NOAA Technical Memorandum NMFS

JULY 2003

ICHTHYOPLANKTON AND STATION DATA FOR SURFACE (MANTA) AND OBLIQUE (BONGO) PLANKTON TOWS FOR CALIFORNIA COOPERATIVE OCEANIC FISHERIES INVESTIGATIONS SURVEY CRUISES IN 2002

Sharon R. Charter
Richard L. Charter
H. Geoffrey Moser

NOAA-TM-NMFS-SWFSC-352

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Fisheries Science Center

The National Oceanic and Atmospheric Administration (NOAA), organized in 1970, has evolved into an agency which establishes national policies and manages and conserves our oceanic, coastal, and atmospheric resources. An organizational element within NOAA, the Office of Fisheries is responsible for fisheries policy and the direction of the National Marine Fisheries Service (NMFS).

In addition to its formal publications, the NMFS uses the NOAA Technical Memorandum series to issue informal scientific and technical publications when complete formal review and editorial processing are not appropriate or feasible. Documents within this series, however, reflect sound professional work and may be referenced in the formal scientific and technical literature.

NOAA Technical Memorandum NMFS
This TM series is used for documentation and timely communication of preliminary results, interim reports, or special purpose information. The TMs have not received complete formal review, editorial control, or detailed editing.

JUNE 2003

ICHTHYOPLANKTON AND STATION DATA FOR SURFACE (MANTA) AND OBLIQUE (BONGO) PLANKTON TOWS FOR CALIFORNIA COOPERATIVE OCEANIC FISHERIES INVESTIGATIONS SURVEY CRUISES IN 2002

Sharon R. Charter, Richard L. Charter, and H. Geoffrey Moser

National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Fisheries Science Center
8604 La Jolla Shores Drive
La Jolla, California, USA 92037

NOAA-TM-NMFS-SWFSC-352

U.S. DEPARTMENT OF COMMERCE
Donald L. Evans, Secretary
National Oceanic and Atmospheric Administration
VADM Conrad C. Lautenbacher, Jr., Undersecretary for Oceans and Atmosphere
National Marine Fisheries Service
William T. Hogarth, Assistant Administrator for Fisheries

CONTENTS

Page

List of Figures iii

List of Tables iii

Abstract 1

Introduction 1

Sampling Area and Pattern 3

Sampling Gear and Methods 4

Laboratory Procedures 4

Identification 5

Species Summary 7

Explanation of Tables 7

Acknowledgments 9

Literature Cited 9

Figures 17

Tables 21

Phylogenetic Index to Tables 4 and 8 93

Alphabetical Index to Tables 4 and 8 96

LIST OF FIGURES

Page

Figure 1. Diagram of the Manta net used on CalCOFI surveys 17

Figure 2. Stations and cruise tracks for CalCOFI cruises 0201 and 0204 18

Figure 3. Stations and cruise tracks for CalCOFI cruises 0207 and 0211 19

Figure 4. Basic station plan for CalCOFI cruises 20

LIST OF TABLES

Page

Table 1. Station and plankton tow data for Manta tows taken on the 2002 CalCOFI survey 21

Table 2. Pooled occurrences of fish larvae taken in Manta net tows on the 2002 CalCOFI survey 27

Table 3. Pooled raw counts of fish larvae taken in Manta net tows on the 2002 CalCOFI survey 28

Table 4. Numbers of fish larvae (per 100 m^3) taken in Manta net tows on the 2002 CalCOFI survey, listed by taxon, station, and month 29

Table 5. Station and Bongo net tow data for CalCOFI cruises in 2002 42

Table 6. Pooled occurrences of fish larvae taken in Bongo net tows on CalCOFI cruises in 2002 50

Table 7. Pooled standardized counts of fish larvae taken in Bongo net tows on CalCOFI cruises in 2002 53

Table 8. Standardized counts of fish larvae taken in Bongo net tows at stations occupied on CalCOFI cruises in 2002, listed by taxon, station, and month 56

ABSTRACT

This report provides ichthyoplankton data from Manta net (surface) tows and Bongo net (oblique) tows and associated station and tow data from California Cooperative Oceanic Fisheries Investigations (CalCOFI) cruises conducted in the Southern California Bight region in 2002. It is the 61st report in a series that presents these data for all biological-oceanographic CalCOFI surveys from 1951 to the present. A total of 264 stations was occupied during quarterly cruises over the survey area which extended from Avila Beach to San Diego, California. Transects extended seaward in a southwesterly direction to a maximum of approximately 330 n. mi. The most seaward station, 90.0 120.0, was approximately 400 n. mi. west of Punta Baja, Baja California, Mexico. The data are listed in a series of eight 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 strained and standard haul factors, are listed in the first and fifth tables. Other tables list, by station and month, counts (number per 100 cubic meters of water filtered) of each of the 50 larval fish categories identified in Manta net tows and standardized counts of each of the 107 larval fish categories identified in Bongo net tows. 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 61st in the series, provides ichthyoplankton and associated station and tow data from California Cooperative Oceanic Fisheries Investigations (CalCOFI) joint biological-oceanographic survey cruises conducted in 2002. 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 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 and associated hydrographic data 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, and Moser et al. 1993, 1994, 2001a, 2002 for summaries of CalCOFI historical sampling effort). Neuston[1] sampling with the Manta net (Figure 1) was initiated in 1977–78. Alhstrom and Stevens (1976), Gruber et al. (1982), and Doyle (1992a,b) provided initial information on the distribution and abundance of surface ichthyoplankton in the northeastern Pacific. Moser et al. (2002) summarized the spatial and temporal distribution and abundance of ichthyoplankton collected in Manta net tows on CalCOFI survey cruises from 1977– 2000.

---

[1]Useage 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 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 of facultatively (Zaitsev 1970; Hemple 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).

Hydrographic and biological data from CalCOFI surveys in 2002 will be published by the Scripps Institution of Oceanography (Univ. of Calif., SIO *in press, in prep.*). All available records for all four 2002 CalCOFI surveys were verified and edited to produce this ichthyoplankton data report. These reports make the CalCOFI ichthyoplankton and station data available to all investigators and serve as guides to the 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. This report includes both Manta net tow data and Bongo net tow data. Prior to the 2001 survey these data were reported separately. Citations for other reports in this series are:

Survey	Manta Tow Report	Survey	Manta Tow Report
1977–78	Moser et al. 2001b	1992	Watson et al. 2002b
1980–81	Ambrose et al. 2002a	1993	Ambrose et al. 2002d
1984	Charter et al. 2002a	1994	Charter et al. 2002d
1985	Ambrose et al. 2002b	1995	Sandknop et al. 2002c
1986	Charter et al. 2002b	1996	Watson et al. 2002c
1987	Sandknop et al. 2002a	1997	Ambrose et al. 2002e
1988	Watson et al. 2002a	1998	Ambrose et al. 2002f
1989	Ambrose et al. 2002c	1999	Ambrose et al. 2002g
1990	Charter et al. 2002c	2000	Watson et al. 2002d
1991	Sandknop et al. 2002b		

Survey	Oblique Tow Report	Survey	Oblique Tow Report
1951	Ambrose et al. 1987a	1962	Sumida et al. 1988a
1952	Sandknop et al. 1987a	1963	Ambrose et al. 1988a
1953	Stevens et al. 1987a	1964	Sandknop et al. 1988b
1954	Sumida et al. 1987a	1965	Stevens et al. 1988a
1955	Ambrose et al. 1987b	1966	Sumida et al. 1988b
1956	Stevens et al. 1987b	1967	Ambrose et al. 1988b
1957	Sumida et al. 1987b	1968	Sandknop et al. 1988c
1958	Sandknop et al. 1987b	1969	Stevens et al. 1988b
1959	Stevens et al. 1987c	1972	Sumida et al. 1988c
1960	Ambrose et al. 1987c	1975	Ambrose et al. 1988c
1961	Sandknop et al. 1988a	1978	Sandknop et al. 1988d

Survey	Oblique Tow Report	Survey	Oblique Tow Report
1981	Ambrose et al. 1988d	1992	Watson et al. 1999b
1984	Stevens et al. 1990	1993	Ambrose et al. 1999c
1985	Ambrose et al. 1999a	1994	Charter et al. 1999c
1986	Charter et al. 1999a	1995	Sandknop et al. 1999c
1987	Sandknop et al. 1999a	1996	Watson et al. 1999c
1988	Watson et al. 1999a	1997	Ambrose et al. 1999d
1989	Ambrose et al. 1999b	1998	Charter et al. 1999d
1990	Charter et al. 1999b	1999	Ambrose et al. 2001
1991	Sandknop et al. 1999b	2000	Watson et al. 2001

Survey	Manta and Oblique Tows Report	Survey	Special cruises
2001	Ambrose et al. 2003a	1997–98	Ambrose et al. 2003b

SAMPLING AREA AND PATTERN

A total of 264 standard CalCOFI survey stations was occupied on four cruises in 2002, employing two research vessels:

0201, RV *David Starr Jordan*, 66 stations, January 24 – February 9;

0204, RV *David Starr Jordan*, 66 stations, March 28 – April 12;

0207, RV *New Horizon*, 66 stations, July 2 – 17;

0211, RV *New Horizon*, 66 stations, November 10 – 24.

