

PART 2. DATA ON PLANKTON SAMPLING

Methods of plankton samplings

Zooplankton was sampled in three ways: a Norpac standard net (Motoda, 1957) was hauled vertically for collecting mesoplankton, a "NIPR-I" sampler (Fukuchi et al., 1979) was used to take layered samples of mesoplankton and a parasol net was hauled vertically for collecting macroplankton/micronekton. Sampling layers at each station are listed below. Parasol net was used only at Stns 4 and 5. Plankton sampling stations were exactly identical to those of water samplings.

Station No.	Norpac net	"NIPR-I" sampler	Parasol net
1	0-8 m	0, 1, 2, 5, 7 m	-
2	0-25 m	0, 1, 2, 5, 10, 15 m	-
3	0-45 m	0, 1, 2, 5, 10, 25, 39, 45 m	-
4	0-150 m	0, 1, 2, 5, 10, 25, 50, 75, 100, 150 m	0-150 m
5	0-150, 150-300, 300-600 m	0, 1, 2, 5, 10, 25, 50, 75, 100, 150 m	0-660 m

Day-night samplings were also carried out when those of water samplings were done as listed in p. 9. In addition, five times of samplings in routine observation no. 3 at Stn 3 were made.

Immediately after the sampling nets were retrieved onto the fast-ice, they were brought into the observation hut. Net samples were transferred into polyethylene bottles in the hut and they were preserved in about 10 % buffered formalin-sea water when they were brought back to the land laboratory at Syowa Station.

Each sampling method is described in detail as follows.

Norpac net: A Norpac net was a conical net of 45 cm in diameter and 180 cm long. Netting was an NXX 13 of 0.10 mm mesh openings. The net was hauled vertically at five stations from near bottom to the surface at a speed of 0.5-1.0 m/s. Only at Stn 5, divided vertical hauls of 600-300, 300-150 and 150-0 m were carried out. A flow-meter (RGS No. 952) was mounted at the center of the mouth ring of the net to register the volume of water filtered by the net. The flow-meter was calibrated at Stn 4 on 20 October 1982; the flow-meter was attached to the mouth ring of the net from which the net had been removed. The flow-meter was hauled vertically from 150 m depth to the surface at two velocities of 0.5 and 1.0 m/s. Vertical hauls were repeated three times at each velocity and the results are summarized below.

Velocity of haul (m/sec)	Revolution of flow-meter per 0-150 m haul
1.0	1462
1.0	1408
1.0	1451
0.5	1418
0.5	1415
0.5	1418
Average	1428.7

The filtration efficiency (F) of the net is expressed as  $F=N/N'$ , where N is the average number of revolutions per one meter distance with a net and N' is that of without a net. In the present case, N' was 9.525 (=1428.7/150 m) as an average of two velocities. Using this value, the filtration efficiency of each net haul was calculated, then the volume of water filtered was

estimated. When the flow-meter was not used at Stns 1 and 2 in the routine observation no. 1, average efficiencies of 97 % and 74 % were applied to net hauls at Stns 1 and 2, respectively. The two values were average efficiencies based on 18 vertical hauls done at two stations in the routine observation nos 4-21. In the case of divided vertical haul at Stn 5, the flow-meter did not work properly at two layers of 600-300 and 300-150 m. An average efficiency of 71 % was calculated from 11 hauls of 150-0 m in the routine observation nos 6-14 and was applied to all hauls at two layers at Stn 5.

Data on the Norpac net hauls at Stns 1, 2, 3, 4, 5 and 4' are listed in Tables 7, 8, 9, 10, 11 and 12 respectively.

"NIPR-I" Sampler: Two types of "NIPR-I" sampler were used to take layered samples between four depths and ten selected depths (see p.59) at Stns 1-5. One type was similar to the prototype as described by Fukuchi et al. (1979) but could be lowered down to 30 m depth. This sampler (mouth diameter, 20 cm; length, 57.5 cm) was operated by a small electric generator such as Honda model E300 (100 V, 300 VA) and was used in the routine observation nos 1, 2 and 19 only. Another type (mouth diameter, 20 cm; length, 80 cm) was a new type modified for operation down to 150 m depth. A submersible electric motor of Hitachi model VCTI-KP (200V, 400W, 3600 rpm) installed in the new sampler was driven by an electric generator of Yammer YSG5EN (5kVA, 4kW). The new sampler was used in the routine observation nos 3-18. In the routine observation nos 20 and 21, no sampling with "NIPR-I" sampler was done.

A conical plankton net of 0.10 mm aperture (NXX 13 netting; diameter, 20 cm; length, 55 cm) was attached to the posterior end

of both samplers. Three minutes of sampling was performed at each depth throughout the routine observations except for the routine observation no. 1 when five minutes sampling was employed.

A flow-meter (General Oceanics model 2030, U.S.A.) with a low-speed propeller (S-2030-R2) was mounted only in the posterior-center of the new sampler to register the volume of water filtered. The volume ( $V$ ) of water filtered by the net could be expressed as  $V=vs t$ , where  $v$  is the water velocity within the sampler,  $s$  is the transverse area of the sampler and  $t$  is the period of sampling. Water velocity ( $v$ ) was calculated from the calibration equation prepared by General Oceanics. When the flow-meter did not work properly, such as freezing or disconnection of propeller, the volume was obtained as an average of the same series of samplings at each station.

Data on the "NIPR-I" sampling at Stns 1, 2, 3, 4 and 5 are listed in Tables 13, 14, 15, 16 and 17, respectively.

Parasol net: Parasol net having a hexagonal mouth was designed for opening-closing operations. Six hinged arms radiating from the center of the mouth could be opened and closed like a parasol. Two different sizes of net were used; a small net with 0.5 m sides, 3.5 m long and mesh sizes of 1.00 and 0.35 mm for the upper and lower parts, respectively, and a large net with 1.0 m sides, 7.0 m long and 2.00 and 1.00 mm mesh sizes. Mouth area of the large and the small nets was 2.598 and 0.650 m<sup>2</sup>, respectively. The net was hauled vertically from near bottom to the surface at a speed of 1 m/s only at Stns 4 and 5. The large net was used in the routine observation nos 4 and 5 only.

Data on parasol net hauls at Stns 4 and 5 are listed in Tables 18 and 19, respectively.

Sample processing: Biomass of net sample, such as settling volume and wet weight, was measured for the formalin preserved sample in the land laboratory. Some large animals were removed before biomass measurements. Abbreviations given in the column of "No. of unusual large organisms removed" listed in the following tables are summarized below.

Abb.	Zooplankton	Abb.	Zooplankton
Si.	Siphonophora	Am.	Amphipoda
Me.	Medusae of other Coelenterata	My.	Mysidacea
Ct.	Ctenophora	Eu.	Euphausiacea
Po.	Polychaeta	Pt.	Pteropoda
Ch.	Chaetognatha	Sa.	Salpa
Co.	Copepoda	Fi.	Fish larvae

#### References

- Fukuchi, M., Tanimura, A. and T. Hoshiai (1979): "NIPR-I", a new plankton sampler under sea ice. Bull. Plankton Soc. Japan, 26, 104-109.
- Motoda, S. (1957): North Pacific Standard Plankton net. Inf. Bull. Plankton. Japan, 4, 13-15.

Table 7. Data on plankton collected by vertical haul with a NORPAC standard net (0.10 mm mesh openings) at Station 1.

No. of routine series	Date	Time	Length of wire (m)	Angle of wire (°)	Flow-meter revolutions	Estimated volume of water filtered (m <sup>3</sup> )	Settling volume of sample in a haul (m <sup>3</sup> )	Sample No.	No. of unusual large organisms removed before settling volume measurement
1982									
1	Jan. 22	1042-1045	8.4			*1.30		2301N001	
	"	1405-1408	9.0			*1.39		2301N002	
	"	1650-1653	9.5			*1.47		2301N003	
	"	1950-1953	10.5			*1.62		2301N004	
	"	2245-2248	10.0			*1.54		2301N005	
	Jan. 23	0150-0153	10.0			*1.54		2301N006	
	"	0443-0446	10.0			*1.54		2301N007	
	"	0800-0803	9.8			*1.51		2301N008	
	"	1046-1049	8.2			*1.27		2301N009	
2	Feb. 11	2220-2221	10.2			*1.57		2301N010	
4	Mar. 29	1045-1048	9.0		74	1.24	0.4	2301N011	
5	Apr. 21	0945-0948	7.0		60	1.00	1.0	2301N012	
6	May 10	0955-0958	10.0		80	1.34	0.8	2301N013	
7	May 24	0935-0938	9.0		110	1.84	0.8	2301N014	
8	June 16	1020-1023	9.5		70	1.17	0.8	2301N015	
9	July 5	1105-1108	9.5		106	1.77	0.4	2301N016	
10	July 27	1030-1033	9.5		73	1.22	0.8	2301N017	
11	Aug. 13	1005-1008	6.5		64	1.07	0.6	2301N018	

Flow-meter was not used

Table 7. Continued.

No. of routine series	Date	Time	Length of wire (m)	Angle of wire (°)	Flow-meter revolutions	Estimated volume of water filtered (m <sup>3</sup> )	Settling volume of sample in a haul (mL)	Sample No.	No. of unusual large organisms removed before settling volume measurement
12	Aug. 30	1010-1013	6.5		60	1.00	1.2	2301N019	
13	Sep. 23	1008-1011	7.0		51	0.85	0.6	2301N020	
14	Oct. 18	0920-0923	7.0		65	1.09	0.8	2301N021	
15	Nov. 2	0905-0908	7.0		82	1.37	0.8	2301N022	
16	Nov. 15	0855-0858	6.0		60	1.00	0.8	2301N023	
17	Dec. 2	0826-0829	7.0		68	1.14	1.8	2301N024	
18	Dec. 17	0852-0855	6.5		62	1.04	0.8	2301N025	
19	Dec. 28	0859-0902	7.5		70	1.17		2301N026	
	1983								
20	Jan. 15	0818-0821	7.5		63	1.05		2301N027	
21	Jan. 28	0845-0848	7.0		59	0.99		2301N028	

\* The volume of water filtered was estimated by mean filtration efficiency of 97 %.

Table 8. Data on plankton collected by vertical haul with a NORPAC standard net (0.10 mm mesh openings) at Station 2.

