

## PREFACE

The Japanese Antarctic Research Expedition (JARE) planned a three-year programme of shore-based research, "Marine biological production in the Antarctic coastal ecosystem", between 1982 (JARE-23) and 1984 (JARE-25). This research programme was a part of the international "Biological Investigations of Marine Antarctic Systems and Stocks (BIOMASS)" programme. The JARE-23 was the first year of the three-year programme. The main objective of the JARE-23 was to carry out marine biological investigations as routinely as possible in order to get data of year-round continuity. This volume summarizes the marine biological data obtained in 1982 by the JARE-23. It is requested that due credit be given if data from this volume are quoted, or if information taken herefrom is incorporated in other papers.

## STATION

Five stations were occupied along the transverse line of 69°S latitude on the fast-ice near Syowa Station (69°00'S, 39°35'E). The location of the five stations was chosen according to accessibility and sea depth. Station 1 was located in the narrow and shallow channel of the Kita-no-seto Strait, and Stn 5 was over the deep glacial trough in the Ongul Strait (Fig. 1). In addition, Stn 5' was used for the current meter operation. Data on current measurements are published in JARE Data Reports, No. 102 (Oceanography 5), 1985. In January 1982, the fast-ice surrounding Syowa Station was in good condition for field work and this condition lasted until the end of 1982. Station 4' in Fig. 1 was occupied only one time in January 1983 when the fast-ice around Stn 5 in the Ongul Strait melted heavily and Stn 5 became inaccessible. Stn 4' itself was a thaw-hole.

In January 1983, Stns 1, 2 and 3 were also inaccessible, and thaw-holes near each station were used for observations. Areal photograph in January 1983 is shown in Fig. 2.

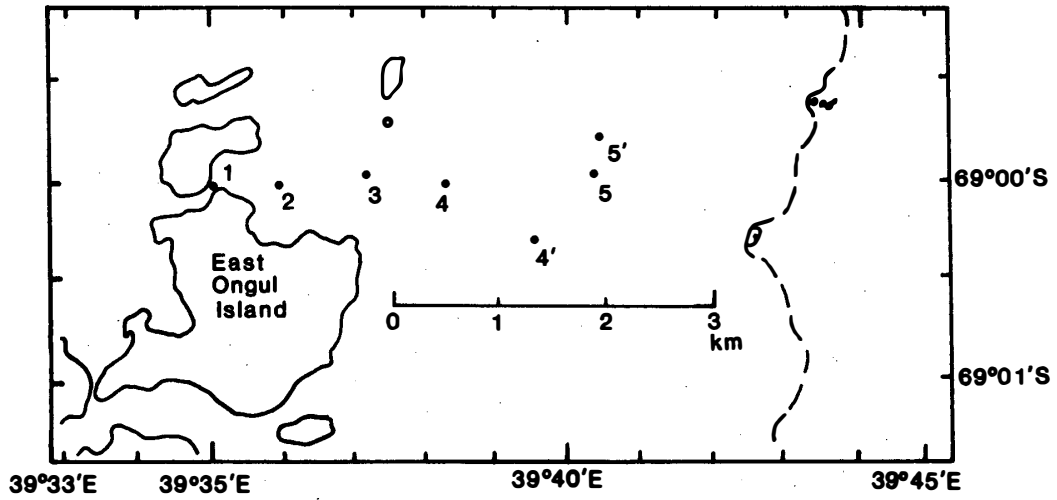


Fig. 1. Locations of oceanographic stations.

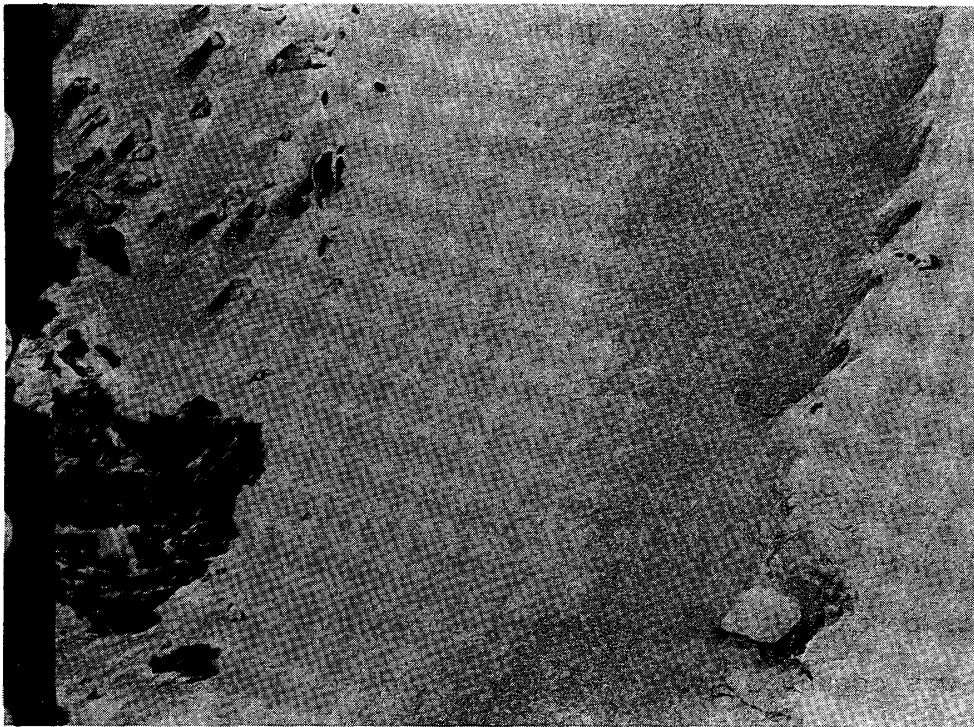


Fig. 2. Areal photograph around Stns 1-5 in January 1983.

Thickness of the fast-ice and the sea depth at each station, when stations were occupied, are summarized below.

Station No.	Position	Depth (m)	Thickness of ice (cm)	Date
1	69°00'00"S, 39°35'00"E	10	94	21 Jan. 1982
2	69°00'00"S, 39°36'00"E	25	137	25 Jan. 1982
3	68°59'57"S, 39°37'16"E	50	130	19 Feb. 1982
4	69°00'00"S, 39°38'20"E	160	110	24 Mar. 1982
5	68°59'57"S, 39°40'25"E	675	90	24 Mar. 1982
5'	68°59'46"S, 39°40'42"E	615	80	24 Mar. 1982
4'	69°00'20"S, 39°39'03"E	?	?	13 Jan. 1983

#### FREQUENCY OF OBSERVATION

Water sampling and plankton sampling were done at five stations and we called the combination of these samplings arbitrarily a routine observation. Progress of the routine observation is schematically represented in Fig. 3. Routine observation no. 1 was done at Stns 1 and 2 in late January 1982. A complete set of routine observation at five stations was started in late March and was continued at intervals of 2-3 weeks until December 1982 (routine observation nos 4-19). In January 1983, routine observation nos 20 and 21 were carried out at Stns 1-4 as mentioned before. A total of 21 routine observations was carried out during 13 months between January 1982 and January 1983. In addition, day-night observations were carried out several times as shown in Fig. 3; observation were done two to nine times a day. Periods of current meter operation are also illustrated in Fig. 3. Water and plankton samplings at each station were carried out usually on the same day, except for routine observation nos 4-7.

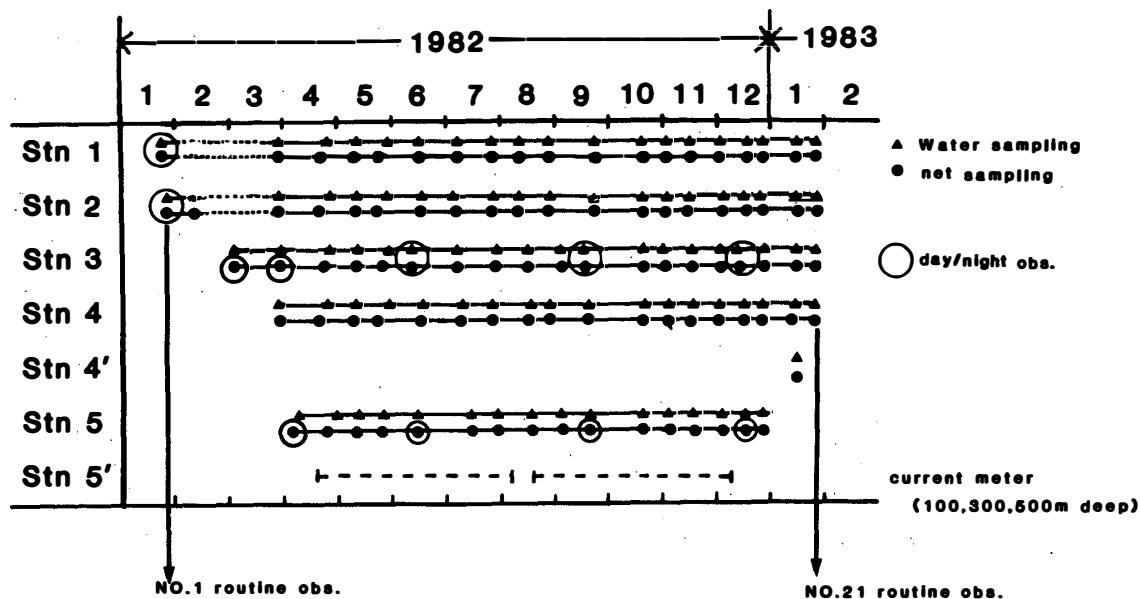


Fig. 3. Progress of routine observation.

Water samplings were made by Nansen and Van Dorn bottles. Methods of water samplings are summarized in Part 1 of this report. Details of plankton samplings with three different methods and their data are summarized in Part 2.

#### OBSERVATION HUT

Samples of water and plankton were processed preliminarily in the observation hut. The hut was mounted on a sledge and was towed to each station by the oversnow vehicle. When the outside temperature was below  $-30^{\circ}\text{C}$ , the room temperature inside the hut was kept at  $+10 - +20^{\circ}\text{C}$  by excess heat from the engine generator (Yammer YSG 3000B). Snapshot of the hut as well as a sledge equipped with an electric winch is shown in Fig. 4.



Fig. 4. Snapshot of the observation hut.

#### ACKNOWLEDGMENTS

We express our gratitude to the members of the JARE-23 for their cooperation in field work on the ice. Without their kind support, the large amount of the present data could not be obtained. Routine observation no. 1 at Stns 1 and 2 in January 1982 was carried out in cooperation with Mr. K. Oka and Mr. S. Fuchinoue from Hydrographic Department, Maritime Safety Agency, who measured temperature, salinity, pH and dissolved oxygen. For routine observation nos 20 and 21 in January 1983, we collaborated with the BIOMASS members of the JARE-24 (Dr. E. Takahashi, Dr. H. Satoh, Dr. H. Kanda and Mr. K. Watanabe) who analyzed nutrient samples collected in the routine observation no 21. Our thanks are also due to these persons.

PART 1. OCEANOGRAPHIC DATA

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### Method of water sampling

Water samples were collected by two kinds of water bottles, Nansen and Van Dorn bottles. Nansen bottle of 1.3 l capacity was used for oceanographic observation and Van Dorn bottle of 6-l capacity was used for phytoplankton studies. Sampling depths at each station are listed below.

Station No.	Depth (m)
1	0, 2, 4, 6
2	0, 5, 10, 15, 23
3	0, 5, 10, 20, 30, 45
4	0, 10, 25, 50, 75, 100, 150
5	0, 10, 25, 50, 75, 100, 150, 200, 300, 400, 600

To collect water sample from 0 m, the uppermost part of Nansen/Van Dorn bottles was lowered to the level of undersurface of the fast-ice. Depths of subsurface layers were determined in a same manner. Sampling depths and number of sampling depth were changed slightly in December and January when the phytoplankton was abundant. See details in the following tables.

Immediately after the water bottles were retrieved onto the fast-ice, the bottles were brought into the observation hut. Samples were processed preliminarily inside the hut.

As shown in Fig. 3, the day-night observations were carried out at Stns 1, 2 and 3. Numbers of samplings repeated in one series of routine observation are summarized below.

Station No.	Routine observation No.	Number of sampling
1	1	9
2	1	9
3	8	2
3	13	2
3	18	2

#### Determination of oceanographic parameters

Methods to measure oceanographic parameters including chlorophyll *a* are as follows.

Temperature: A pair of protected reversing thermometers was attached to each Nansen bottle. In addition, when the bottle was lowered below 100 m depth, an unprotected reversing thermometer was attached to check the exact depth of reversal. Both reversing thermometers were read twice to the nearest 0.01°C when the reading of each auxilliary thermometer became stable in the hut. The difference of corrected temperature readings between two protected reversing thermometers was usually within 0.02 °C. When the difference exceeded 0.04 °C or only one reading was employed, temperature data are listed with asterisks in the following tables.

Dissolved oxygen: Water samples from Nansen bottles were drawn into the 300-ml BOD (biological oxygen demand) bottles immediately after the Nansen bottles were brought into the hut. They were the first samples from the Nansen bottles. The BOD bottles were tightly stoppered and brought back to the land laboratory at Syowa Station, where the manganous sulphate and alkaline iodide solutions were added to the samples immediately according to a modified Winkler procedure as described by Strickland and Parsons (1968). Dissolved oxygen was analyzed



within several days after sampling. Standard iodate solution (0.01 N  $\text{KIO}_3$ ) prepared by CSK Standard Service, Sagami Chemical Research Center, Japan, was used for calibrating the thiosulphate solution.

pH: After the oxygen sampling the samples were taken from Nansen bottles by filling a 100-ml wide mouth glass bottle with a tight fitting screw cap. Samples were allowed to room temperature of the laboratory before determination. A Denki Kagaku Keiki Co. Model HG-3 digital pH meter was used for pH determination and was calibrated with standard buffer solutions (Wako Chemicals, Japan).

Salinity: Samples were taken from Nansen bottle by filling a 300-ml amber glass bottle with a rubber stopper. Samples from five stations in the same series of routine observation were kept in the laboratory for several days after sampling. Salinity was determined with an Auto-Lab Model 601-397 MKIII inductive salinometer, and was expressed on a "practical salinity scale" according to the recommendation of the UNESCO/ICES/SCOR/LAPSO Joint Panel on Oceanographic Tables and Standards. The salinometer was calibrated with an international standard sea water. Salinity data with asterisks in the following tables were obtained by correcting the original data, because a possible misreading of the salinometer might have happened.

Nutrient salts: Samples were taken from Nansen bottles by filling a 500-ml narrow mouth polyethylene bottles. Samples were kept frozen in a freezer below  $-20^\circ\text{C}$  for several days until samplings at five station were completed. After thawing at a laboratory temperature, phosphate-P, nitrate-N and nitrite-N were determined according to the methods described by Strickland and Parsons (1968). The method to measure silicate-Si was

principally based on that of Kato and Kitano (1966), which relies on the direct measurement of the light absorption of the yellow silicomolybdate complex. Standard solutions of blank and required concentrations prepared by CSK Standard Solution Service, Sagami Chemical Research Center, Japan, were used for calibrating the above-mentioned four items. Ammonium-N was analyzed according to Solórzano (1969). Blank and standard solutions for ammonium-N were prepared by the de-ionized water and ammonium chloride ( $\text{NH}_4\text{Cl}$ ). Spectrophotometers of HITACHI model 139 and model 101 were used for measurements of silicate-Si and the other four items, respectively. Silicate data with asterisks from Stns 1 and 2 in the routine observation no. 1 were not comparable to the other data because of the mishandling of the spectrophotometer.

Phytoplankton: Samples were taken from Van Dorn bottles by filling two 1-l wide mouth polyethylene bottles; one bottle for chlorophyll *a* determination and another for sample preservation. Standard chlorophyll *a* from spinach prepared by Sigma Chemical Co., USA, was determined by two methods of fluorometry (after Saijo and Nishizawa, 1969) and by colorimetry (UNESCO, 1966) using a Shimadzu model RF-510 spectrofluorometer and a HITACHI model 101 spectrophotometer, respectively, in order to obtain values of *R* and  $f_{\text{ph}}$  for the fluorometric determination. Values of *R* and  $f_{\text{ph}}$  were 3.8989 and 0.1038, respectively. An inter-calibration of two methods for 50 sets of data obtained in January 1982 revealed a good correlation between two methods as follows:

$$\text{Chl. } a \text{ (}\mu\text{g/l, fluor.)} = 0.9859 \times \text{Chl. } a \text{ (}\mu\text{g/l, color.)} - 0.0768$$
$$(N=50, r=0.9910).$$

Between March 1982 and January 1983, one litre of sample water was filtered through a Whatman GF/C glass fiber filter and chlorophyll *a* concentration was determined by the fluorometric method only. An aliquot of 100 ml of water was preserved in 2-3 % neutralized formalin solution for the later microscopic examination.

