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Report on Canadian participation in NORWESTLANT 2
May-June, 1963

Two Canadian ships CSS "Baffin" and CNAV "Sackville" participated in the NORWESTLANT-2 survey from May 21-June 16, 1963. The "Baffin", being an ice strengthened vessel, worked the northern region of the Labrador Sea and Davis Strait, while "Sackville" occupied the stations in the Central Labrador Sea in conjunction with oceanographic sections of Canadian interest, Fig. 1.

Concurrent with these surveys, Canada and the United States agreed to a joint survey of the Labrador and Baffin Coasts during the period these regions were ice covered. The United States Navy provided the USS "Atka" and agreed to occupy ICNAF stations located within the ice limits. The "Atka" was able to occupy all the stations on the Labrador Coast, but was unfortunately damaged by ice off Baffin Island and forced to abandon further work.

The chemical and physical data from all three ships were processed and made available to ICNAF by the Canadian Oceanographic Data Centre. Special thanks are owed to the U. S. Naval Oceanographic Office for their assistance in providing the "Atka" and making the data available to ICNAF.

The analyses of the biological data were undertaken by the Fisheries Research Board's Biological Station, St. John's, Newfoundland, and the Arctic Unit, Montreal.

Reports covering Canadian participation are the following:

- 1) Wells, R. Egg and larval collections by CGS Baffin and CNAV Sackville off West Greenland 1963 (NORWESTLANT II)
ICNAF 1964 Meeting Document No. 53
- 2) Campbell, N. J., J. R. N. Lazier, and R. H. Loucks. Preliminary Assessment of physical oceanography of Labrador Sea during NORWESTLANT-2, 1963.
ICNAF 1964 Meeting Document No. 54
- 3) Platford, R. F. Preliminary report on Canadian program on chemical oceanography during NORWESTLANT-2, 1963.
ICNAF 1964 Meeting Document No. 55
- 4) Bursa, Adam S. Preliminary observations on ICNAF NORWESTLANT 2. Canadian phytoplankton collections.
ICNAF 1964 Meeting Document No. 63
- 5) Grainger, E. H. Preliminary statement on ICNAF NORWESTLANT 2. Canadian zooplankton collections.
ICNAF 1964 Meeting Document No. 64

Cruise Summaries

Cruise summaries of the survey work carried out by CSS "Baffin" and CNAV "Sackville" were prepared and distributed to the ICNAF participants on completion of the survey. Provisional cross-sectional drawings of the physical and chemical results were prepared for the Madrid meeting of the NORWESTLANT coordinating committee (7 October 1963), but the drawings have now been updated as

recommended by Grasshoff and Platford. These are incorporated in the pertinent reports listed above.

GEBCO

The GEBCO sheets were prepared by the Canadian Hydrographic Service from the track soundings of CSS "Baffin" and CNAV "Sackville" and submitted to Mr. A. J. Lee. "Baffin" was equipped with an Alden Precision Graphic Recorder and an Edo recorder and transducer. "Sackville" was equipped with a Westrex Precision Depth Recorder, and an Edo recorder and transducer.

Oceanographic Data Processing

All countries have submitted their physical and chemical oceanographic data to the Canadian Oceanographic Data Centre for processing and listing. Provisional copies of all data were distributed in April, 1964. Changes or corrections received by CODC will be allowed to accumulate until June 1, 1964 at which time revisions will be prepared and distributed to the participants. The data listings and distributions are summarized as follows:

