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The Vertical Distribution of Zooplankton and Ichthyoplankton on the Nova Scotia Shelf September–October 1986

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July 1989

**Canadian Data Report of
Fisheries and Aquatic Sciences
No. 763**



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Canadian Data Report of Fisheries and Aquatic Sciences

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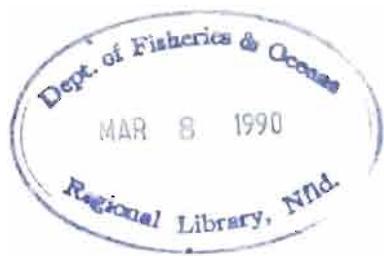
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Canadian Data Report of
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THE VERTICAL DISTRIBUTION OF ZOOPLANKTON
AND ICHTHYOPLANKTON ON THE NOVA SCOTIA SHELF
SEPTEMBER-OCTOBER 1986

by

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ABSTRACT

Lewis, M.K. and D. Sameoto. 1989. The vertical distribution of zooplankton and ichthyoplankton on the Nova Scotia shelf. September-October 1986. Can. Data Rep. Fish. Aquat. Sci. No. 763: iv + 37 p.

During the period September 24 to October 7, 1986, zooplankton and micronekton samples were collected to a depth of 300m or to approximately 1m off the bottom on stations on the Nova Scotia shelf. In this report we make available the raw data for all species plus depth profiles for selected species.

RESUMÉ

Lewis, M.K. and D. Sameoto. 1989. The vertical distribution of zooplankton and ichthyoplankton on the Nova Scotia shelf during September-October 1986. Can. Data Rep. Fish. Aquat. Sci. No. 763: iv + 37 p.

Au cours de la période allant du 24 Septembre au 7 Octobre 1986, des échantillons du zooplancton et du micronecton ont été prélevés en station, jusqu'à des profondeurs de 300m ou jusqu'à approximativement 1m du fond, aux stations au dessus du talus continental de la Nouvelle Ecosse. Nous donnons dans ce rapport les résultats bruts pour toutes les espèces, et les répartitions verticales de quelques espèces sélectionnées.

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INTRODUCTION

The following is a report of BIONESS data collected during C.S.S. Dawson cruise #86030 on the Nova Scotia shelf between September 24 to October 7, 1986. The primary objective of this cruise was to determine the vertical distribution of zooplankton species in the basins on the Scotian shelf using the BIONESS. The second objective was to test a new underwater camera and strobe system for its usefulness as a zooplankton tool for abundance estimates.

METHODS

Biological Sampling

All zooplankton samples and oceanographic data described below were collected with the BIONESS sampler (Sameoto et al., 1980). The BIONESS was equipped with ten one m^2 243 μm mesh nets. The BIONESS was towed at 3-5 knots along an oblique path through the various depth strata. The volume of water sampled per sample varied from 27 to 363 m^3 . The winch speed during sampling was constant and therefore the volume filtered depended upon the depth range of the sample. Flow through each net and the net depth were constantly monitored.

During shallow tows, (0-100m), depth strata were sampled from the surface downward and in the case of deep tows (>100m) the net was lowered to the deepest depth strata and sampled from the bottom up. The BIONESS provided simultaneous data on the temperature and salinity, time of sampling, speed through the water, net flow and volume of water filtered. Conductivity (salinity) and temperature were measured by a Guildline Instruments digital conductivity cell model 87410 and temperature probe model 87401. Values for the time, depth, flow, volume, temperature, conductivity, and salinity were recorded on magnetic tape once every second during the tows. No oxygen data is available for this cruise.

The BIONESS tows were conducted in three areas on the Scotian shelf (Fig. 1). The first series of Bioness tows were taken in Emerald basin (tows 1-7,11,12), the second along the Halifax line across Emerald Basin (tows 8-10) and the third series were in basins off the coast of Louisbourg, Cape Breton (tows 13-17).

The camera system consisted of a programmable Lobsiger Deep Shelf 35mm camera with flash and a black and white video camera mounted on a sled frame and a black and white video camera and light. The objective was to evaluate the ability of the system to view and photograph copepod and euphausiid layers in the water column.

Sample Analysis

All Bioness samples were preserved in 4% buffered formalin and seawater solution. In the lab, the total sample was wet weighed and all fish larvae and other organisms >1cm were removed. These >1cm animals were to be identified to the lowest taxon possible and a wet weight for each group recorded. A subsample of each group was measured for length (to the nearest millimeter). The fish were measured for standard length. The euphausiids were measured from the tip of the rostrum to the tip of the telson.

The remainder of the sample containing zooplankton <1cm in length was split using a Motoda splitter (Motoda 1959) and/or a pipette down to approximately 400 individuals. All individuals in this subsample were identified to species for the Copepoda and genus for other classes and phyla. Copepod species, especially *Calanus finmarchicus*, *C. glacialis* and *C. hyperboreus* were staged. Stage VI *Calanus* were sexed and females were examined and classified as immature, gravid or spent (see table 2 for criteria used). This analysis was completed by Spry Tech Biological Services, Elmsdale, N.S. All data were entered into the Cyber computer and an IBM microcomputer.

RESULTS

Temperature/Salinity/Depth Profiles

Temperature and salinity depth profiles from the Bioness ctd data are presented in figure 3. Tow 7 was selected as being representative for Emerald Basin. Tow 13 was chosen to represent the Louisbourg basin location. TS diagrams for these stations are also included.

Zooplankton Composition and Depth Distribution

Numbers per cubic meter and numbers per square meter for all species (<1cm) are listed in Table 1. Complete data for biomass, ichytoplankton and large mesozooplankton (>1cm) is not available.

Depth profiles are included for all species/groups of mesozooplankton (<1cm) that had an abundance of greater than two occurrences over the entire cruise. Depth distributions for these species in the three areas are shown in Fig. 2. Tows 13/14 and 15/16 were combined to provide a complete depth profile for day and night in the Louisbourg basin location. Tow 6 was incomplete and therefore not included.

Length Frequencies

Lengths for chaetognaths, euphausiids and amphipods were measured for tows 1, 2, 3 and 7 (figure 4).

Camera Profiles

The video camera enabled identification of the copepod and euphausiid layers. The 35mm photographs were used to estimate the density of euphausiids and measure their orientation.

REFERENCES

- Motoda, S. 1959. Devices of simple plankton apparatus. *Mem. Fac. Fish. Hollaido Univ.* 3: 181-186.
- Sameoto, D.D., L.O. Jaroszynski, and W.B. Fraser, 1980. BIONESS, a new design in multiple net zooplankton samplers. *Can. J. Fish. Aquat. Sci.* 37: 722-724.

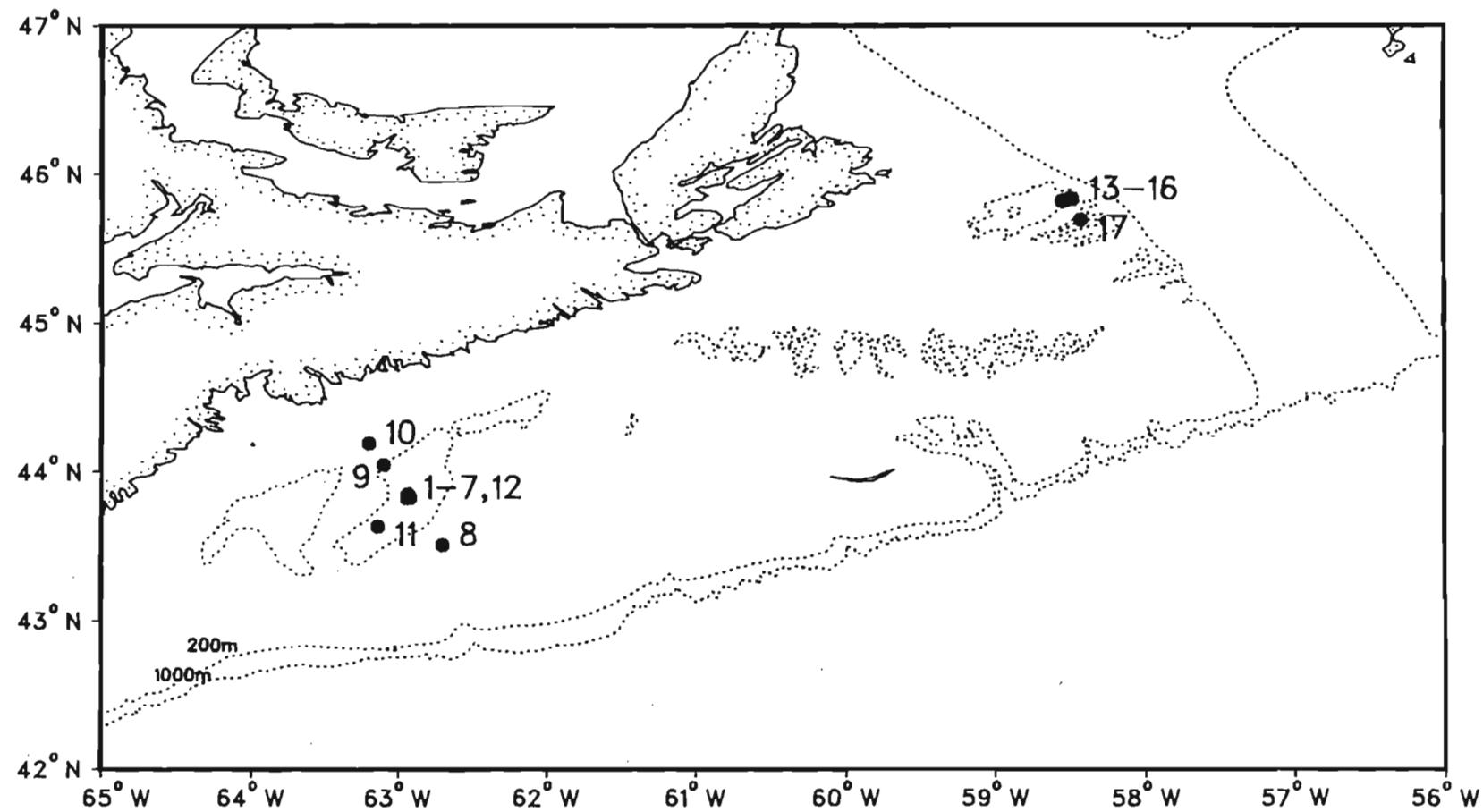


Fig. 1. Location of Sampling.

Fig. 3. Temperature and salinity depth profiles and TS diagrams for representative tows in the three areas. Tows 10 and 9 are north of Emerald Basin on the Halifax Line, tows 7 and 11 are in Emerald Basin, tow 8 is south of Emerald Basin and tows 13 and 17 are in the Louisbourg Basin region.

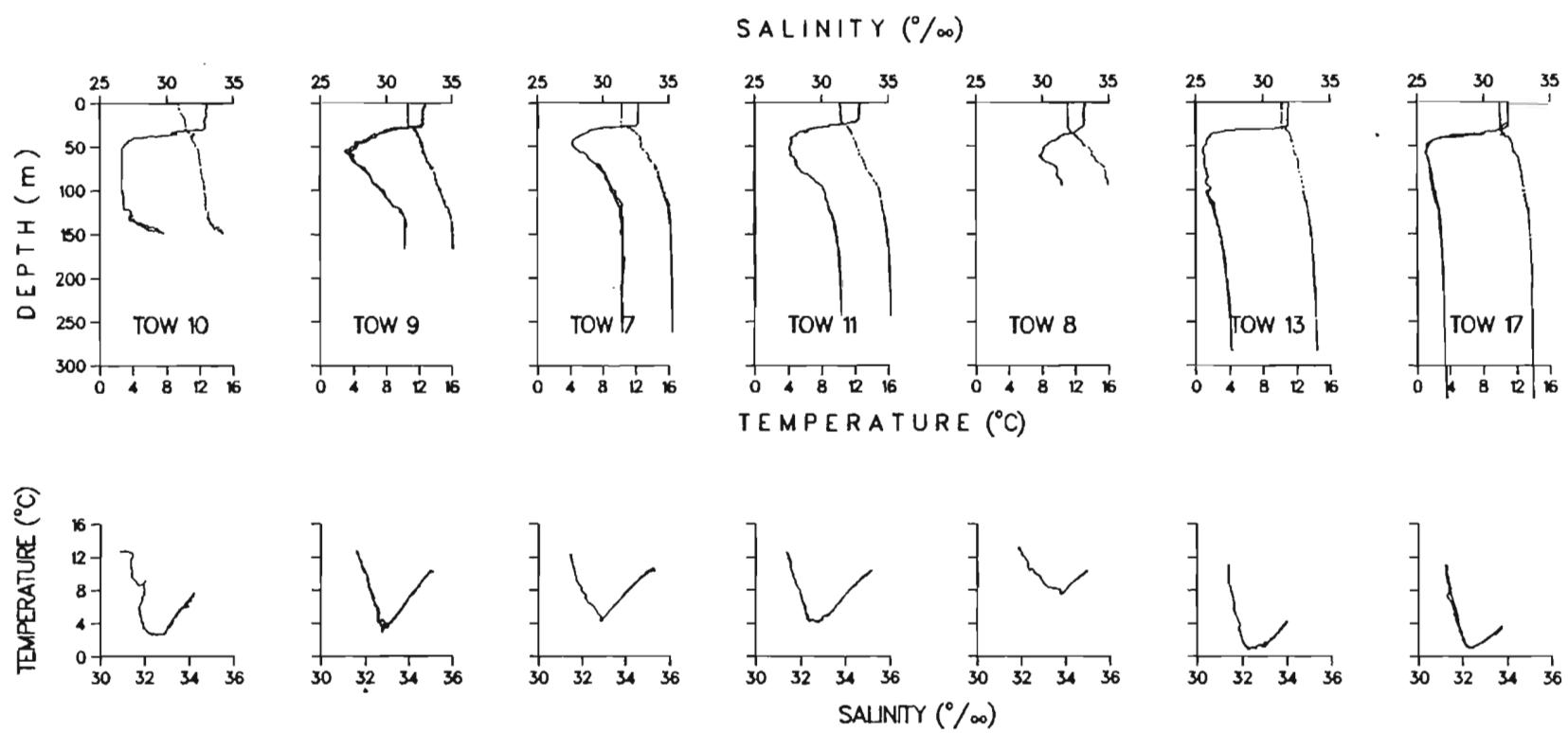


Fig. 2. Vertical distributions for various groups and species (<1cm) for BIONESS tows in the three areas: Emerald Basin, the Halifax Line and the Louisbourg Basins. *Calanus* spp. were identified down to stage level. *Calanus* spp. stage VI females were subdivided according to maturity: developing (VI-F-D), gravid (VI-F-G) or spent (VI-F-S).