Oceanographic data and chlorophyll *a* concentration as well as sample number of preserved samples obtained at Stns 1, 2, 3, 4, 5 and 4' are summarized in Tables 1, 2, 3, 4, 5 and 6, respectively. Oceanographic data from 45 m depth at Stn 3 in the routine observation no. 19 were not comparable to the other data, because the Nansen bottle touched the bottom and the sample water was very turbid.

#### References

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Table 1. Oceanographic data obtained at Station 1 (69°00'00"S, 39°35'00"E) between 22 January 1982 and 28 January 1983.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mZ/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No. 1 Routine observation- 1/9 ( 22 January 1982; 10:00-10:15 )													
0	-0.31	33.837	8.00	7.78	0.23	9.0*	0.11	3.3	2.2	1.21	1.26	48.8	2301W001
2	-0.35	33.946	8.06	7.79	0.56	29.9*	0.11	7.6	2.8	0.22	0.76	22.7	2301W002
4	-1.65	34.013	8.06	7.73	1.45	40.7*	0.16	23.2	0.3	0.12	0.70	15.0	2301W003
6	-1.65	34.082	8.07	7.70	1.73	52.2*	0.21	9.5	0.4	0.09	0.31	22.2	2301W004
No. 1 Routine observation- 2/9 ( 22 January 1982; 13:00-13:15 )													
0	-1.53	33.235	7.85	7.96	0.23	11.9	0.06	25.5	3.1	2.02	1.72	54.0	2301W005
2	-1.47	34.037	8.07	7.70	1.85	59.5	0.06	28.2	0.0	0.16	0.88	15.4	2301W006
4	-1.62	33.997	8.07	7.58	1.85	59.5	0.18	25.5	0.0	0.24	1.30	15.5	2301W007
6	-1.62	34.077	8.08	7.55	1.94	59.5	0.06	33.4	0.0	0.13	0.16	46.0	2301W008
No. 1 Routine observation- 3/9 ( 22 January 1982; 16:00-16:15 )													
0	-1.39	30.512	8.10	9.30	0.52	19.1*	0.16	9.5	1.9	1.66	1.87	47.0	2301W009
2	-1.55	34.003	8.05	7.69	1.27	43.5*	0.11	23.6	0.3	0.20	0.36	36.4	2301W010
4	-1.61	34.014	8.07	7.80	0.66	23.2*	0.11	23.1	1.4	0.17	0.73	18.5	2301W011
6	-1.62	34.073	8.07	7.72	1.50	46.9*	0.11	22.0	1.1	0.24	0.82	22.7	2301W012
No. 1 Routine observation- 4/9 ( 22 January 1982; 19:00-19:15 )													
0	-0.89	32.380	8.04	8.72	1.59	41.6	0.09	10.1	5.3	1.55	1.80	46.2	2301W013
2	-1.02	32.792	8.10	8.08	1.41	41.0	0.05	9.1	1.1	0.26	0.33	43.7	2301W014
4	-1.19	33.904	8.09	7.61	2.06	63.6	0.05	12.9	0.1	0.19	0.73	20.8	2301W015
6	-1.40	34.084	8.08	—	1.50	44.8	0.00	10.9	0.1	0.13	0.61	18.0	2301W016

Table 1. Continued.

Depth	Temp.	Salinity	pH	DO	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio	Sample No.
(m)	(°C)			(mZ/L)		(µg-atoms/L)				(µg/L)		(%)	
No. 1 Routine observation- 5/9 ( 22 January 1982; 22:00-22:15 )													
0	-0.41	32.061	8.10	8.68	—	—	—	—	—	1.50	1.54	49.3	2301W017
2	-1.48	33.786	8.11	7.84	0.98	34.3*	0.05	22.2	0.7	0.21	0.58	26.4	2301W018
4	-1.64	34.018	8.09	7.70	0.75	30.6*	0.11	18.3	1.7	0.25	0.52	32.3	2301W019
6	-1.64	34.051	8.11	7.68	1.08	33.6*	0.05	21.5	0.7	0.16	0.60	21.1	2301W020
No. 1 Routine observation- 6/9 ( 23 January 1982; 01:00-01:15 )													
0	-0.41	32.831	7.95	8.20	2.54	38.1	0.24	16.9	36.9	2.22	2.22	50.1	2301W021
2	-1.42	33.583	8.09	7.77	1.75	54.8	0.06	24.8	2.1	0.24	0.22	52.3	2301W022
4	-1.63	33.824	8.11	7.63	1.89	59.5	0.00	30.6	1.2	0.18	0.80	18.4	2301W023
6	-1.64	33.961	8.11	7.56	1.94	59.5	0.06	29.9	1.2	0.22	0.96	18.4	2301W024
No. 1 Routine observation- 7/9 ( 23 January 1982; 04:00-04:15 )													
0	-1.13	33.369	7.85	7.91	1.92	51.3	0.09	19.1	2.3	0.41	0.94	30.6	2301W025
2	-1.58	31.082	8.07	7.80	0.47	50.7	0.09	0.7	0.0	1.22	0.89	58.0	2301W026
4	-1.62	33.746	8.10	7.74	0.52	50.7	0.14	0.0	0.4	0.19	0.64	23.4	2301W027
6	-1.62	34.025	8.11	7.67	0.52	49.0	0.09	0.0	0.1	0.19	0.54	25.8	2301W028
No. 1 Routine observation- 8/9 ( 23 January 1982; 07:00-07:15 )													
0	-0.35	34.410	8.02	7.88	0.09	31.0	0.09	0.0	0.2	0.71	0.95	42.5	2301W029
2	-1.59	33.670	8.12	7.80	0.42	46.5	0.14	0.0	0.2	0.33	0.21	61.0	2301W030
4	-1.64	33.992	8.12	7.57	0.70	57.7	0.14	0.0	0.4	0.21	0.19	51.6	2301W031
6	-1.64	34.241	8.12	7.55	0.38	45.8	0.05	0.0	0.2	0.14	0.26	34.7	2301W032

Table 1. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mZ/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si NO <sub>2</sub> -N NO <sub>3</sub> -N NH <sub>4</sub> -N				Chl. <i>a</i> Phaeo.		Pigment ratio (%)	Sample No.
						(µg-atoms/L)				(µg/L)			
No. 1 Routine observation- 9/9 ( 23 January 1982; 10:00-10:15 )													
0	-0.90	33.266	8.03	8.09	0.33	41.0	0.14	0.0	0.5	0.64	0.68	48.3	2301W033
2	-1.60	33.564	8.03	7.85	0.47	44.2	0.14	0.0	0.0	0.22	0.23	48.8	2301W034
4	-1.65	33.921	8.10	7.68	0.70	60.3	0.09	0.0	1.6	0.09	0.14	40.7	2301W035
6	-1.66	33.999	8.11	7.63	0.70	58.4	0.09	0.0	1.4	0.09	0.28	23.6	2301W036
No. 4 Routine observation ( 30 March 1982; 13:30-14:00 )													
0	-1.76	33.785	7.98	7.98	2.20	57.4	0.18	14.5	0.1	4.70	0.21	95.8	2301W037
2	-1.80	33.747	7.80	7.88	2.11	67.1	0.14	15.3	0.3	1.32	0.04	96.8	2301W038
4	-1.77	33.761	7.98	7.92	2.20	65.2	0.14	15.1	0.8	0.20	0.09	69.0	2301W039
6	—	33.788	8.00	7.93	2.20	61.0	0.09	11.6	0.1	0.08	0.09	47.2	2301W040
No. 5 Routine observation ( 28 April 1982; 09:00-09:20 )													
0	-1.84	33.891	8.19	8.05	1.55	39.4	0.16	19.7	1.4	0.03	0.10	23.0	2301W041
2	-1.85	33.895	8.19	8.13	2.11	54.1	0.21	21.3	1.1	0.03	0.00	94.9	2301W042
4	-1.81	33.885	8.17	7.82	2.06	57.4	0.16	22.0	1.0	0.03	0.02	63.2	2301W043
6	-1.84	33.878	8.13	7.95	2.02	53.5	0.16	24.0	1.1	0.03	0.02	63.2	2301W044
No. 6 Routine observation ( 12 May 1982; 09:12-09:28 )													
0	-1.84	33.960	8.01	8.01	1.81	60.0	0.29	26.4	0.8	0.07	0.69	9.3	2301W045
2	-1.86	33.929	8.01	7.66	1.81	60.4	0.29	26.7	0.7	0.02	0.08	22.0	2301W046
4	-1.83	33.994*	8.01	7.87	1.95	60.4	0.21	27.0	0.8	0.01	0.09	12.5	2301W047
6	-1.85	34.085*	8.01	7.61	1.91	60.0	0.21	26.5	0.6	0.01	0.08	12.5	2301W048

Table 1. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mZ/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No. 7 Routine observation ( 31 May 1982; 10:57-11:08 )													
0	-1.85	34.016	7.78	7.91	1.24	40.1	0.09	23.4	0.7	0.02	0.06	30.2	2301W049
2	-1.87	34.001	7.85	7.94	1.10	34.9	0.09	26.6	0.5	0.02	0.04	28.7	2301W050
4	-1.83	34.000	7.89	7.92	1.29	40.1	0.09	23.8	0.5	0.01	0.05	17.2	2301W051
6	—	34.000	7.89	7.88	1.91	49.1	0.18	17.9	0.4	0.01	0.04	23.0	2301W052
No. 8 Routine observation ( 16 June 1982; 10:23-10:37 )													
0	-1.81	34.107	7.85	7.61	1.57	36.7	0.30	16.1	1.7	0.05	0.69	6.6	2301W053
2	-1.87	34.087	7.91	7.65	1.86	49.9	0.30	21.7	1.3	0.02	0.02	43.1	2301W054
4	-1.85*	34.083	7.92	7.65	1.81	45.8	0.35	17.9	1.3	0.01	0.04	20.7	2301W055
6	-1.86	34.078	7.91	7.63	2.00	49.2	0.50	18.5	1.3	0.02	0.02	51.7	2301W056
No. 9 Routine observation ( 5 July 1982; 09:51-10:15 )													
0	-1.85*	34.010	7.98	7.74	2.33	71.2	0.33	18.3	0.6	0.01	0.15	6.1	2301W057
2	-1.83	33.999	8.04	7.73	2.24	66.3	0.33	18.4	0.6	0.00	0.03	8.6	2301W058
4	-1.84	33.974	8.05	7.68	2.19	68.9	0.50	19.6	0.7	0.01	0.05	11.5	2301W059
6	-1.83	33.981	8.04	7.68	2.29	78.0	0.54	17.8	0.4	0.01	0.06	17.2	2301W060
No.10 Routine observation ( 27 July 1982; 09:34-09:55 )													
0	-1.84	34.019	7.98	7.48	2.35	76.3	0.41	19.5	0.9	0.04	0.65	6.2	2301W061
2	—	34.026	8.00	7.43	2.05	63.9	0.36	19.9	0.6	0.05	0.55	8.1	2301W062
4	-1.84	34.034	8.00	7.36	2.30	72.9	0.36	19.0	0.7	0.06	0.72	7.6	2301W063
6	—	34.046	8.00	7.42	2.40	72.5	0.82	17.6	0.5	0.03	0.39	7.2	2301W064

Table 1. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mZ/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No.11 Routine observation ( 13 August 1982; 09:40-10:03 )													
0	—	34.049	8.01	7.44	1.60	63.6	0.36	22.7	0.3	0.05	0.69	7.1	2301W065
2	-1.85*	34.036	8.02	7.46	1.50	53.0	0.36	23.9	0.3	0.01	0.20	5.7	2301W066
4	-1.83	34.036	8.02	7.47	2.10	65.9	0.36	25.6	0.3	0.02	0.12	11.5	2301W067
6	-1.85*	34.036	8.02	7.38	2.15	73.1	0.73	22.8	0.6	0.01	0.01	34.5	2301W068
No.12 Routine observation ( 30 August 1982; 09:38-09:56 )													
0	-1.83	34.090	7.92	7.37	2.10	59.5	0.30	20.1	0.4	0.04	0.83	4.7	2301W069
2	-1.84*	34.091	7.97	7.43	2.24	62.2	0.20	23.1	0.2	0.01	0.26	4.5	2301W070
4	-1.83	34.091	7.98	7.34	2.24	59.8	0.25	22.6	0.3	0.01	0.12	9.9	2301W071
6	-1.84	34.093	7.98	7.45	2.24	70.3	0.35	25.7	0.1	0.01	0.02	34.5	2301W072
No.13 Routine observation ( 23 September 1982; 09:50-10:07 )													
0	-1.83*	34.173	7.97	7.22	1.79	61.8	0.52	24.5	0.4	0.02	0.24	8.0	2301W073
2	-1.82	34.153	7.98	7.28	1.84	50.9	0.38	22.1	0.2	0.01	0.07	8.6	2301W074
4	-1.82	34.146	7.97	7.28	1.74	56.7	0.24	19.8	0.2	0.01	0.04	20.6	2301W075
6	-1.82	34.152	7.97	7.28	2.37	74.7	0.10	19.0	0.3	0.01	0.06	9.9	2301W076
No.14 Routine observation ( 18 October 1982; 08:54-09:18 )													
0	-1.81	34.165	8.00	7.32	2.10	69.9	0.09	13.1	0.2	0.02	0.02	43.1	2301W077
2	-1.82	34.168	8.05	7.31	2.15	74.3	0.14	22.2	0.2	0.02	0.01	57.5	2301W078
4	-1.81	34.168	8.05	7.29	2.40	74.3	0.09	22.1	0.4	0.01	0.02	34.5	2301W079
6	-1.78	34.169	8.05	7.27	2.45	77.7	0.18	23.2	0.2	0.01	0.02	34.5	2301W080



Table 1. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mZ/L)	PO <sub>4</sub> -P SiO <sub>3</sub> -Si NO <sub>2</sub> -N NO <sub>3</sub> -N NH <sub>4</sub> -N					Chl. <i>a</i> (µg/L)	Phaeo. (µg/L)	Pigment ratio (%)	Sample No.
					(µg-atoms/L)								
No.15 Routine observation ( 2 November 1982; 08:48-09:54 )													
0	-1.74	34.180	7.98	6.93	2.24	74.7	0.30	21.8	0.2	0.16	0.00	100.0	2301W081
2	-1.76	34.172	8.00	7.07	2.19	69.0	0.24	20.9	0.2	0.08	0.00	100.0	2301W082
4	-1.76	34.174	8.02	7.02	2.44	73.7	0.24	17.6	0.3	0.07	0.09	42.1	2301W083
6	-1.74	34.182	8.02	7.02	2.54	75.0	0.18	18.3	0.0	0.10	0.22	30.7	2301W084
No.16 Routine observation ( 15 November 1982; 08:35-08:53 )													
0	-1.78	34.179	7.99	7.06	2.10	76.6	0.21	26.2	0.2	0.06	0.31	15.1	2301W085
2	-1.78	34.184	7.99	7.10	1.70	65.0	0.13	24.2	0.2	0.03	0.14	16.3	2301W086
4	-1.79	34.172	7.99	7.01	2.15	79.9	0.13	24.0	0.2	0.05	0.26	15.2	2301W087
6	-1.79	34.172	7.99	7.05	2.20	84.0	0.13	24.4	0.2	0.08	0.59	12.4	2301W088
No.17 Routine observation ( 2 December 1982; 08:30-08:49 )													
0	-1.75	34.163	7.99	7.15	2.00	67.5	0.36	—	1.1	0.09	0.28	24.1	2301W089
2	-1.77	34.167	7.99	7.12	2.15	62.6	0.23	17.2	0.6	0.10	0.19	35.6	2301W090
4	-1.77	34.167	7.99	7.14	1.65	56.4	0.18	16.4	0.4	0.07	0.25	22.7	2301W091
6	—	34.163	7.99	7.14	1.25	47.9	0.14	15.2	0.3	0.07	0.16	31.7	2301W092
No.18 Routine observation ( 17 December 1982; 08:38-08:55 )													
0	-1.72	33.967	7.96	7.15	2.00	65.0	0.05	21.4	0.5	0.82	0.08	91.2	2301W093
2	-1.70	34.153	7.96	7.15	2.48	70.8	0.09	21.5	0.4	0.21	0.13	61.7	2301W094
4	-1.73	34.153	7.95	7.11	2.19	67.1	0.14	22.0	0.6	0.12	0.10	54.6	2301W095
6	-1.71	34.155	7.95	7.14	2.14	70.1	0.09	21.7	0.4	0.08	0.12	40.5	2301W096