ICNAF NORWESTLANT 1-3

<u>CANADA</u>	Sackville	CODC Ref: 1801-63-004
	Baffin	CODC Ref: 1801-63-003
<u>DENMARK</u>	Dana	CODC Ref: 2601-63-002
	Dana	CODC Ref: 2601-63-003
<u>FRANCE</u>	Thalassa	CODC Ref: 3501-63-001
<u>ICELAND</u>	Aegir	CODC Ref: 4601-63-002
<u>NORWAY</u>	G. O. Sars	CODC Ref: 5801-63-001
<u>UNITED KINGDOM</u>	Ernest Holt	CODC Ref: 7401-63-003
	Ernest Holt	CODC Ref: 7401-63-005
	Explorer	CODC Ref: 7402-63-001
<u>U. S. S. R.</u>	Ac. Knipovich	CODC Ref: 9001-63-001
	Topseda	CODC Ref: 9001-63-002
	Ac. Knipovich	CODC Ref: 9001-63-003
<u>WEST GERMANY</u>	Anton Dohrn	CODC Ref: 0601-63-069

ICNAF Support

<u>U. S. A.</u>	USS. Atka	CODC Ref: 18US-63-001
	USCGC Evergreen	CODC Ref: 31WB-63-001

Ocean Weather Stations
(Alpha)

<u>FRANCE</u>	France I	CODC Ref: 3502-63-001
	France I/II	Sea surface observations
<u>NORWAY</u>	Polar Front I/II	CODC Ref: 5802-63-001
<u>UNITED KINGDOM</u>	Weather Monitor	CODC Ref: 7401-63-016
	Weather Advisor	CODC Ref: 7401-63-022

Distribution

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Program and Methods

The methods and analyses employed are briefly summarized in this report and attached Tables I and II. References to the specific techniques employed on the survey and in the laboratory are contained in the meeting documents supporting this report.

Biology (see 1964 ICNAF Meeting Documents #53, 63 and 64)

Four types of observations were made:

- 1) Phytoplankton samples were drawn from the 10 m bottle at every station.
- 2) One vertical haul was made from 100 m at each station with a standard Hensen net.
- 3) Oblique hauls were made with either the Icelandic High Speed Sampler or a two metre Stramin net.

Chemical Analyses (see 1964 Meeting Document No. 55)

Samples at depth were obtained with Knudsen reversing water bottles, the insides of which were Teflon coated. When drawing water from the reversing bottles, an oxygen sample was taken first. It was drawn into a calibrated 50 ml glass stoppered flask of German manufacture (Otto Hamp. 34 Haspitalstrasse, Kiel, West Germany). Secondly, a pH sample was drawn into a 2 oz wide mouth polyethylene bottle and sealed with a screw cap. Thirdly, a sample for salinity determinations was drawn into an 8 oz medicine bottle and sealed with a poly-cone lined screw cap. A reference salinity from each station was taken at random depths and stored. Finally, the remainder of the water sample was drained into a one litre polyethylene bottle. This water was then filtered through a millipore filter of 1.5 micron porosity and appropriate aliquots used for the chemical nutrient determinations. Dissolved oxygen was determined by a modified Winkler method using calibrated 50 ml glass stoppered bottles. Reagent concentrations:

- 1) 40 g manganous chloride per 100 ml distilled water.
- 2) 30 g potassium hydroxide plus 60 g potassium iodide per 100 ml distilled water.
- 3) 50 volume per cent sulphuric acid. Standardization according to Strickland and Parsons (1960).

pH was determined using a Radiometer Model 4 pH meter with a reproducibility of ± 0.01 pH units, method according to Strickland and Parsons (1960).

Phosphate was determined by the modified single solution method of Murphy and Riley. Analysis was completed within four hours of collection using a Beckman DU spectrophotometer equipped with 10 cm cells.

Silicate was determined by a method proposed by Dr. Grasshoff of Kiel University which is described briefly: two filtered samples of 50 ml each were pipetted into 100 ml plastic bottles containing 1 ml of mono-chloroacetic acid each. One ml of a solution containing 121 g sodium molybdate dihydrate per liter of silica-free water was added to 50 ml of filtered seawater. The intensity of the yellow colour was measured after 2 hours on a Beckman DU spectrophotometer against filtered seawater at 390 millimicrons.

Nitrate and nitrite were determined by the methods described by Strickland and Parsons (1960). Because of the rather long time required for the nitrate analyses (about 24 hours), it was not possible to carry them out at every station. Instead they were determined at selected stations in deep water and on the Greenland shelf for each station.