No. of routine series	Date	Time	Length of wire (m)	Angle of wire (°)	Flow-meter revolutions	Estimated volume of water filtered (m <sup>3</sup> )	Settling volume of sample in a haul (mL)	Sample No.	No. of unusual large organisms removed before settling volume measurement
	1982								
1	Jan. 27	1050-1053	26.0			*3.06		2302N001	
	"	1315-1318	26.0			*3.06		2302N002	
	"	1605-1607	27.0			*3.18		2302N003	
	"	1608-1610	6.2			*0.73		2303N004	
	"	1611-1614	11.2			*1.32		2302N005	
	"	1903-1905	6.2			*0.73		2302N006	
	"	1906-1908	11.2			*1.32		2302N007	
	"	1909-1912	27.5			*3.24		2302N008	
	"	2204-2206	6.2			*0.73		2302N009	
	"	2207-2209	11.2			*1.32		2302N010	
	"	2210-2213	27.0			*3.18		2302N011	
	Jan. 28	0105-0107	6.2			*0.73		2302N012	
	"	0108-0110	11.2			*1.32		2302N013	
	"	0111-0114	27.0			*3.18		2302N014	
	"	0400-0402	6.2			*0.73		2302N015	
	"	0402-0405	11.2			*1.32		2302N016	
	"	0406-0409	26.5			*3.12		2302N017	
	"	0735-0737	6.2			*0.73		2302N018	

Flow-meter was not used



Table 8. Continued.

No. of routine series	Date	Time	Length of wire (m)	Angle of wire (°)	Flow-meter revolutions	Estimated volume of water filtered (m <sup>3</sup> )	Settling volume of sample in a haul (ml)	Sample No.	No. of unusual large organisms removed before settling volume measurement
1	Jan. 28	0738-0740	11.2		} Flow-meter was not used	*1.32		2302N019	
	"	0741-0744	28.0			*3.30		2302N020	
	"	1007-1009	6.2			*0.73		2302N021	
	"	1010-1012	11.2			*1.32		2302N022	
	"	1012-1016	27.5			*3.24		2302N023	
2	Feb. 12	2120-2123	28.0			*3.30		2302N024	
4	Mar. 29	1200-1203	25.0		164	2.75	0.4	2302N025	
5	Apr. 21	1130-1133	25.0		215	3.60	1.6	2302N026	
6	May 10	1135-1138	25.0		183	3.06	0.8	2302N027	
7	May 24	1129-1132	25.0		221	3.70	1.4	2302N028	
8	June 16	1210-1213	25.0		213	3.57	1.0	2302N029	
9	July 5	1330-1333	23.0		157	2.63	0.4	2302N030	
10	July 27	1334-1337	22.0		155	2.59	0.8	2302N031	
11	Aug. 13	1331-1334	23.0		157	2.63	1.0	2302N032	
12	Aug. 30	1348-1351	22.5		138	2.31	0.8	2302N033	
13	Sep. 23	1503-1506	22.9		148	2.48	0.8	2302N034	
14	Oct. 18	1057-1059	22.0		160	2.68	1.0	2302N035	
15	Nov. 2	1040-1043	22.0		160	2.68	1.0	2302N036	

Table 8. Continued.

No. of routine series	Date	Time	Length of wire (m)	Angle of wire (°)	Flow-meter revolutions	Estimated volume of water filtered (m <sup>3</sup> )	Settling volume of sample in a haul (ml)	Sample No.	No. of unusual large organisms removed before settling volume measurement
16	Nov. 15	1025-1028	22.0		141	2.36	0.8	2302N037	
17	Dec. 2	0953-0956	22.0		143	2.39	1.4	2302N038	
18	Dec. 17	1024-1027	22.5		126	2.11	1.4	2302N039	1 Si.
19	Dec. 28	1400-1403	23.0		131	2.19		2302N040	
	1983								
20	Jan. 15	1030-1035	24.5		179	3.00		2302N041	
21	Jan. 27	1110-1117	25.0		182	3.05		2302N042	

\* The volume of water filtered was estimated by mean filtration efficiency of 74%.

Table 9. Data on plankton collected by vertical haul with a NORPAC standard net (0.10 mm mesh openings) at Station 3.

No. of routine series	Date	Time	Length of wire (m)	Angle of wire (°)	Flow-meter revolutions	Estimated volume of water filtered (m <sup>3</sup> )	Settling volume of sample in a haul (mL)	Sample No.	No. of unusual large organisms removed before settling volume measurement
1982									
3	Mar.	1	1305-1309		253	4.24		2303N001	
	"		1826-1830		237	3.97		2303N002	
	Mar.	2	0000-0004		240	4.02		2303N003	
	"		0513-0517		295	4.94		2303N004	
	"		1202-1206		302	5.06		2303N005	
4	Mar.	31	1225-1229	0	333	5.57	1.2	2303N006	
	"		1800-1804	0	310	5.19	4.8	2303N007	
5	Apr.	22	1010-1014	10	298	4.99	2.0	2303N008	1 Sa.
6	May	11	1010-1014	2	270	4.52	0.4	2303N009	
7	May	25	1037-1041	0	299	5.01	1.2	2303N010	
8	June	10	1103-1107	4	329	5.51	1.8	2303N011	
	"		1810-1814	0	300	5.02	1.6	2303N012	
	June	11	2300-2304	0	280	4.69	2.0	2303N013	1 Eu.
	June	12	0725-0729	0	315	5.27	2.0	2303N014	
	"		1200-1204	0	257	4.30	2.0	2303N015	
9	July	7	1037-1041	0	303	5.07	1.6	2303N016	
10	July	29	1025-1029	0	301	5.04	2.0	2303N017	
11	Aug.	16	1015-1019	0	260	4.35	1.0	2303N018	

Table 9. Continued.

No. of routine series	Date	Time	Length of wire (m)	Angle of wire (°)	Flow-meter revolutions	Estimated volume of water filtered (m <sup>3</sup> )	Settling volume of sample in a haul (mL)	Sample No.	No. of unusual large organisms removed before settling volume measurement
12	Sep. 2	1442-1447	46.5	0	262	4.39	0.8	2303N019	
13	Sep. 16	1015-1020	45.0	3	252	4.22	1.2	2303N020	
	"	1757-1802	46.0	0	273	4.57	1.0	2303N021	
	"	2222-2227	46.0	0	290	4.86	1.2	2303N022	
	Sep. 17	0637-0643	47.0	0	262	4.39	0.8	2303N023	
	"	1054-1059	47.0	0	297	4.97	0.8	2303N024	
14	Oct. 8	1436-1440	46.5	0	293	4.91	1.2	2303N025	
15	Nov. 2	1401-1406	47.0	0	293	4.91	0.8	2303N026	
16	Nov. 15	1405-1409	46.0	0	298	4.99	0.4	2303N027	
17	Dec. 2	1322-1427	46.0	0	273	4.57	1.8	2303N028	1 Po., 1 Am.
18	Dec. 13	1012-1016	45.0	0	247	4.14	2.4	2303N029	1 Si.
	"	1715-1719	47.0	0	252	4.22	1.4	2303N030	
	"	2245-2249	46.5	0	260	4.35	1.0	2303N031	
	Dec. 14	0634-0638	46.5	0	267	4.47	1.0	2303N032	
	"	1110-1114	46.0	0	270	4.52	2.4	2303N033	4 Me., 1 Ch.
19	Dec. 29	0928-0932	45.0	0	268	4.49		2303N034	
	1983								
20	Jan. 15	1429-1433	38.0	0	237	3.97		2303N035	
21	Jan. 27	1448-1454	38.0	0	227	3.80		2303N036	

Table 10. Data on plankton collected by vertical haul with NORPAC standard net (0.10 mm mesh openings) at Station 4.

No. of routine series	Date	Time	Length of wire (m)	Angle of wire (°)	Flow-meter revolutions	Estimated volume of water filtered (m <sup>3</sup> )	Settling volume of sample in a haul (mL)	Sample No.	No. of unusual large organisms removed before settling volume measurement
1982									
4	Mar. 29	1340-1348	150	0	1177	19.70	3.6	2304N001	
5	Apr. 21	1433-1441	150	0	1094	18.32	5.2	2304N002	
6	May 10	1437-1445	150	0	1038	17.38	3.0	2304N003	
7	May 24	1422-1430	150	0	1070	17.91	4.4	2304N004	
8	June 16	1525-1533	150	0	1167	19.54	8.4	2304N005	1 Ch., 3 Co., 1 Am., 1 Eu.
9	July 10	1115-1123	158	2	1018	17.04	3.4	2304N006	1 Me., 2 Co.
10	July 28	1105-1113	150	0	1091	18.26	2.4	2304N007	1 Sa.
11	Aug. 17	1023-1031	150	0	1098	18.38	2.0	2304N008	
12	Aug. 31	1123-1130	150	2	1104	18.48	1.8	2304N009	
13	Sep. 21	1118-1125	150	0	1070	17.91	2.0	2304N010	
14	Oct. 19	0957-1003	150	3	1228	20.56	1.8	2304N011	
15	Nov. 3	1421-1429	150	0	1010	16.91	1.4	2304N012	3 Si.
16	Nov. 16	1428-1438	150	0	1078	18.05	2.4	2304N013	1 Ct., 1 Ch., 2 Co.
17	Dec. 4	0834-0841	150	0	1008	16.88	1.6	2304N014	14 Si., 3 Ch.
18	Dec. 17	1325-1332	150	0	1082	18.11	3.2	2304N015	15 Si., 5 Ch.
19	Dec. 27	1454-1502	150	0	1172	19.62		2304N016	
1983									
20	Jan. 14	1440-1448	150	0	1092	18.28		2304N017	
21	Jan. 27	1035-1043	150	0	1130	18.92		2304N018	

Table 11. Data on plankton collected by divided vertical hauls with NORPAC type closing net (0.10 mm mesh openings) at Station 5.

No. of routine series	Date	Time	Length of wire (m)	Angle of wire (°)	Estimated depth of haul (m)	Flow-meter revolutions	Estimated volume of water filtered (m <sup>3</sup> )	Settling volume of sample in a haul (ml)	Sample No.	No. of unusual large organisms removed before settling volume measurement
1982										
4	Apr. 5	1143 1153	160-0	15	155-0	1280	21.43	10.4	2305ND001	2 Si.
		1200 1217	325-150	20	305-141		*19.76	12.0	2305ND002	1 Eu., 1 Fi.
		1220 1245	650-300	20	611-282		*39.52	8.0	2305ND003	1 Co., 3 My.
	Apr. 5	2020 2030	152-0	10	150-0	1433	23.99		2305ND004	
5	Apr. 22	1337 1345	151-0	9	149-0	1316	22.03	5.2	2305ND005	2 Sa.
		1348 1405	307-0	12	300-0	2805	46.96	7.6	2305ND006	1 Eu., 57 Sa.
		1410 1430	610-0	10	601-0	5219	87.37	10.8	2305ND007	1 My., 5 Eu., 1 Sa.
6	May 11	1321 1330	150-0	5	149-0	956	16.00	4.2	2305ND008	
		1335 1353	300-150	5	299-149		*16.94	3.6	2305ND009	
		1355 1430	600-300	1	600-300		*33.88	2.0	2305ND010	1 Po., 1 Ch., 3 Co.
7	May 25	1445 1453	150-0	2	150-0	925	15.49	3.6	2305ND011	1 Ch., 3 Co., 2 Eu.
		1456 1513	300-150	0	300-150		*16.94	3.6	2305ND012	2 Co., 1 Eu.
		1518 1555	600-0	0	600-0	4156	69.58	9.6	2305ND013	1 Me., 3 Am., 3 Eu., 38 Sa.

