Serial No. 1316 Document No. 21

ANNUAL MEETING JUNE 1964

Preliminary Danish Biological Report on ICNAF NORWESTLANT 2 and 3

by
Erik Smidt

From the Danish research vessel "Dana" following plankton collections were made according to the standardized methods: 170 sedimentation samples (sent to Dr. M. Gillbricht, Helgoland), 149 chlorophyll samples (treated in Charlottenlund), 139 Hensen net samples (sent to Mr. J.H. Steele, Aberdeen, and to Mr. J.P.L. Matthews, Edinburgh), 184 2 m stramin net samples (treatment not finished) and 21 samples with the Icelandic high speed sampler, IHSS (for comparison with the stramin net samples).

Off SE Greenland angling for redfish was made on 10 stations at depths between 90 and 300 m.

On Map 1 are shown the NORWESTLANT 2 stations (May 20th to June 14th), and on Map 2 the NORWESTLANT 3 stations (June 30th to July 16th). Signatures of maps: Hy = hydrography, BT = bathythermograph, He = Hensen net samples, S 200 = 2 m stramin net samples.

Besides the ICNAF Section VI (Stations 12064 - 12075, July 30th to August 4th) was taken from Cape Farewell in SE direction from 59°15'N. 43°16'W. to 53°25'N. 34°00'W. (not shown on map).

Stramin net samples.

It has only been possible to treat 53 stramin net samples till now, and the treatment of all 184 samples taken can hardly be finished before the end of 1964. 71 of the samples were taken on NORWESTLANT 2 (incl. 15 taken in the inner part of the Godthåb Fjord for comparison with IHSS), and 113 on NORWESTLANT 3. On 6 NORWESTLANT 3 stations continuous S 200 hauls and stratified S 200 hauls (such as taken by "Dana" in previous years) were taken for comparison.

The analyses of the stramin net samples follow the lines laid by Mr. Vagn Hansen. The following organisms have been sorted out (those to which priority was given in Madrid 1963 are underlined):

1) Radiolaria.
2) Medusae: Aglantha, Halopsis, Periphylla, other medusae.
3) Ctenophora: Beroe, Mertensia.

4) Siphonophora: Physophora, Dimophyes.
5) Chaetognatha: Eukrohnia hamata, Sagitta elegans, S.maxima, S.sp.
6) Polychaeta: Tomopteris, other polychaeta.
7) Mollusca: Spiratella retroversa, S.helicina, Clione limacina, other pterophods, chephalopoda (mainly Gonatus fabricii).
8) Appendiculata.
9) Crustacea: Calanus hyperboreus (cop. Stage III, IV, V, Stage VI), C.finmarchicus + glacialis (cop. Stage III, IV, V, Stage VI), Pareuchaeta sp., Heterorhabdus sp., Metridia longa, Rhincalanus nasatus, Eucalanus elongatus, copepod.sp. - Caligus. - Gammaridae. - Hyperidae. - Thysanoessa longicaudata, T.raschii, T.inermis, Meganyctiphanes norvegica, euphausid.sp. - Decapod larvae (prawns, crabs, anomurans).
10) Fish eggs: Gadus morhua, Hippoglossoides platessoides.
11) Fish larvae: Gadus morhua, Sebastes, Anarrhichas sp., Reinhardtius hippoglossoides, Hippoglossoides platessoides, other species.

Cod and redfish larvae.

Fish larvae were sorted out onboard the vessel during the cruises, but as still some larvae are found in the samples being worked up in Charlottenlund the final numbers of cod and redfish larvae cannot be given here. On the Maps 2, 3, 5 and 6 are given the preliminary figures per stramin net haul (about 2o minutes hauling). The results of length measurements are shown in Table 1 and 2.

Comparison between 2 m stramin net and Icelandic high speed sampler.

In the inner part of Godthåb Fjord a number of hauls were made on the same locality with stramin net (1o hauls) and IHSS (17 hauls) from June 2oth to 22nd. In Table 3 is shown material, which has been sorted out from the samples macroscopically, but besides the IHSS contained a great number of very small organisms, which could only be distinguished microscopically. It is seen that there is a considerable variation in the proportions of figures between the two gears, so that hardly anything general in comparison can be said. But as very few fish larvae have been taken with the IHSS this gear can be regarded as unsuitable in the West Greenland area.

Angling for redfish.

By means of Norwegian fishing wheels ("Möre snelle") redfish were fished between 9o and 3oo m depths with the best catches between 9o

and 13o m. Details about the fishery are given in Table 4.

Table 1. Length of cod larvae in mm.

mm	NORWESTLANT 2 St.11891-11962 May 21 - June 21	NORWESTLANT 3 St.11975-12o46 July 2 - July 15
15		1
14		4
13		7
12		18
11		23
1o		21
9	1	26
8	4	11
7	16	4
6	24	5
5	16	1

Table 2. Length of redfish larvae in mm.

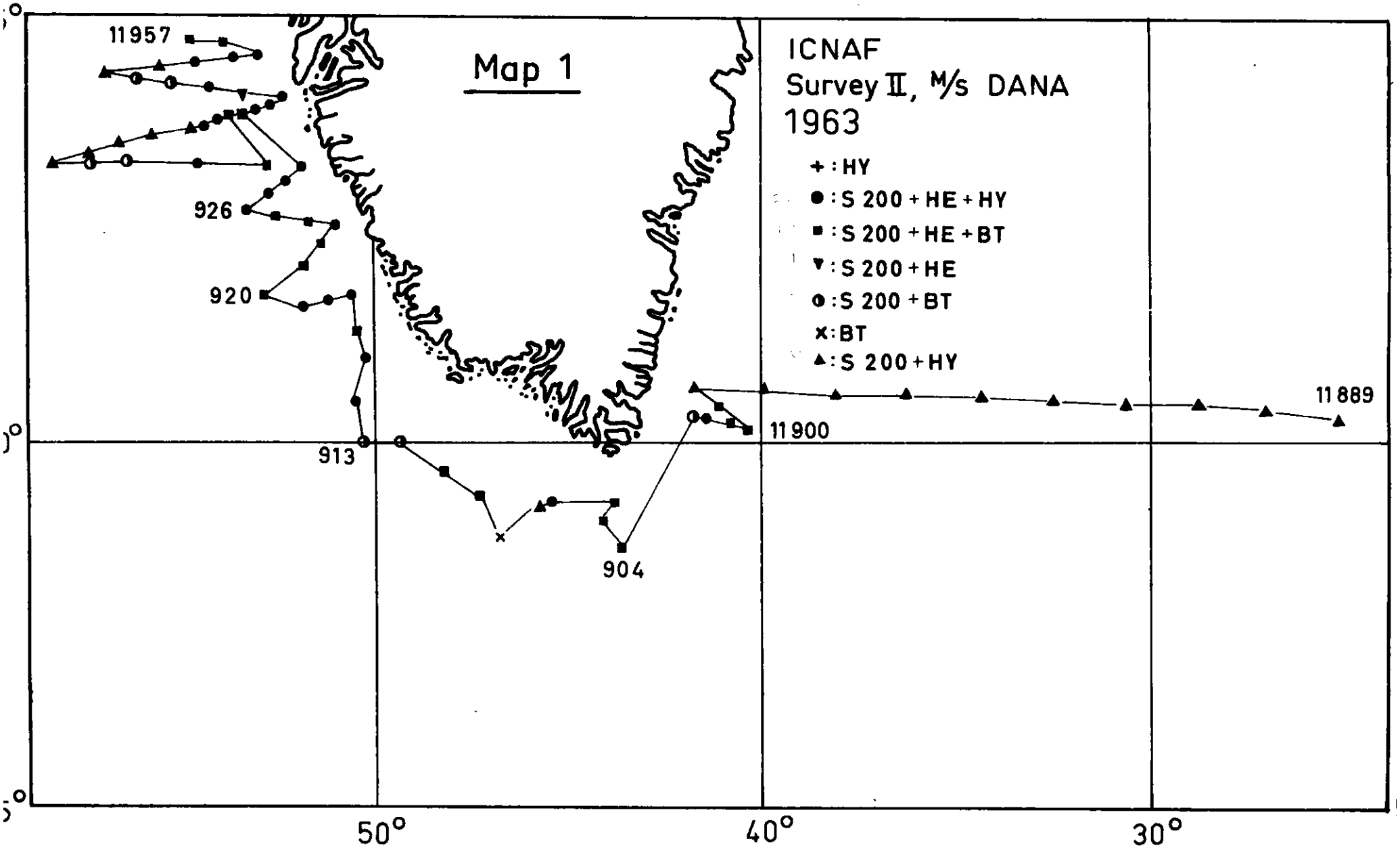
mm	NORWESTLANT 2 St.11889-11955 May 2o - June 14	NORWESTLANT 3 St.11964-12o29 June 3o - July 12	SE of Cape Farewell ICNAF Section VI 58°54'N.42°30'W. to 56°30'N.38°40'W. July 31 - August 2
29			1
22			2
21			6
2o			19
19			7
18			9
17			5
16			2
15			1
14		2	2
13		4	
12		43	
11	2	74	
1o	38	44	
9	219	4	
8	6o8	1	
7	249		
6	69		
5	3		

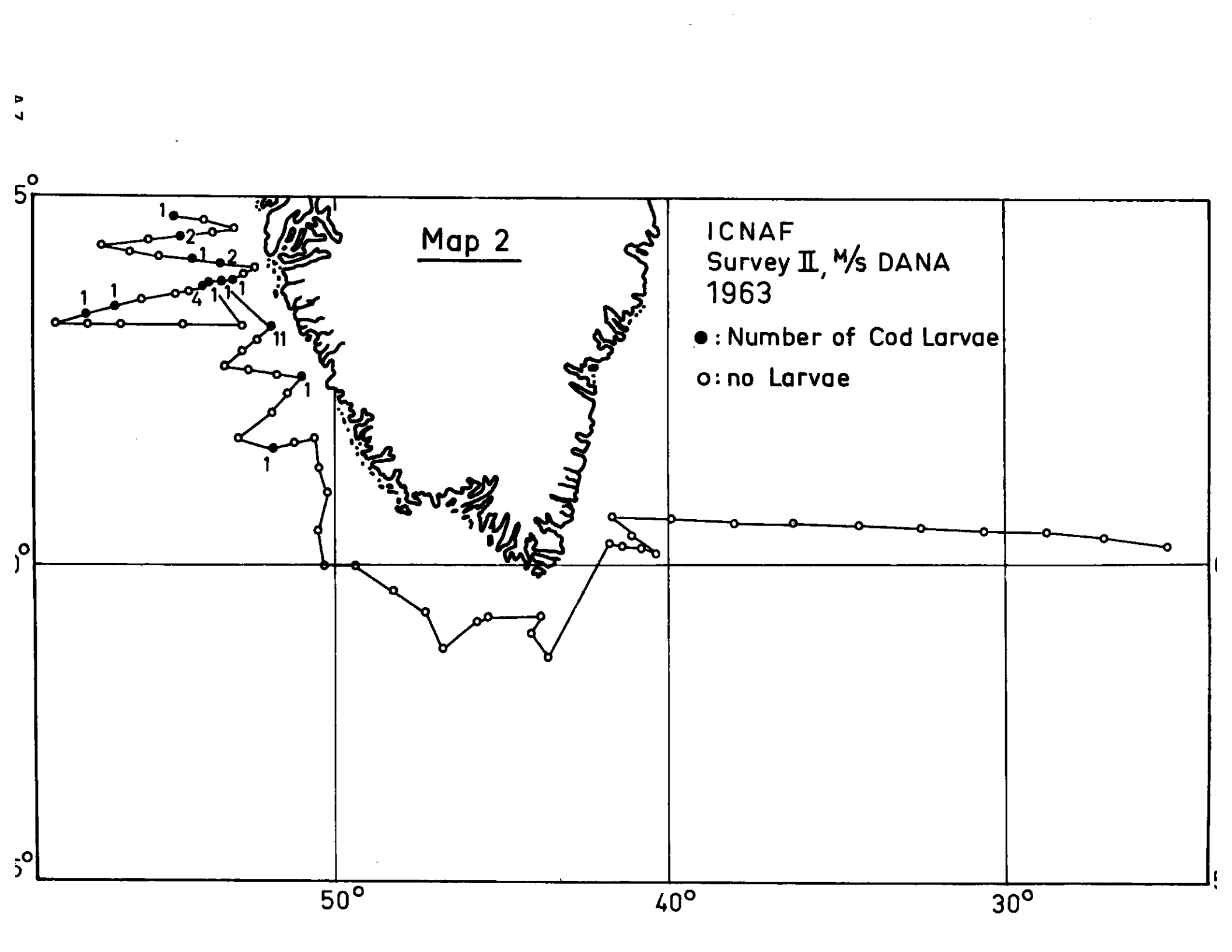
Table 3. Comparison of 2 m stramin net (1o hauls, 195 minutes in total) and IHSS (17 hauls, 2o2 minutes in total) in the inner Godthåb Fjord (64°26'N. 50°39'W.).

