

**ZOOPLANKTON DISTRIBUTION AND  
ASSOCIATED BIOLOGICAL, PHYSICAL AND  
CHEMICAL DATA: BARKLEY SOUND,  
VANCOUVER ISLAND, MAY AND JUNE 1989  
(MASS program)**

by

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Sidney, B.C., Canada

1990

**CANADIAN DATA REPORT OF  
HYDROGRAPHY AND OCEAN SCIENCES  
NO. 77**



Fisheries  
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Pêches  
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Canada

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Cat. No. Fs 97-16/77 ISSN 0711-6721

Correct citation for this publication:

Forbes, J.R., R.M. Brown, D.L. Mackas and S. Cerniuk. 1990. Zooplankton distribution and associated biological, physical and chemical data: Barkley Sound, Vancouver Island, May and June 1989 (MASS Program). Can. Data Rep. Hydrogr. Ocean Sci. 77: 109p.

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## ABSTRACT

Forbes, J.R., R.M. Brown, D.L. Mackas and S. Cerniuk. 1990. Zooplankton distribution and associated biological, physical and chemical data: Barkley Sound, Vancouver Island, May and June 1989 (MASS Program). Can. Data Rep. Hydrogr. Ocean Sci. 77: 109p.

Data collected during May and June 1989 in Barkley Sound, southwest Vancouver Island, as part of the Marine Survival of Salmon (MASS) program are presented. The objectives of this component of MASS were to survey the distribution, abundance and size frequency of zooplankton and investigate underlying biological and oceanographic processes controlling the zooplankton community. Maps of the surface distribution of zooplankton biomass by size category, salinity, temperature and chlorophyll fluorescence obtained by a flow-through sampling system are provided. Zooplankton identity, abundance and size distribution determined from vertical net haul samples, together with biological, physical and chemical observations from CTD casts and discrete water bottle samples are reported.

Key words: data, zooplankton, oceanographic, Barkley Sound, Vancouver Island

## RESUME

Forbes, J.R., R.M. Brown, D.L. Mackas and S. Cerniuk. 1990. Zooplankton distribution and associated biological, physical and chemical data: Barkley Sound, Vancouver Island, May and June 1989 (MASS Program). Can. Data Rep. Hydrogr. Ocean Sci. 77: 109p.

Le document présente les données recueillies en mai et juin 1989 dans le détroit Barkley, au sud-ouest de l'île de Vancouver, dans le cadre du Programme de survie du saumon en mer (MASS). L'objet de cet élément du programme était de relever la répartition, l'abondance et la fréquence des tailles de zooplancton et d'étudier les processus biologiques et océanographiques qui influent sur le zooplancton. Le document renferme des cartes de répartition en surface de la biomasse de zooplancton, selon la taille, la salinité, la température et la fluorescence chlorophylienne, établies à partir d'échantillonnages par instrument d'arpentage électronique. On y indique le type de zooplancton, l'abondance et la répartition par taille, déterminées à partir d'échantillons prélevés verticalement au moyen de filets et à partir d'observations biologique, chimiques et physiques découlant de l'utilisation d'une sonde de conductivité, de température et de profondeur et à partir d'échantillonages ponctuels d'eau.

Mots-clés: données, zooplancton, océanographiques, détroit Barkley, île de Vancouver

#### ACKNOWLEDGEMENTS

We thank Bob Taylor for piloting the Revisor and Walker Rock. He proved to be extremely helpful and flexible and his contribution was key to completing our work. Anton Phillips of the Shellfish Section, Pacific Biological Station lent the CTD to us. Brent Hargreaves and others of the Salmon Dynamics Section at PBS arranged for berths and storage of gear on the L. Pacifica and provided other assistance in the field. Frank Whitney of the Climate Chemistry CODE arranged access to the CHN analyzer and Autoanalyzer.

Specific analyses were performed under contract by the following individuals:

Nutrients, POC/PON	- J. Barwell-Clarke
Bacteria	- R. Blaskovitch, CBR International Corp.
Phytoplankton	- R. Waters
Zooplankton	- M. Galbraith, Sy-Tech Research Ltd.

## INTRODUCTION

The Marine Survival of Salmon (MASS) program is an interdisciplinary study aimed at understanding the relationships between physical and biological oceanographic events and the dispersal and survival of salmon during their early sea life. The program was stimulated by the need to improve forecasting for Pacific salmon returns and the expanding evidence that returns of adults are strongly influenced by critical environmental factors affecting juveniles shortly after entering the sea.

A major effort within the MASS program has been directed at processes within Barkley Sound, on the west coast of Vancouver Island. The Ocean Ecology section at the Institute of Ocean Sciences (IOS) has contributed to the research in Barkley Sound by surveying the distribution, abundance and size frequency of zooplankton, and investigating underlying biological and oceanographic processes controlling the zooplankton community. This report describes the results of two surveys, which were conducted in early May and early June 1989. A second report (Forbes *et al.* 1990) provides results from a more intensive research effort during mid-May 1988, with additional zooplankton abundance data from an initial survey in late April 1987.

## SAMPLING AND ANALYTICAL METHODS

### 1. Project design

Each of the two surveys reported here consisted of continuous underway mapping, throughout Barkley Sound, of the surface distribution of zooplankton biomass by size category, salinity, temperature and chlorophyll fluorescence. The first study (cruise OE8902) was conducted on the launch Revisor from 9 - 12 May 1989. Two nights of sampling were required to obtain adequate spatial coverage of the Sound, at a ship speed of 10 - 13 km/h. Navigation was by radar. The mapping was supplemented by sampling at nine stations. Here, CTD casts were performed, zooplankton were collected by vertical net hauls, and discrete water samples were collected by bottle cast, using Niskin bottles. The FRV Walker Rock was utilized for the second survey (cruise OE8904) from 9 - 12 June 1989. This repeated the May study, with changes to the underway transects to accommodate the navigational requirements of a different vessel, specifically greater draft and slower speed.

## 2. Continuous underway mapping

Continuous underway data of zooplankton by size category, salinity, temperature and chlorophyll fluorescence were collected with a flow-through electronic particle counting system (EPCS) (Mackas *et al.* 1981) coupled to temperature, conductivity and fluorescence sensors (Mackas *et al.* 1980). Water was pumped from a nominal depth of 1m, through a through-hull fitting in the engine room (OE8902) or from a hose mounted on a strut over the side (OE8904). Mapping was performed at night to permit adequate sampling of vertically migrating animals.

The zooplankton sensor counts particles with an equivalent spherical diameter of 0.3 - 3.0mm (approximately  $0.08 - 8.0\text{mm}^3$ ). Resistive particles passing through the sensor cause amplitude modulation of an A.C. excitation signal. Output pulses derived from the demodulated signal are an approximately linear function of particle volume, which allows particles to be assigned to one of ten size categories. The sensor contains four independent sensing tubes to allow for a high flow rate (approximately 25L/min). Precision of the size estimates ranges from about  $\pm 40\%$  for the smallest detected particles to  $\pm 10\%$  for the largest.

Periodic calibration samples for animal identity, abundance, size and size-fractionated biomass were collected by passing the outflow from the system through a tube close at one end with 0.25mm mesh netting, for 5 to 15 min. These calibration samples were either preserved with buffered formalin for identity, abundance and size analysis, or quick frozen in an alcohol bath to  $-40^\circ\text{C}$  for size-fractionated biomass determinations. Details of sample processing are provided in section 9 below. Periodic discrete water samples were also taken from the system outflow for calibration of the temperature, conductivity and fluorescence sensors. Samples for dissolved nutrients ( $\text{NO}_3 + \text{NO}_2$ ,  $\text{PO}_4$ , Si) were collected at the same time.

## 3. CTD and bottle casts

At each station, CTD casts were performed with an Applied Microsystems model STD12 internally recording CTD. The instrument manufacturer specifies an accuracy of  $\pm 0.01^\circ\text{C}$ , with a resolution of  $\pm 0.001^\circ\text{C}$  for temperature, an accuracy of  $\pm 0.05\text{dBar}$  for pressure, and an accuracy of  $\pm 0.01\text{psu}$  for salinity. Instrument malfunction precluded data recovery for a number of casts during OE8902.

Discrete water samples for salinity, chlorophyll *a*, dissolved inorganic nutrients, POC, PON, bacteria and phytoplankton analyses were collected with 5L Niskin bottles. Three depths were sampled at each station. These comprised a near-surface sample in the brackish-water layer typical of Barkley Sound, a sample from 8m, below the low-salinity water, and a deeper sample, generally from 35m.

#### 4. Salinity

Salinity samples were collected in 250mL bottles which were rinsed three times, capped and stored for later analysis at IOS. Salinity samples were analyzed on a Guildline Autosal (Model 8400A) standardized against Standard Sea Water (Standard Sea-water Service, Institute of Oceanographic Sciences, Wormley, Godalming, England). Batch P95 8/3 1983 was used, with a stated  $K_{15} = 0.99997$  (chlorinity = 19.373). Data are reported in practical salinity units (psu) (Lewis and Perkin 1978).

We have not determined the precision of the method ourselves. However the precision (pooled variance of replicate samples) of this method has been estimated by Macdonald *et al.* (1988) to be 0.005.

#### 5. Chlorophyll a

Extracted chlorophyll a was determined by fluorometry (Parsons *et al.* 1984). Duplicate water samples (50mL) were filtered onto 25mm diameter Whatman GF/F glass fiber filters with a vacuum of <100mm Hg. Just before filtration was completed approximately 1mL MgCO<sub>3</sub> suspension was added to the sample and the sides of the filter funnel were rinsed with filtered seawater. The filters were then folded with the sample to the inside, placed in a paper filter cone, wrapped in aluminum foil, and frozen for later analysis at IOS. Chlorophyll was extracted in 90% aqueous acetone by grinding in a tissue grinder. The extract was clarified by filtration through a glass fiber filter and the fluorescence measured in a Turner Designs 10 fluorometer. The sample was acidified with two drops of 1.5N HCl and the fluorescence was redetermined after the reading had stabilized.

Chlorophyll a content was calculated from the equations in Parsons *et al.* (1984). The fluorometer was previously calibrated against a Perkin-Elmer Hitachi 200 spectrophotometer using crystalline chlorophyll a (Sigma Chemical Co.). Chlorophyll concentrations in the calibration samples were calculated using the equations of Jeffrey and Humphrey (1975). Based on 15 replicate samples, we have estimated the mean coefficient of variation of this method to be 4.9% (Forbes *et al.* 1988).

## 6. Inorganic nutrients

Samples for the analysis of dissolved nitrate+nitrite and orthophosphate were collected in 50mL glass tubes, with Teflon™ cap liners, which were rinsed three times with sample. Samples for dissolved reactive silicate were collected in 20mL polystyrene tubes, also with Teflon™ cap liners, with the same rinsing protocol. All samples were quick frozen in an alcohol bath to -40°C and stored frozen until returned to IOS. A Technicon II Auto-Analyzer was used for the analyses, with Technicon Industrial Methods No. 186-72 W and 158-71 W employed for nitrate+nitrite and reactive silicate respectively. The modification of the Technicon method by Brynjolfson (1973) was used for the analysis of orthophosphate. Sagami standards were prepared in 0, 8, 16, 24 and 32‰ NaCl solutions. Standards of the NaCl concentration nearest to sample salinity were used to calibrate the analyses. Where samples were obviously turbid or of low salinity, subsamples were run on the orthophosphate channel with no reagents to determine the turbidity, and sample concentrations were corrected accordingly. The recommendations of Macdonald *et al.* (1986) regarding the thawing of samples were followed.

Previous analyses of replicate samples (Denman *et al.* 1985) have shown that the expected percentage error for nitrate+nitrite is 14.3%, for orthophosphate is 9.4%, and for reactive silicate is 11.5%.

## 7. Particulate organic carbon and nitrogen

Water samples (1L) for particulate organic carbon (POC) and nitrogen (PON) were filtered onto precombusted (500°C, 4hr), 47mm diameter Whatman GF/F glass fiber filters. Vacuum was held at <100mm Hg during filtration and filter funnel sides were rinsed with filtered seawater just before filtration was completed. Filters were folded with the sample facing in and stored, frozen, in precombusted aluminum foil. Prior to analysis, samples were dried at 60°C for 8hr. Samples were analyzed with a Perkin-Elmer Model 240 elemental analyzer standardized with acetanilide for both carbon and nitrogen.

We have not determined the precision of the method ourselves. However, precision (pooled variance) is estimated by Macdonald *et al.* (1988) to be 1.5µg/L for POC and 0.2µg/L for PON.

### 8. Bacteria

For total counts of bacteria in seawater, two subsamples (20mL) from each Niskin bottle were preserved with unbuffered formaldehyde to a concentration of 2%. They were stored at 4°C in the dark prior to counting. Abundance was estimated by the method of Hobbie *et al.* (1977), with slight modification. Subsamples were stained with buffered acridine orange (0.1% in 0.02 mol tris-hydroxymethylaminomethane, pH 7.2), to a final concentration of 0.02% (Bunch 1987), and filtered onto 0.2 μm pore size Nuclepore polycarbonate filters, previously dyed with Irgalan black (0.2% solution in 2.0% v/v acetic acid). Prior to filtration of the subsample, 1mL of surfactant (0.001M Triton-X) was passed through the filter to avert cell clumping due to the hydrophobic property of the Nuclepore filters. Triton-X was selected because it does not affect the background fluorescence. Enumeration was by epifluorescence microscopy, with subsample volume (typically 5mL) chosen to distribute between 20 and 100 cells per field. Ten randomly chosen fields were counted. If the ten fields contained less than 300 cells, additional randomly chosen fields were counted until this number was reached. Duplicate counts were performed on each subsample. Standard deviations of cell concentrations, as determined from the total of four counts from each Niskin bottle, are listed in the data tables.

The proportion of dividing cells was determined using the guidelines of Hagstrom *et al.* (1979). Bacteria showing a region of invagination, but no clear separation, were functionally designated as dividing cells. In general, the procedure for counting described above was used. However, if the dividing cell number was low (20 to 50 cells per ten fields), then an additional ten fields were counted.

A series of control samples was prepared by serial dilution, in filtered seawater, of a natural sample of bacteria. These were preserved with formaldehyde as above. These controls were counted several times during the counting of samples to ensure that temporal variation in the procedure was not occurring.

The mean coefficient of variation of 121 sets of counts of duplicate subsamples was 2.0% with a range from 0.6 to 6.0%.

### 9. Phytoplankton

Samples (250mL) were drawn from the Niskin bottles and preserved with acid Lugol's solution (Throndsen 1978). Identification and enumeration was by settling and inverted microscopy, as outlined in Sournia (1978). Specifically, each sample was shaken gently by hand for approximately 1 min. A subsample was then settled in a 10mL settling chamber, to yield between 100 and 300 cells or chains of the more abundant, medium-sized species present. Medium-sized and larger taxa were enumerated from the entire bottom at 250x magnification, unless numbers of abundant species exceeded 200. In this case, every second or every fifth transect was counted, depending on cell density. Smaller taxa occurring in large numbers were counted at 250x or 500x from two or more transects. The entire chamber was scanned for rare or exotic taxa.

## 10. Zooplankton

EPCS calibration samples were collected as described above. Vertical net haul samples were collected with a bongo net (397cm diam., 0.25mm mesh, black netting) from 150m, or approximately 5m above the bottom where the depth was <150m. The available winches limited the rate of retrieval to about 0.6m/s. As this precluded effective operation of a flowmeter, net collection efficiency was estimated at 85%. One subsample from each bongo haul was preserved with buffered formalin for identification and enumeration; the other was frozen in an alcohol bath to -40°C for size-fractionated biomass determination.

For identification and enumeration of zooplankton, preserved samples were initially passed through a 5mm sieve onto a 0.04mm sieve to remove the preservative and to separate the >5mm size fraction from the rest of the sample. The latter was visually examined for exotic taxa, which were removed for external verification. Generally, all individuals in this size fraction were identified to species, sex and developmental stage where possible. In the event of a very large number of individuals, this portion of the sample was subsampled to approximately 50 individuals. The remaining size fraction (0.04 to 5mm) was split to produce a subsample of no fewer than 300 individuals, which were identified and enumerated to genus, species, sex and developmental where feasible. All subsampling was performed with a Folsom splitter, which was regularly calibrated by splitting a known control sample. A complete list of taxa precedes the abundance data. In some cases taxa are staged, sexed, or both. For example, *Calanus marshallae* 1-4 refers to stages 1 to 4 and *C. marshallae* 6f to stage 6, female of this species. Size classes are used for taxa that vary in size but have either no obvious staged development (e.g. jellies) or a very complex and variable instar sequence (e.g. Euphausiids). *Oikopleura* s1, s2 and s3 is an example. S1 indicates a length of less than 5mm, s2 between 5mm and 1cm, and s3 greater than 1cm.

Size-fractionated biomass on frozen samples was determined as follows. Samples were thawed and passed through a stack of sieves with 11, 2, 0.85, 0.25 and 0.04mm mesh by gentle rinsing and backwashing in standing, filtered seawater. This was followed by a light rinse with isotonic ammonium formate (0.5N in deionized water) to remove salt. Subsamples were then filtered onto preweighed Whatman No.1 filter papers, dried for 24hr at 60°C, and the weight of the filter contents was determined. The 0.04mm sieve serves as a flag for the amount of phytoplankton contamination.

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**DATA SECTION 1****CONTINUOUS UNDERWAY MAPPING TRANSECTS AND  
STATION LOCATIONS**

Fig. 1 OE8902 EPCS Line Track 9 - 10 May 1989

Fig. 2 OE8902 EPCS Line Track 10 - 11 May 1989

Fig. 3 OE8904 EPCS Line Track 9 - 10 June 1989

Fig. 4 OE8904 EPCS Line Track 10 - 11 June 1989

Fig. 5 OE8902 Station locations (CTD + bottle casts)

Fig. 6 OE8902 Station locations (underway calibration  
samples)

Fig. 7 OE8904 Station locations (CTD + bottle casts)

Fig. 8 OE8904 Station locations (underway calibration  
samples)

Fig. 1 OE8902 EPCS Line Track 9 - 10 May 1989

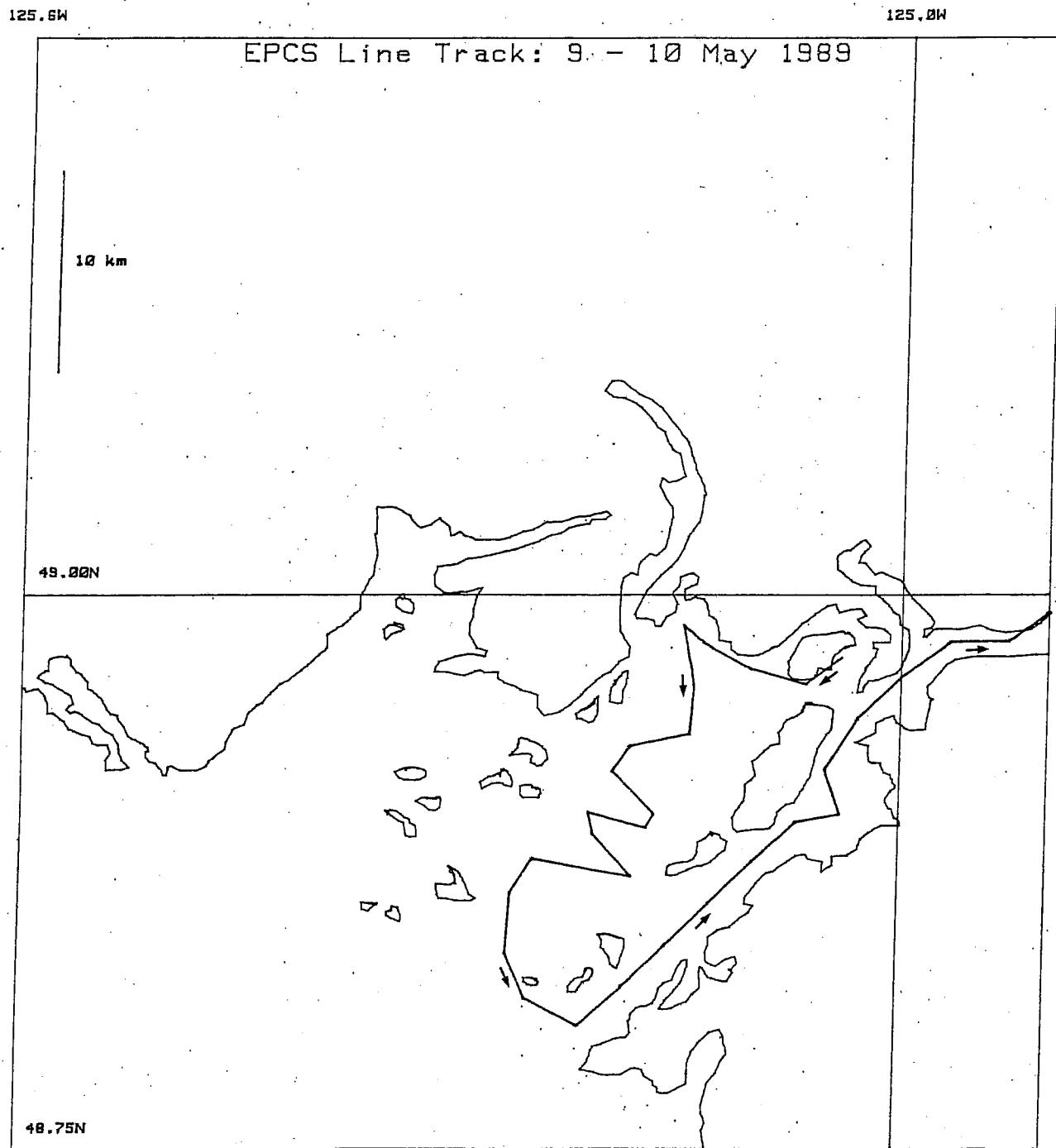


Fig. 2 OE8902 EPCS Line Track 10 - 11 May 1989

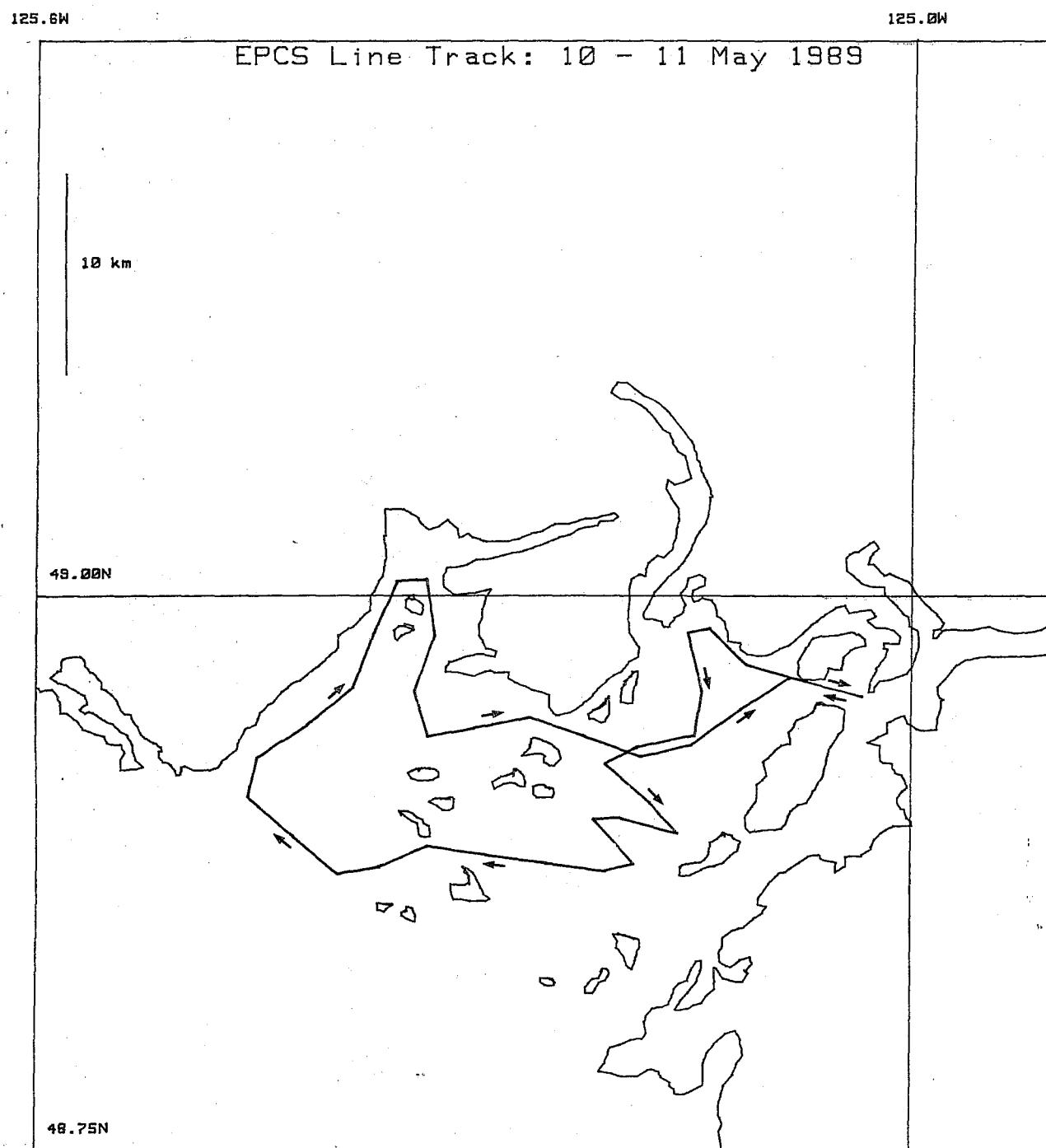


Fig. 3 OE8904 EPCS Line Track 9 - 10 June 1989

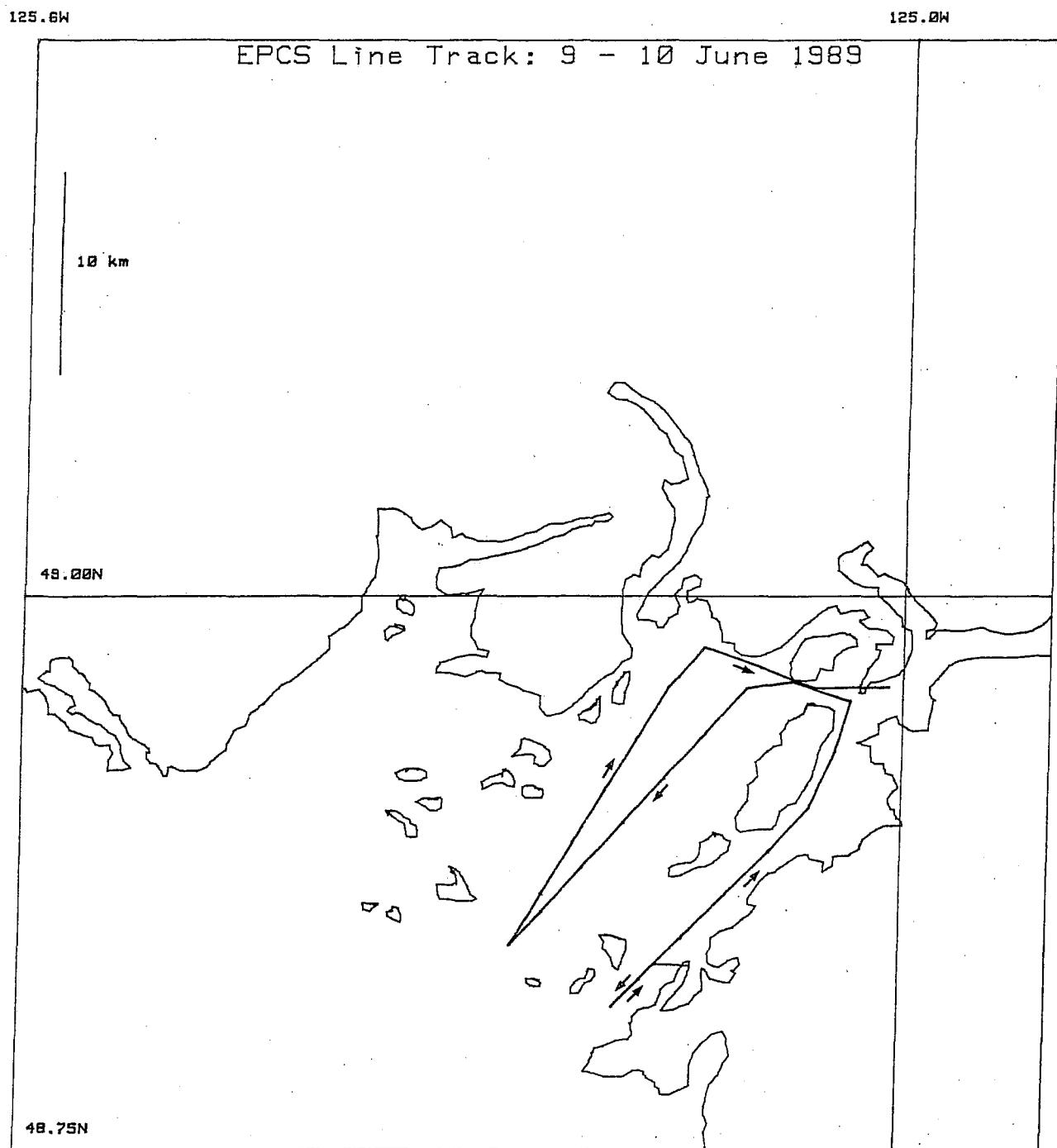


Fig. 4 OE8904 EPSCS Line Track 10 - 11 June 1989

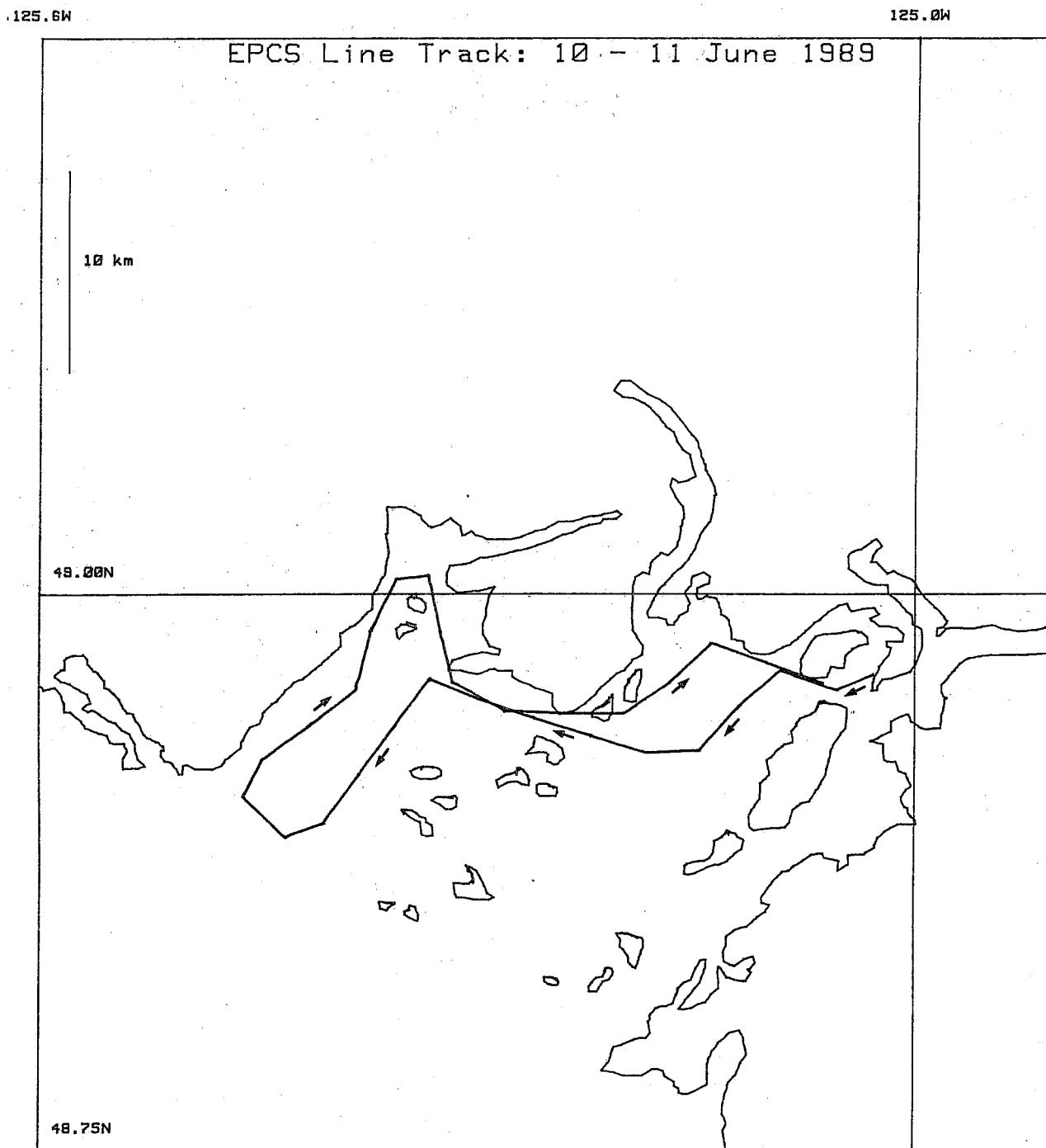


Fig. 5 OE8902 Station locations (CTD + bottle casts)