Alkalinity determinations were made according to the method described by Strickland and Parsons (1960). The results are not included in this report but can be obtained from the Bedford Institute of Oceanography.

Physical Oceanography (see 1964 ICNAF Meeting Document No. 54)

83 bathythermographs were collected by CSS "Baffin" and 25 by CNAF "Sackville". BT's from both ships were processed at the Bathythermograph Data Centre, Bedford Institute of Oceanography.

Subsidiary Programs

The extensive coverage of the Labrador Sea and Davis Strait regions by "Baffin" and "Sackville" provided an opportunity for some of the scientists to carry out other scientific investigations. The results of these programs will be published elsewhere by the individuals concerned.

Continuous recording of the earth's magnetic anomaly was made wherever practical. On some occasions the magnetometer could not be towed continuously as it conflicted with the collection of other data, or ice conditions prevented its use. Despite these interruptions some 4,000 miles of magnetic profiles were obtained by "Baffin".

Biologists from the Institute of Oceanography at Dalhousie University undertook a study of the energy relationship of zooplankton. A new technique for estimating zooplankton abundance based on an assay for succinic acid dehydrogenase was tested and found to give encouraging results.

Samples for fluoride determinations were taken at selected positions and depths as requested by Dr. J. R. Riley of the University of Liverpool, England.

Samples for boron determinations were collected at every station from the bottom bottle for Dr. A. A. Mills, Dalhousie University, Halifax, N. S.

Positional and Meteorological Observations

Position measurements were made by the ship's officer on watch. Specially seconded meteorological observers assisted the ship's officers for meteorological observations and interpretation of the facsimile weather and ice broadcasts.

Summary Tables

Table I is a summary of chemical analyses, while Table II lists the observational program carried out by "Baffin" and "Sackville" in the survey.

Table I. Methods used in obtaining Canadian results during NORWESTLANT 2, 1963.

	Sampling bottle	Filter	Standing time before analysis	Method	Photometer cell length	Average blank	Standard
S ^o /oo		-	"Sackville": several months "Baffin": immediately	Conductivity: NIO Salinometer for "Sackville". Hytech Salinometer for "Baffin"	-	-	Copenhagen water
Temp.		-	-	Reversing Thermometer	-	-	-
O ₂		-	< 30 min.	Winkler	-	0	Bi-iodate 0.01N
PO ₄		Millipore 1.5 μ pore size	< 1 hour	Murphy & Riley	Beckman DU 10 cm	0.017	Supplied by UK
SiO ₃		Millipore 1.5 μ pore size	< 1 hour	Grasshoff	DU 10 cm	0.005	Supplied by UK
NO ₃		Millipore 1.5 μ	About 2 hours	Strickland's Manual	DU 1 cm	0.018	KNO ₃
NO ₂		Millipore 1.5 μ	< 1 hour	Strickland's Manual	DU 10 cm	0.016	NaNO ₂
pH		-	About 1 hour	Strickland's Manual			Borate Buffer Phosphate Buffer
Alkalinity		Millipore 1.5 μ		Strickland's Manual Grasshoff's Tables			Potassium Acid Phthalate Buffer BDH std. HCL

KNUDSEN TYPE BOTTLES
TEFLON COATED INTERNALLY

Table II. Observational program of Canadian ships in NORWESTLANT 2 and explanation of terms.