Fig. 2 (Continued)

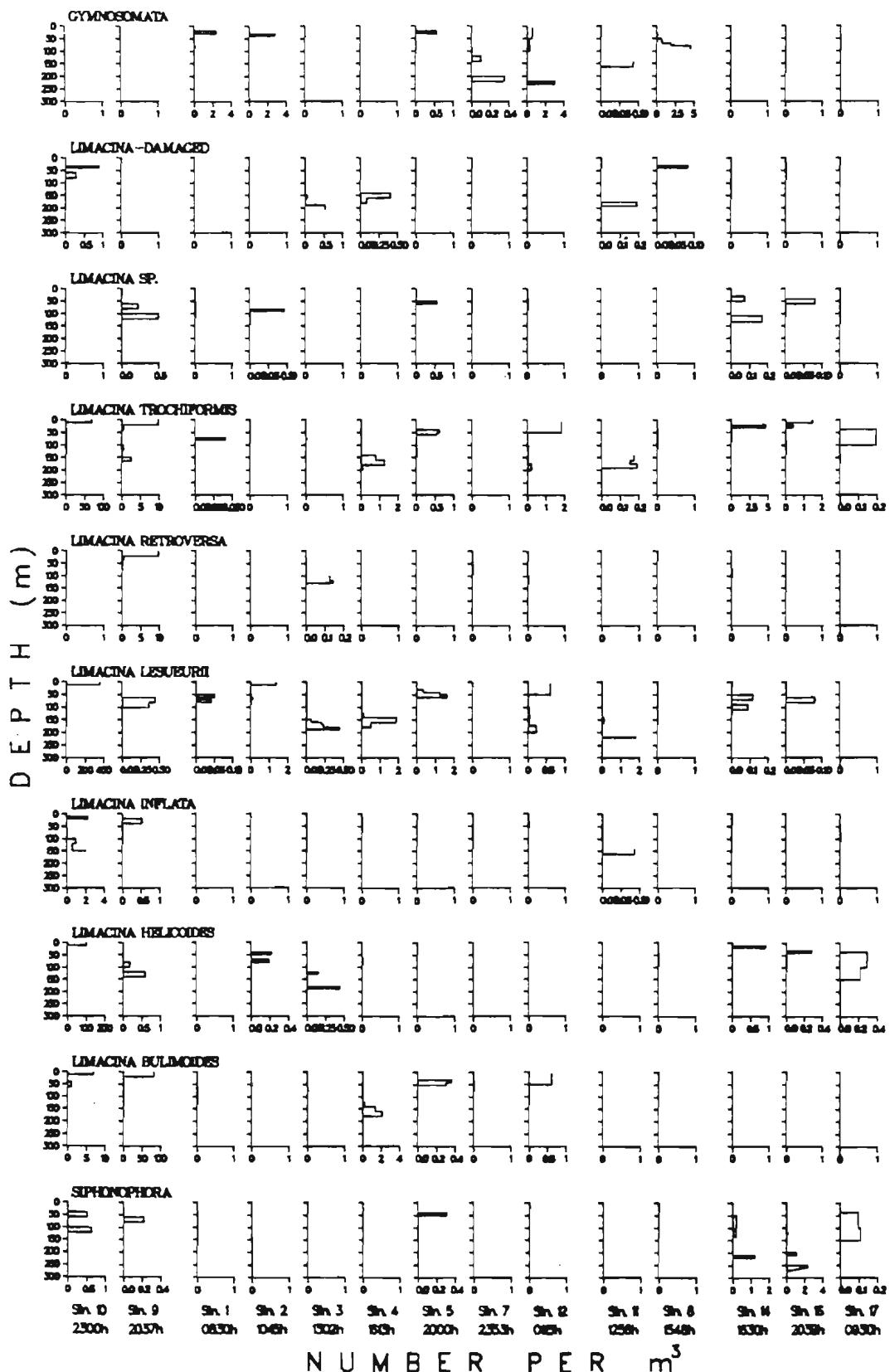


Fig. 2. (Continued)

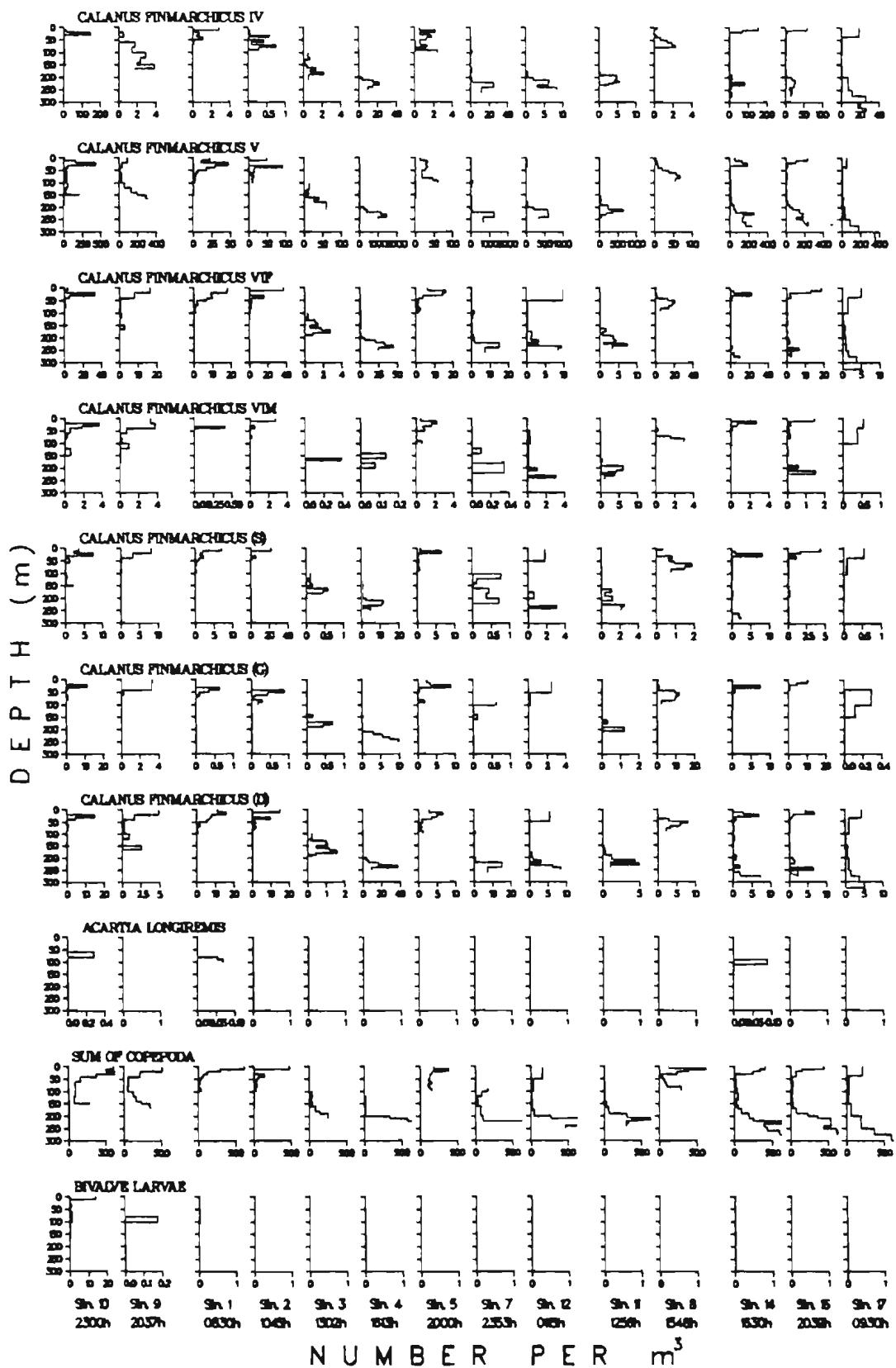


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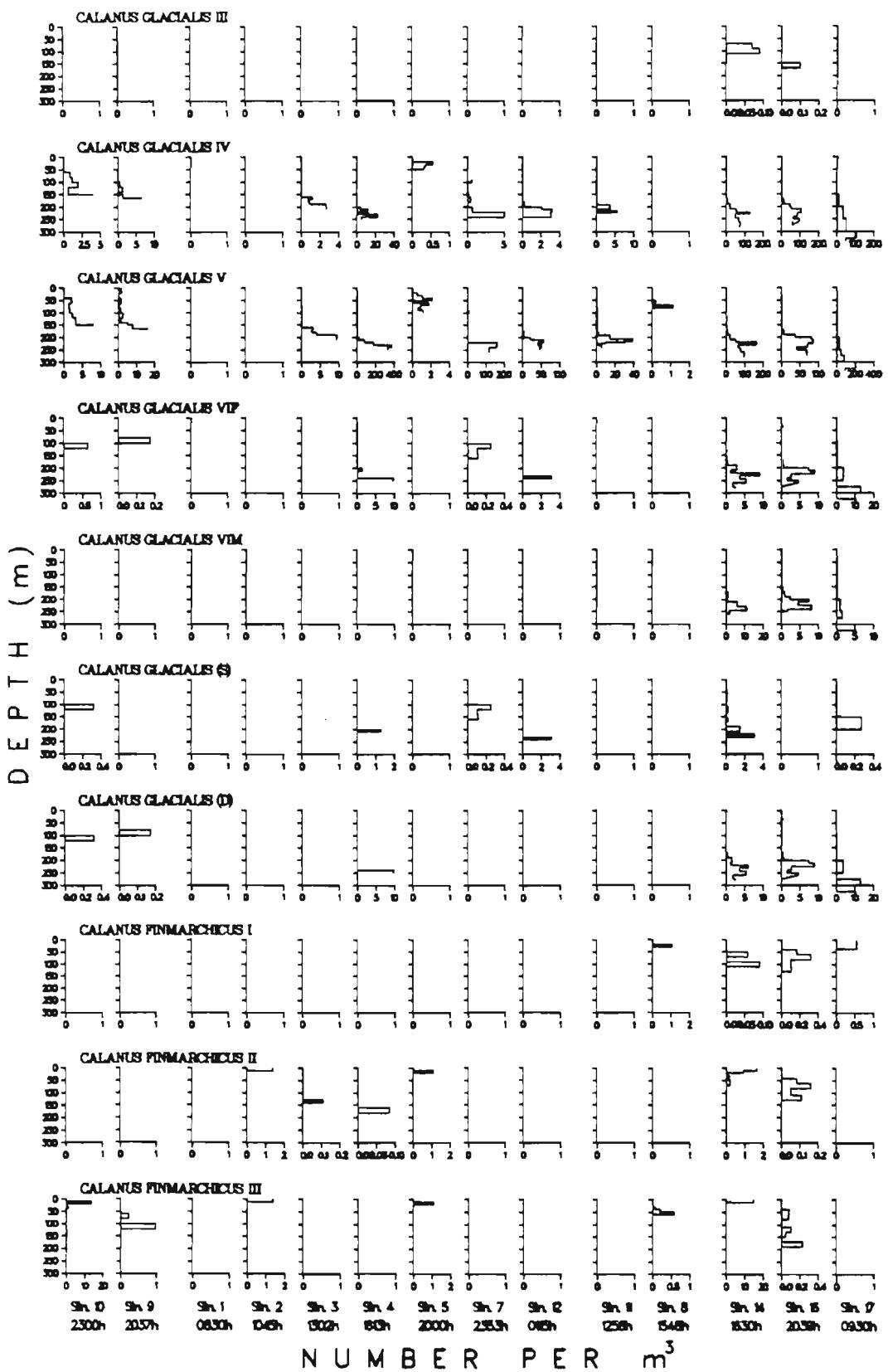


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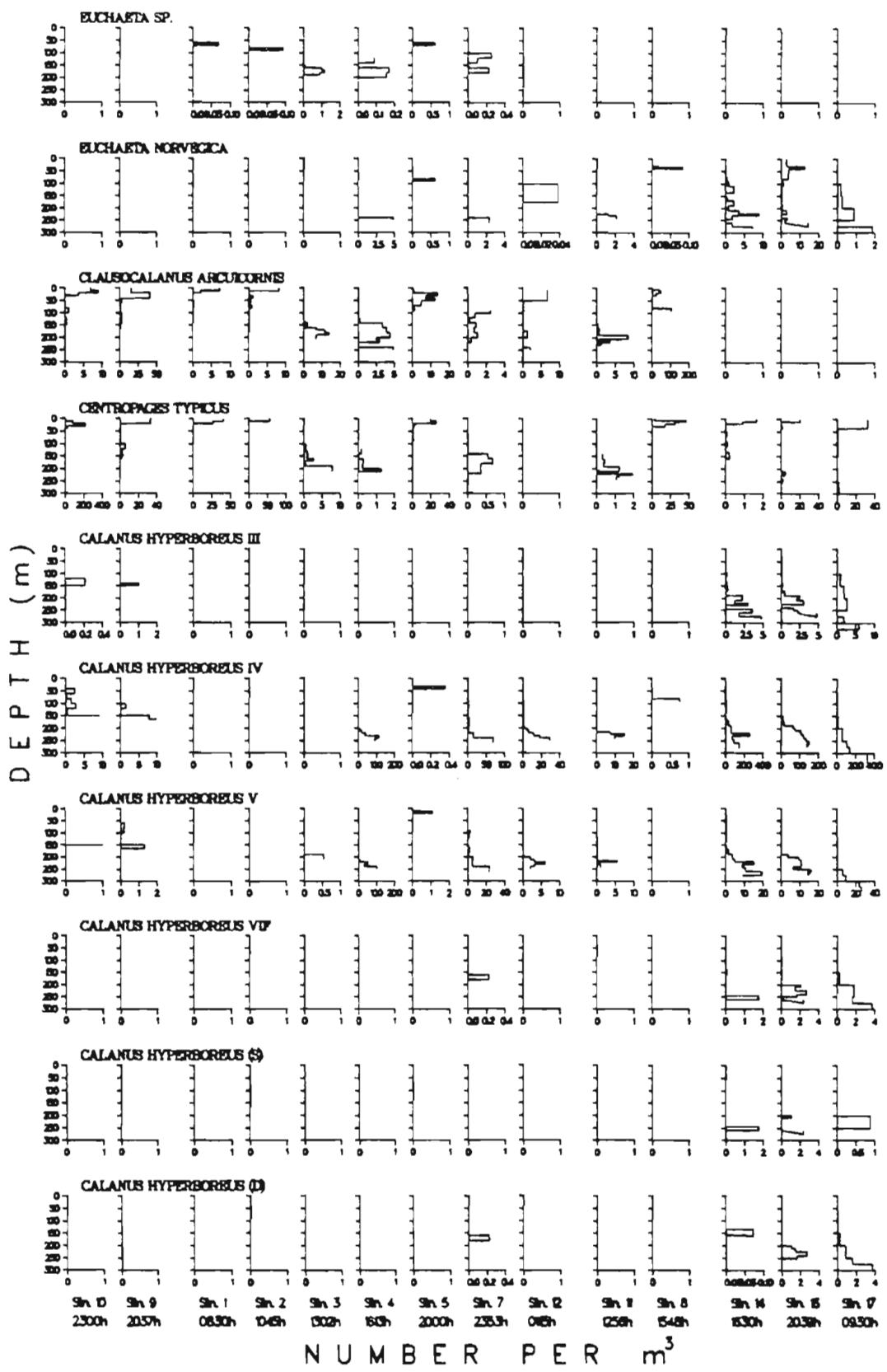


Fig. 2 (Continued)

