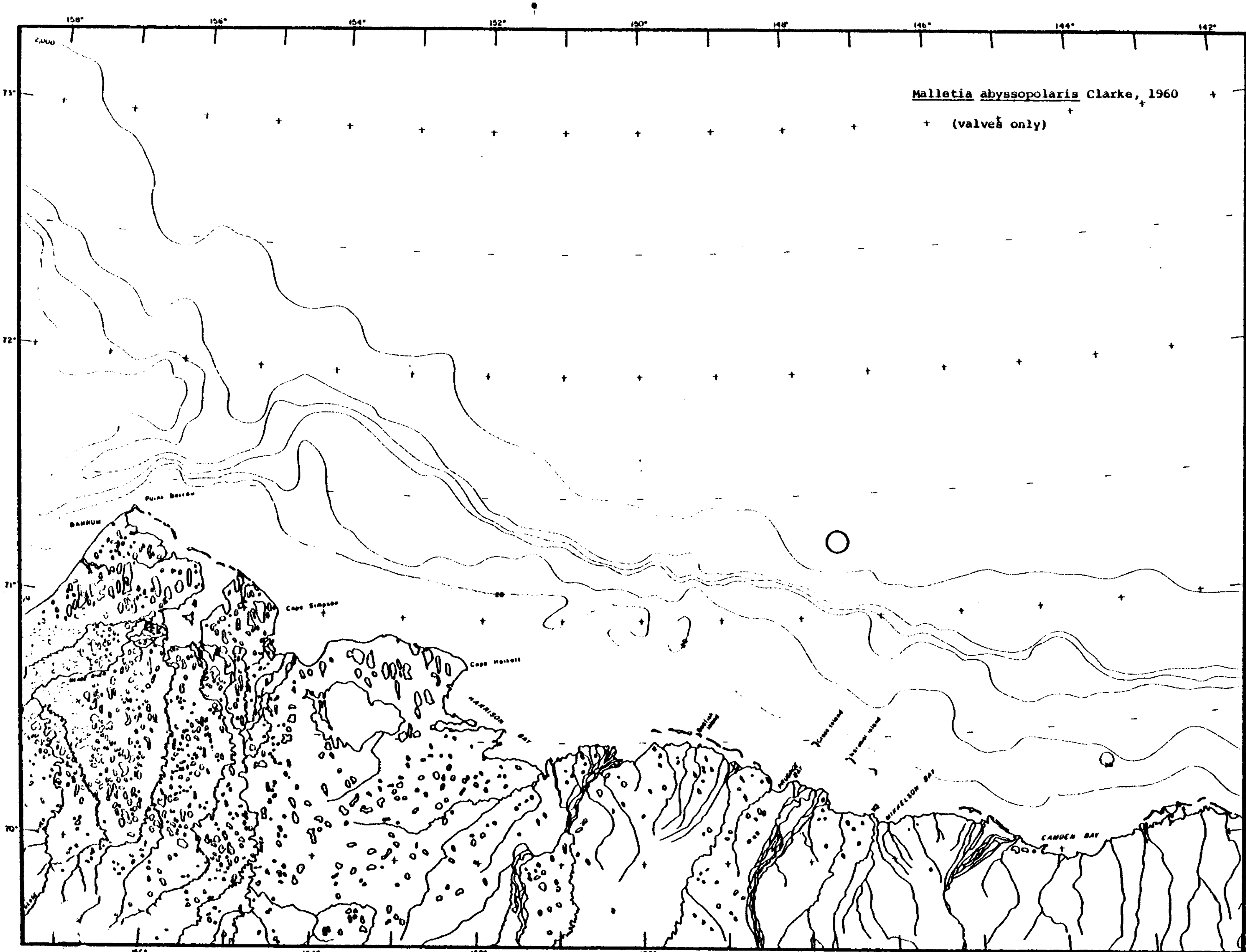
Macoma balthica (Linnaeus, 1758)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
PRUDHOE BAY
MIKKELSON BAY
CAMDEN BAY

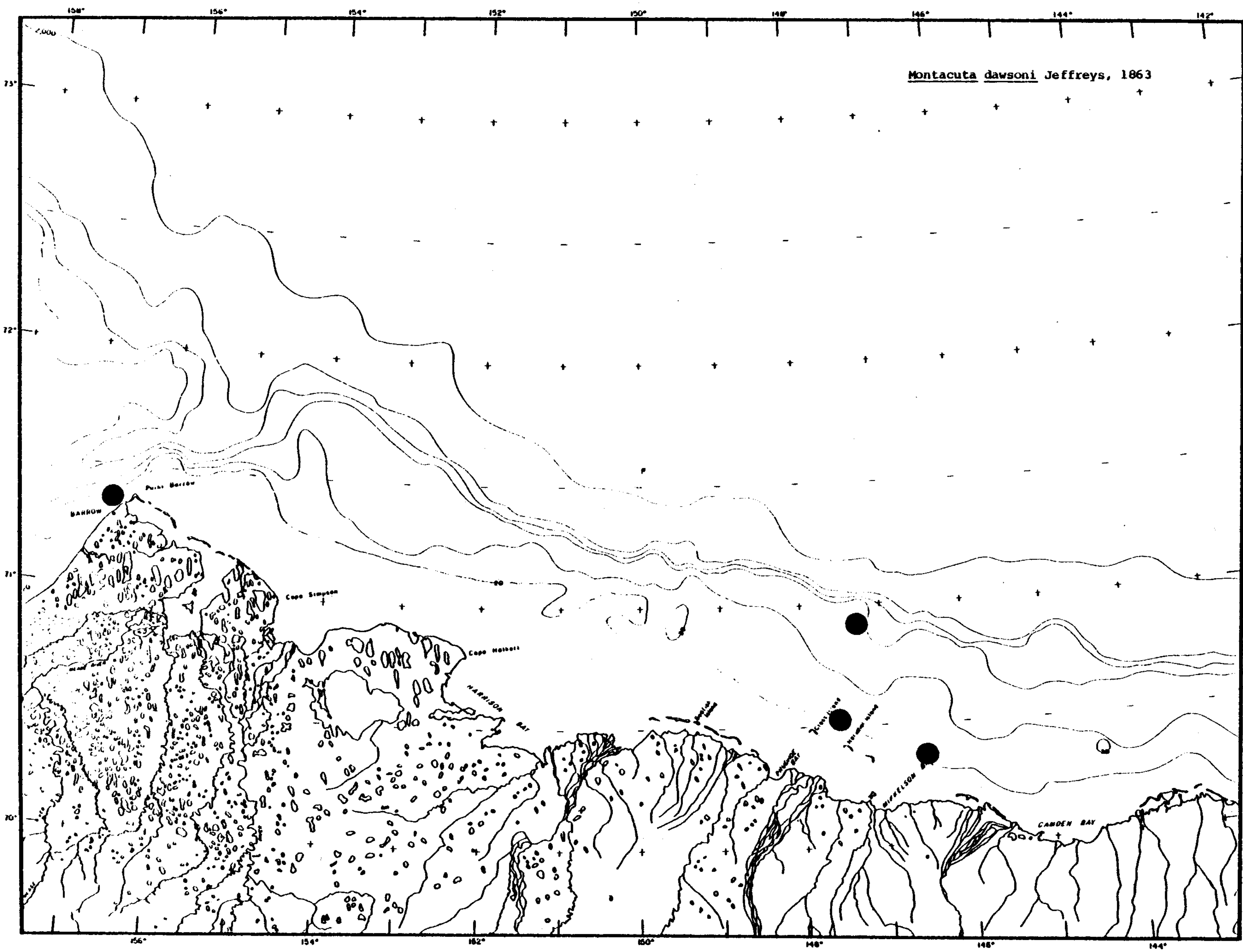

Macoma balthica (Linnaeus, 1758)
Liverpool Bay
Kugmallit Bay
Mackenzie Bay
Mackenzie
Demarcation Point
Herschel Island
2,000

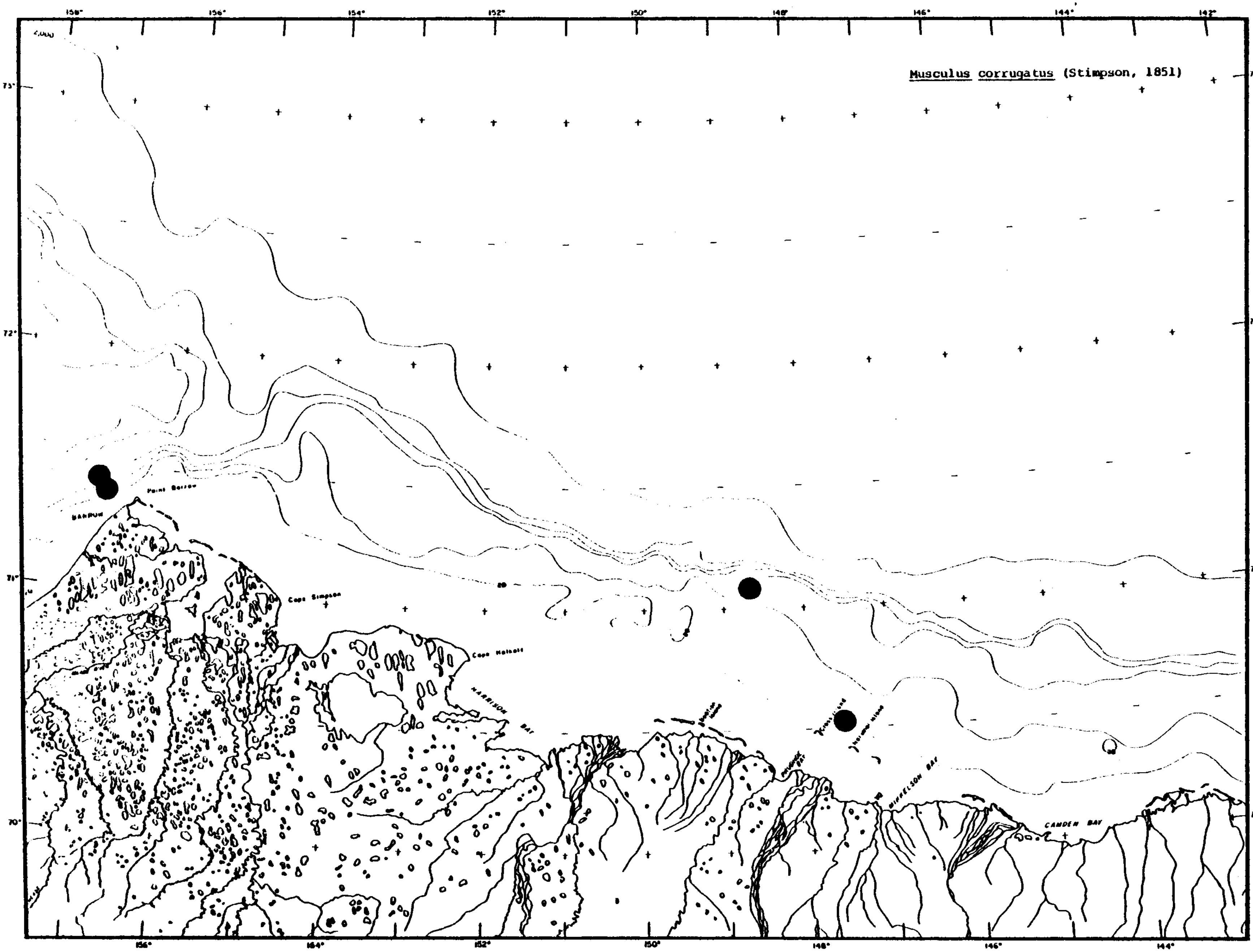

Macoma calcarea (Gmelin, 1791)
(○ ½ valve only)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
73°
72°
71°
70°
158°
156°
154°
152°
150°
148°
146°
144°
142°

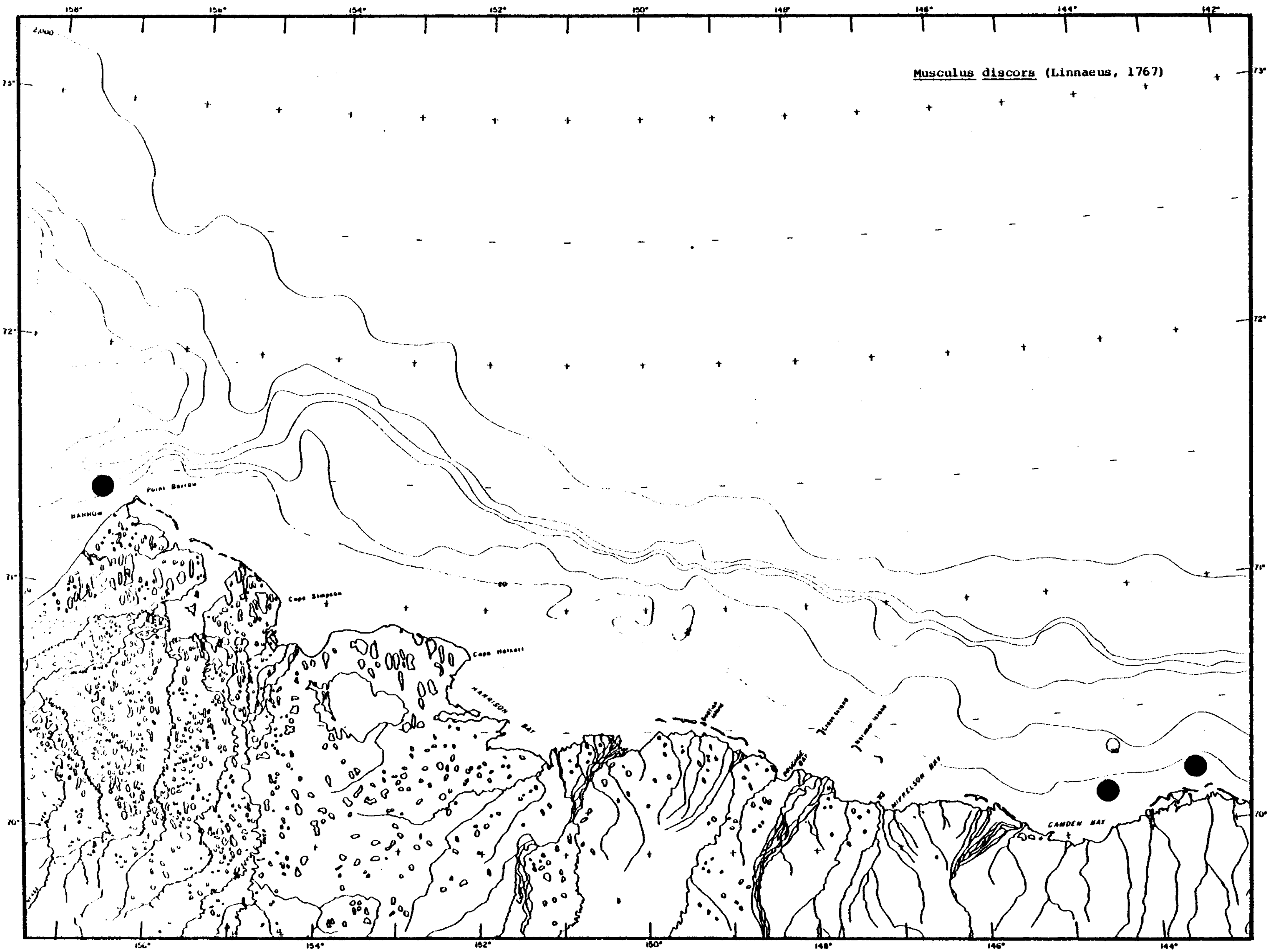

Macoma loveni (Jensen, 1905)
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay

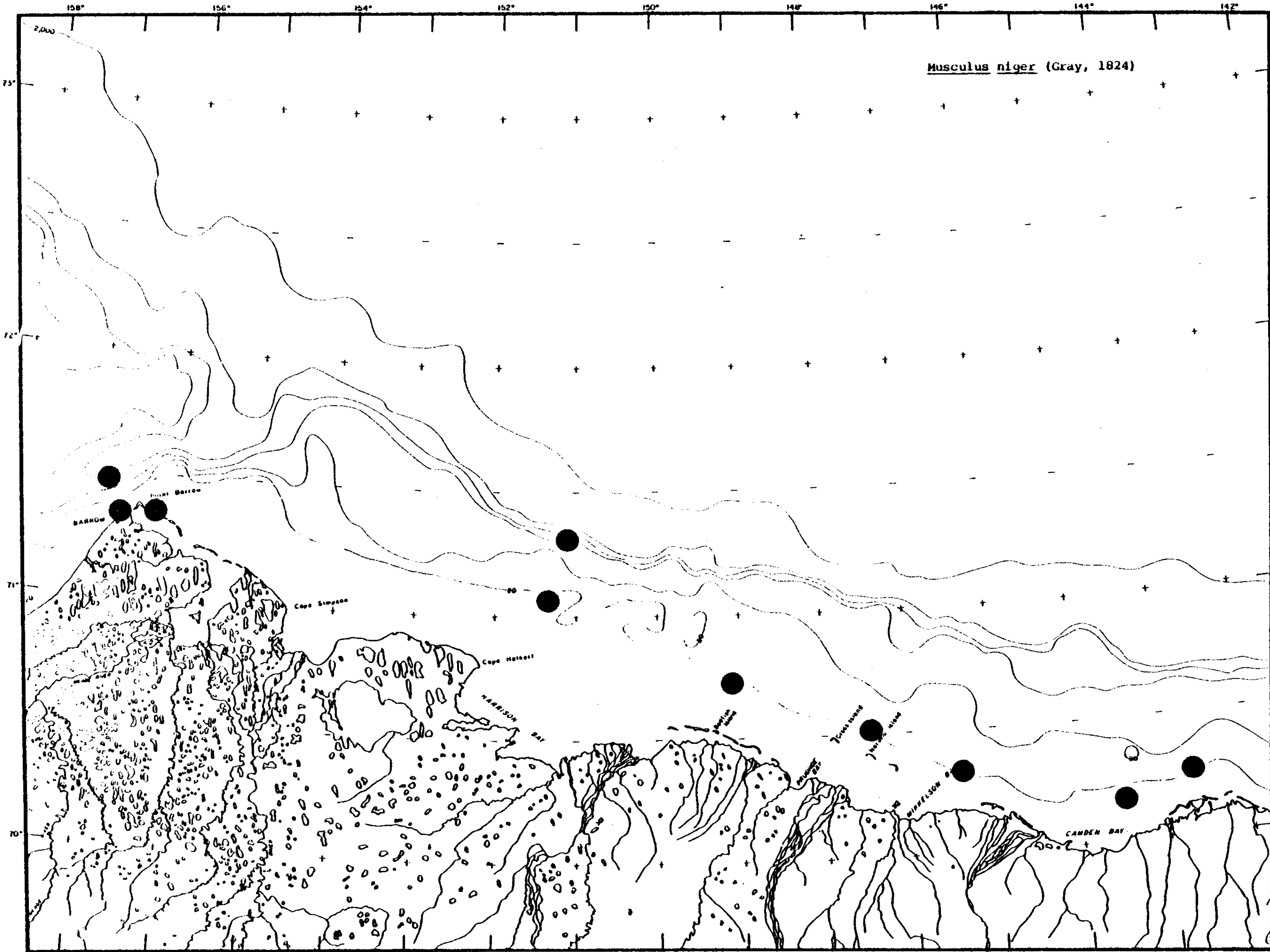

Macoma moesta (Deshayes, 1855)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
73°
72°
71°
70°
158°
156°
154°
152°
150°
148°
146°
144°
142°

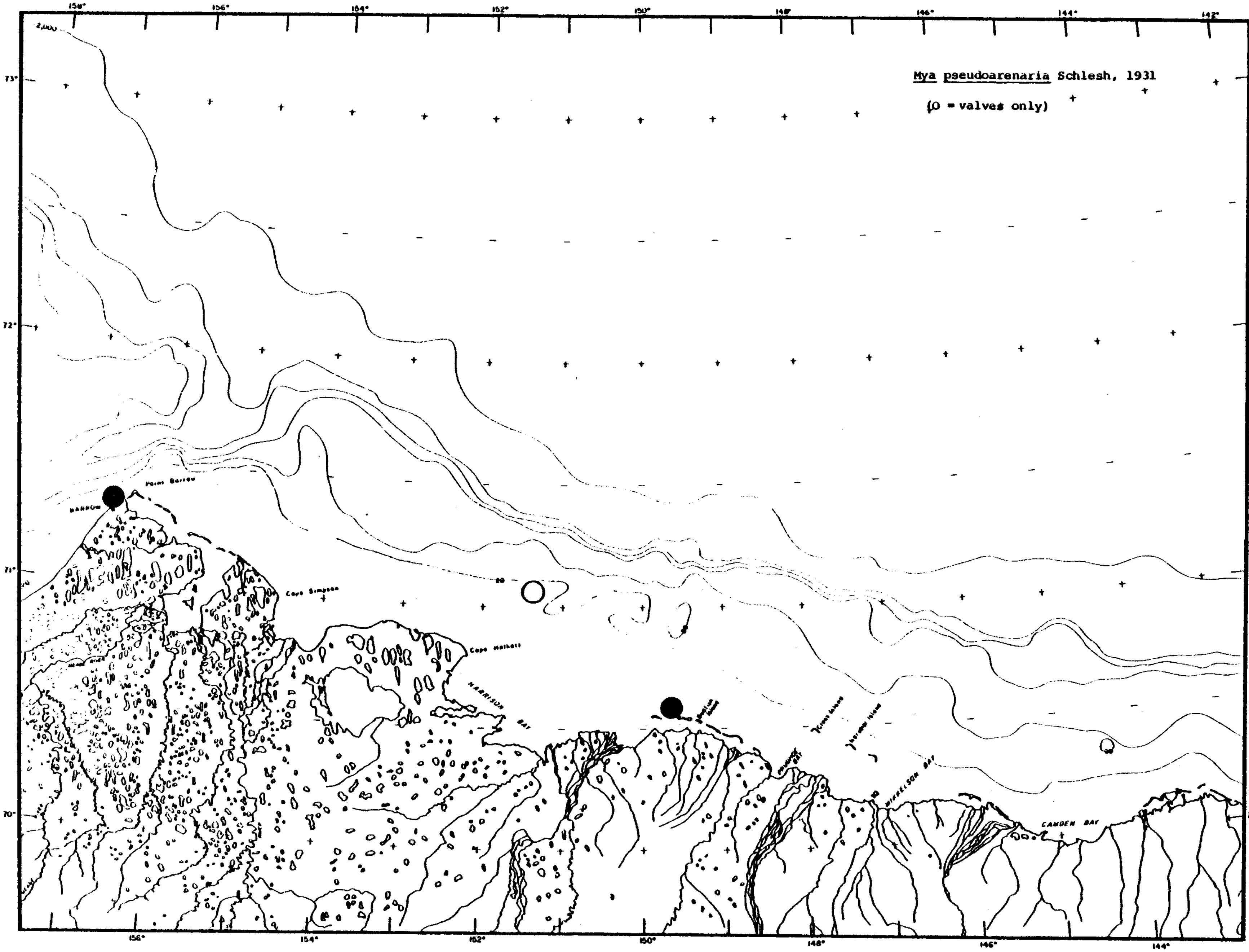

Malletia abyssopolaris Clarke, 1960
+ (valves only)
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

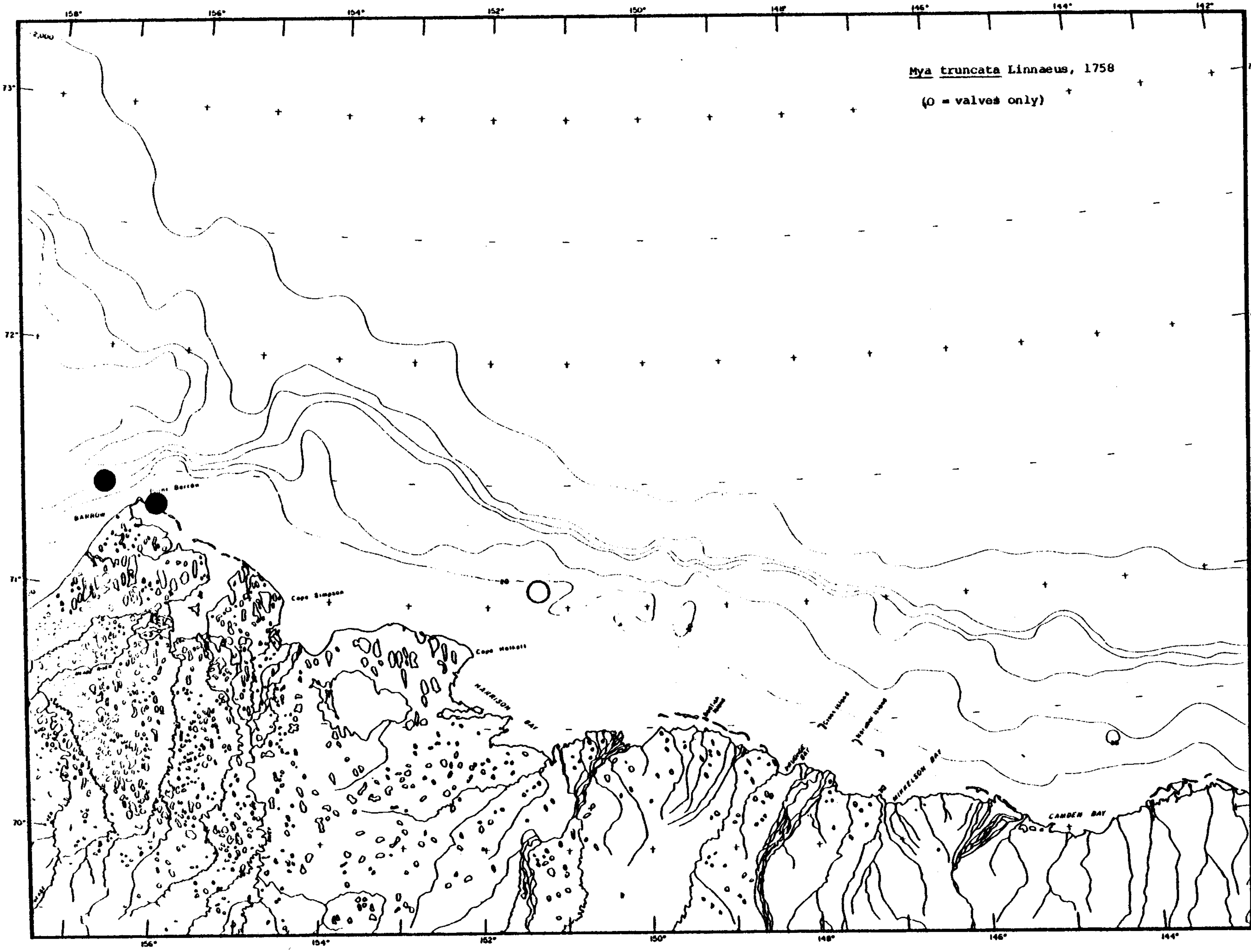

Montacuta dawsoni Jeffreys, 1863
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

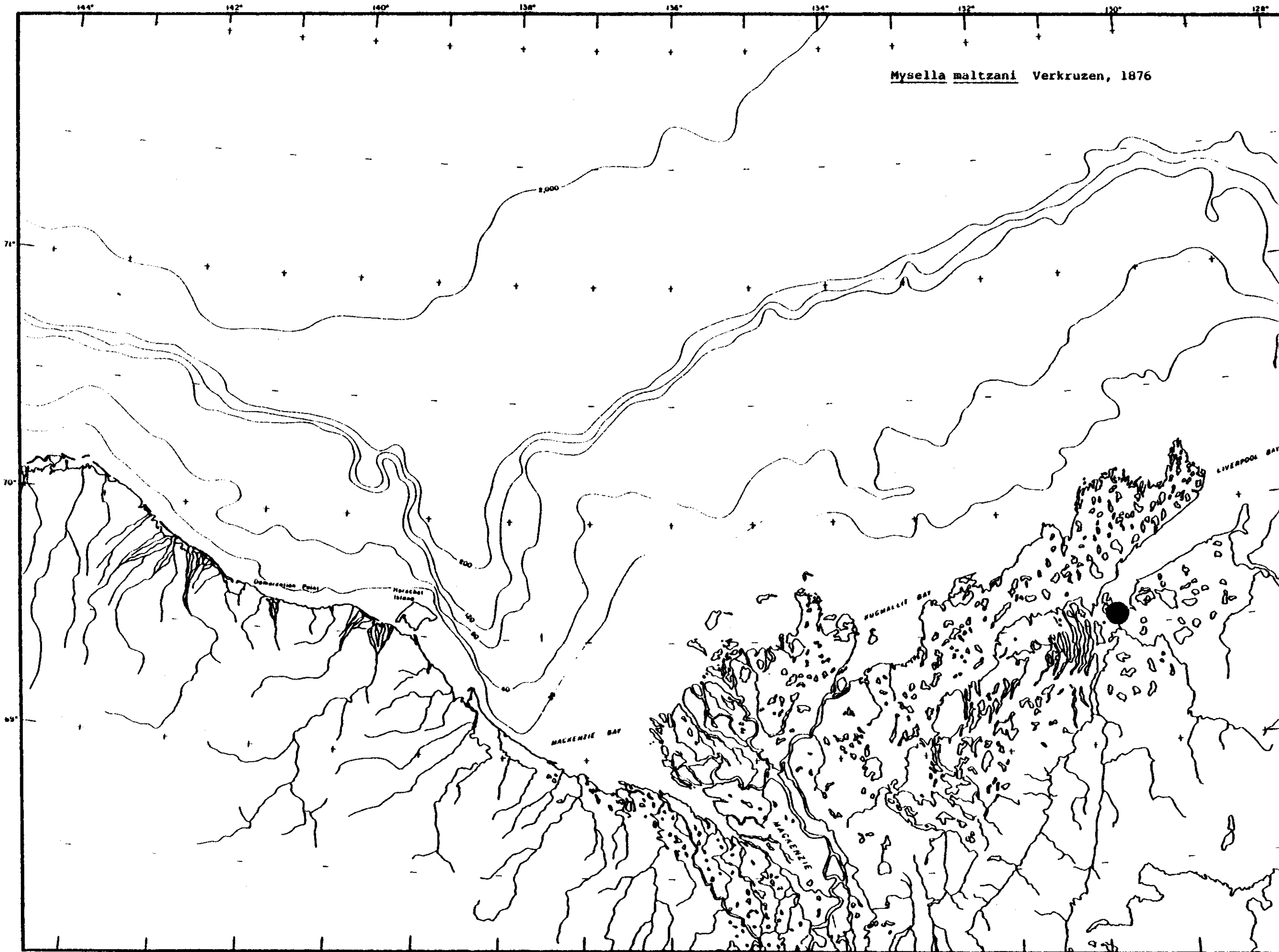

Musculus corrugatus (Stimpson, 1851)
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°
156°
154°
152°
150°
148°
146°
144°
142°

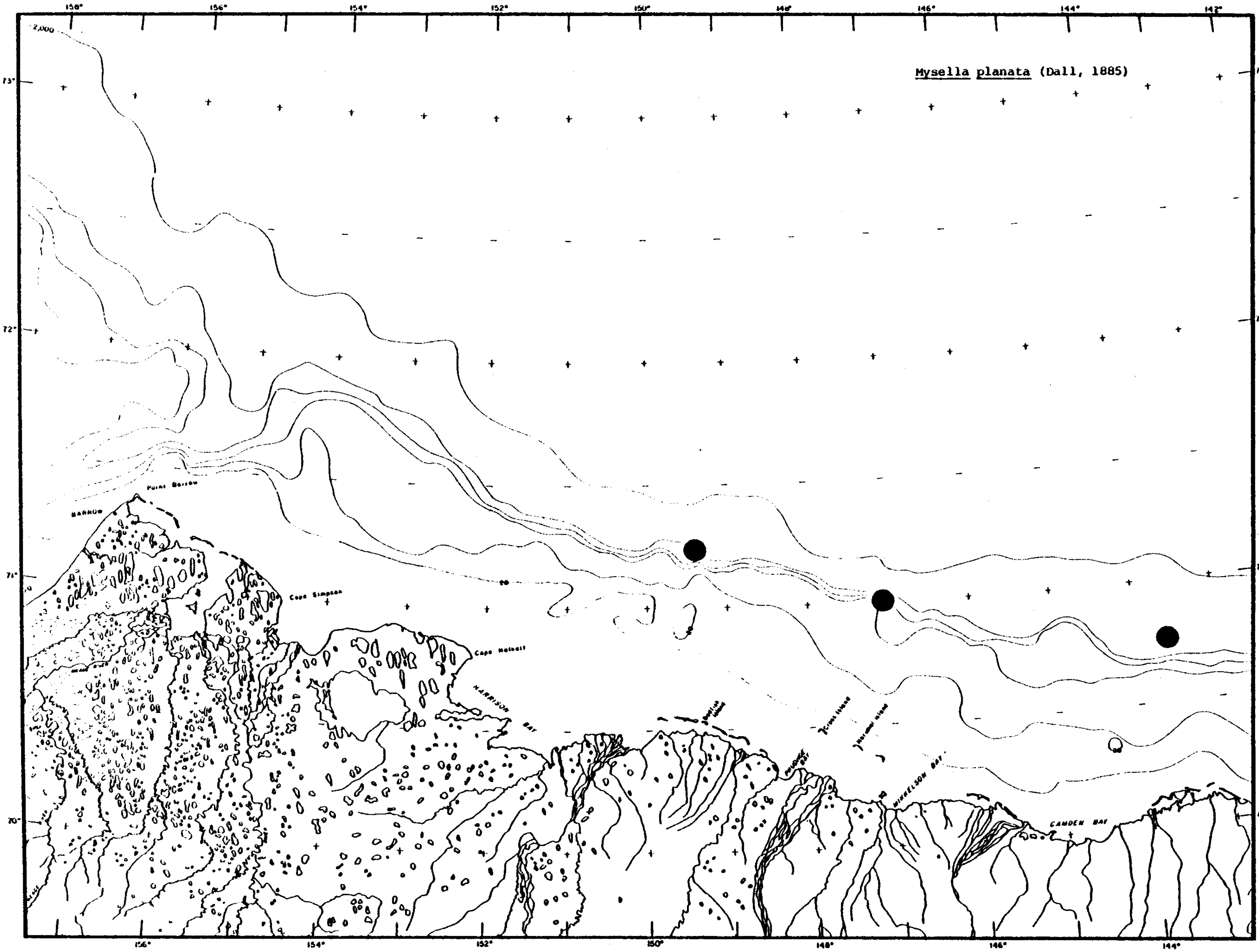

Musculus discors (Linnaeus, 1767)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY

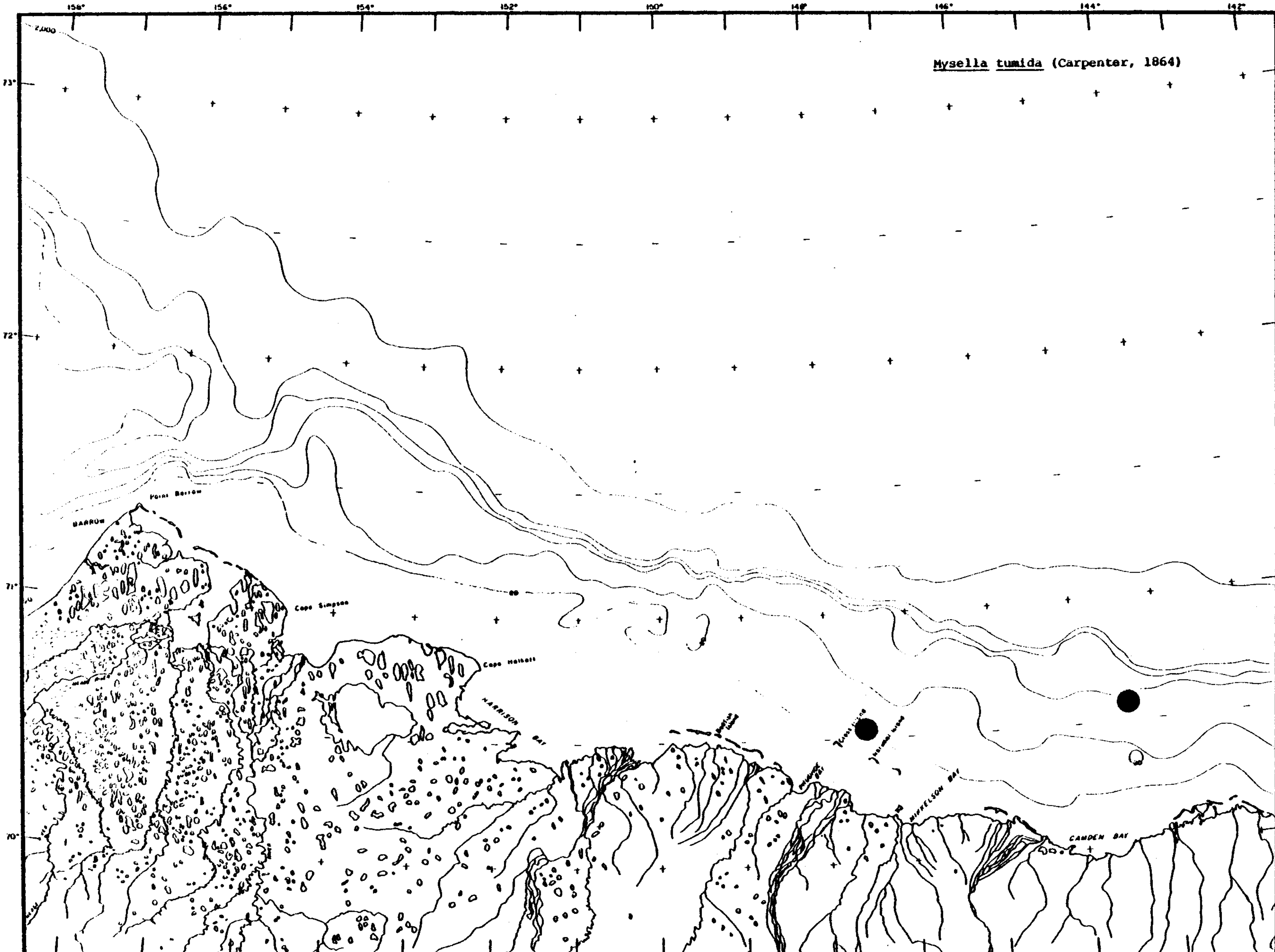

Musculus niger (Gray, 1824)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Mya pseudoarenaria Schlesh, 1931
(O = valves only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°

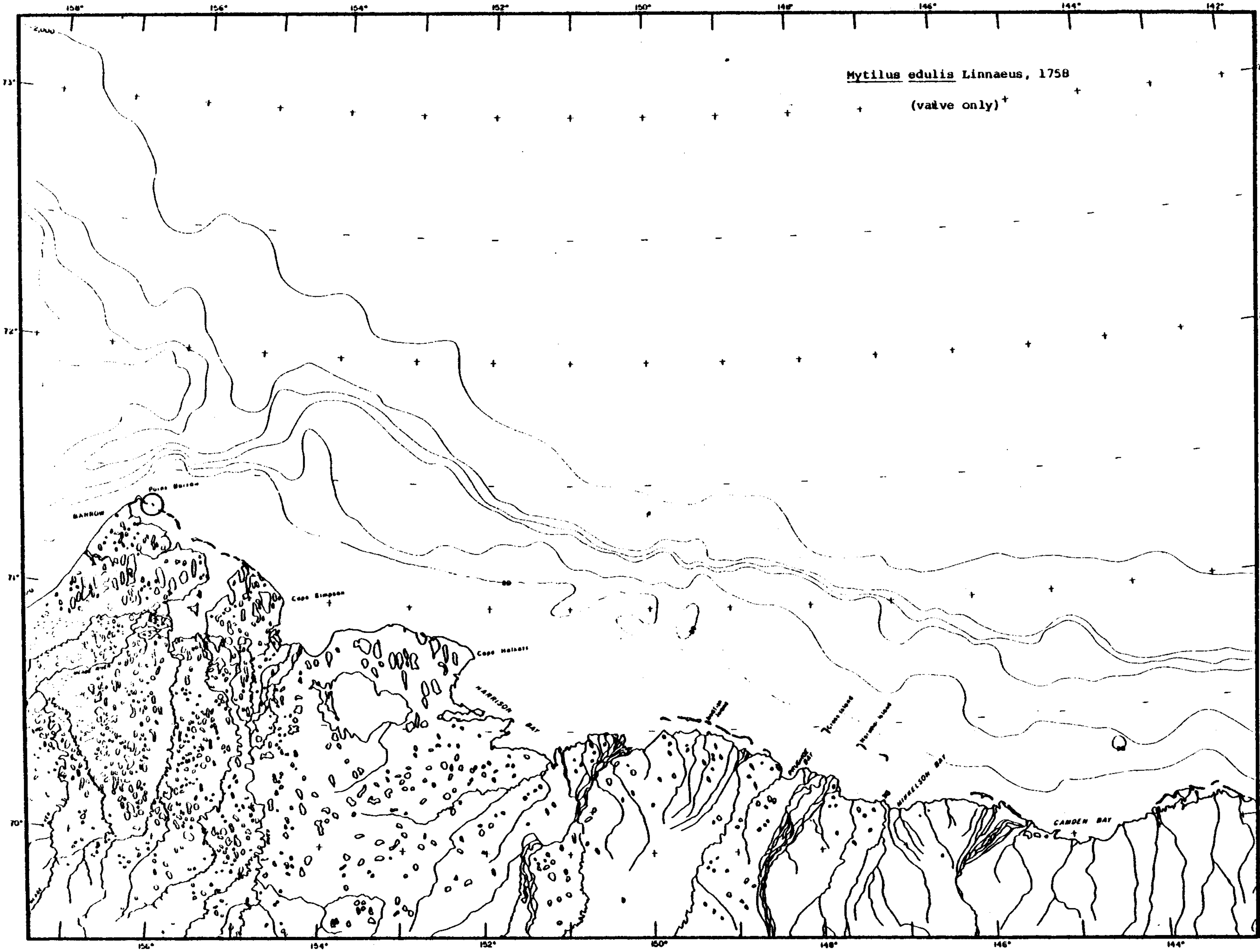

Mya truncata Linnaeus, 1758
(O = valves only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°

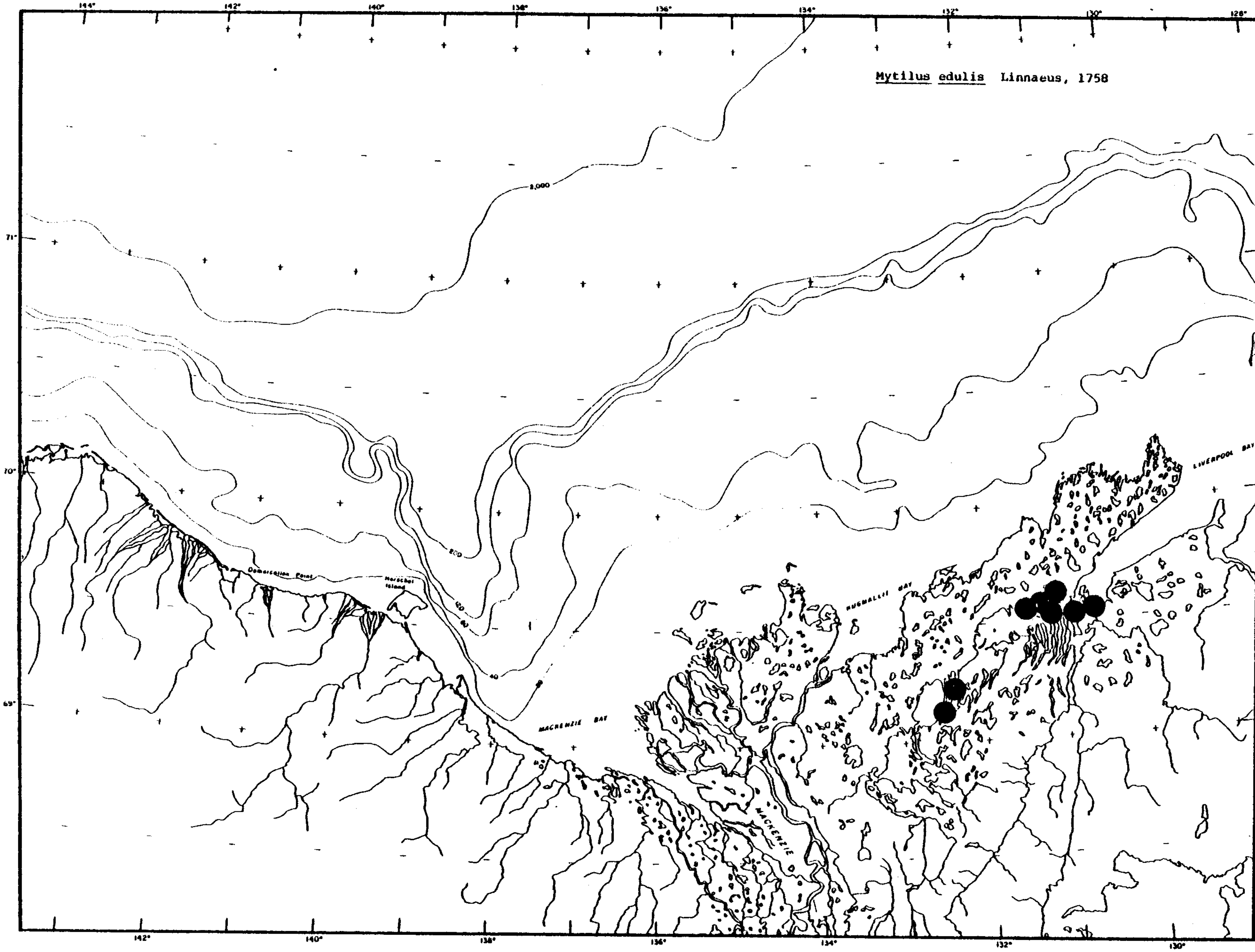

Mysella maltzani Verkruzen, 1876
2,000
200
Demarcation Point
Herschel Island
MACKENZIE BAY
LIVERPOOL BAY

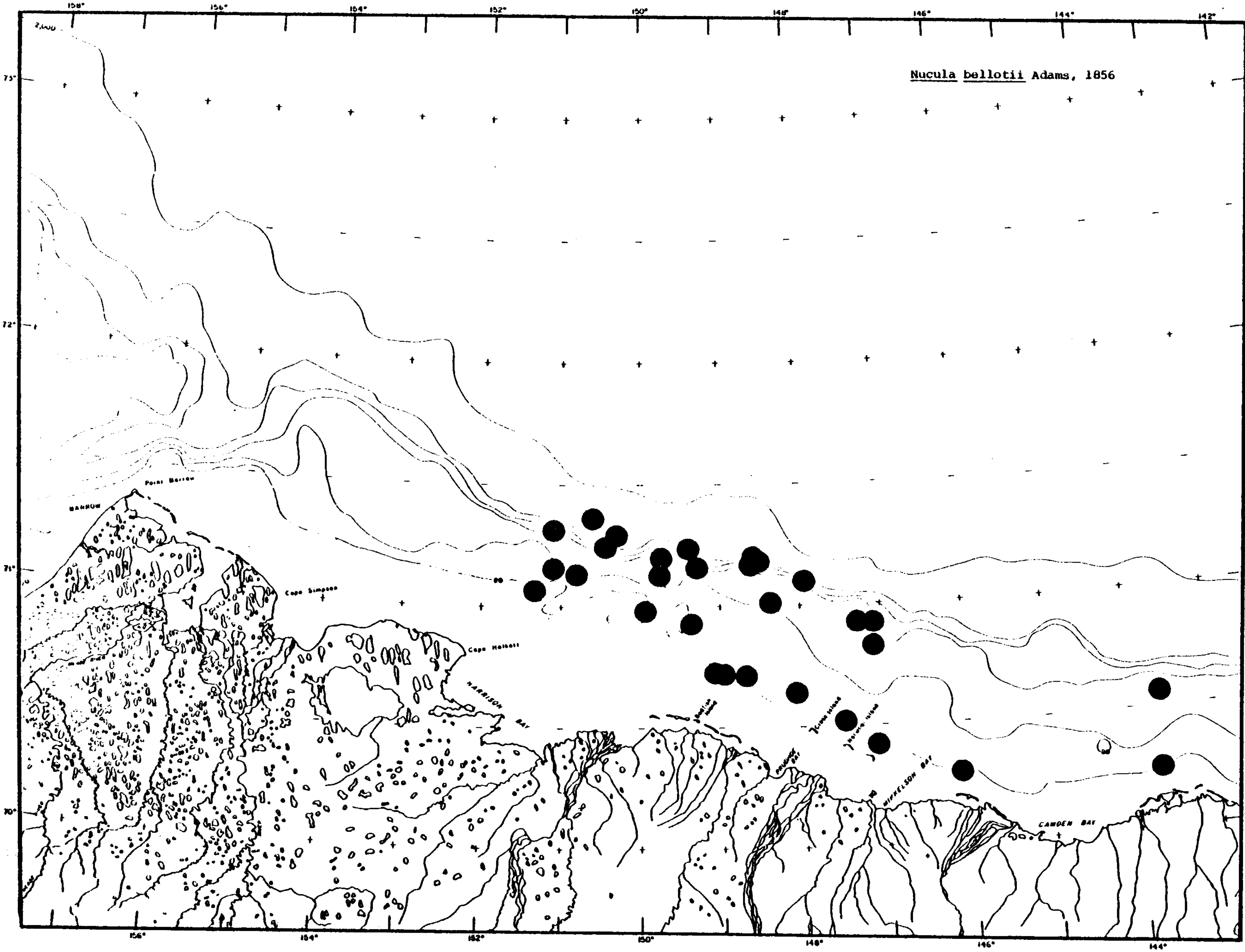

Mysella planata (Dall, 1885)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
2,000
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
PRUDHOE BAY
MIKKELSON BAY
CAMDEN BAY



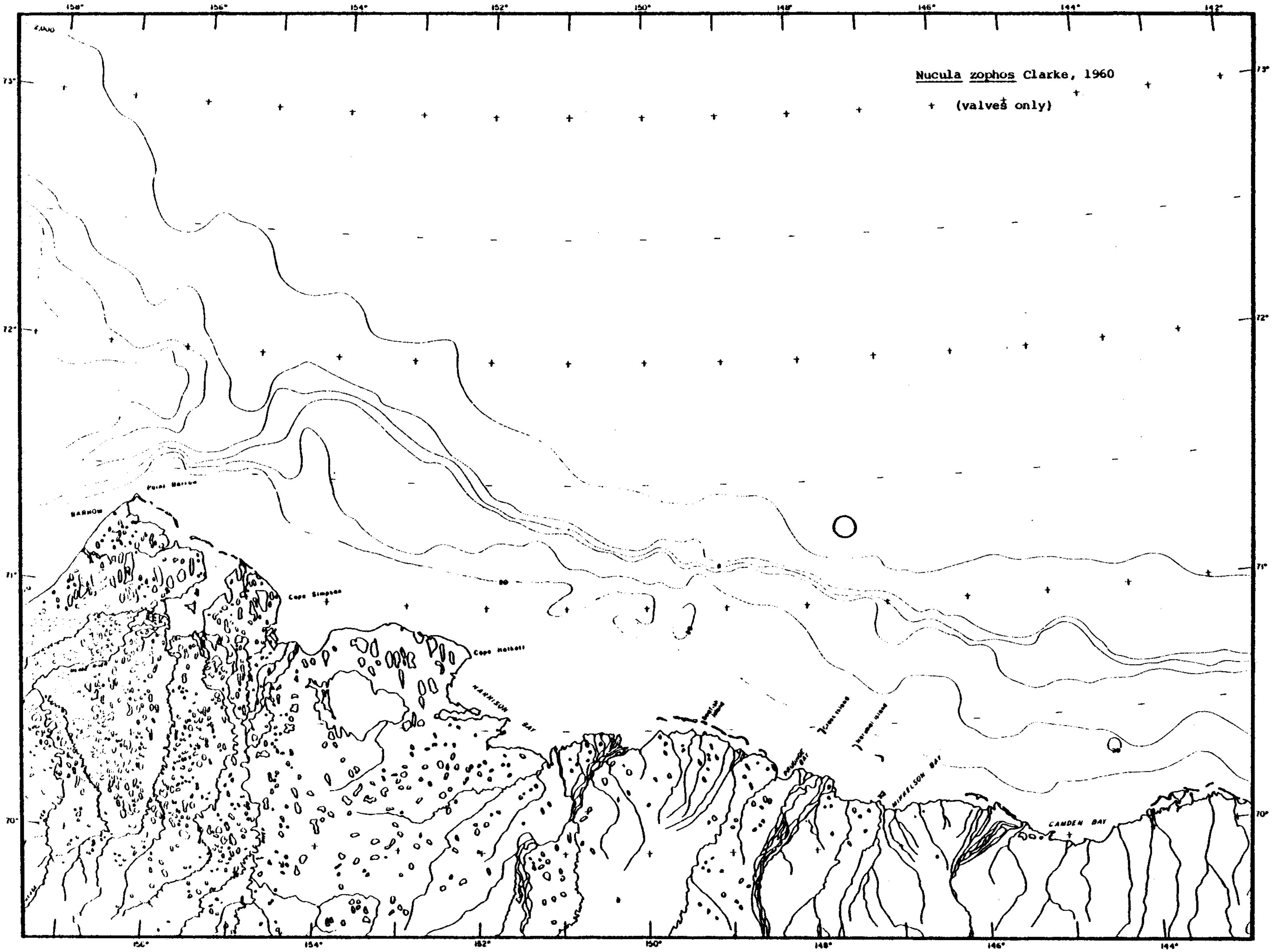
Mysella tumida (Carpenter, 1864)

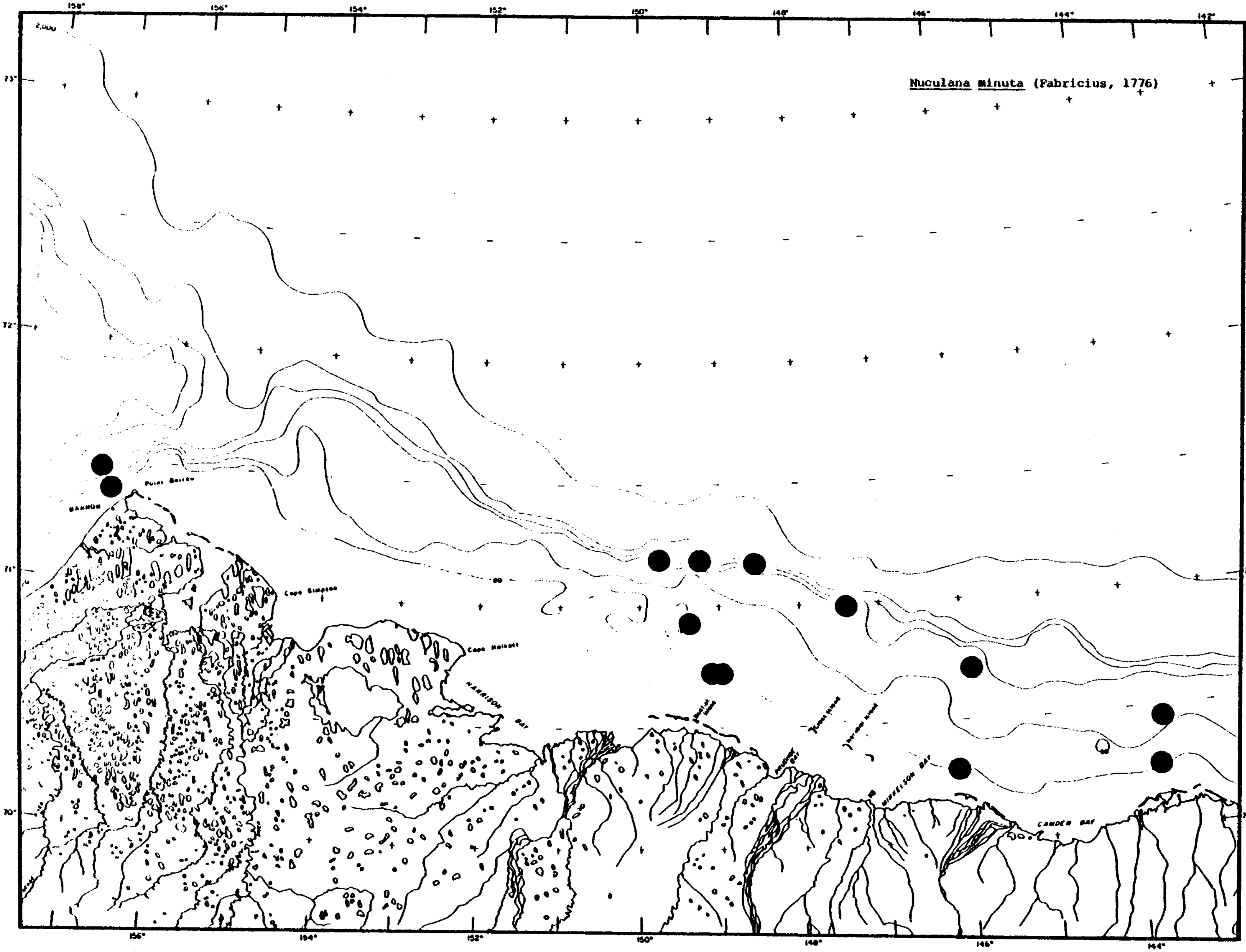

Mytilus edulis Linnaeus, 1758
(valve only)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
PRUDHOE BAY
MIKKELSON BAY
CAMDEN BAY


Mytilus edulis Linnaeus, 1758
144°
142°
140°
138°
136°
134°
132°
130°
128°
71°
70°
69°
2,000
200
MACKENZIE BAY
KUGMALLIT BAY
LIVERPOOL BAY
MACKENZIE