Table 11. Continued

No. of routine series	Date	Time	Length of wire (m)	Angle of wire (°)	Estimated depth of haul (m)	Flow-meter revolutions	Estimated volume of water filtered (m <sup>3</sup> )	Settling volume of sample in a haul (mL)	Sample No.	No. of unusual large organisms removed before settling volume measurement
8	June 13	1126 1134	150-0	5	149-0	970	16.24	4.4	2305ND014	1 Eu.
		1137 1149	300-150	6	298-149		*16.94	5.6	2305ND015	2 Ch., 9 Eu., 1 Co.
		1152 1215	600-300	2	600-300		*33.88	2.4	2305ND016	1 Ch., 1 Am., 1 Eu.
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	June 13	2304 2314	151-0	8	150-0	1050	17.58	4.0	2305ND017	1 Eu.
		2317 2334	305-150	11	299-147		*17.50	5.6	2305ND018	2 Ch., 1 Eu., 5 Co.
		2336 0006	608-300	8	594-297		*34.78	5.2	2305ND019	1 Si., 2 Ch., 3 Co., 1 My., 3 Eu., 1 Pt.
9	July 14	1300 1306	151-0	8	150-0	1013	16.96	3.4	2305ND020	1 Si., 4 Co.
		1308 1321	301-150	6	299-149		*17.05	3.2	2305ND021	21 Ch., 6 Co., 1 Eu.
		1324 1352	603-300	4	602-299		*34.21	5.8	2305ND022	14 Si., 2 Me., 1 Po., 32 Ch., 4 Co.
10	July 30	1314 1322	150-0	6	149-0	1260	21.09	4.0	2305ND023	2 Sa.
		1325 1337	301-150	6	299-149		*17.05	3.2	2305ND024	1 Me., 2 Ct., 9 Ch., 9 Co., 2 Am., 3 Eu.
		1340 1505	601-300	2	601-300		*33.99	7.6	2305ND025	17 Si., 41 Ch., 3 Co., 2 Am., 4 Eu.
11	Aug. 19	1128 1136	150-0	4	150-0	1005	16.83	1.0	2305ND026	1 Ch.
		1139 1154	300-150	2	300-150		*16.94	2.4	2305ND027	1 Si., 2 Ct., 1 Po., 12 Ch.
		1156 1229	600-300	2	600-300		*33.88	5.4	2305ND028	3 Po., 47 Ch., 2 Am., 1 My.

Table 11. Continued

No. of routine series	Date	Time	Length of wire (m)	Angle of wire (°)	Estimated depth of haul (m)	Flow-meter revolutions	Estimated volume of water filtered (m <sup>3</sup> )	Settling volume of sample in a haul (ml)	Sample No.	No. of unusual large organisms removed before settling volume measurement
12	Sep. 3	1223 1229	150-0	10	148-0	1030	17.24	1.6	2305ND029	
		1232 1244	300-150	8	297-149		*16.94	3.0	2305ND030	13 Ch., 1 Eu.
		1245 1315	600-300	5	598-299		*33.88	4.4	2305ND031	3 Si., 2 Po., 77 Ch., 2 Co., 1 Am., 6 Eu.
13	Sep. 19	1057 1106	150-0	9	148-0	955	15.99	2.4	2305ND032	
		1107 1125	300-150	7	298-149		*16.94	1.8	2305ND033	1 Ct., 6 Ch., 1 Eu.
		1126 1156	600-300	3	600-300		*33.88	3.6	2305ND034	28 Si., 2 Po., 67 Ch., 2 Co., 4 Eu.
	Sep. 19	2215 2221	150-0	6	149-0	1002	16.77	1.6	2305ND035	1 Si., 3 Eu.
2222 2243		300-150	5	299-149		*16.94	0.8	2305ND036		
2245 2317		600-300	4	599-299		*33.88	2.4	2305ND037	4 Si., 1 Po., 23 Ch., 2 Co., 1 My., 1 Eu.	
14	Oct. 20	1321 1328	150-0	6	149-0	975	16.32	1.6	2305ND038	1 Si., 1 Ch.
		1330 1343	300-150	6	298-149		*16.94	1.4	2305ND039	13 Ch.
		1345 1408	600-300	7	596-298		*33.88	3.8	2305ND040	3 Po., 79 Ch., 2 Co., 1 Eu.
15	Nov. 4	1030 1038	150-0	0	150-0	820	13.73	1.6	2305ND041	2 Si., 1 Me., 2 Ch., 1 Am.
		1039 1054	300-150	0	300-150		*16.94	1.6	2305ND042	23 Si., 9 Me., 7 Ch.
		1055 1120	600-300	0	600-300		*33.88	1.6	2305ND043	6 Si., 47 Ch., 2 Co., 2 Am.



Table 11. Continued

No. of routine series	Date	Time	Length of wire (m)	Angle of wire (°)	Estimated depth of haul (m)	Flow-meter revolutions	Estimated volume of water filtered (m <sup>3</sup> )	Settling volume of sample in a haul (m <sup>3</sup> )	Sample No.	No. of unusual large organisms removed before settling volume measurement
16	Nov.18	1107 1114	150-0	7	149-0	752	12.59	1.6	2305ND044	6 Si., 3 Ch., 1 Am.
		1116 1130	300-150	5	299-149		*16.94	1.0	2305ND045	3 Si., 1 Ct., 6 Ch.
		1132 1158	600-300	4	599-299		*33.88	2.8	2305ND046	1 Si., 3 Me., 48 Ch., 3 Co., 3 Am., 1 Sa.
17	Dec. 3	0854 0902	150-0	2	150-0	834	13.96	2.8	2305ND047	
		0904 0918	300-150	1	300-150		*16.94	1.2	2305ND048	1 Si., 13 Ch., 2 Co.
		0921 0945	600-300	3	599-300		*33.88	2.4	2305ND049	3 Po., 76 Ch., 6 Co., 1 Am.
18	Dec.15	1046 1055	150-0	3	150-0	758	12.69	3.6	2305ND050	33 Si., 1 Me., 1 Ch.
		1057 1113	300-150	4	299-150		*16.94	1.0	2305ND051	1 Si., 2 Me., 18 Ch.
		1115 1143	600-300	2	599-300		*33.88	1.2	2305ND052	3 Si., 1 Me., 1 Po., 47 Ch., 5 Co.
-----	Dec.15	2334 2345	150-0	3	150-0	712	11.92	3.4	2305ND053	19 Si., 5 Ch.
		2347 0004	300-150	2	300-150		*16.94	1.2	2305ND054	20 Si., 1 Me., 19 Ch., 4 Co., 3 Eu.
		0006 0038	600-300	0	600-300		*33.88	1.2	2305ND055	1 Si., 54 Ch., 8 Co., 1 Am.
19	Dec.27	1006 1010	150-0	4	149-0	1123	18.80	2305ND056		

\* Volume of water filtered was estimated by assuming 71 % filtration efficiency of the net.

Table 12. Data on plankton collected by vertical haul with Norpac standard net (0.10 mm mesh openings) at Station 4'.

No. of routine series	Date	Time	Length of wire (m)	Angle of wire (°)	Flow-meter revolutions	Estimated volume of water filtered (m <sup>3</sup> )	Settling volume of sample in a haul (ml)	Sample No.	No. of unusual large organisms removed before settling volume measurement
	1983								
20	Jan. 14	0930-0935	150	2	1039	17.39		2304'N001	

Table 13. Data on plankton collected by layered sampling with "NIPR-I" type sampler (0.10 mm mesh openings) at Station 1.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
1	Jan. 22	1	0948-0953	0			2301001	*
		2	1005-1010	2			2301002	*
		3	1014-1019	4			2301003	*
		4	1022-1027	6			2301004	*
		5	1030-1035	7			2301005	*
	Jan. 22	1	1322-1327	0			2301006	*
		2	1332-1337	2			2301007	*
		3	1340-1345	4			2301008	*
		4	1348-1353	6			2301009	*
		5	1355-1400	7.1			2301010	*
	Jan. 22	1	1611-1616	0			2301011	*
		2	1619-1624	2			2301012	*
		3	1627-1632	4			2301013	*
		4	1635-1640	6			2301014	*
		5	1643-1648	7.6			2301015	*
	Jan. 22	1	1914-1919	0			2301016	*
		2	1921-1926	2			2301017	*
		3	1928-1932	4			2301018	*
		4	1935-1940	6			2301019	*
		5	1943-1948	7.8			2301020	*
	Jan. 22	1	2209-2214	0			2301021	*
		2	2216-2221	2			2301022	*
		3	2223-2228	4			2301023	*
		4	2230-2235	6			2301024	*
		5	2238-2243	6.9			2301025	*

5 min. sampling

Table 13. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
1	Jan. 23	1	0111-0116	0			2301026	*
		2	0119-0124	2			2301027	*
		3	0126-0131	4			2301028	*
		4	0134-0139	6			2301029	*
		5	0142-0147	7.1			2301030	*
	Jan. 23	1	0406-0411	0			2301031	*
		2	0414-0419	2			2301032	*
		3	0421-0426	4			2301033	*
		4	0427-0432	6			2301034	*
		5	0434-0439	7.6			2301035	*
	Jan. 23	1	0723-0728	0			2301036	*
		2	0731-0736	2			2301037	*
		3	0738-0743	4			2301038	*
		4	0745-0750	6			2301039	*
		5	0752-0757	6.8			2301040	*
	Jan. 23	1	1009-1014	0			2301041	*
		2	1017-1022	2			2301042	*
		3	1024-1029	4			2301043	*
		4	1030-1035	6			2301044	*
		5	1038-1043	6.4			2301045	*
2	Feb. 11	1	2145-2148	0			2301046	*
		2	2151-2154	1			2301047	*
		3	2156-2159	2			2301048	*
		4	2215-2218	4			2301049	*
		5	2224-2227	6			2301050	*
		6	2206-2209	8.1			2301051	*

5 min. sampling

Table 13. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
4	Mar. 29	1	1009-1011	0	3033	4.82	2301052	
		2	1014-1017	1	2868	4.56	2301053	
		3	1020-1023	2	3042	4.84	2301054	3 min. 13 sec. sampling
		4	1025-1028	5	2945	4.68	2301055	
		5	1038-1041	7	2773	4.41	2301056	Cod end was entangled
5	Apr. 21	1	0920-0923	0	2945	4.68	2301057	
		2	0925-0928	1	2939	4.67	2301058	
		3	0940-0943	2	3000	4.77	2301059	
		4	0930-0933	5	2956	4.70	2301060	
		5	0935-0938	7	2996	4.76	2301061	
6	May 10	1	0927-0930	0	2953	4.70	2301062	
		2	0932-0935	1	2952	4.69	2301063	
		3	0937-0940	2	2872	4.57	2301064	
		4	0942-0945	5	3009	4.78	2301065	
		5	0947-0950	7	3061	4.86	2301066	
7	May 24	1	0948-0951	0	3068	4.88	2301067	
		2	0953-0956	1	2973	4.73	2301068	
		3	0958-1001	2	3055	4.86	2301069	
		4	1003-1006	5	3096	4.92	2301070	
		5	1008-1011	7	2640	4.20	2301071	
8	June 16	1	0946-0949	0	3159	5.02	2301072	
		2	0951-0954	1	3292	5.23	2301073	
		3	0956-0959	2	3167	5.03	2301074	
		4	1001-1004	5	3130	4.97	2301075	
		5	1013-1016	7	3081	4.90	2301076	