125

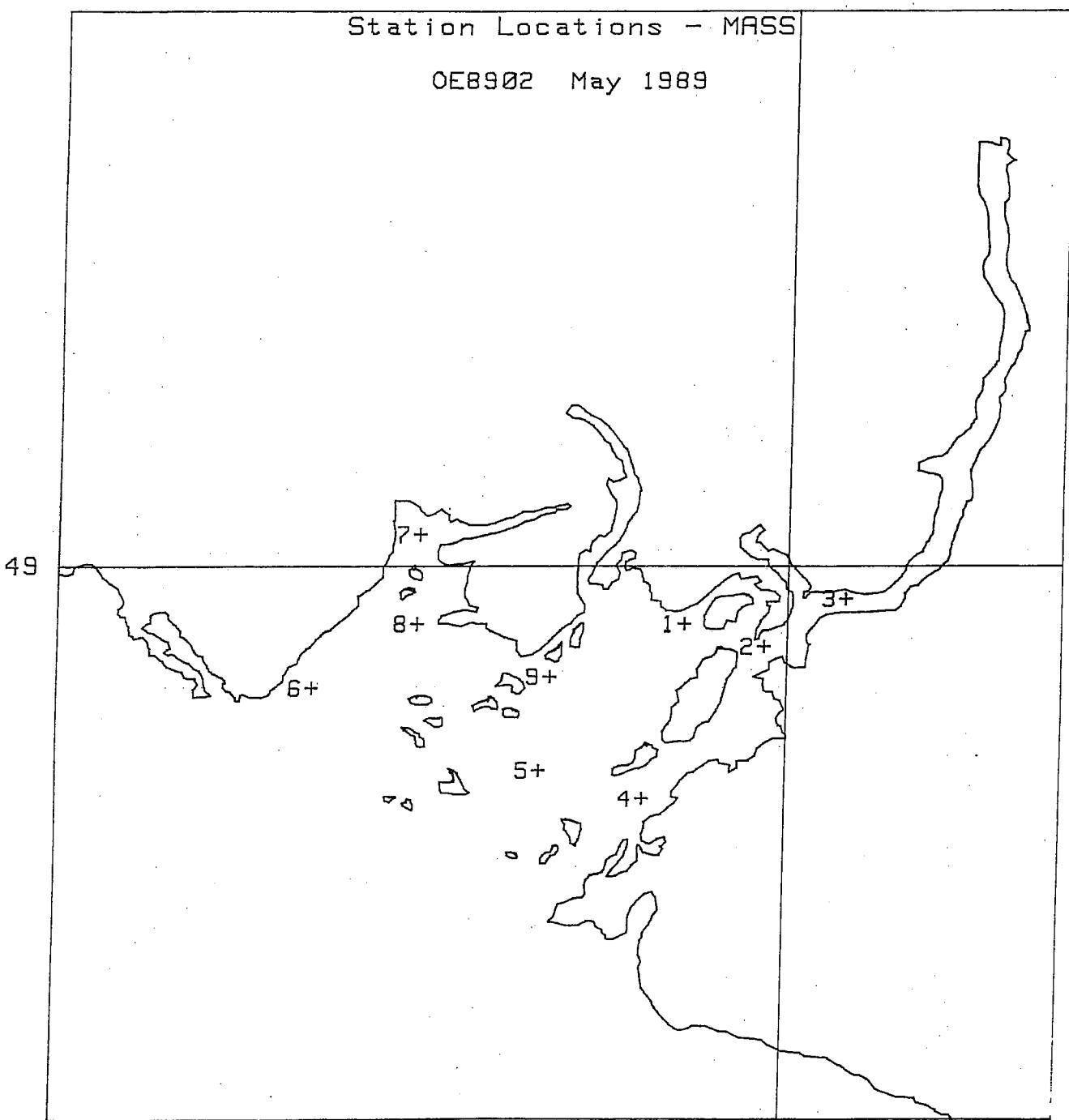


Fig. 6 OE8902 Station locations (underway calibration samples)

125

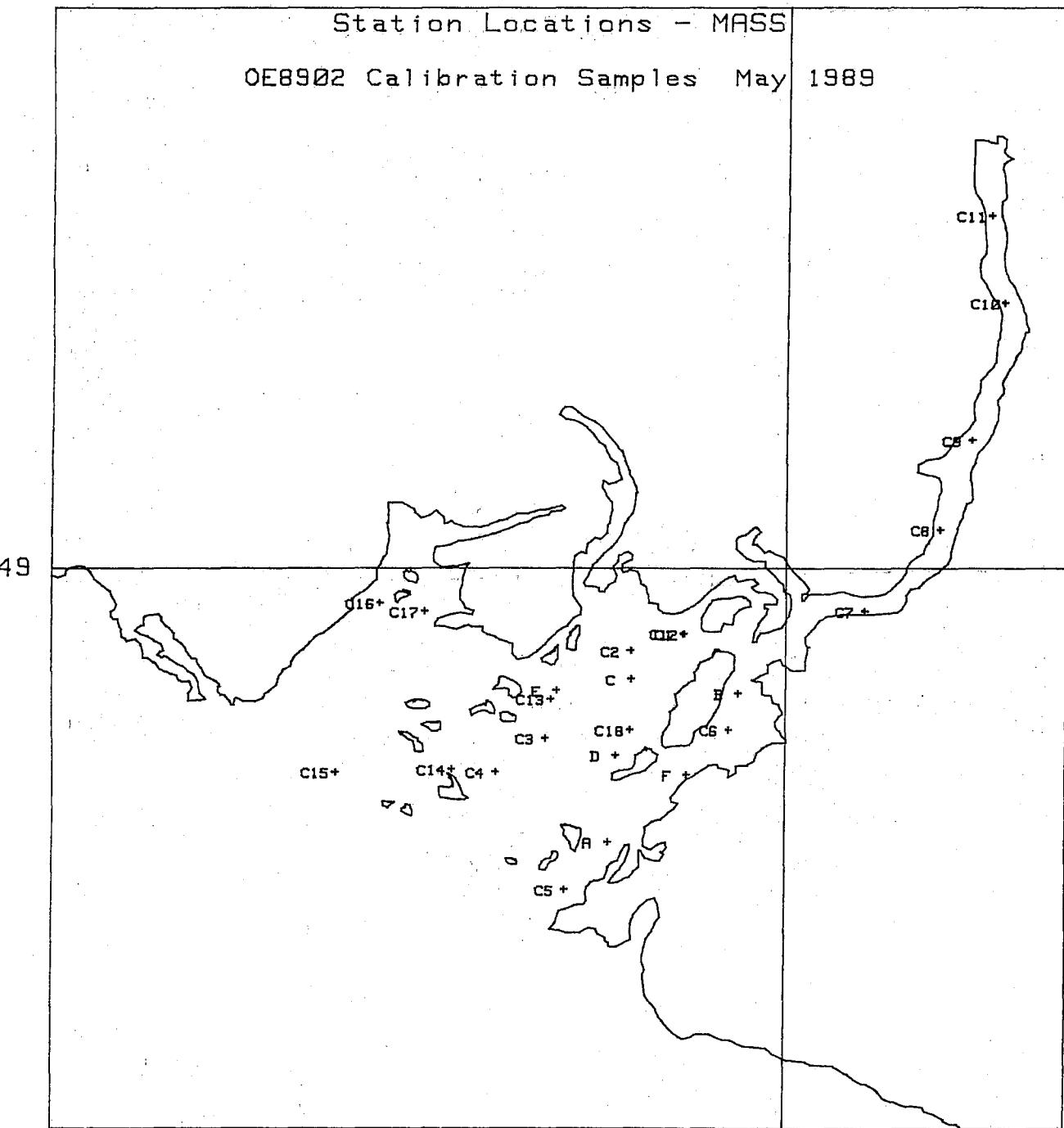


Fig. 7 OE8904 Station locations (CTD + bottle casts)

125

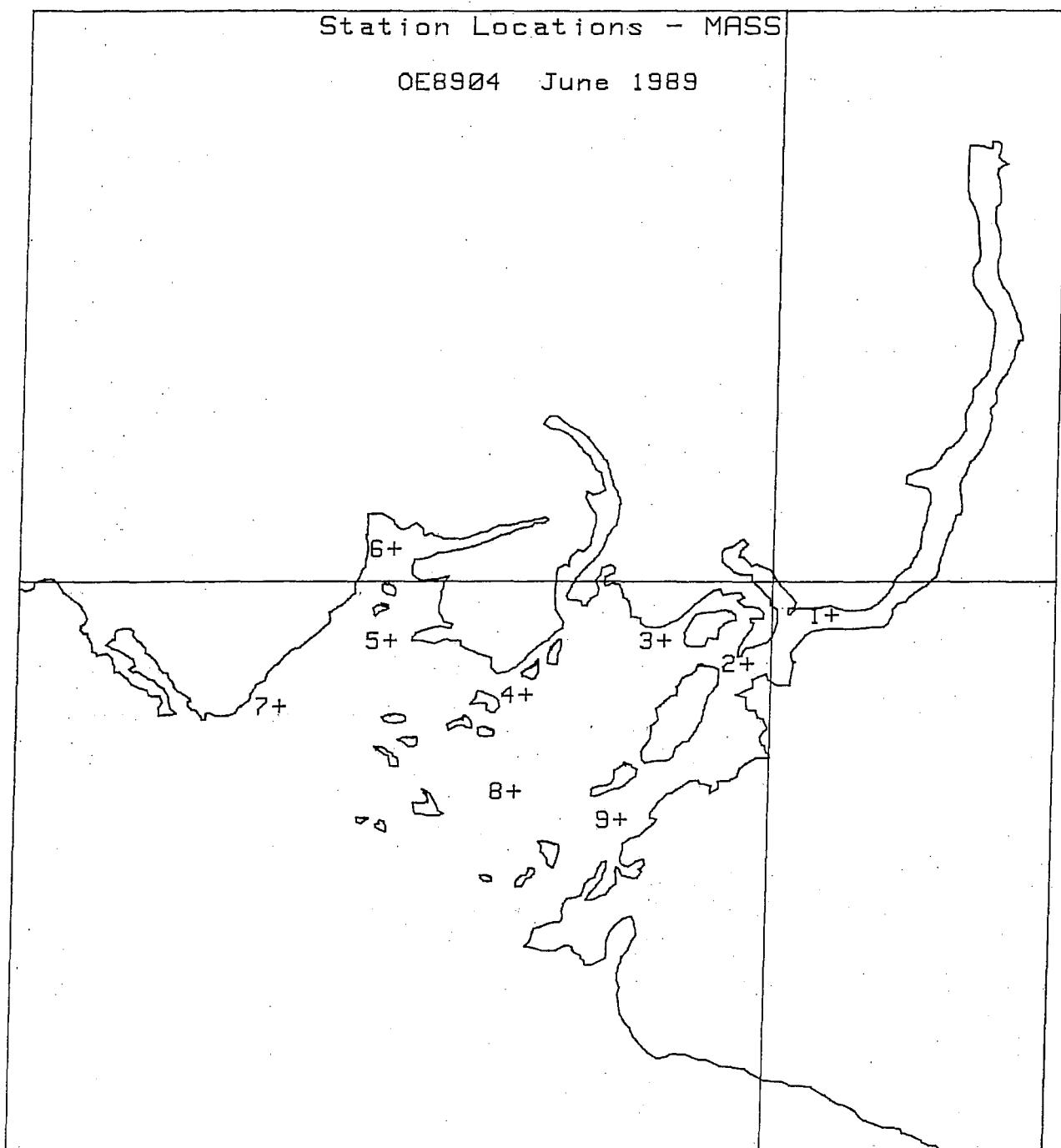
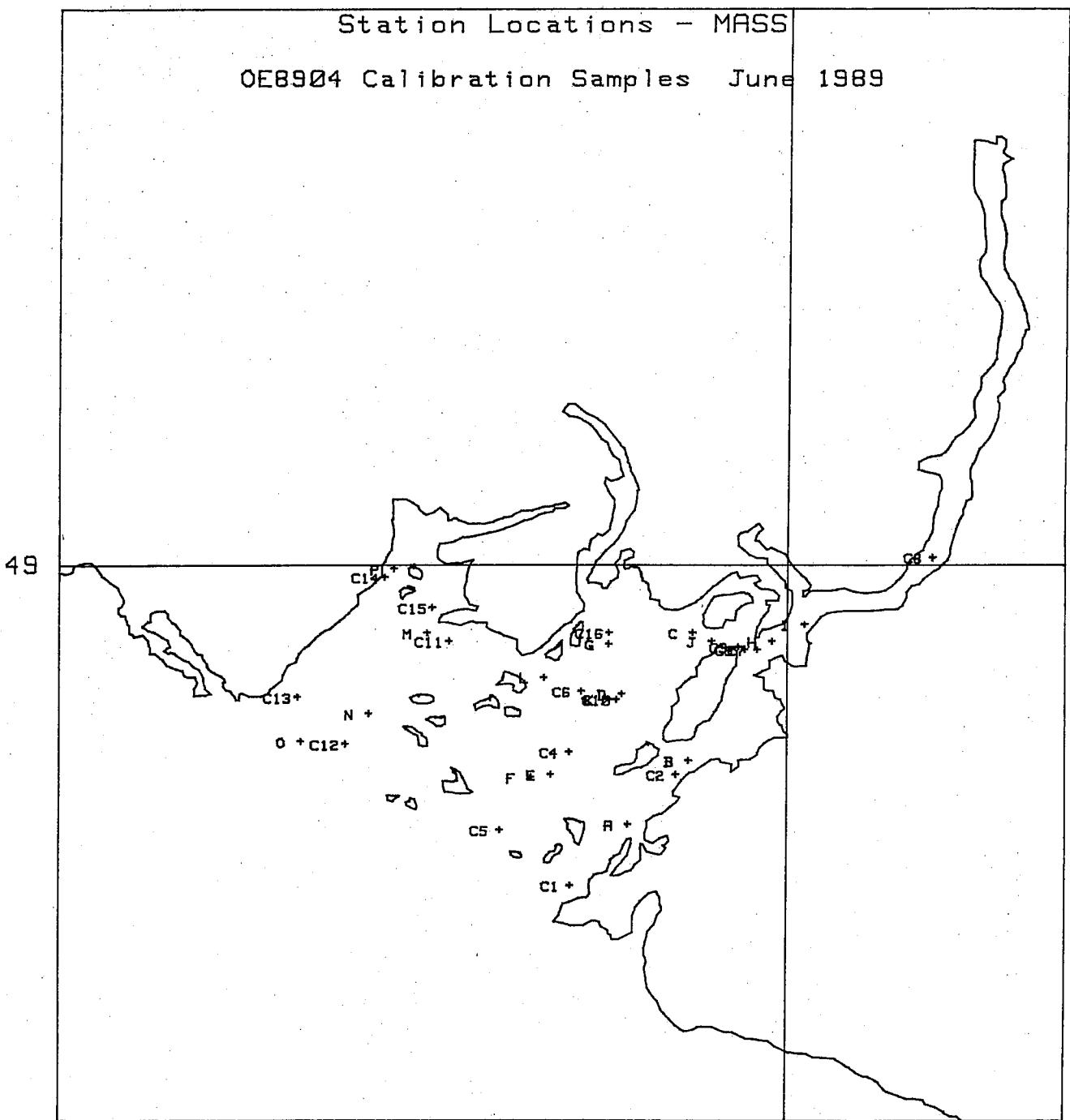


Fig. 8 OE8904 Station locations (underway calibration samples)

125



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**DATA SECTION 2****DATA INVENTORY**

Table 1 OE8902 data collected

Table 2 OE8904 data collected

Table 3 OE8902 and OE8904 zooplankton sample inventory

[Data invent. tables: + data collected  
- data not collected ]

TABLE 1 OE8902 DATA COLLECTED

Station	Date	Time (PDT)	Latitude	Longitude	CTD	Sal.	Temp.	Chl a	Nutr.	POC/PON	Bact.	Phyto.	Zoopl.
1	11 May	2000	48 57.9	125 05.6	+	+	+	+	+	+	+	+	+
2	11 May	2145	48 57.1	125 01.2	+	+	+	+	+	+	+	+	+
3	12 May	0605	48 58.8	124 57.8	-	+	-	+	+	+	+	+	+
4	12 May	0815	48 51.7	125 07.7	+	+	+	+	+	+	+	+	+
5	12 May	1010	48 52.7	125 13.9	-	+	-	+	+	+	+	+	+
6	12 May	1235	48 55.6	125 26.0	-	+	-	+	+	+	+	+	+
7	12 May	1400	49 01.1	125 20.1	-	+	-	+	+	+	+	+	+
8	12 May	1530	48 58.0	125 20.3	-	+	-	+	+	+	+	+	+
9	12 May	1645	48 56.0	125 13.0	-	+	-	+	+	+	+	+	+
C 1	9 May	1918	48 57.9	125 05.5	-	+	+	+	+	-	-	-	-
C 2	9 May	1958	48 57.3	125 08.4	-	+	+	+	+	-	-	-	-
C 3	9 May	2106	48 54.2	125 13.0	-	+	+	+	+	-	-	-	-
C 4	9 May	2153	48 53.0	125 15.7	-	+	+	+	+	-	-	-	-
C 5	9 May	2243	48 48.8	125 11.9	-	+	+	+	+	-	-	-	-
C 6	10 May	0016	48 54.5	125 03.0	-	+	+	+	+	-	-	-	-
C 7	10 May	0109	48 58.7	124 55.7	-	+	+	+	+	-	-	-	-
C 8	10 May	0144	49 01.6	124 51.7	-	+	-	+	+	-	-	-	-
C 9	10 May	0214	49 04.8	124 50.0	-	+	+	+	+	-	-	-	-
C 10	10 May	0258	49 09.7	124 48.3	-	+	+	+	+	-	-	-	-
C 11	10 May	0324	49 12.8	124 49.1	-	+	+	+	+	-	-	-	-
C 12	10 May	2014	48 57.9	125 05.5	-	+	+	+	+	-	-	-	-
C 13	10 May	2146	48 55.6	125 12.7	-	+	+	+	+	-	-	-	-
C 14	10 May	2325	48 53.1	125 18.1	-	+	+	+	+	-	-	-	-
C 15	11 May	0024	48 53.0	125 24.4	-	+	+	-	+	-	-	-	-
C 16	11 May	0144	48 59.0	125 22.0	-	+	+	+	+	-	-	-	-
C 17	11 May	0228	48 58.7	125 19.6	-	+	+	+	+	-	-	-	-
C 18	11 May	0416	48 54.5	125 08.4	-	+	+	+	+	-	-	-	-

TABLE 2 OE8904 DATA COLLECTED

Station	Date	Time (PDT)	Latitude	Longitude	CTD	Sal.	Temp.	Chl a	Nutr.	POC/PON	Bact.	Phyto.	Zoopl.
1	11 June	1600	48 58.8	124 57.8	-	+	-	+	+	+	+	+	+
2	11 June	1840	48 57.1	125 01.2	+	+	+	+	+	+	+	+	+
3	11 June	2044	48 57.9	125 05.1	+	+	+	+	+	+	+	+	+
4	11 June	2200	48 56.0	125 13.0	+	+	+	+	+	+	+	+	+
5	12 June	0555	48 58.0	125 20.3	+	+	+	+	+	+	+	+	+
6	12 June	0710	49 01.1	125 20.1	+	+	+	+	+	+	+	+	+
7	12 June	0840	48 55.6	125 26.0	+	+	+	+	+	+	+	+	+
8	12 June	1025	48 52.7	125 13.4	+	+	+	+	+	+	+	+	+
9	12 June	1115	48 51.6	125 07.7	+	+	+	+	+	+	+	+	+
C 1	9 June	2104	48 48.7	125 11.8	-	+	-	+	+	-	-	-	-
C 2	9 June	2201	48 52.7	125 06.0	-	+	+	+	+	-	-	-	-
C 3	9 June	2258	48 57.3	125 02.6	-	+	+	+	+	-	-	-	-
C 4	10 June	0018	48 53.5	125 11.9	-	+	+	+	+	-	-	-	-
C 5	10 June	0102	48 50.7	125 15.7	-	+	+	+	+	-	-	-	-
C 6	10 June	0157	48 55.7	125 11.2	-	+	+	+	+	-	-	-	-
C 7	10 June	0321	48 57.2	125 01.6	-	+	+	+	+	-	-	-	-
C 8	10 June	0435	49 00.5	124 52.1	-	+	+	+	+	-	-	-	-
C 9	10 June	2116	48 57.2	125 02.3	-	+	+	+	+	-	-	-	-
C 10	10 June	2209	48 55.4	125 09.3	-	+	+	+	+	-	-	-	-
C 11	10 June	2315	48 57.5	125 18.5	-	+	+	+	+	-	-	-	-
C 12	11 June	0014	48 53.8	125 24.2	-	+	+	+	+	-	-	-	-
C 13	11 June	0104	48 55.5	125 26.8	-	+	+	+	+	-	-	-	-
C 14	11 June	0200	48 59.8	125 22.0	-	+	+	+	+	-	-	-	-
C 15	11 June	0246	48 58.7	125 19.4	-	+	+	+	+	-	-	-	-
C 16	11 June	0415	48 57.8	125 09.7	-	+	+	+	+	-	-	-	-

**TABLE 3. OE8902 AND OE89043 ZOOPLANKTON SAMPLE INVENTORY**

**Bongo Net Samples**

Station	Date	Time	Latitude	Longitude	Chart z	Net haul z
<b>OE8902</b>						
1	11 May	2015	48 57.9	125 05.6	110	100
2	11 May	2105	48 57.1	125 01.2	250	150
3	12 May	0650	48 58.8	124 57.8	190	150
4	12 May	0820	48 51.7	125 07.7	132	120
5	12 May	1030	48 52.7	125 13.9	92	85
6	12 May	1240	48 55.6	125 26.0	33	27
7	12 May	1310	49 01.1	125 20.1	27	24
8	12 May	1515	48 58.0	125 20.3	36	32
9	12 May	1630	48 56.0	125 13.0	81	80
<b>OE8904</b>						
1	11 June	1600	48 58.8	124 57.8	190	150
2	11 June	1925	48 57.1	125 01.2	250	150
3	11 June	2110	48 57.9	125 05.1	110	100
4	11 June	2210	48 56.0	125 13.0	81	73
5	12 June	0555	48 58.0	125 20.3	36	35
6	12 June	0710	49 01.1	125 20.1	27	24
7	12 June	0840	48 55.6	125 26.0	33	25
8	12 June	1025	48 52.7	125 13.4	92	85
9	12 June	1115	48 51.6	125 07.7	132	130

EPCS Samples

OE8902	Date	Start Lat.	Start Long.	Start (PDT)	End (PDT)	Time (min)	Size-fractioned (SF) or Enumerated (E)
A	9 May	48 50.5	125 09.6	2301	2306	5.0	SF
B	10 May	48 55.8	125 02.5	0028	0043	15.0	SF
C	10 May	48 56.3	125 08.4	2058	2108	10.0	SF
D	10 May	48 53.6	125 09.2	2209	2219	10.0	E
E	11 May	48 55.9	125 12.4	0348	0358	10.0	E
F	11 May	48 52.9	125 05.3	0439	0447	10.0	E
<b>OE8904</b>							
A	9 June	48 50.9	125 08.6	2137	2147	10.0	E
B	9 June	48 53.2	125 05.3	2207	2217	10.0	SF
C	9 June	48 57.8	125 05.1	2314	2319	5.0	SF
D	9 June	48 55.6	125 09.0	2355	0005	10.0	SF
E	10 June	48 52.7	125 12.9	0028	0038	10.0	E
F	10 June	48 52.6	125 14.0	0123	0133	10.0	SF
G	10 June	48 57.4	125 09.7	0216	0221	5.0	E
H	10 June	48 57.5	125 00.8	0326	0331	5.0	SF
I	10 June	48 58.1	124 59.0	0338	0343	5.0	E
J	10 June	48 57.7	125 04.1	2127	2137	10.0	E
K	10 June	48 55.4	125 09.7	2210	2220	10.0	SF
L	10 June	48 56.2	125 13.3	2236	2241	5.0	SF
M	10 June	48 57.8	125 19.7	2325	2335	10.0	E
N	11 June	48 54.9	125 22.9	0001	0111	10.0	E
O	11 June	48 53.9	125 26.6	0038	0048	10.0	SF
P	11 June	49 00.1	125 21.5	0205	0215	10.0	E

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## DATA SECTION 3

ZOOPLANKTON SIZE DISTRIBUTION; SURFACE ZOOPLANKTON BIOMASS,  
SALINITY, TEMPERATURE AND FLUORESCENCE

- Fig. 9 OE8902 Zooplankton biomass (size-fractioned)  
(Vertical net haul data)
- Fig. 10 OE8904 Zooplankton biomass (size-fractioned)  
(Vertical net haul data)
- Fig. 11 OE8902 EPSCS Zooplankton biomass 9 - 10 May 1989
- Fig. 12 OE8902 EPSCS Zooplankton biomass 10 - 11 May 1989
- Fig. 13 OE8902 EPSCS Surface salinity 9 - 10 May 1989
- Fig. 14 OE8902 EPSCS Surface salinity 10 - 11 May 1989
- Fig. 15 OE8902 EPSCS Surface temperature 9 - 10 May 1989
- Fig. 16 OE8902 EPSCS Surface temperature 10 - 11 May 1989
- Fig. 17 OE8902 EPSCS Surface fluorescence 9 - 10 May 1989
- Fig. 18 OE8902 EPSCS Surface fluorescence 10 - 11 May 1989
- Fig. 19 OE8904 Surface zooplankton biomass 9 - 10 June 1989
- Fig. 20 OE8904 Surface zooplankton biomass 10 - 11 June 1989
- Fig. 21 OE8904 Surface salinity 9 - 10 June 1989
- Fig. 22 OE8904 Surface salinity 10 - 11 June 1989
- Fig. 23 OE8904 Surface temperature 9 - 10 June 1989
- Fig. 24 OE8904 Surface temperature 10 - 11 June 1989
- Fig. 25 OE8904 Surface fluorescence 9 - 10 June 1989
- Fig. 26 OE8904 Surface fluorescence 10 - 11 June 1989

Fig. 9 OE8902 Zooplankton biomass (size-fractioned)  
(Vertical net haul data)

125.67W

125.00W

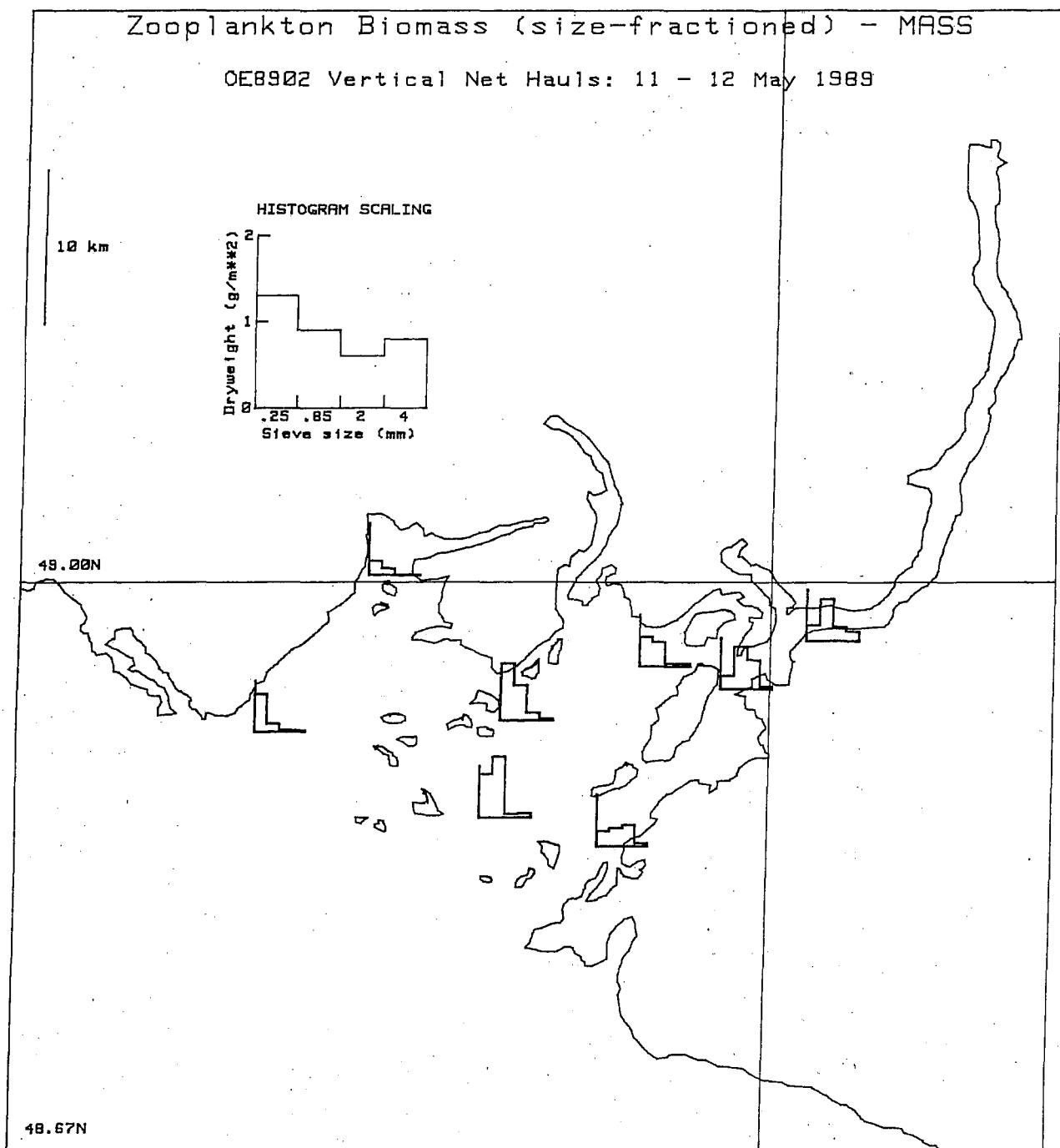


Fig. 10 OE8904 Zooplankton biomass (size-fractioned)  
(Vertical net haul data)