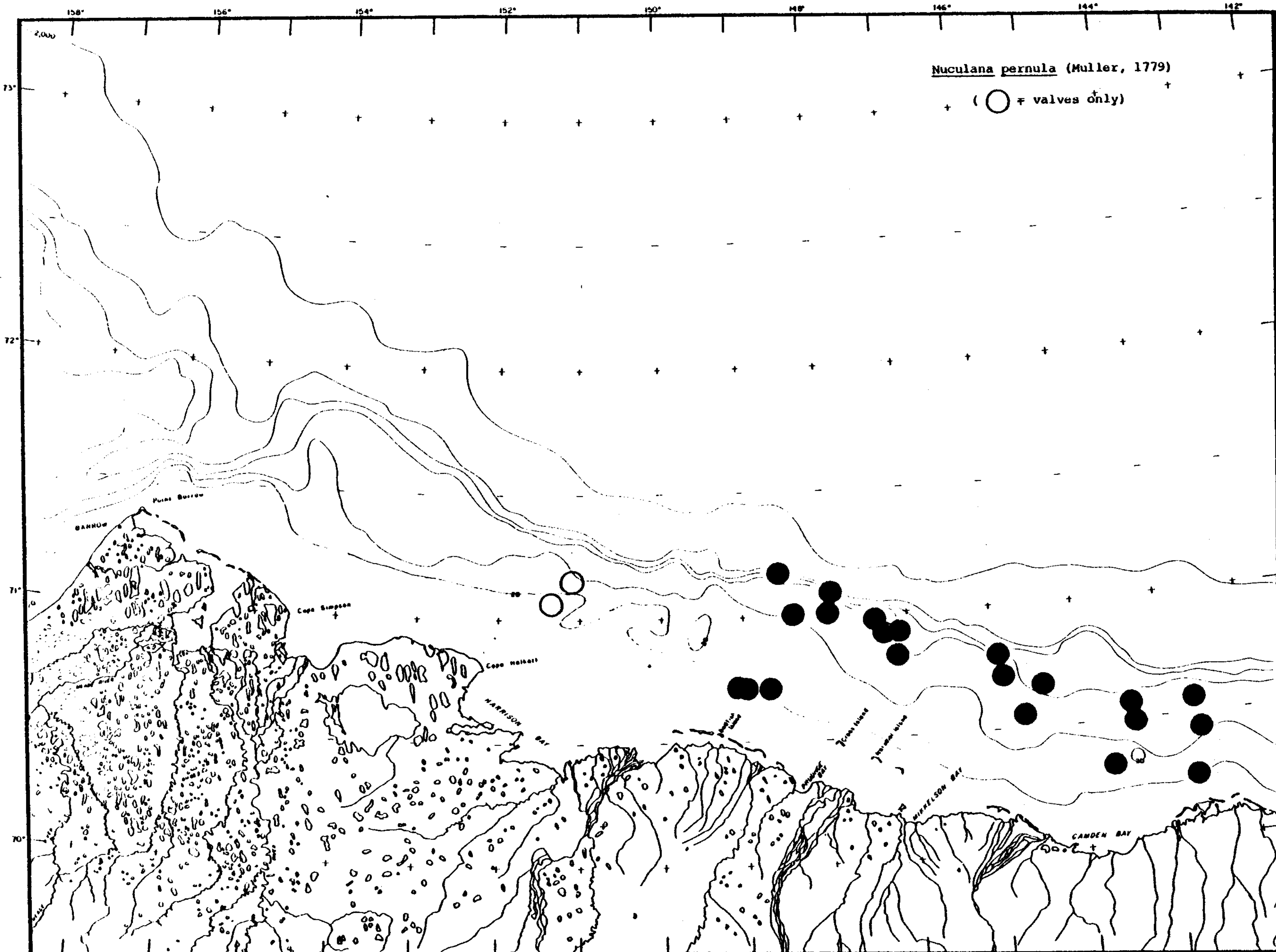


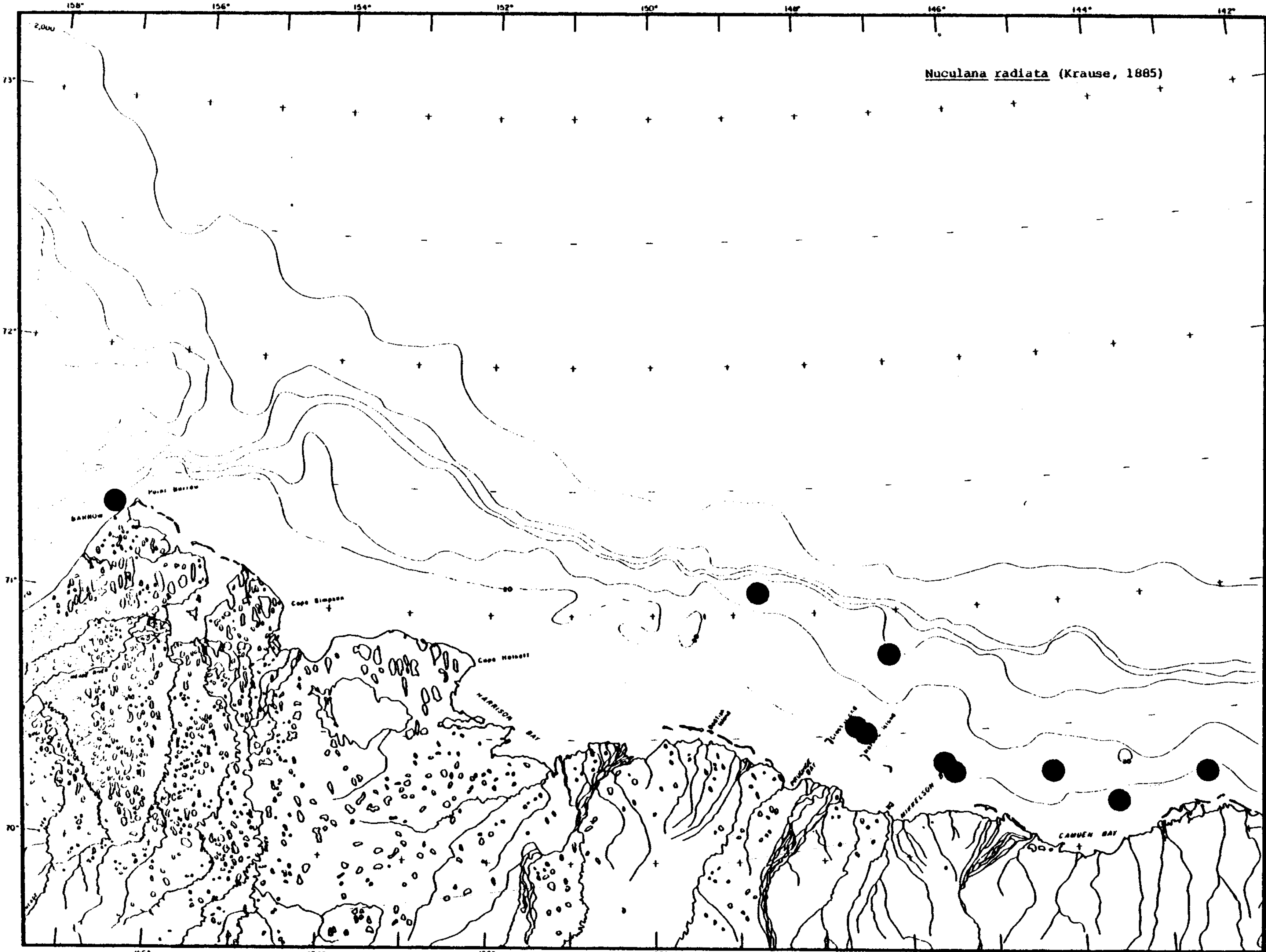
Nucula bellotii Adams, 1856

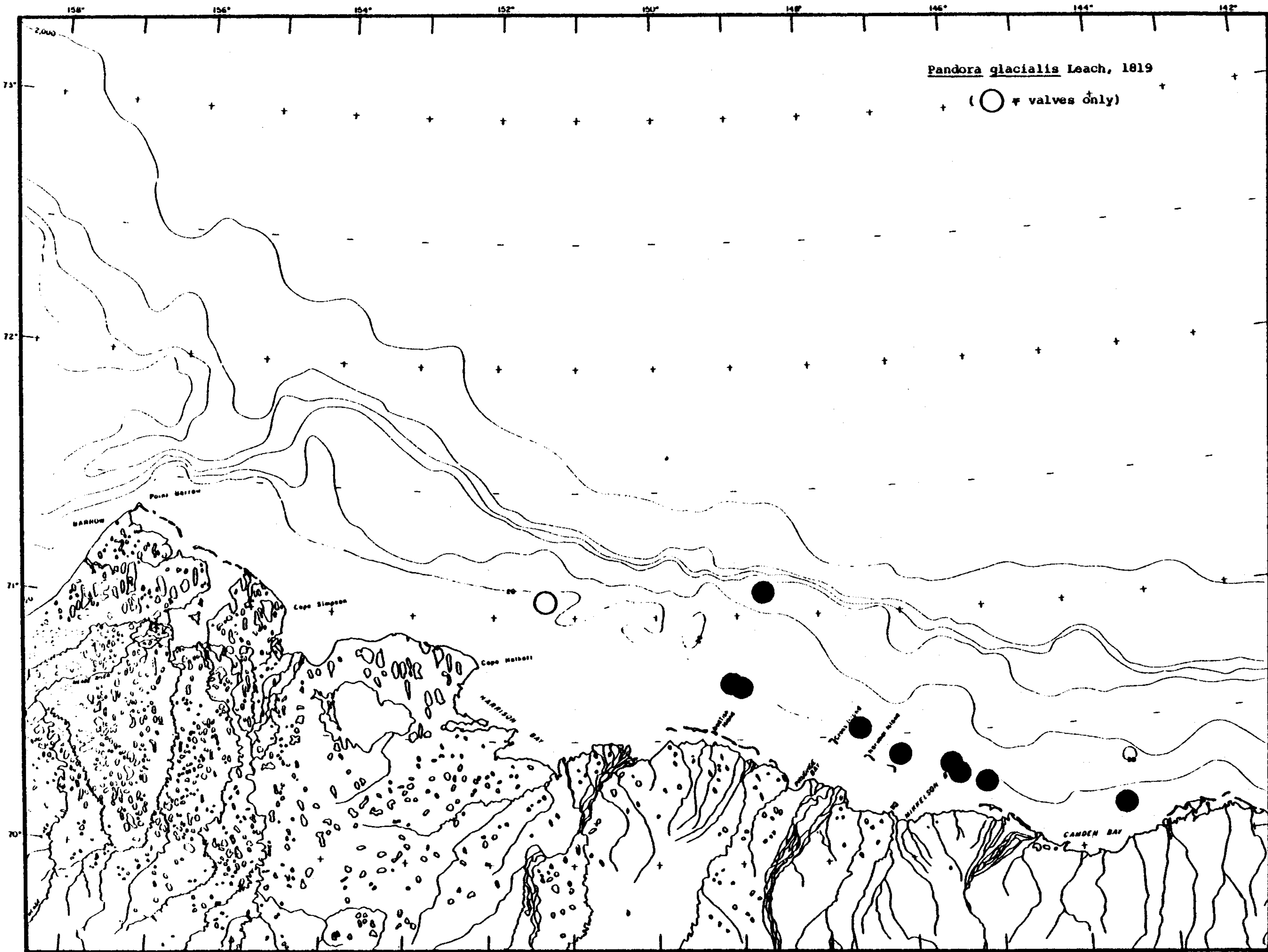

Nucula zophos Clarke, 1960
+ (valves only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°

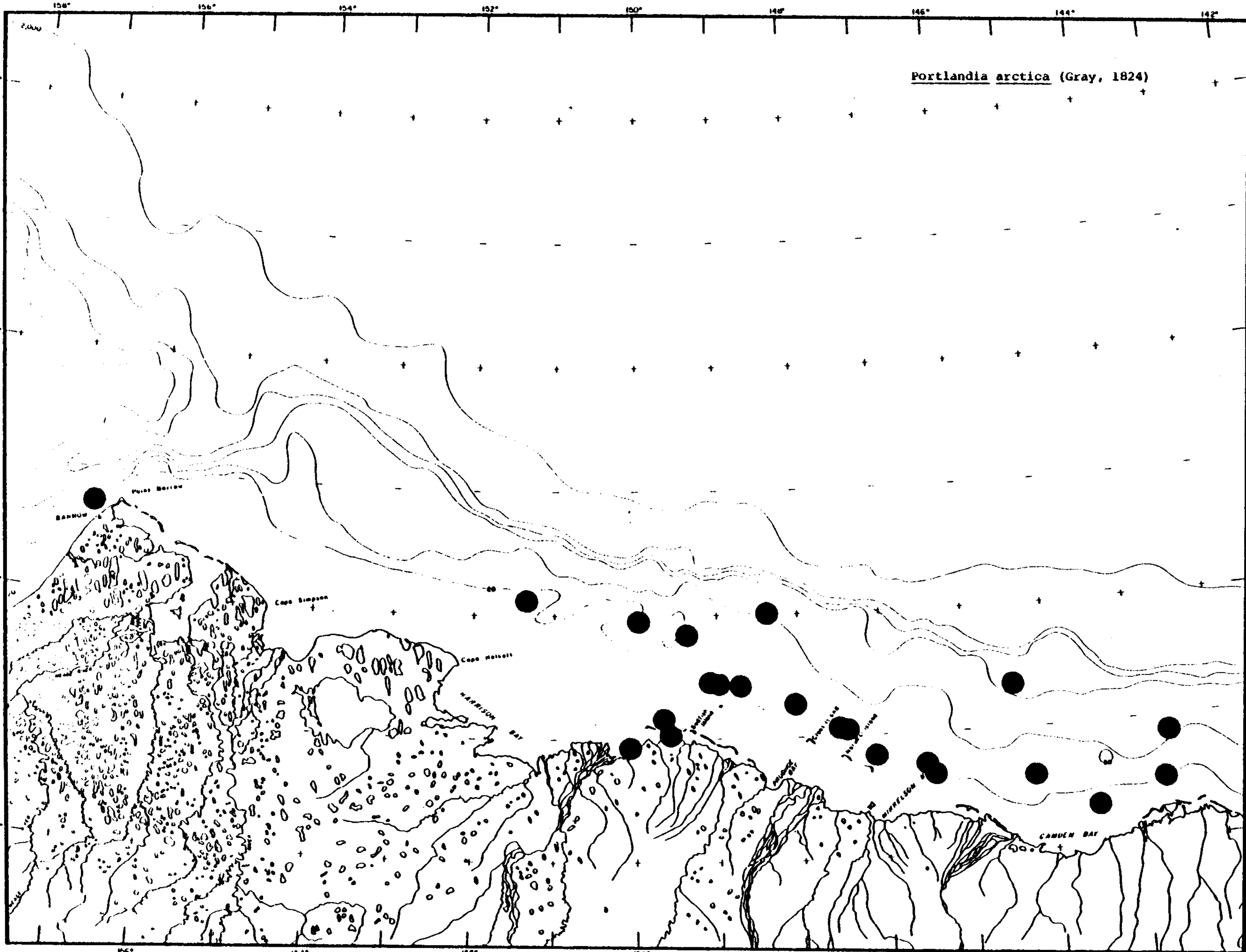


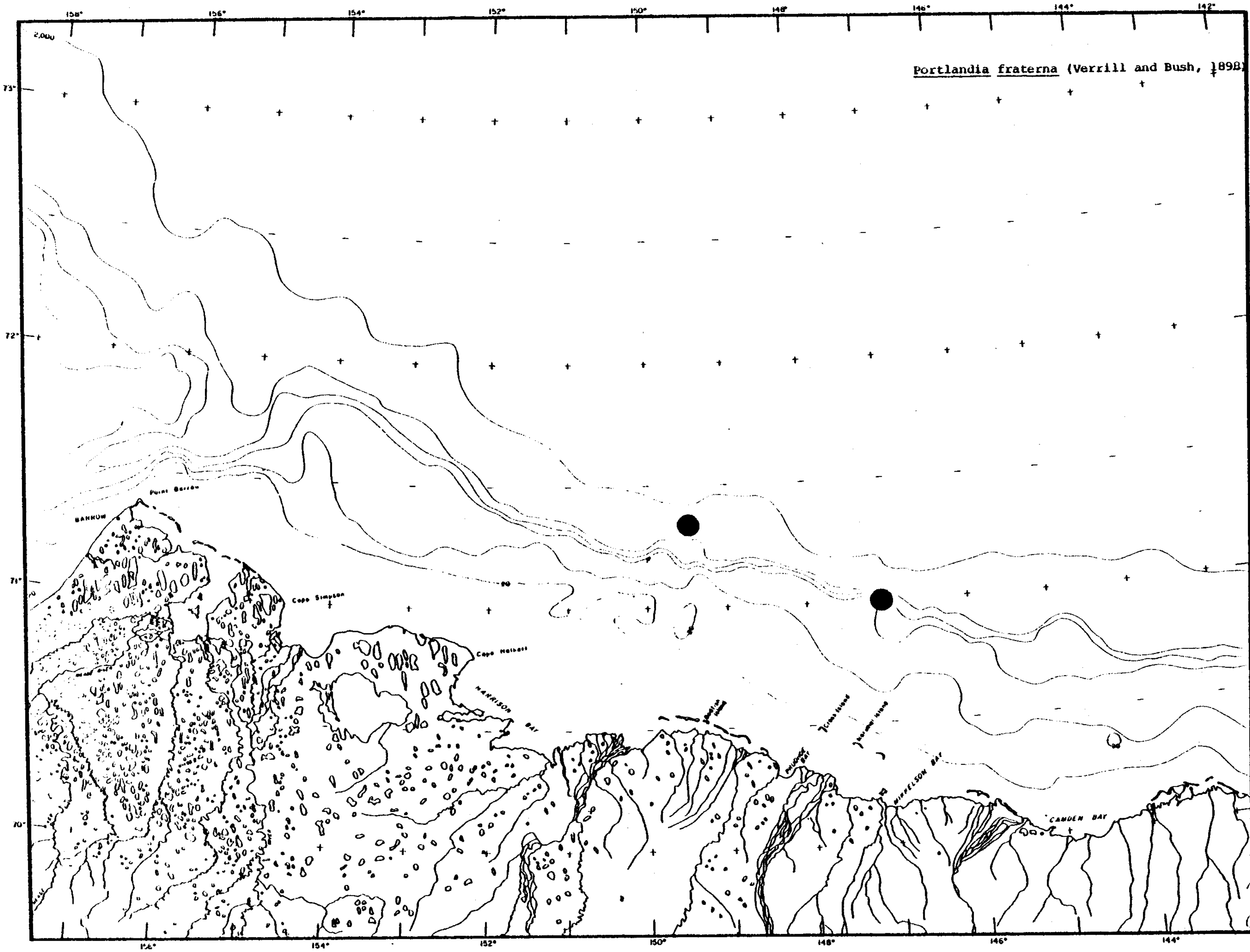
Nuculana minuta (Fabricius, 1776)

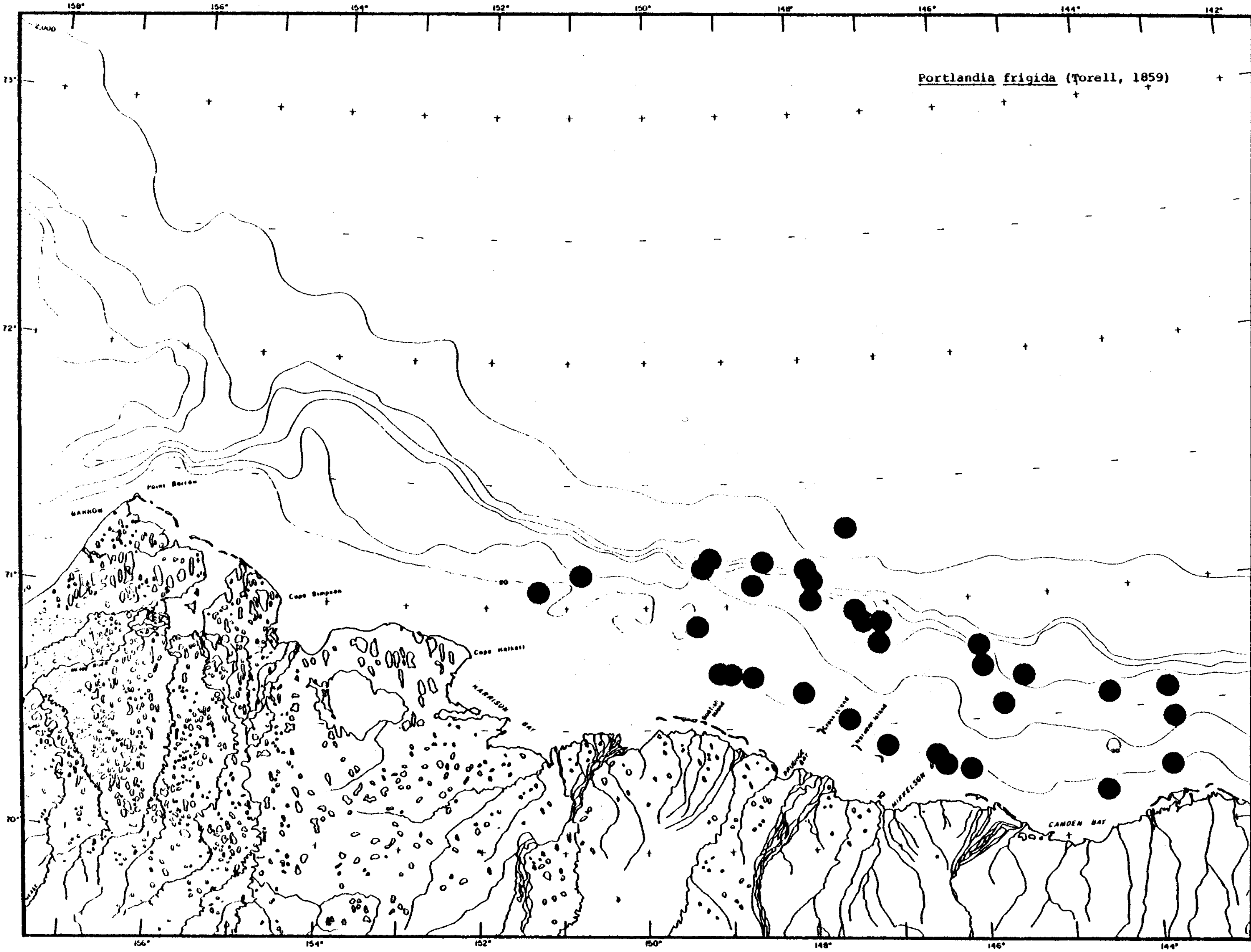

Nuculana pernula (Muller, 1779)
(○ = valves only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY

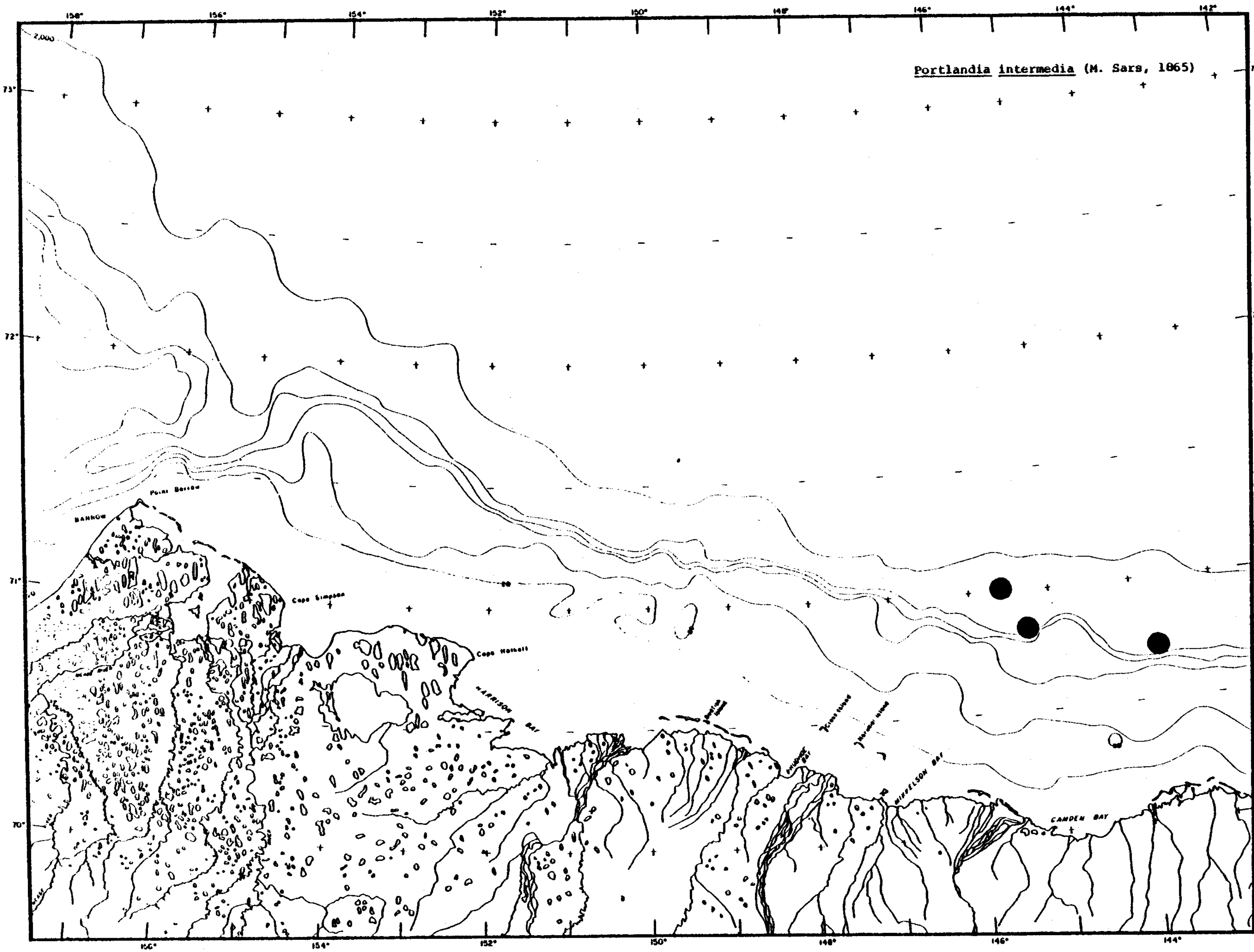

Nuculana radiata (Krause, 1885)
Point Barrow
Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°

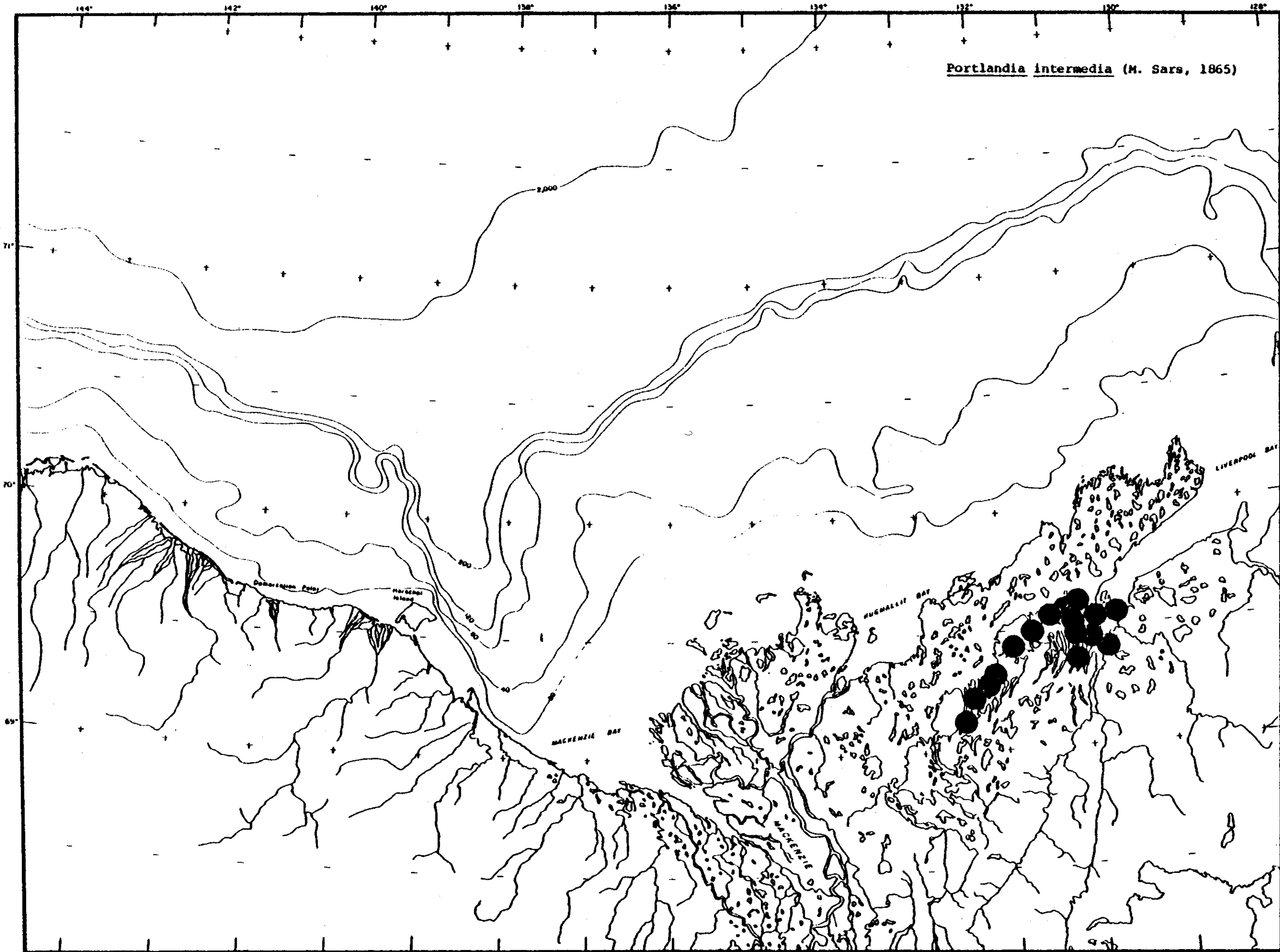

Pandora glacialis Leach, 1819
(○ = valves only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON
CAMDEN BAY
73°
72°
71°
70°
158°
156°
154°
152°
150°
148°
146°
144°
142°

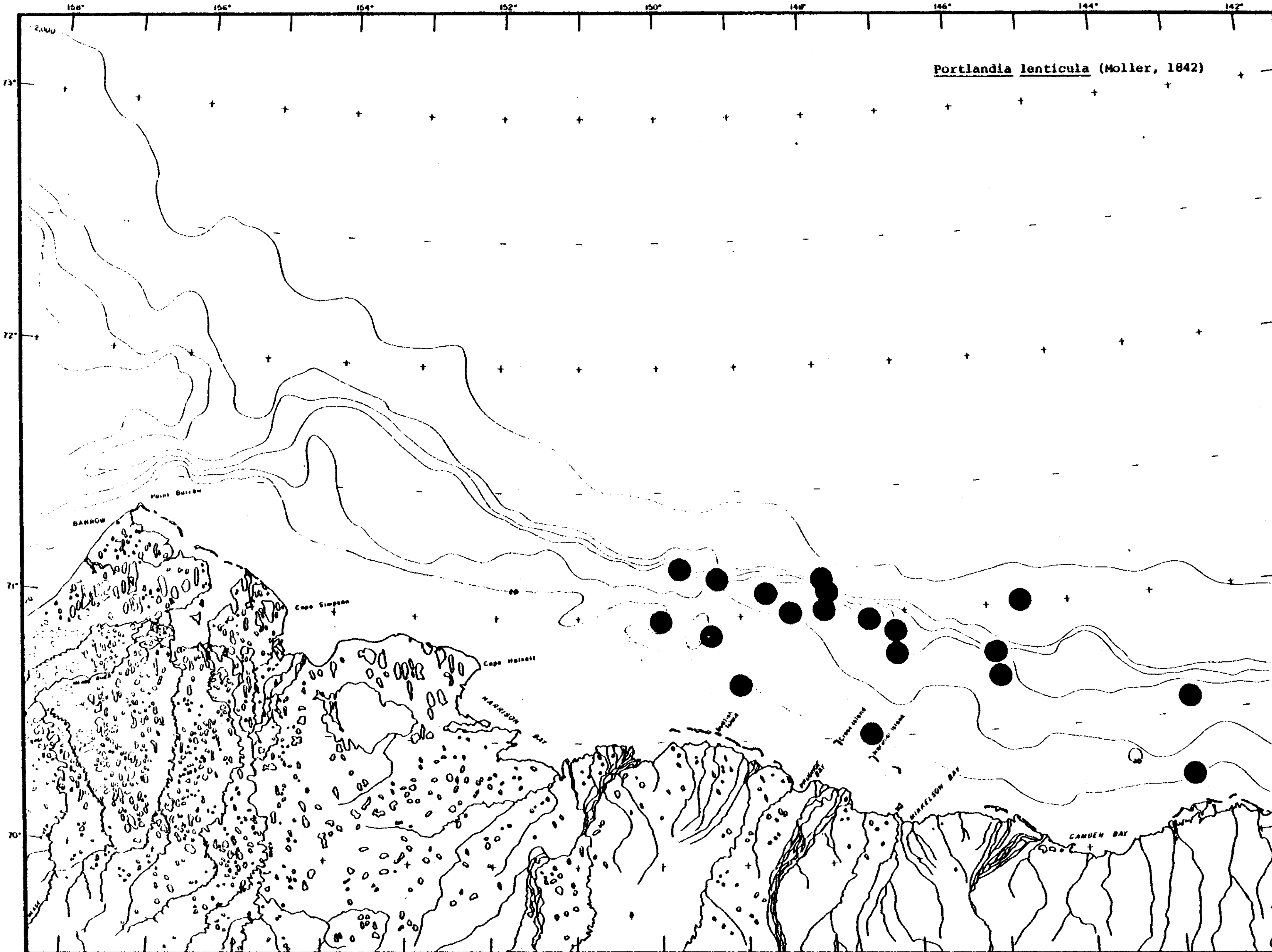

Portlandia arctica (Gray, 1824)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°
158°
156°
154°
152°
150°
148°
146°
144°
142°

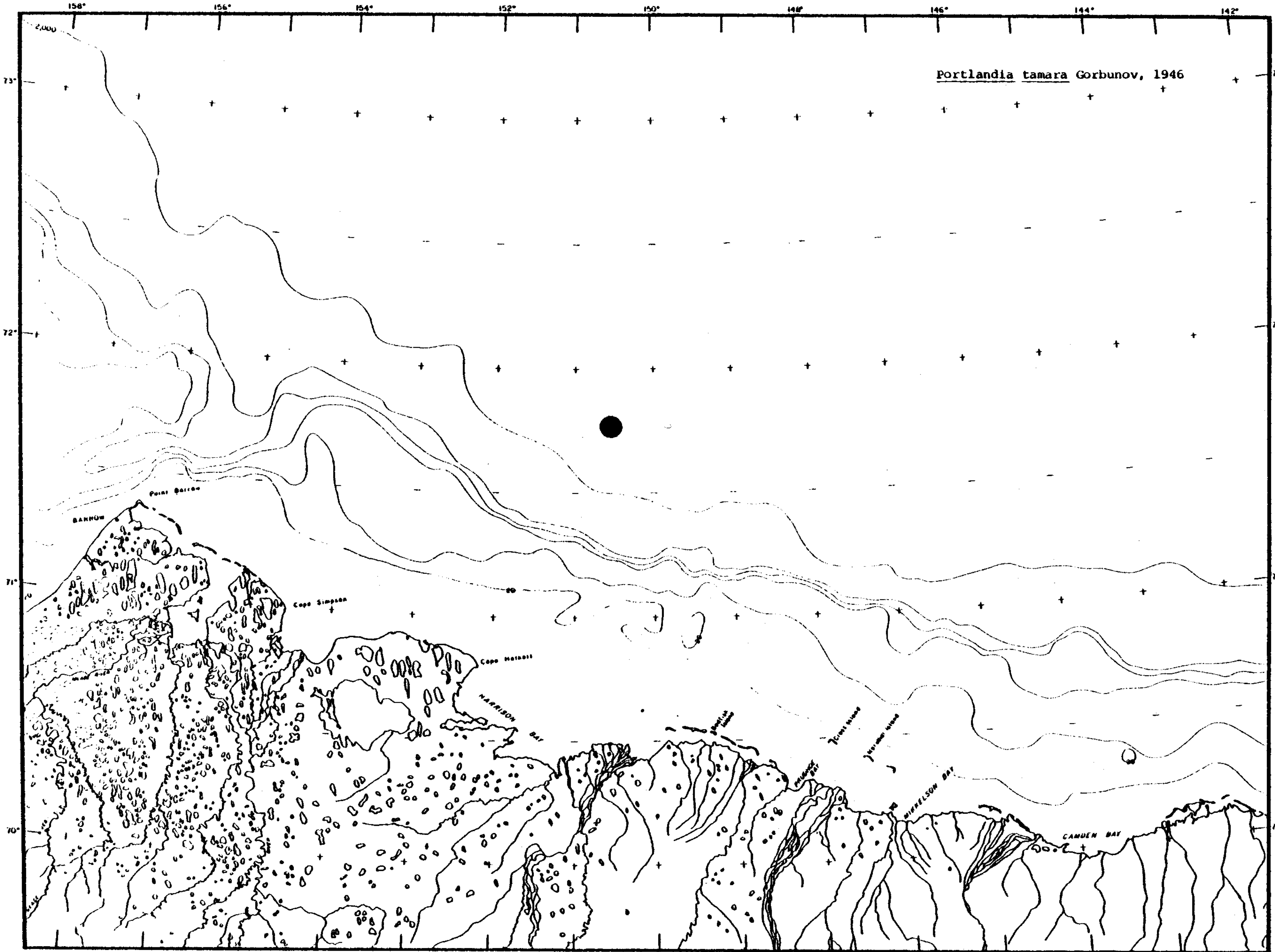

Portlandia fraterna (Verrill and Bush, 1898)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
MIKKELSON BAY
CAMDEN BAY
73°
72°
71°
70°
158°
156°
154°
152°
150°
148°
146°
144°
142°

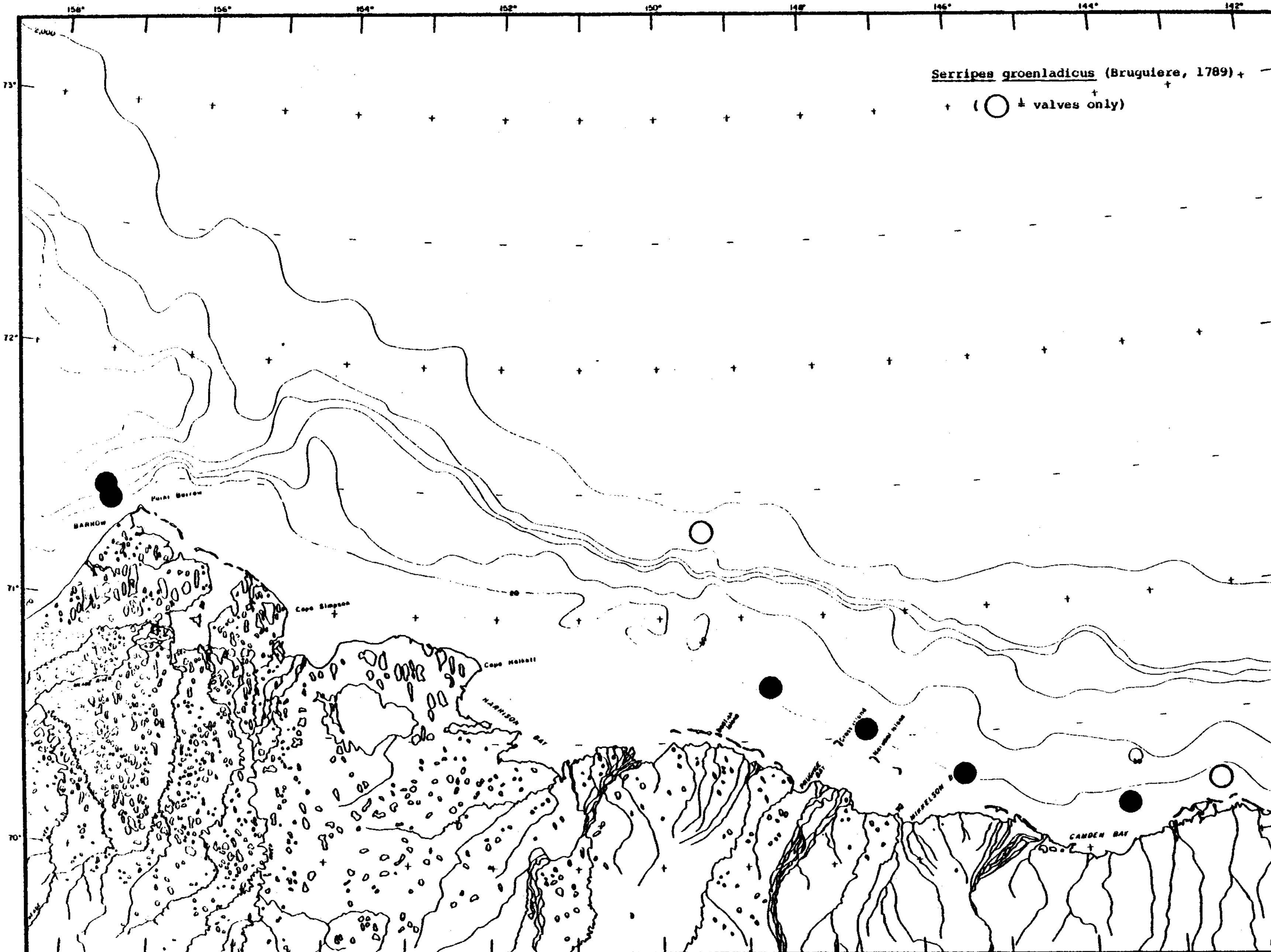

Portlandia frigida (Torell, 1859)
Point Barrow
Cape Simpson
Cape Halkett
Harrison Bay
Camden Bay
156°
154°
152°
150°
148°
146°
144°
142°
72°
71°
70°

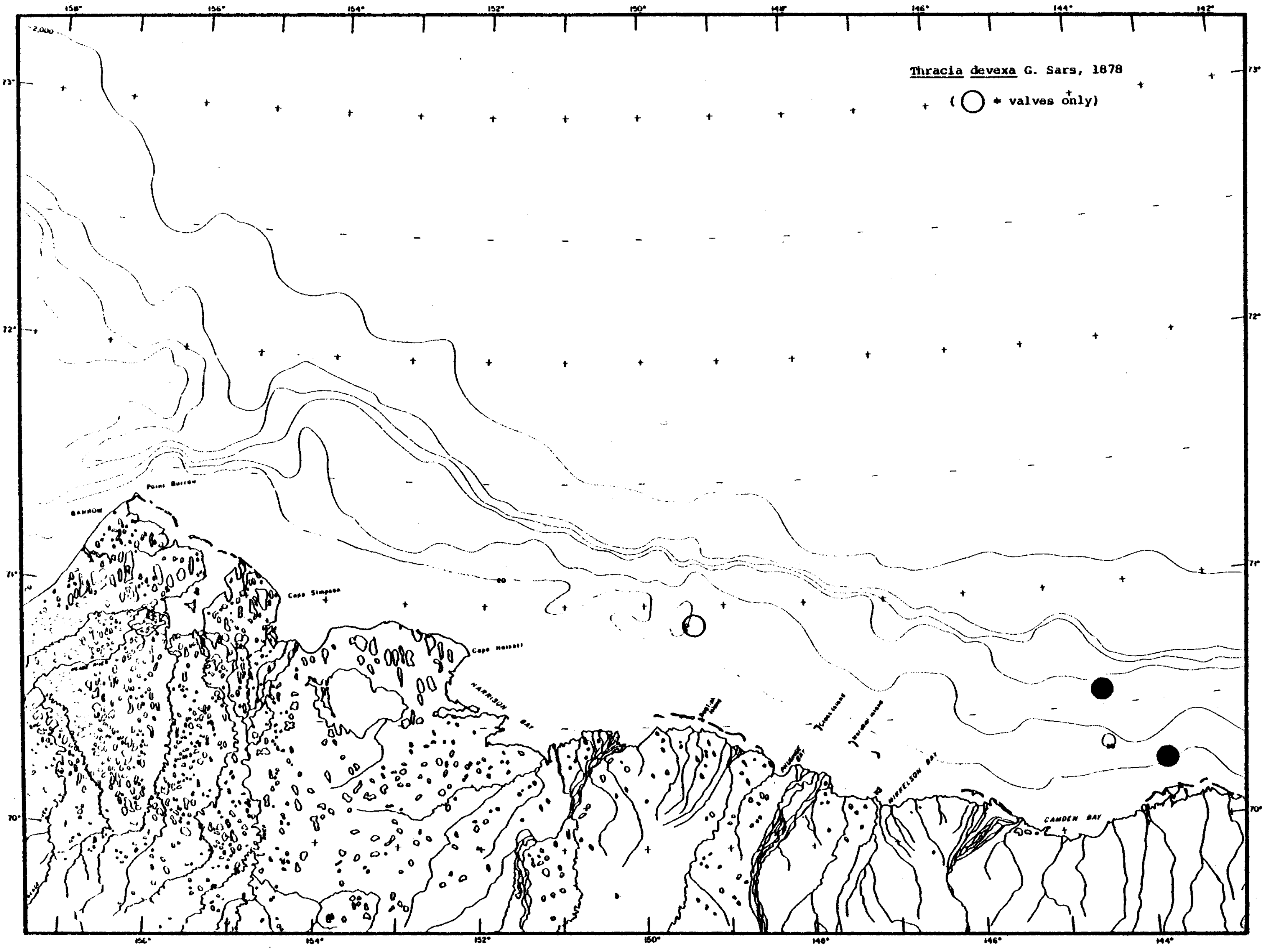

Portlandia intermedia (M. Sars, 1865)
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
2,000
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Portlandia intermedia (M. Sars, 1865)
144°
142°
140°
138°
136°
134°
132°
130°
128°
71°
70°
69°
2,000
800
MACKENZIE BAY
LIVERPOOL BAY
MACKENZIE

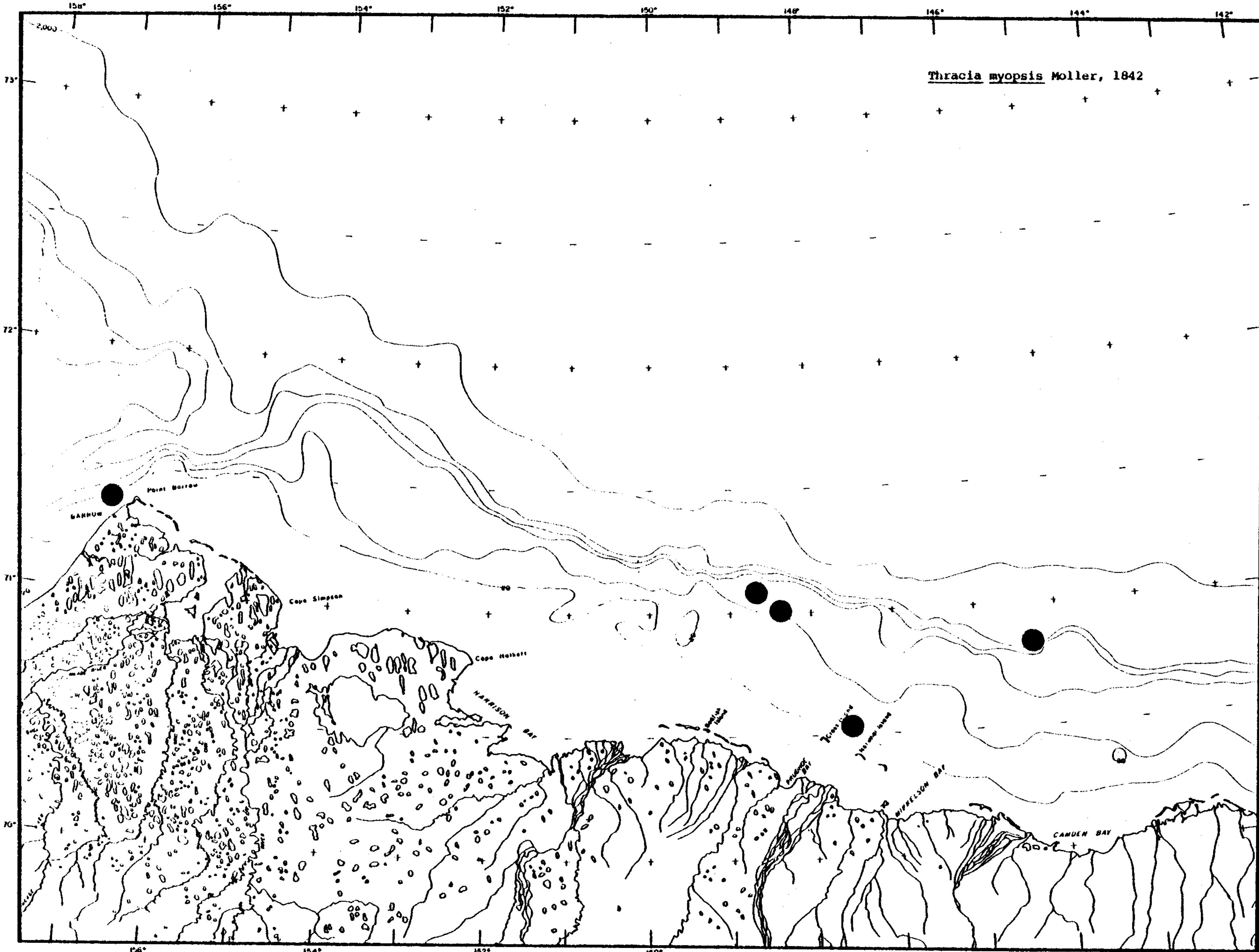

Portlandia lenticula (Moller, 1842)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°
158°
156°
154°
152°
150°
148°
146°
144°
142°


Portlandia tamara Gorbunov, 1946
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
2,000
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Serripes groenladicus (Bruguiere, 1789)
(○ ± valves only)
BARROW
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
73°
72°
71°
70°
156°
154°
152°
150°
148°
146°
144°
142°

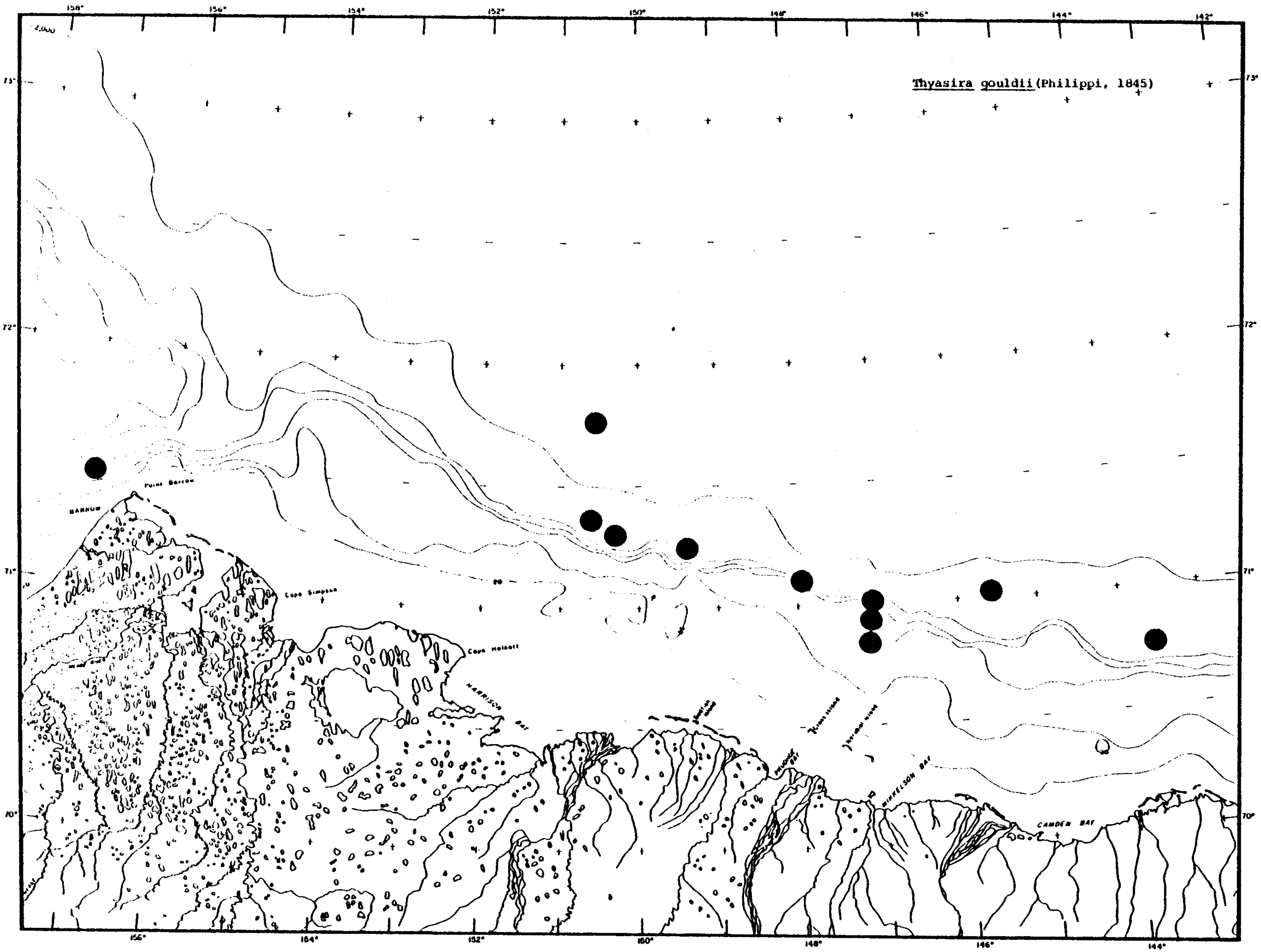

Thracia devexa G. Sars, 1878
(○ = valves only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY

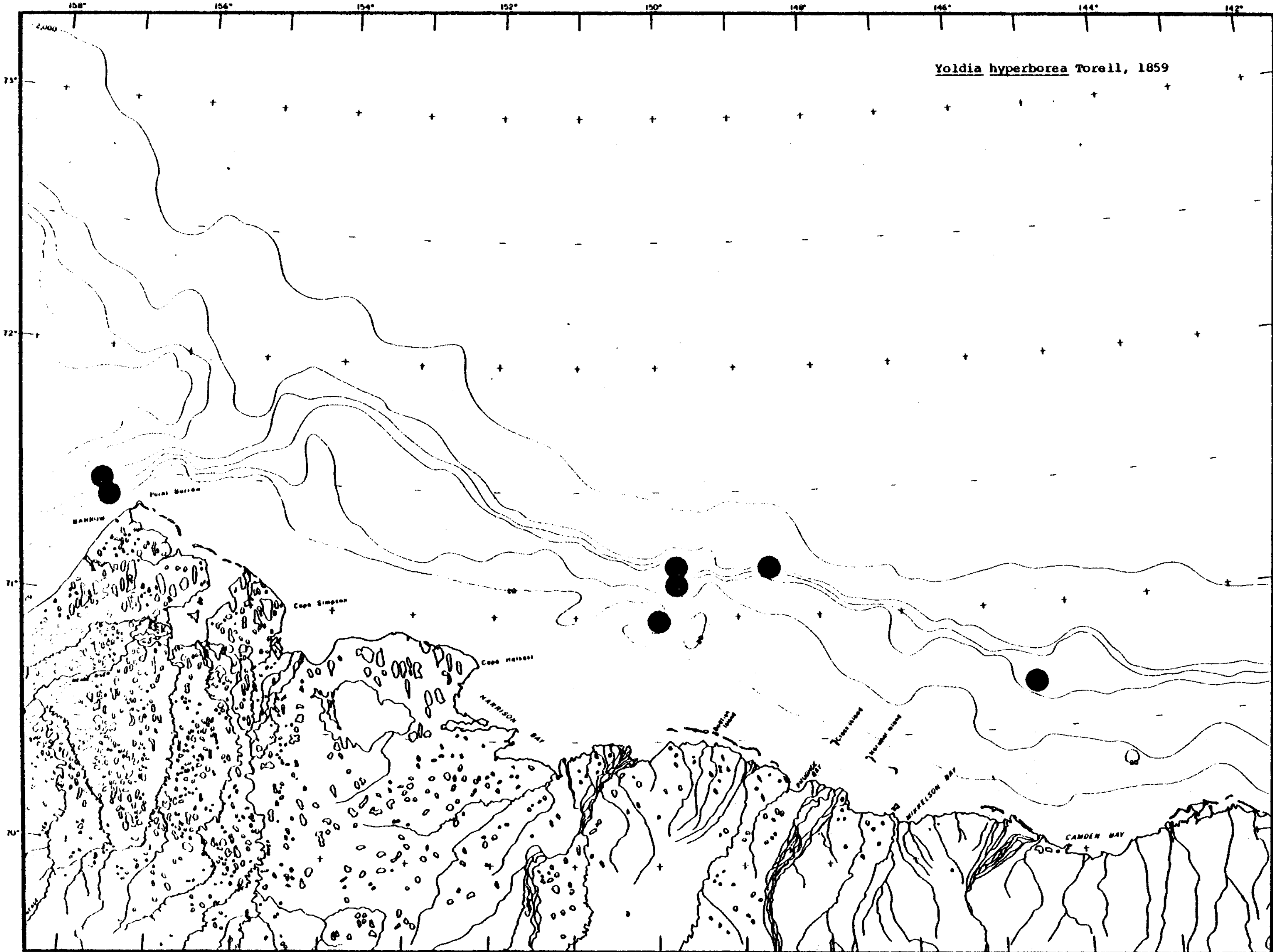
584

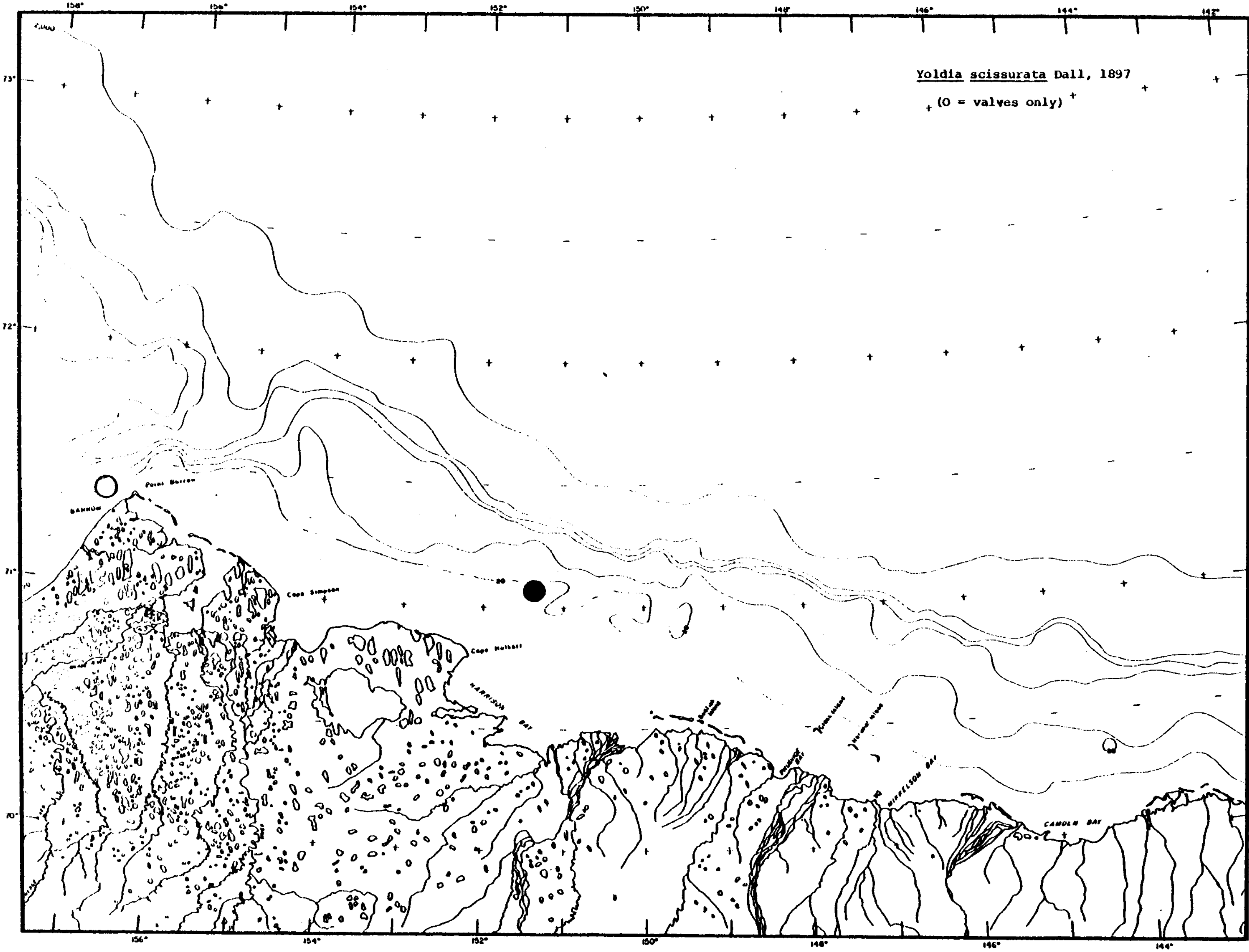


Thracia myopsis Moller, 1842
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
MIKKELSON BAY

422


Thyasira gouldii (Philippi, 1845)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Yoldia hyperborea Torell, 1859
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°
2,000
Point Barrow
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY


Yoldia scissurata Dall, 1897
(O = valves only)
Point Barrow
BARROW
Cape Simpson
Cape Halkett
HARRISON BAY
CAMDEN BAY
158°
156°
154°
152°
150°
148°
146°
144°
142°
73°
72°
71°
70°

FINAL REPORT

Contract No. 03-5-022-68
Task Order No. 4
1 April 1975 - 31 March 1976

Summarization of existing literature and unpublished data on the distribution, abundance, and life histories of benthic organisms

Andrew G. Carey, Jr., Principal Investigator
School of Oceanography
Oregon State University
Corvallis, Oregon 97331

1 January 1977

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VOLUME IV Part A.

A. Listing of Topics

This section has been provided as a guide for the Bibliography Index included in the next part. It lists the headings included in the index, dividing them into five principal categories:

1- Systematic Index- listing all of the faunal groups mentioned specifically in the titles or abstracts of the papers in the bibliography. A 'general topics' section is included for those publications which do not deal with the biota in terms of specific taxa.

2- General Subjects Index- dealing with the general research topics covered in the bibliography.