The core 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).[2] The most seaward station, 90.0 120.0, was approximately 400 n. mi. west of Punta Baja, Baja California, Mexico. On all cruises, lines 83.3 and 86.7 extended seaward to station 110.0, and lines 90.0 and 93.3 extended to station 120.0. On Cruise 0201 lines 76.7 and 80.0 were extended to station 110.0, although Manta and Bongo samples were not taken past station 100.0. On all other cruises lines 76.7 and 80.0 ended at station 100.0 (Figures 2 and 3).

[2]Beginning in 1981 we changed our designation of ordinal survey lines (those ending in "3" and "7") to an exact decimal notation. Thus, lines 77, 83, 87, 93, etc. were changed to 76.7, 83.3, 86.7, 93.3, etc. to indicate the spacing between cardinal lines (those ending in "0"). Scripps Institution of Oceanography continues to use the original designation for ordinal lines (Figures 2 and 3 and see Univ. of Calif., SIO *in press, in prep.*).

SAMPLING GEAR AND METHODS

Surface plankton tows were made with a modified version of the Manta net originally described 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 net 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% formalin buffered with sodium borate and returned to the plankton sorting laboratory at the SWFSC at the end of the cruise.

In 1978, the standard 1-m ring net with towing bridle was replaced by a bridle-free "Bongo" net. The Bongo frame (McGowan and Brown 1966; Smith and Richardson 1977) consists of a pair of circular frames connected to a central axle. The axle is free to rotate so that the mouth openings are vertical during the tow. The standard CalCOFI net has 71 cm diameter frames and net material constructed of nylon mesh. Each net consists of a cylindrical section ~ 146 cm long, a truncated conical section ~ 161 cm long, and a detachable cod end. The starboard net, from which the standard sample is taken, is constructed of 0.505 mm mesh. The sample from the port side is used for other purposes; the mesh size is either 0.505 mm or 0.333 mm depending on requirements. The cod end of each net is constructed of 0.333 mm mesh.

The standard tow in 2002 was a double oblique haul to 212 m depth (to 15 m from the bottom in shallow areas) designed to filter a constant amount of water per depth interval (~ 2 m^3/m of depth) over the vertical range of most ichthyoplankters. Hauls were made at a ship speed of 1.5–2.0 knots and initiated by clamping the net to the towing cable above a 34 kg weight suspended below the surface. The net was lowered to ~ 212 m depth by paying out 300 m of wire at 50 m/minute (35 m of depth/minute). After fishing at depth for 30 seconds, the net was retrieved at 20 m/minute (14 m of depth/minute). The angle of stray was recorded every 30 seconds and maintained at 45° (± 3°) by adjusting ship speed and course. After reaching the surface, the nets were washed down and the samples preserved in 5% formalin buffered with sodium borate. At the beginning and end of each tow, readings were made from a flow meter suspended in the mouth of the starboard net. Detailed descriptions of gear and methods are given by Kramer et al. (1972) and Smith and Richardson (1977); Ohman and Smith (1995) provided summaries of historical CalCOFI zooplankton methods and calibration factors for the various gear types.

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 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 Manta net. We determined a zooplankton displacement volume for each Bongo net sample (methods described in Staff, SPFI 1953 and Kramer et al. 1972). Samples containing > 25 ml of plankton were fractioned to ~50% of their original volume (Manta net samples are not fractioned). Aliquot percentages for fractioned samples are listed in Table 5 under the "Percent Sorted" column. The sorting process included the removal of all ichthyoplankton from the samples and identification and separation of: eggs and larvae of Pacific sardine, northern anchovy, and Pacific saury and larvae of Pacific hake. Body lengths of sardine, anchovy, and hake larvae were measured to the nearest 0.5 mm. Presently, Manta net tow samples are being resorted for squid paralarvae; in the process additional fish eggs and larvae may be sorted, identified, and added to their respective databases.

A standard haul factor (SHF) was calculated for each Bongo net tow to make them comparable and to allow estimation of areal abundance. The SHF is calculated by the formula:

$$SHF = \frac{10\,D}{V}$$

where D = depth of haul = cosine of the average angle of stray of the towing cable multiplied by cable length (m)

V = total volume of water (m^3) strained during the haul

$$V = R \cdot a \cdot p$$

where R = total number of revolutions of the current meter during the haul

a = area (m^2) of the mouth of the net

p = length of the column of water needed produce one revolution of the current meter

Tow depth, volume of water strained, and standard haul factor are listed in Table 5 for each tow taken during 2002. Detailed descriptions of factors involved in calculating these values are presented in Ahlstrom (1948), Kramer et al. (1972), and Smith and Richardson (1977).

IDENTIFICATION

Identification of ichthyoplankton species beyond those separated during the sorting process was done by a separate group of specialists. Early ontogenetic stages of fishes are inherently difficult to identify and this is further complicated by the large number and diversity of species which contribute to the ichthyoplankton of the California Current region. Most identifications were accomplished 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 (Powles and Markle 1984). Our ability to identify larvae in the California Current region improved greatly during 1988–1995 as a result of an intensive research project aimed at producing a taxonomic monograph on the ontogenetic stages of fishes of this region (Moser 1996). Except for damaged specimens, most larvae in the 2002 surveys could be identified to species. A total of 50 larval fish categories (including disintegrated) was identified in Manta net tows for 2002: 45 to species and 4 to genus. A total of 107 larval fish categories (including disintegrated) was identified in the Bongo net tows: 91 to species,

12 to genus, and 3 to family. Identifications were done in the Ichthyoplankton Ecology Laboratory of the Fisheries Resources Division by D. A. Ambrose, E. M. Sandknop, W. Watson, and the senior author of this report.

With few exceptions, taxonomic categories above species represent small specimens which were damaged and partly disintegrated during capture. The following taxonomic categories in Tables 2–4 and 6–8 require special explanation:

Cyclothone spp. – small or damaged larvae, mostly *C. acclinidens* and/or *C. pseudopallida* lacking diagnostic characters.

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*.

Disintegrated fish larvae – larvae that could not be identified because of their poor condition; separated from the "unidentified" category to monitor the general condition of the ichthyoplankton samples through the time series.

Glyptocephalus zachirus – see comment for Pleuronectidae.

Lyopsetta exilis – see comment for Pleuronectidae.

Microstoma spp. – larvae of a distinct but undescribed microstomatid species.

Nannobrachium – Zahuranec (2000) moved the subgroup of *Lampanyctus* characterized by small or absent pectoral fins in adults to 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; in previous data reports these were referred to as *Lampanyctus* "niger" and *Lampanyctus* "no pectorals", respectively (see Moser 1996).

Parophrys vetulus – see comment for Pleuronectidae.

Pleuronectidae – Sakamoto (1984) changed pleuronectid generic designations for species in the CalCOFI area as follows: 1) *Glyptocephalus zachirus* was changed to *Errex zachirus*; 2) *Isopsetta isolepis*, *Lepidopsetta bilineata*, and *Parophrys vetulus* were transferred into *Pleuronectes* and 3) *Lyopsetta exilis* was changed to *Eopsetta exilis*; although these changes were incorporated in the lists of Robins et al. (1991) and Eschmeyer (1998) we follow Nelson (1994) in retaining the older nomenclature because Sakamoto's (1984) changes were based on a phenetic study; also, the older names are used in the major identification guides to fishes of our region (Miller and Lea 1972, Eschmeyer et al. 1983, Moser 1996, and Matarese et al. 1989).