125.67W

125.00W

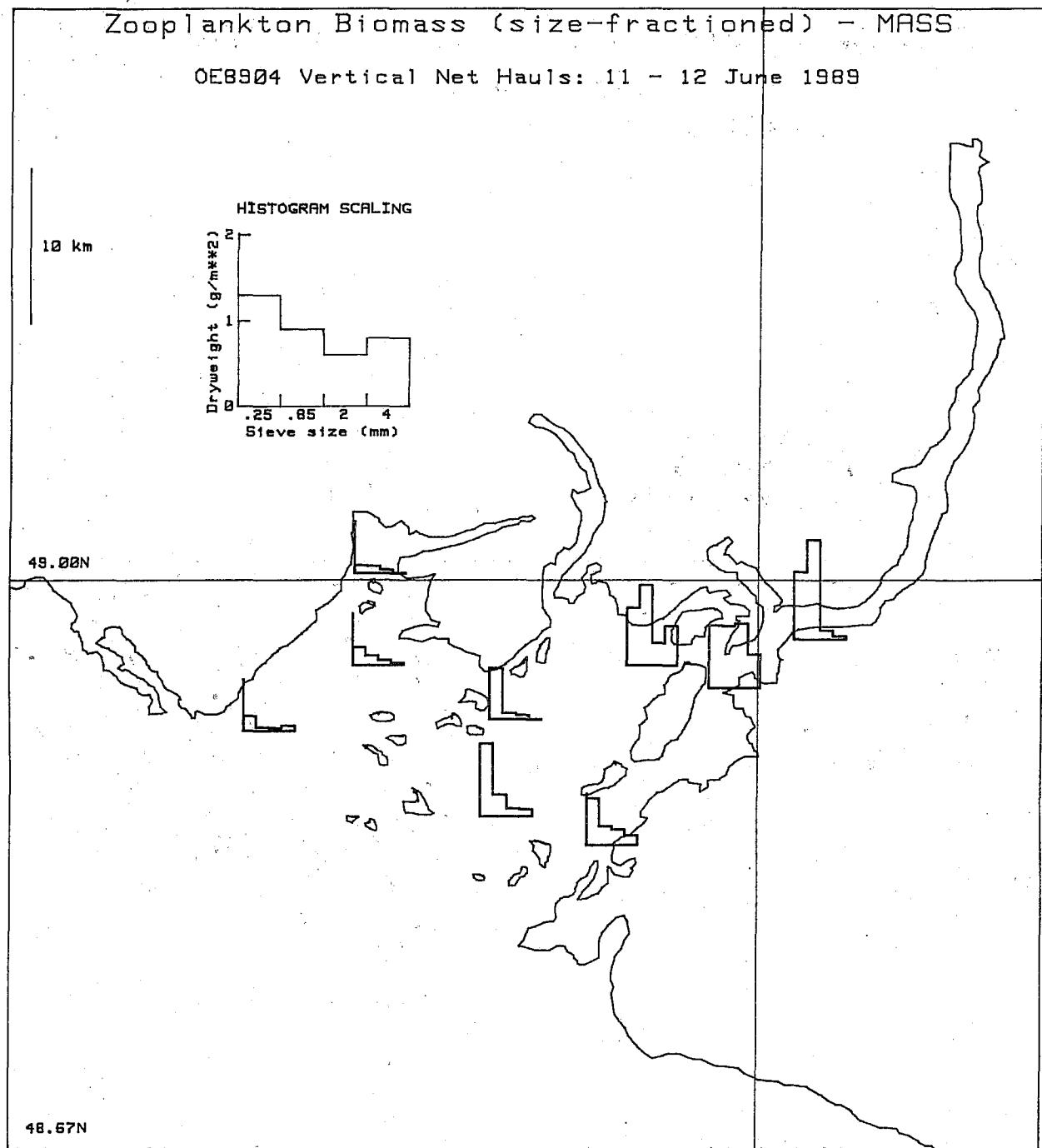


Fig. 11 OE8902 EPCS zooplankton biomass 9 - 10 May 1989

125

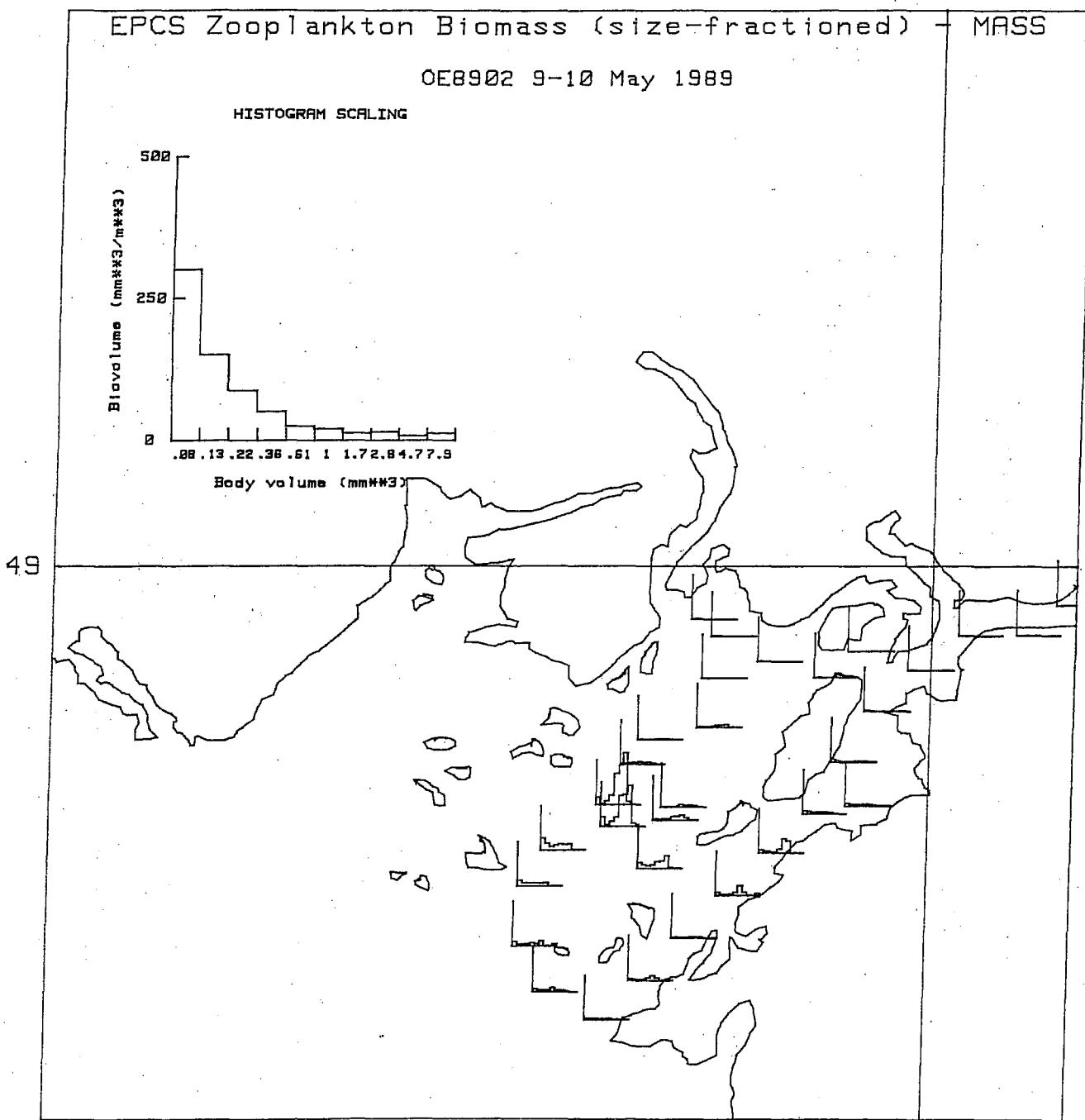


Fig. 12 OE8902 EPCS zooplankton biomass 10 - 11 May 1989

125

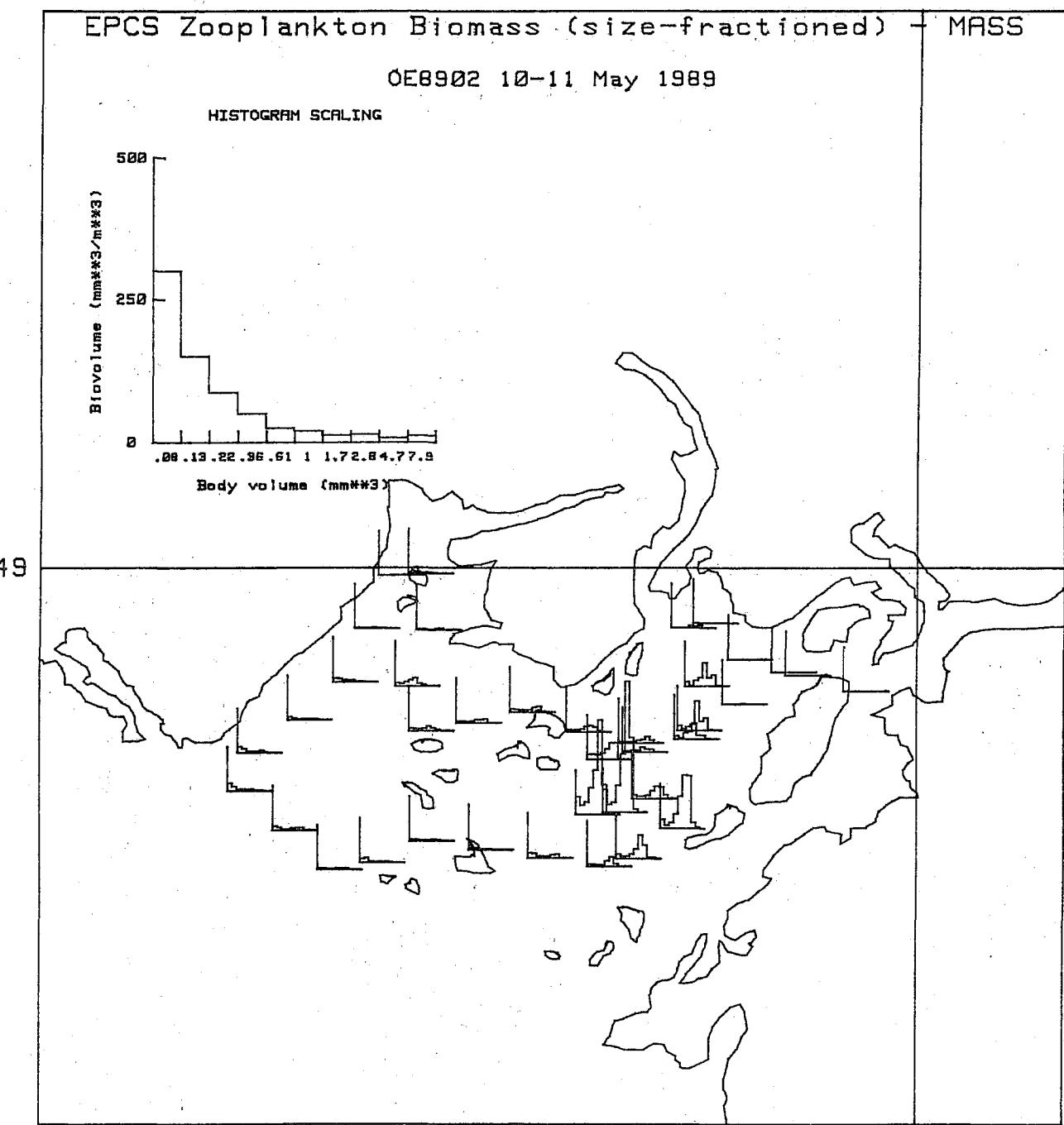


Fig. 13 OE8902 EPCS surface salinity 9 - 10 May 1989

125

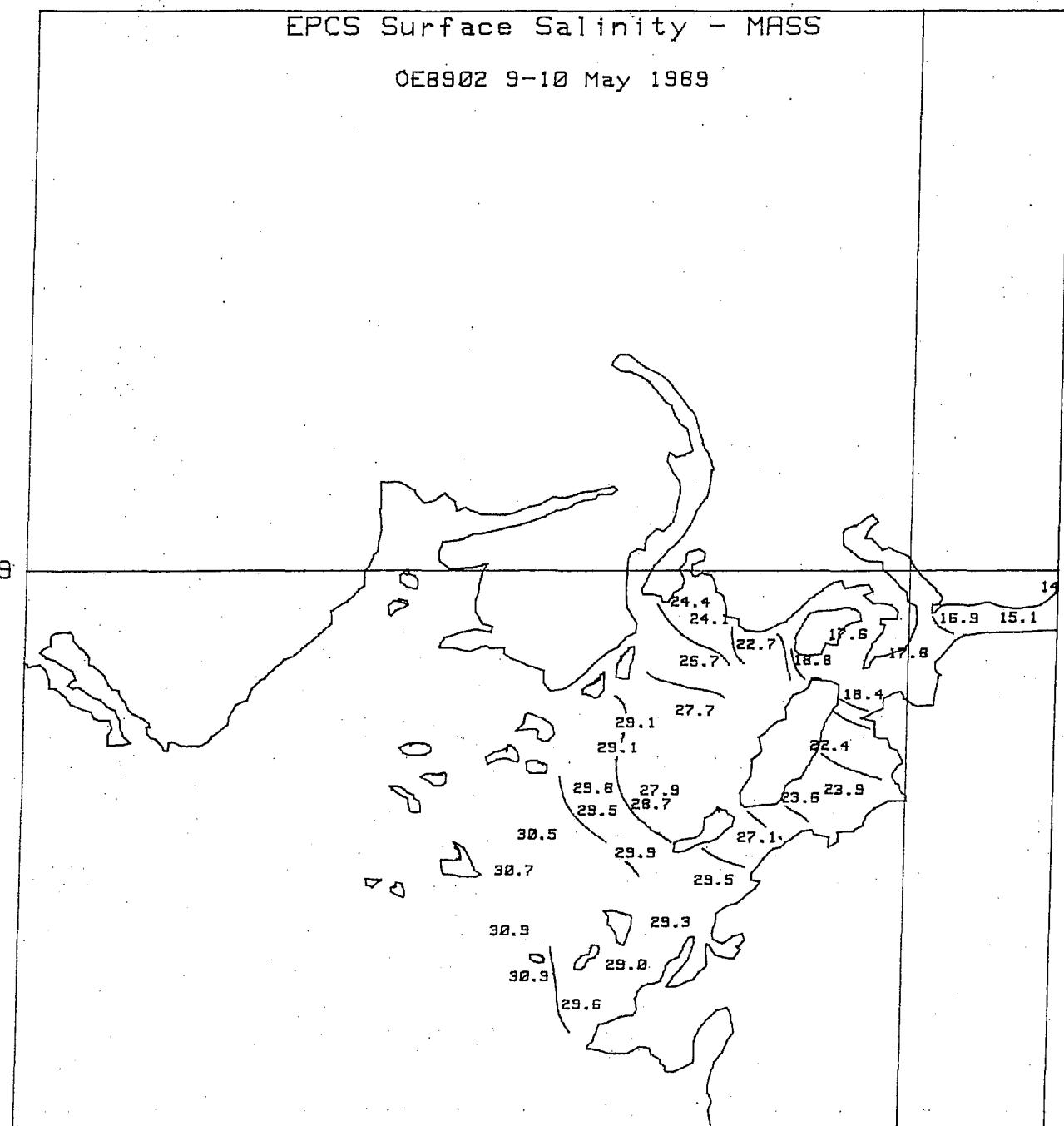


Fig. 14 OE8902 EPCS surface salinity 10 - 11 May 1989

125

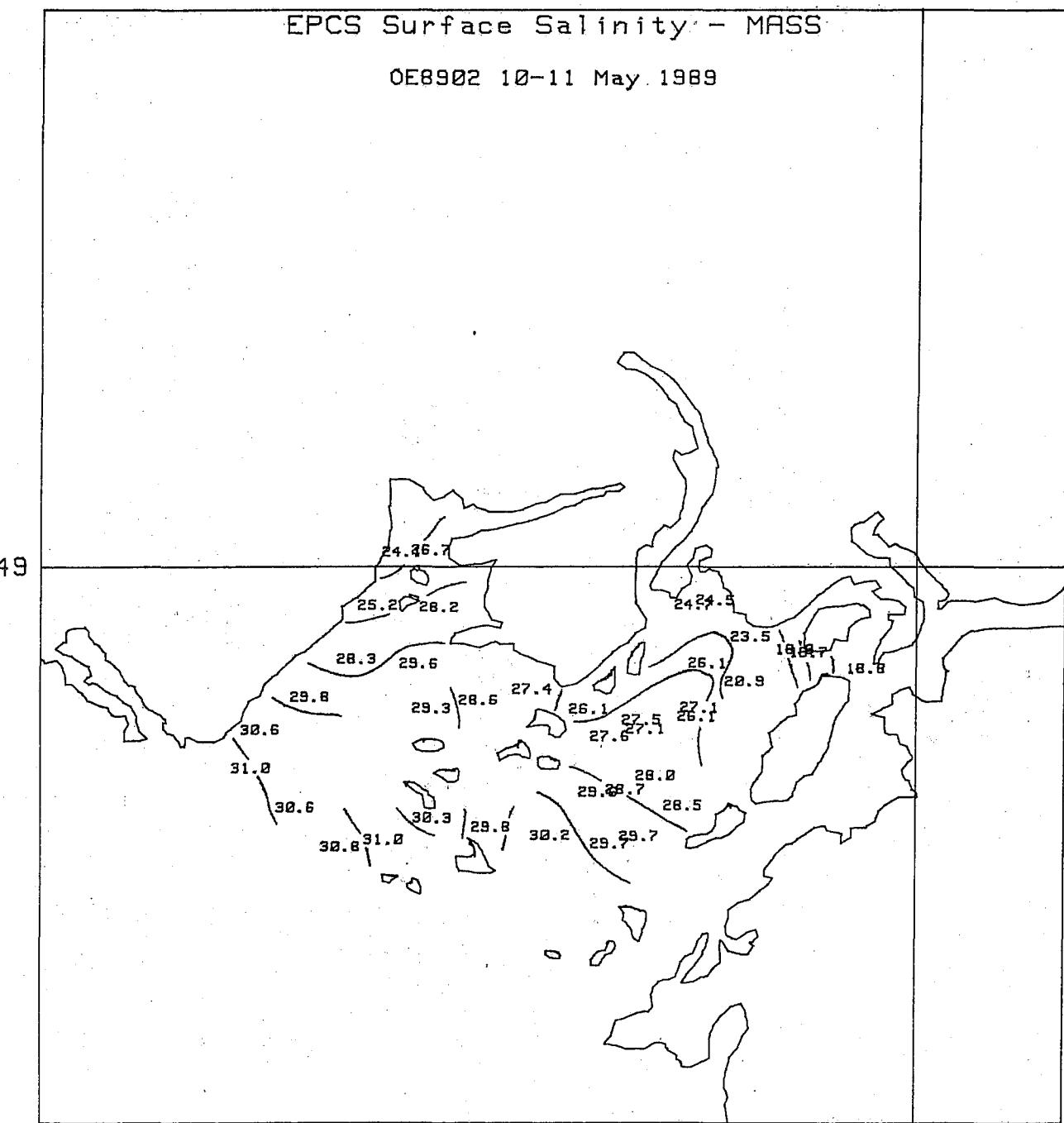


Fig. 15 OE8902 EPSC surface temperature 9 - 10 May 1989

125

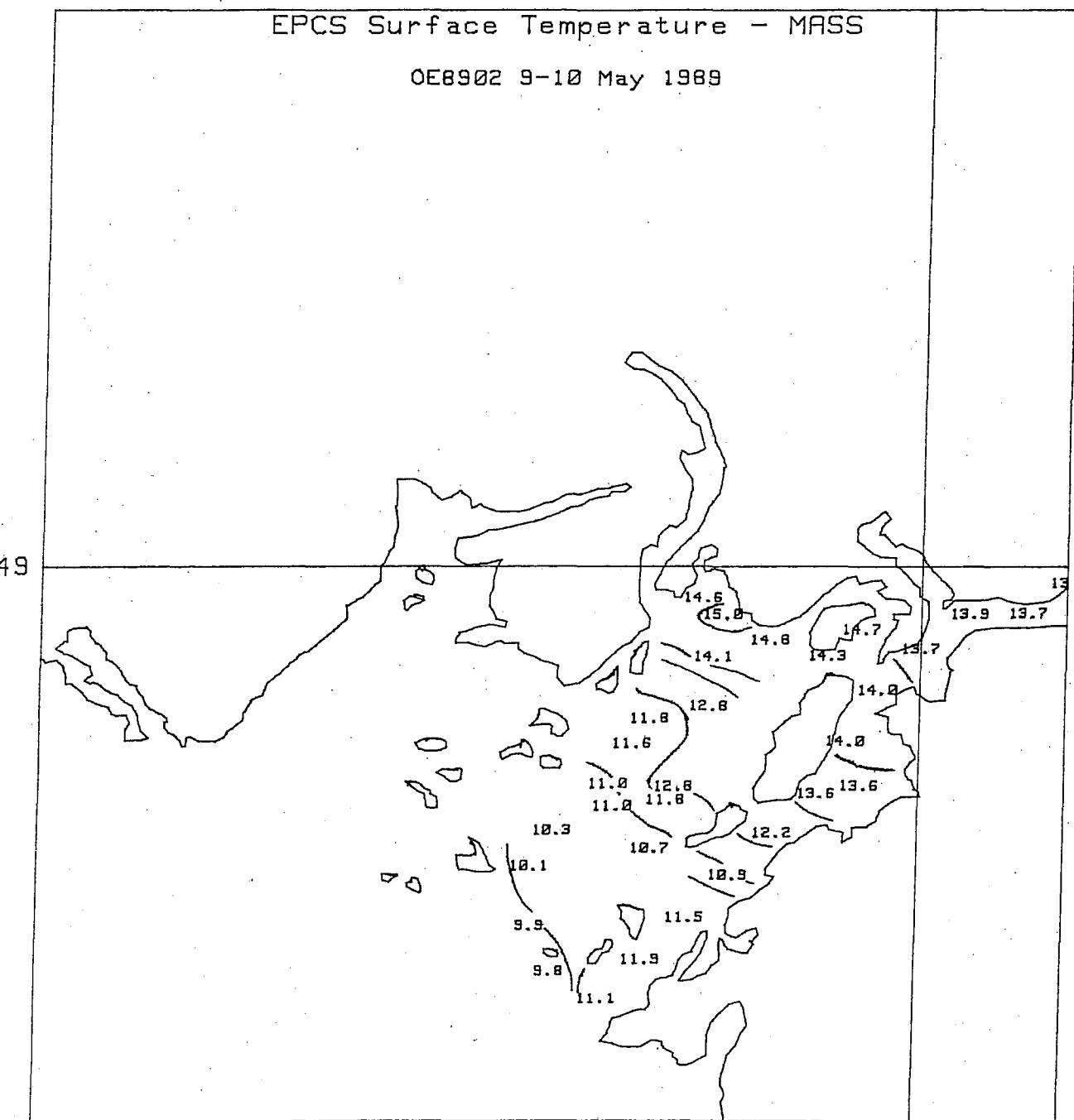


Fig. 16 OE8902 EPSC surface temperature 10 - 11 May 1989

125

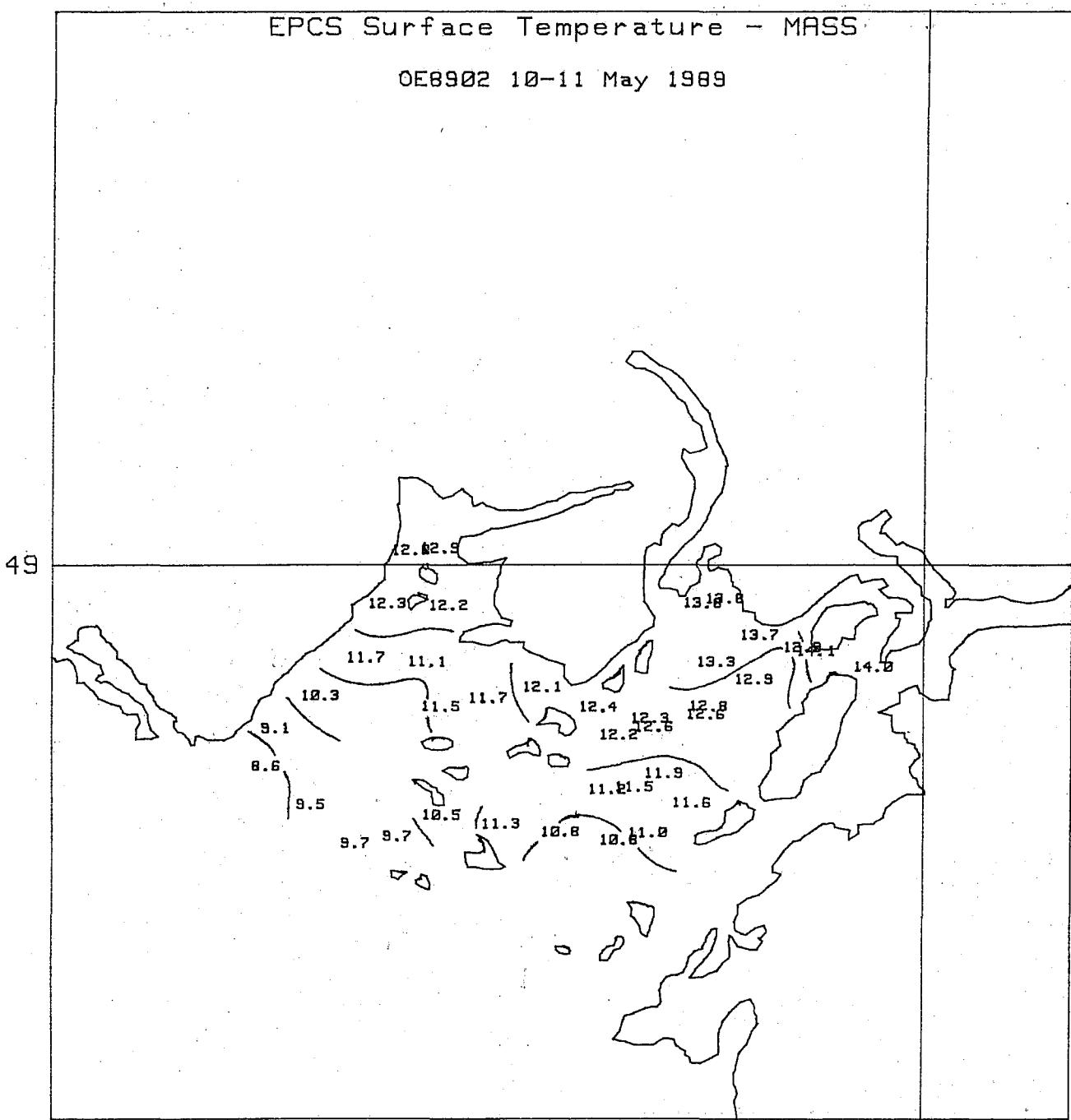


Fig. 17 OE8902 EPSC surface fluorescence 9 - 10 May 1989

125

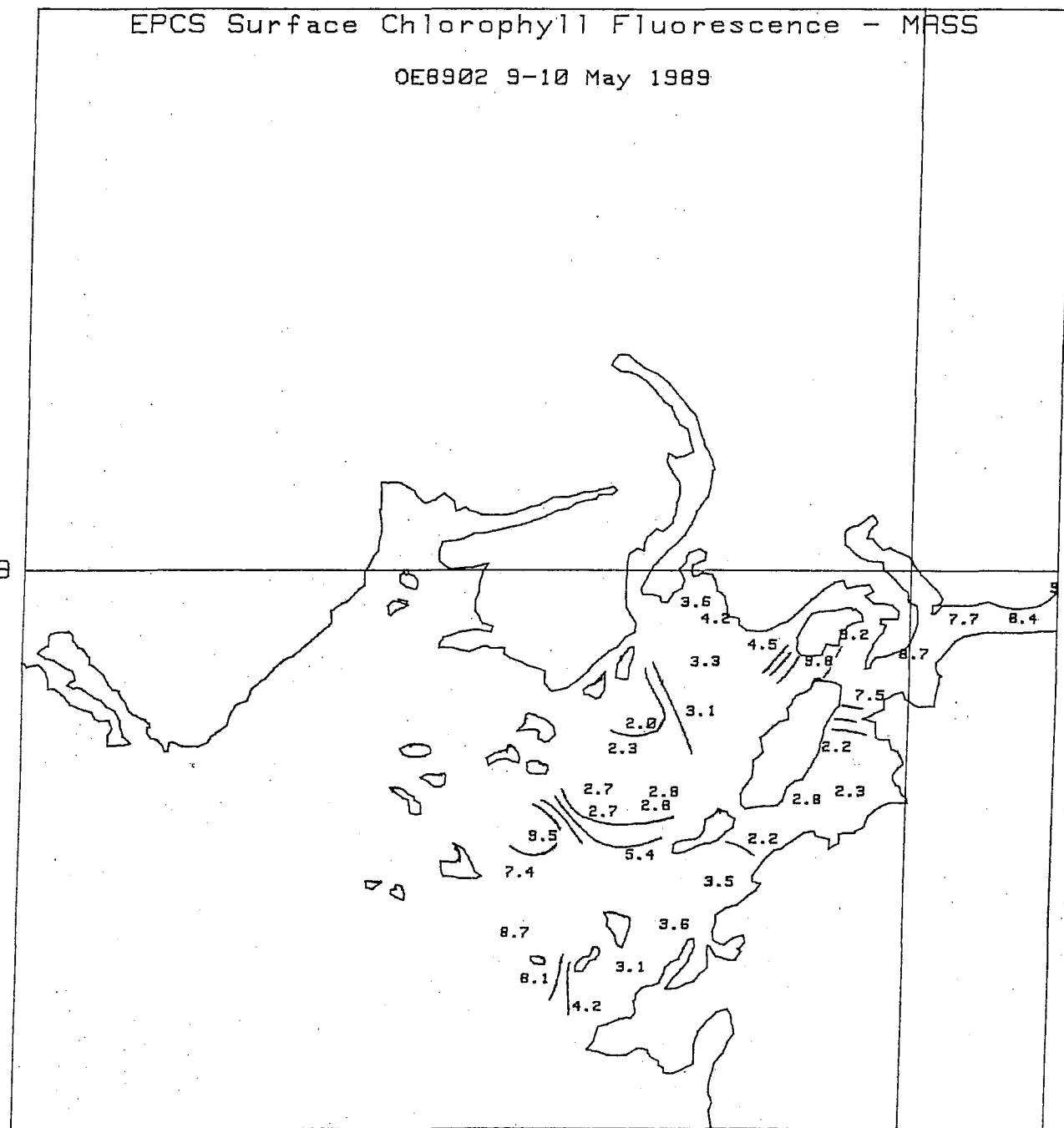


Fig. 18 OE8902 EPSC surface fluorescence 10 - 11 May 1989

125

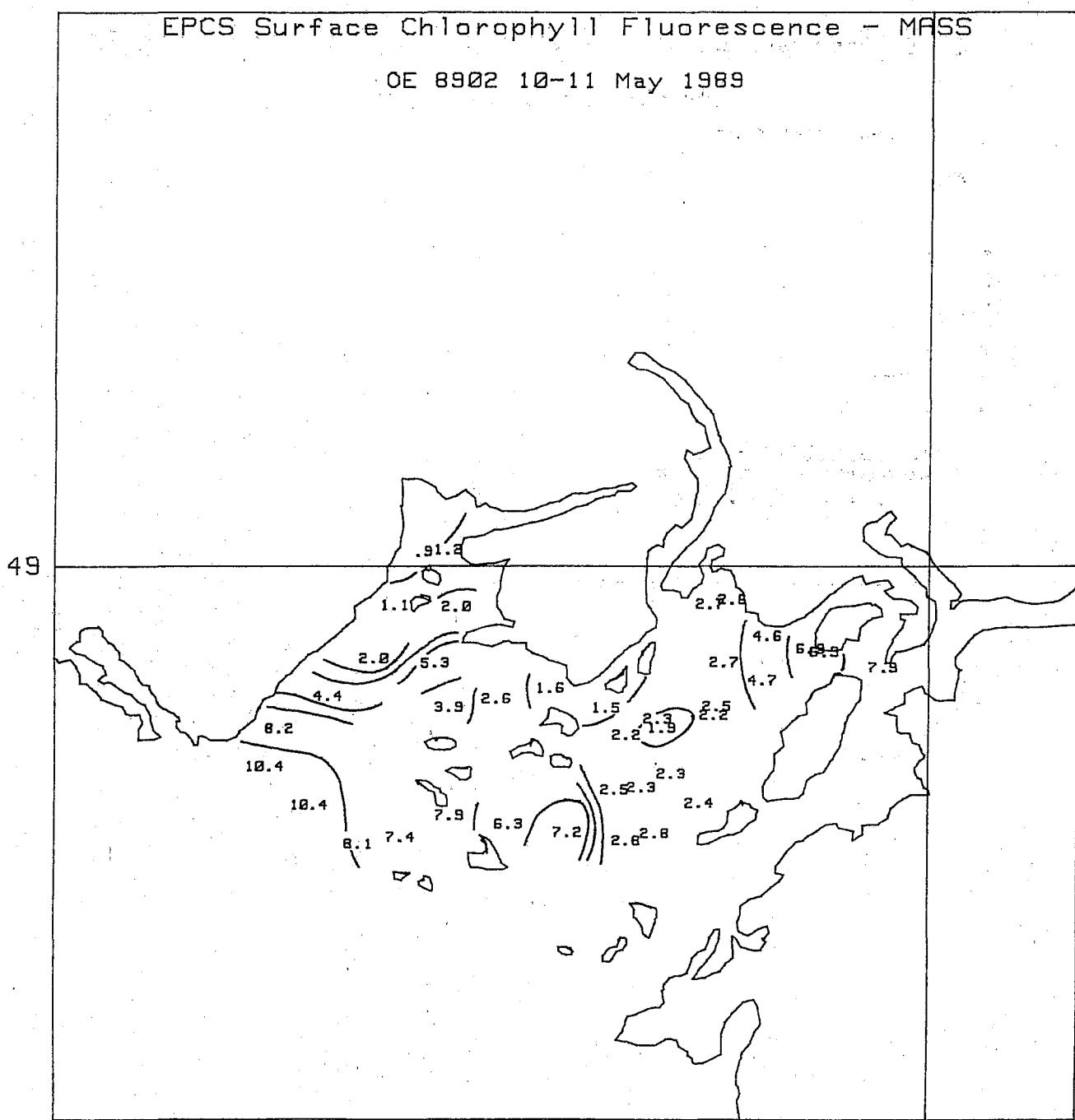


Fig. 19 OE8904 EPSC zooplankton biomass 9 - 10 June 1989

125

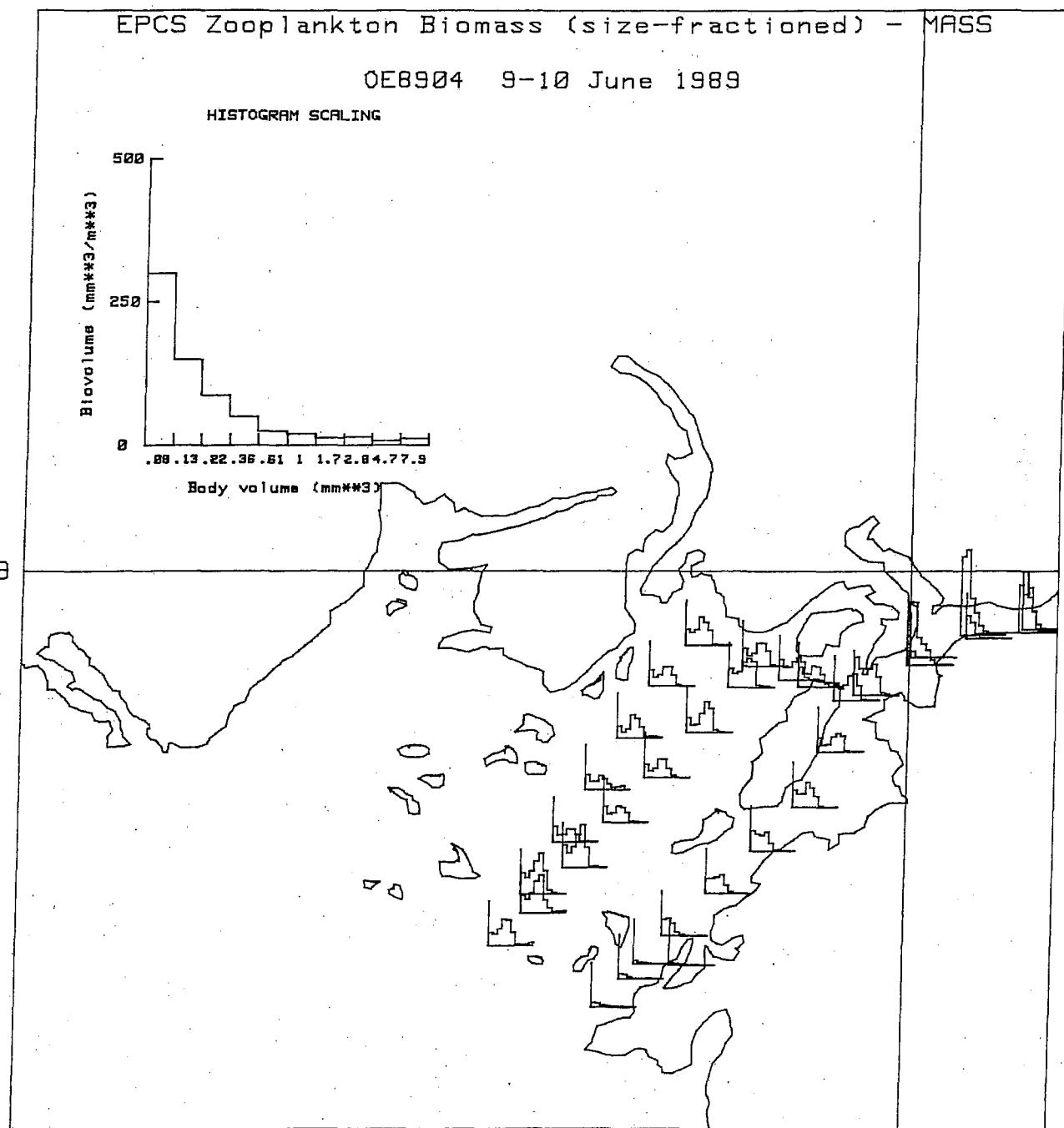


Fig. 20 OE8904 EPCS zooplankton biomass 10 - 11 June 1989

125

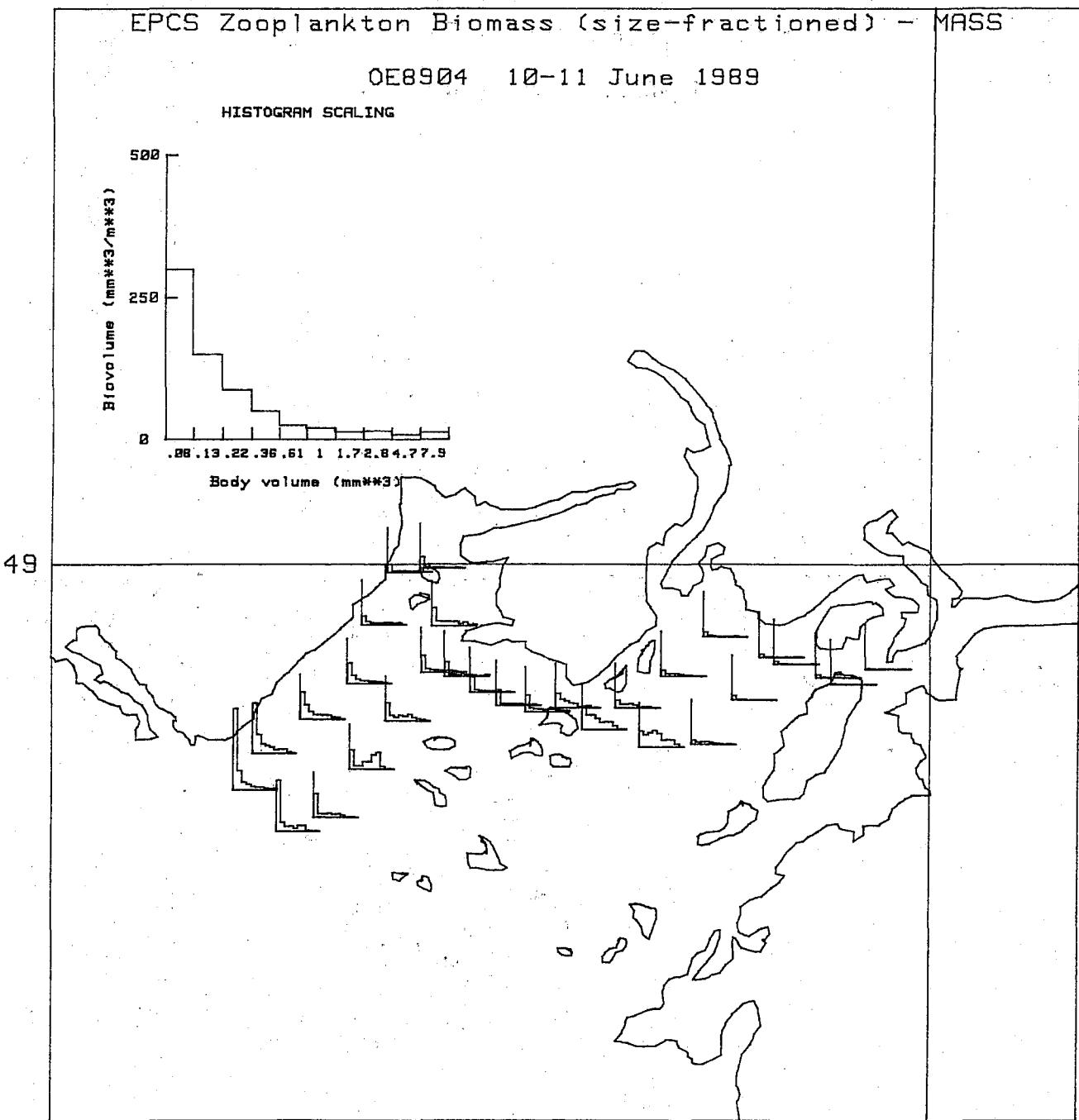


Fig. 21 OE8904 EPCS surface salinity 9 - 10 June 1989

125

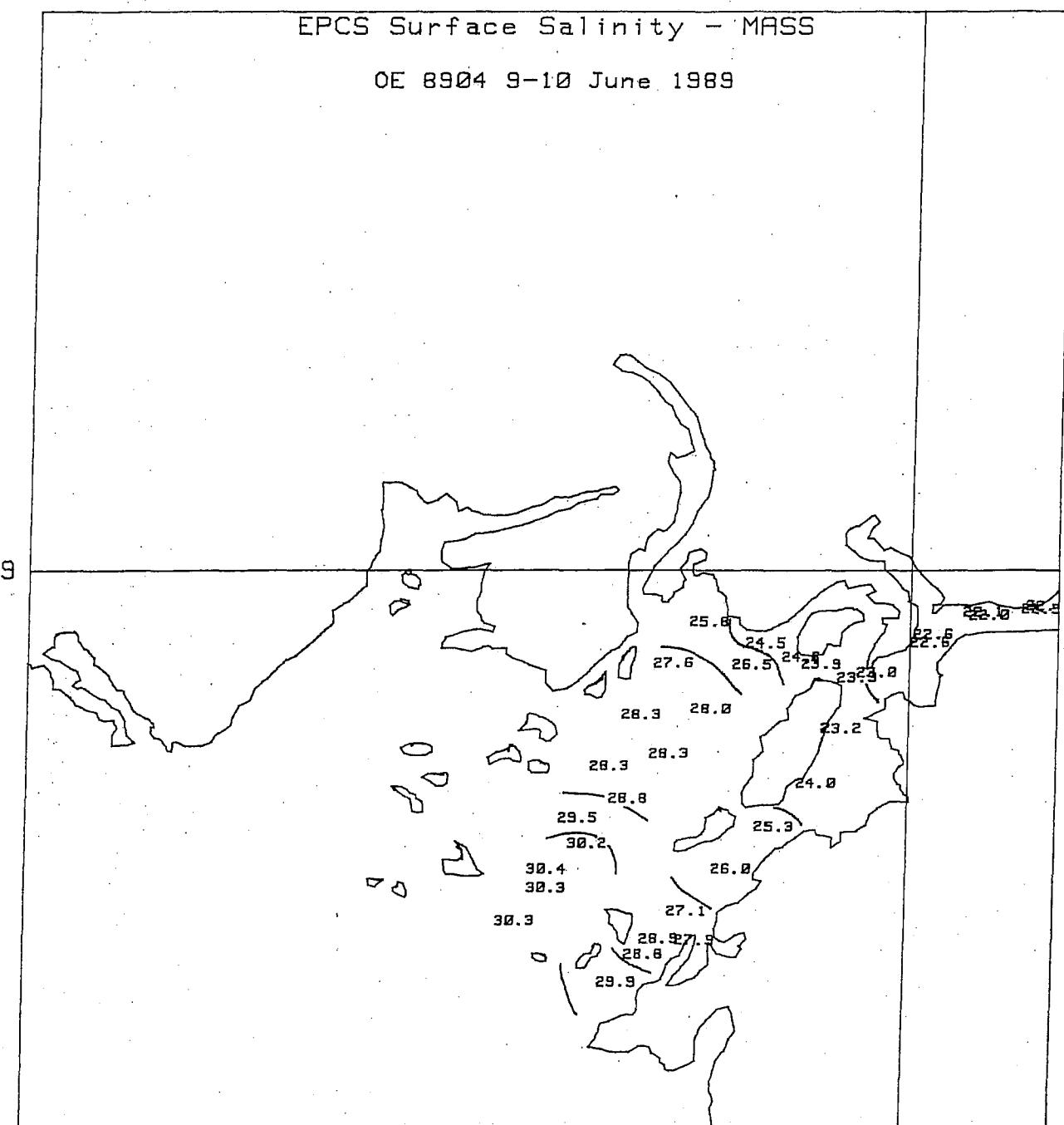


Fig. 22 OE8904 EPCS surface salinity 10 - 11 June 1989

125

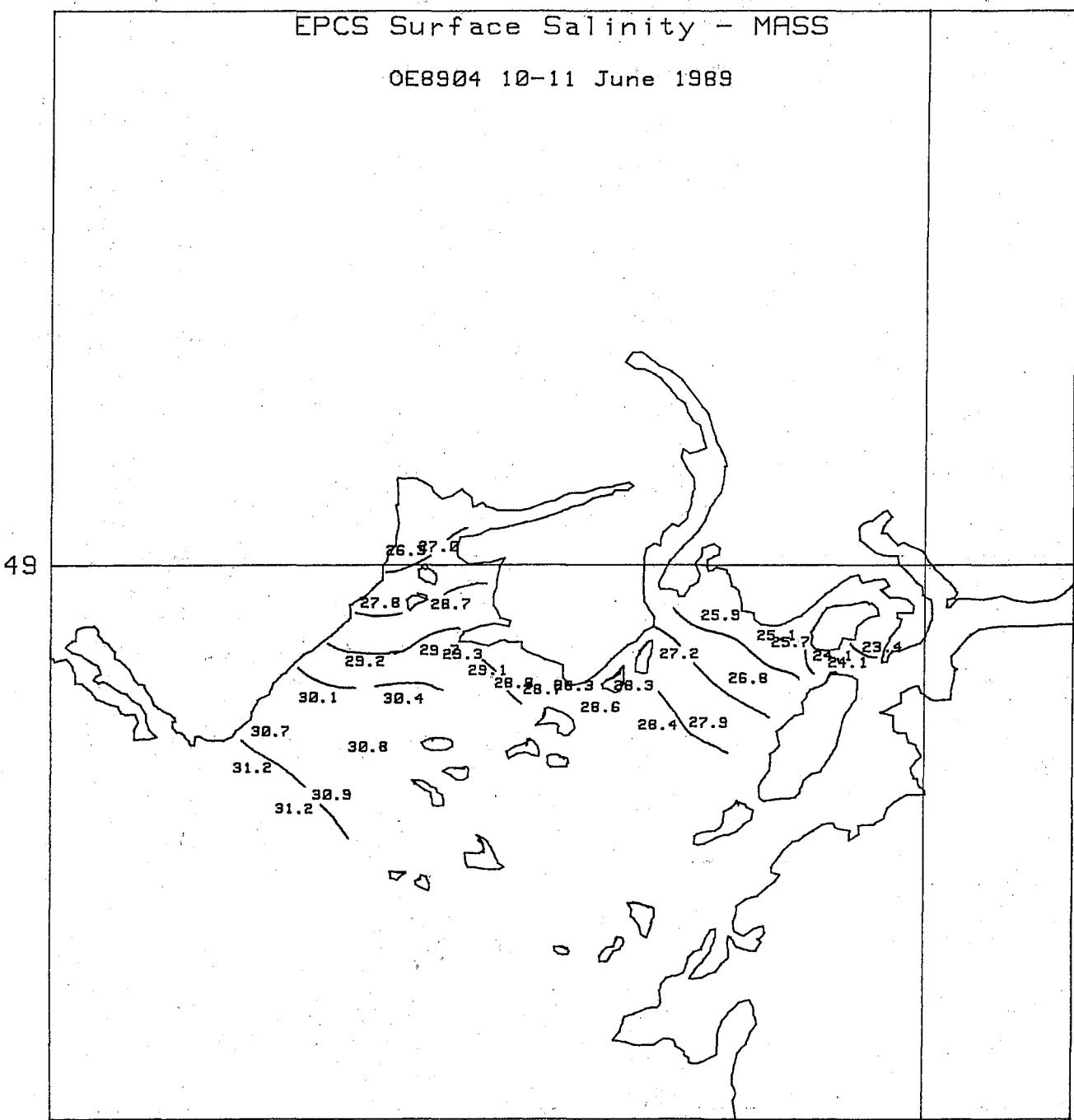


Fig. 23 OE8904 EPCS surface temperature 9 - 10 June 1989

125

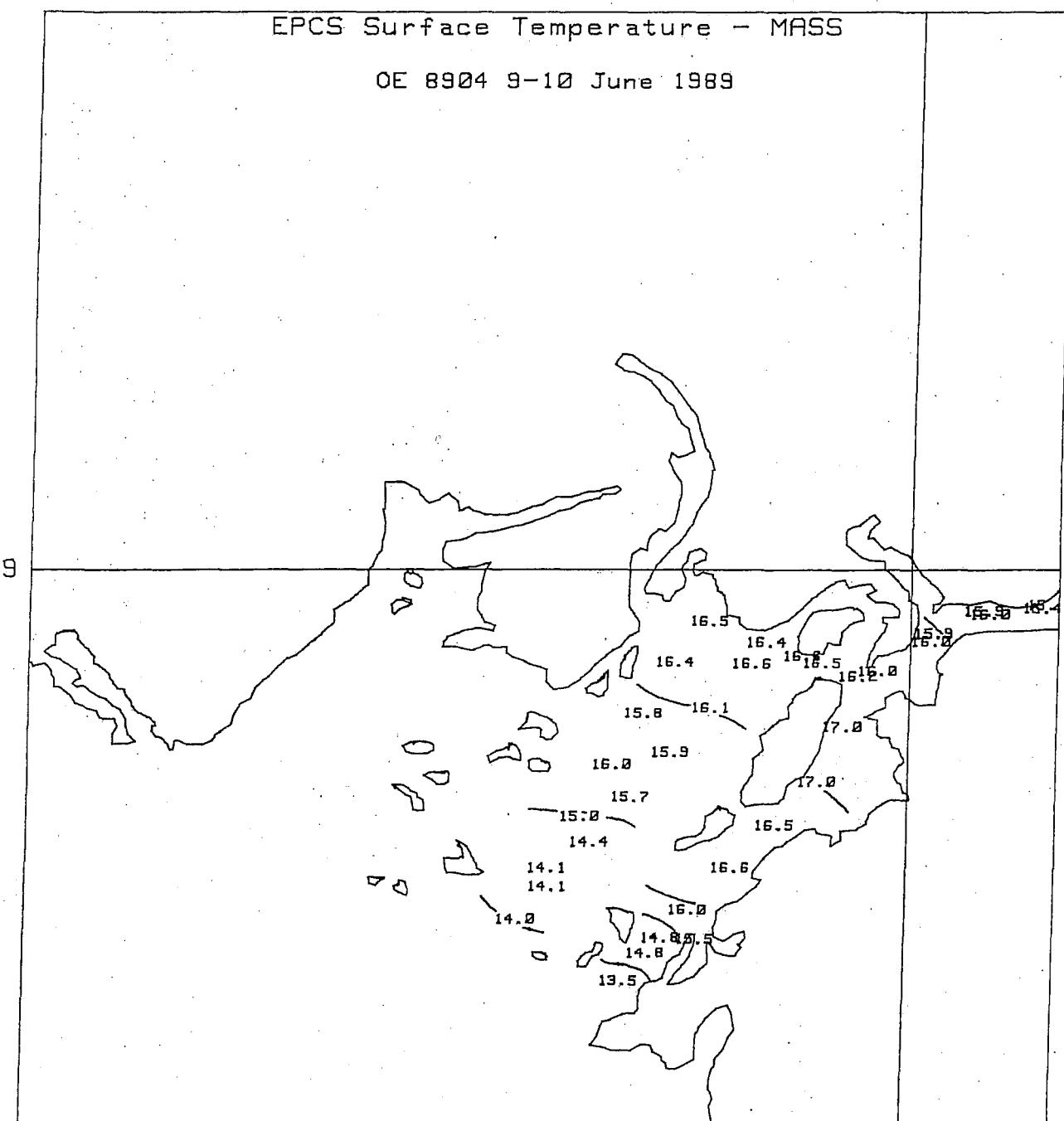


Fig. 24 OE8904 EPCS surface temperature 10 - 11 June 1989

125

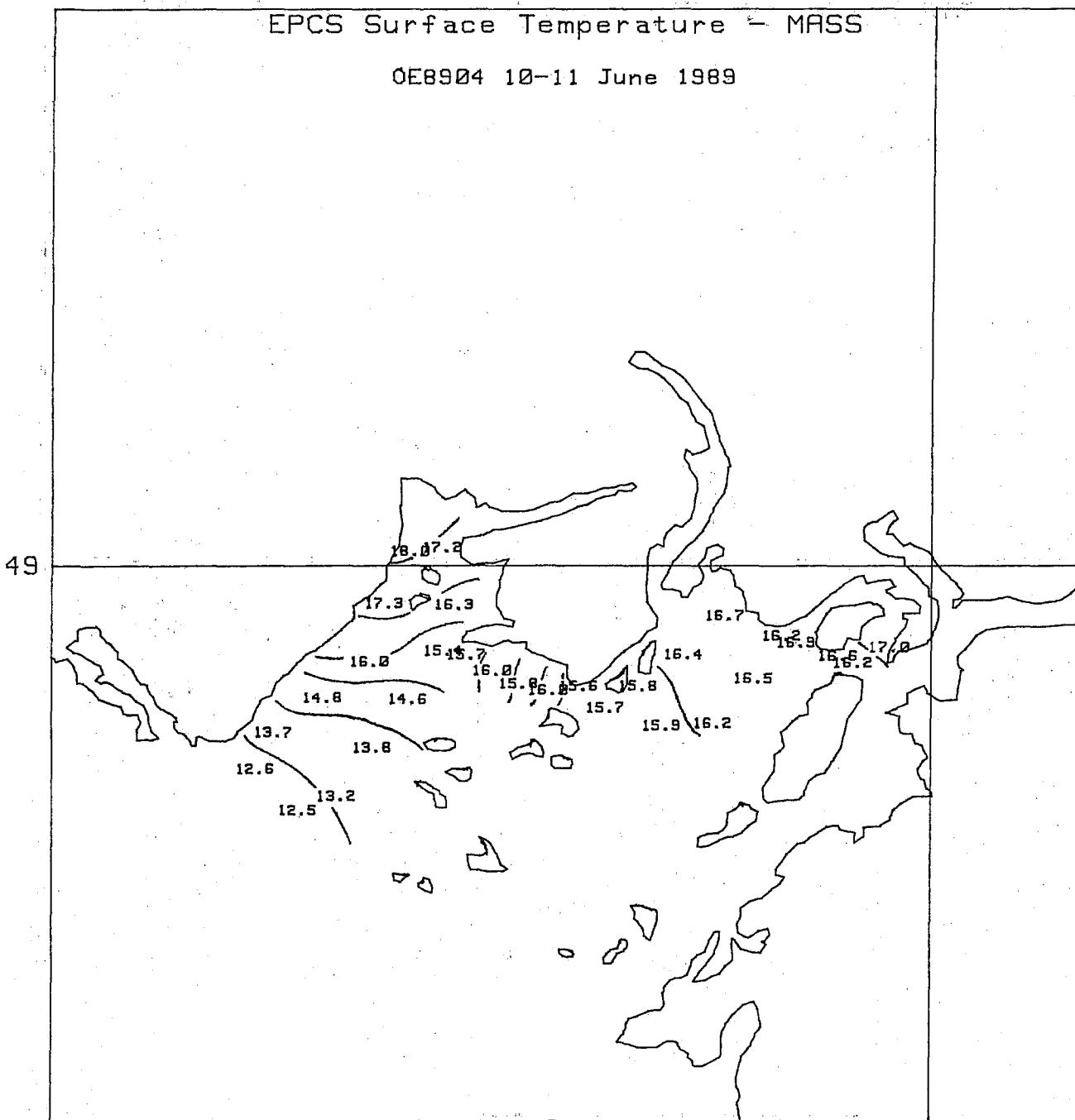


Fig. 25 OE8904 EPSC surface fluorescence 9 - 10 June 1989

125

## EPSC Surface Chlorophyll Fluorescence - MASS

OE 8904 9-10 June 1989

49

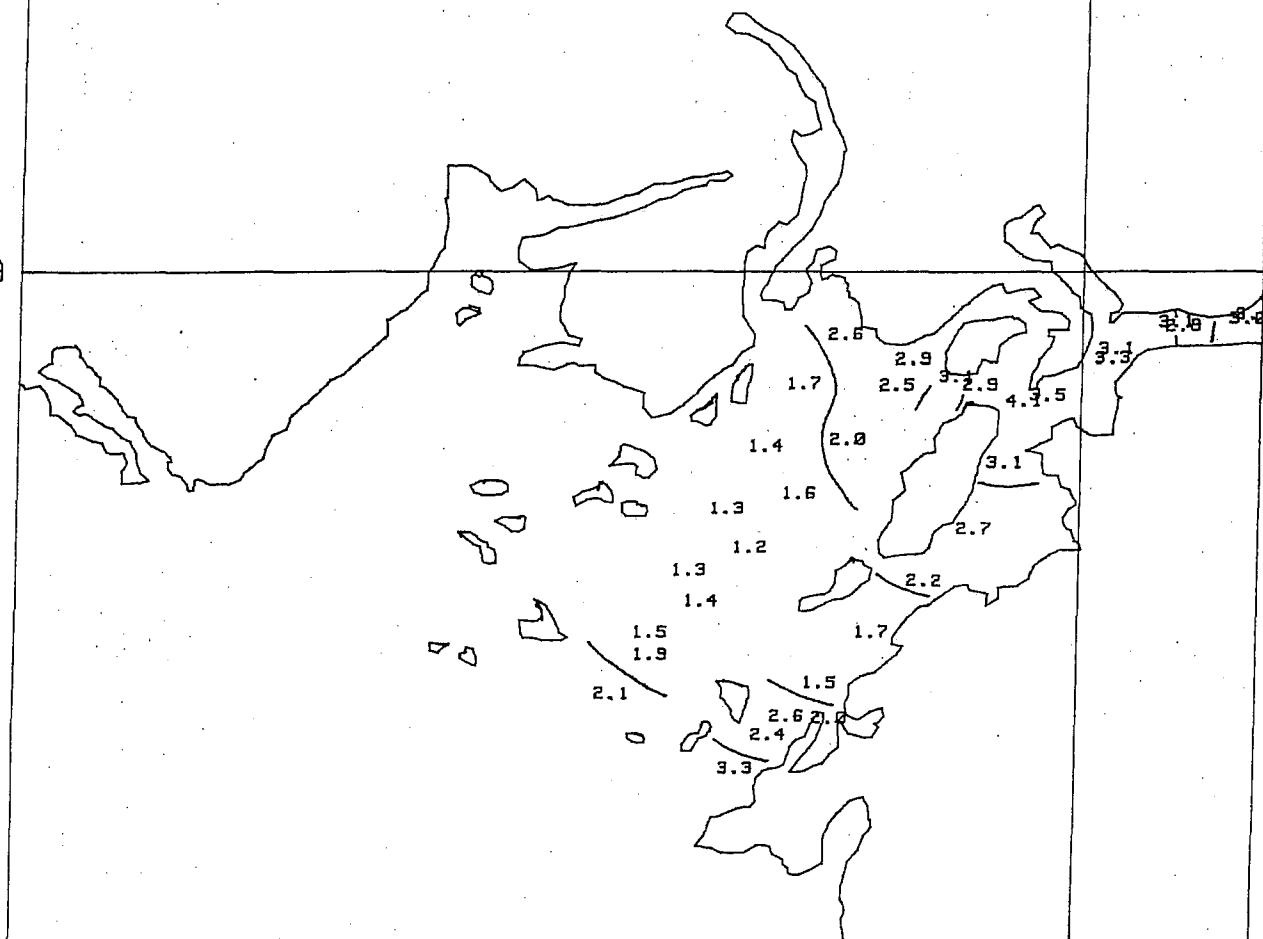
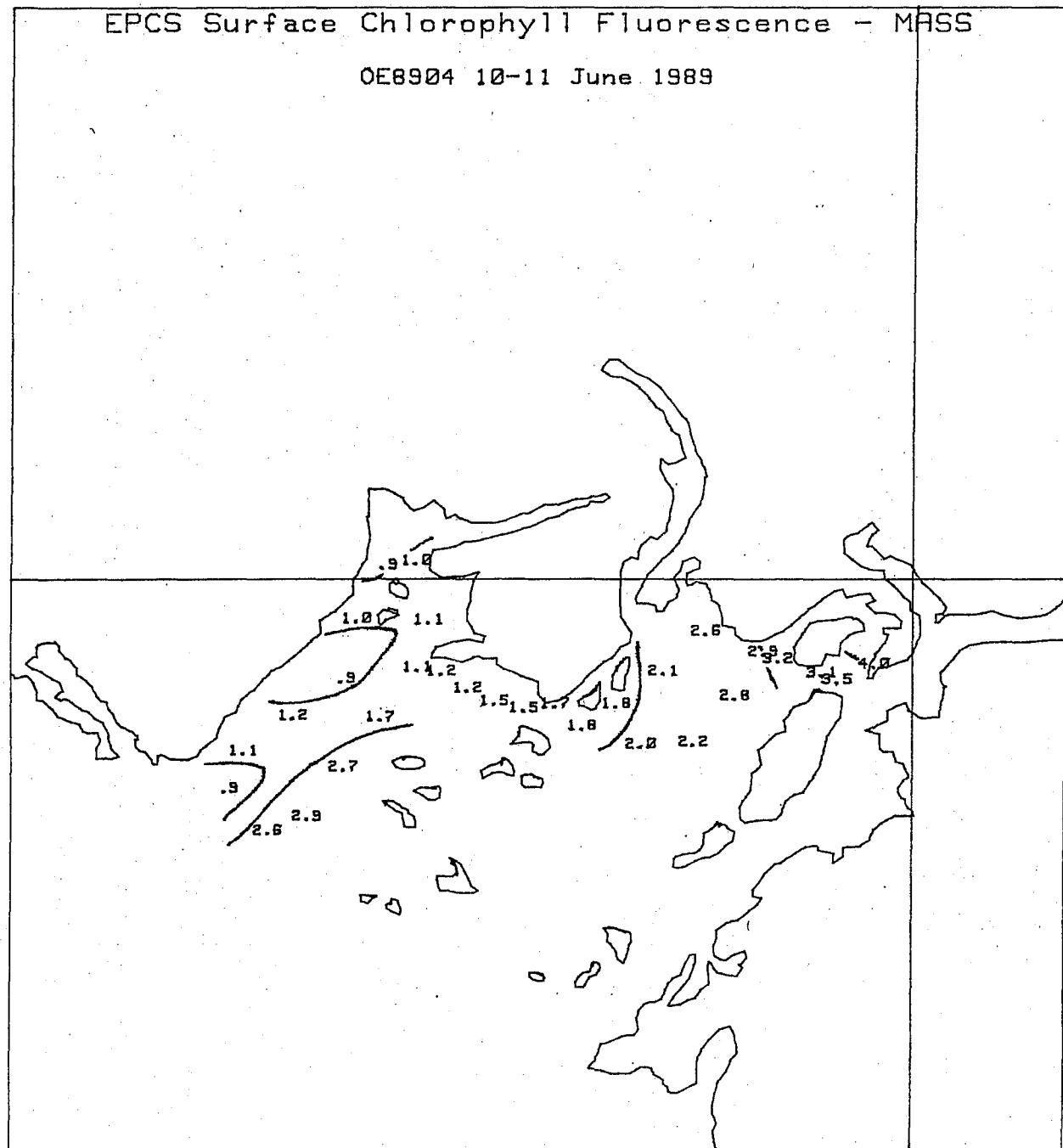


Fig. 26 OE8904 EPCS surface fluorescence 10 - 11 June 1989

125



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**DATA SECTION 4****DISCRETE WATER SAMPLE DATA AND CTD PROFILES**

Table 4 OE8902 Discrete water sample data

Table 5 OE8904 Discrete water sample data

Fig. 27 OE8902 CTD plots

Fig. 28 OE8904 CTD plots

[ — CTD temperature ]  
[ - - - CTD salinity ]

TABLE 4 OE8902 DISCRETE WATER SAMPLE DATA

Station	Bottle	Depth (m)	Salinity	Temp	Chl a ( $\mu\text{g/L}$ )	POC ( $\mu\text{g/L}$ )	PON ( $\mu\text{g/L}$ )	POC/PON	NO3 ( $\mu\text{M/L}$ )	PO4 ( $\mu\text{M/L}$ )	SiO4 ( $\mu\text{M/L}$ )
1	1	35	31.909 *	7.8 *	0.3				16.3	1.42	31.7
1	2	8	31.821 *	8.2 *	6.8	234.8	39.7	5.9	14.7	0.31	30.8
1	3	1	22.080 *	13.8 *	3.6	503.5	49.7	10.1	0.3	0.21	8.5
2	1	35	31.937	7.8 *	0.3	59.9	10.1	5.9	17.7	1.38	33.3
2	2	8	30.758 *	8.0 *	4.9	174.2	32.6	5.3	13.2	1.05	30.2
2	3	1	16.440 *	12.2 *	7.1	1222.7	76.8	15.9	0.0	0.06	16.0
3	1	35	31.911		0.4	40.4	7.5	5.4	16.8	1.64	35.4
3	2	8	31.901		1.4	86.8	19.2	4.5	14.9	0.04	33.6
3	3	1	30.858		12.6	1103.0	64.4	17.1	0.9	1.38	23.4
4	1	35	31.937	7.9 *	0.4	44.9	10.6	4.2	18.3	1.82	35.6
4	2	8	31.326 *	7.8 *	2.5	113.1	23.1	4.9	17.4	1.29	33.2
4	3	1	24.832 *	13.0 *	1.4	361.6	40.7	8.9	0.2	0.09	11.0
5	1	35	32.127		0.2	40.7	10.4	3.9	19.9	1.83	34.6
5	2	8	31.399		11.1	427.7	78.0	5.5	15.1	1.55	29.4
5	3	1	28.070		1.9	281.6	36.3	7.8	0.0	0.22	11.6
6	1	8	31.355		11.9	387.6	66.5	5.8	11.9	1.25	25.8
6	2	1	30.589		11.3	1207.0	112.6	10.7	-0.0	0.15	5.1
7	1	20	31.516		2.4				16.9	1.69	40.6
7	2	8	30.929		5.8	705.3	65.4	10.8	0.1	0.51	12.6
7	3	1	27.482		1.0	289.2	30.1	9.6	0.0	0.08	1.5
8	1	35	31.937		0.4				17.2	1.87	38.2
8	2	8	31.078		46.4	1532.0	217.9	7.0	4.2	0.92	18.9
8	3	1	29.602		3.4	750.3	68.7	10.9	0.1	0.13	4.3
