WOODS HOLE LABORATORY REFERENCE DOCUMENT NO. 81-43

ICHTHYOPLANKTON STUDIES OF CAPE COD AND MASSACHUSETTS BAYS, 1976-77.

by

F. E. Lux and G. F. Kelly

Northeast Fisheries Center

National Marine Fisheries Service

Woods Hole, Massachusetts 02543

☑ Approved for Distribution

☐ Distribution to F/NWC, F/SWC, F/SEC, F/NWR1, & F/NEC (Technical Writer-Editor)

Signature G. F. Kelly

Date JAN. 25, 1982

INTRODUCTION

The fisheries of Cape Cod and Massachusetts bays comprise a rich and varied resource from which over 100 million pounds are harvested each year (Lux and Kelly, 1978). During otter trawl surveys in this area in 1976-77 we collected plankton and neuston samples for information on seasonal abundance and species composition of fish eggs and larvae there. The ichthyoplankton data resulting from these samples are presented in this report.

METHODS AND MATERIALS

The area covered in the surveys lies, roughly, between Cape Cod and Cape Ann from near the shore to about the 90 m depth curve (Figure 1). Coastal stations 1-18 were sampled with small research vessels; offshore stations 21-39 were sampled with the NOAA R/V Albatross IV. There were eight cruises in this series, six covering the coastal stations and two covering the offshore ones, in the months of March to October (Table 1). While the aim of the study was to sample all 18 coastal stations on each coastal survey, adverse weather sometimes made it necessary to omit some stations.

Subsurface plankton was sampled with a bongo plankton sampler (Posgay and Marak, 1980) fitted with two 61-cm diameter nets, one of 0.505 mm mesh and the other of 0.333 mm. At coastal stations these nets were towed for 10 to 15 minutes at 5.6 km/hr at a depth of 3-4 m; during offshore surveys the tows were oblique, with the nets being lowered to near the bottom and then being retrieved at a slow winch speed as the vessel moved ahead at 6.5 km/hr. These latter tows varied from 3.5 to 23 minutes

in duration, depending on water depth. Flowmeters were used to measure distance covered, from which water volume filtered was calculated, for all subsurface tows.

Neuston was sampled with a net having a mouth opening of 1.0 by 0.5 m and 0.505 mm mesh netting. This was towed half submerged for 5 to 15 minutes at 5.6 km/hr at each station during coastal surveys and for 10 minutes at 6.5 km/hr offshore. A flowmeter was not used on the neuston net and water volume filtered was estimated, using as a guide the submerged area of the net mouth, time towed, and calculated volume filtered per unit of time by the 0.505 mm mesh net of the bongo sampler at that station. Estimated water volumes filtered per tow by both bongo and neuston nets usually ran from about 150-400 m^3, depending on tow length and the extent of net clogging. Samples at coastal stations all were obtained during daylight hours; at offshore stations some were taken during daylight and some after dark.

Upon completion of a tow the net contents were washed into a sieve and preserved in jars in a mixture of 2% formaldehyde and seawater.

The samples were sent, on contract, to Marine Research, Inc., 1/ Falmouth, Massachusetts for identification and enumeration of fish eggs, fish larvae, and juvenile fish. This company, through environmental monitoring contracts with electric generating plants, has had wide experience in the identification of plankton from coastal New England waters.

In most cases the entire sample or a one-half split of it was examined for fish larvae. For eggs, however, a 1/4, 1/8, 1/16, or 1/32 split was used, depending on egg abundance. In order to reduce sorting

1/ Reference to company or trade names does not imply endorsement by NMFS.

time the eggs and fish were not removed from the samples and therefore they were not measured. Since egg and larval measurements have been documented for most fishes of this area (Bigelow and Schroeder, 1953; Marak and Colton, 1961; Marak et al, 1962 a and b) this lack has not materially detracted from the aim of this study of providing information on species composition and abundance of eggs and larvae there.

Plankton catches from the 0.505 mm mesh net were the ones sorted, in order that catch data from the bongo net would be comparable to that of the neuston net, also of this mesh. The one exception to this was for the Spirit of '76 cruise of April 1977 for which, for comparison purposes, catches of both the 0.333 and 0.505 mm mesh bongos were sorted.

To the extent possible fish eggs and larvae were identified to species. Some eggs, however, particularly early stage ones, could be identified only to genus or family or, in some cases, to a group of taxa. Taxonomic groupings used for this purpose in Tables 2-29 are: Gadidae-Glyptocephalus, Brosme-Scomber, Enchelyopus-Urophycis-Peprilus, Merluccius-Stenotomus, Labridae-Limanda, Paralichthys-Scophthalmus. Usually one can determine which taxon likely dominates a group by looking at the kinds of eggs and larvae identified to species from that cruise or station. In Table 2, for example, for the grouping Enchelyopus-Urophycis-Peprilus the likely form was Enchelyopus since many later stage eggs and a few larvae of Enchelyopus cimbrius were found in the samples, but none of Urophycis or Peprilus were identified. Time of spawning and geographic distribution pattern of a species also were useful for identifying most likely forms within a group. Data from extensive studies of ichthyoplankton in Cape Cod Bay by Marine Research, Inc., conducted on contract to Pilgrim Nuclear Power Station (Anderson, 1975; Anderson and McGrath, 1976) also provided valuable information for this purpose.

The eggs of Tautoga onitis and Tautogolabrus adspersus, which are similar even in embryonic stages, can be identified to species[2/]; however, it requires detailed examination and it was not done in the present study. All eggs listed as Labridae in Tables 2-29 are one or the other of these species, both of which are common in the area and whose spawning seasons overlap.

Other eggs and, particularly, larvae were identified to a single genus but not to species. Notes regarding likely species in these cases follow.

1. Urophycis spp. eggs and larvae. Two species, U. chuss and U. tenuis, are common in the area, and it is likely that both species occurred in the plankton. U. chuss is the most abundant one in trawl catches there (Lux and Kelly, 1978), and it probably predominated in the plankton.

2. Menidia spp. larvae. These most likely were M. menidia since the other species of this genus, M. beryllina, is rare north of Cape Cod (Bigelow and Schroeder, 1953).

3. Ammodytes sp. larvae. A. americanus is the only species of this genus common in the area (Bigelow and Schroeder, 1953), and we assume that the larvae caught were of this species.

4. Prionotus spp. eggs and larvae. These most likely were P. carolinus, the only species of this genus common to the area (Bigelow and Schroeder, 1953).

5. Myoxocephalus spp. larvae. The most common species of this genus in trawl catches in the area is M. octodecimspinosus (Lux and Kelly, 1978), and its larvae probably predominated in plankton catches from offshore stations, with M. scorpius probably being taken there also in small numbers. At inshore stations some M. aenaeus, an estuarine and shallow water species, probably were caught; this was usually the dominant species of this genus

2/ Personal communication from M. D. Scherer, Marine Research, Inc.

in samples from intake waters of Pilgrim Nuclear Plant in Cape Cod Bay.[2/]

6. Liparis spp. larvae. These larvae probably were of two species: L. atlanticus and L. coheni; taxonomic problems remaining in this group (Able and Musick, 1976) prohibited species identification. More recent studies in Cape Cod Bay by Marine Research, Inc.[2/] indicate that L. coheni larvae are present in the winter and L. atlanticus, in spring and summer.

RESULTS

A list of the genera and species of fish recorded in the March-October samples (Table 30) indicates that eggs and/or larvae and juveniles of at least 45 species were planktonic there over the sampling period. About 23 or more of these are known to have pelagic eggs, and about 20 or so have demersal eggs.

The eggs and larvae found at each station in the neuston and plankton samples, in terms of numbers per 100 m^3 of water filtered, are presented, in cruise sequence, in Tables 2-29. For each cruise the usual presentation order of tabulated catch data is 1) neuston eggs, 2) plankton eggs, 3) neuston larvae, and 4) plankton larvae. It should be noted, however, that neuston was not sorted for all cruises. The scientific names of fishes used throughout follow those given by Robins et al. (1980). A month by month account of the species composition and abundance of eggs and larvae, based on the data of Tables 2-29, is given below.

March.

Coastal stations 1-11 and 13-17 were sampled March 14-18, 1977 (Tables 16-17). Only the plankton samples were sorted. Eggs of three species, Hippoglossoides platessoides, Gadus morhua, and Limanda ferruginea, were caught (Table 16). For the egg category Gadidae-Glyptocephalus, it appears likely that these were mostly, if not all, Gadidae since no

Glyptocephalus, either eggs or larvae, were identified in the catches of this cruise. Gadidae eggs probably were mostly Gadus morhua, although a few Pollachius virens eggs, which are of a similar description in early stages, may have been present. Pseudopleuronectes americanus eggs, which are demersal, also were caught at shoal-water stations in Boston and Gloucester harbors and off Orleans. These eggs apparently became detached and were swept from the bottom by water movements; they appear in catches from some of the other months also. Larvae of 12 kinds were caught at the inshore stations, with Ammodytes sp. , Pholis gunnellus, Myoxocephalus spp., and Liparis spp. being the dominant forms (Table 17). Two of the 12 kinds of larvae recorded are known to have pelagic eggs (Table 30).

At offshore stations, just two samples were made in March (Stations 38-39, March 30-31, 1976) (Tables 2-5). These show a species composition similar to the inshore samples, although the numbers of eggs and larvae generally were smaller.

April.

At the coastal stations samples were collected April 19-23, 1976 (Tables 6-9) and April 11-16, 1977 (Tables 18-23). For the latter cruise the catches from both the 0.505 mm and 0.333 mm mesh bongo nets were enumerated.

In April 1976 nine kinds of eggs were identified, dominated by those of Enchelyopus cimbrius, Hippoglossoides platessoides, Limanda ferruginea, and Scophthalmus aquosus; however, the catches also contained considerable numbers of Gadus morhua and Melanogrammus aeglefinus (Tables 6-7). In regard to egg groups for this cruise, Gadidae-Glyptocephalus probably consisted largely of Gadidae, since eggs identified as Glyptocephalus were not abundant; likewise, the Brosme-Scomber group probably was mainly

Brosme brosme, and the Labridae-Limanda group, mostly Limanda ferruginea (Tables 6-7). The Gasterosteidae eggs identified at one neuston station possibly were swept to the surface from their normally demersal habitat by currents (Table 6). Twenty kinds of fish larvae were caught in the April 1976 inshore tows, with Ammodytes sp., Ulvaria subbifurcata, Myoxocephalus spp., Pseudopleuronectes americanus, Hippoglossoides platessoides, and Liparis spp. predominating (Tables 8-9). Of the 20 kinds of larvae, 7 are known to have pelagic eggs.

In the April 1977 coastal station sampling eight kinds of eggs were caught, with Hippoglossoides platessoides, Enchelyopus cimbrius, Gadus morhua, and Pseudopleuronectes americanus the principal ones (Tables 18-20). While the species composition was similar to that of the 1976 April cruise, the egg catches in 1977 were lighter. The egg group Gadidae-Glyptocephalus likely consisted largely of gadids, as no identified Glyptocephalus eggs and few larvae were caught; the group Labridae-Limanda apparently was a mixture of the two, for both appeared in catches (Tables 18-20). The 0.333 mm mesh bongo net, catches of which were sorted for this cruise, generally caught more eggs than the 0.505 mm mesh (Tables 19-20), although the species composition of the two nets was similar. Seventeen kinds of larvae were caught in April 1977 with Ammodytes sp., Myoxocephalus spp., Pseudopleuronectes americanus, Pholis gunnellus, and Liparis spp. the principal ones (Tables 21-23). As in the case of fish eggs, the 0.333 mm mesh bongo net caught a greater total number of larvae than the 0.505 mm mesh; however, there did not appear to be a marked difference in species composition, although the 0.505 mm mesh caught, in small numbers, several more kinds of larvae (Tables 22-23). Six of the 17 larval types caught have pelagic eggs.

Offshore stations 31-37 were sampled April 9-14, 1976 (Tables 2-5), and these catches contained eight kinds of eggs, of which Hippoglossoides platessoides, Gadus morhua, Enchelyopus cimbrius, and Melanogrammus aeglefinus predominated (Tables 2-3). On the basis of specifically identified eggs and larvae in the samples from these stations, the egg group Gadidae-Glyptocephalus likely was a mixture of both forms , but mostly Gadidae; the Brosme-Scomber group, mostly Brosme brosme; and the Labridae-Limanda, mostly Limanda ferruginea. Larvae from these offshore stations were of 14 kinds, with Ammodytes spp. and Hippoglossoides platessoides being the principal ones (Tables 4-5). The species composition at these offshore stations differed little from that at coastal stations in April. Four of the 14 kinds of larvae caught have pelagic eggs.

May.

The only samples in May were from the offshore area; stations 21-30 were sampled May 3-4, 1976 (Tables 2-5) and stations 21-29 were sampled May 16-18, 1977 (Tables 24-25).

In May 1976 ten kinds of eggs were identified, with Enchelyopus cimbrius, Hippoglossoides platessoides, Limanda ferruginea, and Gadus morhua predominating (Tables 2-3). For the egg categories Gadidae-Glyptocephalus, Brosme-Scomber, and Labridae-Limanda the eggs likely were a mixture of both of these forms. For the Enchelyopus-Urophycis-Peprilus group, most of the eggs likely were Enchelyopus cimbrius. Thirteen kinds of larvae were found in the 1976 May samples, with Hippoglossoides platessoides, Liparis spp., Pseudopleuronectes americanus, Ulvaria subbifurcata, and Ammodytes sp. the principal ones (Tables 4-5). Six of the 13 larval types have pelagic eggs.

In May 1977 samples, for which plankton only was collected, eight kinds of eggs were recorded (Table 24) with Enchelyopus cimbrius, Hippoglossoides platessoides, Gadus morhua, Labridae, Scomber scombrus, and Limanda ferruginea all abundant. Regarding the egg groups, it appears likely that all were mixtures of the indicated taxa, although for the Brosme-Scomber and Encheyopus-Urophycis-Peprilus groups Scomber and Enchelyopus, respectively, probably were dominant. Twelve kinds of larvae were recorded, with Ulvaria subbifurcata, Hippoglossoides platessoides, Liparis spp., and Ammodytes sp. being the principal ones (Table 25). Six of the 12 larval types have pelagic eggs.

The species composition of ichthyoplankton differed little between May 1976 and 1977; however, the numbers of eggs caught were consistently higher in 1977 than in 1976.

June.

Coastal stations 1-3, 5-10, and 17-18 were sampled June 6-11, 1977 (Tables 26-29). Fifteen kinds of eggs were recorded, with those of Labridae, Scomber scombrus, Enchelyopus cimbrius, Urophycis spp., Limanda ferruginea, Brevoortia tyrannus, and Hippoglossoides platessoides most abundant; however, eggs of Merluccius bilinearis, Gadus morhua, Glyptocephalus cynoglossus, and Lophius americanus also were relatively common in catches (Tables 26-27). For the egg groups the following rough proportions probably prevailed: Gadidae-Glyptocephalus, a mixture of both; Brosme-Scomber, mostly, if not all, Scomber; Enchelyopus-Urophycis-Peprilus, largely a mixture of the first two; Merluccius-Stenotomus, mostly, if not all, Merluccius; Labridae-Limanda, a mixture of both with Labridae predominating; and Paralichthys-Scophthalmus, mostly Scophthalmus. Twenty-three kinds of larvae were identified, with Scomber scombrus, Enchelyopus cimbrius, Ulvaria subbifurcata, and Tautogolabrus adspersus

being the principal ones, although considerable numbers of other species for which eggs were common in catches also were taken (Table 28-29). Of the 23 kinds of larvae recorded, 15 have pelagic eggs.