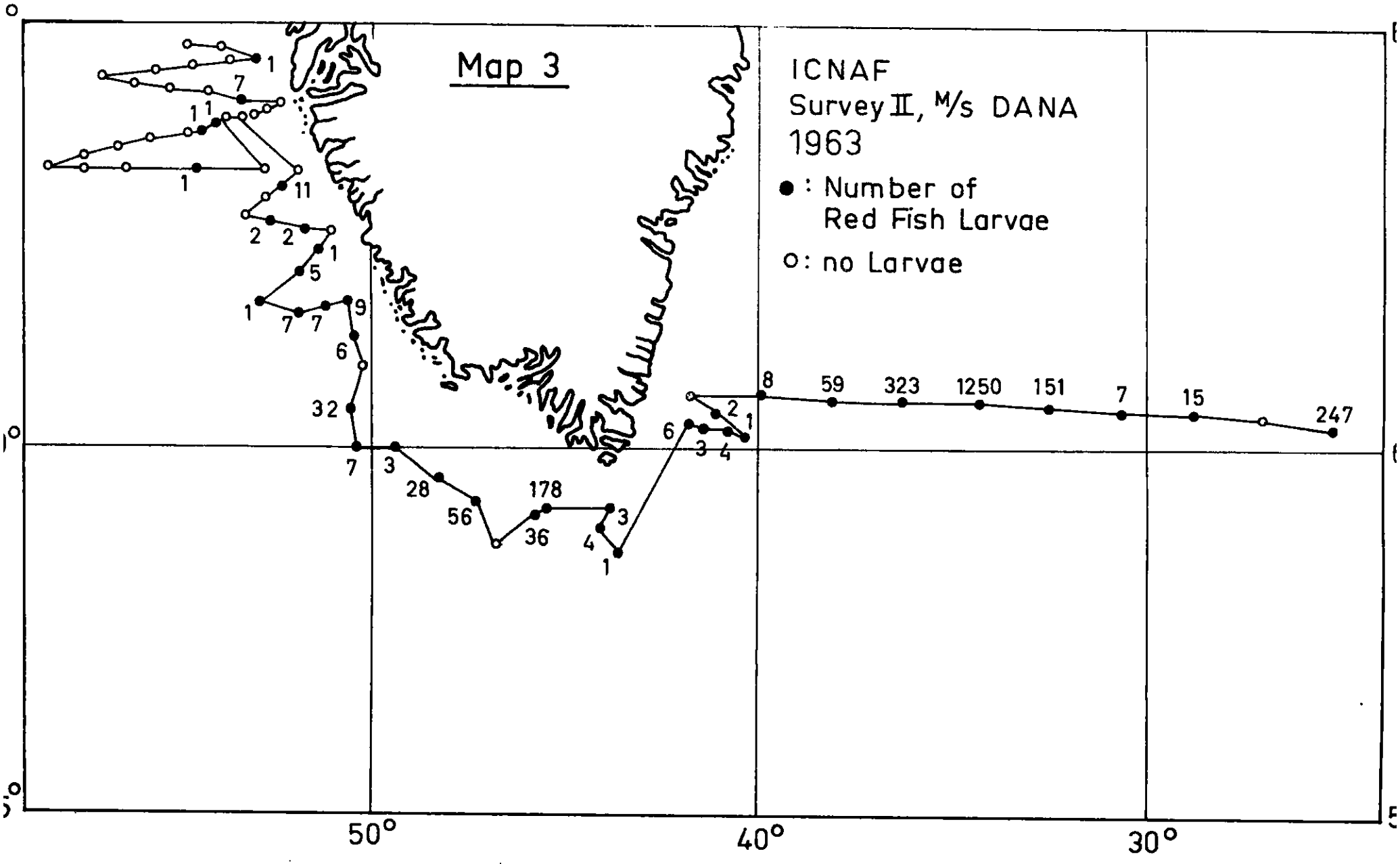
	S. 2oo No. per 3o min.	IHSS No. per 3o min.	Proportion S. 2oo/IHSS
Mallotus villosus	4.5	o.4	
"Stichaeus"	5.8	o.6	
Gadus morhua	2.2	-	
Aspidophoroides monopterygius	9.7	o.4	
Hippoglossoides platessoides	2.o	o.3	
other fish larvae	1.4	o.1	
fish larvae total	25.5	1.9	13/1
fish eggs	458	2.8	164/1
Medusae (incl. Aglantha)	197	19.7	1o/1
Dimophyes	3o75	32.4	9o/1
Sagitta sp.	295	26.o	11/1
Calanus hyperboreus	6o	11.o	5.5/1
Pandalus larvae	287	52.5	5/1
Crab larvae	154	1.3	118/1
Volume in cm^3	68	1.3	52/1

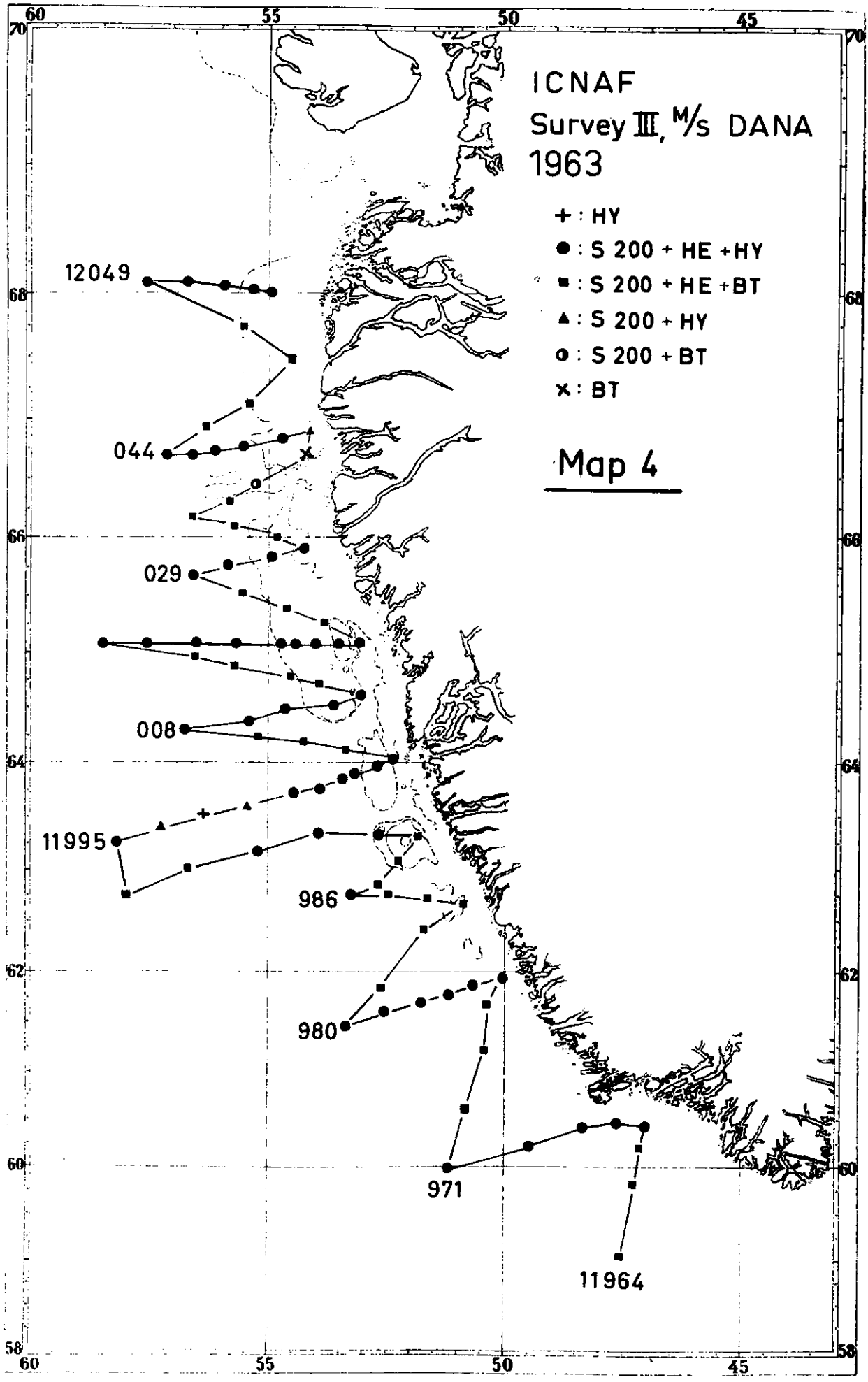
Table 4. Angling for redfish off SE Greenland from May 2o to May 24.

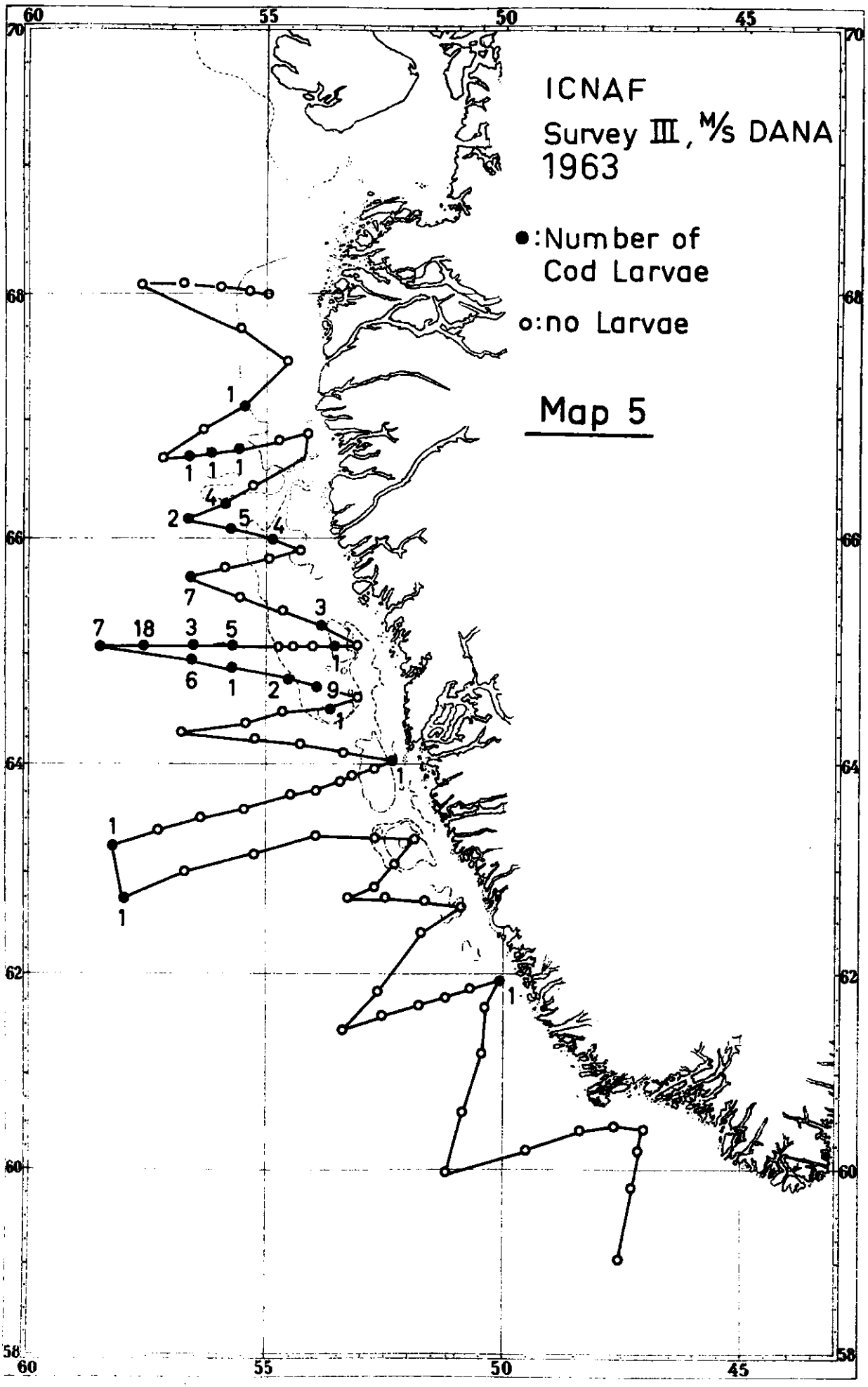
St. No.	Position	No. of redfish	Size interval cm	Depth interval m
11889	60°18'N.25°12'W.	0		
1189o	60°22'N.27°00'W.	0		
11891	60°26'N.28°47'W.	0		
11892	60°26'N.30°36'W.	0		
11893	60°31'N.32°31'W.	5	35 - 42	13o - 16o
11894	60°40'N.34°23'W.	5	39 - 42	9o - 12o
11895	60°45'N.36°14'W.	2o	35 - 4o	9o - 18o
11896	60°39'N.38°07'W.	9	33 - 42	9o - 13o
11897	60°42'N.39°59'W.	23	33 - 45	9o - 3oo
11898	60°45'N.41°50'W.	0		