Table 13. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
9	July 5	1	1056-1059	0	2990	4.75	2301077	
		2	1050-1053	1	3108	4.94	2301078	
		3	1045-1048	2	3108	4.94	2301079	
		4	1040-1043	5	3114	4.95	2301080	
		5	1035-1038	7	3300	5.24	2301081	
10	July 27	1	1055-1058	0	3059	4.86	2301082	
		2	1050-1053	1	3157	5.02	2301083	
		3	1045-1048	2	3144	5.00	2301084	
		4	1040-1043	5	3127	4.97	2301085	
		5	1035-1038	7	3011	4.79	2301086	
11	Aug. 13	1	1048-1051	0	3204	5.09	2301087	
		2	1043-1046	1	3107	4.94	2301088	
		3	1038-1041	2	3133	4.98	2301089	
		4	1032-1035	5	3305	5.25	2301090	
		5	1025-1028	6	3124	4.96	2301091	
12	Aug. 30	1	1100-1103	0	3279	5.21	2301092	
		2	1055-1057	1	3115	4.95	2301093	
		3	1050-1053	2	3035	4.82	2301094	
		4	1044-1047	5	3245	5.15	2301095	
		5	1038-1041	7	3254	5.17	2301096	
13	Sep. 23	1	1037-1040	0	3042	4.83	2301097	
		2	1033-1036	1	2937	4.67	2301098	
		3	1028-1031	2	3138	4.99	2301099	
		4	1024-1027	5	2786	4.43	2301100	
		5	1019-1022	7	3006	4.78	2301101	

Table 13. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
14	Oct. 18	1	0952-0955	0	3174	5.04	2301102	
		2	0947-0950	1	3040	4.83	2301103	
		3	0943-0946	2	3161	5.02	2301104	
		4	0938-0941	5	3059	4.86	2301105	
		5	0932-0935	7	3362	5.34	2301106	
15	Nov. 2	1	0943-0946	0	3298	5.24	2301107	
		2	0938-0941	1	1548	**5.15	2301108	Propeller was off
		3	0934-0937	2	3132	4.98	2301109	
		4	0928-0931	5	3294	5.23	2301110	
		5	0921-0924	7	1053	**5.15	2301111	Propeller was off
16	Nov. 15	1	0916-0919	0	3458	5.49	2301112	
		2	0912-0915	1	3161	5.02	2301113	
		3	0908-0911	2	3379	5.36	2301114	
		4	0903-0906	5	3324	5.28	2301115	
17	Dec. 2	1	0913-0916	0	3659	5.80	2301116	
		2	0909-0912	1	3590	5.70	2301117	
		3	0905-0908	2	3545	5.63	2301118	
		4	0900-0903	5	3582	5.68	2301119	
18	Dec. 17	1	0915-0918	0	3545	5.63	2301120	
		2	0911-0914	1	3545	5.63	2301121	
		3	0907-0910	2	3438	5.46	2301122	
		4	0901-0904	5	3476	5.52	2301123	
19	Dec. 28	1	0920-0923	0			2301124	*
		2	0924-0927	1			2301125	*

\* Prototype "NIPR-I" sampler was used.

\*\* Volume was obtained as an average of the same series of sampling.

Table 14. Data on plankton collected by layered sampling with "NIPR-I" type sampler (0.10 mm mesh openings) at Station 2.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
1	Jan. 27	1	1006-1009	0			2302001	*
		2	1012-1015	1			2302002	*
		3	1016-1019	2			2302003	*
		4	1021-1024	5			2302004	*
		5	1026-1029	10			2302005	*
		6	1037-1040	15			2302006	*
		7	1045-1048	23.8			2302007	*
	Jan. 28	1	1335-1338	0			2302008	*
		2	1340-1343	1			2302009	*
		3	1345-1348	2			2302010	*
		4	1420-1423	5			2302011	*
		5	1402-1405	10			2302012	*
		6	1408-1411	15			2302013	*
		7	1414-1417	23.8			2302014	*
2	Feb. 12	1	2026-2029	0			2302015	*
		2	2034-2037	1			2302016	*
		3	2041-2044	2			2302017	*
		4	2052-2055	5			2302018	*
		5	2102-2105	10			2302019	*
4	Mar. 29	1	1120-1123	0	2559	4.08	2302021	
		2	1125-1128	1	2904	4.62	2302022	
		3	1130-1133	2	2925	4.65	2302023	
		4	1137-1140	5	2833	4.51	2302024	
		5	1142-1145	10	2803	4.46	2302025	
		6	1147-1150	15	2338	3.73	2302026	Cod. end was entangled
		7	1155-1158	23	2706	4.31	2302027	



Table 14. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
5	Apr. 21	1	1045-1048	0	2507	3.99	2302028	Cod end was entangled
		2	1050-1053	1	2527	4.03	2302029	Cod end was entangled
		3	1058-1101	2	2785	4.43	2302030	
		4	1104-1107	5	2962	4.71	2302031	
		5	1110-1113	10	3112	4.94	2302032	
		6	1116-1119	15	2936	4.67	2302033	
		7	1123-1126	23	2838	4.51	2302034	
6	May 10	1	1038-1041	0	2187	**4.73	2302035	Propeller was off
		2	1043-1046	1	2984	4.74	2302036	
		3	1049-1052	1	3018	4.80	2302037	
		4	1055-1058	2	3003	4.77	2302038	
		5	1102-1105	5	2954	4.70	2302039	
		6	1107-1110	10	3026	4.81	2302040	
		7	1113-1116	15	2977	4.73	2302041	
		8	1122-1125	23	2845	4.53	2302042	
7	May 24	1	1044-1047	0	2532	4.03	2302043	Cod end was entangled
		2	1049-1052	1	3023	4.81	2302044	
		3	1054-1057	2	2970	4.72	2302045	
		4	1059-1102	5	3001	4.77	2302046	
		5	1104-1107	10	3032	4.82	2302047	
		6	1109-1112	15	3149	5.00	2302048	
		7	1115-1118	23	2996	4.76	2302049	
8	June 16	1	1138-1141	0	3116	4.95	2302050	
		2	1143-1146	1	2974	4.73	2302051	
		3	1147-1150	2	3089	4.91	2302052	
		4	1152-1155	5	3054	4.85	2302053	
		5	1157-1200	10	3121	4.96	2302054	

Table 14. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
9	July 5	1	1419-1422	0	3114	4.95	2302056	
		2	1414-1417	1	3184	5.06	2302057	
		3	1410-1413	2	3280	5.21	2302058	
		4	1405-1408	5	3271	5.19	2302059	
		5	1400-1403	10	3098	4.92	2302060	
		6	1354-1358	15	3121	4.96	2302061	
		7	1348-1351	23	3146	5.00	2302062	
10	July 27	1	1424-1427	0	3086	4.90	2302063	
		2	1420-1423	1	3184	5.06	2302064	
		3	1415-1418	2	2870	4.56	2302065	
		4	1405-1408	5	3136	4.98	2302066	
		5	1400-1403	10	3187	5.06	2302067	
		6	1358-1401	15	2981	4.74	2302068	
		7	1350-1353	23	3004	4.78	2302069	
11	Aug. 13	1	1424-1427	0	2770	4.41	2302070	
		2	1418-1421	1	2178	**4.72	2302071	Propeller was off
		3	1414-1417	2	2731	4.35	2302072	
		4	1409-1412	5	3186	5.06	2302073	
		5	1404-1407	10	3201	5.08	2302074	
		6	1358-1401	15	2714	4.32	2302075	
		7	1351-1354	23	3198	5.08	2302076	
12	Aug. 30	1	1438-1441	0	3138	4.99	2302077	
		2	1433-1436	1	3194	5.07	2302078	
		3	1428-1431	2	3269	5.19	2302079	
		4	1423-1426	5	3195	5.08	2302080	
		5	1418-1421	10	3146	5.00	2302081	
		6	1412-1415	15	2962	4.71	2302082	Cod end was entangled
		7	1405-1408	23	2965	4.71	2302083	

Table 14. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
13	Sep. 23	1	1552-1555	0	3194	5.07	2302084	
		2	1548-1551	1	3166	5.03	2302085	
		3	1544-1547	2	3041	4.83	2302086	
		4	1540-1543	5	3158	5.02	2302087	
		5	1535-1538	10	2973	4.73	2302088	
		6	1530-1533	15	3163	5.02	2302089	
		7	1524-1527	21	3057	4.86	2302090	
14	Oct. 18	1	1137-1140	0	2942	4.68	2302091	
		2	1133-1136	1	3135	4.98	2302092	
		3	1126-1129	2	3224	5.12	2302093	
		4	1122-1125	5	3263	5.18	2302094	
		5	1118-1121	10	3146	5.00	2302095	
		6	1111-1114	15	9	**4.99	2302096	The flow-meter was frozen
		7	1106-1109	23	515	**4.99	2302097	
15	Nov. 2	1	1117-1120	0	3138	4.99	2302098	
		2	1113-1116	1	3197	5.08	2302099	
		3	1109-1112	2	3098	4.92	2302100	
		4	1105-1108	5	3166	5.03	2302101	
		5	1059-1102	10	381	**5.06	2302102	Propeller was off
		6	1054-1057	15	3208	5.10	2302103	
		7	1048-1051	23	3285	5.22	2302104	
16	Nov. 15	1	1111-1114	0	3074	4.89	2302105	
		2	1057-1100	1	3275	5.20	2302106	
		3	1053-1056	2	3078	4.89	2302107	
		4	1048-1052	5	3254	5.17	2302108	
		5	1043-1046	10	2633	4.19	2302109	
		6	1038-1041	15	3184	5.06	2302110	Cod end was entangled
		7	1033-1036	22	2964	4.71	2302111	

Table 14. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
17	Dec. 2	1	1055-1058	0	3468	5.50	2302112	
		2	1051-1054	1	3594	5.70	2302113	
		3	1047-1050	2	3418	5.43	2302114	
		4	1043-1046	5	3594	5.70	2302115	
		5	1038-1041	10	3533	5.61	2302116	
		6	1033-1036	15	3444	5.47	2302117	
		7	1022-1025	22	3348	5.32	2302118	
18	Dec.17	1	1059-1102	0	3583	5.68	2302119	
		2	1055-1058	1	3483	5.53	2302120	
		3	1051-1054	2	3481	5.52	2302121	
		4	1047-1050	5	3584	5.69	2302122	
		5	1042-1045	10	3443	5.46	2302123	
		6	1036-1039	15	3391	5.38	2302124	
		7	1030-1033	20	2880	4.58	2302125	Cod end was entangled

\* Prototype "NIPR-I" sampler was used.