August.

Coastal stations 1-18 were sampled August 16-20, 1976, and only the plankton samples from these were sorted (Tables 10-11). Fourteen kinds of eggs were identified, with those of Urophycis spp., Enchelyopus cimbrius, Peprilus triacanthus, Merluccius bilinearis, Labridae, and Prionotus spp. most abundant (Table 10). The estimated dominant forms within each egg group (Table 10) were as follows: Gadidae-Glyptocephalus, mostly Gadidae; Brosme-Scomber, all Scomber; Enchelyopus-Urophycis-Peprilus, some of all three, Merluccius-Stenotomus, mostly, if not all, Merluccius; Labridae-Limanda, a mixture of both with Labridae dominant; Paralichthys-Scophthalmus, a mixture of both with Scopthalmus dominant. Eighteen kinds of larvae were identified (Table 11), with those of Tautogolabrus adspersus, Urophycis spp., Enchelyopus cimbrius, Merluccius bilinearis, Brevoortia tyrannus, Peprilus triacanthus, and Scophthalmus aquosus the most abundant ones. Fourteen of the 18 larval forms have pelagic eggs.

October.

Only coastal stations 5-8 and 10-11 were sampled in this cruise of October 13-15, 1976 (Tables 12-15). Except for station 11, these all are Cape Cod Bay stations. Six kinds of eggs were found in the samples, with those of Enchelyopus cimbrius and Merluccius bilinearis being most abundant (Tables 12-13). Both egg numbers and species variety were low in these samples. Estimated dominant forms within each egg group were as follows: Enchelyopus-Urophycis-Peprilus, a mixture of all three types; Merluccius-Stenotomus, all Merluccius; Labridae-Limanda, all Labridae; and Paralichthys-

Scophthalmus, mostly Scophthalmus. Nine kinds of larvae were identified, with those of Enchelyopus cimbrius, Brevoortia tyrannus, Scophthalmus aquosus, Urophycis spp., and Merluccius bilinearis predominating (Tables 14-15). Seven of the 9 larval species have pelagic eggs.

DISCUSSION

The foregoing data (Tables 2-29) indicate that, for the months covered, abundance of eggs and larvae was low in late winter, increased to a peak in June, and had declined considerably by August. In October, although the sample number was small, the catch data showed a marked decline in spawning activity. This pattern of abundance pretty well coincides with the more complete data presented by Andarson and McGrath (1976) for Cape Cod Bay in 1975, where sampling was done in each month, and it is the usual seasonal pattern for ichthyoplankton in this area.

The seasonal occurrence of eggs and/or larvae of the more common spawners in the area is summarized in Table 31. These data provide the general picture of seasonal variations in spawning activity there as well as information on length of spawning seasons. Eggs and/or larvae of some species or groups, such as Enchelyopus cimbrius, Gadus morhua, and Ammodytes sp., to name but a few, were collected in some numbers in most, or all, months sampled although abundance varied from season to season. Those of others, such as Merluccius bilinearis, Peprilus triacanthus, and Prionotus spp., were taken over much shorter time spans. Some fall and/or winter spawners, such as Clupea harrengus, Gadus morhua, and Pollachius virens, probably never were sampled at peak levels of planktonic abundance since no samples were obtained in November-February. Data from Cape Cod Bay (Anderson and McGrath, 1976) show that pelagic stages of these are common in this period.

The abundance data from Tables 2-29 indicate that in late winter (March) catches were dominated by eggs and/or larvae of Gadus morhua, Enchelyopus cimbrius, Ammodytes sp., Liparis spp., Myoxocephalus spp., and Hippoglossoides platessoides. By spring (April and May) the abundance of these forms, with the exception of Gadus, increased and, in addition, Scomber scombrus, Limanda ferruginea, and Pseudopleuronectes americanus began to turn up in some numbers. By summer (June and August) stages of Brevoortia tyrannus, Enchelyopus cimbrius, Merluccius bilinearis, Urophycis spp., Tautoga onitis, Tautogolabrus adspersus, Scomber scombrus, Peprilus triacanthus, Scophthalmus aquosus, Hippoglossoides platessoides, and Limanda ferruginea were abundant. By fall (October) only Brevoortia tyrannus, Enchelyopus cimbrius, Merluccius bilinearis, Urophycis spp., and Scophthalmus aquosus were present in any numbers. The species diversity and apparent abundance levels of ichthyoplankton in the area indicate that it is one of considerable importance for fish reproduction.

An interesting observation from the catch data is that the time of spawning for fish having demersal eggs was more likely to be in the colder months sampled than for those with pelagic eggs, although there are exceptions to this. In March, for example, 2 of the 12 kinds of larvae collected, about 17%, came from pelagic eggs (Table 17). This proportion increased as the season advanced, reaching about 30% in April (Tables 4-5, 8-9, 21-23); 50% in May (Tables 4-5, 25); 65% in June (Tables 28-29); and 78% in August and October (Tables 11, 14-15).

For coastal fishes, having demersal eggs has certain advantages, one of these being that it may keep the eggs from drifting to unsuitable habitat. Another is that the eggs may be tended by an adult, as occurs in sculpins. For species that spawn in winter in northern coastal or estuarine waters demersal deposition also may serve to keep the eggs from floating up against ice, during periods of ice cover, and freezing (Pearcy and Richards, 1962).

Thus Pseudopleuronectes americanus and Liopsetta putnami, the only two New England flatfishes that spawn in estuaries in the winter, are also the only coastal species of this group there with demersal eggs. Microgadus tomcod, the only New England species of Family Gadidae with demersal eggs, spawns in the winter in similar locations.

LITERATURE CITED

ABLE, K. W., and J. A. MUSICK.

1976. Life history, ecology, and behavior of Liparis inquilinus (Pisces: Cyclopteridae) associated with the sea scallop, Placopectin magelanicus. Fish. Bull. 74: 409-421.

ANDERSON, R. D.

1975. Marine ecology studies related to operation of Pilgrim Station. Semi-Annual Rept. No. 6, Boston Edison Co., Boston, Massachusetts.

ANDERSON, R. D. and R. A. McGRATH.

1976. Marine ecology studies related to operation of Pilgrim Station. Semi-Annual Rept. No. 7, Boston Edison Co., Boston, Massachusetts.

BIGELOW, H. B. and W. C. SCHROEDER.

1953. Fishes of the Gulf of Maine. Fish. Bull. 53, 577 p.

KOHLER, A. C., D. J. FABER, and N. J. McFARLANE.

1975. Eggs, larvae and juveniles of fishes from plankton collections in the Gulf of St. Lawrence during 1969. Fish. Mar. Serv. Canada, Tech. Rept. 521, 154 p.

LUX, F. E. and G. F. KELLY.

1978. Fisheries resources of the Cape Cod and Massachusetts Bay region. Nat. Mar. Fish. Serv. Northeast Fish. Center, Woods Hole, MA 02543, Lab. Ref. 78-15, 21 p.

MARAK, R. R. and J. B. COLTON, JR.

1961. Distribution of fish eggs and larvae, temperature and salinity in the Georges Bank-Gulf of Maine area, 1953. U. S. Fish Wildl. Serv., Spec. Sci. Rept.--Fish. 398, 61 p.

MARAK, R. R., J. B. COLTON, JR., and D. B. FOSTER.

1962a. Distribution of fish eggs and larvae, temperature, and salinity in the Georges Bank-Gulf of Maine area, 1955. U. S. Fish Wildl. Serv. Spec. Sci. Rept.--Fish. 411, 66 p.

MARAK, R. R., JOHN B. COLTON, JR., D. B. FOSTER, and D. MILLER.

1962b. Distribution of fish eggs and larvae, temperature, and salinity in the Georges Bank-Gulf of Maine area, 1956. U. S. Fish Wildl. Serv., Spec. Sci. Rept.--Fish. 412, 95 p.

PEARCY, W. G. and S. W. RICHARDS.

1962. Distribution and ecology of fishes of the Mystic River estuary, Connecticut. Ecol. 43: 248-259.

POSGAY, J. A., and R. R. MARAK.

1980. The MARMAP bongo zooplankton samplers. J. Northw. Atl. Fish. Sci. 1: 91-99.

ROBINS C. R., R. M. BAILEY, C. E. BOND, J. R. BROOKER, E. A. LACHNER, R. N. LEA, and W. B. SCOTT.

1980. A list of common and scientific names of fishes from the United States and Canada (Fourth Edition). Am. Fish. Soc., Spec. Publ. 12, 174 p.

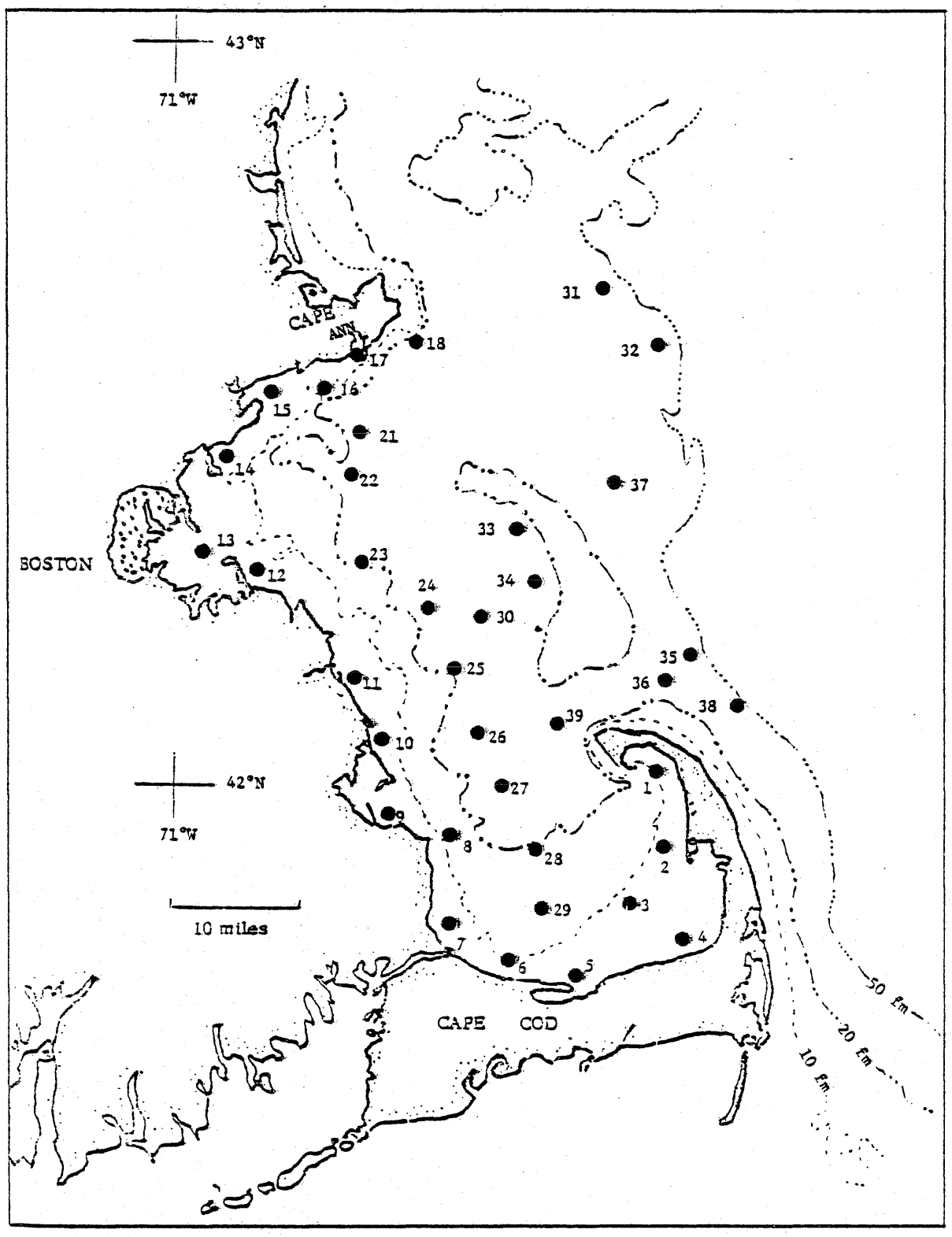

Figure 1.--Plankton and neuston station locations in the Cape Cod Bay-Massachusetts Bay area, 1976-77.

Table 1.--Cruise dates, vessels, and stations sampled for plankton and neuston in the Cape Cod - Massachusetts Bay area in 1976-77.

Cruise dates	Vessel	Stations sampled
March 30-April 14, 1976, and May 3-4, 1976	Albatross IV	21-39
April 19-23, 1976	Spirit of '76	1-18
August 16-20, 1976 1/	" " "	1-18
October 13-15, 1976	Phalarope II	5-8, 10-11
March 14-18, 1977 1/	Spirit of '76	1-11, 13-17
April 11-16, 1977	" " "	1-18
May 16-18, 1977 1/	Albatross IV	21-29
June 6-11, 1977	Spirit of '76	1-3, 5-10, 17-18

1/ Only plankton samples were sorted.

TABLE 2 .--NUMBERS OF FISH EGGS PER 100 CUBIC METERS AT EACH NEUSTON STATION FOR ALBATROSS IV, CRUISE 998, MARCH-MAY 1976. 1/

SPECIES	STATION NUMBER 21	22	23	24	25	26	27	28	29	30	31	32	33
BREVOORTIA TYRANNUS	.0	.0	.0	.0	.0	.0	.0	.0	.5	.0	.0	.0	.0
* GADIDAE-GLYPTOCEPHALUS	14.3	10.7	1.2	.5	37.4	6.5	8.2	7.7	6.4	1.5	66.2	35.4	3.9
* BROSME-SCOMBER	50.3	30.0	.0	2.3	.0	28.2	25.0	81.5	36.8	.5	.0	.6	.0
BROSME BROSME	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.2	.0	.0
* ENCHELYOPUS-UROPHYCIS-PEPRILUS	279.4	91.4	146.6	116.1	291.3	103.2	526.9	300.8	351.0	233.3	.0	.0	.0
ENCHELYOPUS CIMBRIUS	65.6	54.3	7.5	24.0	36.2	24.2	50.0	51.6	52.9	21.6	.0	.0	2.0
GADUS MORHUA	3.2	4.5	.8	.9	.8	2.9	1.9	2.0	4.9	1.0	3.6	3.4	.5
MELANOGRAMMUS AEGLEFINUS	.0	.0	.0	.0	1.1	.0	.0	.4	.0	.0	8.6	.6	.0
* LABRIDAE-LIMANDA	127.0	47.3	6.3	.9	4.9	14.9	16.8	27.0	7.4	8.3	.0	4.6	5.4
LABRIDAE	.0	11.9	.0	.0	.0	.0	15.4	.0	.0	.0	.0	.0	.0
SCOMBER SCOMBRUS	.0	.8	.0	.0	.0	.8	.0	.0	.0	.0	.0	.0	.0
SCOPHTHALMUS AQUOSUS	.0	.0	.0	.0	.0	.8	.0	.0	.0	.0	.0	.0	.0
GLYPTOCEPHALUS CYNOGLOSSUS	1.6	.0	.4	.0	.0	.4	.0	.8	2.0	.0	.7	.0	.0
HIPPOGLOSSOIDES PLATESSOIDES	30.2	25.1	5.9	2.8	14.0	6.0	3.4	4.4	2.0	2.9	93.5	2.3	16.7
LIMANDA FERRUGINEA	38.1	.0	4.7	6.5	5.3	4.8	.0	8.1	6.9	7.4	.0	.0	.5
UNIDENTIFIED	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	141.0	.0	.0
TOTAL	609.5	276.1	173.5	153.9	390.9	192.7	647.6	484.3	470.6	276.5	315.8	46.9	28.9

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

1/ Stations 21-30 were sampled May 3-4; stations 31-39 were sampled March 30-April 14.

