

**REPORT ON THE PHYTOPLANKTON PIGMENT CONCENTRATIONS,
ZOOPLANKTON AND BENTHOS SAMPLING DURING THE JARE-27 CRUISE,
NOVEMBER 1985 - APRIL 1986**

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This is a report on the phytoplankton pigment concentrations, zooplankton and benthos samplings carried out on board the icebreaker SHIRASE during the JARE-27 cruise to Syowa Station, Antarctica from November 1985 to April 1986, with Professor Yoshio Yoshida of the National Institute of Polar Research in charge and Captain Atsushi Kurata, Japan MSDF, commanding.

Chlorophyll a and pheopigment concentrations were measured in two series as part of the routine marine biological program of JARE: (1) surface sampling along the cruise track, and (2) vertical sampling in Antarctic waters (Fig. 1). Zooplankton and benthos sampling were also carried out in these waters as summarized in Table 1.

1. Phytoplankton Pigment Measurements

To observe phytoplankton stocks and their species composition, two kinds of sampling were carried out in the Indian sector of the Antarctic Ocean.

1.1. Chlorophyll a in the surface layer

Surface water sampling was carried out twice a day (0800 and 2000 LT) along the cruise track from Tokyo to Fremantle, Australia (Table 2). Two liters of the sample were filtered through Whatman GF/C filter together with a few milliliters of 0.5 % MgCO₃. Concentration of chlorophyll a and pheopigments was determined fluorometrically (Strickland and Parsons, 1968) using a Shimadzu RF-501 spectrofluorometer.

From Fremantle to Port Louis, Mauritius, water samples were taken three times a day (0800, 1300 and 1900 LT)(Fig.1 open symbols; Table 2). Five hundred milliliters to two liters of the water sample was filtered through 20 μm , 5 μm Nitex screens and GF/C, successively. To extract pigments, screen samples were sonicated for 10 minutes in 90 % acetone. Other samples were processed as mentioned above.

To compare the phytoplankton stocks at the surface to those at a depth of 8 m, water sampling with pump was carried out. Water samples (500ml) for microscopic observation were collected at every 1300 sampling time.

1.2. Vertical distribution of phytoplankton pigments

To determine the vertical distribution of phytoplankton, water samples were collected from 10 depth (0, 10, 20, 30, 50, 75, 100, 125, 150 and 200 m) at the stations shown in Fig. 1 (closed symbols) with a Van Dorn water sampler. One to two liter aliquot of the samples was used for phytoplankton pigment determination (Table 3) and a 0.5 liter aliquot of the samples was preserved for microscopical observations.

2. Zooplankton and Benthos Samplings

Three different methods were used to sample zooplankton; NORPAC net vertical hauls, MTD net horizontal tows and LHPR (Longhurst-Hardy Plankton Recorder) oblique tows. Details of sampling methods and the results of earlier works in 1972-1983 are published elsewhere (Fukuchi and Tanimura, 1981 and Watanabe et al., 1984). A beam trawl was used for benthos sampling. Approximate locations from where plankton and benthos were sampled are shown in Fig. 1.

To investigate diurnal variation in zooplankton populations, the plankton was sampled 5 times per day at Stations 1 and 4 in Breid Bay and Station 11 off Lützow-Holm Bay. Sampling was with a NORPAC net and LHPR sampler and on three occasions with a MTD net over a period of 26-28 hours. While Stations 1 and 11 were repeatedly sampled, movement of the pack ice meant that the position of Station 4 was not constant during the sampling period.

Beam trawling was done at Station 1 on the Breid Bay (sea

depth: 270 m) and at Station 7 on the G  nnerus Bank, where the depth was 955 m.

Data on plankton collected by vertical hauls with the NORPAC net, from simultaneous horizontal tows with MTD horizontal closing nets and from oblique tows with LHPR sampler are listed in Tables 5, 6, and 7, respectively. Also, data from benthos sampling with the beam trawl are listed in Table 8.

References

- Fukuchi, M. and Tanimura, A. (1981): Plankton samplings on board Fuji in 1972-1980. JARE Data Rep., 60 (Mar. Biol. 1.), 27p.
- Strickland, J. D. H. and Parsons T. R.(1968): A practical handbook of seawater analysis. Fish. Res. Bd Can. Bull., 167, 311 p.
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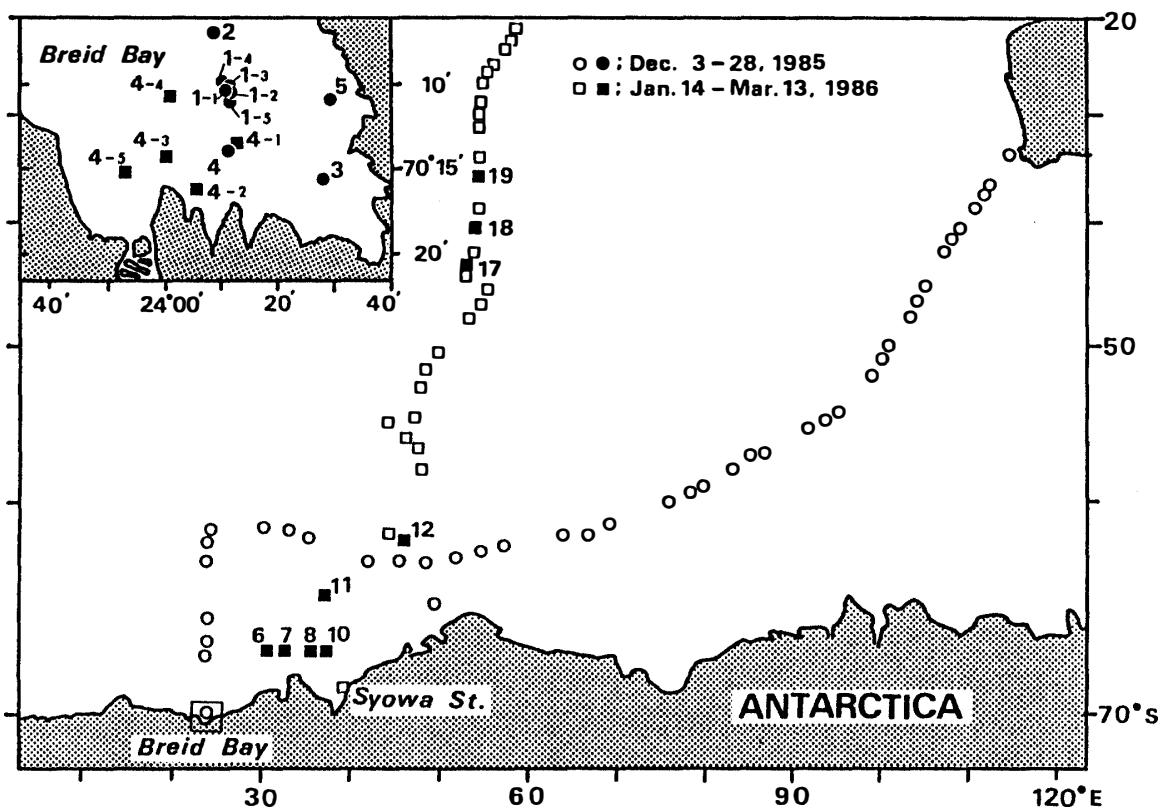


Fig. 1. Location of sampling on board the icebreaker SHIRASE during the JARE-27 cruise. Surface observation of phytoplankton pigment was indicated by open symbols. Closed symbols indicate the stations where the vertical observation of phytoplankton pigment and zooplankton and benthos sampling were carried out. Circle and square symbols indicate samplings carried out on the south-bound course from Fremantle to Antarctica in December and those on the north-bound course from Antarctica in February - March, respectively.

Table 1. List of stations where zooplankton and benthos sampling and vertical observation of phytoplankton pigment by Van Dorn bottles were carried out.

DATE	TIME	LAT	LONG	STN No.	DEPTH (m)	REMARKS						
						NP	LH	MT	BT	TR	VD	
1985												
Dec. 25	1106-1257	70-14.0S	24-11.3E	4	246	O	O	X	X	O	O	
Dec. 25	1520-1705	70-10.8S	24-28.7E	5	280	O	O	X	X	O	O	
Dec. 26	0913-1210	70-14.4S	24-10.7E	1-1	261	O	O	O	X	O	O	Day-night
Dec. 26	1632-1718	70-10.5S	24-11.0E	1-2	252	O	X	X	X	X	O	Day-night
Dec. 26	2131-2346	70-10.1S	24-10.7E	1-3	270	O	O	O	X	X	O	Day-night
Dec. 27	0232-0410	70-09.9S	24-10.0E	1-4	274	O	O	X	X	X	O	Day-night
Dec. 27	0933-1300	70-10.8S	24-11.4E	1-5	270	O	O	O	O	O	O	Day-night
Dec. 29	0943-1121	70-06.8S	24-08.8E	2	1072	O	O	X	X	O	O	
Dec. 29	1309-1437	70-15.6S	24-27.8E	3	230	O	O	X	X	O	O	
1986												
Feb. 14	1045-1348	70-13.7S	24-12.4E	4-1	275	O	O	O	X	O	O	Day-night
Feb. 14	2046-2213	70-15.0S	24-02.0E	4-2	220	O	O	X	X	X	O	Day-night
Feb. 14	2323-0250	70-14.2S	24-00.7E	4-3	214	O	O	O	X	X	O	Day-night
Feb. 15	0317-0440	70-10.8S	24-00.8E	4-4	229	O	O	X	X	X	O	Day-night
Feb. 15	1056-1208	70-15.3S	23-53.4E	4-5	255	O	O	X	X	O	O	Day-night
Feb. 18	1020-1217	67-30.1S	31-02.0E	6	3855	O	O	X	X	O	O	
Feb. 19	0908-1240	67-30.3S	32-59.2E	7	955	O	O	X	O	O	O	
Feb. 20	1021-1202	67-29.8S	36-01.0E	8	3075	O	O	X	X	O	O	
Feb. 21	1015-1154	67-30.3S	37-40.7E	10	3368	O	O	X	X	O	O	
Feb. 25	1032-1237	64-59.9S	37-40.0E	11-1	4884	O	O	O	X	O	O	Day-night
Feb. 25	1737-1930	65-00.0S	37-40.1E	11-2	4885	O	O	X	X	X	O	Day-night
Feb. 25	2305-0245	64-59.9S	37-40.8E	11-3	4886	O	O	O	X	X	O	Day-night
Feb. 26	0324-0532	65-01.2S	37-39.4E	11-4	4883	O	O	X	X	X	O	Day-night
Feb. 26	1034-1401	65-00.0S	37-39.9E	11-5	4885	O	O	O	X	O	O	Day-night
Mar. 2	1124-1221	62-11.0S	46-04.4E	12	4907	O	X	X	X	O	O	
Mar. 8	1155-1240	43-52.2S	53-05.9E	17	3580	O	X	X	X	O	O	
Mar. 9	0756-0835	40-35.7S	53-56.7E	18	4295	O	X	X	X	O	O	
Mar. 10	0751-0832	36-07.0S	54-30.2E	19	4091	O	X	X	X	O	O	
Total number of observation						27	22	8	2	18	27	

NP:Norpac net, LH:LHPR sampler, BT:Beam trawl, TR:Transparency,
 VD:Van Dorn water bottle

Table 2. Data on phytoplankton pigment ($\mu\text{g/l}$) measured along the JARE-27 cruise from Tokyo to Fremantle, Australia. Water samples were collected with bucket (B; 0 m) and pump (P; 8 m).

DATE	TIME	LAT	LONG	TEMP	No	Chl	Phaeo	RATIO
85/11/17	0800	19-40.5N	131-53.3E	27.4	27001-B 27001-P	0.06 0.07	0.16 0.16	28.14 31.37
85/11/17	1900	17-01.5N	130-44.6E	28.6	27002-B 27002-P	0.04 0.05	0.05 0.07	41.83 41.60
85/11/18	0800	13-48.7N	129-29.8E	28.6	27003-B 27003-P	0.03 0.04	0.11 0.12	19.21 26.96
85/11/18	1900	11-02.5N	128-43.6E	29.0	27004-B 27004-P	0.03 0.04	0.12 0.10	21.78 29.66
85/11/19	0800	7-34.3N	127-48.8E	28.9	27005-B 27005-P	0.04 0.04	0.11 0.09	29.33 34.22
85/11/19	1900	5-44.2N	126-26.2E	29.0	27006-B 27006-P	0.03 0.04	0.07 0.11	29.84 26.24
85/11/20	0800	3-38.8N	123-24.9E	29.4	27007-B 27007-P	0.13 0.16	0.12 0.19	52.15 45.16
85/11/20	1900	1-58.0N	120-57.8E	30.0	27008-B 27008-P	0.10 0.11	0.17 0.16	35.76 40.83
85/11/21	0800	0-42.6S	119-09.1E	29.1	27009-B 27009-P	0.34 0.29	0.17 0.15	67.14 65.45
85/11/21	2000	3-48.7S	118-20.4E	30.2	27010-B 27010-P	0.19 0.17	0.09 0.13	67.31 55.95
85/11/22	0800	6-35.9S	116-41.8E	29.0	27011-B 27011-P	0.10 0.16	0.13 0.15	42.07 50.41
85/11/22	1900	9-05.5S	115-37.7E	29.1	27012-B 27012-P	0.37 0.33	0.24 0.26	60.66 56.48
85/11/23	0800	12-04.0S	114-59.5E	28.2	27013-B 27013-P	0.03 0.05	0.05 0.10	39.93 31.51
85/11/23	1900	14-32.1S	114-28.6E	28.2	27014-B 27014-P	0.04 0.04	0.08 0.14	36.24 22.82
85/11/24	0800	17-15.9S	113-52.9E	25.3	27015-B 27015-P	0.04 0.04	0.06 0.10	38.61 30.80
85/11/24	1900	19-32.0S	113-21.4E	24.4	27016-B 27016-P	0.04 0.04	0.08 0.08	36.24 36.24
85/11/25	0800	22-06.7S	112-46.2E	22.9	27017-B 27017-P	0.07 0.07	0.08 0.13	45.63 34.22
85/11/25	1900	24-32.1S	112-08.3E	22.4	27018-B 27018-P	0.06 0.06	0.10 0.10	36.70 36.70
85/11/26	0800	27-11.8S	112-38.9E	21.4	27019-B 27019-P	0.11 0.11	0.10 0.10	53.24 53.24
85/11/26	1900	29-11.2S	113-32.7E	21.3	27020-B 27020-P	0.05 0.05	0.03 0.08	62.74 36.76
85/11/27	0800	31-49.7S	115-12.6E	20.4	27021-B 27021-P	0.05 0.05	0.05 0.06	53.78 48.67

Table 3. Data on phytoplankton pigment ($\mu\text{g/l}$) measured along the JARE-27 cruise from Fremantle to Port Luis, Mauritius. Water samples were collected with (B; 0 m) and pump (P; 8 m).