\*\* Volume was obtained as an average of the same series of sampling.

Table 15. Data on plankton collected by layered sampling with "NIPR-I" type sampler (0.10 mm mesh openings) at Station 3.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
3	Mar. 1	1	1158-1201	0	2893	4.60	2303001	
		2	1204-1207	1	2698	4.29	2303002	
		3	1211-1214	2	3089	4.91	2303003	
		4	1218-1221	5	2911	4.63	2303004	
		5	1225-1228	10	3180	5.05	2303005	
		6	1232-1235	20	2829	4.50	2303006	
		7	1240-1243	30	2902	4.62	2303007	
		8	1453-1256	45	2845	4.53	2303008	
	Mar. 1	1	1720-1723	0	2375	**4.74	2303009	The flow-meter was frozen
		2	1725-1728	1	3016	4.79	2303010	
		3	1730-1733	2	2929	4.66	2303011	
		4	1737-1740	5	3103	4.93	2303012	
		5	1745-1748	10	2873	4.57	2303013	
		6	1753-1757	20	2939	4.67	2303014	
		7	1804-1807	30	3013	4.79	2303015	
		8	1817-1820	45	2283	**4.74	2303016	The flow-meter was frozen
	Mar. 1	1	2303-2306	0	3005	4.78	2303017	
		2	2309-2312	1	2836	4.51	2303018	
		3	2316-2319	2	3199	5.08	2303019	
		4	2322-2325	5	2904	4.62	2303020	
		5	2328-2331	10	3116	4.95	2303021	
		6	2334-2337	20	3364	5.34	2303022	
		7	2340-2343	30	2876	4.57	2303023	
		8	2347-2350	45	2510	4.00	2303024	

Table 15. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks	
3	Mar. 2	1	0518-0520	0	1562	2.48	2303025	1 min. 38 sec. operating	
		2	0523-0526	1	2710	4.31	2303026		
		3	0528-0531	2	2852	4.54	2303027		
		4	0534-0537	5	2625	4.18	2303028		
		5	0541-0544	10	2966	4.72	2303029		
		6	0548-0551	20	2902	4.62	2303030		
		7	0555-0558	30	2920	4.64	2303031		
		8	0603-0606	45	2391	**4.50	2303032		Propeller was off
	Mar. 2	1	1106-1109	0	2837	4.51	2303033		
		2	1111-1114	1	2692	4.29	2303034		
		3	1116-1119	2	2634	4.19	2303035		
		4	1121-1124	5	3030	4.82	2303036		
		5	1127-1130	10	3014	4.79	2303037		
		6	1132-1135	20	2798	4.45	2303038		
		7	1140-1143	30	2680	4.27	2303039		
		8	1150-1153	45	2738	4.36	2303040		
4	Mar. 31	1	1235-1238	0	2259	**4.53	2303041	The flow-meter was frozen	
		2	1240-1243	1	3228	5.13	2303042		
		3	1245-1248	2	2903	4.62	2303043		
		4	1250-1253	5	3008	4.78	2303044		
		5	1255-1258	10	2958	4.70	2303045		
		6	1300-1303	20	2526	4.02	2303046		Cod end was entangled
		7	1305-1308	30	2827	4.50	2303047		
		8	1312-1315	45	2502	3.99	2303048		Cod end was entangled

Table 15. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
4	Mar. 31	1	1710-1713	0	666	**4.40	2303049	The flow-meter was frozen
		2	1715-1718	1	2921	4.64	2303050	
		3	1720-1723	2	2633	4.19	2393051	
		4	1726-1729	5	2972	4.72	2303052	
		5	1732-1735	10	2595	4.13	2303053	Cod end was entangled
		6	1738-1741	20	2559	4.08	2303054	Cod end was entangled
		7	1744-1747	30	2821	4.49	2303055	
		8	1751-1754	45	2881	4.58	2303056	
5	Apr. 22	1	0919-0922	0	1580	**4.30	2303057	The flow-meter was frozen
		2	0923-0926	1	2323	**4.30	2303058	Propeller was off
		3	0928-0931	2	2479	3.95	2303059	Cod end was entangled
		4	0934-0937	5	2833	4.51	2303060	
		5	0940-0943	10	2668	4.25	2303061	
		6	0946-0949	20	2843	4.52	2303062	
		7	0953-0956	30	2479	3.95	2303063	Cod end was entangled
		8	1000-1003	45	2918	4.64	2303064	
6	May 11	1	0915-0918	0	1001	**4.49	2303065	The flow-meter was frozen
		2	0920-0923	1	2746	4.37	2303066	
		3	0925-0928	2	13	**4.49	2303067	Propeller was off
		4	0932-0935	5	3013	4.79	2303068	
		5	0938-0941	10	3185	5.06	2303069	
		6	0944-0947	20	2785	4.43	2303070	
		7	0951-0954	30	2532	4.03	2303071	Cod end was entangled
		8	0959-1002	45	2675	4.26	2303072	

Table 15. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks	
7	May 25	1	0923-0926	0	3112	4.94	2303073		
		2	0930-0933	1	3168	5.03	2303074		
		3	0937-0940	2	2922	4.65	2303075		
		4	0942-0945	5	2990	4.75	2303076		
		5	0947-0950	10	3234	5.14	2303077		
		6	0954-0957	20	2840	4.52	2303078		
		7	1003-1006	30	2680	4.27	2303079		
		8	1010-1013	45	2763	4.40	2303080		
8	June 10	1	1015-1018	0	2531	4.03	2303081	Cod end was entangled	
		2	1020-1023	1	3030	4.82	2303082		
		3	1025-1027	2	2834	4.51	2303083		
		4	1029-1032	5	2539	4.04	2303084	Cod end was entangled	
		5	1034-1037	10	2801	4.46	2303085		
		6	1040-1043	20	2797	4.45	2303086		
		7	1045-1047	30	2856	4.54	2303087		
		8	1051-1054	45	2690	4.28	2303088		
	-----								
	June 10		1	1720-1723	0	2721	4.33	2303089	
			2	1725-1728	1	2835	4.51	2303090	
			3	1730-1733	2	2786	4.43	2303091	
			4	1735-1738	5	3068	4.88	2303092	
			5	1740-1743	10	2864	4.56	2303093	
			6	1745-1748	20	2871	4.57	2303094	
			7	1751-1754	30	2323	3.71	2303095	Cod end was entangled
		8	1759-1802	45	2721	4.33	2303096		
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Table 15. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
8	June 11	1	2321-2324	0	1243	**4.86	2303097	The flow-meter was frozen
		2	2326-2329	1	3048	4.84	2303098	
		3	2333-2336	2	3209	5.10	2303099	
		4	2339-2342	5	3337	5.30	2303100	
		5	2344-2347	10	3131	4.97	2303101	
		6	2349-2352	20	2974	4.73	2303102	
		7	2355-2358	30	2675	4.26	2303103	
		8	0001-0004	45	3011	4.79	2303104	
-----								
	June 12	1	0638-0641	0	2868	4.56	2303105	Cod end was entangled
		2	0644-0647	1	3052	4.85	2303106	
		3	0649-0653	2	3208	5.10	2303107	
		4	0654-0657	5	3120	4.96	2303108	
		5	0658-0701	10	3045	4.84	2303109	
		6	0703-0706	20	2994	4.68	2303110	
		7	0709-0712	30	2599	4.14	2303111	
		8	0715-0718	45	2961	4.71	2303112	
-----								
	June 12	1	1114-1117	0	2077	**4.64	2303113	Cod end was entangled
		2	1119-1122	1	3027	4.81	2303114	
		3	1125-1128	2	3020	4.80	2303115	
		4	1130-1133	5	2999	4.77	2303116	
		5	1135-1138	10	2986	4.75	2303117	
		6	1141-1144	20	2495	3.98	2303118	
		7	1146-1149	30	2956	4.70	2303119	
		8	1153-1156	45	2958	4.70	2303120	

Table 15. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
9	July 7	1	1145-1148	0	2403	3.83	2303121	Cod end was entangled
		2	1140-1143	1	3054	4.85	2303122	
		3	1135-1138	2	3107	4.94	2303123	
		4	1130-1133	5	2758	4.39	2303124	
		5	1124-1127	10	3006	4.78	2303125	
		6	1118-1121	20	3078	4.89	2303126	
		7	1112-1115	30	2417	3.85	2303127	Cod end was entangled
		8	1105-1108	45	2563	4.08	2303128	
10	July 29	1	1130-1133	0	3188	5.06	2303129	
		2	1126-1129	1	3102	4.93	2303130	
		3	1121-1124	2	3172	5.04	2303131	
		4	1116-1119	5	3199	5.08	2303132	
		5	1111-1114	10	3150	5.00	2303133	
		6	1106-1109	20	3204	5.09	2303134	
		7	1100-1103	30	3127	4.97	2303135	
		8	1054-1057	45	3188	5.06	2303136	
11	Aug. 16	1	1124-1127	0	3073	4.88	2303137	
		2	1120-1123	1	3119	4.96	2303138	
		3	1116-1119	2	2980	4.74	2303139	
		4	1112-1115	5	3229	5.13	2303140	
		5	1107-1110	10	3182	5.05	2303141	
		6	1102-1105	20	3036	4.83	2303142	
		7	1056-1059	30	2632	4.19	2303143	Cod end was entangled
		8	1049-1052	45	3090	4.91	2303144	

Table 15. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks	
12	Sep. 2	1	1543-1546	0	3019	4.80	2303145		
		2	1539-1542	1	3135	4.98	2303146		
		3	1534-1537	2	3283	5.21	2303147		
		4	1529-1532	5	3004	4.78	2303148		
		5	1524-1527	10	3154	5.01	2303149		
		6	1519-1522	20	3250	5.16	2303150		
		7	1513-1516	30	3009	4.78	2303151		
		8	1505-1508	45	3077	4.89	2303152		
13	Sep. 16	1	1124-1127	0	3205	5.09	2303153		
		2	1120-1123	1	3218	5.11	2303154		
		3	1116-1119	2	3239	5.14	2303155		
		4	1111-1114	5	2858	4.55	2303156	Cod end was entangled	
		5	1106-1109	10	3065	4.87	2303157		
		6	1101-1104	20	3225	5.12	2303158		
		7	1055-1058	30	3220	5.11	2303159		
		8	1049-1052	45	3141	4.99	2303160		
	Sep. 16	1	1752-1755	0	3101	4.93	2303161		
		2	1748-1751	1	3037	4.83	2303162		
		3	1743-1747	2	3153	5.01	2303163		
		4	1739-1742	5	3176	5.05	2303164		
		5	1734-1737	10	3053	4.85	2303165		
		6	1729-1732	20	2733	4.35	2303166	Cod end was entangled	
		7	1723-1726	30	3129	4.97	2303167		
		8	1715-1718	45	3094	4.92	2303168		