Table 2.-- (continued).

SPECIES	STATION NUMBER 34	35	36	37	38	TOT
BREVOORTIA TYRANNUS	.0	.0	.0	.0	.0	.5
* GADIDAE-GLYPTOCEPHALUS	5.9	28.9	30.5	27.4	44.3	336.7
* BROSME-SCOMBER	.0	.0	2.3	5.0	.0	262.4
BROSME BROSME	.0	2.2	.0	.0	3.4	7.8
* ENCHELYOPUS-UROPHYCIS-PEPRILUS	.0	.0	.0	.0	.0	2440.1
ENCHELYOPUS CIMBRIUS	5.5	.0	2.3	1.1	.0	398.8
GADUS MORHUA	2.7	7.4	23.7	3.4	15.3	82.9
MELANOGRAMMUS AEGLEFINUS	.9	3.0	.0	1.1	6.2	22.0
* LABRIDAE-LIMANDA	1.8	1.5	6.8	.0	10.8	291.8
LABRIDAE	.0	.0	.0	.0	.0	27.3
SCOMBER SCOMBRUS	.0	.0	.6	.0	.0	2.2
SCOPHTHALMUS AQUOSUS	.0	.0	.0	.0	.0	.8
GLYPTOCEPHALUS CYNOGLOSSUS	.0	.0	.0	.0	.0	5.9
HIPPOGLOSSOIDES PLATESSOIDES	12.3	23.7	57.6	22.9	50.0	375.7
LIMANDA FERRUGINEA	1.4	.0	.0	.0	5.7	89.2
UNIDENTIFIED	.5	.0	.0	.0	.0	141.5
TOTAL	31.1	66.7	123.7	60.9	135.8	4485.4

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

TABLE 3 .--NUMBERS OF FISH EGGS PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR ALBATROSS IV, CRUISE 998, MARCH-MAY 1976. 1/

SPECIES	STATION NUMBER 21	22	23	24	25	26	27	28	29	30	31	32	33
*GADIDAE-GLYPTOCEPHALUS	17.3	7.6	2.6	6.1	16.7	13.8	16.5	9.8	4.3	3.6	11.3	21.3	5.9
*BROSME-SCOMBER	8.2	.9	.3	.0	.0	10.3	10.6	52.3	30.9	.0	.0	.3	2.0
BROSME BROSME	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
*ENCHELYOPUS-UROPHYCIS-PEPRILUS	82.3	27.5	55.8	123.3	200.6	142.0	414.1	488.9	264.2	182.1	.0	.0	.0
ENCHELYOPUS CIMBRIUS	14.8	1.3	5.3	10.8	16.4	20.3	45.9	75.8	39.5	17.9	.0	.0	.7
GADUS MORHUA	9.1	1.1	1.2	.4	1.5	2.5	3.5	5.2	2.5	1.4	.7	.3	1.0
MELANOGRAMMUS AEGLEFINUS	1.2	.0	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.7
*LABRIDAE-LIMANDA	43.2	3.9	.6	1.8	2.1	17.8	14.7	15.7	9.3	1.7	.0	3.2	7.7
LABRIDAE	1.2	.0	.0	.0	.0	2.3	.0	.7	.0	.0	.0	.0	.0
SCOPHTHALMUS AQUOSUS	.0	.0	.0	.0	.0	.4	1.2	.0	.0	.0	.0	.0	.0
GLYPTOCEPHALUS CYNOGLOSSUS	.0	.0	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0
HIPPOGLOSSOIDES PLATESSOIDES	68.3	8.7	5.6	2.9	.0	10.1	5.9	11.1	3.7	5.0	1.4	.0	24.2
LIMANDA FERRUGINEA	9.1	.0	.9	2.2	.9	1.1	15.3	5.2	3.7	1.7	.0	.0	.0
TYPE 'D' EGGS 2/	.0	.6	.0	.7	.0	121.7	176.5	.0	.0	3.1	.0	.0	.0
UNIDENTIFIED	.0	.0	.0	5.0	.0	.0	.0	.0	.0	.0	.0	.3	.0
TOTAL	254.7	51.5	72.2	153.0	238.7	343.1	704.1	664.7	358.0	216.5	13.4	25.4	42.2

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

1/ Stations 21-30 were sampled May 3-4; stations 31-39 were sampled March 30-April 14.

2/ Not yet identified.

Table 3.-- (continued).

SPECIES	STATION NUMBER 34	35	36	37	38	39	TOT
* GADIDAE-GLYPTOCEPHALUS	1.2	8.5	6.8	11.2	7.3	3.4	175.2
* BROSME-SCOMBER	.0	.3	.0	.0	.0	.0	116.2
BROSME BROSME	.0	.0	.0	.4	.0	.0	.4
* ENCHELYOPUS-UROPHYCIS-PEPRILUS	.0	.0	.0	.0	.0	.0	1980.8
ENCHELYOPUS CIMBRIUS	1.7	1.6	.5	.0	.0	1.1	253.6
GADUS MORHUA	.7	2.2	1.0	2.4	4.9	4.2	45.6
MELANOGRAMMUS AEGLEFINUS	.0	1.3	1.9	.4	1.5	.0	7.4
* LABRIDAE-LIMANDA	.7	1.6	1.0	.0	1.8	3.0	129.6
LABRIDAE	.0	.0	.0	.0	.0	.0	4.8
SCOPHTHALMUS AQUOSUS	.0	.0	.0	.0	.0	.0	1.5
GLYPTOCEPHALUS CYNOGLOSSUS	.0	.0	.0	.0	.0	.0	.3
HIPPOGLOSSOIDES PLATESSOIDES	13.6	1.3	27.1	4.8	10.0	40.8	244.4
LIMANDA FERRUGINEA	.0	.0	.0	.0	.0	1.9	41.8
TYPE 'D' EGGS 2/	.0	.0	.0	.0	.0	.0	302.6
UNIDENTIFIED	.0	.0	.0	.0	.0	.0	5.3
TOTAL	18.0	16.8	38.2	19.1	25.5	54.3	3309.6

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

TABLE 4.--NUMBERS OF FISH LARVAE PER 100 CUBIC METERS AT EACH NEUSTON STATION FOR ALBATROSS IV, CRUISE 998, MARCH-MAY 1976. 1/

SPECIES	STATION NUMBER 21	22	23	24	25	26	27	28	29	30	31	32	33
CLUPEA HARENGUS HARENGUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ENCHELYOPUS CIMBRIUS	.0	.4	.0	.0	.0	.0	.5	.0	.0	.0	.0	.0	.0
GADUS MORHUA	.0	.0	.0	.5	.0	.0	.0	.0	.0	1.0	.0	.0	.5
MELANOGRAMMUS AEGLEFINUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
URORHYCIS REGIUS 2/	.0	.0	.0	.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
LUMPENUS MACULATUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.5
ULVARIA SUBBIFURCATA	.0	.0	.4	.0	1.5	1.2	.5	.0	2.0	.5	.0	.0	2.0
ANARHICHAS LUPUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
AMMODYTES SP.	.0	.0	.0	.0	1.1	.0	1.4	.4	.0	2.9	.0	.0	3.9
HEMITRIPTERUS AMERICANUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
MYOXOCEPHALUS SPP.	.0	.0	.0	.0	.0	.0	.5	.0	.0	.5	.0	.0	.0
LIPARIS SPP.	.0	.0	.0	.5	.8	.0	6.3	1.2	.5	2.5	.0	.0	.0
HIPPOGLOSSOIDES PLATESSOIDES	.0	1.6	1.2	.0	.0	.4	.0	.4	.0	.0	.0	.0	.0
PSEUDOPLEURONECTES AMERICANUS	.0	.0	.0	.0	.0	1.2	53.8	4.4	.0	.0	.0	.0	.0
UNIDENTIFIED FRAGMENTS	.0	.0	.0	.5	.0	.0	1.9	.0	.0	.0	.0	.0	.0
TOTAL	.0	2.1	1.6	1.8	3.4	2.8	64.9	6.5	2.5	7.4	.0	.0	6.9

1/ Stations 21-30 were sampled May 3-4; stations 31-39 were sampled March 30-April 14.

2/ Juvenile.

Table 4.-- (continued).

SPECIES	STATION NUMBER 34	35	36	37	38	TOT
CLUPEA HARENGUS HARENGUS	.0	.0	.6	.0	.0	.6
ENCHELYOPUS CIMBRIUS	.0	.0	.0	.0	.0	.9
GADUS MORHUA	.0	.0	.6	.0	.0	2.5
MELANOGRAMMUS AEGLEFINUS	.0	.7	.0	.0	.0	.7
URAPHYCIS REGIUS 2/	.0	.0	.0	.0	.0	.5
LUMPENUS MACULATUS	.0	.0	.0	.0	.0	.5
ULVARIA SUBBIFURCATA	.0	.0	.0	.0	.0	8.0
ANARHICHAS LUPUS	.0	1.5	.0	.0	.0	1.5
AMMODYTES SP.	.0	.0	2.3	2.2	.0	14.3
HEMITRIPTERUS AMERICANUS	.0	.7	.0	.0	.0	.7
MYOXOCEPHALUS SPP.	.0	.0	.0	.0	.0	1.0
LIPARIS SPP.	.0	.0	.0	.0	.0	11.6
HIPPOGLOSSOIDES PLATESSOIDES	.0	.0	2.3	.0	2.3	8.2
PSEUDOPLEURONECTES AMERICANUS	.0	.0	.0	.0	.0	59.5
UNIDENTIFIED FRAGMENTS	.0	.0	.0	.0	.0	2.4
TOTAL	.0	3.0	5.6	2.2	2.3	112.8

TABLE 5.--NUMBERS OF FISH LARVAE PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR ALBATROSS IV, CRUISE 998, MARCH-MAY 1976.[1/]

SPECIES	STATION NUMBER 21	22	23	24	25	26	27	28	29	30	31	32	33
ANGUILLA ROSTRATA [2/]	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ENCHELYOPUS CIMBRIUS	.0	.0	.0	.0	.0	.4	.6	.7	.0	.0	.0	.0	.0
GADUS MORHUA	.4	.0	.3	.0	.9	.7	.6	.0	.0	.0	.0	.0	.0
MELANOGRAMMUS AEGLEFINUS	.0	.0	.0	.0	.0	.4	.0	.0	.0	.0	.0	.0	.0
MICROGADUS TOMCOD	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
POLLACHIUS VIRENS	.0	.0	.0	.0	.0	.4	.0	.0	.0	.0	.0	.0	.0
SYNGNATHUS FUSCUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
LUMPENUS LUMPRETAEFORMIS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ULVARIA SUBBIFURCATA	.0	.2	.0	.0	6.7	10.9	1.8	4.6	.6	.0	.0	.0	.0
PHOLIS GUNNELLUS	.0	.0	.1	.0	.0	.4	1.8	.0	.0	.0	.0	.0	.0
CRYPTACANTHODES MACULATUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
AMMODYTES SP.	.4	.4	.4	.7	1.8	.7	2.4	.7	.6	.0	.3	.3	6.7
SCOMBER SCOMBRUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
MYOXOCEPHALUS SPP.	.0	.0	.1	.0	.3	.0	1.2	.7	.0	.0	.0	.0	.0
ASPIDOPHOROIDES MONOPTERYGIUS	.4	.0	.3	.0	.0	.0	1.2	.0	.0	.3	.0	.0	.0
LIPARIS SPP.	.8	1.1	2.8	.7	6.2	6.9	9.4	1.3	.0	1.7	.0	.0	.0
HIPPOGLOSSOIDES PLATESSOIDES	.0	6.9	3.7	1.1	6.2	8.3	7.1	.0	.6	3.9	.3	.0	1.7
LIMANDA FERRUGINEA	.0	.0	.0	.0	.0	1.1	3.5	2.6	.0	1.1	.0	.0	.0
PSEUDOPLEURONECTES AMERICANUS	.4	.2	.0	.0	.9	1.8	10.0	2.6	.0	.3	.0	.0	.0
UNIDENTIFIED FRAGMENTS	.8	1.1	.0	.0	.6	.4	.6	.0	.0	.3	.0	.0	.0
TOTAL	3.3	10.0	7.8	2.5	23.5	32.2	40.0	13.1	1.9	7.5	.7	.3	8.4

1/ Stations 21-30 were sampled May 3-4, stations 31-39 were sampled March 30-April 14.

2/ Juvenile.

Table 5.-- (continued).

SPECIES	STATION NUMBER 34	35	36	37	38	39	TOT
ANGUILLA ROSTRATA 2/	.0	.0	.0	.0	.3	.0	.3
ENCHELYOPUS CIMBRIUS	.0	.0	.0	.0	.0	.0	1.6
GADUS MORHUA	.0	.0	.5	.0	.0	.0	3.4
MELANOGRAMMUS AEGLEFINUS	.0	.0	.0	.0	.0	.0	.4
MICROGADUS TOMCOD	.0	.0	.0	.4	.3	.0	.7
POLLACHIUS VIRENS	.0	.0	.0	.0	.0	.0	.4
SYNGNATHUS FUSCUS	.2	.0	.0	.0	.0	.0	.2
LUMPENUS LUMPRETAEFORMIS	.0	.0	.0	.0	.0	.4	.4
ULVARIA SUBBIFURCATA	.0	.0	.0	.0	.0	.0	24.8
PHOLIS GUNNELLUS	.0	.0	.0	.0	.0	.0	2.3
CRYPTACANTHODES MACULATUS	1.0	.0	.0	.0	.3	1.9	3.2
AMMODYTES SP.	3.2	2.8	1.0	4.0	1.8	2.6	30.8
SCOMBER SCOMBRUS	.0	.3	.0	.0	.0	.0	.3
MYOXOCEPHALUS SPP.	.0	.0	.0	.0	.0	.0	2.3
ASPIDOPHOROIDES MONOPTERYGIUS	.0	.0	.0	.0	.3	.8	3.2
LIPARIS SPP.	.2	1.3	.0	.4	.0	.0	32.8
HIPPOGLOSSOIDES PLATESSOIDES	1.5	2.2	2.4	2.8	.6	3.4	52.7
LIMANDA FERRUGINEA	.0	.0	.0	.0	.0	.0	8.3
PSEUDOPLEURONECTES AMERICANUS	.0	.0	.0	.0	.0	.0	16.2
UNIDENTIFIED FRAGMENTS	.0	.0	.0	.0	.0	.0	3.7
TOTAL	6.1	6.6	3.9	7.6	3.6	9.1	187.9

TABLE 6.--NUMBERS OF FISH EGGS PER 100 CUBIC METERS AT EACH NEUSTON STATION FOR SPIRIT OF '76, CRUISE 982, APRIL 1976.