3- Regional Index- is divided into terrestrial and marine designations. Although all papers included in the bibliography pertain to some aspect of marine research, many have titles which list only the adjacent land areas.

4- Expedition Index- includes all papers resulting from work done on expeditions and research voyages, and from floating ice islands or drift stations.

5- Ecological Index- indexes the marine flora and fauna by ecological group.

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      - Gastrotricha
      - Kinoryncha
      - Nematoda
      - Polychaeta
      - Oligochaeta
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      - Arachnida
      - Pycnogonida
      - Crustacea
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- Fisheries
- Fossils
- Histology
- Larval Ecology
- Morphology
- Physiology
- Pollution
- Reproduction and Growth
- Sampling Gear and Techniques
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- Denmark Strait
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- Eurasian Basin
- Foxe Channel

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- James Bay
- Kane Basin
- Kara Sea
- Kennedy Channel
- La-rador Sea
- Laptev Sea
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- Danmark Expedition
- "Eastwind" Voyages
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- French International Polar Year Expedition, 1932-1933
- German Arctic Expedition
- "Godthaab" Expedition
- High Latitute Arctic Expeditions (USSR)
- Howgate Polar Expedition, 1877-1878
- "Ingolf" Expedition
- International Polar Year Expedition, 1882-1883
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- Lady Franklin Bay Expedition
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- Nekton
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The following index has been prepared to enable the reader to make better use of the annotated bibliography. This index follows the format outlined in the previous section, and proceeds alphabetically by author under each of the principal categories.

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Filatova and Barsonava, 1964

Filatova and Neiman, 1963

Fraser, 1922

Gur'ianova, 1933c

Gur'ianova, 1933d

Gur'ianova, 1935b

Gur'ianova, 1935c

Gur'ianova, 1935d

Gur'ianova, 1936b

Gur'ianova, 1936f

Gur'ianova, 1946a

Gur'ianova, 1948

Gur'ianova, 1950

Gur'ianova, 1951

Gur'ianova, 1952

Gur'ianova, 1968

Hilton, 1942

Hyman, 1953

Ivanov, 1956

Johansson, 1927

Kliuge, 1961

Kuznetsov, 1964b

Lambe, 1900

Lomakina, 1956

Makarov, 1937a

Makarov, 1937b

Makarov, 1938

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Makarov, 1941

McLaughlin, 1963

Moiseev, 1970

Murdoch, 1885a

Neiman, 1960

Newell, 1951a

Newell, 1951b

Osburn, 1955

Pavlovskii, 1955

Rathbun, 1902

Reish, 1965

Shapeero, 1962

Shchedrina, 1952a

Shchedrina, 1952b

Shchedrina, 1956a

Straokadomskii, 1917

U.S. Coast Guard, 1962

Ushakov, 1949

Ushakov, 1958a

Ushakov, 1958b

Verrill, 1914

Verrill, 1922

Vinogradov, 1968

Vinogradov, 1956

Zarendov, 1960

Zarenkov, 1948b

Zarenkov, 1958a

Bering Sea (continued)

Zarenkov, 1958b

Zarenkov, 1963

Znamemskii , no date given

Biology

Abbott, 1961

Akademiia Nauk SSSR, 1954

Akademiia Nauk SSSR, 1955

Akademiia Nauk SSSR, 1956

Allen, 1959

Baker and Wong, 1968

Balakshin, 1957

Barr, 1970

Berrill, 1970

Bowman and Manning, 1972

Brattegard, 1966

Bryazgin, 1968

Bulycheva, 1957

Burukovsky, 1966

Chamberlin and Stearns, 1963

Chislenko, 1963

Cleaver, 1963

Cooney and Crane, 1972

Cromie, 1960

Deriugin, 1927

Deriugin, 1928

D'iakonov, 1938

D'iakonov, 1955

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Dunbar, 1953

George and Paul, 1970

Gur'ianova, 1951

Holmquist, 1973a

Hufford et al., 1974

Hunkins et al., 1960

Hunkins et al., 1970

Hyman, 1953

Iakovleva, 1952

International Polar Year, First, 1888

Ivanov, 1956

Johansson, 1924

Jones, 1960

Just, 1970a

Just, 1970b

Kuznetsov, 1948a

Kuznetsov, 1948b

Kuznetsov, 1948c

Kuznetsov, 1951

Kuznetsov, 1953

Kuznetsov, 1954

Kuznetsov, 1957

Kuznetsov, 1958

Kuznetsov, 1960

Kuznetsov, 1963a

Kuznetsov, 1963b

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Kuznetsov and Matveeva, 1942

Kuznetsov and Matveeva, 1948

Laktionov, 1959

Lomakina, 1958

Lomakina, 1964

Makarov, 1938

Mathews, 1964

McCauley, 1964b

McCrimmon and Bray, 1962

Mileikovsky, 1960

Mohr, 1969a

Mohr, 1969b

Rusanova, 1963a

Rusanova, 1963b

Smidt, 1967

Sokolov, 1952

Southward and Southward, 1967

Streltzov, 1966a

Tcherniakovsky, 1941

Thorson, 1936

Zenkevich, 1947

Zenkevich, 1963

"Blaafield" Voyage

Soot-Ryen, 1925

Brachiopoda

Arndt and Grieg, 1933

Crosse, 1877

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Dall, 1875

Dall, 1885b

Knipovich, 1900

Linder, 1933

Soot-Ryen, 1925

British Arctic Expedition

Duncan and Sladen, 1881

Bryozoa

Borg, 1933

Gostilovskaia, 1964

Gostilovskaia, 1968

Hulsemann and Soule, 1962

Kliuge, 1908a

Kliuge, 1908b

Kliuge, 1929

Kliuge, 1955

Kliuge, 1961

Kliuge, 1962

Osburn, 1923

Osburn, 1955

Powell, 1968

Soule, 1951

Spasskii, 1929

"Calanus" Voyage

Calder, 1970

Hedgpeth, 1963

Canadian Archipelago

Berkeley and Berkeley, 1956

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Blake, 1973

Boone, 1920

Calder, 1970

Calder, 1972

Calman, 1920

Carlgren, 1934

Chamberlin, 1920

Curtis, 1969

Curtis, 1970

Curtis, 1972

Cushman, 1920

Dall, 1903

Ellis, 1960

Forbes, 1852

Grainger, 1964

Grainger, 1966a

Grainger, 1966b

Gray, 1824

Hedgpeth, 1963

International Polar Year, First, 1888

Macpherson, 1971

Squires, 1968a

Verrill, 1879a

Verrill, 1879b

Verrill, 1879c

Vilks, 1964

Vilks et al. 1970

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Wagner, 1961

Wagner, 1964

Canadian Arctic

Berkeley and Berkeley, 1958

Berkeley and Berkeley, 1962

Boone, 1920

Dall, 1919a

Dall, 1919b

Dall, 1924

Dendy and Frederick, 1924

Ellis, 1959

Ellis and Wilce, 1961

Fraser, 1922

Grainger, 1964

Grainger, 1966a

Grainger, 1966b

Hart, 1939

Hedgpeth, 1963

Lambe, 1900

Laubitz, 1972

LaRoque, 1953

Lubinsky, 1972

Macpherson, 1968

Macpherson, 1971

Osburn, 1923

Powell, 1968

Rathbun, 1919

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Sabine, 1824

Schmitt, 1919

Shoemaker, 1920

Smith and Welch, 1924

Southward, 1962

Squires, 1968b

Steele and Brunel, 1968b

Trason, 1964

U.S. Hydrographic Office, 1955

Verrill, 1922

Canadian Arctic Expedition

Calman, 1920

Chamberlin, 1920

Clark, 1920

Cushman, 1920

Dall, 1919a

Dall, 1919b

Dall, 1924

Dendy and Frederick, 1924

Fraser, 1922

Huntsman, 1922

Osburn, 1923

Rathbun, 1919

Schmitt, 1919

Shoemaker, 1920

Smith and Welch, 1924

Verrill, 1922

Canadian Basin

Agatep, 1967

Androsova, 1962

Clark, 1963

Clarke, 1960

Clarke, 1962a

Clarke, 1962b

Fagerlin, 1971

Hunkins et al., 1970

Joy, 1974

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Gray and Sowerby, 1839

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Gur'ianova, 1929b

Chukchi Sea

Abbott, 1961

Abbott, 1966

Annenkova, 1934

Arctic Institute of North America, 1974

Ashworth, 1910

Aurivillius, 1887

Banner, 1947

Banner, 1948

Berkeley and Berkeley, 1942

Boone, 1920

Brahm and Mohr, 1962a

Broderip and Sowerby, 1828

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Burt, 1963

Carlgren, 1934

Carsola, 1955

Chamberlin and Stearns, 1963

Clarke, 1962

Coan, 1971

Coe, 1952

Cromie, 1960

Crosse, 1877

Dall, 1875

Dall, 1879

Dall, 1885a

Dall, 1885b

Dall, 1896

Dall, 1902

Dall, 1903

Dall, 1919a

Dall, 1919b

Dall, 1925

DeLaubenfels, 1953

Dendy and Frederick, 1924

Deriugin and Ivanov, 1937

D'iakonov, 1938

D'iakonov, 1955

Faas, 1974

Fagerlin, 1971

Fraser, 1922

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Gonor, 1964

Grainger, 1964

Grainger, 1966a

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Gur'ianova, 1934d

Gur'ianova, 1936c

Gur'ianova, 1946a

Gur'ianova, 1948

Gustafson, 1936

Hedgpeth, 1963

Holmquist, 1963

Hyman, 1953

Ingham et al., 1972

Kliuge, 1961

MacGinitie, 1954

MacGinitie, 1955

MacGinitie, 1959

Makarov, 1937a

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Makarov, 1938

Makarov, 1941

McCauley, 1964a

McCauley, 1964b

Meguro et al., 1966

Moore, 1906

Murdoch, 1885a

Murdoch, 1885b

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Murdoch, 1885c

Osburn, 1923

Osburn, 1955

Pettibone, 1951

Pettibone, 1954

Reish, 1965

Schalk, 1957

Shapeero, 1962

Shchedrina, 1936

Shoemaker, 1920

Shoemaker, 1955

Smith and Welch, 1924

Soot-Ryen, 1932b

Soule, 1951

Southward and Southward, 1967

Sparks and Pereyra, 1966

Todd and Low, 1966

U.S. Coast Guard, 1962

Ushakov, 1936

Ushakov, 1958b

Williams, 1940

Zarenkov, 1960

Cnidaria

Brahm and Geiger, 1966

Brahm and Mohr, 1962a

Broch, 1929

Broch, 1933

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Calder, 1970

Calder, 1972

Carlgren, 1902

Carlgren, 1912

Carlgren, 1913

Carlgren, 1917

Carlgren, 1932

Carlgren, 1933

Carlgren, 1934

Carlgren, 1940

Carlgren, 1942

Carlgren, 1949

Fraser, 1922

Naumov, 1960

Nesis, 1962

Riemann - Zurnec, 1971

Tanasiichuk, 1928

Ushakov, 1937

Verrill, 1879c

Verrill, 1922

Vinogradov, 1956

"Cobb" Voyage

Sparks and Pereyra, 1966

Crustacea

Allen, 1959

Andersson, 1974

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Baker and Wong, 1968

Banner, 1947

Banner, 1948

Barr, 1970

Boeck, 1871

Boeck, 1872-1876

Boone, 1920

Bowman and Manning, 1972

Brattegard, 1964

Brattegard, 1966

Bray, 1962

Brotskaja, 1961

Bryazgin, 1968

Bulycheva, 1957

Burukovsky, 1966

Calman, 1920

Castillo, 1975

Chislenko, 1963

Christiansen, 1968

Cleaver, 1963

Doflein, 1900

Drzycimski, 1968

Frost, 1967

Given, 1965

Greve, 1963

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Gur'ianova, 1932

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Gur'ainova, 1933b

Gur'ianova, 1933c

Gur'ianova, 1933d

Gur'ianova, 1933e

Gur'ianova, 1934a

Gur'ianova, 1934b

Gur'ianova, 1934c

Gur'ianova, 1934d

Gur'ianova, 1935a

Gur'ianova, 1935b

Gur'ianova, 1935c

Gur'ianova, 1935e

Gur'ianova, 1936a

Gur'ianova, 1936b

Gur'ianova, 1936c

Gur'ianova, 1936d

Gur'ianova, 1936e

Gur'ianova, 1936f

Gur'ianova, 1938

Gur'ianova, 1946a

Gur'ianova, 1946b

Gur'ianova, 1948

Gur'ianova, 1950

Gur'ianova, 1951

Gur'ianova, 1952

Gur'ianova, 1964

Hansen, 1920

Hart, 1939

Holmquist, 1963

Holmquist, 1965

Holmquist, 1973b

Jones, 1960

Joy, 1974

Just, 1970a

Just, 1970b

Just, 1970c

Kobiakova, 1964

Kuznetsov, 1951

Kuznetsov, 1953

Kuznetsov, 1957

Kuznetsov, 1963a

Kuznetsov, 1964a

Kuznetsov and Alexandrova, 1969

Laubitz, 1972

Lomakina, 1956

Lomakina, 1958

Lomakina, 1964

Makarov, 1937a

Makarov, 1938

Makarov, 1941

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Mathews, 1964

McCauley, 1964b

McCrimmon and Bray, 1962

Menzies and Mohr, 1962

Miers, 1877

Murdoch, 1885b

Neale and Howe, 1973

Oldevig, 1959

Pakhomova, 1966

Paul and George, 1975

Powell and Nickerson, 1965

Rathbun, 1902

Rusanova, 1963a

Rzhepishevski, 1966

Schmitt, 1919

Shoemaker, 1920

Shoemaker, 1955

Sivertsen, 1932

Smidt, 1967

Southward and Southward, 1967

Squires, 1964

Squires, 1968a

Squires, 1968b

Steele, 1967a

Steele, 1967b

Steele and Brunel, 1968a

Steele and Brunel, 1968b

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Clark, 1950

Clark and Clark, 1967

Deriugin, 1932b

D'iakonov, 1923

D'iakonov, 1929a

D'iakonov, 1929b

D'iakonov, 1929c

D'iakonov, 1930

D'iakonov, 1931

D'iakonov, 1933

D'iakonov, 1938

D'iakonov, 1946

D'iakonov, 1950a

D'iakonov, 1950b

D'iakonov, 1950c

D'iakonov, 1954

D'iakonov, 1955

Doderlein, 1906a

Doderlein, 1906b

Duncan and Sladen, 1881

Forbes, 1852

Grainger, 1964

Grainger, 1966a

Grainger, 1966b

Grieg, 1900

Huxley, 1852

Khodkina, 1964

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Deriugin, 1928

D'iakonov, 1923

D'iakonov, 1938

D'iakonov, 1946

D'iakonov, 1950c

D'iakonov, 1954

D'iakonov, 1955

Dunbar, 1953

Dunbar, 1960

Ellis, 1960

Ellis and Wilce, 1961

Faas, 1974

Fauchald, 1963

Feder et al., 1976

Filatova, 1957b

Filatova and Barsonava, 1964

Galkin, 1964

George and Paul, 1970

Golikov, 1964

Green, 1960

Gur'ianova, 1924

Gur'ianova, 1928a

Gur'ianova, 1929b

Gur'ianova, 1932

Gur'ianova, 1933b

Gur'ianova, 1935d

Gur'ianova, 1946a

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Gur'ianova, 1950

Gur'ianova, 1950

Gur'ianova, 1951

Gur'ianova, 1957

Gur'ianova, 1961

Gur'ianova, 1968

Gur'ianova and Ushakov, 1926

Gur'ianova and Ushakov, 1928

Gur'ianova and Ushakov, 1929

Gur'ianova et al., 1930

Holmquist, 1963

Holmquist, 1973a

Holmquist, 1973b

Holmquist, 1974

Ingham et al., 1972

Ivanova, 1957

Joy, 1974

Khodkina, 1964

Knipovich, 1900

Knipovich, 1905

Koltun, 1959b

Koltun, 1964b

Kuderskii, 1962

Kuznetsov, 1946

Kuznetsov, 1948a

Kuznetsov, 1948b

Kuznetsov, 1951

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Kuznetsov, 1953

Kuzentsov, 1960

Kuznetsov, 1963b

Kuznetsov, 1964a

Kuznetsov, 1964b

Kuznetsov and Matveeva, 1942

Leshchinskaia, 1962

Lomakina, 1958

Lomakina, 1964

MacGinitie, 1955

Madsen, 1936

Makarov, 1938

Meguro et al., 1966

Mileikovsky, 1960

Mileikovsky, 1968a

Mileikovsky 1968b

Mileikovsky, 1969

Mileikovsky, 1970a

Mileikovsky, 197b

Miloslavskaia, 1958a

Miloslavskaia, 1958c

Mohr, 1969a

Murina, 1964b

Murray et al., 1965

Nesis, 1959

Nesis, 1960

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Nesis, 1965

Nicol, 1955

Nikolsky, 1965

Nikolsky, 1965

Odum et al., 1974

Paul and Menzies, 1973

Paul and Menzies, 1974

Powell and Nickerson, 1965

Sharonov, 1948

Shchedrina, 1950

Shchedrina, 1956a

Shchedrina, 1956b

Skarlato, 1956

Smirnova, 1965

Sokolov, 1952

Soot-Ryen, 1924

Southward and Southward, 1967

Sparks and Pereyra, 1966

Squires, 1968a

Tanasiichuk, 1926

Tanasiichuk, 1928

Tarasov, 1938

Thorson, 1936

Turpaeva, 1948

Ushakov, 1926

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Ushakov, 1931

Verrill, 1914

Vilks, 1964

Wacasey, 1975a

Wagner, 1961

Wagner, 1964

Wahrberg, 1930

Zarenkov, 1960

Zatsepin and Rittikh, 1968

Zenkevich, 1935

Zenkevich, 1947

Zenkevich, 1948a

Zenkevich, 1958b

Zenkevich, 1963

Zenkevich and Brotskaia, 1937

Ellesmere Island

Macpherson, 1971

Epibenthos

Abbott, 1961

Agatep, 1967

Allen, 1959

Anderson, 1971

Arndt and Grieg, 1933

Barr, 1970

Blake, 1973

Borg, 1933

Epibenthos (continued)

Brahm and Geiger, 1966

Brahm and Mohr, 1962a

Brattegard, 1966

Breitfus, 1898

Broch, 1929

Broch, 1933

Bryazgin, 1968

Burukovsky, 1966

Calder, 1970

Calder, 1972

Christiansen, 1968

Clark, 1915

Clark, 1920

Clark, 1921

Clark, 1931

Clark, 1936

Clark, 1941

Clark, 1947

Clark, 1950

Clark and Clark, 1967

Clausen, 1963

Cleaver, 1963

Crosse, 1877

Dall, 1875

Dall, 1979

Dall, 1885b

Epibenthos (continued)

DeLaubenfels, 1953

Dendy and Frederick, 1924

Deriugin, 1932b

D'aikonov, 1923

D'iakonov, 1929a

D'iakonov, 1929b

D'iakonov, 1929c

D'iakonov, 1930

D'iakonov, 1931

D'iakonov, 1933

D'iakonov, 1933

D'iakonov, 1938

D'iakonov, 1946

D'iakonov, 1950a

D'iakonov, 1950b

D'iakonov, 1950c

D'iakonov, 1954

D'iakonov, 1955

Doderlein, 1906a

Doderlein, 1906b

Doflein, 1900

Duncan and Sladen, 1881

Ellis, 1956

Ellis and Wilce, 1961

Forbes, 1852

Fraser, 1922

Epibenthos (continued)

Gostilovskaia, 1964

Gostilovskaia, 1968

Grainger, 1964

Grainger, 1966a

Grainger, 1966b

Greve, 1963

Grieg, 1900

Gur'ianova, 1924

Hart, 1939

Hartmeyer, 1904

Hedgpeth, 1963

Hilton, 1942

Hulsemann and Soule, 1962

Huntsman, 1922

Huxley, 1952

Iakovleva, 1952

Just, 1970c

Khodkina, 1964

Kliuge, 1908a

Kliuge, 1908b

Kliuge, 1929

Kliuge, 1955

Kliuge, 1961

Kliuge, 1962

Knipovich, 1900

Knopovich, 1905

Epibenthos (continued)

Kobiakova, 1964

Koltun, 1959b

Koltun, 1964a

Kuznetsov, 1951

Kuznetsov, 1953

Kuznetsov, 1964a

Lambe, 1900

Linder, 1933

Ludwig, 1900a

Ludwig, 1900b

Lutzen, 1970

Makarov, 1937a

Makarov, 1938

Makarov, 1941

Mileikovsky, 1969

Naumov, 1960

Nesis, 1962

Osburn, 1923

Osburn 1955

Pakhomova, 1966

Powell and Nickerson, 1965

Powell, 1968

Rathbun, 1902

Rathbun, 1919

Rusanova, 1963a

Rzhepishevski, 1966

Epibenthos (continued)

Shimkevich, 1913

Shimkevich, 1929-1930

Silvertsen, 1932

Smidt, 1967

Soot-Ryen, 1925

Soule, 1951

Southward and Southward, 1967

Spasskii, 1929

Squires, 1964

Squires, 1968a

Squires, 1968b

Stendell, 1968

Tanasiichuk, 1928

Tarasov, 1938

Tendal, 1970

Theisen, 1973

Trason, 1964

Ushakov, 1937

Ushakov, 1948a

Verrill, 1879c

Verrill, 1914

Verrill, 1922

Vinogradov, 1968

Vinogradov, 1956

Weltner, 1900

Zarenkov, 1960

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Zarenkov, 1965

Zenkevich, 1935

Estuaries

Alexander et al., 1974

Crane, 1974

Crane and Cooney, 1974

Deriugin, 1932a

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Baranova, 1964

Golikov, 1964

Gostilovskaia, 1964

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Bulycheva, 1957

Carlgren, 1942

D'iakonov, 1946

D'iakonov, 1950c

Dunbar, 1960

Golikov, 1963

Gur'ianova, 1951

Iakovleva, 1952

Zarenkov, 1965

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Knipovich, 1900

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Abbott, 1966

Akademiia Nauk SSSR, 1954

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Akademiia Nauk SSSR, 1955

Akademiia Nauk SSSR, 1956

Aleksandrov, 1915

Allen, 1959

Anderson, 1962

Andriaashev, 1944

Androsova, 1962

Annenkova, 1922

Annenkova, 1924

Annenkova, 1925a

Annenkova, 1925b

Annenkova, 1926

Annenkova, 1929

Annenkova, 1934

Annenkova, 1952

Arctic Institute of North America, 1974

Arndt and Grieg, 1933

Augener, 1928

Aurivillius, 1887

Baranova, 1964

Bergstrom, 1914

Berkeley and Berkeley, 1942

Berkeley and Berkeley, 1956

Berkeley and Berkeley, 1958

Berkeley and Berkeley, 1962

Blake, 1973

Faunal Distribution (continued)

Boeck, 1871

Boeck, 1872-1876

Boone, 1920

Borg, 1933

Brady, 1878

Brahm and Geiger, 1966

Brahm and Mohr, 1962a

Brahm and Mohr, 1962b

Brattegard, 1964

Bray, 1962

Breitfus, 1898

Broch, 1929

Broch, 1933

Broderip and Sowerby, 1828

Brotskaja, 1961

Brotskaja and Zenkevich, 1939a

Brotskaja and Zenkevich, 1939b

Brodskaja et al., 1963

Bryazgin, 1968

Bulycheva, 1957

Burukovsky, 1966

Calder, 1970

Calder, 1972

Calman, 1920

Carey et al., 1974

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Carlgren, 1902

Carlgren, 1912

Carlgren, 1913

Carlgren, 1917

Carlgren, 1932

Carlgren, 1933

Carlgren, 1934

Carlgren, 1942

Castillo, 1975

Chamberlin and Stearns, 1963

Chamberlin, 1920

Christiansen, 1968

Clark, 1920

Clark, 1936

Clark, 1963

Clarke, 1962a

Clarke, 1962b

Clausen, 1963

Coan, 1971

Coe, 1905

Coe, 1944

Coe, 1952

Corgan, 1966

Corgan, 1969

Crosse, 1877

Curtis, 1970

Faunal Distribution (continued)

Curtis, 1972

Cushman, 1920

Cushman, 1948

Dall, 1875

Dall, 1879

Dall, 1885b

Dall, 1896

Dall, 1902

Dall, 1919a

Dall, 1919b

Dall, 1921

Dall, 1924

Dall, 1925

DeLaubenfels, 1953

Dendy and Frederick, 1924

Deriugin, 1928

Deriugin, 1930

Deriugin 1932b

Deriugin and Ivanov, 1937

D'iakonov, 1923

D'iakonov, 1929a

D'iakonov, 1933

D'iakonov, 1938

D'iakonov, 1946

D'iakonov, 1950a

D'iakonov, 1954

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Doderlein, 1906a

Doderlein, 1906b

Doflein, 1900

Duncan and Sladen, 1881

Echols, 1975

Ellis, 1956

Ellis, 1960

Fagerlin, 1971

Fauchald, 1963

Feder and Shamel, in press

Filatova, 1957b

Filatova, 1957c

Filatova and Barsonava, 1964

Filatova and Neiman, 1963

Filatova and Zenkevich, 1957

Fischer, 1929

Fraser, 1922

Galkin, 1964

Galkin, 1965

Given, 1965

Golikov, 1963

Golikov, 1964

Gostilovskaia, 1964

Gostilovskaia, 1968

Grainger, 1964

Grainger, 1966a

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Grainger, 1966b

Greve, 1963

Greve and Samuelsen, 1970

Grieg, 1900

Gur'ianova, 1925a

Gur'ianova, 1925b

Gur'ianova, 1927

Gur'ianova, 1928a

Gur'ianova, 1928b

Gur'ianova, 1929a

Gur'ianova, 1929b

Gur'ianova, 1930

Gur'ianova, 1931

Gur'ianova, 1932

Gur'ianova, 1933a

Gur'ianova, 1933b

Gur'ianova, 1933c

Gur'ianova, 1933d

Gur'ianova, 1934a

Gur'ianova, 1934b

Gur'ianova, 1934c

Gur'ianova, 1935b

Gur'ianova, 1935c

Gur'ianova, 1935e

Gur'ianova, 1936a

Gur'ianova, 1936c

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Gur'ianova, 1936d

Gur'ianova, 1936e

Gur'ianova, 1936f

Gur'ianova, 1946b

Gur'ianova, 1948

Gur'ianova, 1964

Gur'ianova, 1968

Gur'ianova and Ushakov, 1928

Gur'ianova and Ushakov, 1929

Gustafson, 1936

Hansen, 1920

Hart, 1939

Hartmeyer, 1904

Hedgpeth, 1963

Higgins, 1966

Hilton, 1942

Holmquist, 1965

Holmquist, 1973b

Holmquist, 1974

Hulsemann, 1962

Hulsemann and Soule, 1962

Huntsman, 1922

Huxley, 1852

Hyman, 1953

Iakovleva, 1952

Ingham et al., 1972

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Ivanova, 1957

Jones, 1960

Joy, 1974

Just, 1970a

Just, 1970b

Just, 1970c

Khodkina, 1964

Kliuge, 1908a

Kliuge, 1929

Kliuge, 1955

Kliuge, 1961

Kliuge, 1962

Knipovich, 1900

Knipovich, 1905

Knox, 1959

Kobiakova, 1964

Koltun, 1959a

Koltun, 1959b

Koltun, 1964a

Koltun, 1964b

Kuznetsov, 1948c

Kuznetsov, 1963a

Kuznetsov, 1964a

Kuznetsov, 1964b

Kuznetsov and Alexandrova, 1969

Kuznetsov and Matveeva, 1942

Faunal Distribution (continued)

Lambe, 1900

La Rogue, 1953

Lemche, 1948

Leshchinskaia, 1962

Linder, 1933

Linstow, 1900

Loeblich and Tappan, 1953

Lomakina, 1956

Lomakina, 1958

Lomakina, 1964

Lubinsky, 1972

Ludwig, 1900a

Ludwig, 1900b

Lutzen, 1970

MacGinitie, 1954

MacGinitie, 1955

MacGinitie, 1959

Macpherson, 1968

Macpherson, 1971

Makarov, 1937a

Makarov, 1937b

Makarov, 1941

McLaughlin, 1963

Menzies, 1962

Menzies and Mohr, 1962

Mileikovsky, 1968a

Miloslavskaia, 1958b

Faunal Distribution (continued)

Miloslavskaia, 1958c

Miloslavskaia, 1958d

Miloslavskaia, 1970

Mohr, 1969a

Moiseer, 1970

Muench et al., 1971

Murdoch, 1885a

Murdoch, 1885c

Murina, 1964b

Naumov, 1960

Neiman, 1960

Nesis, 1969

Nesis, 1960

Nesis, 1962

Nurminen, 1973

Odhner, 1921

Oldevig, 1959

Osburn, 1923

Osburn, 1955

Pavlovskii, 1955

Pergament, 1957

Pettibone, 1954

Ponomareva, 1949

Powell, 1968

Prigorovskii, 1948

Rathbun, 1919

Faunal Distribution (continued)

Reish, 1965

Remane, 1933

Rusanova, 1963b

Rzhepishevski, 1966

Sabine, 1824

Salvini-Plawen, 1971

Sars, 1866

Schmitt, 1919

Shapeero, 1962

Shchedrina, 1936

Shchedrina, 1938

Shchedrina, 1950

Shchedrina, 1953

Shchedrina, 1956a

Shchedrina, 1956b

Shimkevich, 1929-1930

Shoemaker, 1920

Shoemaker, 1955

Silvertsen, 1932

Smith, 1877

Smith and Welch, 1924

Sokolov, 1952

Soot-Ryen, 1924

Soot-Ryen, 1925

Soot-Ryen, 1933a

Soot-Ryen, 1932b

Faunal Distribution (continued)

Soot-Ryen 1939

Soot-Ryen, 1941

Sparks and Pereyra, 1966

Squires, 1968a

Squires, 1968b

Starokadomskii, 1917

Steele and Brunel, 1968b

Stendell, 1968

Stephensen, 1933

Streltzov, 1966b

Streltzov, 1968

Tanasiichuk, 1926

Tanasiichik, 1927

Theroux, 1971

Thiele, 1929

Thiele, 1933

Todd and Low, 1966

Trason, 1964

Ude, 1933

Ushakov, 1928a

Ushakov, 1928b

Ushakov, 1931

Ushakov, 1936

Ushakov, 1937

Ushakov, 1948a

Ushakov, 1948b

Faunal Distribution (continued)

Ushakov, 1949

Ushakov, 1950

Ushakov, 1958a

Ushakov, 1958b

Verrill, 1879a

Verrill, 1879b

Verrill, 1879c

Verrill, 1922

Vilks, 1964

Vinogradov, 1956

Wacasey, 1975a

Wacasey, 1975b

Wagner, 1961

Wagner, 1964

Weltner, 1900

Zarenkov, 1960

Zarenkov, 1965

Zatsepin and Rittikh, 1968

Zenkevich, 1947

Zenkevich, 1948a

Zenkevich, 1958a

Zenkevich, 1958b

Zenkevich, 1963

Zenkevich and Brotskaia, 1937

Zimmer, 1900

Fisheries

Barr, 1970

Blacker, 1965

Bryazgin, 1968

Cleaver, 1963

Corgan, 1966

Kuznetsov, 1957

Kuznetsov, 1960

Leshchinskaia, 1962

Makarov, 1938

McLaughlin, 1963

Miloslavskaia, 1958a

Miloslavskaia, 1958c

Moiseer, 1970

Smidt, 1967

Vinogradov, 1968

Zenkevich, 1947

Zenkevich, 1963

Fletcher's Ice Island T-3

Bowman and Manning, 1972

George and Paul, 1970

Green, 1960

King, 1967

Paul and George, 1975

Paul and Menzies, 1973

Wagner, 1961

Flora - general

Ellis and Wilce, 1961

Gur'ianova, 1924

Gur'ianova, 1935d

Gur'ianova, 1968

Kuznetsov, 1948b

Kuznetsov, 1960

Meguro et al., 1966

Popova, 1952

Propp, 1962

Soot-Ryen, 1932a

Tcherniakovsky, 1941

Ushakov, 1928a

Ushakov, 1931

Ushakov, 1936

Zenkevich, 1947

Zenkevich, 1948a

Zenkevich, 1963

Foraminifera

Anderson, 1962

Androsova, 1962

Brady, 1878

Carsola, 1955

Cushman, 1920

Cushman, 1948

Echols, 1975

Fagerlin, 1971

Foraminifera (continued)

Green, 1960

Kennett, 1970

Loeblich and Tappan, 1953

Shchedrina, 1936

Shchedrina, 1938

Shchedrina, 1939

Shchedrina, 1946

Shchedrina, 1948

Shchedrina, 1950

Shchedrina, 1952a

Shchedrina, 1952b

Shchedrina, 1953

Shchedrina, 1956a

Shchedrina, 1956b

Todd and Low, 1966

Vilks, 1964

Vilks et al., 1970

Wagner, 1974

Fossils

Dall, 1919a

Dall, 1919b

Dall, 1924

Fagerlin, 1971

Jones, 1960

Knipovich, 1900

Neale and Howe, 1973

Greenland (continued)

Coe, 1944

Cushman, 1948

Dall, 1903

D'iakonov, 1946

Ellis, 1959

Ellis, 1960

Holmquist, 1965

Johansson, 1927

Just, 1970a

Just, 1970b

Just, 1970c

Kliuge, 1908b

LaRoque, 1953

Lutzen, 1970

Madsen, 1936

Shchedrina, 1938

Smidt, 1967

Squires, 1964

Steele and Brunel, 1968b

Tarasov, 1938

Tcherniakovsky, 1941

Tendal, 1970

Theisen, 1973

Theroux, 1971

Thorson, 1935

Thorson, 1936

Greenland Sea

Annenkova, 1952

Boeck, 1871

D'iakonov, 1923

Golikov, 1964

Gur'ianova, 1933a

Gur'ianova, 1934d

Kobiakova, 1964

Koltun, 1964a

Koltun, 1964b

Nesis, 1962

Osburn, 1955

Shchedrina, 1939

Shchedrina, 1952b

Soot-Ryen, 1941

Stendell, 1968

Vinogradov, 1956

Wesenberg-Lund, 1950

Gulf of Alaska

Berkeley and Berkeley, 1942

Chamberlin and Stearns, 1963

Crosse, 1877

Dall, 1879

Dall, 1925

Frost, 1967

Hilton, 1942

Lambe, 1900

Hudson Bay - Hudson Strait (continued)

Osburn, 1923

Verrill, 1922

"Ingolf" Expedition

Carlgren, 1912

Carlgren, 1913

Carlgren, 1942

Hansen, 1920

Wesenberg-Lund, 1950

International Polar Expedition, 1882-1883

Murdoch, 1885a

Murdoch, 1885b

Murdoch, 1885c

Invertebrates - general

Invertebrates - general (continued)

Ellis and Wilce, 1961

Faas, 1974

Feder and Shamel, in press

Filatova and Barsonava, 1964

Filatova and Neiman, 1963

Filatova and Zenkevich, 1957

Gal'tzova

George and Paul, 1970

Gur'ianova, 1924

Gur'ianova, 1925a

Gur'ianova, 1925b

Gur'ianova, 1927

Gur'ianova, 1928a

Gur'ianova, 1929b

Gur'ianova, 1935d

Gur'ianova, 1949

Gur'ianova, 1957

Gur'ianova, 1961

Gur'ianova, 1968

Gur'ianova and Ushakov, 1928

Gur'ianova and Ushakov, 1929

Gur'ianova et al., 1930

Holmquist, 1973a

Hufford et al., 1974

Hunkins et al., 1960

Hunkins et al., 1970

Invertebrates - general (continued)

Ingham et al., 1972

International Polar Year, First, 1888

Ivanova, 1957

Knipovich, 1891

Koltun, 1959a

Koltun, 1964b

Kramp, 1963

Kuderskii, 1960

Kuderskii, 1962

Kuznetsov, 1946

Kuznetsov, 1954

Kuznetsov, 1957

Kuznetsov, 1958

Kuznetsov, 1960

Kuznetsov, 1963b

Kuznetsov, 1964b

Kuznetsov and Matveeva, 1942

Kuznetsov and Matveeva, 1948

Laktionov, 1959

Leshchinskaia, 1962

MacGinitie, 1954

MacGinitie, 1955

Madsen, 1936

Makarov, 1937b

McCauley, 1964a

Invertebrates - general (continued)

McLaughlin, 1963

Menzies, 1962

Mileikovsky, 1960

Mileikovsky, 1968a

Mileikovsky, 1970a

Mileikovsky, 1970b

Miloslavskaia, 1958a

Miloslavskaia, 1958c

Mohr, 1969a

Mohr and Geiger, 1968

Moiseev, 1970

Muench et al., 1971

Mueller, 1970

Murdoch, 1885a

Murdoch, 1885c

Murray et al., 1965

Neiman, 1960

Nesis, 1959

Nesis, 1960

Nesis, 1965

Nikolsky, 1965

Paul and Menzies, 1973

Paul and Menzies 1974

Pavlovskii, 1955

Pergament, 1957

Invertebrates - general (continued)

Ponomareva, 1949

Popova, 1952

Prigorovskii, 1948

Propp, 1962

Rusanova, 1963b

Sabine, 1824

Sailer, 1955

Sars, 1866

Sharanov, 1948

Smirnova, 1965

Soot-Ryen, 1932a

Sparks and Pereyra, 1966

Starokadomskii, 1917

Tanasiichuk, 1926

Tanasiichuk, 1927

Tarasov, 1938

Tcherniakovsky, 1941

Theroux, 1971

Thorson, 1936

Turpaeva, 1948

U.S. Coast Guard, 1962

Ushakov, 1928a

Ushakov, 1931

Ushakov, 1948b

Ushakov, 1949

Invertebrates - general (continued)

Ushakov, 1950

Ushakov, 1958a

Ushakov, 1958b

Wacasey, 1975a

Wacasey, 1975b

Wagner, 1961

Wagner, 1964

Zatsepin and Rittikh, 1968

Zenkevich, 1935

Zenkevich, 1947

Zenkevich, 1948a

Zenkevich 1958b

Zenkevich, 1963

Zenkevich and Brotskaia, 1937

Znamemskii , no date given

James Bay

Grainger, 1964

Grainger, 1966a

Grainger, 1966b

Macpherson, 1971

Kane Basin

Miers, 1877

Smith, 1877

Kara Sea

Annenkova, 1923

Aurivillius, 1887

D'iakonov, 1923

Filatova and Zenkevich, 1957

Gur'ianova, 1927

Gur'ianova, 1929a

Gur'ianova, 1933a

Gur'ianova, 1933b

Gur'ianova, 1933e

Gur'ianova, 1934a

Gur'ianova, 1934c

Gur'ianova, 1934d

Gur'ianova, 1935a

Gur'ianova, 1935e

Gur'ianova, 1936a

Gur'ianova, 1936c

Gur'ianova, 1936d

Gur'ianova and Ushakov, 1926

Leshchinskaia, 1962

Ponomareva, 1949

Shchedrina, 1936

Shchedrina, 1938

Shchedrina, 1939

Steele and Brunel, 1968b

Kennedy Channel

Miers, 1877

Smith, 1877

Kinorhyncha

Higgins, 1966

Remane, 1933

"Krasin" Voyage

Ushakov, 1936

Labrador

Ashworth, 1910

Carlgren, 1934

Labrador Sea

Dall, 1896

Dall, 1902

Dearborn and Dean, 1969

Grainger, 1964

Grainger, 1966a

Grainger, 1966b

Lady Franklin Bay Expedition

International Polar Year, First, 1888

Laptev Sea

Annenkora, 1925a

Aurivillius, 1887

Deriugin, 1932a

Deriugin, 1932b

Gur'ianova, 1932

Gur'ianova, 1933a

Laptev Sea (continued)

Gur'ianova, 1934d

Gur'ianova, 1936c

Gustafson, 1936

Kuznetsov and Alexandrova, 1969

Todd and Low, 1966

Larval Ecology

Mileikovsky, 1960

Mileikovsky, 1968a

Mileikovsky, 1968b

Mileikovsky, 1969

Mileikovsky, 1970a

Mileikovsky, 1970b

Thorson, 1935

Thorson, 1936

"Lena" Voyages

Koltun, 1964a

Lomakina, 1964

"Litke" Expedition

Balakshin, 1957

Baranora, 1964

Gostilovskaia, 1964

Kliuge, 1962

Koltun, 1964a

Lomakina, 1964

"Lomonosov" Voyage

Gur'ianova, 1936d

Macrobenthos

Adams, 1855

Annenkova, 1922

Annenkova, 1923

Annenkova, 1924

Annenkova, 1925a

Annenkova, 1925b

Annenkova, 1926

Annenkova, 1929

Annenkova, 1934

Annenkova, 1952

Ashworth, 1910

Augener, 1928

Aurivillius, 1887

Baker and Wong, 1968

Bergstrom, 1914

Berkeley and Berkeley, 1942

Berkeley and Berkeley, 1956

Berkeley and Berkeley, 1958

Berkeley and Berkeley, 1962

Boeck, 1871

Boeck, 1872-1876

Boone, 1920

Bowman and Manning, 1972

Brahm and Mohr, 1962b

Macrobenthos (continued)

Brattegard, 1964

Bray, 1962

Broderip and Sowerby, 1828

Bulycheva, 1957

Calman, 1920

Carlgren, 1902

Carlgren, 1912

Carlgren, 1913

Carlgren, 1917

Carlgren, 1932

Carlgren, 1933

Carlgren, 1934

Carlgren, 1940

Carlgren, 1942

Carlgren, 1949

Castillo, 1975

Chamberlin and Stearns, 1963

Chamberlin, 1920

Clark, 1963

Clarke, 1960

Clarke, 1962a

Clarke, 1962b

Coan, 1971

Coe, 1905

Coe, 1944

Coe, 1952

Macrobenthos (continued)

Corgan, 1966

Corgan, 1969

Cowan, 1968

Crosse, 1877

Curtis, 1969

Curtis, 1970

Curtis, 1972

Dall, 1875

Dall, 1885a

Dall, 1885b

Dall, 1896

Dall, 1902

Dall 1903

Dall, 1919a

Dall, 1919b

Dall, 1921

Dall, 1924

Dall, 1925

Deriugin, 1932b

Fauchald, 1963

Filatova, 1957a

Filatova, 1957b

Filatova, 1957c

Filatova, 1959

Fischer, 1929

Galkin, 1964

Macrobenthos (continued)

Galkin, 1965

Given, 1965

Golikov, 1963

Golikov, 1964

Gray, 1824

Gray and Sowerby, 1839

Green, 1973

Greve and Samuelsen, 1970

Gur'ianova, 1928b

Gur'ianova, 1929a

Gur'ianova, 1929c

Gur'ianova, 1930

Gur'ianova, 1931

Gur'ianova, 1932

Gur'ianova, 1933a

Gur'ianova, 1933b

Gur'ianova, 1933c

Gur'ianova, 1933d

Gur'ianova, 1933e

Gur'ianova, 1934a

Gur'ianova, 1934b

Gur'ianova, 1934c

Gur'ianova, 1934d

Gur'ianova, 1935a

Gur'ianova, 1935b

Gur'ianova, 1935c

Macrobenthos (continued)

Gur'ianova, 1935e

Gur'ianova, 1936a

Gur'ianova, 1936b

Gur'ianova, 1936c

Gur'ianova, 1936e

Gur'ianova, 1936f

Gur'ianova, 1938

Gur'ianova, 1946a

Gur'ianova, 1946b

Gur'ianova, 1948

Gur'ianova, 1950

Gur'ianova, 1951

Gur'ianova, 1952

Gur'ianova, 1964

Gur'ianova and Ushakov, 1926

Gustafson, 1936

Hansen, 1920

Hart, 1939

Holmquist, 1963

Holmquist, 1965

Holmquist, 1973b

Hulsemann, 1962

Ivanov, 1956

Johansson, 1927

Just, 1970a

Macrobenthos (continued)

Just, 1970b

Just, 1970c

Knipovich, 1900

Knox, 1959

Kuznetsov, 1948b

Kuznetsov, 1948c

Kuznetsov, 1951

Kuznetsov, 1963a

Kuznetsov, 1964a

Kuznetsov and Alexandrova, 1969

Kuznetsov and Matveeva, 1948

Laubitz, 1972

LaRoque, 1953

Lemche, 1948

Lomakina, 1956

Lomakina, 1958

Lomakina, 1964

Lubinsky, 1972

MacGinitie, 1959

Macpherson, 1968

Macpherson, 1971

McCauley, 1964b

McCrimmon and Bray, 1962

Menzies and Mohr, 1962

Miers, 1877

Mileikovsky, 1968b

Macrobenthos (continued)

Miloslavskaia, 1958b

Miloslavskaia, 1958d

Miloslavskaia, 1970

Moore, 1906

Moskaler, 1961

Murdoch, 1885b

Murina, 1964a

Murina, 1964b

Nicol, 1955

Odhner, 1921

Oldevig, 1959

Paul and George, 1975

Pettibone, 1949

Pettibone, 1951

Pettibone, 1954

Reish, 1965

Riemann-Zurnec, 1971

Roginskaya, 1963

Salvini-Plawen, 1970

Shapeero, 1962

Shoemaker, 1920

Shoemaker, 1955

Skarlato, 1956

Smith, 1877

Soot-Ryen, 1924

Soot-Ryen, 1925

Macrobenthos (continued)

Soot-Ryen, 1932b

Soot-Ryen, 1939

Soot-Ryen, 1941

Southward, 1962

Steele, 1967a

Steele, 1967b

Steele and Brunel, 1968a

Steele and Brunel, 1968b

Stephensen, 1933

Streltzov, 1966a

Streltzov, 1966b

Streltzov, 1966c

Streltzov, 1968

Tanasiichuk, 1928

Theroux, 1971

Thiele, 1929

Thiele, 1933

Thorson, 1935

Ushakov, 1926

Ushakov, 1928b

Ushakov, 1940

Ushakov, 1948c

Ushakov, 1957

Verrill, 1879a

Verrill, 1879b

Macrobenthos (continued)

Verrill, 1879c

Verrill, 1922

Vinogradov, 1956

Wagner, 1974

Wahrberg, 1930

Waren, 1973

Wesenberg-Lund, 1950

Williams, 1940

Zenkevich, 1958a

Zimmer, 1900

Maud Expedition

Gustafson, 1936

Sivertsen, 1932

Soot-Ryen, 1932b

Meiobenthos

Anderson, 1962

Andersson, 1974

Androsora, 1962

Baker and Wong, 1968

Brotskaja, 1961

Brady, 1878

Carsola, 1955

Chislenko, 1963

Cushman, 1920

Cushman, 1948

Drzycimski, 1968

Meiobenthos (continued)

Echols, 1975

Erseus, 1974

Fagerlin, 1971

Frost, 1967

Gal'tzova , no date given

Green, 1960

Higgins, 1966

Holmquist, 1974

Hyman, 1953

Jones, 1960

Joy, 1974

Linstow, 1900

Loeblich and Tappan, 1953

Mathews, 1964

Neale and Howe, 1973

Newell, 1951a

Newell, 1951b

Nurminen, 1973

Remane, 1933

Shchedrina, 1936

Shchedrina, 1938

Shchedrina, 1939

Shchedrina, 1946

Shchedrina, 1948

Shchedrina, 1950

Meiobenthos (continued)

Shchedrina, 1952a

Shchedrina, 1952b

Shchedrina, 1953

Shchedrina, 1956a

Shchedrina, 1956b

Smith and Welch, 1924

Sokolov, 1952

Todd and Low, 1966

Ude, 1933

Vilks, 1964

Vilks et al., 1970

Wagner, 1974

Wilson, 1965

Mollusca

Adams, 1855

Aurivillius, 1887

Blake, 1973

Broderip and Sowerby, 1828

Chamberlin and Stearns, 1963

Clark, 1963

Clarke, 1960

Clarke, 1962

Clarke, 1963

Coan, 1971

Corgan, 1966

Corgan, 1969

Mollusca (continued)

Cowan, 1968

Crosse, 1877

Dall, 1875

Dall, 1879

Dall, 1885a

Dall, 1885b

Dall, 1896

Dall, 1902

Dall, 1903

Dall, 1919a

Dall, 1919b

Dall, 1920

Dall, 1924

Dall, 1925

Deriugin, 1932b

Filatova, 1957a

Filatova, 1957b

Filatova, 1957c

Filatova, 1959

Galkin, 1964

Galkin, 1965

Golikov, 1963

Golikov, 1964

Gonor, 1964

Gray, 1824

Gray and Sowerby, 1839

Mollusca (continued)

Green, 1973

Greve and Samuelsen, 1970

Hulsemann, 1962

Iakovleva, 1952

Knipovich, 1900

Knipovich, 1905

Kuznetzov, 1948a

Kuznetsov, 1948b

Kuznetsov, 1948c

Kuznetsov, 1951

Kuznetsov, 1957

LaRoque, 1953

Lemche, 1948

Lubinsky, 1972

MacGinitie, 1959

Macpherson, 1968

Macpherson, 1971

McCauley, 1964b

Miloslavskaia, 1958b

Miloslavskaia, 1958d

Miloslavskaia, 1970

Nicol, 1955

Odhner, 1921

Roginskaya, 1963

Salvini-Plawen, 1970

Mollusca (continued)

Skarlato, 1956

Smith, 1877

Soot-Ryen, 1924

Soot-Ryen, 1925

Soot-Ryen, 1932b

Soot-Ryen, 1939

Soot-Ryen, 1941

Tanasiichuk, 1928

Theisen, 1973

Thiele, 1929

Thiele, 1933

Thorson, 1935

Verrill, 1879b

Verrill, 1922

Wagner, 1974

Waren, 1973

Williams, 1940

Morphology

Anderson, 1974

Baranova, 1964

Boeck, 1872-1876

Bulycheva, 1957

Carlgren, 1912

Carlgren, 1942

Coe, 1905

Morphology (continued)

Dall, 1879

D'iakonov, 1923

D'iakonov, 1946

D'iakonov, 1950a

D'iakonov, 1950b

D'iakonov, 1950c

D'iakonov, 1954

Filatova, 1957a

Given, 1965

Golikov, 1963

Gur'ianova, 1932

Gur'ianova, 1933c

Gur'ianova, 1933d

Gur'ianova, 1935b

Gur'ianova, 1936f

Hyman, 1953

Iakovleva, 1952

Ivanov, 1956

Johansson, 1927

Jones, 1960

Kennett, 1970

Koltun, 1959b

Koltun, 1964a

Kuznetsov, 1963a

Lomokina, 1958

"Northwind" Voyage (continued)

U.S. Coast Guard, 1962

Norway

Berrill, 1970

Brady, 1878

Brattegard, 1964

Christiansen, 1968

Clausen, 1963

Erseus, 1974

Fauchald, 1963

Greve, 1963

Greve and Samuelsen, 1970

Mathews, 1964

Odhner, 1921

Salvini-Plawen, 1970

Sars, 1866

Soot-Ryen, 1924

Soot-Ryen, 1932

Norwegian North Atlantic Expedition, 1876-1878

Waren, 1973

Norwegian Sea

Gur'ianova, 1933a

Gur'ianova, 1934d

Mileikovsky, 1968

Mileikovsky, 1969

Mileikovsky, 1970b

Murray et al., 1965

Okhotsk Sea (continued)

Annenkova, 1929

Annenkova, 1934

Annenkova, 1952

Broch, 1933

Crosse, 1877

Dall, 1879

Dall, 1925

D'iakonov, 1929b

D'iakonov, 1929c

D'iakonov, 1938

D'iakonov, 1950a

D'iakonov, 1950c

D'iakonov, 1954

Filatova, 1957a

Gur'ianova, 1933c

Gur'ianova, 1933d

Gur'ianova, 1935b

Gur'ianova, 1935c

Gur'ianova, 1936b

Gur'ianova, 1936f

Gur'ianova, 1946a

Gur'ianova, 1951

Kliuge, 1961

LaRoque, 1953

Lomakina, 1956

Okhotsk Sea (continued)

Makarov, 1937a

Pavlovskii, 1955

Shchedrina, 1952a

Shchedrina, 1952b

Shchedrina, 1953

Shchedrina, 1956a

Shimkevich, 1913

Silvertsen, 1932

Skarlato, 1956

Starokadomskii, 1917

Steele and Brunel, 1968b

Ushakov, 1940

Ushakov, 1949

Ushakov, 1950

Ushakov, 1958a

Ushakov, 1958b

Vinogradov, 1956

Zarenkov, 1960

Zarenkov, 1948b

Zarenkov, 1958a

Zarenkov, 1958b

Zarenkov, 1963

Znamemskii, no date given

Point Barrow Expedition

Dall, 1885a

Dall, 1885b

Pollution

Chia, 1970

Polychaeta

Annenkova, 1922

Annenkova, 1923

Annenkova, 1924

Annenkova, 1925a

Annenkova, 1925b

Annenkova, 1926

Annenkova, 1929

Annenkova, 1934

Annenkova, 1952

Ashworth, 1910

Augener, 1928

Bergstrom, 1914

Berkeley and Berkeley, 1942

Berkeley and Berkeley, 1956

Berkeley and Berkeley, 1958

Berkeley and Berkeley, 1962

Chamberlin, 1920

Curtis, 1969

Curtis, 1970

Curtis, 1972

Polychaeta (continued)

Fauchald, 1963

Gustafson, 1936

Johansson, 1927

Knox, 1959

Mileikovsky, 1968b

Moore, 1906

Murdoch, 1885b

Pettibone, 1949

Pettibone, 1951

Pettibone, 1954

Reish, 1965

Streltzov, 1966a

Streltzov, 1966b

Streltzov, 1966c

Streltzov, 1968

Ushakov, 1948c

Ushakov, 1957

Verrill, 1879a

Wesenberg-Lund, 1950

Porifera

Breitfus, 1898

DeLaubenfels, 1953

Dendy and Frederick, 1924

Koltun, 1959b

Koltun, 1964a

Porifera (continued)

Lambe, 1900

Tendal, 1970

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FINAL REPORT

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Summarization of existing literature and unpublished data on the distribution, abundance, and life histories of benthic organisms

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1 January 1977

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C. Annotated Bibliography

The annotated bibliography includes the references in the published and unpublished literature pertaining to benthic research in the Beaufort Sea and other polar regions. This list of works has been assembled from correspondence and library searches, as well as a number of other sources, including Oceanic Abstracts, Biological Abstracts, Arctic Bibliography, and the National Technical Information Service. The specific source is listed at the end of each entry when applicable. Entries which pertain wholly or in part to aspects of the Beaufort Sea benthos are indicated with preceeding astrisks.

** Abbott, D.P. 1961. The Ascidians of Point Barrow, Alaska; Part 1. Suborder Phlebobranchia, Enterogona. Pacific Science 15(1):137-143.

Presents data on collections of ascidians made in this north coast area. Eight species of the order Enterogona are described and details of anatomy and habitat are tabulated. (Arctic Biblio.)

Abbott, D.P. 1966. The Ascidians. In: Wilimovsky, N.J. and J.N. Wolfe (eds.). Environment of the Cape Thompson Region, Alaska. United States Atomic Energy Commission, Division of Technical Information. p. 839-841.

Lists 23 species of ascidians and tabulates these by station collected, with a brief introduction. (Arctic Biblio.)

Adams, A. 1855. Descriptions of Two New Genera and Several New Species of Mullusca from the Collections of Hugh Cuming, Esq. Zoological Society of London. Proceedings. 23:119-124.

Contains descriptions of 21 molluscs (19 described as new) from various seas. Bela arctica, native to arctic seas, is included. (Arctic Biblio.)

Agatep, C.P. 1967. Holothurians of the Genera Elpidia and Kolga from the Canadian Basin of the Arctic Ocean. Southern California Academy of Sciences. Bulletin. 66(2):135-141.

Describes two species of elasipodid holothurians, Elipidia glacialis glacialis and Kolga hyalina, specimens of which were collected by Menzie's trawl from drifting station ARLIS II. Drawing and taxonomic notes are included. (Arctic Biblio.)

Akademiia Nauk SSSR. 1954. Ob Issledovaniiakh Sovetskikh Uchenykh v Arktike. (Explorations of the Soviet Scientists in the Arctic.) Akademiia Nauk SSSR. Vestnik. 24(6):76-77.

Summary of a report delivered by the Arctic Institute to the Presidium of the Academy on recent accomplishments: the discovery in 1948-49 of a great submarine mountain range 2.5-30 km in height, extending across the Arctic Basin from the New Siberian Islands to Greenland; discovery of a singular, excessive arctic magnetic anomaly; investigation of marine fauna found in abundance in highest latitudes. (Arctic Biblio.)

Akademiia Nauk SSSR. 1955. Atlas Bespozvonochnykh Dal'nevostochnykh Morei SSSR. (Atlas of Invertebrates from the Far Eastern Seas of the USSR.) Izd-vo Akademii Nauk SSSR, Moskva-Leningrad. 243 p.

Contains a general part (p. 5-21) dealing with the history of faunistic research of these seas; their physico-geographical characteristics; nature and type composition of fauna; fauna of the various marine zones (littoral, continental shelf, etc). This is followed by an account and description of types, classes, etc., down to and including species (p. 22-229) with notes on biology and ecology, distribution, economic value, etc. The "Atlas" proper consists of 66 plates at the end of the book with illustrations of some 600 species described in the text. An alphabetic index (p. 230-40) of both Russian and Latin names in included. Some 30 specialists (listed) participated in the study under the general editorship of P.V. Ushakov. (Arctic Biblio.)

Akademiia Nauk SSSR. 1956. Konferentsiia po Issledovaniiu Fauny Dalnevostochnykh Morei. 3rd. Trudy. Moskva, Leningrad, Izd-vo Akademii Nauk SSSR, 1956. (Transactions of the Third Conference of Fauna of the Far Eastern Seas, 1954.) Akademiia Nauk SSSR. Zoologicheskii Institit. Trudy Problemnykh i Tematicheskikh Soveshchanii. 6.

Contains 27 of the 40 papers presented (some in brief, to be pub. in full elsewhere); several dealing with northern forms or areas. (Arctic Biblio.)

Aleksandrov, A.I. 1915. Spisok Stantsii i Sborov, Proizvendennykh v Kovdenskom Zalivie s 24 Iiunia po 5 Avgusta 1912 Goda. (List of Stations and Specimens Collected in Kovda Bay from June 24 to Aug. 5, 1912.) Akademiia Nauk SSSR. Zoologicheskii Muzei. Ezhegodnik. 19(4):xxix-xlvii.

Contains a general description of the geography and natural history of Kovda Sound (about 66°40' N 33°E) Kandalakshskiy Gulf, White Sea; and a list of 84 stations established there in 1912, with their locations, depth, bottom samples and names of marine plants and animals collected on each station. (Arctic Biblio.)

Alexander, V., D.C. Burrell, J. Chang, RT. R. Cooney, C. Coulon, J.J. Crane, J.A. Dygas, G.E. Hall, P.J. Kinney, D. Kogl, T.C. Mowatt, A.S. Naidu, T.E. Osterkamp, D.M. Schell, R.D. Seifert and R.W. Tucker. 1974. Environmental Studies of an Arctic Estuarine System, Final Report R74-1. Institute Marine Science, University of Alaska, Fairbanks. Sea Grant Report 73-16. 539 pp.

Allen, J.A. 1959. On the Biology of Pandalus borealis Kroyer, with Reference to a Population off the Northumberland Coast. Marine Biological Association of the United Kingdom. Journal 38(1):189-220.

Data on the distribution of Pandalus borealis have been brought up to date, and the factors controlling its distributions (temperature, salinity, substratum and depth) are discussed. An account of the biology of the population off the Northumberland coast is given and compared with accounts of work on other populations. Knowledge of the biology of this species now extends over the entire north-south range in the eastern Atlantic. (Author.)

Andersen, M. 1971. Echinodermata from Joergen Groenlund Fjord, North Greenland. Meddelelser om Groenland 184(12):1-18.

Eleven species of echinoderms are included with station data and remarks.

Anderson, G.J. 1962. Distribution Patterns of Recent Foraminifera of the Bering Sea. Micropaleontology 9(3):305-317.

Foraminiferal distribution within the Bering Sea is related to the physiography of the adjacent land mass, to sea floor topography, sediment type and oceanography. (Biological Abstracts.)

Andersson, A. 1974. Musculature and Muscle Scars in the Cytherid Ostracode Cytheridea papillosa (Bosquet). Zoologica Scripta 3(2):83-90.