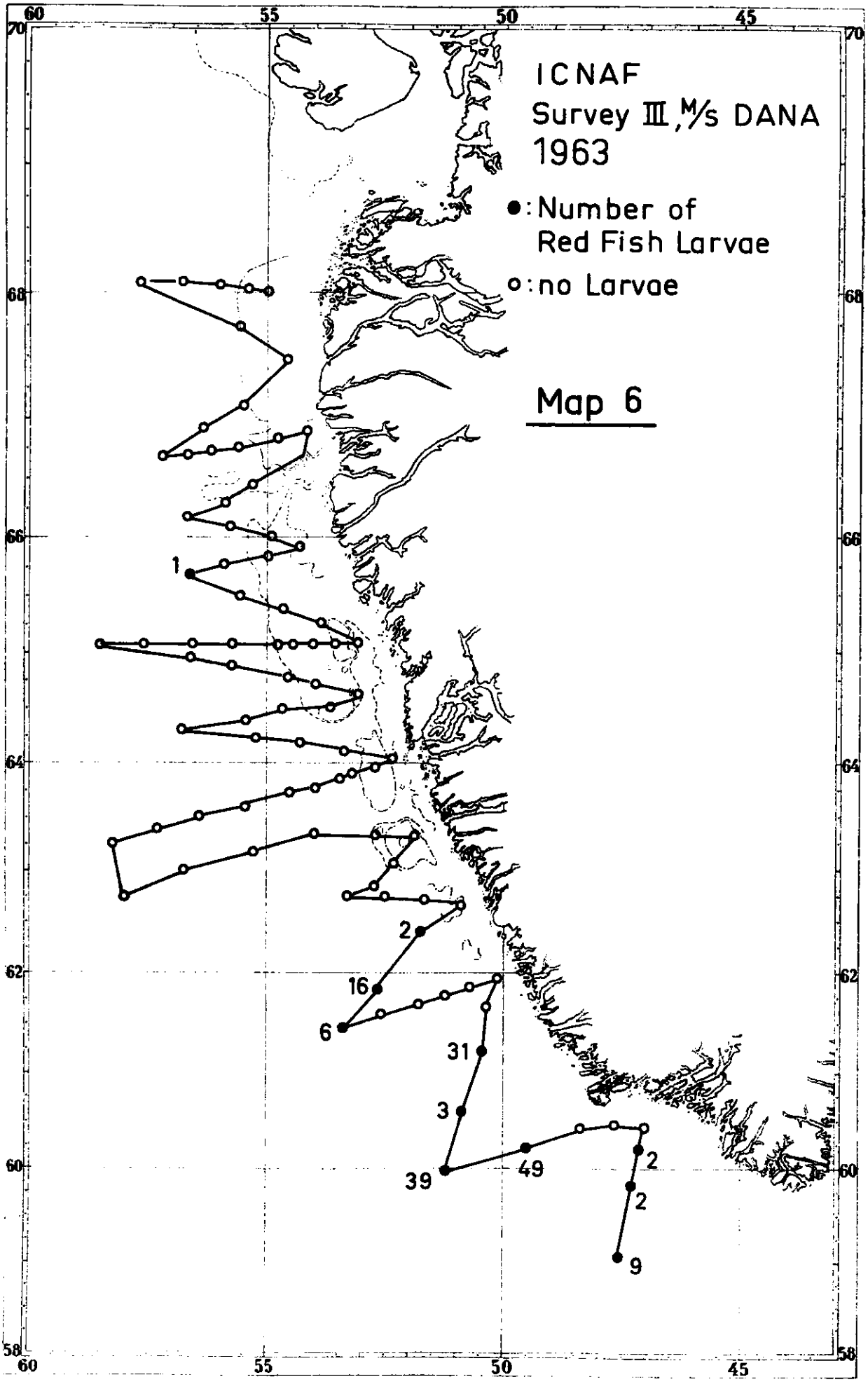

Map 1
ICNAF
Survey II, M/s DANA
1963
+ : HY
● : S 200 + HE + HY
■ : S 200 + HE + BT
▼ : S 200 + HE
o : S 200 + BT
× : BT
▲ : S 200 + HY
11957
926
920
913
904
11900
11889
50°
40°
30°


Map 2
ICNAF
Survey II, M/s DANA
1963
● : Number of Cod Larvae
o : no Larvae
50°
40°
30°


Map 3
ICNAF
Survey II, M/s DANA
1963
● : Number of
Red Fish Larvae
○ : no Larvae
50°
40°
30°


ICNAF
Survey III, M/s DANA
1963
+ : HY
● : S 200 + HE + HY
■ : S 200 + HE + BT
▲ : S 200 + HY
o : S 200 + BT
× : BT
Map 4
12049
044
029
008
11995
986
980
971
11964
60
55
50
45
70
68
66
64
62
60
58


ICNAF
Survey III, M/s DANA
1963
●:Number of
Cod Larvae
o:no Larvae
Map 5
60
55
50
45
70
68
66
64
62
60
58


ICNAF
Survey III, M/s DANA
1963
●: Number of
Red Fish Larvae
o: no Larvae
Map 6
60
55
50
45
70
68
66
64
62
60
58
1
2
16
6
31
3
39
49
2
2
9

WT

I.C.N.A.F. Annual Meeting, Hamburg 1964.
Serial no. 1316 a. Document 21 a.

DANISH RESEARCH IN THE I.C.N.A.F. AREA 1963.

Hydrographic Investigations.

R/V "Dana" took part in the Nortwestlant surveys II and III and was in both cruises mainly working in the West Greenland area. Underway to Greenland a hydrographic section was worked in connection with angling experiments for redfish. This section was not a part of the I.C.N.A.F. program.

Survey II.

In this survey "Dana" should cover the Bank area from 61°N off the east coast of Greenland to about 65°N off the west coast. The weather was, however, very bad during most of the survey and many of the stations planned had to be cancelled, specially in the Cape Farewell region.

The maps 1 - 4 show the distribution of temperature at surface, 50 m, 100 m and 200 m. These maps are based on the "Dana" stations and the "Baffin" sections XXVI and XXVII. These maps are provisional only as they do not include the northernmost of the "Baffin" sections.

The maps show how the polar component of the West Greenland Current follows the western slope of the banks until between 64°N and 65°N a branch of it turns westwards.

West of the cold current and below it the warm Irminger current is found. The shape of the isotherms, specially at 200 metres, indicate that a part of this current turns westwards towards Labrador at about 62°N. The hydrographic situation is further illustrated by section XXVIII over Fylla Bank.

Survey III.

Between June 30th and July 16th the survey of the West Greenland area was completed. The temperature distribution at surface, 50 m, 100 m and 200 m is shown on map 5 - 8. Furthermore the distribution of phosphate at 20 m is shown on map 9 which also shows the position of the hydrographic section which is given in this report.

A comparison between the temperature conditions in June and in July off West Greenland shows that the temperature, as could be expected, generally has increased both in the surface layers and in the deeper layers. Over the shallow parts of the banks this increase is, however, very small and over the western slope of the banks both temperature and salinity have decrease below 200 m.

The polar component seems to have increased in volume from June to July.

The temperature seems to be below normal in the coastal region and over the shallow part of the banks both in June and July, but about normal in the region west of the banks.

Map 9 shows that relatively low values of phosphate is found in the coastal region and in the northern part of the area. A narrow belt with high phosphate values is found along the western slope of the banks. This can possibly be explained as a result of strong vertical mixing in the front area between the warm and the cold branch of the West Greenland Current.

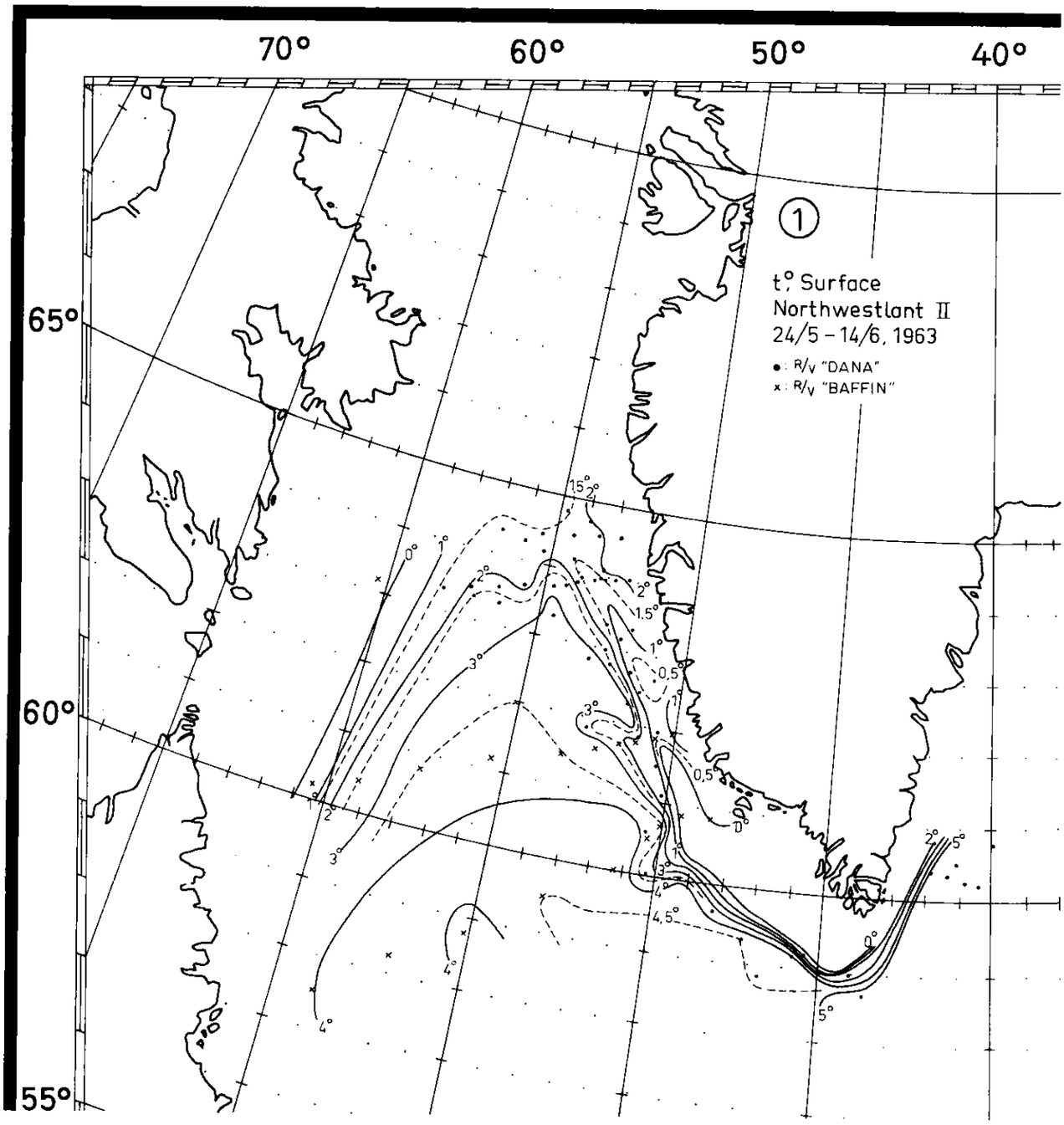
Phosphate determinations were made on nearly all hydrographic stations at standard depths between surface and 100 m.