SPECIES	STATION NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	13
*GADIDAE-GLYPTOCEPHALUS	.8	11.9	1.7	.0	116.5	15.7	.3	8.6	5.3	4.6	20.7	.6	.5
*BROSME-SCOMBER	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
BROSME BROSME	.0	.0	.0	.0	5.8	.0	.0	.0	.0	.0	.0	.0	.0
ENCHELYOPUS CIMBRIUS	6.7	115.0	41.5	24.3	10967.0	313.0	27.3	163.2	7.6	37.3	261.1	23.1	25.7
GADUS MORHUA	.0	.6	1.0	.0	3.9	5.9	.3	1.2	8.9	2.1	1.0	4.4	.9
MELANOGRAMMUS AEGLEFINUS	.0	.0	.0	.0	.0	1.5	.0	.0	.7	.3	.0	1.2	.0
GASTEROSTEIDAE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	19.3	.0
*LABRIDAE-LIMANDA	3.9	1.1	.0	.0	42.7	9.9	.3	13.8	27.4	146.8	216.6	28.0	10.6
LABRIDAE	.0	.0	.0	.0	.0	9.6	.0	.0	.0	.0	.0	.0	.0
SCOPHTHALMUS AQUOSUS	76.4	39.1	22.9	80.8	5.8	.0	.0	.0	4.3	.0	.3	.6	.9
HIPPOGLOSSOIDES PLATESSOIDES	.0	.0	.7	.0	1.9	6.2	3.3	.6	63.4	15.3	.0	34.3	2.3
LIMANDA FERRUGINEA	.0	.0	.0	.6	.0	.0	3.0	1.2	4.3	.0	15.3	13.1	5.2
UNIDENTIFIED	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.0
TOTAL	87.8	167.7	67.8	105.7	11143.7	361.7	34.7	188.7	121.8	206.7	515.0	124.6	46.1

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

Table 6.-- (continued).

SPECIES	STATION NUMBER 14	15	16	17	18	TOT
*GADIDAE-GLYPTOCEPHALUS	45.4	5.5	8.1	.0	.0	246.3
*BROSME-SCOMBER	.0	.0	.0	.6	.0	.6
BROSME BROSME	.0	.0	6.7	.0	.3	12.9
ENCHELYOPUS CIMBRIUS	7.6	208.2	3302.4	102.9	314.8	15948.7
GADUS MORHUA	3.2	2.7	2.7	.6	.0	39.4
MELANOGRAMMUS AEGLEFINUS	3.2	4.6	6.7	1.3	.0	19.6
GASTEROSTEIDAE	.0	.0	.0	.0	.0	19.3
*LABRIDAE-LIMANDA	376.2	104.1	21.5	48.6	2.3	1053.8
LABRIDAE	.0	.0	.0	.0	.0	9.6
SCOPHTHALMUS AQUOSUS	.0	.0	.0	.3	.0	231.4
HIPPOGLOSSOIDES PLATESSOIDES	5.4	8.2	9.4	14.5	.6	166.1
LIMANDA FERRUGINEA	24.9	53.0	5.4	9.0	4.5	139.5
UNIDENTIFIED	.0	.0	.0	.0	.0	.3
TOTAL	465.9	386.3	3363.0	177.8	322.6	17887.6

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

TABLE 7.--NUMBERS OF FISH EGGS PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR SPIRIT OF '76, CRUISE 982, APRIL 1976.

SPECIES	STATION NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	13
* GADIDAE-GLYPTOCEPHALUS	.0	.0	.6	.0	26.5	34.4	.6	2.1	2.3	1.8	3.0	.5	.7
* BROSME-SCOMBER	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
BROSME BROSME	.0	.0	.0	.0	1.1	.0	.0	.0	.0	.0	.3	.0	.0
ENCHELYOPUS CIMBRIUS	1.7	15.0	8.2	5.1	495.0	530.2	25.6	19.9	5.1	17.0	42.8	13.1	14.7
GADUS MORHUA	.0	.2	.3	.0	16.6	8.5	.3	.3	9.3	1.6	.3	4.5	1.5
MELANOGRAMMUS AEGLEFINUS	.0	.2	.0	.0	1.7	1.6	.0	.0	.0	.5	.0	.8	.0
* LABRIDAE-LIMANDA	.0	.0	.6	.0	36.5	25.9	1.1	7.6	12.7	92.4	89.4	22.9	14.0
SCOPHTHALMUS AQUOSUS	28.3	4.4	2.3	31.1	.0	.0	.0	.0	2.8	.0	.0	.0	.6
GLYPTOCEPHALUS CYNOGLOSSUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
HIPPOGLOSSOIDES PLATESSOIDES	.0	.5	.0	.0	15.5	20.6	3.4	3.1	52.3	26.4	.0	29.1	2.2
LIMANDA FERRUGINEA	.3	.7	.6	.0	6.1	9.5	2.8	1.8	4.2	2.6	4.9	17.1	5.5
PSEUDOPLEURONECTES AMERICANUS	.0	.0	.0	1.1	.0	.0	.0	.0	.0	.0	.5	.0	3.0
TOTAL	30.3	21.1	12.5	37.3	598.9	630.7	33.9	34.9	88.7	142.4	141.1	88.0	42.1

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

Table 7.-- (continued).

SPECIES	STATION NUMBER 14	15	16	17	18	TOT
*GADIDAE-GLYPTOCEPHALUS	10.2	2.7	7.2	1.6	14.9	109.2
*BROSME-SCOMBER	.0	.0	.0	.3	.0	.3
BROSME BROSME	.0	.0	2.3	.3	.0	4.0
ENCHELYOPUS CIMBRIUS	21.5	135.2	251.6	59.3	88.5	1749.6
GADUS MORHUA	2.3	1.6	6.3	4.1	10.3	68.0
MELANOGRAMMUS AEGLEFINUS	.5	2.7	8.9	5.8,	24.1	46.8
*LABRIDAE-LIMANDA	355.3	85.9	66.3	47.8	55.2	913.6
SCOPHTHALMUS AQUOSUS	.0	.0	.0	.3	.0	69.6
GLYPTOCEPHALUS CYNOGLOSSUS	.0	.0	.6	.3	.0	.9
HIPPOGLOSSOIDES PLATESSOIDES	6.7	28.1	75.5	53.0	423.0	739.5
LIMANDA FERRUGINEA	36.1	74.2	45.5	39.6	17.2	268.9
PSEUDOPLEURONECTES AMERICANUS	.0	.0	.0	.0	.0	4.6
TOTAL	432.6	330.5	464.3	212.4	633.3	3975.0

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

TABLE 8.--NUMBERS OF FISH LARVAE PER 100 CUBIC METERS AT EACH NEUSTON STATION FOR SPIRIT OF '76, CRUISE 982, APRIL 1976.

SPECIES	STATION NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	13
CLUPEA HARENGUS HARENGUS	.0	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0
GADUS MORHUA	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.3
MICROGADUS TOMCOD	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3
POLLACHIUS VIRENS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	1.0	.0	.0
ULVARIA SUBBIFURCATA	.0	.6	.0	.0	.0	1.9	2.0	.0	2.6	896.6	170.7	10.0	5.5
PHOLIS GUNNELLUS	.0	.0	.0	.0	.0	.0	.3	.0	.0	.0	.0	.0	.0
CRYPTACANTHODES MACULATUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.3	.0	.0
AMMODYTES SP.	.4	2.3	.3	.3	.0	8.0	55.0	.3	12.2	254.4	33.4	2.5	.9
MYOXOCEPHALUS SPP.	.0	.6	.0	.3	.0	.3	9.7	.3	2.3	6.1	12.1	7.5	.6
CYCLOPTERUS LUMPUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.6	.0
LIPARIS SPP.	.0	.0	.0	.0	.0	.0	5.0	.0	.0	.0	6.4	8.1	.3
HIPPOGLOSSOIDES PLATESSOIDES	.0	.0	.3	.0	.0	.0	.7	.9	.3	.0	.0	.6	.9
PSEUDOPLEURONECTES AMERICANUS	.0	.0	.0	.3	.0	.0	4.7	.0	.0	1.2	1.0	1.9	2.0
UNIDENTIFIED FRAGMENTS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.6	.0	.0	.3
TOTAL	.4	3.4	.7	1.3	.0	10.2	77.3	1.5	17.5	1159.9	224.5	31.2	11.1

Table 8.-- (continued).

SPECIES	STATION NUMBER 14	15	16	17	18	TOT
CLUPEA HARENGUS HARENGUS	.0	.0	.0	.0	.0	.3
GADUS MORHUA	.0	.0	2.7	.0	.3	3.6
MICROGADUS TOMCOD	.0	.0	.0	.0	.0	.3
POLLACHIUS VIRENS	.0	1.8	.0	.0	.0	3.1
ULVARIA SUBBIFURCATA	32.4	30.1	6.7	.6	.0	1159.8
PHOLIS GUNNELLUS	.0	.0	.0	.0	.0	.3
CRYPTACANTHODES MACULATUS	.0	.0	.0	.0	.0	.6
AMMODYTES SP.	4.3	1603.7	14.8	1.3	7.7	2001.9
MYOXOCEPHALUS SPP.	.0	316.0	5.4	.3	1.6	363.1
CYCLOPTERUS LUMPUS	.0	.0	.0	.0	.0	.6
LIPARIS SPP.	.0	34.7	.0	.0	.3	54.8
HIPPOGLOSSOIDES PLATESSOIDES	1.1	.0	2.7	1.0	.0	8.5
PSEUDOPLEURONECTES AMERICANUS	.0	.0	.0	.0	.0	11.1
UNIDENTIFIED FRAGMENTS	.0	.0	.0	.0	.3	1.2
TOTAL	37.8	1986.3	32.3	3.2	10.3	3609.3

TABLE 9.--NUMBERS OF FISH LARVAE PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR SPIRIT OF '76, CRUISE 982, APRIL 1976.

SPECIES	STATION NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	13
CLUPEA HARENGUS HARENGUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
OSMERUS MORDAX	.0	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0	1.0
BROSME BROSME	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
GADUS MORHUA	.0	.0	.3	.0	.0	.0	.6	.0	.8	.0	.0	.3	1.8
MELANOGRAMMUS AEGLEFINUS	.0	.0	.0	.0	.0	.0	.0	.0	.3	.5	.0	.0	.7
POLLACHIUS VIRENS	.0	.0	.3	.0	.0	.0	.0	.3	.0	.0	.0	.0	.0
TAUTOGA ONITIS	.0	.0	.6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ULVARIA SUBBIFURCATA	.0	.0	.0	.0	1.7	.0	.0	2.1	.3	1.6	3.5	8.3	3.0
PHOLIS GUNNELLUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.8	1.2
CRYPTACANTHODES MACULATUS	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.0	.0	.0
AMMODYTES SP.	15.8	43.1	47.2	2.4	5.5	2.1	4.0	13.6	5.4	6.0	9.0	.5	9.0
MYOXOCEPHALUS SPP.	.7	1.0	8.2	1.1	.6	1.6	.9	3.1	.8	.3	.8	1.6	3.7
ASPIDOPHOROIDES MONOPTERYGIUS	.0	.0	1.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
LIPARIS SPP.	.0	.2	.6	.0	.6	.0	2.8	.5	5.1	3.9	1.6	3.5	11.5
SCOPHTHALMUS AQUOSUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.0
HIPPOGLOSSOIDES PLATESSOIDES	.0	.0	.9	.0	.6	.0	1.7	.8	2.0	.3	.0	2.4	9.0
LIMANDA FERRUGINEA	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
PSEUDOPLEURONECTES AMERICANUS	8.4	20.1	32.4	.3	.6	.0	23.4	2.4	22.6	6.0	.3	1.9	131.2
UNIDENTIFIED FRAGMENTS	.3	.0	.0	.0	.6	.0	.0	.0	.0	.0	.0	.3	.0
TOTAL	25.3	64.4	91.5	4.1	9.9	3.7	33.3	22.6	37.3	18.8	15.3	19.5	171.5

Table 9.-- (continued).

SPECIES	STATION NUMBER 14	15	16	17	18	TOT
CLUPEA HARENGUS HARENGUS	.0	.0	.0	.3	.0	.3
OSMERUS MORDAX	.0	.0	.0	.0	.0	1.3
BROSME BROSME	.0	.4	.0	.0	.0	.4
GADUS MORHUA	.0	.4	.3	.8	4.6	9.3
MELANOGRAMMUS AEGLEFINUS	.9	.8	.3	2.7	3.4	9.7
POLLACHIUS VIRENS	.0	.0	.0	.0	.0	.5
TAUTOGA ONITIS	.0	.0	.0	.0	.0	.6
ULVARIA SUBBIFURCATA	1.4	5.9	3.5	13.2	.0	44.3
PHOLIS GUNNELLUS	.0	.0	.0	1.1	.0	3.1
CRYPTACANTHODES MACULATUS	.0	.0	.0	.0	.0	.3
AMMODYTES SP.	4.2	37.1	104.9	72.5	4.6	387.0
MYOXOCEPHALUS SPP.	.0	2.0	3.2	10.7	.0	40.2
ASPIDOPHOROIDES MONOPTERYGIUS	.0	.0	.0	.0	.0	1.1
LIPARIS SPP.	.5	.8	2.0	7.4	.0	41.0
SCOPHTHALMUS AQUOSUS	.0	.0	.0	.0	.0	.3
HIPPOGLOSSOIDES PLATESSOIDES	.0	.0	.9	9.9	20.7	48.4
LIMANDA FERRUGINEA	.0	.0	.0	.3	.0	.3
PSEUDOPLEURONECTES AMERICANUS	1.6	1.6	.6	2.2	.0	255.3
UNIDENTIFIED FRAGMENTS	.0	.0	.0	.3	.0	1.4
TOTAL	8.6	48.8	115.6	121.4	33.3	844.9

TABLE 10.--NUMBERS OF FISH EGGS PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR SPIRIT OF '76, CRUISE 987, AUGUST 1976.