Table 1. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mZ/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No.19 Routine observation ( 28 December 1982; 08:35-08:58 )													
0	-1.71	33.825	7.96	7.22	1.95	77.2	0.09	21.3	0.3	3.30	1.77	65.0	2301W097
2	-1.69	34.127	7.95	7.08	1.38	53.2	0.05	19.1	0.3	0.51	0.16	76.7	2301W098
4	-1.69	34.088	7.95	7.03	1.57	61.7	0.05	19.9	0.2	0.08	0.12	39.4	2301W099
6	-1.67	34.126	7.95	7.03	1.24	56.6	0.05	19.9	0.2	0.08	0.11	41.8	2301W100
No.20 Routine observation ( 15 January 1983; 07:55-08:15 )													
0	-1.56	31.661	8.11	7.84	2.10	71.2	0.08	21.9	0.4	3.48	1.30	72.8	2301W101
3	-1.56	34.065	8.07	7.29	1.71	68.1	0.04	21.4	0.3	0.94	0.32	74.5	2301W102
6	-1.56	34.095	8.07	7.32	1.91	76.1	0.04	20.4	0.3	0.74	0.36	67.6	2301W103
10	-1.56	34.119	8.04	7.28	2.24	76.7	0.06	22.8	0.3	0.93	0.25	79.0	2301W104
No.21 Routine observation ( 28 January 1983; 08:31-09:15 )													
0	-1.29	33.959	8.30	9.96	1.67	63.1	0.16	8.2	0.8	6.00	6.19	49.2	2301W105
3	-1.37	34.087	8.23	9.17	1.75	64.4	0.15	19.7	0.0	5.32	6.74	44.1	2301W106
6	-1.44	34.110	8.20	8.85	1.85	65.4	0.12	21.5	0.3	7.01	4.36	61.6	2301W107
10	-1.46	34.114	8.16	8.55	2.09	65.5	0.13	22.5	0.4	6.35	3.65	63.5	2301W108

\* Data with asterisks are not comparable to the other data. See text for details.

Table 2. Oceanographic data obtained at Station 2 (69°00'00"S, 39°36'00"E) between 27 January 1982 and 28 January 1983.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mZ/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No. 1 Routine observation- 1/9 ( 27 January 1982; 10:00-10:20 )													
0	-0.44	34.049	7.91	7.83	1.80	53.5	0.05	13.4	0.2	0.71	0.39	64.5	2302W001
2	-1.58	33.436	8.12	7.92	1.80	43.1	0.05	11.1	0.3	0.72	1.43	33.3	2302W002
4	-1.65	34.063	8.14	7.74	2.03	53.5	0.05	13.7	0.2	0.45	0.65	41.0	2302W003
6	-1.65	34.068	8.15	7.68	—	—	—	—	—	—	—	—	2302W —
10	-1.66	34.086	8.15	7.68	2.08	48.3	0.05	14.8	0.1	0.27	0.44	37.8	2302W004
15	-1.66	34.097	8.15	7.57	1.89	48.3	0.05	15.5	0.0	0.16	0.29	35.4	2302W005
20	-1.66	34.106	8.15	7.53	1.84	48.3	0.05	13.1	0.0	0.14	0.46	23.7	2302W006
No. 1 Routine observation- 2/9 ( 27 January 1982; 13:00-13:20 )													
0	-0.21	32.909	7.78	7.83	1.89	52.4	0.12	26.6	1.0	0.70	0.48	59.5	2302W007
2	-1.50	33.685	8.12	7.79	1.99	59.5	0.12	36.4	0.1	0.61	0.65	48.4	2302W008
4	-1.63	34.036	8.13	7.64	1.57	47.6	0.06	17.1	0.4	0.49	0.67	42.2	2302W009
6	-1.65	33.895	8.15	7.67	—	—	—	—	—	—	—	—	2302W —
10	-1.65	33.895	8.15	7.67	1.57	50.0	0.06	17.0	0.8	0.36	0.54	39.8	2302W010
15	-1.65	34.088	8.16	7.54	1.94	54.8	0.12	28.5	0.0	0.29	0.13	68.8	2302W011
20	-1.66	34.115	8.15	7.58	1.89	54.8	0.06	30.3	0.5	0.20	0.10	67.8	2302W012

Table 2. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mZ/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si NO <sub>2</sub> -N NO <sub>3</sub> -N NH <sub>4</sub> -N				Chl. <i>a</i> Phaeo.		Pigment ratio (%)	Sample No.
						(µg-atoms/L)				(µg/L)			
No. 1 Routine observation- 3/9 ( 27 January 1982; 16:00-16:20 )													
0	-0.22	32.983	7.85	7.88	1.21	37.9	0.05	10.1	0.4	0.55	0.32	62.9	2302W013
2	-1.51	34.008	8.09	7.76	1.55	43.1	0.05	10.9	0.1	0.45	0.58	44.0	2302W014
4	-1.63	34.031	8.13	7.71	1.84	53.5	0.05	14.8	0.2	0.37	0.52	41.8	2302W015
6	-1.65	34.101	8.13	7.77	—	—	—	—	—	—	—	—	2302W —
10	-1.65	34.100	8.13	7.59	2.13	58.6	0.05	14.5	0.1	0.22	0.40	35.9	2302W016
15	-1.66	34.097	8.13	7.59	1.06	37.9	0.05	10.7	0.3	0.24	0.59	29.4	2302W017
20	-1.66	34.111	8.13	7.54	1.60	43.1	0.05	13.7	0.2	0.16	0.43	26.6	2302W018
No. 1 Routine observation- 4/9 ( 27 January 1982; 19:00-19:20 )													
0	-0.32	33.119	7.89	7.78	0.89	28.1*	0.11	12.9	0.3	0.72	0.34	68.1	2302W019
2	-1.34	33.715	8.09	7.76	1.13	33.0*	0.05	16.3	0.2	0.31	0.13	70.1	2302W020
4	-1.62	33.939	8.13	7.58	1.08	33.6*	0.11	15.4	0.0	0.31	0.13	70.9	2302W021
6	-1.64	34.090	8.13	7.53	—	—	—	—	—	—	—	—	2302W —
10	-1.65	34.095	8.15	7.57	1.73	54.0*	0.11	19.4	0.0	0.20	0.13	60.6	2302W022
15	-1.66	34.107	8.12	7.48	1.45	43.2*	0.05	17.8	0.0	0.11	0.08	59.6	2302W023
20	-1.66	34.110	8.13	7.52	1.22	35.5*	0.05	19.0	0.1	0.12	0.07	61.1	2302W024

Table 2. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No. 1 Routine observation- 5/9 ( 27 January 1982; 22:00-22:20 )													
0	-0.36	30.409	7.94	8.19	0.87	34.5	0.05	7.7	0.6	0.64	0.34	65.2	2302W025
2	-1.53	33.971	8.08	7.83	1.06	32.8	0.05	7.2	0.2	0.67	0.50	57.5	2302W026
4	-1.63	34.045	8.11	7.72	1.45	41.4	0.05	9.8	0.5	0.46	0.16	74.3	2302W027
6	-1.65	34.068	8.10	7.75	—	—	—	—	—	—	—	—	2302W —
10	-1.65	34.148	8.12	7.73	1.55	43.1	0.10	11.2	0.3	0.37	0.16	69.9	2302W028
15	-1.65	34.072	8.12	7.61	1.65	46.6	0.05	10.7	0.1	0.33	0.14	70.6	2302W029
20	-1.65	34.054	8.13	7.56	1.40	37.9	0.05	10.9	0.2	0.16	0.12	58.2	2302W030
No. 1 Routine observation- 6/9 ( 28 January 1982; 01:00-01:20 )													
0	-0.43	32.230	7.94	7.86	1.71	—	0.12	22.5	1.7	0.66	0.25	72.9	2302W031
2	-1.53	33.218	8.11	7.82	1.75	57.1	0.00	26.5	0.8	0.60	0.24	71.7	2302W032
4	-1.62	33.997	8.13	7.68	1.89	59.5	0.00	28.4	0.1	0.53	0.19	73.4	2302W033
6	-1.63	33.861	8.14	7.64	—	—	—	—	—	—	—	—	2302W —
10	-1.64	34.080	8.14	7.63	1.57	35.7	0.00	17.1	0.5	0.32	0.14	69.2	2302W034
15	-1.65	34.017	8.13	7.55	2.03	59.5	0.00	41.1	0.4	0.24	0.14	63.3	2302W035
20	-1.65	33.900	8.14	7.54	1.94	57.1	0.06	29.7	0.4	0.20	0.13	60.9	2302W036

Table 2. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P SiO <sub>3</sub> -Si NO <sub>2</sub> -N NO <sub>3</sub> -N NH <sub>4</sub> -N					Chl. <i>a</i> Phaeo.		Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No. 1 Routine observation- 7/9 ( 28 January 1982; 04:00-04:20 )													
0	-0.42	30.110	7.93	8.15	1.06	36.2	0.05	8.1	0.8	0.64	0.43	59.8	2302W037
2	-1.54	33.808	8.08	7.80	1.74	46.6	0.05	13.5	0.2	0.58	0.47	55.4	2302W038
4	-1.63	34.051	8.10	7.73	1.69	51.7	0.05	14.4	0.1	0.46	0.22	67.8	2302W039
6	-1.65	33.525	8.12	7.78	—	—	—	—	—	—	—	—	2302W —
10	-1.65	33.540	8.12	7.70	1.69	50.0	0.05	13.7	0.0	0.37	0.24	61.1	2302W040
15	-1.66	34.088	8.13	7.59	1.69	46.6	0.05	14.0	0.0	0.31	0.13	70.5	2302W041
20	-1.66	34.102	8.14	7.56	1.65	48.3	0.05	12.9	0.1	0.26	0.20	56.3	2302W042
No. 1 Routine observation- 8/9 ( 28 January 1982; 07:00-07:20 )													
0	-0.39	29.896	7.96	8.01	0.33	16.7*	0.11	2.1	1.5	0.48	0.16	75.3	2302W043
2	-1.37	33.582	8.09	7.73	0.56	16.1*	0.16	0.0	0.7	0.46	0.15	75.0	2302W044
4	-1.61	33.967	8.11	7.60	0.56	18.5*	0.11	0.0	0.4	0.32	0.25	56.4	2302W045
6	-1.63	34.080	8.12	7.59	—	—	—	—	—	—	—	—	2302W —
10	-1.64	34.006	8.13	7.67	0.52	21.9*	0.16	0.0	0.7	0.32	0.25	56.4	2302W046
15	-1.64	34.087	8.13	7.64	0.42	19.4*	0.11	0.5	0.4	0.29	0.09	76.6	2302W047
20	-1.64	34.084	8.13	7.55	0.56	25.9*	0.11	9.4	0.2	0.19	0.09	69.5	2302W048

Table 2. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P SiO <sub>3</sub> -Si NO <sub>2</sub> -N NO <sub>3</sub> -N NH <sub>4</sub> -N					Chl. <i>a</i> Phaeo.		Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No. 1 Routine observation- 9/9 ( 28 January 1982; 10:00-10:20 )													
0	-0.15	30.814	7.91	8.04	0.56	23.5*	0.05	7.6	1.4	0.49	0.19	72.4	2302W049
2	-1.34	33.612	8.09	7.78	0.56	21.6*	0.11	0.3	0.6	0.47	0.32	59.9	2302W050
4	-1.62	33.933	8.11	7.74	0.66	24.7*	0.05	0.2	0.4	0.35	0.13	73.4	2302W051
6	-1.63	33.946	8.14	7.79	—	—	—	—	—	—	—	—	2302W —
10	-1.64	34.082	8.12	7.67	0.52	19.8*	0.00	0.1	0.3	0.34	0.12	74.5	2302W052
15	-1.64	34.120	8.13	7.61	0.61	28.7*	0.05	0.2	0.4	0.26	0.11	70.5	2302W053
20	-1.65	34.110	8.13	7.54	0.52	16.1*	0.00	0.8	0.1	0.12	0.07	63.9	2302W054

Table 2. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No. 4 Routine observation ( 30 March 1982; 11:30-12:00 )													
0	-1.71	33.735*	8.03	8.09	1.84	59.6	0.13	24.0	0.4	0.38	0.19	67.1	2302W055
5	-1.79	33.752	8.01	7.86	1.98	69.5	0.09	18.9	0.3	0.05	0.12	31.6	2302W056
10	-1.76	33.806	8.00	7.85	2.23	74.3	0.09	17.3	0.6	0.07	0.76	8.1	2302W057
15	-1.79	33.833	8.00	7.86	2.27	69.2	0.09	20.0	0.3	0.05	0.20	19.3	2302W058
23	-1.76	33.844	8.00	7.85	2.37	71.6	0.09	21.4	0.3	0.08	0.18	30.8	2302W059
No. 5 Routine observation ( 28 April 1982; 10:23-10:40 )													
0	-1.86	33.894	8.19	7.97	1.59	42.1	0.16	18.2	1.3	0.03	0.02	62.1	2302W060
5	-1.87	33.885	8.20	7.94	2.02	55.6	0.21	20.9	1.0	0.04	0.03	60.4	2302W061
10	-1.83	33.881	8.21	7.96	2.02	54.1	0.21	21.4	1.2	0.03	0.07	28.7	2302W062
15	-1.85	33.883	8.21	7.94	1.92	51.5	0.21	22.4	1.0	0.03	0.02	62.1	2302W063
23	-1.85	33.885	8.23	7.88	2.02	49.4	0.21	20.2	1.1	0.02	0.03	40.2	2302W064
No. 6 Routine observation ( 12 May 1982; 10:17-10:31 )													
0	-1.84	33.983	8.01	8.05	1.81	61.1	0.21	26.2	0.6	0.08	0.96	7.7	2302W065
5	-1.85	33.914	8.01	8.03	1.86	56.9	0.17	26.3	0.6	0.05	0.37	12.3	2302W066
10	-1.82	33.910	8.02	8.11	1.86	60.0	0.13	26.2	0.7	0.03	0.25	11.9	2302W067
15	-1.84	33.977*	8.02	7.96	1.81	60.4	0.13	25.9	0.5	0.03	0.20	13.3	2302W068
23	-1.83	33.914	8.01	8.15	1.81	62.4	0.17	26.3	0.7	0.02	0.04	34.5	2302W069



Table 2. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mZ/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No. 7 Routine observation ( 31 May 1982; 11:50-12:04 )													
0	-1.84	34.004	7.91	8.06	1.67	46.7	0.18	22.2	0.5	0.02	0.07	17.2	2302W070
5	-1.88*	33.996	7.92	7.91	1.95	56.0	0.23	22.6	0.6	0.02	0.06	23.0	2302W071
10	-1.83	34.007	7.92	7.93	1.91	58.8	0.23	22.2	0.5	0.02	0.10	15.9	2302W072
15	-1.84	34.008	7.93	7.92	1.91	57.7	0.23	22.0	0.3	0.02	0.05	34.5	2302W073
23	-1.81	34.020	7.93	7.86	2.00	60.5	0.27	22.0	0.4	0.02	0.05	29.6	2302W074
No. 8 Routine observation ( 16 June 1982; 12:15-12:35 )													
0	-1.83	34.089	7.89	7.56	1.57	36.7	0.30	18.7	1.4	0.02	0.02	43.1	2302W075
5	-1.87	34.072	7.89	7.68	1.81	54.8	0.30	22.1	1.1	0.02	0.03	34.5	2302W076
10	-1.85*	34.076	7.89	7.70	2.00	45.0	0.30	19.3	1.2	0.02	0.02	51.7	2302W077
15	-1.85	34.074	7.89	7.62	1.86	59.7	0.25	28.3	1.0	0.02	0.02	43.1	2302W078
23	-1.86	34.076	7.89	7.63	1.67	43.5	0.30	20.3	1.3	0.01	0.05	17.2	2302W079
No. 9 Routine observation ( 5 July 1982; 13:00-13:25 )													
0	-1.81	33.969	8.01	7.63	1.71	58.0	0.33	19.0	0.9	0.03	0.11	23.0	2302W080
5	-1.80*	33.970	8.02	7.63	2.00	58.7	0.33	19.0	0.5	0.03	0.11	23.0	2302W081
10	-1.79	33.976	8.02	7.67	2.14	68.2	0.29	17.4	0.5	0.01	0.15	3.8	2302W082
15	-1.80	33.994	8.02	7.68	2.24	77.7	0.46	19.5	0.3	0.02	0.22	8.0	2302W083
23	-1.78	34.012	8.02	7.65	1.81	57.6	0.29	18.6	0.5	0.01	0.04	20.7	2302W084