Scopelosaurus spp. – according to Balanov and Savinykh (1999) there are two valid species of this genus in the north Pacific, *S. adleri* and *S. harryi*, but only the former spawns in the California Current region; the generic designation is used here since we have not yet reexamined the historical CalCOFI samples to confirm the findings of Balanov and Savinykh (1999).

Sebastolobus spp. – larvae of this genus < 10 mm in length are not identifiable to species; larvae > 10 mm are identified as *S. alascanus* or *S. altivelis*.

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 encountered rarely, usually only at the most seaward CalCOFI stations; a small percentage of *V. poweriae* larvae may have been included in the *V. lucetia* category because of the difficulty in separating early larvae which often are virtually identical.

SPECIES SUMMARY

Of the five most abundant larvae collected in Manta net tows on CalCOFI cruises in 2002, Pacific sardine (*Sardinops sagax*) ranked first in abundance with 24.2% of the total fish larvae and fourth in occurrence with larvae collected in 15.2% of the total samples (Tables 2 and 3). The northern anchovy (*Engraulis mordax*) ranked second in abundance and occurrence with 23.2% of the total larvae and 20.9% of the positive tows. Pacific saury (*Cololabis saira*) was the third most abundant with 16.4% of the total larvae and first in total occurrence (30.4 % of the samples). Cabezon (*Scorpaenichthys marmoratus*) ranked fourth in abundance with 9.6% of the total larvae and fifth in total occurrence (10.3% of the samples). The rockfish genus (*Sebastes*) ranked fifth in abundance (6.0% of total larvae); it ranked third in frequency of occurrence (16.7% of the samples). The next five most abundant taxa were splitnose rockfish *Sebastes diploproa* (2.5% of total larvae), jack mackerel *Trachurus symmetricus* (2.4%), jacksmelt *Atherinopsis californiensis* (2.0%), shortbelly rockfish *Sebastes jordani* (1.9%), and Pacific hake *Merluccius productus* (1.9%). These species ranked 10th, tied for 6th, tied for 14th with two other taxa, tied for 6th, and 11th in frequency of occurrence, respectively. The ten most abundant taxa comprised 90.1% of all the larvae collected in Manta net tows on CalCOFI cruises in 2002. The remaining 9.9% was distributed among 40 other categories (including the disintegrated category). Of the ten most abundant taxa, four are coastal demersal taxa, four are coastal pelagic species, one is an epipelagic species, and one is a nearshore schooling species.

Of the five most abundant larvae collected in Bongo net tows on the 2002 CalCOFI survey, Pacific hake (*Merluccius productus*) ranked first in abundance, with 32.8% of the total larvae, and 6th in occurrence, with 33.2% positive tows (Tables 6 and 7). They were almost three and one half times more abundant than the second most abundant species, Pacific sardine (*Sardinops sagax*) which accounted for 9.5% of the total larvae and ranked 14th in occurrence (14.9% of the samples). The high abundance of Pacific hake is attributable to several stations on Cruise 0201, most notably: 80.0 100.0 (370), 83.3 60.0 (404), 83.3 80.0 (471), 86.7 70.0 (271), and 93.3 55.0 (706). Northern anchovy (*Engraulis mordax*) ranked third with 9.0% of the larvae and 7th in occurrence (27.1% of the stations). Northern lampfish (*Stenobrachius leucopsarus*) ranked fourth in abundance with 8.2% of the total larvae and first in frequency of occurrence with 39.7% positive tows. The rockfish genus *Sebastes* ranked fifth in abundance (7.6% of total larvae) and fourth in occurrence (35.1% positive tows). The next five most abundant taxa were California smoothtongue *Leuroglossus stilbius* (6.9% of total larvae), popeye blacksmelt *Bathylagus ochotensis* (4.7%), shortbelly rockfish *Sebastes jordani* (3.6%), Panama lightfish *Vinciguerria lucetia* (1.6%), and California flashlightfish *Protomyctophum crockeri* (1.5%). These species ranked 5th, 2nd, 21st, tied for 10th with two other taxa, and 3rd in frequency of occurrence, respectively. The ten most abundant taxa comprised 85.4% of all the larvae collected in Bongo net tows on CalCOFI cruises in 2002. The remaining 14.6% was distributed among 97 other categories (including the disintegrated category). Of the ten most abundant taxa, half are midwater species, three are coastal demersal taxa, and two are coastal pelagic species.

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 Manta net tow stations occupied during the 2002 CalCOFI

survey. Cruises are designated by four digits; the first two indicate the year and the second two the month. 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. Ship codes are JD, *David Starr Jordan* or NH, *New Horizon*. Time is listed as Pacific Standard Time (PST) 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 2002 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 2002 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 2002 CalCOFI survey. Numbers of larvae are listed as number per 100 m^3 of water filtered. Taxa are listed in phylogenetic sequence (Eschmeyer 1998); genera are listed alphabetically.

Table 5. This table lists for each Bongo net tow the pertinent station and tow data, the volume of water filtered, the standard haul factor, the plankton volume, the percentage of sample sorted, and the total number of fish eggs and larvae during the 2002 CalCOFI survey. Cruises are designated by four digits; the first two indicate the year and the second two the month. 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. Ship codes are JD, *David Starr Jordan* or NH, *New Horizon.* Plankton displacement volumes were determined after removal of large organisms (those with individual displacement volumes > 5 ml) and expressed as ml per 1000 m^3 of water filtered. Time is listed as Pacific Standard Time (PST) at the start of each tow in 24-hour designation. The values for total fish eggs and larvae are raw counts (unadjusted for percent of sample sorted or standard haul factor). 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. Dates given here and in Figures 2 and 3 for the beginning and end of each cruise are based on PST at the first and last Bongo net tow station of the cruise and do not include transit time from port to the first station and to port after the last station. Thus, our cruise dates may differ slightly from those in SIO reports which are based on GMT prior to 1990 and include transit time to the first station and from the last station.

Table 6. Pooled occurrences of all larval fish taxa taken in Bongo net tows on CalCOFI survey cruises in 2002 listed in rank order.

Table 7. Pooled counts of all larval fish taxa taken in Bongo net tows on CalCOFI survey cruises in 2002 listed in rank order. Numbers are adjusted for percent sorted and standard haul factors.

Table 8. Numbers of fish larvae for each taxon, listed by station and calendar month of the Bongo net tow. Counts are adjusted for percentage of sample sorted and standard haul factor. Taxa are listed in phylogenetic sequence (Eschmeyer 1998); genera are listed alphabetically.

ACKNOWLEDGMENTS

The following NMFS personnel were responsible for making the collections at sea: Dimitry Abramenkoff (0201), Noelle Bowlin (0211), Ronald Dotson (all cruises), Josh Fluty (0204), David Griffith (0201, 0204), Amy Hays (0201, 0207, 0211), Beverly Macewicz (0204), Jose Velez (0201), and Sarah Zao (0211). The samples were sorted by Lucy Dunn. Amy Hays and Susan Manion entered the data and Susan Jacobson provided programming assistance. The cooperation and assistance provided by the crews of the CalCOFI research vessels were instrumental in making the collections and observations at sea.

LITERATURE CITED

Ahlstrom, E. H. 1948. A record of pilchard eggs and larvae collected during surveys made in 1939 to 1941. U.S. Wildl. Serv. Spec. Sci. Rep. Fish. SSRF-54. 2 pp.

Ahlstrom, E. H. and E. G. Stevens. 1976. Report of neuston (surface) collections made on an extended CalCOFI cruise during May 1972. Calif. Coop. Oceanic Fish. Invest. Rep. 18:167–10.

Ambrose, D. A., R. L. Charter, H. G. Moser, and C. R. Santos Methot. 1987a. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1951. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-79. 196 pp.

Ambrose, D. A., R. L. Charter, H. G. Moser, and C. R. Santos Methot. 1987b. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1955. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-83. 15 pp.

Ambrose, D. A., R. L. Charter, H. G. Moser, and C. R. Santos Methot. 1987c. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1960. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-88. 253 pp.

Ambrose, D. A., R. L. Charter, H. G. Moser, and B. S. Earhart. 1988a. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1963. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-94. 209 pp.