DATE & TIME(LT)	Lat.	Long.	On Water Temp.($^{\circ}\text{C}$)		DATE & TIME(LT)	Lat.	Long.	On Water Temp.($^{\circ}\text{C}$)	
Sample No.	Filter	Chl.a	Phaeo.	Pigment Ratio ($\mu\text{g/l}$)	Sample No.	Filter	Chl.a	Phaeo.	Pigment Ratio ($\mu\text{g/l}$)
85/12/03 1900	33-56.4S	113-57.7E	19.9		85/12/07 0800	50-11.1S	100-56.1E	4.6	
27022-B	20um	0.00	0.00	0.00	27032-B	20um	0.67	0.20	77.32
	Sum	0.00	0.00	45.63		Sum	0.06	0.05	52.89
	GF/C	0.03	0.07	32.59		GF/C	0.05	0.04	57.04
	TOTAL	0.04	0.07	33.44		TOTAL	0.77	0.28	73.22
27022-P	20um	0.00	0.01	11.41	27032-P	20um	0.60	0.16	78.35
	Sum	0.00	0.03	11.41		Sum	0.10	0.03	78.39
	GF/C	0.04	0.09	27.89		GF/C	0.23	0.14	62.32
	TOTAL	0.04	0.13	23.77		TOTAL	0.93	0.33	73.85
85/12/04 0800	36-41.7S	111-51.7E	17.1		85/12/07 1300	51-05.0S	99-50.2E	4.4	
27023-B	20um	0.00	0.01	22.82	27033-B	20um	0.42	0.14	75.66
	Sum	0.01	0.03	22.82		Sum	0.06	0.03	63.88
	GF/C	0.09	0.11	44.00		GF/C	0.24	0.29	44.60
	TOTAL	0.10	0.15	40.26		TOTAL	0.72	0.47	60.81
27023-P	20um	0.00	0.02	7.61	27033-P	20um	0.56	0.13	73.87
	Sum	0.00	0.02	15.21		Sum	0.07	0.01	81.87
	GF/C	0.07	0.11	38.61		GF/C	0.22	0.14	61.75
	TOTAL	0.08	0.15	33.51		TOTAL	0.65	0.28	69.86
85/12/04 1300	37-43.5S	111-02.2E	16.1		85/12/07 1900	52-12.0S	98-24.7E	3.4	
27024-B	20um	0.06	0.07	48.17	27034-B	20um	1.18	0.43	73.06
	Sum	0.02	0.00	114.06		Sum	0.06	0.01	84.13
	GF/C	0.29	0.15	66.16		GF/C	0.12	0.08	59.75
	TOTAL	0.36	0.21	63.31		TOTAL	1.36	0.53	72.09
27024-P	20um	0.09	0.04	65.91	27034-P	20um	1.02	0.28	78.59
	Sum	0.01	0.00	102.67		Sum	0.16	0.05	74.67
	GF/C	0.28	0.20	58.42		GF/C	0.14	0.10	58.41
	TOTAL	0.38	0.24	61.02		TOTAL	1.32	0.43	75.34
85/12/04 1845	38-53.6S	110-06.7E	14.4		85/12/08 0800	54-39.9S	94-57.9E	2.6	
27025-B	20um	0.02	0.00	83.66	27035-B	20um	0.87	0.21	80.31
	Sum	0.01	0.00	91.26		Sum	0.03	0.04	45.63
	GF/C	0.14	0.11	55.41		GF/C	0.20	0.15	57.99
	TOTAL	0.17	0.12	59.32		TOTAL	1.10	0.40	73.49
27025-P	20um	0.02	0.01	74.15	27035-P	20um	0.86	0.19	81.57
	Sum	0.01	0.00	91.26		Sum	0.08	0.05	58.31
	GF/C	0.13	0.11	53.24		GF/C	0.22	0.14	61.46
	TOTAL	0.16	0.12	57.33		TOTAL	1.15	0.38	74.98
85/12/05 0800	40-43.3S	108-33.0E	12.5		85/12/08 1300	55-16.5S	93-28.4E	2.7	
27026-B	20um	0.00	0.01	34.22	27036-B	20um	1.16	0.30	79.33
	Sum	0.00	0.02	22.82		Sum	0.06	0.02	75.58
	GF/C	0.11	0.11	50.78		GF/C	0.16	0.09	62.74
	TOTAL	0.12	0.14	47.53		TOTAL	1.38	0.41	76.86
27026-P	20um	0.01	0.01	45.63	27036-P	20um	1.03	0.29	78.04
	Sum	0.01	0.00	68.45		Sum	0.10	0.05	66.93
	GF/C	0.12	0.12	51.00		GF/C	0.19	0.12	62.15
	TOTAL	0.14	0.13	51.63		TOTAL	1.32	0.46	74.75
85/12/05 0800	40-43.3S	108-33.0E	12.5		85/12/08 1900	55-46.9S	91-18.8E	0.9	
27027-B	20um	0.03	0.00	91.26	27037-B	20um	0.50	0.12	81.10
	Sum	0.02	0.00	91.26		Sum	0.11	0.02	81.48
	GF/C	0.13	0.17	43.46		GF/C	0.12	0.08	59.96
	TOTAL	0.18	0.18	51.11		TOTAL	0.73	0.22	76.59
27027-P	20um	0.03	0.00	91.26	27037-P	20um	0.45	0.12	78.52
	Sum	0.02	0.00	91.26		Sum	0.15	0.06	70.91
	GF/C	0.13	0.12	51.97		GF/C	0.13	0.08	61.71
	TOTAL	0.19	0.13	59.11		TOTAL	0.73	0.27	73.35
85/12/05 1300	41-30.0S	107-54.8E	11.7		85/12/09 0800	57-20.1S	84-36.5E	0.9	
27027-B	20um	0.03	0.00	91.26	27038-B	20um	0.38	0.13	75.19
	Sum	0.02	0.00	91.26		Sum	0.09	0.09	52.02
	GF/C	0.13	0.17	43.46		GF/C	0.15	0.10	60.62
	TOTAL	0.18	0.18	51.11		TOTAL	0.63	0.31	66.88
27027-P	20um	0.03	0.00	91.26	27038-P	20um	0.38	0.07	83.66
	Sum	0.02	0.00	91.26		Sum	0.11	0.08	57.46
	GF/C	0.13	0.12	51.97		GF/C	0.13	0.10	58.46
	TOTAL	0.19	0.13	59.11		TOTAL	0.63	0.25	71.23
85/12/05 1900	42-37.9S	106-54.6E	11.4		85/12/09 1300	57-52.9S	84-55.7E	0.7	
27028-B	20um	0.03	0.02	57.04	27039-B	20um	0.48	0.11	81.62
	Sum	0.01	0.02	32.59		Sum	0.11	0.05	70.46
	GF/C	0.09	0.07	54.35		GF/C	0.12	0.07	62.74
	TOTAL	0.13	0.12	51.89		TOTAL	0.72	0.23	75.86
27028-P	20um	0.02	0.02	50.19	27039-P	20um	0.44	0.11	80.73
	Sum	0.01	0.03	22.82		Sum	0.11	0.04	72.59
	GF/C	0.09	0.09	51.03		GF/C	0.14	0.08	64.64
	TOTAL	0.12	0.14	47.29		TOTAL	0.70	0.22	75.58
85/12/06 0800	45-27.9S	104-28.8E	10.6		85/12/09 1900	58-19.9S	82-57.3E	-0.5	
27029-B	20um	0.04	0.02	68.45	27040-B	20um	0.17	0.01	94.00
	Sum	0.02	0.02	43.10		Sum	0.09	-0.01	116.15
	GF/C	0.17	0.08	67.13		GF/C	0.08	0.09	47.53
	TOTAL	0.23	0.13	64.44		TOTAL	0.34	0.09	79.47
27029-P	20um	0.04	0.04	60.46	27040-P	20um	0.16	0.00	99.20
	Sum	0.03	0.02	57.04		Sum	0.08	-0.02	124.22
	GF/C	0.25	0.15	62.33		GF/C	0.09	0.08	54.56
	TOTAL	0.34	0.21	61.44		TOTAL	0.33	0.06	84.62
85/12/06 1300	46-31.1S	103-43.0E	7.4		85/12/10 0800	59-14.9S	79-44.5E	-0.9	
27030-B	20um	0.28	0.10	73.71	27041-B	20um	0.13	-0.01	111.23
	Sum	0.06	0.03	65.91		Sum	0.04	-0.01	148.30
	GF/C	0.14	0.35	57.83		GF/C	0.06	0.04	58.67
	TOTAL	0.48	0.48	50.00		TOTAL	0.23	0.01	93.95
27030-P	20um	0.24	0.09	73.41	27041-P	20um	0.10	0.03	77.84
	Sum	0.04	0.04	51.33		Sum	0.04	0.02	71.30
	GF/C	0.15	0.15	51.06		GF/C	0.08	0.04	67.02
	TOTAL	0.44	0.28	61.37		TOTAL	0.21	0.08	72.34

Table 3. Continued.

DATE & TIME(LT)	Lat.	Long.	Chl-a	Water Temp.(°C)
Sample No.	Filter	Phase	Pigment Ratio (µg/l) (µg/l)	(%)
85/12/10 1300	59-42.2S	78-04.1E	-1.0	
27042-B	20um	0.10	0.05	67.71
	Sum	0.05	0.02	71.49
	GF/C	0.06	0.05	54.56
TOTAL		0.21	0.12	64.15
27042-P	20um	0.09	0.04	69.32
	Sum	0.05	0.02	76.59
	GF/C	0.08	0.04	66.62
TOTAL		0.22	0.09	69.85
85/12/10 1900	60-18.1S	75-39.9E	-0.9	
27043-B	20um	0.18	0.08	68.25
	Sum	0.05	0.01	77.22
	GF/C	0.07	0.12	35.69
TOTAL		0.30	0.22	57.88
27043-P	20um	0.20	0.09	69.21
	Sum	0.04	0.02	63.18
	GF/C	0.08	0.08	51.85
TOTAL		0.32	0.19	63.07
85/12/11 0800	61-26.0S	69-07.4E	-1.5	
27044-B	20um	0.65	0.21	75.20
	Sum	0.02	0.03	43.56
	GF/C	0.09	0.25	26.99
TOTAL		0.76	0.49	60.75
27044-P	20um	0.60	0.21	73.81
	Sum	0.03	0.03	52.24
	GF/C	0.13	0.11	33.68
TOTAL		0.76	0.35	68.33
85/12/11 1300	61-42.0S	66-44.3E	-1.3	
27045-B	20um	0.18	0.05	77.48
	Sum	0.04	0.01	73.01
	GF/C	0.08	0.05	63.16
TOTAL		0.29	0.11	72.52
27045-P	20um	0.18	0.05	77.67
	Sum	0.04	0.02	68.45
	GF/C	0.07	0.03	73.01
TOTAL		0.28	0.09	75.09
85/12/11 1900	61-57.3S	63-50.5E	-1.5	
27046-B	20um	0.35	0.11	76.85
	Sum	0.04	0.02	72.25
	GF/C	0.08	0.06	58.67
TOTAL		0.47	0.18	72.67
27046-P	20um	0.31	0.08	78.74
	Sum	0.04	0.07	58.67
	GF/C	0.10	0.05	69.45
TOTAL		0.45	0.16	74.06
85/12/12 0800	62-33.3S	57-06.7E	-1.4	
27047-B	20um	1.03	0.41	71.49
	Sum	0.04	0.02	64.64
	GF/C	0.12	0.05	68.45
TOTAL		1.18	0.49	70.94
27047-P	20um	0.92	0.33	73.89
	Sum	0.05	-0.00	101.63
	GF/C	0.18	0.05	77.00
TOTAL		1.15	0.38	75.31
85/12/12 1300	62-50.0S	54-35.6E	-1.4	
27048-B	20um	0.69	0.21	76.70
	Sum	0.06	0.02	71.13
	GF/C	0.11	0.06	65.84
TOTAL		0.86	0.29	74.72
27048-P	20um	0.62	0.28	69.05
	Sum	0.06	0.00	94.52
	GF/C	0.13	0.03	62.49
TOTAL		0.84	0.32	72.71
85/12/12 1900	63-09.9S	51-53.9E	-1.5	
27049-B	20um	0.04	0.03	59.67
	Sum	0.01	0.02	45.63
	GF/C	0.08	0.05	60.55
TOTAL		0.13	0.09	58.31
27049-P	20um	0.04	0.03	52.15
	Sum	0.02	0.02	48.48
	GF/C	0.07	0.13	35.55
TOTAL		0.13	0.18	40.72
85/12/13 0800	65-19.7S	49-31.5E	-1.6	
27050-B	20um	0.07	0.02	78.59
	Sum	0.04	0.01	76.05
	GF/C	0.09	0.07	56.37
TOTAL		0.20	0.10	66.31
27050-P	20um	0.21	0.15	58.24
	Sum	0.05	0.03	64.42
	GF/C	0.15	0.16	47.77
TOTAL		0.41	0.34	54.64
85/12/16 0800	63-21.2S	48-30.5E	-1.1	
27051-B	20um	0.05	0.02	66.93
	Sum	0.02	-0.01	144.50
	GF/C	0.08	0.07	52.76
TOTAL		0.15	0.09	62.51
27051-P	20um	0.06	0.01	80.61
	Sum	0.02	0.01	64.64
	GF/C	0.06	0.05	54.56
TOTAL		0.14	0.07	64.62
85/12/16 1300	63-20.6S	45-34.2E	-1.2	
27052-B	20um	0.10	0.02	83.66
	Sum	0.03	0.01	74.15
	GF/C	0.07	0.03	70.62
TOTAL		0.20	0.06	77.06
27052-P	20um	0.10	0.02	82.14
	Sum	0.03	0.01	74.97
	GF/C	0.06	0.08	44.87
TOTAL		0.19	0.11	63.29
85/12/16 1900	63-17.9S	42-13.8E	-1.3	
27053-B	20um	0.07	0.01	88.41
	Sum	0.02	0.00	96.97
	GF/C	0.04	0.08	44.04
TOTAL		0.15	0.09	62.86
27053-P	20um	0.04	0.01	74.15
	Sum	0.02	0.01	64.64
	GF/C	0.05	0.06	47.71
TOTAL		0.11	0.08	58.18
85/12/17 0800	62-00.7S	35-25.3E	-1.6	
27054-B	20um	0.02	0.01	60.84
	Sum	0.01	0.00	79.85
	GF/C	0.07	0.11	40.08
TOTAL		0.10	0.12	44.62
27054-P	20um	0.01	0.01	49.43
	Sum	0.01	0.00	79.85
	GF/C	0.07	0.05	57.49
TOTAL		0.09	0.07	57.38
85/12/17 1300	61-38.6S	33-15.8E	-1.5	
27055-B	20um	0.05	0.03	63.38
	Sum	0.01	0.02	39.11
	GF/C	0.07	0.10	41.60
TOTAL		0.14	0.15	47.95
27055-P	20um	0.04	0.03	55.41
	Sum	0.01	0.02	45.63
	GF/C	0.08	0.07	50.78
TOTAL		0.13	0.12	51.45
85/12/17 1900	61-22.5S	30-21.4E	-1.6	
27056-B	20um	0.01	0.01	49.43
	Sum	0.01	0.01	62.74
	GF/C	0.03	0.15	33.27
TOTAL		0.10	0.18	56.98
27056-F	20um	0.01	0.01	59.32
	Sum	0.01	0.01	51.33
	GF/C	0.07	0.07	51.92
TOTAL		0.10	0.09	52.84
85/12/18 0800	61-37.9S	24-27.3E	-1.7	
27057-B	20um	0.07	0.04	66.46
	Sum	0.03	0.02	59.32
	GF/C	0.10	0.07	59.57
TOTAL		0.20	0.13	61.83
27057-P	20um	0.06	0.02	72.25
	Sum	0.03	-0.00	106.47
	GF/C	0.11	0.08	59.89
TOTAL		0.21	0.10	67.73
85/12/18 1300	62-03.8S	24-16.2E	-1.6	
27058-B	20um	0.08	0.03	71.56
	Sum	0.03	0.01	81.48
	GF/C	0.13	0.07	66.22
TOTAL		0.23	0.10	69.42
27058-P	20um	0.05	0.03	60.39
	Sum	0.03	0.02	57.04
	GF/C	0.11	0.09	53.24
TOTAL		0.18	0.15	55.55
85/12/18 1900	63-14.6S	23-59.9E	-1.6	
27059-B	20um	0.09	0.04	70.14
	Sum	0.03	0.03	49.78
	GF/C	0.11	0.04	72.59
TOTAL		0.23	0.11	68.12
27059-P	20um	0.05	0.03	62.74
	Sum	0.02	0.01	65.19
	GF/C	0.11	0.03	76.54
TOTAL		0.18	0.08	70.98
85/12/19 0800	65-56.4S	24-01.5E	-1.7	
27060-B	20um	0.04	0.02	68.45
	Sum	0.02	0.01	71.71
	GF/C	0.15	0.05	74.57
TOTAL		0.21	0.08	73.01
27060-P	20um	0.04	0.03	61.93
	Sum	0.03	0.02	52.48
	GF/C	0.14	0.07	68.45
TOTAL		0.21	0.11	64.76
85/12/19 1300	67-00.6S	24-00.6E	-1.7	
27061-B	20um	0.05	0.00	91.26
	Sum	0.02	0.00	91.26
	GF/C	0.08	0.11	42.03
TOTAL		0.14	0.11	55.96
27061-P	20um	0.05	0.01	78.22
	Sum	0.02	0.01	65.19
	GF/C	0.08	0.06	56.57
TOTAL		0.16	0.09	63.62