Time:	GMT
Date:	Day of Station
Position:	Latitude and Longitude
Oc. Stn.:	Oceanographic station number in chronological order
BT:	Bathythermograph number or biological station in chronological order.
Sal:	Salinity samples drawn at all standard depths
O ₂ :	Oxygen samples drawn and analyzed
PO ₄ :	Phosphate samples drawn and analyzed
SiO ₃ :	Silicate samples drawn and analyzed
NO ₃ :	Nitrate samples drawn and analyzed
NO ₂ :	Nitrite samples drawn and analyzed
pH:	pH samples drawn and analyzed
Alk:	Alkalinity samples drawn and analyzed
Boron:	Boron samples drawn for the Institute of Oceanography, Dalhousie University
Fluoride:	Fluoride samples drawn for Dr. J. Riley, Liverpool University, England
Rd. Salinity:	Held in reserve for future checking
10 m Phyto:	Samples drawn for Dr. M. Gillbricht
Van Dohrn:	Biological Program, Dr. C. Boyd, Institute of Oceanography, Dalhousie University
0-50 phyto:	Phytoplankton samples drawn for Fisheries Research Board, Arctic Unit, Montreal 18, Quebec, Dr. E. H. Grainger
C-14:	Institute of Oceanography, Dalhousie University, Dr. C. Boyd
Tandem:	Tandem net hauls (100 m) Institute of Oceanography, Dalhousie University, Dr. C. Boyd
Resp.:	Respiratory studies, Institute of Oceanography, Dalhousie University
Hensen:	Hensen net hauls from 100 m
Stram:	Stramin tows
Iceland:	Icelandic tows
Depth:	Depth of water

C.S.S. "Barfin"
Program

Norvestiant-2.

Time	Date	Position	Occ. Stn.	BF.	Temp.	Sal	O/oo	O ₂	PO ₄	NO ₃	NO ₂	pH	Alk	Boron	Fluoride	Rd.	Sal.	LOM	Phyto	Van	O-50	Phyto	Chloro	C-14	Tandem	Dehyd	Resp.	Bensen	Stram	Iceland	Depth (m)
2132	23/5	4826.3	5229.2	1	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	203
2208	26/5	5727.0	5850.3	2	3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1701
2055	26/5	5813.5	5704.0	3	4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3160
0529	27/5	5847.0	5508.0	4	5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3224
1418	27/5	5925.0	5309.2	5	6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3320
0002	28/5	6000.0	5115.0	6	7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3284
0537	28/5	6029.0	5024.8	7	8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3036
1029	28/5	6025.0	4950.0	8	9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2852
1427	28/5	6050.2	4923.5	9	10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	825
1801	28/5	6049.0	4834.5	10	11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	105
0627	29/5	6157.0	5002.0	11	12	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	84
0902	29/5	6150.9	5036.5	12	13	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	248
1219	29/5	6145.8	5110.0	13	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2630
1648	29/5	6140.5	5145.0	14	15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2870
2127	29/5	6135.0	5230.0	15	16	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2953
0154	30/5	6126.0	5330.2	16	17	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2939
0858	30/5	6108	5531.0	17	18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2823
1555	30/5	6048	5730.0	18	19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2835
0001	31/5	6026.0	5920.0	19	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2317
0510	31/5	6012.0	6031.5	20	21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1360
2143	31/5	6310.0	6013.0	21	22	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1207
0355	1/6	6311.0	5813.0	22	23	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1720
0859	1/6	6311.5	5719.5	23	24	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2023
1345	1/6	6320.0	5607.0	24	25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1854
1807	1/6	6337.2	5523.0	25	26	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1900

ICBAF Program

G.S.S. "Buffins"