Table 15. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
13	Sep.16	1	2315-2318	0	3133	4.98	2303169	
		2	2311-2314	1	3160	5.02	2303170	
		3	2306-2309	2	3167	5.03	2303171	
		4	2302-2305	5	3070	4.88	2303172	
		5	2257-2300	10	3086	4.90	2303173	
		6	2252-2255	20	2947	4.69	2303174	
		7	2246-2249	30	2827	4.50	2303175	
		8	2239-2242	45	3050	4.85	2303176	
-----								
	Sep.17	1	0731-0734	0	3145	5.00	2303177	
		2	0727-0730	1	3158	5.02	2303178	
		3	0723-0726	2	3176	5.05	2303179	
		4	0719-0722	5	3165	5.03	2303180	
		5	0714-0717	10	3071	4.88	2303181	
		6	0709-0712	20	2660	4.23	2303182	Cod end was entangled
		7	0703-0706	30	2629	4.19	2303183	Cod end was entangled
		8	0655-0658	45	2970	4.72	2303184	
-----								
	Sep.17	1	1146-1149	0	2795	4.45	2303185	Cod end was entangled
		2	1142-1145	1	3028	4.81	2303186	
		3	1138-1141	2	3134	4.98	2303187	
		4	1134-1137	5	2728	4.34	2303188	Cod end was entangled
		5	1129-1132	10	3015	4.79	2303189	
		6	1124-1127	20	3061	4.86	2303190	
		7	1118-1121	30	2999	4.77	2303191	
		8	1111-1114	45	3043	4.84	2303192	

Table 15. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
14	Oct. 18	1	1531-1534	0	3060	4.86	2303193	
		2	1526-1529	1	3110	4.94	2303194	
		3	1522-1525	2	3020	4.80	2303195	
		4	1517-1520	5	3010	4.78	2303196	
		5	1509-1512	10	1184	**4.62	2303197	Propeller was off
		6	1503-1506	20	2721	4.33	2303198	Cod end was entangled
		7	1458-1501	30	2511	4.05	2303199	Cod end was entangled
		8	1446-1449	45	700	**4.62	2303200	Propeller was off
15	Nov. 2	1	1453-1456	0	3234	5.14	2303201	
		2	1449-1452	1	3186	5.06	2303202	
		3	1445-1448	2	3180	5.05	2303203	
		4	1440-1443	5	3152	5.01	2303204	
		5	1427-1430	10	3165	5.03	2303205	
		6	1422-1425	20	3239	5.14	2303206	
		7	1417-1420	30	2769	4.41	2303207	Cod end was entangled
		8	1410-1413	45	2975	4.73	2303208	
16	Nov. 15	1	1455-1458	0	3352	5.32	2303209	
		2	1451-1454	1	3314	5.26	2303210	
		3	1444-1447	2	2091	**4.87	2303211	Propeller was off
		4	1440-1443	5	3306	5.25	2303212	
		5	1436-1439	10	3120	4.96	2303213	
		6	1430-1433	20	2838	4.51	2303214	
		7	1425-1428	30	2675	4.26	2303215	Cod end was entangled
		8	1418-1421	45	3300	4.52	2303216	

Table 15. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
17	Dec. 2	1	1446-1449	0	3285	5.22	2303217	
		2	1442-1445	1	3563	5.65	2303218	
		3	1438-1441	2	3575	5.67	2303219	
		4	1434-1437	5	3430	5.44	2303220	
		5	1430-1433	10	3088	4.91	2303221	
		6	1425-1428	20	3451	5.48	2303222	
		7	1418-1421	30	3348	5.32	2303223	
		8	1407-1410	40	3398	5.39	2303224	
18	Dec. 13	1	1115-1118	0	3206	5.09	2303225	
		2	1111-1114	1	3794	6.02	2303226	
		3	1107-1110	2	3742	5.93	2303227	
		4	1103-1106	5	3733	5.92	2303228	
		5	1059-1102	10	3132	4.98	2303229	
		6	1053-1056	20	3725	5.91	2303230	
		7	1048-1051	30	3490	5.54	2303231	
		8	1042-1045	40	3589	5.69	2303232	
	Dec. 13	1	1758-1601	0	3674	5.83	2303233	
		2	1754-1757	1	3785	6.00	2303234	
		3	1750-1753	2	3729	5.91	2303235	
		4	1746-1749	5	3741	5.93	2303236	
		5	1742-1745	10	3821	6.06	2303237	
		6	1737-1740	20	3627	5.75	2303238	
		7	1732-1735	30	3541	5.62	2303239	
		8	1725-1728	40	3607	5.72	2303240	

Cod end was entangled

Table 15. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
18	Dec. 13	1	2333-2337	0	3406	5.41	2303241	
		2	2329-2332	1	3846	6.10	2303242	
		3	2325-2328	2	3874	6.14	2303243	
		4	2321-2324	5	3639	5.77	2303244	
		5	2316-2319	10	3830	6.07	2303245	
		6	2312-2315	20	3840	6.09	2303246	
		7	2307-2310	30	3619	5.74	2303247	
		8	2301-2304	40	3186	5.06	2303248	
-----								
	Dec. 14	1	0714-0717	0	3729	5.91	2303249	
		2	0710-0713	1	3916	6.21	2303250	
		3	0705-0708	2	3739	5.93	2303251	
		4	0701-0704	5	3863	6.12	2303252	
		5	0657-0700	10	3400	5.40	2303253	
		6	0653-0656	20	3670	5.82	2303254	
		7	0647-0650	30	3761	5.96	2303255	
		8	0641-0644	40	3693	5.86	2303256	
-----								
	Dec. 14	1	1151-1154	0	3480	5.52	2303257	
		2	1147-1150	1	3732	5.92	2303258	
		3	1143-1146	2	4010	6.36	2303259	
		4	1138-1141	5	3181	5.05	2303260	Cod end was entangled
		5	1134-1137	10	3997	6.34	2303261	
		6	1129-1132	20	3950	6.26	2303262	
		7	1124-1127	30	3629	5.76	2303263	
		8	1117-1120	40	3722	5.90	2303264	

Table 15. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
19	Dec.29	1	0940-0943	0	3507	5.57	2303265	
		2	0945-0948	1	3508	5.57	2303266	
		3	0950-0953	2	3484	5.53	2303267	
		4	0956-0959	5	3296	5.23	2303268	
		5	1000-1003	10	3376	5.36	2303269	
		6	1006-1009	20	3440	5.46	2303270	
		7	1011-1014	30	3290	5.22	2303271	
		8	1017-1020	40	3299	5.24	2303272	

\*\* Volume was obtained as an average of the same series of sampling.



Table 16. Data on plankton collected by layered sampling with "NIPR-I" type sampler (0.10 mm mesh openings) at Station 4.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks	
4	Mar. 29	1	1431-1434	0	2769	4.41	2304001		
		2	1436-1439	1	2952	4.69	2304002		
		3	1442-1445	2	2879	4.58	2304003		
		4	1447-1450	5	2977	4.73	2304004		
		5	1453-1456	10	2839	4.52	2304005		
		6	1500-1503	25	3345	5.31	2304006		
		7	1506-1509	50	2871	4.57	2304007		
		8	1515-1518	75	2922	4.65	2304008		
		9	1525-1528	100	2762	4.40	2304009		
		10	1535-1538	150	3220	5.11	2304010		
5	Apr. 21	1	1309-1312	0	1391	**4.49	2304011	The flow-meter was frozen	
		2	1315-1318	1	2761	4.39	2304012		
		3	1320-1323	2	2657	4.23	2304213		
		4	1325-1328	5	2854	4.54	2304014		
		5	1330-1333	10	2915	4.64	2304015		
		6	1335-1338	25	2858	4.55	2304016		
		7	1342-1345	50	2954	4.70	2304017		
		8	1351-1354	75	2791	4.44	2304018		
		9	1400-1403	100	2686	4.28	2304019		
		10	1410-1413	150	2920	4.64	2304020		
6	May 10	1	1308-1311	0	2322	**4.46	2304021	The flow-meter was frozen	
		2	1313-1316	1	2882	4.58	2304022		
		3	1321-1324	2	3046	4.84	2304023		
		4	1326-1329	5	2821	4.49	2304024		
		5	1332-1335	10	2810	4.47	2304025		
		6	1338-1341	25	2815	4.48	2304026		
		7	1345-1348	50	2156	**4.46	2304027		Propeller was off
		8	1356-1359	75	2644	4.21	2304028		
		9	1410-1413	100	2598	4.14	2304029		Cod end was entangled
		10	1418-1421	150	2796	4.45	2304030		

Table 16. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
7	May 24	1	1303-1306	0	*1581	**4.45	2304031	The flow-meter was frozen
		2	1308-1311	1	2866	4.56	2304032	
		3	1313-1316	2	2803	4.46	2304033	
		4	1318-1321	5	2937	4.67	2304034	Cod end was entangled
		5	1324-1327	10	2856	4.54	2304035	
		6	1330-1333	25	2458	3.92	2304036	
		7	1337-1340	50	2808	4.47	2304037	
		8	1345-1328	75	2683	4.27	2304038	
		9	1354-1357	100	2651	4.22	2304039	
		10	1402-1405	150	2505	3.99	2304040	
8	June 29	1	1148-1151	0	2947	4.69	2304041	Cod end was entangled
		2	1138-1141	1	2937	4.67	2304042	
		3	1133-1136	2	2834	4.51	2304043	
		4	1128-1131	5	3058	4.86	2304044	
		5	1123-1126	10	2880	4.58	2304045	
		6	1117-1120	25	2461	3.92	2304046	
		7	1110-1113	50	2714	4.32	2304047	
		8	1102-1105	75	2760	4.39	2304048	
		9	1054-1057	100	2675	4.26	2304049	
		10	1043-1046	150	3072	4.88	2304050	
9	July 10	1	1100-1103	0	3169	5.03	2304051	
		2	1055-1058	1	3112	4.94	2304052	
		3	1050-1053	2	3029	4.81	2304053	
		4	1045-1048	4	3185	5.06	2304054	
		5	1040-1043	10	3037	4.83	2304055	
		6	1034-1037	25	3076	4.89	2304056	
		7	1027-1030	50	2982	4.74	2304057	
		8	1019-1022	75	2740	4.36	2304058	
		9	1010-1013	100	2703	4.30	2304059	
		10	0957-1000	150	3152	5.01	2304060	