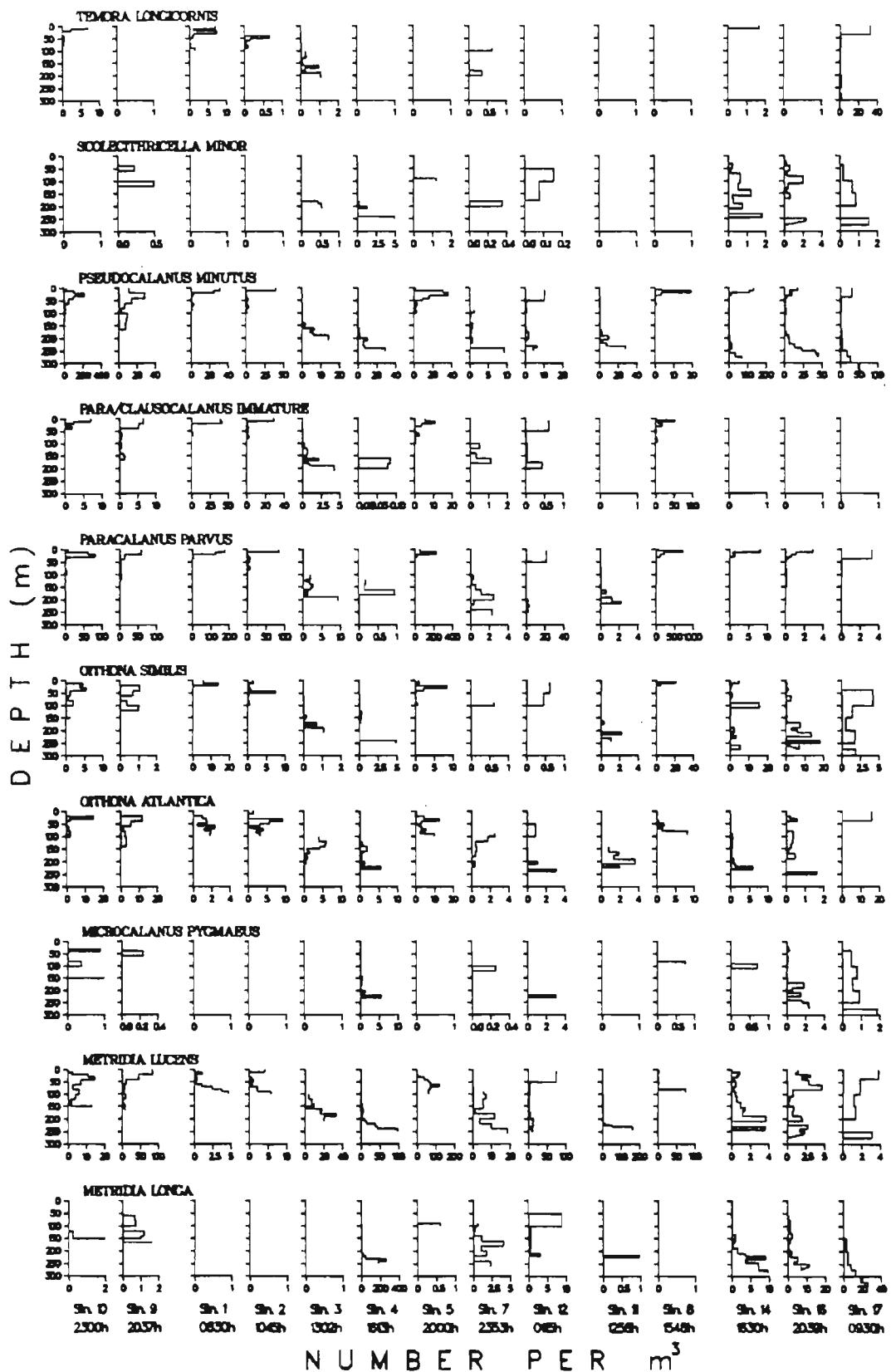
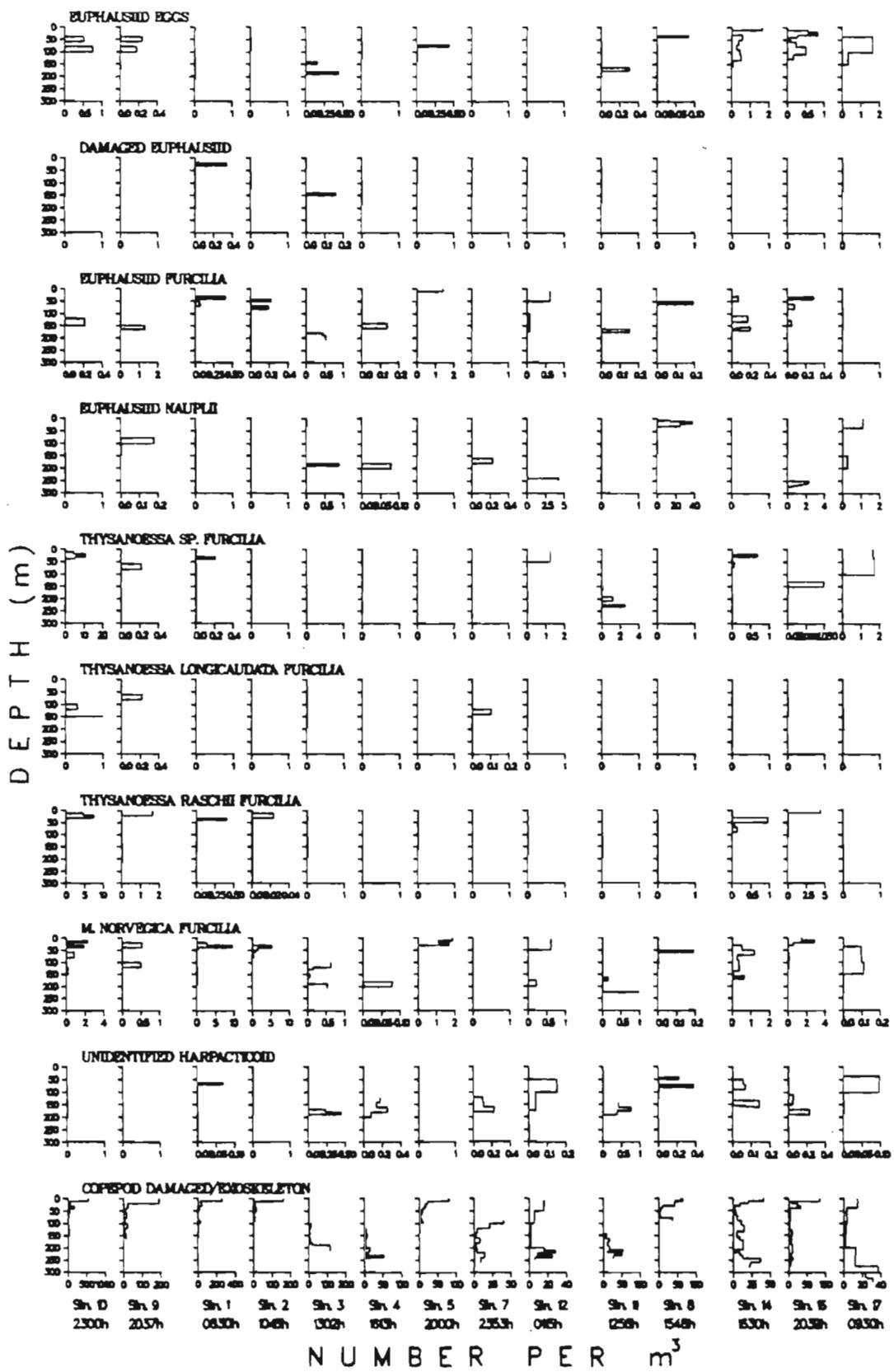


Fig. 2. (Continued)



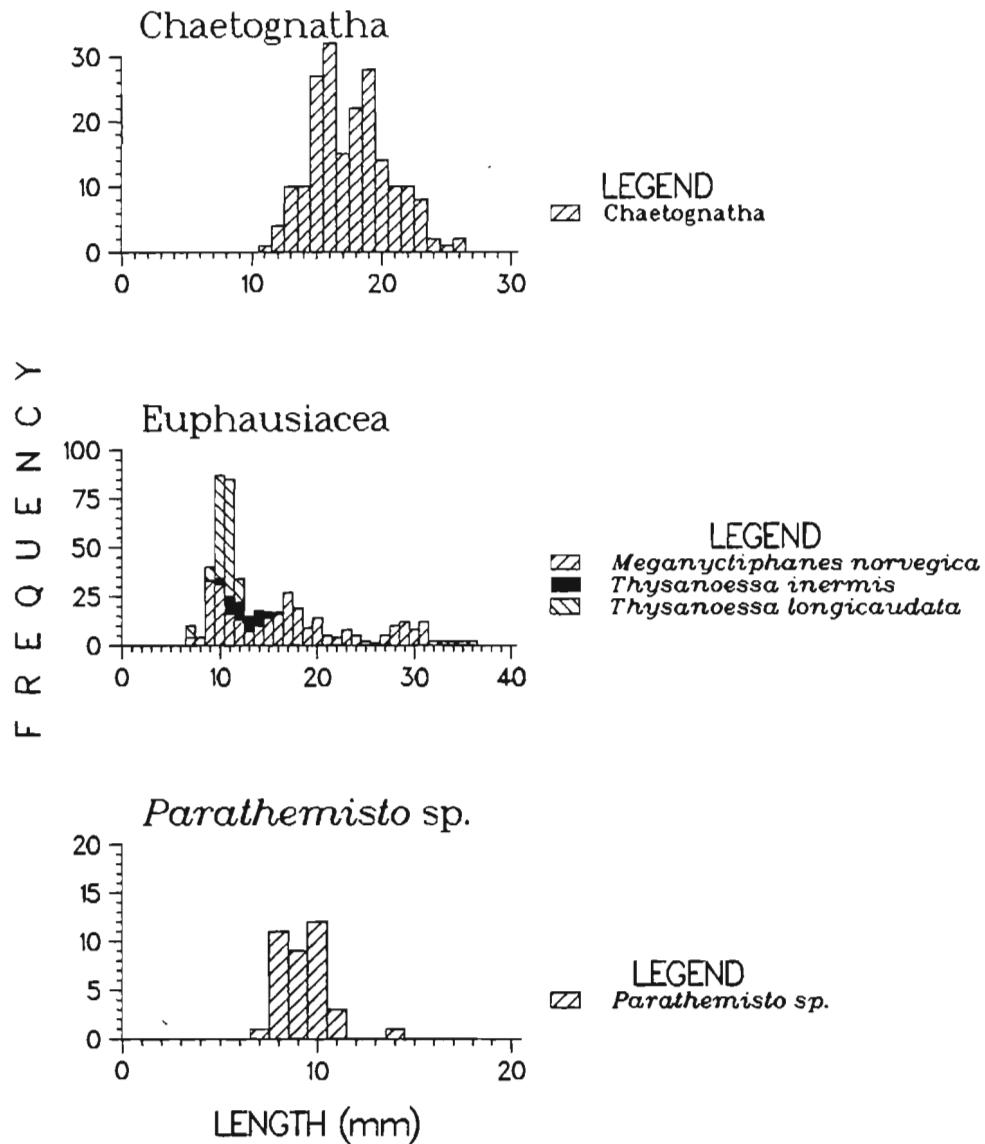


Fig. 4. Length frequencies

Table 1. Number and biomass m^{-3} and m^{-2} for samples taken with the BIONESS over the Nova Scotian shelf. Depth1 is the depth at which the sampling started and Depth2 is the depth when it stopped for each sample. Volume of water filtered and total biomass m^{-3} for each depth strata sampled, date of the sample and the latitude and longitude for the tows are given.

* Designates not available

STATION 1 28/09/86 0830H 43 49.37'N 62 56.65'W

SAMPLE	1	2	3	4	5	6	7	8	9	10
DEPTH1 (M)	.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0
DEPTH2 (M)	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0
VOLUME OF WATER SAMPLED (M3)	114.	100.	116.	98.	115.	143.	118.	161.	93.	98.
TOTAL BIOMASS (G/M3)	.054	.058	.097	.122	.041	.013	.008	.006	.006	.008
CHAETOGNATHA BIOMASS (G/M3)	.001	.001	.004	.002	.002	.000	.000	.000	.000	.001
EUPHAUSIID BIOMASS (G/M3)	.000	.000	.000	.001	.000	.002	.001	.001	.001	.001

SPECIES	NUMBER PER CUBIC METER										#/M2
LIMACINA LESUEURII	.	.	.	.	.	.05	.	.04	.	.	.92
LIMACINA TROCHIFORMIS	.	.	.	.	.	.	.	.04	.	.	.41
GYMNOSOMATA	.	.	2.41	.	.	.	.	.04	.11	.	25.62
PODON LEUCKARTI	.	.	.69	.20	.	.	.	.	.	.14	10.31
DAMAGED CLADOCERA	.	1.07	1.38	.	.17	.	.	.	.	.07	26.88
COPEPODA	618.95	297.60	117.93	64.34	44.10	13.07	20.75	11.84	15.29	36.53	12403.94
ACARTIA LONGIREMIS	.	.	.	.	.	.	.	.	.05	.07	1.22
CALANUS FINMARCHICUS (D)	11.23	16.00	7.93	6.97	5.56	1.58	1.76	.75	.32	.54	526.38
CALANUS FINMARCHICUS (G)	.	.	.	.61	.35	.10	.07	.	.	.	11.32
CALANUS FINMARCHICUS (S)	7.02	2.13	1.38	2.25	1.04	.31	.27	.12	.21	.27	150.14
CALANUS FINMARCHICUS VIM	.	.	.	.41	.	.	.	.	.	.	4.10
CALANUS FINMARCHICUS VIF	18.25	18.13	9.31	9.84	6.94	1.99	2.10	.87	.54	.82	687.84
CALANUS FINMARCHICUS V	22.46	10.67	47.59	29.51	18.06	6.38	4.00	3.06	2.25	2.31	1462.83
CALANUS FINMARCHICUS IV	2.81	.	.69	.41	1.04	.15	.14	.04	.	.	52.78
CENTROPAGES TYPICUS	40.70	26.67	.34	.61	.52	.46	.27	.25	.11	.27	702.07
CLAUSOCALANUS ARCUICORNIS	7.02	2.13	.	.	.	.	.27	.08	.05	.07	96.27
EUCHAETA SP.	.	.	.	.	.	.	.07	.	.	.	.68
HETERORHABDUS NORVEGICUS	.	.	.	.	.	.	.	.	.	.07	.68
LUCUCITIA FLAVICORNIS	.	.	.	.	.	.	.	.	.	.07	.68
METRIDIA LUCENS	.	1.07	.	.41	.35	.15	1.02	2.48	3.76	4.69	139.27
OITHONA ATLANTICA	.	.	1.03	1.43	1.56	.51	2.37	1.20	1.93	1.84	118.84
OITHONA SIMILIS	5.61	13.87	.34	.	.	.10	.20	.17	.43	.	207.26
PARACALANUS PARVUS	181.05	128.00	3.79	4.51	2.43	1.07	1.36	.50	.48	.95	3241.44
PARA/CLAUSOCALANUS IMMATURE	39.30	41.60	.34	.41	.52	.20	1.56	.25	.48	.27	849.41
PSEUDOCALANUS MINUTUS	32.28	24.53	1.72	.61	.52	.10	2.58	.54	.75	.61	642.54
TEMORA LONGICORNIS	7.02	1.07	7.59	1.23	.87	.	.	.33	.21	1.56	198.78
COPEPOD DAMAGED/EXOSKELETON	262.46	29.87	45.17	14.96	11.28	1.94	4.75	2.03	4.24	22.93	3996.16
UNIDENTIFIED COPEPOD	.	.	.	.	.	.	.	.04	.	.	.41
UNIDENTIFIED HARPACTICOID	.	.	.	.	.	.	.07	.	.	.	.68
AMPHIPODA	.	1.07	.	.	.17	.	.	.08	.	.	13.23
AMPHIPODA EGGS	.	.	.	.	.	.	.	.46	.	.	4.55
PARATHEMISTO SP.	.	1.07	.	.	.17	.	.	.08	.	.	13.23
EUPHAUSIIDS	.	.	3.10	10.45	.17	.05	.07	.	.05	.	139.00
M. NORVEGICA FURCILIA	.	2.76	9.43	.17	.	.	.	.	.05	.	124.12
THYSANOESSA RASCHII FURCILIA	.	.	.	.41	.	.	.	.	.	.	4.10
THYSANOESSA SP. FURCILIA	.	.	.	.20	.	.	.	.	.	.	2.05
EUPHAUSIID FURCILIA	.	.	.	.41	.	.05	.07	.	.	.	5.29
DAMAGED EUPHAUSIID	.	.	.34	.	.	.	.	.	.	.	3.45
BRACHYURAN LARVAE	.	.	.	.20	.	.	.	.	.	.	2.05
DAMAGED CHAETOGNATHA	.	.	.69	.82	.69	.	.14	.	.	.07	24.07

L A R G E M E S O Z O O P L A N K T O N & I C H T H Y O P L A N K T O N

MEDUSAE	.009	.	.	.	.	.	.	.	.	.	.088
CTENOPHORA	.	.070	.	.010	.	.	.	.006	.	.	.865
PARATHEMISTO SP.	.	.	.	.	.	.035	.008	.012	.	.010	.662
EUPHAUSIACEA	.	.	.	.020	.	.274	.110	.075	.043	.173	6.953
MEGANYCTIPHANES NORVEGICA	.	.	.	.010	.	.042	.068	.043	.021	.143	3.279
THYSANOESSA INERMIS	.	.	.	.010	.	.084	.008	.	.011	.010	1.239
THYSANOESSA LONGICAUDATA	.	.	.	.	.	.147	.034	.031	.011	.020	2.435
CHAETOGNATHA	.298	.440	1.129	.461	.408	.042	.169	.037	.032	.388	34.054