The intrinsic and extrinsic muscles in Cytheridea papillosa are described and their function discussed. Special attention has been paid to the extrinsic muscles and the scars these muscles form on the valves. (Author.)

Andriiashev, A.P. 1944. Preryvistoe Rasprostranenie Morskoi Fauny v Severnom Polusharii. (Discontinuous Distribution in the Northern Hemisphere.) Priroda 1:44-52.

Contains a study of faunistic relations of northern sections of the Pacific and Atlantic Oceans as typified by disjoint distribution of the common herring (Culpea harengus), some other fishes (Gadus morrhua, Salmo, Hippoglossus hippoglossus, etc), some Decapoda (Lithodes maja) and many other marine organisms. A scheme of the development of amphiboreal areas of marine fauna in the Northern Hemisphere is represented (sketch maps 8-11). It is concluded that the contemporary disjoint amphiboreal areas were formed in the Pleiocene epoch through Bering Strait. The migration of the fauna was from the Pacific into Atlantic Ocean along the northern coast of North America. (Arctic Biblio.)

Androsova, V.P. 1962. Foraminifery Donnykh Otlozhenii Chasti Poliarnogo Basseina. (Foraminifera from Bottom Sediments of the Western Polar Basin.) Moskva. Vsesoiuznyi Nauchno-issledovatelskii Institut Morskogo Rybnogo Khoziaistva i Okeanografii. Trudy. 46:102-117.

Study on material from the upper 20 cm of sediments, collected in 1937-1938 by the North Pole-1 drifting station, with a general introdution by T. Gorshkova. Location and horizon, as well as nature of bottom, are included in the records of species found. A poverty of species is noted in all samples and horizons with fam. Globigerinidae predominating. Most of the species were carried in the Atlantic current. (Arctic Biblio.)

Annenkova, N.P. 1922. Apercu de la Famille des Chloraemidae (Annelida Polychaeta) de la Collection du Musee Zoologique de l'Academie des Sciences de Russie. (A Revision of the Family Chloraemidae [Annelida Polychaeta] from the Collection of the Zoological Museum of the Academy of Sciences of the USSR.) Akademiia Nauk SSSR. Comptes Rendus. Doklady. 1922A:38-40.

Contains a list of 11 species of marine polychaetous worms inhabiting all seas along the northern coast of the USSR, Bering Sea and Okhotsk Sea; diagnosis of Brada ochotensis, B. sachalina, B. nuda and B. arctica n. spp. are included. (Arctic Biblio.)

**Annenkova, N.P. 1923. Rod Brada. (The Genus Brada.) In: Vserossiiskii s"ezd Zoologov, Anatomov i Gistologov, 1, Petrograd, 1922. Trudy. p. 15.

Contains a critical revision of polychaetous genus Brada, with Russian diagnoses of four new species: B. arctica from Novo-Sibirskeye Islands waters, B. nuda native to Beaufort Sea and B. ochotensis and B. sachalinica found in southern part of Sea of Okhotsk. (Arctic Biblio.)

**Annenkova, N.P. 1924. Neus uber die Verbreitung einiger Arten der Polychaeten. (New Data on the Distribution of Some Species of Polychaeta.) Akademiia Nauk SSSR. Comptes Rendus. Doklady. Ser. A:125-128.

Contains descriptions of five new species of marine polychaetous worms including Terebella hesslei (White Sea), Polycirrus eous (Okhotsk Sea) and Flabelligera similis (Beaufort Sea); together with additional data on distribution of other polychaetes occurring in all seas along the northern coast of the USSR, and in Bering and Okhotsk Seas. (Arctic Biblio.)

Annenkova, N.P. 1925a. Beitrage zur Kenntniss der Polychaeten-Fauna Russlands, I. (Contributions to the Knowledge of the Polychaeta Fauna of Russia, I.) Adademiia Nauk SSSR. Comptes Rendus. Doklady. Ser. A:125-126.

Descriptive notes and data on distribution of marine polychaetous worms, Pallasina pennata from Okhotsk Sea and Sternapsis fossor, native to Laptev Sea (77°20' N) and Bering Sea. (Arctic Biblio.)

Annenkova, N.P. 1925b. Neues uber die verbreitung einiger Arten der Polychaeten nebst Beschreibung Neuer Arten. (New Data on the Distribution of Some Species of Polychaeta and Descriptions of New Species.) Akademiia Nauk SSSR. Comptes Rendus. Doklady. Ser. A:26-28.

Pista sachsi n. sp. and Neoamphitrite figulus pacifica n. subsp. are described from the specimens obtained in the Okhotsk Sea, and additional distributional data are given on four other species, occurring in the seas along the northern coast of the USSR. (Arctic Biblio.)

Annenkova, N.P. 1926. Zur Anatomie einer Kiemenlosen Terebelliden-Art (Terebella hesslei mihi). (On the Anatomy of a Terebella Species without Gills [T. hesslei Anenkova].) Zoologischer Anzeiger 68(5-6):131-136.

Contains a study of the external anatomy and morphology of a marine polychaetous worm, native to the White Sea, previously described by the author as Terebella hesslei n. sp., in her paper Neues uber die Verbreitung einiger Arten der Polychaeten, 1924, q.v. (Arctic Biblio.)

Annenkova, N.P. 1929. Beitrage zur Kenntnis der Polychaeten-Fauna der USSR, I. Fam. Pectinariidae Quatrefages (Amphictenidae Malmgren) und Ampharetidae Malmgren. (Contributions to the Knowledge of the Polychaete Fauna of the USSR, I. Fam. Pectinariidae Quatrefages [Amphictenidae Malmgren] and Ampharetidae Malmgren.) Akademiia Nauk SSSR. Zoologicheskii Muzei. Ezhegodnik. 30(3):477-502.

Contains a study of the families Pectinariidae and Ampharetidae of polychaetous marine worms of Russia with a systematic list of 25 species, including descriptions of six new species, critical notes and data on distribution in the waters along the northern coast of European and Asiatic Russia in Bering and Okhotsk Sea, with lists of localities. (Arctic Biblio.)

Annenkova, N.P. 1934. Paraonidae Dal'nevostochnykh Morei SSSR. Meeres-Paraoniden in Fernen Osten der USSR. (Paraonidae of the Far Eastern Seas of the USSR.) Akademiia Nauk SSSR. Doklady. Nov. Ser. 3(8-9):645-661.

Contains Russian and German descriptions of three new species of annelid worms of the fam. Paraonidae, including _Paraonis ivanovi_ n. sp. obtained in northern Bering Sea and _Aricidea antennata_ n. sp. native to Chukchi (71°19'N, 178°12'W) and Okhotsk Seas. Summary in German. (Arctic Biblio.)

Annenkova, N.P. 1952. Novye vidy Mnogoshchetinkovykh Chervei (Polychaeta). (New Species of Polychaete worms.) Akademiia Nauk SSSR. Zoologicheskii Institut. Trudy. 12:148-154.

Descriptions of eight new species of polychaetes native to Greenland Sea, all arctic seas along the northern coast of USSR and to Okhotsk Sea. (Arctic Biblio.)

** Arctic Institute of North America. 1974. The Alaskan Arctic Coast. A Background Study of Available Knowledge. Arctic Institute of North America, Anchorage. 551 p.

Discusses, on pages 272-275, the abundance of invertebrates and changes in density and distribution with depth and sediment type. A table compares the number of species for each phylum in the Chukchi and Beaufort Seas.

Arndt, W., and J.A. Grieg. 1933. Die Brachiopoden des Arktischen Gebietes. Fauna Arctica 6:477-488.

Lists arctic brachiopods with locations.

** Ashworth, J.H. 1910. The Annelids of the Family Arenicolidae of North and South America; including an Account of _Arenicola galcialis_ Murdoch. U.S. National Museum. Proceedings. 39(1772):1-32.

Contains a key, followed by descriptions of the genus *Arenicola* and five species. *A. marina* (labrador), *A. claparedii* (Aleutian Islands), and *A. glacialis* (Point Barrow) are included. (Arctic Biblio.)

Augener, H. 1928. Die Polychaeten von Spitzbergen. Fauna Arctica. 5:647-837.

Includes data on distribution, keys, and descriptions of the species found. In German.

Aurivillius, C.W.S. 1887. Ofversigt Ofver de af Vega-Expeditionen Insamlade Arktiska Hafsmollusker. II. Placophora och Gastropods. (Survey of Arctic Marine Molluscs Collected by the Vega Expedition. II. Placophora and Gastropoda.) *In*: Nordenskiold, N.A.E. Vega-Expeditionens Vetenskapliga Iakttagelser. 4:311-383.

Contains list with synonymy, localities and remarks upon the specimens of one hundred twenty-one (including nine new) species from Kara, Laptev, East Siberian and Chukchi Seas, Bering Strait and Bering Sea; descriptions of new species and new varieties and a list of stations. (Arctic Biblio.)

Baker, H.J. and J.W. Wong. 1968. Paradoxostoma rostratum Sars (Ostracoda, Podocopida) as a Commensal on the Arctic Gammarid Amphipods Gammaracanthus loricatus (Sabine) and Gammarus wilkitzkii Birula. Crustaceana 14(3):307-311.

Twenty-six genera of podocopid ostracods are now known to be commensal. Of these 26 genera, three are members of the Paradoxostomatidae (McKenzie, 1967). These three genera are Aspidoconcha De Vos, 1953; Laocoonella De Vos and Stock, 1956; and Redekea De Vos, 1953. All of the commensal Ostracoda cling to the appendages of other crustaceans to obtain food from currents of water. Since species of Paradoxostoma suck the juices of plants (Morkhoven, 1962), this is believed to be the first report on commensalism within the genus. (Author.)

Balakshin, L.L. 1957. Vysokoshirotnaia Okeanograficheskaia Ekspeditsiia na Ledoreze "F. Litke" 1955 g. (High Latitude Oceanographic Expedition on the Ice-Breaker F. Litke in 1955.) Problemy Arktiki 1:123-135.

This expedition, sponsored by the Arctic Institute and headed by the author, left Murmansk on Aug. 24, sailed to Dikson Island, then north across the Kara Sea and explored the Arctic Basin north of Franz Joseph Land. The vessel reached 83°21' N, 53°11' E on Sept. 11, the farthest north for a freesailing ship, refuelled twice at Barentsburg, made two trips in area north from Spitsbergen, and on Oct. 28th returned home. Taking advantage of favorable ice conditions, the expedition studied the hydrology, chemistry, biology and geology of the little known area of the Arctic Basin, 80-83° N, 15-65° E' 57 deep water stations were made, 84 bottom samples, including a 412 cm. core, were taken, 27 trawls were made, including 12 in deep water. A depth of 5449 m. was found at 82°23' N, 19°31' E, the deepest spot so far known. The great number of polar bears (50-60) on edge of the ice pack is noted. Route of expedition is shown on map (p. 124). (Arctic Biblio.)

Banner, A.H. 1947. A Taxonomic Study of the Mysidacea and Euphausiacea (Crustacea) of the Northeastern Pacific, Part I. Royal Canadian Institute. Transactions. 26:345-399.

Includes that part of the North Pacific Ocean north of 45° N and east of 180°, and the adjacent sections of the Bering Sea and Arctic Ocean. Contains Mysidacea from family Lophogastridae through tribe Erythropini. In parts I and II, to the sixteen species of mysids previously reported, sixteen more are added here, seven species and one genus of which are described as new. (Arctic Biblio.)

Banner, A.H. 1948. A Taxonomic Study of the Mysidacea and Euphausiacea (Crustacea) of the Northeastern Pacific, Part II. Royal Canadian Institute. Transactions. 27:65-125.

Includes that part of the North Pacific Ocean north of 45° N and east of 180°, and the adjacent sections of the Bering Sea and the Arctic Ocean. Contains Mysidacea from tribe Mysini through subfamily Mysidellinae. In parts I and II, to the sixteen species of mysids previously reported, sixteen more are added here, seven species and one genus of which are described as new. (Arctic Biblio.)

Baranova, Z.I. 1964. Iglokozhie (Echinodermata), Sobrannye Ekspeditsiei na l/r "F. Litke" v 1955 g. (Echinoderms Collected by the F. Litke Expedition in 1955.) Leningrad. Arkticheskee i Antarkticheskii n.-issl. Inst. Trudy. 259:355-372.

Reports of material collected north of Franz Joseph Land and Spitzbergen, half of it from depths of more than 1000 m. Thirty-three species are listed with notes on location and depth of find, morphology, vertical and geographic distribution. Some forms are described in detail. A general and zoogeographic characteristic of the material is included. (Arctic Biblio.)

Barr, L. 1970. Alaska's Fishery Resources, the Shrimps. U.S. Fish Wildlife Serv., Fisheries Leaflet. 631:1-10.

Contains a key and photographs for the commercially important species of Pandalidae. Discusses life history and research being conducted to improve the fishery.

Beliaev, G.M. 1950. Normal'nye Pokazateli Osmoticheskogo Davleniia Polostnoi Zidkosti Bezpozvonochnykh Barentsova Moria. (Normal Indicators of the Osmotic Pressure of Body Liquid of the Invertebrates of the Barents Sea). Akademiia Nauk SSSR. Doklady. Nov. Seriia 71(3):569-572.

An investigation of the osmotic concentration of the body liquid of 48 species of invertebrates was carried out on the Murman Biological Station in 1947. It shows that the view of a so-called osmotic balance of pressure of the body liquid with that of the sea water is not valid. Only two species out of 48 were found to be isotonic with sea water; the rest have either higher or lower osmotic concentration of the body liquid; some groups of crustaceans are hypotonic, the rest of the invertebrates are hypertonic. (Arctic Biblio.)

Bergstrom, E. 1914. Zur Systematik der Polychaeten-familie der Phyllodociden. (On Systematics of the Polychaeta Family Phyllodocidae.) Zoologiska Bidrag Fran Uppsala 3:37-224.

Contains notes on the systematic position of this family of marine polychaete worms together with its diagnosis and systematic characteristics, p. 38-76; a discussion of the genera, with a key, p. 76-116, a discussion of the species with keys and diagnoses of 51 species from various waters (11 genera and 3 species described as new), list of localities and data on total distribution; a bibliography (200 items). Includes species distributed along the northern coast of Europe and Asia, in Greenland Waters and Bering Sea. (Arctic Biblio.)

Berkeley, E. and C. Berkeley. 1942. North Pacific Polychaeta, Chiefly from the West Coast of Vancouver Island, Alaska, and Bering Sea. Canadian Journal of Research. 20(D):183-208.

List, with localities, of one hundred seventy-five species, of which about forty-six occur in the Gulf of Alaska, Aleutian waters, Bering Sea and Chukchi Sea. (Arctic Biblio.)

**Berkeley, E. and C. Berkeley. 1956. On a Collection of Polychaetous Annelids from Northern Banks Island, from the South Beaufort Sea, and from Northwest Alaska, Together with Some New Records from the East Coast of Canada. Canada. Fisheries Research Board. Journal. 13(2):233-246.

Contains notes on 37 species collected mostly by Dr. Ferris Neave from the Northwind in 1954 of Banks Island and off Icy Cape, Alaska; 27 are new for the area. Six species collected off Nova Scotia and New Brunswick are included. Extent of Northern American and European distribution is given. (Arctic Biblio.)

**Berkeley, E. and C. Berkeley. 1958. Polychaeta of the Western Canadian Arctic. Canada. Fisheries Research Board. Journal. 15(5):801-804.

A summary of the species of Polychaeta hitherto recorded from the western Canadian Arctic is given. Each of the species enumerated is considered in the light of its known, or unknown, occurrence in each of two regions to the west (northern Alaska and the Chukchee Sea) and two to the east (Hudson Bay and Greenland) respectively. The results show an almost complete balance in the number of occurrences of like species in the regions in both directions, suggesting circumpolar distribution within the area studies. (Author.)

**Berkeley, E., and C. Berkeley. 1962. Polychaeta from British Columbia; with a Note on Some Western Canadian Arctic Forms. Canadian Journal of Zoology 40:571-577.

Nine species of Polychaeta collected off the Coast of British Columbia are recorded. Two of these (Micromaldane ornithochaeta and Notomastus lineatus var. balanoglossi) have not been reported previously outside of Europe, one (Asychis biceps) is new to the west coast of North America, and four are new to British Columbia. Six species are recorded from the neighborhood of Herschell Island in the western Canadian Arctic. All are new to the region, though known from further western seas, and, in three cases (Melaenis loveni, Antinoella sarsi, and Nephtys malmgreni) from the western Canadian Arctic further east. (Author.)

Berrill, M. 1970. Benthic Life in the Fiords of Norway. Natural History 79(9):52-59.

Observations of benthic invertebrates taken at depths of 800 feet or more in Raunefjord.

Blacker, R.W. 1965. Recent Changes in the Benthos of the West Spitzbergen Fishing Grounds, International Commission for the Northwest Atlantic Fisheries. Special Publication No. 6:791-793.

Discusses changes in the benthos of what are considered indicator species for Atlantic waters and Arctic waters. The data indicates an influx of Atlantic species.

Blake, W. Jr. 1973. Former Occurrence of Mytilus edulis L. on Coburg Island. Arctic Archipelago. Le Naturaliste Canadien. 100:51-58.

Investigations on Coburg Island, Arctic Archipelago, have revealed that the blue mussel, Mytilus edulis Linne formerly lived 350 km north of its present limit. The age of the mussels on Coburg Island is >38,000 radiocarbon years (GSC-1425), and the deposit probably relates to the warm interval, with accompanying higher sea-level, which corresponds to the Sangamon Interglacial of continental North America. (Author.)

Boeck, A. 1871. Crustacea Amphipoda Boreali et Arctica. (Boreal and Arctic Crustacea Amphipoda.) Norske Videnskaps-Akademi, Oslo. p. 83-279.

Contains a critical revision of marine and some fresh-water (in Scandanavia) crustaceans of arctic and boreal regions, with a systematic list of about 250 species, including diagnoses of many new species, brief descriptions of other species, synonymy, critical notes and data on distribution. At least 70 species are native to Greenland and Barents Sea, Svalbard Waters and northern provinces of Scandinavia. (Arctic Biblio.)

Boeck, A. 1872-1876. De Skandinaviske og Arktiske Amphipoder. (The Skandinavian and Arctic Amphipods.) Christiania, A.W. Brøgger. 711 p.

This comprehensive work gives a description of the morphology of the amphipods; alphabetic list of the more important works written about this order of crustaceans to 1870; chronological survey of knowledge of the amphipods, from Aristotle to the year 1855; development of a system of classification; descriptions of species, with habitats, distribution and other data. Includes alphabetic listing of species (p. 705-711), and a preface to each volume. (Arctic Biblio.)

Boone, P.L. 1920. Isopoda of the Canadian Arctic and Adjoining Regions. Canadian Arctic Expedition, 1913-1918. Report. Vol. 7: Crustacea, Pt. D. King's Printer, Ottawa. 40 p.

List, with comprehensive synonymy and circumpolar distribution, of thirty-three species of marine isopods from the Bering Sea waters of Alaska across the Canadian arctic coast to Davis Strait at the 60° N lat. parallel; based on the collections of this expedition and on other sources. (Arctic Biblio.)

Borg, F. 1933. Die Bryozoen. III. Tiel: Die Marinen Bryozoen (Stenolaemata und Gyanolaemata) des Arktischen Gebietes. Fauna Arctica 6:515-551.

Lists these arctic Bryozoens with locations.

Bowman, T.E. and R.B. Manning. 1972. Two Arctic Bathyal Crustaceans, the Shrimp Bythocaris cayonesus New Species, and the Amphipod Eurythenes gryllus, with in situ Photographs from Ice Island T-3. Crustaceana 23(2):187-201.

Considers these two crustaceans photographed and trapped in 3800 meters of water in the Arctic Ocean. A key to the arctic species of the shrimp Bythocaris and a description of Bythocaris cryonesus n. sp. is included. The taxonomy, natural history and biogeography of the amphipod Eurythenes gryllus is discussed.

Brady, H.B. 1878. On the Reticularian and Rodiolarian Rhizopoda (Foraminifera and Polycystina) of the North Polar Expedition of 1875-76. Annals and Magazine of Natural History. Ser. 5. I(6):425-440.

Contains tabular data on distribution of 53 species of Foraminifera brought home by Capt. H.W. Fielden, naturalist to the Nares Expedition of 1975-76, from Baffin Bay and Smith Sound, and of 23 additional species from the coast of Greenland and northern Norway; descriptions of some species abstracted from papers of various naturalists and notes on distribution of ten genera of Radiolaria from Baffin Bay, Smith Sound and Robeson Channel. (Arctic Biblio.)

Brahm, C. and S.R. Geiger. 1966. Additional Records of the Scyphozoan Stephanoscyphus simplex Kirkpatrick. Southern California Academy of Sciences. Bulletin. 65(1):47-52.

Reports wide distribution of this coelenterate species; of 32 bottom samples from the Arctic Ocean, Stephanoscyphus simplex was present in fifteen. These new records are from collections made from ARLIS I, ARLIS II, and the icebreaker USNS Burton Island, at depths of 110-1440 m. This data suggests that S. simplex is found at shallower depths in the Arctic Ocean than elsewhere. (Arctic Biblio.)

**Brahm, C. and J.L. Mohr. 1962a. Report of a Scyphozoan Stephanoscyphus simplex Kirkpatrick from the Arctic Ocean. Southern California Academy of Sciences. Bulletin. 61(1):64.

A single specimen from a depth of 1540 m at 71°45' N, 144°55'W in the Beaufort Sea, and a colony from a depth of 471 m. at 74°54' N, 165°48' W in the Chukchi Sea, extend the distribution of this species into the Arctic, and the range of its temperature tolerance to -0.4°. (Arctic Biblio.)

**Brahm, C. and J.L. Mohr. 1962b. Report of an Echiuroid Worm Hamingia arctica Danielsen and Koren from the Beaufort Sea. Southern California Academy of Sciences. Bulletin. 61(2):123.

A complete specimen of this worm was recovered from clayey silt at a depth of 110 m. in the Beaufort Sea in bottom samples taken by the USNS Burton Island, 1960. This is a first regional report of this species in normal substrate; it had previously been washed ashore at Pt. Barrow after a storm. (Arctic Biblio.)

Brattegard, T. 1964. Hydale pontica Rathke (Amphipoda) from Western Norway. Sarsia 15:23-25.

Briefly discussed findings of this amphipod on the Norwegian coast.

Brattegard, T. 1966. Ecological and Biological Notes on Calocarides coronatus Crustacea, Thalassinidea. Sarsia 24:45-52.

New records of Calocarides coronatus (Trybom) are given together with notes on the ecology and biology. It is a deep-water thalassinid decapod occurring scattered on very fine silty or clayey bottoms. Eggs are laid in February-March and develop slowly and hatch in November-December. The newly hatched larvae is large, being at least 6.0 mm long. (Author.)

** Bray, J. 1962. Zoogeography and Systematics of Isopods of the Beaufort Sea. M.Sc. Thesis, McGill University, Montreal. 138 p.

Breitfus, L.L. 1898. Note sur la Faune des Calcaires de l'Ocean Arctique. (Note on the Calcareous Fauna of the Arctic Ocean.) Akademiia Nauk SSSR. Zoologicheskii Muzei. Ezhegodnik. 3(1):12-38.

Contains historical notes on the study of sponges, a critical survey of the fauna of the arctic calcareous sponges with lists of the species occurring in the White and Barents Seas, geographic distribution of 42 calcareous sponges in Greenland, White, Kara and other arctic seas, bathymetric distribution of the arctic species. (Arctic Biblio.)

Breitfus, L.L. 1930. Biogeographischer Beitrag zur Kenntnis der Spongienfauna der Arktis. (Contribution to Knowledge of the Distribution of Arctic Sponges.) Gesellschaft Naturforschender Freunde zu Berlin. Sitzungsberichte 1929:274-282.

Tabular presentation of sponges collected in 1906 aboard the Andrei Pervozvannyi in Barents and Kara Seas, with location, depth and the type of bottom of each station and the temperature and salinity of the ocean water. (Arctic Biblio.)

Broch, H. 1929. Die Hydroiden der Arktischen Meere. Fauna Arctica 5:127-248.

Lists arctic members of this group with locations.

Broch, H. 1933. Uber einige Geographisch Interessante Fundstellen von Alcyonarien und Hydrokorallen im Nordlichen Stillen Ozean. (Some Geographically Interesting Locations of Alcyonarians and Hydrocorals in the North Pacific. Gosudarstvennyi Gidrologicheskii Institut. Issledovannia Morei SSSR. 17:81-86.

Notes on finds in new areas, one in the Okhotsk Sea, for two alcyonarians with records of temperature and salinity. Also description of a new species, Stylaster (Allopora) boreopacificus, n. sp. with discussion of related species, taxonomic position, etc. (Arctic Biblio.)

Broderip, W.J. and G.B. Sowerby. 1828. Observations on New or Interesting Mollusca Contained, for the Most Part, in the Museum of the Zoological Society. Zoological Journal 4(15):359-379.

Contains a list, with descriptions and discussion, of molluscs, some new collected by Lieut. Betcher of the Beechey voyage, 1925-1928, including several from the northwest coast of Alaska near Icy Cape, and at least one from Avacha Bay, Kamchatka. (Arctic Biblio.)

Brotskaja, V.A. 1961. Materialy po Faune Harpacticoida (Crustacea, Copepoda) Velikoi Salmy i Prilezhashchikh Uchastkov Belogo Morya. (Data on the Fauna of Harpacticoida [Crustacea, Copepoda] from the Velikaya Salma and Adjoining Areas of the White Sea.) In: Biologiya Belogo Morya (Biology of the White Sea). Mosk. Univ., Moscow. 1:109-129.

The first specialized study of harpacticoids from the White Sea is presented. A list of 55 spp. is included, with brief notes on their ecology and geographic distributions (3 forms defined only on the genus level). A total of 53 spp. was found by the author. The work provides the first records of 40 spp. for the White Sea and 7 for Arctic Seas of the USSR. Arctic spp. are absent from the littoral, with boreal spp. accounting for 44.5% and arctic-boreal spp. for 33.3% of the total number. Arctic spp. represent 11.8% of the sublittoral, with boreal forms accounting for 14.7% and arctic-boreal for 38.2%. (Biological Abstracts.)

Brotskaja, V.A. and L.A. Zenkevich. 1939a. Quantitative Evaluation of the Bottom Fauna of the Barents Sea. Newfoundland. Memorial University, St. John's. Library Bulletin, 1971. 5(6):1-48.

Comprised of the translated table of contents and summaries of the Russian journal Transactions of the Institute of Marine Fisheries and Oceanography. Discusses the distribution of benthos biomass and its main components; factors determining biomass indices for the whole benthos and for its separate components; and the main bottom fauna complexes of the Barents Sea as shown by the bottom-sampler data.

Brotskaja, V.A. and L.A. Zenkevich. 1939b. Quantitative Evaluation of the Bottom Fauna of the Barents Sea. Part II. Newfoundland. Memorial University, St. John's. Library Bulletin, 1972. 6(1):1-19.

Translation from the Russian journal Transactions of the Institute of Marine Fisheries and Oceanography. This is the second part of this evaluation of the Barents Sea bottom fauna. It contains discussion of indices of density of forms for different complexes, comparison of bottom complexes of the Barents Sea with those of other parts of the Atlantic, zoogeographical conclusions, typological characteristics of the Barents Sea and a summary.

Brotskaya, V.A., N.N. Zhdanova and N.L. Semyonova. 1963. Donnaya Fauna Velikoi Salmy i Prilezhaschikh Rainov Kandalakshskogo Zaliva Belogo Morya. (Bottom Fauna of the Velikaya Salma and the Adjoining Regions of the Kandalaksha Bay of the White Sea.) Belomorskoi Biologicheskoi Stantsii Moskovskogo Gosudarstvennogo Universiteta. Trudy. 2:159-181.

Results of 130 qualitative and 160 quantitative samples taken at 180 stations from 1953-1960. The author presentd data on biomass and distinguishes faunal complexes.

Bryazgin, V.F. 1968. On the Biology and Distribution of Pandalus borealis in the Offshore Waters of the Barents Sea. Annales Biologuques 24:204.

Discusses two commercial concentrations of this deep sea prawn in terms of the physical environment and characteristics of these populations.

Bulycheva, A.I. 1957. Morskie Blokhi Morei SSSR i Sopredelnykh vod; Amphipoda-Talitroidea. (Marine Amphipods of Soviet and Adjacent Seas: Amphipoda-Talitroidea.) Akademiia Nauk SSSR. Zoologicheskii Institut. Opredelitel po Faune SSSR, No. 65.

Monograph in two parts, the first (p. 3-74) dealing with the taxonomic position and morphology of these crustaceans; their phylogeny and evolution; geographic distribution (including arctic waters); methods of their collection. Pt. 2 presents descriptions of these forms in taxonomic order with synonyms, data on morphometry and anatomy, sexual development, geographical distribution. A list of latin names of the forms described is appended. (Arctic Biblio.)

Burt, W.V. 1963. Oregon Oceanographic Studies. Dept. of Oceanography Final Rept., Oct. 62-Sep. 63. Oregon State University, Corvallis.

Summaries are given of studies in the following areas: offshore chemistry, chemistry of upwelling, conductometric analyses of salinity and alkalinity, gas chromatographic determination of dissolved gases in sea water, physical chemistry of sea water, benthic fauna of the Chuckchi Sea, benthic fauna off Oregon, benthic ecology, primary production, Yaquina Bay Studies, oceanic nekton and macroplankton, marine microbiology. (NTIS.)

Burukovsky, R.N. 1966. Novyi vid Krevetki iz Roda Bythocaris i Nekotorye Voprosy Zoogeograffi Roda. (A New Species of Shrimp of the Genus Bythocaris, and some Problems of Zoogeography of the Genus.) Zoologicheskii Zhurnal 45(4):536-542.

A new species of shrimps from the Barents Sea, Bythocaris grumanti sp. n., is described. Some problems of zoogeography of the genus are discussed. When taking under analysis the data on the distribution and biology of the genus, its Atlantic origin is proved by the author. (Author.)

**Calder, D.R. 1970. Thecate Hydroids from the Shelf Water at Northern Canada. Canada. Fisheries Research Board. Journal. 27(9):1501-1547.

Based largely on collections from the Calanus-Salvelinus expeditions, 54 species of thecate hydroids were identified from the shelf waters of northern Canada between northeastern Newfoundland and the Alaska-Yukon border. Common species included Halecium muricatum, Calycella syringa, Campanularia integra, C. speciosa, C. volubilis, Gonothyraea loveni, Filellum serpens, Lafoea gracillima, Sertularella polyzonias, S. tricuspidata, Sertularia schmidti, and S. similis. Halecium groenlandicum, H. scutum, Cuspidella procumbens, Calycella gracilis, and Sertularia schmidti are new records for North America; Ptychogena lactea is previously known from this continent only as the medusa. Twenty-two species are reported in northern Canada for the first time, bringing to 71 the number of thecate species recorded from the region. Nearly half of the 71 species recorded are circumpolar in distribution, and over two-thirds transgress both arctic and subarctic zones.

Most samples had a paucity of hydroids, particularly those from the high arctic. Collection records indicate that the most favorable regions for hydroids in northern Canada are the Strait of Belle Isle, eastern Ungava Bay, eastern Hudson Strait, northern and southeastern Hudson Bay, Foxe Channel, and northern Foxe Basin. (Author.)

**Calder, D.R. 1972. Some Athecate Hydroids from the Shelf Water of Northern Canada. Canada. Fisheries Research Board. Journal. 29(3):217-228.

Sixteen species of athecate hydroids were identified in collections from the shelf waters of northern Canada between the Strait of Belle Isle and the Alaska-Yukon border. This brings the number of athecate species reported from Canada's north coast to 21, and the total number of hydroid species known from the region to 92. One species, Eudendrium caricum Jaderholm 1908 is placed in synonymy with Eudendrium arbusculum Wright 1859. No high-arctic forms were represented, and only eight of the species are panarctic or low-arctic in distribution. Of the remaining species, six occur in boreal as well as subarctic waters, and two have a wide latitudinal range. Five species, Corymorpha groenlandica, Tubularia regalis, Monocoryne gigantea, Rhizogeton nudus, and Hydractinia monocarpa, are recorded in North American waters for the first time. This five, plus Myriothela phrygia, Eudendrium capillare and the hydroid of Euphysa, are new records for northern Canada. (Author.)

**Calman, W.T. 1920. Cumacea. Canadian Arctic Expedition, 1913-1918. Report. V.7: Crustacea, Pt. C. King's Printer, Ottawa. 4 p.

List, with locations and remarks on synonymy of five species from the Beaufort Sea (Collinson Pt., Alaska), Bathurst Inlet, and Dolphin and Union Strait, N.W.T. (Arctic Biblio.)

** Carey, A.G., Jr., and R.E. Ruff. In Press. Benthic ecological studies on WEBSEC-71 and WEBSEC-72. U.S. Coast Guard Oceanography Report Series.

** Carey, A.G., Jr., R.E. Ruff, J.G. Castillo and J.J. Dickinson. 1974. Benthic Ecology of the Western Beaufort Sea Continental Margin: Preliminary Results. In: Reed, J.C. and J.E. Sater (eds.). The Coast and Shelf of the Beaufort Sea Proceedings. Symposium Beaufort Sea Coast and Shelf Research, Jan. 1974. Arct Institute of North America, Arlington. p. 665-680.

The relationships between benthic organisms and the polar marine environment of the continental shelf and slope of the western Beaufort Sea are being defined by statistical analyses of faunal and environmental data. Of particular interest are the ecological effects on benthic community structure of the uniformly low bottom temperatures, the low and unpredictable input of food, and the scouring of the shallower continental shelf by ice. Preliminary results based on data from 20 bottom trawl samples, 70 grab samples, and bottom photographs demonstrate that species are restricted in their distribution with depth zones.

Carlgren, O.H. 1902. Die Actiniarien. Zoologishe Ergebnisse einer Untersuchungsfahrt (etc.) nach der Bareninsel und Westspitzbergen, Ausgefuhrt im Sommer 1898 auf S.M.S. "Olga." IV. (The Actiniarians. Zoological Results of a Research Expedition [etc.] to Bear Island and West Spitzbergen in the summer of 1898 on S.M.S. "Olga" IV.) Wissenschaftliche Meeresuntersuchungen. Neue Folge. 5, Abt. Helgoland: 31-56.

Contains an anatomical and taxonomic treatment of the eight species of sea anemones, collected on the voyage, with a list arranged by station number, giving position, depth, and type of bottom, and a bibliography. (Arctic Biblio.)

Carlgren, O.H. 1912. Ceriantharia. Ingolf-Expedition, 1895-1896. Reports. V.5, Pt. 3. B. Luno, Copenhagen. 76 p.

Deals with the small collection of these coelentraterates brought home by the cruiser Ingolf, and northern species from several museum collections. Contains discussion of the literature and geographic distribution; list with descriptions, of six (including three new) species and one larval form, only one of which occurs in European arctic waters; classification, and a section on morphology of the group; bibliography (62 items). (Arctic Biblio.)

Carlgren, O.H. 1913. Zoantharia. Ingolf-Expedition, 1895-1896. Reports. V.5, Pt. 4. B. Luno, Copenhagen. 63 p.

Based on small collection made by the cruiser Ingolf and on northern and arctic specimens from several museums, this paper contains (1) literature and summary; (2) contribution to the systematic classification of Zoantharia;

and (3) a list, with synonyms, references, occurrences, and descriptions of twenty-two (including twelve new) species of corals and sea anemones; bibliography (27 items). (Arctic Biblio.)

Carlgren, O.H. 1917. Actiniaria and Zoantharia of the Danmark Expedition. Danmark-Ekspeditionen til Gronlands Nordostkyst, 1906-1908. Bd. 3, nr. 19. Meddelelser om Groenland 43:505-507.

List, with localities, of four sea anemones and one zoanth, from the waters in the Kanmark Havn region of Dove Bay, East Greenland. (Arctic Biblio.)

Carlgren, O.H. 1932. Die ceriantharien, Zoantharien und Actiniarien des Arktischen Gebietes. (Ceriantharia, Zoantharia and Actiniaria of the Arctic Region.) Fauna Arctica 6:253-266.

Contains a list, with synonymy, references, distribution, and some descriptive notes, of fifty-eight species of sea anemones from circumpolar seas; a station list for those collected by the German Expedition to the Arctic Ocean, 1898, giving positions and depths; and a bibliography (10 items). (Arctic Biblio.)

Calgren, O.H. 1933. The Godthaab Expedition 1928. Zoantharia and Actiniaria. Meddelelser om Groenland. Bd. 79, Nr. 8. C.A. Reitzel, Kobenhavn. 55 p.

List, with synonymy, localities, and remarks, of twenty (including one new) species of corals, sea anemones, etc., collected in the waters west of Greenland; also discussion and tables of distributions and zoogeographical relations, and list of stations. Bibliography, p. 54-55. (Arctic Biblio.)

Carlgren, O.H. 1934. Some Actinaria from Bering Sea and Arctic Waters. Washington Academy of Sciences. Journal. 24:348-353.

Results of an examination of a small collection in the U.S. National Museum taken by R.A. Bartlett during several years, to which were added some specimens from the Swedish expedition to Kamchatka and the Aleutian Islands, 1920-22. Author gives an annotated list, with localities and some descriptions, of thirteen (including one new) species of coelenterates from waters off western and northern Alaska, Greenland, Labrador, Canadian Arctic Islands, Franz Josef Land, and Kamchatka. (Arctic Biblio.)

Carlgren, O.H. 1940. Actiniaria from Alaska and Arctic Waters. Washington Academy of Sciences. Journal. 30(1):21-27.

Contains account of five species of actinians collected by the MS Stranger in 1937 on the coast of Alaska and north of Bering Sound [sic]. Two of the species seem to be new; one of them, Epiactis polaris, n. sp., develops its embryos in a circular brood chamber, located in the uppermost part of the body, a way hitherto unknown from the Arctic. A bathypelagic species from the Sea of Japan is also included. (Arctic Biblio.)

Carlgren, O.H. 1942. Actiniaria, Part II. Ingolf-Expedition, 1895-1896. Reports. V.5, Pt. 12. B. Luno, Copenhagen. 92. p.

Similar in plan to the author's Actiniaria, part 1, 1921, q.v., this paper includes also forms of sub-tribe Acontiaria, which occur in the same areas. It contains description of forty-four (including eight new) species and one new genus; discussion of distribution of the species; contributions to the anatomy, genealogy, and classification of the Actiniaria, a bibliography (256 items) and an index to part 1-2. (Arctic Biblio.)

Carlgren, O.H. 1949. A Survey of the Ptychodactiaria, Corallimorpharia, and Actiniaria; with a Preface by T.A. Stephenson. Svenska Vetenskaps-Akademien Handlingar, ser. 4, 1(1).

Systematic classification of known sea anemones by one of the two leading authorities on the subject, with a preface by the other, who discusses their present agreement on the systematics and clarifies their earlier differences. All major groups of sea anemones are believed to be known but the classification is still to be enlarged. In the three orders described, 67 of the species representing 41 genera have arctic locations which range from the intertidal and littoral to depths of 3500 m. Several species are circumpolar. All the main polar areas are represented. (Arctic Biblio.)

** Carsola, A.J. 1955. Foraminifera from the Beaufort and Chukchi Seas. Journal of Paleontology 29(4):738. Also in: Journal of Sedimentary Petrology 25(2): 144.

Contains abstract of paper presented at the Annual Meeting of the Society of Economic Paleontologists and Mineralogists, New York, Mar. 28-31, 1955. Foraminifera populations in 62 sediment samples are small. Planktonic foraminifera are rare; principle species is Globigerina pachyderma Ehrenberg. The benthonic assemblage in the Chukchi differs from that of the Beaufort. Three zones of benthonic fauna exist: above 65 m, 65-450 m, below 450 m, probably dependent on sea surface temperature which affects ice cover and organic production. (Arctic Biblio.)

** Castillo, J.G. 1975. Analysis of the Benthic Cumacea and Gammaridean Amphipoda from the Western Beaufort Sea. Thesis submitted to Oregon State University, Corvallis. June, 1975.

Data on the gammarid amphipods and cumaceans from one hundred ninety-nine samples are analyzed using the Simpson index and Shannon-Wiener index. Results indicate high diversity and density on the outer continental shelf and low diversity on the inner shelf and slope.

Chamberlin, J.L. and F. Stearns. 1963. A Geographic Study of the Clam, Spisula polynyma (Stimpson). American Geographical Society. Serial Atlas of the Marine Environment, folio 3, 12 p.

Discusses and maps on a scale of 1:4,000,000 and 1:10,000,000 the geographic Distribution of this reef clam, also bottom temperatures and bottom sediments in the western North Atlantic postulated as suitable for its survival and/or reproduction. Spisula polynyma occurs in the continental shelf regions of Bering and Chukchi Seas, Aleutian waters and the Gulf of Alaska; also in the Gulf of St. Lawrence and southward to Georges Bank. Examined specimens (110 from the Pacific waters noted) and located and identified; including pertinent data. Partial analyses of the distribution of its Pacific locality records indicates temperatures 5.3° - 1.3° C and medium grade sediments suitable for survival and reproduction. This species is reportedly palatable, commonly dug for food in southern Alaska (pink neck clam), but is not of commercial importance. (Arctic Biblio.)

** Chamberlin, R.V. 1920. Polychaeta. Canadian Arctic Expedition, 1912-1918. Report. Vol. 9: Annelids, Parasitic Worms, Protozoans, etc., Pt. B. King's Printer, Ottawa. 40 p.

List, with some descriptions, locations and distribution noted, of forty-nine (including nine new) species of marine worms from the coastal waters of Alaska and Northwest Territories, and a few from Hudson Bay. Addendum and emendations on one of these species appear in Ashworth, J.H. Polychaeta (supplementary), 1924, q.v. (Arctic Biblio.)

Chia, F.S. 1970. Reproduction of Arctic Marine Invertebrates. Marine Pollution Bulletin 1(5):78-79.

Discusses reproductive patterns in arctic invertebrates and the implications of pollution disrupting an arctic community.

Chislenko, L.L. 1963. O Sushchestvovanii Svyazi Plodovitosti s Chislennost'yu u Morskikh Harpacticoida (Crustacea, Copepoda). (On the Existence of a Relationship between the Fecundity and Population of Marine Harpacticoida [Crustacea, Copepoda].) Akademiia Nauk SSSR. Doklady. 155(2):451-453.

The number of eggs and density of population /l of water were determined in 110 different samples collected in the area of the White Sea Biological Station. The samples included 33 spp. of Harpacticoida. It is shown that fertility was directly related to population; thus, 14 spp. averaged less than 1 specimen /l, and the average number of eggs collected for these spp. was only 15. Thirteen species, of which there were 1-20 specimens /l, averaged 27 eggs, and 8 spp. with a frequency of more than 20 specimens /l averaged 47 eggs. (Biological Abstracts.)

Christiansen, M.E. 1968. Notes on the Occurrence of Some Brachyura (Crustacea Decapoda) in Norway and Sweden. Sarsia 36:45-48.

Published records on the occurrence and distribution of six brachyuran species in Scandinavian waters are corrected. (Author.)

Clark, A.H. 1915. A Monograph of the Existing Crinoids. Vol. 1, The Comatulids. Part I. U.S. National Museum Bulletin. 82(1):1-406.

Begun as a memoir on the Crinoidea collected in 1906 in the Bering Sea this is an extensive monograph on existing comatulids consisting of 5 parts.

Clark, A.H. 1920. Echinoderms. Canadian Arctic Expedition, 1913-1918. Report. Vol. 8: Mollusks, Echinoderms, Coelenterates, etc., Pt. C. King's Printer, Ottawa. 13 p.

List, with locations and discussion of distribution, of twenty species from waters between Bering Strait and Bathurst Inlet, with additional list of fifteen species from Hudson Bay area; based on specimens from Eastern Arctic expeditions. (Arctic Biblio.)

Clark, A.H. 1921. A Monograph of the Existing Crinoids. Vol. 1, The Comatulids. Part. 2. U.S. National Museum. Bulletin. 82(2):1-795.

See Clark, A.H., 1915.

Clark, A.H. 1931. A Monograph of the Existing Crinoids. Vol. 1, The Comatulids. Part 3. U.S. National Museum. Bulletin. 82(3):1-816.

See Clark, A.H., 1915.

Clark, A.H. 1936. Echinoderms Collected by Capt. Robert A. Bartlett in the Seas about Baffin Island and Greenland. Journal of the Washington Academy of Sciences. 26(7):294-296.

Lists echinoderms (exclusive of holothurians) collected in the area about Baffin Island and Greenland with locations.

Clark, A.H. 1941. A Monograph of the Existing Crinoids. Vol. 1, The Comatulids. Part 4a. U.S. National Museum. Bulletin. 82(4a):1-603.

See Clark, A.H., 1915.

Clark, A.H. 1947. A Monograph of the Existing Crinoids. Vol. 1, The Comatulids. Part 4b. U.S. National Museum. Bulletin. 82(4b):1-473.

See Clark, A.H., 1915.

Clark, A.H. 1950. A Monograph of the Existing Crinoids. Vol. 1, The Comatulids. Part 4c. U.S. National Museum. Bulletin. 82(4c):1-383.

See Clark, A.H., 1915.

Clark, A.H. 1963. Arctic Archibenthal and Abyssal Mollusks II. Mollusks Dredged from Drift Station Charlie (Alpha II). National Museum of Canada. Bulletin. 185(7):90-109.

A report of molluscs collected in 1959-1960 from station Charlie in the North Canadian Basin about 800 miles north of the Bering Strait. Species found are listed with locality and depth. A systematic discussion with plates is included.

Clark, A.H., and A.N. Clark. 1967. A Monograph of the Existing Crinoids. Vol. 1, The Comatulids. Part 5. U.S. National Museum. Bulletin. 82(5):1-860.

See Clark, A.H., 1915.

Clarke, A.H., Jr. 1960. Arctic Archibenthal and Abyssal Mollusks from Drifting Station Alpha. Breviora 119:1-17.

Record of 17 species taken during summer 1958 while drifting northeasterly some 800 miles north of Point Barrow and 300 miles from the North Pole. Three of the species: *Colus hunkinsi*, *Nucula zophos* and *Malletia abyssopolaris* are new, and described in detail. Some of the material was probably transported from shallow waters. (Arctic Biblio.)

Clarke, A.H., Jr. 1962a. Arctic Archibenthal and Abyssal Mulluscs II, Molluscs Dredged from Drifting Station Charlie, Alpha II. Canada. National Museum. Bulletin. 1963: No. 185, Contributions to Zoology 1962:90-109.

Reports the 1959 and 1960 collections, 2068 specimens, dredged near the western flank of the Chukchi Rise about 800 mi. north of Bering Strait. Included are one scaphopod, 12 gastropod, and 11 pelecypod species, one gastropod, *Alvania karlini* n. sp., described as new; other finds represent substantial bathymetric and geographic range extensions. Some samples also eight species described by Gorbunov are illus. (Arctib Biblio.)

Clarke, A.H., Jr. 1962b. On the Composition, Zoogeography, Origin and Age of the Deep-Sea Mollusk Fauna. Deep-Sea Research 9:291-306.

Presents some conclusions from analysis of information on this fauna at 1000 fm. and deeper: its differences from typical shallow-water mollusc fauna in composition and feeding, the latter most striking in bivalves. The abyssal and shallow-water bivalve faunas at Point Barrow, Alaska, have greater similarity than do those of New England or Puerto Rico. Off East Greenland, filter-feeding bivalves have declines to secondary importance in the 100-200 m interval. Data from Kuril-Kamchatka Trench at 6000-9000 m indicate that in favorable localities deep-sea plankton may constitute a more important food source for filter-feeding mollusks than previously realized. (Arctic Biblio.)

Clarke, A.H., Jr. 1972. The Arctic Dredge, a Benthic Biological Sampler for Mixed Boulder and Mud Substrates. Canada. Fisheries Research Board. Journal. 29(10):1503-1505.

Benthic biological samplers of a new design have been used successfully on ice-rafted archibenthal and abyssal sediments of boulders and mud. The dredge is kite-shaped, of massive construction, and features a single point for cable attachment and a removable cannister for specimen retrieval. Experience in Baffin Bay, the Labrador Sea, and the Icelandic Shelf indicates that the Arctic dredge is a reliable tool for arctic and subarctic research. (Author.)

Clausen, C. 1963. The Hydrozoan Halammohydra found in Norway. Sarsia (11): 17-20.

Briefly discusses distribution and taxonomy of this genus.

Cleaver, F.C. 1963. Bering Sea King Crab (Paralithodes camtschatica) Tagging Experiments. International Commission Northwest Atlantic Fisheries. Special Publication. No. 4:59-63.

A preliminary analysis of data from tagging experiments with the southeastern Bering Sea King crab. The data gives information on growth rates and mortality rates.

Coan, E.V. 1971. The Northwest American Tellinidae. Veliger 14 (Suppl): 1-63.

A taxonomic review of the Tellinacea occurring from the Arctic coast of Alaska to the central coast of Baja California. Includes discussions on nomenclature, historical taxonomy, biogeography, and ecology. Species descriptions are accompanied by black and white plates.

Coe, W.R. 1905. Nemerteans of the West and Northwest Coast of America. Harvard University. Museum of Comparative Zoology. Bulletin. No. 47, 318 p.

Contains general characters of nemerteans, anatomical and histological structures, development, geographical distribution, systematic position. Distribution of the Pacific coast species, keys to groups and species, and a systematic account of 86 species (in 20 genera) are given; 24 of the species are new; 33 recorded on the Alaskan coast, nine in Aleutian waters, nine in the Bering Sea and one in Arctic Ocean. (Arctic Biblio.)

Coe, W.R. 1944. Nemerteans of the Northwest Coast of Greenland and Other Arctic Seas. Journal of the Washington Academy of Sciences. 34:59-61.

Four species not previously found off the northwest coast of Greenland are presented with known distribution and some notes on taxonomy. A list of nemerteans reported from the arctic is given with species' distributions.

** Coe, W.R. 1952. Geographical Distribution of the Species of Nemerteans of the Arctic Ocean Near Point Barrow, Alaska. Washington Academy of Sciences. Journal. 42:55-58. Also issued as: Scripp's Institute of Oceanography. Contribution No. 557.

Contains an account of the worldwide distribution of the 24 species belonging to nine genera of nemertean worms which occur from shallow water to depths of 250 meters on the north Alaskan coast near Point Barrow. (Arctic Biblio.)

** Cooney, R.T., and J. Crane. 1972. Nearshore Marine Biology - Colville Area. Baseline Data Study of the Alaskan Arctic Aquatic Environment. 217-219 p. In: Progress Report to E.P.A., Sea Grant, State of Alaska for 1971. Contract No. 16100 EOM and Grant No. 36109. Institute of Marine Science. Rep. No. R72-3, University of Alaska, Fairbanks.

Corgan, J.X. 1966. Mya on the Alaska Peninsula. Nautilus 80(1):13-16.

Reports several new localities where species of the molluscan genus Mya have been observed in Alaska, on both coasts of the Alaska peninsula from Pavlov Bay to Wide Bay. Notes on the general distrubution of Mya in the Arctic are included. The genus is considered an unexploited economic resource. (Arctic Biblio.)

Corgan, J.X. 1969. Marine Mollusks of Port Moller Bay, Alaska Peninsula. Nautilus. 83:65-66.

Lists and gives abundance estimates of molluscs collected in the Port Moller - Herendeen Bay area in 1965.

Cowan, I. Mct. 1968. The Interrelationships of Certain Boreal and Arctic Species of Yoldia Moller, 1842. Veliger 11(1):51-58.

The author compares a series of measurements on Arctic and Boreal species of Yoldia and discusses their taxonomic significance. A resume of the species discussed, including their synonymy, is included in the taxonomic discussion. Contains photographs.

Crane, J.J. 1974. Ecological Studies of the Benthic Fauna in an Arctic Estuary. Master's Thesis. University of Alaska, Fairbanks. 105 p.

Crane, J.J., and R.T. Cooney. 1974. The Nearshore Benthos. In: V. Alexander, et al. Environmental Studies of an Arctic Estuarine System. Final Report. Institute of Marine Science, Report R74-1. University of Alaska, Fairbanks. p. 411-466.

Cromie, W.J. 1960. Preliminary Results of Investigations on Arctic Drift Station Charlie. Columbia University. Lamont Geological Observatory. Scientific Report No. 3. 33 p.

The station drifted east-west across a shallow peninsula of the Chukchi Shelf (approx. 77°35' N, 160°-165° W) during July-Aug. 1959. Continuous soundings were taken within an accuracy of one meter across the feature and is adjacent deep water. A bathymetric profile has been constructed and the angles of slope computed from seismic reflections. Piston cores (22) were taken, ranging in penetration to 250 cm. Over a hundred bottom photographs show rocks and abundance of life. Geological and biological specimens were sampled by trawl. An attempt at dating by radiocarbon analysis of pelagic forms is in progress. Work was done in seismology (dip and strike of bottom sediments, long-range sound transmission); one earthquake was recorded. Relative and continuous absolute values of the magnetic field were measured. Small variations in atmospheric pressure were recorded continuously on a micro-variobarograph. (Arctic Biblio.)

Crosse, H. 1877. Catalogue des Mollusques qui Vivent dans le Detroit de Behring et dans les Parties Voisines de l'Ocean Arctique. (Catalog of Molluscs of Bering Strait and Neighboring Parts of Arctic Ocean.) Journal de Conchyliologie. Ser. 3. 17:101-128.

List, with synonyms, records of occurrence, and southern limits of range of one hundred sixteen species of mulluscs and two brachiopods, from Chukchi Sea to Okhotsk Sea, the Aleutian waters and Gulf of Alaska (Arctic Biblio.)

Curtis, M.A. 1969. Synonymy of the Polychaete Scoloplos acutus with S. armiger. Canada. Fisheries Research Board. Journal. 26(12):3279-3282.

Some species of Scoloplos, including S. acutus, have been described as differing from Scoloplos armiger by the absence of distinctive hooks (crotchets) in the choracic neuropodia and by the absence of subpodial papillae in the region adjacent to the junction of thoracic and abdominal setigers. Although these species have previously been synonymized with S. armiger, little objective evidence has been put forth to support the synonymies and the species persist in the literature. Data presented here demonstrate that the presence of hooks and subpodial papillae is related to growth and so their absence cannot be considered a good criterion for the discrimination of separate species. (Author.) Specimens were collected at Tanquary Fiord, Ellesmere Island (81°N, 80°W).

Curtis, M.A. 1970. Depth Distributions of Benthic Polychaetes in Harefjord and Tanquary Fjord, Ellesmere Island, N.W.T. McGill University, Marine Sciences Centre. Manuscript Report No. 16, 76 p.

Presents data on 69 polychaete species collected in more than 350 bottom samples. Gradient analysis is carried out on the data and discussed.

Curtis, M.A. 1972. Depth Distributions of Benthic Polychaetes in Two Fjords on Ellesmere Island, N.W.T. Canada. Fisheries Research Board. Journal. 29(9):1319-1327.

The benthic fauna of Hare and Tanquary fiords was collected in replicate grab samples taken at standardized depths from 6 to 100 m. From this collection, 68 polychaete species were identified. Two of these, Hartmania moorei Pettibone and Zeppelinia monostyla (Zeppelin), have not previously been reported in the Arctic. Population densities of common species were similar in each fiord. Distributions at less than 10 m in Tanquary Fiord appear to be greatly modified by the presence of fiord water, a brackish surface layer formed during the summer ice melt. Among the polychaetes, depth ranges and depths of greatest abundance usually differed and so the species appeared to be scattered along the depth gradient rather than grouped in distinct assemblages. (Author.)

** Cushman, J.A. 1920. Forminifera. Canadian Arctic Expedition, 1913-1918. Report. Vol. 9: Annelids, Parasitic Worms, Protozoans, etc., Pt. M. King's Printer, Ottawa. 13 p.

List, with locations and notes on synonymy and distribution, of twenty-six species from the waters between Bering Sea and Bernard Harbour, N.W.T. (Arctic Biblio.)

Cushman, J.A. 1948. Arctic Forminifera. Cushman Laboratory for Foraminiferal Research. Special Publication No. 23. Sharon, Mass. 79 p.

Taxonomic list (with data on known arctic distribution, descriptions and synonymy) of one hundred eighty-two species, based on collections made by R.A. Bartlett, 1925-33 in the Greenland and Canadian Arctic Seas, and Hudson Bay, also on earlier records of forms from the arctic regions. (Arctic Biblio.)

Dall, W.H. 1875. Catalogue of Shells from Bering Strait and the Adjacent Portions of the Arctic Ocean, with Descriptions of Three New Species. California Academy of Sciences. Proceedings. 5:246-253.

Catalog based on previous explorers, on the author's, and on whalers' collections, ranging from the North Alaskan coast to the Aleutians, and including the Siberian side of Bering Sea. Includes three tunicates, two brachiopods, and one hundred and sixteen molluscs. (Arctic Biblio.)

Dall, W.H. 1879. Report on the Limpets and Chitons of the Alaskan and Arctic Regions, with Descriptions of Genera and Species Believed to be New. U.S. National Museum. Proceedings. 1:281-344.

Discussion of the comparative morphology and nomenclature of the chitons, and a systematic list, with descriptions, synonymy, habitats and distribution, of twenty-nine species of chitons and nineteen (including one new) species of limpets, ranging from Pt. Barrow waters to southeastern Alaskan waters and Okhotsk Sea. Includes circumpolar distribution and species outside Alaskan waters. (Arctic Biblio.)

Dall, W.H. 1885a. New or Specially Interesting Shells of the Point Barrow Expedition. U.S. National Museum. Proceedings. 7:523-526.

List of fourteen species with notes on specimens, and descriptions of three new species. (Arctic Biblio.)

** Dall, W.H. 1885b. Report on the Mollusks. In: Report of the International Polar Expedition to Point Barrow, Alaska, 1881-1883. Pt. 4, Natural History, pt. 6. p. 177-184.

Systematic annotated list, with localities, of sixty-one species of molluscs and one brachiopod, obtained from beach and dredging near Point Barrow, Franklin Point, and Norton Sound, with three snails from tundra moss near Point Barrow. (Arctic Biblio.)

Dall, W.H. 1896. Illustrations and Descriptions of New, Unfigured, or Imperfectly Known Shells, Chiefly American, in the U.S. National Museum. U.S. National Museum. Proceedings. 18(1034):7-20.

With Dall, 1902, contains a critical revision of 11 American land shells and about 150 marine species from the Atlantic and Pacific coasts. Two genera, one section and 39 species are described as new. At least 40 of the species, including some new ones, are native to the Chukchi and Bering Seas, Aleutian Island Waters, Baffin Bay-Davis Strait and Labrador Sea. (Arctic Biblio.)

Dall, W.H. 1902. Illustrations and Descriptions of New, Unfigured, or Imperfectly Known Shells, Chiefly American, in the U.S. National Museum. U.S. National Museum. Proceedings. 24(1264):499-566, plates 27-40.

With Dall, 1896, contains a critical revision of 11 American land shells and about 150 marine species from the Atlantic and Pacific coasts. Two genera, one section and 39 species are described as new. At least 40 of the the species including some new ones, are native to the Chukchi and Bering Seas, Aleutian Island waters, Baffin Bay-Davis Strait and Labrador Sea. (Arctic Biblio.)

Dall, W.H. 1903. Synopsis of the Family Astartidae with a Review of the American Species. U.S. National Museum. Proceedings. 26(1342):933-951, plates 62-63.

Contains a discussion of this molluscan family and its subdivisions, brief descriptions of 32 species, and full descriptions of six newly-named forms. At least five of the new species and 15 described earlier are listed as native to arctic seas, Greenland waters, Canadian Arctic Islands waters, Bering Sea, Bering Strait, and Chukchi Sea (Arctic Biblio.)

Dall, W.H. 1919a. Mollusks, Recent and Pleistocene, Canadian Arctic Expedition, 1913-1918. Report. Vol. 8: Mollusks, Echinoderms, Coelenterates, etc., Pt. A. King's Printer, Ottawa. 29 p.

List of one hundred (mainly marine) species, including seven new species fully described, arranged by collecting stations in waters between Teller, Alaska and Bathurst Inlet; appended is a list of thirty Pleistocene fossil species from the coast of Yukon and Northwest Territories. (Arctic Biblio.)