9	1	35	32.113		0.4				16.6	1.46	29.8
9	2	8	31.304		17.9	770.1	130.2	5.9	10.0	1.06	26.5
9	3	1	25.245		1.1	370.6	35.8	10.3	0.1	0.12	3.6

\* Data from CTD

Station	Bottle	Depth (m)	Salinity	Temp.	Chl a (ug/L)	POC (ug/L)	PON (ug/L)	NO3 (uM/L)	PO4 (uM/L)	Sio4 (uM/L)
C 1	Bucket	0	22.674	14.6	3.7			0.0	0.02	8.2
C 2	Bucket	0	25.340	14.0	3.4			0.3	0.26	6.1
C 3	Bucket	0	29.940	11.0	2.9			0.3	0.28	12.0
C 4	Bucket	0	30.275	10.4	9.0			4.9	0.63	15.6
C 5	Bucket	0	29.297	10.8	5.8			1.5	0.73	14.3
C 6	Bucket	0	22.723	13.2	2.9			0.5	0.20	8.4
C 7	Bucket	0	15.232	13.5	9.6			0.0	0.08	16.9
C 8	Bucket	0	12.531		12.8			0.0	0.15	22.4
C 9	Bucket	0	9.547	13.6	13.1			0.0	0.50	27.7
C 10	Bucket	0	5.352	14.2	10.3			0.0	0.13	36.5
C 11	Bucket	0	2.838	14.1	3.9			1.1	0.15	38.9
C 12	Bucket	0	19.298	13.8	5.0			0.1	0.27	9.2
C 13	Bucket	0	27.770	11.8	1.8			0.0	0.29	8.6
C 14	Bucket	0	29.792	11.0	7.3			0.3	0.27	5.0
C 15	Bucket	0	30.435	9.7				1.0	0.45	8.1
C 16	Bucket	0	25.124	11.5	1.0			0.2	0.15	4.8
C 17	Bucket	0	27.723	11.8	1.0			0.0	0.09	1.3
C 18	Bucket	0	26.890	12.2	2.2			0.0	0.13	7.3

TABLE 5 OE8904 DISCRETE WATER SAMPLE DATA

Station	Bottle	Depth (m)	Salinity	Temp	Chl a (ug/L)	POC (ug/L)	PON (ug/L)	POC/PON	NO3 (uM/L)	PO4 (uM/L)	SiO4 (uM/L)
1	1	35	32.319		0.2	91.0	10.4	8.8	19.6	1.90	37.2
1	2	8	31.629		0.8	182.2	20.1	9.1	8.8	1.41	20.5
1	3	1	20.302		2.2	319.9	49.6	6.5	1.3	0.51	25.0
2	1	35	32.287	8.0 *	0.3	81.3	17.1	4.8	21.2	1.97	38.1
2	2	8	31.785	9.3 *	2.1	163.8	31.2	5.2	9.5	1.52	15.5
2	3	1	22.843	17.5 *	3.2	395.1	63.5	6.2	0.7	0.39	16.5
3	1	35	32.302	8.0 *	0.4	81.1	15.9	5.1	23.2	2.08	39.3
3	2	8	31.713	9.8 *	8.2	393.8	68.3	5.8	3.5	0.80	3.1
3	3	1	24.856	17.3 *	2.4	553.1	64.9	8.5	0.0	0.06	0.4
4	1	35	32.286	8.3 *	0.4	91.5	15.7	5.8	23.0	2.11	38.3
4	2	8	31.655	10.6 *	4.9	389.5	66.1	5.9	0.5	0.47	2.9
4	3	1	28.363	14.9 *	1.2	438.4	50.0	8.8	0.0	0.06	0.4
5	1	35	32.224	8.3 *	0.8	105.5	21.9	4.8	19.9	2.32	8.1
5	2	8	31.628	9.9 *	2.1	261.4	50.7	5.2	2.4	0.83	0.8
5	3	1	28.749	16.2 *	1.3	387.6	56.7	6.8	0.0	0.19	43.0
6	1	24	32.027	8.1 *	0.4	103.7	19.6	5.3	15.2	2.21	37.4
6	2	8	31.462	10.0 *	1.8	133.9	26.0	5.1	0.0	0.34	7.7
6	3	1	25.459	18.2 *	1.2	243.5	39.5	6.2	0.0	0.07	4.2
7	1	27	32.140	8.9 *	0.8	67.4	13.9	4.9	16.9	1.85	30.8
7	2	8	31.806	9.8 *	9.1	303.3	63.1	4.8	9.3	1.36	16.3
7	3	1	30.587	14.2 *	2.8	524.8	58.2	9.0	0.0	0.27	1.2
8	1	35	32.266	8.0 *	0.3	72.4	14.1	5.2	22.9	1.61	37.2
8	2	8	31.883	9.7 *	20.7	723.7	136.0	5.3	4.5	0.92	4.4
8	3	1	29.903	14.1 *	1.2	331.5	46.2	7.2	0.0	0.20	0.8
9	1	35	32.324	8.0 *	0.3	46.7	10.1	4.6	20.7	0.51	41.3
9	2	8	31.789	9.3 *	0.9	102.9	25.2	4.1	8.7	1.42	14.0
9	3	1	26.918	15.5 **	2.0	305.5	56.0	5.5	0.0	0.22	4.4

\* Data from CTD

Station	Bottle	Depth (m)	Salinity	Temp	Chl a (ug/L)	POC (ug/L)	PON (ug/L)	NO3 (uM/L)	PO4 (uM/L)	SiO4 (uM/L)
C 1	Bucket	0	30.330		4.9			1.6	0.63	4.2
C 2	Bucket	0	25.916	16.2	1.5			0.0		1.2
C 3	Bucket	0	23.614	15.8	3.6			0.0	0.30	8.7
C 4	Bucket	0	28.584	15.2	1.0			0.0	0.23	0.6
C 5	Bucket	0	30.180	13.7	2.1			0.2	0.29	0.8
C 6	Bucket	0	28.025	15.5	1.2			0.0	0.24	0.6
C 7	Bucket	0	23.259	15.7	3.5			0.0	0.34	13.4
C 8	Bucket	0	21.523	14.7	2.0			1.2	0.66	23.1
C 9	Bucket	0	22.856	15.5	3.9			0.2	0.38	18
C 10	Bucket	0	28.052	15.2	2.0			0.0	0.23	0.6
C 11	Bucket	0	29.276	15.4	1.4			0.0	0.29	1
C 12	Bucket	0	30.742	13.3	2.8			0.0	0.67	0.8
C 13	Bucket	0	31.028	12.7	0.7			0.1	0.44	1.9
C 14	Bucket	0	28.093	16.3	1.2			0.0	0.37	1.7
C 15	Bucket	0	28.513	16.0	1.3			0.0	0.36	0.8
C 16	Bucket	0	27.544	15.8	1.3			0.0	0.14	0.6

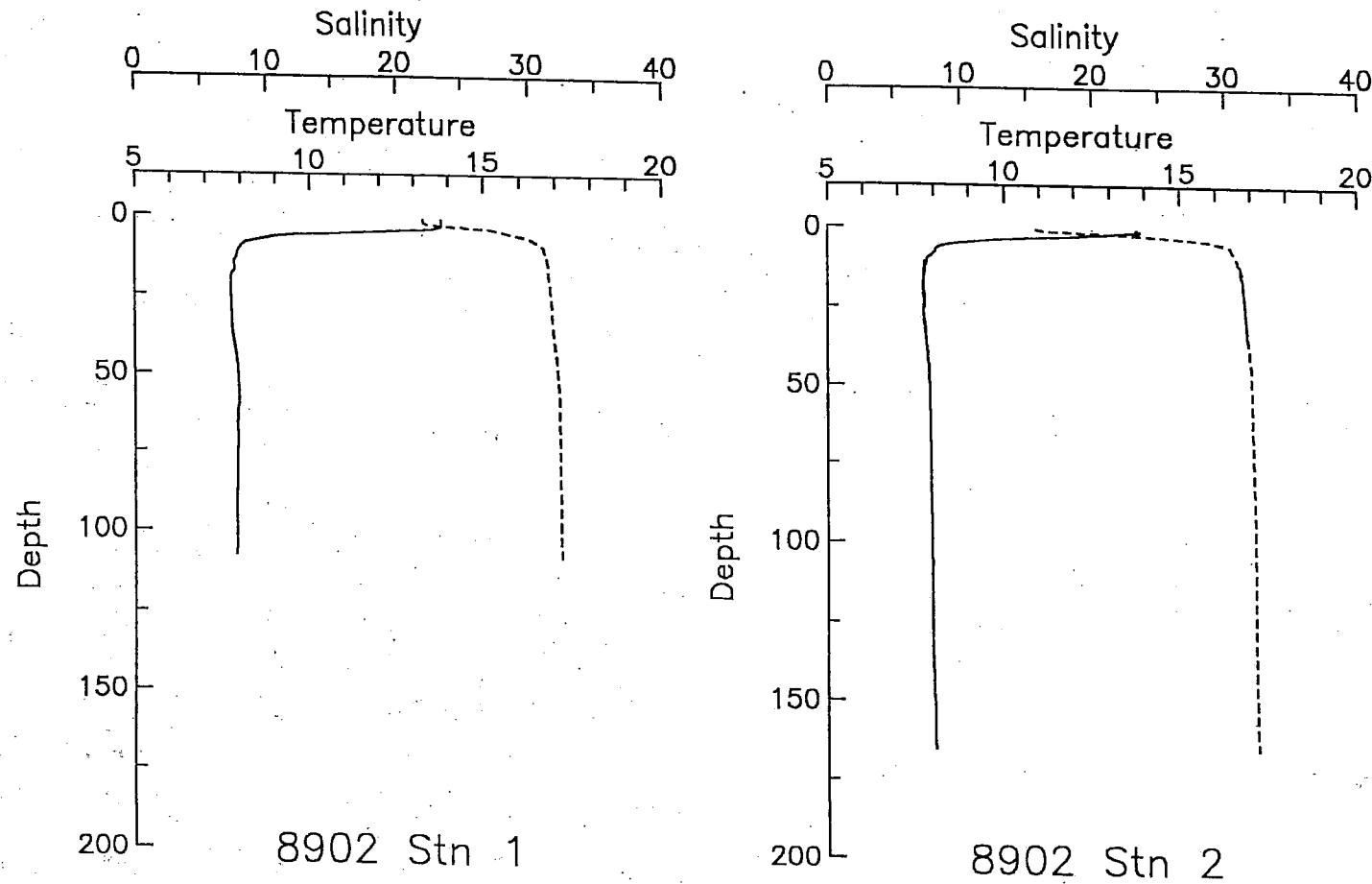


FIG. 27 0E8902 CTD plots.