Ambrose, D. A., R. L. Charter, H. G. Moser, and B. S. Earhart. 1988b. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1967. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-98. 103 pp.

Ambrose, D. A., R. L. Charter, H. G. Moser, and B. S. Earhart. 1988c. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1975. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-110. 221 pp.

Ambrose, D. A., R. L. Charter, H. G. Moser, and B. S. Earhart. 1988d. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1981. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-112. 170 pp.

Ambrose, D. A., R. L. Charter, and H. G. Moser. 1999a. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1985. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-266. 79 pp.

Ambrose, D. A., R. L. Charter, and H. G. Moser. 1999b. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1989. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-270. 87 pp.

Ambrose, D. A., R. L. Charter, and H. G. Moser. 1999c. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1993. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-274. 88 pp.

Ambrose, D. A., R. L. Charter, and H. G. Moser. 1999d. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1997. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-278. 86 pp.

Ambrose, D. A., R. L. Charter, and H. G. Moser. 2001. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1999. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-311. 69 pp.

Ambrose, D. A., R. L. Charter, and H. G. Moser. 2002a. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1980–81. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-319. 100 pp.

Ambrose, D. A., R. L. Charter, and H. G. Moser. 2002b. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1985. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-321. 36 pp.

Ambrose, D. A., R. L. Charter, and H. G. Moser. 2002c. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1989. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-325. 45 pp.

Ambrose, D. A., R. L. Charter, and H. G. Moser. 2002d. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1993. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-329. 41 pp.

Ambrose, D. A., R. L. Charter, and H. G. Moser. 2002e. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1997. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-333. 41 pp.

Ambrose, D. A., R. L. Charter, and H. G. Moser. 2002f. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1998. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-334. 43 pp.

Ambrose, D. A., R. L. Charter, and H. G. Moser. 2002g. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1999. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-335. 39 pp.

Ambrose, D. A., R. L. Charter, and H. G. Moser. 2003a. Ichthyoplankton and station data for surface (Manta) and oblique (Bongo) plankton tows for California Cooperative Oceanic Fisheries Investigations survey cruises in 2001. U.S. Dep. Commer., NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-348. 104 pp.

Ambrose, D. A., R. L. Charter, and H. G. Moser. 2003b. Ichthyoplankton and station data for surface (Manta) and oblique (Bongo) plankton tows for "Mini" California Cooperative Oceanic Fisheries Investigations survey cruises in 1997 and 1998. U.S. Dep. Commer., NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-351. 69 pp.

Balanov, A. A. and V. F. Savinykh. 1999. Redescriptions of *Scopelosaurus harryi* and *S. adleri* (Notosudidae): two valid mesopelagic species inhabiting the northern part of the Pacific Ocean. J. Ichthyol. 39 (8): 616–625.

Banse, K. 1975. Pleuston and neuston: on the categories of organisms in the uppermost pelagial. Int.Rev. ges. Hydrobiol. 60(4):439–447.

Brown, D. M. and L. Cheng. 1981. New net for sampling the ocean surface. Mar. Ecol. Prog. Ser. 5:224–227.

Charter, S. R., R. L. Charter, and H. G. Moser. 1999a. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1986. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-267. 79 pp.

Charter, S. R., R. L. Charter, and H. G. Moser. 1999b. Ichthyoplankton and station data for Calfornia Cooperative Oceanic Fisheries Investigations survey cruises in 1990. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-271. 86 pp.

Charter, S. R., R. L. Charter, and H. G. Moser. 1999c. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1994. U. S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-275. 89 pp.

Charter, S. R., R. L. Charter, and H. G. Moser. 1999d. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1998. U. S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-279. 104 pp.

Charter, S. R., R. L. Charter, and H. G. Moser. 2002a. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1984. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-320. 84 pp.

Charter, S. R., R. L. Charter, and H. G. Moser. 2002b. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1986. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-322. 40 pp.

Charter, S. R., R. L. Charter, and H. G. Moser. 2002c. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1990. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-326. 41 pp.

Charter, S. R., R. L. Charter, and H. G. Moser. 2002d. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1994. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-330. 40 pp.

Doyle, M. J. 1992a. Patterns in distribution and abundance of ichthyoplankton off Washington, Oregon, and northern California (1980–1987). U.S. Dep. Commer., Nat. Mar. Fish. Serv., Alaska Fish. Sci. Ctr. Proc. Rep. 92-14. 344 pp.

Doyle, M. J. 1992b. Neustonic ichthyoplankton in the northern region of the California Current ecosystem. Calif. Coop. Oceanic Fish. Invest. Rep. 33:141–161.

Eschmeyer, W. N. (ed.). 1998. Catalog of fishes. Center for Biodiversity Research and Information. California Academy of Sciences. Spec. Publ. 1. Vols. I-III. 2905 pp.

Eschmeyer, W. N., E. S. Herald, and H. Hammann. 1983. A field guide to Pacific coast fishes of North America. Houghton Mifflin Co. Boston. 336 pp.

Gruber, D., E. H. Ahlstrom, and M. M. Mullin. 1982. Distribution of ichthyoplankton in the Southern California Bight. Calif. Coop. Oceanic Fish. Invest. Rep. 23:172–179.

Hempel, G. and H. Weikert. 1972. The neuston of the subtropical and boreal northeastern Atlantic Ocean. A review. Mar. Biol. 13:70–88.

Hewitt, R. P. 1988. Historical review of the oceanographic approach to fishery research. Calif. Coop. Oceanic Fish. Invest. Rep. 29:27–41.

Kramer, D., M. Kalin, E. G. Stevens, J. R. Thrailkill, and J. R. Zweifel. 1972. Collecting and processing data on fish eggs and larvae in the California Current Region. NOAA Tech. Rep. NMFS Circ. 370. 38 pp.

Matarese, A. C., A. W. Kendall, Jr., D. M. Blood, and B. M. Vinter. 1989. Laboratory guide to early life history stages of northeast Pacific fishes. U.S. Dep. Commer., NOAA Tech. Rep. NMFS 80. 652 pp.

McGowan, J. S. and D. M. Brown. 1966. A new opening-closing paired zooplankton net. Scripps Inst. Oceanogr. Ref. 66-23. 23 pp.

Miller, D. J. and R. N. Lea. 1972. Guide to the coastal marine fishes of California. Calif. Dep. Fish Game Fish Bull. 157. 235 pp.

Moser, H. G. (ed.). 1996. The early stages of fishes in the California Current region. CalCOFI Atlas 33. 1505 pp.

Moser, H. G., R. L. Charter, P. E. Smith, D. A. Ambrose, S. R. Charter, C. A. Meyer, E. M. Sandknop, and W. Watson. 1993. Distributional atlas of fish larvae and eggs in the California Current region: taxa with 1000 or more total larvae, 1951 through 1984. CalCOFI Atlas 31. 233 pp.

Moser, H. G., R. L. Charter, P. E. Smith, D. A. Ambrose, S. R. Charter, C. A. Meyer, E. M. Sandknop, and W. Watson. 1994. Distributional atlas of fish larvae in the California Current region: taxa with less than 1000 total larvae, 1951 through 1984. CalCOFI Atlas 32. 181 pp.

Moser, H. G., R. L. Charter, P. E. Smith, D. A. Ambrose, W. Watson, S. R. Charter, and E. M. Sandknop. 2001a. Distributional atlas of fish larvae and eggs in the Southern California Bight region: 1951–1998. CalCOFI Atlas 34. 166 pp.

Moser, H. G., R. L. Charter, D. A. Ambrose, and E. M. Sandknop. 2001b. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1977–78. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-313. 58 pp.

Moser, H. G., R. L. Charter, P. E. Smith, D. A. Ambrose, W. Watson, S. R. Charter, and E. M. Sandknop. 2002. Distributional atlas of fish larvae and eggs from Manta (surface) samples collected on CalCOFI surveys from 1977 to 2000. CalCOFI Atlas 35. 97 pp.

Naumann, E. 1917. Beiträge zur Kenntnis des Teichnannoplanktons. II. Über das Neuston das Süsswassers. Biol. Zentralbl. 37:98–106.

Nelson, J. S. 1994. Fishes of the world. Third edition. John Wiley and Sons, N.Y. 600 pp.

Ohman, M. D. and P. E. Smith. 1995. A comparison of zooplankton sampling methods in the CalCOFI time series. Calif. Coop. Oceanic Fish. Invest. Rep. 36:153–158.