Table 3. Continued.

DATE & TIME(LT)	Lat.	Long.	On Water Temp.(°C)		DATE & TIME(LT)	Lat.	Long.	On Water Temp.(°C)	
Sample No.	Filter	Chl.a	Phaeo.	Pigment Ratio (µg/l) (µg/l) (X)	Sample No.	Filter	Chl.a	Phaeo.	Pigment Ratio (µg/l) (µg/l) (X)
85/12/19 1900	67-37.5S	23-47.8E	-1.8		86/01/24 1300	69-00.3S	39-37.7E	0.5	
27062-B	20um	0.04	0.01	88.98	27071-B	20um	0.97	0.22	81.64
	Sum	0.01	0.01	62.74		Sum	0.25	0.03	87.84
	GF/C	0.10	0.19	34.98		GF/C	2.86	0.78	78.48
	TOTAL	0.16	0.20	43.78		TOTAL	4.08	1.04	79.74
27062-P	20um	0.07	0.07	50.52	27071-P	20um	6.54	2.19	74.89
	Sum	0.04	0.03	59.67		Sum	0.81	0.19	81.34
	GF/C	0.09	0.13	39.18		GF/C	4.10	1.48	73.44
	TOTAL	0.19	0.23	45.89		TOTAL	11.45	3.86	74.78
85/12/20 0800	70-06.6S	23-38.7E	-1.6		86/01/24 1900	69-00.3S	39-37.7E	2.2	
27063-B	20um	2.52	0.62	80.27	27072-B	20um	2.44	0.70	77.66
	Sum	0.08	0.02	81.48		Sum	2.07	0.80	72.10
	GF/C	0.22	0.27	44.95		GF/C	2.02	0.86	70.27
	TOTAL	2.82	0.90	75.73		TOTAL	6.53	2.36	73.47
no data	20um	0.00	0.00	0.00	27072-P	20um	3.50	1.11	75.96
	Sum	0.00	0.00	0.00		Sum	0.32	0.07	81.97
	GF/C	0.00	0.00	0.00		GF/C	1.84	0.96	65.76
	TOTAL	0.00	0.00	0.00		TOTAL	5.66	2.14	72.59
86/01/14 1645	69-00.3S	39-37.0E	-1.7		86/01/28 0810	69-00.3S	39-37.7E	0.9	
27064-B	20um	0.76	0.17	81.99	27073-B	20um	0.41	0.02	95.96
	Sum	0.11	0.03	78.71		Sum	0.13	0.08	62.56
	GF/C	3.87	1.12	77.57		GF/C	1.28	0.33	79.24
	TOTAL	4.74	1.31	78.27		TOTAL	1.82	0.44	80.55
no data	20um	0.00	0.00	0.00	27073-P	20um	6.54	2.02	76.70
	Sum	0.00	0.00	0.00		Sum	1.29	0.35	78.55
	GF/C	0.00	0.00	0.00		GF/C	3.22	1.47	66.57
	TOTAL	0.00	0.00	0.00		TOTAL	11.15	3.84	74.40
86/01/22 1345	69-00.3S	39-37.7E	0.3		86/02/18 0815	67-30.1S	31-01.8E	-0.2	
27065-B	20um	1.39	0.34	80.40	V1501-B	20um	0.03	-0.00	108.57
	Sum	0.28	0.03	90.06		Sum	0.01	-0.00	114.08
	GF/C	1.30	0.34	79.22		GF/C	0.42	0.17	71.26
	TOTAL	2.97	0.71	80.70		TOTAL	0.45	0.16	73.49
27065-P	20um	9.14	2.73	77.03	V1501-P	20um	0.02	0.01	68.45
	Sum	1.51	0.34	81.80		Sum	0.02	0.00	91.26
	GF/C	4.75	1.43	76.22		GF/C	0.29	0.15	66.95
	TOTAL	15.40	4.54	77.22		TOTAL	0.34	0.16	63.12
86/01/22 1905	69-00.3S	39-37.7E	0.8		86/02/19 0900	67-30.3S	32-58.8E	-0.3	
27066-B	20um	0.57	0.03	94.91	V1601-B	20um	0.02	0.01	74.05
	Sum	0.21	0.05	85.94		Sum	0.00	0.02	7.61
	GF/C	1.67	0.40	80.78		GF/C	0.21	0.26	44.93
	TOTAL	2.54	0.48	84.20		TOTAL	0.22	0.28	44.47
27066-P	20um	7.45	3.81	66.16	V1601-P	20um	0.04	0.02	63.78
	Sum	1.81	0.42	81.11		Sum	0.02	0.00	91.26
	GF/C	6.29	1.65	79.23		GF/C	0.17	0.03	83.11
	TOTAL	15.55	5.88	72.56		TOTAL	0.23	0.06	79.28
86/01/23 0800	69-00.3S	39-37.7E	0.6		86/02/20 0925	67-28.6S	36-05.9E	-0.2	
27067-B	20um	0.66	0.03	95.06	V1701-B	20um	0.02	0.01	62.74
	Sum	0.23	0.03	88.73		Sum	0.00	0.01	0.00
	GF/C	1.57	0.38	80.61		GF/C	0.12	0.10	54.76
	TOTAL	2.45	0.44	84.79		TOTAL	0.14	0.12	52.60
27067-P	20um	5.84	1.92	75.29	V1701-P	20um	0.03	0.04	45.53
	Sum	1.00	0.19	83.84		Sum	0.02	0.03	39.11
	GF/C	2.64	0.97	73.25		GF/C	0.10	0.03	79.18
	TOTAL	9.48	3.07	75.52		TOTAL	0.15	0.10	61.06
86/01/23 1300	69-00.3S	39-37.7E	0.9		86/02/21 0940	67-32.0S	37-35.3E	-0.6	
27068-B	20um	0.71	0.14	83.57	V1801-B	20um	0.02	0.02	53.24
	Sum	0.20	0.02	69.28		Sum	0.01	0.01	38.03
	GF/C	1.91	0.27	87.75		GF/C	0.15	0.18	46.62
	TOTAL	2.82	0.43	86.76		TOTAL	0.19	0.21	46.88
27068-P	20um	4.19	1.41	74.83	V1801-P	20um	0.06	0.02	80.89
	Sum	0.38	0.13	74.97		Sum	0.03	0.02	68.45
	GF/C	2.71	1.13	70.57		GF/C	0.13	0.05	73.92
	TOTAL	7.27	2.66	73.19		TOTAL	0.23	0.08	74.81
86/01/23 1900	69-00.3S	39-37.7E	1.0		86/02/26 0940	65-01.8S	37-37.6E	1.0	
27069-B	20um	1.81	0.47	79.42	V1901-B	20um	0.08	0.00	97.48
	Sum	0.25	0.07	78.82		Sum	0.02	0.01	63.68
	GF/C	3.75	0.71	84.16		GF/C	0.05	0.03	64.30
	TOTAL	5.80	1.24	82.39		TOTAL	0.15	0.04	77.74
27069-P	20um	2.62	0.91	74.22	V1901-P	20um	N.D.	N.D.	N.D.
	Sum	0.16	0.02	87.75		Sum	N.D.	N.D.	N.D.
	GF/C	1.75	1.01	63.34		GF/C	0.11	0.05	68.45
	TOTAL	4.53	1.94	69.97		TOTAL	0.11	0.05	68.45
86/01/23 1905	69-00.3S	39-37.7E	1.0		86/02/26 1010	65-00.2S	37-38.8E	1.0	
27069-B	20um	2.52	0.36	87.61	V2301-B	20um	0.08	-0.04	219.03
	Sum	1.29	0.10	92.67		Sum	0.02	0.01	63.88
	GF/C	30.18	3.42	89.82		GF/C	0.05	0.04	57.04
	TOTAL	33.99	3.88	89.76		TOTAL	0.15	0.01	95.41
no data	20um	0.00	0.00	0.00	V2301-P	20um	N.D.	N.D.	N.D.
	Sum	0.00	0.00	0.00		Sum	N.D.	N.D.	N.D.
	GF/C	0.00	0.00	0.00		GF/C	0.11	0.07	61.43
	TOTAL	0.00	0.00	0.00		TOTAL	0.11	0.07	61.43
86/01/24 0800	69-00.3S	39-37.7E	0.0		86/03/02 1050	62-07.0S	46-06.1E	1.1	
27070-B	20um	1.41	0.42	76.89	V2401-B	20um	0.23	0.11	67.50
	Sum	0.53	0.08	87.46		Sum	0.02	0.01	68.45
	GF/C	9.83	1.20	89.11		GF/C	0.04	0.04	51.85
	TOTAL	11.76	1.70	87.38		TOTAL	0.30	0.18	64.88
27070-P	20um	6.72	2.88	70.02	V2401-P	20um	N.D.	N.D.	N.D.
	Sum	1.29	0.34	79.15		Sum	N.D.	N.D.	N.D.
	GF/C	5.75	1.48	76.98		GF/C	0.17	0.05	78.33
	TOTAL	13.56	4.69	74.28		TOTAL	0.17	0.05	78.33

Table 3. Continued.