Nonresident-2

Site	Date	Position	Co. Sta.	HT.	Temp.	Sal. ‰/cc	O ₂	PO ₂	SI ₀₃	PO ₃	MI	ALK	Baron	Fluoride	SD.	Sal.	LM Parts	Yen Parts	0-50 Parts	Chlors.	0-11	Fundus	Dehyd	Resp.	Kanem	Ikawa	Isolana	Parva (ml)
2219	1/6	6348.3	5433.0	26	27	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	d	R	X	X	X	1115
0132	2/6	6354.2	5353.5	27	28	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	d	X	X	X	X	1206
0602	2/6	6359.3	5321.9	28	29	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	d	R	X	X	X	970
0906	2/6	6402.2	5306.0	29	30	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	229	
1159	2/6	6405.3	5246.8	30	31	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	d	R	X	X	X	225	
1629	2/6	6359.5	5222.0	31	32	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	d	R	X	X	X	62	
0607	3/6	6241.0	5143.0	33																								
0942	3/6	6244.0	5229.2	34																								250
1350	3/6	6246.8	5311.0	35																								2348
1715	3/6	6258.2	5243.3	36																								1914
2255	3/6	6308.0	5217.0	37																								1765
0155	4/6	6327.9	5150.0	38																								71
																												207
0939	4/6	6352.8	5322.2	39																								
1245	4/6	6354.2	5353.9	40																								580
2023	6/6	6434.2	5258.0	41																								1100
2338	6/6	6440.0	5355.0	42																								521
0244	7/6	6445.0	5447.9	43																								140
0600	7/6	6452.0	5540.0	44																								274
1114	7/6	6505.5	5745.0	33	45	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	d	R	X	X	852	
1540	7/6	6506.0	5630.0	34	46	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	d	R	X	X	665	
1932	7/6	6506.0	5610.0	34	47	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	d	R	X	X	7075	
2252	7/6	6506.0	5455.0	36	48	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	d	R	X	X	769	
0140	8/6	6506.0	5424.0	37	49	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	d	R	X	X	416	
0440	8/6	6506.0	5357.0	38	50	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	d	R	X	X	105	
																												85

ICNAF
Program

C.G.S. "Daffin"

Horsetent-2

Time	Date	Position	Co. Sta.	BT.	Temp.	Sal. 0/00	O ₂	PO ₄	SiO ₃	NO ₃	NO ₂	pH	Alk	Boron	Fluoride	Ed. Sal.	100 Fyts	Van Darm	C-50 Fyts	Chloro.	C-1A	Tandem	Dehyd	Resp.	Busan	Stras	Inclined	Depth (m)
0745	11/6	6757.8	49	75	X	X	X										X					X	d	R	X	X		113
0815	11/6	6753.8	50	76	X	X	X										X	X	X	X		X	d		X	X		63
1221	11/6	6750.9	51	77	X	X	X										X					X	d	R	X	X		40
		5553.0		78																								98
		5524.0		79																								227
				80																								2788
				81																								3300
				82																								
				83																								
				84																								
				85																								
				86																								
				87																								
				88																								
				89																								

CGAV "Seaville"

ICWAP

Norwestlant-2

Program

Time	Date	Position	Co. Stn.	BT	Temp.	Salp/oo	O ₂	PO ₄	SiO ₂	NO ₃	NO ₂	PH	Alk	Boron	Fluoride	Rd. Sal.	ICM Pkts	Van Bohrn	0-50 Pkts	Chloro	C-111	Tanden	Dehyd Resp	100 Y Hason	Stram	Iseland	Depth
1159	26/5	5100	4400	1	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	4390
2319	26/5	5224	4400	2	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	4020
0032	27/5	5348	4400	3	3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3300
1738	27/5	5511.5	4400	4	4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3300
0240	28/5	5636	4400	5	5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3300
1210	28/5	5800	4400	6	6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2750
1602	28/5	5821.5	4357	7	7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2000
2034	28/5	5845	4402.5	8	8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1500
0134	29/5	5830	4300	9	9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2600
0850	31/5	5750.5	4054.0	10	10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2300
1152	1/6	5612	4535	11	11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3300
1900	1/6	5546	4711	12	12	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3350
0156	2/6	5524.5	4845	13	13	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3660
1000	2/6	5459	5018.5	14	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3470
1725	2/6	5431.5	5155	15	15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2200
2212	2/6	5416	5255	16	16	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	238
1716	8/6	5906	4542	17	17	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2600
2105	11/6	5231	5039	18	18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2010
0529	12/6	5251	4900	19	19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3660
1322	12/6	5310	4721	20	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	4000
2107	12/6	5328.5	4540	21	21	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	4000
1458	13/6	5049	4549	22	22	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3840
2315	14/6	5037	4736	23	23	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2743
0729	14/6	5025	4924	24	24	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1643
1313	14/6	5013	5112	25	25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	274