Peres, J. M. 1982. Specific pelagic assemblages: 1. Assemblages at the air-ocean interface *In* Marine Ecology. O. Kinne (ed.). 5 (1):313–372.

Powles, H. and D. F. Markle. 1984. Identification of larvae. Pages 31–33 *in* H. G. Moser, W. J. Richards, D. M. Cohen, M. P. Fahay, A. W. Kendall, Jr., and S. L. Richardson, eds. Ontogeny and Systematics of Fishes. Am. Soc. Ichthyol. Herpetol. Spec. Publ. 1. 760 pp.

Robins, C. R., R. M. Bailey, C. E. Bond, J. R. Brooker, E. A. Lachner, R. N. Lea, and W. B. Scott. 1991. Common and scientific names of fishes from the United States and Canada. Fifth edition. Am. Fish. Soc. Spec. Publ. 20. 183 pp.

Sakamoto, K. 1984. Interrelationships of the family Pleuronectidae (Pisces: Pleuronectiformes). Mem. Fac. Fish. Hokkaido Univ. 31:95–215.

Sandknop, E. M., R. L. Charter, H. G. Moser, and J. D. Ryan. 1987a. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1952. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-80. 207 pp.

Sandknop, E. M., R. L. Charter, H. G. Moser, and J. D. Ryan. 1987b. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1958. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-86. 248 pp.

Sandknop, E. M., R. L. Charter, H. G. Moser, C. A. Meyer, and A. E. Hays. 1988a. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1961. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-92. 167 pp.

Sandknop, E. M., R. L. Charter, H. G. Moser, C. A. Meyer, and A. E. Hays. 1988b. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1964. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-95. 222 pp.

Sandknop, E. M., R. L. Charter, H. G. Moser, C. A. Meyer, and A. E. Hays. 1988c. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1968. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-99. 112 pp.

Sandknop, E. M., R. L. Charter, H. G. Moser, C. A. Meyer, and A. E. Hays. 1988d. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1978. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-111. 216 pp.

Sandknop, E. M., R. L. Charter, and H. G. Moser. 1999a. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1987. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-268. 91 pp.

Sandknop, E. M., R. L. Charter, and H. G. Moser. 1999b. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1991. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-272. 90 pp.

Sandknop, E. M., R. L. Charter, and H. G. Moser. 1999c. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1995. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-276. 84 pp.

Sandknop, E. M., R. L. Charter, and H. G. Moser. 2002a. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1987. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-323. 40 pp.

Sandknop, E. M., R. L. Charter, and H. G. Moser. 2002b. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1991. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-327. 41 pp.

Sandknop, E. M., R. L. Charter, and H. G. Moser. 2002c. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1995. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-331. 42 pp.

Smith, P. E. and S. L. Richardson. 1977. Standard techniques for pelagic fish egg and larva surveys. FAO Fish. Tech. Pap. 175. 100 pp.

Staff, South Pacific Fisheries Investigations. 1953. Zooplankton volumes off the Pacific Coast, 1952. U.S. Fish. Wildl. Serv. Spec. Sci. Rep. Fish. SSRF-100. 41 pp.

Stevens, E. G., R. L. Charter, H. G. Moser, and M. S. Busby. 1987a. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1953. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-81. 186 pp.

Stevens, E. G., R. L. Charter, H. G. Moser, and M. S. Busby. 1987b. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1956. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-84. 189 pp.

Stevens, E. G., R. L. Charter, H. G. Moser, and M. S. Busby. 1987c. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1959. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-87. 273 pp.

Stevens, E. G., R. L. Charter, H. G. Moser, and L. R. Zins. 1988a. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1965. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-96. 220 pp.

Stevens, E. G., R. L. Charter, H. G. Moser, and L. R. Zins. 1988b. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1969. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-100. 265 pp.

Stevens, E. G., R. L. Charter, H. G. Moser, and C. A. Meyer. 1990. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1984. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-141. 157 pp.

Sumida, B. Y., R. L. Charter, H. G. Moser, and D. L. Snow. 1987a. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1954. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-82. 207 pp.

Sumida, B. Y., R. L. Charter, H. G. Moser, and D. L. Snow. 1987b. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1957. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-85. 225 pp.

Sumida, B. Y., R. L. Charter, H. G. Moser, and D. L. Snow. 1988a. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1962. U.S. Dep. Commer., NOAA Tech. Memo, NOAA-TM-NMFS-SWFC-93. 179 pp.

Sumida, B. Y., R. L. Charter, H. G. Moser, and D. L. Snow. 1988b. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1966. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-97. 287 pp.

Sumida, B. Y., R. L. Charter, H. G. Moser, and D. L. Snow. 1988c. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1972. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFC-109. 219 pp.

University of California, Scripps Institution of Oceanography. *in press*. Data Report. Physical, chemical, and biological data. CalCOFI Cruise 0201, 24 January–11 February 2002, CalCOFI Cruise 0204, 28 March–12 April 2002. CC Ref. # 03-01. 104 pp.

University of California, Scripps Institution of Oceanography. *in prep*. Data Report. Physical, chemical, and biological data. CalCOFI Cruise 0207, 2–18 July 2002, CalCOFI Cruise 0211, 10–26 November 2002. CC Ref.

Watson, W., R. L. Charter, and H. G. Moser. 1999a. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1988. U. S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-269. 88 pp.

Watson, W., R. L. Charter, and H. G. Moser. 1999b. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1992. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-273. 90 pp.

Watson, W., R. L. Charter, and H. G. Moser. 1999c. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 1996. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-277. 91 pp.

Watson, W., R. L. Charter, and H. G. Moser. 2001. Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises in 2000. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-312. 73 pp.

Watson, W, R. L. Charter, and H. G. Moser. 2002a. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1988. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-324. 46 pp.

Watson, W, R. L. Charter, and H. G. Moser. 2002b. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1992. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-328. 40 pp.

Watson, W, R. L. Charter, and H. G. Moser. 2002c. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 1996. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-332. 45 pp.

Watson, W, R. L. Charter, and H. G. Moser. 2002d. Ichthyoplankton and station data for Manta (surface) tows taken on California Cooperative Oceanic Fisheries Investigations survey cruises in 2000. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-336. 40 pp.

Zahuranec, B. J. 2000. Zoogeography and systematics of the lanternfishes of the genus *Nannobrachium* (Lampanyctini: Myctophidae). Smiths. Contrib. Zool. 607. 69 pp.

Zaitsev, Y. P. 1970. Marine neustonology. Naukova Dumka. Kiev. 264 pp.[In Russian]. [English transl.: 1971. Israel Progr. Sci. Transl. No. 5976. 207 pp.]

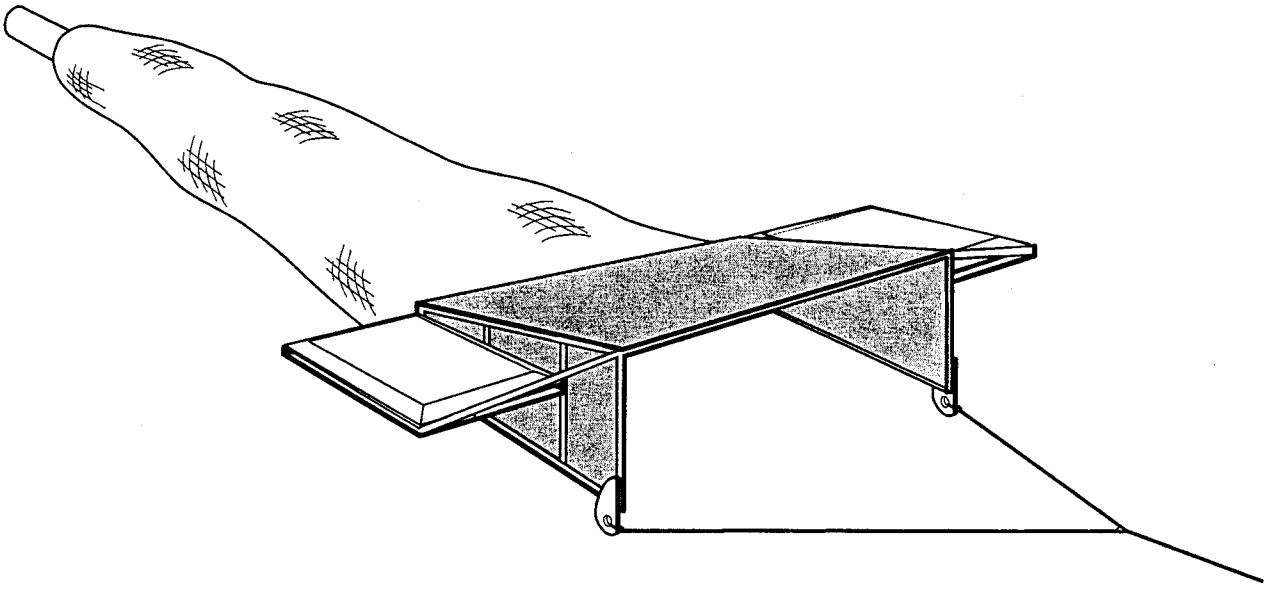

Figure 1. Diagram of the Manta net used on CalCOFI surveys.