** Dall, W.H. 1919b. The Mollusks of the Arctic Coast of America Collected by the Canadian Arctic Expedition West from Bathurst Inlet with an Appended Report on a Collection of Pleistocene Fossil Mollusca. Report of the Canadian Arctic Expedition (1913-1918). 8(A):3-29.

A listing by station of mollusca found in arctic waters of the United States with some general notes and species descriptions.

Dall, W.H. 1921. Summary of the Marine Shell-bearing Mollusks of the Northwest coast of America, from San Diego, California, to the Polar Sea, Mostly Contained in the United States National Museum, with Illustrations of hitherto Unfigured Species. U.S. National Museum. Bulletin 112. U.S. Gov't. Printing Office, Washington, D.C. 217 p.

Contains a systematic list of 2122 species of the marine bivalve mollusks excluding the Cephalopoda and Nudibranchiata. Among them are 148 arctic species and 291 of the Aleutian subfauna (p. 4). The names of a few new species are included without descriptions but with references to the proposed vehicle of publication. (Arctic Biblio.)

**Dall, W.H. 1924. Supplement to the Report of the Canadian Arctic Expedition, 1913-1918. Volume VII, Part A, Molluscs, Recent and Pleistocene (1919). Report of the Canadian Arctic Expedition (1913-1918). 8(A):31-32.

An addendum to the species found and reported for the Canadian Arctic.

Dall, W.H. 1925. Illustrations of Unfigured Types of Shells in the Collection of the United States National Museum. U.S. National Museum. Proceedings. 66(2554):1-41, plates 1-36.

Contains an alphabetical list and illustrations of nearly two hundred shells from the northern waters of the Pacific Ocean; seventeen of them are described as new. More than a hundred shells are from the Sea of Okhotsk, Bering Sea, Aleutian Waters, Gulf of Alaska, and a few from the Arctic Ocean north of Bering Strait. An index of genera is supplied. (Arctic Biblio.)

Dearborn, J.H. and D. Dean. 1969. Arctic Invertebrate Studies. Antarctic Journal of the United States 4:194-195.

Briefly discusses sampling technique and objectives of samples taken in Labrador Sea and Davis Strait.

**DeLaubenfels, M. 1953. Sponges of the Alaskan Arctic. Smithsonian Miscellaneous Collections. 121(6):1-22.

A systematic discussion of sponges collected near Pt. Barrow with some general remarks on distribution of sponges.

**Dendy, A. and L.M. Frederick. 1924. Porifera. Canadian Arctic Expedition, 1913-1918. Report. Vol. 8: Mollusks, Echinoderms, Coelenterates, etc., Pt. J. King's Printer, Ottawa. 8 p.

List, with descriptions and locations noted, of six species of sponges from waters between Bering Strait and Hudson Bay. (Arctic Biblio.)

Deriugin, K.M. 1927. Otritsatel'nye Cherty Fauny Belogo Moria i Prichiny Etogo Iavleniia. (Negative Characteristics of the Fauna of the White Sea and the Causes of this Phenomenon). In: Vserossiiskii s"ezd Zoologov, Anatomiv i Gistologov. 2, Moskva, 1925, Trudy. p. 268-269.

Contains data on the zoological, oceanographic and hydrological investigations of Novaya Zemlya, carried out by the expeditions of the Northern Scientific-Industrial Institute and Hydrological Institute in 1923-24, with notes on the most interesting finds in the zoological field. (Arctic Biblio.)

Deriugin, K.M. 1928. Fauna Belogo Moria i Usloviia ee Suschestvovaniia. (Fauna of the White Sea and its Life Conditions.) Leningrad. Gosudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR. 7-8:1-511.

A comprehensive biological and hydrographic study based largely on exploration conducted during 1922-1926 by the State Hydrological Institute and the Institute for Exploration of the North with the Murman. Deriugin himself carried out the work with his colleagues and students. These investigations are outlined year by year (p. 10-34) with an introductory account (p. 1-9) of the topography and history of the White Sea. Results of the hydrological and biological investigations of 1922 and 1923 are presented (p. 35-89): temperature, chlorinity, salinity, etc., with depth; benthonic forms collected at stations, and depth and bottom character of them. Chap. 5. (p. 90-181) covers the hydrography of the White Sea: thermic conditions and salinity, oxygen and CO_2, pH, transparency, ice, currents. The bottom deposits are outlined (p. 182-97). An extensive treatment of the fauna (p. 198-352) reviews past faunistic research and continues with descriptions of the forms collected (in taxonomic order, from protozoans to mammals), including notes on occurrence, geographic distribution, taxonomic position, etc. The general characteristic of this fauna and its negative traits are outlines. Phyto- and zooplankton collected, its character, origin, etc. (p. 363-78), and the seaweeds (p. 379-82), are dealt with briefly. Zonation and ecological aspects, from the littoral down to the "pseudoabyssal" are discussed (p. 383-426). Quantitative aspects of the benthos are presented and zonation of the area is dealt with (p. 427-40) on the basis of the benthonic population. Finally the geographic origins of the studied fauna are considered, and an alphabetic list appended of the names of species and genera described, some 1,500 forms. (Arctic Biblio.)

Deriugin, K.M. 1930. Gidrologiia i Biologiia. (Hydrology and Biology.) Leningrad. Gosudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR. 11:37-45.

After reference is made to the relation between hydrography, especially temperature, and life in the sea, the author points to the recent warming of the Barents Sea and the biological changes thus brought about. The latter include penetration of northern Norwegian planktonic and benthonic forms into the Kola Fjord and the central Murman. Cod moved as far east as Novaya Zemlya with a corresponding benefit to fisheries. (Arctic Biblio.)

Deriugin, K.M. 1932a. Bentos Estuariia r. Leny. (Benthos of the Lena Estuary.) Leningrad. Gosudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR. 15:63-66.

Report on the benthos collected by P.K. Khmyzhnikov at 12 stations whilst on an upstream journey in 1926. The material contained typical estuarine forms with some local elements. Temperature and salinity are also noted. (Arctic Biblio.)

Deriugin, K.M. 1932b. Iglokozhie i Mulliuski iz Moria Laptevykh. (Echinoderms and Molluscs from the Laptev Sea.) Leningrad. Gosudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR. 15:147-156.

Description of 19 species of molluscs and two echinoderms, the latter so scarce because of the brackish condition of the area. A new species of mollusc Bela amundseni n. sp. is described in detail. As to the other forms, location of finds, nature of bottom, water temperature, geographic distribution, etc., are noted. The material was collected by P.K. Khmyzhnikov and A. Popov in 1926 and 1927. (Arctic Biblio.)

Deriugin, K.M. 1935. Raboty Tikhookeanskoi Ekspeditsii Gos. Gidrologicheskogo Instituta v 1933 Godu. (Activities of the Pacific Expedition of the State Hydrological Institute in 1933.) Leningrad. Godudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR. 22:5-24.

A report on investigations of three groups of this expedition, one of which under G.E. Ratmanov on the Krasnoarmeets, covered the Bering and Chukchi Seas (p. 17-24). Interesting results were obtained from the study of the "cold spot" in Anadyr Bay, and the effects of the hydrological conditions upon the plankton, benthos and the distribution of fishes were elucidated. Currents in the Bering Strait, ice conditions, and some hydrological as well as biological problems were also studies (Arctic Biblio.)

Deriugin, K.M. 1937. Osnovnye Cherty Sovremennykh Faun Morei SSSR i Veroiatnye Puti ikh Evoliutsii. (Main Characteristics of the Present-Day Faunas of the Seas of the USSR and Probable Ways of the Evolution.) Leningrad. Universitet. Uchenye Zapiski. 17(3):237-248.

Contains a bio-geographical and hydrological characteristization of the various seas of the USSR, including the White, Barents, Kara, Okhotsk and Bering Seas. Their origin, geological age, biological and ecological features of their faunas, and the latter's probable course of evolution are discussed in light of the recent studies of Soviet scientists, to which the author contributed by his expeditions of 1931-1935 and 1937. (Arctic Biblio.)

Deriugin, K.M. and A. Ivanov. 1937. Predvaritel'nyi Obzor Rabot po Izucheniiu Bentosa Beringova i Chukotskogo Morei. (Preliminary Review of studies on the Benthos in the Bering and Chukchi Sea.) Leningrad. Gasudarstveniia Morei SSSR. 25:247-249.

An account based on the work of several expeditions active since 1929. A series of areas both in the shallow and deep sea are outlined and their more common forms listed. The distribution and occurrence of the latter are viewed as determined by the nature of the bottom, temperature, depth, etc. (Arctic Biblio.)

D'iakonov, A.M. 1923. Iglokozhiia, Echinodermata t.1, vyp. 1. Morskie ezhi, Echinoidea. (Echinoderms, Echinodermata, v.1, pt. 1. Sea Urchins, Echinoidea.) In: Fauna SSSR. Echinodermata, t.1, vyp. 1. Petrograd. 362 p.

Contains in the introductory part (p. 1-105), data on the type of echinoderms and a table for the determination of the classes; external morphology of echinoids; glossary of terms; a synopsis and a table for determination of families and subfamilies of echinoidea; historical notes; and a bibliography. In the special part (p. 106-301) are keys to the families, genera and species, and an enumeration of 12 species of sea urchins, with synonyms, Latin diagnoses, descriptions, comparative notes, also data on their ecology and geographic distribution. A few species native to Greenland, Barents, Kara and Bering Seas are included. (Arctic Biblio.)

D'iakonov, A.M. 1929a. Eine Neue Amphiuride aus dem Kola-Fjord nebst Bermerkingen uber das Vorkommen Anderer Amphiuriden im Barentsmeer. (A New Amphiurid from Kola Bay, together with Comments on the Occurrence of Other Amphiurids in Barents Sea.) Leningradskoe Obschestvo Estestvoispytatelei. Murmanskai Biologicheskaia Stantsiis. Raboty. 3(5):1-6.

Contains a description of a new species of starfish, Amphipholis murmanica, sp. n., together with brief notes on the occurrence of a few other species of this family. Summary in Russian. (Arctic Biblio.)

D'iakonov, A.M. 1929b. Neue Seesterne aud dem Ochotskischen Meer, I. Leptasterias fisheri sp. n. (New Starfishes from the Okhotsk Sea, I. Leptasterias fisheri n. sp.) Akademiia Nauk SSSR. Doklady. Seriia A(10):233-238.

D'iakonov, A.M. 1929c. Neue Seesterne aud dem Ochotskischen Meer, II. Leptasterias orientalis sp. n. (New Starfishes from the Okhotsk Sea, II. Leptasterias orientalis sp. n.) Akademiia Nauk SSSR. Doklady. Seriia A (11): 277-281.

D'iakonov, A.M. 1930. Zur Frage der Artberechtigung der Mulleri-Groenlandica Gruppe der Asteridengattung Leptasterias mit Beschreibung einer Neven Art aus dem Sibirischen Eismeer. (On the Question of the Revision of the Mulleri-Groendandica Group of the Asteridae Genus Leptasterias with a Description of a New Species from the Siberian Arctic Ocean.) Zoologischer Anzeiger 91:27-50.

Based on a study of the starfishes in the Leningrad Academy of Sciences, Zoological Museum collected in waters from Bering Sea westward to West Spitsbergen; a comparison of the Starfishes, L. mulleri, L. hyperborea, and L. groenlandica, and full description of Leptasterias sibirica, sp. nov., from Chukchi Sea; bibliography (25 items). (Arctic Biblio.)

D'iakoniv, A.M. 1931. Neue Asteriden (Echinodermata) aus der Sammlung des Zoologischen Museums der Akademie der Wissenschaften. (New Asterideans [Echinodermata] in the Collection of the Zoological Museum of the Academy of Sciences.) Akademiia Nauk SSSR. Zoologicheskii Muzei. Ezhegodnik. 32(1):67-85.

Contains descriptions of three new starfish, including Leptasterias nanimensis beringiana subsp. n., found in 1882 in Bering Island waters. (Arctic Biblio.)

D'iakonov, A.M. 1933. Iglokozhie Severnykh Morei. (The Echinoderms of the Arctic Seas.) Akademiia Nauk SSSR. Opredeliteli po Faune SSSR. No. 8. Izd-vo Akademiia Nauk, Moskva-Leningrad. 166 p.

Contains general characteristics of Echinodermata and tables for the determination of classes, orders, families, genera and species of echinoderms of all arctic seas along the northern coast of European and Asiatic USSR, with descriptions of the species and data on distribution; bibliography (40 items); index of Latin names. (Arctic Biblio.)

D'iakonov, A.M. 1938. Monograficheskii Ocherk Morskikh Zvezd Severo-Zapadnykh Chastei Tikhogo Okeana, Echinodermata, Asteroidea, 1. Rod Leptasterias Fisher. (Monographic Survey of Starfishes of the Northwest Pacific [Echinodermata, Asteroidea], 1. The Genus Leptasterias Fisher.) Akademiia Nauk SSSR. Zoologicheskii Institut. Trudy. 4(5):749-914.

Contains a monographic treatment of the genus Leptasterias of Northwestern Pacific, including Okhotsk Sea, Bering Sea, Bering Strait and adjoining parts of Arctic Ocean (Chukchi Sea); with a key to the species and subspecies, a monographic description of 24 species (10 new), with synonymy, list of stations, critical notes, biological and ecological data and distribution. A small part of this work (introduction and keys, p. 749-60) is in Russian, the rest in German. (Arctic Biblio.)

D'iakonov, A.M. 1946. Individual'naia Izmenchivost i Vozrastnye Izmeneniia u Nekorykh Grupp Iglokozhikh. (Individual and Age Variability in Some Groups of Echinoderms.) Akademiia Nauk SSSR. Zoologicheskii Institut. Trudy. 8(1): 145-193.

Contains an ecological study of some marine starfishes, including Strongylocentrotus droebachiensis, a circumpolar species of the Northern Hemisphere, Paraniomorpha tumida also having wide distribution in arctic waters (all Russian northern seas and Greenland waters), and Trophodiscus, Leptasterias and Asterias species (Bering and Okhotsk Seas). Data are given on ecological factors influencing the extent and character of individual and age variability and its importance in the evolutionary process. Summary in English. (Arctic Biblio.)

D'iakonov, A.M. 1950a. Glubokovodnyi Element i Faune Morskikh Zvezd Okhotskogo Moria. (The Deep-Sea Element in the Starfish Fauna of the Sea of Okhotsk.) In: Akademiia Nauk SSSR. Zoologicheskii Institut. Issledovaniia Dal'nevostochnykh Morei SSSR. 2:28-57.

Contains report based on a 1932 deep-sea investigation of the Okhotsk Sea carried out by the government Hydrological Institute and the Pacific Institute of Fisheries and Oceanography. Twelve species are described with details in morphology and anatomy; location, depth and date of find; comparative notes, etc. A list of additional 13 species found below 500 m is attached. (Arctic Biblio.)

D'iakonov, A.M. 1950b. Monograficheskii Ocherk Morskikh Zvezd Severo-Zapadnoi Chasti Tikhogo Okeana, Echinodermata, Asteroidea, II-IV. (A Monographic Survey of the Starfishes of the Northwestern Pacific [Echinodermata, Asteroidea] II-IV). Akademiia Nauk SSSR. Zoologicheskii Institut. Issledovaniia Dal'nevostochnykh Morei. 2:58-139.

Contains section II, Pedicellaster M. Sars (4 species); III, Erasterias Verrill (3 species); IV, Asterias (L.) Fisher (6 species). Data for each species (or form) include: synonyms, morphology and morphometry, comparative morphology, occurrence and geographical distribution. Genetic characteristics and data are given at the beginning of each chapter. Species of these genera inhabit arctic seas. Bibliographic footnotes. (Arctic Biblio.)

D'iakonov, A.M. 1950c. Morskie Zvezdy Morei SSSR. (Starfishes of the Seas of the USSR.) Akademiia Nauk SSSR. Opredeliteli po Faune SSSR. No. 34. Izd-vo Akademiia Nauk, Moskva-Leningrad. 202 p.

Contains (in the general part, p. 1-16) brief characteristics of Echinodermata, hostory of the study, phylogenetic relationship of classes, a morphological sketch of the starfishes (Asteroidea), their ecology and geographic distribution in the arctic seas, Okhotsk, Bering and Japanese Seas. In the systematic part are: keys for the determination of orders, families, genera and species and brief diagnoses of about 150 species and 50 lower forms of starfishes (in 46 genera and 15 families) native to USSR waters, with synonymy and data on Russian and total distribution; index of Latin names, p. 199-202. (Arctic Biblio.)

D'iakonov, A.M. 1954. Ofiury (Zmeekhvostki) Morei SSSR. (The Ophiuroidea [Brittle-stars] of the Seas of the USSR.) Akademiia Nauk SSSR. Zoologicheskii Institut. Opredeliteli po Fauna SSSR. No. 55. Malaia Fauna, Vyp. 24. Moskva-Leningrad. 135 p.

Contains a systematic index of the species, followed (p. 9-18) by an introductory part with general characteristics of the brittle stars, their morphology, life habit, and geographic distribution. In the systematic part (p. 19-132) are tables for the determination of the orders (Euryalae and Ophiurae), families, genera and species; a systematic list of 114 species and subspecies, with diagnosis of 15 new species and two new forms, synonyms, and data of Russian and total distribution. An index of Latin names is appended. Many species native to Arctic Seas, Bering Sea and Sea of Okhotsk are included. This paper is a continuation of the study of Echinodermata of the Russian Seas published in 1950. (Arctic Biblio.)

D'iakonov, A.M. 1955. O Sposobnosti Iglokozhikh Vyderzhivat' Ponizhenie Normal'noi Okeanicheskoi Solensote. (On Echinoderms' Toleration of the Low Salinity of Sea Water.) Akademiia Nauk SSSR. Doklady. 105(2):373-374.

Contains observations on the ability of certain representatives of Echinodermata, such as Ophiocten sericeum, Solaster papposus and Stegophiura nodosa of the Chukchi Sea, and Echinarachnius parma of Kamchatka waters, to withstand fluctuation of salinity. The younger animals especially prefer the upper layers of the sea water where the salinity is less than on lower levels. (Arctic Biblio.)

Doderlein, L. 1906a. Atktische Crinoiden. Fauna Arctica. 4:395-406.

Lists arctic members of this group with locations.

Doderlein, L. 1906b. Arktische Seeigel. Fauna Arctica. 4:373-394.

Lists arctic members of this echinoderm group with locations.

Doflein, F. 1900. Die Dekapoden Krebse der Arktischen Meere. Fauna Arctica. 1:313-362.

Lists arctic decapods with locations.

Drzycimski, I. 1968. Metahuntemennia Smirnov and Apodella Por (Copepoda, Harpacticoida): mit Beschreibung einer neuen Art aus dem Westnorwegischen Kustengebeit. Sarsia 31:127-130.

Brief discussion of the taxonomy and systematics of these genera with a description of Metahuntemennia smirnovi sp. n. In German.

Dunbar, M.J. 1953. Arctic and Subarctic Marine Ecology. Immediate Problems. Arctic 6(2):75-90.

The Arctic and sub-Arctic are defined in terms of marine environment. Differences in biological productivity between the areas are discussed, with consideration of the chemical and physical factors involved. Plankton production and biology, benthonic and littoral fauna, and fishes and marine animals present problems related to North America's fisheries and Eskimo needs. In each case problems are listed for future study, a discussion of systematic and zoogeographic problems closing the report. Maps show (1) zones of marine environment, (2) bathymetry, and (3) major currents of northern seas. Diagram illustrates the biological cycle in arctic and subarctic marine zones. (Arctic Biblio.)

Dunbar, M.J. 1960. The Evolution of Stability: Natural Selection at the Level of the Ecosystem. In: Royal Society of Canada. Studia Varia 4, Evolution Symposium, p. 98-109.

Considers the evolution of stability through natural selection in high latitude ecosystems, i.e., complexes of interacting and interdependent organisms and physical factors of the environment. In contrast to the stable (ideal) systems of tropical areas, those in polar and temperate regions are oscillating, a symptom of non-adaptation attributed to the shorter period during which they have evolved. The high latitude systems are evolving toward greater stability however, and some examples are given among marine fauna and sea birds in cold climates. Selective mechanisms tend toward survival of the system rather than the individual or species. (Arctic Biblio.)

Duncan, P.M. and W.P. Sladen. 1881. A Memoir of the Echinodermata of the Arctic Sea to the West of Greenland. London, J. Van Voorst. 82 p.

Based on the collections of the British Arctic Expedition, 1875-1876, mostly between 79°20'N, and 82°27'N, and a few specimens from the Valorous cruise in 1875 between 66°56' and 70°30'N. A list with synonymy descriptions, and distribution of thirty species of sea cucumbers, urchins, stars, etc., from Baffin Bay and Smith Sound-Robeson Channel waters. (Arctic Biblio.)

** Echols, R.J. 1975. Benthic Foraminifera of the Alaskan Shelf and Slope of the Beaufort Sea. In: Reed, J.C. and J.E. Sater (eds.). The Coast and Shelf of the Beaufort Sea. Symposium. San Francisco, Calif. Jan. 7-9, 1974. Arctic Institute of North America, Arlington. p. 491.

Abstract of the paper only. Indicates faunal changes with water depth and distance from shore.

Ellis, D.V. 1956. Some Observations on the Shore Fauna of Baffin Island. Arctic 8(4):224-236.

A study of shore animals made in the summer 1953, covering Frobisher Bay, Cumberland Sound and Padloping Island. Thirty species of invertebrates and four of fishes are recorded from the area; their habitat and distribution are described and compared with those in Greenland. A detailed itinerary and review of earlier work precede the account. (Arctic Biblio.)

Ellis, D.V. 1959. The Benthos of Soft Sea-Bottom in Arctic North America. Nature 184(4688):79-80.

Preliminary discussion of the results of quantitative surveys of the benthos of soft sea-bottoms in Greenland and N.W.T. The author relates the distribution of communities to environmental conditions.

Ellis, D.V. 1960. Marine Infaunal Benthos in Arctic North America. Arctic Inst. N. Amer. Tech. Pap. 5:5-53.

Study of the fauna living in or on soft bottoms, made in northern Baffin Island during 1954-1955, in Greenland 1956 and in Foxe Basin 1957. Both quantitative and qualitative determinations were conducted, with depth-range with geographic distribution of the collected forms considered. Factors affecting the composition and the standing crops, as well as productivity are analyzed and discussed. An annotated list of species collected is appended together with tables of collecting grounds, and quantitative data for the fauna studied. Despite variable distribution of species, lamellibranchs, foraminifera, polychaetes, echinoderms, etc., the surveys showed the bottom communities present and enabled rough estimates of standing crops within the communities. (Arctic Biblio.)

Ellis, D.V., and R.T. Wilce. 1961. Arctic and Subarctic Examples of Intertidal Zonation. Arctic 14(4):224-235.

Discusses zonation of the intertidal zone in the Canadian Arctic and subarctic. Different shore types are discussed with regard to fauna and flora and the physical parameters affecting them.

Erseus, C. 1974. Grania pusilla sp. n. (Oligochaeta, Enchytraeidae) from the West Coasts of Norway and Sweden with Some Taxonomic Notes on the Genus Grania. Sarsia 56:87-93.

Grania pusilla is described from the west coasts of Norway and Sweden. It differs from other Grania species particularly in length, in the morphology of the spermathacae, and in the size of the penial bulb. The taxonomy of the genus Grania Southern, 1913 is discussed. (Biological Abstracts.)

** Faas, R.W. 1974. Inshore Arctic Ecosystems with Ice Stress. In: Odum, H.T., B.J. Copeland, and E.A. McMahan (eds.). Coastal Ecological Systems of the United States, III. The Conservation Foundation, Washington, D.C. p. 37-54.

A general discussion of the ice-stressed ecosystem including shoreline processes, circulation patterns, productivity, stress factors and their influence on the fauna with further discussion on two ice-stressed systems (Elson Lagoon and Esatkuat Lagoon).

Fagerlin, S.C. 1971. Pleistocene and Recent Foraminifera from the Chukchi Rise and Canada Basin areas of the Arctic Ocean. Masters Thesis, Wisconsin Univ., Madison.

Two cores of Arctic Ocean sediments were studied to determine their faunal content. Emphasis was placed on the benthonic Foraminifera and their usefulness in paleoecologic considerations. Relative abundances were determined and species were identified. (NTIS.)

Fauchald, F. 1963. Nephtydae (Polychaeta) from Norwegian Waters. Sarsia 13: 1-32.

The paper is a revision of the Norwegian nephtyids. The following species have been found in Norwegian waters: *Nephtys hombergi*, *N. ciliata*, *N. longosetosa*, *N. caeca*, *N. paradoxa*, *N. incisa*, *Aglaophamus malmgreni* and *A. rubella*. The ecological data existing for the present material are discussed and some comments are given on the geographical and bathymetrical distribution of the species. (Author.)

** Feder, H.M., and D. Shamel. In press. Shallow-water Benthic Fauna of Prudhoe Bay. In: D. Hood, ed. Assessment of the Arctic Marine Environment: Selected Topics. Institute Marine Science, University of Alaska, Fairbanks. Occas. Publ. No. 4 (POAC 1975).

** Feder, H.M., D.G. Shaw, and A.S. Naidu. 1976. The Arctic Coastal Environment of Alaska. Vol. I. The Nearshore Marine Environment of Prudhoe Bay, Alaska. Sea Grant Rep. 76-3. 161 p.

Filatova. Z.A. 1957a. Nekotorye Novye Predstaviteli Semeistva Astartidae, Bivalvia, Dal'nevostochnykh Morei. (Some New Representatives of the Family Astartidae, Bivalvia of the Far Eastern Seas.) Akademiia Nauk SSSR. Institut Okeanologii. Trudy. 23:296-302.

Description of forms collected by the research vessel VITIAZ' 1949-1954, from the Okhotsk and Bering Seas, including two new species, *Astarte (Astarte) multicostata* and *A. (A.) derjugini*. Morphometry, location, color of valves, etc., are noted. (Arctic Biblio.)

Filatova, Z.A. 1957b. Obshchii Obzor Fauny Dvustvorchatykh Molliuskov Severnykh Morei SSSR. (General Review of the Bivalve Molluscs of the Northern Seas of the USSR.) Akademiia Nauk SSSR. Institut Okeanologii. Trudy. 20:3-59.

Account of the composition and geographic distribution of this fauna, based on materials of Zoological Institute of the Academy of Sciences and the author's collections during 1934-38 and 1945. The coastal seas, west to east, and the abyssal molluscs of the Arctic Ocean proper are treated in turn; 145 species and 45 subspecies are recorded and their quantitative and qualitative distribution analyzed. For each area, the physical and ecological conditions are outlined, the molluscan fauna and characteristics are presented, and general descriptions given in conclusion. (Arctic Biblio.)

Filatova, Z.A. 1957c. Zoogeograficheskoe Rainirovanie Severnykh Morei po Rasprostraneniiu Dvustvorchatykh Molliuskov. (Zoogeographic Zonation of the Northern Seas According to the Distribution of Bivalve Molluscs.) Akademiia Nauk SSSR. Institut Okeanologii. Trudy. 23:195-215.

Attempt based on qualitative and, where data available, quantitative distribution of bivalves. Author distinguished two regions (oblast'), boreal and arctic, the latter further divided into low-arctic ahd high-arctic sub-regions. Further zonation is based on a depth distribution of these molluscs (e.g. littoral, abyssal) and on geographic provinces, as Polar-Greenland province, etc. (Arctic Biblio.)

Filatova, Z.A. 1959. General Review of the Bivalve Mollusks of the Northern Seas of the USSR. American Institute of Biological Sciences. 44 p. (Translation from Akademiia Nauk SSSR. Institut Okeanologii, Trudy. 20.)

Filatova, Z.A. and N.G. Barsonava. 1964. Communities of Benthic Fauna in the Western Bering Sea. (Soovshschestva Donnoi Fauny Zapadnoi). Slessers, M. (trans). 1969. Naval Oceanographic Office, Washington, D.C. 119 p. (Translation of Akademiia Nauk SSSR. Institut Okeanologii. Trudy. 69:6-97.

The data on the composition and distribution of the bottom fauna in the western Bering Sea were received in 1950-1952. During that period 256 stations were occupied. One hundred seventy-three quantitative samples of the bottom fauna were taken with large bottom-samples "Ocean-50" and Petersen grab and 64 samples were gathered with Sigsbye trawl. Forty-six of the stations were occupied at the depths exceeding 1000 m and 39 of them at depths exceeding 2000 m. Eighteen communities of the bottom fauna were established in western Bering Sea. True oceanic deep-sea species are dominant in the abyssal bottom-fauna communities of the western Bering Sea. Some species living presumably on the slope of the shelf are the leading forms of bathyal communities. A great many arctic-circumpolar, arctic-boreal, and north-boreal Pacific species of the bottom fauna are part of the composition of the shallow-water communities of the western Bering Sea. (Author.) (NTIS.)

Filatova, Z.A. and A.A. Neiman. 1963. Biotsenozy Donnoi Fauny Beringova Moria. (Biocoenoses of Bottom Fauna of the Bering Sea). Okeanologiia 3(6):1079-1084.

Reports a study of quantitative distribution based on 173 bottom-grab and 64 trawl samples collected at 8-4820 m depth in the western part of the sea, and 280 samples at 20-540 m in the eastern part. Sublittoral and abyssal biocoeneses are reported and mapped. Spatial distribution is described. (Arctic Biblio.)

Filatova, Z.A. and L.A. Zenkevich. 1957. Kolichestvennoe Raspredelenie Donnoi Fauny Karskogo Moria. (Quantitative Distribution of the Bottom Fauna in the Kara Sea.) Vesesoiuznoe Gidrobiologicheskoe Obshchestvo. Trudy. 8:3-67.

Account of quantitative and also qualitative distribution of the main bottom forms of this area are given with information on its relief and sediments; distribution of the total biomass and the biomass of bivalves, polychaetes, echinoderms, etc. main biocenoses; qualitative and quantitative composition of these biocenoses; some characteristic traits of the bottom fauna of the Kara Sea. (Arctic Biblio.)

Fischer, W. 1929. Die Sipunculiden, Priapuliden und Echiuriden der Arktis. Fauna Arctica 5:451-490.

Lists arctic members of these groups with locations.

Forbes, E. 1852. Notes on Animals of the Class Echinodermata Collected by Dr. Sutherland in Assistance Bay. In: P.C. Sutherland's Journal of a Voyage in Baffin's Bay and Barrow Straits, in the years 1850-1851. p. ccxiv-ccxvi.

** Fraser, C.M. 1922. Hydroids. Canadian Arctic Expedition, 1913-1918. Report. Vol. 8: Mollusks, Echinoderms Coelenterates, etc., Pt. I. King's Printer, Ottawa. 5 p.

List with locations and distribution noted, of twenty-five species from the east coastal waters of Hudson Bay, and westward to the Alaskan coast of Bering Sea. (Arctic Biblio.)

Frost, B.W. 1967. A New Species of the Genus *Harpacticus* (Copepoda, Harpacticoida) from Kodiak Island, Alaska. Crustaceana 12(2):133-140.

Describes *Harpacticus compressus* n. sp., collected with *H. uniremis* from green algae in shallow water at low tide on the southwest tip of Nexman Peninsula in Chiniak Bay. The new species is placed with four other species in a group of *Harpacticus* characterized by one or two inner setae on the second endopodal segment of the female leg two. (Arctic Biblio.)

Galkin, Yu. I. 1964. Mnogoletnie Izmeneniya v Raspredelenii Dvustvorchatnykh Mollyuskov v Yuzhnoi Chasti Barentseva Morya. (Perennial Changes in the Distribution of Bivalved Mollusks in the Southern Part of the Barents Sea.) Murmanskogo Morskogo Biologicheskogo Instituta. Trudy. 6(10):22-40.

In 1957-59 a survey was made of the benthos in the region from Motovskii Gulf and the Kola meridian to the shores of Novaya Zemlya and the Karskie Vorota (strait) and to 72°30' N latitude in the north. In these catches 55 bivalve species were found. For the last 30 years boundaries for the ranges of a number of species have shifted to the east. The author analyzes the possible effect of changes in temperature and salinity on conditions for the breeding of species of western and eastern origin.

Galkin, Yu. I. 1965. (Years Long Changes in the Distribution of the Bivalve Molluscs in the Southern Part of Barents Sea.) In: Molluscs. Questions of Theoretical and Applied Malacology. Summaries of Reports. Second Collection. Akademiia Nauk. SSSR. Zoologicheskogo Instituta. Trudy. 79.

Gal'tzova, V.V. A Quantitative Characteristics of Meiobenthos in the Chupinsky Inlet of the White Sea. Zoologicheskii Zhurnal 50:641-647.

George, R.Y. and A.Z. Paul. 1970. University of Southern California-Florida State University Biological Investigations from the Fletcher's Ice Island T-3 on Deep-Sea and Under-Ice Benthos of the Arctic Ocean. University of Southern California Technical Report. No. 1:1-69.

The report presents the preliminary results and tabulated station data on the deep-sea benthic samples and photographs taken during the period between September 1969 and February 1970 from the Fletcher's Ice Island T-3. Descriptions of the new collecting equipment used are also provided with illustrations. Observations of unusual interest and recommendations for future studies on research initiated during this period are also included. T-3 as an ideal oceanographic platform for deep-sea benthic studies is pointed out. The report also contains the preliminary results of physiological studies on thermal tolerance; endurance to super-cooling; salinity tolerance and deep-submergence experiments for observing pressure effects. This document emphasized the added effort to USC project during this period on benthic studies and physiological investigations on Arctic marine biota. (Author.)

**Given, R.R. 1965. Five Collections of Cumacea from the Alaskan Arctic. Arctic 18(4):213-299.

Lists, with detailed morphologic and taxonomic information, several species of these crustaceans collected 1948-1950 by various parties. The latter, working in the area described, with pertinent station data and species recovered. Some taxonomically significant variations are noted among the species listed, also some range extensions. (Arctic Biblio.)

Golikov, A.N. 1963. Briukhonogie Molliuski Roda *Neptunea* Bolten. (Gastropod Molluscs of Genus *Neptunea* Bolten.) Fauna SSSR. Molliuski. Vol. 1, No. 1. Izd-vo Akademii Nauk SSSR, Leningrad. 218 p.

Outlines earlier work on this largely arcto-boreal group, and discusses its morpho-physiology, variability, phylogeny, geographic distribution, and ecology. A species part p. 97-183, deals with 25 species, incl. keys, synonomy, morphology with differential diagnoses, geographic and depth distribution, reproduction, etc. Appended are 28 plates with excellent photos. (Arctic Biblio.)

Golikov, A.N. 1964. Briukhonogie i Lopatonogie Molluski (Gastropoda et Scaphopoda) Severnoi Chasti Grenlandskogo Moria i Rainonov k Severa ot Shpitsbergena i Zemli Frantsa-Iosifa. (Gastropod and Scaphopod Molluscs of the Northern Greenland Sea and the Regions North of Spitzbergen and Franz Joseph Land.) Arkticheskii i Antarkticheskii Nauchno-Issledovatel'skogo Instituta. Trudy. 259:340-354.

Records 59 species collected during warm seasons of 1955-57. Location and number of finds, size, geographic and depth distribution are noted. General ecological and zoogeographic aspects of these molluscs are also discussed. (Arctic Biblio.)

Gonor, J.J. 1964. Egg Capsules and Young of the Gastropod *Pyrulofusus deformis* (Neptuneidae) at Barrow, Alaska. Arctic 17(1):48-51.

Describes two egg capsules of snails collected in 1963, and compares shell dimensions of three juveniles from one of the capsules with those of subadult and adult animals. The large capsules and few, large, nonpelagic young that develop in them are interpreted as an adaption for reproduction in cold seas. (Arctic Biblio.)

Gostilovskaia, M.G. 1964. Mshanki (Bryozoa), Sobrannye Ekspeditsiei na l/r "F. Litke" 1955 G. k Severu ot Zemli Frantsa-Iosifa i Shpitsbergena. Bryozoans Collected by the 1955 *F. Litke* Expedition North of Franz Joseph Land and Spitzbergen.) Arkticheskii i Antarkticheskii Nauchno-Issledovatel'skogo Instituta. Trudy. 259:191-228.

Lists species described by each of the earlier investigators and some 149 forms identified by the author from various collections of the present century. All the material is tabulated in taxonomic order with notes on earlier records and depth of finds. Over 80% of the forms are arctic. (Arctic Biblio.)

Gostilovskaya, M.G. 1968. (Bryozoa of the Chesha Mouth in the Barents Sea.) Murmanskogo Morskogo Biologicheskogo Instituta. Trudy. 17(21):58-73.

** Grainger, E.H. 1964. North American Sea Stars (Echonodermata: Asteroidea) from North Alaska to the Strait of Belle Isle. Serial Atlas of the Marine Environment. Folio 5. American Geographical Society, New York. 12 p.

Gives distributional data for 26 species recorded in the literature, with indication of water depths and substrate. The localities extend from Cape Lisburne-Pt. Barrow in the Chukchi Sea, eastward through Canadian Arctic Islands waters, from northeasternmost Ellesmere to southern Labrador Sea and Hudson and James Bays. (Arctic Biblio.)

Grainger, E.H. 1966a. North American Sea Stars (Echinodermata: Asteroidea) from North Alaska to the Strait of Belle Isle. American Geographical Society. Serial Atlas of the Marine Environment, folio 5.

Gives distributional data for 26 species recorded in the literature, with indication of water depths and substrate. The localities extend from Cape Lisburne - Pt. Barrow in the Chukchi Sea, eastward through Canadian Arctic islands waters, from northeastern most Ellesmere to southern Labrador Sea and Hudson and James Bays. (Arctic Biblio.)

** Grainger, E.H. 1966b. Sea stars Enchinodermata - Asteroidea of Arctic North America. Canada. Fisheries Research Board. Bulletin. No. 152. 70 p.

Twenty-four species of sea stars are reported from northern North American waters between the Strait of Belle Isle and Point Barrow, Alaska. A key for identification and morphological descriptions of all the recorded species and several of probable occurrences in the region are included. Data are given on geographical distribution and on depth, substrate, temperature, and salinity conditions. Arctic-subarctic waters surrounding the Arctic Ocean are shown on the basis of sea star distribution to comprise two major zoogeographical regions: Atlantic-arctic and Pacific. Arctic North America east of about 120° W is included in the Atlantic-arctic region. Farther west the fauna is primarily Pacific. (Author.)

Gray, J.E. 1824. Shells. In: Parry, Sir W.E. Journal of a Voyage. Supplement to the Appendix. p. ccxl-ccxlvi.

Contains a classified list, with some descriptions, of twenty-three species of marine molluscs (presumably), from Baffin Bay and Canadian Arctic Islands waters. (Arctic Biblio.)

Gray, J.E. and G.B. Sowerby. 1839. Molluscous Animals and their Shells. In: Beechey, F.W. and others. The Zoology of Captain Beechey's Voyage. p. 103-155.

Contains (1) introductory remarks; and (2) list, with description of fleshy parts and shells, of molluscs, (some new) collected on the Beechey voyage of 1825-28, and on other expeditions of about the same period. Includes several specimens from Icy Cape, Alaska, and from other unspecified portions of the Arctic and Pacific Oceans. (Arctic Biblio.)

Green, K.E. 1960. Ecology of Some Arctic Forminifera. Micropaleontology 6(1):57-78. Also in: Bushnell, V.C. (ed.). 1959. Geophysical Research Paper No. 63. U.S. Air Force. Cambridge Research Center. Bedford. p. 59-81.

Presents result of investigation of foraminifera in cores of the bottom sediments collected by Charles Horvath 1952-1955 on ice island T-3. Samples were taken from a rectangular area 82°32' - 86°45'N and 81°20 - 85°40'W at 433 to 2760 m depth and at 24 surface locations. Previous foraminiferal studies are noted. Comparison is made with sediments, bottom topography, water depth, calcium carbonate distribution, organic carbon content of sediments, water temperature and salinity, and associated organisms. Twenty species were useful in establishing depth zones. Five species and one variety are new. Faunal changes correspond generally at one station. Systematic description is given; also an annotated list of 105 species collected. (Arctic Biblio.)

Green, R.H. 1973. Growth and Mortality in an Arctic Intertidal Population of Macoma balthica (Pelecypoda, Tellinidae). Canada. Fisheries Research Board. Journal 30(9):1345-1348.

In an arctic intertidal environment on Hudson Bay, Macoma balthica have a higher growth rate at the tidal level of 1.1 m above mean low water than at the mean low water level, in terms of both length and dry weight. Temperature, rather than food, appears to be the primary proximate factor involved, and summer air temperatures play a major role. The estimated growth rates are comparable to reported growth rates for intertidal Macoma populations in Scotland and the Netherlands. A partial life table calculated from the death assemblage indicates thst Macoma at 1.1 m above mean low water have an annual mortality which increases from about 20% at age 2 to about 50% at age 7 years. (Author.)

Greve, L. 1963. The Genera Spirontocaris, Lebbeus, Eualus and Thoralus in Norwegian Waters (Crustacea, Decapoda). Sarsia 11:29-42.

The paper deals with the genera Spirontocaris, Lebbeus, Eualus and Thoralus, with eight species, their systematic position and their occurrence along the Norwegian coast. S. lilljeborgi, L. polaris, and E. pusiolus are common in the whole area. T. cranchii and E. occultus are frequently found in southern Norway. E. occulatus is recorded for the first time from Norway. S. spinus, S. phippsi, and E. gaimardii are common in north Norway, having their southern limit in western Norway. A key to the Norwegian species is given, with a short note on the two parasitic isopods found. (Author.)

Greve, L. and T.J. Samuelsen. 1970. A Population of Chlamys islandica (O.F. Muller) Found in Western Norway. Sarsia 45:17-24.

A population of the Iceland scallop (Chlamys islandica) from western Norway is described. Information on the topography and hydrography of the locality and description of the habitat is given. Eighty-eight scallops were measured and the results are given. This is the southernmost known population of the iceland scallop in Europe, but isolated specimens are reported further south. (Author.)

Grieg, J.A. 1900. Die Ophiuriden der Arktis. Fauna Arctica. 1:259-286.

Lists and describes arctic ophiuroids with locations.

Gur'ianova, E.F. 1924. Biotsenoz Laminarii Kol'skogo Zaliva. (Laminaria Biocoenose at Kola Fjord). Leningradskoe Obshchestvo Estestvoispytatelei. Trudy. 53(2):139-172.

Contains a study of the bioceonose of Laminaria overgrowth in Kola Bay, including some notes on L. stenophylla, L. saccarina and L. digitata and sixteen other algae, also data on faunal population of the stays and rhizoids of these Laminaria and a list of one hundred seventy-one species of various marine animals: the Crustacea determined by the author; Mollusca by K.M. Deriugin; Spongia by P.D. Rezvyi; Polychaeta by I.G. Zaks; Nemertini by P.V. Ushakov; Bryozoa by G.A. Kliuge; Nematoda by I.N. Filip'ev; Algae by E.S. Zinova; periodical changes and ontegny of the biocoenose are discussed. Summary in English. (Arctic Biblio.)

Gur'ianova, E.F. 1925a. Fauna "Dvorov" Kol'skogo Zaliva. (Fauna of "Dvory" of Kola Bay). Leningradskoe Obshchestvo Estestvoispytatelei. Trudy. 54(1): 17-46.

Contains results of the study of marine fauna of four "dvory" (small inlets) of Kola Bay, investigated in the summers of 1921-23 by a group of students (including the author) under direction of Prof. K.M. Deriugin; includes data on littoral and sublittoral distribution of marine fauna and a systematic list of one hundred seventy-six marine animals, determined by K.M. Deriugin, the author and some other specialists. Summary in German. (Arctic Biblio.)

Gur'ianova, E.F. 1925b. Sravnitel'nyi Obzor Litorali Russkikh Severnykh Morei. (Comparative Review of the Littoral of Russian Northern Seas). Leningradskoe Obshchestvo Estestvoispytatelei. Murmanskaia Biologicheskaia Stantsiia, Polyarnyy. Raboty. 1:110-130.

Contains an analysis of littoral life of Kola Bay and comparisons with conditions at several points on the Barents and White Seas. Three kinds of littoral are distinguished: a high arctic (polar), an arctic and subarctic. Their main characteristics and components are discussed and their part in making up the life of the compared areas reviewed. (Arctic Biblio.)

Gur'ianova, E.F. 1927. K Faune Kol'skogo Zaliva, Barentsova, Karskogo i Belogo Morei i Novoi Zemli. (To the Fauna of the Kola-Fjord, Barents Sea, White Sea, Kara Sea and Novaya Zemlya.) Leningradskoe Obshchestvo Estestvoispytatelei. Trudy. 57(1):23-38.

Contains critical notes on certain marine fauna (mainly Mollusca and Crustacea) collected 1921-26, and determined as new to the European arctic waters in which they were found. Includes thirteen molluscs, eleven crustaceans and nine worms, new to the fauna of Kola Bay; five molluscs and five crustaceans, Barents Sea; two molluscs and two crustaceans, White Sea; and five mollusks and five other marine fauna from Kara Sea and Novaya Zemlya waters; bibliography (26 items). Summary in English. (Arctic Biblio.)

Gur'ianova, E.F. 1928a. Fauna Cheshskoi Guby. (The Fauna of Cheshskaya Guba). In: Vserossiiskii s"ezd Zoologiv, Anatomiv i Gistologov, 3, Leningrad, 1927. Trudy. p. 362-364.

Contains general notes on the hydrological regime of this arm of Barents Sea, and data on its elements, origin and peculiar features of its fauna. Notes on some typical species and a table of zonal distribution of benthos organisms are included. (Arctic Biblio.)

Gur'ianova, E.F. 1928b. K Faune Amphipoda Barentsova Mariia. (Contribution to the Fauna of Amphipoda in the Barents Sea.) Leningrad. Nauchno-Issledovatel'skii Institut po Izucheniiu Severa. Trudy. 37:43-54.

Results of a study of these crustaceans collected in 1921-24, by the Northern Scientific and Economic Expedition, 1920-1926, listing twenty-eight species, with data on their locations, and distribution. Summary in English. (Arctic Biblio.)

Gur'ianova, E.F. 1929a. K Faune Crustacea - Malocostraca Barentsova, Belogo i Karskogo Morei. (On the Fauna of Crustacea - Malocostraca of the Barents Sea, White Sea and Kara Sea.) Leningradskoe Obshchestvo Estestvoispytatelei. Trudy. 59(1):29-46.

Contains a list of thirty-seven species of crustaceans (Isopoda and Amphipoda) of the Barents, White and Kara Seas, and an enumeration, with critical notes and data on distribution in arctic regions. Summary in English. (Arctic Biblio.)

Gur'ianova, E.F. 1929b. K Voprosu o Sostave i Raspredelenii Bentosa Cheshskoi Guby. (Contribution to the Question of the Distribution of Benthos in the Cheshskaya Bay.) In: Leningrad. Nauchno-Issledovatel'skii Institut op Izucheniiu Severa. Its Trudy. Vyp. 43. Chast'2: Ekspeditsiia Cheshskuiu Gubu 1925-1926 gg., p. 58-100.

A study based on observations of the Cheshskaya Bay Expedition, 1925-26, describing the benthos fauna of the region, its relation to conditions peculiar to the bay and distribution in other seas. Bibliography, p. 96-98. Summary in English. (Arctic Biblio.)

Gur'ianova, E.F. 1929c. Neue Formen Arktischer Isopoden and Amphipoden. (New Forms of Arctic Isopoda and Amphipoda.) Zoologischer Anzeiger 81:309-317.

Contains descriptions of one new species and one new variety of isopods and six new species of amphipods from Eurasian arctic seas. (Arctic Biblio.)

Gur'ianova, E.F. 1930. Beitrage zur Fauna der Crustacea-Malacostroca des Arktischen Gebietes. (Contributions to the Crustacea-Malacostraca of the Arctic Regions.) Zoologischer Anzeiger 86:231-248.

Based on collections of the Berlin Zoological Museum, the Institute for the Exploration of the North and the State Hydrological Institute in Leningrad. Descriptions of five new species of isopods from Greenland Sea and Svalbard waters, and discussion of the distribution, in all arctic seas and the brackish or fresh waters of the Asiatic Arctic of three other species; descriptions and distribution of seven (including three new) species of Amphipoda of arctic seas. (Arctic Biblio.)

Gur'ianova, E.F. 1931. K Faune Amphipoda i Isopoda Vostochnogo Murmana (Raion Guby Porchnikhi.) (Contribution to the Knowledge of Amphipods and Isopods of Eastern Murman [Porchnikha Bay Region].) Leningrad. Nauchno-Issledovatel'skii Institut po Izucheniiu Severa. Trudy. 48(1):196-204.

A study of crustaceans inhabiting the waters of, and near Porchnikha Bay (Barents Sea coast about 69° N, 36° E), listing forty-one species of amphipods and eight species of isopods, with some notes on habitats and distribution in other seas. Summary in German. (Arctic Biblio.)

Gur'ianova, E.F. 1932. K Faune Crustacea Moria Laptevykh. (The Crustacean Fauna of the Laptev Sea.) Leningrad. Gosudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR. 15:157-187.

A study of material collected in 1926 and 1927 by the Hydrographic party of the Academy of Sciences' Yakut Expedition. Fifteen species of amphipods, three isopods and two schizopods are described. Two species, Pseudalibratus birulai n. sp. and Haploops sibirica n. sp. are new. Morphology and taxonomy, location of finds, temperature and nature of bottom, closely related forms, and geographic distribution are dealt with. (Arctic Biblio.)

Gur'ianova, E.F. 1933a. Die Marinen Isopoden der Arktis. (Marine Isopoda of the Arctic.) Fauna Arctica 6:391-470.

Contains definition of the southern limits: Newfoundland to North Cape, Norway, thence across the arctic seas to Bering Strait, Beaufort Sea and Canadian Arctic Islands waters. Classified list, with key, synonyms, references, distribution, and some descriptive notes, of one hundred eighty-two species of these crustaceans. A zoogeographic discussion of Barents, White, Kara, Laptev, East Siberian and Beaufort Seas, Baffin Bay, Davis Strait, Norwegian and Greenland Seas. (Arctic Biblio.)

Gur'ianova, E.F. 1933b. K Faune Crustacea-Malacostraca Ob-Eniseiskogo Zaliva i Obskoi Guby. (The Crustacea - Malacostraca Fauna of the Ob-Yenisey Bay and the Ob Gulf). Leningrad. Gosudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR. 18:75-90.

A description of 25 species with identification keys and comparisons with identical species in adjacent regions. Location, occurrence and geographic distribution are also discussed. Four regions are distinguished in the area, ranging in salinity from 33°/₀₀ to 10°/₀₀ or less. Each has its specific forms, the more common of them being listed. Their distribution at present and in geological times is discussed. (Arctic Biblio.)

Gur'ianova, E.F. 1933c. K Faune Ravnonogikh Rakov, Isopoda, Tikhogo Okeana, 1; Novye Vidy Valvifera i Flabellifera. (The fauna of Isopod Crustaceans of the Pacific, 1; New Species of Valvifera and Flabellifera.) Leningrad. Gusudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR. 17:87-106.

A contribution based on material collected by State Hydrographic and Pacific Fisheries Institutes' expeditions to the Bering Sea and the Seas of Okhotsk and Japan. Seventeen new forms are described including morphology, morphometry and anatomy, size, color, location of find, geographic distribution, etc. (Arctic Biblio.)

Gur'ianova, E.F. 1933d. K Faune Ravnonogikh Rakov, Isopoda, Tikhogo Okeana, 2; Novye Vidy Gnathiidea i Asellota. (The Fauna of Isopod Crustaceans of the Pacific, 2; New Species of Gnathiidea and Asellota.) Leningrad. Gosudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR. 19:79-91.

Descriptions of 13 new forms, including seven new species; morphology and anatomy, size, color, sexual differences, location of finds, geographic distribution, etc., are given. (Arctic Biblio.)

Gur'ianova, E.F. 1933e. Zur Amphipodenfauna des Karishen Meeres. (Amphipoda of the Kara Sea.) Zoologischer Anzeiger 103:119-128.

Based on collections of the Russian Hydrological Institute vessel Rusanov, in the summer of 1931; descriptions of seven new species and one new subspecies. (Arctic Biblio.)

Gur'ianova, E.F. 1934a. Fauna Rakoobraznykh Karskogo Moria i Puti Proniknoveniia Morskoi Atlanticheskoi Fauny v Arktiku. (The Crustacean Fauna of the Kara Sea and the Routes of Penetration of the Atlantic Marine Fauna into the Arctic). Akademiia Nauk SSSR. Comptes Rendus. Doklady. Nouv. Ser. 1(2):91-96.

Contains an analysis of the crustacean fauna of the Kara Sea, which the author divides into seven large groups according to origin and geographic distribution; the foreign elements in the Kara Sea fauna are discussed and analyzed and their routes of immigration from the Atlantic traced. (Arctic Biblio.)

Gur'ianova, E.F. 1934b. K Faune Amphipoda Barnetsova i Belogo Morei. (The Amphipod Fauna of the Barents and White Seas). Leningrad. Gosudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR 20:87-89.

A list of 11 zoogeographically interesting or rare amphipods, with data on location of find(s), occurrence in depth, geographic distribution, etc. (Arctic Biblio.)

Gur'ianova, E.F. 1934c. Neue Formen von Amphipoden des Karischen Meeres. (New Forms of Amphipods from Kara Sea.) Zoologischer Anzeiger 108:122-230.

Descriptions of six new species, collected by routine ice-breaker expeditions, 1930-23. (Arctic Biblio.)

** Gur'ianova, E.F. 1934d. Zoogeograficheskii Ocherk Fauny Isopoda Arktiki. (Zoogeographical Study of the Arctic Isopods.) Arctica 2:127-152.

A study of the distribution of 182 species of isopods in the Arctic Ocean, with list and discussion of their occurrence in Barents, White, Kara, Laptev, East Siberian, Chukchi, and Beaufort Seas, Baffin Bay, Davis and Denmark Strait, and Norwegian and Greenland Seas. Summary in English. (Arctic Biblio.)

Gur'ianova, E.F. 1935a. K Faune Amphipoda i Isopoda Iuzhnoi Chasti Karskogo Moria. (The Amphipod and Isopod Fauna of the Southern Kara Sea.) Leningrad. Gusudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR 21:65-87.

A study of these crustaceans collected in the summer 1931 from the ice-breaker Rusanov. Ninety-four forms are described, with notes on location and depth of finds, bottom, etc. Zoogeographically the material is divided into six groups. Their distribution in the regions of the area is discussed. (Arctic Biblio.)

Gur'ianova, E.F. 1935b. K Faune Ravnonogikh Rakov, Isopoda, Tikhogo Okeana 3; Novye Vidy v Sborakh Tikhookeanskoi Ekspeditsii Gos. Gidrobiologicheskogo Instituta 1932 g. (The Fauna of Isopod Crustaceans of the Pacific, 3; New Species in the Collection of the Pacific Expedition of the State Hydrological Institute of 1932.) Leningrad. Gosudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR. 22:25-35.

Description of three new species and four new varieties from the Bering, Okhotsk and Japanese Seas; also a list of isopods hitherto recorded from these areas. Descriptions include morphometry and anatomy, location of find; taxonomic status, etc. (Arctic Biblio.)

Gur'ianova, E.F. 1935c. K Zoogeografii Dal'nevostochnykh Morei. (Contribution to the Zoogeography of Far Eastern Seas.) Akademiia Nauk SSSR. Izvestiia, Seriia 7. Otdelenie Matematicheskikh i Estestvennykh Nauk. No. 8-9:1229-1235.

Contains the results of a zoogeographic analysis of isopod fauna (124 species) of the Bering, Okhotsk and Japan Seas, with data on the seven groups into which this fauna is subdivided by the author; their geographic distribution and relationship with the faunas of the Arctic and Pacific Oceans are dealt with. Summary in English. (Arctic Biblio.)

Gur'ianova, E.F. 1935d. Komandorskie Ostrova i ikh Morskaia Pribrezhnaia Fauna i Flora. (The Commander Islands and their Coastal Fauna and Flora.)

Contains a general description of these islands in the Bering Sea, with brief notes on their discovery and exploration, and data on their geography, geology, climate, and the hydrological regime of the coastal waters. Their marine fauna and flora (algae) are treated in more detail, with notes on ecology, references to many animals and plants observed, and comparison with fauna and flora of other northern regions (the Murman coast of the Barents Sea). (Arctic Biblio.)

Gur'ianova, E.F. 1935e. Zur Zoogeographic der Crustacea Malacostraca des Arktischen Gebietes. (On the Zoogeography of the Malacostracan Crustacea of the Arctic Region.) Zoogeographica 2:555-571.

Contains detailed discussion of the distribution and various groupings of amphipods and isopods designated as truly arctic, found in the Soviet seas east of Novaya Zemlya; based on the rich collections made during 1928-33 by the Arctic Institute USSR. List of sixty-one species new to Kara Sea, noting location and depth is given. (Arctic Biblio.)

Gur'ianova, E.F. 1936a. Beitrage zur Amphipodenfauna des Karischen Meeres. (Contributions to the Amphipoda of Kara Sea.) Zoologischer Anzeiger 116: 145-152.

Based on material collected by the SEDOV, 1934, descriptions of three new species, a list, with locations, of twenty-nine additional species new to Kara Sea, and remarks on the presence there of eight North Atlantic forms. (Arctic Biblio.)

Gur'ianova, E.F. 1936b. Beitrage zur Kenntnis der Isopodenfauna des Pazifischen Ozeans. IV. Neue Isopodenarten aus dem Japanischen und Beringmeer. (Contributions to Knowledge of the Isopoda of the Pacific Ocean. 4. New Isopods of the Japan and Bering Sea.) Zoologischer Anzeiger 114:250-265.

Contains descriptions of five new species, only one of which was taken in Bering Sea; a list of all species known to occur in the Okhotsk and Bering Seas, and a discussion distinguishing between the arctic Kamchatka province and the Aleutian province. (Arctic Biblio.)

Gur'ianova, E.F. 1936c. K Faune Crustacea - Malacostraca Arkticheskoi Oblasti. (Contribution to the Fauna of Crustacea - Malacostraca of the Arctic Region.) Leningrad. Vsesoiuznyi Arkticheskii Institut. Trudy. 33:31-44.

A study of material collected during the voyages of ice-breakers Sibiriakov and Rusanov, 1932, and of the ships Taimyr and Vaigach, 1911-13, in Kara, Laptev and Chukchi Seas; with lists of species (including description of four new species) and locations. Summary in English. (Arctic Biblio.)

Gur'ianova, E.F. 1936d. K Zoogeografii Karskogo Moria. (The Zoogeography of Kara Sea). Akademiia Nauk SSSR. Izvestiia. Otdelenie Matematicheskikh i Estestvennykh Nauk. Seriia Biologicheskaia. No. 2-3:565-594.

Contains a study of zoogeography of the northern part of the Kara Sea based on the collections of marine amphipods and isopods brought home by the ice-breaker Sedov in 1929-30 (collector: G. Gorbunov), ship Lomonosov in 1931 (collectors: V. Vagin and L Retovskii), and ice-breaker Rusanov in 1932 (collectors: V. Vagin and N. Kondakov). The material is divided into five zoogeographic groups: circumpolar forms, North Atlantic forms of warmer waters, fauna of polar basin, forms of the eastern Arctic and subarctic forms. Lists of typical forms are given for each zone and a list of all crustaceans arranged by the stations and expeditions; the penetration of various elements into Kara Sea is duscussed (see map no. 2). Bibliography (27 items). Summary in English. (Arctic Biblio.)

Gur'ianova, E.F. 1936e. Neue Beitrage zur Fauna der Crustacea-Malocostraca des Arktischen Gebietes. (New Contributions to the Crustacea-Malocostraca of the Arctic Regions.) Zoologischer Anzeiger 113:245-255.

Contains an annotated list, with localities, of fifteen (including with descriptions, five new) species of Amphipoda from Eurasian arctic seas. (Arctic Biblio.)

Gur'ianova, E.F. 1936f. Rakoobraznye, t. 7, vyp. 3. Ravnonogie Dal'nevostochnykh Morei. (Crustaceans. Isopoda of the Far Eastern Seas.) In: Fauna SSSR. Crustacea. t.7, vyp.3. (Nov. Ser. No. 6). Izd-vo Akademiia Nauk SSSR. Moskva-Leningrad. 279 p.