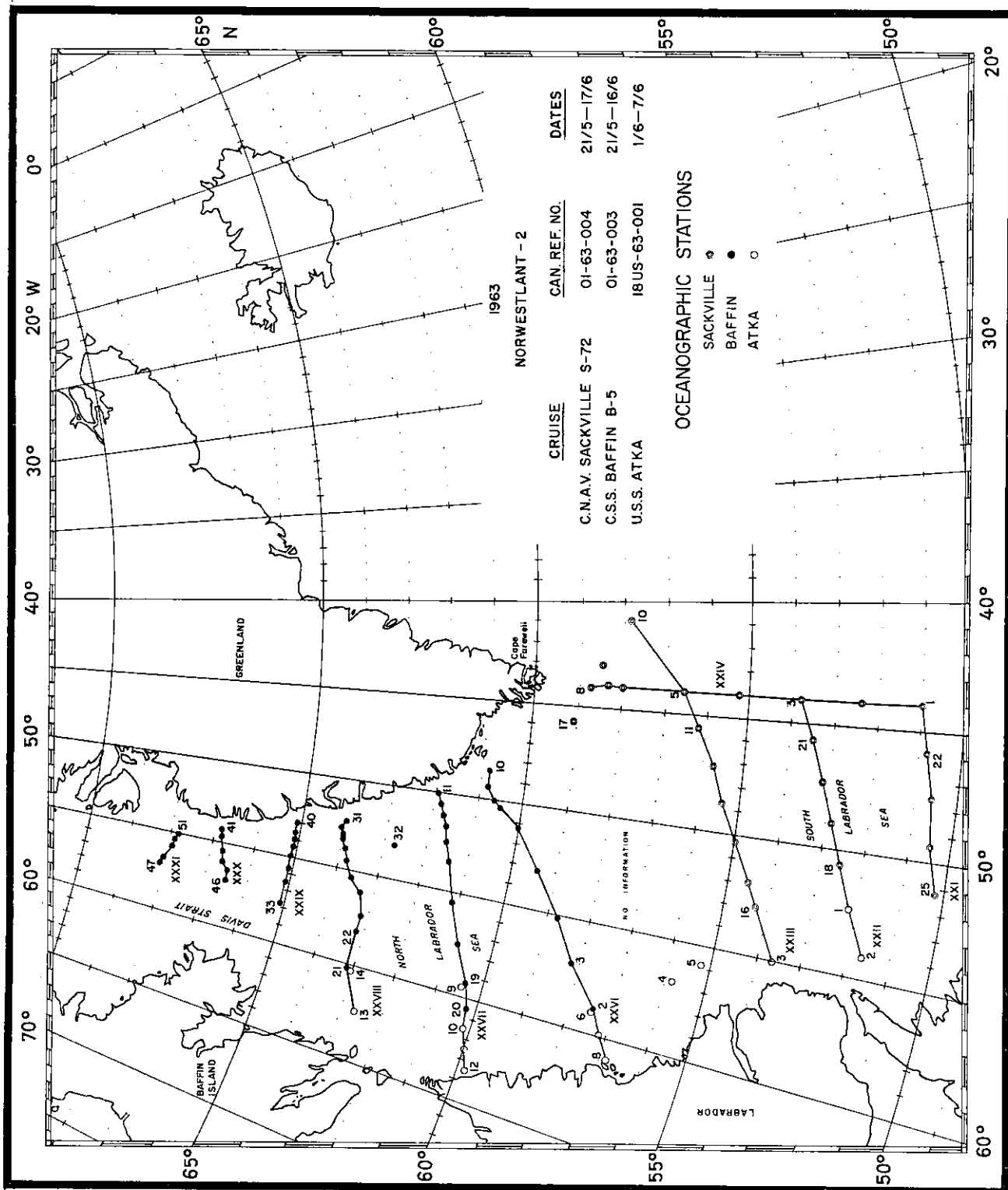


Figure 1