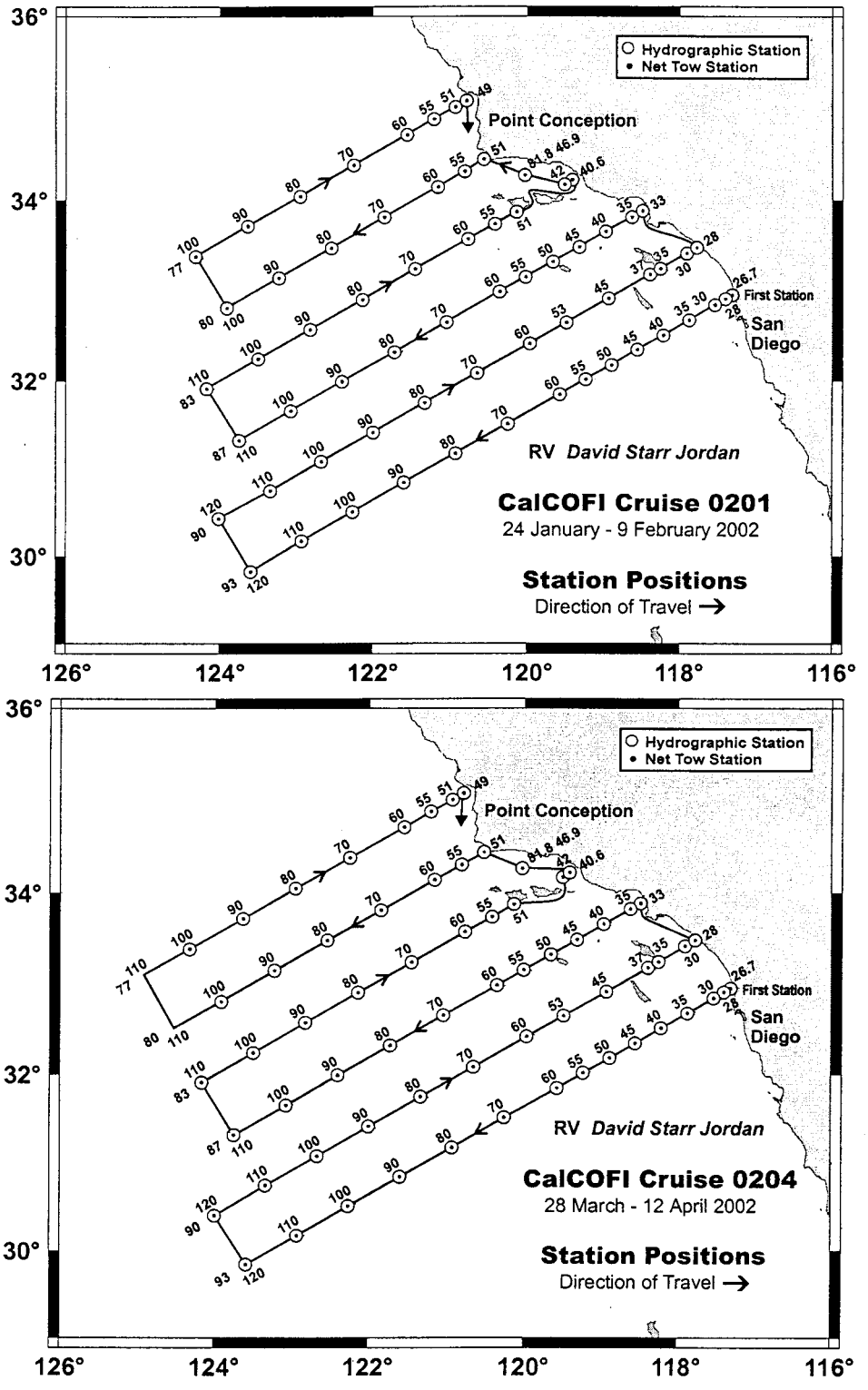

Figure 2. Stations and cruise tracks for CalCOFI cruises 0201 (above) and 0204 (below). Circles indicate hydrographic stations; dots indicate net tow stations. On cruise 0201, a Manta tow was taken unaccompanied by a Bongo tow at station 90. 28. On cruise 0204, a Manta tow was taken unaccompanied by a Bongo tow at station 80. 51 and a Bongo tow was taken unaccompanied by a Manta tow at station 81.8 46.9.

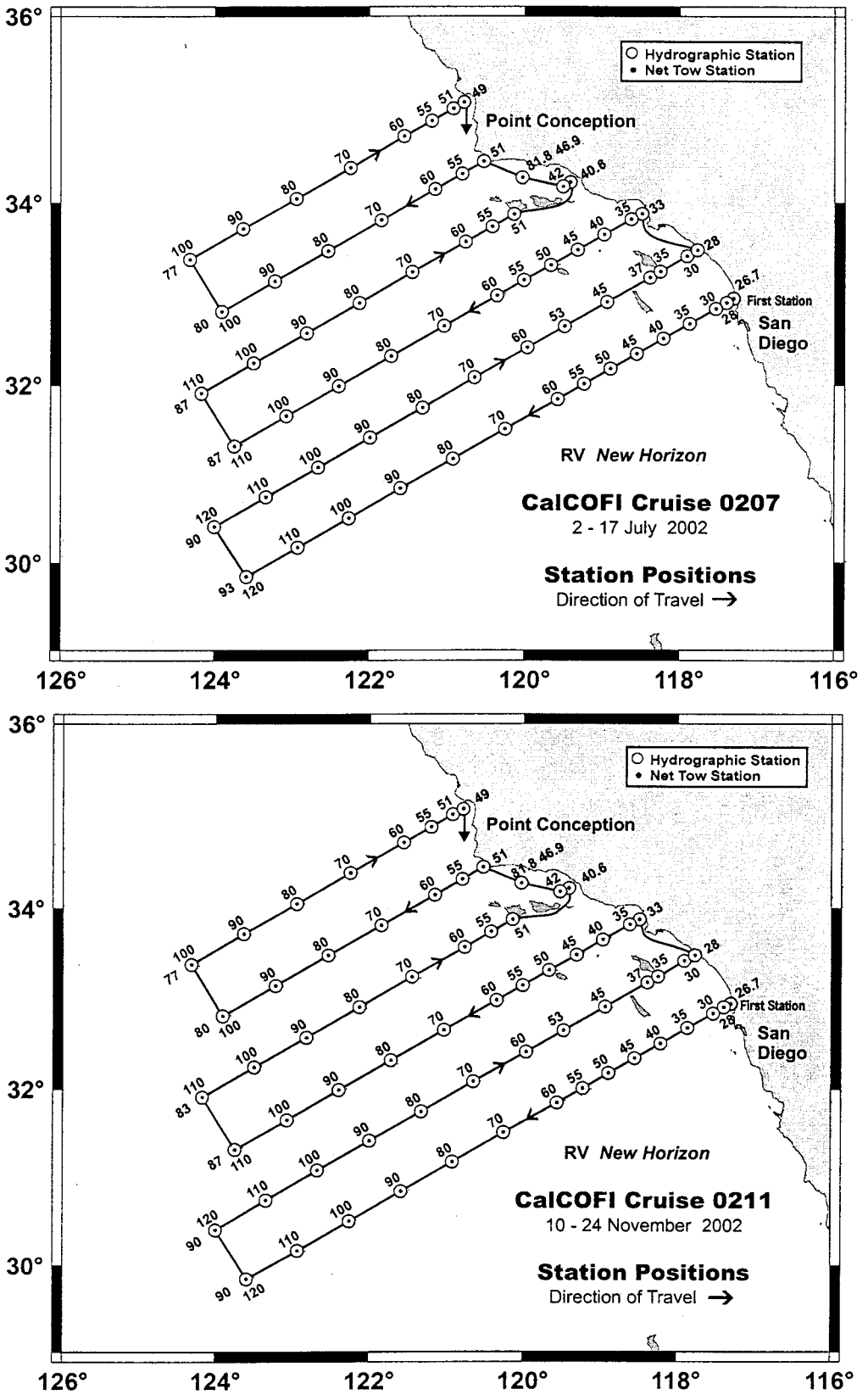

Figure 3. Stations and cruise tracks for CalCOFI cruises 0207 (above) and 0211 (below). Symbols as in Figure 2.