Fig. 27 (cont.)

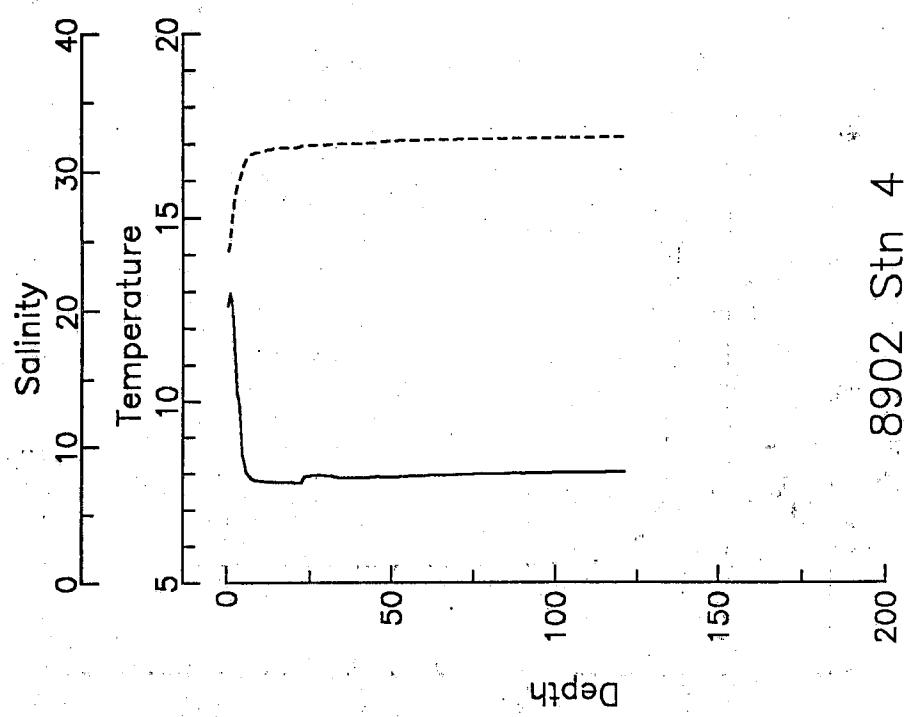


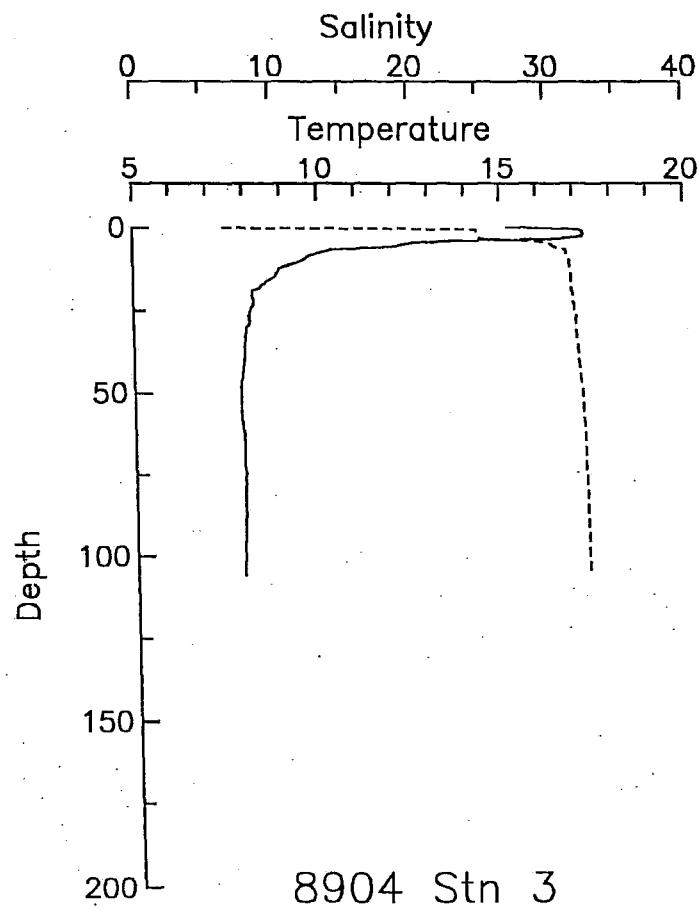
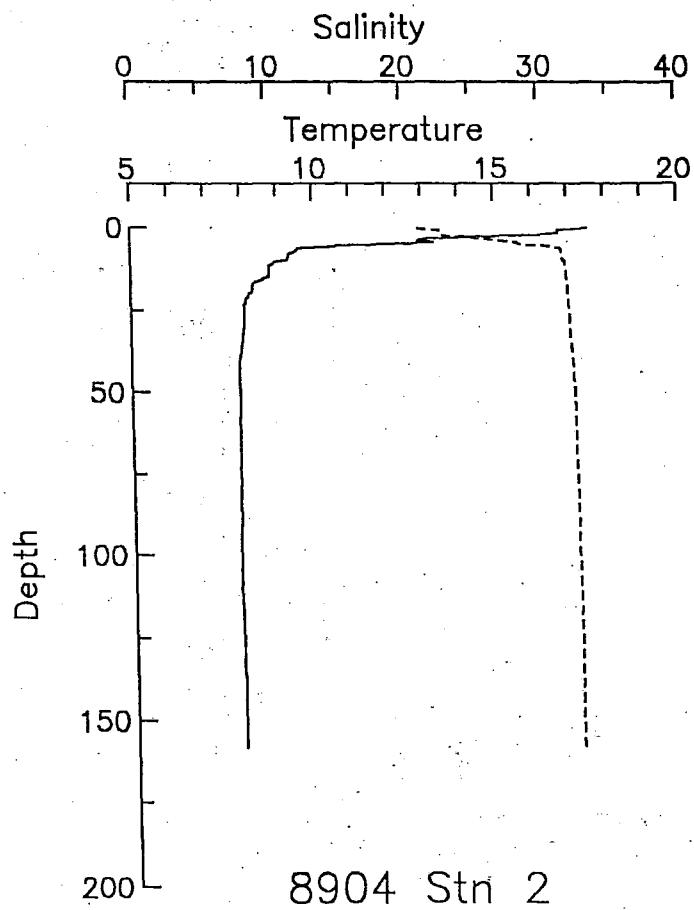
FIG. 28  
OEB904 CTD plots

FIG. 28 (cont.)

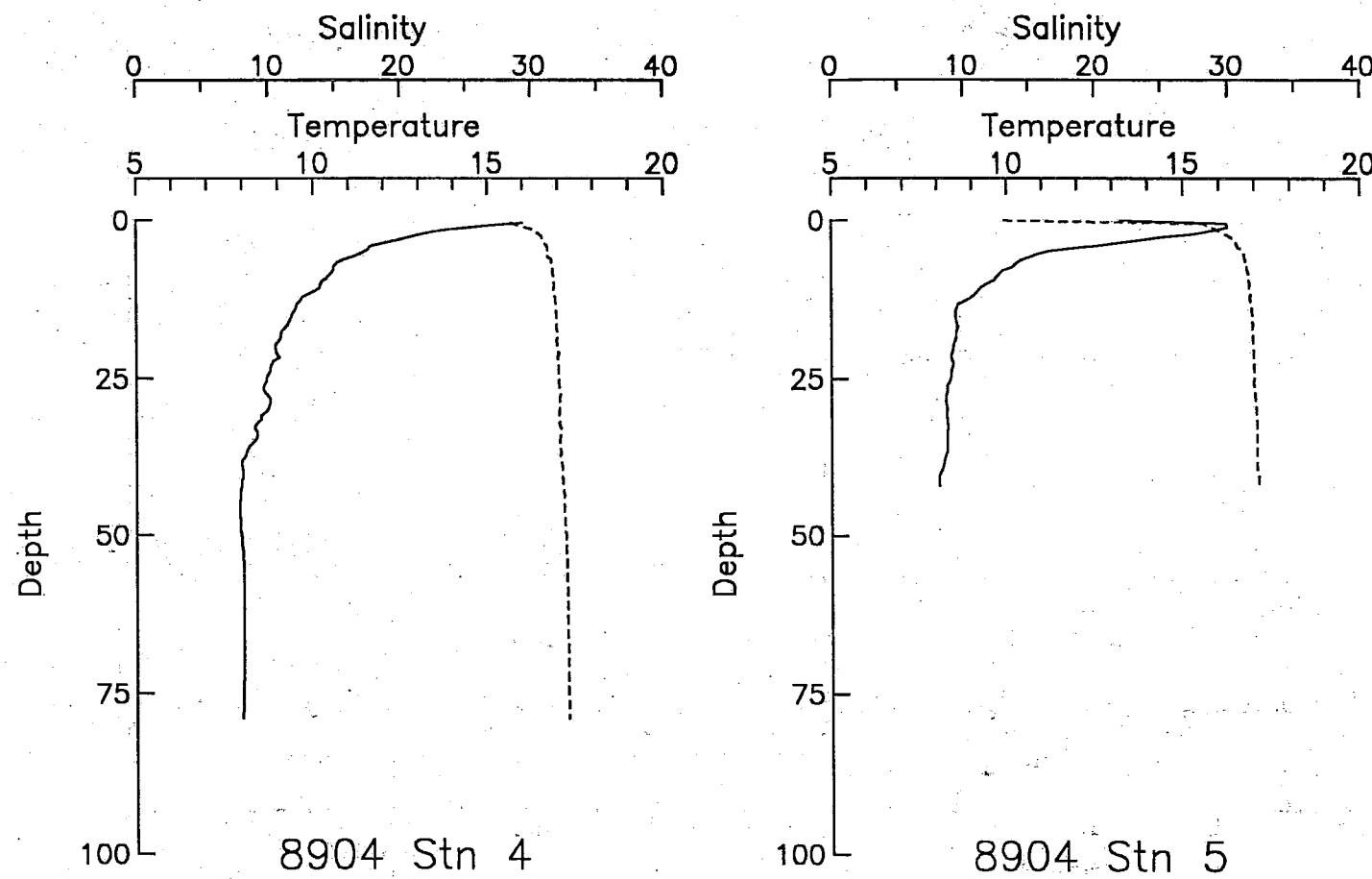


FIG. 28 (cont.)

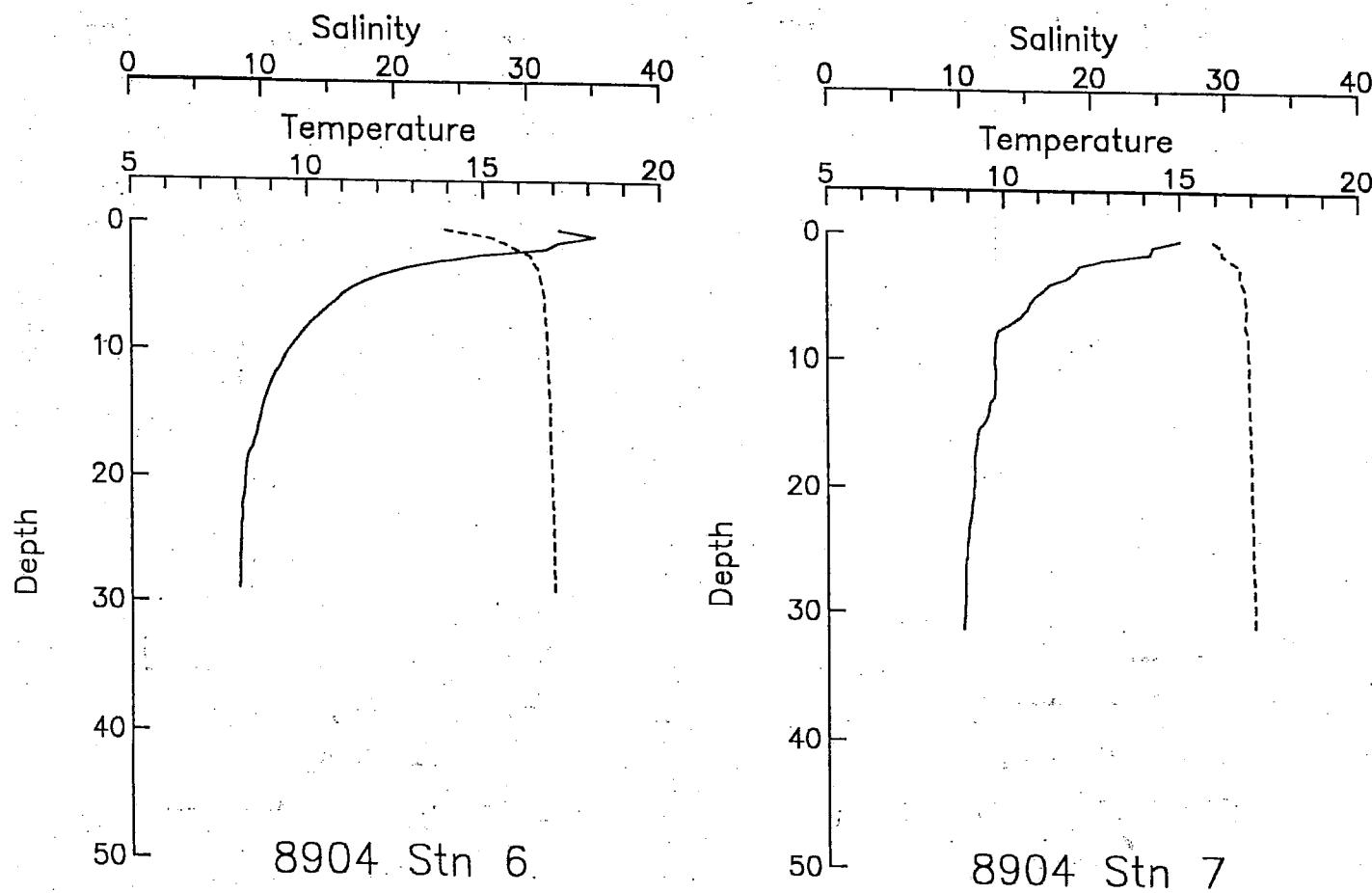
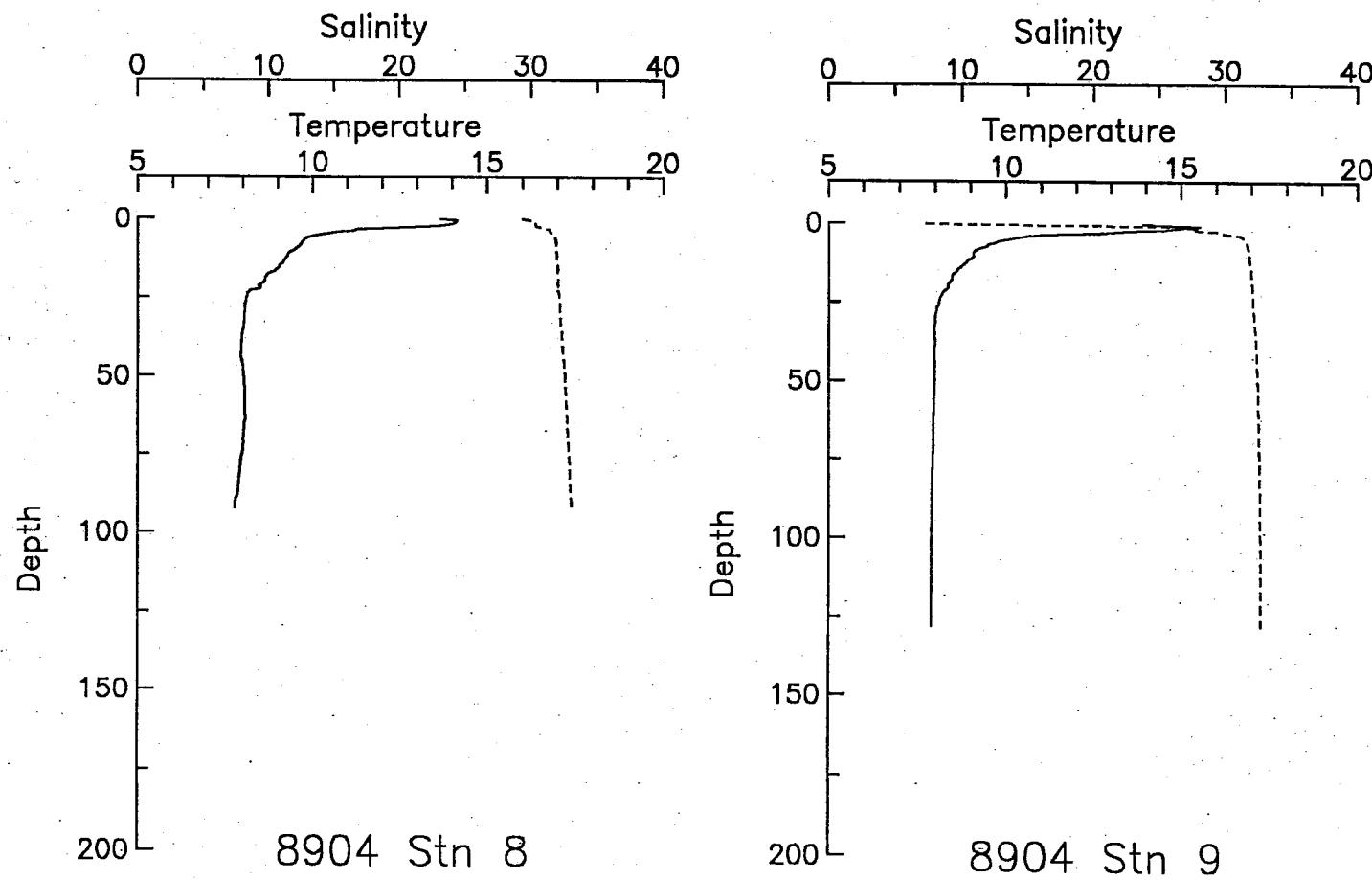


FIG. 2B (cont.)



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## DATA SECTION 5

## BACTERIA ABUNDANCE

Table 6 OE8902 Bacteria abundance and frequency of dividing cells

Table 7 OE8904 Bacteria abundance and frequency of dividing cells

TABLE 6 OE8902 BACTERIA ABUNDANCE AND FREQUENCY OF DIVIDING CELLS

Concentrations in cells.ml<sup>-1</sup> x 10<sup>-5</sup>

Std = 1 standard deviation of the concentration

Station	Bottle	Depth	Concentration	% Div.	Std
1	1	35	1.4	20	0.08
	2	8	0.9	14	0.08
	3	1	0.6	15	0.03
2	1	35	1.2	19	0.02
	2	8	0.6	14	0.02
	3	1	0.7	15	0.02
3	1	35	1.4	18	0.03
	2	8	0.3	8	0.02
	3	1	0.2	14	0.02
4	1	35	1.0	14	0.04
	2	8	0.3	11	0.02
	3	1	0.6	18	0.03
5	1	35	0.3	12	0.02
	2	8	0.3	13	0.03
	3	1	0.9	17	0.03
6	1	8	0.4	10	0.04
	2	1	0.3	7	0.01
7	2	8	0.1	11	0.02
	3	1	0.1	9	0.01
8	1	35	0.2	11	0.01
	2	8	0.2	10	0.01
	3	1	0.1	16	0.01
9	2	8	0.5	11	0.02
	3	1	1.3	20	0.01

TABLE 7 OE8904 BACTERIA ABUNDANCE AND  
FREQUENCY OF DIVIDING CELLS

Concentrations in cells.ml<sup>-1</sup> × 10<sup>-5</sup>

Std = 1 standard deviation of the concentration

Station	Bottle	Depth	Concentration	% Div.	Std
1	1	35	1.0	19	0.4
	2	8	1.4	17	0.3
	3	1	2.3	16	0.4
2	1	35	1.0	19	0.4
	2	8	2.0	20	0.2
	3	1	1.8	12	0.7
3	1	35	1.2	13	0.5
	2	8	2.1	19	0.4
	3	1	2.2	12	0.5
4	1	35	1.1	20	0.3
	2	8	1.1	10	0.2
	3	1	2.1	8	0.5
5	1	35	1.3	18	0.3
	2	8	2.0	14	0.3
	3	1	1.6	9	0.4
6	1	24	0.9	12	0.3
	2	8	1.9	10	0.3
	3	1	2.2	13	0.0
7	1	27	1.7	15	0.1
	2	8	1.9	7	0.4
	3	1	1.9	8	0.2
8	1	35	1.4	20	0.3
	2	8	2.2	10	0.1
	3	1	2.9	15	0.9
9	1	35	1.6	14	0.3
	2	8	1.7	11	0.1
	3	1	2.3	9	0.2

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## DATA SECTION 6

## PHYTOPLANKTON IDENTITY AND ABUNDANCE

Table 8 Phytoplankton taxonomic list

Table 9 OE8902 Phytoplankton identity and abundance

Table 10 OE8904 Phytoplankton identity and abundance

TABLE 8 PHYTOPLANKTON TAXONOMIC LIST (WITH ABBREVIATIONS USED IN DATA RECORDS)

		Abbreviations in data records
Cyanobacteria		
Cyanophyceae	Synechococcus spp.	synechococ spp.
Chroococcales		
Chroococcaceae		
Nostocales	Anabaena spp.	anabaena spp.
Nostocaceae		
Chrysophyta	Solenicola setigera	solenicola setigera
Chrysophyceae		
Ochromonadales	Ochromonas spp.	ochromonas spp.
Ochromonadaceae		
Dinobryaceae	Dinobryon suecicum	dinobryon suecicum
Dictyochales	Dictyocha speculum	dictyocha speculum
Dictyochaceae		
Chromulinales	Apedinella spinifera	apedinella spinifera
Pedinellaceae	Pseudopedinella pyriformis	pseudopedi pyriformis
Xanthophyta		
Xanthophyceae		
Heterochloridales	Olisthodiscus carterae	olisthodis carterae
Heterochloridaceae		
Mishcoccales	Meringosphaera mediterranea	meringosph. mediterranea
Pleurochloridaceae		
Haptophyta		
Haptophyceae		
Isochrysidales	Imantonia rotundata	imantonia rotundata
Gephyrocapsaceae		
Prymnesiales	Chrysochromulina sp.1	chrysochro sp.1
Prymnesiaceae	C. spp. (4-5.5 um)	chrysochro spp. 4-5.5
	C. spp. (6-10 um)	chrysochro spp. 6-10
	C. spp. (10-15 um)	chrysochro spp. 10-15
Phaeocystaceae	Phaeocystis pouchetii	phaeocysti pouchetii

Bacillariophyta

Bacillariophyceae

Centrales

Cymatosiraceae

Leyanella arenaria

Leptocylindraceae

Schroederalla delicatula  
Leptocylindrus spores spiny  
Leptocylindrus danicus  
L. minimus  
L. mediterraneus

Coscinodiscaceae

Melosira sp. (10.5x4 um)  
Melosira moniliformis  
S. nipponica  
Skeletonema costatum  
Thalassiosira spp.  
T. gravida (syn. T. rotula)  
T. angulata  
T. anguste-lineata  
T. binata  
T. aestivalis  
T. nordenskioldii  
T. pacifica  
T. eccentrica  
T. mendiolana  
T. conferta  
T. weisflogii  
Coscinodiscus spp.  
C. radiatus

Biddulphiaceae

Bidulphia aurita  
Eucampia spp.  
E. zoodiacus  
Cerataulina pelagica  
Ditylum brightwellii

Chaetoceraceae

Chaetoceros sp. 1  
C. sp. 2 (=sp.a)  
C. sp. 5 (=sp.g)  
C. sp. 6 (=sp.h)  
C. sp. 7 (=sp.i)  
C. sp. 8 (=sp.j)  
C. sp. 9 (=sp.k)  
C. sp. 10 (=sp.l)  
C. cf. affine v. circinalis  
C. perpusillum  
C. affine  
C. breve  
C. compressum  
C. constrictum  
C. convolutum  
C. curvisetum  
C. danicum

leyanella arenaria

schroederae delicatula  
leptocylin spores spiny  
leptocylin danicus  
leptocylin minimus  
leptocylin mediterraneu

melosira sp. 10.5x4  
melosira moniliformis  
stephanopy nipponica  
skeletonem costatum  
thalassios spp.  
thalassios rotula  
thalassios angulata  
thalassios anguste-line  
thalassios binata  
thalassios aestivalis  
thalassios nordenskiold  
thalassios pacifica  
thalassios eccentrica  
thalassios mendiolana  
thalassios conferta  
thalassios weisflogii  
coscinodis spp.  
coscinodis radiatus

bidulphia aurita  
eucampia spp.  
eucampia zoodiacus  
cerataulin pelagica  
ditylum brightwellii

chaetocero sp.1  
chaetocero sp.a  
chaetocero sp.g  
chaetocero sp.h  
chaetocero sp.i  
chaetocero sp.j  
chaetocero sp.k  
chaetocero sp.l  
chaetocero cf.affine v.circinalis  
chaetocero cf.perpusill  
chaetocero affine  
chaetocero breve  
chaetocero compressum  
chaetocero constrictum  
chaetocero convolutum  
chaetocero curvisetum  
chaetocero danicum

<i>C. debile</i>	<i>chaetocero debile</i>
<i>C. decipiens</i>	<i>chaetocero decipiens</i>
<i>C. diadema</i>	<i>chaetocero diadema</i>
<i>C. didymum</i>	<i>chaetocero didymum</i>
<i>C. gracile</i>	<i>chaetocero gracile</i>
<i>C. laciniosum</i>	<i>chaetocero laciniosum</i>
<i>C. lorenzianum</i>	<i>chaetocero lorenzianum</i>
<i>C. pseudocrinitum</i>	<i>chaetocero pseudocrinit</i>
<i>C. radicans</i>	<i>chaetocero radicans</i>
<i>C. septentrionis</i>	<i>chaetocero septentriona</i>
<i>C. socialis</i>	<i>chaetocero socialis</i>
<i>C. teres</i>	<i>chaetocero teres</i>
<i>C. vixvisibilis</i>	<i>chaetocero vixvisibilis</i>
<b>Bacteriastraceae</b>	
<i>Bacteriastrum delicatula</i>	<i>bacteriast delicatula</i>
<b>Rhizosoleniaceae</b>	
<i>Rhizosolenia alata f. gracillima</i>	<i>rhizosolen alata f.gracillima</i>
<i>R. alata f. alata</i>	<i>rhizosolen alata f.alata</i>
<i>R. delicatula</i>	<i>rhizosolen delicatula</i>
<i>R. fragilissima</i>	<i>rhizosolen fragilissima</i>
<i>R. fragilissima v. 1</i>	<i>rhizosolen fragilissima v.1</i>
<i>R. hebetata f. semispina</i>	<i>rhizosolen hebetata f.semispina</i>
<i>R. setigera</i>	<i>rhizosolen setigera</i>
<i>R. stolterfothii</i>	<i>rhizosolen stolterfothi</i>
<b>Pennales</b>	
<b>Cymatocyraceae</b>	
<i>Minutocellus scriptus</i>	<i>minuticell scriptus</i>
<b>Fragiliariaceae</b>	
<i>Fragilaria spp.</i>	<i>fragilaria spp.</i>
<i>Synedra spp. (59x5 um)</i>	<i>synedra spp. 59x5</i>
<i>S. spp. (90-141x2-3 um)</i>	<i>synedra spp. 90-141x2-3</i>
<i>S. spp. (95-110 x 6 um)</i>	<i>synedra spp. 95-110x6</i>
<i>S. spp. (204 um)</i>	<i>synedra spp. 204</i>
<i>Asterionella glacialis</i>	<i>asterionel glacialis</i>
<i>Thalassiothrix frauenfeldii</i>	<i>thalassiot frauenfeldii</i>
<i>T. longissima</i>	<i>thalassiot longissima</i>
<i>Thalassionema nitzschioides</i>	<i>thalassion nitzschoides</i>
<i>T. bacillaris</i>	<i>thalassion bacillaris</i>
<i>Licmophora spp.</i>	<i>licmophora spp.</i>
<i>L. abbreviata</i>	<i>licmophora abbreviata</i>
<i>Tabellaria sp. (36-54x3.3 um)</i>	<i>tabellaria sp. 36-54x3.3</i>
<i>T. sp. (92-151x8 um)</i>	<i>tabellaria sp. 92-151x8</i>
<b>Naviculaceae</b>	
<i>Gyrosigma spp. and Pleurosigma spp.</i>	<i>gyrosigma spp. pleurosigma</i>
<i>Pleurosigma angulatum</i>	<i>pleurosigm angulatum</i>
<i>P. acutum</i>	<i>pleurosigm acutum</i>
<b>Nitzschiaeae</b>	
<i>Nitzschia cylindriformis and N. pseudonana</i>	<i>nitzschia cylindrus pseudonana</i>
<i>N. americana</i>	<i>nitzschia americana</i>
<i>N. delicatissima</i>	<i>nitzschia delicatissim</i>
<i>N. longissima</i>	<i>nitzschia longissima</i>
<i>N. pungens</i>	<i>nitzschia pungens</i>
<i>N. seriata</i>	<i>nitzschia seriata</i>
<i>N. seriata v. obtusa</i>	<i>nitzschia seriata v.obtusa</i>

