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ICHTHYOPLANKTON AND STATION DATA FOR MANTA (SURFACE) TOWS TAKEN ON CALIFORNIA COOPERATIVE OCEANIC FISHERIES INVESTIGATIONS SURVEY CRUISES IN 1995

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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
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ABSTRACT

This report provides ichthyoplankton data and associated station and tow data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations (CalCOFI) cruises in 1995. It is the 14th report in a series that presents surface tow data for all biological-oceanographic CalCOFI surveys from 1977 to the present. A total of 251 stations was occupied during four quarterly cruises over the survey area which extended from Avila Beach to San Diego, California and seaward in a southwesterly direction to a maximum of approximately 330 n. mi. The most seaward station, 90.120, was approximately 400 n. mi. west of Punta Baja, Baja California, Mexico. A total of 248 Manta net tows was taken during 1995. The data for stations on which Manta tows were taken are listed in a series of four tables; the background, methodology, and information necessary for interpretation of the data are presented in an accompanying text. All pertinent station and tow data, including volumes of water filtered are listed in the first table. Another table lists, by station and month, standardized counts of each of the 77 larval fish categories identified from Manta tows taken on the survey. This series of reports makes the CalCOFI ichthyoplankton and station data available to all investigators and serves as a guide to the computer data base.

INTRODUCTION

This report, the 14th in a series of surface tow data reports, provides ichthyoplankton and associated station and Manta net tow data from California Cooperative Oceanic Fisheries Investigations (CalCOFI) joint biological-oceanographic survey cruises conducted in 1995. This program was initiated in 1949, under the sponsorship of the Marine Research Committee of the State of California, to study the population fluctuations of the Pacific sardine (*Sardinops sagax*) and the environmental factors that may play a role in these fluctuations. CalCOFI is a partnership among the Southwest Fisheries Science Center (SWFSC) of the National Marine Fisheries Service (NMFS), the Scripps Institution of Oceanography (SIO), and the California Department of Fish and Game (CDFG). NMFS and SIO supply ships and personnel to conduct the sea surveys, NMFS processes the plankton samples and analyzes the ichthyoplankton from them. SIO processes and analyzes hydrographic and biological samples and analyzes invertebrate groups from the plankton samples.

The boundaries, station placement, and sampling frequency for the CalCOFI surveys were based on the results of joint biological-oceanographic cruises conducted by NMFS and SIO during 1939–41. Originally, CalCOFI cruises were designed to collect sardine eggs and larvae in oblique net tows and hydrographic data associated with the tows over the entire areal and seasonal spawning range of the species. From 1951 to 1960 the surveys were annual with cruises conducted monthly. The survey area was occupied quarterly during 1961–1965 and in 1966 the surveys became triennial with monthly cruises. Beginning in 1985 annual surveys were resumed, with quarterly cruises occupying only the Southern California Bight region (see Hewitt 1988; Moser et al. 1993, 1994, 2001a for summaries of historical CalCOFI sampling effort). Neuston[1] sampling with the Manta net (Figure 1) was initiated in 1977-78. Station and ichthyoplankton data for oblique tows taken on the 1992 CalCOFI survey are published in Watson et al. (1999). Ahlstrom and Stevens (1976), Gruber et al. (1982) and Doyle (1992a, b) provided initial information

[1]Usage of the term "neuston" for surface-living marine organisms is controversial because it was applied originally to organisms associated with the surface film in freshwater habitats (Naumann 1917). Banse (1975) reviewed in detail the evolution of the usage of this term, a related term, "pleuston", and the various subdivisions of each. Neuston is now used by most workers in referring to the uppermost (upper ~10–20 cm) layer of the sea and to the assemblage of organisms that lives in that zone, either permanently or facultatively (Zaitsev 1970; Hempel and Weikert 1972; Peres 1982; Doyle 1992b). We accept this definition and use it interchangeably with the more general term "surface" (e.g., surface waters, surface zone, surface tow, surface assemblage).

on the distribution and abundance of surface ichthyoplankton in the northeastern Pacific.

Hydrographic and biological data from the 1995 CalCOFI survey were published by the Scripps Institution of Oceanography (Univ. of Calif., SIO 1995, 1996). All available records for Manta tows on the 1993 CalCOFI surveys were verified and edited to produce this data report. The CalCOFI ichthyoplankton data reports make CalCOFI ichthyoplankton and station data available to all investigators and serve as guides to the ichthyoplankton computer data base. They are the basic documents against which changes in the data base can be compared as it is modified to correct errors and update earlier identifications. Citations for previous reports in this series are:

Survey	Report	Survey	Report
1977-78	Moser et al. 2001b	1989	Ambrose et al. 2002c
1980-81	Ambrose et al. 2002a	1990	Charter et al. 2002c
1984	Charter et al. 2002a	1991	Sandknop et al. 2002b
1985	Ambrose et al. 2002b	1992	Watson et al. 2002b
1986	Charter et al. 2002b	1993	Ambrose et al. 2002d
1987	Sandknop et al. 2002a	1994	Charter et al. 2002d
1988	Watson et al. 2002		

SAMPLING AREA AND PATTERN

The 1995 CalCOFI survey consisted of four quarterly cruises on which a total of 248 Manta net tows was taken at the 251 standard CalCOFI net tow stations occupied during the survey (Table 1; Figures 2–3). Two vessels were employed on the survey, the NOAA vessel RV *David Starr Jordan* and the SIO vessel *New Horizon*. Dates and numbers of stations sampled with the Manta net in 1995 (Figures 2–3) are summarized below:

9501, RV *David Starr Jordan*, 65 stations, January 4–21;

9504, RV *New Horizon*, 51 stations, April 6–22;

9507, RV *David Starr Jordan*, 66 stations, July 6–23;

9510, RV *New Horizon*, 66 stations, October 10–28.

The survey area extended from Avila Beach to San Diego, California and seaward on six survey lines to approximately 120–330 n. mi. (Figures 2 and 3). The most seaward station, 90.0 120.0, was approximately 400 n. mi. west of Punta Baja, Baja California, Mexico. Stations on CalCOFI lines 76.7 and 80.0 extended seaward to station 100.0, stations on lines 83.3 and 86.7 extended seaward to station 110.0, and stations on lines 90.0 and 93.3 extended seaward to station 120.0 on all cruises (Figures 2 and 3).

SAMPLING GEAR AND METHODS

Plankton tows were made with a modified version of the Manta net originally designed by Brown and Cheng (1981). It consists of a rectangular mouth 15.5 cm deep and 86 cm wide attached to a frame that supports square lateral extensions covered with plywood and urethane foam (Figure 1). These extensions

stabilize the net when it is towed and keep the top of the net at the sea surface. The net is constructed of 0.505 mm nylon mesh. The towing bridle is asymmetrical with one side longer than the other; when the net is towed this bridle arrangement forces the mouth away from the ship at a slight angle. A General Oceanics flowmeter was suspended across the center of the net mouth to measure the amount of water filtered during each tow. At each Manta tow station the tow line from the bridle was attached to the hydrographic wire and then lowered to slightly below the surface of the water before the net was deployed. The net was towed at a ship speed of 1.0–2.0 knots for 15 minutes. Samples were preserved in 5% buffered formalin and returned to the plankton sorting laboratory at the SWFSC at the end of the cruise.

LABORATORY PROCEDURES

The ichthyoplankton was removed from the invertebrate portion of each sample and bottled separately in 3% buffered formalin. In addition to fish eggs and larvae, some samples contained surface-living juvenile, and occasionally adult, stages of fishes; these were removed and bottled separately in 3% formalin. The volume of water filtered by each net was computed from the flowmeter readings. A "standard haul factor" is used for oblique CalCOFI net tows to calculate the total number of ichthyoplankters of a taxon per unit surface area (Kramer et al 1972; Smith and Richardson 1977; Moser et al. 1993). A requirement for this is the entire depth distribution of the taxon must be encompassed during the tow. The Manta net samples only the upper ~15.5 cm of the water column and most, if not all, ichthyoplankton taxa that inhabit the surface zone have a vertical range > 15.5 cm. Even taxa associated with the immediate surface layer may range deeper than 15.5 cm as a result of diel migratory patterns or vertical mixing (Hempel and Weikert 1972; Doyle 1992b). Calculation of total numbers of eggs or larvae per unit surface area from Manta net samples awaits accurate information on the fine-scale vertical distribution of these organisms in the upper region of the water column. Even if there are few species whose larvae are restricted to the upper 15.5 cm of the water column, the time series of Manta samples provides a useful index of relative abundance for species whose larvae appear in these samples. In this report we express quantities of eggs or larvae in each sample as unadjusted counts or as numbers of eggs or larvae per unit volume of water filtered by the net.

IDENTIFICATION

Constituent taxa in the samples were identified by William Watson and the senior author. Early ontogenetic stages of fishes are difficult to identify; most identifications were based on descriptions of ontogenetic series of fishes in published identification guides to early stages of fishes in the northeastern Pacific (Matarese et al. 1989; Moser 1996). Larval specimens that could not be identified with these guides were identified by establishing ontogenetic series on the basis of morphology, meristics, and pigmentation, and then linking these series through overlapping features to known metamorphic, juvenile, or adult stages (Miller and Lea 1972; Eschmeyer et al. 1983; Powles and Markle 1984). Except for damaged specimens, most of the larvae and juvenile/adults taken in the surface tows could be identified to species. A total of 77 larval fish categories (including unidentified) was identified: 67 to species, 8 to genus, and 1 to family.

The following taxonomic categories in Tables 2–4 require special explanation:

Diaphus spp.–*Diaphus theta* is the dominant *Diaphus* species in the survey area and most, if not all, of the larvae from the Southern California Bight region are this species; the generic category is used because a small proportion of the *Diaphus* larvae captured at the outer margin of the survey pattern may represent other species whose larvae are identical to those of *D. theta*.

Lampanyctus spp.–most of the larvae in this category are small (< 5 mm), often damaged, specimens belonging to the subgroup of *Lampanyctus*, characterized by small or absent pectoral fins in adults,

placed by Zahuranec (2000) in the genus *Nannobrachium*; two *Nannobrachium* species, *N. ritteri* (formerly *L. ritteri*) and *N. regale* (formerly *L. regalis*), occur commonly in the present CalCOFI survey pattern; larvae of these species > ~ 5 mm have been identified in oblique tow samples since 1954; beginning in 1985, larvae of two other species, *N. bristori* and *N. hawaiiensis*, have been identified and included in the CalCOFI data base for oblique tows; in previous oblique tow data reports these were referred to as *Lampanyctus* "niger" and *Lampanyctus* "no pectorals", respectively (see Moser 1996).

Vinciguerria lucetia–V. lucetia, an eastern tropical Pacific species, is common in the present CalCOFI region whereas the central water mass species *V. poweriae* is rarely encountered; a small percentage of *V. poweriae* larvae may have been included in the *V. lucetia* category because of the difficulty in separating early larvae of the two species.

SPECIES SUMMARY

Of the five most abundant larvae, northern anchovy (*Engraulis mordax*) ranked first in abundance with 36.8% of the total fish larvae and second in occurrence with larvae taken in 24.6% of the total samples (Tables 2 and 3). They were almost twice as abundant as the second most abundant species, Pacific saury (*Cololabis saira*), which had 12.5% of the total larvae and ranked first in occurrence (31.0% of the total samples). California grunion (*Leuresthes tenuis*) was the third most abundant taxon with 8.2% of the total larvae and ranked 24th in frequency of occurrence (2.0% of the samples). Pacific sardine (*Sardinops sagax*) ranked fourth in abundance (10.9% of the samples). The rockfish genus *Sebastes* ranked fifth in abundance (5.7% of total larvae) and third in total occurrences (14.7% of the samples). The next five most abundant taxa were Pacific mackerel *Scomber japonicus* (4.8% of total larvae), mussel blenny *Hypsoblennius jenkensi* (3.8%), unidentified specimens of the blenny genus *Hypsoblennius* (2.3%), jack mackerel *Trachurus symmetricus* (2.1%), and jacksmelt *Atherinopsis californiensis* (2.0%). These species ranked 8th, 5th, tied for 14th, tied for 6th, and tied for 6th in frequency of occurrence, respectively. The 10 most abundant taxa comprised 86.1% of all the larvae collected in Manta net tows on CalCOFI cruises in 1995. The remaining 13.9% was distributed among 67 other taxa (including the unidentified category). Of the ten most abundant taxa, six were coastal pelagic species, three were coastal demersal taxa, and one was an epipelagic species.