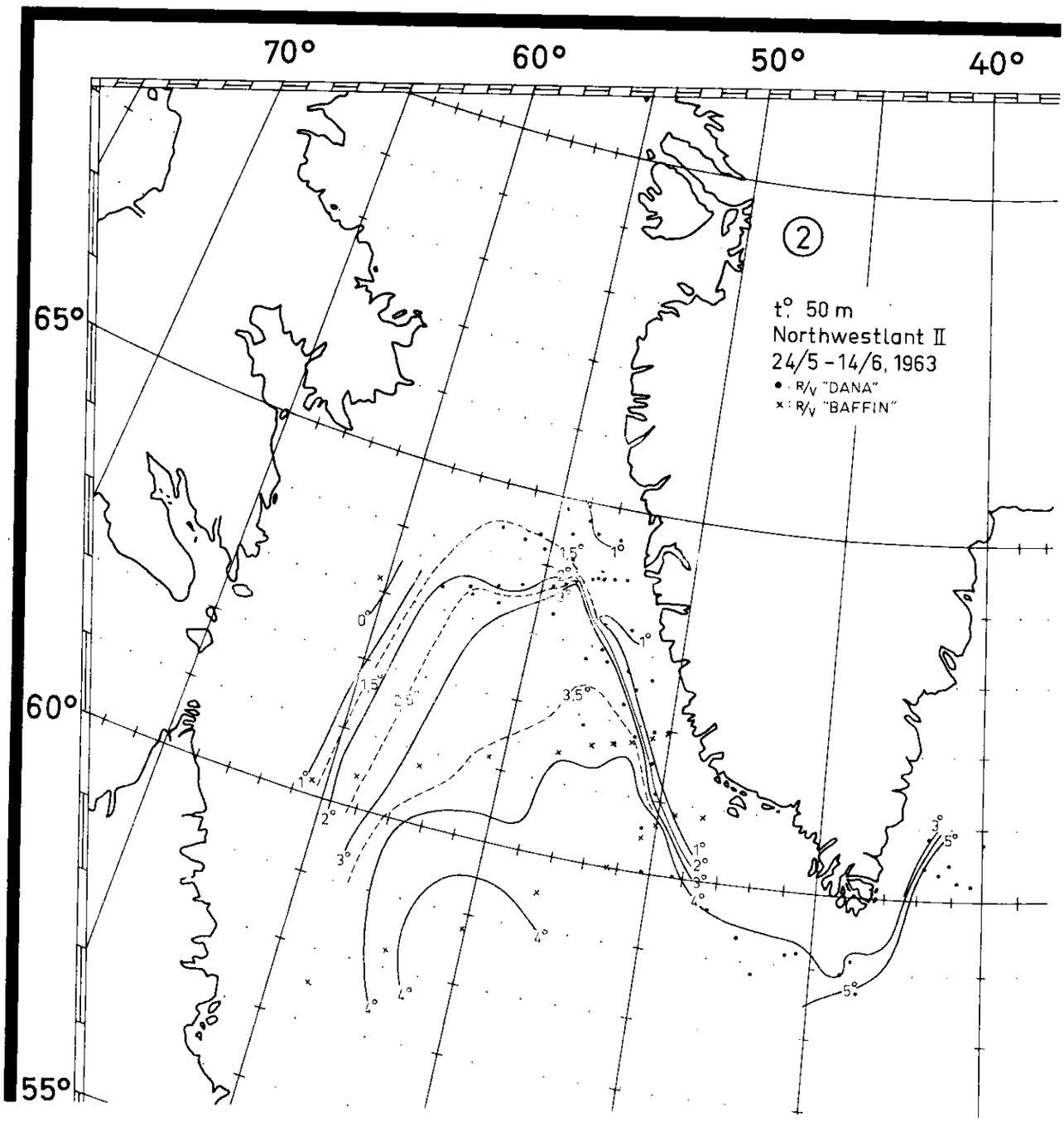
Oxygen determinations were made on nearly all hydrographic stations at standard depths between 10 m and 100 m.

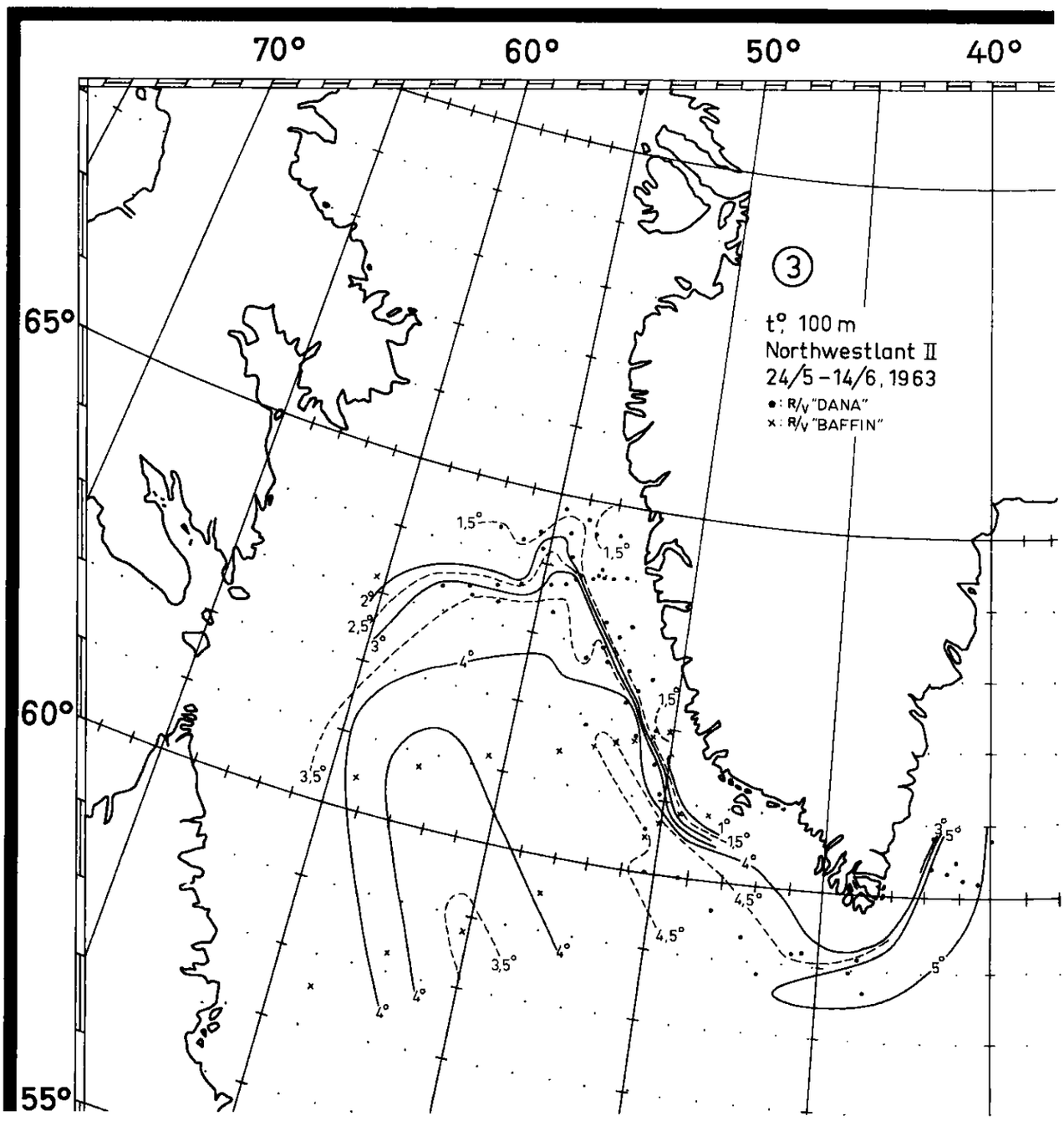
Method of analysis.

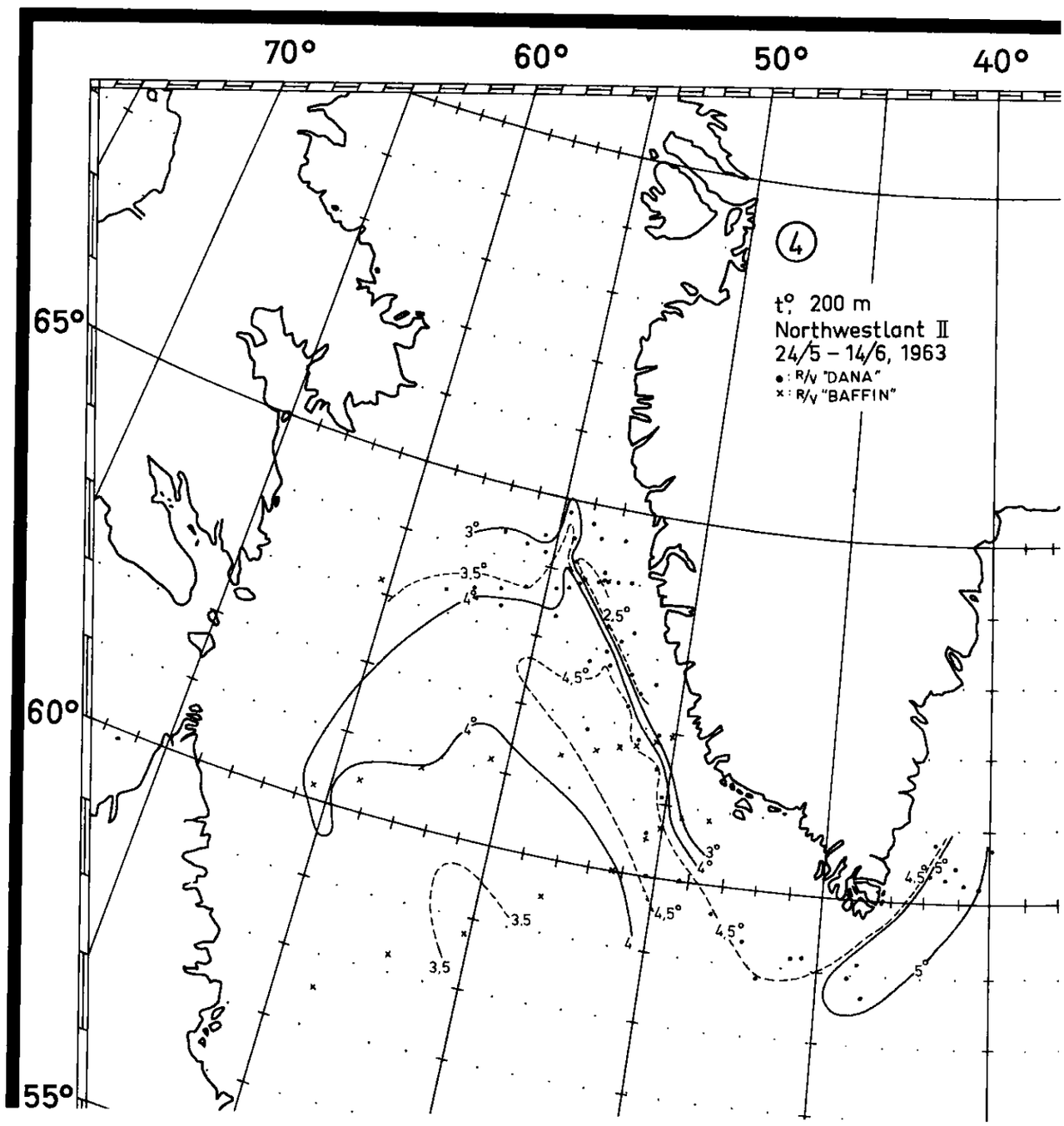
	Salinity	Oxygen	Phosphate
Survey II	Titration	Winkler	Murphy and Riley
Survey III	Auto-Lab Salinometer	Winkler	Murphy and Riley St. 1-24. Wooster and Rakestraw, 25-67.
Standard	Copenhagen Standard Sea Water	$KH(JO_3)_2$ 0.3250 g/l	Phosphate standard supplied by Fish.Lab. Lowestoft.