N. turgiduloides	nitzschia	turgiduloide
N. bicapitata	nitzschia	bicapitata
N. lineola	nitzschia	lineola
N. closterium	nitzschia	closterium
N. closterium v. stiatula	nitzschia	closterium v. striatula
N. subfraudulenta	nitzschia	subfraudulen
N. fraudulenta	nitzschia	fraudulenta
N. cylindroformis	nitzschia	cylindroform
N. impressa	nitzschia	impressa
N. subcurvata	nitzschia	subcurvata
Bacillariaceae	Cylindrotheca fusiformis	cylindroth fusiformis
Prasinophyta		
Prasinophyceae		
Pyramimonadales		
Nephroselmidaceae	Nephroselmis spp.	nephroselm spp.
	Bipedinomonas spp.	bipedinomo spp.
Polyblepharidaceae	Pyramimonas spp. (3-8 um)	pyramimona spp. 3-8
	Cymbomonas spp.	cymbomonas spp.
Platymonadaceae	Platymonas sp.	platymonas sp.
Halosphaerales		
Pterospermataceae	Pterosperma spp.	pterosperm spp.
	P. spp. (0-5 um)	pterosperm sp. 0-5
	P. spp. (5-7 um)	pterosperm sp. 5-7
	P. spp. (>7 um)	pterosperm sp. >7
	P. cristatum	pterosperm cristatum
Euglenophyta		
Euglenophyceae		
Eutreptiales	Eutreptiella spp.	eutreptiel spp.
Pyrrophyta		
Dinophyceae		
Prorocentrales		
Prorocentraceae	Prorocentrum sp. (14x11 um)	prorocentr sp. 14x11
	P. minimum v. balticum	prorocentr minimum v.balticum
	P. balticum	prorocentr balticum
	P. rotundatum	prorocentr rotundatum
Dinophysiales		
Dinophysiaceae	Dinophysis spp.	dinophysis spp.
	D. acuminata	dinophysis acuminata
	D. ovum	dinophysis ovum
Gymnodiniales		
Gymnodiniaceae	'Gonyaulax' rugosum	gonyaulax rugosum
	Cochlodinium citron	cochlodini citron
	G. sp. 3 (round) (6.6 - 10 um)	gymnodiniu sp.3 (round) 6.6-10
	G. sp. 5	gymnodiniu sp.5

G. simplex	gymnodiniu simplex	
G. flavum	gymnodiniu flavum	
G. gracilentum	gymnodiniu gracilentum	
G. agiliforme	gymnodiniu agiliforme	
G. inequale	gymnodiniu inequale	
G. paulseni	gymnodiniu paulseni	
Katodinium rotundatum	katodinium rotundatum	
Peridiniales		
Peridiniaceae		
Scripsiella & Glenodinium (20 - 25 um)	scripsiell spp.	glenodinium 20-25
S. spp. and G. spp. (25 - 30 um)	scripsiell spp.	glenodinium 25-30
S. sp. 2	scripsiell sp.2	
S. digitale	scripsiell digitale	
S. trochoidea	scripsiell trochoidea	
Glenodinium inequale	glenodiniu inequale	
Heterocapsa triquetra	heterocaps triquetra	
Gonyaulaceae		
Gonyaulax diagensis	gonyaulax diagensis	
G. digitale	gonyaulax digitale	
Ceratiaceae		
Ceratium lineatum	ceratium lineatum	
Cryptophyta		
Cryptophyceae		
Cryptomonadales		
spp. (5-10 um)	cryptomona spp.	5-10
spp. (11-20 um)	cryptomona spp.	11-20
spp. (21-30 um)	cryptomona spp.	21-30
Isoselmis spp. and hemiselmis spp. (4-6 um)	isoselmis spp. hemiselmis	4-6
FLAGELLATES (autotrophic, unidentified)		6
sp. xiii	flagellate sp. xiii	
spp. (1-2 um)	flagellate spp.	1-2
spp. (2-5 um)	flagellate spp.	2-5
spp. (6-15 um)	flagellate spp.	6-15
Protozoa		
Mesodinium rubrum	mesodinium rubrum	

um = micrometres  
 syn = synonym  
 v. = variety  
 f. = form  
 cf. = similar to

TABLE 9 OE8902 PHYTOPLANKTON IDENTITY AND ABUNDANCE

Cruise 89-02

## Total Abundance (no./litre)

Taxon	1-2	1-3	2-2	2-3
synechococ spp.	2.46E+06	1.77E+05	3.99E+05	1.94E+05
anabaena spp.	3.90E+04	6.50E+03	0.00E+00	2.90E+03
dinobryon sueicum	2.50E+03	3.30E+04	1.05E+04	1.42E+04
apedinella spinifera	4.00E+02	9.00E+02	0.00E+00	0.00E+00
pseudopedi pyriformis	3.00E+02	0.00E+00	0.00E+00	0.00E+00
meringosph mediterranea	0.00E+00	0.00E+00	3.00E+02	0.00E+00
imantonia rotundata	1.03E+06	3.61E+05	1.60E+05	1.04E+05
chrysocro sp. 1	5.60E+03	4.37E+05	1.12E+04	4.48E+05
chrysocro spp. 4-5.5	4.48E+04	2.32E+05	5.60E+03	1.85E+05
chrysocro spp. 6-10	0.00E+00	5.04E+04	0.00E+00	1.12E+04
chrysocro spp. 15-20	0.00E+00	1.68E+04	0.00E+00	0.00E+00
phaeocysti pouchetii	5.80E+05	0.00E+00	5.20E+04	0.00E+00
leyanella arenaria	0.00E+00	0.00E+00	2.52E+04	0.00E+00
melosira sp. 10.5x4	0.00E+00	0.00E+00	0.00E+00	5.80E+03
melosira moniliformis	0.00E+00	1.00E+03	0.00E+00	2.70E+03
leptocylin danicus	1.70E+03	9.00E+02	4.00E+03	0.00E+00
leptocylin minimus	0.00E+00	1.40E+03	0.00E+00	2.00E+02
leptocylin mediterraneu	0.00E+00	0.00E+00	1.02E+04	0.00E+00
skeletonem costatum	2.39E+06	1.48E+07	2.29E+06	1.60E+08
thalassios rotula	0.00E+00	0.00E+00	3.00E+02	0.00E+00
thalassios anguste-line	0.00E+00	0.00E+00	2.00E+02	0.00E+00
thalassios nordenskiold	4.00E+02	0.00E+00	1.20E+03	1.30E+03
thalassios pacifica	9.00E+03	5.20E+03	7.40E+03	9.00E+03
thalassios eccentrica	0.00E+00	0.00E+00	5.00E+02	0.00E+00
thalassios mendiolana	4.00E+02	0.00E+00	4.00E+02	3.00E+02
thalassios conferta	4.20E+03	2.00E+03	1.57E+04	0.00E+00
thalassios weisflogii	0.00E+00	6.35E+04	0.00E+00	9.75E+05
coccinodis radiatus	0.00E+00	0.00E+00	1.00E+02	0.00E+00
chaetocero sp.g	8.00E+02	4.30E+03	2.50E+03	1.43E+04
chaetocero sp.h	0.00E+00	0.00E+00	5.00E+02	0.00E+00
chaetocero sp.1	0.00E+00	7.20E+03	0.00E+00	5.20E+04
chaetocero compressum	0.00E+00	0.00E+00	3.10E+03	0.00E+00
chaetocero debile	3.62E+04	8.67E+04	2.14E+04	0.00E+00
chaetocero decipiens	0.00E+00	1.90E+03	0.00E+00	0.00E+00
chaetocero diadema	4.60E+03	1.88E+04	0.00E+00	0.00E+00

chaetocero radicans	0.00E+00	7.30E+03	9.00E+02	0.00E+00
chaetocero socialis	5.90E+03	6.30E+03	1.50E+03	0.00E+00
chaetocero teres	7.00E+02	5.00E+02	0.00E+00	0.00E+00
rhizosolen delicatula	4.00E+02	0.00E+00	0.00E+00	0.00E+00
rhizosolen fragilissima	1.50E+03	2.30E+03	6.00E+02	0.00E+00
rhizosolen fragilissima v.1	8.00E+02	5.60E+03	1.40E+03	2.00E+02
minuticell scriptus	6.00E+03	0.00E+00	6.60E+03	0.00E+00
synedra sp. 204	0.00E+00	0.00E+00	0.00E+00	0.00E+00
synedra sp. 90-141x2-3	0.00E+00	0.00E+00	0.00E+00	2.00E+02
synedra sp. 59x5	0.00E+00	0.00E+00	0.00E+00	1.60E+03
thalassion nitzschoides	0.00E+00	0.00E+00	0.00E+00	6.00E+02
thalassion bacillaris	5.31E+04	4.28E+04	2.40E+05	7.02E+04
licmophora abbreviata	0.00E+00	1.60E+03	0.00E+00	0.00E+00
tabellaria sp. 36-59x3.3	4.00E+02	0.00E+00	0.00E+00	2.00E+02
tabellaria sp. 92-151x8-1	0.00E+00	0.00E+00	0.00E+00	1.70E+03
nitzschia cylindrus pseudonana	0.00E+00	0.00E+00	0.00E+00	1.20E+03
nitzschia americana	0.00E+00	1.36E+04	0.00E+00	0.00E+00
nitzschia delicatissim	0.00E+00	0.00E+00	3.18E+04	4.00E+02
nitzschia longissima	3.14E+04	1.57E+04	1.70E+03	2.50E+03
nitzschia pungens	2.10E+03	0.00E+00	0.00E+00	0.00E+00
nitzschia bicapitata	1.70E+03	3.60E+03	1.60E+03	0.00E+00
nitzschia closterium	4.00E+02	0.00E+00	1.80E+03	0.00E+00
nitzschia closterium v. striatula	5.00E+02	1.00E+03	3.00E+02	2.00E+02
nitzschia cylindroform	2.00E+03	1.10E+03	6.00E+02	0.00E+00
nitzschia subcurvata	5.22E+04	0.00E+00	3.25E+04	0.00E+00
cymbomonas spp.	4.20E+03	0.00E+00	8.00E+02	0.00E+00
bipedinomo spp.	0.00E+00	2.70E+03	0.00E+00	3.00E+02
pyramimona spp. 3-8	0.00E+00	0.00E+00	1.96E+04	1.40E+04
pterosperm spp.	6.00E+02	4.00E+03	2.50E+03	2.00E+02
eotreptiel spp.	0.00E+00	0.00E+00	0.00E+00	1.00E+02
scripsiell spp. glenodinium 20-25	0.00E+00	0.00E+00	3.00E+02	0.00E+00
scripsiell spp. glenodinium 25-30	0.00E+00	1.30E+03	0.00E+00	1.00E+02
gymnodinium sp. 3 (round) 6.6.10	0.00E+00	3.00E+03	0.00E+00	2.00E+02
gymnodinium gracilemum	8.00E+02	0.00E+00	1.00E+02	8.00E+02
gymnodinium agiliforme	4.90E+03	0.00E+00	6.00E+03	2.00E+02
katodinium rotundatum	4.60E+03	8.00E+02	5.30E+03	2.00E+02
cryptomonas spp. 5-10	1.20E+03	5.52E+04	4.00E+02	6.00E+02
cryptomonas spp. 11-20	2.62E+04	8.00E+04	1.82E+04	5.10E+04
cryptomonas spp. 21-30	9.90E+03	1.76E+04	3.72E+04	3.40E+03
iso selmis spp. hemiselmis 4-6	8.00E+02	8.80E+03	7.00E+02	1.30E+03
flagellate spp. 1-2	2.27E+05	7.56E+04	3.53E+05	3.92E+04
flagellate spp. 2-5	2.96E+05	1.56E+06	3.64E+05	1.97E+06
mesodinium rubrum	2.80E+04	1.65E+05	3.64E+05	3.53E+05
	1.32E+04	4.50E+03	7.40E+03	5.00E+02

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## Total Abundance (no./litre)

Taxon	3-2	3-3	4-2	4-3
synechococ spp.	3.19E+05	2.57E+05	3.19E+05	3.02E+05
anabaena spp.	0.00E+00	4.20E+03	0.00E+00	0.00E+00
solenicola setigera	6.10E+03	0.00E+00	3.40E+03	0.00E+00
ochromonas spp.	0.00E+00	0.00E+00	0.00E+00	1.08E+05
dinobryon suecicum	2.00E+03	6.70E+03	9.00E+02	1.80E+04
meringosph mediterranea	0.00E+00	0.00E+00	2.00E+02	4.40E+03
imantonia rotundata	4.48E+04	3.08E+04	3.08E+05	7.00E+04
chrysocro sp.1	8.40E+03	1.54E+05	2.52E+04	3.11E+05
chrysocro spp. 4-5.5	1.40E+04	4.76E+04	1.40E+04	3.61E+05
chrysocro spp. 6-10	1.12E+04	0.00E+00	1.68E+04	4.00E+04
chrysocro spp. 15-20	0.00E+00	0.00E+00	0.00E+00	1.09E+04
phaeocysti pouchetii	2.70E+03	0.00E+00	2.86E+05	8.70E+04
leyanella arenaria	1.82E+05	0.00E+00	3.08E+05	0.00E+00
melosira moniliformis	0.00E+00	1.09E+04	0.00E+00	0.00E+00
leptocylin danicus	0.00E+00	0.00E+00	4.00E+02	0.00E+00
leptocylin minimus	0.00E+00	0.00E+00	0.00E+00	1.50E+03
leptocylin mediterraneu	1.80E+03	0.00E+00	8.00E+02	0.00E+00
skeletonem costatum	2.94E+05	4.00E+07	1.68E+06	1.05E+07
thalassios nordenskiold	0.00E+00	7.00E+02	2.00E+02	0.00E+00
thalassios pacifica	0.00E+00	5.00E+02	1.00E+03	0.00E+00
thalassios eccentrica	0.00E+00	0.00E+00	1.00E+02	0.00E+00
thalassios mendiolana	1.00E+02	0.00E+00	0.00E+00	0.00E+00
thalassios conferta	6.40E+03	0.00E+00	2.60E+03	1.71E+04
thalassios weisflogii	0.00E+00	8.48E+05	0.00E+00	0.00E+00
bidulphia aurita	0.00E+00	0.00E+00	2.00E+02	0.00E+00
chaetocero sp.g	1.00E+03	9.00E+02	7.00E+02	1.09E+04
chaetocero sp.h	0.00E+00	0.00E+00	1.30E+03	0.00E+00
chaetocero sp.l	0.00E+00	1.28E+05	0.00E+00	0.00E+00
chaetocero compressum	0.00E+00	0.00E+00	0.00E+00	8.20E+03
chaetocero constrictum	0.00E+00	0.00E+00	0.00E+00	3.00E+03
chaetocero convolutum	0.00E+00	0.00E+00	5.00E+02	0.00E+00
chaetocero debile	0.00E+00	0.00E+00	4.00E+02	2.80E+03
chaetocero decipiens	0.00E+00	0.00E+00	3.00E+02	1.10E+03
chaetocero diadema	0.00E+00	0.00E+00	0.00E+00	1.60E+03
chaetocero didymum	0.00E+00	0.00E+00	0.00E+00	1.30E+03

chaetocero laciniosum	0.00E+00	0.00E+00	0.00E+00	6.00E+02
chaetocero radicans	0.00E+00	0.00E+00	0.00E+00	1.36E+04
chaetocero socialis	0.00E+00	0.00E+00	7.00E+02	1.00E+03
rhizosolen fragilissima	0.00E+00	0.00E+00	5.00E+02	4.20E+03
rhizosolen fragilissima v.1	4.00E+02	0.00E+00	4.00E+02	0.00E+00
minuticell scriptus	7.80E+03	0.00E+00	5.60E+03	0.00E+00
synedra sp. 90-141x2-3	0.00E+00	8.00E+02	0.00E+00	0.00E+00
synedra spp. 95-110x6	0.00E+00	6.00E+02	0.00E+00	0.00E+00
thalassion nitzschoides	3.50E+04	5.36E+04	1.86E+04	6.90E+04
licmophora abbreviata	0.00E+00	3.00E+02	2.00E+02	8.00E+02
tabellaria sp. 36-59x3.3	0.00E+00	4.50E+03	0.00E+00	0.00E+00
nitzschia americana	2.00E+02	2.00E+02	3.00E+02	0.00E+00
nitzschia delicatissim	9.80E+03	1.00E+03	5.80E+03	8.10E+03
nitzschia longissima	9.00E+02	0.00E+00	2.00E+02	0.00E+00
nitzschia pungens	3.00E+02	0.00E+00	0.00E+00	0.00E+00
nitzschia bicapitata	2.70E+03	0.00E+00	3.40E+03	0.00E+00
nitzschia closterium	8.00E+02	8.00E+02	3.00E+02	0.00E+00
nitzschia closterium v. striatula	2.00E+02	0.00E+00	0.00E+00	3.00E+03
nitzschia cylindroform	2.28E+04	0.00E+00	1.67E+04	2.10E+03
nitzschia subcurvata	1.10E+03	0.00E+00	1.20E+03	3.50E+03
cylindroth fusiformis	2.00E+02	0.00E+00	0.00E+00	0.00E+00
pyramimonas spp. 3-8	3.10E+03	0.00E+00	3.00E+02	8.00E+02
platymonas sp.	0.00E+00	0.00E+00	2.00E+02	0.00E+00
euteptiel spp.	0.00E+00	0.00E+00	1.00E+02	5.00E+02
prorocentr sp. 14x11	8.00E+02	0.00E+00	0.00E+00	0.00E+00
gymnodinium gracilementum	0.00E+00	1.22E+04	0.00E+00	0.00E+00
gymnodinium agiliforme	8.70E+03	0.00E+00	6.00E+03	1.90E+03
katodinium rotundatum	3.20E+03	3.00E+02	1.60E+03	1.10E+03
cryptomonas spp. 5-10	9.00E+02	0.00E+00	2.10E+03	2.20E+03
cryptomonas spp. 11-20	4.30E+04	2.96E+04	2.56E+04	2.54E+04
cryptomonas spp. 21-30	1.32E+04	1.42E+04	1.42E+04	6.40E+03
isoselimis spp. hemiselmis 4-6	1.50E+03	0.00E+00	9.00E+02	0.00E+00
flagellate spp. 1-2	2.39E+05	5.32E+04	3.95E+05	5.60E+04
flagellate spp. 2-5	3.88E+05	2.25E+06	3.25E+05	1.56E+06
flagellate spp. 6-15	1.96E+04	1.25E+05	8.55E+04	4.10E+05
flagellate sp. xiii	3.00E+03	0.00E+00	0.00E+00	1.26E+04
mesodinium rubrum	0.00E+00	9.12E+04	0.00E+00	0.00E+00
	3.50E+03	1.00E+03	2.00E+02	4.30E+03

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## Total Abundance (no./litre)

TAXON	5-2	5 3	6-2	6-3
synechococ spp.	3.99E+05	6.67E+05	3.65E+05	3.59E+05
dinobryon sueicum	1.00E+03	5.10E+04	7.00E+03	6.30E+04
dictyocha speculum	0.00E+00	8.00E+02	0.00E+00	0.00E+00
apedinella spinifera	0.00E+00	0.00E+00	2.00E+02	3.40E+03
pseudopedi pyriformis	0.00E+00	4.00E+02	0.00E+00	0.00E+00
meringosiph mediterranea	2.00E+02	9.00E+02	4.00E+02	9.00E+02
imantonia rotundata	2.83E+07	2.07E+05	9.50E+06	5.78E+06
chrysocro sp.1	5.30E+03	1.57E+05	3.98E+05	3.88E+05
chrysocro spp. 4-5.5	5.00E+03	2.58E+05	1.54E+05	4.05E+05
chrysocro spp. 6-10	0.00E+00	3.80E+04	0.00E+00	0.00E+00
chrysocro spp. 15-20	0.00E+00	1.90E+04	1.00E+03	3.60E+04
phaeocysti pouchetii	4.98E+05	1.55E+05	1.95E+06	5.24E+05
schroedere delicatula	0.00E+00	0.00E+00	4.81E+04	1.81E+04
leptocylin danicus	0.00E+00	0.00E+00	7.20E+03	2.60E+04
leptocylin minimus	0.00E+00	9.00E+02	1.50E+04	9.00E+03
skeletonem costatum	5.58E+05	4.70E+06	2.53E+05	1.57E+06
thalassios aestivalis	0.00E+00	0.00E+00	0.00E+00	9.00E+02
thalassios nordenskiold	0.00E+00	0.00E+00	2.20E+03	0.00E+00
thalassios pacifica	1.00E+02	0.00E+00	1.82E+04	1.27E+04
thalassios eccentrica	2.00E+02	0.00E+00	0.00E+00	0.00E+00
thalassios mendiolana	0.00E+00	0.00E+00	5.00E+02	8.00E+02
thalassios conferta	4.00E+03	1.18E+04	0.00E+00	1.70E+03
eucampia zoodiacus	0.00E+00	0.00E+00	2.60E+03	5.00E+02
cerataulin pelagica	0.00E+00	0.00E+00	8.00E+02	2.00E+03
chaetocero sp.1	1.20E+03	1.10E+03	0.00E+00	0.00E+00
chaetocero sp.g	0.00E+00	6.80E+03	0.00E+00	0.00E+00
chaetocero compressum	3.00E+02	3.54E+04	2.28E+05	2.55E+05
chaetocero constrictum	0.00E+00	1.24E+04	1.18E+05	3.54E+05
chaetocero debile	3.40E+03	5.72E+04	9.70E+05	2.25E+06
chaetocero decipiens	0.00E+00	1.60E+03	1.45E+04	5.35E+04
chaetocero diadema	2.00E+02	1.90E+04	3.72E+04	6.80E+07
chaetocero didymum	0.00E+00	0.00E+00	6.30E+03	1.40E+04
chaetocero laciniiosum	0.00E+00	1.70E+03	3.00E+04	4.64E+04
chaetocero radicans	0.00E+00	2.54E+04	5.90E+04	1.06E+06
chaetocero socialis	4.00E+02	7.20E+03	1.54E+05	6.40E+07

rhizosolen delicatula	0.00E+00	1.30E+03	0.00E+00	1.10E+03
rhizosolen fragilissima	0.00E+00	2.20E+03	1.20E+03	0.00E+00
rhizosolen fragilissima v.1	1.60E+03	9.00E+03	4.00E+02	1.60E+03
rhizosolen hebetata f.semispina	0.00E+00	0.00E+00	0.00E+00	9.10E+03
minuticell scriptus	1.12E+04	0.00E+00	0.00E+00	8.40E+03
thalassion nitzschoides	6.20E+03	2.54E+04	2.10E+03	9.00E+02
licmophora abbreviata	0.00E+00	0.00E+00	3.00E+02	0.00E+00
nitzschia americana	8.00E+02	0.00E+00	4.00E+02	1.90E+04
nitzschia delicatissim	7.30E+04	9.10E+03	8.80E+03	8.60E+03
nitzschia longissima	6.00E+02	0.00E+00	2.00E+02	1.30E+03
nitzschia turgiduloide	0.00E+00	0.00E+00	5.00E+02	1.00E+03
nitzschia bicapitata	1.30E+03	1.20E+03	0.00E+00	0.00E+00
nitzschia closterium	1.40E+03	7.00E+02	0.00E+00	1.31E+04
nitzschia closterium v.striatula	0.00E+00	1.45E+04	1.52E+04	0.00E+00
nitzschia fraudulenta	0.00E+00	0.00E+00	0.00E+00	8.00E+02
nitzschia cylindroform	4.80E+03	3.54E+04	1.50E+03	9.50E+03
nitzschia subcurvata	2.22E+04	1.90E+04	2.20E+04	8.70E+04
cymbomonas spp.	0.00E+00	0.00E+00	3.00E+02	1.20E+03
bipedinomo spp.	0.00E+00	0.00E+00	1.40E+04	4.20E+04
pyramimonas spp. 3-8	0.00E+00	0.00E+00	7.00E+02	3.20E+03
eutreptiel spp.	0.00E+00	1.40E+03	0.00E+00	0.00E+00
prorocentr minimum v.balticum	0.00E+00	3.00E+02	0.00E+00	0.00E+00
gonyaulax rugosum	0.00E+00	0.00E+00	1.00E+02	5.00E+02
gymnodiniu sp.5	0.00E+00	0.00E+00	0.00E+00	2.00E+02
gymnodiniu gracilentum	0.00E+00	0.00E+00	5.00E+02	8.00E+02
gymnodiniu agiliforme	1.76E+04	9.00E+02	4.00E+02	5.00E+02
gymnodiniu paulseni	0.00E+00	6.00E+02	0.00E+00	3.00E+02
katodinium rotundatum	0.00E+00	0.00E+00	0.00E+00	2.00E+02
cryptomonas spp. 5-10	6.00E+02	1.00E+03	0.00E+00	0.00E+00
cryptomonas spp. 11-20	4.30E+04	2.90E+04	4.10E+04	1.00E+04
cryptomonas spp. 21-30	1.44E+05	7.20E+03	3.50E+03	4.60E+03
isoselimis spp. hemiselimis 4-6	1.00E+03	0.00E+00	0.00E+00	1.30E+03
flagellate spp. 1-2	1.63E+06	2.55E+05	1.01E+05	3.08E+04
flagellate spp. 2-5	2.87E+06	7.98E+05	8.78E+05	2.29E+06
flagellate spp. 6-15	4.10E+05	6.95E+05	1.14E+04	1.54E+05
mesodinium rubrum	1.20E+03	0.00E+00	0.00E+00	0.00E+00
	1.78E+04	1.80E+03	0.00E+00	0.00E+00

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## Total Abundance (no./litre)

## Taxon

7-2

7-3

8-2

8-3

<i>synechococ</i> spp.	1.65E+05	3.93E+05	4.10E+05	6.21E+05
<i>solenicola setigera</i>	1.40E+04	0.00E+00	7.00E+04	0.00E+00
<i>dinobryon sueicum</i>	7.50E+03	6.20E+04	8.00E+03	3.20E+04
<i>apedinella spinifera</i>	1.20E+03	3.00E+02	2.30E+03	4.00E+02
<i>pseudopedi</i> pyriformis	1.60E+03	0.00E+00	9.00E+02	0.00E+00
<i>olishodis carterae</i>	3.00E+02	0.00E+00	1.40E+03	1.20E+03
<i>meringosph</i> mediterranea	5.00E+02	1.00E+03	0.00E+00	2.00E+02
<i>imantonia rotundata</i>	1.04E+05	4.20E+04	2.83E+05	7.98E+05
<i>chrysocro</i> sp.1	2.80E+04	2.52E+04	0.00E+00	0.00E+00
<i>chrysocro</i> spp. 4-5.5	1.40E+04	4.40E+05	3.36E+04	5.04E+04
<i>chrysocro</i> spp. 15-20	1.20E+03	7.90E+04	1.40E+03	2.90E+04
<i>phaeocysti pouchetii</i>	0.00E+00	0.00E+00	2.73E+05	1.25E+05
<i>stephanopy nipponica</i>	0.00E+00	0.00E+00	4.60E+03	1.00E+03
<i>schroedere delicatula</i>	0.00E+00	8.00E+02	5.20E+03	1.68E+04
<i>leptocylin danicus</i>	8.00E+03	9.00E+03	1.62E+04	5.40E+03
<i>leptocylin minimus</i>	2.00E+03	2.40E+04	8.00E+02	1.09E+04
<i>leptocylin mediterraneu</i>	4.20E+03	0.00E+00	4.90E+03	0.00E+00
<i>skeletonem costatum</i>	8.37E+06	4.55E+05	5.37E+06	1.56E+06
<i>thalassios gradata rotula</i>	0.00E+00	0.00E+00	3.12E+04	0.00E+00
<i>thalassios angulata</i>	0.00E+00	0.00E+00	5.00E+02	0.00E+00
<i>thalassios binata</i>	0.00E+00	0.00E+00	6.00E+02	0.00E+00
<i>thalassios aestivalis</i>	0.00E+00	0.00E+00	1.60E+03	0.00E+00
<i>thalassios nordenskiold</i>	0.00E+00	0.00E+00	9.26E+04	2.40E+03
<i>thalassios pacifica</i>	1.00E+03	0.00E+00	1.50E+04	2.60E+03
<i>thalassios eccentrica</i>	0.00E+00	0.00E+00	4.60E+03	0.00E+00
<i>thalassios mendiolana</i>	1.38E+04	0.00E+00	8.62E+04	1.00E+03
<i>thalassios conferta</i>	4.00E+02	0.00E+00	2.10E+03	2.00E+02
<i>eucampia</i> spp.	1.10E+03	0.00E+00	0.00E+00	0.00E+00
<i>eucampia zodiacus</i>	0.00E+00	0.00E+00	2.60E+03	1.30E+03
<i>cerataulin pelagica</i>	6.00E+02	8.00E+02	1.70E+03	2.20E+03
<i>chaetocero</i> sp.1	0.00E+00	1.20E+03	3.00E+02	0.00E+00
<i>chaetocero</i> sp.g	0.00E+00	0.00E+00	1.20E+03	4.00E+03
<i>chaetocero compressum</i>	6.53E+04	1.07E+05	1.05E+05	6.08E+05
<i>chaetocero constrictum</i>	1.88E+05	1.40E+05	5.31E+05	4.60E+05
<i>chaetocero convolutum</i>	1.40E+03	0.00E+00	8.00E+02	0.00E+00

chaetocero debile	9.35E+04	6.60E+05	8.08E+05	1.37E+06
chaetocero decipiens	2.27E+04	2.80E+03	1.81E+04	6.20E+03
chaetocero diadema	3.37E+05	1.05E+04	1.17E+06	4.19E+05
chaetocero didymum	2.40E+03	3.10E+03	4.10E+03	7.80E+03
chaetocero laciniosum	4.50E+03	3.80E+03	2.30E+03	3.60E+03
chaetocero radicans	1.05E+04	5.20E+03	1.36E+04	7.38E+04
chaetocero septentriona	0.00E+00	0.00E+00	9.00E+02	0.00E+00
chaetocero socialis	1.50E+05	1.62E+04	3.01E+06	2.64E+05
chaetocero teres	1.50E+03	8.00E+02	1.80E+03	0.00E+00
chaetocero vixvisibilis	0.00E+00	0.00E+00	0.00E+00	3.00E+02
bacteriast delicatula	0.00E+00	0.00E+00	0.00E+00	2.00E+02
rhizosolen alata f.alata	6.00E+02	0.00E+00	0.00E+00	2.00E+02
rhizosolen delicatula	0.00E+00	0.00E+00	0.00E+00	1.00E+02
rhizosolen fragilissima	8.00E+02	2.00E+02	6.00E+02	2.10E+03
rhizosolen fragilissima v.l	0.00E+00	4.90E+03	0.00E+00	2.00E+03
rhizosolen setigera	0.00E+00	0.00E+00	4.00E+02	0.00E+00
rhizosolen stolterfothi	0.00E+00	0.00E+00	1.10E+03	0.00E+00
ditylum brightwellii	0.00E+00	0.00E+00	1.20E+03	0.00E+00
minuticell scriptus	2.00E+02	0.00E+00	1.10E+03	3.50E+03
fragilaria spp.	0.00E+00	0.00E+00	2.60E+03	0.00E+00
asterionel glacialis	0.00E+00	4.00E+02	0.00E+00	0.00E+00
thalassiot longissima	0.00E+00	0.00E+00	0.00E+00	0.00E+00
thalassion nitzschoides	3.40E+03	0.00E+00	0.00E+00	0.00E+00
licmophora spp.	0.00E+00	2.00E+03	1.50E+03	1.20E+03
licmophora abbreviata	0.00E+00	0.00E+00	0.00E+00	4.00E+02
gyrosigma spp. pleurosigma	0.00E+00	2.00E+02	0.00E+00	0.00E+00
pleurosigm angulatum	0.00E+00	0.00E+00	3.00E+02	0.00E+00
pleurosigm acutum	0.00E+00	0.00E+00	3.00E+02	0.00E+00
nitzschia americana	0.00E+00	0.00E+00	1.00E+03	0.00E+00
nitzschia delicatissim	4.40E+03	3.00E+03	1.39E+04	3.70E+03
nitzschia longissima	3.10E+03	3.20E+03	1.00E+04	1.72E+04
nitzschia seriata	7.00E+02	6.00E+02	1.10E+03	5.00E+02
nitzschia turgiduloide	0.00E+00	0.00E+00	4.90E+03	0.00E+00
nitzschia bicapitata	9.00E+02	2.00E+03	3.20E+03	4.30E+03
nitzschia closterium	0.00E+00	0.00E+00	0.00E+00	2.00E+02
nitzschia closterium v.striatula	2.00E+02	0.00E+00	3.00E+02	1.00E+03
nitzschia fraudulenta	4.00E+02	3.30E+03	0.00E+00	1.00E+04
nitzschia cylindroform	0.00E+00	0.00E+00	7.80E+03	0.00E+00
nitzschia subcurvata	2.20E+03	7.00E+02	6.60E+03	1.20E+03
cylindroth fusiformis	1.70E+03	1.20E+03	4.40E+03	5.50E+03
cymbomonas spp.	0.00E+00	1.00E+02	3.00E+02	4.00E+02
nephroelm spp.	0.00E+00	4.20E+03	0.00E+00	1.50E+03
bipedinomo spp.	0.00E+00	0.00E+00	0.00E+00	8.00E+02
pyramimonas spp. 3-8	6.72E+04	5.32E+04	6.16E+04	1.12E+04
platyomonas sp.	2.00E+03	8.00E+02	3.50E+03	4.10E+03
pterosperm spp.	4.00E+02	0.00E+00	0.00E+00	0.00E+00
pterosperm cristatum	3.00E+02	0.00E+00	3.00E+02	5.00E+02
eutreptiel spp.	0.00E+00	3.00E+02	0.00E+00	0.00E+00
prorocentr minimum v.balticum	2.00E+02	0.00E+00	4.00E+02	6.00E+02
	8.00E+02	9.00E+02	1.70E+03	4.00E+02

dinophysis spp.				
gonyaulax rugosum	0.00E+00	0.00E+00	0.00E+00	1.00E+02
gonyaulax digitale	4.00E+02	0.00E+00	0.00E+00	1.00E+03
scripsiella spp. glenodinium 20-25	4.00E+02	7.00E+02	0.00E+00	0.00E+00
scripsiella spp. glenodinium 25-30	6.00E+02	0.00E+00	0.00E+00	0.00E+00
gymnodinium sp.5	1.00E+02	0.00E+00	0.00E+00	0.00E+00
gymnodinium simplex	0.00E+00	2.40E+03	0.00E+00	3.40E+03
gymnodinium gracilentum	2.00E+02	2.00E+02	7.60E+03	0.00E+00
gymnodinium agiliforme	2.00E+02	6.00E+02	6.00E+02	9.00E+02
gymnodinium inequale	0.00E+00	0.00E+00	2.00E+02	2.00E+02
gymnodinium paulseni	1.00E+03	0.00E+00	2.00E+02	0.00E+00
katodinium rotundatum	0.00E+00	0.00E+00	1.50E+03	0.00E+00
cryptomonas spp. 5-10	6.00E+02	5.40E+03	6.00E+02	1.30E+03
cryptomonas spp. 11-20	1.40E+03	1.80E+03	1.50E+04	6.30E+03
cryptomonas spp. 21-30	5.00E+02	0.00E+00	1.30E+04	1.01E+04
isoselmis spp. hemiselmis 4-6	1.40E+04	3.08E+04	4.48E+04	3.00E+02
flagellate spp. 1-2	4.22E+05	9.23E+05	2.62E+05	1.04E+05
flagellate spp. 2-5	2.28E+04	5.13E+04	6.16E+05	1.51E+05
flagellate spp. 6-15	0.00E+00	0.00E+00	1.71E+04	2.74E+06
mesodinium rubrum	1.00E+03	2.00E+03	3.00E+02	2.20E+03