DATE & TIME(LT)	Lat.	Long.	On Water Temp.(°C)		DATE & TIME(LT)	Lat.	Long.	On Water Temp.(°C)	
Sample No.	Filter	Chl-a Phase.	Pigment Ratio	(µg/l) (µg/l) (%)	Sample No.	Filter	Chl-a Phase.	Pigment Ratio	(µg/l) (µg/l) (%)
86/03/02 1900	60-51.6S	44-37.4E	1.7		86/03/07 1300	47-00.7S	54-41.6E	8.0	
27074-B	20µm	0.17	0.05	77.57	27084-B	20µm	0.02	0.02	53.24
	Sum	0.01	0.02	45.63		5µm	0.02	0.05	31.94
	GF/C	0.05	0.03	63.88		GF/C	0.27	0.27	50.19
	TOTAL	0.23	0.09	71.56		TOTAL	0.32	0.34	48.39
27074-P	20µm	0.13	0.01	92.40	27084-P	20µm	0.03	0.06	45.43
	Sum	0.03	0.01	68.45		5µm	0.02	0.06	28.52
	GF/C	0.05	0.01	63.66		GF/C	0.32	0.25	56.47
	TOTAL	0.22	0.04	86.05		TOTAL	0.40	0.37	51.81
86/03/03 1900	58-05.5S	47-54.2E	2.0		86/03/07 1900	45-58.0S	55-24.5E	7.7	
27075-B	20µm	0.11	-0.01	104.95	27085-B	20µm	0.07	0.07	47.91
	Sum	0.02	0.01	68.45		5µm	0.07	0.08	46.72
	GF/C	0.08	0.02	80.73		GF/C	0.45	0.36	39.93
	TOTAL	0.21	0.02	90.55		TOTAL	0.39	0.51	53.63
27075-P	20µm	0.12	0.03	80.99	27085-P	20µm	0.04	0.01	77.00
	Sum	0.02	0.02	49.43		5µm	0.04	0.07	37.08
	GF/C	0.06	0.01	91.26		GF/C	0.40	0.37	52.03
	TOTAL	0.20	0.05	78.22		TOTAL	0.49	0.45	51.73
86/03/04 0800	56-55.6S	47-40.7E	2.3		86/03/08 0800	44-37.0S	53-02.1E	10.4	
27076-B	20µm	0.11	0.02	86.19	27086-B	20µm	0.05	0.04	57.04
	Sum	0.01	0.01	53.24		5µm	0.03	0.03	33.26
	GF/C	0.06	0.05	53.24		GF/C	0.21	0.19	51.85
	TOTAL	0.18	0.08	69.71		TOTAL	0.28	0.28	50.31
27076-P	20µm	0.09	0.03	74.15	27086-P	20µm	0.05	0.05	50.19
	Sum	0.01	0.01	53.24		5µm	0.03	0.06	30.42
	GF/C	0.07	0.01	83.66		GF/C	0.22	0.18	54.19
	TOTAL	0.17	0.05	75.81		TOTAL	0.30	0.30	50.03
86/03/04 1900	56-18.3S	46-18.9E	1.9		86/03/08 1205	43-52.0S	53-06.1E	12.4	
27077-B	20µm	0.03	0.04	45.63	27V2501	20µm	0.52	0.13	79.85
	Sum	0.01	0.01	36.03		5µm	0.10	0.03	65.34
	GF/C	0.06	0.03	64.44		GF/C	0.38	0.28	58.03
	TOTAL	0.10	0.08	53.84		TOTAL	1.00	0.46	68.45
27077-P	20µm	0.03	0.02	55.41	27087-P	20µm	0.39	0.04	91.26
	Sum	0.01	0.01	38.03		5µm	0.10	0.08	53.84
	GF/C	0.07	0.03	68.45		GF/C	0.30	0.31	49.12
	TOTAL	0.11	0.07	60.84		TOTAL	0.79	0.43	64.69
86/03/05 0800	55-24.5S	44-40.1E	2.0		86/03/08 1900	47-09.8S	52-37.5E	11.7	
27078-B	20µm	0.04	0.07	33.46	27088-B	20µm	0.06	0.02	70.52
	Sum	0.01	0.02	34.21		5µm	0.01	0.05	11.41
	GF/C	0.06	0.05	55.24		GF/C	0.15	0.14	40.23
	TOTAL	0.10	0.14	42.59		TOTAL	0.20	0.21	48.02
27078-P	20µm	0.05	-0.00	107.55	27088-P	20µm	0.02	0.03	42.78
	Sum	0.01	0.02	34.22		5µm	0.01	0.05	17.11
	GF/C	0.05	0.04	52.65		GF/C	0.17	0.10	62.28
	TOTAL	0.11	0.06	85.59		TOTAL	0.20	0.18	52.52
86/03/05 1900	55-04.4S	47-19.0E	2.3		86/03/09 0800	40-35.6S	51-56.2E	19.4	
27079-B	20µm	0.02	0.03	35.85	27V2601	20µm	0.00	0.00	0.00
	Sum	0.01	0.02	30.42		5µm	0.00	0.02	22.82
	GF/C	0.04	0.05	43.73		GF/C	0.24	0.26	48.24
	TOTAL	0.06	0.05	55.24		TOTAL	0.23	0.28	47.19
27079-P	20µm	0.01	0.03	34.22	27089-P	20µm	0.01	0.05	17.11
	Sum	0.00	0.01	34.22		5µm	0.01	0.06	10.14
	GF/C	0.05	0.02	75.29		GF/C	0.24	0.37	39.46
	TOTAL	0.07	0.06	57.04		TOTAL	0.26	0.48	35.12
86/03/06 0800	53-01.7S	48-01.8E	3.9		86/03/09 1900	39-03.0S	54-22.5E	19.0	
27080-B	20µm	0.06	0.02	70.52	27090-B	20µm	0.01	0.03	18.25
	Sum	0.01	0.04	22.82		5µm	0.00	0.06	7.61
	GF/C	0.16	0.17	48.11		GF/C	0.10	0.21	31.51
	TOTAL	0.23	0.23	49.20		TOTAL	0.11	0.30	26.48
27080-P	20µm	0.04	0.03	60.84	27090-P	20µm	0.01	0.04	15.21
	Sum	0.01	0.04	15.21		5µm	0.01	0.06	12.63
	GF/C	0.15	0.10	61.53		GF/C	0.11	0.28	28.73
	TOTAL	0.20	0.16	55.61		TOTAL	0.13	0.37	25.46
86/03/06 1305	51-48.6S	48-26.8E	4.8		86/03/10 0800	36-07.6S	54-30.2E	20.4	
27081-B	20µm	0.72	0.14	83.66	27V2701	20µm	0.00	0.05	5.70
	Sum	0.03	0.05	36.50		5µm	0.00	0.06	2.85
	GF/C	0.20	0.13	40.33		GF/C	0.05	0.29	14.74
	TOTAL	0.94	0.32	74.97		TOTAL	0.06	0.40	12.12
27081-P	20µm	0.36	0.12	74.58	27091-P	20µm	0.00	0.03	13.69
	Sum	0.02	0.07	26.33		5µm	0.01	0.04	13.04
	GF/C	0.21	0.41	33.55		GF/C	0.07	0.11	39.24
	TOTAL	0.59	0.60	49.64		TOTAL	0.08	0.18	30.83
86/03/06 1900	50-38.7S	49-57.7E	4.3		86/03/10 1900	36-16.4S	54-28.8E	22.6	
27082-B	20µm	0.28	0.09	75.03	27092-B	20µm	0.01	0.03	19.01
	Sum	0.03	0.04	40.56		5µm	0.00	0.06	7.61
	GF/C	0.22	0.34	40.07		GF/C	0.04	0.10	26.42
	TOTAL	0.53	0.47	53.18		TOTAL	0.05	0.20	20.13
27082-P	20µm	0.18	0.07	72.56	27092-P	20µm	0.00	0.05	5.70
	Sum	0.02	0.04	35.49		5µm	0.00	0.07	6.84
	GF/C	0.22	0.92	19.06		GF/C	0.04	0.17	19.77
	TOTAL	0.42	1.03	29.03		TOTAL	0.05	0.29	14.74
86/03/07 0800	48-01.6S	53-52.6E	6.2		86/03/11 0800	31-24.8S	54-24.7E	23.3	
27083-B	20µm	0.02	0.05	27.38	27093-B	20µm	0.00	0.05	5.70
	Sum	0.03	0.06	36.86		5µm	0.00	0.07	6.84
	GF/C	0.32	0.25	56.16		GF/C	0.02	0.12	17.11
	TOTAL	0.37	0.36	50.83		TOTAL	0.03	0.24	12.01
27083-P	20µm	0.02	0.02	50.19	27093-P	20µm	0.01	0.07	9.13
	Sum	0.03	0.05	36.50		5µm	0.00	0.06	7.61
	GF/C	0.29	0.97	22.95		GF/C	0.03	0.19	13.69
	TOTAL	0.33	1.03	24.38		TOTAL	0.04	0.31	11.64

Table 3. Continued.

DATE & TIME(LT)	Lat.	Long.	On Water Temp.(°C)
Sample No.	Filter	Chl _a (ug/l)	Phase, Pigment Ratio (X)
86/03/11 1300	30-18.4S	54-29.3E	23.6
27094-B	20μm	0.01	0.06 10.14
	Sum	0.00	0.07 4.56
	GF/C	0.01	0.35 3.65
	TOTAL	0.02	0.47 4.63
27094-P	20μm	0.00	0.02 15.21
	Sum	0.00	0.01 22.82
	GF/C	0.04	0.11 28.25
	TOTAL	0.05	0.13 26.47
86/03/11 1900	29-06.1S	54-33.4E	25.1
27095-B	20μm	0.00	0.03 11.41
	Sum	0.01	0.04 15.21
	GF/C	0.02	0.23 7.82
	TOTAL	0.03	0.29 9.13
27095-P	20μm	0.00	0.03 13.69
	Sum	0.00	0.02 17.11
	GF/C	0.03	0.16 16.67
	TOTAL	0.04	0.21 16.30
86/03/12 0800	26-40.7S	55-02.5E	26.3
27096-B	20μm	0.01	0.04 15.21
	Sum	0.00	0.03 13.69
	GF/C	0.03	0.10 26.62
	TOTAL	0.05	0.16 22.03
27096-P	20μm	0.01	0.04 15.21
	Sum	0.00	0.03 13.69
	GF/C	0.03	0.11 22.82
	TOTAL	0.04	0.18 19.87
86/03/12 1300	25-55.1S	55-21.0E	26.3
27097-B	20μm	0.01	0.04 15.21
	Sum	0.00	0.03 13.69
	GF/C	0.03	0.13 19.70
	TOTAL	0.04	0.19 17.98
27097-P	20μm	0.01	0.04 15.21
	Sum	0.00	0.03 13.69
	GF/C	0.04	0.09 27.89
	TOTAL	0.05	0.16 22.82
86/03/12 1900	25-03.9S	55-55.4E	26.4
27098-B	20μm	0.01	0.05 11.41
	Sum	0.01	0.04 15.21
	GF/C	0.04	0.04 35.85
	TOTAL	0.05	0.15 24.45
27098-P	20μm	0.01	0.05 11.41
	Sum	0.01	0.04 15.21
	GF/C	0.04	0.08 30.97
	TOTAL	0.05	0.17 22.82
86/03/13 0800	23-15.9S	57-30.0E	26.4
27099-B	20μm	0.01	0.04 13.04
	Sum	0.04	0.04 49.43
	GF/C	0.05	0.11 29.04
	TOTAL	0.10	0.20 32.23
27099-P	20μm	0.04	0.03 55.00
	Sum	0.04	0.05 45.65
	GF/C	0.04	0.15 21.06
	TOTAL	0.12	0.23 34.92
86/03/13 1300	22-30.4S	58-06.2E	26.6
27100-B	20μm	0.00	0.04 7.61
	Sum	0.00	0.03 9.13
	GF/C	0.04	0.12 26.96
	TOTAL	0.05	0.19 20.74
27100-P	20μm	0.00	0.05 9.73
	Sum	0.00	0.04 7.61
	GF/C	0.04	0.14 22.32
	TOTAL	0.05	0.23 18.14
86/03/13 1900	21-40.4S	53-18.7E	26.5
27101-B	20μm	0.01	0.05 17.75
	Sum	0.00	0.03 4.56
	GF/C	0.05	0.07 38.92
	TOTAL	0.06	0.16 27.23
27101-P	20μm	0.01	0.04 22.92
	Sum	0.00	0.05 3.26
	GF/C	0.06	0.15 27.70
	TOTAL	0.07	0.24 22.32

Table 4. Data on phytoplankton pigment ($\mu\text{g/l}$) measured at respective station. Water samples were collected with Van Dorn sampler.

DATE & TIME(LT)		Lat.	Long.	Station No.		DATE & TIME(LT)		Lat.	Long.	Station No.	
Depth (m)	Sample No.	Filter	Chl.a ($\mu\text{g/l}$)	Phaeo ($\mu\text{g/l}$)	Ratio (%)	Depth (m)	Sample No.	Filter	Chl.a ($\mu\text{g/l}$)	Phaeo ($\mu\text{g/l}$)	Ratio (%)
85/12/25	1106	70-14.0S	24-11.3E	St. 4		85/12/26	0913	70-10.4S	24-10.7E	St. 1-1	
0	27V0101	20um	2.67	0.55	82.91	0	27V0301	20um	3.19	1.01	75.95
		5um	0.09	0.04	68.45			5um	0.11	-0.06	199.64
		GF/C	0.57	0.29	66.16			GF/C	0.54	0.34	61.34
		TOTAL	3.33	0.88	79.04			TOTAL	3.84	1.29	74.84
10	27V0102	20um	2.12	0.59	78.28	10	27V0302	20um	3.09	1.66	65.14
		5um	0.08	0.03	71.30			5um	0.16	0.00	99.56
		GF/C	0.41	0.21	66.32			GF/C	0.98	0.37	72.82
		TOTAL	2.61	0.83	75.89			TOTAL	4.24	2.02	67.67
20	27V0103	20um	4.36	0.98	81.63	20	27V0303	20um	4.09	1.01	80.28
		5um	0.13	0.08	60.84			5um	0.10	0.03	78.59
		GF/C	0.54	0.21	71.52			GF/C	0.76	0.25	75.62
		TOTAL	5.02	1.28	79.72			TOTAL	4.96	1.28	79.49
30	27V0104	20um	4.19	1.36	75.49	30	27V0304	20um	4.95	1.04	82.66
		5um	0.13	0.07	65.19			5um	0.21	0.03	87.24
		GF/C	0.47	0.26	64.42			GF/C	0.69	0.31	68.77
		TOTAL	4.79	1.69	73.91			TOTAL	5.85	1.38	80.88
50	27V0105	20um	0.65	0.10	86.44	50	27V0305	20um	3.46	0.81	81.11
		5um	0.92	0.28	76.97			5um	0.11	0.02	82.86
		GF/C	0.30	0.19	61.06			GF/C	0.42	0.22	65.85
		TOTAL	1.86	0.57	76.68			TOTAL	3.99	1.05	79.24
75	27V0106	20um	2.20	0.51	81.31	75	27V0306	20um	2.19	0.44	83.09
		5um	0.05	0.01	79.85			5um	0.07	0.01	87.11
		GF/C	0.31	0.26	54.19			GF/C	0.22	0.20	52.44
		TOTAL	2.56	0.78	76.61			TOTAL	2.47	0.65	79.16
100	27V0107	20um	1.17	0.36	76.41	100	27V0307	20um	1.29	0.38	77.06
		5um	0.04	0.00	91.26			5um	0.06	0.01	86.70
		GF/C	0.28	0.18	60.84			GF/C	0.17	0.25	39.73
		TOTAL	1.48	0.54	73.24			TOTAL	1.52	0.65	70.19
125	27V0108	20um	0.66	0.22	75.37	125	27V0308	20um	0.87	0.22	79.85
		5um	0.02	0.02	45.63			5um	0.04	0.01	83.66
		GF/C	0.11	0.12	47.71			GF/C	0.12	0.15	44.43
		TOTAL	0.79	0.36	68.73			TOTAL	1.03	0.38	73.10
150	27V0109	20um	0.74	0.22	77.37	150	27V0309	20um	0.44	0.15	74.57
		5um	0.02	0.02	53.24			5um	0.03	-0.01	136.89
		GF/C	0.13	0.12	51.97			GF/C	0.08	0.12	40.74
		TOTAL	0.90	0.36	71.31			TOTAL	0.55	0.26	67.84
200	27V0110	20um	2.36	0.69	77.33	200	27V0310	20um	0.26	0.11	70.24
		5um	0.05	0.02	68.45			5um	0.03	-0.02	365.05
		GF/C	0.20	0.25	44.89			GF/C	0.12	0.14	46.28
		TOTAL	2.61	0.96	73.09			TOTAL	0.40	0.23	63.99
85/12/25	1520	70-10.8S	24-28.7E	St. 5		85/12/26	1632	70-10.5S	24-11.0E	St. 1-2	
0	27V0201	20um	2.59	0.83	75.65	0	27V0401	20um	3.30	0.66	83.31
		5um	0.07	0.03	68.45			5um	0.12	0.01	95.29
		GF/C	0.71	0.31	69.73			GF/C	0.65	0.23	74.01
		TOTAL	3.37	1.17	74.16			TOTAL	4.07	0.90	81.95
10	27V0202	20um	3.31	0.99	76.93	10	27V0402	20um	3.87	1.08	78.24
		5um	0.08	0.02	81.48			5um	0.16	0.02	91.26
		GF/C	0.56	0.24	69.87			GF/C	0.77	0.28	73.76
		TOTAL	3.95	1.25	75.93			TOTAL	4.80	1.37	77.85
20	27V0203	20um	2.73	1.01	73.01	20	27V0403	20um	4.02	1.33	75.12
		5um	0.10	0.03	79.85			5um	0.14	0.02	86.30
		GF/C	0.50	0.22	69.36			GF/C	0.60	0.22	73.25
		TOTAL	3.33	1.26	72.63			TOTAL	4.77	1.57	75.17
30	27V0204	20um	3.15	0.97	76.41	30	27V0404	20um	4.90	1.13	81.30
		5um	0.08	0.02	77.57			5um	0.21	0.03	88.50
		GF/C	0.39	0.25	61.19			GF/C	0.70	0.31	69.42
		TOTAL	3.42	1.24	74.45			TOTAL	5.81	1.46	79.89
50	27V0205	20um	3.02	0.85	78.05	50	27V0405	20um	2.58	0.51	83.39
		5um	0.10	0.06	64.30			5um	0.15	0.03	84.87
		GF/C	0.31	0.22	58.45			GF/C	0.25	0.24	50.33
		TOTAL	3.43	1.12	75.31			TOTAL	2.97	0.78	79.16
75	27V0206	20um	1.67	1.00	62.70	75	27V0406	20um	2.06	0.36	85.30
		5um	0.04	0.04	49.78			5um	0.08	0.03	73.01
		GF/C	N.D.	N.D.	N.D.			GF/C	0.18	0.24	43.31
		TOTAL	1.71	1.04	62.33			TOTAL	2.33	0.63	78.81
100	27V0207	20um	1.17	0.35	76.77	100	27V0407	20um	1.16	0.28	80.42
		5um	0.03	-0.01	136.89			5um	0.05	0.00	94.52
		GF/C	0.11	0.10	51.14			GF/C	0.17	0.22	43.56
		TOTAL	1.30	0.45	74.46			TOTAL	1.38	0.51	73.06
125	27V0208	20um	0.65	0.15	81.51	125	27V0408	20um	0.66	0.19	77.34
		5um	0.03	-0.01	159.71			5um	0.03	0.00	91.26
		GF/C	0.13	0.20	38.19			GF/C	0.09	0.15	38.03
		TOTAL	0.81	0.34	70.46			TOTAL	0.78	0.34	69.47
150	27V0209	20um	0.38	0.03	83.42	150	27V0409	20um	0.44	0.18	71.10
		5um	0.02	-0.01	250.97			5um	0.03	0.00	86.70
		GF/C	0.11	0.12	47.06			GF/C	0.09	0.15	36.64
		TOTAL	0.51	0.19	73.15			TOTAL	0.56	0.33	62.56
200	27V0210	20um	0.22	0.06	77.57	200	27V0410	20um	0.21	0.08	71.79
		5um	0.02	-0.01	148.30			5um	0.02	-0.00	114.08
		GF/C	0.08	0.13	37.43			GF/C	0.10	0.14	40.93
		TOTAL	0.32	0.18	63.54			TOTAL	0.33	0.23	59.26