In contrast to the Manta collections, among the 130 taxa collected in the oblique tows during the 1995 survey, Panama lightfish ranked first in both abundance and occurrence (35.1% of the total larvae and 34.4% positive tows). Among the ten most abundant taxa in oblique tows in 1995, only three (northern anchovy, *Sebastes* spp., and Pacific sardine) were among the ten most abundant in Manta tows (Sandknop et al. 1999).

EXPLANATION OF TABLES

Table 1. This table lists for each tow the pertinent station and tow data, the volume of water filtered, and the total number of fish eggs and larvae for ichthyoplankton stations occupied during the 1995 CalCOFI survey. Cruises are designated by a six character alphanumeric code; the first two digits indicate the year and the second two the month, followed by the ship code, JD (*David Starr Jordan*) or NH (*New Horizon*). Within each cruise the data are listed in order of increasing line and station number (southerly and seaward directions); the order of station occupancy is shown on the station charts (Figures 2 and 3). Stations are designated by two groups of numbers; the first set indicates the line and decimal fraction and the second set indicates the station and decimal fraction. Time is listed as Pacific Standard Time at the start of each tow in 24-hour designation. The values for total fish eggs and larvae are raw counts (unadjusted for volume of water filtered). The listings for

station latitude and longitude in this table may differ from values given for the same station in the SIO data reports, reflecting the slight difference in position of the net tow and hydrocast.

Table 2. Pooled occurrences of all larval fish taxa taken in Manta nets on the RV *David Starr Jordan* and the RV *New Horizon* during the 1995 CalCOFI survey. Taxa are listed in rank order.

Table 3. Pooled counts (unadjusted for volume of water filtered) of all larval fish taxa taken in Manta net tows on the the RV *David Starr Jordan* and the RV *New Horizon* during the 1995 CalCOFI survey. Taxa are listed in rank order.

Table 4. Numbers of fish larvae for each taxon taken in Manta net tows on the RV *David Starr Jordan* and the RV *New Horizon* during the 1995 CalCOFI survey. Numbers of larvae are listed as number per 100 m^3 of water filtered. Orders and families are listed in phylogenetic sequence (Eschmeyer 1998); other taxa are listed alphabetically.

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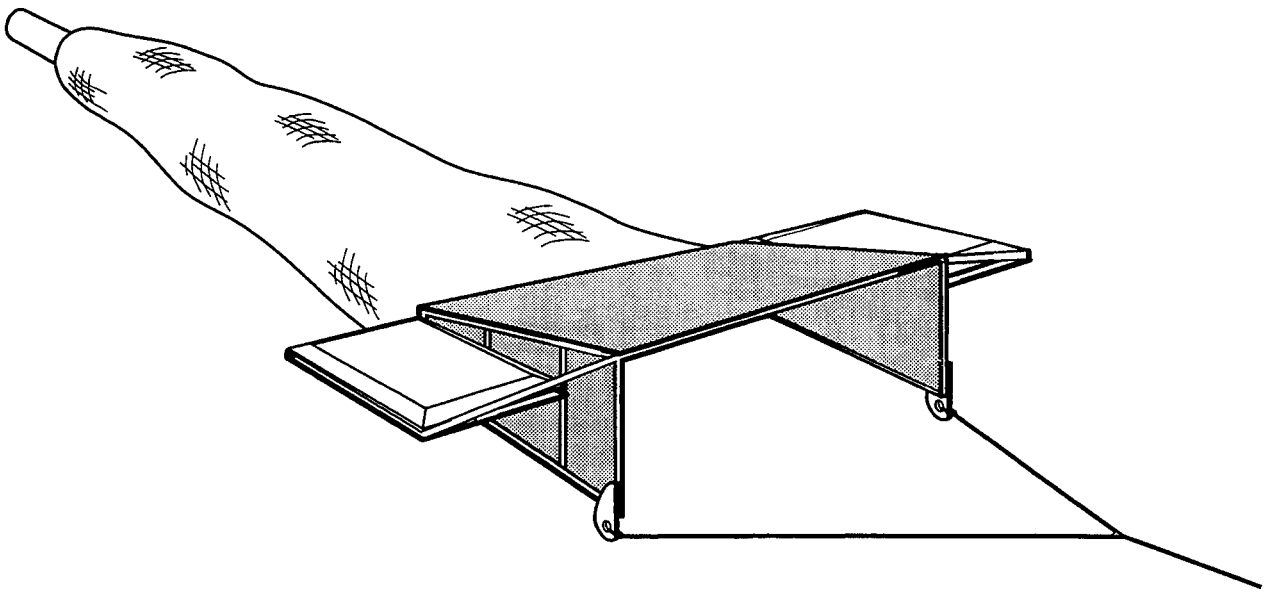

Figure 1. Diagram of the Manta net used on CalCOFI surveys.

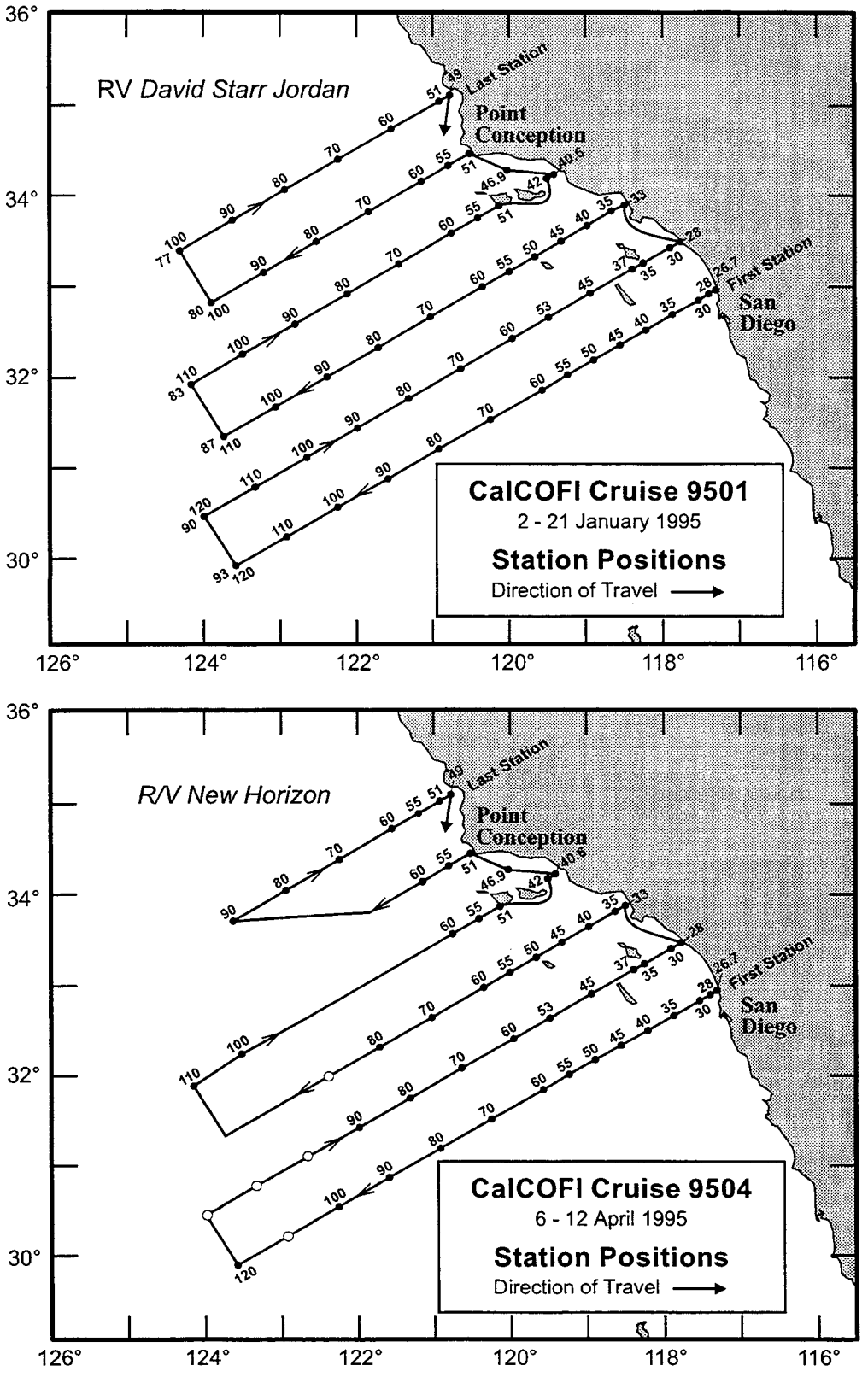

Figure 2. Stations and cruise tracks for CalCOFI cruises 9501 (above) and 9504 (below). Dots indicate stations where Manta and oblique tows were taken; open circles indicate stations where only oblique tows were taken.

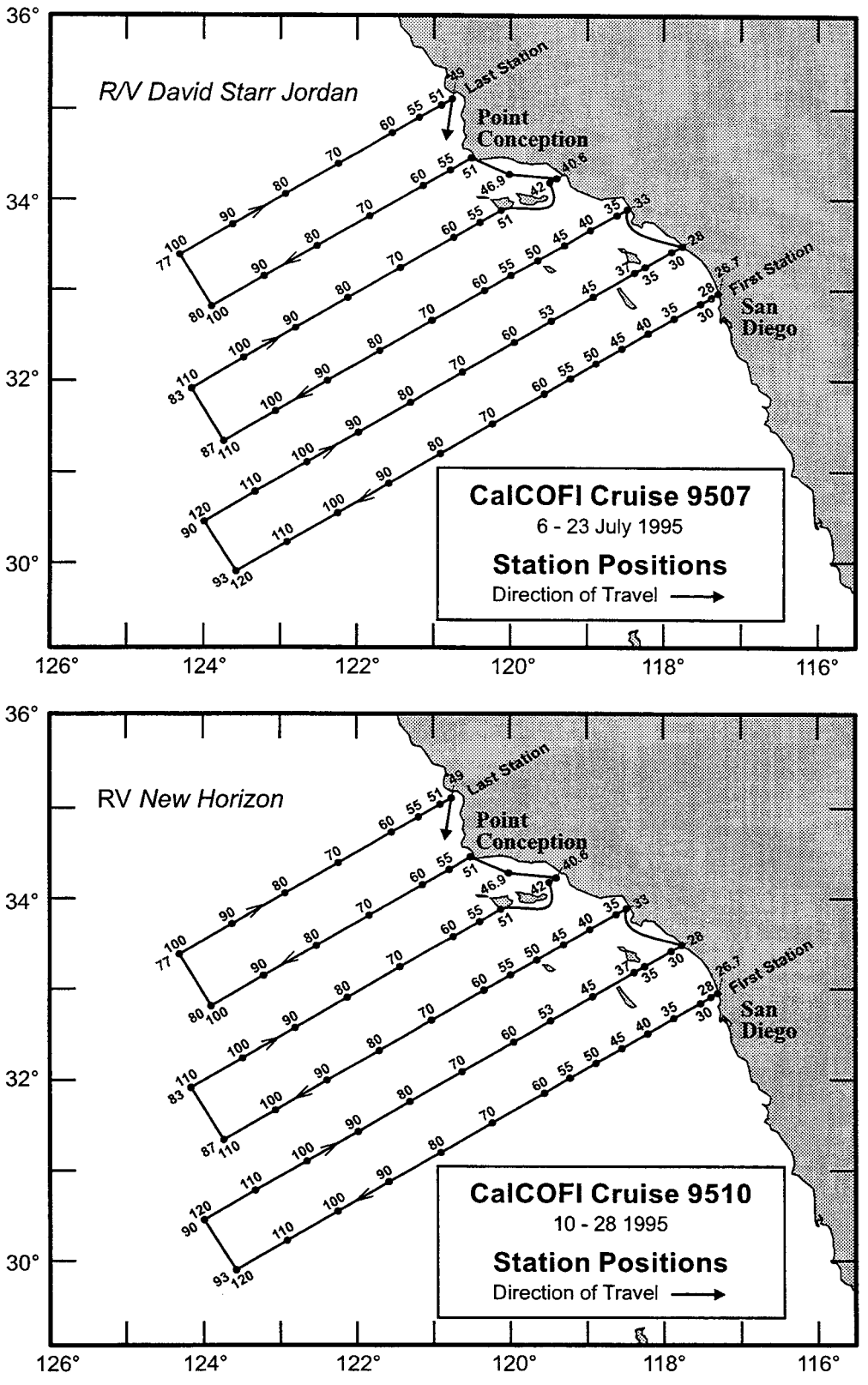

Figure 3. Stations and cruise tracks for CalCOFI cruises 9507 (above) and 9510 (below). Symbols as in Figure 2.