## Total Abundance (no./litre)

Taxon	9-2	9-3
synechococ spp.	5.08E+06	2.33E+06
dinobryon sueicum	1.30E+04	3.70E+04
dictyocha speculum	1.60E+03	9.00E+02
imantonia rotundata	4.30E+07	2.69E+07
chrysosochro spp. 4-5.5	4.76E+04	3.92E+04
phaeocysti pouchetii	9.89E+06	7.87E+06
leyanella arenaria	1.48E+05	2.28E+05
stephanopy nipponica	4.40E+03	1.20E+03
schroedere delicatula	1.00E+03	3.60E+03
leptocylin danicus	1.40E+03	5.00E+03
skeletonem costatum	1.70E+06	3.11E+06
thalassios rotula	2.20E+03	1.00E+03
thalassios anguste-line	0.00E+00	4.00E+02
thalassios nordenskiold	6.00E+02	1.80E+03
thalassios pacifica	1.72E+04	7.20E+03
thalassios mendiolana	3.00E+02	2.60E+03
thalassios conferta	1.58E+04	5.40E+03
eucampia zodiacus	2.90E+03	7.00E+02
cerataulin pelagica	0.00E+00	8.00E+02
chaetocero sp.g	0.00E+00	6.00E+02
chaetocero compressum	3.60E+03	8.10E+03
chaetocero constrictum	5.63E+04	6.26E+04
chaetocero convolutum	9.00E+02	5.00E+02
chaetocero debile	7.76E+05	6.08E+05
chaetocero decipiens	4.50E+03	4.00E+02
chaetocero diadema	5.63E+04	6.80E+03
chaetocero laciniosum	0.00E+00	5.30E+03
chaetocero radicans	1.45E+04	1.54E+04
chaetocero septentriona	2.00E+02	8.00E+02
chaetocero socialis	1.04E+05	8.85E+04
rhizosolen fragilissima	7.45E+04	5.08E+04
rhizosolen fragilissima v.1	4.00E+02	7.00E+02
minuticell scriptus	7.50E+04	6.70E+04
thalassion nitzschoides	3.40E+03	7.50E+03
thalassion bacillaris	0.00E+00	4.00E+02

<i>gyrosigma</i> spp. <i>pleurosigma</i>	0.00E+00	3.00E+02
<i>nitzschia americana</i>	1.10E+03	6.30E+03
<i>nitzschia delicatissim</i>	1.10E+05	1.50E+05
<i>nitzschia longissima</i>	0.00E+00	1.10E+03
<i>nitzschia bicapitata</i>	5.60E+03	0.00E+00
<i>nitzschia closterium</i>	2.00E+02	7.00E+02
<i>nitzschia cylindroform</i>	3.50E+04	5.20E+04
<i>nitzschia subcurvata</i>	8.40E+04	4.50E+04
<i>cylindroth fusiformis</i>	0.00E+00	2.00E+02
<i>pyramimona</i> spp. 3-8	2.90E+03	7.00E+02
<i>eutreptiel</i> spp.	0.00E+00	5.00E+02
<i>gymnodiniu</i> <i>gracilellum</i>	7.90E+03	2.00E+03
<i>gymnodiniu</i> <i>agiliforme</i>	2.80E+03	6.00E+02
<i>gymnodiniu</i> <i>paulseni</i>	1.20E+03	4.00E+02
<i>katodinium</i> <i>rotundatum</i>	2.74E+04	1.63E+04
<i>cryptomona</i> spp. 5-10	1.87E+05	6.70E+04
<i>cryptomona</i> spp. 11-20	5.30E+04	9.20E+04
<i>cryptomona</i> spp. 21-30	4.00E+02	1.10E+03
<i>isoselmis</i> spp. <i>hemiselmis</i> 4-6	1.28E+06	2.25E+06
<i>flagellate</i> spp. 1-2	4.14E+06	1.84E+06
<i>flagellate</i> spp. 2-5	1.03E+05	5.70E+04
<i>mesodinium</i> <i>rubrum</i>	5.60E+03	5.20E+03

TABLE 10 OE8904 PHYTOPLANKTON IDENTITY AND ABUNDANCE

Cruise 89-04

## Total Abundance (no./litre)

Taxon	1-2	1-3	2-2	2-3
synechococcus spp.	6.00E+04	0.00E+00	1.64E+07	1.06E+05
dinobryon sueicum	6.00E+02	3.00E+02	1.70E+04	0.00E+00
dictyocha speculum	0.00E+00	2.00E+02	0.00E+00	2.00E+02
pseudopedi pyriformis	0.00E+00	0.00E+00	9.00E+02	0.00E+00
chrysocro sp.1	1.68E+04	1.68E+04	1.61E+06	1.12E+04
chrysocro spp. 4-5.5	5.04E+04	1.40E+04	7.17E+06	3.92E+04
chrysocro spp. 6-10	0.00E+00	0.00E+00	3.08E+05	1.40E+04
chrysocro spp. 15-20	0.00E+00	0.00E+00	2.00E+02	0.00E+00
leptocylindrus danicus	0.00E+00	0.00E+00	9.00E+02	3.20E+03
leptocylindrus minimus	0.00E+00	0.00E+00	1.47E+04	0.00E+00
leptocylindrus mediterraneus	0.00E+00	0.00E+00	3.00E+02	0.00E+00
skeletonema costatum	0.00E+00	0.00E+00	2.20E+03	2.80E+03
thalassios rotula	0.00E+00	0.00E+00	0.00E+00	2.20E+03
thalassios aestivialis	0.00E+00	0.00E+00	0.00E+00	2.20E+03
thalassios nordenskioldii	0.00E+00	0.00E+00	0.00E+00	6.00E+02
thalassios mendiolana	0.00E+00	1.00E+02	0.00E+00	2.00E+02
thalassios conferta	3.00E+02	0.00E+00	0.00E+00	2.00E+02
cosecinodis spp.	0.00E+00	0.00E+00	3.60E+03	0.00E+00
cerataulin pelagica	0.00E+00	0.00E+00	0.00E+00	1.00E+02
chaetoceros sp.1 (=D)	0.00E+00	0.00E+00	4.00E+02	0.00E+00
chaetoceros sp.k	0.00E+00	0.00E+00	1.50E+03	0.00E+00
chaetoceros sp.1	0.00E+00	0.00E+00	1.21E+05	0.00E+00
chaetoceros cf.affine v.circinalis	0.00E+00	0.00E+00	2.10E+03	0.00E+00
chaetoceros cf.perpusilla	0.00E+00	0.00E+00	6.40E+03	5.00E+02
chaetoceros affine	0.00E+00	0.00E+00	1.80E+03	0.00E+00
chaetoceros breve	0.00E+00	0.00E+00	0.00E+00	2.00E+02
chaetoceros compressum	0.00E+00	0.00E+00	1.20E+03	1.00E+03
chaetoceros convolutum	0.00E+00	0.00E+00	4.52E+04	1.64E+05
chaetoceros danicum	0.00E+00	0.00E+00	4.00E+02	4.80E+03
chaetoceros debile	0.00E+00	0.00E+00	7.00E+02	0.00E+00
chaetoceros decipiens	0.00E+00	0.00E+00	5.00E+02	5.20E+03
chaetoceros diadema	0.00E+00	0.00E+00	0.00E+00	4.00E+02
chaetoceros didymum	0.00E+00	0.00E+00	0.00E+00	1.00E+03
chaetoceros laciniosum	0.00E+00	0.00E+00	2.80E+03	6.20E+03
chaetoceros pseudoorinum	0.00E+00	0.00E+00	6.00E+02	0.00E+00
	0.00E+00	0.00E+00	4.00E+03	4.00E+02

chaetocero radicans	0.00E+00	0.00E+00	4.50E+03	3.14E+04
chaetocero vixvisibilis	0.00E+00	0.00E+00	4.00E+02	0.00E+00
bacteriast delicatula	0.00E+00	0.00E+00	2.18E+04	1.60E+04
rhizosolen delicatula	0.00E+00	0.00E+00	7.00E+02	1.60E+03
rhizosolen fragilissima	0.00E+00	0.00E+00	1.70E+03	8.00E+02
rhizosolen hebetata f.semispina	0.00E+00	0.00E+00	0.00E+00	2.00E+02
rhizosolen stolterfothi	0.00E+00	0.00E+00	0.00E+00	1.40E+03
minuticell scriptus	0.00E+00	0.00E+00	0.00E+00	3.30E+03
synedra spp. 95-110x6	0.00E+00	0.00E+00	1.00E+02	0.00E+00
thalassion nitzschoides	6.00E+02	7.00E+02	1.21E+04	1.80E+03
licmophora spp.	0.00E+00	0.00E+00	4.00E+02	4.00E+02
nitzschia americana	0.00E+00	0.00E+00	5.00E+02	4.30E+03
nitzschia delicatissim	7.00E+02	3.00E+02	2.00E+03	8.10E+03
nitzschia closterium	0.00E+00	0.00E+00	6.00E+02	2.20E+03
nitzschia cylindroform	8.00E+02	1.20E+03	0.00E+00	0.00E+00
nitzschia impressa	0.00E+00	0.00E+00	0.00E+00	1.20E+03
bipedinomo spp.	0.00E+00	0.00E+00	1.12E+04	0.00E+00
pyramimonas spp. 3 8	9.00E+02	1.60E+03	1.19E+05	0.00E+00
platymonas sp.	0.00E+00	0.00E+00	2.32E+04	1.26E+04
pterosperm spp. 0 5	0.00E+00	0.00E+00	2.80E+03	0.00E+00
pterosperm spp. 5-7	0.00E+00	0.00E+00	7.00E+03	0.00E+00
pterosperm spp. >7	3.70E+03	3.60E+03	4.20E+03	3.30E+03
dinophysis acuminata	0.00E+00	0.00E+00	3.00E+02	0.00E+00
scripsiell spp. glenodinium 15-20	0.00E+00	2.00E+02	0.00E+00	0.00E+00
scripsiell spp. glenodinium 20-25	0.00E+00	1.00E+02	2.00E+02	0.00E+00
scripsiell spp. glenodinium 25-30	0.00E+00	0.00E+00	4.00E+02	0.00E+00
glenodiniu inequale	0.00E+00	0.00E+00	1.43E+04	0.00E+00
gymnodiniu gracilentum	1.00E+03	3.00E+02	3.60E+03	0.00E+00
gymnodiniu agiliforme	0.00E+00	0.00E+00	1.20E+03	4.00E+02
gymnodiniu paulseni	5.00E+02	0.00E+00	5.00E+02	0.00E+00
heterocaps triquetra	0.00E+00	0.00E+00	5.00E+02	0.00E+00
cryptomonas spp. 5-10	5.76E+05	7.06E+05	1.62E+04	6.30E+04
cryptomonas spp. 10.1-15	1.12E+04	5.00E+03	2.04E+04	4.60E+03
cryptomonas spp. 21-30	5.80E+03	1.50E+03	2.40E+04	0.00E+00
isoselmis spp. hemiselmis 4 6	1.12E+04	6.10E+03	8.40E+03	1.12E+04
flagellate spp. 1-2	1.64E+06	7.87E+05	2.99E+06	6.16E+05
flagellate spp. 2-5	3.36E+04	1.03E+05	1.20E+05	5.88E+04
flagellate spp. 6-15	0.00E+00	0.00E+00	3.42E+04	0.00E+00
mesodinium rubrum	3.00E+02	9.00E+02	1.68E+04	3.00E+02

## Total Abundance (no./litre)

## Taxon

Taxon	3-2	3-3	4-2	4-3
synechococ spp.	2.28E+04	1.86E+06	9.75E+05	2.00E+05
dinobryon sueicum	2.40E+04	2.04E+05	0.00E+00	1.50E+04
apedinella spinifera	0.00E+00	9.00E+02	1.28E+04	1.50E+03
olisthodis carterae	0.00E+00	0.00E+00	1.10E+03	0.00E+00
chrysochro sp.1	1.40E+04	2.02E+06	1.40E+04	1.21E+06
chrysochro spp. 4-5.5	4.48E+04	6.21E+05	8.96E+04	9.01E+05
chrysochro spp. 6-10	3.08E+04	1.00E+05	3.92E+04	2.05E+05
chrysochro spp. 15-20	0.00E+00	6.80E+03	4.10E+03	1.22E+04
schroedere delicatula	0.00E+00	2.30E+03	2.20E+03	0.00E+00
leptocylin danicus	1.33E+04	0.00E+00	2.70E+03	5.90E+03
leptocylin minimus	2.70E+05	6.13E+04	1.18E+04	5.10E+04
leptocylin mediterraneu	0.00E+00	1.80E+03	0.00E+00	0.00E+00
skeletonem costatum	1.50E+03	1.81E+04	1.58E+04	5.70E+03
thalassios rotula	1.80E+03	0.00E+00	1.58E+04	0.00E+00
thalassios aestivalis	2.00E+02	0.00E+00	1.31E+04	0.00E+00
thalassios nordenskiold	2.00E+03	0.00E+00	6.60E+03	0.00E+00
thalassios pacifica	0.00E+00	0.00E+00	5.00E+02	0.00E+00
thalassios eccentrica	1.00E+02	0.00E+00	7.00E+02	0.00E+00
thalassios mendiolana	1.90E+03	0.00E+00	2.30E+03	0.00E+00
thalassios conferta	1.20E+03	0.00E+00	2.70E+03	0.00E+00
coscinodis spp.	5.00E+02	0.00E+00	2.00E+02	0.00E+00
chaetocero sp.k	3.80E+03	7.63E+05	3.40E+03	7.00E+04
chaetocero cf. affine. v. circinalis	0.00E+00	2.72E+04	0.00E+00	1.60E+03
chaetocero breve	3.50E+03	0.00E+00	6.80E+03	0.00E+00
chaetocero compressum	6.97E+05	3.58E+06	9.35E+05	7.32E+05
chaetocero constrictum	1.20E+03	0.00E+00	2.40E+04	0.00E+00
chaetocero convolutum	5.20E+03	2.30E+03	0.00E+00	0.00E+00
chaetocero debile	1.27E+04	7.70E+03	1.07E+05	6.40E+03
chaetocero decipiens	0.00E+00	1.13E+04	0.00E+00	0.00E+00
chaetocero diadema	8.20E+03	3.20E+03	1.22E+04	1.60E+03
chaetocero didymum	5.40E+03	7.30E+03	0.00E+00	1.30E+03
chaetocero laciniosum	1.00E+03	9.90E+03	4.00E+03	0.00E+00
chaetocero pseudocrinit	1.48E+04	2.95E+04	1.24E+05	1.32E+04
chaetocero radicans	1.92E+05	5.54E+05	9.70E+04	8.30E+03
chaetocero socialis	4.17E+04	2.27E+04	2.50E+04	2.40E+03

bacteriast delicatula	6.17E+04	2.77E+05	2.63E+04	3.56E+05
rhizosolen alata f.gracillima	0.00E+00	0.00E+00	6.00E+02	0.00E+00
rhizosolen delicatula	1.90E+03	5.90E+03	3.90E+03	8.00E+02
rhizosolen fragilissima	0.00E+00	4.00E+02	0.00E+00	6.00E+02
rhizosolen fragilissima v.1	0.00E+00	1.80E+03	0.00E+00	0.00E+00
rhizosolen stolterfothi	2.60E+03	9.00E+02	3.10E+03	2.00E+02
minuticell scriptus	0.00E+00	1.80E+03	6.30E+03	2.50E+03
thalassion nitzschoides	8.00E+02	2.30E+03	7.00E+02	4.00E+02
nitzschia americana	3.60E+04	3.20E+03	2.10E+04	2.60E+03
nitzschia delicatissim	8.80E+03	6.30E+03	2.22E+04	8.50E+03
nitzschia pungens	5.00E+02	0.00E+00	1.70E+03	0.00E+00
nitzschia seriata	3.00E+02	0.00E+00	1.00E+03	0.00E+00
nitzschia seriata v.obtusa	6.20E+03	0.00E+00	8.00E+02	3.00E+02
nitzschia lineola	0.00E+00	0.00E+00	0.00E+00	2.00E+02
nitzschia closterium	7.00E+03	2.70E+03	4.10E+03	1.60E+03
nitzschia closterium v.striatula	0.00E+00	0.00E+00	0.00E+00	3.00E+02
nitzschia subraudulen	2.10E+03	9.00E+02	0.00E+00	0.00E+00
cylindroth fusiformis	7.00E+02	0.00E+00	1.40E+03	4.00E+02
nephroelm spp.	2.80E+04	6.36E+04	5.60E+03	3.92E+04
pyramimonas spp. 3 8	2.70E+04	4.00E+04	5.80E+04	4.40E+03
platymonas sp.	0.00E+00	2.70E+03	1.45E+04	2.10E+03
pterosperm spp.	0.00E+00	0.00E+00	1.20E+03	0.00E+00
pterosperm spp. 0 5	0.00E+00	2.30E+03	0.00E+00	1.02E+04
pterosperm spp. 5 7	0.00E+00	5.90E+03	0.00E+00	1.80E+03
pterosperm spp. ,7	1.44E+04	4.35E+04	0.00E+00	6.70E+03
prorocentr minimum v.balticum	9.00E+02	1.80E+03	1.70E+03	3.30E+03
prorocentr rotundatum	0.00E+00	0.00E+00	0.00E+00	5.00E+02
dinophysis ovum	0.00E+00	0.00E+00	1.20E+03	2.00E+02
gonyaulax digitale	1.00E+02	0.00E+00	0.00E+00	0.00E+00
scripsiell spp. glenodinium 20-25	8.00E+02	1.40E+03	6.00E+02	2.00E+02
scripsiell spp. glenodinium 25-30	0.00E+00	0.00E+00	0.00E+00	7.00E+02
scripsiell trochoidea	2.00E+02	9.00E+02	1.00E+03	4.00E+02
gymnodiniu flavum	0.00E+00	4.00E+02	2.00E+02	1.10E+03
gymnodiniu gracilem	7.20E+03	4.50E+03	1.18E+04	9.00E+03
gymnodiniu agiliiforme	2.00E+03	4.10E+03	2.20E+03	1.20E+03
gymnodiniu paulseni	4.00E+02	7.70E+03	3.90E+03	4.50E+03
heterocaps triquetra	0.00E+00	1.40E+03	0.00E+00	0.00E+00
ceratium lineatum	0.00E+00	0.00E+00	5.00E+02	0.00E+00
cryptomonas spp. 5-10	1.50E+04	4.45E+04	2.76E+04	2.30E+04
cryptomonas spp. 10.1-15	5.20E+03	9.10E+03	1.18E+04	6.80E+03
cryptomonas spp. 21-30	4.20E+03	9.10E+03	2.50E+03	0.00E+00
isoselmis spp. hemiselmis 4-6	1.96E+04	1.27E+04	1.68E+04	0.00E+00
flagellate spp. 1-2	5.47E+05	2.41E+06	5.02E+05	1.43E+06
flagellate spp. 2-5	5.04E+04	4.70E+05	1.94E+05	3.65E+05
flagellate spp. 6-15	0.00E+00	0.00E+00	0.00E+00	3.00E+03
mesodinium rubrum	1.00E+03	0.00E+00	6.00E+02	4.00E+02

## Total Abundance (no./litre)

TAXON	5-2	5-3	6-2	6-3
synechococ spp.	0.00E+00	8.19E+05	2.28E+04	4.10E+05
dinobryon sueicum	4.10E+04	2.05E+04	4.90E+04	2.30E+04
apedinella spinifera	1.84E+05	2.40E+03	0.00E+00	0.00E+00
pseudopedi pyriformis	0.00E+00	0.00E+00	1.20E+03	0.00E+00
olisthodis carterae	1.59E+05	4.90E+03	1.74E+04	0.00E+00
chrysochro sp.1	1.40E+04	1.71E+05	3.08E+04	0.00E+00
chrysochro spp. 4-5.5	7.56E+04	8.09E+05	7.84E+04	1.15E+05
chrysochro spp. 6-10	1.68E+04	1.94E+05	2.80E+04	2.24E+04
chrysochro spp. 15-20	3.80E+03	4.46E+04	1.12E+04	2.10E+03
leptocylin danicus	5.70E+03	6.80E+03	0.00E+00	1.10E+03
leptocylin minimus	2.70E+03	1.35E+05	1.39E+04	4.64E+04
leptocylin mediterraneu	0.00E+00	0.00E+00	0.00E+00	4.00E+02
skeletonetem costatum	1.32E+04	0.00E+00	4.20E+03	1.05E+04
thalassios rotula	2.60E+03	0.00E+00	0.00E+00	0.00E+00
thalassios nordenskiold	1.50E+03	0.00E+00	3.00E+02	0.00E+00
thalassios mendiolana	8.00E+02	0.00E+00	0.00E+00	0.00E+00
thalassios conferta	1.40E+03	0.00E+00	0.00E+00	0.00E+00
eucampia zoodiacus	0.00E+00	0.00E+00	2.00E+02	0.00E+00
chaetocero sp.1 (=D)	8.40E+03	9.00E+03	0.00E+00	0.00E+00
chaetocero sp.a	0.00E+00	0.00E+00	0.00E+00	0.00E+00
chaetocero sp.h	1.50E+04	5.60E+04	1.20E+03	0.00E+00
chaetocero sp.j	0.00E+00	0.00E+00	1.60E+03	6.20E+03
chaetocero cf.affine v.circinalis	0.00E+00	0.00E+00	0.00E+00	1.46E+05
chaetocero compressum	0.00E+00	6.00E+02	0.00E+00	7.00E+02
chaetocero convolutum	6.14E+04	4.55E+05	0.00E+00	3.30E+03
chaetocero danicum	0.00E+00	4.00E+02	0.00E+00	0.00E+00
chaetocero debile	0.00E+00	1.00E+03	0.00E+00	0.00E+00
chaetocero diadema	2.10E+04	3.10E+03	0.00E+00	7.00E+02
chaetocero didymum	1.33E+04	4.30E+03	0.00E+00	0.00E+00
chaetocero pseudocrinit	6.80E+03	3.00E+03	0.00E+00	0.00E+00
chaetocero radicans	2.70E+03	3.20E+03	0.00E+00	0.00E+00
chaetocero septentriona	3.50E+03	0.00E+00	0.00E+00	0.00E+00
chaetocero socialis	1.80E+03	0.00E+00	6.00E+02	0.00E+00
chaetocero vixivisibilis	9.50E+03	1.80E+03	1.00E+03	0.00E+00
bacteriast delicatula	0.00E+00	0.00E+00	0.00E+00	4.00E+02
	4.70E+03	1.32E+05	0.00E+00	7.50E+03

rhizosolen alata f.gracillima	0.00E+00	1.00E+03	0.00E+00	0.00E+00
rhizosolen delicatula	1.00E+03	3.50E+03	0.00E+00	5.00E+02
rhizosolen fragilissima	0.00E+00	6.00E+02	0.00E+00	4.00E+02
rhizosolen fragilissima v.1	0.00E+00	0.00E+00	0.00E+00	7.00E+02
thalassion nitzschoides	0.00E+00	1.50E+03	0.00E+00	0.00E+00
nitzschia americana	1.00E+03	0.00E+00	0.00E+00	0.00E+00
nitzschia delicatissim	1.50E+03	0.00E+00	0.00E+00	0.00E+00
nitzschia closterium	5.60E+03	3.80E+03	2.00E+03	1.05E+04
nitzschia closterium v.striatula	0.00E+00	0.00E+00	0.00E+00	1.10E+03
nitzschia subcurvata	0.00E+00	0.00E+00	0.00E+00	2.60E+03
cylindroth fusiformis	3.00E+02	1.00E+03	3.00E+02	4.00E+02
nephroselm spp.	1.12E+04	5.70E+03	0.00E+00	0.00E+00
bipedinomo spp.	0.00E+00	0.00E+00	0.00E+00	1.14E+04
pyramimonas spp. 3-8	7.20E+04	1.03E+05	2.10E+03	3.14E+05
platymonas sp.	0.00E+00	4.00E+02	0.00E+00	5.00E+02
pterosperm spp. 0-5	1.34E+05	0.00E+00	0.00E+00	0.00E+00
pterosperm spp. 7	8.60E+04	3.10E+04	5.60E+04	2.12E+04
eutreptiel spp.	0.00E+00	2.20E+03	0.00E+00	1.64E+04
prorocentr minimum v.balticum	3.10E+03	3.40E+03	1.30E+03	0.00E+00
dinophysis ovum	0.00E+00	0.00E+00	1.00E+02	0.00E+00
scripsiell sp.2 (=114)	0.00E+00	0.00E+00	0.00E+00	4.00E+02
scripsiell trochoidea	0.00E+00	4.00E+02	0.00E+00	0.00E+00
gymnodiniu flavum	0.00E+00	0.00E+00	2.00E+02	0.00E+00
gymnodiniu gracilement	5.80E+03	2.00E+03	2.40E+03	1.60E+03
gymnodiniu agiliforme	6.00E+02	0.00E+00	2.90E+03	0.00E+00
gymnodiniu paulseni	2.80E+03	1.10E+03	0.00E+00	0.00E+00
cryptomonas spp. 5-10	2.76E+04	4.30E+04	5.90E+03	4.90E+04
cryptomonas spp. 10.1-15	6.00E+03	3.20E+03	6.00E+02	2.50E+03
isoselmis spp. hemiselmis 4-6	0.00E+00	0.00E+00	0.00E+00	1.80E+04
flagellate spp.	0.00E+00	1.64E+06	0.00E+00	0.00E+00
flagellate spp. 1 2	1.65E+05	6.96E+05	4.79E+05	1.22E+06
flagellate spp. 2 5	7.41E+04	0.00E+00	4.56E+04	3.19E+05
mesodinium rubrum	0.00E+00	0.00E+00	3.00E+02	3.00E+02

## Total Abundance (no./litre)

Taxon	7-2	7-3	8-2	8-3
synechococ spp.	0.00E+00	0.00E+00	0.00E+00	1.14E+04
solenicola setigera	4.60E+03	0.00E+00	0.00E+00	0.00E+00
dinobryon sueicum	5.00E+03	2.04E+04	1.09E+05	2.20E+03
apedinella spinifera	0.00E+00	2.30E+03	0.00E+00	1.50E+03
pseudopedi pyriformis	0.00E+00	0.00E+00	4.10E+03	0.00E+00
olisthodis carterae	0.00E+00	4.10E+03	0.00E+00	1.50E+03
chrysosochro sp.l	0.00E+00	1.23E+05	1.18E+05	1.42E+05
chrysosochro spp. 4-5.5	3.40E+04	1.77E+05	2.72E+04	3.88E+05
chrysosochro spp. 6-10	5.00E+03	2.95E+04	0.00E+00	2.85E+04
chrysosochro spp. 15-20	0.00E+00	3.04E+04	0.00E+00	1.90E+04
stephanopy nipponica	0.00E+00	0.00E+00	5.40E+03	0.00E+00
schroedere delicatula	5.60E+03	1.59E+04	1.04E+04	0.00E+00
leptocylin danicus	1.15E+04	1.45E+04	1.41E+04	9.00E+03
leptocylin minimus	8.70E+03	1.02E+05	3.20E+03	2.01E+05
leptocylin mediterraneu	6.00E+02	0.00E+00	0.00E+00	0.00E+00
skeletonem costatum	1.81E+05	6.49E+04	0.00E+00	0.00E+00
thalassios spp.	6.00E+02	0.00E+00	0.00E+00	0.00E+00
thalassios rotula	2.10E+03	2.30E+03	7.30E+03	0.00E+00
thalassios anguste-line	3.00E+02	0.00E+00	0.00E+00	0.00E+00
thalassios aestivalis	3.20E+03	8.20E+03	1.45E+04	0.00E+00
thalassios nordenskiold	1.88E+04	7.70E+03	2.54E+04	0.00E+00
thalassios pacifica	4.30E+03	2.70E+03	1.80E+03	0.00E+00
thalassios eccentrica	8.00E+02	0.00E+00	0.00E+00	0.00E+00
thalassios mendiolana	2.40E+03	9.00E+02	1.63E+04	0.00E+00
thalassios conferta	4.30E+03	3.20E+03	3.60E+03	0.00E+00
cerataulin pelagica	4.00E+02	4.00E+02	0.00E+00	0.00E+00
chaetocero sp.l (=D)	0.00E+00	1.40E+03	0.00E+00	0.00E+00
chaetocero sp.h	1.20E+03	1.40E+05	2.95E+04	4.56E+04
chaetocero cf. affine v.circinalis	0.00E+00	1.80E+03	0.00E+00	6.00E+02
chaetocero cf. perpusill	0.00E+00	0.00E+00	6.80E+03	0.00E+00
chaetocero breve	4.90E+03	1.22E+04	0.00E+00	1.60E+03
chaetocero compressum	4.20E+05	5.38E+06	4.10E+06	4.55E+05
chaetocero constrictum	3.50E+03	0.00E+00	3.58E+04	0.00E+00
chaetocero convolutum	6.80E+03	0.00E+00	3.45E+04	0.00E+00
chaetocero curvisetum	0.00E+00	3.20E+03	0.00E+00	0.00E+00

chaetocero danicum	7.00E+02	0.00E+00	9.00E+02	0.00E+00
chaetocero debile	2.11E+05	4.00E+05	5.63E+04	0.00E+00
chaetocero diadema	3.60E+03	0.00E+00	4.36E+04	2.60E+05
chaetocero didymum	5.30E+03	2.04E+04	1.91E+05	0.00E+00
chaetocero lorenzianum	7.00E+02	0.00E+00	0.00E+00	0.00E+00
chaetocero pseudocrinit	5.00E+03	6.53E+04	2.72E+04	4.80E+05
chaetocero radicans	1.18E+05	1.84E+05	6.86E+05	0.00E+00
chaetocero septentriona	4.30E+03	0.00E+00	1.04E+04	0.00E+00
chaetocero socialis	2.02E+05	1.36E+04	4.52E+05	5.00E+03
chaetocero vixvisibilis	2.20E+03	9.00E+02	1.80E+03	0.00E+00
bacteriast delicatula	1.50E+03	2.54E+05	2.95E+04	2.18E+05
rhizosolen alata f.gracillima	3.00E+02	0.00E+00	0.00E+00	3.00E+02
rhizosolen delicatula	1.20E+03	1.00E+04	2.20E+03	4.50E+03
rhizosolen fragilissima	1.50E+03	2.30E+03	4.00E+02	0.00E+00
rhizosolen fragilissima v.1	1.50E+03	0.00E+00	1.80E+03	1.00E+03
rhizosolen stolterfothi	8.00E+02	0.00E+00	5.90E+03	0.00E+00
ditylum brightwellii	2.00E+02	0.00E+00	0.00E+00	0.00E+00
minuticell scriptus	7.00E+03	0.00E+00	3.60E+03	0.00E+00
thalassion nitzschoides	2.80E+03	9.00E+02	5.40E+03	1.10E+03
gyrosigma spp. pleurosigma	7.00E+02	0.00E+00	9.00E+02	0.00E+00
nitzschia americana	9.20E+04	2.81E+04	2.79E+05	4.00E+03
nitzschia delicatissim	2.92E+05	5.22E+04	7.58E+04	3.10E+03
nitzschia pungens	4.20E+03	0.00E+00	1.40E+03	0.00E+00
nitzschia seriata	3.00E+02	0.00E+00	0.00E+00	0.00E+00
nitzschia seriata v.obtusa	2.40E+03	4.10E+03	9.00E+02	0.00E+00
nitzschia lineola	0.00E+00	9.00E+02	0.00E+00	0.00E+00
nitzschia closterium	1.00E+04	1.91E+04	1.68E+04	5.20E+03
nitzschia closterium v.striatula	0.00E+00	2.49E+04	0.00E+00	0.00E+00
nitzschia subfraudulen	2.50E+03	0.00E+00	5.40E+03	0.00E+00
nitzschia cylindroform	9.20E+04	4.50E+03	2.70E+03	0.00E+00
nitzschia impressa	7.10E+03	0.00E+00	1.80E+03	0.00E+00
nitzschia subcurvata	6.60E+03	1.40E+03	0.00E+00	5.00E+02
cylindroth fusiformis	6.00E+02	0.00E+00	1.40E+03	3.00E+02
cymbomonas spp.	0.00E+00	0.00E+00	0.00E+00	1.20E+04
nephroelm spp.	0.00E+00	0.00E+00	0.00E+00	4.56E+04
bipedinomo spp.	0.00E+00	0.00E+00	2.30E+03	0.00E+00
pyramimonas spp. 3 8	2.40E+03	1.91E+04	1.27E+04	6.20E+03
platy wholemonas sp.	0.00E+00	1.80E+03	0.00E+00	1.00E+03
pterosperm spp. 0-5	0.00E+00	1.36E+04	0.00E+00	0.00E+00
pterosperm spp. 5-7	0.00E+00	5.40E+03	0.00E+00	0.00E+00
pterosperm spp. >7	0.00E+00	0.00E+00	1.40E+03	0.00E+00
eutreptiel spp.	0.00E+00	0.00E+00	0.00E+00	4.00E+02
prorocentr spp.	6.00E+02	0.00E+00	0.00E+00	0.00E+00
prorocentr minimum v.balticum	0.00E+00	0.00E+00	0.00E+00	2.50E+03
prorocentr balticum	0.00E+00	2.30E+03	0.00E+00	0.00E+00
prorocentr rotundatum	0.00E+00	0.00E+00	0.00E+00	3.00E+02
dinophysis acuminata	0.00E+00	0.00E+00	9.00E+02	0.00E+00
dinophysis ovum	0.00E+00	0.00E+00	4.00E+02	0.00E+00
gonyaulax diagensis	2.00E+02	0.00E+00	0.00E+00	0.00E+00

scripsiell spp. glenodinium	15-20	0.00E+00	0.00E+00	0.00E+00	3.00E+02
scripsiell trochoidea		0.00E+00	0.00E+00	0.00E+00	6.00E+02
gymnodinium gracilentum		1.00E+03	3.60E+03	3.60E+03	1.00E+03
gymnodinium agiliforme		9.00E+02	4.00E+02	4.00E+02	0.00E+00
gymnodinium paulseni		2.50E+03	0.00E+00	1.82E+04	4.00E+02
heterocaps triquetra		0.00E+00	0.00E+00	0.00E+00	4.00E+02
cryptomonas spp. 5-10		2.82E+04	1.36E+04	6.13E+04	2.08E+04
cryptomonas spp. 10.1-15		1.10E+03	8.60E+03	1.77E+04	1.44E+04
cryptomonas spp. 15.1-20		0.00E+00	0.00E+00	0.00E+00	5.00E+02
cryptomonas spp. 21-30		1.20E+03	9.50E+03	6.30E+03	0.00E+00
isoselmis spp. hemiselmis	4-6	1.60E+03	2.70E+03	4.18E+04	1.71E+04
flagellate spp. 1-2		2.45E+05	5.72E+05	8.54E+05	5.13E+04
flagellate spp. 2-5		3.42E+04	9.00E+04	2.07E+05	1.14E+04
mesodinium rubrum		9.00E+02	3.20E+03	8.03E+04	6.00E+02