Table 4. Continued.

DATE & TIME(LT)		Lat.	Long.	Station No.			DATE & TIME(LT)		Lat.	Long.	Station No.	
Depth (m)	Sample No.	Filter	Chl.a ($\mu\text{g/l}$)	Phaeo ($\mu\text{g/l}$)	Ratio (%)		Depth (m)	Sample No.	Filter	Chl.a ($\mu\text{g/l}$)	Phaeo ($\mu\text{g/l}$)	Ratio (%)
85/12/26 2110	70-10.1S		24-10.7E	St. 1-3			85/12/27 0855	70-10.8S		24-11.4E	St. 1-5	
0	27V0501	20um	3.37	0.73	82.11		0	27V0701	20um	4.37	1.64	72.68
		5um	0.14	0.02	89.19			5um	0.15	0.02	85.56	
		GF/C	0.80	0.32	71.39			GF/C	0.49	0.31	61.11	
		TOTAL	4.30	1.07	80.09			TOTAL	5.01	1.98	71.66	
10	27V0502	20um	3.16	0.70	81.79		10	27V0702	20um	4.43	1.82	70.90
		5um	0.20	0.03	87.66			5um	0.19	0.02	91.26	
		GF/C	0.55	0.25	68.79			GF/C	0.99	0.39	71.65	
		TOTAL	3.91	0.98	79.93			TOTAL	5.61	2.23	71.57	
20	27V0503	20um	4.62	0.84	84.39		20	27V0703	20um	5.30	1.33	79.95
		5um	0.11	0.04	72.72			5um	0.14	0.08	62.97	
		GF/C	0.54	0.32	63.06			GF/C	0.48	0.28	63.08	
		TOTAL	5.27	1.20	81.47			TOTAL	5.92	1.69	77.75	
30	27V0504	20um	3.51	0.94	78.82		30	27V0704	20um	3.37	0.85	79.95
		5um	0.16	0.05	74.53			5um	0.14	0.06	68.45	
		GF/C	0.44	0.39	53.17			GF/C	0.34	0.22	61.15	
		TOTAL	4.11	1.39	74.79			TOTAL	3.85	1.12	77.39	
50	27V0505	20um	3.04	0.78	79.64		50	27V0705	20um	1.89	0.49	73.24
		5um	0.09	0.05	64.42			5um	0.05	0.04	58.94	
		GF/C	0.25	0.29	47.06			GF/C	0.20	0.18	52.65	
		TOTAL	3.39	1.12	75.24			TOTAL	2.14	0.71	75.13	
75	27V0506	20um	2.13	0.43	83.19		75	27V0706	20um	1.32	0.33	80.12
		5um	0.07	0.03	66.82			5um	0.04	0.03	58.67	
		GF/C	0.19	0.22	47.23			GF/C	0.16	0.24	40.74	
		TOTAL	2.39	0.68	77.85			TOTAL	1.53	0.59	71.96	
100	27V0507	20um	2.03	0.54	79.06		100	27V0707	20um	1.23	0.34	78.24
		5um	0.06	0.02	74.15			5um	0.03	0.02	65.19	
		GF/C	0.15	0.18	45.12			GF/C	0.12	0.22	35.17	
		TOTAL	2.24	0.74	75.23			TOTAL	1.39	0.58	70.36	
125	27V0508	20um	0.87	0.19	81.70		125	27V0708	20um	0.71	0.18	80.13
		5um	0.05	0.01	79.85			5um	0.02	0.01	79.85	
		GF/C	0.11	0.10	51.72			GF/C	0.10	0.15	39.11	
		TOTAL	1.03	0.31	76.79			TOTAL	0.83	0.33	71.26	
150	27V0509	20um	0.58	0.15	79.18		150	27V0709	20um	0.63	0.18	78.02
		5um	0.05	0.03	63.88			5um	0.02	0.01	74.15	
		GF/C	0.07	0.14	34.62			GF/C	0.09	0.21	30.96	
		TOTAL	0.70	0.32	68.93			TOTAL	0.74	0.39	65.41	
200	27V0510	20um	0.49	0.12	79.72		200	27V0710	20um	0.19	0.08	70.91
		5um	0.03	0.02	68.45			5um	0.02	0.01	76.05	
		GF/C	0.12	0.18	40.20			GF/C	0.11	0.37	22.12	
		TOTAL	0.64	0.32	66.74			TOTAL	0.31	0.45	40.68	
85/12/27 0215	70-09.9S		24-01.0E	St. 1-4			85/12/28 0943	70-06.8S		24-08.8E	St. 2	
0	27V0601	20um	2.87	0.87	76.69		0	27V0801	20um	3.51	1.29	73.09
		5um	0.12	0.04	75.71			5um	0.15	0.03	83.05	
		GF/C	0.88	0.30	74.53			GF/C	0.83	0.40	68.45	
		TOTAL	3.87	1.21	76.16			TOTAL	4.54	1.73	72.43	
10	27V0602	20um	3.29	0.97	77.29		10	27V0802	20um	2.91	1.25	69.85
		5um	0.18	0.03	84.74			5um	0.16	-0.00	100.60	
		GF/C	0.75	0.41	64.41			GF/C	0.81	0.32	71.64	
		TOTAL	4.22	1.41	74.92			TOTAL	3.87	1.57	71.12	
20	27V0603	20um	3.06	1.49	67.33		20	27V0803	20um	3.12	1.71	64.57
		5um	0.15	0.00	99.41			5um	0.13	0.05	71.42	
		GF/C	0.68	0.34	66.96			GF/C	0.59	0.25	70.62	
		TOTAL	3.90	1.82	68.13			TOTAL	3.85	2.01	65.65	
30	27V0604	20um	2.54	1.39	64.54		30	27V0804	20um	4.83	1.30	78.85
		5um	0.12	0.03	82.57			5um	0.23	0.03	74.28	
		GF/C	0.49	0.32	60.30			GF/C	0.85	0.47	64.21	
		TOTAL	3.15	1.74	64.40			TOTAL	5.90	1.85	76.18	
50	27V0605	20um	2.66	0.92	74.36		50	27V0805	20um	1.83	0.49	78.76
		5um	0.08	0.10	44.75			5um	0.07	0.07	51.63	
		GF/C	0.29	0.28	50.83			GF/C	0.24	0.27	46.93	
		TOTAL	3.03	1.30	69.99			TOTAL	2.14	0.83	72.11	
75	27V0606	20um	1.59	0.34	82.40		75	27V0806	20um	0.81	0.25	76.83
		5um	0.05	0.03	62.74			5um	0.07	0.04	60.84	
		GF/C	0.27	0.23	54.43			GF/C	0.20	0.32	38.03	
		TOTAL	1.91	0.60	76.12			TOTAL	1.08	0.61	63.86	
100	27V0607	20um	1.14	0.30	79.00		100	27V0807	20um	0.66	0.23	74.33
		5um	0.03	-0.01	119.78			5um	0.03	0.04	40.56	
		GF/C	0.15	0.15	49.93			GF/C	0.11	0.23	31.07	
		TOTAL	1.33	0.45	74.73			TOTAL	0.79	0.50	61.35	
125	27V0608	20um	1.02	0.26	79.47		125	27V0808	20um	1.22	0.42	74.32
		5um	0.03	-0.01	144.50			5um	0.05	0.06	42.59	
		GF/C	0.18	0.20	47.73			GF/C	0.15	0.26	36.26	
		TOTAL	1.23	0.45	73.13			TOTAL	1.42	0.74	65.63	
150	27V0609	20um	0.90	0.29	75.77		150	27V0809	20um	0.91	0.35	72.08
		5um	0.03	-0.01	144.50			5um	0.04	0.04	53.93	
		GF/C	0.13	0.30	29.78			GF/C	0.12	0.20	38.03	
		TOTAL	1.06	0.58	64.73			TOTAL	1.08	0.59	64.61	
200	27V0610	20um	0.32	0.11	75.27		200	27V0810	20um	0.40	0.23	63.26
		5um	0.02	-0.01	228.15			5um	0.03	0.04	40.56	
		GF/C	0.13	0.20	39.68			GF/C	0.11	0.20	35.02	
		TOTAL	0.47	0.30	61.41			TOTAL	0.54	0.47	53.13	

Table 4. Continued.

DATE & TIME(LT)		Lat.	Long.	Station No.	
Depth (m)	Sample No.	Filter	Chl.a ($\mu\text{g/l}$)	Phaeo ($\mu\text{g/l}$)	Ratio (%)
85/12/28 1300	70-15.6S	24-27.8E	St. 3		
0	27V0901	20um	1.20	0.22	84.54
		5um	0.03	0.03	51.33
		GF/C	0.15	0.07	68.45
		TOTAL	1.38	0.32	81.36
10	27V0902	20um	0.99	0.19	84.03
		5um	0.03	0.01	72.25
		GF/C	0.17	0.08	68.45
		TOTAL	1.19	0.28	81.08
20	27V0903	20um	1.01	0.21	83.03
		5um	0.02	0.02	54.76
		GF/C	0.13	0.08	60.58
		TOTAL	1.16	0.30	79.12
30	27V0904	20um	N.D.	N.D.	
		5um	0.02	0.01	62.74
		GF/C	0.09	0.09	48.61
		TOTAL	0.11	0.11	50.70
50	27V0905	20um	0.72	0.16	81.62
		5um	0.02	0.02	53.24
		GF/C	0.08	0.09	48.61
		TOTAL	0.83	0.27	75.50
75	27V0906	20um	0.46	0.08	86.09
		5um	0.03	0.02	61.93
		GF/C	0.08	0.07	52.89
		TOTAL	0.58	0.17	77.44
100	27V0907	20um	0.52	0.11	81.93
		5um	0.02	0.00	83.66
		GF/C	0.07	0.08	47.80
		TOTAL	0.61	0.20	75.58
125	27V0908	20um	0.46	0.11	80.58
		5um	0.02	0.01	76.05
		GF/C	0.07	0.07	49.23
		TOTAL	0.54	0.18	74.55
150	27V0909	20um	0.47	0.12	79.58
		5um	0.02	0.01	59.32
		GF/C	0.08	0.12	41.56
		TOTAL	0.57	0.25	69.44
200	27V0910	20um	0.05	0.03	62.74
		5um	0.02	0.01	76.05
		GF/C	0.03	0.08	27.09
		TOTAL	0.10	0.12	45.63
86/02/14 1115	70-13.5S	24-12.5E	St. 4-1		
0	27V1001	20um	5.63	2.14	72.41
		5um	0.14	0.10	58.31
		GF/C	0.45	0.43	51.42
		TOTAL	6.22	2.67	69.97
10	27V1002	20um	5.70	1.30	81.48
		5um	0.17	0.08	68.45
		GF/C	0.49	0.46	51.85
		TOTAL	6.36	1.83	77.66
20	27V1003	20um	5.65	1.54	78.57
		5um	0.21	0.12	62.97
		GF/C	0.54	0.35	61.06
		TOTAL	6.40	2.01	76.11
30	27V1004	20um	4.51	1.15	79.71
		5um	0.23	0.10	69.44
		GF/C	0.53	0.27	66.37
		TOTAL	5.27	1.52	77.65
50	27V1005	20um	2.09	0.50	80.61
		5um	0.12	0.06	66.04
		GF/C	0.43	0.41	51.33
		TOTAL	2.65	0.98	73.06
75	27V1006	20um	1.04	0.23	78.86
		5um	0.09	0.10	49.14
		GF/C	0.37	0.19	65.81
		TOTAL	1.51	0.57	72.65
100	27V1007	20um	0.54	0.20	72.92
		5um	0.07	-0.01	114.08
		GF/C	0.29	0.27	51.70
		TOTAL	0.89	0.47	65.79
125	27V1008	20um	0.16	0.21	43.88
		5um	0.03	0.03	51.33
		GF/C	0.21	0.20	50.03
		TOTAL	0.40	0.44	47.39
150	27V1009	20um	0.11	0.15	42.37
		5um	0.03	0.03	45.63
		GF/C	0.21	0.23	47.53
		TOTAL	0.34	0.40	45.63
200	27V1010	20um	0.11	0.09	52.96
		5um	0.01	0.04	26.07
		GF/C	0.14	0.16	45.72
		TOTAL	0.26	0.29	47.11