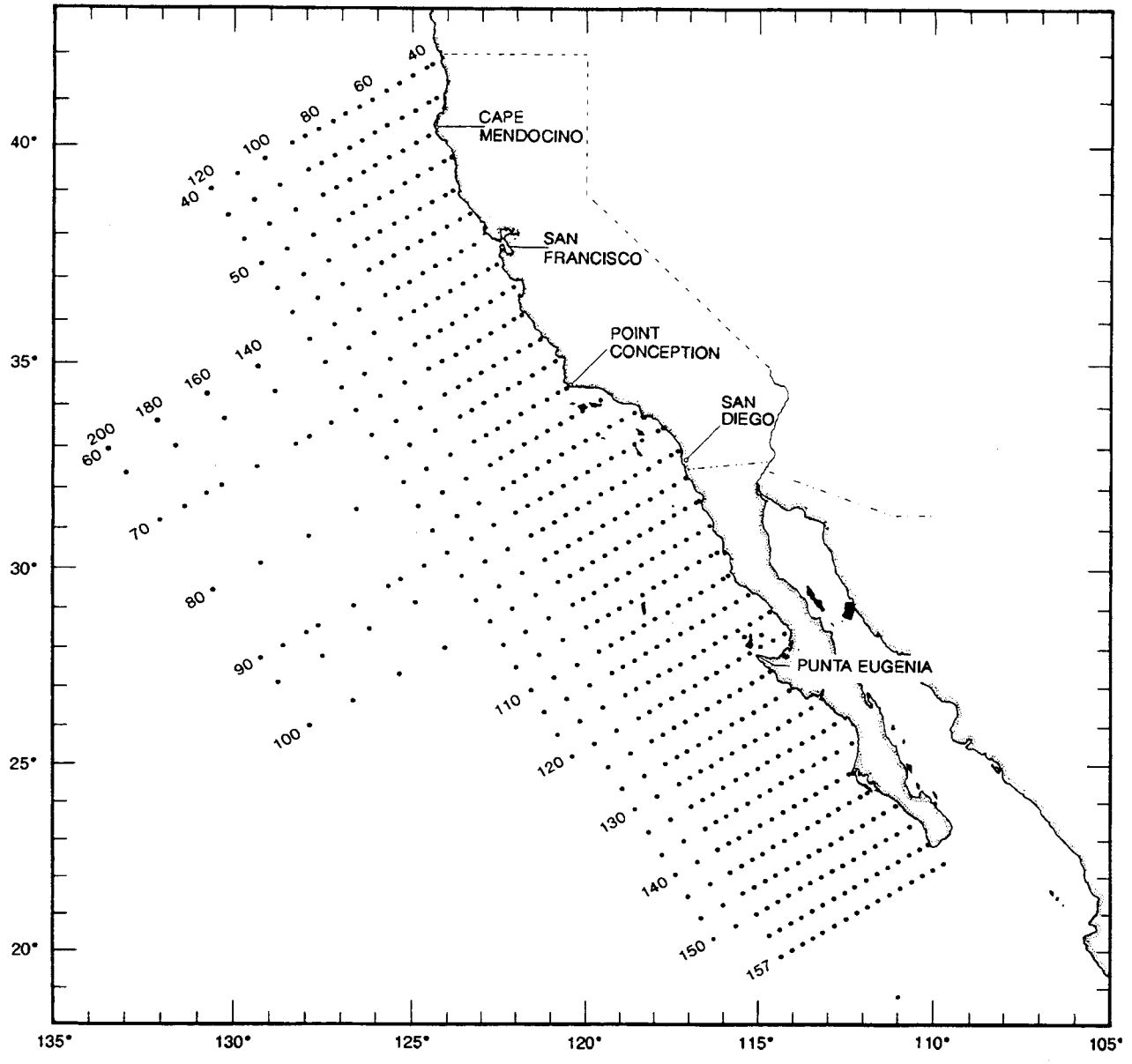

Figure 4. The basic station plan for CalCOFI cruises from 1950 - 1984.

TABLE 1. Station and plankton tow data for Manta tows taken on the 1995 CalCOFI survey. Numbers of fish eggs and larvae are raw counts, unadjusted for volume (cubic meters) of water filtered.

CalCOFI Cruise 9501

Line	Station	Latitude (N) deg.	min.	Longitude (W) deg.	min.	Ship Code	Tow Date yr.	mo.	day	Time (PST)	Volume Water Strained	Total Larvae	Total Eggs
76.7	49.0	35	05.3	120	46.6	JD	95	01	20	1621	73	1	58
76.7	51.0	35	01.3	120	55.1	JD	95	01	20	1333	89	61	19
76.7	60.0	34	43.4	121	32.6	JD	95	01	20	0402	81	2	3
76.7	70.0	34	23.2	122	15.0	JD	95	01	19	2158	88	0	14
76.7	80.0	34	03.3	122	56.6	JD	95	01	19	1617	82	0	10
76.7	90.0	33	43.3	123	37.8	JD	95	01	19	1024	87	0	2
76.7	100.0	33	23.3	124	19.3	JD	95	01	19	0450	92	8	0
80.0	51.0	34	27.0	120	31.3	JD	95	01	17	1428	95	18	169
80.0	55.0	34	19.0	120	48.1	JD	95	01	17	1808	89	6	33
80.0	60.0	34	09.0	121	09.0	JD	95	01	17	2214	94	1	3
80.0	70.0	33	49.0	121	50.7	JD	95	01	18	0425	84	41	2
80.0	80.0	33	29.0	122	32.0	JD	95	01	18	1037	85	9	1
80.0	90.0	33	09.0	123	13.2	JD	95	01	18	1706	106	10	5
80.0	100.0	32	49.1	123	54.2	JD	95	01	18	2252	92	6	0
81.8	46.9	34	16.4	120	01.6	JD	95	01	17	0720	85	5	22
83.3	40.6	34	13.5	119	24.7	JD	95	01	17	0320	87	21	3421
83.3	42.0	34	10.7	119	30.4	JD	95	01	17	0116	91	7	4
83.3	51.0	33	52.8	120	08.0	JD	95	01	16	1843	79	20	141
83.3	55.0	33	44.8	120	24.8	JD	95	01	16	1516	88	8	0
83.3	60.0	33	34.7	120	45.3	JD	95	01	16	0750	64	0	1
83.3	70.0	33	14.6	121	26.7	JD	95	01	16	0055	88	51	4
83.3	80.0	32	54.7	122	07.8	JD	95	01	15	1748	70	1	0
83.3	90.0	32	34.7	122	48.8	JD	95	01	15	0651	71	0	0
83.3	100.0	32	14.7	123	29.7	JD	95	01	15	0102	88	2	2
83.3	110.0	31	54.6	124	10.2	JD	95	01	14	1818	70	1	2
86.7	33.0	33	53.4	118	29.3	JD	95	01	12	0215	84	19	19
86.7	35.0	33	49.4	118	39.6	JD	95	01	12	0452	75	3	8
86.7	40.0	33	39.6	118	58.6	JD	95	01	12	0807	78	0	8
86.7	45.0	33	29.5	119	19.0	JD	95	01	12	1430	89	0	40
86.7	50.0	33	19.3	119	39.8	JD	95	01	12	1801	58	32	114
86.7	55.0	33	09.4	120	00.0	JD	95	01	12	2154	80	15	12
86.7	60.0	32	59.5	120	20.9	JD	95	01	13	0220	89	4	37
86.7	70.0	32	39.5	121	02.0	JD	95	01	13	0750	84	0	12
86.7	80.0	32	19.2	121	43.0	JD	95	01	13	1623	76	2	1
86.7	90.0	31	59.5	122	23.5	JD	95	01	13	2233	95	40	25
86.7	100.0	31	39.4	123	04.1	JD	95	01	14	0500	67	0	1
86.7	110.0	31	19.4	123	44.6	JD	95	01	14	1126	80	0	0
90.0	28.0	33	29.0	117	46.1	JD	95	01	11	2003	98	13	180
90.0	30.0	33	25.1	117	54.3	JD	95	01	11	1719	94	0	3
90.0	35.0	33	15.1	118	15.1	JD	95	01	11	1317	87	0	305
90.0	37.0	33	11.1	118	23.3	JD	95	01	11	0908	84	2	420
90.0	45.0	32	55.2	118	56.2	JD	95	01	11	0227	96	2	1
90.0	53.0	32	39.0	119	29.0	JD	95	01	10	2111	82	1	7
90.0	60.0	32	24.9	119	57.6	JD	95	01	10	1616	76	0	2
90.0	70.0	32	05.1	120	38.1	JD	95	01	10	0634	79	1	0
90.0	80.0	31	45.0	121	19.0	JD	95	01	10	0057	93	2	1
90.0	90.0	31	25.1	121	59.6	JD	95	01	09	1816	74	2	4

TABLE 1. (cont.) CalCOFI Cruise 9501 (cont.)

Line	Station	Latitude (N) deg.	min.	Longitude (W) deg.	min.	Ship Code	Tow Date yr.	mo.	day	Time (PST)	Volume Water Strained	Total Larvae	Total Eggs
90.0	100.0	31	05.0	122	39.7	JD	95	01	09	1156	83	1	0
90.0	110.0	30	45.0	123	20.0	JD	95	01	09	0537	80	0	0
90.0	120.0	30	25.1	123	59.9	JD	95	01	08	2339	86	14	1
93.3	26.7	32	57.4	117	18.2	JD	95	01	04	1255	71	110	12
93.3	28.0	32	54.8	117	23.7	JD	95	01	05	0931	81	2	29
93.3	30.0	32	50.5	117	32.0	JD	95	01	05	1640	69	4	61
93.3	35.0	32	41.0	117	52.3	JD	95	01	05	2133	87	0	20
93.3	40.0	32	30.7	118	13.1	JD	95	01	06	0210	86	2	1
93.3	45.0	32	20.9	118	33.0	JD	95	01	06	0630	81	0	3
93.3	50.0	32	10.8	118	53.7	JD	95	01	06	1109	91	0	141
93.3	55.0	32	00.8	119	14.1	JD	95	01	06	1609	85	0	4
93.3	60.0	31	50.7	119	34.0	JD	95	01	06	2053	93	0	1
93.3	70.0	31	30.7	120	14.8	JD	95	01	07	0437	77	0	1
93.3	80.0	31	10.8	120	55.3	JD	95	01	07	1141	94	0	4
93.3	90.0	30	50.7	121	35.3	JD	95	01	07	1803	89	56	16
93.3	100.0	30	30.9	122	15.2	JD	95	01	08	0027	88	4	0
93.3	110.0	30	10.8	122	55.4	JD	95	01	08	0559	83	2	1
93.3	120.0	29	51.0	123	35.0	JD	95	01	08	1710	94	3	2