STATION 2 28/09/86 1045H 43 49.37'N 62 56.65'W

SAMPLE	1	2	3	4	5	6	7	8	9
DEPTH1 (M)	.0	10.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0
DEPTH2 (M)	10.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0
VOLUME OF WATER SAMPLED (M3)	.58.	.42.	.28.	.45.	.55.	.47.	.53.	.54.	.59.
TOTAL BIOMASS (G/M3)	.168	.002	.106	*	*	*	*	*	*
CHAETOGNATHA BIOMASS (G/M3)	.001	.000	.002	*	*	*	*	*	*
EUPHAUSIID BIOMASS (G/M3)	.000	.000	.004	*	*	*	*	*	*

SPECIES										#/M2
LIMACINA HELICOIDES	.	.	.	.22	.	.	.19	.	.	4.11
LIMACINA LESUEURII	1.38	.	.	.	.	.09	.	.	.	14.74
LIMACINA SP.	.	.	.	.	.	.	.09	.	.	.93
GYMNOSOMATA	.	.10	2.86	.	.	.	.	.	.	30.48
COPEPODA	480.00	12.10	140.57	60.22	36.51	12.62	46.98	20.37	28.56	8500.28
ANOMALOCERA PATERSONI	.	.02	.	.	.	.	.	.	.	.48
CALANUS FINMARCHICUS (D)	15.17	.45	9.71	.89	1.75	.76	2.08	.65	.25	321.60
CALANUS FINMARCHICUS (G)	.	.	.	.89	.44	.09	.	.28	.17	18.67
CALANUS FINMARCHICUS (S)	22.07	.24	5.71	.67	.29	.09	.	.	.42	297.35
CALANUS FINMARCHICUS VIM	2.76	.05	.57	.	.	.	.19	.	.	36.14
CALANUS FINMARCHICUS VIF	37.24	.69	15.43	2.44	2.47	.95	2.08	.93	.85	637.63
CALANUS FINMARCHICUS V	48.28	1.10	91.43	15.56	14.84	3.59	13.96	9.44	10.25	2095.41
CALANUS FINMARCHICUS IV	.	.05	.57	.	.44	.09	.75	.28	.	22.30
CALANUS FINMARCHICUS III	1.38	.	.	.	.	.	.	.	.	13.79
CALANUS FINMARCHICUS II	1.38	.	.	.	.	.	.	.	.	13.79
CENTROPAGES TYPICUS	56.55	.67	1.71	2.22	1.45	1.04	2.08	.37	1.02	677.79
CLAUSOCALANUS ARCUICORNIS	8.28	.12	1.14	.22	.44	.09	.75	.09	.25	115.12
CLYTEMNESTRA SCUTULLATA	.	.	.	.	.	.	.19	.	.	1.89
EUCHAETA SP.	.	.	.	.	.	.	.	.09	.	.93
METRIDIA LUCENS	4.14	.07	.57	1.11	.73	.47	2.08	2.04	5.76	170.39
OITHONA ATLANTICA	1.38	.05	9.14	5.78	3.20	.61	3.96	2.13	3.14	294.37
OITHONA SIMILIS	1.38	.26	.57	7.33	.29	.19	.	.28	.51	110.74
PARACALANUS PARVUS	84.14	1.93	7.43	6.44	2.76	1.65	7.55	1.20	1.95	1169.87
PARA/CLAUSOCALANUS IMMATURE	28.97	.74	1.71	1.56	1.16	.52	2.64	.28	.42	387.38
PSEUDOCALANUS MINUTUS	40.00	.57	.	2.00	1.16	.90	3.21	.37	.76	495.45
TEMORA LONGICORNIS	.	.02	.	.67	.15	.05	.	.09	.	10.00
COPEPOD DAMAGED/EXOSKELETON	164.14	5.76	10.29	14.89	7.42	2.46	7.55	2.78	3.64	2246.82
AMPHIPODA	1.38	.02	.	.44	.15	.05	.94	.	.08	30.92
AMPHIPODA EGGS	.	.	.	.	.	.	.	2.31	.	23.15
AMPHIPOD-DAMAGED	.	.	.	.	.15	.	.	.	.	1.45
PARATHEMISTO GAUDICHAUDI	.	.	.	.	.	.	.	.	.08	.85
PARATHEMISTO SP.	1.38	.02	.	.44	.	.05	.94	.	.	28.62
EUPHAUSIIDS	.	.02	5.14	1.78	.73	.05	.57	.09	.08	84.86
M. NORVEGICA FURCILIA	.	.	5.14	1.56	.73	.05	.38	.09	.08	80.28
THYSANOESSA RASCHII FURCILIA	.	.02	.	.	.	.	.	.	.	.48
EUPHAUSIID FURCILIA	.	.	.	.22	.	.	.19	.	.	4.11
DAMAGED CHAETOGNATHA	.	.	.	.	.15	.	.	.	.	1.45

L A R G E M E S O Z O O P L A N K T O N & I C H T H Y O P L A N K T O N

CTENOPHORA	.017	.	.036	*	*	*	*	*	*	.530
EUPHAUSIACEA	.017	.119	1.000	*	*	*	*	*	*	12.553
EUPHAUSIID	.	.	.107	*	*	*	*	*	*	1.071
MEGANYCTIPHANES NORVEGICA	.017	.119	.857	*	*	*	*	*	*	11.125
THYSANOESSA LONGICAUDATA	.	.	.036	*	*	*	*	*	*	.357
CHAETOGNATHA	.241	.143	1.536	*	*	*	*	*	*	20.628
MERLUCCIUS BILINEARIS	.	.	.036	*	*	*	*	*	*	.357

* = NOT AVAILABLE

STATION 3 28/09/86 1302H 43 49.44'N 62 55.34'W

SAMPLE	2	3	4	5	6	7	8	9	10
DEPTH1 (M)	210.0	190.0	180.0	170.0	160.0	150.0	140.0	130.0	120.0
DEPTH2 (M)	190.0	180.0	170.0	160.0	150.0	140.0	130.0	120.0	100.0
VOLUME OF WATER SAMPLED (M3)	2.	30.	29.	34.	100.	42.	45.	46.	79.
TOTAL BIOMASS (G/M3)	♦	♦	♦	.043	.010	.019	.013	.018	.014
CHAETOGNATHA BIOMASS (G/M3)	♦	♦	♦	.003	.001	.000	.000	.001	.000
EUPHAUSIID BIOMASS (G/M3)	♦	♦	♦	.006	.004	.007	.005	.002	.000

SPECIES											#/M2
LIMACINA HELICOIDES	.	.44	.	.	.	.	.	.	.15	.	5.98
LIMACINA LESUEURII	.	.44	.23	.20	.07	.	.	.	.	.	9.38
LIMACINA RETROVERSA	.	.	.	.	.	.	.	.	.15	.13	3.99
LIMACINA-DAMAGED	.53	.	.	.	.07	.	.	.	.	.	11.19
DAMAGED CLADOCERA	.	.44	.23	.	.	.	.	.	.	.	6.74
COPEPODA	255.26	144.00	79.77	94.20	16.78	38.41	26.78	32.09	38.10	10187.65	
CALANUS FINMARCHICUS (D)	.	.44	1.61	1.18	.47	1.11	1.00	.15	.25	.	64.65
CALANUS FINMARCHICUS (G)	.	.44	.69	.	.	.16	.	.	.	.	12.93
CALANUS FINMARCHICUS (S)	.	.	.46	.59	.07	.16	.11	.	.13	.	16.40
CALANUS FINMARCHICUS VIM	.	.	.	.39	.	.	.	.	.	.	3.93
CALANUS FINMARCHICUS VIF	.	.89	2.76	1.77	.53	1.43	1.11	.15	.38	.	93.97
CALANUS FINMARCHICUS V	59.47	60.89	27.13	40.51	6.08	11.75	6.00	14.00	14.94	3151.83	
CALANUS FINMARCHICUS IV	.53	2.22	.69	1.38	.33	.16	.11	.73	.51	.	76.87
CALANUS FINMARCHICUS II	.	.	.	.	.	.	.	.	.	.	1.11
CALANUS GLACIALIS V	9.47	4.00	2.76	3.15	.	.	.	.	.	.	288.52
CALANUS GLACIALIS IV	2.63	.89	.69	1.18	.	.	.	.	.	.	80.22
CALANUS HYPERBOREUS V	.53	.	.	.	.	.	.	.	.	.	10.53
CENTROPAGES TYPICUS	7.89	.44	.23	2.75	1.00	1.27	.89	.44	.51	.	238.29
CLAUSOCALANUS ARCUICORNIS	6.84	13.78	11.49	6.88	.67	2.06	.44	.29	.25	498.14	
EUCHAETA SP.	.	.89	1.15	.98	.07	.	.	.	.	.	30.88
METRIDIA LUCENS	20.00	32.89	16.09	18.09	1.74	9.52	6.33	7.29	3.67	1393.05	
OITHONA ATLANTICA	.53	.89	.69	1.57	.94	4.29	5.67	5.98	4.05	291.75	
OITHONA SIMILIS	1.05	.	.69	.	.07	.16	.	.	.	.	30.21
PARACALANUS PARVUS	9.47	.	1.15	.39	2.14	2.70	1.89	.73	2.03	319.97	
PARA/CLAUSSOCALANUS IMMATURE	4.21	.89	.23	2.16	.27	.63	.67	.58	.25	143.62	
PSEUDOCALANUS MINUTUS	14.21	6.22	4.14	6.49	.53	1.75	.	.29	.	478.44	
SCOLECITHIRICELLA MINOR	.53	.44	.	.	.	.	.	.	.	.	14.97
TEMORA LONGICORNIS	1.05	.	.23	.98	.13	.	.11	.29	.25	43.61	
COPEPOD DAMAGED/EXOSKELETON	116.84	18.22	9.43	5.31	2.27	2.70	3.44	1.31	11.27	2989.02	
UNIDENTIFIED COPEPOD	.	.	.	.20	.	.	.	.	.	.	1.97
UNIDENTIFIED HARPACTICOID	.	.44	.23	.	.	.	.	.	.	.	6.74
AMPHIPODA	.	.	.	.	.	.	.	.	.15	.	1.46
PARATHEMISTO SP.	.	.	.	.	.	.	.	.	.15	.	1.46
ISOPOD	.	.	.	.	.	.	.	.11	.	.	1.11
EUPHAUSIIDS	1.05	1.33	.	.	.07	.16	.	.15	.63	50.76	
M. NORVEGICA FURCILIA	.53	.	.	.	.07	.	.	.15	.63	25.31	
EUPHAUSIID EGGS	.	.44	.	.	.	.16	.	.	.	.	6.03
EUPHAUSIID NAUPLII	.	.89	.	.	.	.	.	.	.	.	8.89
EUPHAUSIID FURCILIA	.53	.44	.	.	.	.	.	.	.	.	14.97
DAMAGED EUPHAUSIID	.	.	.	.	.	.16	.	.	.	.	1.59
DAMAGED CHAETOGNATHA	.	.	.	.	.	.	.	.11	.	.	1.11

LARGE MESOZOOPLANKTON & ICHTHYOPLANKTON

STATION	4	28/09/86	1613H	43 49.44'N	62 55.34'W	2	3	4	5	6	7	8	9	10
SAMPLE														
DEPTH1 (M)				250.0	240.0	230.0	220.0	210.0	200.0	180.0	160.0	140.0		
DEPTH2 (M)				240.0	230.0	220.0	210.0	200.0	180.0	160.0	140.0	120.0		
VOLUME OF WATER SAMPLED (M3)				44.	43.	29.	27.	42.	85.	78.	74.	74.		
TOTAL BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*	
CHAETOGNATHA BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*	
EUPHAUSIID BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*	

SPECIES															#/M2
LIMACINA BULIMOIDES	.	.	.	.	.	.	.	.	.	2.14	1.35	.18	73.37	
LIMACINA LESUEURI	.	.	.	.	.	.	.	.	.51	1.89	.09	49.90		
LIMACINA TROCHIFORMIS	.	.	.	.	.	.	.	.08	1.28	.81	.	43.43		
LIMACINA-DAMAGED	.	.	.	.	.	.	.	.	.09	.41	.	9.82		
DAMAGED CLADOCERA	.	.	.	.	.	.	.	.	.	.	.09	.	1.80	
COPEPODA	1915.15	2418.60	1572.41	574.81	335.24	24.78	29.57	32.57	22.25	70345.76					
CALANUS FINMARCHICUS (D)	9.70	37.21	16.55	5.93	3.81	.16	.43	.14	.	746.32					
CALANUS FINMARCHICUS (G)	9.70	7.44	5.52	2.96	.	.08	.09	.14	.	262.17					
CALANUS FINMARCHICUS (S)	4.85	.	11.03	11.85	2.54	.55	.09	.68	.18	332.55					
CALANUS FINMARCHICUS VIM	.	.	.	.	.	.	.	.08	.	.14	.	4.27		
CALANUS FINMARCHICUS VIF	24.24	44.65	33.10	20.74	6.35	.78	.60	.95	.18	1341.04					
CALANUS FINMARCHICUS V	1018.18	1458.60	1142.07	382.22	237.46	10.59	11.28	12.57	13.24	43339.00					
CALANUS FINMARCHICUS IV	9.70	14.88	22.07	14.81	3.81	.63	.	.41	.18	677.00					
CALANUS FINMARCHICUS II	.	.	.	.	.	.	.	.09	.	.	.	1.71		
CALANUS GLACIALIS (D)	9.70	.	.	.	.	.	.	.	.	.	.	96.97		
CALANUS GLACIALIS (S)	.	.	.	.	1.27	.	.	.	.	.	.	12.70		
CALANUS GLACIALIS VIF	9.70	.	.	.	1.27	.	.	.	.	.	.	109.67		
CALANUS GLACIALIS V	329.70	372.09	176.55	77.04	20.32	.71	1.20	.54	1.35	9832.85					
CALANUS GLACIALIS IV	4.85	22.33	.	11.85	3.81	.	.17	.	.18	435.38					
CALANUS HYPERBOREUS V	101.82	29.77	49.66	2.96	3.81	.08	.09	.41	.27	1896.92					
CALANUS HYPERBOREUS IV	92.12	111.63	38.62	17.78	6.35	.08	.51	1.22	.27	2706.52					
CENTROPAGES TYPICUS	.	.	.	.	1.27	.24	.26	.	.18	26.14				
CLAUSOCALANUS ARCUICORNIS	4.85	.	.	2.96	2.54	4.39	3.93	3.38	.18	341.16					
EUCHAETA NORVEGICA	4.85	.	.	5.52	.	.	.	.	.	48.48				
EUCHAETA TONSA	.	.	5.52	.	.	.	.	.	.	55.17				
EUCHAETA SP.	.	.	.	.	.	.16	.17	.	.09	8.36				
METRIDIA LONGA	179.39	260.47	44.14	11.85	10.16	.	.26	.27	.	5070.61					
METRIDIA LUCENS	96.97	44.65	38.62	14.81	8.89	1.33	4.36	2.70	1.80	2243.39					
MICROCALANUS PYGMAEUS	.	.	5.52	.	1.27	.	.17	.27	.	76.70					
OITHONA ATLANTICA	.	.	5.52	.	1.27	.31	.51	2.03	.63	137.55					
OITHONA SIMILIS	4.85	.	.	.	.	.	.09	.14	.27	58.30				
OITHONA SP.	.	.	.	.	.	.63	.	.	.	12.55				
PARACALANUS PARVUS	.	.	.	.	.	.	.94	.14	.18	25.11				
PARA/CLAUSOCALANUS IMMATURE	.	.	.	.	.	.08	.09	.	.	3.28				
PSEUDOCALANUS MINUTUS	29.09	7.44	5.52	5.93	10.16	1.80	1.20	.54	.	652.17					
SCOLOCITHRIX SP.	.	.	.	.	1.27	.16	.	.	.89	1.80				
SCOLOCITHRICELLA MINOR	4.85	.	.	.	1.27	.	.	.	.	64.32				
COPEPOD DAMAGED/EXOSKELETON	.	52.09	5.52	11.85	15.24	2.67	3.42	6.76	2.97	1163.31					
UNIDENTIFIED HARPACTICOID	.	.	.	.	.	.08	.26	.14	.18	13.00				
EUPHAUSIIDS	.	.	.	.	.	.16	.	.14	.	5.84				
M. NORVEGICA FURCILIA	.	.	.	.	.	.08	.	.	.	1.57				
EUPHAUSIID NAUPLII	.	.	.	.	.	.08	.	.	.	1.57				
EUPHAUSIID FURCILIA	.	.	.	.	.	.	.	.14	.	2.70				