SPECIES	STATION NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	13
BREVOORTIA TYRANNUS	.0	.0	.0	.0	.9	.0	.0	.0	.0	.9	.0	8.0	.0
*GADIDAE-GLYPTOCEPHALUS	.0	.0	.0	.0	.0	.0	.0	2.8	.0	.0	.0	.0	.4
*BROSME-SCOMBER	.0	.0	.0	.0	.0	1.4	.0	2.3	.0	.0	.0	.0	.0
*ENCHELYOPUS-UROPHYCIS-PEPRILUS	432.1	8.2	17.6	3.9	5168.1	5100.7	1049.4	1372.5	330.0	45.5	19.5	70.4	46.2
ENCHELYOPUS CIMBRIUS	105.1	.0	2.3	.0	99.1	62.4	65.9	42.2	17.1	18.2	21.3	56.3	12.5
GADUS MORHUA	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
*MERLUCCIUS-STENOTOMUS	6.6	.0	.0	7.2	6.2	12.8	2.9	3.2	56.4	.0	.0	.0	.0
MERLUCCIUS BILINEARIS	5.8	.0	.0	.0	1.8	3.5	1.8	4.6	12.1	10.9	.0	.0	.4
UROPHYCIS SPP.	624.8	.7	87.5	2.6	2569.9	590.1	216.5	715.6	236.6	23.6	42.2	132.7	17.2
*LABRIDAE-LIMANDA	9.5	257.3	22.7	39.2	4.4	10.6	17.6	36.2	91.8	2.7	.7	11.1	40.7
LABRIDAE	2.2	.0	.0	3.9	5.3	7.8	.0	25.2	38.1	.9	.0	6.0	5.9
SCOMBER SCOMBRUS	.0	.0	.0	.0	.0	1.4	.0	.0	.0	.0	.0	.0	.0
PEPRILUS TRIACANTHUS	5.8	.0	.0	.0	99.1	17.0	47.1	194.5	14.0	.0	.7	70.4	.4
PRIONOTUS SPP.	2.2	5.4	39.8	92.8	2.7	1.4	.0	7.8	3.9	.9	1.7	1.0	2.9
ETROPUS MICROSTOMUS	.0	.0	.0	9.8	.0	.0	.0	.0	.0	.0	.0	.0	.0
*PARALICHTHYS-SCOPHTHALMUS	10.9	18.6	463.0	10.5	61.1	24.8	24.7	106.4	119.1	33.6	26.8	72.9	25.3
GLYPTOCEPHALUS CYNOGLOSSUS	.7	.0	.0	.0	.0	.0	.0	.0	.8	.9	.0	.0	1.5
LIMANDA FERRUGINEA	.0	.0	18.5	.0	.0	.0	.0	.0	2.3	.0	.0	.5	.7
UNIDENTIFIED	.0	.0	.0	.0	.0	.0	.0	.9	.0	.0	.0	.0	.4
TOTAL	1205.8	290.3	651.4	169.9	8018.6	5834.0	1425.9	2514.2	922.2	138.2	112.9	429.1	154.2

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

Table 10.-- (continued).

SPECIES	STATION NUMBER 14	15	16	17	18	TOT
BREVOORTIA TYRANNUS	.0	.0	.0	.0	.0	9.8
*GADIDAE-GLYPTOCEPHALUS	3.0	.0	8.9	.0	.0	15.0
*BROSME-SCOMBER	.0	.0	.0	.0	.0	3.7
*ENCHELYOPUS-UROPHYCIS-PEPRILUS	275.2	37.2	102.2	77.5	222.2	14378.4
ENCHELYOPUS CIMBRIUS	85.7	52.5	26.7	9.3	28.8	705.2
GADUS MORHUA	.0	.0	1.1	.0	.0	1.1
*MERLUCCIUS-STENOTOMUS	15.0	1.1	5.6	52.7	43.1	212.8
MERLUCCIUS BILINEARIS	15.0	6.6	34.4	10.9	62.7	170.5
UROPHYCIS SPP.	863.2	467.8	180.0	226.4	373.9	7371.1
*LABRIDAE-LIMANDA	12.0	18.6	41.1	40.3	9.2	665.8
LABRIDAE	36.1	8.7	.0	10.9	15.7	166.8
SCOMBER SCOMBRUS	.0	.0	.0	.0	.0	1.4
PEPRILUS TRIACANTHUS	43.6	13.1	57.8	.0	10.5	573.9
PRIONOTUS SPP.	1.5	.0	.0	.0	1.3	165.4
ETROPUS MICROSTOMUS	.0	.0	.0	.0	.0	9.8
*PARALICHTHYS-SCOPHTHALMUS	24.1	37.2	.0	52.7	28.8	1140.4
GLYPTOCEPHALUS CYNOGLOSSUS	4.5	.0	.0	.0	.0	8.4
LIMANDA FERRUGINEA	.0	2.2	7.8	1.6	.0	33.6
UNIDENTIFIED	.0	.0	.0	.0	.0	1.3
TOTAL	1378.9	644.8	465.6	482.2	796.1	25634.3

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

TABLE 11.--NUMBERS OF FISH LARVAE PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR SPIRIT OF '76, CRUISE 987, AUGUST 1976.

SPECIES	STATION NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	13
BREVOORTIA TYRANNUS	3.6	1.4	3.7	7.8	.4	.7	1.2	3.2	.4	6.4	.0	.0	.0
ANCHOA SPP.	.0	.0	.0	.0	.0	.0	.0	.9	.0	.0	.0	.0	.0
LOPHIUS AMERICANUS	.0	.0	.0	.0	.0	.0	.6	.0	.0	.0	.0	.0	.0
ENCHELYOPUS CIMBRIUS	.0	.4	.0	.0	.4	.7	10.0	.0	.0	.9	.0	.0	.7
MERLUCCIUS BILINEARIS	.0	.7	.0	25.5	.9	2.8	.0	.0	.0	.9	.0	.0	.0
UROPHYCIS SPP.	43.1	3.2	3.2	9.2	.9	34.8	52.9	5.5	1.6	20.9	.3	.0	.0
SYNGNATHUS FUSCUS	.0	3.9	1.9	2.0	.0	1.4	.0	.0	.8	.9	.0	.0	2.9
TAUTOGA ONITIS	.0	.7	.0	.7	.0	.0	2.4	1.4	.8	.9	.0	.5	.0
TAUTOGOLABRUS ADSPERSUS	8.8	.0	5.6	.0	28.8	8.5	25.9	114.7	25.3	68.2	.7	1.0	.4
ULVARIA SUBBIFURCATA	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
AMMODYTES SP.	.0	.0	.0	.0	.0	.0	.6	.0	.0	.0	.0	.0	.0
SCOMBER SCOMBRUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
PEPRILUS TRIACANTHUS	2.2	1.4	1.4	2.0	2.2	2.1	2.9	.9	1.2	.9	.0	.0	.0
PRIONOTUS SPP.	.0	.4	.0	.0	.0	.0	.6	.0	.0	.0	.0	.0	.0
PARALICHTHYS OBLONGUS	.0	1.1	.0	.0	.0	.0	.6	.0	.0	.0	.0	.0	.0
SCOPHTHALMUS AQUOSUS	.0	.4	.9	.7	3.1	.7	1.2	.5	.8	.9	.0	1.0	1.1
GLYPTOCEPHALUS CYNOGLOSSUS	.0	.0	.0	.0	.9	.0	.0	.0	.0	.0	.0	.0	.0
SPHOEROIDES MACULATUS	.0	.0	.0	.0	.0	.0	.6	.0	.0	.0	.0	.0	.0
UNIDENTIFIED FRAGMENTS	.0	.0	.5	.7	.0	.7	2.9	.0	.4	.0	.0	.5	.0
UNIDENTIFIED CLUPEIFORMS	.0	.0	.0	.0	.0	.0	.0	.5	.0	.0	.0	.0	.0
TOTAL	57.7	13.6	17.1	48.4	37.6	52.5	102.4	127.5	31.1	100.9	1.0	3.0	5.1

Table 11.-- (continued)

SPECIES	STATION NUMBER 14	15	16	17	18	TOT
BREVOORTIA TYRANNUS	.0	.0	.0	.0	.0	28.9
ANCHOA SPP.	.0	.0	.0	.0	.0	.9
LOPHIUS AMERICANUS	.0	.0	.0	.0	.0	.6
ENCHELYOPUS CIMBRIUS	6.0	.0	16.7	1.6	.0	37.4
MERLUCCIUS BILINEARIS	.0	1.1	.0	.0	2.6	34.5
UROPHYCIS SPP.	15.0	7.7	63.3	3.9	36.6	302.1
SYNGNATHUS FUSCUS	1.5	1.1	.0	.0	.0	16.4
TAUTOGA ONITIS	.0	.0	.0	.0	.0	7.3
TAUTOGOLABRUS ADSPERSUS	33.1	33.9	247.8	31.8	28.8	663.0
ULVARIA SUBBIFURCATA	1.5	1.1	.0	.0	1.3	3.9
AMMODYTES SP.	.0	.0	.0	.0	1.3	1.9
SCOMBER SCOMBRUS	.0	1.1	.0	.8	.0	1.9
PEPRILUS TRIACANTHUS	1.5	.0	1.1	.0	.0	19.9
PRIONOTUS SPP.	.0	.0	.0	.0	.0	.9
PARALICHTHYS OBLONGUS	.0	.0	.0	.0	.0	1.7
SCOPHTHALMUS AQUOSUS	3.0	1.1	1.1	2.3	.0	18.7
GLYPTOCEPHALUS CYNOGLOSSUS	.0	.0	.0	.0	.0	.9
SPHOEROIDES MACULATUS	.0	.0	.0	.0	.0	.6
UNIDENTIFIED FRAGMENTS	.0	.0	3.3	1.6	.0	10.5
UNIDENTIFIED CLUPEIFORMS	.0	.0	.0	.0	.0	.5
TOTAL	61.7	47.0	333.3	41.9	70.6	1152.4

TABLE 12.--NUMBERS OF FISH EGGS PER 100 CUBIC METERS AT EACH NEUSTON STATION FOR PHALAROPE, CRUISE 983, OCTOBER 1976.

SPECIES	STATION NUMBER 5	6	7	8	10	11	TOT
BREVOORTIA TYRANNUS	.0	.0	.0	.4	.0	.0	.4
*ENCHELYOPUS-UROPHYCIS-PEPRILUS	.4	.0	.4	7.0	.0	.0	7.8
ENCHELYOPUS CIMBRIUS	1.4	2.1	1.2	1.9	.3	.0	7.1
GADUS MORHUA	.0	.0	.0	.0	.3	.0	.3
*MERLUCCIUS-STENOTOMUS	.0	1.4	.0	.0	.0	.0	1.4
MERLUCCIUS BILINEARIS	1.8	.4	.0	.0	.0	.0	2.2
UROPHYCIS SPP.	.7	.0	.0	.4	.0	.4	1.5
*LABRIDAE-LIMANDA	.0	.4	.0	.0	.0	.0	.4
*PARALICHTHYS-SCOPHTHALMUS	25.4	54.6	6.2	3.9	.0	.0	90.1
PARALICHTHYS DENTATUS	1.1	.0	.8	.0	.0	.4	2.3
UNIDENTIFIED	.0	.0	.0	.4	.0	.0	.4
TOTAL	30.8	58.8	8.7	14.0	.7	.8	113.8

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

TABLE 14.--NUMBERS OF FISH LARVAE PER 100 CUBIC METERS AT EACH NEUSTON STATION FOR PHALAROPE, CRUISE 983, OCTOBER 1976.

SPECIES	STATION NUMBER 5	6	7	8	10	11	TOT
BREVOORTIA TYRANNUS	.0	.0	.0	.0	19.2	1.2	20.4
ENCHELYOPUS CIMBRIUS	31.9	2.5	2.9	40.9	.7	1.2	79.9
UROPHYCIS SPP.	.0	1.4	4.1	2.7	.0	.0	8.3
SCOPHTHALMUS AQUOSUS	.4	1.1	.4	.4	.0	.0	2.2
UNIDENTIFIED FRAGMENTS	.4	.4	.0	.0	.3	.0	1.1
UNIDENTIFIED CLUPEIFORMS	.0	.0	.0	.0	.0	.4	.4
TOTAL	32.6	5.3	7.5	44.0	20.2	2.7	112.2

TABLE 13.--NUMBERS OF FISH EGGS PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR PHALAROPE, CRUISE 983, OCTOBER 1976.

SPECIES	STATION NUMBER 5	6	7	8	10	11	TOT
*ENCHELYOPUS-UROPHYCIS-PEPRILUS	.0	.6	.7	4.3	.0	.0	5.6
ENCHELYOPUS CIMBRIUS	1.2	.6	.0	1.7	.0	.3	3.8
GADUS MORHUA	.0	.6	.0	.0	.3	.0	.9
*MERLUCCIUS-STENOTOMUS	2.5	1.2	.0	.0	.0	.0	3.7
MERLUCCIUS BILINEARIS	3.7	.0	.0	.0	.0	.0	3.7
UROPHYCIS SPP.	.0	.0	.0	.3	.0	.0	.3
*LABRIDAE-LIMANDA	.0	.0	.4	.3	.0	.0	.7
*PARALICHTHYS-SCOPHTHALMUS	19.0	51.8	8.2	2.3	.3	.0	81.6
PARALICHTHYS DENTATUS	.0	.0	.4	.0	.0	.0	.4
TOTAL	26.4	54.8	9.6	9.0	.6	.3	100.7

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

TABLE 15.--NUMBERS OF FISH LARVAE PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR PHALAROPE, CRUISE 983, OCTOBER 1976.

SPECIES	STATION NUMBER 5	6	7	8	10	11	TOT
BREVOORTIA TYRANNUS	.0	.0	.0	.3	190.8	37.2	228.3
ENCHELYOPUS CIMBRIUS	16.6	16.9	10.7	86.0	3.2	7.3	140.6
MERLUCCIUS BILINEARIS	4.9	4.2	.4	.3	.0	.0	9.8
UROPHYCIS SPP.	8.0	.0	.0	.3	.0	.0	8.3
AMMODYTES SP.	.0	.0	.0	.7	.0	.7	1.3
PEPRILUS TRIACANTHUS	.0	.0	.0	.0	.0	2.7	2.7
LIPARIS SPP.	.0	.0	.0	.3	.0	.0	.3
SCOPHTHALMUS AQUOSUS	3.7	9.6	2.1	1.0	.0	1.3	17.8
GLYPTOCEPHALUS CYNOGLOSSUS	.0	.0	.0	.3	.0	.0	.3
UNIDENTIFIED FRAGMENTS	.0	5.4	.0	.0	.0	.0	5.4
TOTAL	33.1	36.1	13.2	89.3	193.9	49.2	414.9

TABLE 16.--NUMBERS OF FISH EGGS PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR SPIRIT OF '76, CRUISE 984, MARCH 1977.

SPECIES	STATION NUMBER 1	2	3	4	5	6	7	8	9	10	11	13	14
GADIDAE-GLYPTOCEPHALUS	.0	.3	3.4	.3	.2	.0	.7	22.5	1.9	1.4	5.9	8.1	7.4
GADUS MORHUA	.3	.0	.0	.5	.7	2.0	2.1	5.5	1.0	.5	1.6	1.3	.9
HIPPOGLOSSOIDES PLATESSOIDES	.0	.0	.0	.5	.4	.7	1.2	19.8	1.4	4.7	4.1	11.4	35.4
LIMANDA FERRUGINEA	.0	.0	.0	.0	.0	.0	.0	.3	.0	1.4	.9	.0	1.2
PSEUDOPLEURONECTES AMERICANUS	.0	.0	.0	.5	.0	.0	.0	.0	.0	.0	.0	.7	.0
TOTAL	.3	.3	3.4	1.9	1.3	2.7	4.0	48.0	4.3	7.9	12.5	21.5	44.9

Table 16.-- (continued).