Table 2. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No.10 Routine observation ( 27 July 1982; 13:08-13:32 )													
0	-1.83	34.049	8.00	7.52	2.30	66.1	0.36	19.0	0.5	0.08	1.04	6.7	2302W085
5	—	34.037	8.00	7.53	2.35	69.5	0.36	19.5	0.5	0.05	0.60	8.2	2302W086
10	-1.83	34.029	8.01	7.52	2.25	73.3	0.36	19.9	0.5	0.06	0.62	8.4	2302W087
15	—	34.082	8.01	7.50	2.15	74.1	0.82	21.0	0.6	0.03	0.32	8.0	2302W088
23	-1.83	34.039	8.01	7.50	2.10	66.1	0.41	15.7	0.6	0.02	0.24	7.4	2302W089
No.11 Routine observation ( 13 August 1982; 13:00-13:29 )													
0	—	34.062	8.04	7.44	1.60	58.7	0.36	23.5	0.3	0.05	0.81	5.2	2302W090
5	-1.82	34.043	8.05	7.45	2.05	65.5	0.36	27.8	0.2	0.02	0.29	6.5	2302W091
10	-1.80	34.037	8.04	7.45	2.10	68.2	0.32	27.6	0.2	0.03	0.33	8.4	2302W092
15	-1.82	34.042	8.04	7.43	2.05	67.8	0.55	28.3	0.2	0.01	0.02	34.5	2302W093
23	-1.82	34.047	8.04	7.44	2.10	68.6	0.55	29.2	0.3	0.01	0.04	20.7	2302W094
No.12 Routine observation ( 30 August 1982; 13:18-13:45 )													
0	-1.83*	34.130	8.00	7.41	2.05	63.9	0.25	24.0	0.2	0.02	0.50	3.6	2302W095
5	-1.81*	34.104	8.01	7.39	2.19	65.2	0.30	21.3	0.1	0.02	0.19	9.4	2302W096
10	-1.83*	34.092	8.01	7.38	2.10	67.6	0.30	25.0	0.2	0.02	0.13	14.2	2302W097
15	-1.82	34.091	8.00	7.38	2.29	66.6	0.25	20.5	0.2	0.01	0.04	13.8	2302W098
23	-1.80	34.100	8.00	7.34	2.14	67.2	0.35	24.4	0.1	0.01	0.03	17.2	2302W099

Table 2. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. $\alpha$	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No.13 Routine observation ( 23 September 1982; 14:39-15:01 )													
0	-1.83*	34.166	7.98	7.35	1.98	68.6	0.43	24.9	0.3	0.02	0.14	12.2	2302W100
5	-1.81	34.150	7.97	7.30	1.80	54.6	0.24	21.5	0.3	0.02	0.05	30.2	2302W101
10	-1.79	34.143	7.97	7.29	1.80	61.4	0.24	21.1	0.4	0.01	0.07	7.7	2302W102
15	-1.79	34.132	7.96	7.31	1.80	42.0	0.14	18.3	0.4	0.01	0.11	7.4	2302W103
23	-1.76	34.155	7.95	7.27	2.32	62.8	0.29	21.0	0.4	0.09	0.22	28.2	2302W104
No.14 Routine observation ( 18 October 1982; 10:35-10:56 )													
0	-1.79	34.177	8.02	7.28	2.15	75.0	0.18	10.3	0.3	0.01	0.04	20.7	2302W105
5	-1.79	34.168	8.01	7.22	2.10	68.8	0.14	8.7	0.3	0.02	0.06	26.8	2302W106
10	-1.80	34.160	8.02	7.20	1.70	68.8	0.09	8.4	0.5	0.01	0.02	34.5	2302W107
15	-1.78	34.162	8.02	7.19	2.30	70.5	0.14	11.1	0.1	0.01	0.02	23.0	2302W108
23	-1.75	34.163	8.01	7.20	2.35	71.2	0.18	11.2	0.2	0.01	0.00	100.0	2302W109
No.15 Routine observation ( 2 November 1982; 10:16-10:39 )													
0	-1.73	34.196	8.00	7.00	2.19	75.0	0.30	23.0	0.1	0.03	0.04	44.4	2302W110
5	-1.72	34.183	8.00	7.02	2.19	74.3	0.12	27.1	0.2	0.02	0.05	30.1	2302W111
10	-1.72	34.177	7.98	6.96	2.29	75.7	0.12	24.7	0.1	0.05	0.03	57.5	2302W112
15	-1.71	34.179	7.99	7.00	2.34	75.0	0.06	23.8	0.0	0.04	0.05	43.9	2302W113
23	-1.68	34.186	7.99	6.96	3.02	73.7	0.36	28.9	0.4	0.03	0.05	34.5	2302W114

Table 2. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. $\alpha$	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No.16 Routine observation ( 15 November 1982; 09:58-10:24 )													
0	-1.77	34.180	7.99	7.12	2.25	74.9	0.29	24.5	0.1	0.11	0.40	22.2	2302W115
5	-1.76	34.162	8.00	7.10	2.05	73.2	0.13	20.7	0.2	0.11	0.27	29.6	2302W116
10	-1.77	34.163	7.99	7.10	1.85	72.5	0.08	18.2	0.2	0.07	0.48	13.1	2302W117
15	-1.73	34.167	7.99	7.03	2.30	76.2	0.25	23.6	0.2	0.05	0.15	23.5	2302W118
23	-1.75	34.171	7.99	7.03	2.45	82.0	0.33	19.9	0.4	0.03	0.10	22.1	2302W119
No.17 Routine observation ( 2 December 1982; 09:57-10:15 )													
0	-1.75	34.167	7.99	7.14	1.35	59.3	0.18	15.0	0.2	0.03	0.05	38.3	2302W120
5	-1.76	34.168	7.99	7.17	1.10	52.1	0.09	13.2	0.2	0.03	0.06	34.5	2302W121
10	-1.75	34.165	7.98	7.13	1.25	55.4	0.05	15.7	0.2	0.03	0.15	17.2	2302W122
15	-1.73	34.167	7.98	7.08	2.25	73.1	0.02	21.8	0.1	0.03	0.10	25.3	2302W123
23	-1.69	34.165	7.98	7.09	1.75	60.0	0.23	16.4	0.2	0.02	0.08	22.0	2302W124
No.18 Routine observation ( 17 December 1982; 09:54-10:22 )													
0	-1.75	34.143	7.95	7.11	2.10	63.3	0.09	20.1	0.5	0.20	0.09	69.0	2302W125
5	-1.72	34.138	7.95	7.12	2.10	56.6	0.05	18.7	0.6	0.11	0.15	40.7	2302W126
10	-1.70	34.145	7.95	7.14	2.33	76.6	0.05	19.6	0.4	0.07	0.14	34.5	2302W127
15	-1.73	34.150	7.95	7.12	2.14	75.2	0.05	25.7	0.4	0.07	0.13	36.0	2302W128
23	-1.68	34.159	7.95	7.04	2.29	69.1	0.05	19.7	0.5	0.07	0.13	36.1	2302W129

Table 2. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No.19 Routine observation ( 28 December 1982; 13:30-13:59 )													
0	-1.61	19.554	7.96	8.29	0.91	42.3	0.09	12.0	0.4	0.78	0.27	74.4	2302W130
5	-1.76	34.120	7.92	7.03	1.14	51.8	0.05	15.6	0.1	0.08	0.12	41.1	2302W131
10	-1.70	34.138	7.92	6.98	1.05	48.8	0.05	16.4	0.1	0.08	0.05	62.1	2302W132
15	-1.67	34.131	7.92	6.95	1.38	54.9	0.05	17.2	0.1	0.08	0.08	49.8	2302W133
23	-1.63	34.140	7.92	6.95	1.48	60.6	0.05	19.3	0.1	0.04	0.10	29.9	2302W134
No.20 Routine observation ( 15 January 1983; 09:49-10:25 )													
0	-1.52	34.023	8.05	7.12	1.81	77.9	0.04	23.4	0.5	1.21	0.78	61.0	2302W135
5	-1.60	34.091	8.04	7.21	1.67	67.5	0.04	18.9	0.5	0.89	0.25	78.1	2302W136
10	-1.62	34.112	8.04	7.12	1.91	73.6	0.02	21.3	0.2	0.67	0.21	75.9	2302W137
15	-1.60	34.125	8.03	7.15	2.00	74.2	0.06	22.3	0.1	0.64	0.17	78.6	2302W138
25	-1.59	34.144	8.02	7.07	1.91	81.6	0.04	23.2	0.2	0.37	0.12	76.2	2302W139
No.21 Routine observation ( 28 January 1983; 10:30-10:58 )													
0	-0.82	34.028	8.36	11.51	2.64	67.4	0.10	26.7	0.4	6.14	8.92	40.8	2302W140
5	-1.34	34.089	8.19	9.14	1.48	63.9	0.13	18.5	0.5	9.74	6.10	61.5	2302W141
10	-1.50	34.134	8.11	8.17	1.48	66.1	0.11	22.8	0.5	7.28	4.17	63.6	2302W142
15	-1.51	34.145	8.08	7.87	2.03	67.2	0.10	24.3	0.2	6.13	3.07	66.7	2302W143
25	-1.52	34.169	8.01	7.55	0.96	60.1	0.20	7.8	0.8	4.31	2.67	61.7	2302W144

\* Data with asterisks are not comparable to the other data. See text for details.

Table 3. Oceanographic data obtained at Station 3 (68°59'57"S,39°37'16"E) between 2 March 1982 and 27 January 1983.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N NO <sub>3</sub> -N NH <sub>4</sub> -N			Chl. $\alpha$	Phaeo.	Pigment ratio (%)	Sample No.
							( $\mu$ g-atoms/L)						
No. 3 Routine observation ( 2 March 1982; 12:00-12:20 )													
0	—	—	—	—	0.97	38.1	0.12	6.6	1.0	4.61	1.35	77.4	2303W001
5	—	—	—	—	1.52	54.8	0.12	18.0	0.7	4.30	1.36	76.0	2303W002
10	—	—	—	—	1.71	50.0	0.12	20.3	0.9	3.93	0.92	81.0	2303W003
20	—	—	—	—	1.52	50.0	0.06	18.1	1.0	2.86	0.78	78.6	2303W004
30	—	—	—	—	1.71	47.6	0.06	25.0	2.3	2.35	0.95	71.3	2303W005
45	—	—	—	—	1.75	47.6	0.12	29.3	1.0	1.15	0.41	73.5	2303W006
No. 4 Routine observation ( 31 March 1982; 11:00-11:30 )													
0	—	33.772	7.98	7.78	1.59	47.7	0.14	13.3	0.5	0.26	0.19	57.8	2303W007
5	—	33.778	7.99	7.88	2.11	62.3	0.14	14.2	0.2	0.06	0.13	30.9	2303W008
10	—	33.784	7.98	7.71	1.69	41.0	0.09	8.2	0.3	0.06	0.10	36.4	2303W009
20	—	33.789	7.99	7.85	0.80	38.4	0.09	25.5	0.3	0.04	0.10	28.4	2303W010
30	—	33.798	7.99	7.84	0.56	27.7	0.05	18.0	0.3	0.05	0.06	45.9	2303W011
45	—	33.803	7.98	7.72	0.75	38.1	0.09	19.1	0.3	0.05	0.09	37.0	2303W012
No. 5 Routine observation ( 28 April 1982; 14:15-14:35 )													
0	-1.85	33.901	8.20	7.93	1.78	46.5	0.16	18.7	1.1	0.03	0.15	19.0	2303W013
5	-1.87	33.877	8.21	7.92	2.02	49.1	0.16	19.2	1.1	0.04	0.05	48.3	2303W014
10	-1.84	33.878	8.21	7.91	1.69	43.5	0.16	20.8	1.2	0.03	0.03	46.0	2303W015
20	-1.84	33.877	8.21	7.91	1.97	52.4	0.16	21.7	1.0	0.03	0.02	62.1	2303W016
30	-1.85	33.882	8.21	7.88	1.97	51.5	0.16	22.7	1.0	0.03	0.01	77.6	2303W017
45	-1.84	33.884	8.21	7.89	2.02	52.9	0.16	21.0	1.1	0.02	0.07	23.0	2303W018

Table 3. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	NO <sub>2</sub> -N NO <sub>3</sub> -N NH <sub>4</sub> -N			Chl. <i>a</i> (µg/L)	Phaeo. (µg/L)	Pigment ratio (%)	Sample No.	
						SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N					
No. 6 Routine observation ( 12 May 1982; 11:40-11:54 )													
0	-1.83	33.927	8.00	7.97	1.81	59.3	0.21	25.7	0.6	0.04	0.28	11.8	2303W019
5	-1.85	33.910	8.00	8.04	1.86	59.3	0.21	25.8	0.5	0.03	0.24	12.2	2303W020
10	-1.83	33.860	8.00	8.13	2.00	63.1	0.17	25.5	0.6	0.03	0.30	8.4	2303W021
20	-1.84	33.909	8.01	8.09	1.81	60.0	0.13	26.4	0.5	0.03	0.17	15.0	2303W022
30	-1.83	33.937	8.01	8.07	1.81	60.4	0.08	32.9	0.5	0.03	0.04	43.1	2303W023
45	-1.83	33.901	8.01	8.15	1.86	61.1	0.13	29.6	0.6	0.03	0.05	34.5	2303W024
No. 7 Routine observation ( 31 May 1982; 13:45- 14:01 )													
0	-1.83	34.011	7.88	7.91	2.05	62.6	0.27	22.4	0.4	0.02	0.02	55.2	2303W025
5	-1.87	34.007	7.93	7.89	1.91	58.1	0.32	22.1	0.6	0.02	0.04	39.4	2303W026
10	-1.83	34.000	7.93	7.92	1.95	56.7	0.32	22.8	0.5	0.02	0.03	46.0	2303W027
20	-1.84	34.016	7.93	7.91	2.00	58.1	0.32	23.0	0.4	0.02	0.02	55.2	2303W028
30	-1.82	34.023	7.93	7.89	1.91	57.7	0.27	22.6	0.3	0.02	0.01	57.5	2303W029
45	-1.84	34.015	7.93	7.89	1.91	58.4	0.32	22.9	0.5	0.02	0.01	57.5	2303W030
No. 8 Routine observation- 1/2 ( 10 June 1982; 11:09-11:24 )													
0	-1.85	34.086	7.96	7.82	1.52	44.7	0.30	18.2	1.5	0.02	0.03	34.5	2303W031
5	-1.88	34.088	8.00	7.82	1.81	54.5	0.35	22.2	1.4	0.01	0.06	14.8	2303W032
10	-1.86	34.088	8.01	7.83	1.95	54.5	0.35	23.5	1.4	0.02	0.05	25.9	2303W033
20	-1.88	34.085	8.02	7.81	1.76	48.7	0.60	18.9	1.3	0.02	0.07	20.7	2303W034
30	-1.89	34.095	8.02	7.84	2.00	44.3	0.40	19.3	1.1	0.01	0.06	17.2	2303W035
45	-1.88	34.129	8.02	7.82	1.52	38.6	0.35	17.0	1.4	0.02	0.06	21.6	2303W036