Contains a morphological sketch of the Isopoda (p. 1-11) with data on ecology and biology (p. 12-14); a brief zoogeographic survey of the Bering, Okhotsk and Japanese Seas (p. 14-32). In the special part (p. 37-273) are keys to the sub-orders, families, genera and species, and a systematic list with brief diagnoses, synonyms, critical notes, and data on geographic distribution. Index of Latin names is appended (p. 274-78). This study included 55 species of isopods native to Bering Sea and 47 species recorded in the Sea of Okhotsk. (Arctic Biblio.)

Gur'ianova, E.F. 1938. On the Question of the Composition and Origin of the Fauna of the Polar Basin Bassalia. Akademiia Nauk SSSR. Comptes Rendus. Doklady. Nouv. Ser. 20(4):333-336.

An analysis of deep-sea Crustacea of the Arctic Basin indicating that the abyssal fauna of this basin is "original, autochthonous and of relative recent age." Based on collections of the SADKO high latitude expedition of 1935. (Arctic Biblio.)

Gur'ianova, E.F. 1946a. Individual'naia i Vozrastnaia Izmenchivost' Morskogo Tarakana: ee Znachenie v Evolutsii Roda Mesidothea Rich. (Individual and Age Variability of the Marine Asellid and its Significance in the Evolution of the Genus Mesidothea Rich.) Akademiia Nauk SSSR. Zoologicheskii Institut. Trudy. 8(1):105-144.

Contains the results of a study of Mesidothea entomon, a marine species of crustaceans (sometimes called "hog-lice") from various northern (including White, Bering, Okhotsk and Chukchi) seas, Siberian river estuaries and glacial lakes. The author deals with the influence of environmental factors (chiefly salinity) on its variability (arctic material on p. 116-17, 119-20, 124, 128-29). Summary in English. (Arctic Biblio.)

Gur'ianova, E.F. 1946b. Novye Vidy Isopoda i Amphipoda iz Severnogo Ledovitogo Okeana. (New Species of Isopoda and Amphipoda from the Arctic Ocean.) Dreifuiushchaia Ekspeditsiia Glavesevmorputi na Ledokol'nom Parokhode "G. Sedov" 1937-1940 gg. Trudy. 3:272-297.

Description of twenty-five new species of these crustaceans collected by the ice-breaker Sadko in 1935 and 1937. Station list shows locations and depths. Summary in English. (Arctic Biblio.)

Gur'ianova, E.F. 1948. Amphipoda Tikhogo Okeana. II. Stenothoidae Dal' nevostochnykh Morei. (Amphipoda of the Pacific Ocean, II. Stenothoidae of the Far Eastern Seas.) In: Pavlovskii, E.N. 1948. Pamiati Akad. S.A. Zernova. p. 287-325.

Contains a list of 37 species of small crustacean amphipods of the family Stenothoidae, native to the northern Pacific, with data on their distribution in Chukchi, Bering, and Japan Seas and in North American waters. Descriptions are given for 18 new species, including 13 inhabiting the Bering Sea and one from Bering and Chukchi Seas. In a supplement, p. 322-25, is a systematic list of 137 species of Stenothoidea with data on their total distribution. (Arctic Biblio.)

** Gur'ianova, E.F. 1949. Fauna Poliarnogo Baseina i Puti ee Obmena s Faunami Sosednikh Rainov Mirovogo Okeana. (Fauna of the Arctic Basin and its Exchange with Fauna of Adjoining Regions of the World Ocean.) In: Vesoiuznyi Geograficheskii s"ezd 2d, Leningrad, 1947. Trudy. 3:202-203.

Theses of a paper (delivered to the Second All-Union Geographical Congress, Leningrad, 1947) pointing out that the present arctic fauna represents a merger of two ancient arctic faunas originated in Kara Sea (Siberian Center) and in Chukchi and Beaufort Seas (Chukchi-American center), with some added elements from Atlantic and Pacific Oceans. (Arctic Biblio.)

Gur'ianova, E.F. 1950. K Faune Ravononogikh Rakov (Isopoda) Tikhogo Okeana, V. Izopody po Sboram Kamchatskoi Morskoi Stantsii Gosudarstvennogo Gidrologicheskogo Instituta. (To the Fauna of Isopod Shrimps [Isopoda] of the Pacific

Ocean, V. The Isopods from the Collections of the Oceanographic Station of the State Hydrological Institute.) Akademiia Nauk SSSR Zoologicheskii Institut, Issledovaniia Dal'nevostochnykh Morei SSSR. 2:280-292.

Contains a description of 18 species of these crustacea (4 of them new), collected during 1932-35 on the shores of southeastern Kamchatka. The new species described here are: Janiropsis setifera, Gurjanova sp. n.; Nannomiscella vinogradovi, Gurjanova sp. n.; Idothea spasskii, Gurjanova sp. n. and a fourth species described earlier. In addition to the description (morphology), data are offered on occurrence, geographic distribution, ecology, etc. (Arctic Biblio.)

Gur'ianova, E.F. 1951. Bokoplavy Morei SSSR i Sopredel'nykh Stran (Amphipoda - Gammaridea). (Gammaridea of the Seas of the USSR and Adjacent Waters.) Akademiia Nauk SSSR. Opredeliteli Po Fauna SSSR. Izd-vo Akademii Nauk SSSR, Moskva-Leningrad. 1029 p.

Contains (in the general part, p. 5-145) a systematic index of the families and genera of marine amphipodous crustaceans of the suborder Gammaridea, followed by data on the systematic position, a morphological sketch, remarks on phylogeny and evolution, details of geographic distribution, notes on the biology and economic importance, and bibliography (125 items). In the systematic part (p. 147-1010) are tables for the determination of families, genera and species and brief diagnoses of all known species with literature citations and data on habitat and geographic distribution. An index of Latin names is appended (p. 1011-1029). Distributional data for the northern waters of the USSR are given (p. 69-106), lists of arctic and Far Eastern (Bering and Okhotsk Seas) species (p. 123-33), and diagnoses of several arctic forms. (Arctic Biblio.)

Gur'ianova, E.F. 1952. K Faune Vysshikh Rakoobraznykh. (Crustacea-Malacostraca) Severnoi Chasti Tikhogo Okeana. (A Contribution to the Fauna of Higher Crustacea Malacostraca of the Northern Section of the Pacific Ocean.) Akademiia Nauk SSSR. Zoologicheskii Institut. Issledovaniia Dal'nevostochnykh Morei SSSR. 3:113-115.

Contains a systematic list of four species of marine crustaceans collected in 1946, southeast of Kamchatka Peninsula, at a depth of 4100-4200 m; and a key to the species of the genus Cyphocaris. (Arctic Biblio.)

Gur'ianova, E.F. 1957. Kratkie Rezul'taty Gidrobiologicheskikh Issledovanii Mezenskogo Zaliva Letom 1952 Goda. (Brief Account of Hydrobiological Investigations of the Gulf of Mezen during Summer 1952.) Akademiia Nauk SSSR. Karel'skii Filial, Petrozavodsk. Materialy po Kompleksnomu Izucheniiu belogo Moria. 1:252-281.

Divisions of the White Sea, including the Gulf of Mezen, bottom invertebrates and fishes, physical conditions and their ecological effects are outlined. Zoogeographic nature and origin of the fauna, their marine zones and principal biocenoses are considered. Mezen is compared with other bays of the White Sea; its littoral is dealt with also. (Arctic Biblio.)

Gur'ianova, E.F. 1961. Comparative Research of Biology of the Littoral in the Far Eastern Seas. Pacific Science Congress. 9th, Bangkok, Thailand, 1957. Proceedings. Zoology 19:75-86.

Discusses some bionomic and biogeographical conclusions based on Russian research (cited in the references) during the past 30 years along the northern and eastern coasts of the Soviet Union. Principles of vertical zonation of the littoral by tidal sea-levels (Vaillant) and by distribution of species and communitites (Stephenson) were applied to the various coastal regions studied, and are illustrated by a few examples from northern seas, e.g., Commander Islands. The most specific feature of the Far Eastern Seas is the existence of a horizon between the littoral and sublittoral that is exposed only during winter (Oct-April) ebb tides. (Arctic Biblio.)

Gur'ianova, E.F. 1964. Fauna Amphipoda i Isopoda Priatlanticheskoi v Padiny Arkticheskogo Basseina, Kotloviny Nansena. (Amphipoda and Isopoda of a Depression of the Arctic Basin, the Nansen Basin.) Arkticheskii i Antarkicheskii Nauchno - Issledovatel'skogo Instituta. Trudy. 259:255-315.

Reviews earlier faunistic studies in the general area, presents records of some 50 isopods and 250 amphipods collected during 1934-1956. The material is presented in taxonomic order and each form is dealt with as to date and location of find, depth, water temperature, and geographic distribution. (Arctic Biblio.)

Gur'ianova, E.F. 1968. The Influence of Water Movements upon the Species Composition and Distribution of the Marine Fauna and Flora throughout the Arctic and North Pacific Intertidal Zones. Sarsia 34:83-94.

Comparative studies of the intertidal and sublittoral zones along the coasts of the Arctic Ocean (the Barents and White Seas) and the North Pacific from the Bering Straits to Hainan and Gulf of Tonkin (South China Sea) show certain patterns in the changes of the fauna and flora in the vertical distribution of species, all of which are related to water movements, in the form of surf and currents. (Author.)

Gur'ianova, E.F. and P.V. Ushakov. 1926. K Ekologii i Geograficheskomu Rasprostraneniiu Balanoglossus v Russkikh Severnykh Moriakh. (On the Ecology and Geographic Distribution of Balanoglossus in Russian Northern Seas.) Gidrobiologicheskii Zhurnal SSSR 5(1-2):11-17.

Contains data on systematics and ecology of the marine burrowing worm of the genus Balanoglossus including B. mereschkowskii native to the White Sea, Murman coast and Novaya Zemlya waters; and another unnamed species of B. found in the central section of the White Sea. Summary in German. (Arctic Biblio.)

Gur'ianova, E.F. and P.V. Ushakov. 1928. K Faune Chernoi Guby na Novoi Zemle. (The Fauna of Chernaya Bay of Novaya Zemlya). Leningrad. Gosudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR 6:5-72.

Investigations of State Hydrographic Institute 1925, and others on the south west coast 1923-1927, and the topography of this bay (70°41' N, 54°40'E) are outlined. The nature of the bottom and hydrology of the bay, animal distribution and faunistic nature of the neighboring sea, of the channel and central bay, also fauna of the shore pools and those further inland are described. Trawling and dredging reports from the stations investigated are presented with list of animals found. The closed part of the bay showed signs of stagnation and so did some pools. The fauna is largely arctic with some boreal and warm-water elements. (Arctic Biblio.)

Gur'ianova, E.F. and P.V. Ushakov. 1929. Litoral Vostochnogo Murmana. (The Littoral of the Eastern Murman.) Leningrad. Gosudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR 10:5-40.

A detailed description of the areas investigated: Teriberka, Porchnikha Bay, Rynda and Zolotaya and their fauna. In the first area, the littoral of Lodeynaya Bay was found to be very rich, that of the others the more depleted the more they are exposed to wave action. Salinity varied from 34-30°/$_{oo}$ to 0 in the river mouths. The effects of sea action upon animal distribution, horizontal and vertical, and upon the forms of some animals is also discussed as well as the effects of the nature of the bottom. (Arctic Biblio.)

Gur'ianova, E.F., I.G. Zaks and P.V. Ushakov. 1930. Litoral'zapadnogo Murmana. (The Littoral of the Western Murman.) Leningrad. Gosudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR. 11:47-104.

Account of the tidal zone of the northwest coast of Kola Peninsula, its flora and fauna. The hydrographic and ice conditions as well as the nature of the bottom in the area studies are dealt with. Detailed descriptions follow of representative sections of the area and their bionomics. Six ecological types are distinguished and described, largely on the basis of salinity and effects of wave action. Two of the types comprise "little brooks" and pools of the tidal zone, characterized by strong fluctuations in temperature and salinity and by a specific fauna and flora. (Arctic Biblio.)

Gustafson, G. 1936. Polychaeta and Sipunculoidea from the Siberian Arctic Ocean. Maud Expedition, 1918-1925. Scientific Reports, V. 5, No. 17. John Grieg, Bergen. 12 p.

List, with localities, notes on distribution and remarks, of twenty-four species of annelid worms collected in the Chukchi, East Siberian and Laptev Seas; with list of stations; bibliography (18 items). (Arctic Biblio.)

Hansen, H.J. 1920. Crustacea-Malacostraca. IV. The Order Cumacea. Danish Ingolf Expedition 3(6):1-74.

A listing of the cumacea found on the Danish Ingolf expedition with notes on the specimans and their distribution.

Hart, J.r.L. 1939. Cumacea and Decapoda of the Western Canadian Arctic Region, 1936-1937. Canadian Journal of Research. 17(D):62-67.

List cumacea and decapods collected by H.A. Larsen southwest of Victoria Island from 1936-1937. Each species is listed with locality, western range limit and miscellaneous remarks.

Hartmeyer, R. 1904. Die Ascidien der Arktis. Fauna Arctica. 3:91-412.

Lists and describes arctic ascidians with locations.

** Hedgpeth, J.W. 1963. Pycnogonida of the North American Arctic. Canada. Fisheries Research Board. Journal. 20(5):1315-1348.

This report concerns 22 species of pycnogonids found between Point Barrow and the Baffin Bay-Davis Strait region, based on collections by the Calanus expeditions since 1947 and by G.E. MacGinitie at Point Barrow. One new species, from Point Barrow, is described. Three basic distribution patterns are recognized: a boreal, circumarctic or panarctic distribution, a high arctic and deeper boreal distribution related to the North Atlantic - Norwegian Sea areas, and a Pacific boreal distribution. Neither of the latter two have circumpolar components. No relationship between arctic and antarctic Pycnogonida can be demonstrated and several arctic species carry their young until they are much more advanced than do antarctic species. (Author.)

Higgins, R.P. 1966. <u>Echinoderes arlis</u>, a New Kinorhynch from the Arctic Ocean. Pacific Science 20(4):518-520.

The first kinorhynch reported from within the Arctic circle was <u>Centroderes arcticus</u> (Steiner, 1919) n. comb. This species was originally described in one of several invalid "larval genera," gen <u>Centropsis</u> Zelinka, 1907. Fam. Echinoderidae Butschli, 1876 has been reported from as far north as Bergen, Norway and the northern Baltic Sea, its southern limit of distribution is South Georgia Island in the Southern Atlantic. Members of the single genus within this family, <u>Echinoderes</u> Claparede, 1863, are widely distributed and are common representatives of the phylum Kinorhyncha. The species described in this paper is the first member of the gen <u>Echinoderes</u> reported from within the Arctic Circle and is from the greatest recorded depth for the phylum. (Arctic Biblio.)

Hilton, W.A. 1942. Pantopoda. Pantopoda Chiefly from the Pacific. Journal of Entomology and Zoology 34:3-7, 38-41.

Of the thirty-five species of sea spiders described, fifteen (including thirteen new) species were found in Aleutian waters, Bering Sea, the Gulf of Alaska, and North Alaskan Waters (Arctic Biblio.)

Holmquist, C.M. 1963. Some Notes on Mysis relicta and its Relatives in Northern Alaska. Arctic 16(2):109-128.

Reports studies of mysids on the Arctic Slope and adjacent continental shelf off Barrow in summer 1961. Several localities, their physical and chemical properties and faunal compositions described, were investigated as possible habitats of Mysis. M. relicta were found in abundance in a freshwater lake, a marine lagoon, and a metahaline pond; the species apparently prefers shallow inland waters to the open sea. The absence of mysids from several freshwater lakes is attributed to isolation. Dispersal in this unglaciated area is considered, also possible inter-specific competition between M. relicta and litoralis. (Arctic Biblio.)

Holmquist, C.M. 1965. The Amphipod Genus Pseudalibratus. Zeitschrift fur Zoologische Systematik and Evolutionforschung 3(1-2):19-46.

Comparative morphological study of own and museum collections, from Alaskan (esp. Nuwuk Pond near Pt. Barrow) and West Greenland waters. Ps. littoralis, Ps. nanseni and Ps. glacialis are recognized as genuine species, apparently of circumpolar distribution. Ps. birulai could not be definitely classified for lack of Caspian material. (Arctic Biblio.)

Holmquist, C. 1973a. Some Arctic Limnology and the Hibernation of Invertebrates and Some Fish in Sub-zero Temperatures. Office of Naval Research Technical Rept. 1968-1970. ONR 412:3.

Holmquist, C. 1973b. Taxonomy, Distribution and Ecology of the Three Species Neomysis intermedia (Czerniavsky), N. awatschensis (Brandt) and N. mercedis Holmes (Crustacea, Mysidacea). Zoologische Jahrbucher. Abteilung fur Systematik Okologie und Geographie der Tiere. 100:197-222.

On the basis of samples from North American Pacific coasts, from northern Alaska and from Japan, it is stressed that no doubt remains as to the validity of the three mysid species Neomysis intermedia (Czerniavsky), N. awatschensis (Brandt) and N. mercedis Holmes. N. mercedis appears as a North American Pacific Species, N. awatschensis as an Asiatic Pacific to Alaskan species. They are all rather euryhaline and eurythermic. (Author.)

Holmquist, C. 1974. On Alexandrovia onegensis Hrabe from Alaska, with a Revision of the Telmatodrilinae (Oligochaeta, Tubificidae). Zoologische Jahrbucher. Abteilung fur Systematik Okologie und Geographie der Tiere. 101:249-268.

Finds of the tubificid worm Alexandrovia onegensis Hrabe, 1962 in northern Alaska have led to a revision of the subfamily Telmatodrilinae and the genus Telmatodrilus Eisen, 1879 as grouped by Brinkhurst. A summary of the distribution and ecology of the worms was also given. (Author.)

** Hufford, G.L., S.H. Fortier, D.E. Wolfe, J.F. Doster and D.L. Noble. 1974. WEBSEC-71-72, An Ecological Survey in the Beaufort Sea. U.S. Coast Guard Oceanographic Report, No. 64. United States Coast Guard Oceanographic Unit, Washington, D.C. 282 p.

The report contains a collection of scientific papers from two successive marine ecological baseline cruises to the Western Beaufort Sea (August-September 1971 and 1972). Preliminary results of the physical, chemical, biological, and geological data are presented and interpreted. The results indicate that the data were collected in a marine ecosystem that is still in a relatively unpolluted state. The data should provide a base for assessing the effects of pollution from future development, especially from petroleum. (NTIS.)

** Hulsemann, K. 1962. Marine Pelecypoda from the North Alaskan Coast. Veliger 5(2):67-73.

Describes 12 lamellibranchs dredged from shallow waters between Point Barrow and Baxter Island in August 1953. Geographic distribution of the species, four of them new to the area, is discussed. Earlier work on area is mentioned. (Arctic Biblio.)

Hulsemann, L. and J.D. Soule. 1962. Bryozoa from the Arctic Alaskan Coast. Arctic 15(3):228-230.

Lists 11, mostly common species of bryozoans collected in August 1953 between 145°14' N and 155°48' W; manner of occurrence and general distribution are noted. Location of each of the 12 stations, depth, and sediment type from which material was collected, also presence of kelp are indicated. (Arctic Biblio.)

Hunkins, K., M. Ewing, B. Heezen and R. Menzies. 1960. Biological and Geological Observations on the First Photographs of the Arctic Ocean Deep-Sea Floor. Limnology and Oceanography 5:154-161.

Contains bottom photographs and a discussion of the animals and evidence of animals seen in the photographs. The authors conclude from the photographs that bottom life is less abundant than in the Atlantic at similar depths. Also includes geological observations.

Hunkins, K., G. Mathieu, S. Teeter and A. Gill. 1970. The Floor of the Arctic Ocean in Photographs. Arctic 23(3):175-189.

Over 2,000 usable bottom photographs have been taken in the western Arctic Ocean. The 87 stations cover the major geomorphic provinces of this part of the Arctic Basin, including the Alph Cordillera, Mendeleyev Ridge, and Canada Abyssal Plain as well as smaller features. The ridge and plain provinces differ markedly in their bottom characteristics. Scattered rocks, living animals and indications of bottom current are most prevalent on the ridges. Trails are most abundant on the abyssal plains. The differences are attributed to bottom current distributions and turbidity currents. Bedrock outcrops are observed on the tops of two knolls on the Mendeleyev Ridge. (Author.)

** Huntsman, A.G. 1922. Ascidiacea. Canadian Arctic Expedition, 1913-1918. Report. Vol. 6: Fishes and Tunicates, Pt. B. King's Printer, Ottawa. 14 p.

Lists with descriptions, locations and synonymy, of sixteen species of tunicates from fourteen dredging stations off the Alaskan coast and in Dolphin and Union Strait, off the Canadian arctic coast. (Arctic Biblio.)

Huxley, T.H. 1852. Ascidians and Echinoderms. In: P.C. Sutherland's Journal of a Voyage in Baffin's Bay and Barrow Straits, in the years 1850-1851. p. ccxi-ccxii.

Hyman, L.H. 1953. The Polyclad Flatworms of the Pacific Coast of North America. American Museum of Natural History, New York, Bulletin. 100(2): 265-392.

Contains a critical revision of 67 species of polyclad flatworms, comprising 48 Acotylea and 19 Cotylea native to the Pacific coast of North America; with data on material, form, color, eyes, digestive system, copulatory apparatus, differential characters, distribution, holotype and remarks. Nine new genera, 36 new species and one new variety are recorded, including the following from Alaskan areas: Kaburakia excelsa (Sitka), Notoplana atomata (Pt. Barrow), N. Longastyletta new comb. (Aleutian Islands), N. sanjuania (Pavlov Bay), and Acerotisa arctica n. sp. (Pt. Barrow). (Arctic Biblio.)

Iakovleva, A.M. 1952. Pantsyrnye Molliuski Morei SSSR (Loricata). (Chitons [loricata] of the Seas of the USSR). Izd-vo Akademii Nauk SSSR, Moskva-Leningrad. 107 p.

Contains in the general part, a systematic index to marine species of the class Loricata (p. 5-6); followed by an introduction (p. 7-43) giving a brief characterization and morphological and anatomical sketch of loricata, biology, phylogeny, geographic distribution, and methodics of determination; also a bibliography (107 items). In the systematic part (p. 48-104) are given keys to the orders, families, genera and species, and descriptions of 42 species of chitons (one family, two genera and 11 species are new to science), with synonyms, literature references, critical notes and data on ecology and distribution. Index of Latin names in appendix p. 105-107. Many species native to northern waters of the USSR and adjoining seas are included in this work (see table 9 on p. 38-39). (Arctic Biblio.)

Ingham, M.C., B.A. Rutland, P.W. Barnes, G.E. Watson and G.J. Divoky. 1972. WEBSEC - 70, An Ecological Survey in the Eastern Chukchi Sea. September-October 1970. United States Coast Guard Oceanographic Report No. 50. United States Coast Guard Oceanographic Unit, Washington, D.C. 206 p.

Oceanographic stations were occupied by the USCGS Glacierin the eastern Chukchi Sea during 25 September - 17 October 1970. The currents and distributions of physical and chemical variables are described. Geologic sampling was carried out in the same area, using a variety of field techniques to define the sediment distribution pattern and particle transport processes. Water turbidity, bottom sediments along with current measurements and water mass data are discussed. Pelagic bird and mammal observations were made in the areas, providing new fall distributional feeding information for the biologically little known area from Point Barrow to Cape Lisburne. Preliminary results of studies of sedimentation, macrobenthic population and trace metal chemistry of sea water of the east central Chukchi Sea are described. Sixty-two categories of zooplankton were identified from 77 vertical tows with the results of the data summarized in two tables and three charts. Fish were collected on 20 stations. Lists of species captured are presented. (NTIS.)

Iniutkina, A.I. 1965. Plavaniia Amerikanskogo Ledokola "Nortuind" v Arktike. (Cruise of the America Icebreaker Northwind in the Arctic.) Problemy Arktiki i Antarktiki 19:69-71.

Describes pertinent construction characteristics of the vessel and reviews the 1960-1963 scientific work, noting personnel, Map 6 references. (Arctic Biblio.)

International Polar Year, First. 1888. Lady Franklin Bay Expedition. Report on the Proceedings of the United States Expedition to Lady Franklin Bay, Grinnell Land. U.S. Government Printing Office, Washington, D.C. Vol. 2, 738 p.

International Polar Year, First. 1888. Lady Franklin Bay Expedition. Report on the Proceedings of the United States Expedition to Lady Franklin Bay, Grinnell Land. U.S. Government Printing Office, Washington, D.C. Vol. 2, 738 p.

Scientific appendices (17) are presented in V. 2, accompanied by charts and tables of observations. Echinodermata, Vermes, Crustacea and pteropod Mollusca: notes (edited) and sketches by J.W. Fewkes of marine animals, collected near Fort Congor, May 17-June 8, 1883; identification impossible, but some never observed so far north, p. 47-53. Mollusca: Notes by W.H. Dall on about 14 specimens found near Fort Conger in 1883, p. 57-58. (Arctic Biblio.)

Ivanov, A.V. 1956. Pogonofory Severo-zapadnoi Chasti Tikhogo Okeana. (Pogonophora of the Northwestern Pacific.) Akademiia Nauk SSSR. Zoologicheskii Institut. Trudy. Problemnykh i Tematicheskikh Soveshchanii. 6:20-21.

Discusses briefly Soviet finds of this sea class (20 species, 5 families) and their body systems, anatomy, sexual conditions, taxonomy, including relations. (Arctic Biblio.)

Ivanova, S.S. 1957. Kachestvennaia i Kolichestvennaia Kharakteristika Bentosa Onezhskogo Zaliva Belogo Moria. (Qualitative and Quantitative Character of the Benthos of the Onega Bay of the White Sea.) Akademiia Nauk SSSR. Karelskii Filial, Petrozavodsk. Materialy po Izucheniiu Belogo Moria. 1:355-380.

Account based on material collected in 1952, also repeatedly since 1946. Earlier studies were reviewed and data given on species making up the benthos. Its main faunistic complexes, their biomass and occurrence, species composition of the complexes quantitative distribution of the benthos, and distribution of the species are treated in turn. The Bay was found to be rich in benthonic forms (mostly boreal and arcto-boreal) but rather poor in quantity. (Arctic Biblio.)

Johansson, K.E. 1927. Beitrage zur Kenntnis der Polychaeten-Familien Hermellidae, Sabellidae und Serpulidae. (Contributions to the Knowledge of Polychaeta families Hermillidae, Sabellidae and Serpulidae.) Zoologiska Bidrag Fran Uppsala 11: 1-183.

Contains in chapters 1-4 (p. 1-63), a study of the biology and anatomy of marine annelid worms of the families Hermellidae, Sabellidae and Serpulidae and in Chapters 5-7 (p. 63-183), data on their systematic position, with a list of about 150 species from various waters (these species and one variety described as new) with synonyms, descriptions of new and more interestin g species from arctic seas, Greenland and Bering Seas; a general bibliography (236 items). (Arctic Biblio.)

Jones, D.J. 1960. Ostracoda from the Central Arctic Basin. Geological Society of America. Bulletin. 71(12, pt. 2):1900.

Reports eight genera (names) and 16 species, including two new forms, collected from the Basin floor, 1952-1955. Some show evidence of stratigraphic and geographic displacement. Noteworthy are the thin carapaces, extreme development of spines and other ornamentation, also absence of instars in some forms of these crustaceans. (Arctic Biblio.)

Joy, J.A. 1974. The Distribution and Ecology of the Benthic Ostracoda from the Central Arctic Ocean. Thesis, Wisconsin Univ., Madison. 125 p.

From the top 3 cm of 64 central Arctic Ocean sediment cores, 33 samples have been found to contain ostracodes. The cores were taken from depths between 1351 and 3812 m. Of the remaining 31 barren cores, 29 were taken from depths exceeding 3600 m in the Canada Basin. All 19 ostracode species constitute a bathyal fauna which extends to approximately 3000 m. The bathyal fauna is found along Alpha Cordillera and Chukchi Rise. Only Cytheropteron bronwynae n. sp. and Krithe bartonensis (Jones) occur below approximately 3000 m. These two species compose the abyssal fauna. The central Arctic ostracode faunas are more similar to the faunas of Scandinavia than to faunas of the northern Pacific. (NTIS.)

Just, J. 1970a. Amphipoda from Joergen Broenlund Fjord, North Greenland. Meddelelser om Groenland 184(6):1-39.

From Jørgen Brønlund Fjord, North Greenland 28 species of amphipods are listed, one of which is new to science, viz. Byblis arcticus. Four known species and one genus are new to Greenland waters. Notes on breeding biology are made where possible and maps of distribution of Monoculodes schneideri G.O. Sars and Aceroides latipes G.O. Sars are presented. Anatomical and morphological problems of Corophium clarencense Shoemaker are mentioned briefly. (Author.)

Just, J. 1970b. Cumacea from Joergen Broenlund Fjord, North Greenland. Meddelelser om Groenland 184(8):1-22.

From Jørgen Brønlund Fjord, North Greenland (82°10'N, 30°30'W) 11 species of cumacea are listed as a result of investigations during the Fourth Peary Land Expedition in the summer of 1966. One species is new to science, viz. Campylaspis stephenseni. The male of Leucon spinulosus H.J. Hansen is recorded and described for the first time. A possibly new species of the genus Eudorella is described, but in view of recent papers it is referred to as Eudorella sp. only. Notes on breeding biology are made where possible. (Author.)

Just, J. 1970c. Decapoda, Mysidacea, Isopoda and Tanaidacea from Joergen Broenlund Fjord, North Greenland. Meddelelser om Groenland 184(9):1-32.

From Jørgen Brønlund Fjord (82°10'N, 30°30'W) 29 species of Crustacea Malacostraca are listed: 2 Decapoda, 3 Mysidacea, 15 Isopoda, and 9 Tanaidacea. Two species are considered new to science, viz. Nannoniscus hanseni and Pseudomesus sp. (nov. sp.). Two genera and 9 species are recorded for the first time from Greenland waters. (Author.)

Kennett, James P. 1970. Comparison of Globigernia pachyderma (Ehrenberg) in Arctic and Antarctic areas. Contributions from the Cushman Foundation for Forminiferal Research 21(2):47-49.

Populations of Globigerina pachyderma in Arctic bottom sediments exhibit distinct morphological differences from those in Antarctic bottom sediments. Arctic populations are less heavily encrusted, more lobulate, have a higher arched aperture, and have a dominance of 4 1/2-chambered form (umbilical view), compared with a dominance of 4-chambered forms in Antarctic populations. Both are dominated by sinistrally coiling forms and they have similar size characteristics. Because of a shortage of morphological data on G. pachyderma in subarctic and northern hemisphere subtropical areas, it is not possible to determine whether these morphological differences results from phenotypic variation or subspeciation. Characteristic ranges of variation of G. pachyderma from both areas are illustrated by scanning-electron micrographs. (Author.)

Khodkina, I.V. 1964. Iglokozhie Yuzhnoi Chasti Barentseva Morya (Po Materialam 1957-1959 gg.). (Echinoderms of the Southern Part of the Barents Sea [on the Materials 1957-1959].) Murmanskogo Morskogo Biolighcheskogo Instituta. Trudy. (6(10):41-75.

From material collected in the southern part of the Barents Sea between 1957 and 1959, 48 echinoderm species were found. Ophiopholis aculeata, Ophiocantha bidentata, Ophiura sarsi, O. robusta, and Strongylocentroutus droebachiensis were found to be at more than 50% of the stations. On the basis of Echinodermata distribution, which depends upon temperature and food (detritus) distribution, the southern part of the Barents Sea can be divided into four regions: western, eastern, southeastern, and deep water. The region of the highest biomass of Echinodermata (60-90 g/m^2) lay between Gusinyi Bank, Novaya Zemlya, and Kolguev Island. (Biological Abstracts.)

King, G.S. 1967. Biological Stations Occupied from Fletcher's Ice Island T-3. June 13, 1965-May 24, 1966. University of Southern California, Los Angeles. 34 p.

The report is a station list of the biological collections made from Fletcher's Ice Island T-3 in the Arctic Ocean from June 13, 1965 to May 24, 1966. The marine biology program was carried out by a total of 280 stations, the majority of collections were planktonic. Each station includes its latitude, time and data of sampling, gear used, and sample and bottom depths. (Author.)

Kliuge, G.A. 1908a. Beitrage zur Kenntnis der Bryozoen des Weissen Meeres. (Contributions to the Knowledge of Bryozoa of the White Sea.) Akademiia Nauk SSSR. Zoologicheskii Muzei. Ezhegodnik, 1907. 12(4):515-540.

Contains a systematic list of 81 bryozoans collected by the author in 1897 during his work at the Biological Station in the Solovetskiye

Islands, White Sea, including descriptions of <u>Membranipora heterospinosa</u> and <u>Schizoporella ussowi</u> n spp.; synonymy, critical notes and data on local distribution. (Arctic Biblio.)

Kliuge, G.A. 1908b. Zur Kenntnis der Bryozoen von West Gronland. (A Contribution to the Knowledge of Bryozoa of West Greenland.) Akademiia Nauk SSSR. Zoologicheskii Muzei. Ezhegodnik, 1907. 12(4):546-554.

Contains a systematic list of 76 bryozoans collected by Dr. A.E. Ortmann in Inglefield Gulf, northwest Greenland, during the Peary Relief Expedition in 1899 under Prof. Wm. Libbey; includes a description of <u>Schizoporella ortmanni</u> n. sp. (Arctic Biblio.)

Kliuge, G.A. 1929. Die Bryozoen des Sibirischen Eismeeres. (Bryozoa of the Siberian Arctic Sea.) Leningradskoe Obshchestvo Estestvoispytalelei. Murmanskaia Biologicheskaia Stantsiia, Murmansk. 3(4):1-33.

Contains a preliminary report on the bryozoans (moss-like, colonial animals) collected by the <u>Vega</u> (Nordenskiold, 1878-79); <u>Sarja</u> (Toll', 1900-1902), <u>Taimyr</u> and <u>Vaigach</u> (Vilkitskii, 1914-1915) expeditions. 108 species are listed, nine of them new. The localities where each species was found, are given, together with a description of new forms or variations. The geographical distribution of the species is graphically summarized. (Arctic Biblio.)

Kliuge, G.A. 1955. Novye i Maloizvestnye Mshanki (Bryozoa) iz Severnogo Ledovitogo Okeana II. (New and Little Known Species of Bryozoa from the Arctic Ocean, II.) Akademiia Nauk SSSR. Zoologicheskii Institut. Trudy. 18:63-99.

Contains description of three new genera, 39 new and a few little known species of bryozoans, mostly from the Russian arctic seas, but covering practically all arctic waters. (Arctic Biblio.)

Kliuge, G.A. 1961. Spisok Vidov Mshanok Bryozoa, Dal'nevostochnykh Morei SSSR. (List of Species of Bryozoa from the Far-Eastern Seas of USSR.) Akademiia Nauk SSSR. Zoologicheskii Institut. Issledovaniia Dal'nevostochnykh Morei SSSR 7:118-143.

Lists 223 forms from 70 years collections: 1879-1949, with notes on locations and geographic range, and depth of occurrence. The Bering, Okhotsk and Chukchi Seas harbor these invertebrates. (Arctic Biblio.)

Kliuge, G.A. 1962. Bryozoa of the Northern Seas of the USSR (Mshanki Severnykh Morei SSSR). Sharma, B.R. (Trans.). 1975 Smithsonian Institute, Washington, C.D. 735 p. (Translation from Opredeliteli po Fauna SSSR 76, 1962.

The identification key is a presentation of knowledge about the Bryozoan fauna of the northern seas (Polar Basin). This fundamental work is a product of about fifty years of research carried out by the scientist, German Avgustovich Kluge, and is based on sizable collections from several Soviet Arctic expeditions beginning from the first investigations of the expedition for Scientific Fishery Research at the coasts of Murmansk (ENPIM) which was organized at the end of the last century and the beginning of the present one, and the Russian Polar Expedition on the schooner Zarya in 1900-1902, and the subsequent high latitude expedition of recent years on expedition ships Sadko, Sibiryakov, Sedov, Litke, and others, as well as the Drifting Polar Stations (SP 1-4), which had collected sizable and extremely rich material from all regions of the northern seas. (NTIS.)

Knipovich, N.M. 1891. K Voprosu o Zoogeograficheskikh Zonakh Bielago Moria. (On the Zoogeographical Zones of the White Sea). Viestnik Estestvoznaniia 2(6-7):201-206.

Contains a discussion of three zoogeographical zones of the White Sea established by the author, a comparison with subdivisions of other naturalists (S.M. Gertsenshtein and K.I. Khvorostanskii) and with similar zones of the Barents Sea; marine species typical for each zone are listed. (Arctic Biblio.)

Knipovich, N.M. 1900. Zur Kenntniss der Geologischen Geschichte der Fauna des Weissen und des Murman-Meeres. (Post-Pliocene Mollusken and Brachiopoden.) (On the Geologic History of the Fauna of White and Murman Seas [Post-Pliocene Molluscs and Brachiopods].) Vserossiiskoe Mineralogicheskoe Obshchestvo, Leningrad. Zapiski. Seriia 2. 38:1-169.

Based on collections of recent material made in 1898-99, by the Expedition for Scientific and Economic Investigation of the Murman Coast, and on post-Pliocene collections in the White Sea region, Novaya Zemlya and the Murman coast. Discussion of the water temperature and recent molluscan and brachiopod faunas of the southern Barents and White Seas (p. 4-30); the localities and post-Pliocene collections of (a) Rybachiy Peninsula, Port Vladimir, Kildin Island, the Kola Bay region, the shores of Notozero (lake), and elsewhere along the north coast of Kola Peninsula (p. 31-48); (b) the White Sea coasts (p. 48-105); (c) the Mezen, Chechskaya and Pechora Bay regions (p. 105-140); and (d) Novaya Zemlya (p. 141-48). Remarks on the 105 species of post-Pliocene fauna, relating them to interglacial, late glacial, and post-glacial subsidence in northern European Russia and discussing paleoclimatic changes of the hydrologic regimes of the bordering seas. (Arctic Biblio.)

Knipovich, N.M. 1905. Uber das Vorkommen von *Mytilus edulis* L. in Tiefen Teilen des Weissen Meeres. (On the Occurrence of *Mytilus edulis* L. in Deep Waters of the White Sea.) Vserossiiskoe Mineralogicheskoe Obshchestvo, Leningrad. Zapiski. Ser. 2. 2(43):271-277.

Contains a report of the find of a mollusc, Mytilus edulis, a common representative of the littoral and warm water faunas in the deep and cold waters of the White Sea: with observations on the temperature and environmental conditions, and a discussion of the vertical distribution of this mollusc. (Arctic Biblio.)

Knox, G.A. 1959. Pelagic and Benthic Polychaetes of the Central Arctic Basin. In: Bushnell, V.C. (ed.). 1959. Geophysical Research Paper No. 63. U.S. Air Force. Cambridge Research Center, Bedford. p. 105-114.

A small but most northerly collection obtained (north of 80°N), four species of pelagic polychaetes included. (Arctic Biblio.)

Kobiakova, Z.I. 1964. Materialy po Faune Decapoda iz Raionov Zemli Frantsa-Iosifa, Shpitsbergena i Grenlandskogo Moria. (Decapod Fauna from the Area of Franz Joseph Land, Spitsbergen and the Greenland Sea.) Leningrad. Arkticheskii i Antarkticheskii Nauchno-Issledovatel'skogo Instituta. Trudy. 259:322-329.

Records 16 forms of these crustaceans collected by the High Latitude Arctic Expeditions of 1955-1958. Location of finds, water temperature, vertical and geographic distribution, zoogeographic aspects, etc. are considered. (Arctic Biblio.)

Koltun, V.M. 1959a. Donnaia Fauna Abissal'nykh Glubin TSentral'nogo Poliarnogo Basseina. (Bottom Fauna of the Abyssal Depths of the Central Arctic Basin.) Akademiia Nauk SSSR. Doklady. 129(3):662-665.

Lists bottom animals collected on various recent expeditions (1948-55) from depths down to 4000 m. The animals are listed in three groups: abyssal (40 forms), bathyal (37), and continental-shelf group (65). Occurrence and geographic origin are noted. (Arctic Biblio.)

Koltun, V.M. 1959b. Kremnerogovye Gubki Severnykh i Dal'nevostochnykh Morei SSSR, Otriad Cornacuspongida. (Siliceous-horny Sponges of the Northern and Far Eastern Seas of the USSR; Order Cornacuspongida.) Akademiia Nauk SSSR. Zoologicheskii Institut. Opredeliteli po Faune SSSR. 67:1-235.

A study of 191 species, 17 families, from various Russian collections and sources. The general part (p. 13-45) deals with the history of Russian study of sponges; anatomy and morphology of siliceous-horny sponges; propagation, embryology and growth; ecology; geographic distribution (largely subarctic and arctic) and vertical distribution. The succeeding, taxonomic part contains deys and information on morphology and anatomy, geographic distribution, synonyms, etc. (Arctic Biblio.)

Koltun, V.M. 1964a. Gubki (Porifera), Sobrannye v Grenlandskom More i v Raione k Severu ot Shpitsbergena i Zemli Frantsa-Iosifa Ekspeditsiiami na l/r "F. Litke" 1955 g., d/e "Ob" 1956 g., i d/e "Lena" 1957 i 1958 gg. (Sponges Collected in the Greenland Sea and in the Region North of Spitsbergen and Franz Joseph Land, by the F. Litke in 1955, Ob in 1956, and Lena 1957, 1958. Leningrad. Arkticheskii i Antarkticheskii Nauchno-Issledovatel'skogo Instituta. Trudy. 259:143-166.

Account of 92 forms, with notes on synomyms, location and depth of finds, morphology and geographic distribution. Data are also tabulated within a taxonomic framework. (Arctic Biblio.)

Koltun, V.M. 1964b. K Izucheniiu Donnoi Fauny Grenlandskogo Moria i Tsentral'noi Chasti Arkticheskogo Basseina. (Study of the Bottom Fauna of the Greenland Sea and the Central Part of the Arctic Basin.) Arkticheskogo i Antarkticheskogo Nauchno - Issledovatel'skogo Instituta. Trudy. 259:13-78.

Fauna at depths of 50-800 m include arctic-boreal, panarctic, high arctic, lower arctic, subarctic, boreal, and bathybial species. Near northern Spitzbergen and Franz Josef Land and northeastern Greenland arctic-boreal and panarctic species predominate at 50-200 m (73%) with bathybial and high arctic species constituting 11% and 8.5% of the fauna, respectively. The small number of high arctic species which are not typical of the high arctic region is accounted for by the effect of Atlantic water. Even though the bottom temperature is high enough (as high as 4.1°C), there are hardly any boreal species. Arctic-boreal and panarctic species also predominate at depths of 200-800 m, but there are quite a few subarctic, bathybial, and even true boreal species at these depths, but not many high arctic and lower arctic ones. Subarctic species occur in the south, generally along Tomson Shelf, and in the north to the northern parts of the Kara and Laptev Seas. They include "amphisubarctic" species which apparently originated in the deep ocean, migrating into the part of the Arctic near the Atlantic in postglacial times. Among the bathybial species there are both autochthonous and allochthonous (deep ocean and atlantic) species. The latter migrated in the prequaternary period and later. Deep-water North Atlantic bathybial species are not really boreal. In their ecology they resemble arctic-boreal or subarctic species and probably passed into the depths of the Atlantic from the bathyal Arctic. North Atlantic boreal species have not passed into the bathyal region of the Polar Basin east of Franz Josef Land, but deep arctic species which resemble them (pairs) have been found earlier for fish by A.P. Andriyashev. They are descended from boreal species during the epoch of the intraglacial boreal transgression and at later times. The limit for the occurrence of boreal species in the Arctic lies between Spitzbergen and Franz Josef Land, and their migration route pass along the western shores of Spitzbergen. The eurybathic species is abundant. This abundance causes some leveling out of the vertical zonation in the benthos and is related in its origin to "salt pulsations" of the quaternary period which sometimes drove pelagic fauna into the deep water and sometimes made it possible for them to settle in shallows again. The levelling effect of a warm current on the fauna in the 200-1500 m zone and the rising of deep water into the shallows facilitates the development of eurybathic conditions. The abyssal fauna in the Polar Basin are reviewed. This fauna consists of abyssal species, bathybial species descending into the abyssal region, and eurybathic sublittoral species. A list of these groups is presented: 146 spp. including 41 abyssal species, 40 bathybial ones, and 65 sublittoral species. Six species are very characteristic for the abyssal region. The fauna at the upper limit of this zone are found near northern Spitzbergen and Franz Josef Land at depths of 1500-1800 m, and those at the lower limits of the bathyal zone at 110-1300 m. A transitional abyssal-bathybial zone lies between them. Apparently these same boundaries pass quite close to the Novosibirskie Islands and the North Pole. In the sector near the Pacific Ocean the upper limit of the abyssal zone is found at a depth of 1200 m or above. The benthos in the Scandanavian Trench is much more varied than in the Polar Basin although the boundaries of the abyssal zone and the basic background of the fauna are the same. In the northern part of the Greenland Sea Bryozoa and a number of subarctic and bathybial species were found which do not descend into the abyssal zone in the Polar Basin. (Biological Abstracts.)

Kramp, P.L. 1963. Summary of the Zoological Results of the Godthaab Expedition 1928. Meddeleser om Groenland 81(7):1-115.

A summary of the results of this expedition. Pages 81-96 discuss the bottom fauna. The main purpose of the collections is to compare the deep-sea bottom fauna north and south of the submarine ridge across Davis Strait. Littoral and sub-littoral results are discussed separately from deep water results.

Kuderskii, L.A. 1960. On the Assumed Suppression of Invertebrates with a Long Life Cycle in the White Sea. (O Predpolagaemon Ugnetenii Bespozvonochnykh s Dlitelnym Zhizennym Tsiklom v Belom More.) Slessers, M. (Trans.). 1968. Naval Oceanographic Office, Washington, D.C. 13 p. (Translation of Zoologicheškii Zhurnal [USSR].) 39(6):826-831.

The material presented in the paper shows that the biomass of some invertebrates with a long life cycle, as well as that of the benthos of separate benthal coenoses (in particular, coenoses of Modiolus modiolus) in the White Sea appears to be higher than the corresponding biomass in the adjacent Barents Sea. This fact proves the incorrectness of V.V. Kuznetsov's opinion on the total depression of organisms of a lasting life cycle in the White Sea. (Author.)

Kuderskii, L.A. 1962. Donnoe Soobshchestvo Modiolus modiolus Onezhskogo Zaliva Belogo Moria. (Bottom Biocenosis Modiolus modiolus in Onega Bay of the White Sea.) Akademiia Nauk SSSR. Karel'skii Filial. Trudy. 1962(33): 67-81.

Study of one of the main groupings in the benthos of this area based on over a hundred bottom samples collected in 1950 and 1951. Forms composing this association and their percentage, their biomass and zoogeographic origin, leading forms, total biomass in their associations, etc., are considered. Tables, graph, 14 references. (Arctic Biblio.)

Kuznetsov, V.V. 1946. Pitanie i Rost Rastenieiadnykh Morskikh Bespozvonochnykh Vostochnogo Murmana. (Nutritition and Growth of Herbovorous Marine Invertebrates of the Eastern Murman.) Akademiia Nauk SSSR. Izvestiia, Seriia Biologicheskaia. 4:431-452.

Account of field and aquarium work, with five main plant-feeders studied. The intensity of their food intake was found to depend on the season, age, and physiological condition. In general, there was little food selection among the animals, and all easily passed to detritus feeding. A relation between life span and "feeding index" was detected; and the invertebrates were estimated to consume some 35% of the annual seaweed production. (Arctic Biblio.)

Kuznetsov, V.V. 1948a. Bioekologicheskaia Kharakteristika Massovykh Vidov Morskikh Bespozvonochnykh. Biologicheskii Tsikl Laguna vincta (Montagu)-Laguna divaricata (Fabricius) na Vostochnom Murmane. (Bioecological Characteristics of Mass-Species of the Marine Invertebrates. Biological Cycle of Laguna vincta [Montagu]-Laguna divaricata [Fabricius] in the Eastern Murman.) Akademiia Nauk SSSR. Murmanskaia Biologicheskaia Stantsiia. Dal'niye Zelentsy. Trudy. 1:192-214.

The author uses this widely-occurring mollusc as a representative, typical of animals living on seaweeds. He traces its biological cycles of migration; reproduction and rate of reproduction; growth and maturation; rate of survival of offspring, and total biomass production of this species per area. Bibliography (25 items). (Arctic Biblio.)

Kuznetsov, V.V. 1948b. Bioekologicheskaia Kharakteristika Massovykh Vidov Morskikh Bespozvonochnykh. Chast'2. Biologicheskii Tsikl Margarita helicina (Phipp.) Vostochnogo Murmana i Belogo Moria. (Bioecological Characteristics of Mass-Species of Marine Invertebrates, Part 2. Biological Cycle of Margarita helcina [Phipp.] of the Eastern Murman and the White Sea.) Akademiia Nauk SSSR. Izvestiia. Seriia Biologicheskaia. 5:538-564.

Contains a biological and ecological study of this mollusc living on Laminaria saccarina abundant in the littoral zone of arctic seas. A general characterization is given of the Laminaria group for various months in Dal'ne-Zelenetskaya Bay on the eastern Murman coast and in Gridina Bay (Kandalaksha) of the White Sea. Then follow observations on the life cycle of Margarita helicina (tables 5-7) and its productivity. (Arctic Biblio.)

Kuznetsov, V.V. 1948c. Biologiia i Bioligicheskii Tsikl Lacuna pallidula Da Costa v Barentsovom More. (The Biology and Biological Cycle of Lacuna pallidula Da Costa in the Barents Sea.) In: Pavlovskii, E.N. Pamiati Akad. S.A. Zernova. p. 72-93.

Contains a study of this marine mollusc, Lacuna pallidula, carried out at the Murman Biological Station in 1939-41, with data on geographic

distribution (horizontal and vertical), biomass and its fluctuations, life cycle and productivity. (Arctic Biblio.)

Kuznetsov, V.V. 1951. O Plodovitosti i Skorosti Rosta Nekotorykh Morskikh Bezpozvonochnykh. (On the Fertility and Growth Rate of Some Marine Invertebrates.) Akademiia Nauk SSSR. Doklady. 76(5):743-745.

Contains a study of the relation between the fertility and the rate of growth of some marine invertebrates, Eualus gaimardi, Hyas araneus and Littorina saxatilis, on the eastern Murman coast of Barents Sea and in Kandalaksha Bay in the White Sea. It is concluded that with the increase in the size of females, their fertility is also increased, but not in the same ratio. The intensity of the growth and fertility is also influenced by environmental conditions. (Arctic Biblio.)

Kuznetsov, V.V. 1953. Vliianie Kolebanii Faktorov Vneshnei Sredy na Nekotorye Biologicheskie Protsessy u Morskikh Bespozvonochnykh. (Effect of Fluctuation in Ambient Factors upon Some Biological Processes of Marine Invertebrates.) Zhurnal Obshchei Biologii 14(6):413-423.

A study of the barnacle Balanus balanoides of the east Murman waters. Summers with small temperature amplitude produced earlier maturation, greater fertility and larger animals. Similar conditions were observed in the hermit crab Pagurus pubescens and in a number of molluscs. (Arctic Biblio.)

Kuznetsov, V.V. 1954. Biologicheskie Osobennosti Belomorskoi Fauny. Biological Peculiarities of the White Sea Fauna.) Voprosy Ikhtiologii 2:25-31.

Contains a discussion of life span, body size and productivity of some bottom invertebrates and fishes of the White and Barents Seas; also rate of growth of a series of animals from both seas including cod and herring. A practical application of the findings is suggested. (Arctic Biblio.)

Kuznetsov, V.V. 1957. Mnogoletnie Izmeneniia Biologicheskikh Svoistv Nekotorykh Bespozvonchnykh Belogo Moria. (Long-term Changes in Biological Properties of Some White Sea Invertebrates.) Zoologicheskii Zhurnal. 36(3): 321-327.

A study of invertebrates with long life cycles (mainly bivalves and cirripedians) led the author to the conclusion that within the past hundred years or so, there occurred in the White Sea a decline in their range, growth and longevity and the degeneration of disappearance of some species. These changes he attributes to the mouth of this sea becoming shallow, which caused an increase of temperature and salinity ranges, and to an increase of O_2- deficiency due to accumulation of organic sediments. He suggests that these changes may have similarly affected some fish and fisheries. (Arctic Biblio.)

Kuznetsov, V.V. 1958. O Nekotorykh Osobennostiakh Biologicheskoi Produktivnosti Bespozvonochnykh s Dlitel'nym Zhiznennym Tsiklom v Severnykh Moriakh. (Some Pecularities of Biological Productivity among Invertebrates of Northern Seas with a Long Life Cycle.)

Contains discussion of life span among various groups of invertebrates of the Barents and White Seas; length of life of the same species at various latitudes and environments. Biomass and productivity are considered; the productivity of the sea (or its parts) cannot be expressed by its biomass alone. (Arctic Biblio.)

Kuznetsov, V.V. 1960. Beloe More i Biologicheskie Osbennosti ego Flory i Fauny. (The White Sea and the Biological Features of its Flora and Fauna.) Izd-vo Akademiia Nauk SSSR. 322 p.

Comprehensive study based on author's long activity in this area and on other surces. Exploitation of the White Sea resources is reviewed from earlier times (p. 7-30), particularly the herring, navaga and salmon fisheries. The geological character of the basin and adjacent areas is outlined (p. 31-68), and some hydrometeorological particulars given (p. 69-111) including ice conditions and long term climatic fluctuations and their biological effects. Biological features of the marine flora are treated in some detail (p. 112-78), viz. phytoplankton and phytobenthos, Fucus vesiculosis, F. inflatus, and J. serratus. Ascophyllum nodosum, Laminaria saccharina, and other seaweeds and flowering plants. The invertebrates and fisheries are similarly treated (p. 179-291); the latter part of this chapter (p. 276 ff.) dealing with such general features as: size, numbers and whether they are increased or reduced, also growth, life cycles, life span etc. Appended are alphabetic lists of authors, localities, and scientific names. (Arctic Biblio.)

Kuznetsov, V.V. 1963a. O Biologii i Izmenchivosti; Eualis gaimardi Milne-Edwards. (Biology and Variability of Eualus gaimardi Milne-Edward.) Akademiia Nauk SSSR. Karel'skii Filial. Materialy po Kompleksnomu Izucheniiu Belogo Moria. 2:77-89.

Describes in detail the geographic distribution of this arcto-boreal, circumpolar crustacean, its habitats, population (two) in the White Sea, and geographic races (three). Reproduction, planktonic stage, size and fertility variations in the Barents and White Seas are reported, as are growth, size and sex composition during female maturity in these seas. Age at maturity, number of reproductions, life span and morophology of geographic races are also considered. (Arctic Biblio.)

Kuznetsov, V.V. 1963b. Vremia i Temperaturnye Usloviia Razmnosheniia Morskikh Bespozvonochnykh. (Periods and Temperature Conditions of Reproduction of Marine Invertebrates.) Akademiia Nauk SSSR. Karel'skii Filial. Materialy po Kompleksnomu Izucheniiu Belogo Moria. 2:35-52.

Extensive study covering over eighty invertebrates of the arctic arcto-boreal and boreal waters. The high amplitude of temperature tolerated by adult forms is stressed as well as the relationship between temperature, latitude and period of oviposition and hatching. The effect of low temperature in slowing down embryonal and larval development is also discussed. (Arctic Biblio.)

Kuznetsov, V.V. 1964a. Biologiia Massovykh i Naibolee Obychnykh Vidov Rakoobraznykh Barentseva i Belogo Morei. (The Biology of Mass Species and Most Common Species of Crustaceans in the Barents and White Seas.) Izd-vo Nauka, Moscow. 242 p.

Study based on material collected in 1946-1953 and some other sources. The area covered by author's collections is the White Sea and a "tongue" of the Barents extending up to 72° n off southern Novaya Zemlya. Decapoda p. 7-94, Amphipoda p. 95-188, Isopoda p. 189-212, and Cirripedia p. 213-32 are treated in turn. Each species is dealt with as to frequency, horizontal and vertical distribution, seasonal fluctuation in numbers, size range, rate of growth, reproduction and development. An appendix deals with size distribution and fertility in different areas and depths studied. (Arctic Biblio.)

Kuznetsov, A. 1964b. Distribution of Benthic Fauna in the Western Bering Sea by Trophic Zones and some General Problems of Trophic Zonation. (Raspredelenie Donnoi Fauny Zapadnoi Chasti Beringova Morya po Troficheskim Zonam i Nekotorye Obshchie Voprosy Troficheskoi Zonalnosti.) Slessers, M. (Trans. 1969 U.S. Naval Oceanographic Office, Washington, D.C. 103 p. Translation of Akademiia Nauk SSSR. Institut Okeanologii. Trudy. 69:98-177.

The paper discusses the predominance of benthos groups within trophic zones and their distribution patterns in the Bering Sea. The trophical zonation of the bottom fauna in the Bering and Okhotsk Sea and the Pacific coastal line of Kamtshathka and North Kurile Islands are compared. A correlation between the trophic zones and biocoenoses was also studied. The distribution of trophic zones along the coasts of continents is discussed and charts showing the trophical zonation of the bottom fauna in the Asov and Baltic Sea are given. (Author.)

Kuznetsov, V.V. and E.N. Alexandrova. 1969. O Faune Rakoobraznykh Morya Leptevykh. (On the Fauna of Crustacea of the Laptev Sea.) Zoologicheskii Zhurnal 48(7):1095-1096.

A record of Monoculodes minutus Gurjanova, previously unknown in the Laptev Sea, as well as of Oediceros minor Gurjanova and of Senecella calanoides Judey in stomachs of Whitefishes and hydrobiological samples is reported. (Biological Abstracts.)

Kuznetsov, V.V. and T.A. Matveeva. 1942. Materialy k Bioekologicheskoi Kharakteristike Morskikh Bespozvonovhnykh Vostochnogo Murmana. (Materials toward a Bioecological Characterization of Marine Invertebrates of the Eastern Murman.) Akademiia Nauk SSSR. Murmanskaia Biologicheskaia Stantsiia. Dal' niye Zelentsy. Trudy. 1:242-260.

The authors discuss aboout 90 species in regard to occurrence, common substrate or medium preferred, reproduction season, depth of habitat and other biological and ecological data. (Arctic Biblio.)

Kuzentsov, V.V. and T.A. Matveeva. 1948. Sezonnye i Sutochnye Izmeneniia Aktivnosti Napadeniia na Primanku u Morskikh Bezposvonochnykh. (Seasonal and Diurnal Fluctuation in the Reaction of the Marine Invertebrates to Bait.) Priroba 3:66-68.

Contains results of a study carried out in the White and Barents Sea (eastern Murman) on the activity of marine invertebrates in taking bait: the most active species in both seas are Anonyx nugax and Orchomenella minuta; the diurnal activities of all investigated species are different (tables 1-4); they are not influenced by the tides apparently, but it is quite possible that the chief factor in fluctuation of activity is solar radiation; the results of the study are inconclusive. (Arctic Biblio.)

Laktionov, A.F. 1959. Okeanograficheskie Issledovaniia v TSentralnoi Arktike. (Oceanographic Studies in the Central Arctic.) Akademiia Nauk SSSR. Mezhduvedomstvennyi Komitet po Provedeniiu Mezhdunarodnogo Geofizicheskoga Goda. X Razdel Programmy MGG: Okeanologiia. Sbornik Statei. 1:17-19.

Condensed information on Soviet research in recent years. Major results are listed of studies on bottom topography and geological history, dynamics and chemistry of water masses, ice drift and currents, ice conditions, heat exchange, biology. (Arctic Biblio.)

Lambe, L.M. 1900. Catalogue of the Recent Marine Sponges of Canada and Alaska. Canadian Field Naturalist. 14:153-172.

List, with bibliographic notes and data on dsitrubution, of ninety-one species, from localities ranging between the Alaskan arctic waters, Bering Sea, Aleutian watets, Gulf of Alaska, Davis Strait, and Hudson Bay. (Arctic Biblio.)

Laubitz, D.R. 1972. The Caprellidae Crustacea, Amphipoda of Atlantic and Arctic Canada. Oceanography 4:82.

** LaRocque, J.A.A. 1953. Catalogue of the Recent Molluska of Canada. Canada. National Museum. Bulletin, No. 129. Biological Series, No. 44. Queens Printer, Ottawa. 406 p.