CalCOFI Cruise 9504

Line	Station	Latitude (N) deg.	min.	Longitude (W) deg.	min.	Ship Code	Tow Date yr.	mo.	day	Time (PST)	Volume Water Strained	Total Larvae	Total Eggs
76.7	49.0	35	05.3	120	46.5	NH	95	04	21	0508	77	29	68
76.7	51.0	35	01.3	120	55.3	NH	95	04	21	0756	60	1	0
76.7	55.0	34	53.4	121	11.9	NH	95	04	20	1611	82	4	15
76.7	60.0	34	43.3	121	33.0	NH	95	04	20	0947	81	13	22
76.7	70.0	34	23.3	122	14.7	NH	95	04	20	0442	71	18	48
76.7	80.0	34	03.3	122	56.5	NH	95	04	19	2245	87	1	125
76.7	90.0	33	43.2	123	38.0	NH	95	04	19	1651	73	2	78
80.0	51.0	34	27.0	120	31.2	NH	95	04	17	1914	82	6	1
80.0	55.0	34	19.0	120	48.2	NH	95	04	17	2251	90	9	19
80.0	60.0	34	09.0	121	09.0	NH	95	04	18	0235	82	132	47
81.8	46.9	34	16.5	120	01.5	NH	95	04	17	1509	95	5	2
83.3	40.6	34	13.9	119	24.2	NH	95	04	17	0849	82	7	1301
83.3	42.0	34	10.7	119	30.5	NH	95	04	17	0703	82	3	16
83.3	51.0	33	52.8	120	07.9	NH	95	04	17	0055	72	25	59
83.3	55.0	33	44.7	120	24.6	NH	95	04	16	2131	80	34	14
83.3	60.0	33	34.7	120	45.3	NH	95	04	16	1715	82	4	35
83.3	100.0	32	14.7	123	31.4	NH	95	04	15	1810	82	5	2
83.3	110.0	31	53.3	124	09.2	NH	95	04	15	1204	82	2	4
86.7	33.0	33	53.4	118	29.5	NH	95	04	12	1746	93	4	52
86.7	35.0	33	49.4	118	37.7	NH	95	04	12	2017	69	16	520
86.7	40.0	33	39.4	118	58.4	NH	95	04	12	2351	79	123	131
86.7	45.0	33	29.4	119	19.2	NH	95	04	13	0351	86	4	51
86.7	50.0	33	19.4	119	39.8	NH	95	04	13	0750	66	16	149
86.7	55.0	33	09.4	120	00.4	NH	95	04	13	1150	89	0	928
86.7	60.0	32	59.4	120	21.1	NH	95	04	13	1609	81	2	82
86.7	70.0	32	39.5	121	02.0	NH	95	04	14	0105	68	3	64

TABLE 1. (cont.) CalCOFI Cruise 9504 (cont.)

Line	Station	Latitude (N) deg.	min.	Longitude (W) deg.	min.	Ship Code	Tow Date yr.	mo.	day	Time (PST)	Volume Water Strained	Total Larvae	Total Eggs
86.7	80.0	32	19.5	121	43.0	NH	95	04	14	1157	78	2	237
90.0	28.0	33	29.1	117	46.2	NH	95	04	12	1137	80	7	14
90.0	30.0	33	25.1	117	54.2	NH	95	04	12	0908	95	2	1375
90.0	35.0	33	15.2	118	15.0	NH	95	04	12	0442	86	54	136
90.0	37.0	33	11.2	118	23.2	NH	95	04	12	0205	81	12	1043
90.0	45.0	32	55.1	118	56.2	NH	95	04	11	2117	85	3	821
90.0	53.0	32	39.1	119	28.9	NH	95	04	11	1633	82	1	92
90.0	60.0	32	25.1	119	57.7	NH	95	04	11	1124	83	3	84
90.0	70.0	32	05.2	120	38.4	NH	95	04	11	0418	82	48	170
90.0	80.0	31	45.0	121	19.0	NH	95	04	10	2219	87	48	167
90.0	90.0	31	25.1	121	59.4	NH	95	04	10	1650	86	6	95
93.3	26.7	32	57.4	117	18.3	NH	95	04	06	1154	82	69	466
93.3	28.0	32	54.7	117	23.7	NH	95	04	06	1500	91	18	123
93.3	30.0	32	50.8	117	32.0	NH	95	04	06	1829	82	341	96
93.3	35.0	32	40.8	117	52.3	NH	95	04	06	2240	97	16	207
93.3	40.0	32	30.8	118	12.8	NH	95	04	07	0259	82	18	82
93.3	45.0	32	20.5	118	33.2	NH	95	04	07	0734	84	3	99
93.3	50.0	32	10.8	118	53.5	NH	95	04	07	1148	83	1	63
93.3	55.0	32	00.8	119	14.1	NH	95	04	07	1607	78	0	219
93.3	60.0	31	50.8	119	34.2	NH	95	04	07	2004	94	3	431
93.3	70.0	31	30.8	120	15.0	NH	95	04	08	0141	88	1	192
93.3	80.0	31	10.8	120	55.2	NH	95	04	08	0739	62	3	17
93.3	90.0	30	50.8	121	35.5	NH	95	04	08	1600	91	4	45
93.3	100.0	30	30.8	122	15.6	NH	95	04	08	2217	82	19	53
93.3	120.0	29	50.9	123	35.1	NH	95	04	09	1201	89	0	188

CalCOFI Cruise 9507

Line	Station	Latitude (N) deg.	min.	Longitude (W) deg.	min.	Ship Code	Tow Date yr.	mo.	day	Time (PST)	Volume Water Strained	Total Larvae	Total Eggs
76.7	49.0	35	05.3	120	46.6	JD	95	07	21	2250	82	4	820
76.7	51.0	35	01.3	120	55.1	JD	95	07	21	1829	73	2	289
76.7	55.0	34	53.2	121	12.0	JD	95	07	21	1459	86	0	3
76.7	60.0	34	43.3	121	32.9	JD	95	07	21	0931	80	1	2
76.7	70.0	34	23.2	122	14.9	JD	95	07	21	0432	73	29	72
76.7	80.0	34	03.3	122	56.5	JD	95	07	20	2220	80	1	114
76.7	90.0	33	43.3	123	38.0	JD	95	07	20	1629	88	2	9
76.7	100.0	33	23.3	124	19.4	JD	95	07	20	0901	94	1	474
80.0	51.0	34	27.2	120	31.3	JD	95	07	18	1533	89	20	218
80.0	55.0	34	19.0	120	48.0	JD	95	07	18	2015	78	31	5
80.0	60.0	34	09.0	121	09.0	JD	95	07	19	0006	99	44	16
80.0	70.0	33	49.0	121	50.6	JD	95	07	19	0908	92	1	4
80.0	80.0	33	29.0	122	31.9	JD	95	07	19	1602	89	4	94
80.0	90.0	33	09.0	123	13.3	JD	95	07	19	2154	84	2	6094
80.0	100.0	32	49.1	123	54.3	JD	95	07	20	0345	88	10	27
81.8	46.9	34	16.4	120	01.5	JD	95	07	18	0900	77	0	45
83.3	40.6	34	13.5	119	24.8	JD	95	07	18	0330	88	20	1723
83.3	42.0	34	10.7	119	30.5	JD	95	07	18	0142	91	31	897
83.3	51.0	33	52.7	120	08.0	JD	95	07	17	1947	73	1	593

TABLE 1. (cont.) CalCOFI Cruise 9507 (cont.)

Line	Station	Latitude (N) deg.	min.	Longitude (W) deg.	min.	Ship Code	Tow Date yr.	mo.	day	Time (PST)	Volume Water Strained	Total Larvae	Total Eggs
83.3	55.0	33	44.7	120	24.7	JD	95	07	17	1614	70	2	0
83.3	60.0	33	34.7	120	45.3	JD	95	07	17	0927	89	146	69
83.3	70.0	33	14.6	121	26.8	JD	95	07	17	0442	90	3	36
83.3	80.0	32	54.6	122	07.7	JD	95	07	16	2302	86	6	1611
83.3	90.0	32	34.5	122	48.6	JD	95	07	16	1704	93	0	54
83.3	100.0	32	14.7	123	29.4	JD	95	07	16	0832	88	3	550
83.3	110.0	31	54.5	124	10.1	JD	95	07	16	0223	92	19	3936
86.7	33.0	33	53.3	118	29.4	JD	95	07	13	1117	80	3	1638
86.7	35.0	33	49.5	118	37.5	JD	95	07	13	1432	77	0	39
86.7	40.0	33	39.4	118	58.5	JD	95	07	13	1920	79	23	57
86.7	45.0	33	29.5	119	18.7	JD	95	07	13	2314	86	12	31
86.7	50.0	33	19.4	119	39.8	JD	95	07	14	0243	87	5	84
86.7	55.0	33	09.4	120	00.5	JD	95	07	14	0623	71	0	9
86.7	60.0	32	59.4	120	21.0	JD	95	07	14	1101	73	2	12
86.7	70.0	32	39.4	121	02.0	JD	95	07	14	1739	81	2	4
86.7	80.0	32	19.4	121	42.8	JD	95	07	14	2332	73	9	163
86.7	90.0	31	59.4	122	23.6	JD	95	07	15	0531	80	24	202
86.7	100.0	31	39.4	123	04.3	JD	95	07	15	1230	78	1	387
86.7	110.0	31	19.4	123	44.5	JD	95	07	15	2000	76	40	2315
90.0	28.0	33	28.9	117	45.9	JD	95	07	13	0408	92	361	532
90.0	30.0	33	25.1	117	54.2	JD	95	07	13	0155	81	87	443
90.0	35.0	33	15.0	118	14.9	JD	95	07	12	2147	78	4	144
90.0	37.0	33	11.1	118	23.2	JD	95	07	12	1911	76	1	461
90.0	45.0	32	55.1	118	56.1	JD	95	07	12	1313	80	0	4
90.0	53.0	32	39.1	119	28.9	JD	95	07	12	0616	70	0	16
90.0	60.0	32	25.1	119	57.6	JD	95	07	12	0050	78	11	2
90.0	70.0	32	05.1	120	38.3	JD	95	07	11	0858	75	3	24
90.0	80.0	31	45.1	121	18.8	JD	95	07	11	0326	81	3	41
90.0	90.0	31	25.0	121	59.4	JD	95	07	10	1932	72	11	55
90.0	100.0	31	05.1	122	39.7	JD	95	07	10	1216	64	3	535
90.0	110.0	30	45.1	123	19.9	JD	95	07	10	0513	70	5	202
90.0	120.0	30	25.0	123	59.9	JD	95	07	09	2254	76	4	661
93.3	26.7	32	57.4	117	18.3	JD	95	07	06	1215	87	22	1459
93.3	28.0	32	54.7	117	23.6	JD	95	07	06	1618	79	13	360
93.3	30.0	32	50.7	117	32.0	JD	95	07	06	1930	89	17	852
93.3	35.0	32	40.7	117	52.4	JD	95	07	06	2333	90	9	31
93.3	40.0	32	30.9	118	12.8	JD	95	07	07	0334	72	9	89
93.3	45.0	32	20.8	118	33.3	JD	95	07	07	0742	90	3	7
93.3	50.0	32	10.8	118	53.5	JD	95	07	07	1232	81	7	22
93.3	55.0	32	00.8	119	13.9	JD	95	07	07	1732	82	4	65
93.3	60.0	31	50.8	119	34.2	JD	95	07	07	2157	91	14	1032
93.3	70.0	31	30.7	120	14.7	JD	95	07	08	0406	93	57	65
93.3	80.0	31	10.8	120	55.2	JD	95	07	08	0906	84	0	379
93.3	90.0	30	50.7	121	35.4	JD	95	07	08	1830	77	0	354
93.3	100.0	30	30.8	122	15.4	JD	95	07	09	0020	76	14	545
93.3	110.0	30	10.8	122	55.4	JD	95	07	09	0803	80	1	626
93.3	120.0	29	50.8	123	35.1	JD	95	07	09	1652	72	0	330