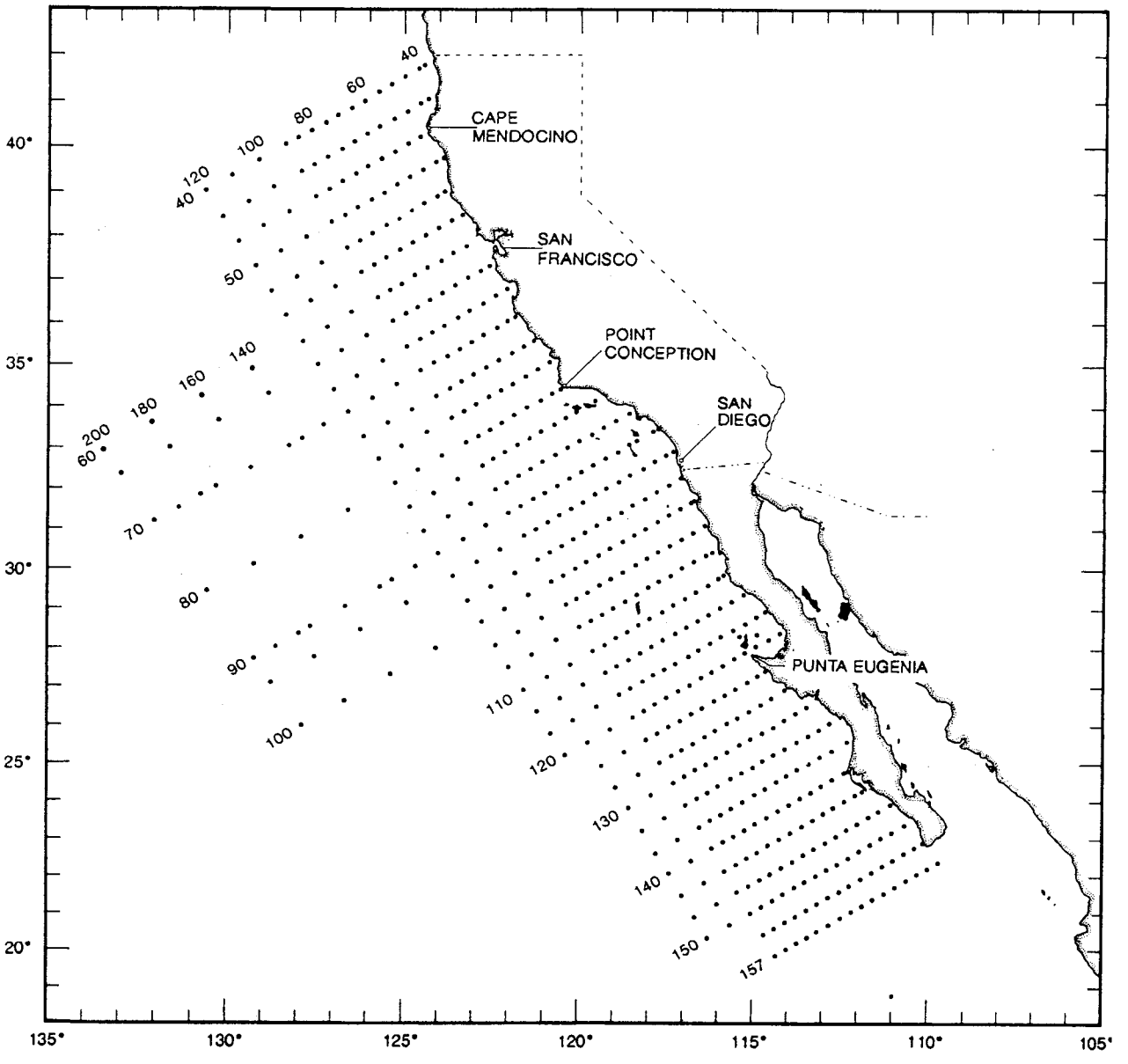

Figure 4. The basic CalCOFI station pattern occupied, in part, by cruises during 1951-1984.

TABLE 1. Station and plankton tow data for Manta tows taken on the 2002 CalCOFI survey. Numbers of fish eggs and larvae are raw counts, unadjusted for volume (cubic meters) of water filtered.

CalCOFI Cruise 0201

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	46.7	JD	02	02	09	1622	78	24	14
76.7	51.0	35	01.3	120	55.2	JD	02	02	09	1347	78	1	24
76.7	55.0	34	53.2	121	12.1	JD	02	02	09	0853	64	8	8
76.7	60.0	34	43.2	121	32.9	JD	02	02	09	0458	69	22	324
76.7	70.0	34	23.2	122	14.8	JD	02	02	08	2212	67	3	54
76.7	80.0	34	02.9	122	56.6	JD	02	02	08	1142	62	1	22
76.7	90.0	33	43.2	123	38.1	JD	02	02	08	0520	75	5	1
76.7	100.0	33	23.2	124	18.9	JD	02	02	07	2307	69	0	0
80.0	51.0	34	27.1	120	33.2	JD	02	02	06	0240	70	8	114
80.0	55.0	34	19.1	120	48.0	JD	02	02	06	0636	64	29	123
80.0	60.0	34	09.0	121	09.1	JD	02	02	06	1133	85	60	294
80.0	70.0	33	49.1	121	50.5	JD	02	02	06	2023	74	14	10
80.0	80.0	33	28.9	122	31.9	JD	02	02	07	0310	73	1	0
80.0	90.0	33	08.9	123	13.2	JD	02	02	07	0834	70	1	3
80.0	100.0	32	49.0	123	54.4	JD	02	02	07	1635	70	0	1
81.8	46.9	34	16.5	120	01.6	JD	02	02	05	1955	68	18	349
83.3	40.6	34	13.6	119	24.7	JD	02	02	05	0611	78	36	1117
83.3	42.0	34	10.5	119	30.8	JD	02	02	05	0836	71	0	149
83.3	51.0	33	52.5	120	07.9	JD	02	02	04	2354	65	9	48
83.3	55.0	33	44.8	120	24.7	JD	02	02	04	2037	68	3	0
83.3	60.0	33	34.7	120	45.4	JD	02	02	04	1639	64	4	39
83.3	70.0	33	14.7	121	26.7	JD	02	02	04	0900	69	0	1
83.3	80.0	32	54.3	122	07.8	JD	02	02	03	2314	64	29	88
83.3	90.0	32	34.7	122	48.7	JD	02	02	03	1631	73	0	2
83.3	100.0	32	14.7	123	29.7	JD	02	02	03	0817	68	0	1
83.3	110.0	31	54.7	124	10.2	JD	02	02	03	0037	68	2	7
86.7	33.0	33	53.2	118	29.3	JD	02	01	31	0206	73	37	711
86.7	35.0	33	49.3	118	37.7	JD	02	01	31	0435	73	20	145
86.7	40.0	33	39.7	118	58.5	JD	02	01	31	0816	65	18	530
86.7	45.0	33	29.5	119	19.0	JD	02	01	31	1426	76	2	2051
86.7	50.0	33	19.6	119	39.7	JD	02	01	31	1811	77	97	2612
86.7	55.0	33	09.4	120	00.9	JD	02	02	01	0049	62	21	10
86.7	60.0	32	59.7	120	20.9	JD	02	02	01	0848	73	3	406
86.7	70.0	32	39.5	121	01.9	JD	02	02	01	1633	72	0	13
86.7	80.0	32	19.4	121	42.7	JD	02	02	01	2310	68	3	14
86.7	90.0	31	59.5	122	23.5	JD	02	02	02	0505	69	1	4
86.7	100.0	31	39.5	123	03.9	JD	02	02	02	1150	69	0	0
86.7	110.0	31	19.6	123	44.6	JD	02	02	02	1817	69	3	2
90.0	28.0	33	29.1	117	46.2	JD	02	01	30	2003	69	15	2
90.0	30.0	33	25.2	117	54.3	JD	02	01	30	1740	68	3	6
90.0	35.0	33	15.2	118	15.0	JD	02	01	30	1326	69	4	59
90.0	37.0	33	11.1	118	23.2	JD	02	01	30	0840	61	1	57
90.0	45.0	32	55.1	118	56.1	JD	02	01	30	0402	69	0	357
90.0	53.0	32	39.1	119	28.9	JD	02	01	29	2200	62	3	68
90.0	60.0	32	25.1	119	57.7	JD	02	01	29	1647	67	0	1

TABLE 1. (cont.)