L A R G E M E S O Z O O P L A N K T O N & I C H T H Y O P L A N K T O N *

* = NOT AVAILABLE

STATION	5	28/09/86	2000H	43 50.85'N	62 56.12'W	1	2	3	4	5	6	7	8	9	10	
SAMPLE																#/M2
DEPTH1 (M)	.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0					
DEPTH2 (M)	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0						
VOLUME OF WATER SAMPLED (M3)	42.	73.	72.	56.	65.	73.	67.	61.	65.	44.						
TOTAL BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*						
CHAETOGNATHA BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*						
EUPHAUSIID BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*						
SPECIES																
SIPHONOPHORA																3.08
LIMACINA BULIMOIDES	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6.68
LIMACINA LESUEURII	.	.	.	.	.	.	1.23	1.64	.	.	.	.	.	.	.	32.28
LIMACINA TROCHIFORMIS	.	.	.	.	.	.	62	55	.	.	.	.	.	.	.	11.61
LIMACINA SP.	.	.	.	.	.	.	55	.	.	.	.	.	.	.	.	5.46
GYMNOSOMATA	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5.57
COPEPODA	182.98	381.99	164.35	135.14	132.00	112.41	158.56	105.54	127.61	155.15	16557.21					
CALANUS FINMARCHICUS (D)	2.84	6.55	5.01	3.68	.92	1.09	.	.	.87	.	1.21					220.98
CALANUS FINMARCHICUS (G)	2.36	3.27	8.91	.36	.31	.	.	.	.	.	1.84					170.60
CALANUS FINMARCHICUS (S)	.95	6.55	.56	.	.31	.55	.	.	.43	.61	.					99.52
CALANUS FINMARCHICUS VIM	.47	2.18	1.67	.72	.92	.	.	.	.	.	.61					65.77
CALANUS FINMARCHICUS VIF	6.15	16.37	14.48	3.96	1.54	1.64	.	.	1.30	2.45	1.21					491.11
CALANUS FINMARCHICUS V	12.77	32.74	28.41	32.79	28.31	18.01	18.62	17.37	47.85	60.61	2974.79					
CALANUS FINMARCHICUS IV	.47	2.18	.56	1.80	1.23	.55	.60	1.30	.	2.42	111.19					
CALANUS FINMARCHICUS III	.	1.09	.	.	.	.	.	.	.	.	.					10.91
CALANUS FINMARCHICUS II	.	1.09	.	.	.	.	.	.	.	.	.					10.91
CALANUS GLACIALIS V	.	.	.	.56	1.08	2.15	.	.	1.80	.87	.61	1.21				82.88
CALANUS GLACIALIS IV	.	.	.	.56	.36	.31	.	.	.	.	.	.				12.25
CALANUS HYPERBOREUS V	.	1.09	.	.	.	.	.	.	.	.	.					10.91
CALANUS HYPERBOREUS IV	.	.	.	.	.36	.	.	.	.	.	.					3.60
CENTROPAGES TYPICUS	19.86	26.19	2.79	1.08	1.23	1.09	.60	.43	1.23	.						545.03
CLAUSOCALANUS ARCUICORNIS	.47	1.09	13.93	7.21	12.31	4.91	4.80	.87	1.23	.						468.18
EUCHAETA NORVEGICA	.	.	.	.	.	.	.	.	.	.	.61	.				6.13
EUCHAETA SP.	.	.	.	.	.	.	.	.	.	.	.60	.				6.01
METRIDIA LONGA	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	6.06
METRIDIA LUCENS	1.89	.	5.57	38.20	59.08	70.94	117.72	72.96	63.19	64.24	4937.93					
OITHONA ATLANTICA	.47	.	4.46	12.61	3.08	1.64	3.00	5.21	2.45	9.70	426.22					
OITHONA SIMILIS	.95	.	8.36	2.16	.	.	.	.	.	.	.	.	.	.	.	120.70
OITHONA SP.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	3.08
PARACALANUS PARVUS	51.06	232.47	23.40	1.44	2.46	2.18	.60	.43	1.23	.						3152.79
PARA/CLAUSOCALANUS IMMATURE	5.67	10.91	3.90	.36	.	.55	2.40	.43	.61	.61						254.50
PSEUDOCALANUS MINUTUS	1.42	30.56	36.77	15.86	9.54	2.73	3.00	1.74	.61	2.42	1046.47					
SCOLECITHRICELLA MINOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	12.12
COPEPOD DAMAGED/EXOSKELETON	81.32	24.01	18.94	15.14	9.54	8.19	4.80	2.61	5.52	9.70	1797.65					
AMPHIPODA	.47	.	.56	2.52	1.85	.55	.60	.	.	.						65.45
AMPHIPODA EGGS	.	.	.56	.	.	.55	.60	.	.	.						84.52
PARATHEMISTO ABYSSORUM	.47	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4.73
PARATHEMISTO SP.	.	.	.	.56	2.52	1.85	.55	.60	.	.	.	.	.	.	.	60.72
EUPHAUSIIDS	3.31	1.09	1.67	.	.	.	.	.	.	.	.	.	.	.	.	60.72
M. NORVEGICA FURCILIA	1.89	1.09	1.67	.	.	.	.	.	.	.	.	.	.	.	.	46.54
EUPHAUSIID EGGS	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4.34
EUPHAUSIID FURCILIA	1.42	.	.	.	.	.	.	.	.	.	.	.	.	.	.	14.18

L A R G E M E S O Z O O P L A N K T O N & I C H T H Y O P L A N K T O N •

• = NOT AVAILABLE

STATION 6 28/09/86 2100H 43 50.85'N 62 56.12'W
 SAMPLE 2 3 4 5
 DEPTH1 (M) 200.0 190.0 180.0 140.0
 DEPTH2 (M) 190.0 160.0 140.0 120.0
 VOLUME OF WATER SAMPLED (M3) 71. 157. 106. 100.
 TOTAL BIOMASS (G/M3) • • • •
 CHAETOGNATHA BIOMASS (G/M3) • • • •
 EUPHAUSIID BIOMASS (G/M3) • • • •

SPECIES	NUMBER PER CUBIC METER				#/M2
LIMACINA LESUEURII	.	.	.13	.	5.05
LIMACINA SP.	.	.	.	.10	2.00
COPEPODA	79.78	42.12	35.73	29.70	4084.74
AETIDIUS ARMATUS	.37	.17	.	.	8.84
CALANUS FINMARCHICUS (D)	.	.	.38	.20	19.15
CALANUS FINMARCHICUS (G)	.	.	.13	.	5.05
CALANUS FINMARCHICUS (S)	.	.	.	.10	2.00
CALANUS FINMARCHICUS VIM	.37	.	.13	.	8.80
CALANUS FINMARCHICUS VIF	.	.	.51	.30	26.20
CALANUS FINMARCHICUS V	57.30	23.95	12.37	7.30	1932.45
CALANUS FINMARCHICUS IV	1.87	1.19	.38	.20	73.55
CALANUS GLACIALIS (D)	.	.17	.	.	5.10
CALANUS GLACIALIS (S)	.37	.	.	.	3.75
CALANUS GLACIALIS VIF	.37	.17	.	.	8.84
CALANUS GLACIALIS V	5.99	1.02	.76	.60	132.80
CALANUS GLACIALIS IV	.75	.17	.25	.10	24.69
CALANUS HYPERBOREUS V	.37	.	.13	.	8.80
CALANUS HYPERBOREUS IV	.37	.17	.13	.	13.89
CENTROPAGES TYPICUS	.	.	.51	.40	28.20
CLAUSOCALANUS ARCUICORNIS	3.37	1.19	1.89	.60	157.13
EUCHAETA SP.	.	.17	.	.30	11.10
METRIDIA LONGA	.	.68	1.64	1.30	112.04
METRIDIA LUCENS	4.49	7.64	4.42	5.70	565.01
MICROCALANUS PYGMAEUS	.37	.	.88	.	39.10
OITHONA ATLANTICA	.	.68	1.77	4.00	171.09
OITHONA SIMILIS	.37	.	1.14	.20	53.20
PARACALANUS PARVUS	.	.17	1.64	2.50	120.75
PARA/CLAUSOCALANUS IMMATURE	.	.34	1.77	.80	96.90
PSEUDOCALANUS MINUTUS	1.12	.	.88	1.50	76.59
SCOLECITHRICELLA MINOR	.	.17	.	.10	7.10
TEMORA LONGICORNIS	.	.	.13	.	5.05
COPEPOD DAMAGED/EXOSKELETON	2.25	3.74	4.42	3.80	387.34
UNIDENTIFIED HARPACTICOID	.	.51	.	.	15.29
AMPHIPODA	.	.	.38	.30	21.15
AMPHIPODA EGGS	.	1.36	2.40	.	136.72
PARATHEMISTO GAUDICHAUDI	.	.	.38	.	15.15
PARATHEMISTO SP.	.	.	.	.30	6.00
EUPHAUSIIDS	1.12	.	.13	.20	20.29
M. NORVEGICA FURCILIA	.	.	.13	.20	9.05
EUPHAUSIID EGGS	.	.17	.	.10	7.10
EUPHAUSIID NAUPLII	1.12	.	.	.	11.24

L A R G E M E S O Z O O P L A N K T O N & I C H T H Y O P L A N K T O N •

• = NOT AVAILABLE

STATION 7 28/09/86 2353H 43 50.85'N 62 56.12'W

SAMPLE	2	3	4	5	6	7	8	9	10
DEPTH1 (M)	261.0	240.0	220.0	200.0	180.0	160.0	140.0	120.0	100.0
DEPTH2 (M)	240.0	220.0	200.0	180.0	160.0	140.0	120.0	100.0	90.0
VOLUME OF WATER SAMPLED (M3)	137.	128.	149.	149.	142.	120.	130.	104.	32.
TOTAL BIOMASS (G/M3)	1.178	1.574	.121	.060	.086	.044	.039	.094	.157
CHAETOGNATHA BIOMASS (G/M3)	.003	.002	.000	.000	.000	.000	.000	.000	.000
EUPHAUSIID BIOMASS (G/M3)	.009	.012	.005	.005	.013	.025	.017	.030	.015

SPECIES	NUMBER PER CUBIC METER								#/M2
GYMNOSOMATA	.	.	.36	.	.	.	.	.10	.
COPEPODA	938.98	1480.00	94.85	71.23	68.96	27.78	27.69	83.59	167.50
CALANUS FINMARCHICUS (D)	7.01	15.00	.72	.36	.	.22	.10	.	.63
CALANUS FINMARCHICUS (G)	.	.	.	.	.	.11	.	.	.63
CALANUS FINMARCHICUS (S)	.	.	.72	.36	.45	.	.10	.77	.
CALANUS FINMARCHICUS VIM	.	.	.36	.36	.	.	.10	.	47.93
CALANUS FINMARCHICUS VIF	7.01	15.00	1.43	.72	.45	.33	.21	.77	1.25
CALANUS FINMARCHICUS V	663.36	1230.00	62.28	40.09	39.44	12.44	13.13	40.51	98.75
CALANUS FINMARCHICUS IV	11.68	25.00	1.43	.36	1.35	.11	.21	.26	1.25
CALANUS GLACIALIS (S)	.	.	.	.	.	.	.11	.10	.26
CALANUS GLACIALIS VIF	.	.	.	.	.	.	.11	.10	.26
CALANUS GLACIALIS V	119.12	160.00	10.74	7.16	4.06	1.33	1.44	5.13	6.25
CALANUS GLACIALIS IV	.	5.00	.72	.	.45	.11	.	.	.63
CALANUS HYPERBOREUS (D)	.	.	.	.	.23	.	.	.	.
CALANUS HYPERBOREUS VIF	.	.	.	.	.23	.	.	.	.451
CALANUS HYPERBOREUS V	23.36	5.00	5.01	.72	1.80	.11	.21	1.28	2.50
CALANUS HYPERBOREUS IV	70.07	15.00	1.43	1.43	2.70	.22	.92	2.31	2.50
CENTROPAGES TYPICUS	.	.	.36	.36	.68	.56	.	.	38.95
CLAUSOCALANUS ARCUICORNIS	.	.	.36	1.07	.68	.89	.21	.77	2.50
EUCHAETA NORVEGICA	2.34	.	.	.	.	.	.	.	49.05
EUCHAETA SP.	.	.	.	.	.23	.	.10	.26	.
METRIDIA LONGA	2.34	.	1.79	1.07	4.06	1.11	.10	.26	.63
METRIDIA LUCENS	18.69	10.00	3.58	11.81	.90	5.67	5.44	7.18	5.63
MICROCALANUS PYGMAEUS	.	.	.	.	.	.	.	.26	.
OITHONA ATLANTICA	.	.	.36	.	.45	.56	.41	1.79	2.50
OITHONA SIMILIS	.	.	.	.	.	.	.	.	.63
PARACALANUS PARVUS	2.34	.	.36	2.51	1.13	.56	.10	.26	.
PARA/CLAUSOCALANUS IMMATURE	.	.	.	.	1.13	.33	.	.51	.
PSEUDOCALANUS MINUTUS	9.34	.	.72	.36	.45	.78	.10	.26	1.25
SCOLECITHRICELLA MINOR	.	.	.	.36	.	.	.	.	7.16
TEMORA LONGICORNIS	.	.	.	.36	.	.	.	.63	13.41
COPEPOD DAMAGED/EXOSKELETON	9.34	15.00	3.94	2.15	8.56	2.44	4.82	21.54	40.63
UNIDENTIFIED COPEPOD	.	.	.	.36	.	.	.	.	7.16
UNIDENTIFIED HARPACTICOID	.	.	.	.	.23	.11	.10	.	8.78
AMPHIPODA	.	.	.	.	.	.	.	.77	.
AMPHIPODA EGGS	.	.	8.95	1.79	.45	1.56	.	.	254.89
PARATHEMISTO SP.	.	.	.	.	.	.	.	.77	.
EUPHAUSIIDS	.	.	.	.	.23	.	.10	.	6.56
THYSANOESSA LONGICAUDATA FUR	.	.	.	.	.	.	.10	.	2.05
EUPHAUSIID NAUPLII	.	.	.	.	.23	.	.	.	4.51

L A R G E M E S O Z O O P L A N K T O N & I C H T H Y O P L A N K T O N

SQUID	.007	.	.	.	.	.	.	.	.153
PARATHEMISTO SP.	.	.	.007	.020	.028	.017	.	.	1.434
DICHLOPANDALUS SP.	.	.	.007	.	.	.	.	.010	.
327	.	.	.	.	.	.	.	.	.
EUPHAUSIACEA	.270	.195	.141	.315	.331	.342	.238	.442	.500
EUPHAUSIID	.	.	.	.013	.	.025	.015	.029	50.774
MEGANYCTIPHANES NORVEGICA	.124	.148	.094	.168	.155	.200	.162	.288	1.653
NEMATOSCELIS MEGALOPS	.	.	.	.	.	.008	.	.	.167
THYSANOESSA INERMIS	.	.	.013	.013	.056	.008	.	.058	4.234
THYSANOESSA LONGICAUDATA	.146	.047	.034	.121	.120	.100	.062	.067	15.312
CHAETOGNATHA	.350	.148	.013	.007	.035	.033	.023	.	12.874