TABLE 1. (cont.) CalCOFI Cruise 9510

Line	Station	Latitude (N) deg.	min.	Longitude (W) deg.	min.	Ship Code	Tow Date yr.	mo.	day	Time (PST)	Volume Water Strained	Total Larvae	Total Eggs
76.7	49.0	35	05.4	120	46.5	NH	95	10	27	0644	79	23	155
76.7	51.0	35	01.3	120	55.2	NH	95	10	27	0417	95	10	11
76.7	55.0	34	53.3	121	12.0	NH	95	10	27	0107	75	4	0
76.7	60.0	34	43.3	121	32.9	NH	95	10	26	1903	75	1	3
76.7	70.0	34	23.3	122	14.8	NH	95	10	26	1051	71	2	1
76.7	80.0	34	03.2	122	56.6	NH	95	10	26	0316	74	1	1
76.7	90.0	33	43.3	123	38.0	NH	95	10	25	2152	78	1	1
76.7	100.0	33	23.3	124	19.4	NH	95	10	25	1624	78	3	6
80.0	51.0	34	27.0	120	31.6	NH	95	10	24	0156	73	16	847
80.0	55.0	34	18.9	120	48.3	NH	95	10	24	0507	81	24	0
80.0	60.0	34	09.0	121	09.1	NH	95	10	24	0809	81	2	1
80.0	70.0	33	49.0	121	50.5	NH	95	10	24	1550	81	0	5
80.0	80.0	33	28.9	122	31.9	NH	95	10	24	2121	80	5	3
80.0	90.0	33	09.1	123	13.2	NH	95	10	25	0257	79	9	4
80.0	100.0	32	49.0	123	54.4	NH	95	10	25	0903	82	1	2
81.8	46.9	34	16.5	120	01.5	NH	95	10	23	2206	86	6	113
83.3	40.6	34	13.5	119	24.7	NH	95	10	23	1730	93	120	4501
83.3	42.0	34	10.6	119	30.5	NH	95	10	23	1521	94	501	3704
83.3	51.0	33	52.7	120	08.0	NH	95	10	23	0814	79	3	252
83.3	55.0	33	44.6	120	24.5	NH	95	10	23	0117	59	3	2
83.3	60.0	33	34.7	120	45.4	NH	95	10	22	1838	86	1	7
83.3	70.0	33	14.7	121	26.7	NH	95	10	22	1158	70	1	5
83.3	80.0	32	54.6	122	07.6	NH	95	10	22	0513	83	10	8
83.3	90.0	32	34.7	122	48.8	NH	95	10	21	2236	77	24	7
83.3	100.0	32	14.6	123	29.6	NH	95	10	21	1622	86	7	7
83.3	110.0	31	54.7	124	10.2	NH	95	10	21	0834	69	1	11
86.7	33.0	33	53.3	118	29.5	NH	95	10	18	1910	94	18	66
86.7	35.0	33	49.4	118	37.6	NH	95	10	18	2124	92	5	2
86.7	40.0	33	39.4	118	58.4	NH	95	10	19	0109	95	3	210
86.7	45.0	33	29.4	119	19.0	NH	95	10	19	0458	93	0	26
86.7	50.0	33	19.3	119	39.9	NH	95	10	19	0922	92	0	37
86.7	55.0	33	09.5	120	00.4	NH	95	10	19	1644	92	1	69
86.7	60.0	32	59.4	120	21.0	NH	95	10	19	2256	86	3	7
86.7	70.0	32	39.5	121	02.0	NH	95	10	20	0429	83	6	22
86.7	80.0	32	19.3	121	42.8	NH	95	10	20	0850	91	2	26
86.7	90.0	31	59.4	122	23.5	NH	95	10	20	1637	86	12	238
86.7	100.0	31	39.4	123	04.2	NH	95	10	20	2144	84	19	45
86.7	110.0	31	19.5	123	44.5	NH	95	10	21	0302	78	8	28
90.0	28.0	33	29.1	117	46.1	NH	95	10	18	1226	88	17	207
90.0	30.0	33	25.1	117	54.4	NH	95	10	18	0845	88	21	4
90.0	35.0	33	15.1	118	15.0	NH	95	10	18	0505	88	22	340
90.0	37.0	33	11.1	118	23.2	NH	95	10	18	0215	88	6	2
90.0	45.0	32	55.1	118	56.1	NH	95	10	17	2121	82	2	3
90.0	53.0	32	39.1	119	29.0	NH	95	10	17	1635	88	1	2
90.0	60.0	32	25.1	119	57.6	NH	95	10	17	1131	70	0	8
90.0	70.0	32	05.1	120	38.4	NH	95	10	16	2238	88	3	2
90.0	80.0	31	45.1	121	19.0	NH	95	10	16	1645	129	1	2
90.0	90.0	31	25.1	121	59.3	NH	95	10	16	0844	95	0	12
90.0	100.0	31	05.1	122	39.8	NH	95	10	16	0332	81	4	76

TABLE 1. (cont.) CalCOFI Cruise 9510 (cont.)

Line	Station	Latitude (N) deg.	min.	Longitude (W) deg.	min.	Ship Code	Tow Date yr.	mo.	day	Time (PST)	Volume Water Strained	Total Larvae	Total Eggs
90.0	110.0	30	45.1	123	19.9	NH	95	10	15	2203	64	2	44
90.0	120.0	30	25.1	123	59.9	NH	95	10	15	1630	86	2	3
93.3	26.7	32	57.3	117	18.3	NH	95	10	12	1112	89	6	8
93.3	28.0	32	54.8	117	23.6	NH	95	10	12	1511	78	3	1
93.3	30.0	32	50.7	117	31.8	NH	95	10	12	1817	91	0	0
93.3	35.0	32	40.8	117	52.4	NH	95	10	12	2155	77	5	40
93.3	40.0	32	30.8	118	12.8	NH	95	10	13	0154	84	0	2
93.3	45.0	32	20.7	118	33.1	NH	95	10	13	0634	95	3	6
93.3	50.0	32	10.9	118	53.4	NH	95	10	13	1112	85	0	10
93.3	55.0	32	00.8	119	13.9	NH	95	10	13	1530	98	1	45
93.3	60.0	31	50.7	119	34.1	NH	95	10	13	1923	93	6	3
93.3	70.0	31	30.8	120	14.7	NH	95	10	14	0106	95	1	14
93.3	80.0	31	10.8	120	55.1	NH	95	10	14	0834	89	2	54
93.3	90.0	30	50.8	121	35.3	NH	95	10	14	1617	96	0	399
93.3	100.0	30	30.8	122	15.5	NH	95	10	14	2145	89	3	507
93.3	110.0	30	10.8	122	55.3	NH	95	10	15	0314	83	5	46
93.3	120.0	29	50.8	123	35.1	NH	95	10	15	0821	93	0	6

TABLE 2. Pooled occurrences of fish larvae taken in Manta tows on the 1995 CalCOFI survey.

Rank	Taxon	Occurrences
1	*Cololabis saira*	77
2	*Engraulis mordax*	61
3	*Sebastes* spp.	37
4	*Sardinops sagax*	27
5	*Hypsoblennius jenkinsi*	21
6	*Trachurus symmetricus*	18
6	*Atherinopsis californiensis*	18
8	*Scorpaenichthys marmoratus*	17
8	*Scomber japonicus*	17
10	*Vinciguerria lucetia*	15
11	*Sebastes diploproa*	13
12	*Triphoturus mexicanus*	11
12	*Oxyjulis californica*	11
14	*Chromis punctipinnis*	9
14	*Hypsoblennius* spp.	9
16	*Ceratoscopelus townsendi*	8
17	*Pleuronichthys coenosus*	7
17	*Sebastes jordani*	7
17	*Merluccius productus*	7
20	*Hypsoblennius gilberti*	6
20	*Medialuna californiensis*	6
20	*Cyclothone signata*	6
20	*Hypsoblennius gentilis*	6
24	*Citharichthys stigmaeus*	5
25	*Icichthys lockingtoni*	4
25	*Stenobrachius leucopsarus*	4
25	*Hexagrammos decagrammus*	4
25	*Leuresthes tenuis*	4
25	*Tetragonurus cuvieri*	4
30	*Macroramphosus gracilis*	3
30	*Lampadena urophaos*	3
30	*Citharichthys sordidus*	3
30	*Oxylebius pictus*	3
34	*Sebastes aurora*	2
34	*Cheilopogon pinnatibarbatus*	2
34	*Genyonemus lineatus*	2
34	*Desmodema lorum*	2
34	*Girella nigricans*	2
34	*Pleuronichthys verticalis*	2
34	*Ophiodon elongatus*	2
34	*Diogenichthys atlanticus*	2
34	*Atractoscion nobilis*	2
34	*Sphyraena argentea*	2
34	Unidentified fish larvae	2
34	*Neoclinus blanchardi*	2
46	*Dolichopteryx longipes*	1
46	*Cyclothone acclinidens*	1
46	*Diplophos taenia*	1
46	*Vinciguerria poweriae*	1

TABLE 2. (cont.)

Rank	Taxon	Occurrences
46	*Synodus lucioceps*	1
46	*Bathophilus flemingi*	1
46	*Bathypterois* spp.	1
46	*Diaphus* spp.	1
46	*Nannobrachium regale*	1
46	*Lampanyctus* spp.	1
46	*Nannobrachium ritteri*	1
46	*Paralabrax* spp.	1
46	*Parophrys vetulus*	1
46	*Paralichthys californicus*	1
46	*Peprilus simillimus*	1
46	*Typhlogobius californiensis*	1
46	*Lepidogobius lepidus*	1
46	*Neoclinus stephensae*	1
46	*Rathbunella* spp.	1
46	*Hypsypops rubicundus*	1
46	*Sebastolobus altivelis*	1
46	*Brama japonica*	1
46	*Protomyctophum crockeri*	1
46	*Liparis florae*	1
46	Cottidae	1
46	*Anoplopoma fimbria*	1
46	*Sebastes paucispinis*	1
46	*Cheilopogon heterurus*	1
46	*Gigantactis* spp.	1
46	*Chilara taylori*	1
46	*Symbolophorus californiensis*	1
46	*Umbrina roncador*	1
	Total	507

TABLE 3. Pooled raw counts of fish larvae taken in Manta tows on the 1995 CalCOFI survey.

Rank	Taxon	Count
1	*Engraulis mordax*	1437
2	*Cololabis saira*	488
3	*Leuresthes tenuis*	319
4	*Sardinops sagax*	308
5	*Sebastes* spp.	224
6	*Scomber japonicus*	189
7	*Hypsoblennius jenkinsi*	148
8	*Hypsoblennius* spp.	91
9	*Trachurus symmetricus*	80
10	*Atherinopsis californiensis*	78
11	*Scorpaenichthys marmoratus*	70
12	*Vinciguerria lucetia*	65
13	*Chromis punctipinnis*	47
14	*Oxyjulis californica*	38
15	*Merluccius productus*	37
16	*Triphoturus mexicanus*	36
17	*Sebastes jordani*	26
18	*Ceratoscopelus townsendi*	23
19	*Sebastes diploproa*	21
20	*Hypsoblennius gentilis*	16
20	*Hypsoblennius gilberti*	16
22	*Pleuronichthys coenosus*	8
23	*Citharichthys stigmaeus*	7
23	*Stenobrachius leucopsarus*	7
25	*Medialuna californiensis*	6
25	*Cyclothone signata*	6
25	*Paralichthys californicus*	6
28	*Macroramphosus gracilis*	5
28	*Tetragonurus cuvieri*	5
30	*Sphyraena argentea*	4
30	*Icichthys lockingtoni*	4
30	*Hexagrammos decagrammus*	4
30	*Rathbunella* spp.	4
30	*Neoclinus blanchardi*	4
30	*Sebastes paucispinis*	4
36	*Oxylebius pictus*	3
36	*Pleuronichthys verticalis*	3
36	*Citharichthys sordidus*	3
36	*Lampadena urophaos*	3
36	*Ophiodon elongatus*	3
36	*Vinciguerria poweriae*	3
36	*Synodus lucioceps*	3
36	*Atractoscion nobilis*	3
36	*Cheilopogon heterurus*	3
36	*Girella nigricans*	3
36	*Cheilopogon pinnatibarbatus*	3
47	*Diplophos taenia*	2
47	*Diogenichthys atlanticus*	2
47	*Brama japonica*	2

TABLE 3. (cont.)

Rank	Taxon	Count
47	Cottidae	2
47	*Desmodema lorum*	2
47	*Genyonemus lineatus*	2
47	Unidentified fish larvae	2
47	*Sebastes aurora*	2
47	*Parophrys vetulus*	2
56	*Typhlogobius californiensis*	1
56	*Neoclinus stephensae*	1
56	*Cyclothone acclinidens*	1
56	*Anoplopoma fimbria*	1
56	*Liparis florae*	1
56	*Dolichopteryx longipes*	1
56	*Bathophilus flemingi*	1
56	*Chilara taylori*	1
56	*Lepidogobius lepidus*	1
56	*Sebastolobus altivelis*	1
56	*Umbrina roncador*	1
56	*Gigantactis* spp.	1
56	*Bathypterois* spp.	1
56	*Diaphus* spp.	1
56	*Nannobrachium regale*	1
56	*Nannobrachium ritteri*	1
56	*Lampanyctus* spp.	1
56	*Protomyctophum crockeri*	1
56	*Peprilus simillimus*	1
56	*Symbolophorus californiensis*	1
56	*Paralabrax* spp.	1
56	*Hypsypops rubicundus*	1
	Total	3904

TABLE 4. Numbers of fish larvae taken in Manta net tows on the 1995 CalCOFI survey, listed by taxon, station, and month. Numbers of larvae are expressed as larvae per 100 cubic meters of water filtered. Unoccupied stations are indicated by a dash.