DATE & TIME(LT)		Lat.	Long.	Station No.	
Depth (m)	Sample No.	Filter	Chl.a ($\mu\text{g/l}$)	Phaeo ($\mu\text{g/l}$)	Ratio (%)
86/02/14 2120	70-14.9S	24-02.7E	St. 4-2		
0	27V1101	20um	3.89	0.99	79.79
		5um	0.18	0.06	73.01
		GF/C	0.49	0.19	72.36
		TOTAL	4.55	1.24	78.65
10	27V1102	20um	4.14	1.43	74.28
		5um	0.18	0.09	65.81
		GF/C	0.62	0.24	71.71
		TOTAL	4.93	1.77	73.61
20	27V1103	20um	4.18	1.99	67.73
		5um	0.16	0.13	54.76
		GF/C	0.46	0.29	61.43
		TOTAL	4.80	2.41	66.56
30	27V1104	20um	3.81	0.85	81.83
		5um	0.18	0.10	63.56
		GF/C	0.56	0.24	69.62
		TOTAL	4.55	1.19	79.21
50	27V1105	20um	1.20	0.32	78.99
		5um	0.06	0.10	38.37
		GF/C	0.44	0.21	67.43
		TOTAL	1.70	0.63	73.02
75	27V1106	20um	0.54	0.15	78.19
		5um	0.05	0.07	39.93
		GF/C	0.30	0.32	48.28
		TOTAL	0.88	0.54	62.11
100	27V1107	20um	0.28	0.17	61.57
		5um	0.04	0.07	34.98
		GF/C	0.23	0.23	49.20
		TOTAL	0.54	0.48	53.18
125	27V1108	20um	0.21	0.23	48.25
		5um	0.04	0.03	57.04
		GF/C	0.21	0.26	44.58
		TOTAL	0.46	0.52	47.14
150	27V1109	20um	0.14	0.14	49.14
		5um	0.02	0.05	29.66
		GF/C	0.18	0.17	51.68
		TOTAL	0.34	0.36	48.42
200	27V1110	20um	0.04	0.07	37.08
		5um	0.01	0.05	19.96
		GF/C	0.15	1.14	11.85
		TOTAL	0.21	1.25	14.16
86/02/14 2357	70-14.3S	24-01.4E	St. 4-3		
0	27V1201	20um	3.28	1.21	73.03
		5um	0.15	0.06	70.02
		GF/C	0.50	0.35	58.78
		TOTAL	3.93	1.62	70.74
10	27V1202	20um	4.06	1.59	71.81
		5um	0.19	0.00	98.87
		GF/C	0.61	0.44	58.02
		TOTAL	4.87	2.04	70.46
20	27V1203	20um	4.02	0.99	80.18
		5um	0.16	0.08	66.37
		GF/C	0.63	0.39	62.00
		TOTAL	4.81	1.46	76.69
30	27V1204	20um	4.24	1.13	78.93
		5um	0.21	0.09	71.42
		GF/C	0.66	0.48	57.96
		TOTAL	5.11	1.70	75.10
50	27V1205	20um	1.50	0.37	80.29
		5um	0.11	0.07	61.43
		GF/C	0.48	0.33	59.56
		TOTAL	2.10	0.77	73.19
75	27V1206	20um	0.76	0.27	73.55
		5um	0.06	0.04	61.43
		GF/C	0.38	0.20	65.59
		TOTAL	1.19	0.51	70.19
100	27V1207	20um	0.37	0.17	67.84
		5um	0.04	0.05	43.88
		GF/C	0.25	0.29	46.23
		TOTAL	0.66	0.52	55.93
125	27V1208	20um	0.32	0.14	69.87
		5um	0.03	0.04	43.56
		GF/C	0.21	0.16	57.26
		TOTAL	0.57	0.34	62.47
150	27V1209	20um	0.21	0.16	56.81
		5um	0.02	0.05	31.11
		GF/C	0.23	0.27	45.63
		TOTAL	0.46	0.49	48.74
200	27V1210	20um	0.03	0.09	25.67
		5um	0.02	0.01	59.32
		GF/C	0.10	0.26	26.47
		TOTAL	0.15	0.36	28.60

Table 4. Continued.

DATE & TIME(LT)		Lat.	Long.	Station No.	
Depth (m)	Sample No.	Filter	Chl.a ($\mu\text{g/l}$)	Phaeo ($\mu\text{g/l}$)	Ratio (%)
86/02/15 0355	70-12.4S	23-56.8E	St. 4-4		
0	27V1301	20um	2.84	1.48	65.74
		5um	0.15	0.07	68.45
		GF/C	0.33	0.25	57.04
		TOTAL	3.31	1.79	64.87
10	27V1302	20um	3.43	1.04	76.76
		5um	0.13	0.12	52.02
		GF/C	0.46	0.26	63.88
		TOTAL	4.03	1.42	73.89
20	27V1303	20um	3.43	1.03	76.80
		5um	0.15	0.11	57.04
		GF/C	0.50	0.26	65.59
		TOTAL	4.08	1.41	74.29
30	27V1304	20um	3.59	1.33	72.25
		5um	0.18	0.12	58.53
		GF/C	0.62	0.28	69.11
		TOTAL	4.39	1.78	71.12
50	27V1305	20um	3.09	0.78	79.95
		5um	0.16	0.11	60.84
		GF/C	0.46	0.23	61.85
		TOTAL	3.72	1.17	76.05
75	27V1306	20um	1.10	0.31	77.76
		5um	0.09	0.05	63.64
		GF/C	0.44	0.27	61.53
		TOTAL	1.62	0.64	71.79
100	27V1307	20um	0.35	0.10	78.38
		5um	0.04	-0.01	136.89
		GF/C	0.28	0.20	58.23
		TOTAL	0.67	0.29	69.97
125	27V1308	20um	0.21	0.08	71.87
		5um	0.02	0.00	98.87
		GF/C	0.23	0.16	59.57
		TOTAL	0.46	0.24	65.86
150	27V1309	20um	0.07	0.16	31.37
		5um	0.02	-0.01	250.97
		GF/C	0.15	0.15	49.98
		TOTAL	0.24	0.30	44.72
200	no data	20um	0.00	0.00	0.00
		5um	0.00	0.00	0.00
		GF/C	0.00	0.00	0.00
		TOTAL	0.00	0.00	0.00
86/02/15 1125	70-14.8S	23-53.1E	St. 4-5		
0	27V1401	20um	3.65	0.93	79.69
		5um	N.D.	N.D.	N.D.
		GF/C	0.54	0.32	62.74
		TOTAL	4.19	1.25	77.00
10	27V1402	20um	3.59	1.04	77.47
		5um	0.12	0.00	98.87
		GF/C	0.56	0.27	67.32
		TOTAL	4.27	1.32	76.43
20	27V1403	20um	3.74	0.71	84.07
		5um	0.16	-0.15	1779.60
		GF/C	0.63	0.22	74.27
		TOTAL	4.53	0.78	85.38
30	27V1404	20um	3.40	0.89	79.35
		5um	0.15	0.01	91.26
		GF/C	0.52	0.20	72.72
		TOTAL	4.07	1.10	78.80
50	27V1405	20um	3.29	0.67	83.02
		5um	0.15	0.07	68.45
		GF/C	0.61	0.27	69.52
		TOTAL	4.06	1.01	80.04
75	27V1406	20um	1.19	0.31	79.14
		5um	0.44	0.14	76.43
		GF/C	0.42	0.32	56.59
		TOTAL	2.05	0.77	72.71
100	27V1407	20um	0.36	0.07	83.03
		5um	0.05	0.01	88.41
		GF/C	0.13	0.28	32.42
		TOTAL	0.55	0.36	60.48
125	27V1408	20um	0.05	-0.01	136.89
		5um	0.01	-0.01	205.34
		GF/C	0.05	0.04	57.92
		TOTAL	0.12	0.02	84.46
150	27V1409	20um	0.06	0.02	72.25
		5um	0.01	-0.00	159.71
		GF/C	0.06	0.18	24.20
		TOTAL	0.13	0.20	39.63
200	27V1410	20um	0.06	-0.01	110.82
		5um	0.02	-0.00	114.08
		GF/C	0.03	0.09	46.53
		TOTAL	0.15	0.08	64.30
86/02/19 1041	67-30.1S	32-58.8E	St. 7		
0	27V1601	20um	0.02	0.01	76.05
		5um	0.00	0.02	7.61
		GF/C	0.21	0.26	44.93
		TOTAL	0.23	0.28	44.67
10	27V1602	20um	0.01	0.01	45.63
		5um	0.00	0.01	22.82
		GF/C	0.23	0.22	56.54
		TOTAL	0.29	0.23	55.32
20	27V1603	20um	0.01	0.00	91.26
		5um	0.00	0.00	45.63
		GF/C	0.31	0.08	78.59
		TOTAL	0.32	0.09	78.22
30	27V1604	20um	-0.00	0.04	-9.13
		5um	0.00	0.01	22.82
		GF/C	0.33	0.24	57.61
		TOTAL	0.33	0.29	52.97
50	27V1605	20um	0.00	0.02	17.11
		5um	0.00	0.00	45.63
		GF/C	0.30	0.28	52.11
		TOTAL	0.31	0.31	50.41
75	27V1606	20um	0.01	0.01	63.45
		5um	0.01	0.04	15.21
		GF/C	0.37	0.37	49.88
		TOTAL	0.39	0.41	48.51
100	27V1607	20um	0.01	0.04	16.30
		5um	0.01	0.02	45.63
		GF/C	0.20	0.19	51.02
		TOTAL	0.22	0.25	47.01
125	27V1608	20um	0.01	0.02	30.42
		5um	0.00	0.01	22.82
		GF/C	0.10	0.05	66.16
		TOTAL	0.10	0.07	59.89
150	27V1609	20um	0.00	0.01	0.00
		5um	0.00	0.01	11.41
		GF/C	0.07	0.06	50.70
		TOTAL	0.07	0.09	42.52
200	27V1610	20um	0.00	0.02	7.61
		5um	0.00	0.01	11.41
		GF/C	0.02	0.08	19.31
		TOTAL	0.02	0.11	16.48

Table 4. Continued.