SPECIES	STATION NUMBER 15	16	17	TOT
GADIDAE-GLYPTOCEPHALUS	4.0	1.3	4.3	61.6
GADUS MORHUA	.0	.0	.0	16.4
HIPPOGLOSSOIDES PLATESSOIDES	18.1	3.3	8.6	109.6
LIMANDA FERRUGINEA	.0	.0	.0	3.8
PSEUDOPLEURONECTES AMERICANUS	.0	.0	.5	1.8
TOTAL	22.0	4.5	13.4	193.0

TABLE 17.--NUMBERS OF FISH LARVAE PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR SPIRIT OF '76, CRUISE 984, MARCH 1977.

SPECIES	STATION NUMBER 1	2	3	4	5	6	7	8	9	10	11	13	14
CLUPEA HARENGUS HARENGUS	1.1	.6	.5	.5	.2	.0	.0	.0	.0	3.7	.2	.0	.3
GADUS MORHUA	.3	.0	.0	.3	.0	.2	.0	.0	.0	.5	.0	.0	.0
LUMPENUS LUMPRETAEFORMIS	.3	.3	.5	.0	.0	.0	.5	.0	.2	.0	.0	.0	.0
PHOLIS GUNNELLUS	.5	.0	.0	.0	.2	.0	1.2	.0	.5	7.0	14.4	14.1	3.6
AMMODYTES SP.	448.9	13.6	75.5	278.3	6.6	24.4	164.2	8.6	40.5	24.4	9.8	8.7	3.9
MYOXOCEPHALUS SPP.	.0	.0	.2	.5	.0	.0	.0	.0	.0	3.5	2.5	6.7	.6
ASPIDOPHOROIDES MONOPTERYGIUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3
CYCLOPTERUS LUMPUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.7	.0
LIPARIS SPP.	.0	.0	.0	.0	.0	.0	.0	.0	.0	5.8	.2	3.4	1.8
HIPPOGLOSSOIDES PLATESSOIDES	.0	.0	.0	.0	.0	.0	.0	.8	.0	.2	.2	.0	.3
LIOPSETTA PUTNAMI	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.5	.7	.0
PSEUDOPLEURONECTES AMERICANUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
UNIDENTIFIED FRAGMENTS	.5	.3	.0	.0	.0	.0	.5	2.3	.0	.5	.0	.0	.0
TOTAL	451.6	14.7	76.7	279.6	7.0	24.7	166.3	11.7	41.2	45.6	27.8	34.2	10.7

Table 17.-- (Continued).

SPECIES	STATION NUMBER 15	16	17	TOT
CLUPEA HARENGUS HARENGUS	.2	.0	.3	7.5
GADUS MORHUA	.0	.0	.0	1.3
LUMPENUS LUMPRETAEFORMIS	.0	.0	4.3	6.0
PHOLIS GUNNELLUS	35.5	3.0	38.1	117.9
AMMODYTES SP.	122.9	107.8	121.7	1459.8
MYOXOCEPHALUS SPP.	18.5	.8	27.1	60.4
ASPIDOPHOROIDES MONOPTERYGIUS	.0	.0	.0	.3
CYCLOPTERUS LUMPUS	.0	.0	.0	.7
LIPARIS SPP.	7.3	.0	4.0	22.5
HIPPOGLOSSOIDES PLATESSOIDES	.0	.0	.0	1.5
LIOPSETTA PUTNAMI	.2	.0	1.9	3.2
PSEUDOPLEURONECTES AMERICANUS	.7	.0	.0	.7
UNIDENTIFIED FRAGMENTS	.4	.0	.0	4.5
TOTAL	185.7	111.5	197.3	1686.3

TABLE 18.--NUMBERS OF FISH EGGS PER 100 CUBIC METERS AT EACH NEUSTON STATION FOR SPIRIT OF '76, CRUISE 985, APRIL 1977.

SPECIES	STATION NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	13
*GADIDAE-GLYPTOCEPHALUS	.0	.0	.0	.0	1.8	.6	2.8	2.8	.9	.6	34.1	.3	.3
ENCHELYOPUS CIMBRIUS	20.7	.6	.0	.0	.6	1.2	2.0	.6	.3	.6	39.5	.0	.6
GADUS MORHUA	.0	.0	.2	.0	.0	.0	.0	.0	.0	.0	.8	.0	.0
*LABRIDAE-LIMANDA	.8	.0	.0	.0	2.1	4.9	10.1	31.6	12.1	12.1	674.4	1.4	5.7
SCOPHTHALMUS AQUOSUS	.0	.0	.0	96.6	.3	.0	.0	.0	.0	.0	.0	.0	.0
HIPPOGLOSSOIDES PLATESSOIDES	4.0	.0	.0	.0	.6	.3	1.7	6.3	4.4	2.5	13.2	.0	1.9
LIMANDA FERRUGINEA	.0	.3	.0	.0	.0	.0	.3	.9	.3	.6	1.6	.3	.3
PSEUDOPLEURONECTES AMERICANUS	.0	.3	.5	.0	.3	.0	.0	.0	.0	.0	.8	.0	2.2
UNIDENTIFIED	.0	.0	.0	.0	.0	.0	.8	.0	.0	.0	9.3	.0	.0
TOTAL	25.5	1.2	.7	96.6	5.8	7.1	17.6	42.2	18.0	16.5	773.6	1.9	11.1

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

Table 18.-- (continued).

SPECIES	STATION NUMBER 14	15	16	17	18	TOT
* GADIDAE-GLYPTOCEPHALUS	16.7	4.9	6.9	8.5	11.0	92.1
ENCHELYOPUS CIMBRIUS	1.8	.0	5.2	1.0	3.0	77.7
GADUS MORHUA	1.8	1.4	3.5	1.7	4.7	14.1
* LABRIDAE-LIMANDA	29.8	8.7	6.6	4.3	5.7	810.3
SCOPHTHALMUS AQUOSUS	.0	.0	.2	.0	.0	97.2
HIPPOGLOSSOIDES PLATESSOIDES	102.1	58.7	235.5	238.6	315.7	985.5
LIMANDA FERRUGINEA	.7	.0	1.2	.2	.0	6.6
PSEUDOPLEURONECTES AMERICANUS	.0	.0	.2	.0	.0	4.3
UNIDENTIFIED	.0	.0	.0	.0	.0	10.1
TOTAL	152.8	73.6	259.3	254.3	340.0	2098.0

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

TABLE 19.--NUMBERS OF FISH EGGS PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR SPIRIT OF '76, CRUISE 985, APRIL 1977.

SPECIES	STATION NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	13
LOPHIUS AMERICANUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
*GADIDAE-GLYPTOCEPHALUS	.0	.0	.0	.0	.3	1.0	3.8	2.0	.8	.5	1.7	.2	.8
ENCHELYOPUS CIMBRIUS	13.7	.5	.6	.0	.5	.3	3.4	.0	.0	.3	1.7	.5	.3
GADUS MORHUA	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.0
*LABRIDAE-LIMANDA	.3	.0	.2	.0	1.3	7.6	17.3	18.0	4.8	3.0	10.6	1.4	7.5
LABRIDAE	.0	.0	.0	.0	.0	.0	1.0	.0	.0	.0	.0	.0	.3
SCOPHTHALMUS AQUOSUS	.0	.0	.4	5.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
HIPPOGLOSSOIDES PLATESSOIDES	.0	.0	.0	.0	1.0	1.6	1.0	2.9	1.5	2.4	6.0	.2	5.4
LIMANDA FERRUGINEA	.0	.0	.0	.0	.5	.3	.0	.2	.3	1.4	3.3	.2	.8
PSEUDOPLEURONECTES AMERICANUS	1.0	.0	3.3	4.3	1.0	.3	.0	.2	.0	.0	.0	.0	24.2
UNIDENTIFIED FRAGMENTS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0
TOTAL	15.0	.5	4.6	9.4	4.7	11.0	26.4	23.4	7.3	7.9	23.2	2.8	39.4

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

Table 19.-- (continued).

SPECIES	STATION NUMBER 14	15	16	17	18	TOT
LOPHIUS AMERICANUS	.0	.0	.0	.6	.0	.6
* GADIDAE-GLYPTOCEPHALUS	15.8	2.7	6.9	4.3	10.3	51.0
ENCHELYOPUS CIMBRIUS	.9	.3	1.4	.0	3.1	27.4
GADUS MORHUA	2.4	2.7	2.4	2.1	2.3	12.2
* LABRIDAE-LIMANDA	19.7	8.3	8.1	8.1	9.7	126.1
LABRIDAE	1.8	.0	.0	.0	.0	3.0
SCOPHTHALMUS AQUOSUS	.0	.0	.0	.0	.0	5.5
HIPPOGLOSSOIDES PLATESSOIDES	74.5	61.3	150.3	157.9	220.0	686.1
LIMANDA FERRUGINEA	.3	.3	.0	.0	.3	7.9
PSEUDOPLEURONECTES AMERICANUS	.0	3.3	.0	.0	.3	38.0
UNIDENTIFIED FRAGMENTS	.0	.0	.0	.0	.0	.2
TOTAL	115.5	78.9	169.1	172.9	246.0	957.9

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

TABLE 20.--NUMBERS OF FISH EGGS PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR SPIRIT OF '76, CRUISE 985, APRIL 1977.[1/]

SPECIES	STATION NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	13
*GADIDAE-GLYPTOCEPHALUS	.0	.0	.3	.0	.3	1.5	2.4	2.3	.3	.3	1.1	.0	2.1
ENCHELYOPUS CIMBRIUS	9.8	.5	.0	.0	.3	.0	1.9	.3	.0	.0	.8	.0	.0
GADUS MORHUA	.0	.0	.0	.3	.0	.0	.0	.3	.3	.3	.3	.0	.0
MERLUCCIUS BILINEARIS	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	1.4
*LABRIDAE-LIMANDA	.0	.0	.3	.0	.8	2.8	11.3	8.0	3.8	3.8	10.8	1.2	10.3
LABRIDAE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0
SCOPHTHALMUS AQUOSUS	.0	.0	.5	13.8	.0	.0	.0	.0	.0	.0	.0	.0	.0
HIPPOGLOSSOIDES PLATESSOIDES	.3	.0	.0	.0	1.4	.8	1.4	1.8	.0	2.2	5.5	.6	2.8
LIMANDA FERRUGINEA	.0	.0	.3	.0	.6	.5	.0	1.8	.0	.8	1.3	.0	1.4
PSEUDOPLEURONECTES AMERICANUS	.5	.0	1.8	4.2	.8	.0	.0	.0	.0	.3	.0	.0	35.9
TOTAL	10.6	.8	3.1	18.3	4.2	5.6	17.0	14.3	4.3	7.7	20.1	2.1	53.8

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

1/ The samples in these tows were obtained with the 0.333 mm mesh plankton net.

Table 20.-- (continued). 1/

SPECIES	STATION NUMBER 14	15	16	17	18	TOT
*GADIDAE-GLYPTOCEPHALUS	25.2	9.9	3.2	11.8	13.2	73.7
ENCHELYOPUS CIMBRIUS	1.0	.7	.0	.7	1.3	17.2
GADUS MORHUA	1.9	1.4	2.1	5.6	3.8	16.2
MERLUCCIUS BILINEARIS	.0	.0	.0	.0	.6	2.5
*LABRIDAE-LIMANDA	1.0	12.1	9.6	4.2	18.2	98.3
LABRIDAE	20.4	1.4	.0	.0	.0	22.1
SCOPHTHALMUS AQUOSUS	1.0	.0	.0	.0	.0	15.3
HIPPOGLOSSOIDES PLATESSOIDES	127.2	131.9	77.0	336.1	296.9	985.7
LIMANDA FERRUGINEA	.0	.0	.5	1.4	.0	8.5
PSEUDOPLEURONECTES AMERICANUS	.0	7.8	.0	2.1	.0	53.3
TOTAL	177.7	165.2	92.5	361.8	334.0	1292.9

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

1/ The samples in these tows were obtained with the 0.333 mm mesh plankton net.

TABLE 21.--NUMBERS OF FISH LARVAE PER 100 CUBIC METERS AT EACH NEUSTON STATION FOR SPIRIT OF '76, CRUISE 985, APRIL 1977.

SPECIES	STATION NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	13
CLUPEA HARENGUS HARENGUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ULVARIA SUBBIFURCATA	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
PHOLIS GUNNELLUS	.0	.0	.0	.0	.0	.3	.3	.0	.0	.0	.0	.0	1.0
CRYPTACANTHODES MACULATUS	.0	.0	.0	.0	.0	.3	1.4	.0	.0	.0	.0	.0	.0
AMMODYTES SP.	.0	.3	.2	1.4	.0	.0	5.9	.0	.3	1.3	2.3	.3	1.5
MYOXOCEPHALUS SPP.	.0	.0	.0	.0	.3	1.2	4.2	.0	.3	13.0	.8	24.9	10.2
LIPARIS SPP.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0
HIPPOGLOSSOIDES PLATESSOIDES	.0	.0	.0	.0	.0	.0	.0	.3	.3	.0	.0	.0	.0
UNIDENTIFIED	.0	.0	.0	.0	.3	.0	.0	.0	.0	.3	.0	.0	.0
TOTAL	.0	.3	.2	1.4	.6	1.8	11.8	.3	.9	14.6	3.1	25.4	12.7

Table 21.-- (continued).

SPECIES	STATION NUMBER 14	15	16	17	18	TOT
CLUPEA HARENGUS HARENGUS	.0	.0	.0	.0	.3	.3
ULVARIA SUBBIFURCATA	.0	.0	.0	.0	.3	.3
PHOLIS GUNNELLUS	2.1	.3	.2	.0	1.7	5.9
CRYPTACANTHODES MACULATUS	.0	.0	.0	.0	.0	1.7
AMMODYTES SP.	1.1	6.2	5.9	.0	1.0	26.8
MYOXOCEPHALUS SPP.	28.7	38.5	1.2	2.7	1.7	127.6
LIPARIS SPP.	.4	.7	.0	.0	.0	1.3
HIPPOGLOSSOIDES PLATESSOIDES	1.1	.3	.5	.2	.0	2.7
UNIDENTIFIED	.0	.0	.0	.0	.0	.6
TOTAL	33.3	45.1	7.8	2.9	5.0	167.3

TABLE 22.--NUMBERS OF FISH LARVAE PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR SPIRIT OF '76, CRUISE 985, APRIL 1977.