Table 3. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P (µg-atoms/L)	SiO <sub>3</sub> -Si (µg-atoms/L)	NO <sub>2</sub> -N (µg-atoms/L)	NO <sub>3</sub> -N (µg-atoms/L)	NH <sub>4</sub> -N (µg-atoms/L)	Chl. <i>a</i> (µg/L)	Phaeo. (µg/L)	Pigment ratio (%)	Sample No.
No. 8 Routine observation- 2/2 ( 12 June 1982; 22:25-22:42 )													
0	-1.86	34.094	7.90	7.83	1.67	51.8	0.35	23.0	1.2	0.03	0.19	11.5	2303W037
5	-1.88	34.085	7.98	7.70	1.91	45.0	0.35	20.0	1.1	0.02	0.19	10.1	2303W038
10	-1.85	34.086	7.99	7.72	1.76	39.0	0.35	16.8	1.4	0.02	0.23	8.6	2303W039
20	-1.87	34.086	8.00	7.70	1.76	40.5	0.40	17.8	1.4	0.02	0.05	34.5	2303W040
30	-1.88	34.083	8.00	7.70	1.67	57.5	0.35	17.4	1.4	0.02	0.04	34.5	2303W041
45	-1.87	34.082	8.01	7.72	1.57	39.0	0.30	18.0	1.1	0.02	0.06	25.9	2303W042
No. 9 Routine observation ( 7 July 1982; 09:53-10:35 )													
0	-1.80	33.999	7.89	7.58	1.81	64.4	0.33	17.9	0.5	0.02	0.11	13.3	2303W043
5	-1.79*	33.999	7.98	7.60	2.14	70.1	0.38	17.4	0.5	0.02	0.15	9.6	2303W044
10	-1.78	33.999	7.98	7.65	2.29	78.8	0.38	17.7	0.6	0.01	0.06	17.2	2303W045
20	-1.76	34.055	7.98	7.63	1.95	71.2	0.46	19.6	0.3	0.02	0.15	12.7	2303W046
30	-1.76	34.094	7.98	7.60	2.10	75.8	0.42	17.4	0.3	0.01	0.10	11.5	2303W047
45	-1.76	34.120	7.98	7.62	2.00	58.0	0.29	15.9	0.3	0.01	0.13	9.2	2303W048
No.10 Routine observation ( 29 July 1982; 09:43-10:22 )													
0	-1.83	34.048	8.01	7.46	2.20	71.4	0.41	19.8	0.5	0.02	0.42	4.9	2303W049
5	—	34.027	8.01	7.45	2.40	69.5	0.36	20.7	0.7	0.03	0.32	8.0	2303W050
10	-1.81	34.028	8.06	7.50	2.40	77.1	0.32	19.3	0.5	0.03	0.10	20.7	2303W051
20	-1.75*	34.049	8.07	7.52	2.30	74.4	0.68	18.9	0.6	0.00	0.06	4.9	2303W052
30	-1.79	34.061	8.07	7.57	2.25	74.4	0.36	21.3	0.3	0.01	0.02	23.0	2303W053
45	-1.79	34.089	8.08	7.50	2.50	68.8	0.27	18.4	0.4	0.00	0.02	11.5	2303W054



Table 3. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mZ/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si NO <sub>2</sub> -N NO <sub>3</sub> -N NH <sub>4</sub> -N				Chl. $\alpha$ Phaeo.		Pigment ratio (%)	Sample No.
						( $\mu$ g-atoms/L)				( $\mu$ g/L)			
No.11 Routine observation ( 16 August 1982; 09:38-10:12 )													
0	-1.81	34.069	7.95	7.31	1.65	59.1	0.36	21.4	0.4	0.07	0.79	8.2	2303W055
5	-1.82*	34.072	7.99	7.38	2.10	69.3	0.36	28.3	0.2	0.05	0.64	7.5	2303W056
10	-1.82	34.057	8.00	7.43	2.10	69.7	0.36	28.7	0.2	0.01	0.23	3.8	2303W057
20	-1.80	34.075	8.00	7.39	2.05	67.0	0.64	29.6	0.1	0.01	0.31	3.7	2303W058
30	-1.78	34.097	8.00	7.37	2.10	68.2	0.32	28.6	0.1	0.01	0.08	7.7	2303W059
45	-1.77	34.111	8.00	7.37	2.15	69.7	0.41	28.2	0.1	0.01	0.05	11.5	2303W060
No.12 Routine observation ( 2 September 1982; 14:08-14:40 )													
0	-1.74	34.131	7.98	7.43	1.95	57.8	0.15	21.5	0.2	0.06	0.63	9.0	2303W061
5	-1.81*	34.114	8.01	7.42	2.24	70.6	0.15	20.9	0.1	0.02	0.12	15.1	2303W062
10	-1.81	34.107	8.02	7.42	2.29	61.8	0.10	22.2	0.2	0.02	0.15	9.1	2303W063
20	-1.80*	34.108	8.02	7.43	2.14	58.8	0.45	19.2	0.2	0.02	0.06	19.2	2303W064
30	-1.79	34.114	8.02	7.38	2.29	68.2	0.40	20.7	0.1	0.01	0.03	25.9	2303W065
45	-1.78	34.119	8.03	7.34	2.43	76.7	0.25	27.7	0.1	0.01	0.03	17.2	2303W066
No.13 Routine observation- 1/2 ( 16 September 1982; 09:44-10:13 )													
0	-1.82*	34.130	7.97	7.29	1.84	55.6	0.38	19.1	0.3	0.07	1.03	6.2	2303W067
5	-1.81	34.115	8.00	7.29	1.60	44.7	0.33	17.9	0.5	0.05	0.63	7.8	2303W068
10	-1.82	34.121	8.00	7.32	1.55	50.9	0.24	18.4	0.5	0.02	0.37	6.3	2303W069
20	-1.82	34.131	8.00	7.30	1.60	44.7	0.19	18.3	0.6	0.03	0.04	43.1	2303W070
30	-1.74	34.150	8.00	7.27	2.03	59.0	0.14	22.5	0.2	0.03	0.02	55.2	2303W071
45	-1.74	34.153	8.00	7.26	1.60	43.0	0.29	17.8	0.3	0.01	0.04	13.8	2303W072

Table 3. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si (µg-atoms/L)	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. $\alpha$ (µg/L)	Phaeo.	Pigment ratio (%)	Sample No.
No.13 Routine observation- 2/2 ( 16 September 1982; 23:25-23:58 )													
0	-1.78*	34.177	7.95	7.31	1.84	57.3	0.67	18.9	0.3	0.07	0.64	9.3	2303W073
5	-1.80	34.153	7.94	7.35	1.69	51.9	0.43	18.6	0.3	0.02	0.07	17.2	2303W074
10	-1.81	34.148	7.97	7.34	1.50	40.3	0.14	17.5	0.4	0.02	0.27	8.1	2303W075
20	-1.78	34.131	7.97	7.34	1.40	44.0	0.10	18.0	0.4	0.01	0.08	10.3	2303W076
30	-1.75*	34.141	7.97	7.27	1.84	53.2	0.10	19.4	0.4	0.01	0.05	11.5	2303W077
45	-1.72	34.170	7.98	7.18	1.79	48.8	0.10	21.0	0.2	0.01	0.05	11.5	2303W078
No.14 Routine observation ( 18 October 1982; 14:08-14:34 )													
0	-1.81	34.178	7.98	7.25	2.15	78.8	0.32	9.4	0.1	0.03	0.27	9.1	2303W079
5	-1.80	34.159	7.98	7.24	1.90	66.1	0.14	9.0	0.2	0.01	0.07	15.3	2303W080
10	-1.80	34.165	8.00	7.26	2.20	71.2	0.05	10.0	0.2	0.01	0.10	11.5	2303W081
20	-1.78	34.167	8.01	7.18	2.15	75.0	0.05	10.1	0.3	0.01	0.01	46.0	2303W082
30	-1.75	34.163	8.02	7.13	2.15	77.4	0.05	9.0	0.4	0.01	0.00	100.0	2303W083
45	-1.75	34.178	8.01	7.26	2.35	74.3	0.09	9.4	0.2	0.02	0.00	100.0	2303W084
No.15 Routine observation ( 2 November 1982; 13:32-14:00 )													
0	-1.75	34.179	7.96	6.98	2.19	76.0	0.24	26.2	0.2	0.06	0.19	23.8	2303W085
5	-1.73	34.172	7.95	6.97	2.15	61.7	0.06	24.6	0.4	0.04	0.04	49.8	2303W086
10	-1.72	34.180	7.95	6.96	2.29	69.0	0.06	28.1	0.1	0.03	0.09	23.9	2303W087
20	-1.71	34.181	7.93	6.95	2.24	71.3	0.06	26.0	0.0	0.04	0.02	64.1	2303W088
30	-1.66	34.188	7.91	6.94	2.24	74.3	0.06	31.3	0.2	0.06	0.05	51.7	2303W089
45	-1.64	34.214	7.91	6.88	2.24	73.3	0.36	28.5	0.2	0.04	0.13	23.0	2303W090

Table 3. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	NO <sub>2</sub> -N NO <sub>3</sub> -N NH <sub>4</sub> -N				Chl. <i>a</i> Phaeo.		Pigment ratio (%)	Sample No.
						(µg-atoms/L)				(µg/L)			
No.16 Routine observation ( 15 November 1982; 13:29-14:04 )													
0	-1.74	34.178	7.97	7.14	2.25	80.6	0.21	18.7	0.3	0.15	0.47	23.7	2303W091
5	-1.73	34.172	7.99	7.12	1.70	67.1	0.13	19.0	0.2	0.14	0.24	37.0	2303W092
10	-1.70	34.176	7.99	7.05	2.30	79.3	0.08	18.8	0.2	0.10	0.21	32.5	2303W093
20	-1.72	34.180	7.98	7.04	2.20	76.6	0.08	20.7	0.2	0.08	0.21	27.2	2303W094
30	-1.69	34.185	7.99	7.02	2.35	75.9	0.08	24.6	0.2	0.06	0.08	43.1	2303W095
45	-1.69	34.189	8.00	7.00	2.35	81.6	0.08	20.2	0.2	0.05	0.08	39.1	2303W096
No.17 Routine observation ( 2 December 1982; 13:28-13:56 )													
0	-1.47*	34.177	7.97	7.16	1.80	60.7	0.09	29.7	0.4	0.07	0.12	36.2	2303W097
5	-1.73	34.163	7.99	7.16	1.30	58.7	0.09	21.5	0.3	0.05	0.09	34.5	2303W098
10	-1.77	34.160	7.98	7.15	1.60	54.1	0.05	10.5	0.2	0.03	0.13	18.3	2303W099
20	-1.70	34.176	7.98	7.13	1.50	53.1	0.05	21.0	0.1	0.03	0.31	9.1	2303W100
30	-1.67	34.172	7.98	7.11	1.50	60.3	0.09	20.5	0.2	0.05	0.12	26.8	2303W101
45*	-1.70	34.176	7.97	7.09	1.55	58.7	0.27	19.0	0.1	0.04	0.13	22.3	2303W102
No.18 Routine observation- 1/2 ( 13 December 1982; 09:42-10:10 )													
0	-1.76	34.133	7.93	7.25	2.24	71.8	0.32	26.5	0.8	0.31	0.24	56.8	2303W103
5	-1.76	34.144	7.93	7.22	2.24	66.7	0.18	20.3	0.7	0.49	0.41	54.5	2303W104
10	-1.72	34.148	7.92	7.14	2.05	59.6	0.09	19.1	0.6	0.37	0.36	50.7	2303W105
20	-1.68	34.156	7.92	7.10	2.29	71.1	0.14	18.8	0.4	0.14	0.21	39.5	2303W106
30	-1.66	34.172	7.92	6.93	2.14	75.5	0.27	25.7	0.4	0.08	0.12	39.2	2303W107
45	-1.57	34.219	7.91	6.80	2.29	75.2	0.23	23.9	0.4	0.05	0.12	30.7	2303W108

Table 3. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No.18 Routine observation- 2/2 ( 13 December 1982; 22:14-22:43 )													
0	-1.76	34.164	7.92	7.16	2.19	70.8	0.18	25.3	0.5	0.29	0.57	33.8	2303W109
5	-1.77	34.156	7.94	7.15	2.14	68.1	0.09	18.8	0.5	0.31	0.36	46.5	2303W110
10	-1.72	34.156	7.95	7.14	2.29	74.9	0.14	21.5	0.5	0.13	0.18	42.4	2303W111
20	-1.71	34.165	7.95	7.10	2.24	72.5	0.09	21.4	0.5	0.08	0.15	34.5	2303W112
30	-1.64	34.184	7.93	6.98	2.19	72.2	0.14	25.8	0.4	0.11	0.16	41.6	2303W113
45	-1.59	34.211	7.93	6.93	2.24	72.8	0.18	23.0	0.4	0.11	0.14	44.7	2303W114
No.19 Routine observation ( 29 December 1982; 08:49-09:23 )													
0	-1.73	28.207	8.38	8.64	0.81	35.3	0.09	11.2	0.4	0.74	0.34	68.7	2303W115
5	-1.73	34.065	7.98	7.02	1.14	55.6	0.05	15.7	0.1	0.09	0.10	47.6	2303W116
10	-1.73	34.117	7.97	6.95	1.24	52.2	0.05	14.7	0.1	0.08	0.62	56.0	2303W117
20	-1.68	34.148	7.97	6.94	1.76	64.4	0.05	25.7	0.1	0.05	0.10	32.6	2303W118
30	-1.56	33.927	7.95	6.71	2.05	73.2	0.05	26.4	0.1	0.03	0.06	34.5	2303W119
45*	-1.51*	34.216*	7.94*	6.61*	1.71*	74.9*	0.55*	42.8*	2.3*	0.02	0.05	24.6	2303W120
No.20 Routine observation ( 15 January 1983; 13:20-14:25 )													
0	-0.77	26.990	8.17	9.00	1.10	62.3	0.08	13.0	0.6	0.66	0.88	42.8	2303W121
5	-1.43	34.073	8.07	7.68	1.71	77.9	0.04	22.1	0.5	1.32	0.84	61.3	2303W122
10	-1.57	34.089	8.04	7.39	1.86	75.8	0.04	21.9	0.3	1.62	0.75	68.5	2303W123
15	—	—	—	—	—	—	—	—	—	2.86	0.77	78.8	2303W124
20	-1.67	34.138	8.00	7.10	2.38	76.7	0.04	24.6	0.1	4.68	1.52	75.4	2303W125
30	-1.59	34.157	7.98	6.98	2.10	75.2	0.04	27.2	0.2	1.09	0.33	77.0	2303W126
34	-1.64	34.155	7.99	6.98	2.24	78.5	0.04	25.6	0.3	—	—	—	2303W —

Table 3. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mZ/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No.21 Routine observation ( 27 January 1983; 14:04-14:45 )													
0	-0.60	34.029	8.48	12.72	0.80	61.4	0.17	2.7	0.3	9.41	7.37	56.1	2303W127
5	-1.21	34.095	8.29	10.01	1.26	64.8	0.11	14.1	0.5	11.30	3.48	76.5	2303W128
10	-1.43	34.114	8.27	9.80	1.53	64.8	0.10	15.1	0.9	8.52	2.61	76.5	2303W129
15	-1.53	34.129	8.14	8.24	1.52	66.1	0.10	21.8	0.5	6.68	4.71	58.6	2303W130
25	-1.58	34.158	8.05	7.39	2.39	68.0	0.15	25.3	0.4	6.00	2.34	71.9	2303W131
35	-1.63	34.165	8.02	7.27	2.36	68.1	0.10	26.6	0.1	1.84	0.76	70.7	2303W132

\* Data with asterisks are not comparable to the other data. See text for details.