DATE & TIME(LT)		Lat.	Long.	Station No.		DATE & TIME(LT)		Lat.	Long.	Station No.		
Depth (m)	Sample No.	Filter	Chl.a ($\mu\text{g/l}$)	Phaeo ($\mu\text{g/l}$)	Ratio (%)		Depth (m)	Sample No.	Filter	Chl.a ($\mu\text{g/l}$)	Phaeo ($\mu\text{g/l}$)	Ratio (%)
86/02/20	1047	67-28.6S	36-05.9E	St. 8		86/02/25	1101	65-01.8S	37-37.06E	St. 11-1		
0	27V1701	20um	0.02	0.01	62.74	0	27V1901	20um	0.08	0.00	97.48	
		5um	0.00	0.01	0.00			5um	0.02	0.01	63.88	
		GF/C	0.12	0.10	54.76			GF/C	0.05	0.03	64.30	
		TOTAL	0.14	0.12	52.60			TOTAL	0.15	0.04	77.74	
10	27V1702	20um	0.00	0.02	7.61	10	27V1902	20um	0.07	0.03	71.71	
		5um	0.00	0.01	0.00			5um	0.03	0.00	86.70	
		GF/C	0.21	0.10	67.90			GF/C	0.06	0.10	39.41	
		TOTAL	0.21	0.13	61.16			TOTAL	0.17	0.13	56.20	
20	27V1703	20um	0.00	0.01	11.41	20	27V1903	20um	0.06	0.10	35.26	
		5um	0.00	0.01	11.41			5um	0.02	0.05	27.89	
		GF/C	0.30	0.15	66.64			GF/C	0.06	0.29	16.16	
		TOTAL	0.31	0.18	63.34			TOTAL	0.13	0.44	22.82	
30	27V1704	20um	0.01	0.03	22.82	30	27V1904	20um	0.09	-0.01	106.47	
		5um	0.00	0.04	0.00			5um	0.02	0.03	41.83	
		GF/C	0.29	0.23	56.40			GF/C	0.06	0.03	64.64	
		TOTAL	0.30	0.29	50.92			TOTAL	0.17	0.05	76.81	
50	27V1705	20um	0.01	0.02	45.63	50	27V1905	20um	0.08	0.03	74.97	
		5um	0.01	0.01	68.45			5um	0.09	-0.03	148.30	
		GF/C	0.22	0.17	56.62			GF/C	0.10	0.02	84.55	
		TOTAL	0.25	0.19	56.48			TOTAL	0.26	0.02	94.19	
75	27V1706	20um	0.01	0.02	34.22	75	27V1906	20um	0.10	0.01	91.26	
		5um	0.01	0.01	57.04			5um	0.05	0.02	70.73	
		GF/C	0.14	0.17	45.09			GF/C	0.13	0.12	52.80	
		TOTAL	0.15	0.19	44.68			TOTAL	0.28	0.15	65.40	
100	27V1707	20um	0.01	0.01	53.24	100	27V1907	20um	0.10	0.05	65.34	
		5um	0.00	0.01	34.22			5um	0.02	0.04	32.96	
		GF/C	0.08	0.22	27.16			GF/C	0.20	0.26	43.10	
		TOTAL	0.10	0.24	29.13			TOTAL	0.32	0.36	47.33	
125	27V1708	20um	0.00	0.01	22.82	125	27V1908	20um	0.03	0.04	45.63	
		5um	0.00	0.01	11.41			5um	0.02	0.01	62.74	
		GF/C	0.07	0.43	14.22			GF/C	0.08	0.13	38.03	
		TOTAL	0.07	0.44	14.26			TOTAL	0.13	0.18	42.00	
150	27V1709	20um	0.00	0.01	0.00	150	27V1909	20um	0.01	0.02	41.07	
		5um	0.00	0.01	0.00			5um	0.01	0.02	31.94	
		GF/C	0.03	0.08	27.09			GF/C	0.03	0.06	36.86	
		TOTAL	0.03	0.11	22.82			TOTAL	0.06	0.10	36.70	
200	27V1710	20um	0.00	0.01	0.00	200	27V1910	20um	0.01	0.01	45.63	
		5um	0.00	0.01	0.00			5um	0.00	0.01	34.22	
		GF/C	0.04	0.09	31.69			GF/C	0.00	0.39	0.41	
		TOTAL	0.04	0.10	28.52			TOTAL	0.01	0.41	3.09	
86/02/21	1045	67-32.0S	37-35.3E	St. 10		86/02/25	1755	65-00.0S	37-40.6E	St. 11-2		
0	27V1801	20um	0.02	0.02	53.24	0	27V2001	20um	0.08	0.01	89.36	
		5um	0.01	0.01	38.03			5um	0.02	0.03	42.37	
		GF/C	0.15	0.18	46.62			GF/C	0.05	0.05	50.19	
		TOTAL	0.19	0.21	46.88			TOTAL	0.15	0.09	62.41	
10	27V1802	20um	0.02	0.04	28.52	10	27V2002	20um	0.03	0.03	71.49	
		5um	0.01	0.01	53.24			5um	0.03	0.00	91.26	
		GF/C	0.20	0.09	69.59			GF/C	0.05	0.08	39.29	
		TOTAL	0.23	0.14	62.18			TOTAL	0.15	0.11	57.96	
20	27V1803	20um	0.02	0.02	45.63	20	27V2003	20um	0.06	0.03	64.94	
		5um	0.01	0.01	57.04			5um	0.03	0.04	45.63	
		GF/C	0.16	0.07	71.30			GF/C	0.05	0.05	50.19	
		TOTAL	0.19	0.10	66.74			TOTAL	0.15	0.13	54.04	
30	27V1804	20um	0.02	0.01	57.04	30	27V2004	20um	0.08	0.03	71.49	
		5um	0.01	0.01	53.24			5um	0.03	0.03	51.33	
		GF/C	0.15	0.08	64.17			GF/C	0.05	0.09	34.22	
		TOTAL	0.18	0.10	62.60			TOTAL	0.16	0.15	50.41	
50	27V1805	20um	0.03	0.01	82.14	50	27V2005	20um	0.05	0.04	57.04	
		5um	0.01	0.02	45.63			5um	0.06	0.03	66.55	
		GF/C	0.18	0.15	54.06			GF/C	0.12	0.07	62.30	
		TOTAL	0.22	0.17	56.00			TOTAL	0.22	0.14	62.06	
75	27V1806	20um	0.00	0.02	15.21	75	27V2006	20um	0.08	0.06	58.84	
		5um	0.02	0.00	85.56			5um	0.06	0.02	77.57	
		GF/C	0.28	0.34	45.09			GF/C	0.21	0.14	60.07	
		TOTAL	0.30	0.36	45.88			TOTAL	0.35	0.21	62.01	
100	27V1807	20um	0.01	0.01	38.03	100	27V2007	20um	0.05	0.03	62.74	
		5um	0.02	0.01	59.32			5um	0.02	0.03	38.03	
		GF/C	0.16	0.17	48.17			GF/C	0.12	0.16	43.23	
		TOTAL	0.19	0.20	48.64			TOTAL	0.19	0.21	46.85	
125	27V1808	20um	0.01	0.02	31.94	125	27V2008	20um	0.01	0.01	53.24	
		5um	0.00	0.01	34.22			5um	0.00	0.01	34.22	
		GF/C	0.12	0.16	43.88			GF/C	0.06	0.14	30.83	
		TOTAL	0.14	0.19	42.16			TOTAL	0.08	0.16	32.83	
150	27V1809	20um	0.00	0.02	15.21	150	27V2009	20um	0.00	0.01	34.22	
		5um	0.00	0.01	11.41			5um	0.00	0.00	45.63	
		GF/C	0.02	0.21	9.27			GF/C	0.03	0.10	24.08	
		TOTAL	0.03	0.24	9.87			TOTAL	0.04	0.11	26.07	
200	27V1810	20um	0.00	0.02	15.21	200	27V2010	20um	0.00	0.01	22.82	
		5um	0.00	0.01	22.82			5um	0.00	0.01	0.00	
		GF/C	0.03	0.10	26.62			GF/C	0.01	0.03	22.82	
		TOTAL	0.04	0.12	24.59			TOTAL	0.01	0.04	19.56	

Table 4. Continued.

DATE & TIME(LT)		Lat.	Long.	Station No.	
Depth (m)	Sample No.	Filter	Chl.a ($\mu\text{g/l}$)	Phaeo ($\mu\text{g/l}$)	Ratio (%)
86/02/25 2335	65-02.0S	37-40.9E	St.11-3		
0	27V2101	20um	0.07	-0.01	109.01
		5um	0.02	0.01	76.05
		GF/C	0.05	0.06	47.15
10	27V2102	20um	0.14	0.06	70.98
		5um	0.01	0.04	13.04
		GF/C	0.04	0.21	17.11
20	27V2103	20um	0.05	0.05	50.19
		5um	0.02	0.02	53.24
		GF/C	0.06	0.01	88.98
30	27V2104	20um	0.14	0.08	63.29
		5um	0.03	0.01	68.45
		GF/C	0.06	0.09	39.93
50	27V2105	20um	0.09	-0.03	144.50
		5um	0.07	0.00	95.82
		GF/C	0.12	0.02	87.66
75	27V2106	20um	0.28	-0.01	103.27
		5um	0.13	0.05	70.27
		GF/C	0.23	0.39	36.61
100	27V2107	20um	0.10	0.01	94.52
		5um	0.00	0.01	11.41
		GF/C	0.15	0.16	48.28
125	27V2108	20um	0.25	0.18	58.01
		5um	0.02	0.00	98.87
		GF/C	0.10	0.27	26.62
150	27V2109	20um	0.12	0.28	30.56
		5um	0.00	0.01	11.41
		GF/C	0.02	0.05	34.22
200	27V2110	20um	0.00	0.01	0.00
		5um	0.00	0.01	0.00
		GF/C	0.01	0.06	10.14
		TOTAL	0.01	0.07	8.30
86/02/26 0400	65-01.2S	37-39.4E	St.11-4		
0	27V2201	20um	0.08	-0.02	129.29
		5um	0.02	0.01	57.04
		GF/C	0.04	0.05	45.63
10	27V2202	20um	0.14	0.04	77.57
		5um	0.09	0.03	73.81
		GF/C	0.01	0.03	30.42
		TOTAL	0.06	0.12	32.32
20	27V2203	20um	0.16	0.13	47.09
		5um	0.07	0.06	55.03
		GF/C	0.03	0.00	91.26
		TOTAL	0.05	0.03	62.74
30	27V2204	20um	0.15	0.09	62.22
		5um	0.08	0.07	54.76
		GF/C	0.03	-0.00	102.67
		TOTAL	0.06	0.04	55.41
50	27V2205	20um	0.16	0.11	60.04
		5um	0.10	0.03	77.84
		GF/C	0.07	-0.03	196.21
		TOTAL	0.12	0.13	47.64
75	27V2206	20um	0.23	0.12	70.08
		5um	0.10	0.03	78.59
		GF/C	0.04	0.02	71.30
		TOTAL	0.16	0.24	40.33
100	27V2207	20um	0.31	0.28	51.75
		5um	0.13	0.05	70.27
		GF/C	0.03	0.04	41.07
		TOTAL	0.25	-0.03	114.08
125	27V2208	20um	0.40	0.07	86.00
		5um	0.04	0.01	74.97
		GF/C	0.02	0.01	74.15
		TOTAL	0.06	0.15	28.32
150	27V2209	20um	0.12	0.17	41.07
		5um	0.01	0.00	68.45
		GF/C	0.00	0.01	22.82
		TOTAL	0.08	0.30	20.62
200	27V2210	20um	0.09	0.31	22.41
		5um	0.00	0.01	11.41
		GF/C	0.01	0.06	18.25
		TOTAL	0.01	0.07	14.67
86/03/02 1157	62-07.0S	37-39.4E	St.11-4		
0	27V2401	20um	0.23	0.11	67.50
		5um	0.02	0.01	68.45
		GF/C	0.04	0.04	51.85
10	27V2402	20um	0.30	0.16	64.88
		5um	0.24	0.10	70.87
		GF/C	0.02	0.02	50.19
		TOTAL	0.05	0.44	10.74
20	27V2403	20um	0.31	0.55	35.93
		5um	0.22	0.06	78.65
		GF/C	0.02	0.09	19.96
		TOTAL	0.05	0.23	17.41
30	27V2404	20um	0.29	0.38	43.15
		5um	0.24	0.07	76.74
		GF/C	0.05	0.06	42.59
		TOTAL	0.06	0.15	27.70
50	27V2405	20um	0.34	0.28	55.07
		5um	0.22	0.00	99.63
		GF/C	0.06	0.02	74.15
		TOTAL	0.05	0.07	38.92
75	27V2406	20um	0.33	0.10	76.95
		5um	0.23	0.08	74.97
		GF/C	0.17	0.07	71.13
		TOTAL	0.11	0.13	45.63
100	27V2407	20um	0.51	0.28	64.71
		5um	0.12	0.08	60.30
		GF/C	0.05	0.04	53.24
		TOTAL	0.10	0.12	44.11
125	27V2408	20um	0.26	0.24	52.15
		5um	0.01	0.04	29.35
		GF/C	0.01	0.06	13.69
		TOTAL	0.04	0.16	18.59
150	27V2409	20um	0.06	0.26	19.19
		5um	0.00	0.03	13.69
		GF/C	0.02	0.03	42.37
		TOTAL	0.03	0.09	24.24
200	27V2410	20um	0.00	0.03	5.70
		5um	0.00	0.03	5.70
		GF/C	0.00	0.08	4.15
		TOTAL	0.01	0.13	4.80

Table 4. Continued.

DATE & TIME(LT)		Lat.	Long.	Station No.	
Depth (m)	Sample No.	Filter	Chl.a ($\mu\text{g/l}$)	Phaeo ($\mu\text{g/l}$)	Ratio (%)
86/03/08 1240	43-51.3S	53-07.6E	St. 17		
0	27V2501	20um	0.52	0.13	79.85
		5um	0.10	0.05	65.34
		GF/C	0.38	0.28	58.03
		TOTAL	1.00	0.46	68.45
10	27V2502	20um	0.45	0.13	77.46
		5um	0.14	0.09	60.15
		GF/C	0.35	0.26	57.17
		TOTAL	0.94	0.49	65.92
20	27V2503	20um	0.50	0.14	77.42
		5um	0.11	0.08	57.95
		GF/C	0.34	0.18	65.28
		TOTAL	0.94	0.40	70.03
30	27V2504	20um	0.46	0.09	83.26
		5um	0.18	0.07	71.71
		GF/C	0.43	0.38	53.17
		TOTAL	1.07	0.54	66.41
50	27V2505	20um	0.29	0.09	76.46
		5um	0.25	0.21	53.74
		GF/C	0.37	0.22	62.55
		TOTAL	0.91	0.53	63.39
75	27V2506	20um	0.20	0.07	73.85
		5um	0.06	0.10	36.70
		GF/C	0.26	0.22	54.62
		TOTAL	0.52	0.39	57.13
100	27V2507	20um	0.02	0.05	27.89
		5um	0.04	0.06	38.61
		GF/C	0.05	0.08	40.56
		TOTAL	0.11	0.18	37.08
125	27V2508	20um	0.02	0.03	32.59
		5um	0.01	0.05	14.26
		GF/C	0.05	0.11	29.04
		TOTAL	0.07	0.20	26.52
150	27V2509	20um	0.01	0.03	22.82
		5um	0.00	0.03	11.41
		GF/C	0.04	0.03	55.77
		TOTAL	0.05	0.08	36.76
200	27V2510	20um	0.00	0.02	15.21
		5um	0.00	0.02	15.21
		GF/C	0.01	0.06	18.25
		TOTAL	0.02	0.10	17.11
86/03/09 0835	40-35.4S	54-01.1E	St. 18		
0	27V2601	20um	0.00	0.00	0.00
		5um	0.00	0.02	22.82
		GF/C	0.24	0.26	48.24
		TOTAL	0.25	0.28	47.19
10	27V2602	20um	0.01	0.07	12.44
		5um	0.00	0.07	4.56
		GF/C	0.22	0.25	47.39
		TOTAL	0.23	0.38	37.94
20	27V2603	20um	0.01	0.05	17.11
		5um	0.01	0.04	19.56
		GF/C	0.27	0.18	59.61
		TOTAL	0.29	0.27	51.56
30	27V2604	20um	0.01	0.06	11.41
		5um	0.01	0.04	16.30
		GF/C	0.23	0.38	37.58
		TOTAL	0.25	0.49	33.55
50	27V2605	20um	0.01	0.06	10.14
		5um	0.00	0.05	9.78
		GF/C	0.28	0.22	55.88
		TOTAL	0.29	0.32	47.24
75	27V2606	20um	0.00	0.08	5.70
		5um	0.01	0.05	11.41
		GF/C	0.23	0.29	49.05
		TOTAL	0.29	0.43	40.34
100	27V2607	20um	0.01	0.04	16.30
		5um	0.01	0.04	16.30
		GF/C	0.19	0.22	46.42
		TOTAL	0.21	0.31	40.56
125	27V2608	20um	0.00	0.05	8.56
		5um	0.00	0.05	9.78
		GF/C	0.05	0.23	13.82
		TOTAL	0.06	0.33	12.72
150	27V2609	20um	0.00	0.05	5.70
		5um	0.00	0.05	3.26
		GF/C	0.02	0.08	16.50
		TOTAL	0.02	0.19	10.25
200	27V2610	20um	0.01	0.08	7.61
		5um	0.00	0.03	2.07
		GF/C	0.00	0.06	2.54
		TOTAL	0.01	0.22	4.28

Table 5. Data on plankton collected by vertical hauls with two NORPAC standard nets
 (one has 0.33 mm and another has 0.11 mm mesh openings).