## Total Abundance (no./litre)

Taxon	9-2	9-3
synechococ spp.	6.04E+05	1.97E+06
dinobryon sueicum	0.00E+00	4.00E+03
dictyocha speculum	2.00E+02	0.00E+00
pseudopedi pyriformis	1.00E+03	1.50E+03
olisthodis carterae	1.00E+03	7.00E+02
chrysochro spp. 4-5.5	1.04E+06	1.99E+06
chrysochro spp. 6-10	1.03E+05	3.88E+05
leptocylin spores spiny	0.00E+00	6.20E+03
leptocylin minimus	0.00E+00	2.94E+04
leptocylin mediterraneu	0.00E+00	8.00E+02
thalassios nordenskiold	0.00E+00	2.00E+02
thalassios conferta	2.00E+02	1.10E+03
cerataulin pelagica	0.00E+00	4.00E+02
chaetocero cf.affine v.circinalis	0.00E+00	1.40E+03
chaetocero breve	0.00E+00	3.40E+03
chaetocero compressum	9.00E+03	3.63E+05
chaetocero convolutum	8.00E+02	2.00E+02
chaetocero danicum	2.00E+02	8.00E+02
chaetocero debile	2.00E+02	0.00E+00
chaetocero decipiens	0.00E+00	7.00E+02
chaetocero diadema	0.00E+00	6.00E+02
chaetocero didymum	0.00E+00	1.20E+03
chaetocero lorenzianum	2.00E+02	3.00E+02
chaetocero pseudocrinit	0.00E+00	6.60E+03
chaetocero radicans	0.00E+00	8.50E+03
chaetocero socialis	0.00E+00	6.00E+02
chaetocero subtile	0.00E+00	1.10E+03
chaetocero vixvisibilis	3.00E+02	4.00E+02
bacteriast delicatula	2.00E+02	3.58E+04
rhizosolen delicatula	0.00E+00	2.20E+03
rhizosolen fragilissima	6.00E+02	3.00E+02
rhizosolen fragilissima v.1	0.00E+00	2.30E+03
minuticell scriptus	1.50E+03	0.00E+00
thalassiot frauendorfii	0.00E+00	1.00E+02
thalassion nitzschoides	1.00E+03	4.00E+03

thalassion bacillaris	0.00E+00	3.00E+02
nitzschia americana	4.00E+02	1.60E+03
nitzschia delicatissim	2.20E+03	3.60E+03
nitzschia pungens	0.00E+00	4.00E+02
nitzschia lineola	0.00E+00	3.00E+02
nitzschia closterium	9.00E+02	1.00E+03
nitzschia subraudulen	0.00E+00	2.00E+02
nitzschia cylindroform	5.00E+02	1.70E+03
nitzschia impressa	1.00E+02	0.00E+00
nitzschia subcurvata	6.00E+02	0.00E+00
cylindroth fusiformis	0.00E+00	2.00E+02
pyramimona spp. 3-8	3.30E+03	1.82E+05
pterosperm spp. >7	0.00E+00	1.10E+03
prorocentr minimum v.balticum	1.80E+03	2.00E+02
scripsiell spp. glenodinium 15-20	0.00E+00	1.00E+02
cochlodini citron	1.00E+02	0.00E+00
gymnodiniu gracilentum	1.60E+03	0.00E+00
gymnodiniu agiliforme	2.00E+02	3.00E+02
gymnodiniu paulseni	2.00E+02	0.00E+00
cryptomonas spp. 5-10	1.25E+05	0.00E+00
cryptomonas spp. 10.1-15	1.60E+03	3.56E+04
isoselmis spp. hemiselmis 4-6	3.95E+04	6.00E+03
flagellate spp. 1-2	1.35E+06	2.17E+06
flagellate spp. 2-5	2.96E+05	5.92E+05
mesodinium rubrum	2.10E+03	6.00E+03

## DATA SECTION 7

## ZOOPLANKTON IDENTITY AND ABUNDANCE

Table 11 Zooplankton taxonomic list

Table 12 OE8902 Zooplankton identity and abundance  
(vertical net hauls)

Table 13 OE8902 Zooplankton identity and abundance  
(EPCS calibration samples)

Table 14 OE8904 Zooplankton identity and abundance  
(vertical net hauls)

Table 15 OE8904 Zooplankton identity and abundance  
(EPCS calibration samples)

TABLE 11 ZOOPLANKTON SPECIES LIST: CRUISES OE8902 AND OE8904

<b>Protozoa</b>		<b>Annelida</b>		
	Foraminifera	Polychaeta		
<b>Cnidaria</b>			Polychaete trochophores	
	Medusae		Polychaete larvae	
<b>Hydrozoa</b>			Polynoid larvae	
	Aglantha	<b>Bryozoa</b>		
	Eutonla		Cyphonautes larvae	
	Phialidium	<b>Arthropoda</b>		
	Proboscidactyla			
	Sarsia	Crustacea		
<b>Siphonophora</b>		Cladocera		
	Siphonophore nectophores		Evdne	
	Dinophyes		Podon	
	Muggiaeaa	Ostracoda		
<b>Scyphozoa</b>			Conchoecia	
	Aurelia	Copepoda		
<b>Ctenophora</b>			Copepod nauplii	
Tentaculata		Calanoida		
	Pleurobrachia		Calanoida (unidentified)	
<b>Mollusca</b>			Acartia	
Gastropoda			Acartia clausi	
	Gastropod veligers		Acartia longiremis	
Pteropoda			Calanus	
	Limacina		Calanus marshallae	
Bivalvia			Calanus pacificus	
	Bivalve veligers		Candacia columblae	
			Centropages abdominalis	
			Ctenocalanus vanus	
			Eucalanus bungii	
			Euchaeta	
				Euchaeta elongata
				Galdius pungens
				Lucicutia flavicornis
				Mesocalanus tenuicornis
				Metridia
				Metridia pacifica
				Microcalanus pygmaeus pusillus
				Neocalanus cristatus
				Paracalanus parvus
				Pseudocalanus minimus/elegans
				Scolecithricella minor
				Tortanus discaudatus
				Corycaeus anglicus
				Oithona similis
				Oithona atlantica
				Harpacticoida
				Harpacticoida (unidentified)
				Cirripedia
				Barnacle nauplii
				Barnacle cyprids
				Euphausiacea
				Euphausiid nauplii
				Euphausiid juveniles
				Euphausiid calyptopsis
				Euphausiid furcilia
				Euphausia pacifica
				Thysanoessa longipes
				Thysanoessa spinifera

<b>Decapoda</b>		<b>Hyperidea</b>
	<b>Decapod zoea</b>	
	Axidae	
<b>Caridea</b>		
	Caridean zoea	
	Caridean mysis	
	Crangonidae	<b>Echinodermata</b>
	Pasiphaea pacifica	
	Pandalidae	Echinoderm pluteus
	Pasiphaea pacifica	
<b>Anomura</b>		<b>Asteroidea</b>
	Pagurid zoea	
	Pagurid megalops	Asteroid larvae
	Porcellanidae zoea	
<b>Brachyura</b>		
	Brachyuran zoea	
	Brachyuran megalops	
<b>Mysida</b>	Holmsiella anomola	<b>Chaetognatha</b>
<b>Isopoda</b>	Isopoda	
<b>Amphipoda</b>		
<b>Gammaridea</b>	Cyphocaris challengerii	Chaetognatha
	Melphidippa	Chaetognath juvenile
	Stilipes	Sagitta elegans
		Sagitta scrippsae
		Eukrohnia hamata
		<b>Urochordata</b>
		Larvacea
		Oikopleura
		Fritillaria
		<b>Vertebrata</b>
		Pisces
		Fish larvae
		<b>Miscellaneous</b>
		Unclassified eggs

TABLE 12 ZOOPLANKTON ABUNDANCE: OE8902

Bongo vertical net haul: animals.m<sup>-2</sup>

	Stn 2	Stn 3	Stn 4	Stn 5	Stn 6	Stn 7	Stn 8	Stn 9
Depth of haul:	150m	150m	120m	85m	27m	24m	32m	80m
Taxon:								
Acartia 1-4	1232		5538	8616	2460	922	27927	1230
Acartia clausi 5								
Acartia clausi 6f	308							
Acartia clausi 6m		308						
Acartia longiremis 5	308		4924	10462	2152		6206	18462
Acartia longiremis 6f	308		2461	11693	2787		1862	4923
Acartia longiremis 6m	1232		3077	10462	3690		1862	2462
Aglantha s2	29	20						
Asteroid larvae								
Aurelia					10			
Axidae s1								
Barnacle cyprids	308		616	615	308			
Barnacle nauplii	1232			1231	5227	3994	7447	
Bivalve veligers	3077	615	1846	5539	2152	25805	13033	2462
Brachyuran megalops s1								
Brachyuran megalops s2								
Brachyuran zoea s1				1846	1537	3072		
Brachyuran zoea s2								
Calanoida 1-3 (unidentified)	3384	77	2461	3692	3690	1536	620	6154
Calanus 1-3			1846	4308	2152		1862	11077
Calanus marshallae 4	308			3692	308		620	1230
Calanus marshallae 5	615		616	3692	308		620	2462
Calanus marshallae 6f		1539	1231	7385			1241	1230
Calanus marshallae 6m				615				1230
Calanus pacificus 6f		308						
Candacia columblae 6f	308							

OE8902 (cont.)	Stn 2	Stn 3	Stn 4	Stn 5	Stn 6	Stn 7	Stn 8	Stn 9
<i>Candacia columblae</i> 6m		308						
<i>Caridean mysis</i> s1			616		615		2483	
<i>Caridean mysis</i> s2	57		48	116	67	67	87	19
<i>Caridean mysis</i> s3		9			10	10		
<i>Caridean zoea</i> s1		615		1231				
<i>Centropages abdominalis</i> 1-4						307		
<i>Centropages abdominalis</i> 5					308	307	1241	3692
<i>Centropages abdominalis</i> 6f							1230	
<i>Centropages abdominalis</i> 6m	308			1231				
<i>Chaetognath juvenile</i> s1								
<i>Chaetognath juvenile</i> s2	39	29	10	500		10	10	192
<i>Chaetognatha</i> s3			38		10			
<i>Conchoecia</i> s1	6770	5538	1846			307		1230
<i>Copepod nauplii</i>	2154	308	5538	11077	2460	307	2483	12308
<i>Corycaeus anglicus</i> 5								
<i>Corycaeus anglicus</i> 6f			616					
<i>Crangonidae</i> s2						29		
<i>Ctenocalanus vanus</i> 5					922			
<i>Ctenocalanus vanus</i> 6f					308			
<i>Cyphocaris challengerl</i> s1	923							
<i>Cyphocaris challengerl</i> s2	693	212	240	20				
<i>Cyphocaris challengerl</i> s3	29	9	58					
<i>Cypronautes larvae</i>	1847	9846						
<i>Dimophyes</i> s1			616					
<i>Dimophyes</i> s2	20	9	10					
<i>Echinoderm pluteus</i> s1				615	615	614	3724	
<i>Eucalanus bungii</i> 5f						10		
<i>Eucalanus bungii</i> 5m								
<i>Eucalanus bungii</i> 6f						10		
<i>Eucalanus bungii</i> 6m			10					
<i>Euchaeta</i> 1-2		615						
<i>Euchaeta</i> 3		615	616					

OE8902 (cont.)      Stn 2      Stn 3      Stn 4      Stn 5      Stn 6      Stn 7      Stn 8      Stn 9

<i>Euchaeta elongata</i> s1	20	491	96					
<i>Euchaeta elongata</i> 5m	48	39	616					
<i>Euchaeta elongata</i> 6f	116	288	134					
<i>Euchaeta elongata</i> 6m	29	125	144					
<i>Eukrohnia hamata</i> s2	29	9						
<i>Eukrohnia hamata</i> s3	9	9	67					
<i>Euphausia pacifica</i> f		11	10					
<i>Euphausia pacifica</i> m		9						
<i>Euphausia pacifica</i> s2	29					10		
<i>Euphausia pacifica</i> s3		9						
<i>Euphausiid calyptopsis</i> s1	308	1232	1231	3077	1845	307		
<i>Euphausiid furcilla</i> s1		308		615	308	307		
<i>Euphausiid juveniles</i> s1								
<i>Euphausiid juveniles</i> s2	29	9					10	
<i>Euphausiid nauplii</i>	3077			3077	4920		620	3692
<i>Eutonia</i>								
<i>Eyadne</i> s1	3693	1539	616			8602	1862	3692
<i>Fish larvae</i> s2			10		10			
<i>Fish larvae</i> s3	9		10					
<i>Fritillaria</i> s1	615					922		
<i>Galdius pungens</i> 5	308							
<i>Gastropod veligers</i> s1	308		616		615	2150		
<i>Harpacticoida</i> (unidentified)								
<i>Holmsiella anomola</i> s2			10					
<i>Holmsiella anomola</i> s3			58					
<i>Hyperia</i> s1								
<i>Hyperidae</i> s1	308	615	1846	615				
<i>Isopoda</i> s1			616					
<i>Limacina</i> s1	308			3692	922	8294	3724	1230
<i>Lucicutia flavicornis</i> 6m		308						
<i>Medusae</i> s1								
<i>Medusae</i> s2								

OE8902 (cont.)	Stn 2	Stn 3	Stn 4	Stn 5	Stn 6	Stn 7	Stn 8	Stn 9
<b>Meihipippa s2</b>								
<b>Mesocalanus tenuicornis 5</b>	308							
<b>Metridia 1-4</b>	615	4001	1846			307		
<b>Metridia pacifica 1-4</b>		308	3692					
<b>Metridia pacifica 5f</b>	923	1539	1846	615			2462	
<b>Metridia pacifica 5m</b>	615	2154	2461			620	1230	
<b>Metridia pacifica 6f</b>	1847	1539	4308	1231				
<b>Metridia pacifica 6m</b>	3077	41231	9230	615				
<b>Microcalanus pygmaeus pusillus 5</b>	2154	1539	4924					
<b>Microcalanus pygmaeus pusillus 6f</b>	4923	3693	4924					
<b>Microcalanus pygmaeus pusillus 6m</b>	615				922			
<b>Muggiaea s1</b>						10	269	39
<b>Muggiaea s2</b>								
<b>Muggiaea s3</b>								
<b>Neocalanus cristatus 5</b>		9						
<b>Oikopleura s1</b>	1847		4924	1846	6457	23040	35995	
<b>Oikopleura s2</b>	173	192	548	163		19		38
<b>Oikopleura s3</b>								
<b>Oithona atlantica 1-5</b>		615						
<b>Oithona atlantica 6f</b>	308	923						
<b>Oithona atlantica 6m</b>								
<b>Oithona similis 1-5</b>	1232	12615	5538	3077	1537	2150	2462	
<b>Oithona similis 6f</b>	12615	4616	7385	4308	2152	3686	10550	12308
<b>Oithona similis 6m</b>	308	615	616	2462	615			1230
<b>Oncaeа conifera 6f</b>			616					
<b>Pagurid megalops s2</b>					10			
<b>Pagurid zoea s1</b>			616		1845			
<b>Pagurid zoea s2</b>				125	29	10	29	
<b>Pagurid zoea s3</b>						19		
<b>Pandalidae s2</b>		29						
<b>Pandalidae s3</b>								
<b>Paracalanus parvus 5</b>								

OE8902 (cont.)	Stn 2	Stn 3	Stn 4	Stn 5	Stn 6	Stn 7	Stn 8	Stn 9
Parathemisto pacifica f	116	77	106					
Parathemisto pacifica m	107	20	38					
Parathemisto pacifica s1	308		1231			620		
Pasiphaea pacifica f		9						
Pasiphaea pacifica s3		29						
Phialidium s1								
Phialidium s2				9	10	48	39	10
Phialidium s3				29		67	107	19
Pleurobrachia s1					307			
Pleurobrachia s2					10			
Pleurobrachia s3								
Podon s1	615							
Polychaete larvae s1			615			1241		
Polychaete larvae s2					10			
Polychaete trochophores s1	1539		616		2152	307	620	
Polynoid larvae s1						620		
Porcellanidae zoea s1			615					
Porcellanidae zoea s2								
Primno abyssalis f			10					
Primno abyssalis m			29					
Primno abyssalis s1			1231					
Primno abyssalis s2		20	10					
Probiscdactyla s1								
Probiscdactyla s2								
Probiscdactyla s3								
Pseudocalanus min/el 1-4				6154	2460		1241	4923
Pseudocalanus min/el 5f	1539	923	3077	8616	3382	307	3724	13538
Pseudocalanus min/el 5m	1539	308		3077	2152		4965	4923
Pseudocalanus min/el 6f	1539	1847	21539	59692	31670	1229	14894	73846
Pseudocalanus min/el 6m	1847	615	1846	20923	2152		620	11077
Sagitta elegans s2		116						
Sagitta elegans s3	2538	1193	1368	490			20	1298

OE8902 (cont.)	Stn 2	Stn 3	Stn 4	Stn 5	Stn 6	Stn 7	Stn 8	Stn 9
<i>Sagitta scrippae</i> s3								
<i>Sareia</i> s2								
<i>Scolecithricella minor</i> 6f			308					
<i>Siphonophore</i> nectophores s1						15667	6827	
<i>Siphonophore</i> nectophores s2						29		
<i>Stilipes</i> s2			29					
<i>Thysanoessa spinifera</i> s2								
<i>Thysanoessa longipes</i> m		20						
<i>Thysanoessa longipes</i> s2								
<i>Tortanus discudatus</i> 5						614	620	
<i>Tortanus discudatus</i> 6f								
<i>Tortanus discudatus</i> 6m								
Unclassified eggs	17538	17231	32000	30154	31362	3686	1862	18462

TABLE 13 ZOOPLANKTON ABUNDANCE: OE8902

EPCS Calibration Samples: (animals.m<sup>-3</sup>) (Based on approx. 250L sample)

	EPCS D	EPCS E	EPCS F
Taxon:			
Acartia 1-4	522	29	
Acartia clausi 5		22	
Acartia clausi 6m		4	
Acartia longiremis 5	203	11	
Acartia longiremis 6f	232	7	
Acartia longiremis 6m	116	7	
Barnacle cyprids		18	
Barnacle nauplii	87	14	62
Bivalve veligers	29	43	4
Brachyuran megalops s1		7	
Brachyuran zoea s1	1014	391	11
Calanoida 1-3 (unidentified)	174		4
Calanus 1-3	435	101	
Calanus marshallae 4	290	87	
Calanus marshallae 5	841	43	
Calanus marshallae 6f	203	29	
Calanus marshallae 6m			
Caridean mysis s2	87		
Caridean mysis s3	29		
Caridean zoea s1		29	
Caridean zoea s2			
Centropages abdominalis 1-4			
Centropages abdominalis 5		7	
Centropages abdominalis 6f		14	
Centropages abdominalis 6m			

	<b>OE8902 (cont.)</b>	<b>EPCS D</b>	<b>EPCS E</b>	<b>EPCS F</b>
<b>Chaetognath juvenile s1</b>				
<b>Conchoecia s1</b>				
<b>Copepod nauplii</b>	203	297	58	
<b>Corycaeus 1-5</b>				
<b>Corycaeus anglicus 6f</b>				
<b>Cyphonautes larvae</b>			11	
<b>Decapod zoea s1</b>				
<b>Echinoderm pluteus s1</b>	29			
<b>Euphausiid calyptopsis s1</b>	319	80		
<b>Euphausiid furcilia s1</b>	29			
<b>Euphausiid juveniles s1</b>				
<b>Evadne s1</b>	116	174	29	
<b>Fish larvae s1</b>				
<b>Gastropod veligers s1</b>	29			
<b>Harpacticoida (unidentified)</b>		7		
<b>Hyperia s1</b>			4	
<b>Limacina s1</b>	29		4	
<b>Metridia pacifica 5f</b>	29			
<b>Metridia pacifica 6f</b>		7		
<b>Metridia pacifica 6m</b>	29			
<b>Muggiaeae s1</b>				
<b>Oikopleura s1</b>				
<b>Oithona 1-5</b>				
<b>Oithona similis 1-5</b>		7	11	
<b>Oithona similis 6f</b>				
<b>Pagurid zoea s1</b>	87	7		
<b>Paracalanus parvus 5</b>				
<b>Paracalanus parvus 6f</b>				
<b>Paracalanus parvus 6m</b>				
<b>Phialidium s1</b>				
<b>Podon s1</b>		7	25	
<b>Polychaete larvae s1</b>				

OE8902 (cont.)      EPCS D      EPCS E      EPCS F

**Polychaete trochophores s1**

**Polynoid larvae s1**

**Porcellanidae zoea s1**

58

**Pseudocalanus min/el 1-4**

29

14

**Pseudocalanus min/el 5f**

203

7

**Pseudocalanus min/el 5m**

29

**Pseudocalanus min/el 6f**

87

7

**Pseudocalanus min/el 6m**

29

**Unclassified eggs**

TABLE 14 ZOOPLANKTON ABUNDANCE: OE8904

Bongo vertical net haul: animals.m <sup>-2</sup>	Stn 1	Stn 2	Stn 3	Stn 4	Stn 5	Stn 6	Stn 7	Stn 8	Stn 9
Depth of haul:	150m	150m	100m	73m	36m	24m	25m	85m	130m
<b>Taxon:</b>									
Acartia 1-4	4923	9846		4925	475	1229	2462	6154	1231
Acartia clausi 5	7384								
Acartia clausi 6f	2462	1232	1231			307		2461	
Acartia clausi 6m						307		1231	
Acartia longiremis 5		1232	6154	8618	475	307	4923	6154	3692
Acartia longiremis 6f	4923	3693	3992	2462	316		4308	2462	
Acartia longiremis 6m	2462		2462	3693	158	307	616	12308	4923
Aglantha s2					40	67	29		
Asteroid larvae								1231	
Aurelia					30				
Axidae s1					316				
Barnacle cyprids			2462		1108			1231	3692
Barnacle nauplii	4923	3693	11077	11080	633	614	2462	6154	3692
Bivalve veligers	27077	7384	20923		5064	11674	14154	3692	73847
Brachyuran megalops s1		1232						9	
Brachyuran megalops s2									
Brachyuran zoea s1			2462	1231	791	1229	1231		
Brachyuran zoea s2		39		9			10		
Calanoida 1-3 (unidentified)	17231	17231	12308	23391	13451	17510	27692	9846	82462
Calanus 1-3	118154	34461	9846	7387	475		2462	23384	29539
Calanus marshallae 4	44307	27077	8615	2462	158			4923	8615
Calanus marshallae 5	12308	7384	8615	3693				2462	1231
Calanus marshallae 6f	2462	2462	2462	1231			616	2462	
Calanus marshallae 6m	7384	2462		1231				3692	2461
Calanus pacificus 6f									
Candacia columbiae 6f									



OE8904 (cont.)	Stn 1	Stn 2	Stn 3	Stn 4	Stn 5	Stn 6	Stn 7	Stn 8	Stn 9
Euchaeta elongata 5f									20
Euchaeta elongata 5m									
Euchaeta elongata 6f	9								20
Euchaeta elongata 6m									20
Eukrohnia hamata s2		39							
Eukrohnia hamata s3	20		10						9
Euphausia pacifica f									20
Euphausia pacifica m									
Euphausia pacifica s2		116	28			10		87	20
Euphausia pacifica s3									
Euphausiid calyptopsis s1	98462	22154	4923	8618	6648	3686	38154	20923	11077
Euphausiid furcilla s1	32000	6155		1231	5697	3072	1231	6154	
Euphausiid juveniles s1				2482					
Euphausiid juveniles s2		500	10						
Euphausiid nauplii	4923	2462	2462	3693			5539	3692	
Eutonia			96	318	69	10	3077	9	39
Evadne s1	66462	19692	38154	35701	19464	40550		2462	11077
Fish larvae s2				9				9	9
Fish larvae s3					10				
Fritillaria s1						3379	8000		
Gaeldius pungens 5									
Gastropod veligers s1	2462				158	922			
Harpacticoida (unidentified)					316				
Holmskiella anomola s2									
Holmskiella anomola s3									
Hyperla s1		8616							
Hyperidae s1								1231	
Isopoda s1									
Limacina s1	4923			3693	475	3686		3692	
Lucicutia flavicornis 6m									
Medusae s1							4308		
Medusae s2							616		

OE8904 (cont.)	Stn 1	Stn 2	Stn 3	Stn 4	Stn 5	Stn 6	Stn 7	Stn 8	Stn 9
<i>Melphidippa</i> s2					9				
<i>Mesocalanus tenuicornis</i> 5									
<i>Metridia</i> 1-4	12308	28308	1231	1231					14769
<i>Metridia pacifica</i> 1-4		2462							
<i>Metridia pacifica</i> 5f	4923	7384	3692						4923
<i>Metridia pacifica</i> 5m		8616	1231						3692
<i>Metridia pacifica</i> 6f		1232							6154
<i>Metridia pacifica</i> 6m	7384	2462			316				1231
<i>Microcalanus pygmaeus pusillus</i> 5			1231						11077
<i>Microcalanus pygmaeus pusillus</i> 6f		1232							8615
<i>Microcalanus pygmaeus pusillus</i> 6m									2461
<i>Mugglaea</i> s1					1583	2765			
<i>Mugglaea</i> s2				48	1395	1632	481	9	
<i>Mugglaea</i> s3						19			
<i>Neocalanus cristatus</i> 5									
<i>Oikopleura</i> s1		1232	1231	11080	3165	21811	45539	6154	1231
<i>Oikopleura</i> s2	183		38						586
<i>Oikopleura</i> s3			10						20
<i>Oithona atlantica</i> 1-5									
<i>Oithona atlantica</i> 6f									2461
<i>Oithona atlantica</i> 6m									
<i>Oithona similis</i> 1-5	14769	8616			949	614	1231	1231	
<i>Oithona similis</i> 6f			8615	6155	633	2150	616	9846	6154
<i>Oithona similis</i> 6m				2462					
<i>Oncaea conifera</i> 6f									
<i>Pagurid megalops</i> s2		39						9	
<i>Pagurid zoea</i> s1									
<i>Pagurid zoea</i> s2	39	29	9		19		20		
<i>Pagurid zoea</i> s3	39								
<i>Pandalidae</i> s2									
<i>Pandalidae</i> s3	39							9	
<i>Paracalanus parvus</i> 5			1231		922				

OE8904 (cont.)	Stn 1	Stn 2	Stn 3	Stn 4	Stn 5	Stn 6	Stn 7	Stn 8	Stn 9
Parathemisto pacifica f	39	731	58						9
Parathemisto pacifica m	20	500	38						
Parathemisto pacifica s1									
Pasiphaea pacifica f									
Pasiphaea pacifica s3	9								
Phialidium s1					316				
Phialidium s2	39	39	19	125	79	10	58	105	29
Phialidium s3	29	116		134	445		39	116	14
Pleurobrachia s1					158				
Pleurobrachia s2			29	87	40	19	96	20	
Pleurobrachia s3								9	
Podon s1	9846	14769	33231	27084	2373	8294	1846	1231	14769
Polychaete larvae s1		2462	1231		1583	614	616	7385	
Polychaete larvae s2							19		
Polychaete trochophores s1			1231	4925	1108	3886	3692		4923
Polynoid larvae s1					158	614	616		
Porcellanidae zoea s1					158	307	0		
Porcellanidae zoea s2							19		
Primno abyssalis f									
Primno abyssalis m									
Primno abyssalis s1									
Primno abyssalis s2									9
Probiscdactyla s1					633				
Probiscdactyla s2			10		49				9
Probiscdactyla s3			10						
Pseudocalanus min/el 1-4	9846	19692	12308	28315	2057	3994		72616	102154
Pseudocalanus min/el 5f	73847	35693	30769	29546	1741	2765		81231	51692
Pseudocalanus min/el 5m	44307	27077	8615	14773	1108	2150	2462	43077	56615
Pseudocalanus min/el 6f	140307	43077	39385		1424	1536	3077	70154	97231
Pseudocalanus min/el 6m	39384	923	32000		475	614	1231	51692	18461
Sagitta elegans s2				673					
Sagitta elegans s3	96	9384	2788				10	1346	3289

OE8904 (cont.)	Stn 1	Stn 2	Stn 3	Stn 4	Stn 5	Stn 6	Stn 7	Stn 8	Stn 9
<i>Sagitta scrippsa</i> s3		39							
<i>Sarsia</i> s2				19	20				
<i>Scylocithrocella minor</i> 6f				1231					1231
<i>Siphonophore</i> <i>nectophores</i> s1					15824	31027	14769		
<i>Siphonophore</i> <i>nectophores</i> s2									
<i>Stilipes</i> s2									
<i>Thysanoessa spinifera</i> s2	269		29	19					
<i>Thysanoessa longipes</i> m							183		
<i>Thysanoessa longipes</i> s2	39								
<i>Tortanus discaudatus</i> 5					316	2785			
<i>Tortanus discaudatus</i> 6f						307			
<i>Tortanus discaudatus</i> 8m						307			
Unclassified eggs	7384	35692					5539	51692	22153

TABLE 15 ZOOPLANKTON ABUNDANCE: OE8904

EPCS Calibration Samples: (animals.m<sup>-3</sup>) (Based on approx. 250L sample)

	EPCS A	EPCS E	EPCS G	EPCS I	EPCS J	EPCS M	EPCS N	EPCS P
<b>Taxon:</b>								
Acartia 1-4				119	830	30		
Acartia clausi 5	476					15	30	15
Acartia clausi 6m								
Acartia longiremis 5	119	714			90	75		
Acartia longiremis 6f	238	654	119		30	15	45	
Acartia longiremis 6m		357	237			15	30	
Barnacle cyprids		59	119			30		
Barnacle nauplii	1546	357	711	119	179	119	119	30
Bivalve veligers		59	474	119	30	179	30	
Brachyuran megalops s1			119				15	
Brachyuran zoea s1	119		119			60	119	45
Calanoida 1-3 (unidentified)		178	356	2133	90	75	75	179
Calanus 1-3	8208	2498	2607	4859	119	60	149	15
Calanus marshallae 4	833	1844	1067	474		15	75	
Calanus marshallae 5		952	711	237				
Calanus marshallae 6f								
Calanus marshallae 6m		59						
Caridean mysis s2								
Caridean mysis s3								
Caridean zoea s1	4401			4859		239	119	104
Caridean zoea s2							15	
Centropages abdominalis 1-4					119		45	60
Centropages abdominalis 5	238		119	237	60		90	104
Centropages abdominalis 6f				356			15	45
Centropages abdominalis 6m					30		15	

## OE8804 (cont.)

<b>Chaetognath juvenile s1</b>								<b>15</b>
<b>Conchoecia s1</b>								
<b>Copepod naupili</b>	<b>357</b>	<b>119</b>	<b>119</b>	<b>474</b>	<b>15</b>	<b>75</b>		
<b>Corycaeus 1-5</b>								
<b>Corycaeus anglicus 6f</b>								
<b>Cyphonautes larvae</b>							<b>15</b>	
<b>Decapod zoea s1</b>								
<b>Echinoderm pluteus s1</b>		<b>59</b>					<b>60</b>	
<b>Euphausiid calyptopsis s1</b>	<b>714</b>	<b>178</b>	<b>474</b>	<b>237</b>	<b>30</b>	<b>328</b>	<b>75</b>	<b>30</b>
<b>Euphausiid furcilla s1</b>	<b>357</b>	<b>119</b>	<b>119</b>			<b>60</b>	<b>15</b>	
<b>Euphausiid juveniles s1</b>								
<b>Evadne s1</b>	<b>3807</b>	<b>833</b>	<b>9837</b>	<b>830</b>	<b>2687</b>	<b>493</b>	<b>239</b>	<b>284</b>
<b>Fish larvae s1</b>				<b>119</b>			<b>15</b>	
<b>Foraminiferida</b>								<b>30</b>
<b>Gastropod veligers s1</b>		<b>59</b>					<b>30</b>	
<b>Harpacticoida (unidentified)</b>							<b>60</b>	<b>348</b>
<b>Hyperia s1</b>								
<b>Limacina s1</b>	<b>238</b>	<b>59</b>				<b>45</b>	<b>45</b>	<b>134</b>
<b>Metridia pacifica 5f</b>								
<b>Metridia pacifica 6f</b>								
<b>Metridia pacifica 6m</b>								
<b>Mugglaea s1</b>							<b>15</b>	
<b>Oikopleura s1</b>								
<b>Oithona 1-5</b>							<b>75</b>	
<b>Oithona similis 1-5</b>			<b>237</b>					
<b>Oithona similis 6f</b>		<b>59</b>						
<b>Pagurid zoea s1</b>				<b>119</b>		<b>30</b>		
<b>Paracalanus parvus 5</b>	<b>238</b>	<b>59</b>	<b>237</b>					<b>15</b>
<b>Paracalanus parvus 6f</b>	<b>238</b>	<b>119</b>	<b>474</b>	<b>119</b>	<b>30</b>	<b>254</b>	<b>15</b>	<b>209</b>
<b>Paracalanus parvus 6m</b>	<b>357</b>		<b>237</b>					<b>418</b>
<b>Phialidium s1</b>						<b>75</b>		<b>75</b>
<b>Pleurobrachia s1</b>							<b>15</b>	

## OE8904 (cont.)

<b>Podon s1</b>	1071	238	9244	474	4000	552	119	1179
<b>Polychaete larvae s1</b>		59				45		
<b>Polychaete trochophores s1</b>	119						15	15
<b>Polynoid larvae s1</b>			119			75	15	
<b>Porcellanidae zoea s1</b>							134	15
<b>Pseudocalanus min/el 1-4</b>		178		3556	30	30	164	30
<b>Pseudocalanus min/el 5f</b>		833	119	2133		15	418	15
<b>Pseudocalanus min/el 5m</b>		535	237	3556		15	254	30
<b>Pseudocalanus min/el 6f</b>		773		237		30	119	15
<b>Pseudocalanus min/el 6m</b>							45	
<b>Unclassified eggs</b>		119						