Table 16. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
10	July 28	1	1328-1331	0	3184	5.06	2304061	
		2	1324-1327	1	3064	4.87	2304062	
		3	1320-1323	2	3060	4.86	2304063	
		4	1315-1318	5	3341	5.30	2304064	
		5	1310-1313	10	3130	4.97	2304065	
		6	1304-1307	25	3185	5.06	2304066	
		7	1257-1300	50	3268	5.19	2304067	
		8	1250-1253	75	2806	4.46	2304068	
		9	1241-1244	100	2854	4.54	2304069	
		10	1230-1233	150	3324	5.28	2304070	
11	Aug. 17	1	1338-1341	0	3187	5.06	2304071	
		2	1334-1337	1	3131	4.97	2304072	
		3	1330-1333	2	2682	4.27	2304073	Cod end was entangled
		4	1326-1329	5	2801	4.46	2304074	
		5	1321-1324	10	3091	4.91	2304075	
		6	1315-1318	25	2629	4.19	2304076	Cod end was entangled
		7	1308-1311	50	2629	4.19	2304077	Cod end was entangled
		8	1300-1303	75	2612	4.16	2304078	Cod end was entangled
		9	1252-1255	100	2866	4.56	2304079	Cod end was entangled
		10	1241-1244	150	3002	4.77	2304080	
12	Aug. 31	1	1404-1407	0	3307	5.25	2304081	
		2	1400-1403	1	3176	5.05	2304082	
		3	1355-1358	2	3151	5.01	2304083	
		4	1350-1353	5	2954	4.70	2304084	Cod end was entangled
		5	1345-1348	10	3132	4.98	2304085	
		6	1339-1342	25	2875	4.57	2304086	Cod end was entangled
		7	1333-1336	50	3271	5.19	2304087	
		8	1323-1326	75	3160	5.02	2304088	
		9	1315-1318	100	3246	5.16	2304089	
		10	1303-1306	150	2801	4.46	2304090	Cod end was entangled

Table 16. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
13	Sep. 21	1	1024-1027	-1	2810	4.47	2304091	Cod end was entangled
		2	1020-1023	0	2550	4.06	2304092	Cod end was entangled
		3	1016-1019	1	3246	5.16	2304093	
		4	1012-1015	4	3095	4.92	2304094	
		5	1007-1010	9	2999	4.77	2304095	
		6	1002-1005	24	3210	5.10	2304096	
		7	0956-0959	49	3322	5.27	2304097	
		8	0948-0951	74	3297	5.24	2304098	
		9	0940-0943	99	3203	5.09	2304099	
		10	0929-0932	149	3156	5.01	2304100	
14	Oct. 19	1	1152-1155	0	3102	4.93	2304101	
		2	1148-1151	1	3128	4.97	2304102	
		3	1144-1147	2	3216	5.11	2304103	
		4	1140-1143	5	2760	4.39	2304104	Cod end was entangled
		5	1135-1138	10	3039	4.83	2304105	
		6	1130-1133	25	3151	5.01	2304106	
		7	1122-1125	50	2284	**4.78	2304107	Propeller was off
		8	1114-1117	75	2535	4.04	2304108	Cod end was entangled
		9	1107-1110	100	3187	5.06	2304109	
		10	1056-1059	150	2959	4.70	2304110	
15	Nov. 3	1	1615-1618	0	3152	5.01	2304111	
		2	1611-1614	1	3206	5.09	2304112	
		3	1607-1610	2	3152	5.01	2304113	
		4	1603-1606	5	3318	5.27	2304114	
		5	1559-1602	10	3050	4.85	2304115	
		6	1553-1556	25	3124	4.96	2304116	
		7	1546-1549	50	2708	4.31	2304117	Cod end was entangled
		8	1539-1542	75	3157	5.02	2304118	
		9	1530-1533	100	3213	5.10	2304119	
		10	1519-1522	150	2753	4.38	2304120	Cod end was entangled

Table 16. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
16	Nov. 17	1	1628-1631	0	2655	4.23	2304121	Cod end was entangled Propeller was off
		2	1622-1625	1	950	**5.08	2304122	
		3	1618-1621	2	3227	5.13	2304123	
		4	1614-1617	5	3317	5.27	2304124	Propeller was off
		5	1608-1611	10	1563	**5.08	2304125	
		6	1603-1606	25	3314	5.26	2304126	
		7	1557-1600	50	3346	5.31	2304127	
		8	1549-1552	75	3260	5.18	2304128	
		9	1541-1544	100	3236	5.14	2304129	
		10	1531-1534	150	3238	5.14	2304130	
17	Dec. 4	1	1115-1118	0	3161	5.02	2304131	Cod end was entangled
		2	1111-1114	1	3570	5.66	2304132	
		3	1107-1110	2	3716	5.89	2304133	
		4	1102-1105	5	3494	5.54	2304134	
		5	1058-1101	10	3656	5.80	2304135	
		6	1054-1057	25	3464	5.50	2304136	
		7	1048-1051	50	3280	5.21	2304137	
		8	1040-1043	75	3404	5.40	2304138	
		9	1032-1035	100	3297	5.24	2304139	
		10	1021-1024	145	3020	4.80	2304140	
18	Dec. 17	1	1558-1601	0	3523	5.59	2304141	
		2	1554-1557	1	3260	5.18	2304142	
		3	1550-1553	2	3374	5.36	2304143	
		4	1546-1549	5	3432	5.45	2304144	
		5	1541-1544	10	2917	4.64	2304145	
		6	1536-1539	25	3297	5.24	2304146	
		7	1531-1534	50	3251	5.16	2304147	
		8	1524-1527	75	3668	5.82	2304148	
		9	1515-1518	100	3338	5.30	2304149	
		10	1505-1508	150	3265	5.19	2304150	

Table 16. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
19	Dec.27	1	1528-1531	0			2304151	*
		2	1532-1535	1			2304152	*
		3	1536-1539	2			2304153	*
		4	1541-1544	5			2304154	*
		5	1546-1549	10			2304155	*
		6	1551-1554	15			2304156	*
		7	1556-1559	20			2304157	*

\* Prototype "NIPR-I" sampler was used.

\*\* Volume was obtained as an average of the same series of sampling.

Table 17. Data on plankton collected by layered sampling with "NIPR-I" type sampler (0.10 mm mesh openings) at Station 5.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
4	Apr. 5	1	1250-1253	0	2862	4.55	2305001	
		2	1255-1258	1	2736	4.35	2305002	
		3	1300-1303	2	2768	4.40	2305003	
		4	1305-1308	5	2674	4.26	2305004	
		5	1311-1314	10	2752	4.38	2305005	
		6	1318-1321	25	2719	4.33	2305006	
		7	1325-1328	50	2314	3.69	2305007	Cod end was entangled
		8	1336-1339	75	2833	4.51	2305008	
		9	1348-1351	100	2984	4.74	2305009	
		10	1404-1407	150	2963	4.71	2305010	
5	Apr. 22	1	1122-1125	0	0	**4.62	2305011	The flow-meter was frozen
		2	1127-1128	1	0	**4.62	2305012	The flow-meter was frozen
		3	1130-1133	2	2775	4.42	2305013	
		4	1135-1138	5	2907	4.62	2305014	
		5	1141-1144	10	2724	4.34	2305015	
		6	1147-1150	25	2943	4.68	2305016	
		7	1154-1157	50	3065	4.87	2305017	
		8	1201-1204	75	3079	4.89	2305018	
		9	1208-1211	100	2635	4.20	2305019	Cod end was entangled
		10	1217-1220	150	3088	4.91	2305020	
6	May 11	1	1104-1107	0	2760	4.39	2305021	
		2	1109-1112	1	3113	4.95	2305022	
		3	1114-1117	2	3153	5.01	2305023	
		4	1119-1122	5	2910	4.63	2305024	
		5	1125-1127	10	3019	4.80	2305025	
		6	1132-1135	25	3121	4.96	2305026	
		7	1140-1143	50	2708	4.31	2305027	
		8	1147-1150	75	3023	4.81	2305028	
		9	1155-1158	100	2957	4.70	2305029	
		10	1203-1206	150	3017	4.80	2305030	

Table 17. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
7	May 25	1	1218-1221	0	2806	4.46	2305031	
		2	1223-1226	1	1	**4.40	2305032	The flow-meter was frozen
		3	1229-1232	2	2687	4.28	2305033	
		4	1235-1238	5	770	**4.40	2305034	The flow-meter was frozen
		5	1243-1247	10	93	**4.40	2305035	The flow-meter was frozen
		6	1250-1253	25	2788	4.44	2305036	
		7	1258-1301	50	2616	4.17	2305037	
		8	1306-1309	75	2924	4.65	2305038	
		9	1315-1318	100	2731	4.35	2305039	
		10	1330-1333	150	2782	4.43	2305040	
8	June 13	1	1014-1017	0	3069	4.88	2305041	
		2	1019-1022	1	3015	4.79	2305042	
		3	1024-1027	2	3002	4.77	2305043	
		4	1029-1032	5	3135	4.98	2305044	
		5	1034-1037	10	3057	4.86	2305045	
		6	1040-1043	25	2661	4.24	2305046	Cod end was entangled
		7	1045-1048	50	2676	4.26	2305047	Cod end was entangled
		8	1052-1055	75	2975	4.23	2305048	
		9	1101-1104	100	2703	4.30	2305049	Cod end was entangled
		10	1112-1115	150	3111	4.94	2305050	
8	June 13	1	2146-2149	0	2793	4.44	2305051	
		2	2151-2154	1	3479	5.52	2305052	
		3	2156-2159	2	2861	4.55	2305053	
		4	2202-2205	5	3217	5.11	2305054	
		5	2207-2210	10	3069	4.88	2305055	
		6	2212-2215	25	2979	4.74	2305056	
		7	2219-2222	50	3146	5.00	2305057	
		8	2227-2230	75	3089	4.91	2305058	
		9	2235-2238	100	2810	4.47	2305059	
		10	2247-2250	150	2831	4.50	2305060	



Table 17. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
9	July 12	1	1503-1506	0	3030	4.82	2305061	
		2	1458-1501	1	3022	4.80	2305062	
		3	1453-1456	2	2992	4.76	2305063	
		4	1448-1451	5	3128	4.97	2305064	
		5	1443-1446	10	3017	4.80	2305065	
		6	1436-1439	25	2885	4.59	2305066	
		7	1430-1433	50	3047	4.84	2305067	
		8	1422-1425	75	3030	4.82	2305068	
		9	1413-1416	100	3274	5.20	2305069	
		10	1402-1405	150	3159	5.02	2305070	
10	July 30	1	1058-1101	0	3187	5.06	2305071	
		2	1053-1057	1	3076	4.89	2305072	
		3	1049-1052	2	3118	4.95	2305073	
		4	1044-1047	5	3105	4.93	2305074	
		5	1039-1042	10	3028	4.81	2305075	
		6	1033-1036	25	2979	4.74	2305076	
		7	1026-1029	50	3109	4.94	2305077	
		8	1017-1020	75	2798	4.45	2305078	
		9	1009-1012	100	2831	4.50	2305079	
		10	0958-1001	150	3257	5.17	2305080	
11	Aug. 19	1	1114-1117	0	3252	5.16	2305081	
		2	1110-1113	1	3176	5.06	2305082	
		3	1106-1109	2	3120	4.96	2305083	
		4	1102-1105	5	3240	5.15	2305084	
		5	1057-1100	10	3089	4.91	2305085	
		6	1051-1054	25	3260	5.18	2305086	
		7	1043-1046	50	3067	4.87	2305087	
		8	1034-1037	75	2805	4.46	2305088	
		9	1024-1027	100	2911	4.63	2305089	
		10	1013-1016	150	2976	4.73	2305090	