* = NOT AVAILABLE

STATION	8	29/09/86	1548H	43 30.38'N	62 42.19'W	1	2	3	4	5	6	7	8	9	10
SAMPLE															
DEPTH1 (M)	.0	5.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0	110.0	120.0	130.0
DEPTH2 (M)	5.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0	110.0	120.0	130.0	140.0
VOLUME OF WATER SAMPLED (M3)	59.	45.	107.	100.	80.	92.	105.	71.	71.	106.					
TOTAL BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
CHAETOGNATHA BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
EUPHAUSIID BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SPECIES															
															#/M2
LIMACINA-DAMAGED															.83
GYMNOSOMATA															
COPEPODA	135.47	962.86	386.10	236.21	24.30	45.63	70.80	84.51	94.56	294.98	19337.49				
CALANUS FINMARCHICUS (D)	.	.	.	.	.	3.06	8.02	6.01	3.40	2.27	238.98				
CALANUS FINMARCHICUS (G)	.34	.	.	1.07	.92	9.39	11.83	10.14	9.46	2.27	463.83				
CALANUS FINMARCHICUS (S)	.34	.	.	.	.83	.66	.95	1.88	1.51	.76	71.39				
CALANUS FINMARCHICUS VIM	.	.	.	.	.	.22	.	.	1.51	3.03	62.81				
CALANUS FINMARCHICUS VIF	.68	.	.	1.07	1.75	13.10	20.80	18.03	14.37	5.31	774.20				
CALANUS FINMARCHICUS V	2.70	.	6.01	7.48	8.82	18.78	37.40	58.22	66.57	55.36	2876.68				
CALANUS FINMARCHICUS IV	.34	.	.	.	.25	.66	1.34	1.88	2.27	.	65.57				
CALANUS FINMARCHICUS III	.	.	.	.	.08	.22	.57	.	.	.	8.74				
CALANUS FINMARCHICUS I	.	.	.	1.07	.	.	.	.	.	.	10.69				
CALANUS GLACIALIS V	.	.	.	.	.	.	.	.19	.	1.13	.	13.26			
CALANUS HYPERBOREUS IV	.	.	.	.	.	.	.	.	.	.	.76	11.37			
CENTROPAGES TYPICUS	4.05	46.53	31.55	18.17	.	.22	.19	.38	.	.	757.97				
CLAUSOCALANUS ARCUICORNIS	1.01	39.37	48.08	21.38	1.25	1.75	1.34	1.13	.38	103.89	2513.10				
EUCHAETA NORVEGICA	.	.	.	.	.08	.	.	.	.	.	.83				
METRIDIA LUCENS	.	3.58	.	.	1.08	.66	1.34	.	.	.	75.07	1174.69			
MICROCALANUS PYGMAEUS	.	.	.	.	.	.	.	.	.	.	.76	11.37			
OITHONA ATLANTICA	.	.	.	.	.17	.44	1.91	.38	1.51	8.34	169.12				
OITHONA SIMILIS	.	21.48	4.51	.	.	.	.	.	.	.	152.45				
PARACALANUS PARVUS	63.85	730.20	223.85	120.77	.	2.84	.95	.	.76	.76	7473.38				
PARA/CLAUSOCALANUS IMMATURE	1.35	53.69	7.51	19.24	.	1.31	1.53	.38	.	4.55	643.09				
PSEUDOCALANUS MINUTUS	.	3.58	19.53	3.21	.	.	.	.75	.38	.	256.56				
COPEPOD DAMAGED/EXOSKELETON	61.49	64.43	45.07	43.82	10.82	5.24	3.24	3.38	5.30	37.16	2355.64				
UNIDENTIFIED HARPACTICOID	.	.	.	.	.	.22	.	.	.38	.	5.97				
AMPHIPODA	.	.	.	1.50	.	.	.	.	.	.	15.02				
AMPHIPODA EGGS	.	.	.	.	.	.66	.	.	.	.	6.55				
PARATHEMISTO SP.	.	.	1.50	.	.	.	.	.	.	.	15.02				
EUPHAUSIIDS	.	14.32	37.56	24.58	.08	.22	.38	.	.	.	699.83				
M. NORVEGICA FURCILIA	.	.	.	.	.	.	.19	.	.	.	1.91				
EUPHAUSIID EGGS	.	.	.	.	.08	.	.	.	.	.	.83				
EUPHAUSIID NAUPLII	.	14.32	37.56	24.58	.08	.22	.	.	.	.	696.02				
EUPHAUSIID FURCILIA	.	.	.	.	.	.	.19	.	.	.	1.91				
DECAPOD LARVAE	.	.	.	.	.	.	.19	.	.	.	.76	13.28			
FISH EGGS	.	.	.	.	.08	.	.	.	.	.	.83				

L A R G E M E S O Z O O P L A N K T O N & I C H T H Y O P L A N K T O N *

* = NOT AVAILABLE

STATION	9	29/09/86	2037H	44 02.67'N	63 06.13'W	1	2	3	4	5	6	7	8	9	10	
SAMPLE																#/M2
DEPTH1 (M)	.0	20.0	40.0	60.0	80.0	100.0	120.0	140.0	150.0	160.0	165.0					
DEPTH2 (M)	20.0	40.0	60.0	80.0	100.0	120.0	140.0	150.0	160.0	165.0	165.0					
VOLUME OF WATER SAMPLED (M3)	129.	99.	114.	90.	113.	81.	90.	53.	82.	65.						
TOTAL BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*					
CHAETOGNATHA BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*					
EUPHAUSIID BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*					
SPECIES																
MEDUSA																11.85
SIPHONOPHORA																4.42
LIMACINA BULIMOIDES	82.50	.54	.23													1665.36
LIMACINA HELICOIDES																15.40
LIMACINA INFILATA		.54														10.77
LIMACINA LESUEURII																15.95
LIMACINA RETROVERSA	9.90	.54														213.19
LIMACINA TROCHIFORMIS	9.90	.54	.23													262.33
LIMACINA SP.																14.34
BIVALVE LARVAE																3.55
COPEPODA	513.12	219.80	63.39	62.83	51.82	128.38	164.15	234.47	346.89	370.87						31617.81
CALANUS FINMARCHICUS (D)	4.95	1.62	.23	.22	.35	.99										206.32
CALANUS FINMARCHICUS (G)	3.30	3.23	.23													135.32
CALANUS FINMARCHICUS (S)	8.25	3.23	.23													237.87
CALANUS FINMARCHICUS VIM	3.30	3.77	.70													178.83
CALANUS FINMARCHICUS VIF	16.50	8.08	.70	.22	.53	.99										579.51
CALANUS FINMARCHICUS V	90.75	35.02	9.82	23.01	27.86	61.96	133.33	193.21	287.13	311.79						13873.98
CALANUS FINMARCHICUS IV		.54		1.77	1.42	2.97	2.37	2.01	3.90	1.64						260.84
CALANUS FINMARCHICUS III																24.25
CALANUS GLACIALIS (D)																3.55
CALANUS GLACIALIS VIF																3.55
CALANUS GLACIALIS V	1.65		1.17	.44	.89	2.48	1.19	5.03	7.80	16.41						323.50
CALANUS GLACIALIS IV			.23													61.33
CALANUS HYPERBOREUS V																27.46
CALANUS HYPERBOREUS IV			.23													151.35
CALANUS HYPERBOREUS III																10.86
CENTROPAGES TYPICUS	33.00	.54	.70	1.33	.71	5.95	2.37	3.02	1.30							941.56
CLAUSOCALANUS ARCUICORNIS	14.85	40.40	2.57	.88	.53	1.98	2.37	1.01	1.30	1.64						1301.49
METRIDIA LONGA																61.24
METRIDIA LUCENS	84.15	45.79	10.99	5.75	4.61	8.92	2.37	6.04	7.80	8.21						3429.09
MICROCALANUS PYGMAEUS			.23													4.68
OITHONA ATLANTICA			11.85	5.85	1.11	2.48	2.97	2.96								544.55
OITHONA SIMILIS			1.08	.70		.35	.99									62.51
PARACALANUS PARVUS	59.40	14.01	1.40	2.43	1.42	2.97	.59	2.01	1.30							1684.15
PARA/CLAUSOCALANUS IMMATURE	6.60	5.39	.23	.66	.18	.50		1.01	1.30							300.70
PSEUDOCALANUS MINUTUS	11.55	28.55	14.50	6.42	2.66	9.91	8.30	7.04	7.80	1.64						1825.21
SCOLECITHRICELLA MINOR			.23													14.59
COPEPOD DAMAGED/EXOSKELETON	191.39	24.78	13.10	17.70	6.74	21.31	5.93	12.08	14.29	11.49						5954.17
AMPHIPODA																52.89
AMPHIPODA EGGS																11.85
PARATHEMISTO SP.																52.89
EUPHAUSIIDS	1.65	.54														99.04
M. NORVEGICA FURCILIA		.54														20.69
THYSANOESSA RASCHII FURCILIA	1.65															33.00
THYSANOESSA INERMIS FURCILIA																13.46
THYSANOESSA LONGICAUDATA FUR																4.42
THYSANOESSA SP. FURCILIA																4.42
EUPHAUSIID EGGS																8.23
EUPHAUSIID NAUPLII																3.55
EUPHAUSIID FURCILIA																19.49

L A R G E M E S O Z O O P L A N K T O N & I C H T H Y O P L A N K T O N *

* = NOT AVAILABLE

STATION 10	29/09/86	2300H	44 11.49°N	63 12.16°W	1	2	3	4	5	6	7	8	9	10	
SAMPLE															
DEPTH1 (M)	.0	10.0	20.0	30.0	40.0	60.0	80.0	100.0	120.0	120.0	149.0				
DEPTH2 (M)	10.0	20.0	30.0	40.0	60.0	80.0	100.0	120.0	149.0	147.0					
VOLUME OF WATER SAMPLED (M3)	46.	47.	43.	44.	103.	94.	106.	126.	126.	107.					
TOTAL BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
CHAETOGNATHA BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
EUPHAUSIID BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
SPECIES															#/M2
SIPHONOPHORA															23.07
LIMACINA BULIMOIDES	7.00														90.77
LIMACINA HELICOIDES	101.53														1038.06
LIMACINA INFILATA		2.26													64.09
LIMACINA LESUEURII	357.11		7.39												3903.58
LIMACINA TROCHIFORMIS	70.02														924.08
LIMACINA-DAMAGED															14.76
BIVALVE LARVAE	14.00														204.92
COPEPODA	616.19	507.29	1226.79	380.05	156.68	87.28	98.68	89.21	76.61	283.12	38728.01				
ACARTIA LONGIREMIS															5.69
CALANUS FINMARCHICUS (D)			14.78	4.54											214.08
CALANUS FINMARCHICUS (G)			11.09	.91											136.98
CALANUS FINMARCHICUS (S)	3.50	2.26	7.39												168.79
CALANUS FINMARCHICUS VIM			3.70	1.81											89.57
CALANUS FINMARCHICUS VIF	3.50	2.26	33.26	5.44	1.04	1.42	.38	.32	.21	2.99					519.85
CALANUS FINMARCHICUS V	7.00	156.26	428.64	51.70	39.43	36.67	38.94	49.52	32.80	198.38	11075.48				
CALANUS FINMARCHICUS IV		15.85	144.11	2.72	3.11	2.56	4.16	2.22	2.33	9.97	1955.35				
CALANUS FINMARCHICUS III		13.59		.91											151.09
CALANUS GLACIALIS (D)															6.35
CALANUS GLACIALIS (S)															6.35
CALANUS GLACIALIS VIF															12.70
CALANUS GLACIALIS V															252.64
CALANUS GLACIALIS IV															104.22
CALANUS HYPERBOREUS V															1.00
CALANUS HYPERBOREUS IV															1.99
CALANUS HYPERBOREUS III															175.17
CENTROPAGES TYPICUS	3.50	86.06	218.01	25.40	3.63	3.13	6.81	.95	1.06						3650.72
CLAUSOCALANUS ARCUICORNIS	7.00	9.06	3.70												232.52
METRIDIA LONGA															10.13
METRIDIA LUCENS		2.26	11.09	14.51	6.74	2.56	6.05	3.81	1.48	12.96	730.74				
MICROCALANUS PYGMAEUS				.91											18.63
OITHONA ATLANTICA			14.78	1.81											232.63
OITHONA SIMILIS		4.53	3.70	5.44	1.04	.57	1.89								214.73
PARACALANUS PARVUS	7.00	61.15	81.29	3.63	.52	.85	3.40	.63	.42						1651.16
PARA/CLAUSSOCALANUS IMMATURE	7.00	2.26		1.81											110.81
PSEUDOCALANUS MINUTUS	21.01	108.70	218.01	102.49	50.32	11.09	14.74	2.86	3.60	4.98	6196.78				
SPINOCALANUS SP.															6.14
TEMORA LONGICORNIS	7.00	2.26													108.73
COPEPOD DAMAGED/EXOSKELETON	553.17	43.03	66.51	161.45	45.14	23.88	14.74	21.27	28.15	27.91	11214.41				
AMPHIPODA EGGS		2.26	3.70												59.60
EUPHAUSIID															
M. NORVEGICA FURCILIA		11.32	18.48												444.13
THYSANOESSA RASCHII FURCILIA		2.26		1.81											63.98
THYSANOESSA LONGICAUDATA FUR		4.53	7.39												119.20
THYSANOESSA SP. FURCILIA		4.53	11.09	5.44	.52	.28	.38								8.34
EUPHAUSIID EGGS															246.47
EUPHAUSIID FURCILIA															6.14
ECHINOODERMATA-LARVAE															6.14
OIKOPLEURA VANHOEFFENI															6.35
DAMAGED APPENDICULARIA															68.25

L A R G E M E S O Z O O P L A N K T O N & I C H T H Y O P L A N K T O N *

* = NOT AVAILABLE

STATION 11	01/10/86	1256H	43 37.95'N	63 08.28'W	2	3	4	5	6	7	8	9	10	
SAMPLE														
DEPTH1 (M)			244.0	231.0	225.0	221.0	215.0	208.0	192.0	176.0	162.0			
DEPTH2 (M)			231.0	225.0	221.0	215.0	208.0	192.0	176.0	162.0	140.0			
VOLUME OF WATER SAMPLED (M3)			50.	32.	27.	44.	49.	89.	70.	44.	77.			
TOTAL BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*	*
CHAETOGNATHA BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*	*
EUPHAUSIID BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*	*
<hr/>														
SPECIES														#/M2
LIMACINA INFLATA														.09 1.91
LIMACINA LESUEURII						1.81								.09 12.75
LIMACINA TROCHIFORMIS														.19 .15 .17 8.99
LIMACINA-DAMAGED														.19 .19 .19 .305
GYMNOSOMATA														.09 1.91
COPEPODA	294.62	322.98	296.95	455.08	757.55	306.82	58.48	55.30	24.51	22147.29				
CALANUS FINMARCHICUS (D)	1.08	4.97	.98	3.61	4.35	1.20	.38	.30	.09	131.27				
CALANUS FINMARCHICUS (G)						1.20								23.42
CALANUS FINMARCHICUS (S)	2.15	2.48				1.20								82.98
CALANUS FINMARCHICUS VIM	1.08	3.73		1.81	4.35	5.99								181.81
CALANUS FINMARCHICUS VIF	3.23	7.45	.98	3.61	4.35	3.60	.76	1.67	.09	237.67				
CALANUS FINMARCHICUS V	52.69	180.12	197.31	373.81	644.35	233.71	38.10	25.45	11.91	14275.50				
CALANUS FINMARCHICUS IV		2.48	3.91	5.42	4.35	4.79	.38							178.23
CALANUS GLACIALIS V	5.38	2.48	9.77	30.70	39.18	14.38	1.52	.76	.70	862.75				
CALANUS GLACIALIS IV			3.91	5.42		3.60	.19							108.71
CALANUS HYPERBOREUS V	1.08													46.48
CALANUS HYPERBOREUS IV	9.68	14.91	7.81	7.22										300.03
CALANUS TENUICORNIS (S)														.09 1.91
CALANUS TENUICORNIS: ADULT F														.09 1.91
CENTROPAGES TYPICUS	1.08	1.24	1.95			1.20	.38	.45	.35	68.53				
CLAUSOCALANUS ARCUICORNIS		1.24		3.61		8.39	.57	.76	.26	188.84				
EUCHAETA NORVEGICA	2.15	1.24												35.41
METRIDIA LONGA			.98											3.91
METRIDIA LUCENS	161.29	50.93	12.70	7.22	2.18		1.90	3.33	.78	2606.89				
OITHONA ATLANTICA			1.95			3.60	1.33	1.82	.78	129.34				
OITHONA SIMILIS	1.08				2.18			.30		33.46				
PARACALANUS PARVUS					2.18	1.20		.61	.09	44.81				
PSEUDOCALANUS MINUTUS	27.96	7.45	7.81		2.18	9.59	2.48	1.36	.43	676.34				
SPINOCALANUS SP.	1.08													13.98
COPEPOD DAMAGED/EXOSKELETON	26.88	49.69	47.86	10.84	52.24	16.78	10.48	17.12	8.17	2125.31				
UNIDENTIFIED HARPACTICOID														26.26
AMPHIPODA			1.24											7.45
AMPHIPODA EGGS														15.24
PARATHEMISTO SP.		1.24												7.45
EUPHAUSIIDS		2.48	.98			1.20		.30	.09	44.14				
M. NORVEGICA FURCILIA			.98											6.03
THYSANOESSA SP. FURCILIA		2.48				1.20								36.00
EUPHAUSIID EGGS														4.24
EUPHAUSIID FURCILIA														2.12