Stn. No.	Position Date	Ship's time Time	Length of wire (m)	Angle of wire (°)	Estimated depth of haul (m)	RGS No.	Flow-meter Revolution	Estimated volume of water m^3	Wet weight of sample in a haul per 1000 m^3 (gr)	Mesh size (gr)	Sample No. (μm)	Large organisms removed before weighing
4	70-14.0S 24-11.3E	1985 Dec.25	168 1202	28	150	51 1249	2252 1240	29.91 17.17		330 110	27N001 27N002	
5	70-10.8S 24-28.7E	Dec.25	1610	150	0	51 1249	1530 755	20.32 10.46		330 110	27N003 27N004	
1-1	70-14.4S 24-10.7E	Dec.26	0959	160	20	51 1249	1935 825	25.70 11.43		330 110	27N005 27N006	
1-2	70-10.5S 24-11.0E	Dec.26	1707	152	10	51 1249	1702 843	22.60 11.68		330 110	27N007 27N008	
1-3	70-10.1S 24-10.7E	Dec.26	2207	150	6	51 1249	1600 734	21.25 10.17		330 110	27N009 27N010	
1-4	70-09.9S 24-10.0E	Dec.27	0311	153	12	51 1249				330 110	27N011 27N012	
1-5	70-10.8S 24-11.4E	Dec.27	1000	150	2	51 1249	1548 735	20.56 10.18		330 110	27N013 27N014	
2	70-06.8S 24-08.8E	Dec.29	1020	152	10	51 1249	1682 700	22.34 9.70		330 110	27N015 27N016	
3	70-15.6S 24-27.8E	Dec.29	1352	165	25	51 1249	2000 848	26.56 11.74		330 110	27N017 27N018	
4-1	70-13.7S 24-12.4E	1986 Feb.14	196 1119	40	150	51 1249	4918 1513	65.31 20.96		330 110	27N019 27N020	

Table 5. Continued.

Stn. No.	Position Date	Ship's time	Length of wire (m)	Angle of wire (°)	Estimated depth of haul (m)	RGS Flow-meter		Estimated volume of water (m ³)	Wet weight of sample in a haul per 1000 m ³ (gr)	Mesh size	Sample No.	Large organisms removed before weighing (μm)
						No.	Revolution					
4-2	70-15.0S 24-02.0E	1986 Feb.14	162 2124	22	150	51 1249	1915 1102	25.43 15.26		330 110	27N021 27N022	
4-3	70-14.2S 24-00.7E	Feb.14	2350	160	20	51 1249	1969 933	26.15 12.92		330 110	27N023 27N024	
4-4	70-10.8S 24-00.8E	Feb.15	0350	173	30	51 1249	2410 1208	32.01 16.73		330 110	27N025 27N026	
4-5	70-15.3S 23-53.4E	Feb.15	1128	212	45	51 1249	3620 1660	48.07 22.99		330 110	27N027 27N028	
6	67-30.1S 31-02.0E	Feb.18	1057	177	32	51 1249	2776 2182	36.87 30.22		330 110	27N029 27N030	
7	67-30.5S 32-59.2E	Feb.19	0941	150	0	51 1249	1794 1427	23.82 19.76		330 110	27N031 27N032	
8	67-29.8S 36-01.0E	Feb.20	1050	156	16	51 1249	1862 1608	24.73 22.27		330 110	27N033 27N034	
10	67-30.3S 37-40.7E	Feb.21	1049	196	40	51 1249	2836 2360	37.66 32.69		330 110	27N035 27N036	
11-1	64.59.9S 37-40.0E	Feb.25	1110	196	40	51 1249	3189 2468	42.35 34.18		330 110	27N037 27N038	
11-2	65-00.0S 37-40.1E	Feb.25	1802	155	15	51 1249	2061 1770	27.37 24.51		330 110	27N039 27N040	

Table 5. Continued.

Stn. No.	Position		Ship's time	Length of wire	Angle of wire	Estimated depth of haul	RGS No.	Flow-meter Revolution	Estimated volume of water (m ³)	Wet weight of sample in a haul per 1000 m ³ (gr)	Mesh size (gr)	Sample No.	Large organisms removed before weighing (μm)
	Date	Time	(m)	(°)	(m)								
11-3	64-59.9S 37-40.8E	1986 Feb.25	170 2341	28	150	51 1249	2783 2120	36.96 29.36		330 110	27N041 27N042		
11-4	65-01.2S 37-39.4E	Feb.26	0403	150	6	150	51 1249	1950 1540	25.90 21.33		330 110	27N043 27N044	
11-5	65-00.0S 37-39.9E	Feb.26	1106	150	0	150	51 1249	1833 1470	24.34 20.36		330 110	27N045 27N046	
12	62-11.0S 46-04.4E	Mar. 2	1202	300	60	150	51 1249	7257 4458	96.37 61.74		330 110	27N047 27N048	
17	43-52.2S 53-05.9E	Mar. 8	1155	233	50	150	51 1249	5600 4670	74.37 64.68		330 110	27N049 27N050	
18	40-35.7S 53-56.7E	Mar. 9	0756	270	55	150	51 1249	5402 3184	71.74 44.10		330 110	27N051 27N052	
19	36-07.0S 54-30.2E	Mar.10	0751	173	30	150	51 1249	1848 1550	24.54 21.47		330 110	27N053 27N054	

Table 6. Data on plankton collected by simultaneous horizontal tows with MTD horizontal closing nets (0.35 mm mesh openings).

Stn. No.	Position Date	Net No.	Ship's time		Length of wire	Angle of depth of tow	Estimated wet weight of sample in a tow per 1000 m ³	Sample No.	Large organisms removed before weighing	Remarks
			Net out	Net in						
1-1	70-14.4S 24-10.7E	11	1053	1103	11	45	0	27M0101		
		1			25		10	27M0102		
		2			39		20	27M0103		
		3			53		30	27M0104		
		4			82		50	27M0105		
		5			117		75	27M0106		
		6			152		100	27M0107		
		7			188		125	27M0108		
		8			223		150	27M0109		
		9	1025	1130	259		175	27M0110		
1-3	70-10.1S 24-10.7E	1	2238	2250	11	45	0	27M0201		
		2			25		10	27M0202		
		3			39		20	27M0203		
		4			53		30	27M0204		
		5			82		50	27M0205		
		6			117		75	27M0206		
		7			152		100	27M0207		
		8			188		125	27M0208		
		9			223		150	27M0209		
		10	2220	2310	259		175	27M0210		
1-5	70-10.8S 24-11.4E	1	1040	1055	11	45	0	27M0301		
		2			25		10	27M0302		
		3			39		20	27M0303		
		4			53		30	27M0304		
		5			82		50	27M0305		
		6			117		75	27M0306		
		7			152		100	27M0307		
		8			188		125	27M0308		
		9			223		150	27M0309		
		10	1020	1108	259		175	27M0310		

Table 6. Continued.

Stn. No.	Position	Date	Net No.	Ship's time	Length of wire	Angle of tow	Estimated depth of tow	Wet weight of sample		Sample No.	Large organisms removed before weighing	Remarks			
								Net out	Net in	(m)	(°)	(m)	in a tow per 1000 m ³	(gr)	(gr)
4-1	70-13.7S 24-12.4E	1986 Feb.14	1	1228	1243	14	45	0						27M0401	
			2			28		10						27M0402	
			3			42		20						27M0403	
			4			56		30						27M0404	
			5			85		50						27M0405	
			6			120		75						27M0406	
			7			155		100						27M0407	
			8			191		125						27M0408	
			9			226		150						27M0409	
			10	1208	1303	262		175						27M0410	
4-3	70-14.2S 24-00.7E	Feb.15	1	0027	0041	13	45	0						27M0501	
			2			27		10						27M0502	
			3			41		20						27M0503	
			4			55		30						27M0504	
			5			84		50						27M0505	
			6			119		75						27M0506	
			7	0000	0050	190		125						27M0507	
11-1	64-59.9S 37-40.0E	Feb.25	1	1312	1340	17	45	0						27M0601	
			2			31		10						27M0602	
			3	1310		52		25						27M0603	
			4		1347	88		50						27M0604	Cod-end was entangled.
			5	1306		122		75						27M0605	
			6	1304		158		100						27M0606	
			7	1300		229		150						27M0607	
			8	1257		300		200						27M0608	
			9	1252		441		300						27M0609	
			10	1239	1401	724		500						27M0610	

Table 6. Continued.

Stn. No.	Position Date	Net No.	Ship's time	Length	Angle	Estimated	Wet weight of sample	Sample No.	Large organisms removed before weighing	Remarks
				of Net out	Net in	wire (m)	wire (°)	depth of tow (m)	in a tow per 1000 m ³ (gr)	
11-3	64-59.9S 1986 37-40.8E Feb.26	1	0152 0217	12	45	0			27M0701	
		2	0149	26		10			27M0702	
		3	0147	47		25			27M0703	
		4	0145	83		50			27M0704	
		5	0227	117		75			27M0705	
		6	0141	153		100			27M0706	
		7	0137	224		150			27M0707	
		8		295		200			27M0708	
		9	0126	436		300			27M0709	
		10	0123 0243	719		500			27M0710	
11-5	65-00.0S Feb.26 37-39.9E	1	1308 1336	18	45	0			27M0801	
		2	1306	32		10			27M0802	
		3	1300	53		25			27M0803	
		4	1343	89		50			27M0804	Cod-end was entangled.
		5	1258	123		75			27M0805	
		6	1256 1347	159		100			27M0806	Cod-end was entangled.
		7	1254	230		150			27M0807	
		8	1251	301		200			27M0808	
		9	1246	442		300			27M0809	
		10	1239 1400	725		500			27M0810	

Table 7. Data on plankton collected by LHPR sampler (0.35 mesh openings).

Stn. No.	Depth (m)	Date	Time and Position						Length of wire (m)	Angle of maximum wire depth of (°)	Recorded by sampler	Sample No.	Remarks
			Net out Time	Position	At max. depth Time	Position	Net in Time	Position					
4	246	1985 Dec. 25	1236		1244	70-13.2S 24-08.0E	1257	70-13.1S 24-07.2E	300	60	190	27L001	
5	307	Dec. 25	1435	70-10.5S 24-28.2E	1448	70-10.3S 24-26.9E	1459	70-10.4S 24-25.2E	400	60	280	27L002	
1-1	848	Dec. 26	1140	70-07.5S 24-07.8E	1152	70-07.1S 24-07.0E	1204	70-07.3S 24-06.6E	400	60	245	27L003	
1-3	340	Dec. 26	2314	70-08.7S 24-08.8E	2328	70-08.4S 24-08.7E	2338	70-07.9S 24-08.7E	400	60	240	27L004	
1-4	274	Dec. 27	0335	70-08.8S 24-10.8E	0349	70-08.6S 24-10.4E	0358	70-08.5S 24-10.0E	350	60	250	27L005	
1-5	270	Dec. 27	1113	70-10.3S 24-10.5E	1123	70-10.0S 24-09.6E	1131	70-09.8S 24-09.2E	350	60	245	27L006	
2	280	Dec. 28	1042	70-06.2S 24-08.5E	1102	70-06.6S 24-08.4E	1114	70-06.9S 24-07.9E	500	60	250	27L007	
3	280	Dec. 28	1414	70-14.9S 24-25.1E	1427	70-14.6S 24-25.1E	1437	70-14.2S 24-25.1E	350	60	185	27L008	
4-1	261	1986 Feb. 14	1306	70-10.4S 24-07.3E	1332	70-10.2S 24-07.4E	1342	70-10.0S 24-07.5E	350	60	205	27L009	
4-2	220	Feb. 14	2143	70-14.9S 24-01.9E	2156	70-14.7S 24-01.5E	2203	70-14.4S 24-01.3E	300	60	170	27L010	
4-3	214	Feb. 15	0105	70-12.6S 24-00.4E	0116	70-12.5S 24-00.0E	0125	70-12.7S 23-58.5E	350	60	200	27L011	

Table 7. Continued.

Stn. No.	Depth (m)	Date	Time and Position						Length of wire (m)	Angle of wire depth (°)	Recorded Maximum sampler	Sample No.	Remarks
			Net out		At max. depth		Net in						
			Time	Position	Time	Position	Time	Position					
4-4	217	1986 Feb.15	0415	70-11.7S 23-58.3E	0424	70-11.6S 23-58.9E	0435	70-11.0S 24-00.1E	300	60	150	27L012	
4-5	233	Feb.15	1150	70-13.8S 23-51.7E	1158	70-13.6S 23-51.4E	1206	70-13.2S 23-47.3E	300	60	150	27L013	
6	3824	Feb.18	1122	67-27.7S 31-05.1E	1144	67-26.9S 31-06.9E	1210	67-26.4S 31-09.6E	1000	60	600	27L014	
7	955	Feb.19	1001	67-29.0S 33-02.2E	1022	67-28.4S 33-02.5E	1047	67-27.6S 33-03.0E	1000	60	585	27L015	
8	3275	Feb.20	1110	67-27.0S 36-00.6E	1132	67-28.2S 36-08.2E	1159	67-27.2S 36-09.6E	1000	60	600	27L016	
10	3175	Feb.21	1105	67-31.9S 37-30.8E	1123	67-31.6S 37-28.9E	1150	67-30.8S 37-26.5E	1000	60	570	27L017	
11-1	4877	Feb.25	1131	65-02.5S 37-35.5E	1154	65-03.6S 37-34.5E	1231	65-04.7S 37-33.6E	1600	60	850	27L018	
11-2	4883	Feb.25	1822	65-00.2S 37-40.3E	1855	65-01.2S 37-38.5E	1930	65-02.5S 37-36.8E	1600	60	780	27L019	
11-3	4887	Feb.26	0001		0032		0108		1600	60	800	27L020	
11-4	4880	Feb.26	0425	65-01.3S 37-39.0E	0457	65-01.4S 37-37.2E	0530	65-01.7S 37-34.3E	1600	60	960	27L021	
11-5	4883	Feb.26	1125	65-00.4S 37-38.2E	1156	65-00.8S 37-36.5E	1232	65-01.6S 37-33.6E	1600	60	870	27L022	

Table 8. Data on benthos collected by beam trawl.

Stn. No.	Depth (m)	Date	Time and Position			Length of wire (m)	Sample No.	Remarks
			Net out		At sea bottom			
			Time	Position	Time	Position		
1-5	270	1985 Dec. 27	1202		1213 70-11.2S 24-12.2E	1257 70-11.8S 24-12.8E	700	27BT001 Fuse rope was cut.
7	955	1986 Feb. 19	1109		1128 67-27.7S 32-02.2E	1235 67-27.3S 32-59.1E	2000	27BT002