Table 4. Oceanographic data obtained at Station 4 (69°00'00"S, 39°38'20"E) between 30 March 1982 and 27 January 1983.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N NO <sub>3</sub> -N NH <sub>4</sub> -N			Chl. $\alpha$ Phaeo.		Pigment ratio (%)	Sample No.
							( $\mu$ g-atoms/L)			( $\mu$ g/L)			
No. 4 Routine observation ( 30 March 1982; 10:00-11:00 )													
0	-1.77	33.759	8.00	8.09	2.03	64.7	0.22	20.7	0.8	0.06	0.12	34.3	2304W001
10	-1.81	33.760	8.01	7.93	2.13	70.6	0.17	19.6	0.5	0.04	0.08	30.0	2304W002
25	-1.78	33.783	7.99	7.88	2.18	68.8	0.17	20.1	1.0	0.04	0.06	43.0	2304W003
50	-1.79	33.789	7.99	7.85	2.03	66.4	0.13	21.6	0.6	0.03	0.13	18.8	2304W004
75	-1.78	33.804	7.99	7.84	1.89	64.4	0.17	21.0	0.4	0.05	0.14	25.0	2304W005
100	-1.74	34.010	7.99	7.69	2.32	71.9	0.09	19.0	0.5	0.08	0.20	27.5	2304W006
150	-1.70	34.211	7.96	7.43	2.32	69.9	0.09	21.9	0.0	0.11	0.24	31.3	2304W007
No. 5 Routine observation ( 28 April 1982; 11:40-12:00 )													
0	-1.83	33.874	8.14	7.94	1.97	55.0	0.21	21.6	1.1	0.04	0.13	23.0	2304W008
10	-1.86	33.881	8.11	7.95	1.88	52.6	0.21	24.0	1.0	0.01	0.06	17.2	2304W009
25	-1.83	33.883	8.15	7.93	2.16	51.8	0.16	19.7	1.5	0.01	0.06	17.2	2304W010
50	-1.84	33.880	8.10	7.93	2.11	50.6	0.16	19.9	1.1	0.04	0.03	56.1	2304W011
75	-1.82	33.899	8.11	7.74	1.78	47.6	0.11	24.4	1.1	0.03	0.04	43.1	2304W012
100	-1.82	33.904	8.13	7.96	1.92	50.9	0.16	24.0	1.0	0.02	0.07	22.0	2304W013
150	-1.76	33.980	8.11	7.90	1.97	51.2	0.16	23.7	1.0	0.03	0.05	34.5	2304W014
No. 6 Routine observation ( 12 May 1982; 13:30-13:50 )													
0	-1.83	33.693	7.98	8.10	1.76	61.1	0.13	27.1	0.6	0.04	0.17	18.0	2304W015
10	-1.86	33.880	7.99	8.04	1.81	60.4	0.13	26.5	0.8	0.03	0.14	19.0	2304W016
25	-1.82	33.860	8.02	8.06	1.86	63.8	0.08	26.4	0.5	0.03	0.07	27.6	2304W017
50	-1.83	33.899	8.02	8.12	1.81	60.4	0.13	26.4	0.5	0.02	0.06	27.6	2304W018
75	-1.80	33.809	8.00	7.99	1.86	63.8	0.13	27.4	0.4	0.03	0.08	25.1	2304W019
100	-1.78	34.016	8.00	7.93	1.86	64.5	0.17	28.4	0.5	0.03	0.05	38.3	2304W020
150	-1.71	33.830	8.00	7.89	1.86	64.2	0.17	28.8	0.2	0.02	0.05	30.2	2304W021

Table 4. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mZ/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No. 7 Routine observation ( 31 May 1982; 15:25-16:20 )													
0	-1.84	34.017	7.93	7.95	1.91	56.7	0.32	22.4	0.5	0.03	0.06	38.3	2304W022
10	-1.87	33.998	7.93	7.92	1.86	59.1	0.23	22.4	0.4	0.03	0.01	86.2	2304W023
25	-1.81	34.022	7.93	7.92	1.95	56.7	0.27	22.9	0.5	0.03	0.02	55.2	2304W024
50	-1.85	34.041	7.93	7.97	1.91	57.7	0.23	22.7	0.5	0.03	0.03	51.7	2304W025
75	-1.83	34.050	7.94	7.91	1.91	60.1	0.23	22.7	0.5	0.03	0.04	44.4	2304W026
100	-1.85	34.054	7.93	7.89	1.91	58.8	0.27	22.6	0.3	0.03	0.07	27.6	2304W027
150	-1.82	34.080	7.93	7.87	1.91	57.4	0.27	22.8	0.5	0.03	0.05	34.5	2304W028
No. 8 Routine observation ( 16 June 1982; 14:30-15:05 )													
0	-1.84	34.098	7.91	7.81	1.52	40.5	0.30	18.0	1.1	0.04	0.05	41.4	2304W029
10	-1.85	34.071	7.91	7.72	1.86	60.1	0.30	33.3	1.1	0.02	0.18	8.2	2304W030
25	-1.84	34.073	7.92	7.72	1.67	44.3	0.30	20.9	1.1	0.02	0.14	11.5	2304W031
50	-1.84	34.092	7.92	7.66	1.81	48.4	0.30	20.5	1.1	0.02	0.08	18.8	2304W032
75	-1.83	34.104	7.90	7.73	1.57	33.7	0.20	17.7	1.3	0.03	0.09	23.0	2304W033
100	-1.83	34.108	7.90	7.70	1.81	43.2	0.25	17.0	1.2	0.01	0.06	17.2	2304W034
150	-1.77	34.150	7.90	7.58	1.62	42.4	0.20	16.6	1.1	0.02	0.11	17.2	2304W035
No. 9 Routine observation ( 11 July 1982; 09:33-10:30 )													
0	—	34.034*	8.00	7.76	2.00	73.1	0.54	17.2	0.6	0.04	0.64	5.9	2304W036
10	-1.81*	34.190	8.03	7.76	2.10	74.2	0.50	18.4	0.4	0.01	0.28	3.2	2304W037
25	—	34.087	8.03	7.68	2.00	72.3	0.42	19.8	0.4	0.01	0.25	3.8	2304W038
50	—	34.090	8.02	7.62	2.05	69.3	0.54	16.8	0.7	0.03	0.06	27.6	2304W039
75	-1.76*	34.159	8.02	7.62	2.14	76.5	0.46	17.2	0.1	0.02	0.18	9.4	2304W040
100	-1.75	34.171	8.03	7.57	2.10	66.3	0.26	15.8	0.1	0.01	0.09	11.5	2304W041
150	-1.69	34.201	8.03	7.42	2.10	64.8	0.13	16.4	0.1	0.00	0.03	8.6	2304W042

Table 4. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si (µg-atoms/L)	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i> (µg/L)	Phaeo.	Pigment ratio (%)	Sample No.
No.10 Routine observation ( 27 July 1982; 09:42-10:35 )													
0	-1.84	34.018	8.03	7.49	1.70	61.2	0.32	18.1	0.8	0.08	0.73	9.4	2304W043
10	—	34.005	8.07	7.45	2.20	69.5	0.36	17.4	0.7	0.04	0.60	6.4	2304W044
25	-1.79	34.056	8.08	7.44	2.35	73.3	0.36	18.3	0.4	0.03	0.49	6.4	2304W045
50	-1.78*	34.085	8.08	7.37	2.35	72.5	0.46	19.9	0.4	0.02	0.22	8.9	2304W046
75	-1.75	34.133	8.08	7.32	2.35	63.8	0.32	19.0	0.8	0.02	0.14	10.1	2304W047
100	-1.73	34.163	8.08	7.28	2.05	63.8	0.27	16.8	0.5	0.02	0.15	10.9	2304W048
150	-1.70	34.183	8.08	7.22	2.00	76.7	0.18	17.6	0.3	0.00	0.02	17.2	2304W049
No.11 Routine observation ( 17 August 1982; 09:29-10:20 )													
0	-1.81*	34.079	7.95	7.39	2.10	69.3	0.36	27.7	0.2	0.09	1.05	7.9	2304W050
10	-1.82*	34.079	7.98	7.46	2.10	68.2	0.32	30.9	0.1	0.01	0.05	11.5	2304W051
25	-1.77	34.095	8.02	7.44	2.15	67.4	0.27	31.2	0.1	0.01	0.06	9.9	2304W052
50	-1.76*	34.136	8.02	7.42	2.00	68.2	0.36	31.0	0.1	0.00	0.04	6.9	2304W053
75	-1.74	34.151	8.02	7.35	2.05	68.2	0.27	28.2	0.1	0.00	0.04	6.9	2304W054
100	-1.72	34.169	8.01	7.32	2.10	70.8	0.18	31.6	0.1	0.01	0.05	11.5	2304W055
150	-1.65	34.231	8.01	7.13	2.10	71.2	0.14	35.1	0.1	0.01	0.03	17.2	2304W056
No.12 Routine observation ( 31 August 1982; 10:08-10:34 )													
0	-1.83	34.106	8.00	7.20	1.95	64.2	0.35	19.4	0.2	0.04	0.40	9.0	2304W057
10	-1.80*	34.112	8.03	7.20	2.00	59.1	0.20	20.2	0.3	0.04	0.74	5.2	2304W058
25	-1.75	34.118	8.02	7.24	2.19	65.5	0.15	23.1	0.2	0.02	0.12	12.3	2304W059
50	-1.74*	34.144	8.02	7.18	2.14	66.9	0.30	23.4	0.2	0.02	0.23	8.3	2304W060
75	-1.67	34.176	8.01	7.11	2.24	69.3	0.20	21.7	0.3	0.01	0.11	8.0	2304W061
100	-1.67	34.210	8.01	7.07	2.14	61.8	0.15	19.7	0.3	0.00	0.04	6.9	2304W062
150	-1.64	34.238	8.00	6.90	2.14	54.4	0.10	20.1	0.1	0.00	0.04	6.9	2304W —



Table 4. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No.13 Routine observation ( 21 September 1982; 10:35-11:16 )													
0	-1.82*	34.127	7.95	7.22	2.08	68.6	0.38	24.3	0.4	0.02	0.17	8.2	2304W064
10	-1.79	34.124	7.98	7.31	1.79	57.0	0.24	19.0	0.2	0.01	0.08	13.8	2304W065
25	-1.72	34.160	7.99	7.26	1.60	51.5	0.19	18.6	0.2	0.01	0.10	6.3	2304W066
50	-1.65	34.183	8.00	7.22	2.13	47.8	0.14	19.4	0.2	0.01	0.03	17.2	2304W067
75	-1.58	34.208	7.99	7.17	1.79	53.2	0.14	19.4	0.4	0.01	0.03	17.2	2304W068
100	-1.57	34.235	7.99	7.12	1.69	52.2	0.14	18.7	0.3	0.01	0.02	23.0	2304W069
150	-1.49	34.290	7.99	6.94	1.79	55.6	0.10	17.6	0.2	0.01	0.02	34.5	2304W070
No.14 Routine observation ( 19 October 1982; 09:10-09:56 )													
0	-1.83	34.182	7.96	7.20	2.10	74.3	0.27	9.0	0.2	0.06	0.21	21.4	2304W071
10	-1.81	34.167	8.00	7.25	1.85	68.8	0.18	8.4	0.1	0.02	0.02	43.1	2304W072
25	-1.78	34.166	8.01	7.21	2.15	76.0	0.09	8.6	0.1	0.04	0.07	34.5	2304W073
50	-1.72	34.182	8.00	7.14	1.85	75.0	0.05	9.0	0.2	0.01	0.04	17.2	2304W074
75	-1.56	34.224	7.99	6.97	2.30	77.7	0.05	9.7	0.3	0.01	0.01	34.5	2304W075
100	-1.54	34.264	7.99	6.84	2.05	76.7	0.05	9.2	0.2	0.00	0.00	—	2304W076
150	-1.50	34.298	7.99	6.84	2.20	75.3	0.05	9.0	0.1	0.00	0.00	—	2304W077
No.15 Routine observation ( 3 November 1982; 13:33-14:20 )													
0	-1.82	34.156	7.95	6.99	2.10	73.3	0.42	38.9	0.2	0.11	0.17	39.9	2304W078
10	-1.85	34.130	7.92	6.97	2.10	68.3	0.18	23.7	0.0	0.11	0.15	41.9	2304W079
25	-1.67	34.185	7.90	6.90	2.29	71.0	0.12	31.7	0.1	0.04	0.07	34.5	2304W080
50	-1.55	34.219	7.89	6.74	2.24	60.0	0.06	20.5	0.4	0.02	0.07	23.0	2304W081
75	-1.46	34.264	7.89	6.68	2.39	73.3	0.12	35.7	0.2	0.01	0.06	17.2	2304W082
100	-1.46	34.282	7.89	6.64	2.10	74.0	0.12	33.3	0.2	0.02	0.02	51.7	2304W083
150	-1.41	34.301	7.88	6.62	2.19	76.3	0.12	37.9	0.1	0.03	0.00	100.0	2304W084

Table 4. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si (µg-atoms/L)	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i> (µg/L)	Phaeo.	Pigment ratio (%)	Sample No.
No.16 Routine observation ( 16 November 1982; 13:48-14:27 )													
0	-1.77	34.196	7.96	7.12	2.20	75.9	0.21	24.1	0.2	0.09	0.20	31.2	2304W085
10	-1.71	34.168	7.95	7.10	2.05	70.5	0.13	18.7	0.3	0.07	0.17	29.4	2304W086
25	-1.69	34.178	7.95	7.01	2.15	78.9	0.13	21.4	0.2	0.05	0.19	20.7	2304W087
50	-1.58	34.217	7.94	6.69	2.00	79.3	0.08	19.0	0.2	0.04	0.18	19.3	2304W088
75	-1.49	34.246	7.93	6.79	2.40	81.3	0.08	22.0	0.1	0.03	0.49	6.2	2304W089
100	-1.43	34.292	7.93	6.75	2.10	81.3	0.13	19.0	0.2	0.02	0.07	19.2	2304W090
150	-1.40	34.333	7.93	6.76	2.15	83.3	0.08	21.4	0.2	0.01	0.04	23.0	2304W091
No.17 Routine observation ( 4 December 1982: 08:52-09:42 )													
0	-1.76	34.196	7.98	7.20	1.25	47.9	0.18	25.3	0.3	0.03	0.11	18.4	2304W092
10	-1.73	34.165	7.98	7.16	1.65	60.3	0.05	23.8	0.1	0.03	0.12	20.3	2304W093
25	-1.70	34.179	7.97	7.14	1.40	51.2	0.09	16.9	0.3	0.03	0.12	21.6	2304W094
50	-1.64	34.189	7.96	7.07	1.80	64.3	0.05	23.2	0.1	0.03	0.09	23.9	2304W095
75	-1.49	34.247	7.95	6.84	1.75	68.2	0.05	22.2	0.2	0.02	0.04	29.6	2304W096
100	-1.42	34.269	7.94	6.76	2.10	75.4	0.05	29.3	0.1	0.01	0.05	11.5	2304W097
150	-1.39	34.311	7.95	6.71	1.35	61.6	0.09	22.3	0.1	0.01	0.03	17.2	2304W098

Table 4. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mZ/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si (µg-atoms/L)	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. $\alpha$ (µg/L)	Phaeo.	Pigment ratio (%)	Sample No.
No.18 Routine observation ( 17 December 1982; 13:43-14:43 )													
0	-1.70	34.146	7.95	7.24	2.14	72.2	0.14	24.0	0.4	0.13	0.17	43.6	2304W099
5	-1.72	34.151	7.95	7.29	2.00	68.4	0.14	18.5	0.5	0.13	0.20	39.9	2304W100
10	-1.70	34.150	7.92	7.02	2.14	67.7	0.09	17.9	0.5	0.27	0.39	41.0	2304W101
15	-1.67	34.157	7.93	7.00	2.19	68.1	0.05	16.4	0.4	0.18	0.19	48.6	2304W102
25	-1.63	34.166	7.92	6.94	2.24	71.5	0.09	28.6	0.4	0.14	0.16	46.7	2304W103
35	-1.58	34.199	7.92	6.80	2.24	72.8	0.09	26.5	0.4	0.13	0.13	50.0	2304W104
50	-1.50	34.222	7.92	6.89	2.14	73.2	0.05	25.4	0.4	0.03	0.07	31.6	2304W105
75	-1.43	34.254	7.90	6.65	2.29	79.3	0.05	31.2	0.3	0.02	0.03	41.4	2304W106
100	-1.59	34.283	7.88	6.64	2.29	79.3	0.05	29.8	0.3	0.01	0.03	27.6	2304W107
150	-1.33	34.321	7.88	6.55	2.29	80.6	0.05	28.0	0.3	0.01	0.03	34.5	2304W108
No.19 Routine observation ( 27 December 1982; 13:53-14:52 )													
0	-1.73	33.383	7.94	7.29	1.14	60.6	0.09	19.5	0.1	0.99	0.32	75.5	2304W109
5	—	—	—	—	—	—	—	—	—	0.11	0.11	51.1	2304W110
10	-1.76	34.108	7.90	7.04	1.29	56.2	0.09	20.2	0.0	0.10	0.09	54.2	2304W111
15	—	—	—	—	—	—	—	—	—	0.07	0.05	56.7	2304W112
25	-1.65	34.149	7.89	7.04	1.29	51.5	0.05	21.1	0.1	0.07	0.06	54.2	2304W113
35	—	—	—	—	—	—	—	—	—	0.04	0.06	40.2	2304W114
50	-1.52	34.203	7.87	6.83	0.95	46.4	0.05	13.1	0.0	0.02	0.08	22.0	2304W115
75	-1.42	34.249	7.86	6.55	1.81	75.2	0.05	25.0	0.1	0.02	0.08	18.8	2304W116
100	-1.39	34.280	7.86	6.54	1.38	59.3	0.05	19.4	0.1	0.02	0.09	17.2	2304W117
150	-1.36	34.320	7.86	6.51	1.86	72.5	0.00	27.3	0.1	0.01	0.08	7.7	2304W118