L A R G E M E S O Z O O P L A N K T O N & I C H T H Y O P L A N K T O N *

* = NOT AVAILABLE

STATION 12 02/10/86 0115H 43 50.52'N 62 56.55'W

SAMPLE	2	3	4	5	6	7	8	9	10
DEPTH1 (M)	250.0	240.0	230.0	220.0	210.0	200.0	175.0	100.0	50.0
DEPTH2 (M)	240.0	230.0	220.0	210.0	200.0	175.0	100.0	50.0	5.0
VOLUME OF WATER SAMPLED (M3)	38.	52.	53.	50.	51.	121.	209.	130.	104.
TOTAL BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*
CHAETOGNATHA BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*
EUPHAUSIID BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*

SPECIES	NUMBER PER CUBIC METER										#/M2
LIMACINA BULIMOIDES62	27.69
LIMACINA LESUEURII	.	.	.	.	.	.22	.04	.	.62	36.05
LIMACINA TROCHIFORMIS	.	.	.	.	.	.22	.04	.	1.85	91.44
GYMNOSOMATA	.	3.02	.	.	.	.	.08	.31	.62	79.01
COPEPODA	458.95	735.38	673.21	704.38	269.29	46.35	12.48	30.15	158.15	39131.29	
CALANUS FINMARCHICUS (D)	8.42	6.15	.	3.19	1.05	.66	.11	.	5.54	462.42	
CALANUS FINMARCHICUS (G)	.	.	.	.	.	.	.	.15	2.46	118.46
CALANUS FINMARCHICUS (S)	.	3.08	.	.	.	.66	.04	.	1.85	133.19
CALANUS FINMARCHICUS VIM	.	3.08	.	.	1.05	.22	.11	.31	.	70.74	
CALANUS FINMARCHICUS VIF	8.42	9.23	.	3.19	1.05	1.32	.15	.15	9.85	714.07	
CALANUS FINMARCHICUS V	338.95	600.00	576.60	580.08	202.23	28.34	5.44	6.31	16.00	25130.02	
CALANUS FINMARCHICUS IV	8.42	3.08	6.04	6.37	2.10	.44	.04	.	.	273.91	
CALANUS GLACIALIS (S)	.	3.08	.	.	.	.	.	.	.	30.77
CALANUS GLACIALIS VIF	.	3.08	.	.	.	.	.	.	.	30.77
CALANUS GLACIALIS V	46.32	52.31	42.26	57.37	20.96	3.29	.31	.62	.62	2355.94	
CALANUS GLACIALIS IV	.	3.08	3.02	3.19	2.10	.22	.04	.	.	122.15	
CALANUS HYPERBOREUS V	2.11	3.08	6.04	3.19	2.10	.22	.	.	.	170.52	
CALANUS HYPERBOREUS IV	29.47	18.46	12.08	6.37	4.19	.66	.04	.15	.	732.80	
CLAUSOCALANUS ARCUICORNIS	2.11	.	.	.	.	1.32	.04	.15	6.77	369.18
EUCHAETA NORVEGICA	.	.	.	.	.	.	.04	.	.	2.87
HALITHALESTRIS CRONI	.	.	.	.	.	.	.08	.	.	5.74
METRIDIA LONGA	.	.	.	3.19	.	.44	.46	8.92	.	523.46	
METRIDIA LUCENS	10.53	6.15	12.08	12.75	13.62	5.27	2.49	5.08	75.08	4501.97	
MICROCALANUS PYGMÆUS	.	3.02	.	.	.	.	.	.	.	30.19
OITHONA ATLANTICA	.	3.08	.	.	1.05	.	.	.92	.	87.40	
OITHONA SIMILIS	.	.	.	.	.	.	.	.46	.62	50.77
PARACALANUS PARVUS	2.11	.	3.02	.	2.10	.22	.11	.	22.15	1083.22	
PARA/CLAUSOCALANUS IMMATURE	.	.	.	.	.	.44	.04	.	.62	41.55
PSEUDOCALANUS MINUTUS	4.21	6.15	.	.	1.05	1.98	.27	.77	10.46	692.87	
SCOLOCITHRICELLA MINOR	.	.	.	.	.	.	.08	.15	.	13.43
COPEPOD DAMAGED/EXOSKELETON	6.32	24.62	9.06	28.69	15.72	1.98	2.72	6.00	16.00	2117.15	
UNIDENTIFIED HARPACTICOID	.	.	.	.	.	.	.04	.15	.	10.56
AMPHIPODA	.	.	.	.	.	.	.11	.31	1.23	79.38
AMPHIPODA EGGS	.	.	.	.	.	.	.57	.	.62	70.75
AMPHIPOD-DAMAGED	.	.	.	.	.	.	.04	.	.	2.87
PARATHEMISTO SP.	.	.	.	.	.	.	.08	.31	1.23	76.51
EUPHAUSIIDS	4.21	.	.	.	.	.22	.08	.	2.46	164.11
M. NORVEGICA FURCILIA	.	.	.	.	.	.22	.	.	.62	33.18
THYSANOESSA SP. FURCILIA	.	.	.	.	.	.	.	.	1.23	55.38
EUPHAUSIID NAUPLII	4.21	.	.	.	.	.	.	.	.	42.11
EUPHAUSIID FURCILIA	.	.	.	.	.	.	.08	.	.62	33.43

L A R G E M E S O Z O O P L A N K T O N & I C H T H Y O P L A N K T O N .

* = NOT AVAILABLE

STATION	DATE	TIME	LAT	LON	2	3	4	5	6	7	8	9	10
SAMPLE													
DEPTH1 (M)	282.0	275.0	260.0	245.0	230.0	221.0	209.0	190.0	180.0				
DEPTH2 (M)	275.0	260.0	245.0	230.0	221.0	209.0	190.0	170.0	155.0				
VOLUME OF WATER SAMPLED (M3)	38.	61.	120.	119.	107.	107.	146.	144.	98.				
TOTAL BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*
CHAETOGNATHA BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*
EUPHAUSIID BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*
SPECIES													
SIPHONOPHORA													
COPEPODA	690.53	597.69	436.97	392.13	962.99	253.61	193.61	88.61	46.73	44097.45			14.36
CALANUS FINMARCHICUS (D)	7.22	1.76	.	1.80	.	.	.73	.	.	.			117.84
CALANUS FINMARCHICUS (S)	2.41	1.76	.	.	.	.	.	.28	.	.			48.84
CALANUS FINMARCHICUS VIF	9.62	3.53	.	1.80	.	.	.73	.28	.	.			166.68
CALANUS FINMARCHICUS V	230.98	163.97	133.22	142.10	257.20	58.62	42.37	20.56	11.63	12615.10			
CALANUS FINMARCHICUS IV	7.22	14.10	3.55	8.99	80.75	3.59	14.61	4.72	3.47	1644.20			
CALANUS GLACIALIS (D)	2.41	1.76	5.33	3.60	5.98	1.20	1.46	.28	.	278.69			
CALANUS GLACIALIS (S)	.	.	.	.	2.99	.	1.46	.	.20	57.74			
CALANUS GLACIALIS VIM	.	.	1.78	10.79	5.98	5.98	.73	.83	.	344.69			
CALANUS GLACIALIS VIF	2.41	1.76	5.33	3.60	8.97	1.20	2.92	.28	.20	336.43			
CALANUS GLACIALIS V	93.83	98.73	76.38	61.16	161.50	51.44	21.19	7.22	3.88	6876.81			
CALANUS GLACIALIS IV	72.18	74.05	65.72	46.77	128.60	53.83	21.92	6.11	4.90	5718.86			
CALANUS HYPERBOREUS (S)	.	.	1.78	.	.	.	.	.	.	26.64			
CALANUS HYPERBOREUS VIF	.	.	1.78	.	.	.	.	.	.	26.64			
CALANUS HYPERBOREUS V	9.62	19.39	10.66	8.99	14.95	4.79	3.65	1.67	.41	953.91			
CALANUS HYPERBOREUS IV	149.17	149.86	88.81	70.15	254.21	59.81	58.45	28.61	9.59	10508.85			
CALANUS HYPERBOREUS III	4.81	1.76	3.55	.	2.99	1.20	2.19	.	.20	199.40			
EUCHAETA NORVEGICA	7.22	1.76	.	1.80	8.97	3.59	.73	2.22	.41	292.22			
METRIDIA LONGA	9.62	7.05	7.11	3.60	8.97	3.59	1.46	.28	.41	496.95			
METRIDIA LUCENS	.	.	.	3.60	.	.	3.65	1.11	1.43	167.02			
OITHONA ATLANTICA	.	.	.	.	5.98	1.20	.73	.28	.	87.62			
OITHONA SIMILIS	.	5.29	.	.	2.99	.	2.19	.	.	147.90			
PSEUDOCALANUS MINUTUS	69.77	33.50	1.78	14.39	11.96	3.59	2.19	.83	1.02	1457.74			
SCOLECITHRICELLA MINOR	.	.	.	1.80	.	.	.73	.28	.20	49.48			
COPEPOD DAMAGED/EXOSKELETON	21.65	22.92	37.30	12.59	8.97	1.20	13.15	13.33	8.98	1990.11			
AMPHIPODA	.	.	.	.	.	.	.	.	.	.20	3.06		
PARATHEMISTO SP.	.	.	.	.	.	.	.	.	.	.20	3.06		
EUPHAUSIIDS	.	.	.	.	.	.	.	.	.	.82	12.24		
M. NORVEGICA FURCILIA	.	.	.	.	.	.	.	.	.	.61	9.18		
EUPHAUSIID FURCILIA	.	.	.	.	.	.	.	.	.	.20	3.06		

L A R G E M E S O Z O O P L A N K T O N & I C H T H Y O P L A N K T O N *

* = NOT AVAILABLE

SPECIES											#/M2
SIPHONOPHORA	.	.17	.18	.21	.23	.	.	.	.	.	16.64
LIMACINA HELICOIDES	.	.	.	.	.	.	.	.	.92	.	9.20
LIMACINA LESUEURII	.	.	.09	.	.11	.	.	.	.	.	4.07
LIMACINA TROCHIFORMIS	.	.	.	.	.06	.	4.75	.	.	.	48.60
LIMACINA SP.	.	.17	.	.	.07	.	.	.	.	.	5.80
COPEPODA	21.94	46.75	39.38	21.53	22.00	19.19	242.71	342.07	414.02	13747.29	
ACARTIA LONGIREMIS	.	.	.09	.	.	.	.	.	.	.	1.79
CALANUS FINMARCHICUS (D)	.	.35	.09	.28	.17	.74	6.78	2.76	.	.	129.52
CALANUS FINMARCHICUS (G)	.	.	.	.14	.23	.66	7.46	.	.	.	95.16
CALANUS FINMARCHICUS (S)	.	.17	.09	.14	.17	.37	8.14	.92	.	.	110.23
CALANUS FINMARCHICUS VIM	.	.	.09	.07	.06	.15	.68	2.76	.	.	41.62
CALANUS FINMARCHICUS VIF	.	.52	.18	.56	.57	1.76	22.37	3.68	.	.	334.90
CALANUS FINMARCHICUS V	4.60	9.87	3.75	7.22	7.14	5.51	185.76	130.57	52.78	4525.67	
CALANUS FINMARCHICUS IV	.72	2.08	2.14	3.13	3.54	4.49	5.42	68.05	153.40	2604.57	
CALANUS FINMARCHICUS III	.	.	.18	.07	.11	.15	.	.	.	14.85	158.64
CALANUS FINMARCHICUS II	.	.	.	.	.23	.15	.	.	.92	1.65	33.20
CALANUS FINMARCHICUS I	.	.	.09	.	.06	.	.	.	.	.	2.93
CALANUS GLACIALIS (D)	.07	.	.	.	.	.	.	.	.	.	1.80
CALANUS GLACIALIS (S)	.	.17	.	.07	.06	.	.	.	.	.	6.86
CALANUS GLACIALIS VIM	.	.	.	.07	.	.	.	.	.	.	1.39
CALANUS GLACIALIS VIF	.07	.17	.	.07	.06	.	.	.	.	.	8.66
CALANUS GLACIALIS V	.65	3.98	.89	.87	.29	.51	.68	.	.	.	141.72
CALANUS GLACIALIS IV	.72	3.98	.45	.07	.11	.07	.	.	.	.	131.63
CALANUS GLACIALIS III	.	.	.09	.07	.	.	.	.	.	.	3.17
CALANUS HYPERBOREUS (D)	.07	.	.	.	.	.	.	.	.	.	1.80
CALANUS HYPERBOREUS VIF	.07	.	.	.	.	.	.	.	.	.	1.80
CALANUS HYPERBOREUS V	.	.35	.09	.	.	.	.	.	.	.	10.44
CALANUS HYPERBOREUS IV	1.65	5.02	.63	.28	.	.22	2.03	.	.	209.71	
CALANUS HYPERBOREUS III	.14	.	.09	.	.06	.	.	.	.	.	5.38
CENTROPAGES TYPICUS	.22	.	.09	.	.06	.	.	.	.92	1.65	34.01
EUCHAETA NORVEGICA	.	2.25	.71	.28	.	.	.	.	.	.	76.12
EUCHIRELLA ROSTRATA	3.96	.	.	.	.	.	.	.	.	.	98.92
METRIDIA LONGA	.86	.	.	.	.	.	.	.	.	.	21.58
METRIDIA LUCENS	.94	.52	.45	.28	.51	.29	.68	.92	.	.	83.00
MICROCALANUS PYGMAEUS	.	.	.71	.	.	.	.	.	.	.	14.29
OITHONA ATLANTICA	.29	.52	.45	.07	.06	.	.	.	.	.	31.64
OITHONA SIMILIS	.	.	15.80	.14	1.03	.	.68	.92	4.95	404.88	
PARACALANUS PARVUS	.	.	.	.07	.11	.07	1.36	.92	8.25	110.37	
PSEUDOCALANUS MINUTUS	.65	2.08	1.43	2.36	3.77	3.01	13.56	111.26	133.61	2863.97	
SCOLECITHRICELLA MINOR	1.22	.52	.63	.63	.11	.22	.	.	.	.	75.26
TEMORA LONGICORNIS	.	.	.	.	.	.	.	.	.	1.65	16.49
COPEPOD DAMAGED/EXOSKELETON	5.04	14.89	11.16	5.97	4.11	2.57	9.49	21.15	41.24	1693.39	
UNIDENTIFIED HARPACTICOID	.14	.	.	.07	.06	.37	.	.92	3.30	6.13	
AMPHIPODA	.	2.08	.09	.07	.06	.	.	.	.	105.80	
AMPHIPOD-DAMAGED	.	.	.	.07	.	.	.	.	.	.	1.39
PARATHEMISTO SP.	.	2.08	.89	.	.06	.37	.	.92	3.30	104.41	
EUPHAUSIID	.07	.52	.36	.42	1.31	1.54	.68	.	.	.	94.21
M. NORVEGICA FURCILIA	.07	.35	.36	.28	1.20	.51	.	.	.	.	57.45
THYSANOESSA RASCHII FURCILIA	.	.	.	.14	.06	.96	.	.	.	.	23.04
THYSANOESSA SP. FURCILIA	.	.	.	.	.06	.	.68	.	.	.	7.92
EUPHAUSIID EGGS	.07	.52	.45	.28	.40	.59	.	.	1.65	65.53	
EUPHAUSIID FURCILIA	.	.17	.	.	.	.07	.	.	.	.	5.80

L A R G E M E S O Z O O P L A N K T O N & I C H T H Y O P L A N K T O N .