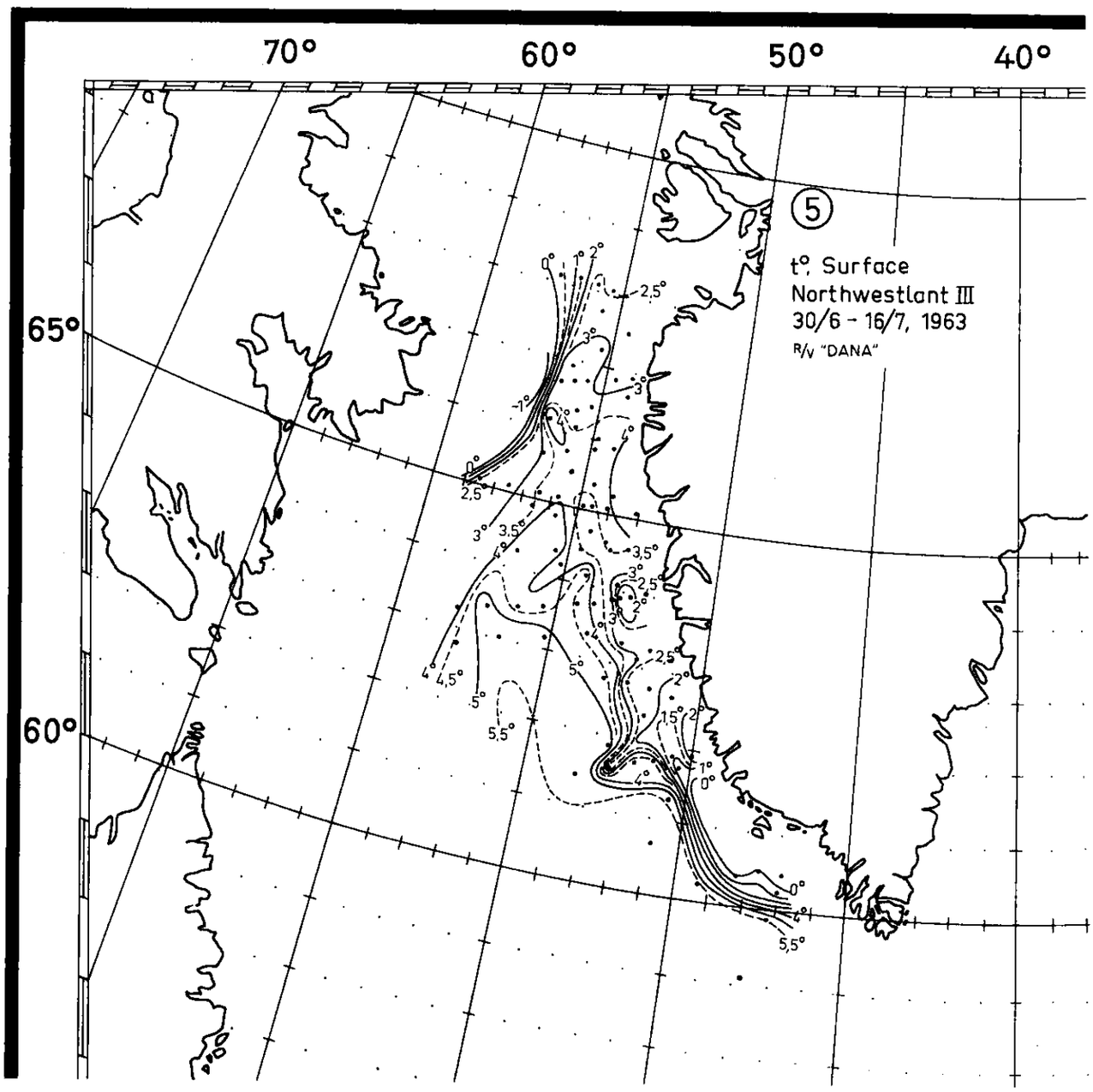
F. Hermann.

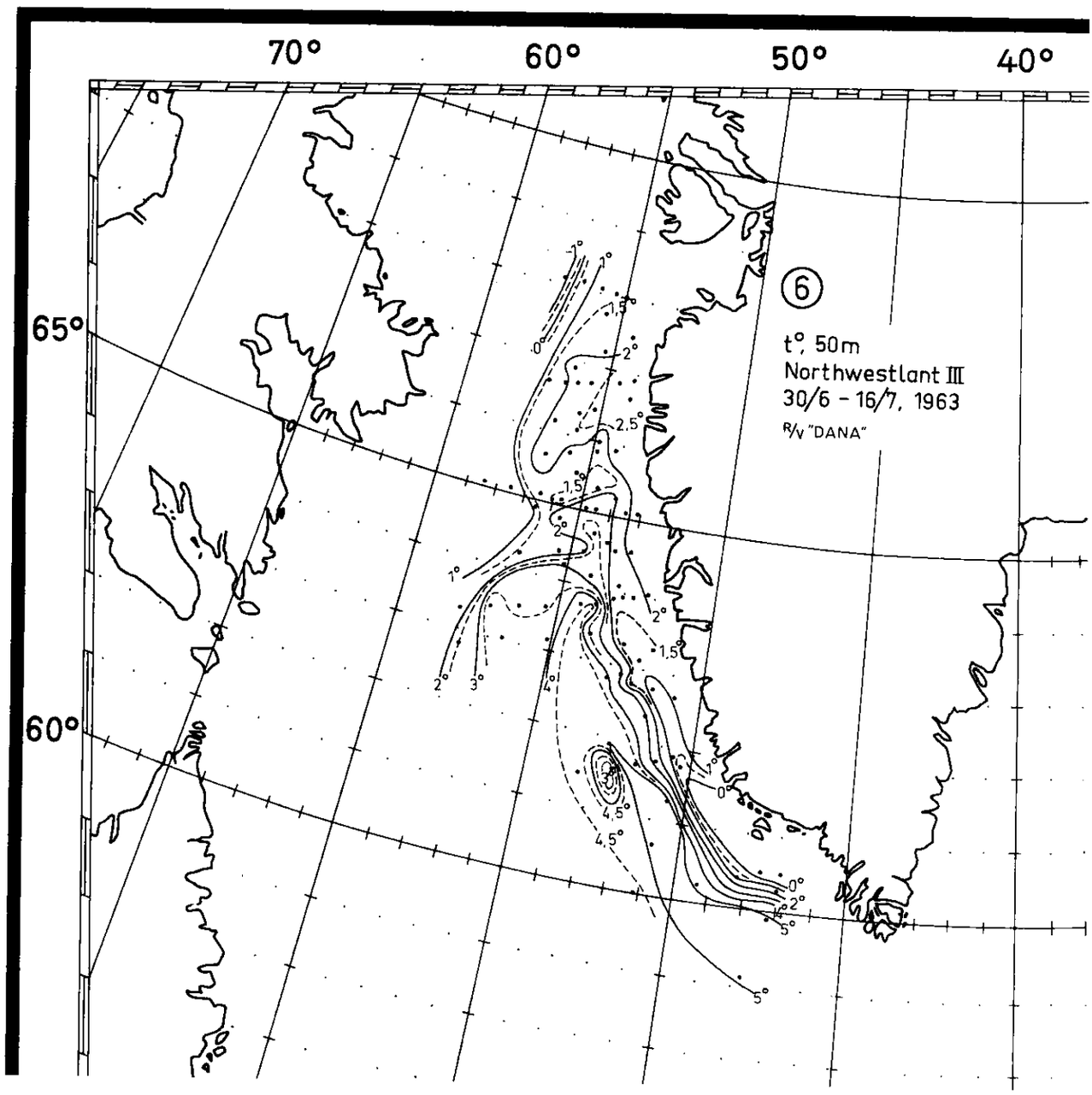

70°
60°
50°
40°
65°
60°
55°
①
t° Surface
Northwestlant II
24/5 – 14/6, 1963
• : R/V "DANA"
× : R/V "BAFFIN"

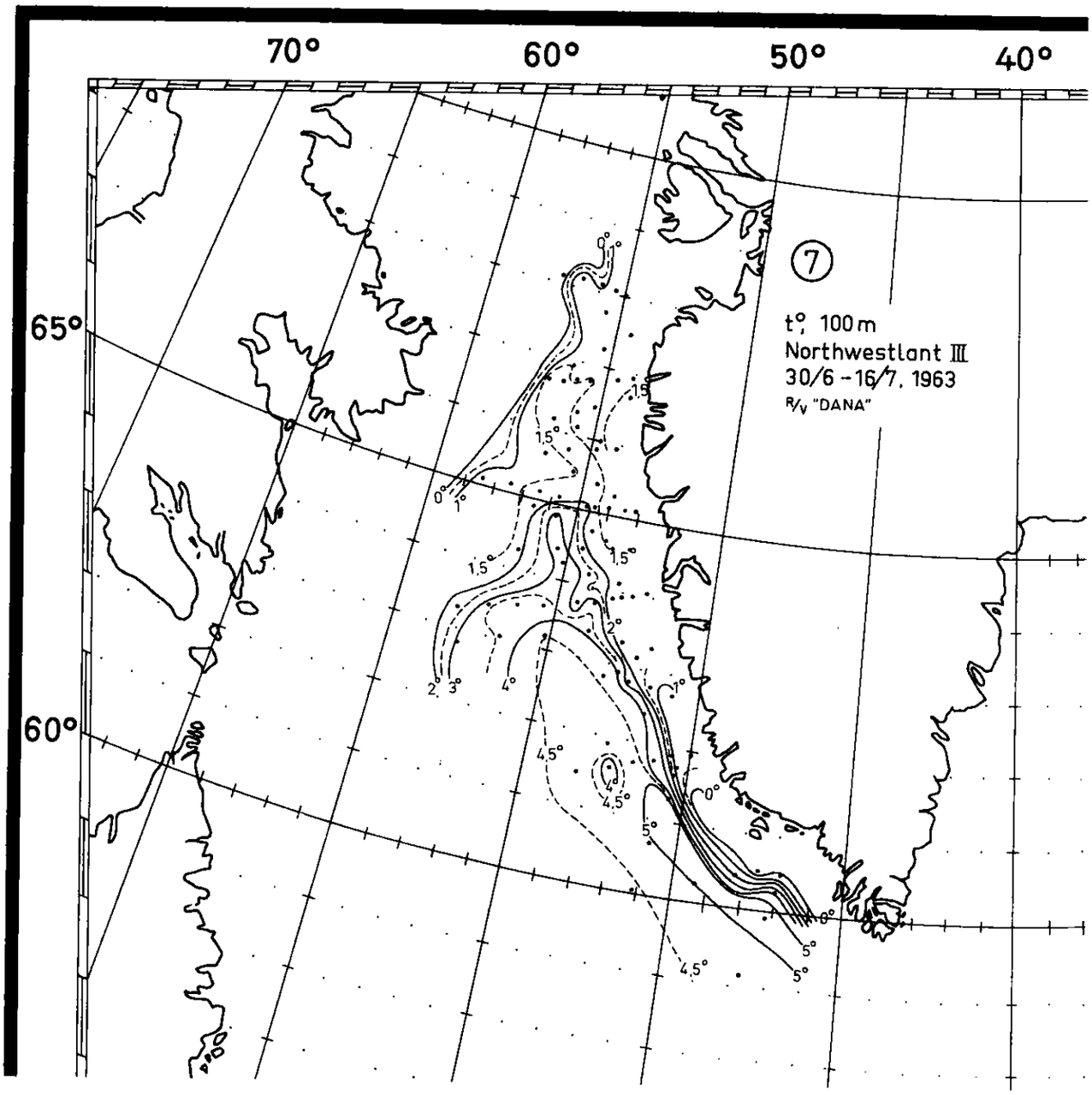

70°
60°
50°
40°
65°
60°
55°
②
t° 50 m
Northwestlant II
24/5 - 14/6, 1963
• : R/V "DANA"
× : R/V "BAFFIN"