Cod end was entangled

Table 17. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
12	Sep. 3	1	1120-1123	0	3228	5.13	2305091	
		2	1116-1119	1	3225	5.12	2305092	
		3	1112-1115	2	3107	4.94	2305093	
		4	1107-1110	5	3124	4.96	2305094	
		5	1103-1106	10	3107	4.94	2305095	
		6	1057-1100	25	2775	4.42	2305096	Cod end was entangled
		7	1050-1053	50	3202	5.09	2305097	
		8	1041-1044	75	2750	4.38	2305098	Cod end was entangled
		9	1032-1035	100	3235	5.14	2305099	
		10	1020-1023	150	3236	5.14	2305100	
13	Sep. 19	1	1044-1047	0	3332	5.29	2305101	
		2	1040-1043	1	3100	4.93	2305102	
		3	1036-1039	2	3184	5.06	2305103	
		4	1032-1035	5	3261	5.18	2305104	
		5	1028-1031	10	3175	5.04	2305105	
		6	1022-1025	25	2795	4.45	2305106	Cod end was entangled
		7	1015-1018	50	2893	4.60	2305107	Cod end was entangled
		8	1008-1011	75	3030	4.82	2305108	
		9	1000-1003	100	3254	5.17	2305109	
		10	0949-0952	150	3077	4.89	2305110	
13	Sep. 19	1	2207-2210	0	3200	5.08	2305111	
		2	2203-2206	1	3147	5.00	2305112	
		3	2159-2202	2	3135	4.98	2305113	
		4	2155-2158	5	3215	5.11	2305114	
		5	2150-2153	10	3102	4.93	2305115	
		6	2144-2147	25	3095	4.92	2305116	
		7	2138-2141	50	2713	4.32	2305117	Cod end was entangled
		8	2130-2133	75	2998	4.77	2305118	
		9	2122-2125	100	2940	4.67	2305119	
		10	2112-2115	150	3064	4.87	2305120	

Table 17. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
14	Oct. 20	1	1604-1607	0	3129	4.97	2305121	
		2	1600-1603	1	3172	5.04	2305122	
		3	1556-1559	2	3009	4.78	2305123	
		4	1552-1555	5	3207	4.09	2305124	
		5	1547-1550	10	3183	5.06	2305125	
		6	1543-1546	25	2574	**4.84	2305126	Propeller was off
		7	1535-1538	50	3094	4.92	2305127	
		8	1528-1531	75	3140	4.99	2305128	
		9	1519-1522	100	3119	4.96	2305129	
		10	1509-1512	150	3015	4.79	2305130	
15	Nov. 4	1	1340-1343	0	3164	5.03	2305131	
		2	1336-1339	1	3409	5.41	2305132	
		3	1332-1335	2	3354	5.33	2305133	
		4	1328-1331	5	3345	5.31	2305134	
		5	1323-1326	10	3242	5.15	2305135	
		6	1319-1322	25	3082	4.90	2305136	
		7	1312-1315	50	3189	5.07	2305137	
		8	1304-1307	75	2791	4.44	2305138	Cod end was entangled
		9	1256-1259	100	3150	5.00	2305139	
		10	1246-1249	150	3201	5.08	2305140	
16	Nov. 18	1	1331-1334	0	3376	5.36	2305141	
		2	1327-1330	1	3008	4.78	2305142	
		3	1323-1326	2	3325	5.28	2305143	
		4	1319-1322	5	3583	5.68	2305144	
		5	1315-1318	10	3288	5.22	2305145	
		6	1311-1314	25	2797	4.45	2305146	Cod end was entangled
		7	1305-1308	50	3188	5.06	2305147	
		8	1258-1301	75	3264	5.18	2305148	
		9	1250-1253	100	3143	4.99	2305149	
		10	1240-1243	150	2918	4.64	2305150	Cod end was entangled

Table 17. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
17	Dec. 3	1	1409-1412	0	3188	5.06	2305151	
		2	1405-1408	1	3055	4.86	2305152	
		3	1400-1403	2	2813	4.48	2305153	Cod end was entangled
		4	1345-1348	5	3596	5.71	2305154	
		5	1340-1343	10	3431	5.45	2305155	
		6	1335-1338	25	3372	5.35	2305156	
		7	1329-1332	50	3558	5.65	2305157	
		8	1323-1326	75	3406	5.41	2305158	
		9	1315-1318	100	2904	4.62	2305159	Cod end was entangled
		10	1305-1308	150	3275	5.20	2305160	
18	Dec. 15	1	1240-1243	0	3531	5.60	2305161	
		2	1236-1239	1	3830	6.07	2305162	3 min. 21 sec. sampling
		3	1232-1235	2	3536	5.61	2305163	
		4	1228-1231	5	3469	5.51	2305164	
		5	1223-1226	10	3024	4.81	2305165	Cod end was entangled
		6	1218-1221	25	3422	5.43	2305166	
		7	1212-1215	50	3346	5.31	2305167	
		8	1205-1208	75	3354	5.33	2305168	
		9	1156-1159	100	3323	5.28	2305169	
		10	1148-1151	150	3164	5.03	2305170	
18	Dec. 15	1	2324-2327	0	3705	5.88	2305171	
		2	2320-2323	1	3679	5.84	2305172	
		3	2316-2319	2	3603	5.72	2305173	
		4	2312-2315	5	3808	6.04	2305174	
		5	2308-2311	10	3517	5.58	2305175	
		6	2303-2306	25	3471	5.51	2305176	
		7	2257-2300	50	3113	4.95	2305177	Cod end was entangled
		8	2250-2253	75	3516	5.58	2305178	
		9	2242-2245	100	3694	5.86	2305179	
		10	2231-2234	150	3675	5.83	2305180	

Table 17. Continued.

No. of routine series	Date	Net No.	Sampling time	Sampling depth beneath the ice (m)	Flow-meter reading	Estimated volume of water filtered (m <sup>3</sup> )	Sample No.	Remarks
19	Dec.27	1	1045-1048	0			2305181	*
		2	1049-1052	1			2305182	*
		3	1053-1056	2			2305183	*
		4	1058-1101	5			2305184	*
		5	1103-1106	10			2305185	*
		6	1108-1111	15			2305186	*
		7	1113-1116	20			2305187	*

\* Prototype "NIPR-I" sampler was used.

\*\* Volume was obtained as an average of the same series of sampling.

Table 18. Data on plankton collected by vertical hauls with PARASOL net at Station 4.

No. of routine series	Date	Time	Length of wire (m)	Angle of wire (°)	Estimated depth of a haul (m)	Settling volume of sample in a haul (ml)	Wet weight in a haul (g)	Sample No.	No. of unusual large organisms removed before settling volume measurement or weighing
4	Mar.29	1405-1420	150	0	150	< 5		2304P 001*	
5	Apr.21	1510-1525	151	7	150	< 5		2304P 002*	
6	May 10	1448-1500	150	0	150	7.5		2304P 003	
7	May 24	1432-1443	150	0	150	15		2304P 004	
8	June 16	1539-1548	150	0	150	25		2304P 005	
9	July 10	1128-1140	150	2	150	7.5		2304P 006	
10	July 28	1113-1125	150	0	150	5		2304P 007	
11	Aug.17	1033-1045	150	0	150	5		2304P 008	
12	Aug.31	1109-1120	150	0	150	15		2304P 009	
13	Sep.21	1128-1138	150	0	150	< 5		2304P 010	
14	Oct.20	1013-1020	160	2	160	< 5		2304P 011	
15	Nov. 3	1441-1449	150	0	150	12.5		2304P 012	
16	Nov.16	1440-1448	150	2	150	7.5		2304P 013	
17	Dec. 4	0950-1004	150	0	150			2304P 014	
18	Dec.17	1445-1452	150	0	150			2304P 015	
19	Dec.27	1504-1520	150	0	150			2304P 016	

\* A large size net with 1.0 m sides was used.

Table 19. Data on plankton collected by vertical hauls with PARASOL net at Station 5.

No. of routine series	Date	Time	Length of wire (m)	Angle of wire (°)	Estimated depth of a haul (m)	Settling volume of sample in a haul (mL)	Wet weight in a haul (g)	Sample No.	No. of unusual large organisms removed before settling volume measurement or weighing
4	Apr. 5	1840-1945	661	10	651			2305P 001*	
6	May 11	1435-1515	660	2	660	20	0.66	2305P 004	8 Sa., 1 Eu.
7	May 25	1343-1437	660	0	660	25	1.66	2305P 005	8 Sa., 8 Eu., 7 Am.
8	June 13	1217-1256	660	5	658	25	3.14	2305P 006	18 Eu., 1 Am.
	June 14	0018-0102	660	5	658	45	5.24	2305P 007	24 Eu., 5 Am.
9	July 14	1105-1145	664	4	662	50	6.60	2305P 008	19 Eu., 29 Am.
10	July 30	1220-1312	664	4	662	65	10.34	2305P 011	21 Eu., 15 Am. 1 Ch.
11	Aug. 18	1113-1158	660	2	660	55	10.92	2305P 012	34 Eu., 15 Am., 2 Ch., 1 Fi.
12	Sep. 3	1128-1203	670	10	660	75	9.18	2305P 013	22 Eu., 15 Am.
13	Sep. 19	1157-1227	660	5	658	55	6.74	2305P 014	12 Eu., 26 Am.
	Sep. 19	2318-2357	660	4	658	58	5.14	2305P 015	26 Eu., 12 Am., 1 Co.
14	Oct. 20	1239-1318	660	2	660	33	3.74	2305P 016	2 Eu., 1 Am., 1 Ch.
15	Nov. 4	1121-1153	660	2	660	63	6.16	2305P 017	10 Eu., 6 Am., 3 Ch., 1 Fi.
16	Nov. 18	1200-1231	660	4	658	48	6.52	2305P 018	3 Eu., 11 Am., 2 Ch.
17	Dec. 3	1123-1154	660	2	660	48	5.00	2305P 019	1 Po., 2 Eu., 9 Am.
	Dec. 3	1158-1235	660	2	660	63	9.88	2305P 020	14 Am., 3 Ch.
18	Dec. 15	0935-1011	660	8	654	35	4.88	2305P 021	5 Eu.
	Dec. 15	1013-1042	660	8	654	40	3.46	2305P 022	5 Eu., 2 Ch.
	Dec. 15	2115-2143	660	7	655	30	2.86	2305P 023	6 Eu.
	Dec. 15	2146-2218	660	5	658	35	4.34	2305P 024	7 Eu., 1 Ch.
19	Dec. 27	1016-1036	150	0	150			2305P 025	

\* A large size net with 1.0 m sides was used.