Sardinops sagax

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 70.0	0.0	-	-	0.0	-	-	3.7	-	-	0.0	-	-
76.7 80.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-
76.7 90.0	0.0	-	-	1.5	-	-	0.0	-	-	0.0	-	-
80.0 55.0	0.0	-	-	6.3	-	-	0.0	-	-	0.0	-	-
80.0 60.0	0.0	-	-	107.1	-	-	27.6	-	-	0.0	-	-
83.3 55.0	0.0	-	-	5.6	-	-	0.0	-	-	0.0	-	-
83.3 60.0	0.0	-	-	3.3	-	-	0.0	-	-	0.0	-	-
86.7 35.0	0.0	-	-	0.7	-	-	0.0	-	-	0.0	-	-
86.7 40.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-
86.7 45.0	0.0	-	-	0.9	-	-	0.0	-	-	0.0	-	-
86.7 60.0	0.0	-	-	1.6	-	-	0.0	-	-	0.0	-	-
90.0 28.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-
90.0 30.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-
90.0 35.0	0.0	-	-	6.8	-	-	1.6	-	-	0.0	-	-
90.0 37.0	0.0	-	-	0.8	-	-	0.0	-	-	1.8	-	-
90.0 60.0	0.0	-	-	0.0	-	-	2.3	-	-	0.0	-	-
90.0 70.0	0.0	-	-	28.7	-	-	0.0	-	-	0.0	-	-
90.0 80.0	0.0	-	-	29.4	-	-	0.0	-	-	0.0	-	-
93.3 40.0	0.0	-	-	11.5	-	-	0.7	-	-	0.0	-	-
93.3 45.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-
93.3 60.0	0.0	-	-	0.0	-	-	2.7	-	-	0.0	-	-
93.3 70.0	0.0	-	-	0.0	-	-	9.3	-	-	0.0	-	-
93.3 100.0	0.0	-	-	2.5	-	-	0.0	-	-	0.0	-	-

Engraulis mordax

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 49.0	0.0	-	-	1.5	-	-	2.5	-	-	15.8	-	-
76.7 51.0	0.0	-	-	0.6	-	-	1.5	-	-	9.5	-	-
76.7 55.0	-	-	-	0.8	-	-	0.0	-	-	3.0	-	-
76.7 60.0	0.0	-	-	9.0	-	-	0.0	-	-	0.7	-	-
76.7 70.0	0.0	-	-	5.0	-	-	0.0	-	-	0.0	-	-

TABLE 4. (cont.)

Engraulis mordax (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	51.0	9.5	-	-	3.3	-	-	0.0	-	-	8.1	-	-
80.0	55.0	0.0	-	-	0.0	-	-	1.6	-	-	10.5	-	-
81.8	46.9	0.8	-	-	0.0	-	-	0.0	-	-	4.3	-	-
83.3	40.6	0.0	-	-	0.0	-	-	6.2	-	-	70.8	-	-
83.3	42.0	0.0	-	-	0.0	-	-	3.6	-	-	466.8	-	-
83.3	51.0	0.0	-	-	8.6	-	-	0.7	-	-	0.0	-	-
83.3	55.0	0.9	-	-	20.1	-	-	0.0	-	-	0.0	-	-
86.7	33.0	5.9	-	-	0.0	-	-	0.0	-	-	3.8	-	-
86.7	35.0	0.0	-	-	4.1	-	-	0.0	-	-	4.6	-	-
86.7	40.0	0.0	-	-	95.2	-	-	0.8	-	-	0.0	-	-
86.7	45.0	0.0	-	-	0.9	-	-	0.0	-	-	0.0	-	-
86.7	50.0	0.6	-	-	2.0	-	-	0.0	-	-	0.0	-	-
86.7	55.0	1.6	-	-	0.0	-	-	0.0	-	-	0.0	-	-
86.7	60.0	0.9	-	-	0.0	-	-	0.0	-	-	1.7	-	-
86.7	70.0	0.0	-	-	0.0	-	-	0.0	-	-	3.3	-	-
90.0	28.0	9.8	-	-	0.8	-	-	0.9	-	-	0.0	-	-
90.0	30.0	0.0	-	-	1.0	-	-	0.0	-	-	0.0	-	-
90.0	35.0	0.0	-	-	35.1	-	-	0.0	-	-	0.0	-	-
90.0	37.0	0.8	-	-	6.5	-	-	0.0	-	-	0.0	-	-
90.0	45.0	1.0	-	-	0.0	-	-	0.0	-	-	0.8	-	-
90.0	53.0	0.8	-	-	0.0	-	-	0.0	-	-	0.0	-	-
90.0	70.0	0.0	-	-	0.0	-	-	0.0	-	-	2.6	-	-
90.0	80.0	0.0	-	-	1.7	-	-	0.0	-	-	0.0	-	-
93.3	26.7	40.6	-	-	45.9	-	-	0.9	-	-	0.0	-	-
93.3	28.0	0.0	-	-	12.7	-	-	0.8	-	-	0.0	-	-
93.3	30.0	2.8	-	-	268.6	-	-	3.6	-	-	0.0	-	-
93.3	35.0	0.0	-	-	15.5	-	-	0.0	-	-	0.0	-	-
93.3	90.0	0.9	-	-	0.0	-	-	0.0	-	-	0.0	-	-

Dolichopteryx longipes

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	80.0	0.0	-	-	-	-	-	0.9	-	-	0.0	-	-

Cyclothone acclinidens

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7	110.0	0.0	-	-	-	-	-	0.0	-	-	0.8	-	-

TABLE 4. (cont.)

Cyclothone signata

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 100.0	0.9	-	-	-	-	-	0.0	-	-	0.0	-	-
80.0 60.0	0.9	-	-	0.0	-	-	0.0	-	-	0.0	-	-
80.0 90.0	0.0	-	-	-	-	-	0.0	-	-	0.8	-	-
83.3 80.0	0.7	-	-	-	-	-	0.0	-	-	0.8	-	-
90.0 120.0	0.0	-	-	-	-	-	0.8	-	-	0.0	-	-

Diplophos taenia

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 60.0	0.0	-	-	0.0	-	-	2.0	-	-	0.0	-	-

Vinciguerria lucetia

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 70.0	0.8	-	-	-	-	-	0.0	-	-	0.0	-	-
80.0 80.0	0.0	-	-	-	-	-	0.9	-	-	0.0	-	-
80.0 90.0	0.0	-	-	-	-	-	0.0	-	-	2.4	-	-
83.3 70.0	0.0	-	-	-	-	-	0.0	-	-	0.7	-	-
83.3 80.0	0.0	-	-	-	-	-	0.0	-	-	4.1	-	-
83.3 90.0	0.0	-	-	-	-	-	0.0	-	-	14.6	-	-
83.3 100.0	0.0	-	-	0.0	-	-	0.0	-	-	5.2	-	-
86.7 90.0	0.0	-	-	-	-	-	13.5	-	-	0.0	-	-
86.7 110.0	0.0	-	-	-	-	-	0.0	-	-	1.6	-	-
90.0 80.0	0.0	-	-	0.0	-	-	0.0	-	-	1.3	-	-
90.0 90.0	0.0	-	-	0.0	-	-	0.7	-	-	0.0	-	-
90.0 110.0	0.0	-	-	-	-	-	0.7	-	-	0.0	-	-
93.3 28.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-
93.3 40.0	0.0	-	-	0.0	-	-	1.4	-	-	0.0	-	-
93.3 110.0	0.0	-	-	-	-	-	0.0	-	-	3.3	-	-

Vinciguerria poweriae

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 90.0	0.0	-	-	-	-	-	0.0	-	-	2.4	-	-

Bathophilus flemingi

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 120.0	0.0	-	-	-	-	-	0.0	-	-	0.9	-	-

TABLE 4. (cont.)

***Bathypterois* spp.**

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 100.0	0.0	-	-	-	-	-	0.0	-	-	0.8	-	-

Synodus lucioceps

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 26.7	2.1	-	-	0.0	-	-	0.0	-	-	0.0	-	-

Ceratoscopelus townsendi

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 90.0	0.0	-	-	0.0	-	-	0.0	-	-	0.8	-	-
80.0 90.0	0.0	-	-	-	-	-	0.0	-	-	0.8	-	-
83.3 100.0	0.0	-	-	1.6	-	-	0.0	-	-	0.0	-	-
83.3 110.0	0.0	-	-	0.0	-	-	0.0	-	-	0.7	-	-
86.7 90.0	0.0	-	-	-	-	-	4.0	-	-	0.0	-	-
86.7 110.0	0.0	-	-	-	-	-	0.0	-	-	0.8	-	-
90.0 90.0	0.0	-	-	0.0	-	-	6.4	-	-	0.0	-	-
90.0 110.0	0.0	-	-	-	-	-	2.1	-	-	0.0	-	-

***Diaphus* spp.**

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 120.0	0.0	-	-	-	-	-	0.8	-	-	0.0	-	-

Lampadena urophaos

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 110.0	0.0	-	-	-	-	-	0.7	-	-	0.0	-	-
93.3 35.0	0.0	-	-	0.0	-	-	0.0	-	-	0.8	-	-
93.3 110.0	0.0	-	-	-	-	-	0.8	-	-	0.0	-	-

***Lampanyctus* spp.**

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 70.0	0.8	-	-	-	-	-	0.0	-	-	0.0	-	-

Nannobrachium regale

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 60.0	0.0	-	-	0.0	-	-	1.0	-	-	0.0	-	-

Nannobrachium ritteri

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 90.0	0.0	-	-	0.9	-	-	0.0	-	-	0.0	-	-

TABLE 4. (cont.)

Stenobrachius leucopsarus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 51.0	3.6	-	-	0.0	-	-	0.0	-	-	0.0	-	-
76.7 70.0	0.0	-	-	0.7	-	-	0.0	-	-	0.0	-	-
80.0 80.0	0.0	-	-	-	-	-	0.9	-	-	0.0	-	-
83.3 51.0	0.0	-	-	0.7	-	-	0.0	-	-	0.0	-	-

Triphoturus mexicanus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 42.0	0.0	-	-	0.0	-	-	0.0	-	-	1.9	-	-
83.3 55.0	0.0	-	-	0.0	-	-	0.7	-	-	0.0	-	-
83.3 100.0	0.0	-	-	1.6	-	-	0.0	-	-	0.0	-	-
86.7 33.0	0.0	-	-	0.9	-	-	0.0	-	-	0.0	-	-
86.7 70.0	0.0	-	-	0.0	-	-	1.6	-	-	0.0	-	-
86.7 90.0	0.0	-	-	-	-	-	1.6	-	-	0.0	-	-
90.0 30.0	0.0	-	-	0.0	-	-	0.0	-	-	17.5	-	-
90.0 53.0	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-
90.0 80.0	0.0	-	-	0.9	-	-	0.0	-	-	0.0	-	-
93.3 45.0	0.0	-	-	0.0	-	-	0.0	-	-	2.8	-	-
93.3 60.0	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-

Diogenichthys atlanticus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 55.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-
83.3 100.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-

Protomyctophum crockeri

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 80.0	0.0	-	-	0.9	-	-	0.0	-	-	0.0	-	-

Symbolophorus californiensis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 100.0	0.9	-	-	-	-	-	0.0	-	-	0.0	-	-

Desmodema lorum

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 120.0	0.0	-	-	-	-	-	0.0	-	-	0.9	-	-
93.3 80.0	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-

TABLE 4. (cont.)