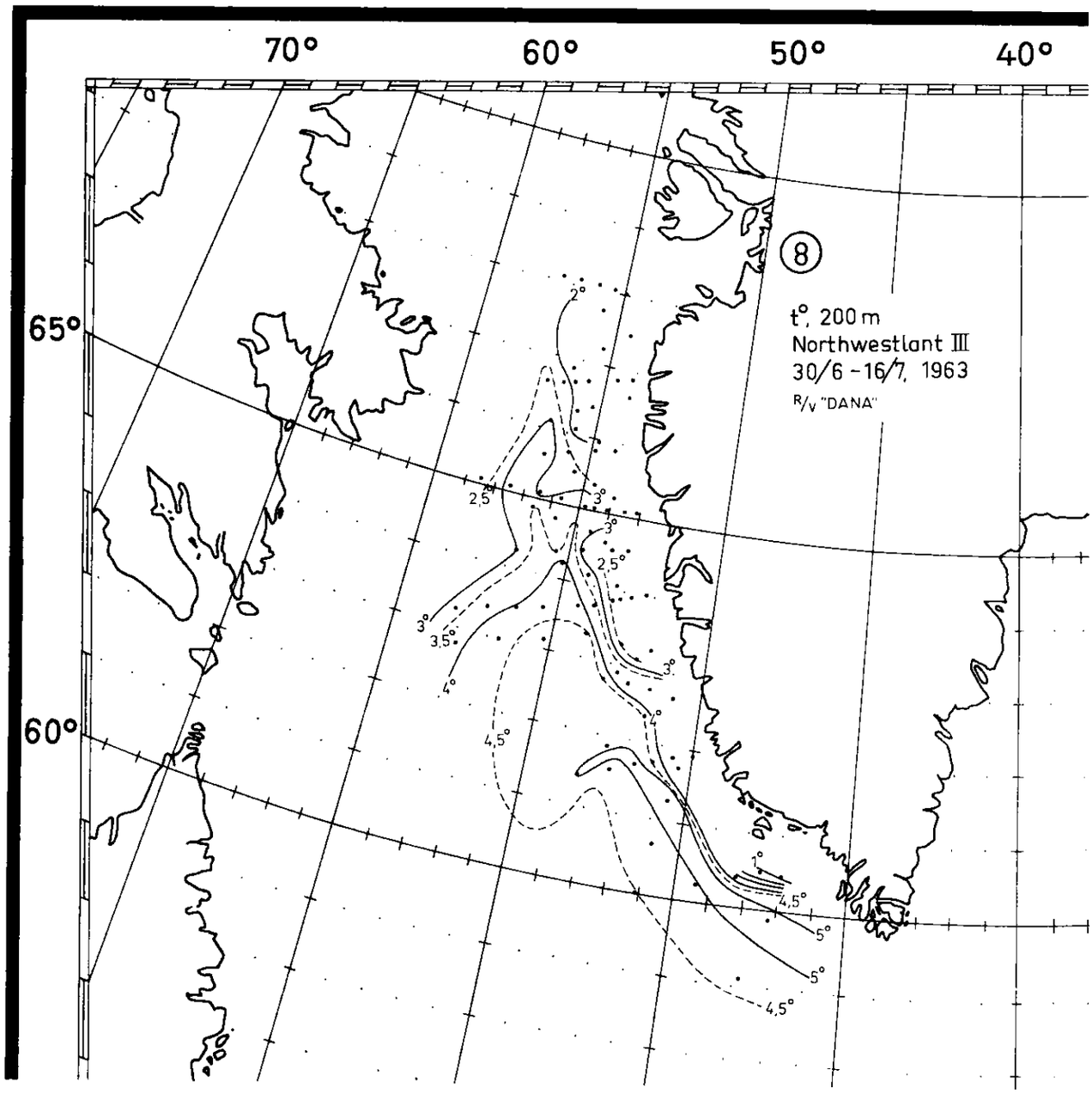

70°
60°
50°
40°
65°
60°
55°
③
t° 100 m
Northwestlant II
24/5 – 14/6, 1963
•: R/V "DANA"
×: R/V "BAFFIN"
1,5°
2°
2,5°
3°
3,5°
4°
4,5°
5°

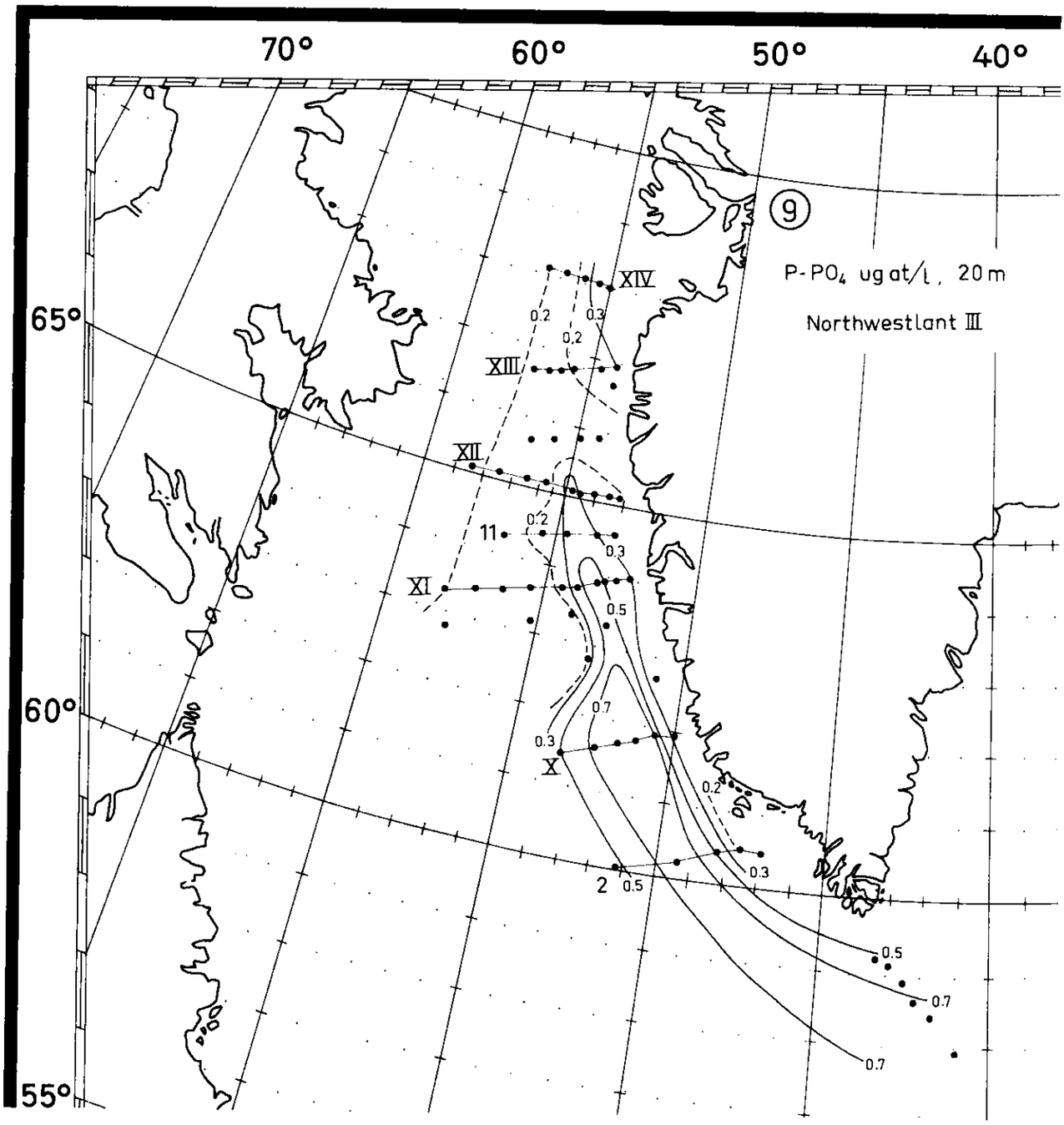

70°
60°
50°
40°
65°
60°
55°
4
t° 200 m
Northwestlant II
24/5 – 14/6, 1963
• : R/V "DANA"
× : R/V "BAFFIN"
3°
3,5°
4°
2,5°
4,5°
4°
3°
4°
4,5°
5°
3,5
3,5
4
4,5°
4,5°
5
5

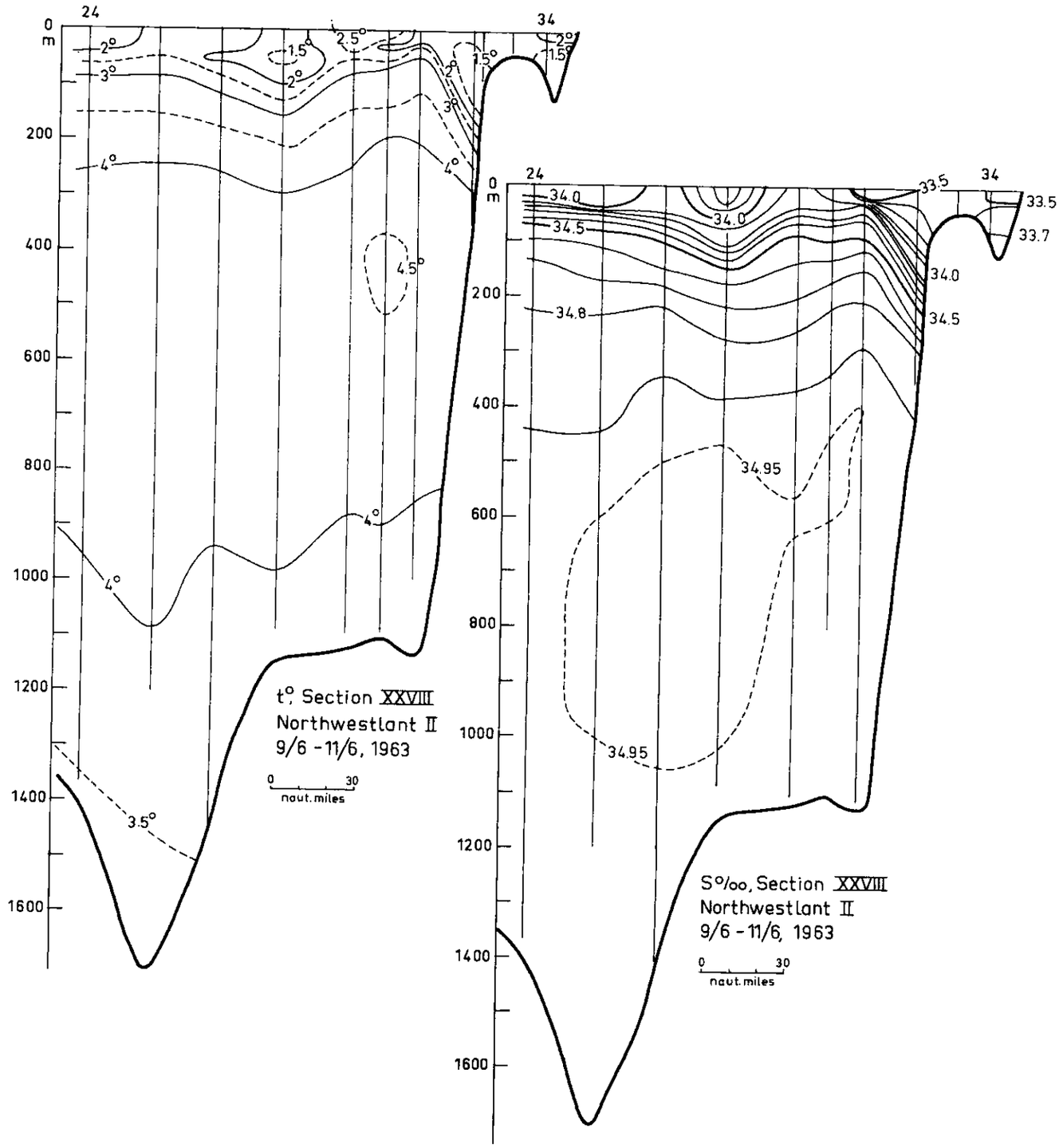

70°
60°
50°
40°
65°
60°
5
t°, Surface
Northwestlant III
30/6 - 16/7, 1963
R/V "DANA"