SPECIES	STATION NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	13
CLUPEA HARENGUS HARENGUS	.0	.0	.0	.2	.8	.3	.5	.0	.5	1.4	.7	.9	.3
GADUS MORHUA	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3
URAPHYCIS SPP.	.0	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TAUTOGA ONITIS	.0	.0	.0	.0	.0	.0	.0	.2	.0	.0	.0	.0	.0
TAUTOGOLABRUS ADSPERSUS	.0	.0	.0	.0	.0	.0	.0	.0	.8	.0	.0	.0	.0
LUMPENUS LUMPRETAEFORMIS	.0	.0	.0	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0
ULVARIA SUBBIFURCATA	.0	.0	.0	.0	.0	.0	.2	.0	.0	.0	.0	.0	.0
PHOLIS GUNNELLUS	.0	.0	.0	.0	.0	.3	1.7	1.7	.5	1.6	.0	2.6	39.9
CRYPTACANTHODES MACULATUS	1.4	.3	.0	.0	.0	.0	1.0	.5	.0	.0	.0	.0	.0
AMMODYTES SP.	17.1	16.1	16.3	25.7	15.0	11.0	85.9	16.6	43.9	19.8	48.3	3.5	40.2
MYOXOCEPHALUS SPP.	.0	.8	.6	.5	.8	4.5	1.9	13.9	10.6	60.1	3.3	11.0	19.8
ASPIDOPHOROIDES MONOPTERYGIUS	.0	.0	.0	.0	.3	.5	.5	.2	.3	.0	.0	.0	.0
LIPARIS SPP.	.0	.0	.0	.0	.0	.3	.0	1.2	.3	.3	.0	2.1	11.4
GLYPTOCEPHALUS CYNOGLOSSUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
HIPPOGLOSSOIDES PLATESSOIDES	.0	.0	.0	.2	.0	.0	.2	.0	.5	.5	.3	.0	.0
PSEUDOPLEURONECTES AMERICANUS	.7	.5	.0	12.0	3.9	1.0	6.0	.2	2.3	6.0	.0	8.4	19.6
UNIDENTIFIED FRAGMENTS	.0	.0	.0	.0	.3	.3	.2	.2	.0	1.6	.3	1.2	.0
TOTAL	19.1	17.6	17.1	38.7	21.0	18.4	98.1	34.9	59.6	91.3	53.0	29.7	131.5

Table 22.-- (continued).

SPECIES	STATION NUMBER 14	15	16	17	18	TOT
CLUPEA HARENGUS HARENGUS	.0	.0	.6	1.2	1.4	8.8
GADUS MORHUA	.0	.0	.0	.0	.0	.3
UROPHYCIS SPP.	.0	.0	.0	.0	.0	.2
TAUTOGA ONITIS	.0	.0	.0	.2	.0	.5
TAUTOGOLABRUS ADSPERSUS	.0	.0	.0	.2	.0	1.0
LUMPENUS LUMPRETAEFORMIS	.0	.0	.0	.2	.0	.5
ULVARIA SUBBIFURCATA	.3	.0	.0	.0	.0	.5
PHOLIS GUNNELLUS	9.7	5.1	.2	1.7	.3	65.2
CRYPTACANTHODES MACULATUS	.0	.0	.0	.0	.0	3.1
AMMODYTES SP.	11.2	33.0	22.4	15.7	9.7	451.5
MYOXOCEPHALUS SPP.	8.5	16.1	1.0	8.1	2.6	164.0
ASPIDOPHOROIDES MONOPTERYGIUS	.3	.9	.2	.0	.0	3.2
LIPARIS SPP.	6.7	20.5	.4	4.5	.3	48.0
GLYPTOCEPHALUS CYNOGLOSSUS	.0	.6	.0	.0	.0	.6
HIPPOGLOSSOIDES PLATESSOIDES	2.4	.9	1.2	.0	2.3	8.7
PSEUDOPLEURONECTES AMERICANUS	3.9	3.6	.0	.6	.0	68.8
UNIDENTIFIED FRAGMENTS	.6	1.2	.2	.0	2.6	8.7
TOTAL	43.6	81.8	26.3	32.4	19.1	833.3

TABLE 23.--NUMBERS OF FISH LARVAE PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR SPIRIT OF '76, CRUISE 985, APRIL 1977. 1/

SPECIES	STATION NUMBER 1	2	3	4	5	6	7	8	9	10	11	12	13
CLUPEA HARENGUS HARENGUS	.0	.0	.0	.0	.8	.0	.0	.0	.0	.5	.0	.6	.7
SYNGNATHUS FUSCUS 2/	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0
LUMPENUS LUMPRETAEFORMIS	.0	.0	.0	.0	.0	.5	.2	.0	.0	.0	.0	.0	.0
PHOLIS GUNNELLUS	.0	.0	.0	.3	.0	.3	2.1	.5	.0	1.9	.0	3.8	48.3
CRYPTACANTHODES MACULATUS	1.6	.0	.3	.0	.0	.0	.0	3.3	.5	.5	.8	.0	.0
AMMODYTES SP.	16.5	29.4	31.8	46.1	16.4	6.1	84.6	22.8	109.4	30.1	42.2	3.5	31.0
MYOXOCEPHALUS SPP.	.5	1.0	.0	.3	1.1	3.8	1.2	10.0	12.0	54.2	3.2	10.0	16.6
ASPIDOPHOROIDES MONOPTERYGIUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
LIPARIS SPP.	.0	.0	.0	.0	.0	.0	.2	.0	.8	.0	.0	2.9	6.2
HIPPOGLOSSOIDES PLATESSOIDES	.0	.0	.3	.3	.0	.0	.0	.0	.0	.0	.0	.3	1.4
PSEUDOPLEURONECTES AMERICANUS	1.8	4.7	1.0	73.7	6.1	1.3	4.3	4.0	8.7	14.0	.3	19.1	36.5
UNIDENTIFIED FRAGMENTS	.3	.0	.3	1.8	.8	.0	.9	.5	.3	1.6	.8	5.6	2.1
TOTAL	20.7	35.2	33.6	122.5	25.3	12.0	93.6	41.1	131.6	103.0	47.2	46.2	142.8

1/ The samples in these tows were obtained with the 0.333 mm mesh plankton net.

2/ Juvenile.

Table 23.-- (continued). 1/

SPECIES	STATION NUMBER 14	15	16	17	18	181
CLUPEA HARENGUS HARENGUS	.0	.0	1.1	2.8	1.3	7.8
SYNONATHUS FUSCUS 2/	.0	.0	.0	.0	.0	.3
LUMPENUS LUMPRETAEFORMIS	.0	.0	.0	.7	.0	1.4
PHOLIS GUNNELLUS	17.5	13.5	.0	.0	.6	88.8
CRYPTACANTHODES MACULATUS	.0	.0	.0	.0	.0	6.9
AMMODYTES SP.	17.5	65.2	20.9	38.2	6.3	618.3
MYOXOCEPHALUS SPP.	10.7	33.3	1.1	19.4	.0	178.5
ASPIDOPHOROIDES MONOPTERYGIUS	.0	.7	.0	.0	.0	.7
LIPARIS SPP.	9.7	34.0	.5	11.8	.0	66.2
HIPPOGLOSSOIDES PLATESSOIDES	.0	.0	.0	.7	.6	3.6
PSEUDOPLEURONECTES AMERICANUS	1.9	7.1	.5	.7	.0	185.7
UNIDENTIFIED FRAGMENTS	4.9	18.4	.0	1.4	.6	40.3
TOTAL	62.1	172.3	24.1	75.7	9.4	1198.4

1/ The samples in these tows were obtained with the 0.33 mm mesh plankton net.

2/ Juvenile.

TABLE 24.--NUMBERS OF FISH EGGS PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR ALBATROSS IV, CRUISE 690, MAY 1977.

SPECIES	STATION NUMBER 21	22	23	24	25	26	27	28	29	TOT
* GADIDAE-GLYPTOCEPHALUS	51.5	25.9	35.1	35.6	23.1	52.5	43.1	56.2	200.0	523.2
* BROSME-SCOMBER	23.5	23.0	36.0	2.6	43.4	81.4	137.3	125.0	694.7	1166.9
* ENCHELYOPUS-UROPHYCIS-PEPRILUS	166.2	366.9	301.3	512.6	153.7	284.7	1043.1	735.0	1908.8	5472.3
ENCHELYOPUS CIMBRIUS	10.3	23.0	31.8	33.7	49.6	147.3	180.4	280.0	442.1	1198.3
GADUS MORHUA	12.5	12.2	20.9	7.1	10.3	30.5	18.3	23.7	17.5	153.2
UROPHYCIS SPP.	.0	.0	.0	.0	.0	.0	2.6	.0	.0	2.6
* LABRIDAE-LIMANDA	34.6	5.0	50.2	16.8	211.6	71.2	3.9	20.0	249.1	662.4
LABRIDAE	.0	.0	.0	18.1	.0	64.9	14.4	.0	70.2	167.1
SCOMBER SCOMBRUS	.7	.0	.8	1.3	.8	11.9	11.8	42.5	35.1	104.9
PARALICHTHYS-SCOPHTHALMUS	.0	.0	.0	.0	.4	.4	.0	.0	.0	.8
GLYPTOCEPHALUS CYNOGLOSSUS	.0	.0	3.3	.0	.0	.8	6.5	11.2	3.5	25.5
HIPPOGLOSSOIDES PLATESSOIDES	68.4	54.7	76.2	51.8	31.0	37.7	35.3	15.0	.0	370.0
LIMANDA FERRUGINEA	3.7	7.2	20.9	.0	39.7	.0	.0	6.2	24.6	102.3
TOTAL	371.3	518.0	576.6	679.6	563.6	783.0	1496.7	1315.0	3645.6	9949.5

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

TABLE 25.--NUMBERS OF FISH LARVAE PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR ALBATROSS IV, CRUISE 690, MAY 1977.

SPECIES	STATION NUMBER 21	22	23	24	25	26	27	28	29	TOT
GADUS MORHUA	4.4	.0	.8	.0	.0	.4	.7	.0	.0	6.3
UROPHYCIS SPP.	.0	.0	.0	.0	.0	.0	.0	1.2	.0	1.2
TAUTOGOLABRUS ADSPERSUS	.0	.0	.0	.0	.0	.0	.0	.0	1.8	1.8
ULVARIA SUBBIFURCATA	4.4	7.2	6.7	.0	2.9	3.4	.0	.0	1.8	26.3
PHOLIS GUNNELLUS	.0	.0	.0	.0	.0	.4	.7	.0	.0	1.1
AMMODYTES SP.	2.9	.7	.0	.0	4.5	.4	1.3	1.2	1.8	12.9
SCOMBER SCOMBRUS	.0	.0	.0	.6	.0	.0	.0	.0	.0	.6
MYOXOCEPHALUS SPP.	.0	.0	.0	.0	.0	.4	.0	.0	.0	.4
LIPARIS SPP.	.0	.7	3.3	.0	.8	3.4	.7	3.7	5.3	17.9
HIPPOGLOSSOIDES PLATESSOIDES	11.0	5.0	.8	1.3	.0	.4	.7	1.2	.0	20.5
LIMANDA FERRUGINEA	.7	.0	.0	.0	.4	1.7	3.9	1.2	.0	8.0
PSEUDOPLEURONECTES AMERICANUS	.0	.0	.0	.0	.0	.0	2.0	1.2	.0	3.2
UNIDENTIFIED FRAGMENTS	.0	.0	.0	.0	.4	.8	.0	.0	.0	1.3
TOTAL	23.5	13.7	11.7	1.9	9.1	11.4	9.8	10.0	10.5	101.7

TABLE 26.--NUMBERS OF FISH EGGS PER 100 CUBIC METERS AT EACH NEUSTON STATION FOR SPIRIT OF '76, CRUISE 986, JUNE 1977.

SPECIES	STATION NUMBER 1	2	3	5	6	7	8	9	10	17	18	TOT
BREVOORTIA TYRANNUS	.0	.0	.0	1.1	.5	.0	.0	.0	.0	23.2	170.3	195.2
ANCHOA MITCHILLI	.0	.0	.0	.0	.5	.0	.0	.0	.0	.0	.0	.5
LOPHIUS AMERICANUS	.3	.0	1.4	8.3	36.1	5.4	7.8	.0	1.3	.4	.0	60.9
*GADIDAE-GLYPTOCEPHALUS	.0	.0	.0	.0	.0	.0	.0	1.1	.0	19.6	102.6	123.2
*BROSME-SCOMBER	.3	2.7	127.4	94.3	942.2	785.7	1537.7	1052.1	3025.1	673.1	8114.9	16355.5
*ENCHELYOPUS-UROPHYCIS-PEPRILUS	15.8	1.3	22.7	563.2	298.1	321.4	1259.9	196.2	106.8	125.5	976.4	3887.3
ENCHELYOPUS CIMBRIUS	1.1	1.6	17.7	32.2	31.8	240.5	225.1	40.5	117.0	82.7	385.6	1176.0
GADUS MORHUA	.0	.0	.0	.0	.0	.0	2.4	.0	.0	22.9	2.1	27.3
*MERLUCCIUS-STENOTOMUS	.6	1.6	2.5	.0	1.6	4.2	2.4	9.9	29.6	.7	48.2	101.2
MERLUCCIUS BILINEARIS	1.1	.0	.0	.0	4.2	.3	16.2	20.8	15.4	.4	8.2	66.7
UROPHYCIS SPP.	1.7	.8	13.9	57.5	41.4	39.3	124.6	17.5	32.2	1.5	8.2	338.4
*LABRIDAE-LIMANDA	1017.8	336.6	221.6	2349.4	3386.7	1395.2	435.9	7329.3	22420.6	1930.6	1628.7	42452.4
LABRIDAE	346.7	103.2	396.7	248.3	233.4	452.4	804.8	2270.7	20187.8	543.2	586.7	26173.9
SCOMBER SCOMBRUS	.8	.0	16.6	24.1	1574.5	1166.7	3195.2	1569.3	17841.8	614.0	1280.0	27283.0
PRIONOTUS SPP.	.0	.0	.0	.0	.5	.0	.6	.0	.0	.0	.0	1.1
*PARALICHTHYS-SCOPHTHALMUS	426.7	236.6	678.1	1144.8	445.6	160.7	47.9	574.2	87.5	36.9	18.5	3857.5
GLYPTOCEPHALUS CYNOGLOSSUS	.0	.0	.0	.0	.5	.0	.0	4.4	1.3	.0	.0	6.2
HIPPOGLOSSOIDES PLATESSOIDES	.3	.0	.0	.0	1.1	.0	.0	.0	1.3	29.2	135.4	167.2
LIMANDA FERRUGINEA	.0	.0	.0	.0	.0	.0	.0	.0	82.3	.0	119.0	201.3
PSEUDOPLEURONECTES AMERICANUS	.0	.0	.0	.0	.0	.0	.0	.0	3.9	.0	.0	3.9
UNIDENTIFIED	.3	.5	.6	.9	.0	.0	.0	.0	.0	.0	17.4	19.7
TOTAL	1813.3	684.9	1499.2	4524.1	6998.9	4571.7	7660.5	13086.0	63953.7	4103.7	13602.0	122498.0

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

TABLE 27.--NUMBERS OF FISH EGGS PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR SPIRIT OF '76, CRUISE 986, JUNE 1977.