• = NOT AVAILABLE

STATION 15	03/10/86	1930H	45 49.28'N	58 31.91'W	1	2	3	4	5	6	7	8	9	10	
SAMPLE															
DEPTH1 (M)	.0	10.0	20.0	30.0	40.0	60.0	80.0	110.0	130.0	150.0					
DEPTH2 (M)	10.0	20.0	30.0	40.0	60.0	80.0	110.0	130.0	150.0	170.0					
VOLUME OF WATER SAMPLED (M3)	109.	47.	48.	36.	163.	125.	196.	124.	202.	198.					
TOTAL BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*					
CHAETOGNATHA BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*					
EUPHAUSIID BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*					
<hr/>															
SPECIES					NUMBER PER CUBIC METER								#/M2		
SIPHONOPHORA															
LIMACINA HELICOIDES						28									1.08
LIMACINA LESUEURII							08								2.82
LIMACINA TROCHIFORMIS	1.47			41							05				1.68
LIMACINA SP.						08									1.64
COPEPODA	447.71	155.60	65.35	76.62	17.91	35.60	21.22	14.52	22.08	33.23	10556.48				
CALANUS FINMARCHICUS (D)	4.40	6.77	1.24	.85	.16	.24	.10	.05	.15						147.77
CALANUS FINMARCHICUS (G)	10.28	4.51	.41	.56		.08			.05						160.23
CALANUS FINMARCHICUS (S)	4.40	1.69	.21	1.13	.08	.16	.15								85.74
CALANUS FINMARCHICUS VIM	1.47		.21		.08	.16			.05						22.58
CALANUS FINMARCHICUS VIF	19.08	12.97	1.87	2.54	.25	.48	.26	.05	.20						393.74
CALANUS FINMARCHICUS V	239.27	116.70	18.46	16.90	3.35	11.12	5.97	3.51	5.15	5.96	4674.24				
CALANUS FINMARCHICUS IV	58.72	5.64	3.32	2.25	.98	2.48	1.12	.49	.45	.61	832.92				
CALANUS FINMARCHICUS III					.08	.08		.11	.05						6.39
CALANUS FINMARCHICUS II					.08	.16	.05	.11							8.53
CALANUS FINMARCHICUS I					.16	.32	.10	.11							14.89
CALANUS GLACIALIS (D)				28			.05		.05						5.34
CALANUS GLACIALIS VIM									.15	.40	11.05				
CALANUS GLACIALIS VIF				28			.05		.05						5.34
CALANUS GLACIALIS V			.21	.56	.25	.16	.56	.32	.40	1.21	71.29				
CALANUS GLACIALIS IV					.25	.24	.46	.38	1.34	4.04	138.58				
CALANUS GLACIALIS III															2.02
CALANUS HYPERBOREUS (D)															2.02
CALANUS HYPERBOREUS VIF															2.02
CALANUS HYPERBOREUS V									.05						1.08
CALANUS HYPERBOREUS IV						.41	1.12	1.28	.43	1.24	8.48	271.93			
CALANUS HYPERBOREUS III							.08	.10	.11	.15	.10	11.81			
CENTROPAGES TYPICUS	20.55		.62	1.13		.24	.15	.16							235.63
EUCHAETA NORVEGICA	2.94	2.82	3.11	12.68	4.09	3.84	.87	.27	.40	.20	417.41				
METRIDIA LONGA					.16	.56	1.63	1.62	2.48	1.41	173.63				
METRIDIA LUCENS	1.47	1.13	3.11	1.97	2.86	4.64	.77	.27	.15	.81	274.34				
MICROCALANUS PYGMAEUS			.21	.28		.16	.05								11.64
MICROSETELLA SP.							.05	.05							2.61
OITHONA ATLANTICA			.21	.56			.36	.32	.25	.10	31.87				
OITHONA SIMILIS		.56		1.13	.08	2.80	.41	.49	.25	.30	107.51				
PARACALANUS PARVUS	2.94	1.13	.62	.28			.05		.10		53.19				
PSEUDOCALANUS MINUTUS	17.61	6.77	9.34	2.82	.57	1.36	1.53	.59	.30	.40	475.80				
SCOLOCITHRICELLA MINOR			.21	.28	.57	.32	2.04	.43	.25	.61	109.68				
COPEPOD DAMAGED/EXOSKELETON	83.67	7.89	23.86	32.96	3.68	5.28	3.37	4.59	8.66	8.18	2192.78				
UNIDENTIFIED HARPACTICOID									.05	.05					2.07
AMPHIPODA	2.94	1.69	.62	7.04	1.15	.24	.05	.11							154.31
AMPHIPODA EGGS				2.70	3.10	.08		2.14							123.88
PARATHEMISTO ABYSSORUM			.21	.56	.16		.05								12.51
PARATHEMISTO GAUDICHAUDI			.21			.08									3.67
PARATHEMISTO SP.	2.94	1.69	.21	6.48	.98	.16		.11							138.13
EUPHAUSIIDS	5.87	2.82	.62	.28	.08	.24	.10	.05	.10						108.50
M. NORVEGICA FURCILIA	1.47	2.82	.62		.08	.05	.05								53.30
THYSANOESSA RASCHII FURCILIA	4.40				.08	.08	.05								48.80
THYSANOESSA SP. FURCILIA															.99
EUPHAUSIID EGGS		.56	.83	.28	.08	.24	.51	.16							41.73
EUPHAUSIID FURCILIA				.28		.08				.05					5.41

L A R G E M E S O Z O O P L A N K T O N & I C H T H Y O P L A N K T O N •

* = NOT AVAILABLE

STATION 16	03/10/86	2039H	45 50.00'N	58 29.97'W	2	3	4	5	6	7	8	9	10
SAMPLE													
DEPTH1 (M)	275.0	260.0	250.0	240.0	225.0	210.0	200.0	190.0	180.0				
DEPTH2 (M)	260.0	250.0	240.0	225.0	210.0	200.0	190.0	170.0	140.0				
VOLUME OF WATER SAMPLED (M3)	67.	35.	49.	117.	106.	76.	132.	173.	92.				
TOTAL BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*				
CHAETOGNATHA BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*				
EUPHAUSIID BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*				

SPECIES														#/M2
SIPHONOPHORA		2.29												33.38
COPEPODA	623.28	610.29	442.45	538.80	541.89	361.05	226.06	74.22	74.32	45672.17				
CALANUS FINMARCHICUS (D)	2.39	.	6.53	.	1.51	1.05	.	.	.					134.29
CALANUS FINMARCHICUS (S)	.	.	.	.	.	.	.	.	.					11.12
CALANUS FINMARCHICUS VIM	.	.	.	.	1.51	.	.	.61	.					28.70
CALANUS FINMARCHICUS VIF	2.39	.	6.53	.	1.51	1.05	.	.	.					145.42
CALANUS FINMARCHICUS V	236.42	182.86	109.39	183.25	143.40	72.63	44.85	12.72	18.42	13350.06				
CALANUS FINMARCHICUS IV	14.33	18.29	11.43	24.62	27.17	17.89	3.03	2.31	3.47	1648.35				
CALANUS FINMARCHICUS III	.	.	.	.	.	.	.	.	.					4.62
CALANUS GLACIALIS (D)	.	4.57	1.63	2.74	9.06	7.37	.61	.46	.43	340.91				
CALANUS GLACIALIS VIM	.	.	1.63	8.21	4.53	7.37	2.42	.92	.65	343.25				
CALANUS GLACIALIS VIF	.	4.57	1.63	2.74	9.06	7.37	.61	.46	.43	340.91				
CALANUS GLACIALIS V	69.25	68.57	40.82	71.11	86.04	82.11	36.97	5.55	6.28	5980.16				
CALANUS GLACIALIS IV	59.70	98.29	62.04	87.52	107.17	53.68	43.64	13.87	6.50	6864.83				
CALANUS HYPERBOREUS (D)	.	.	1.63	2.74	1.51	1.05	.	.	.					97.02
CALANUS HYPERBOREUS (S)	2.39	.	.	.	.	1.05	.	.	.					46.35
CALANUS HYPERBOREUS VIF	2.39	.	1.63	2.74	1.51	2.11	.	.	.					143.37
CALANUS HYPERBOREUS V	14.33	16.00	6.53	10.94	10.57	9.47	3.64	.	.	1.30	932.93			
CALANUS HYPERBOREUS IV	138.51	150.86	135.51	120.34	105.66	76.84	64.85	16.42	11.05	10408.08				
CALANUS HYPERBOREUS III	4.78	2.29	1.63	.	3.02	2.11	2.42	.46	.87	236.65				
CENTROPAGES TYPICUS	.	.	1.63	.	4.53	1.05	.	.	.					101.28
EUCHAETA NORVEGICA	14.33	2.29	3.27	.	3.02	.	.	.61	.23	.	326.40			
METRIDIA LONGA	7.16	11.43	3.27	5.47	1.51	2.11	.61	.46	2.82	479.96				
METRIDIA LUCENS	.	2.29	1.63	2.74	.	2.11	1.82	.69	.65	152.82				
MICROCALANUS PYGMAEUS	2.39	2.29	1.63	.	1.51	.	.	.61	1.85	2.38	212.21			
OITHONA ATLANTICA	.	.	1.63	.	.	.	.	.	.46	.22	32.08			
OITHONA SIMILIS	7.16	.	17.96	.	13.58	6.32	3.03	7.86	5.63	910.53				
PSEUDOCALANUS MINUTUS	45.37	41.14	22.86	13.68	6.04	6.32	5.45	1.39	2.38	1833.25				
SCOЛЕCITHRICELLA MINOR	.	2.29	.	.	.	.	.	.	.	.43	35.86			
COPEPOD DAMAGED/EXOSKELETON	4.78	6.86	9.80	5.47	10.57	10.53	10.91	7.86	10.18	1155.82				
UNIDENTIFIED HARPACTICOID	.	.	.	.	.	.	.	.	.	.23				4.62
AMPHIPODA	.	.	.	.	.	1.05	.	.	.	.	10.53			
PARATHEMISTO ABYSSORUM	.	.	.	.	.	1.05	.	.	.	.	10.53			
EUPHAUSIIDS	.	2.29	.	.	.	.	.	.	.	.	22.86			
EUPHAUSIID EGGS	.	.	.	.	.	.	.	.	.	.	6.50			
EUPHAUSIID NAUPLII	.	2.29	.	.	.	.	.	.	.	.	22.86			

L A R G E M E S O Z O O P L A N K T O N & I C H T H Y O P L A N K T O N •

• = NOT AVAILABLE

STATION 17	04/10/86	0930H	45 41.41'N	58 25.73'W	2	3	4	5	6	7	8	9	10	
SAMPLE														
DEPTH1 (M)			360.0	325.0	300.0	275.0	250.0	200.0	200.0	150.0	100.0	100.0	37.0	
DEPTH2 (M)			325.0	300.0	275.0	250.0	200.0	200.0	150.0	100.0	37.0	.0		
VOLUME OF WATER SAMPLED (M3)			123.	109.	171.	203.	363.	292.	242.	274.	145.			
TOTAL BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*	
CHAETOGNATHA BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*	
EUPHAUSIID BIOMASS (G/M3)	*	*	*	*	*	*	*	*	*	*	*	*	*	
SPECIES														/M2
SIPHONOPHORA														11.64
LIMACINA HELICOIDES														29.41
LIMACINA TROCHIFORMIS														12.26
COPEPODA	999.02	1121.47	600.70	367.29	192.18	59.37	25.56	29.10	217.93	110954.68				
CALANUS FINMARCHICUS (D)	5.20		3.74	1.58	.88	.55	.11	1.07	4.41	622.79				
CALANUS FINMARCHICUS (G)														23.90
CALANUS FINMARCHICUS (S)														26.55
CALANUS FINMARCHICUS VIM														44.94
CALANUS FINMARCHICUS VIF	5.20		3.74	1.58	.88	.55	.22	1.46	4.97	673.24				
CALANUS FINMARCHICUS V	353.82	346.42	179.65	83.55	31.74	14.23	10.80	8.66	52.97	32967.68				
CALANUS FINMARCHICUS IV	26.02	17.61	26.20	11.03	7.05	1.09	.22	.58	18.76	3430.98				
CALANUS FINMARCHICUS I														20.41
CALANUS GLACIALIS (D)	10.41		13.10		3.53		.11							873.53
CALANUS GLACIALIS (S)							.27							13.68
CALANUS GLACIALIS VIM	5.20			1.58	.88	.27	.22	.10						296.43
CALANUS GLACIALIS VIF	10.41		13.10		3.53	.27	.11							887.21
CALANUS GLACIALIS V	88.46	205.50	82.34	48.87	24.68	3.83	1.10	1.27						13074.19
CALANUS GLACIALIS IV	46.83	105.69	58.01	58.33	32.62	10.12	1.54	1.27	2.76	9585.57				
CALANUS HYPERBOREUS (D)			3.74	1.58	.88	.27								190.73
CALANUS HYPERBOREUS (S)							.88							44.08
CALANUS HYPERBOREUS VIF			3.74	1.58	1.76	.27								234.81
CALANUS HYPERBOREUS V	26.02	23.49	9.36	6.31		.27								1915.22
CALANUS HYPERBOREUS IV	327.80	328.81	136.61	108.77	59.06	12.31	.66	1.95	2.76	29654.29				
CALANUS HYPERBOREUS III		5.87	1.87		2.64	1.92	.88	.10						471.77
CALANUS MINOR				1.58			.11							44.92
CENTROPAGES TYPICUS			1.87	1.58		.27	.88	.88						1403.55
EUCHAETA NORVEGICA			1.87		.88	.27	.22							115.56
METRIDIA LONGA	26.02	17.61	13.10	7.88	4.41	3.28								2260.01
METRIDIA LUCENS				3.15		1.37	1.21	1.85	3.86	467.22				
MICROCALANUS PYGMAEUS			1.87		.88	.55	.77	.49						187.44
OITHONA ATLANTICA						.27	.11	.10	16.00	617.32				
OITHONA SIMILIS			1.87		1.76	.55	1.43	4.18						497.57
PARACALANUS PARVUS														128.61
PSEUDOCALANUS MINUTUS	52.03	46.97	26.20	17.34	5.29	3.83	1.32	1.17	31.45	5843.18				
SCOLECITHRICELLA MINOR				1.58		.82	.66	.19						125.77
TEMORA LONGICORNIS			1.87		1.76	1.09	.33	.58	32.55	1447.39				
COPEPOD DAMAGED/EXOSKELETON	31.22	23.49	37.43	12.61	12.34	1.92	2.75	3.50	14.90	4553.26				
UNIDENTIFIED HARPACTICOID														6.13
AMPHIPODA						.88								91.04
AMPHIPODA EGGS		5.87	1.87											193.57
PARATHEMISTO SP.					.88									91.04
EUPHAUSIIDS						.27	.11	1.85	2.76	237.75				
M. NORVEGICA FURCILIA							.11	.10						11.64
THYSANDESSA SP. FURCILIA									1.75	1.66	171.61			
EUPHAUSIID EGGS							.33	1.65						120.76
EUPHAUSIID NAUPLII						.27								54.51
OIKOPLEURA SP.									.97					61.31

L A R G E M E S O Z O O P L A N K T O N & I C H T H Y O P L A N K T O N •

• = NOT AVAILABLE



Table 2. Criteria for determination of *Calanus* spp. female maturity.

	DEVELOPING	GRAVID	SPENT
General Condition	good	good	not good
Oil Content Stored	large amount	decreasing slightly	largely used, globules left
REPRODUCTIVE ORGANS			
Ovary	immature	obviously enlarged	difficult to observe, visible in outline
Oviduct	difficult to see	filling with eggs (some eggs remain?)	
Egg Presence	few	up to very many	few
Egg Ripeness	small, no pigment	enlarging, deepening pigment to quite dark	more; and more developed than immature