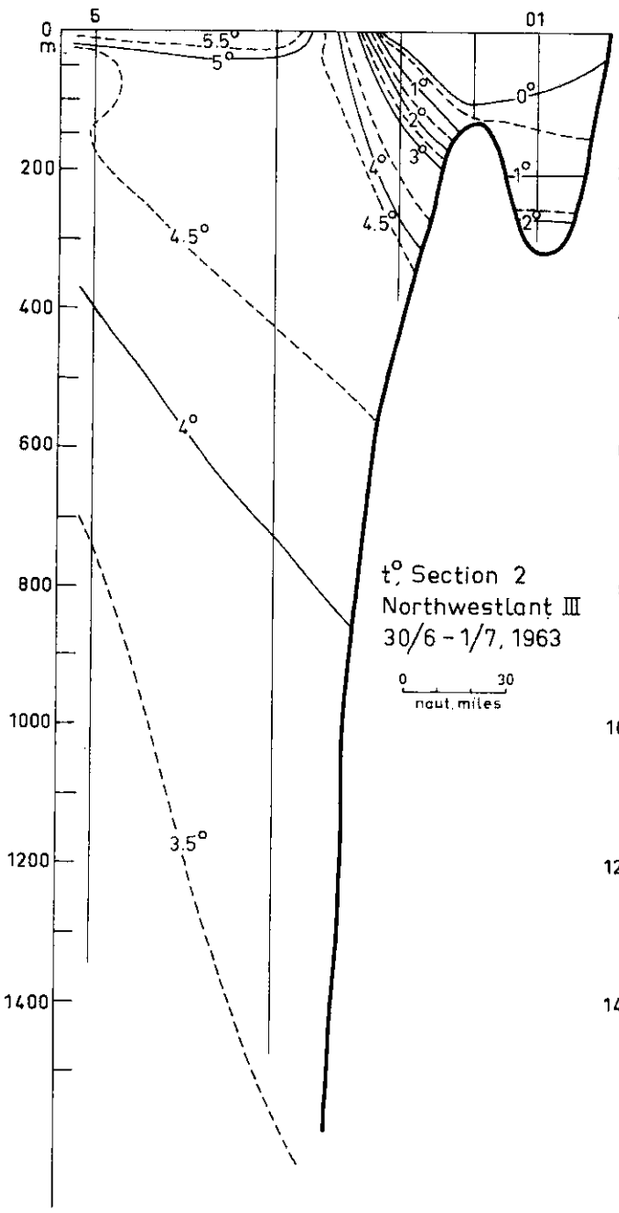

70°
60°
50°
40°
65°
60°
⑥
t°, 50m
Northwestlant III
30/6 - 16/7, 1963
R/v "DANA"

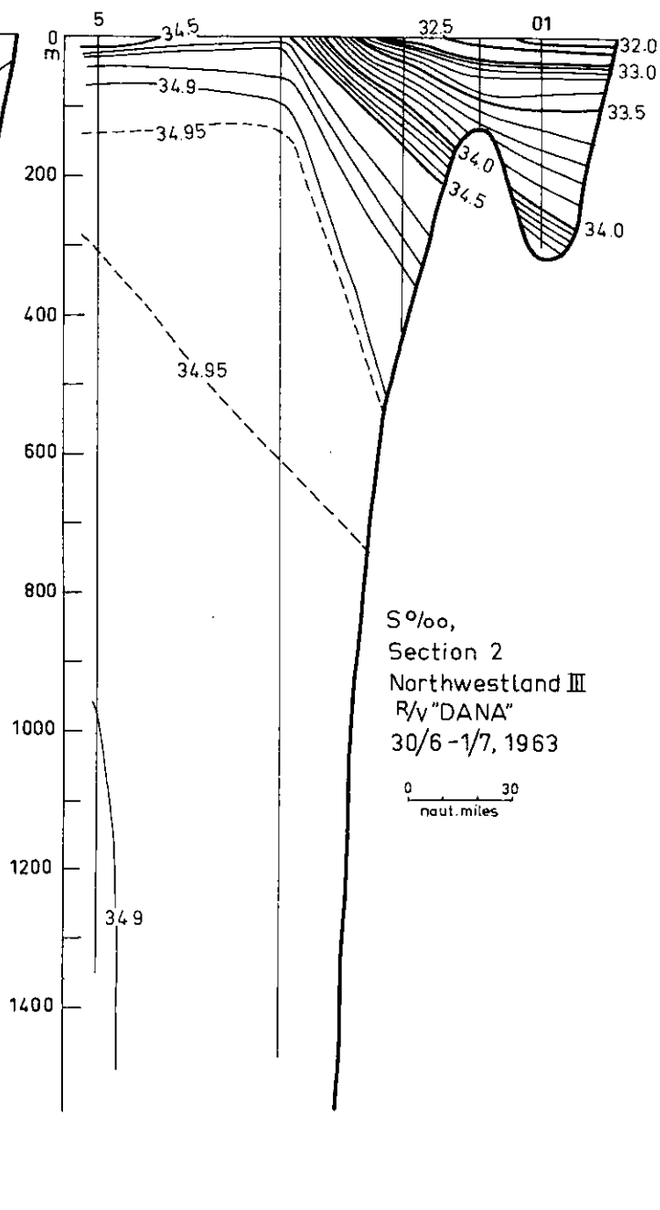

70°
60°
50°
40°
65°
60°
⑦
t°, 100 m
Northwestlant III
30/6 - 16/7, 1963
R/V "DANA"
0°
1°
1.5°
2°
3°
4°
4.5°
5°

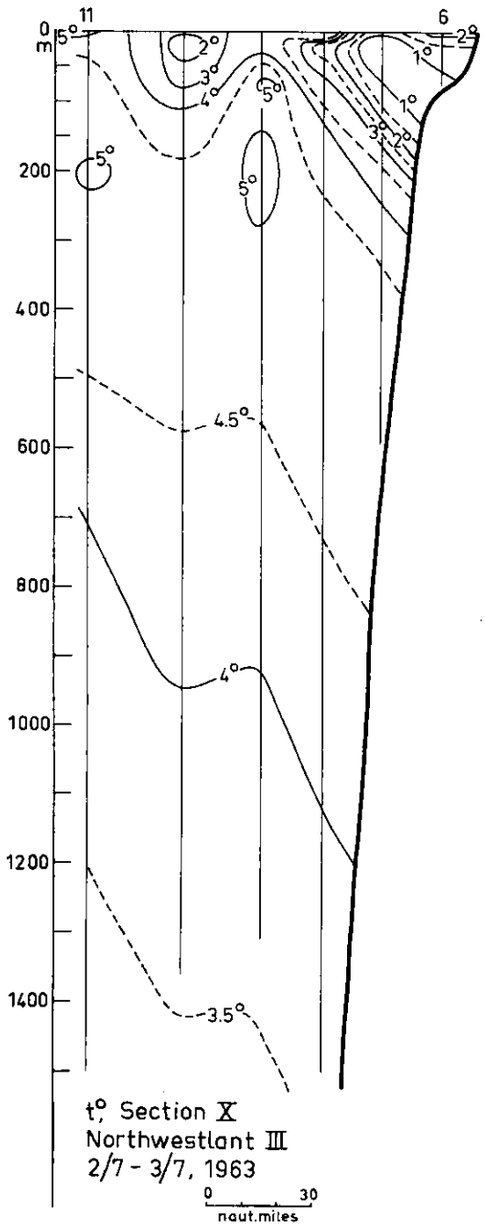

70°
60°
50°
40°
65°
60°
8
t°, 200 m
Northwestlant III
30/6 -16/7, 1963
R/v "DANA"
2°
2,5°
3°
3,5°
4°
4,5°
5°
1°

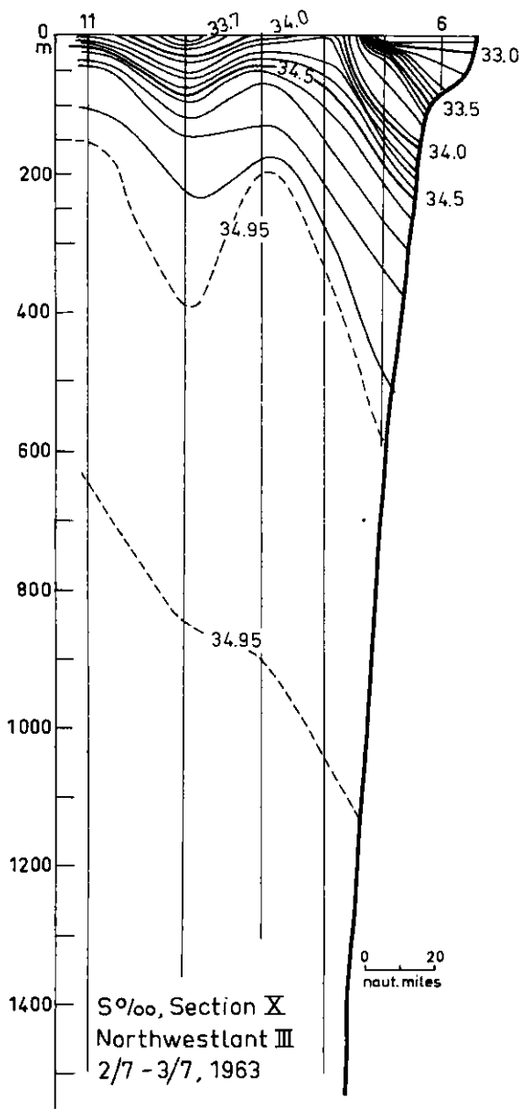

70°
60°
50°
40°
65°
60°
55°
9
P-PO4 ug at/l, 20 m
Northwestlant III
XIV
XIII
XII
11
XI
X
2
0.2
0.3
0.5
0.7

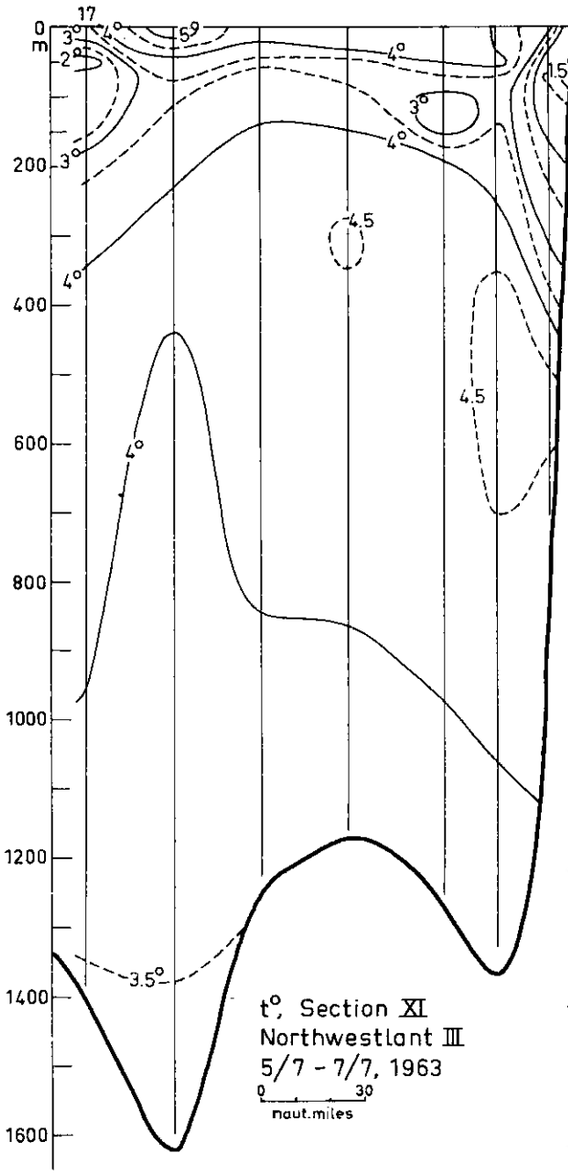

24
34
0
m
200
400
600
800
1000
1200
1400
1600
2°
3°
4°
1.5°
2.5°
4.5°
3.5°
t° Section XXVIII
Northwestlant II
9/6 - 11/6, 1963
0 30
naut. miles
34.0
34.5
34.8
34.95
33.5
33.7
S°/oo, Section XXVIII
Northwestlant II
9/6 - 11/6, 1963
0 30
naut. miles