Merluccius productus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 51.0	1.8	-	-	0.0	-	-	0.0	-	-	0.0	-	-
80.0 51.0	0.0	-	-	0.0	-	-	0.0	-	-	0.7	-	-
80.0 70.0	23.5	-	-	-	-	-	0.0	-	-	0.0	-	-
83.3 51.0	0.0	-	-	1.4	-	-	0.0	-	-	0.0	-	-
90.0 35.0	0.0	-	-	0.9	-	-	0.0	-	-	0.0	-	-
90.0 70.0	0.8	-	-	0.0	-	-	0.0	-	-	0.0	-	-
93.3 45.0	0.0	-	-	1.7	-	-	0.0	-	-	0.0	-	-

Chilara taylori

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 49.0	0.0	-	-	0.0	-	-	0.0	-	-	0.8	-	-

***Gigantactis* spp.**

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 100.0	0.9	-	-	0.0	-	-	0.0	-	-	0.0	-	-

Atherinopsis californiensis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 51.0	0.9	-	-	0.0	-	-	0.0	-	-	0.0	-	-
80.0 51.0	0.0	-	-	0.0	-	-	17.8	-	-	0.0	-	-
80.0 55.0	0.0	-	-	0.9	-	-	11.7	-	-	0.0	-	-
81.8 46.9	0.8	-	-	0.0	-	-	0.0	-	-	0.0	-	-
83.3 40.6	0.0	-	-	2.5	-	-	0.0	-	-	0.0	-	-
83.3 42.0	0.0	-	-	1.6	-	-	0.0	-	-	0.0	-	-
86.7 33.0	4.2	-	-	0.9	-	-	0.0	-	-	0.0	-	-
86.7 35.0	2.3	-	-	0.7	-	-	0.0	-	-	0.0	-	-
86.7 45.0	0.0	-	-	1.7	-	-	0.0	-	-	0.0	-	-
90.0 28.0	2.9	-	-	4.0	-	-	0.0	-	-	0.0	-	-
90.0 37.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-
93.3 26.7	3.6	-	-	4.1	-	-	0.0	-	-	0.0	-	-
93.3 28.0	0.0	-	-	3.6	-	-	0.0	-	-	0.0	-	-

Leuresthes tenuis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 40.6	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-
83.3 42.0	0.0	-	-	0.0	-	-	7.3	-	-	0.0	-	-

TABLE 4. (cont.)

Leuresthes tenuis (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7 33.0	0.0	-	-	0.0	-	-	1.6	-	-	0.0	-	-
90.0 28.0	0.0	-	-	0.0	-	-	284.6	-	-	0.0	-	-

Cololabis saira

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 60.0	0.8	-	-	0.0	-	-	0.0	-	-	0.0	-	-
76.7 70.0	0.0	-	-	0.7	-	-	3.7	-	-	0.0	-	-
76.7 100.0	5.5	-	-	-	-	-	0.9	-	-	0.8	-	-
80.0 55.0	3.6	-	-	0.0	-	-	0.0	-	-	0.0	-	-
80.0 60.0	0.0	-	-	0.0	-	-	3.0	-	-	0.0	-	-
80.0 70.0	9.2	-	-	-	-	-	0.9	-	-	0.0	-	-
80.0 80.0	7.7	-	-	-	-	-	0.9	-	-	4.0	-	-
80.0 90.0	10.6	-	-	-	-	-	0.0	-	-	0.8	-	-
80.0 100.0	5.5	-	-	-	-	-	8.8	-	-	0.0	-	-
83.3 40.6	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-
83.3 42.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-
83.3 55.0	0.9	-	-	0.0	-	-	0.0	-	-	1.2	-	-
83.3 60.0	0.0	-	-	0.0	-	-	0.9	-	-	0.9	-	-
83.3 70.0	30.8	-	-	-	-	-	1.8	-	-	0.0	-	-
83.3 80.0	0.0	-	-	-	-	-	5.2	-	-	3.3	-	-
83.3 90.0	0.0	-	-	-	-	-	0.0	-	-	3.8	-	-
83.3 100.0	0.9	-	-	0.0	-	-	2.6	-	-	0.0	-	-
83.3 110.0	0.7	-	-	1.6	-	-	17.5	-	-	0.0	-	-
86.7 45.0	0.0	-	-	0.0	-	-	8.6	-	-	0.0	-	-
86.7 50.0	0.6	-	-	0.0	-	-	1.7	-	-	0.0	-	-
86.7 55.0	10.3	-	-	0.0	-	-	0.0	-	-	0.0	-	-
86.7 60.0	2.7	-	-	0.0	-	-	0.0	-	-	0.9	-	-
86.7 70.0	0.0	-	-	0.0	-	-	0.0	-	-	1.7	-	-
86.7 80.0	1.5	-	-	0.0	-	-	6.6	-	-	0.9	-	-
86.7 90.0	37.9	-	-	-	-	-	0.0	-	-	10.3	-	-
86.7 100.0	0.0	-	-	-	-	-	0.8	-	-	16.0	-	-
86.7 110.0	0.0	-	-	-	-	-	30.4	-	-	3.1	-	-
90.0 45.0	0.0	-	-	0.0	-	-	0.0	-	-	0.8	-	-
90.0 60.0	0.0	-	-	0.0	-	-	1.6	-	-	0.0	-	-
90.0 70.0	0.0	-	-	0.0	-	-	2.3	-	-	0.0	-	-

TABLE 4. (cont.)

Cololabis saira (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 80.0	1.9	-	-	0.0	-	-	2.4	-	-	0.0	-	-
90.0 90.0	1.5	-	-	0.0	-	-	0.0	-	-	0.0	-	-
90.0 100.0	0.8	-	-	-	-	-	1.9	-	-	3.2	-	-
90.0 110.0	0.0	-	-	-	-	-	0.0	-	-	1.3	-	-
90.0 120.0	12.1	-	-	-	-	-	1.5	-	-	0.0	-	-
93.3 35.0	0.0	-	-	0.0	-	-	5.4	-	-	0.0	-	-
93.3 40.0	0.9	-	-	0.0	-	-	0.7	-	-	0.0	-	-
93.3 60.0	0.0	-	-	1.9	-	-	4.5	-	-	0.0	-	-
93.3 70.0	0.0	-	-	0.0	-	-	17.6	-	-	1.0	-	-
93.3 80.0	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-
93.3 90.0	48.7	-	-	0.0	-	-	0.0	-	-	0.0	-	-
93.3 100.0	3.5	-	-	9.0	-	-	10.6	-	-	1.8	-	-
93.3 110.0	1.7	-	-	-	-	-	0.0	-	-	0.8	-	-
93.3 120.0	2.8	-	-	0.0	-	-	0.0	-	-	0.0	-	-

Cheilopogon heterurus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 28.0	0.0	-	-	0.0	-	-	0.0	-	-	2.3	-	-

Cheilopogon pinnatibarbatus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 35.0	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-
93.3 26.7	0.0	-	-	0.0	-	-	0.0	-	-	1.8	-	-

Macroramphosus gracilis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 45.0	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-
93.3 50.0	0.0	-	-	0.0	-	-	2.4	-	-	0.0	-	-
93.3 55.0	0.0	-	-	0.0	-	-	0.0	-	-	1.0	-	-

***Sebastes* spp.**

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 49.0	0.7	-	-	0.0	-	-	0.0	-	-	0.0	-	-
76.7 51.0	35.6	-	-	0.0	-	-	0.0	-	-	0.0	-	-
76.7 55.0	-	-	-	0.8	-	-	0.0	-	-	0.0	-	-
76.7 60.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-
76.7 70.0	0.0	-	-	2.1	-	-	0.0	-	-	0.0	-	-

TABLE 4. (cont.)

Sebastes spp. (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	51.0	5.7	-	-	0.8	-	-	0.0	-	-	0.0	-	-
80.0	55.0	0.9	-	-	0.0	-	-	0.0	-	-	0.0	-	-
81.8	46.9	2.5	-	-	4.8	-	-	0.0	-	-	0.0	-	-
83.3	40.6	8.7	-	-	0.0	-	-	0.0	-	-	0.0	-	-
83.3	42.0	2.7	-	-	0.0	-	-	0.0	-	-	0.0	-	-
83.3	51.0	13.4	-	-	5.0	-	-	0.0	-	-	0.8	-	-
83.3	55.0	5.3	-	-	0.8	-	-	0.0	-	-	0.0	-	-
83.3	70.0	1.8	-	-	-	-	-	0.0	-	-	0.0	-	-
86.7	33.0	0.0	-	-	0.9	-	-	0.0	-	-	1.9	-	-
86.7	50.0	17.3	-	-	8.6	-	-	0.9	-	-	0.0	-	-
86.7	70.0	0.0	-	-	1.4	-	-	0.0	-	-	0.0	-	-
86.7	80.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-
90.0	28.0	0.0	-	-	0.0	-	-	0.0	-	-	3.5	-	-
90.0	30.0	0.0	-	-	1.0	-	-	0.0	-	-	0.0	-	-
90.0	37.0	0.8	-	-	0.0	-	-	0.0	-	-	0.0	-	-
90.0	45.0	1.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
90.0	60.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-
93.3	26.7	29.9	-	-	0.8	-	-	0.0	-	-	0.0	-	-
93.3	28.0	0.8	-	-	0.0	-	-	0.0	-	-	0.0	-	-
93.3	30.0	0.0	-	-	7.4	-	-	0.0	-	-	0.0	-	-
93.3	40.0	0.9	-	-	0.0	-	-	0.0	-	-	0.0	-	-
93.3	50.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-
93.3	60.0	0.0	-	-	0.0	-	-	1.8	-	-	0.0	-	-

Sebastes aurora

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	55.0	0.9	-	-	0.0	-	-	0.0	-	-	0.0	-	-
83.3	70.0	0.9	-	-	-	-	-	0.0	-	-	0.0	-	-

Sebastes diploproa

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	70.0	0.0	-	-	1.4	-	-	1.5	-	-	1.4	-	-
80.0	60.0	0.0	-	-	0.0	-	-	0.0	-	-	1.6	-	-
83.3	42.0	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-
83.3	51.0	0.0	-	-	0.0	-	-	0.0	-	-	1.6	-	-

TABLE 4. (cont.)

Sebastes diploproa (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 70.0	0.9	-	-	-	-	-	0.0	-	-	0.0	-	-
86.7 55.0	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-
90.0 35.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-
90.0 60.0	0.0	-	-	0.0	-	-	2.3	-	-	0.0	-	-
93.3 26.7	0.7	-	-	0.0	-	-	0.0	-	-	0.0	-	-
93.3 28.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-
93.3 55.0	0.0	-	-	0.0	-	-	1.6	-	-	0.0	-	-

Sebastes jordani

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 51.0	10.7	-	-	0.0	-	-	0.0	-	-	0.0	-	-
76.7 60.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-
83.3 40.6	4.3	-	-	0.0	-	-	0.0	-	-	0.0	-	-
83.3 42.0	2.7	-	-	0.0	-	-	0.0	-	-	0.0	-	-
83.3 51.0	0.0	-	-	2.2	-	-	0.0	-	-	0.0	-	-
90.0 53.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-
93.3 28.0	0.8	-	-	0.0	-	-	0.0	-	-	0.0	-	-

Sebastes paucispinis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 40.6	3.5	-	-	0.0	-	-	0.0	-	-	0.0	-	-

Sebastolobus altivelis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 60.0	0.0	-	-	0.0	-	-	1.0	-	-	0.0	-	-

Anoplopoma fimbria

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 60.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-

Oxylebius pictus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 37.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-
90.0 45.0	0.0	-	-	0.9	-	-	0.0	-	-	0.0	-	-
93.3 55.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-

TABLE 4. (cont.)