Marine, fresh-water and terrestrial molluscs found in Canada and adjacent Alaskan and Greenland waters, and Sea of Okhotsk, are listed. References, type locality, and exact range are given for each form. The new species confined to the "recent" are included. Tertiary range of living species is given. A selected bibliography (p. 347-77) and alphabetical index of genera and species are appended. (Arctic Biblio.)

Lemche, H. 1948. Northern and Arctic Tectibranch Gastropods. I. The Larval Shells. II. A Revision of the Cephalaspid Species. K. Danske Videnskabernes Selskab (Biologiske Skrifter). 5(3):1-136.

Part I: Discussion of the larval shells with descriptions, illustrations and localities. Part II: Discussion of thirteen Cephalaspid species with revisions of descriptions and a key to the species.

Leshchinskaia, A.S. 1962. Biomassa Bentosa Obskoi Guby i ee Kormovoe Znachenie Dlia Ryb. (Biomass of the Benthos in Ob Bay and its Nutritative Value for the Fish). Akademiia Nauk SSSR. Uralskii Filial. Salekhardskii Statsioner. Trudy. 2:27-40.

Describes fish yields in this inlet including the Taz estuary, earlier studies of their benthos, and the latter's role as find food. As basis of the present study, over 250 samples collected in 1958-1960 were investigated. Distribution of the main forms and benthic feeding grounds are outlined. Fish utilization of benthos and biomass of the latter are

discussed. The average biomass of the bottom fauna was not rich during the period studies; the richest area was in the south. Appended (p. 41-75) are tabular data (on hydrological conditions, species, distribution, quantity, biomass, vertical migration, fish food, etc.) as well as the literature applicable to this and to a companion paper infra. (Arctic Biblio.)

Linder, F. 1933. Die Branchiopoden des Arktischen Begietes. Fauna Arctica 6:183-204.

Lists arctic branchiopods with locations.

Linstow, O. von. 1900. Die Nematoden. Fauna Arctica 1:117-132.

Lists arctic nematods with locations.

Loeblich, A.R. and H. Tappan. 1953. Studies of Arctic Foraminifera. Smithsonian Miscellaneous Collections, V. 121, No. 7. Its Pub. 4105. Smithsonian Institute, Washington, D.C. 142 p.

Contains a study of foraminifera dredged in the summer of 1950 from the ocean bottom off Pt. Barrow northern Alaska, supplemented by material collected by the Albatross in the Arctic and sub-Arctic, and by Capt. R.A. Bartlett in Greenland and Canadian arctic areas. Introductory part (p. 1-10) deals with previous work; collecting stations; character of the Barrow fauna; and factors limiting its distribution. This is followed by systematic descriptions and illus of 110 species belonging to 20 families and 56 genera; six genera and 21 species are new. (Arctic Biblio.)

Lomakina, N.B. 1956. Kumovye Raki, Cumacea, Dal'nevostochnykh Morei. (Cumacean Crustaceans of the Far-Eastern Seas.) Akademiia Nauk SSSR. Zoologicheskii Institut. Trudy Problemnykh i Tematecheskikh Soveshchanii. 6:81-82.

Notes of 50 species so far recorded in this area, 26 of them new, and one genus, Pavlovskeola, new. Species distribution in the individual seas (Bering, Okhotsk), zoogeographical origin, etc. are considered (Arctic Biblio.)

Lomakina, N.B. 1958. Kumovye Raki, Cumacea, Morei SSSR. (Cumacean Crustaceans of the Soviet Seas.) Moskva-Leningrad, Izd-vo Akademiia Nauk SSSR. 302 p. (Akademiia Nauk SSSR. Zoologicheskii Institut. Opredilitel po Faune SSSR. No. 66.)

Monograph in two parts, the first (p. 3-79) offers a short description of the group and account of the morphology, anatomy and biology, the latter including movement, food and respiration, multiplication and growth. Geographic distribution and ecology inclusive of the arctic regions (p. 44-58) are discussed, as well as general classification and phylogeny, methods of collection, preservation and study. Pt. 2, the taxonomic part, presents identification tables, synonymy, descriptions of sexual dimorphism and geographic distribution. Some 150-200 forms are treated in turn. An index (scientific names) is appended, and a taxonomic guide to the species precedes the study proper. (Arctic Biblio.)

Lomakina, N.B. 1964. Myzidy, Kumatsei i Evfauzievye Raki (Mysidacea, Cumacea et Euphausiacea) po Materialam Arkticheskikh Ekspeditsii na l/r "F. Litke" 1955 g., d/e "Ob'" 1956 g., i d/e "Lena" 1957 i 1958 gg. (Mysidacea, Cumacea and Euphausiacea from the Arctic Expecitions of the F. Litke 1955, Ob' 1956, and Lena 1957 and 1958.) Leningrad. Arkticheskii i Antarkticheskii Nauchno-Issledovatel'skogo Instituta. Trudy 259:241-254.

Records finds of five, six and four species respectively of these crustaceans, with notes on location, depth, numbers retrived and geographic distribution. The ecology and biology are also discussed and the four species of euphausids dealt with in detail as to occurrance, size, and reproduction. (Arctic Biblio.)

Lubinsky, I. 1972. Canadian Arctic Marine Bivalve Molluscs. Ph.D. Thesis. McGill University, Montreal. 345 p.

The fauna of marine bivalve molluscs of the shallow water region of the Canadian Central and Eastern Arctic was studied on the basis of extensive collections of the Fisheries Research Board and the National Museum of Canada, identified by the author, as well as on the basis of materials in museums on this continent. In a total of 1000 samples from the region studied, sixty-two species of bivalves were found, redescribed, and their areas of distribution mapped. (Dissertation Abstracts.)

Ludwig, H. 1900a. Arktische Seesterne. Fauna Arctica. 1:445-502.

Lists the members of this echinoderm group in the arctic with locations.

Ludwig, H. 1900b. Arktische und Subarktische Holothurien. Fauna Arctica 1: 133-178.

Lists arctic holothuroids with locations.

Lutzen, J. 1970. The Ascidians of Joergen Broenlund Fjord, North Greenland. Meddelelser om Groenland 184(7):15-22.

Six species of ascidians are recorded from Jørgen Brønlund Fjord, North Greenland, one of which, Cnemidocarpa squamata n. sp. is new to science. The horizontal the vertical distribution of the ascidians within the area is reviewed. (Author.)

** MacGinitie, G.E. 1954. Survey of Marine Invertebrate Fauna at Point Barrow, Alaska. 1948-50. Polar Record 7(48):137.

Contains notes on work done for U.S. Office of Naval Research by the writer, assisted by his wife and H. Feder. Plankton was sampled up to 20 miles offshore. (Arctic Biblio.)

** MacGinitie, G.E. 1955. Distribution and Ecology of the Marine Invertebrates of Point Barrow, Alaska. Smithsonian Miscellaneous Collections. V. 128, No. 9. Publication 4221. Smithsonian Institute, Washington D.C. 201 p.

Study based on observations and material collected during 1948-50. Earlier investigations, location and facilities of the Arctic Research Laboratory maintained by the U.S. Office of Naval Research at Pt. Barrow are stated. Sections follow on the chemical and physical aspects of the area: climate, geology, ice, currents, salinity and other features of the sea; general biological aspects such as distribution, and abundance of animals, their food, reproduction, adaption to cold, etc.; methods of collecting, stations and course of dredging. This rather general part is followed by a discussion of animals and phenomena according to phyla (p. 115-87), with data on morphology, occurrance, development and reproduction, ecology, taxonomy, etc. Short notes on some common fishes and mammals are included (p. 183-87). A discussion with synoptic and comparative tables concludes the account. (Arctic Biblio.)

** MacGinitie, N. 1959. Marine Mollusca of Point Barrow, Alaska. U.S. National Museum. Proceedings. 109(3412):59-208.

Account of over 110 species and 11 varieties dredged in the course of two summers from depths of less than 225 feet, only six stations being over 400 feet deep. Of the material, 18 species and four varieties are new to arctic America. Synonyms, material examined, location, morphology, geographic distribution, variations, etc., are considered. An alphabetical list of species and genera and 27 plates with photographs are appended. (Arctic Biblio.)

Macpherson, E. 1968. Distribution of Canadian Arctic Marine Gastropods. Ann. Repts. for 1967 Amer. Malc. Union. p. 19-21.

** Macpherson, E. 1971. The Marine Molluscs of Arctic Canada. National Museum of Natural Sciences, Ottawa. 149 p.

Describes 108 species of prosobranch gastropods, chitons and scaphopods from the region between Hudson Strait, James Bay, Herschel Island, and northern Ellesmere Island. More than half of the species are circumarctic.

Madsen, H. 1936. Investigations on the Shore Fauna of East Greenland with a Survey of the Shores of Other Arctic Regions. Meddelelser om Groenland 100(8): 1-79.

A generalized description of the physical and biological zones of the shore including the littoral zone. The area discussed extends from 70°29' to 74°05'N on the east Greenland shore.

Makarov, V.V. 1937a. K Faune Rakov-Otshel'nikov, Paguridae, Dal'nevostochnykh Morei. (The Fauna of Hermit crabs, Paguridae, of the Far Eastern Seas). Leningrad. Gosudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR. 23:55-67.

Account of 20 species from material collected since 1926 in the Chukchi, Bering, Okhotsk and Japanese Seas. Synonyms, morphology, size, occurrance and geographical distribution are discussed. (Arctic Biblio.)

Makarov, V.V. 1937b. Materialy po Kolichestvennomu Uchetu Donnoi Fauny Severnoi Chasti Beringova Moria i Chikotskogo Moria. (Materials to a Quantitative Estimate of the Bottom Fauna in the Northern Bering Sea and in the Chukchi Sea.) Leningrad. Gosudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei. 25:260-291.

Description of bottom animal associations found in these areas, and based on sampling at 84 stations. The amount of biomass (weight of living matter per m^3 of water) is calcualted both in average and for select animal groups. The northern Bering Sea was found to be richer in bottom life, Chukchi Sea the poorer. (Arctic Biblio.)

Makarov, V.V. 1938. Fauna of the USSR. Crustacea, Vol. X, No. 3. Anomura. (Fauna SSSR. Rakoobraznye. Anomura.) Por, F.D. (trans.). 1962. Israel Program for Scientific Translations, Jerusalem. 283 p. (Translation from Izdatel'stvo Akademiia Nauk SSSR. Moskva-Leningrad.)

Contains in the introduction (p. 1-44) a morphological sketch of decapod crustaceans, the so-called Anomura, with data on their biology, ecology, and phylogeny; a zoogeographic survey, and a note on their economic importance. (Paralithodes camtschatica, P. platypus, and P. brevipes, edible crabs); bibliography (95 items). In the special part (p. 45-289) are tables for the determination of superfamiles, families, subfamilies, genera and species; descriptions of 88 marine species and one subspecies with synonyms, dimensions and data on geographic distribution in Russian and extra-Russian waters. Many species native to Bering, Chukchi and Okhotsk Seas are included. Summary in English, p. 290-320. (Arctic Biblio.)

Makarov, V.V. 1941. Fauna Decapoda Beringova i Chukotskogo Morei. (The Decapod Fauna of the Bering and Chukchi Seas.) Issledovaniia Dal'nevostochnykh Morei. 1:111-163.

Study, based on several collections, comprising 70 species of 24 genera. Following an introduction on earlier work, the individual species are recorded, with notes on location(s), depth, and geographic range. A general part (p. 144-57) deals with the character of the decapods of the two seas, distribution over particular areas, routes of spread, etc. From the character of its Decapoda, the Bering Sea is considered a boreal region. (Arctic Bibio.)

Mathews, J.B.L. 1964. On the Biology of Some Bottom-Living Copepods (Aetideidae and Phaennidae) from Western Norway. Sarsie 16:1-46.

The developmental stages of Chiridius armatus are described and compared with the copepodite stages of Bradyidius bradyi and briefly with the naupliar stages of Aetideus armatus. The annual cycle is recorded for the two first-named species. The adult male of Comantenna(=Bryaxis) brevicornis is described for the first time. The copepodite development of Xanthocalanus fallax is described and an account is given of the annual cycle. The adult male of X. minor is redescribed and comparisons made between these two species. Consideration is given to the differences between the development and annual cycles here described and those of planktonic calanoids as possible indications of adaption to a benthic existence. Where necessary, nomenclature has been revised. (Author.)

McCauley, J.E. 1964a. A Preliminary Report of the Benthic Animals Collected on the USCGC Northwind Cruise during 1962. U.S. Coast Guard Oceanographic Report. No. 1, p. 17-22.

Discusses procedures used in collecting benthic samples in the Chukchi and East Siberian Seas, and gives preliminary results by station.

McCauley, J.E. 1964b. Gastropod Larvae from the Brood Pouch of an Arctic Shrimp. American Microscopical Society 83(3):290-293.

While examining a specimen of the shrimp Argis lar from the Chukchi Sea, author noticed attached egg cases of snail, probably Buccinum. The capsules contained eggs and larvae of all stages of development and then are described and illustrated. (Arctic Biblio.)

** McCrimmon, H. and J. Bray. 1962. Observations on the Isopod Mesidotea entomon in the Western Canadian Arctic Ocean. Canada. Fisheries Research Board. Journal. 19(3):489-496.

Study of a great number of this crustacean from the Beaufort Sea. It was found to be most numerous on muddy bottoms where temperature ranged between -1.3 and +10°C; no specimens were found in depths greater than 24 fathoms. Sexual dimorphism, age and maturation are also considered. (Arctic Biblio.)

McLaughlin, P.A. 1963. Survey of the Benthic Invertebrate Fauna of the Eastern Bering Sea. U.S. Fish and Wildlife Service. Special Scientific Report: Fisheries No. 401.

Reports an investigation in summers of 1958 and 1959 made in connection with king crab surveys. A check list is given of species of pelecypods, gastropods (except nudibranchs), barnacles, decapod crustaceans, tunicates and most echinoderms found on the continental shelf; some other invertebrates are also listed. Annotations to each species include areas of occurrence. Catches on stations are also analyzed as to their species composition. Approx. 140 references. (Arctic Biblio.)

Meguro, H., K. Ito and H. Fukushima. 1966. Diatoms and the Ecological Conditions of their Growth in Sea Ice in the Arctic Ocean. Science 152:1089-1090.

A summer study off Point Barrow, Alaska found 23 species of diatoms in sea ice, in the brine between ice crystals on the underside of the ice. This find suggests that a considerable fraction of primary production takes place in sea ice. (Arctic Biblio.)

Menzies, R.J. 1962. The Abyssal Faunas of the Sea Floor of the Arctic Ocean. In: Proceedings of the Arctic Basin Symposium 1962. p. 46-66.

Gives a general outline of the fauna, mainly from depths of 1000-2000 m. He deals with the concept of the abyss, the arctic abyss and its topography, extent of benthos sampling in the arctic. Zoogeographic aspects are considered, generic and species distribution of the abyssal benthos in the Arctic are reviewed, with quantitative comparisons to the Antarctic. It is suggested that the polar abyssal benthos represents distinct regions of the world oceans. (Arctic Biblio.)

** Menzies, R.J. and J.L. Mohr. 1962. Benthic Tanaidacea and Isopoda from the Alaskan Arctic and the Polar Basin. Crustaceana 3(3):192-202.

Lists stations with station data where these animals were found. Includes systematic and distributional data on each species.

Mesiatsev, I.I. 1927. Einige Zoogeographische und Fanuistische Ergebnisse der Expeditionen des Wissenschaftlichen Meeresinstittues [sic] in die Nordlichen Meere. (Some Zoogeographic and Faunistic Results of the Expeditions of the Marine Scientific Institute into the Northern Seas.) Akademiia Nauk SSSR. Doklady. Seriia A. 14:207-212.

A report on the Persei research vessel expedition of 1926 into the White and Barents Seas. (Arctic Biblio.)

Miers, E.J. 1877. Report on the Crustacea Collected by the Naturalists of the Arctic Expedition in 1875-1876. Annals and Magazine of Natural History. Ser. 4. 20:52-66, 96-110.

Description of thirty-one (including one new) species, collected between 78°-84°N in Smith Sound, Kane Basin, Kennedy Channel. (Arctic Biblio.)

Mileikovsky, S.A. 1960. O Sviazi Mezhdu Temperaturnymi Granitsami Neresta Vida i ego Zoogeograficheskoi Prinadlezhnost'in v Morskikh Bespozvonochoiykh. (On the Relation between Temperature Spawning Range of a Species and its Zoogeographical Belonging in Marine Invertebrates.) Zoologicheskii Zhurnal 39(5):666-669.

Several year's study of the seasonal dynamics of larvae of the benthic invertebrates in the plankton off the southern shore of Kandalaksha Bay

in the White Sea established that there is a relationship between the temperature limits of spawning and the zoogeographical affiliation of various littoral and upper sublittoral species. (Biological Abstracts.)

Mileikovsky, S.A. 1968a. Distribution of Pelagic Larvae of Bottom Invertebrates of the Norwegian and Barents Sea. Marine Biology. Berlin. 1(3): 161-167.

The distribution of pelagic larvae, juvenile and epitoquous stages of shallow shelf bottom invertebrates, in the plankton of the Norwegian and Barents Seas is largely determined by the distribution of the respective parental forms. The various currents influence the distribution only secondarily and to a rather limited extent. Most larvae remain in the water masses above the zones inhabited by their parents. Thus their large scale distribution in the plankton is determined primarily by the ecological and zoogeographical patterns of distribution of the parental life cycle stages. Such dependence of larval distributions on the distribution of adults in the benthos is assumed to represent a general pattern in all shallow regions of the world oceans. (Author.)

Mileikovsky, S.A. 1968b. Larval Development of Spiochaetopterus typicus M. Sars (Polychaeta, Chaetopteridae) from the Barents Sea and the Taxonomy of the Family Chaetopteridae and Order Spiomorpha. Akademiia Nauk SSSR. Doklady. (Biological Sciences Section.) 174:403-505.

Contains description and drawings of Spiochaetopterus typicus larvae and a discussion of the significance of the adult in the benthos.

Mileikovsky, S.A. 1969. Breeding of the Starfish Asterias Rubeno L. in the White, Barents, Norwegian and Other European Seas. Oceanology 8(4):553-562. (Translation of Okeanologiia 8[4]).

The breeding and larval development of Asterias rubens have been studied in the White, Barents and Norwegian Seas. A survey of the data on the breeding of local populations of the species from 17 regions in six European seas and in the English Channel indicates that the species contains three reproductive "physiological races," differing in the temperature at which spawning begins. Two, which begin spawning at 3.5-4.5°C and 6.5-9.0°C respectively, are true "physiological races" with temperature-conditioned reproduction, like the oysters Ostrea edulis and Crassostrea virginica, while the third, represented by the Kiel population which lives in brackish waters ($S = 15°/_{oo}$) and which does not spawn until the temperature reaches 13-15°C, has arisen, not as a result of the temperature conditions prevailing in the region, but in response to its low salinity. The general ecological patterns of the spawning of A. rubens in European waters are analyzed. (Author.)

Mileikovsky, S.A. 1970a. Seasonal and Daily Dynamics in Pelagic Larvae of Marine Shelf Bottom Invertebrates in Nearshore Waters of Kandalaksha Bay (White Sea). Marine Biology 5(3):180-194.

Seasonal and daily population dynamics have been studied in pelagic larvae of littoral and upper-sublittoral bottom invertebrates in the plankton of the shallow, narrow Velikaya Salma Sound, which connects the inner and outer areas of the Kandalaksha Bay in the western part of the White Sea. Hydrologically, this Sound is characterized by a clearly defined cycle of great seasonal variations in water temperature coupled with more or less stable salinities and regular, pronounced semi-diurnal tides corresponding to daily and lunar monthly tidal cycles. The seasonal dynamics of larvae in the Sound reflect differences in occurrence of spawning periods in local waters of various species and systematic groups of bottom invertebrates. These differences are caused by the correlation of spawning periods of local species of different zoogeographical origin with the different water temperatures. They reflect, also, lunar periodicities of spawning and larval hatchings. The daily dynamics of larval abundances are related to the daily spawning rhythms of many species with pelagic development affected by the daily tidal cycles of the Velikaya Salma Sound. A daily invasion of the Sound by pelagic larvae of bottom invertebrates from the inner and the outer parts of the Kandalaksha Bay occurs at ebb tide, and also at flood tide; the rhythms of the invasions coincide with the daily spawning rhythms of the Sound's invertebrates. From literature data summarized by MILEIKOVSKY (1958a, b, 1960a, b, c, 1961, 1965, 1968, 1970), it is concluded that seasonal, lunar and daily (tidal) reproductive periodicities for the marine shallow-shelf bottom invertebrates concerned, follow world-wide ecological patterns. It is evident that the effects of these rhythms upon the population dynamics of pelagic invertebrate larvae, as demonstrated by the present data on the Velikaya Salma Sound (White Sea), must also follow world-wide regularities. (Biological Abstracts.)

Mileikovsky, S.A. 1970b. The Relation Between the Breeding and the Spawning of Marine Shallow Shelf Bottom Invertebrates and the Water Temperature. Akademiia Nauk SSSR. Instituta Okeanologii. Trudy. 88:113-149.

On the basis of literature data summarizing the field and experimental results mainly of 1940-60ies and of own material about the bottom invertebrates with pelagic development from Barents, White and Norwegian seas is discussed the problem of interrelations between the water temperature and breeding and spawning of marine shallow shelf bottom invertebrates.

The problem of dependence of breeding and spawning temperatures of individual species from their zoogeographical belonging is analyzed. Ecological rules of Appellof, Orton and Runnstrom and moderm Korringa's conception of "physiological races" are discussed.

It is accepted that the main factor controlling the season patterns and periodicity of breeding and spawning of marine shallow shelf bottom invertebrates is the seasonal cycle of water temperature in the region of their inhabitance.

Characteracter of dependence of breeding of individual species from water temperature is determined by their zoogeographical belonging.

Main regularities of interrelations between water temperature and breeding and spawning of marine shallow shelf bottom invertebrates are well outlined by solution of adding each other "Orton's rules" and modern conception of "physiological races." (Biological Abstracts.) In Russian.

Miloslavskaia, N.M. 1958a. Nekotorye Soobrazheniia o Bentose Vostochnogo Murmana i ego Roli v Zhizni Pikshi. (Some Considerations on the Benthos of Eastern Murman and its Role in the Life of Haddock.) Akademiia Nauk SSSR. Kol'skii Filial. Murmanskaia Biologicheskaia Stantsiia. Trudy. 4:151-156.

Discussed the abundance of fish and haddock on the Murman coast in historical times, effect of the nature of bottom; the role of benthos in determining the abundance of haddock along the coast; biomass of the benthos in this area; seasonal changes in feeding habits of haddock. (Arctic Biblio.)

Miloslavskaia, N.M. 1958b. Novye Teplovodnye Molliuski v Faune Vostochnogo Murmana. (New Warm-water Molluscs in the Fauna of East Murman.) Zoologicheskii Zhurnal 37(6):939-942.

Author describes the occurrance of Propeamussium (Palliolum) vitreum Chemnitz, and Venus (Timoclea) ovata Pennant, and the morphology of their shells. Earlier records, warming of arctic waters, etc. are also discussed. (Arctic Biblio.)

Miloslavskaia, N.M. 1958c. Osobennosti Razmeshcheniia Bentosa i Vozmozhnosti ego Ispol'zovaniia Treskovymi Rybami na Vostochnom Murmane. (Pecularities of Benthos Distribution and Possibilities of its Utilization by Cod Fishes on the Eastern Murman.) In: Akademiia Nauk SSSR. Murmanskaia Biologicheskaia Stantsiia. Zakonomernosti Skoplenii. p. 103-125.

Study based largely on field work conducted during 1953-1955, on the occurrence of the various benthonic invertebrates on different types of bottom (over 150 species and 5 main types of sea bottom); ecological aspects of the benthos studied; specific traits of coastal benthos, utilization of this benthos by the various cod-like fish, largely haddock and cod; distribution of species used as food. (Arctic Biblio.)

Miloslavakaia, N.M. 1958d. Temperaturnyi Faktor v Raspredelenii Dvustvorchatykh Molluiskov Vostochnogo Murmana. (Temperature Factor in the Distribution of Bivalve Molluscs in the Eastern Murman.) Akademiia Nauk SSSR. Kol'skii Filial. Murmanskaia Biologicheskaia Stantsiia. Trudy. 4:140-150.

Account based on year-round collection during 1953-1955, combined with measurement of bottom temperatures. The distribution of 38 forms was established; both warm and cold-water forms were found, as well as such of wide distribution. Micro-areas in the zone studies were also established. (Arctic Biblio.)

Miloslavskaia, N.M. 1970. Ob Otsutstvii Thyasira flexuosa (Montagu) (Ungulinidae, Bivalvia, Mollusca) v Faune Morei Krainego Severa. (On the Absence of Thyasira flexuosa [Montagu] [Ungulinidae, Bivalvia, Mollusca] in the Fauna of the Seas of the Extreme North.) Zoologicheskii Zhurnal 49:785-786.

Investigations confirm the opinion of K. Ockelmann (1958) concerning the absence of T. flexuosa (Montagu) in the seas of the extreme north. By this name, T. equalis (Verill et Bush) and T. gouldii (Philippi) are concealed in the fauna-lists of many authors. These species (perhaps polymorphous) and also T. sarsi (Philippi) and T. ferruginosa (Forbes) are widely distributed in the seas of the Arctic, while T. flexuosa is a boreal-lusithanian species. (Biological Abstracts.)

Mohr, J.L. 1969a. A Study of Marine Biology from Arctic Drift Stations. University of Southern California, Los Angeles. 53 p.

This report reviews the activities of 27 marine biological field collectors between November 1959 and May 1969. The collections include the most extensive American collections of central arctic plankton, rather limited but significant arctic benthonic collections, important Northeast Greenland planktonic and benthonic collections, and the most complete and largest collection of cyamids. Special attention has been directed to occurrance of organisms in particular water masses and to relations with confluent seas' populations. For these studies on protozoans, jellyfishes and some crustaceans are significant. State of work on cyclical events, behavior, physiology, and biochemistry, and of affiliated studies on cetaceans and on arctic marine-influenced lakes is reported. (Arctic Biblio.)

**Mohr, J.L. 1969b. Marine Biology. Arctic 22(3):265-282.

An historical discussion of marine biological work carried out at the Naval Arctic Research Laboratory, Barrow, Alaska.

Mohr, J.L. and S.R. Geiger. 1968. Arctic Basin Faunal Precis-Animals Taken Mainly from Arctic Drifting Stations and Their Significance for Biogeography and Water-mass Recognition. Arctic Drifting Stations. 1968:298-313.

The abundance of life in the Arctic ranges from considerable in favored areas of the continental shelf to negligible at the bottoms of deep basins. Even at the surface in the central Arctic Basin life is reduced to a few kinds and not many individuals except sporadically. There are periodic reminders, such as the occurrance of the octopus in the hydrohole, animals the nets never take, and perhaps more significantly, the whole composition of the high Arctic polychaete fauna, that collection so far is incomplete and probably very incomplete for animals that can avoid catching devices. (Author.)

Moiseev, P.A. 1970. Soviet Fisheries Investigations in the Northeastern Pacific. Part V. (Sovetskie Rybokhozyaitvenne Issledovaniya v Severo-Vostochnoi Chasti Tikhogo Okeana.) Kaner, N. (trans.). 1972. National Marine Fisheries Service, Washington, D.C. 469 p. (Translation of Vesesoyuznyi Naucho-Issledovatelskii Institut Morskogo Rybnogo Khozyaistva i Okeanograffi, Moscow. Trudy. 70:453 p. 1970.

Contents: Some problems of estimating biological resources of the oceans in the light of the results of the Bering Sea expedition; principal results of latest investigations of bottom relief and sediments in fishing grounds in the North Pacific Ocean; bottom relief and sediments and some features of the geological structure of the continental slope in the Eastern Bering Sea; distribution of bottom areas in the Bering Sea suitable for trawling; mineral composition of the coarse silt fraction of recent sediments in the northwestern part of the Gulf of Alaska; some hydrological characteristics of whale grounds in the Northeastern Pacific and the Bering and Chukchi Seas; seasonal variations in primary production in the southeastern part of the Bering Sea; plankton of the eastern Bering Sea in spring and autumn; winter and spring plankton in the southeastern part of the Bering Sea; quantitative distribution of benthos on the continental slope of the eastern part of the Bering Sea; distribution of the deep-sea prawn (Pandulus borealis) in the Bering Sea nad Gulf of Alaska; some data on the distribution of King Crab (Paralithodes camtschatica) in the southeastern Bering Sea; an estimation of the state of the King Crab (Paralithodes camtschatica) stock in the southeastern Bering Sea. (NTIS.)

Moore, J.P. 1906. Descriptions of Two New Polychaeta from Alaska. Academy of Natural Sciences, Philadelphia. Proceedings. 58:352-355.

Syllis quaternaria and Ammotrypane brevis are described from the morphological point of view. Specimens of the former were taken by E.A. McIlhenny off Point Barrow, and a single example of the latter by Dr. Benjamin Sharp at Icy Cape, Northern Alaska. (Arctic Biblio.)

Moskalev, L.I. 1961. Pogonofory v Barentsevom More. (Pogonofora in the Barents Sea.) Akademiia Nauk SSSR. Doklady. 137(3):730-731.

Reports finds of tubes, a few with the animals in them, of these peculiar invertebrates in the southwestern part of this sea. The finds are identified as belonging to the genus Diplobrachia. (Arctic Biblio.)

Muench, R.D., M.J. Moynihan, E.J. Tennyson, Jr., W.G. Tidmarsh, W. Gordon and R.B. Theroux. 1971. Oceanographic Observations in Baffin Bay during July-September 1968. U.S. Coast Guard Oceanographic Report No. 37.

Oceanographic conditions in Smith Sound, northern Baffin Bay, Disko Bay and southeastern Baffin Bay during the summer of 1968 are described. Vertical sections of temperature and salinity are presented and the relationship of these variables to Baffin Bay-North Water and the general circulation of Baffin Bay is discussed. Zooplankton collections in the Smith Sound region and macrobenthos collections in Disko Bay and several West Greenland Fjords are reported on. Listings of the physical and chemical station data are included. (Author.)

Mueller, G.J. (unpublished) Species analysis of Oliktok-Colville Project Institute of Marine Science, University of Alaska, Fairbanks, 61-A, 19-27 August 1970.

Müller, G.W. 1933. Die Ostracoden des Arktischen Gebietes. Fauna Arctica 6:21-32.

Lists arctic members of this group with locations.

**Murdoch, J. 1885a. Collecting Localities and Dredging Stations. In: International Polar Expedition, 1882-1883. Report of the international Polar Expedition to Point Barrow, Alaska p. 185-190.

Summarized operations at six collecting localities (Cape Smythe Beach, Elson Lagoon, waters off Cape Smythe, off Franklin Point, off Port Clarence, and head of Norton Sound), listing the species of invertebrates collected, and comparing the abundance of individuals, at each locality. (Arctic Biblio.)

Murdoch, J. 1885b. Description of Seven New Species of Crustacea and One Worm from Arctic Alaska. U.S. National Museum. Proceedings, 1884. 7:518-522.

Descriptions based on specimens collected from waters off Point Barrow and Point Franklin, 1883, during the First International Polar Year Expedition to Point Barrow. (Arctic Biblio.)

Murdock, J. 1885c. Marine Invertebrates (Exclusive of Mullusks). In: International Polar Expedition, 1882-1883. Report of the International Polar Expedition to Point Barrow, Alaska. p. 136-176.

Systematic annotated list with synonymy, citations, and localities of 180 species some of which are described. Obtained from tundra pools (four species of crustaceans) and beach near Point Barrow, Point Franklin, Port Clarence, in Norton Sound, Gulf of Alaska, and Plover Bay (Siberia). Includes comments on coelenterates by J. Walker Fewkes. Bibliography (about 100 items). (Arctic Biblio.)

Murina, V.V. 1964a. K Voprosu o Bipoliarnom Rasprostranenii Priapulid. (The Bipolar Distribution of Priapulids). Okeanologiia 4(5):873-875.

Of eight species of the phylum Priapulida, each of three pairs is symmetrically distributed in the Arctic and Antarctic, and closely related. This bipolar distribution is assumed to have taken place via the cold abyssal waters of the tropics. The assumption is supported by the fact that a subspecies of the bipolar forms and the other two species of these marine worms have an abyssal, tropic-subtropic distribution. (Arctic Biblio.)

Murina, V.V. 1964b. Novye i Redkie Vidy Glubokovodnykh Sipunkulid Roda Golfingia. (New and Rare Species of Deep-Sea Sipunculids of the Genus Golfingia.) Akademiia Nauk SSSR. Institut Okeanologii. Trudy. 69:216-253.

Describes 91 specimens belonging to 12 species of these interesting worms, collected by different expeditons during 1947-1958 from depths of about 1000-6800 m. Two species, G. tasmaniensis and G. vitjazi n. sp. are treated in some detail. Age, sexual, ecological and geographic aspects are considered. Most of the species are arctic, antarctic or bipolar. (Arctic Biblio.)

Murray, J., J. Hjort, A. Appellof, H.H. Gran and B. Helland-Hansen. 1965. Chapter 8, Invertebrate Bottom Fauna of the Norwegian Sea and North Atlantic. In: Murray, J. and J. Hjort. Depths of the Ocean. London. Original 1912. Reprint 1965. 821 p., p. 457-560.

Discusses and illustrates the prevalent invertebrates in each environmental situation. Covers intertidal to deep-sea forms.

Naumov, D.V. 1960. Gidroidy i Gidromeduzy Morskikh, Solonovatovodnykh i Presnovodnykh Basseinov SSSR. (Hydroids and Hydromedusae of the Marine, Brackish and Fresh Waters of the USSR.) Akademiia Nauk SSSR. Zoologicheskii Institut. Opredeliteli po Fauna SSSR. 70.

A comprehensive study of the invertebrates covering 26 families with 333 species. Its general part (p. 19-164) deals with the morphology and anatomy, development and life cycles, organismal integration within the colonies, phylogeny and origin, taxonomy, and geographic distribution. In the special part (p. 165-571) are keys and descriptions of taxa, the latter including information on synonyms, anatomy, distribution, etc. The majority of forms dealt with are arctic or subarctic. Plates (30) contain photographic reproductions, some in color. A scientific, alphabetic index is included. (Arctic Biblio.)

Neale, J.W. and H.V. Howe. 1973. New Cold Water Recent and Pleistocene Species of the Ostracod Genus _Cytheropteron_. Crustaceana 25(3):237-244.

The new species _Cytheropteron arcticum_ and _C. nodosoalatum_ which are considered to be recent species characteristic of cold marine waters are diagnosed and described. The new species _C. dimlingtonensis_ which is only known from the Pliestocene Bridlington Crag of England and from englacial material from the Aaratsmarkbreen glacier of Spitzbergen is also diagnosed and described. (Author.)

Neiman, A.A. 1960. Quantitative Distribution of Benthos in the Eastern Bering Sea. (Kolichestvennoe Raspredelenie Bentosa V Vostochnoi Chasti Beringova Morya.) Slessers, M. (trans.). 1968. Naval Oceanographic Office, Washington, D.C. 21 p. Translation of Zoologicheskii Zhurnal 39(9):1291-1292.

In August-September benthos sampling on the shelf on the upper portion of the slope was carried out in the eastern part of the Bering Sea. Altogether, 104 dredge stations were occupied at depths from 20 to 500 m. The mean benthos biomass in this region makes up 74.4g/sg. m, the main part consisting of bivalves and echinoderms. Qualitatively, the benthos of the investigated area can be divided into two complexes; low-arctic and boreal ones. Low-arctic complex achieves its greatest development in the northwestern part of the area investigated where it stretches from the shore to the isobath of 100 m, while in the osutheastern part it is situated in the narrow band at the depth of 50 to 70 m. The remaining area of the shelf and upper horizons of the slope are occupied by boreal fauna. Low-arctic complex is characterized by _Macoma calcarea_ and _Ophiura sarsi_, while the boreal one is characterized by _Echinarachnius parma_ and _Yoldia traciaeformis_. (Author.)

Nesis, K.N. 1959. Raspredelenie Borealnykh Donnykh Zhivotnykh u Beregov Zapadnogo Shpitsbergena. (Distribution of the Boreal Bottom Animals along the Coasts of Western Spitsbergen.) Akademiia Nauk SSSR. Doklady. 127(3): 677-680.

Contains information on the currents of this area; effect of the warming up of the arctic waters; collections (1955-59) of bottom animals made by author, etc. Warm-water (boreal) forms were found in deeper waters along the west coast and were predominant in its southern part. Shallow water forms were exclusively arctic. (Arctic Biblio.)

Nesis, K.N. 1960. Donnaia Fauna kak Pokazatel Gidrologicheskogo Rezhima Moria; na Primere Severo-TSentralnogo Raiona Barentseva Moria. (The Bottom Fauna as Indicator of Hydrographic Conditions in the Sea; as exemplified by the North-Central Region of the Barents Sea.) Murmansk. Poliarnyi Nauchno-Issledovatel'skii Institut Morskogo Rybnogo Khoziaistva i Okeanografii. Nauchno-teknicheskii Biulleten 3(13):34-36.

Reports on the benthos of a small (6.2 km^3), representative area as studied before the war and in 1957-58. Temperature, salinity, geographic origin of forms, benthic complexes (three), and their limits are noted in a general way. (Arctic Biblio.)

Nesis, K.N. 1962. Korally i Morskie Peria, Indikatory Gidrologicheskogo Rezhima. (Corals and Sea Pens as Indicators of the Hydrological Regime.) Okeanologiia 2(4):705-714.

Contains a description of currents in the northern and arctic Atlantic followed by records of corals and sea pens collected in these areas by PINRO expeditions during 1954-1960. Depth and distribution of the finds are noted. An attempt is made to correlate the detailed distribution of these benthonic forms with the ambient water temperature, dependent in their turn on the water masses, their distribution and movements. (Arctic Biblio.)

Nesis, K.N. 1965. Aspects of the Food Structure of a Marine Biocoenosis. Oceanology. Academy of Sciences, USSR. 5(4). 1965. English edition publ., July 1966. p. 96-107.

Analyzes the trophic structure of a generalized marine benthic biocoenosis.

Newell, I.M. 1951a. Copidognathus curtis Hall, 1912, and other Species of Copidognathus from Western North America (Acari, Halocaridae). American Museum Novitates. No. 1499. American Museum of Natural History, New York. 27 p.

Detailed descriptions of five new species of marine mites, four from Aleutian waters, and one from north of Wainwright in Northern Alaska (with redescription of a California species); a study made possible through aid of the Arctic Institute of North America. (Arctic Biblio.)

Newell, I.M. 1951b. Further Studies on Alaskan Halocaridae (Acari). America Museum Novitates, No. 1536. American Museum of Natural History, New York. 56 p.

Describes ten new species and one new subspecies of water mites and adds two new records for Alaskan waters, bringing the total discussed for the region to 27 species. Offers a table of principal specific characters to the genus Copidognathus, and a formula key to known species from the Arctic Ocean, Bering Sea, and the adjacent North Pacific. (Arctic Biblio.)

Nicol, D. 1955. An analysis of Arctic Marine Pelecypod Fauna. Nautilus 68 (4):115-122.

Contains a comparative analysis of several collections of these molluscs from circumpolar regions, viz. that of Dr. McGinitie from Point Barrow region, and those reported by Dr. Soot-Ryan, also some from Florida. The author concludes that the main component of this arctic fauna consists of ancient, primitive forms. A second, much smaller component is represented by "the more specialized burrowers." (Arctic Biblio.)

Nikolsky. G.V. 1965. Distant Northern Seas. International Council for the Exploration of the Sea. Annales Biologiques. 1963. 20:9-10.

Reviews temperature distribution in 1963 as compared with two preceeding years, plankton, quantity and quality, benthos and redfish. (Arctic Biblio.)

Nurminen, M. 1973. Enchytraeidae (Oligochaeta) from the Arctic Archipelago of Canada. Annales Zoologici Fennici 10(3):403-411.

Twelve species of Enchytraeidae were recorded from terrestrial, littoral and benthic habitats during the summer 1970. Two new species, Cernosvitoviella pusilla sp. n. and descriptions of Lumbricillus charae (Tynen) 1970 and Henlea ochracea (Eisen) 1878 augm. Welch 1919 are augmented. (Author.)

Odhner, N.H. 1921. Norwegian Solenogastres. Bergen. Norway. Museum. Aarbok; Naturvidenskabig Raekke, 1918-1921. No. 3:1-86.

Contains a critical revision of Norwegian species of the Molluscan order Solenogastres, based on the study of collections in the museums of Bergen, Copenhagen, Gothenburg, Kristiania and Trondhjem, with a synopsis of all the forms treated in this paper and a descriptive section, (p. 10-54) dealing with systematics, morphology and distribution of each of 12 Norwegian species, including five native to Greenland Sea and the Arctic Ocean. A comparative section contains general consideration of the organization and the relations of the Soleogastres, a bibliography (38 items). (Arctic Biblio.)

Odum, H.T., B.J. Copeland and E.A. McMahan. 1974. Coastal Ecological Systems of the United States. Volume III. Conservation Foundation, Washington, D.C. 460 p.

Contents: Natural arctic ecosystems with ice stress; emerging new systems associated with man; migrating subsystems. (NTIS.)

Oldevig, H. 1959. Arctic, Subarctic and Scandinavian Amphipods in the Collection of the Swedish Natural History Museum in Stockholm. Goteborgs k. Vetenskaps-och Samhalle. Handlingar, 6 Foljd., Ser. B. 8(2). 132 p. Also issued as: Goteborg, Sweden. Museum. Zoologisha Avdelningen. Meddelanden, 127.

Contains a systematic list of about 400 amphipods, of which two genera and 14 species are described as new. The data include localities, references to expeditions (chiefly Swedish), temperature, depths, ground frequency, etc. The range of the study includes practically all arctic seas of Eurasia and America. (Arctic Biblio.)

Osburn, R.C. 1923. Bryozoa. Canadian Arctic Expedition, 1913-1918. Report. V. 8: Mollusk, Ehinoderms, Coelenterates, etc., Pt. D. King's Printer, Ottawa. 13 p.

List, with notes on locations and distribution of fifty-eight species, of which fifty-one are from waters between Bering Strait and Bernard Harbor, N.W.T., and seven from Hudson Bay area. (Arctic Biblio.)

Osburn, R.C. 1955. The Circumpolar Distribution of Arctic-Alaskan Bryozoa. In: Essays in the Natural Sciences in Honor of Capt. Allan Hancock. University of Southern California, Los Angeles. p. 29-38.

Contains brief discussion based on the literature and on study by the author of 113 species from Pt. Barrow, northern Alaska. All but 11 of the species were already known from the Greenland to the Kara Sea region. Author concludes that there is no significant difference between bryozoa of the Pacific-Arctic and Atlantic-Arctic areas and that a preponderance

of circumpolar species exists in the Arctic Ocean. Table shows distribution of the 113 species from Alaska south along the Pacific Coast, Greenland south along the Atlantic Coast, and in northern Europe. (Arctic Biblio.)

Pakhomova, H.A. 1966. Decapod Crustacea in the Southern Part of the Barents Sea. Murmanskogo Morskogo Biologicheskogo Instituta. Trudy. 11(15):58-70.

Paul, A.Z. and R.Y. George. 1975. High Arctic Benthic Isopods from Fletcher's Ice Island, T-3, with a description of one new species, _Mirabilicoxa fletcheri_ n. sp. Crustaceana 29(2):166-168.

Briefly enumerates isopods collected from Fletcher's Ice Island T-3 in the area from 84°13.5'N to 86°00'N and from 86°51'W to 121°05'W. Also describes and illustrates _Mirabilicoxa fletcheri_ n. sp.

Paul, A.Z. and R.J. Menzies. 1973. Benthic Ecology of the High Arctic Deep Sea. (Final Report Apr. 71-Sep. 73) Florida State Univ., Tallahassee, 349 p.

The investigation is an analyses of seventy-five quantitative benthic samples collected by the Mini-LUBS, twenty-eight qualitative benthic samples collected with the Small Biological Trawl, and fifty-two bottom camera stations taken from Fletcher's Ice Island, T-3, while it was drifting over the Alpha Cordillera region of the High Arctic Ocean during October 1969 through February 1970 and in March 1972. The depth range was 1000 to 2500 m. Benthic foraminiferans are responsible for about 53 percent, bivalves for 27 percent, sponges for 7 percent, and polychaetes for 5 percent of the total biomass. Other groups make up the remaining 8 percent. In numbers, excluding Forminifera, polychaetes are 42 percent, nematodes 16 percent, sponges 11 percent, and bivalves 8 percent of the total fauna. The remaining 23 percent is composed of thirteen other taxa. (Modified author abstract.) Portions of this document are not fully legible. (NTIS.)

Paul, A.Z., and R.J. Menzies. 1974. Benthic Ecology of the High Arctic Deep Sea. Marine Biology. 27:251-262.

An analysis is made of 75 quantitative benthic samples collected by Mini-LUBS, and 28 qualitative benthic samples collected with the "small biological trawl." from Fletcher's Ice Island, T-3, while it was drifting over the Alpha Cordillera region of the High Arctic Ocean during October, 1969 through February, 1970 and in March, 1972. (Author.)

Pavlovskii, E.N. (ed.). 1955. Atlas of the Invertebrates of the Far Eastern Seas of the USSR. (Atlas Bespozvonochnykh Dal'nevostochnykh Morei SSSR.) Mercado, A. (trans.). 1966. Israel Program for Scientific Translations. Jerusalem. 457 p. (Translation of Izdatel'stvo Akademiia Nauk SSSR.) Akademiia Nauk SSSR. Zoologicheskii Institut. Moskva-Leningrad. 1955.

Contains a brief historical outline of the study of the fauna of far eastern seas. The atlas covers the most common and characteristic invertebrate forms of the far eastern seas of the USSR extending from the Korean Coast to the Bering Strait. Includes 66 plates. (Arctic Biblio.)

Pergament, T.S. 1957. Raspredelenie Bentosa v Pribrezhnoi Zone Vostochnogo Murmana. (Distribution of Benthos in the Coastal Zone of the Eastern Murman.) Akademiia Nauk SSSR. Murmanskaia Biologicheskaia Stantsiia. Trudy. 3:75-89.

A study of the bottom fauna from a 20 mile wide zone and 147 samples: distribution according to species or larger taxa, quantitative distribution of the larger groups, distribution per haul, frequency of individual species, zoogeographic origin of forms: circumpolar (47%), North Atlantic (and North Pacific) 16%, Arctic (8%), and of dubious origin 27%. The role of currents, especially those from the Atlantic in the distribution of the local benthos, is discussed. (Arctic Biblio.)

Pettibone, M.H. 1949. Polychaetous Annelids of the Polynoidae from the Northeastern Pacific, with a Description of a New Species. American Museum Novitates No. 1414, American Museum of Natural History, New York. 5 p.

On a reexamination of polychaete worms collected from Alaska in 1924 by R.A. Bartlett, identifications are shown to be incorrect as published in A.L. Treadwell's Polychaetous annelids collected by Captain R.A. Bartlett (etc.) 1926. Gattyana treadwelli is now described as a new species. (Arctic Biblio.)

Pettibone, M.H. 1951. A New Species of Polychaete Worm of the Family Polynoidae from Point Barrow, Alaska. Washington Academy of Sciences. Journal. 41:44-45.

Description of Eunoe clarki, n. sp. from two specimens of this annelid worm which were washed ashore at Point Barrow, Oct. 1949. (Arctic Biblio.)

Pettibone, M.H. 1954. Marine Polychaete Worms from Point Barrow, Alaska, with Additional Records from the North Atlantic and North Pacific. U.S. National Museum. Proceedings. 103(3324):203-356.

Contains a study of material collected during 1948-50 by G.E. MacGinitie of the Arctic Research Laboratory. Eighty-eight species and 26 families are described with notes on synonymy, keys to families, genera and species, geographic distribution, frequency, etc. Some limited material from earlier collections was also utilized in this monograph. (Arctic Biblio.)

Ponomareva, L.A. 1949. Proniknovenie Arktoboreal'noi Fauny v Karskoe More. (The Penetration of the Arcto-Boreal Fauna into the Kara Sea.) Akademiia Nauk. Doklady. Nov. Seriia. 65(6):907-909.

Contains a study of the arcto-boreal elements in the plankton, benthos and fish fauna in the northern section of the Kara Sea; some species are noted and their distribution is given. The penetration of some species from Barents Sea is explained by the warming-up of the climate of the Arctic. (Arctic Biblio.)

Popova, N.M. 1952. Bogatstva Moria. (The Wealth of the Sea.) Nauka i Zhizn 19(1):22-25.

Popular survey of the main resources of the Soviet Seas; algae, crabs, fishes, whales, seals, birds, stressing the richness of arctic marine flora and fauna. (Arctic Biblio..)

Powell, G.C. and R.B. Nickerson. 1965. Aggregations Among Juvenile King Crabs, Paralithodes camtschatica Tilesius, Kodiak, Alaska. Animal Behavior 13(2-3):374-380.

Reports studies of SCUBA divers during 57 days in 1960 with observations from other sources. Year-old crabs (3-12 mm carapace length) live solitarily in niches of the littoral; 9-19 mm crabs are found on dock pilings; two-year olds (24-69 mm c.l.) form aggregations (pods) which persist throughout the third and part of the fourth year. These pods subsequently change into elongate piles and, at 60-97 mm c.l., into dome-shaped aggregations. (Arctic Biblio.)

**Powell, N.A. 1968. Bryozoa (Polyzoa) of Arctic Canada. Canada. Fisheries Research Board. Journal 25:2269-2320.

Ninety-three species of Bryozoa are reported here from the area of arctic Canada extending from Belle Isle Strait westward to Herschel Island. Bathymetric and distributional data, both local and regional, are given for all species. Photomicrographs are provided for 47 species. One species, Stomachetosella hincksi, is described as new. Electra crustulenta (Pallas) var. arctica Borg is accorded specific rank. Callopora smitti Kluge is referred to the genus Copidozoum and Hippodiplosia obesa (Waters) is transferred to the genus Schizoporella. A new family, Hincksiporidae, monotypical for H. spinulifera (Hincks), is attributed to the Ascophora Imperfecta. Porella princeps (Norman, 1903b) is considered to be a synonym of Pachyegis producta (Packard, 1863), and Codonellina operculata Mawatari (1956) a synonym of Schizomavella porifera (Smitt, 1867). The following eight species are new for arctic Canada: Terminoflustra barleei, Scrupocellaria arctica, Reginella spitzbergensis, Hippoporina cancellata, Schismopora nodulosa, Escharella thompsoni, Smittina mucronata, Pseudoflustra sinuosa. Except for R. Spitzbergensis and H. cancellata, these are also new for arctic North America.

The zoogeographical relationships of the fauna are discussed, three main types of distribution being recognized, viz., panaractic, boreal-panarctic, and Atlantic-arctic. No relationship between faunal distribution and the surface waters of the arctic and subarctic zones is apparent, the majority of species transgressing both. Compared with the bryozoan fauna of the antarctic region, the arctic group is impoverished in indigenous taxa (Author.)

Prigorovskii, B.G. 1948. Fauna Miagkikh Gruntov Litorali Guby Dal'ne-Zelentskoi. (The Fauna of the Soft Littoral Bottom of the Dal'niye Zelentsy Bay.) Akademiia Nauk SSSR. Murmanskaia Biologicheskaia Stantsiia. Dal'niye Zelentsy. Trudy. 1:146-154

Author gives a quantitative qualitative analysis of the fauna of soft bottoms of the small inlet (Oscar Bay) on which the Murmansk Biological Station is located. (Arctic Biblio.)

Propp, M.V. 1962. Underwater Observation of Sublittoral of the Barents Sea (Podvodnye Nablyudeniya v Sublitorali Barentseva Morya). Slessers, M. (trans.). 1964. Naval Oceanographic Office, Washington, D.C. 6 p. (translation of Akademiya Nauk SSSR. Okeanograficheskaya Komissiya. Trudy. 14:73-75.

The findings of underwater investigations carried out in the Murman sublittoral of the Barents Sea are outlined. The applications and advantages of various types of diving suits for summer and winter seasons are pointed out. Also the use of still and motion picture cameras and the significance of the photographs in determining the littoral fauna and flora and their migrations are discussed. The investigations disclose the presence in the littoral of many warm-water species that have been brought by the Nordkapp current. (Author.)

Rathbun, M.J. 1902. Descriptions of the New Decapod Crustaceans from the West Coast of North America. U.S. National Museum. Proceedings. 24(1272): 885-905.

Fifty-two new marine species and three subspecies are described, among them about thirty native to Bering Sea, Aleutian Islands and the Gulf of Alaska. (Arctic Biblio.)

Rathbun, M.J. 1919. Decapod Crustaceans. Canadian Arctic Expedition, 1913-1918. Report. Vol. 7: Crustacea, Pt. A. King's Printer, Ottawa. 14 p.

List, with locations and distribution of 21 species of shrimps and crabs from the coastal waters of Alaska and Northwest Territories, with additional records by other Canadian expeditions, and a bibliography. (Arctic Biblio.)

** Reish, D. 1965. Benthic Polychaetous Annelids from Bering, Chukchi and Beaufort Seas. U.S. National Museum. Proceedings. 117(3511):131-157

Records 67 species, mainly from offshore waters with two new forms Magelona alata n. sp. and Euchone trisegmentata n. sp. described in detail. Records include synonyms, location(s) of find, nature of bottom, etc. (Arctic Biblio.)

Remane, A. 1933. Die Rotatorien, Gastrotrichen, Kinorhynchen und Archianneliden der Arktis. Fauna Arctica 6:93-114.

Lists arctic members of these groups with locations.

Riemann-Zurnec, K. 1971. Die Variabilitat Taxonomisch Wichtiger Merkmale Bei Actinostola callosa (Anthozoa, Actiniaria). Variability of the Taxonomically Important Features in the Actinarian, Actinostola callosa.) Veroeffentlichungen des Instituts fuer Meeresforschung in Bremerhaven 13(1):153-162.

Roginskaya, I.S. 1963. Cuthona maris albi n. sp. - A New Nudibranchaite Mollusc from the White Sea. Belomorskoi Biologicheskoi Stantsii Moskovskogo Gosudarstvennogo Universiteta. Trudy. 2:258-265.

The mollusc was observed for the first time at the end of May, 1960 at a water temperature of 6-8°C. By the middle of July, when the temperature was 14-16°, it became the dominant nudibranch in this area. A description of the new sp. is given and it is differentiated from the related spp., C. postulata and C. concinna. (Biological Abstracts.)

Rusanova, M.N. 1963a. Biologiia i Zhiznennyi Tsikl Balanus balanoides Linne v Belom More. (Biology and Life Cycle of Balanus balanoides L. in the White Sea.) Akademiia Nauk SSSR. Karelskii Filial. Materialy po Kompleksnomu Izucheniiu Belogo Moria. 1963(2):66-76.

Comprehensive study of this common barnacle made in 1957-1959 along the southern shores of Kandalaksha Bay. Age composition on different shore formations and mortality at Cape Kartesh due to influx of fresh water are described. Growth and reproduction are considered. (Arctic Biblio.)

Rusanova, M.N. 1963b. Kratkie Svedeniia po Biologii Nekotorykh Massovykh Vidov Bespozvonochnykh Raiona Mysa Kartesh. (Notes on the Biology of Some Invertebrate Mass-species in the Cape Kartesh Area.) Akademiia Nauk SSSR. Karelskii Filial. Materialy po Kompleksnomu Izucheniiu Belogo Moria. 1963 (2):53-65.

Reports on material collected during Sept. 1957-Dec. 1959, also 1953-1955 at the entrance to Chupa Bay, in the bay proper and in adjacent areas of Kandalaksha Bay. Eleven crustaceans, 19 molluscs and two echinoderms are recorded as to depth of occurrence, biotope, size and age limits, reproduction and embryonic development, hatching, etc. (Arctic Biblio.)

Rzhepishevski, I.K. 1966. (On the Distribution of Balanus in the southeastern part of the Barents Sea.) Murmanskogo Morskogo Biologicheskogo Instituta. Trudy. 11(15):50-56.

Sabine, E. 1824. Marine Invertebrate Animals. In: Supplement to the Appendix of Capt. Parry's Voyage for the Discovery of a Northwest Passage, in the years 1819-1820. p. ccxix-ccxxic.

Contains a list, with synonymy, some descriptions, localities and notes of twenty-four species (coelenterates, echinoderms, annelid worms, crustaceans, and tunicates) from Baffin Bay and the waters of the Canadian Arctic Islands. (Arctic Biblio.)

Sailer, R.I. 1955. Invertebrate Research in Alaska. Arctic 7(3-4):266-274.

Account of invertebrate collections and research in the 19th century; work in present century till 1940 (mostly descriptive and taxonomic); research centers in Alaska; recent and current investigation in entomology, parasitology, terrestrial and marine invertebrates; main research problems. (Arctic Biblio.)

Salvini-Plawen, L.V. 1970. Die Norweigischen Caudofoveata (Molluska, Aculifera). (Caudofaveata from Norway.) Sarsia 45:1-16.

All individuals of the Caudofoveata (formerly Aplacophora-Chaetodermatida), hitherto authentically recorded from Norwegian waters, are listed geographically. Additional comments are given on their systematics and on the horizontal as well as vertical distribution. (Author.)

Sars, M. 1866. Om Arktiske Dyrefomer i Christianiafjorden. (On Arctic Faunal Forms in Christianiafjord.) Norske Videnskaps - Akademi, Oslo. Forhandlinger, 1865. p. 196-102.

Contains a systematic list of 32 species of so-called "arctic outliers" (arthropods, molluscs, worms and echinoderms) in the fauna of Christianiafjord, with data on their distribution in their native arctic regions and the discussion of the reasons of their occurrence in the northern part of Norway. (Arctic Biblio.)

Schalk, Marshall. 1957. Beach and Near-Shore Studies, Point Barrow, Alaska, Conducted during the Period July 1954-Jan. 1957. Woods Hole Oceanographic Institution Ref. No. 57-43. Woods Hole Oceanographic Institution, Woods Hole, Mass. 50 p.

Progress report on field work at Point Barrow, noting personnel, methods used, preparation and character of profiles, conditions of tides, beach and bottom, ice, and weather. Storms and subsequent changes in nearshore bottom conditions are described, and explained. (Arctic Biblio.)

Schmitt, W.L. 1919. Schizopod Crustaceans. Canadian Arctic Expedition, 1913-1918. Report. Vol. 7: Crustacea, Pt. B. King's Printer, Ottawa. 8 p.

List of three mysids (including one new species fully described) and three euphausids, showing station where taken in coastal waters and lagoons of Alaska and Northwest Territories. (Arctic Biblio.)

Schoepf, R.W. 1974. The Trans-Alaska Pipeline and the Environment. A Bibliography. Department of the Interior, Washington, D.C. 31 p.

The bibliography contains 152 citations to research and conference reports written in English and published between 1970 through mid-1973 concerning environmental problems to be encountered in the construction of the trans-Alaska pipeline. The emphasis is primarily on Alaska marine and terrestrial environment, although a number ot items deal with engineering problems related to the Arctic environment. The citations are arranged under ten broad subject categories and an author index is provided. (NTIS.)

Shapeero, W.L. 1962. The Distribution of Priapulus caudatus Lam. on the Pacific Coast of North America. American Midland Naturalist. 68(1):237-241.

Notes on the morphology of these vermiform coelomates, taxonomy, occurrance in depth, and distribution, which includes the Chukchi Sea as far east as Point Barrow and Glacier Bay, Alaska. (Arctic Biblio.)

Sharonov, I.V. 1948. Sublitoral'nye Bentonicheskie Gruppirovki Guby. (Sublittoral Benthonic Grouping of Yarnyshnaya Bay.) Akademiia Nauk SSSR. Murmanskaia Biologicheskaia Stantsiia. Dal'niye Zelentsy. Trudy. 1:155-163.

Following a brief characterization of this bay on the Murmansk coast (69°05'-69°09'N, 36°00'-36°05'E). Another gives some analysis of the deep-water animal groups living near the shores. (Arctic Biblio.)

Shchedrina, Z.G. 1936. K Faune Kornenozhek Poliarnykh Morei SSSR. (On Foraminifera of USSR Polar Seas.) Leningrad. Vsesoiuznyi Arkticheskii Institut. Trudy. 33:51-64.