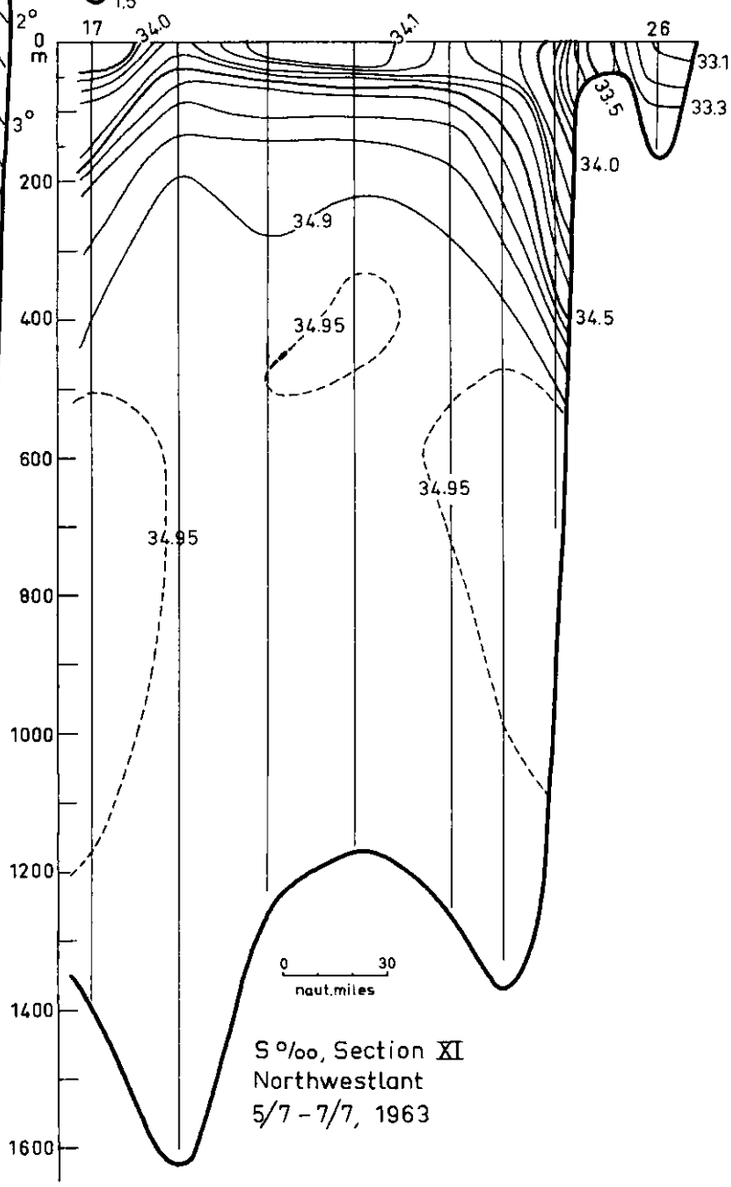

0
m
5
01
200
400
600
800
1000
1200
1400
5.5°
5°
4.5°
4°
3.5°
0°
1°
2°
3°
4°
4.5°
t° Section 2
Northwestlant III
30/6 - 1/7, 1963
0
30
naut. miles

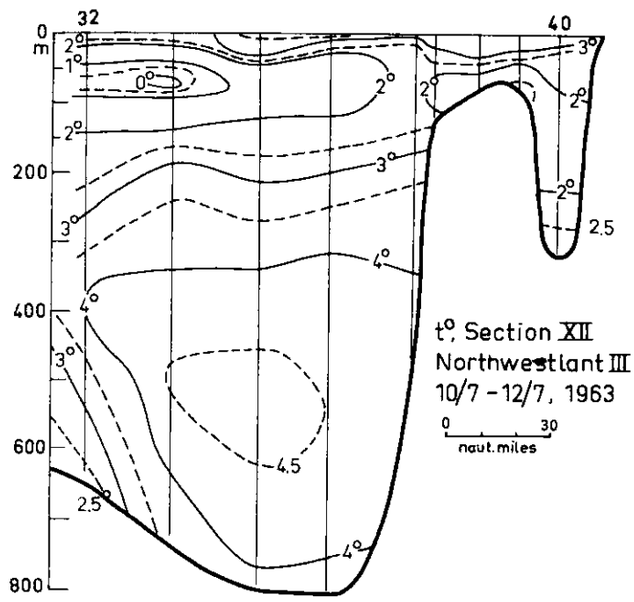

0
m
5
01
200
400
600
800
1000
1200
1400
34.5
34.9
34.95
32.5
32.0
33.0
33.5
34.0
34.5
34.0
34.95
34.9
S °/oo,
Section 2
Northwestland III
R/v "DANA"
30/6 - 1/7, 1963
0
30
naut. miles

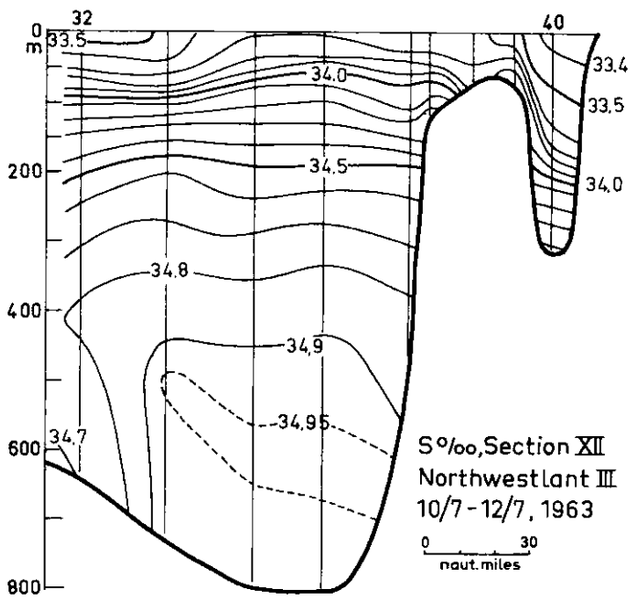

0
m
11
6
200
400
600
800
1000
1200
1400
5°
4.5°
4°
3.5°
t° Section X
Northwestlant III
2/7 - 3/7, 1963
0 30
naut.miles

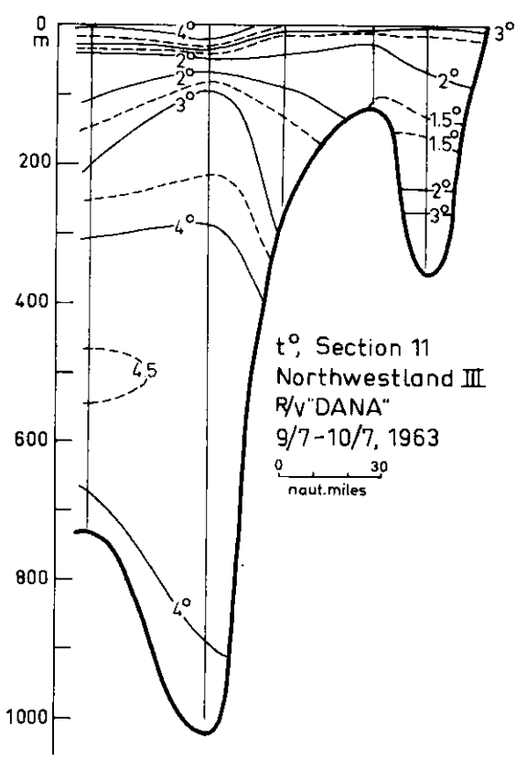

0
m
11
6
200
400
600
800
1000
1200
1400
33.7
34.0
34.5
33.0
33.5
34.0
34.5
34.95
34.95
S°/oo, Section X
Northwestlant III
2/7 - 3/7, 1963
0 20
naut. miles

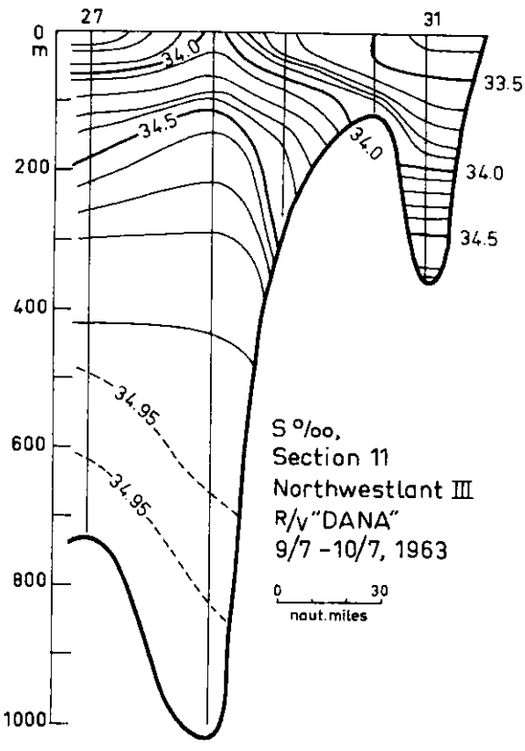

17
26
0
m
200
400
600
800
1000
1200
1400
1600
3°
4°
5°
2°
1.5°
4.5
3.5°
t°, Section XI
Northwestlant III
5/7 - 7/7, 1963
0
30
naut.miles

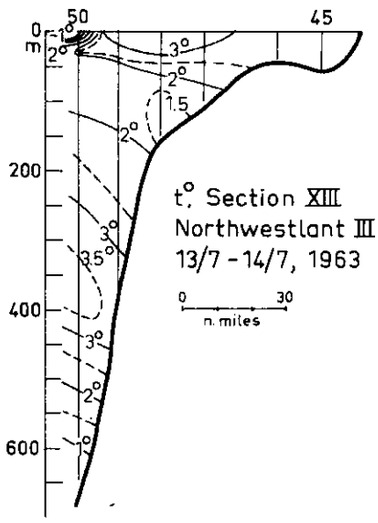

17
26
0
m
200
400
600
800
1000
1200
1400
1600
34.0
34.1
33.1
33.3
33.5
34.0
34.5
34.9
34.95
34.95
34.95
0
30
naut.miles
S °/oo, Section XI
Northwestlant
5/7 - 7/7, 1963

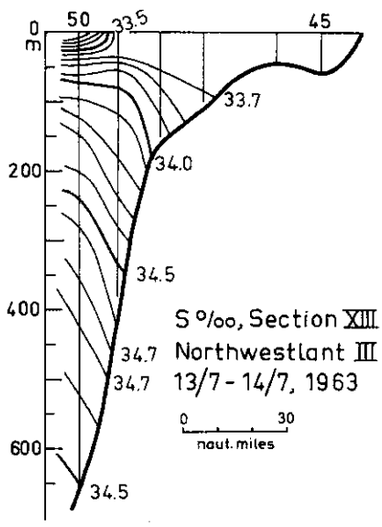

32
40
0
m
200
400
600
800
t°, Section XII
Northwestlant III
10/7 - 12/7, 1963
0 30
naut.miles

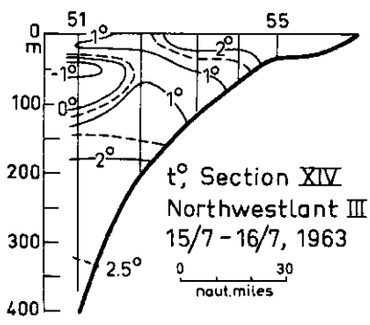

32
40
0
m
200
400
600
800
S °/oo, Section XII
Northwestlant III
10/7 - 12/7, 1963
0 30
naut.miles

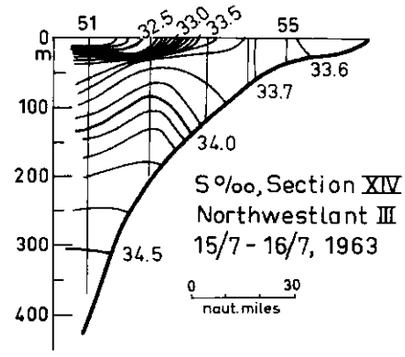

0
m
200
400
600
800
1000
t°, Section 11
Northwestland III
R/v "DANA"
9/7 - 10/7, 1963
0 30
naut.miles


27
31
0
m
200
400
600
800
1000
S °/oo,
Section 11
Northwestlant III
R/v "DANA"
9/7 - 10/7, 1963
0 30
naut.miles


50
45
0
m
200
400
600
t°, Section XIII
Northwestlant III
13/7 - 14/7, 1963
0 30
n. miles


50
33.5
45
0
m
200
400
600
33.7
34.0
34.5
34.7
34.7
34.5
S °/oo, Section XIII
Northwestlant III
13/7 - 14/7, 1963
0 30
naut. miles


51
55
0
m
100
200
300
400
t°, Section XIV
Northwestlant III
15/7 - 16/7, 1963
0 30
naut.miles


51
32.5
33.0
33.5
55
0
m
100
200
300
400
33.6
33.7
34.0
34.5
S °/oo, Section XIV
Northwestlant III
15/7 - 16/7, 1963
0 30
naut.miles