Hexagrammos decagrammus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	51.0	1.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
86.7	33.0	0.0	-	-	0.9	-	-	0.0	-	-	0.0	-	-
90.0	35.0	0.0	-	-	0.9	-	-	0.0	-	-	0.0	-	-
90.0	45.0	0.0	-	-	0.9	-	-	0.0	-	-	0.0	-	-

Ophiodon elongatus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	49.0	0.0	-	-	1.5	-	-	0.0	-	-	0.0	-	-
83.3	40.6	0.9	-	-	0.0	-	-	0.0	-	-	0.0	-	-

Cottidae

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3	26.7	0.0	-	-	0.0	-	-	1.7	-	-	0.0	-	-

Scorpaenichthys marmoratus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	49.0	0.0	-	-	19.1	-	-	0.0	-	-	0.0	-	-
76.7	55.0	-	-	-	1.6	-	-	0.0	-	-	0.0	-	-
76.7	70.0	0.0	-	-	2.8	-	-	0.0	-	-	0.0	-	-
80.0	51.0	0.0	-	-	0.8	-	-	0.0	-	-	0.7	-	-
80.0	55.0	0.0	-	-	0.9	-	-	0.0	-	-	3.2	-	-
83.3	40.6	0.9	-	-	1.6	-	-	0.0	-	-	0.0	-	-
83.3	51.0	0.8	-	-	0.0	-	-	0.0	-	-	0.0	-	-
83.3	55.0	0.0	-	-	0.0	-	-	0.0	-	-	0.6	-	-
83.3	70.0	10.6	-	-	-	-	-	0.0	-	-	0.0	-	-
86.7	33.0	5.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
86.7	35.0	0.0	-	-	3.4	-	-	0.0	-	-	0.0	-	-
86.7	40.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-
90.0	35.0	0.0	-	-	1.7	-	-	0.0	-	-	0.0	-	-
90.0	45.0	0.0	-	-	0.9	-	-	0.0	-	-	0.0	-	-

Liparis florae

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	55.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-

TABLE 4. (cont.)

***Paralabrax* spp.**

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3	26.7	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-

Trachurus symmetricus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	60.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-
76.7	70.0	0.0	-	-	0.0	-	-	8.8	-	-	0.0	-	-
76.7	90.0	0.0	-	-	0.0	-	-	1.8	-	-	0.0	-	-
80.0	60.0	0.0	-	-	0.8	-	-	1.0	-	-	0.0	-	-
83.3	42.0	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-
86.7	70.0	0.0	-	-	0.7	-	-	0.0	-	-	0.0	-	-
86.7	80.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-
90.0	60.0	0.0	-	-	2.5	-	-	0.0	-	-	0.0	-	-
90.0	70.0	0.0	-	-	8.2	-	-	0.0	-	-	0.0	-	-
90.0	80.0	0.0	-	-	6.1	-	-	0.0	-	-	0.0	-	-
90.0	90.0	0.0	-	-	4.3	-	-	0.0	-	-	0.0	-	-
93.3	55.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-
93.3	70.0	0.0	-	-	0.9	-	-	21.3	-	-	0.0	-	-
93.3	80.0	0.0	-	-	0.6	-	-	0.0	-	-	0.0	-	-
93.3	90.0	0.0	-	-	3.6	-	-	0.0	-	-	0.0	-	-
93.3	100.0	0.0	-	-	4.1	-	-	0.0	-	-	0.0	-	-

Brama japonica

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	90.0	0.0	-	-	-	-	-	1.7	-	-	0.0	-	-

Atractoscion nobilis

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3	42.0	0.0	-	-	0.0	-	-	1.8	-	-	0.0	-	-
93.3	30.0	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-

Genyonemus lineatus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	51.0	1.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-
90.0	28.0	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-

TABLE 4. (cont.)

Umbrina roncador

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 42.0	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-

Girella nigricans

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 28.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-
93.3 30.0	0.0	-	-	0.0	-	-	1.8	-	-	0.0	-	-

Medialuna californiensis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 55.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-
80.0 60.0	0.0	-	-	0.0	-	-	1.0	-	-	0.0	-	-
83.3 70.0	0.0	-	-	-	-	-	0.9	-	-	0.0	-	-
90.0 37.0	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-
93.3 50.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-
93.3 60.0	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-

Chromis punctipinnis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 40.6	0.0	-	-	0.0	-	-	5.3	-	-	17.7	-	-
90.0 30.0	0.0	-	-	0.0	-	-	1.6	-	-	0.0	-	-
90.0 35.0	0.0	-	-	0.0	-	-	0.0	-	-	7.0	-	-
90.0 37.0	0.0	-	-	0.0	-	-	0.8	-	-	1.8	-	-
93.3 26.7	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-
93.3 35.0	0.0	-	-	0.0	-	-	0.0	-	-	3.1	-	-
93.3 60.0	0.0	-	-	0.0	-	-	0.0	-	-	3.7	-	-

Hypsypops rubicundus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 30.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-

Oxyjulis californica

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 80.0	0.0	-	-	0.0	-	-	0.0	-	-	0.7	-	-
80.0 55.0	0.0	-	-	0.0	-	-	0.0	-	-	1.6	-	-
83.3 42.0	0.0	-	-	0.0	-	-	0.0	-	-	1.9	-	-
83.3 55.0	0.0	-	-	0.0	-	-	0.7	-	-	0.0	-	-
86.7 40.0	0.0	-	-	0.0	-	-	16.5	-	-	0.0	-	-

TABLE 4. (cont.)

Oxyjulis californica (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7 45.0	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-
86.7 60.0	0.0	-	-	0.0	-	-	1.5	-	-	0.0	-	-
90.0 30.0	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-
93.3 30.0	0.0	-	-	4.1	-	-	0.0	-	-	0.0	-	-
93.3 45.0	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-
93.3 60.0	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-

***Rathbunella* spp.**

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 42.0	0.0	-	-	0.0	-	-	3.6	-	-	0.0	-	-

Neoclinus blanchardi

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7 35.0	0.0	-	-	2.1	-	-	0.0	-	-	0.0	-	-
93.3 26.7	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-

Neoclinus stephensae

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 49.0	0.0	-	-	0.0	-	-	0.0	-	-	0.8	-	-

***Hypsoblennius* spp.**

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7 33.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-
90.0 28.0	0.0	-	-	0.0	-	-	30.5	-	-	9.7	-	-
90.0 30.0	0.0	-	-	0.0	-	-	19.5	-	-	0.0	-	-
90.0 35.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-
93.3 26.7	0.0	-	-	0.8	-	-	14.8	-	-	0.0	-	-
93.3 40.0	0.0	-	-	0.0	-	-	0.7	-	-	0.0	-	-
93.3 60.0	0.0	-	-	0.0	-	-	1.8	-	-	0.0	-	-

Hypsoblennius gentilis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 40.6	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-
90.0 28.0	0.0	-	-	0.0	-	-	10.2	-	-	0.9	-	-
90.0 35.0	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-
90.0 60.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-
93.3 26.7	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-

TABLE 4. (cont.)

Hypsoblennius gilberti

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 51.0	0.0	-	-	0.0	-	-	0.0	-	-	2.2	-	-
90.0 30.0	0.0	-	-	0.0	-	-	6.5	-	-	0.0	-	-
93.3 26.7	0.7	-	-	0.8	-	-	0.0	-	-	0.9	-	-
93.3 40.0	0.0	-	-	0.0	-	-	1.4	-	-	0.0	-	-

Hypsoblennius jenkinsi

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 55.0	0.0	-	-	0.0	-	-	7.0	-	-	1.6	-	-
80.0 60.0	0.0	-	-	0.0	-	-	1.0	-	-	0.0	-	-
81.8 46.9	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-
83.3 40.6	0.0	-	-	0.0	-	-	4.4	-	-	20.5	-	-
83.3 42.0	0.0	-	-	0.0	-	-	9.1	-	-	0.9	-	-
86.7 33.0	0.0	-	-	0.0	-	-	0.0	-	-	11.3	-	-
86.7 40.0	0.0	-	-	0.0	-	-	0.0	-	-	2.9	-	-
86.7 45.0	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-
86.7 50.0	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-
90.0 28.0	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-
90.0 30.0	0.0	-	-	0.0	-	-	41.5	-	-	0.0	-	-
90.0 35.0	0.0	-	-	0.0	-	-	0.0	-	-	10.6	-	-
90.0 37.0	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-
93.3 26.7	0.7	-	-	3.3	-	-	0.0	-	-	0.0	-	-
93.3 30.0	0.0	-	-	0.8	-	-	5.3	-	-	0.0	-	-
93.3 35.0	0.0	-	-	0.0	-	-	2.7	-	-	0.0	-	-

Lepidogobius lepidus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7 33.0	0.8	-	-	0.0	-	-	0.0	-	-	0.0	-	-

Typhlogobius californiensis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 49.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-

Sphyraena argentea

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 26.7	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-
93.3 28.0	0.0	-	-	0.0	-	-	2.4	-	-	0.0	-	-

TABLE 4. (cont.)

Scomber japonicus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	70.0	0.0	-	-	0.0	-	-	3.7	-	-	0.0	-	-
80.0	60.0	0.0	-	-	0.0	-	-	3.0	-	-	0.0	-	-
83.3	60.0	0.0	-	-	0.0	-	-	128.9	-	-	0.0	-	-
86.7	40.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-
90.0	70.0	0.0	-	-	2.5	-	-	0.0	-	-	0.0	-	-
90.0	80.0	0.0	-	-	3.5	-	-	0.0	-	-	0.0	-	-
93.3	26.7	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-
93.3	28.0	0.0	-	-	0.0	-	-	4.7	-	-	0.0	-	-
93.3	30.0	0.0	-	-	0.0	-	-	3.6	-	-	0.0	-	-
93.3	40.0	0.0	-	-	3.3	-	-	1.4	-	-	0.0	-	-
93.3	45.0	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-
93.3	50.0	0.0	-	-	0.0	-	-	2.4	-	-	0.0	-	-
93.3	60.0	0.0	-	-	0.9	-	-	0.9	-	-	0.0	-	-
93.3	70.0	0.0	-	-	0.0	-	-	3.7	-	-	0.0	-	-
93.3	80.0	0.0	-	-	0.6	-	-	0.0	-	-	0.0	-	-

Icichthys lockingtoni

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	51.0	0.9	-	-	0.0	-	-	0.0	-	-	0.0	-	-
80.0	60.0	0.0	-	-	0.0	-	-	1.0	-	-	0.0	-	-
86.7	80.0	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-
93.3	70.0	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-

Tetragonurus cuvieri

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	100.0	0.0	-	-	-	-	-	0.0	-	-	1.6	-	-
90.0	90.0	0.0	-	-	0.0	-	-	0.7	-	-	0.0	-	-
93.3	80.0	0.0	-	-	0.6	-	-	0.0	-	-	0.0	-	-
93.3	100.0	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-

Peprilus simillimus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3	40.6	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-

Citharichthys sordidus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	49.0	0.0	-	-	0.0	-	-	0.0	-	-	0.8	-	-

TABLE 4. (cont.)

Citharichthys sordidus (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 55.0	0.0	-	-	0.0	-	-	0.0	-	-	0.8	-	-
83.3 42.0	0.9	-	-	0.0	-	-	0.0	-	-	0.0	-	-

Citharichthys stigmaeus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 51.0	0.9	-	-	0.0	-	-	0.0	-	-	0.0	-	-
76.7 60.0	0.8	-	-	0.0	-	-	0.0	-	-	0.0	-	-
80.0 55.0	0.0	-	-	0.0	-	-	0.8	-	-	1.6	-	-
83.3 51.0	1.6	-	-	0.0	-	-	0.0	-	-	0.0	-	-

Paralichthys californicus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 28.0	0.0	-	-	0.0	-	-	5.5	-	-	0.0	-	-

Parophrys vetulus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 40.6	0.0	-	-	1.6	-	-	0.0	-	-	0.0	-	-

Pleuronichthys coenosus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 60.0	0.0	-	-	0.0	-	-	2.0	-	-	0.0	-	-
83.3 42.0	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-
86.7 40.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-
86.7 50.0	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-
90.0 35.0	0.0	-	-	0.9	-	-	0.0	-	-	0.0	-	-
90.0 37.0	0.0	-	-	0.8	-	-	0.0	-	-	0.0	-	-
90.0 60.0	0.0	-	-	0.0	-	-	0.8	-	-	0.0	-	-

Pleuronichthys verticalis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 55.0	0.0	-	-	0.0	-	-	1.6	-	-	0.0	-	-
90.0 28.0	0.0	-	-	0.0	-	-	0.9	-	-	0.0	-	-

Unidentified fish larvae

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 40.6	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-
83.3 100.0	0.0	-	-	0.0	-	-	0.0	-	-	0.9	-	-

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ALPHABETICAL INDEX TO TABLE 4

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