Table 4. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No.20 Routine observation ( 14 January 1983; 13:28-14:38 )													
0	-0.68	33.271	8.17	8.20	1.62	75.8	0.12	18.0	0.5	1.06	0.96	52.5	2304W119
5	-	-	-	-	-	-	-	-	-	6.84	1.40	83.0	2304W120
10	-1.58	34.099	8.08	7.29	1.86	78.8	0.04	22.4	0.4	4.10	1.14	78.3	2304W121
15	-	-	-	-	-	-	-	-	-	0.77	0.20	79.8	2304W122
25	-1.65	34.140	8.05	7.19	2.00	77.9	0.04	23.1	0.5	1.12	0.38	74.7	2304W123
35	-	-	-	-	-	-	-	-	-	0.77	0.21	78.3	2304W124
50	-1.59	34.182	8.03	6.93	2.05	77.9	0.04	25.6	1.1	0.22	1.04	68.1	2304W125
75	-1.48	34.247	7.98	6.66	2.14	77.9	0.02	30.3	0.9	0.03	0.03	54.2	2304W126
100	-1.43	34.271	7.98	6.60	1.86	80.1	0.00	23.8	0.9	0.02	0.05	30.2	2304W127
150	-1.41	34.321	7.98	6.61	2.14	83.4	0.00	23.7	1.3	0.03	0.13	18.3	2304W128
No.21 Routine observation ( 27 January 1983; 09:42-10:25 )													
0	+0.45	33.978	8.64	15.27	0.50	62.8	0.10	0.9	0.3	9.91	5.28	65.3	2304W129
5	-	-	-	-	-	-	-	-	-	8.09	3.87	67.7	2304W130
10	-1.62	34.130	8.13	7.91	1.71	65.2	0.13	22.4	0.8	5.24	2.97	63.8	2304W131
15	-	-	-	-	-	-	-	-	-	6.49	4.10	61.3	2304W132
25	-1.67	34.172	8.03	7.16	2.16	68.0	0.10	22.4	0.3	1.78	0.41	81.5	2304W133
35	-	-	-	-	-	-	-	-	-	3.21	0.85	79.2	2304W134
50	-1.54	34.232	7.99	6.85	2.04	71.9	0.06	27.0	0.3	6.14	1.72	78.1	2304W135
75	-1.46	34.272	7.98	6.74	2.00	73.3	0.05	27.3	0.2	5.71	1.92	74.9	2304W136
100	-1.46	34.297	7.97	6.68	2.20	73.7	0.06	27.5	0.1	0.05	0.16	25.9	2304W137
150	-1.59	34.321	7.97	6.89	2.07	70.2	0.06	27.4	0.0	0.04	0.04	51.7	2304W138

\* Data with asterisks are not comparable to the other data. See text for details.

Table 5. Oceanographic data obtained at Station 5 (68°59'57"S,39°40'25"E) between 9 April and 27 December 1982.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mZ/L)	PO <sub>4</sub> -P SiO <sub>3</sub> -Si NO <sub>2</sub> -N NO <sub>3</sub> -N NH <sub>4</sub> -N					Chl. <i>a</i> Phaeo.		Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No. 4 Routine observation ( 9 April 1982; 14:20-16:50 )													
0	-1.80	33.896	7.98	7.84	1.79	59.3	0.17	22.2	0.3	0.06	0.09	37.9	2305W001
10	-1.82	33.897	7.90	7.76	1.84	61.3	0.17	22.2	0.3	0.06	0.22	20.0	2305W002
25	-1.79	33.902	7.89	7.71	1.89	57.9	0.17	22.2	0.3	0.06*	0.56*	9.1*	2305W003
50	-1.78	33.907	7.90	7.76	1.89	59.9	0.17	22.1	0.8	0.05	0.32	13.3	2305W004
74	-1.81	33.909	7.91	7.77	1.89	58.9	0.13	24.6	0.2	0.07	0.19	26.4	2305W005
99	-1.81	33.909	7.91	7.76	1.89	58.9	0.13	24.3	0.3	0.05	0.10	34.5	2305W006
149	-1.79	33.917	7.91	7.75	1.89	61.3	0.13	23.1	0.3	0.05	0.12	28.7	2305W007
198	-1.78	33.970	7.91	7.74	1.89	59.9	0.13	23.1	0.3	0.06	0.17	25.9	2305W008
297	-1.72	34.338	7.88	7.24	2.03	63.7	0.04	26.7	0.0	0.04	0.06	40.2	2305W009
396	-1.74	34.382	7.89	7.18	2.03	68.5	0.04	26.8	0.0	0.02	0.03	34.5	2305W010
594	-1.69	34.405	7.88	7.11	2.13	67.5	0.04	26.6	0.0	0.01	0.02	34.5	2305W011
No. 5 Routine observation ( 30 April 1982; 09:20-10:06 )													
0	-1.82	33.891	8.11	7.95	1.97	50.6	0.16	17.7	1.2	0.04	0.07	34.5	2305W012
10	-1.85	33.886	8.14	7.95	2.02	44.7	0.16	19.2	1.2	0.04	0.05	48.3	2305W013
26	-1.82	33.890	8.14	7.86	2.02	50.6	0.16	18.7	1.2	0.03	0.08	25.9	2305W014
52	-1.81	33.907	8.14	7.92	2.02	49.7	0.11	19.2	1.1	0.04	0.07	37.1	2305W015
78	-1.80	33.936	8.15	7.83	2.25	55.0	0.11	18.2	1.3	0.03	0.10	20.7	2305W016
104	-1.79	33.952	8.15	7.83	2.02	48.5	0.16	22.3	0.8	0.03	0.10	23.0	2305W017
156	-1.74	34.010	8.14	7.81	2.06	53.5	0.16	21.5	0.5	0.04	0.05	41.4	2305W018
208	-1.75	34.097	8.14	7.81	2.25	63.5	0.16	20.8	1.3	0.03	0.06	30.7	2305W019
312	-1.73	34.239	8.12	7.45	2.39	53.2	0.16	21.2	0.1	0.01	0.04	23.0	2305W020
415	-1.75	34.314	8.12	7.52	2.48	64.1	0.05	23.2	0.2	0.02	0.03	34.5	2305W021
623	-1.68	34.353	8.11	7.19	2.06	46.5	0.00	17.1	0.0	0.01	0.02	34.5	2305W022

Table 5. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	NO <sub>2</sub> -N NO <sub>3</sub> -N NH <sub>4</sub> -N				Chl. <i>a</i> (µg/L)	Phaeo. (µg/L)	Pigment ratio (%)	Sample No.
						µg-atoms/L							
No. 6 Routine observation ( 13 May 1982; 09:20-09:53 )													
0	-1.83	33.922	7.85	8.05	1.86	63.5	0.21	24.9	0.6	0.06	0.44	11.3	2305W023
10	-1.86	33.919	7.89	8.07	1.86	62.4	0.13	26.6	0.7	0.03	0.11	20.7	2305W024
25	-1.82	33.918	7.91	7.99	1.86	60.7	0.13	26.6	0.7	0.03	0.10	23.0	2305W025
50	-1.80	33.923	7.92	7.99	1.86	61.1	0.17	26.9	0.5	0.03	0.10	23.0	2305W026
75	-1.79	33.981	7.92	7.97	1.81	62.1	0.13	26.9	0.5	0.02	0.09	18.8	2305W027
100	-1.77	34.020	7.92	7.88	1.91	61.1	0.21	27.6	0.4	0.03	0.09	25.1	2305W028
150	-1.70	34.102	7.89	7.90	1.95	61.1	0.17	28.2	0.6	0.03	0.05	42.2	2305W029
200	-1.69	34.117	7.88	7.83	1.95	61.8	0.21	29.2	0.6	0.02	0.07	24.1	2305W030
300	-1.69	34.164	7.84	7.69	1.95	64.9	0.21	31.1	0.2	0.01	0.06	17.2	2305W031
400	-1.72	34.287	7.82	7.38	2.00	68.3	0.04	31.7	0.0	0.00	0.06	4.9	2305W032
600	-1.68	34.347	7.78	7.20	2.00	70.0	0.00	33.5	0.3	0.01	0.04	20.7	2305W033
No. 7 Routine observation ( 27 May 1982; 13:50-16:00 )													
0	-1.84	33.967	7.90	7.88	1.81	60.1	0.27	22.3	0.8	0.03	0.08	29.2	2305W034
10	-1.87	33.961	7.92	8.02	1.91	58.4	0.32	22.3	0.8	0.04	0.11	26.4	2305W035
25	-1.83	33.962	7.94	7.96	1.71	66.7	0.32	22.3	0.8	0.02	0.12	15.1	2305W036
50	-1.82	34.010	7.94	7.93	1.81	57.4	0.32	22.6	0.5	0.03	0.17	12.5	2305W037
75	-1.82	34.045	7.93	7.94	1.86	58.1	0.32	22.8	0.5	0.05	0.07	39.8	2305W038
100	-1.84	34.061	7.93	7.90	1.91	58.1	0.36	22.8	0.6	0.03	0.05	42.2	2305W039
150	-1.82	34.110	7.92	7.89	1.91	57.7	0.32	22.8	0.5	0.03	0.06	31.0	2305W040
200	-1.85	34.099	7.94	7.91	1.95	58.8	0.27	23.0	0.5	0.03	0.05	42.2	2305W041
300	-1.75	34.146	7.93	7.73	2.00	57.7	0.32	24.6	0.4	0.02	0.05	30.2	2305W042
400	-1.71	34.250	7.90	7.25	1.91	63.6	0.05	25.8	0.0	0.01	0.04	23.0	2305W043
600	-1.69	34.372	7.88	7.23	2.10	66.0	0.00	26.3	0.0	0.02	0.03	34.5	2305W044

Table 5. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mZ/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(μg-atoms/L)					(μg/L)			
No. 8 Routine observation ( 14 June 1982; 14:12-15:35 )													
0	-1.83	34.076	7.89	7.74	1.52	42.4	0.30	18.2	1.4	0.03	0.23	11.1	2305W045
10	-1.86	34.058	7.95	7.74	1.67	45.4	0.30	19.3	1.4	0.04	0.53	7.7	2305W046
25	-1.82	34.048	7.98	7.72	1.71	41.6	0.30	18.1	1.3	0.02	0.07	24.1	2305W047
50	-1.85	34.024	7.98	7.78	1.33	35.2	0.30	18.7	1.4	0.02	0.08	22.0	2305W048
75	-1.82	34.091	7.97	7.73	1.62	42.8	0.25	18.2	1.3	0.02	0.08	18.8	2305W049
100	-1.81	34.125	7.98	7.74	1.91	58.6	0.30	26.9	1.0	0.01	0.05	14.8	2305W050
150	-1.82	34.165	7.97	7.69	1.76	44.3	0.30	22.4	1.2	0.02	0.10	15.9	2305W051
200	-1.82	34.138	7.97	7.68	1.57	37.1	0.25	17.1	1.1	0.02	0.12	11.5	2305W052
300	-1.74	34.176	7.97	7.48	1.62	74.4	0.15	20.4	0.8	0.02	0.09	20.1	2305W053
400	-1.71	34.271	7.94	7.15	1.62	72.6	0.05	21.2	0.0	0.00	0.11	2.7	2305W054
600	-1.68	34.321	7.94	7.08	2.14	71.4	0.00	38.4	0.0	0.01	0.14	7.7	2305W055
No. 9 Routine observation ( 14 July 1982; 09:35-11:00 )													
0	-1.84	33.982	7.98	7.64	2.00	69.7	0.38	14.3	0.3	0.01	0.17	3.4	2305W056
10	—	33.974	8.01	7.64	2.19	71.2	0.42	16.0	0.7	0.01	0.15	3.8	2305W057
25	-1.74	34.032	8.01	7.44	2.00	64.4	0.29	16.0	0.3	0.01	0.04	23.0	2305W058
50	-1.75*	34.115	8.01	7.60	2.14	70.5	0.46	15.6	0.2	0.01	0.03	27.6	2305W059
75	-1.74	34.143	8.00	7.55	2.00	63.6	0.33	17.2	0.2	0.01	0.06	17.2	2305W060
100	-1.72	34.162	7.98	7.32	1.95	60.6	0.21	16.2	0.0	0.01	0.06	17.2	2305W061
150	-1.70	34.212	7.98	7.38	2.19	78.4	0.17	15.0	0.0	0.01	0.04	13.8	2305W062
200	-1.65	34.236	7.98	7.16	2.19	73.1	0.17	16.4	0.1	0.01	0.04	13.8	2305W063
308	-1.60	34.262	7.98	7.12	2.24	74.2	0.08	20.0	0.0	0.00	0.07	0.0	2305W066

Table 5. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No.10 Routine observation ( 31 July 1982; 09:13-11:00 )													
0	-1.86*	34.002	8.04	7.54	2.25	76.7	0.41	17.7	0.5	0.08	1.28	5.6	2305W067
10	-1.86*	34.002	8.07	7.63	2.25	72.2	0.41	19.4	0.6	0.02	0.03	46.0	2305W068
25	-1.84	34.029	8.08	7.64	2.20	67.6	0.32	19.5	0.6	0.01	0.04	17.2	2305W069
50	-1.76	34.123	8.06	7.45	2.20	75.9	0.64	21.2	0.1	0.01	0.05	8.6	2305W070
75	-1.73	34.157	8.07	7.41	2.15	74.4	0.41	22.5	0.2	0.01	0.02	34.5	2305W071
100	-1.70	34.181	8.07	7.32	2.25	73.7	0.14	26.3	0.0	0.01	0.04	20.7	2305W072
150	-1.64	34.229	8.06	7.20	1.85	65.4	0.09	20.7	0.0	0.01	0.02	34.5	2305W073
200	-1.62	34.247	8.05	7.13	1.85	72.2	0.05	17.9	0.1	0.02	0.05	24.6	2305W074
300	-1.56	34.273	8.06	7.03	2.40	80.1	0.09	23.5	0.0	0.01	0.06	12.9	2305W075
400	-1.56	34.277	8.05	7.01	2.30	81.6	0.05	19.4	0.2	0.01	0.02	34.5	2305W076
600	-1.67	34.319	8.04	7.03	2.05	65.0	0.05	20.5	0.3	0.00	0.02	11.5	2305W077
No.11 Routine observation ( 18 August 1982; 09:35-11:02 )													
0	-1.84*	34.076	8.03	7.42	1.95	68.9	0.50	31.0	0.4	0.02	0.04	28.7	2305W078
10	-1.84*	34.050	8.08	7.45	2.00	68.6	0.36	29.6	0.2	0.02	0.04	28.7	2305W079
25	-1.80	34.071	8.09	7.45	1.60	60.6	0.36	24.1	0.1	0.01	0.04	20.7	2305W080
50	-1.73*	34.144	8.09	7.38	1.40	55.3	0.32	22.1	0.2	0.01	0.04	20.7	2305W081
75	-1.72	34.175	8.08	7.33	1.40	56.1	0.27	22.6	0.0	0.00	0.03	8.6	2305W082
100	-1.68	34.211	8.08	7.25	1.85	62.5	0.18	24.8	0.1	0.00	0.03	8.6	2305W083
150	-1.62	34.273	8.06	7.15	1.35	52.3	0.09	21.0	0.1	0.00	0.03	8.6	2305W084
200	-1.61	34.263	8.06	7.12	1.50	55.3	0.09	22.7	0.2	0.00	0.03	8.6	2305W085
300	-1.54	34.289	8.05	7.05	1.80	67.4	0.09	27.5	0.2	0.00	0.03	11.5	2305W086
400	-1.55*	34.292	8.05	7.02	1.90	72.7	0.05	30.1	0.1	0.00	0.04	6.9	2305W087
600	-1.63	34.313	8.05	7.05	2.15	76.9	0.05	30.2	0.4	0.00	0.03	8.6	2305W088