SPECIES	STATION NUMBER 1	2	3	5	6	7	8	9	10	17	18	TOT
BREVOORTIA TYRANNUS	.0	.0	.0	1.0	.0	.0	1.0	.0	.0	10.4	54.4	66.8
* GADIDAE-GLYPTOCEPHALUS	.0	.0	.0	.0	.0	.0	.0	3.7	.0	9.8	46.5	60.0
* BROSME-SCOMBER	.2	2.3	67.8	9.3	189.1	355.1	492.3	187.4	1763.1	181.7	926.3	4174.6
* ENCHELYOPUS-UROPHYCIS-PEPRILUS	7.4	.5	45.5	40.3	182.7	222.4	713.8	108.7	105.8	63.1	70.2	1560.4
ENCHELYOPUS CIMBRIUS	1.7	1.4	12.3	274.2	80.0	451.0	225.6	92.7	105.8	55.5	603.5	1903.8
GADUS MORHUA	.0	.0	.0	.0	.0	.5	3.1	2.3	2.2	11.4	6.6	26.1
* MERLUCCIUS-STENOTOMUS	.0	.0	.0	.0	2.7	10.7	11.3	7.0	12.1	7.9	18.4	70.2
MERLUCCIUS BILINEARIS	.0	.0	.0	1.0	5.9	10.7	26.6	10.8	19.8	.3	.4	74.6
UROPHYCIS SPP.	3.1	1.2	16.6	13.8	23.6	12.2	53.3	8.4	24.2	2.5	.0	159.0
* LABRIDAE-LIMANDA	1052.7	276.5	333.6	116.0	1207.3	591.8	644.1	2667.9	13981.2	1044.8	659.6	22575.5
LABRIDAE	349.6	202.8	599.1	82.6	210.9	346.9	537.4	1738.6	13470.0	519.9	7.0	18064.8
SCOMBER SCOMBRUS	.0	.0	43.1	51.1	1520.0	844.9	2830.8	983.6	12826.5	542.6	1343.9	20986.5
PEPRILUS TRIACANTHUS	.0	.0	.0	1.0	.0	.0	.0	.0	.0	.0	.0	1.0
PRIONOTUS SPP.	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2
* PARALICHTHYS-SCOPHTHALMUS	423.8	306.0	887.2	282.1	181.8	67.3	80.0	135.8	116.8	29.3	.0	2510.1
GLYPTOCEPHALUS CYNOGLOSSUS	.0	.0	.0	.0	.9	.0	.0	9.4	3.3	.6	11.0	25.2
HIPPOGLOSSOIDES PLATESSOIDES	.0	.0	.0	.0	.0	.0	.0	.9	.0	8.2	31.1	40.3
LIMANDA FERRUGINEA	.0	.0	.0	.0	3.6	.0	24.6	15.0	52.9	10.1	284.2	390.4
TOTAL	1838.7	790.6	2005.2	872.2	3608.6	2913.8	5643.1	5972.3	42483.7	2498.1	4063.2	72689.5

*LATER DEVELOPMENTAL STAGES MAY BE DISTINGUISHABLE SPECIFICALLY; THESE WILL BE FOUND LISTED IN PHYLOGENETIC ORDER UNDER THE APPROPRIATE SPECIES HEADING.

TABLE 28.--NUMBERS OF FISH LARVAE PER 100 CUBIC METERS AT EACH NEUSTON STATION FOR SPIRIT OF '76, CRUISE 986, JUNE 1977.

SPECIES	STATION NUMBER 1	2	3	5	6	7	8	9	10	17	18	TOT
BREVOORTIA TYRANNUS	.6	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.8
LOPHIUS AMERICANUS	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3
ENCHELYOPUS CIMBRIUS	20.8	1.9	8.9	4.0	16.4	18.2	28.7	24.1	240.5	8.5	16.9	389.0
GADUS MORHUA	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.1	.0	1.1
UROPHYCIS SPP.	.0	2.2	.0	.0	.0	.0	.0	.0	.6	.4	.0	3.2
MENIDIA SPP.	.0	.0	.0	.3	3.2	.3	.0	6.6	.0	.0	.0	10.3
GASTEROSTEUS ACULEATUS	4.2	1.1	.3	.0	.5	.0	.0	.0	.0	.0	.0	6.0
TAUTOGA ONITIS	.0	.0	.0	.0	.0	.0	.0	1.1	.0	.0	.5	1.6
TAUTOGOLABRUS ADSPERSUS	.0	.0	.6	.3	.0	.0	.6	.0	10.9	.4	.5	13.3
ULVARIA SUBBIFURCATA	.0	.0	.0	.0	9.0	2.1	3.6	2.2	72.7	114.4	1.5	205.5
AMMODYTES SP.	.0	.0	.0	.0	1.6	.0	.0	1.1	.0	.0	4.1	6.8
SCOMBER SCOMBRUS	41.4	18.8	82.0	44.0	240.8	22.0	56.9	67.9	185.9	16.6	61.0	837.4
CYCLOPTERUS LUMPUS	.0	.0	.0	.0	.0	.0	.0	1.1	.0	.0	.0	1.1
LIPARIS SPP.	5.3	6.2	5.0	2.0	7.4	6.8	1.8	13.2	5.1	55.0	41.5	149.3
SCOPHTHALMUS AQUOSUS	.8	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	1.1
GLYPTOCEPHALUS CYNOGLOSSUS	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.1	.0	1.1
HIPPOGLOSSOIDES PLATESSOIDES	.0	.0	.0	.0	.0	.0	.0	.0	.0	.4	.0	.4
LIMANDA FERRUGINEA	.0	.3	.3	.0	.0	.0	.0	.0	1.3	2.2	.0	4.0
PSEUDOPLEURONECTES AMERICANUS	.0	.0	.8	.0	.0	1.5	.0	.0	.0	.0	.0	2.3
UNIDENTIFIED FRAGMENTS	.6	.0	.3	1.4	.0	2.1	2.4	23.0	16.1	.0	2.6	48.4
TOTAL	73.9	30.4	98.1	52.6	279.0	53.0	94.0	140.3	533.1	200.0	128.7	1683.1

TABLE 29.--NUMBERS OF FISH LARVAE PER 100 CUBIC METERS AT EACH PLANKTON STATION FOR SPIRIT OF '76, CRUISE 986, JUNE 1977.

SPECIES	STATION NUMBER 1	2	3	5	6	7	8	9	10	17	18	TOT
BREVOORTIA TYRANNUS	1.0	.9	.0	7.4	1.4	8.7	14.4	.0	.0	.0	.0	33.6
ANCHOA SPP.	.0	.0	.5	.0	.0	.0	.0	.0	.0	.0	.0	.5
ENCHELYOPUS CIMBRIUS	1.2	.7	4.7	9.8	45.9	31.1	299.5	48.2	125.6	27.8	33.8	628.4
GADUS MORHUA	.0	.2	.0	.0	.5	1.0	.0	2.8	.0	8.5	21.1	34.1
MERLUCCIUS BILINEARIS	.0	.0	.2	5.4	2.3	1.0	2.1	2.3	.0	.0	.0	13.3
URPHYCIS SPP.	.0	.0	.0	.0	.9	1.5	.0	.9	.0	.0	.0	3.4
MENIDIA SPP.	.0	.0	.0	.0	.0	.0	.0	.5	.0	.0	.0	.5
SYNGNATHUS FUSCUS	.2	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0	.6
TAUTOGA ONITIS	1.7	.9	1.7	1.0	1.4	6.6	8.2	2.8	5.5	.0	.0	29.7
TAUTOGOLABRUS ADSPERSUS	.6	.5	2.8	6.4	4.1	4.1	60.5	21.5	73.8	2.2	.0	176.4
ULVARIA SUBBIFURCATA	.0	.2	.0	.0	.0	.0	5.1	7.5	6.6	4.4	3.9	27.8
AMMODYTES SP.	.0	.0	.0	.0	.0	1.5	.0	.0	.0	.0	.9	2.4
SCOMBER SCOMBRUS	4.0	3.9	37.7	212.3	463.6	832.7	2336.4	438.4	643.5	24.3	45.6	5042.4
LIPARIS SPP.	.7	.2	.2	.5	.0	.5	.0	2.3	2.2	25.2	7.9	39.9
PARALICHTHYS OBLONGUS	.0	.0	.0	.5	.0	.0	.0	.0	.0	.0	.0	.5
SCOPHTHALMUS AQUOSUS	.2	.0	.9	8.8	12.7	9.7	15.4	3.3	.0	.3	.0	51.4
GLYPTOCEPHALUS CYNOGLOSSUS	.0	.0	.0	.0	3.2	9.2	10.3	2.3	1.1	.0	1.8	27.8
HIPPOGLOSSOIDES PLATESSOIDES	.0	.0	.2	.0	.9	1.5	.0	.0	.0	11.0	74.1	87.8
LIMANDA FERRUGINEA	.0	.5	1.7	.0	3.2	3.6	4.1	4.7	32.0	5.4	12.7	67.7
PSEUDOPLEURONECTES AMERICANUS	.0	.0	.0	.0	2.3	5.1	1.0	2.8	2.2	1.6	.0	15.0
UNIDENTIFIED FRAGMENTS	.7	.2	1.2	1.5	.5	2.0	7.2	2.3	13.2	.9	2.2	32.0
UNIDENTIFIED CLUPEIFORMS	.0	.0	.5	.5	.0	.0	.0	.0	.0	.0	.0	1.0
TOTAL	10.2	8.3	52.4	254.1	542.7	919.9	2764.1	542.9	905.8	112.0	203.9	6316.2

Table 30.--Scientific and common names, type of egg deposition, and stages identified of ichthyoplankton collected in Cape Cod-Massachusetts Bays in 1976-77.

Scientific name	Common name	Egg deposition	Forms collected
Anguilla rostrata	American eel	Unknown	Juvenile
Brevoortia tyrannus	Atlantic menhaden	Pelagic	Eggs and larvae
Clupea harengus harengus	Atlantic herring	Demersal	Larvae
Anchoa mitchilli	Bay anchovy	Pelagic	Eggs
Osmerus mordax	Rainbow smelt	Demersal	Larvae
Lophius americanus	Goosefish	Pelagic	Eggs and larvae
Brosme brosme	Cusk	Pelagic	Eggs and larvae
Enchelyopus cimbrius	Fourbeard rockling	Pelagic	Eggs and larvae
Gadus morhua	Atlantic cod	Pelagic	Eggs and larvae
Melanogrammus aeglefinus	Haddock	Pelagic	Eggs and larvae
Merluccius bilinearis	Silver hake	Pelagic	Eggs and larvae
Microgadus tomcod	Tomcod	Demersal	Larvae
Pollachius virens	Pollock	Pelagic	Larvae
Urophycis regius	Spotted hake	Pelagic	Juvenile
Urophycis spp.	Hake(s)	Pelagic	Eggs and larvae
Menidia spp.	Silverside	Demersal	Larvae
Gasterosteus aculeatus	Threespine stickleback	Demersal	Larvae
Syngnathus fuscus	Pipefish	Brood pouch	Larvae & Juvenile
Tautoga onitis	Tautog	Pelagic	Eggs and larvae
Tautogolabrus adspersus	Cunner	Pelagic	Eggs and larvae
Lumpenus lumpretaeformis	Snakeblenny	Demersal	Larvae
Lumpenus maculatus	Daubed shanny	Demersal	Larvae
Ulvaria subbifurcata	Radiated shanny	Demersal	Larvae

Table 30.— (continued).

Scientific name	Common name	Egg deposition	Forms collected
Pholis gunnelus	Rock gunnel	Demersal	Larvae
Anarhichas lupus	Atlantic wolffish	Demersal	Larvae
Cryptacanthodes maculatus	Wrymouth	Unknown 1/	Larvae
Ammodytes spp.	Sand lance	Demersal	Larvae
Scomber scombrus	Atlantic mackerel	Pelagic	Eggs and larvae
Peprilus triacanthus	Butterfish	Pelagic	Eggs and larvae
Prionotus spp.	Sea robin	Pelagic	Eggs and larvae
Hemitripterus americanus	Sea raven	Demersal	Larvae
Myoxocephalus spp.	Sculpins	Demersal	Larvae
Aspidophoroides monopterygius	Alligatorfish	Unknown 1/	Larvae
Cyclopterus lumpus	Lumpfish	Demersal	Larvae
Liparis spp.	Sea snails	Demersal	Larvae
Etropus microstomus	Smallmouth flounder	Pelagic	Eggs
Paralichthys dentatus	Summer flounder	Pelagic	Eggs
Paralichthys oblongus	Fourspot flounder	Pelagic	Larvae
Scopthalmus aquosus	Windowpane	Pelagic	Eggs and larvae
Glyptocephalus cynoglossus	Witch flounder	Pelagic	Eggs and larvae
Hippoglossoides platessoides	American plaice	Pelagic	Eggs and larvae
Limanda ferruginea	Yellowtail flounder	Pelagic	Eggs and larvae
Liopsetta putnami	Smooth flounder	Demersal	Larvae
Pseudopleuronectes americanus	Winter flounder	Demersal	Eggs and larvae
Sphoeroides maculatus	Northern puffer	Demersal	Larvae

1/ The eggs have not been described, to our knowledge; however, they probably are demersal since the adults apparently spawn successfully under ice cover in some locations such as the Gulf of St. Lawrence (Kohler et al, 1975).

Table 31.--Seasonal occurrence of the more common forms of fish eggs (E) and/or larvae (L) identified in Cape Cod and Massachusetts Bay neuston and plankton samples in 1976-77.

Species	Inshore March 1977		Offshore March-April 1976		Inshore April 1976		Inshore April 1977		Offshore May 1976		Offshore May 1977		Inshore June 1977		Inshore August 1976		Inshore October 1976	
Brevoortia tyrannus									E				E	L	E	L	E	L
Clupea harengus harengus		L		L		L		L										
Brosme brosme			E		E	L												
Enchelyopus cimbrius			E		E		E		E		E		E	L	E	L	E	L
Gadus morhua	E	L	E	L	E	L	E	L	E	L	E	L	E	L	E		E	
Melanogrammus aeglefinus			E		E	L			E	L								
Merluccius bilinearis													E	L	E	L	E	L
Urophycis spp.								L			E	L	E	L	E	L	E	L
Tautoga onitis						L		L						L		L		
Tautogolabrus adspersus								L				L		L		L		
Ulvaria subbifurcata				L		L		L		L		L		L		L		
Pholis gunnelus		L				L		L		L		L						
Ammodytes spp.		L		L		L		L		L		L		L		L		L
Scomber scombrus									E		E	L	E	L	E	L		
Peprilus triacanthus													E		E	L		L
Prionotus spp.													E		E	L		
Myoxocephalus spp.		L				L		L		L		L						
Liparis spp.		L		L		L		L		L		L		L				L
Scophthalmus aquosus					E	L	E		E					L		L		L
Glyptocephalus cynoglossus			E		E			L	E		E		E	L	E	L		L
Hippoglossoides platessoides	E	L	E	L	E	L	E	L	E	L	E	L	E	L				
Limanda ferruginea	E		E		E	L	E		E	L	E	L	E	L	E			
Pseudopleuronectes americanus 1/	E	L			E	L	E	L		L		L	E	L				
Source of data (Table numbers)	16-17		2-5		6-9		18-23		2-5		24-25		26-29		10-11		12-15	

1/ While the eggs of this species are demersal they sometimes were caught in plankton tows in shallow water where currents carried them off botto