List of species collected during the voyage of the ice-breaker Sibiriakov and Rusanov, 1932 in Kara and Chukchi Seas, with locations and discussion. Summary in German. (Arctic Biblio.)

Shchedrina, Z.G. 1938. On the Distribution of Foraminifera in the Kara Sea. Akademiia Nauk SSSR. Comptes Rendus. Doklady. Nouv. Ser. 19(4):319-322.

In the northern troughs, Atlantic, Greenland and boreal deep-sea forms were found. The southeast region was an original fauna including brackish forms indicating a possible influence of the Ob-Yenisey waters. There are also indications that Atlantic waters penetrate by way of the polar basin. Based on material collected by ice breakers in 1929-34 and by Sadko 1935-36 in Kara Sea, also in parts of Greenland and Barents Seas and the Arctic Basin. (Arctic Biblio.)

Shchedrina, Z.G. 1939. A New Genus of Sand Foraminifera from the Arctic Seas. Akademiia Nauk SSSR. Compted Rendus. Doklady. N.S. 24(1):95-96.

Full description of a new species found in the Kara Sea, Greenland Sea, and in the Arctic Basin. (Arctic Biblio.)

Shchedrina, Z.G. 1946. Novye Formy Formainifer iz Severnogo Ledovitogo Okeana. (New Species of Foraminifera from the Arctic Ocean.) In: Dreifuiushchaia Ekspeditsiia Glavsevmorputi na Ledokhode Parokhode "G. Sedov" 1937-1940 gg. Trudy. 3:139-148.

A description of twelve new species and varieties taken mostly during the voyages of the ice-breaker Sadko, 1935 and 1937-38. Summary in English. (Arctic Biblio.)

Shchedrina, Z.G. 1948. Forminifery. (Forminifera.) In: Gaevskaia-Sokolova, N. and Others. Opredelitel' Fauny i Flory. p. 5-20.

Contains a morphological and biological sketch of marine forminifera of northern seas of the USSR with keys for determination of the families, genera and typical species of this order. (Arctic Biblio.)

Shchedrina, Z.G. 1950. K Raspredeleniiu Morskikh Kornenozhek v Sviazi s Usloviiami ikh Obitaniia. (On the Distribution of Marine Foraminifera in Connection with their Life Conditions.) Akademiia Nauk SSSR. Doklady. Nov Seriia 70(4):711-713.

On the basis of the study of several collections of foraminifera from the arctic seas, the author divides this fauna into the following groups: (1) deep-sea group (1000-3800 m); (2) sublittoral coldwater group (80-200 m); (3) sublittoral warm-water group; (4) upper sublittoral group (0-80 m). Oceanographic conditions and typical species for each group are discussed and compared with similar groups of the North Pacific Ocean. (Arctic Biblio.)

Shchedrina, Z.G. 1952a. Novye Vidy Forminifer Roda Rhabdammina M. Sars. (New Species of Foraminifera of the Genus Rhabdammina M. Sars.) Akademiia Nauk SSSR. Zoologicheskii Institut. Trudy. 12:25-33.

Descriptions of Rhabdammina parabyscorum n. sp. (southern Okhotsk and Bering Seas), R. pulverulenta n. sp. (southern part of Barents Sea) and R. heteractina n. sp. (Okhotsk Sea). (Arctic Biblio.)

Shchedrina, Z.B. 1952b. O Razlichnykh Formakh Forminifer, Rhabdammina abyssorum Carpenter. (On Various Forms of Forminifera, Rhabdammina abyssorum Carpenter.) Akademiia Nauk SSSR. Zoologicheskii Institut. Trudy. 12:7-24.

Contains a study of the geographic variation of a foraminifer, Thabdammina abyssorum, together with descriptions of R. a. abyssorum (Greenland Sea and arctic seas), R a. arctica n. subsp. (arctic seas and Svalbard waters), and R. a. pacifica n. subsp. (northern Okhotsk Sea and Bering Sea). (Arctic Biblio.)

Shchedrina, Z.G. 1953. K Izucheniiu Foraminifer Glubokovodnykh Donnykh Otlozhenii Okhotskogo Moria. (A Contribution to the Knowledge of the Deep-Sea Bottom Foraminifer of the Okhotsk Sea.) Akademiia Nauk SSSR. Doklady. Nov. Seriia 90(2):287-289.

Contains a list of 57 foraminifers (tables 1-2) with their vertical distribution. The material was obtained in 1949 by the Expedition of the Institute of Oceanology of the Academy of Sciences USSR in the southern part of the Okhotsk Sea from the bottom sediments at the depth of 3400 m. Analysis of the samples shows that the foram bottom fauna is almost identical with benthic fauna of corresponding regions of the Okhotsk Sea, and that the typical fossil forms are lacking. (Arctic Biblio.)

Shchedrina, Z.G. 1956a. Fauna Foraminifer Dal'nevostochnykh Morei Sovetskogo Soiuza. (Foraminiferal Fauna of the Far-Eastern Seas of the Soviet Union.) Akademiia Nauk SSSR. Zoologicheskii Institut. Trudy Problemnykh i Tematicheskikh Soveshchanii. 6:65-71.

Account based on study of extensive collections made during 20-25 years. The fauna is divided into climatic and geographic forms and such of the deep sea. The main factor determining distribution in one and the same area was found to be depth, at equal depths: temperature, salinity, and currents. (Arctic Biblio.)

Shchedrina, Z.G. 1956b. Itogi Izucheniia Foraminifer Morei SSSR. (Results of the Study of Foraminifer in the Soviet Seas.) Voprosy Mikropaleontologii 1956 (1):23-36.

Comprehensive review, citing number of identified species for each sea, and outlining species variation in respect to depth, temperature, salinity and hydrographic conditions. Seven groups are distinguished according to ecologic conditions, and are characterized. Over-all results of foraminifera study in the Arctic Ocean are summarized. An extensive review is made of the literature for which a reference list is appended. (Arctic Biblio.)

Shimkevich, V.M. 1913. Einige Nueu Pantopoden. (Some New Pantopoda.) Akademiia Nauk SSSR. Zoologicheskii Muzei. 18(2):240-248.

Contains descriptions of three new species and one new variety of sea spiders, including Nymphon hogdsoni n. sp. native to Okhotsk Sea and N. longitarse var. minus n. var. occurring in Okhotsk and the arctic seas. (Arctic Biblio.)

Shimkevich, V.M. 1929-1930. Mnogokolenchatye (Patopoda). (Pantopodes [Pantopoda].) In: Fauna SSSR. Pantopoda, v. 1-2. Izd-vo Akademiia Nauk SSSR, Leningrad. 555 p.

Contains in v. 1, an introduction (cxiv p.) giving terminology; doubtful genera, with descriptions of 14 new species; characteristics of Pantopoda; bibliography (317 items). Then follows (p. 1-224) a monographic treatment of eight families (Pycnogonidae-Phoxichilidiidae), with keys, Latin diagnoses, Russian descriptions, synonyms, critical notes, lists of specimens, and data on geographic distribution. In v. 2 (p. 225-554) the families Pallenidae and Nymphonidae are treated similarly; a supplementary bibliography compiled by D. Redotov (84 items) and an index of Latin names are appended. Many species native to Russian arctic waters are included, also some from other northern seas because they are important for the study of Russian species. (Arctic Biblio.)

Shoemaker, C.R. 1920. Amphipods. Canadian Arctic Expedition, 1913-1918. Report. Vol. 7: Crustacea, Pt. E. King's Printer, Ottawa. 30 p.

List, with notes on synonymy and distribution of fifty-three (including one new) species of marine and fresh water forms from the arctic coast, collected by the Expedition; with data from the Neptune collections, and a bibliography. (Arctic Biblio.)

Shoemaker, C.R. 1955. The Amphipoda Collected at the Arctic Laboratory, Office of Naval Research, Point Barrow, Alaska, by G.E. MacGinitie. Smithsonian Miscellaneous Collections 128(1):1-78, figs. 1-20.

Lists amphipods collected in the Barrow region with locations, references, and some descriptions and illustrations.

Sivertsen, E. 1932. Crustacea, Decapoda and Mysidacea from the East Siberian and Okhotsk Seas. Maud Expedition, 1918-1925. Scientific Results, V. 5, No. 13. John Grieg, Bergen. 14 p.

List with references to literature, remarks on specimens, some descriptions, occurrence and distribution, of ten (including one new) species of crustaceans, decapods and mysids; bibliography (36 items). (Arctic Biblio.)

Skarlato, O.A. 1956. K Biogeografii Dalnevostochnykh Morei Sovetskogo Soiuza na Primere Dvustvorchatykh Molliuskov. (The Biogeography of the Far-Eastern Seas of the Soviet Union as illustrated by the Bivalve Molluscs.) Akademiia Nauk SSSR. Zoologicheskii Institut. Trudy Problemnykh i Tematicheskikh Soveshchanii. 6:83-92.

Discussed the zoogeographic origin of the bivalves of these seas; the arctic-boreal forms and others; endemic arctic and other species; conditions in the Okhotsk Sea, and in the northernmost Kuril Islands. (Arctic Biblio.)

Smidt, E. 1967. Deep Sea Prawn (Pandalus borealis Kr.) in Greenland waters: Biology and Fishery. In: Proc. Symposium on Crustacea, Ernakulam, 1965. Mar. Biol. Assoc. India, Symp. Ser. 2:1448-1453.

Smirnova, T.S. 1965. Donnaia Fauna Guby Kanda Belogo Moria. (Bottom Fauna of Kanda Bay, White Sea.) Gidrobiologicheskii Zhurnal. 1(4):27-33.

Reports on 1962-63 investigations in this western arm of Kandalaksha Bay, with supporting data on area and depth, temperature, salinity, pH and O_2. Seventy-three species of invertebrates are recorded. Due to the almost complete isolation of this inlet from the sea, a retreat of marine forms and appearance of freshwater elements is noted. (Arctic Biblio.)

Smith, E.A. 1877. On the Molluska Collected during the Arctic Expedition of 1875-1876. Annals and Magazine of Natural History, Ser. 4. 20:131-146.

List, with descriptions, synonymy, localities and notes, of thirty-four (including one new) species from Kane Basin and Kennedy Channel. (Arctic Biblio.)

Smith, F., and P.S. Welch. 1924. Oligochaeta. Report of the Canadian Arctic Expedition (1913-1918). 9(A):1-19.

Descriptions of the Oligochaetes collected in Arctic regions of North America with a discussion of distribution and systematic relationships.

Sokolov, I.I. 1952. Paukoobraznye, t.5, vyp.5. Vodianye Kleshchi, Chast II, Halacarae. (Arachnids, Water Mites [Hydracarina] pt. 2, Halacarae). Izd-vo Akademiia Nauk SSSR, Moskva-Leningrad. 201 p.

Contains a systematic index of water mites of the superfamily Halacarae, followed by an introduction (p. 9-44) giving characteristics, brief history of the development, biological and ecological sketch, history of the study, present-day knowledge and geographic distribution, and a bibliography (147 items). In the special part (p. 45-196) are keys to the subfamilies, genera, subgenera and species; descriptions of 91 species and 23 varieties (17 species and four varieties described as new), of which 46 species (38 marine and eight freshwater) are native to the USSR; synonyms, critical notes as well as data on metamorphosis, biology, ecology and geographic distribution are included. Index of Latin names is appended. Many species are native to northern waters of the USSR and adjoining countries. (Arctic Biblio.)

Soot-Ryen, T. 1924. Faunistische Untersuchungen im Ramfjorde. (Faunal Study of Ramfjord.) Tromso, Norway. Museum. Arshefter, 1922. Bd. 45, Nr. 6. Tromso. 106 p.

Ecological study based on the molluscs and better known echinoderms with detailed notes on associations, distribution, size and abundance, brief characterization of the fiord (about 69°35'N, 19°15'E) and mention of its other fauna. Charts: bathymetric and bottom sediment charts. (Arctic Biblio.)

Soot-Ryen, T. 1925. Notes on Some Mollusca and Brachiopoda from Spitzbergen. Tromso, Norway. Museum. Arshefter, 1924. Bd. 47, Nr. 4. Tromso. 10 p.

Contains a list, with localities and depths, of thirty-six species of molluscs and one brachiopod, based on collections made by the Blaafield in 1923 from the coastal banks west of West Spitzbergen. (Arctic Biblio.)

Soot-Ryen, T. 1932a. Hydrographical Investigations in the Ramfiord 1924-25. Tromso, Norway. Museum. Aarshefter, 1928. Bd. 51, Nr. 4. K. Karlsen, Tromso. 21 p.

Contains the result of hydrographical survey of Ramfjord, Tromso district, carried out by the author in 1924, with data on isotherms, isophalines and isopycnes, bottom fauna and plankton; hydrographical tables, p. 15-21. (Arctic Biblio.)

Soot-Ryen, T. 1932b. Pelecypoda with a Discussion of Possible Migrations of Arctic Pelecypods in Tertiary Times. Maud Expedition, 1918-1925. Scientific Results, V. 5, No. 12. John Grieg, Bergen. 32 p.

List, with references to literature, localities, remarks and distribution, of twenty-one (including two new) species of pelecypods (clams, oysters, mussels) from the Chukchi and East Siberian Seas. Discussion, with table, of distribution and occurrence in the north Siberian seas and of migrations of arctic pelecypods in Tertiary times resulting from alterations of physical conditions; bibliography (74 items). (Arctic Biblio.)

Soot-Ryen, T. 1939. Some Pelecypods from Franz Josef Land, Victoriaoya and Hopen. Norway. Norges Svalboard-og Ishavets-undersokelser. Meddelelse Nr. 43. J. Dybwad, Oslo. 21 p.

A systematic list of thirty-five bivalve species reported by expeditions prior to, and including the Norwegian Scientific Expedition, 1930; with notes on the hydrographic conditions of the waters surrounding Franz Josef Land and remarks on research needed to establish the effects of temperature on distribution of pelecypods. (Arctic Biblio.)

Soot-Ryen, T. 1941. Northern Pelecypods in the Collection of Tromso Museum. I. Order Anomalodesmacea, Families Pholadomyidae, Thraciidae and Periplomatidae. Tromso, Norway. Museum. Aarshefter, 1938. Bd. 61, Nr. 1. Naturhistorisk Avd. Nr. 17. A.W. Brogger, Oslo. 41 p.

Contains a study of systematics and distribution of northern molluscs in the collection of the Tromso Museum, including a key to eight families of the order Anomalodesmacea, and an enumeration of twelve marine species, including some fossils, with descriptions (Thracia rectangularis n. sp.), brief synonymy, measurements, types, type localities and critical notes; a list of material including an enumeration of specimens, arranged by the species and regions; the principal area of distribution is limited on the south by Great Britain, The Faroes, Iceland, Cape Farewell, Greenland, and to the east and north by Novaya Zemlya and the Arctic Ocean; the total distribution for each species is also given. (Arctic Biblio.)

Soule, J.D. 1951. Two New Species of Encrusting Ctenostomatous Bryozoa from the Pacific. Washington Academy of Sciences. Journal. 41(11):367-370. Also pub. as: Contribution No. 63, Allan Hancock Foundation, University of Southern California.

Includes a description of Alcyonidium enteromorpha n. sp., collected by G.E. MacGinitie of the Arctic Research Laboratory, off Point Barrow, Alaska. (Arctic Biblio.)

Southward, A.J., and E.C. Southward. 1967. On the Biology of an Intertidal Chthamalid Crustacea, Cirripedia) from the Chukchi Sea. Arctic 20(1):8-20.

A Pacific-boreal zpecies, Chthamalus dalli occurs in the narrow intertidal zone near Cape Thompson, Alaska. Diatoms and filamentous green algae, but no other animals, were associated with the barnacles which apparently survive the winter frozen in the ice foot. Growth is less than in southern species, but continued for five years or more; maturity is reached in two years and breeding can occur at a water temperature of 6°C. There appears to be only a very slight cold adaptation, shown by cirral activity, compared with C. dalli from southeast Alaska and southern California. (Arctic Biblio.)

Southward, E.C. 1962. A New Species of Galathealinum, Pogonophora, from the Canadian Arctic. Canadian Journal of Zoology. 40(3):385-389.

Describes two incomplete specimens, male and female, of Galathealinum arcticum n sp. from Thetis Bay, Herschel Island, at a depth of 120 ft. (Arctic Biblio.)

Sparks, A.K. and W.T. Pereyra. 1966. Benthic Invertebrates of the Southeastern Chukchi Sea. In: Wilimovsky, N.J. and J.N. Wolfe (eds.). Environment of the Cape Thompson Region, Alaska. United States Atomic Energy Commission, Division of Technical Information. p. 817-838.

Lists 201 species from 11 phyla obtained during a marine survey in 1959, and discussed the general distributions of the main groups of organisms in relation to their habitat. Samplings were made on a pre-plotted 20-mile interval grid from MV John N. Cobb. Echinoderms, tunicates, decapods, molluscs, and annelids were the dominant faunal elements encountered and account for approximately 95% of the sampled biomass. The fauna is Pacific boreal in character since the prevailing northtrending current prevents high arctic species from entering the Chukchi Sea and the shallowness of this area eliminates any deep-sea elements. Relatively large areas of littoral zone are sparsely populated owing to scouring of the inshore area by ice. The standing crop of the area studied is considered to be high partly because of the low fish population. (Arctic Biblio.)

Spasskii, N. 1929. K Faune Gidroidov Kol'skogo Zaliva i Iugo-zapadnoi Chasti Barentsova Moria. (Contributions to the Hydroid Fauna of Kola Bay and the Southwestern Part of Barents Sea.) Leningradskoe Obshchestvo Estesvoispytatelei. Murmanskaia Biologicheskaia Stantsiia. Raboty, t. 3, no. 2. Murmansk. 48 p.

Contains result of study of a large collection of hydroids from southwestern Barents Sea particularly Kola Bay. 70 species are listed, some 22 are new for the area and largely warm-water forms. Three new species are reported and described. Bibliography (29 items). Summary in German. (Arctic Biblio.)

Squires, H.J. 1964. Pagurus pubescens and a Proposed New Name for a Closely Related Species in the Northwest Atlantic, Decapoda: Anomura. Canada. Fisheries Research Board. Journal. 21(2):355-365.

Comparisons of the type specimens of the hermit crab Pagurus kroyeri from Greenland and P. pubescens, showed them to be identical. The American species thought to be pubescens is now given the name P. arcautus. Both species are compared with P. tigonocheirus using a new diagnostic character. (Arctic Biblio.)

Squires, H.J. 1968. Decapod Crustacea from the Queen Elizabeth and Nearby Islands in 1962. Canada. Fisheries Research Board. Journal 25:347-362.

Five surveys of the Queen Elizabeth and nearby islands during the summer of 1962 collected 1221 specimens of decapod Crustacea. These decapods comprised 10 species of hippolytid and crangonid shrimps. Sizes and maturity status of specimens indicated variability in adaptation of different species to the low temperature environment. Records of northern distribution of the species in Canada and Greenland are reviewed. Food was mostly detritus and phytobenthos but some species showed preference for foraminiferans or crustaceans. (Author.)

**Squires, H.J. 1969. Decapod Crustacea of the Beaufort Sea and Arctic Waters Eastward to Cambridge Bay, 1960-65. Canada. Fisheries Research Board. Journal. 26:1899-1918.

The CGS Salvelinus collections of decapod crustaceans from the South Beaufort Sea to Cambridge Bay in 1960-65 comprised 1830 specimens of 15 species. Five of the species were not previously recorded from this area. Most abundant species were Sabinea septemcarinata and Eualus gaimardi. Eualus macilentus and E. stoneyi were confined to Bathurst Inlet. Westward setting currents along the Beaufort Sea coast mediate against incursions by Pacific species but Chionoecetes opilio, Hyas coarctatus alutaceus, and a species of Pagurus seemed to have overcome this condition. The species in which the highest percentages of females presumably reproduced annually were Spirontocaris phippsi, S. spinus, and S. septemcarinata. (Author.)

Starokadomskii, L.M. 1917. Zoologicheskiia Stantsii Transporta Taimyr v 1913 g. (Zoological Stations of the Transport Taimyr in 1913). Akademiia Nauk SSSR. Zoologicheskii Muzei. Ezhegodnik, 1916. 21:xxvii-xlix.

Contains a list of 81 stations established (as part of the Arctic Ocean Hydrographic Expedition) by the Taimyr in 1913 in Japan, Okhotsk and

Bering Seas and in the arctic seas from Bering Strait to the Taymyr Peninsula of Siberia, with the following data for each station; date, time, location, air and sea temperature, bottom, brief list of marine and terrestrial (island and coastal) fauna. (Arctic Biblio.)

Steele, D.H. 1967a. New Species of the Genus Anonyx (Amphipoda) from the Barents Sea. Crustaceana 13(3):257-264.

Describes Anonyx bispinosus n. sp. on the basis of British Museum material collected off the east coast of Kolguyev Island, Barents Sea. (Arctic Biblio.)

Steele, D.H. 1967b. The Life Cycle of the Marine Amphipod Stegocephalus inflatus Kroyer in the Northwest Atlantic. Canadian Journal of Zoology 45(5): 623-628.

Studies this circumpolar crustacean from arctic areas and the Gulf of St. Lawrence. It was found to be protandrous, to reproduce throughout the year, each female having more than one brood. Graphs, tables, illustrated, references. (Arctic Biblio.)

Steele, D.H. and P. Brunel. 1968a. Amphipoda of the Atlantic and Arctic Coasts of North America: Anonyx (Lysianassidae). Canada. Fisheries Research Board. Journal. 25:943-1060.

In place of the widely ranging, abundant, and variable species Anonyx nugax, previously recorded from Canadian Atlantic and Arctic waters, eight less variable species of this genus are here recognized, one of which (sarsi) is new to science. Detailed descriptions, figures, distribution maps and a key applying to all sizes is given. The study of the species is based on examination of available type-specimens and the use of new characters. The systematics of the genus is discussed in a chronological review of all the relevant literature, and the status of several species is revised. (Author.)

Steele, D.H. and P. Brunel. 1968b. Collections of Amphipods of the Genus Anonyx, mainly from the Atlantic and Arctic Coasts of North America. Canada. Fisheries Research Board. Technical Report. No. 47:73 p.

Lists specimens of Anonyx nugax, A. pacificus, A. sarsi, A. laticoxae, A. lilljeborgi, A. ochoticus and A debruyni, examined in 15 Canadian, west European and/or American museums. Position and depth of the station, date and collector (expedition, ship or individual) are stated, as is the museum where specimen(s) may be found. In addition to collections from the entire Canadian coastline, a few are included from Alaskan waters, Sea of Okhotsk, Greenland and Svalbard waters, and the Barents and Kara Seas. (Arctic Biblio.)

Stendell, R. 1968. Echinoderms Collected from a Drifting Ice Island off the East Greenland Coast, with Comments on Their Distribution in Adjacent Waters. Canada. Fisheries Research Board. Journal. 24(4):833-842.

A collection of 127 echinoderms was made from the ice island Arlis II as it drifted southward along the east coast of Greenland. Sixteen species are represented: 2 crinoids, 4 asteroids, 8 ophiuroids, 1 echinoid, and 1 holothurian. Distributions of the animals are discussed in relation to their occurrence in Greenland and adjacent waters. Of the species collected 14 are characteristic of the east Greenland marine fauna; two are characteristic of the northern North Atlantic and are not commonly found in east Greenland coastal waters, and two have been recorded from both regions. (Author.)

Stephensen, K. 1933. The Tanaidacea and Amphipoda of the Arctic. Fauna Arctica 6:343:378.

Lists arctic tanaids and amphipods with locations.

Streltzov, V.E. 1966a. Biology of Feeding of the Predatory Polychaete Worm *Harmothoe imbricata* in the Dalnezelenetz Inlet of the Barents Sea. Murmanskogo Morskogo Biologicheskogo Instituta. Trudy. 11(15):115-121.

Streltzov, V.E. 1966b. (Quantitative Distribution of Polychaeta in the Southern Part of the Barents Sea.) Murmanskogo Morskogo Biologicheskogo Instituta. Trudy. 11(15):71-91.

Streltzov, V.E. 1966c. Relationships in the Postembryonic Development of the Polychaete Worm *Harmothoe imbricata* L. (Polychaeta, Errantia) in the Littoral Zone of the Southern Part of the Barents Sea. Akademiia Nauk SSSR. (Biological Sciences Sect.) Doklady. 169:472-475.

Results of growth experiments in the laboratory indicate there are two distinct reproductive periods annually and that growth patterns for the first two years differ for the two spawning groups.

Streltzov, V.E. 1968. Paraonidae (Polychaeta Sedentaria) in Barents Sea. Murmanskogo Morskogo Biologicheskogo Instituta. Trudy. 17(21):74-95.

Tanasiichuk, N.P. 1926. Materialy k Poznaniiu Fauny Barentsova Moria. (Materials Contributing to the Knowledge of the Barents Sea Fauna.) Leningradskoe Obshchestvo Estesvoispytatelei. Murmanskaia Biologicheskaia Stantsiia. Raboty. 3(1):31 p.

Contains discussion of the effect of the North Cape current on the rise of the temperature in Kola Inlet. Author analyzes a number of animal species (corals, echinoderms, polychaetes) known to have been rare or confined to deep waters earlier, and attributes their present abundance to this rise in temperature. The change is largely toward an enrichment with boreal elements. Bibliography (about 50 items). Summary in German. (Arctic Biblio.)

Tanasiichuk, N.P. 1927. O Novykh i Redkikh Dlia Fauny Kol'skogo Zaliva (Murman) Formakh Zhivotnykh. (On Some New and Rare Animal Forms of Kola Bay [Murman].) Akademiia Nauk SSSR. Doklady, Seriia A, No. 14:213-218.

List of bottom animals collected by trawl in 1926-27. About 40 species are described including five fishes. (Arctic Biblio.)

Tanasiichuk, N.P. 1928. O Nekotorykh Dopolneniiakh k Faune Kol'skogo Zaliva. (Some Additions to the Fauna of Kola Bay.) In: Vserossiiskii s"ezd Zoologov, Anatomov i Gistologiv, 3, Leningrad, 1927. Trudy. p. 382-383.

Contains notes and data on origin and habitat of some species new to this arm of the Barents Sea (Murman coast). Molluscs and hydroids are included. (Arctic Biblio.)

Tarasov, N.I. 1938. Issledovanie Grenlandskoi Littorali. (Study of the Greenland Littoral.) Priroda 5:100-101.

Contains a review of the present-day knowledge of the littoral fauna of East Greenland, with a general description, notes on some typical species and ecological subdivisions, based chiefly on works of H. Madsen, H. Brich, and some other zoologists; the littoral fauna of West Greenland (53° N-67° N) is briefly discussed. (Arctic Biblio.)

Tcherniakovsky, P. 1941. Rapport sur les Travaux Biologiques Effectues au Scoresby Sund. Mission Francaise de l'Annee Polaire Internationale 1932-1933. (Report on Biological Studies Conducted at Scoresby Sund. French International Polar Year Expedition, 1932-1933). In: International Polar Year. 2d, 1932-1933. Participation Francaise. Observations et Travaux. 3, p. 1-67.

After introductory sections on the scope of biology in this expedition, on equipment and the laboratory, an outline is presented of this part of East Greenland and its bio-geographical peculiarities. Terrestrial and marine mammals encountered are described (particularly musk ox and seal), with native names, data on occurrance, hunt, economic value, etc. A relatively large section deals with birds (34 species) and is followed by chapters on marine biology (temperature, salinity, pH, etc.: common phyto- and zooplankton, invertebrates, fishes and seaweeds), also terrestrial invertebrates and flora. The concluding chapter (p. 51-67) deals with physical anthropology of the "Eskimo race;" blood groups of pure and mixed populations; origin, racial and geographic, etc. (Arctic Biblio.)

Tendal, O.S. 1970. Sponges from Joergen Broenlund Fjord, North Greenland. Meddelelser om Broenland 184(7):1-14.

Describes, with illustrations, each of eight species of sponges collected during the Fourth Pearcy Land Expedition in 1966.

Theisen, B.F. 1973. The Growth of Mytilus edulis L. (Bivalvia) from Disko and Thule District, Greenland. Opehlia 12(1-2):59-77.

The growth in length of Mytilus edulis L. from Disko and the Thule district is estimated by means of the very distinct winter growth checks. The growth is highly sigmoid and can be described by a combination of the Gomperz equation (valid for growth until about half the ultimate length is attained) and the von Bertalanffy equation (valid for growth from about one third of the ultimate length) as neither of the two growth equations covers the whole size range of Mytilus. The growth of the species at Greenland is slow compared with its growth in most temperate areas. Doubtlessy low temperature is the cause of the slow growth. When the growth rate is related to day-degrees, growth at Greenland almost equals that found in similar habitats in temperate regions. An apparent size-dependent mortality occurs among the very small Mytilus living on Fucus. However, this phenomenon is probably caused by differential emigration among the small individuals. A conspicuous lack of young individuals in the samples from the Thule district indicates that practically no settling took place after 1959 in that area. (Author.)

Theroux, R.B. 1971. Major Taxonomic Groups of Macrobenthos in Disko Bay and Several West Greenland Fjords. United States Coast Guard Oceanographic Report No. 37. p. 34-40.

A preliminary report on the macrobenthic organisms collected by the USCGC Eastwind in 1968. Station locations are listed with physical features of the bottom and major groups or organisms collected are listed by station.

Thiele, J. 1929. Arktische Loricaten, Gastropoden, Scaphopoden und Bivalven. Fauna Arctica 5:561-632.

Lists arctic members of these groups with locations.

Thiele, J. 1933. Die Solenogastres des Arktischen Gebietes. Fauna Arctica 6:379-382.

Lists arctic solenogastres with locations.

Thorson, G. 1935. Studies on the Egg-capsules and Development of Arctic Marine Prosobranchs. Meddelelser om Groenland 100(5):1-71.

Descriptions of the egg capsules and development of twenty-eight species of marine snails, collected by the Danish Three-year Expedition in the Franz Joseph and Scoresby Sound Fiord areas of East Greenland. (Arctic Biblio.)

Thorson, G. 1936. The Larval Development, Growth and Metabolism of Arctic Marine Bottom Invertebrates Compared with Those of Other Seas. Meddelelser om Groenland 100(6):1-155.

Discussion (based on material colelcted in East Greenland 68°10'-76°50'N by the Danish Three-year Expedition, 1931-1934) of the reproduction, spawning time and larval development of arctic echinodermsn polychaetous worms, gastropods, lamellibranchiates, crustaceans and other marine invertebrates; growth, consumption of oxygen; summary of the ecology and common biological features of arctic invertebrates, comparison with those of other seas; bibliography (about 150 items.) (Arctic Biblio.)

Todd, R., and D. Low. 1966. Foraminifera from the Arctic Ocean off the Eastern Siberian Coast. U.S. Geological Survey, Professional Paper No. 550-C, p. 79-85.

The impoverished fauna (56 species) resulting from subnormal marine conditions on the shallow shelf beneath the Laptev, East Siberian and Chukchi Seas is recorded with notes on its distribution which appears to be haphazard for most species. (Arctic Biblio.)

Trason, W.B. 1964. Ascidians of the Canadian Arctic Waters. Canada. Fisheries Research Board. Journal. 21(6):1505-1517.

The ascidians of the Canadian Arctic collected by the Eastern Arctic Investigations and Arctic Unit of the Fisheries Research Board of Canada from the years 1947 to 1962 inclusive have been identified and the numbers collected tabulated. Information relevant to collecting stations is presented in tables and on maps. (Author.)

Turpaeva, E.P. 1948. Pitanie Nekotorykh Donnykh Bezpozvonochnykh Barentsova Moria. (Food of Some Invertebrates of the Barents Sea Bottom.) Zoologicheskii Zhurnal 27(6):503-512.

Contains data on the food and conditions of nourishment of various invertebrate fauna (Eclinodermata, Lamellibranchiata, Crustacea, Tunicata, and Brachiopoda) found on or in the bottom of the Barents Sea; the region of the study includes the central section of this sea, Bear Island waters and the Pechora-Karin-Kolguyev shallows. (Arctic Biblio.)

Ude, H. 1933. Die Oligochaten der Arktis und ihre Geographische Verbreitung II. Fauna Arctica 6:41-54.

Lists arctic members of this group with locations.

U.S. Hydrographic Office. 1955. Oceanographic Survey Results, Project 572, July-September 1955. U.S. Hydrographic Office Pub. No. 16366. U.S. Hydrographic Office, Washington, D.C. 169 p.

Contains summary of a hydrographic-oceanographic survey, conducted summer 1955 by USS Requisite in the Western Arctic. Ship's main track, location of oceanographic, current, and bottom sampling stations between Pt. Barrow in Alaska and Shepherd Bay, Northwest Territories, and special hydrographic survey areas, are shown on maps; tables summarize observations at 99 oceanographic stations, 46 Phleger cores and 85 grab samples, and Ekman current meter observations at 19 locations. Explanation of data is provided in the appendix. Depths in survey areas were shallow; observations were mostly made at 20 meters or less. (Arctic Biblio.)

United States Coast Guard. 1962. Oceanographic Cruise USCGS Northwind Bering and Chukchi Seas. U.S. Coast Guard Oceanographic Report No. 1. 125 p.

Contents: navigation; weather and ice conditions; cruise narrative and survey procedure; notes on the physical oceanography of the Chukchi sea; a preliminary report of the benthic animals collected on the USCGC Northwind cruise during 1962; notes on bottom sediments of the Chukchi Sea; bathymetry; reconnaissance magnetic survey of the Chukchi Sea shelf. (NTIS.)

Ushakov, P.V. 1926. K Faune Nemertin Belogo Moria. (The Nemertine Fauna of the White Sea.) Leningrad. Gosudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR. 3:47-71.

Description of 24 forms of these worms from the deep sea and coastal waters. Six of the forms are new species, one of the species also a new genus. Morphology and morphometry, external and internal anatomy, size, color, ecology, etc., are considered. (Arctic Biblio.)

Ushakov, P.V. 1928a. Floro-Faunisticheskie Gruppirovki Pribrezhnykh zon Novoi Zemli. (Floro-Faunistic Groups of the Coast Zone of Novaya Zemlya.) In: Vserossiiskii s"ezd Zoologov, Anatomov i Gistologiv, 3, Leningrad, 1927. Trudy, p. 383-385.

Contains a summary of results of the study of flora and fauna of the coastal waters of Novaya Zemlya, based on material from 64 dredging and 290 trawling stations established during 1923-27 by the Hydrological Institute. Characteristics of the faunistic groups and their geographic variations are given. (Arctic Biblio.)

Ushakov, P.V. 1928b. K Faune Nemertin Barentsova Moria. (Contributions to the Fauna of Nemerteans in the Barents Sea.) Nauchno-Issledovatel'skii Instit po Izucheniiu Severa. Trudy. 37:55-66.

Description of eleven (including one new) species of these flatworms taken 1921, 1924 and 1925 by the Northern Scientific and Economic Expedition, 1920-26, with data on their localities and distribution. Summary in English. (Arctic Biblio.)

Ushakov, P.V. 1931. Bentonicheskie Gruppirovki Matochkina Shara (Benthonic Groupings of Matochkin Shar.) Leningrad, Gosudarstvennyi Gidrologicheskii Institut. Issledovaniia Morei SSSR. 12:5-130.

A comprehensive study of the littoral, sublittoral and pseudoabyssal of this strait between the two islands of Novaya Zemlya. It is introduced (p. 5-40) with an outline of the scope of the investigation, earlier studies, topography of the area, nature of bottom, hydrological conditions of the strait, and meteorological observations. The biocoenoses of the three zones are described (p. 41-63), the sublittoral showing the quantitatively and qualitatively richest fauna. The seaweeds of the area, distribution of the benthonic forms and general character of the fauna are treated in turn. Tables are presented indicating, in detail, the distribution of the main animal groups over the area, by a list of dredging and trawling stations and the forms found at them. The study is based on field work conducted during 1923-1929. (Arctic Biblio.)

Ushakov, P.V. 1936. K Bentonicheskoi Faune Chukotskogo Moria. (On the Benthonic Fauna of Chukchi Sea.) In: Duplitskii, D.S. and G.E. Ratmanov (eds.). Nauchnye Raboty Ekspeditsii na Ledokole "Krasin" v 1935 Godu. 1936. p. 74-89.

A biological study of bottom fauna made during the expedition of the icebreaker Krasin, 1935, with lists of species found in bottom samples from different stations in the Chukshi Sea. (Arctic Biblio.)

Ushakov, P.V. 1937. Materialy po Gidroidam Arkiticheskikh Morei SSSR. (Materials on the Hydroids of the Arctic Seas of USSR.) Leningrad. Vesesoiuznyi Arkticheskii Institut. Trudy 50:5-34.

Lists, with descriptions, discussion and locations of sixty-two species based on collections made during the period 1921-30. Summary in English. (Arctic Biblio.)

Ushakov, P.V. 1940. O Novoi Gruppe Ologomernykh Chervei (Pogonophora) s Abissal'nykh Glubin Okhotskogo Moria i Poliarnogo Basseina. (On a New Group of Oligomere Worms, Pogonophora, from Abyssal Depths of the Okhotsk Sea and the Polar Basin.)

Deals with a group of deep-sea marine worms, one of which was described from the Okhotsk Sea by the author in 1933, under the name of Lamellisabella zachsi. The same species was found by G.P. Gorbunov, on a trip on the Sadko in 1935 in the Arctic Basin. This species was first referred to the group Polychaeta, but was transferred by K. Johansson in 1937 to a new group, Pogonophora. (Arctic Biblio.)

Ushakov, P.V. 1948a. K Nakhozdeniiu Cladocarpus formosus Allm. (Aglaopheniidae, Hydroida) v Kol'skom Zalive. (On the Occurrence of Cladocarpus formosus Allm. [Aglaopneiidae, Hydroida] in Kola Bay.) Akademiia Nauk SSSR. Murmanskaia Biologicheskaia Stantsiia, Dal'niye Zelentsy. Trudy. 1:286-287.

A find of this hydroid from the Kola Bay is reported. (Arctic Biblio.)

Ushakov, P.V. 1948b. Murmanskaia Biologicheskaia Stantsiia Akademii Nauk SSSR v Gube Dal'ne-Zelenetskoi i ee Pervye Nauchnye Roboty. (The Murman Biological Station of the Academy of Sciences USSR in Dal'ne-Zelenetsy Bay and its First Scientific Work.) Akademiia Nauk SSSR. Murmanskaia Biologicheskaia Stantsiia, Dal'niye Zelensky. Trudy. 1:10-32.

Contains account of the location of the station (69°07' N, 36°05'E) and description of its surroundings; its main purposes; principal buildings, research vessels, museum and library; account of its research activities during 1936-1938; short notes on the deep-water fauna in the vicinity of the new station followed by a list of over 600 species of animals found in this area. (Arctic Biblio.)

Ushakov, P.V. 1948c. O Dvukh Novykh Vidakh Scolelepis (Spionidae, Polychaeta) s Poberezh'ia Murmana. (On Two New Species of Scolelepis [Spionidae, Polychaeta] on the Shores of Murman.) Akademiia Nauk SSSR. Murmanskaia Biologicheskaia Stantsiia, Dal'niye Zelentsy, Trudy. 1:284-285.

Two new species of bristle-worms, Scolelepis derjugini n. sp. and Scolelepis murmanica Zachs, n. sp. are described. (Arctic Biblio.)

Ushakov, P.V. 1949. Osnovnye Cherty i Osobennosti Fauny Dal'nevostochnykh Morei. (Main Features and Peculiarities of the Fauna of the Far Eastern Seas.) In: Veseoiuznyi Geograficheskii s"ezd. 2d, Leningrad, 1947. Trudy. 3:193-201.

Based on Russian investigations by P. IU. Shmidt, Prof. K.N. Deriugin, and others, 1905-1945. Common biogeographical features of the Japan, Okhotsk and Bering Seas are discussed, as well as the faunal character of each sea individually. The difference of their fauna from that of arctic seas is noted. (Arctic Biblio.)

Ushakov, P.V. 1950. Abissal'naia Fauna Okhotskogo Moria. (The Deep-Water Fauna of the Okhotsk Sea.) Akademiia Nauk SSSR. Doklady. Nov. Seriia. 7(5):971-974.

Contains a systematic list of 35 species of marine organisms, inhabiting the Sea of Okhotsk at a depth of 3000 m or more, based on collections of Russian expeditions since 1932, and on data from the voyage of the U.S. Fisheries research vessel *Albatross* in 1906. Comparison is made with the deep-sea fauna of the northern Pacific Ocean. (Arctic Biblio.)

Ushakov, P.V. 1957. K Faune Mnogoshohetinkovykh Chervei (Polychaeta) Arktiki i Antarktiki. (The Polychaete Fauna of the Arctic and Antarctic.) Zoologicheskii Zhurnal 36(11):1659-1974.

Contains brief descriptions of worms collected during 1950-55 in the central Arctic Basin by the Russian drifting stations, North Pole 2-5. Three out of 16 benthal forms are new species; *Macellicephala longipalpa*, *M. polaris*, and *Melinnexis somovi*. The forms found suggest an Atlantic rather than Pacific origin. A new genus is described from the Antarctic material. (Arctic Biblio.)

Ushakov, P.V. 1958a. Faunisticheskie Issledovaniia Zoologicheskogo Instituta AN SSSR na Dal'nevostochnykh Moriakh. (Faunistic Studies in Far Eastern Seas by the Zoological Institute of the Academy of Sciences, USSR.) Akademiia Nauk SSSR. Okeanograficheskaia Komissiia. Trudy. 3:102-108.

Contains information on relevant activities of the Institute from its earliest times (18th century) to present. Its work (largely taxonomic) covering the major animal groups is described in detail, and the scientists performing it are indicated. Studies in populations and their distribution, publications, etc. are also discussed. (Arctic Biblio.)

Ushakov, P.V. 1958b. Investigations of the Bottom Fauna of the Far Eastern Seas of the USSR. *In*: Pacific Science Congress, 1957. Proceedings. 16:210-216.

Reports studies on the *Vitiaz* since 1949 by the Institute of Oceanology, Academy of Sciences, USSR. Vertical and horizontal distribution of fauna in the Japan, Bering, and Okhotsk Seas is discussed, also exchanges (mostly northward) of fauna between these seas. Faunistic boundaries between the Japan and Okhotsk Seas occur at La Perouse Strait, Catherine Strait, and the Amur Estuary; and between Bering and Chukchi Seas in the Bering Strait region. Some species penetrating these barriers are noted. (Arctic Biblio.)

Verrill, A.E. 1879a. Annelides. In: Kumlien, L., and Others. Contributions to the Natural History of Arctic America. U.S. National Museum. Bulletin. No. 15:141-143.

List of eleven species of worms with some notes, including location of specimens found on the Howgate Polar Expedition, 1877-78. (Arctic Biblio.)

Verrill, A.E. 1879b. Molluscoids. In: Kumlien, L. and Others. Contributions to the Natural History of Arctic America. U.S. National Museum. Bulletin. No. 15:147-150.

Annotated list of four species of tunicates and eight species of polyzoans, collected during the Howgate Polar Expedition to Cumberland Sound, 1877-78. (Arctic Biblio.)

Verrill, A.E. 1879c. Radiates. In: Kumlein, L. and Others. Contributions to the Natural History of Arctic America. U.S. National Museum. Bulletin. No. 15:151-153.

Annotated list of six species of echinoderms, three hydroids, two anthozoans, and mention of Porifera collected during the Howgate Polar Expedition to Cumberland Sound, 1877-78. (Arctic Biblio.)

Verrill, A.E. 1914. Monograph of the Shallow-Water Starfishes of the North Pacific Coast from the Arctic Ocean to California. Smithsonian Institute, Washington, D.C. V. I, 408 p; V. 2, 110 plates.

Contains description (in detail) of the habits, morphology and classification of forms, with a list of forty-three species from the arctic coast of Alaska, the coasts and islands of Bering Sea, south to the Aleutian Islands and Alaska Peninsula, and fifty species from southeastern Alaska. (Arctic Biblio.)

Verrill, A.E. 1922. Alcyonaria and Actinaria. Canadian Arctic Expedition, 1913-1918. Report. Vol. 8: Mollusks, Echinoderms, Coelenterates, etc. Pt. G. King's Printer, Ottawa, 164 p.

Lists, with descriptions, taxonomic revision, and distribution noted, of thirty-three (including five new) alcyonarian species (soft corals and sea pens) from the waters of Bering Strait, the arctic coast of Alaska and Canada, Hudson Bay and east coast of Canada; also twenty-seven (including five new) actiniarian species (sea anemones) from all coasts of Canada and Alaska. (Arctic Biblio.)

Vilks, G. 1964. Foraminiferal Study of East Bay, Mackenzie King Island, District of Franklin. Geological Survey of Canada, Ottawa. Paper 64-53:26.

Preliminary account of a study of forams from bottom sediment samples collected during the 1963 field season, East Bay, being considered to provide a representative available, inshore environment. Previous work, and the methods used to obtain and treat the 76 selected samples are described. Environmental conditions are considered as they affect the distribution of the 84,513 forams counted. Of the 48 species identified, 33 are arenaceous, 15 calcareous. The high ratio of arenaceous to calcareous species appears unrelated to bathymetry; but the cold environment with extended ice cover may produce conditions inhibiting calcareous forms. (Author).

Vilks, G., E.H. Anthony and W.T. Williams. 1970. Application of Association-analysis to Distribution Studies of Recent Foraminifera. Canadian Journal of Earth Sciences 7(6):1462-1469.

Foraminiferal species counts from 75 sediment samples from East Bay, Mackenzie King Island at 77°50'N 110°30'W, were converted to a matrix of presence-absence data. These were submitted to both normal and inverse association-analysis as a preliminary test of the application of the multivariate method to problems in marine ecology. Maps of stations and bathymetry are shown. Although the sampling pattern was not the most suitable for such analysis, the results indicate that the method might prove quite informative. (Arctic Biblio.)

Vinogradov, L.G. 1968. Kamchatskoe Stado Krabov. (Kamchatka's Crabs.) Priroda 57(7):43-50.

Considers conservation of crab in these waters. The location of the nursery is on the western shore of Shelekhov Bay, from where young crabs descend to 10-60 m depth for the first time at the age of 3 yr, and join the adults traveling north only at 7 yr. Drawings illustrate the developmental stages of the crab. Strict observance of fishing regulations is urged to restore the depleted reserves of crab in Kamchatka. (Arctic Biblio.)

Vinogradov, N.G. 1956. Zoogeograficheskoe Raionirovanie Abissali Mirovogo Okeana (Zoogeographical Subdivision of the Abyss of the World Ocean.) Akademiia Nauk SSSR. Doklady, III(I):195-198.

Attempt is made at geographic subdivision of the abyssal region (hitherto considered cosmopolitan and homogeneous) on the basis of distribution of Spongia, Coelenterata, Cirripedia, Isopoda, Pantopoda, and Echinodermata. The orders are mostly (85 percent) confined to a certain ocean. The going scheme presented includes the northern Pacific province (Okhotsk and Bering Seas) and the Arctic subprovince (Barents Sea, Svalbard Waters, Greenland Sea and Greenland Waters). The latter is connected with the Atlantic Ocean province: 32.5 percent of the Arctic deep-sea species are of Atlantic origin, but it is quite different from the northern Pacific province. (Arctic Biblio.)

** Wacasey, J.W. 1975a. Biological Productivity of the Southern Beaufort Sea: Zoobenthic Studies. Beaufort Sea Technical Report No. 12b. Beaufort Sea Project Office, Victoria. 39 p.

Results of a study of the zoobenthos of the southern Beaufort Sea continental shelf. 337 species of invertebrates were identified from 82 stations. The author believes the data (physical and biological) indicate the existence of four zones across the shelf. Includes station data and species list.

** Wacasey, J.W. 1975b. Zoobenthos of the Southern Beaufort Sea. In: Reed, J.C. and J.E. Slater (eds.). The Coast and Shelf of the Beaufort Sea. Symposium. San Francisco, California, Jan. 7-9, 1974. Arctic Institute of North America, Arlington, p. 697-704.

Biological results of 17 samples of five grabs each taken from inshore areas of the Beaufort Sea at depths of 3 to 94 m. The number of species, their density and biomass are given. Includes tables and maps.

Wagner, F.J.E. 1961. Faunal Report, Submarine Geology Program, Polar Continental Shelf Project, Isachsen, District of Franklin. Canada. Geological Survey. Paper 61-27. Queen's Printer, Ottawa.

Deals with recent organisms from the surface of the sea bottom at 15 of the 17 off-shore stations along the line 77°51.5' N, 115°36' W to 80° 04.5' N, 97°10' W, and northwest from Cape Isachsen of Ellef Ringnes Island to 80°42' N, 112°50' W. Foraminifera were the most important group, molluscs and ostracods next in abundance. Some forams have value as depth-indicator species for certain broad bathymetric zones, shelf, slope, etc. Some were also found to be zonally characteristic near ice island T-3; and others apparently serve as indicators only in this project area. The Atlantic or Pacific affinities of the Arctic fauna should be indicated as work continues for some conclusion regarding water circulation, ocean currents, etc. (Arctic Biblio.)

Wagner, F.J.E. 1964. Faunal Report, 2; Marine Geology Program, Polar Continental Shelf Project, Isachsen, District of Franklin. Dartmouth, N.S. Canada. Bedford Institute of Oceanography. Dartmouth, N.S. Report B.I.O. 64-1. Unpublished Manuscripts.

Lists and discusses the depth distribution and affinities of inverbrate faunas collected at traverses seaward 115 mi northwest of Ellef Ringnes and 95 mi northward of the tip of Borden Islands in 1962, by Geological Survey of Canada personnel connected with the Polar Continental Shelf Project. Of the 133 species recognized, 86 are foraminifera, 25 molluscans, 11 ostracods, and a few sponges, bryozoans, annelids, and echinoderms. (Arctic Biblio.)

Wagner, F.J.E. 1974. Benthonic Foraminifera and Mollusca in the Beaufort Sea. In: Report of Activities Part B. November 1973 to March 1974. Geol. Survey Can., Paper 74-1, Part B, p. 130.

Wahrberg, R. 1930. Sveriges Marina och Lacustra Isopoder. (Sweden's Marine and Lacustrine Isopoda.) Goteborgs Kungl. Vetenskaps - och Vitterhets-samhalle. Handlinger. 5 Foljden, Ser. B, Bd. 1, No. 9. Goteborg. 76 p.

Systematic description of isopods includes 25 species known in arctic regions from the Barents Sea to northern Canada. Cited depths of occurrance range to 200 meters. Several species are described as parasitic. (Arctic Biblio.)

Waren, A. 1973. Revision of the Rissoidae from the Norwegian North Atlantic Expedition 1876-78. Sarsia 53:1-13.

The present paper contains a revision of the species of Rissoidae which were collected by the Norwegian North Atlantic Expedition 1876-78. One new species, Alvania pseudosyngenes, is described. Types are selected of the species described by Friele. Further information, most often based on unpublished material in Scandinavian museums, on the variation, distribution, and taxonomy of these species, is given. The determination of some specimens is corrected. (Author.)

Weltner, W. 1900. Die Cirripedien der Arktis. Fauna Arctica 1:287-312.

Lists arctic cirripeds with locations.

Wesenberg-Lund, E. 1950. The Danish Ingolf Expedition. Vol. IV, Part 4. Polychaeta. Copenhagen. 92 p.

A systematic geographical treatment of the Polychaetes from the northwestern parts of the Atlantic Ocean, north of 60°N and west of 0° longitude.

Williams, M.W. 1940. A New Periploma from Alaska. Journal of Entomology and Zoology 32:37-40.

Description of Periploma alaskana, n. sp., a clam from Chukchi Sea and from Prince William Sound. (Arctic Biblio.)

Wilson, M.S. 1965. North American Harpacticoid Copepods. A New Species of Stenhelia from Nuwuk Lake on the Arctic Coast of Alaska. Biological Society of Washington. Proceedings. 78(22):179-188.

Description, with illustrations, of Stenhelia nuwukensis sp. n., a marine-brackish water harpacticoid found in Nuwuk Lake, arctic Alaska.

Zarenkov, N.A. 1960. Materialy po Sravnitel'noi Ekologii Desiatinogikh Rakoobraznykh Dal'nevostochnykh Morei. (Materials for the Comparative Ecology of Decapod Crustaceans of the Far Eastern Seas.) Zoologicheskii Zhurnal 39 (2):188-199.

Study of distribution by depth of 16 forms, and by temperature of 12 forms, in the Chukchi, Bering, Okhotsk and Japan Seas. The ranges of distribution by depth and by temperature are formulated for most species. The degree of range variability by depth and by temperature was found to be different in different species. (Arctic Biblio.)

Zarenkov, N.A. 1965. Geographic Distribution of Shrimps of the Family Crangonidae in Relation to the Origin of the Antarctic Genus *Notocrangon*. Oceanology, Academy of Sciences, USSR. 5(1). English ed. published Feb. 1966, p. 112-118.

Presents recent data on the distribution of these shrimps and discusses the possible conclusions regarding the evolution of the members of this family.

Zatsepin, V.I. and Rittikh, L.A. 1968. Quantitative Distribution of Bottom Fauna and its various Ecological Groups in the Murmansk Coastal Area of the Barents Sea. Mokoskogo Obshchestva Isptatelei Prirody. Trudy. 30:49-82.

Zenkevich, L.A. 1935. Nekotorye Nabliudeniia po Obrastaniiu v Ekaterinenskoi Bukhte, Kol'skiy Zaliv. (Some Observations on Fouling in Ekaterininskaya Bay, Kola Bay.) Moskovskoe Obshchestvo Ispytatelei Prirody. Biulleten'. Otdel Biol. Novaia Seriia. 44(3):103-112.

Contains the results of investigations carried out by the author in Kola Bay, Barents Sea, on hard substrata in fresh and sea water "fouled" with molluscan encrustations; data are given on the rate of growth of *Balanus balanoides*, *Mytilus edulis* and Hydroidea (number of specimens, weight in grams, total weight of the encrustation, etc.) for every month. (Arctic Biblio.)

Zenkevich, L.A. 1937. Uspekhi Izucheniia Morskoi Fauny SSSR za 20 Let. (The Results of the Study of Marine Fauna of the USSR for Twenty Years.) Zoologicheskii Zhurnal 16(5):830-870.

Contains data on the progress of this study during 1917-37, and on many expeditions in the arctic seas and their achievements; bibliography (about 200 items). (Arctic Biblio.)

Zenkevich, L.A. 1947. Fauna i Biologicheskaia Produktivnost' Moriia. Moria SSSR. Tom 2. (The Fauna and Biological Productivity of the Sea. Seas of USSR, Vol. 2.) Sovetskaia Nauka, Leningrad. 587 p.

An extensive monograph, based on 25 years work on Russian seas by the author and his students. The first part is devoted to the arctic seas: General characteristics (p. 11-14); Barents Sea (p. 45-138); White Sea (p. 139-66); Kara Sea (p. 167-89); Laptev Sea (p. 190-94); and Chukchi Sea (p. 195-99). For each sea is given its general characteristics, history of its exploration; physico-geographical hydrological, hydrochemical and geological characteristics, flora and fauna (plankton: composition, distribution, migration, food value, etc.; benthos: kinds, composition, distribution, biomass, etc.; the fish fauna: general composition; commercial fishes, their growth, food, migrations, etc.; fisheries); zoogeography. At the end (p. 519-38) is a bibliography for all parts of the volume (over 1000 items), also (p. 562-83) an index of species, as well as the usual subject-geographic and author indexes. Vol. 1 of this work has not been located, its scope is indicated (V. 2, p. 8) as: general oceanography, marine biology, ecology and zoogeography in genera. (Arctic Biblio.)

Zenkevich, L.A. 1948a. Biologicheskaia Struktura Okeana. (Biological Structure of the Ocean.) Zoologicheskii Zhurnal 27(2):113-124.

Contains the results of a general study of the organic life of oceans and horizontal and vertical fluctuations of the marine fauna, with statistical data on quantitative distribution of algae and benthos in various seas including all arctic seas of the USSR and some other extra-Russian Seas. (Arctic Biblio.)

Zenkevich, L.A. 1948b. Russkie Issledovateli Fauny Morei. (Russian Investigations of Marine Fauna.) Akademiia Nauk SSSR. Institut Istorii Estestvoznaniia. Trudy. 2:170-196.

Contains a historical review of this work, with emphasis on the achievements during the Soviet regime; includes data on expeditions for the study of the fauna of northern seas (Barents, White and Kara Seas) p. 179-83, and the seas of the Far East (Okhotsk and Bering Seas); bibliography (129 items). (Arctic Biblio.)

Zenkevich, L.A. 1958a. Glubokovodnye Ekhiuridy iz Severo-Zapadnoi Chasti Tikhogo Okeana. (Deep-sea Echiurids from the Northwestern Part of the Pacific Ocean.) Akademiia Nauk SSSR. Institut Okeanologii, Trudy. 27:192-203.

Description of nine species of these worms, seven of them new. Five of the latter form three new genera: *Jacobia*, *Vitiazema* and *Alomasoma*. Location and depth of find are noted as well as nature of substrate, etc. The material was collected during cruises of *Vitiaz'* in the Bering and Okhotsk Seas. (Arctic Biblio.)

Zenkevich, L.A. 1958b. Obshchaia Kratkaia Kharakteristica Kachestvennogo Sostava i Kolichestvennogo Raspredeleniia Donnoi Fauny Dal'nevostochnykh Morei SSSR i Severozapadnoi Chasti Tikhogo Okeana. (A Brief General Description of

the Bottom Fauna in the Far Eastern Seas of the USSR and the Northwestern Part of the Pacific Ocean.) Akademiia Nauk SSSR. Institut Okeanologii. Trudy. 27:154-160.

Authors draw attention to the diminution in quantity of the benthos from ±1000 g./m.^{2} on the continental shelf to 10 g. on bottoms 1000-2000 m deep and to a fraction of gram on the abyssal. Qualitative distribution is found to depend on the distance from the coast, degree of isolation from the ocean and on vertical zonation. More common benthic forms of the area are discussed. (Arctic Biblio.)

Zenkevich, L.A. 1963. Biology of the Seas of the USSR. (Biologiia Morei SSSR.) Bocharskaia, S. (trans.). 1963. Interscience Pub., New York, 955 p. (Translation of Moskva, Izd-vo Akademiia Nauk SSSR. 1963. 738 p.)

Encyclopedic study by the Nestor of Russian marine biology. Introduction treats the area and other parameters of the 14 Russian (including the Caspian and Aral) seas, their geographic location, orography, geology, and water balance; also research, research institutions, and main serial publications. Pt. 1 (p. 17-210) deals with the arctic seas,their hydrology, fauna and flora including plankton and benthos. This general description is followed by detailed accounts for the six seas, from the Barents eastward to the Chukchi. Each is treated as to general characteristics, exploration and research, physical and geographic traits, flora and fauna, especially plankton, benthos and fishes. Pt. 4 covers the seas of the Far East, including the Okhotsk and the Bering (p. 601-646). Appendix is an extensive literature list, indexes of persons, Latin names and subjects. (Arctic Biblio.)

Zenkevich, L.A. and V.A. Brotskaia. 1937. Materialy po Ekologii Rukovodiashchikh from bentosa Barentsova Moria. (Some Data on the Ecology of Dominants in the Benthos of the Barents Sea.) Moskva. Universitet. Uchenye Zapiski. 13, Zoologiia: 203-226.

Contains data on the evaluations of bottom complexes of marine fauna of Barents Sea with the aid of diagrams and density curves of the benthos population; the influence of certain factors on benthos distribution and the method proposed by the author for their evaluation is discussed. This study is based on collections of the State Oceanographic Institute, 1924-33. Summary in English. (Arctic Biblio.)

Zimmer, C. 1900. Die Arktischen Cumaceen. Fauna Arctica 1:409-444.

Lists and has a key for arctic cumaceans with locations.

Znamemskii, Iu. P. Morskie Bespozvonochnye i ikh Ispol'zovanie. (Marine Invertebrates and their Uses.) Priroda 9:55-60.

Attempt is made at a rough estimate of the marine invertebrates of the various Russian seas, and possibilities of utilizing commercial molluscs, crustaceans, and echinoderms. The importance of such crustaceans as the Kamchatka crab, *Pandalus borealis*, *Sclerocrangon boreus* and edible molluscs (*Mytilus edulis*, *Machaera costata*, *Haliotis gontschatcara*, etc.) is stressed. The study is arranged by the seas, and includes the northern waters of the USSR, Okhotsk, and Bering Seas. (Arctic Biblio.)

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