Table 5. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mZ/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si NO <sub>2</sub> -N NO <sub>3</sub> -N NH <sub>4</sub> -N			Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.	
						(µg-atoms/L)							(µg/L)
No.12 Routine observation ( 4 September 1982; 14:40-16:30 )													
0	—	34.089	7.99	7.28	1.86	57.4	0.10	23.6	0.6	0.01	0.13	9.2	2305W089
10	—	34.078	8.03	7.35	2.38	61.5	0.20	19.0	0.2*	0.01	0.11	10.6	2305W090
25	—	34.086	8.04	7.37	2.24	65.5	0.10	24.4	0.2	0.02	0.30	5.7	2305W091
50	-1.72*	34.151	8.03	7.30	2.00	66.6	0.60	27.1	0.2	0.02	0.15	9.6	2305W092
75	-1.64*	34.214	8.02	7.02	2.10	61.1	0.25	20.1	0.5	0.01	0.06	8.6	2305W093
100	—	34.242	8.02	7.01	1.62	59.5	0.05	19.4	0.1	0.00	0.11	2.9	2305W094
150	-1.56*	34.269	8.03	6.98	1.76	67.6	0.05	19.9	0.1	0.00	0.04	6.9	2305W095
200	-1.55	34.296	8.03	6.96	1.71	62.8	0.05	21.4	0.0	0.00	0.03	8.6	2305W096
300	-1.50	34.300	8.03	6.89	1.52	58.4	0.05	21.9	0.1	0.01	0.06	9.9	2305W097
400	-1.52	34.304	8.03	6.96	1.67	63.5	0.05	20.9	0.0	0.01	0.05	5.7	2305W098
600	-1.50	34.322	8.04	6.97	1.52	57.8	0.00	20.6	0.0	0.01	0.03	8.6	2305W099
No.13 Routine observation ( 20 September 1982; 08:47-10:37 )													
0	-1.86*	34.113	7.98	7.29	1.69	48.8	0.14	18.3	0.2	0.06	0.51	10.6	2305W100
10	-1.85	34.098	8.00	7.28	1.40	46.4	0.10	17.6	0.3	0.02	0.05	21.6	2305W101
25	-1.84*	34.111	8.01	7.27	1.79	55.6	0.10	19.3	0.3	0.01	0.06	17.2	2305W102
50	-1.66	34.180	8.00	7.12	1.65	54.3	0.05	20.1	0.2	0.01	0.05	14.8	2305W103
75	-1.56*	34.224	7.99	6.94	1.55	50.5	0.29	18.2	0.4	0.00	0.03	8.6	2305W104
100	-1.54	34.245	7.99	6.92	1.21	46.4	0.24	17.9	0.5	0.01	0.01	34.5	2305W105
150	-1.51	—	7.99	6.91	1.55	62.1	0.14	20.0	0.5	0.00	0.02	11.5	2305W106
200	-1.49	34.311	7.99	6.90	2.32	72.7	0.10	24.8	0.2	0.01	0.03	17.2	2305W107
300	-1.41	34.322	7.99	6.89	2.32	89.8	0.10	20.5	0.4	0.00	0.03	8.6	2305W108
400	-1.43	34.329	7.99	6.87	1.69	63.1	0.14	17.3	0.1	0.01	0.04	13.8	2305W109
600	-1.41	34.425	7.99	6.82	2.27	75.1	0.05	24.0	0.0	0.00	0.06	0.0	2305W110

Table 5. Continued.

Depth	Temp.	Salinity	pH	DO	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio	Sample No.
(m)	(°C)			(m <sup>2</sup> /L)		(µg-atoms/L)				(µg/L)		(%)	
No.14 Routine observation ( 20 October 1982; 09:45-12:37 )													
0	-1.84	34.123	8.06	7.46	1.95	68.2	0.05	7.6	0.2	0.05	0.05	53.3	2305W111
10	-1.85	34.125	8.06	7.46	2.25	71.6	0.09	9.4	0.2	0.07	0.07	47.4	2305W112
25	-1.82	34.150	8.05	7.27	1.85	64.7	0.05	7.3	0.2	0.05	0.02	69.0	2305W113
50	-1.62	34.207	8.05	7.13	1.80	69.2	0.05	7.1	0.4	0.01	0.00	100.0	2305W114
75	-1.55	34.252	8.04	6.84	2.30	82.5	0.23	21.2	0.2	0.00	0.01	34.5	2305W115
100	-1.52	34.269	8.04	6.78	2.30	77.4	0.09	24.6	0.5	0.00	0.00	—	2305W116
150	-1.48	34.310	8.02	6.83	2.30	74.7	0.09	33.5	0.0	0.00	0.00	—	2305W117
200	-1.47	34.326	8.02	6.84	1.95	77.1	0.05	22.8	0.2	0.00	0.00	—	2305W118
300	-1.47	34.342	8.02	6.87	2.35	79.5	0.00	23.9	0.2	0.00	0.00	—	2305W119
400	-1.45	34.342	8.02	6.88	2.45	77.7	0.05	25.2	0.2	0.00	0.00	—	2305W120
600	-1.45	34.348	8.02	6.81	2.35	74.0	0.00	31.1	0.2	0.00	0.01	0.0	2305W121
No.15 Routine observation ( 4 November 1982; 08:57-10:29 )													
0	-1.84	34.143	7.89	6.80	2.24	70.0	0.03	21.0	0.2	0.10	0.13	42.8	2305W122
10	-1.83	34.136	7.88	6.88	2.19	65.0	0.03	31.3	0.4	0.10	0.07	59.4	2305W123
25	-1.80	34.138	7.88	6.91	2.24	70.7	0.06	36.6	0.4	0.11	0.06	67.1	2305W124
50	-1.54	34.229	7.87	6.66	2.15	76.7	0.06	35.3	0.2	0.03	0.00	92.0	2305W125
75	-1.44	34.271	7.87	6.62	2.34	79.3	0.18	32.8	0.1	0.01	0.01	34.5	2305W126
100	-1.41	34.304	7.87	6.62	2.19	67.7	0.06	30.2	0.3	0.00	0.00	—	2305W127
150	-1.39	34.331	7.87	6.60	2.34	79.3	0.06	32.8	0.2	0.00	0.02	17.2	2305W128
200	-1.38	34.346	7.87	6.60	2.34	71.7	0.0	34.1	0.2	0.00	0.01	34.5	2305W129
300	-1.37	34.366	7.87	6.70	2.05	74.3	0.0	39.0	0.0	0.01	0.01	69.0	2305W130
400	-1.39	34.377	7.87	6.70	1.37	58.3	0.0	24.3	0.0	0.00	0.01	34.5	2305W131
600	-1.35	34.381	7.87	6.72	2.10	75.0	0.0	41.0	0.2	0.00	0.01	0.0	2305W132

Table 5. Continued.

Depth	Temp.	Salinity	pH	DO	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio	Sample No.
(m)	(°C)			(mL/L)		(µg-atoms/L)				(µg/L)		(%)	
No.16 Routine observation ( 18 November 1982; 09:35-11:05 )													
0	-1.81	34.134	8.01	7.27	2.05	71.5	0.13	22.7	0.2	0.20	0.19	50.9	2305W133
10	-1.81	34.128	8.02	7.37	1.90	76.6	0.08	17.6	0.2	0.21	0.13	62.3	2305W134
25	-1.73	34.156	8.00	7.12	2.40	83.3	0.04	19.1	0.1	0.49	0.10	82.7	2305W135
50	-1.53	34.234	7.98	6.81	2.20	72.2	0.04	23.2	0.1	0.04	0.01	75.9	2305W136
75	-1.45	34.269	7.98	6.69	2.10	85.0	0.04	23.7	0.1	0.02	0.05	25.9	2305W137
100	-1.47	34.300	7.98	6.72	2.30	84.7	0.04	25.5	0.1	0.27	0.10	72.4	2305W138
130	-1.36*	34.329	7.98	6.61	2.35	92.8	0.04	23.2	0.1	0.01	0.01	51.7	2305W140
247	-1.39*	34.365	7.98	6.79	2.55	83.3	0.04	25.5	0.1	0.01	0.02	23.0	2305W141
369	-1.43*	34.377	7.98	6.84	2.20	88.1	0.00	19.8	0.1	0.01	0.01	46.0	2305W142
594	-1.37*	34.397	7.98	6.82	2.25	59.6	0.00	24.7	0.0	0.00	0.02	17.2	2305W143
No.17 Routine observation ( 3 December 1982; 09:46-11:22 )													
0	-1.75	34.115	7.98	7.60	1.25	49.5	0.05	16.1	0.4	0.09	0.25	25.4	2305W144
10	-1.73	34.128	7.99	7.62	1.60	59.7	0.02	15.3	0.2	0.98	0.49	66.7	2305W145
25	-1.73	34.146	7.97	7.36	1.90	63.0	0.05	21.3	0.2	1.97	0.48	80.5	2305W146
50	-1.58	34.213	7.94	6.86	1.95	70.2	0.02	20.5	0.1	0.04	0.11	24.5	2305W147
75	-1.45	34.260	7.93	6.78	2.05	76.7	0.09	19.8	0.0	0.03	0.05	34.5	2305W148
100	-1.39	34.331	7.93	6.68	1.75	67.9	0.05	16.5	0.0	0.02	0.05	24.6	2305W149
150	-1.39	34.329	7.92	6.74	1.60	56.7	0.02	14.2	0.1	0.02	0.04	28.7	2305W150
200	-1.43	34.351	7.93	6.86	1.50	55.4	0.00	19.1	0.1	0.01	0.04	17.2	2305W151
300	-1.39	34.367	7.93	6.86	1.90	74.8	0.00	22.2	0.2	0.01	0.03	17.2	2305W152
400	-1.40	34.402	7.92	6.79	1.40	60.0	0.02	17.9	0.1	0.01	0.03	17.2	2305W153
600	-1.38	34.382	7.93	6.74	1.65	63.6	0.00	20.0	0.4	0.00	0.02	11.5	2305W154

Table 5. Continued.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P	SiO <sub>3</sub> -Si	NO <sub>2</sub> -N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Chl. <i>a</i>	Phaeo.	Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No.18 Routine observation ( 16 December 1982; 09:35-11:25 )													
0	-1.63	34.032	8.03	7.58	1.95	68.8	0.23	19.3	0.6	0.17	0.11	61.4	2305W155
5	-1.66	34.099	8.03	7.48	2.05	72.8	0.14	14.8	0.7	0.16	0.35	31.0	2305W156
10	-1.67	34.092	8.03	7.55	1.95	72.8	0.14	26.9	0.6	0.18	0.19	48.0	2305W157
15	-1.73	34.126	8.01	7.31	2.19	76.9	0.09	21.1	0.6	0.19	0.29	39.3	2305W158
25	-1.66	34.151	7.98	7.11	2.14	74.5	0.14	25.4	0.5	0.87	1.11	44.0	2305W159
35	-1.65	34.171	7.97	6.95	2.24	75.9	0.18	19.5	0.6	0.73	0.46	61.4	2305W160
50	-1.48	34.233	7.94	6.67	2.19	72.5	0.09	23.8	0.3	0.04	0.06	43.9	2305W161
75	-1.40	34.276	7.93	6.63	2.38	79.9	0.09	28.8	0.2	0.02	0.04	28.7	2305W162
100	-1.33	34.310	7.93	6.51	2.33	83.7	0.05	21.3	0.3	0.02	0.03	46.0	2305W163
150	-1.38	34.338	7.93	6.63	2.48	76.9	0.05	20.1	0.2	0.01	0.05	19.7	2305W164
200	-1.38	34.360	7.94	6.68	2.29	64.0	0.05	19.9	0.5	0.00	0.04	6.9	2305W165
300	-1.38	34.368	7.95	6.75	2.52	84.3	0.05	24.4	0.3	0.01	0.02	23.0	2305W166
400	-1.40	34.381	7.95	6.73	2.43	81.3	0.05	21.5	0.0	0.01	0.02	23.0	2305W167
600	-1.39	34.381	7.95	6.71	1.67	63.0	0.05	22.8	0.0	0.01	0.03	17.2	2305W168
No.19 Routine observation ( 27 December 1982; 08:45-10:03 )													
0	-1.61	33.936	7.95	7.97	1.48	63.3	0.46	22.3	0.3	0.38	0.22	63.8	2305W169
5	—	—	—	—	—	—	—	—	—	0.11	0.17	38.9	2305W170
10	-1.69	34.092	7.91	7.16	1.05	50.1	0.14	16.5	0.3	0.41	0.08	82.8	2305W171
15	—	—	—	—	—	—	—	—	—	0.09	0.12	43.9	2305W172
25	-1.62	34.155	7.88	6.76	1.24	55.9	0.14	17.2	0.2	0.11	0.13	46.0	2305W173
35	—	—	—	—	—	—	—	—	—	0.05	0.19	19.3	2305W174
50	-1.45	34.226	7.87	6.54	1.33	64.0	0.09	23.3	0.1	0.02	0.23	8.9	2305W175
75	-1.38	34.309	7.87	6.51	1.71	73.2	0.23	38.8	0.1	0.01	0.23	3.8	2305W176
100	-1.34	34.302	7.86	6.45	1.86	74.2	0.23	27.4	0.1	0.00	0.15	2.0	2305W177
150	-1.42	34.351	7.87	6.62	1.62	67.4	0.05	24.1	0.1	0.01	0.04	13.8	2305W178

\* Data with asterisks are not comparable to the other data. See text for details.

Table 6. Oceanographic data obtained at Station 4' (69°00'20"S, 39°39'03"E) on 14 January 1983.

Depth (m)	Temp. (°C)	Salinity	pH	DO (mL/L)	PO <sub>4</sub> -P SiO <sub>3</sub> -Si NO <sub>2</sub> -N NO <sub>3</sub> -N NH <sub>4</sub> -N					Chl. <i>a</i> Phaeo.		Pigment ratio (%)	Sample No.
					(µg-atoms/L)					(µg/L)			
No.20 Routine observation ( 14 January 1983; 08:17-09:25 )													
0	-0.67	33.581	8.11	8.19	1.48	78.8	0.12	18.1	0.2	1.61	1.64	49.6	2304'W001
5	—	—	—	—	—	—	—	—	—	7.85	1.39	85.0	2304'W002
10	-1.61	34.114	8.10	7.84	1.62	69.9	0.06	16.3	0.4	4.69	1.61	74.5	2304'W003
15	—	—	—	—	—	—	—	—	—	1.19	0.27	81.6	2304'W004
25	-1.68	34.166	8.01	7.11	1.71	68.4	0.02	21.2	0.2	0.63	0.19	76.8	2304'W005
35	—	—	—	—	—	—	—	—	—	0.37	0.10	79.1	2304'W006
50	-1.56	34.218	7.98	6.81	2.10	82.2	0.02	25.0	0.0	0.18	0.09	66.8	2304'W007
75	-1.46	34.252	7.98	6.66	2.05	83.1	0.04	25.9	0.0	0.02	0.04	34.5	2304'W008
100	-1.43	34.308	7.97	6.65	2.10	86.2	0.02	24.0	0.2	0.00	0.05	0.0	2304'W009
150	-1.51	34.330	7.97	6.77	1.81	85.6	0.00	22.6	0.0	—	—	—	2304'W010

PART 2. DATA ON PLANKTON SAMPLING

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	47.0		253	4.24		2303N001	
	"	1826-1830	47.5		237	3.97		2303N002	
	Mar. 2	0000-0004	47.0		240	4.02		2303N003	
	"	0513-0517	49.0		295	4.94		2303N004	
	"	1202-1206	48.0		302	5.06		2303N005	
4	Mar. 31	1225-1229	47.0	0	333	5.57	1.2	2303N006	
	"	1800-1804	48.0	0	310	5.19	4.8	2303N007	
5	Apr. 22	1010-1014	46.0	10	298	4.99	2.0	2303N008	1 Sa.
6	May 11	1010-1014	47.0	2	270	4.52	0.4	2303N009	
7	May 25	1037-1041	46.0	0	299	5.01	1.2	2303N010	
8	June 10	1103-1107	45.0	4	329	5.51	1.8	2303N011	
	"	1810-1814	47.0	0	300	5.02	1.6	2303N012	
	June 11	2300-2304	47.0	0	280	4.69	2.0	2303N013	1 Eu.
	June 12	0725-0729	47.0	0	315	5.27	2.0	2303N014	
	"	1200-1204	47.0	0	257	4.30	2.0	2303N015	
9	July 7	1037-1041	47.0	0	303	5.07	1.6	2303N016	
10	July 29	1025-1029	47.0	0	301	5.04	2.0	2303N017	
11	Aug. 16	1015-1019	47.0	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.
-----										
	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	
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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	
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	Cod end was entangled
		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.