CalCOFI Cruise 0201

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	70.0	32	05.2	120	38.4	JD	02	01	29	0804	65	0	0
90.0	80.0	31	45.0	121	18.9	JD	02	01	29	0124	67	0	4
90.0	90.0	31	25.1	121	59.4	JD	02	01	28	1852	68	0	0
90.0	100.0	31	05.2	122	39.9	JD	02	01	28	1234	63	2	10
90.0	110.0	30	45.2	123	19.9	JD	02	01	28	0548	68	1	2
90.0	120.0	30	26.2	124	00.6	JD	02	01	27	2318	69	4	0
93.3	26.7	32	57.5	117	18.2	JD	02	01	24	1207	71	1	5
93.3	28.0	32	54.9	117	23.6	JD	02	01	24	1452	65	6	97
93.3	30.0	32	50.9	117	31.9	JD	02	01	24	1804	71	7	24
93.3	35.0	32	40.7	117	52.2	JD	02	01	24	2228	65	0	297
93.3	40.0	32	30.8	118	12.8	JD	02	01	25	0315	67	1	2
93.3	45.0	32	21.1	118	33.2	JD	02	01	25	0735	67	1	8
93.3	50.0	32	10.7	118	53.6	JD	02	01	25	1214	64	0	5
93.3	55.0	32	00.8	119	13.9	JD	02	01	25	1626	69	22	108
93.3	60.0	31	50.8	119	34.4	JD	02	01	25	2036	68	1	3
93.3	70.0	31	30.8	120	14.8	JD	02	01	26	0243	63	1	2
93.3	80.0	31	10.7	120	55.1	JD	02	01	26	0754	75	0	2
93.3	90.0	30	50.9	121	35.3	JD	02	01	26	1636	76	1	6
93.3	100.0	30	30.7	122	15.4	JD	02	01	26	2223	72	0	3
93.3	110.0	30	10.9	122	55.4	JD	02	01	27	0417	73	22	0
93.3	120.0	29	49.7	123	35.3	JD	02	01	27	0955	70	8	2

CalCOFI Cruise 0204

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	JD	02	04	12	0849	86	1	25
76.7	51.0	35	01.1	120	55.2	JD	02	04	12	0651	83	1	0
76.7	55.0	34	53.3	121	12.0	JD	02	04	12	0325	82	2	5
76.7	60.0	34	43.1	121	32.8	JD	02	04	11	2305	83	6	13
76.7	70.0	34	23.3	122	14.7	JD	02	04	11	1630	79	4	970
76.7	80.0	34	03.3	122	57.1	JD	02	04	11	0804	81	0	28
76.7	90.0	33	43.3	123	38.1	JD	02	04	11	0129	83	0	6
76.7	100.0	33	23.1	124	19.5	JD	02	04	10	1915	87	3	11
80.0	51.0	34	26.9	120	31.1	JD	02	04	08	1917	95	16	10
80.0	55.0	34	18.8	120	47.9	JD	02	04	08	2247	83	4	12
80.0	60.0	34	09.0	121	09.1	JD	02	04	09	0230	66	0	2
80.0	70.0	33	49.0	121	50.4	JD	02	04	09	0803	84	0	2
80.0	80.0	33	29.1	122	32.1	JD	02	04	09	1542	88	0	89
80.0	90.0	33	09.1	123	13.4	JD	02	04	09	2151	87	1	51
80.0	100.0	32	49.1	123	54.4	JD	02	04	10	0339	79	2	20
83.3	40.6	34	13.6	119	24.9	JD	02	04	08	0938	79	0	317
83.3	42.0	34	10.5	119	30.5	JD	02	04	08	0750	91	2	5
83.3	51.0	33	52.7	120	08.1	JD	02	04	08	0152	76	79	3
83.3	55.0	33	44.5	120	24.6	JD	02	04	07	2237	80	30	18
83.3	60.0	33	34.6	120	45.4	JD	02	04	07	1821	81	5	4
83.3	70.0	33	14.6	121	26.7	JD	02	04	07	1153	77	11	3
83.3	80.0	32	54.6	122	08.1	JD	02	04	07	0505	86	69	36

TABLE 1. (cont.) CalCOFI Cruise 0204

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	90.0	32	34.5	122	48.9	JD	02	04	06	2238	82	8	32
83.3	100.0	32	14.6	123	29.6	JD	02	04	06	1620	88	0	43
83.3	110.0	31	54.6	124	10.0	JD	02	04	06	0833	87	1	79
86.7	33.0	33	53.3	118	29.4	JD	02	04	03	1425	75	0	248
86.7	35.0	33	49.6	118	37.3	JD	02	04	03	1743	86	60	25
86.7	40.0	33	39.6	118	58.4	JD	02	04	03	2140	82	82	662
86.7	45.0	33	29.5	119	19.1	JD	02	04	04	0134	89	9	49
86.7	50.0	33	19.5	119	39.5	JD	02	04	04	0500	100	20	26
86.7	55.0	33	09.4	120	00.4	JD	02	04	04	0752	87	4	16
86.7	60.0	32	59.5	120	20.6	JD	02	04	04	1932	93	93	6
86.7	70.0	32	39.3	121	01.9	JD	02	04	05	0143	88	38	17
86.7	80.0	32	19.4	121	42.9	JD	02	04	05	0800	81	0	7
86.7	90.0	31	59.4	122	23.5	JD	02	04	05	1530	85	0	68
86.7	100.0	31	39.4	123	04.1	JD	02	04	05	2117	91	37	111
86.7	110.0	31	19.4	123	44.6	JD	02	04	06	0307	79	42	22
90.0	28.0	33	29.0	117	46.3	JD	02	04	03	0530	85	8	544
90.0	30.0	33	25.3	117	54.3	JD	02	04	03	0325	88	80	10
90.0	35.0	33	14.9	118	15.1	JD	02	04	02	2337	85	5	343
90.0	37.0	33	11.0	118	23.4	JD	02	04	02	2057	89	1	8
90.0	45.0	32	55.1	118	56.1	JD	02	04	02	1559	104	10	821
90.0	53.0	32	39.2	119	29.2	JD	02	04	02	1040	93	2	71
90.0	60.0	32	25.2	119	57.9	JD	02	04	02	0534	100	8	64
90.0	70.0	32	04.9	120	38.5	JD	02	04	01	2324	88	120	46
90.0	80.0	31	45.0	121	19.2	JD	02	04	01	1722	92	0	159
90.0	90.0	31	25.1	121	59.6	JD	02	04	01	1134	86	3	429
90.0	100.0	31	05.1	122	39.8	JD	02	04	01	0520	84	119	17
90.0	110.0	30	45.1	123	20.1	JD	02	03	31	2324	87	23	7
90.0	120.0	30	24.8	123	59.7	JD	02	03	31	1717	81	2	32
93.3	26.7	32	57.3	117	18.3	JD	02	03	28	1220	85	15	77
93.3	28.0	32	54.8	117	23.7	JD	02	03	28	1508	87	2	436
93.3	30.0	32	50.9	117	31.8	JD	02	03	28	1748	86	0	92
93.3	35.0	32	40.8	117	52.4	JD	02	03	28	2156	89	3	329
93.3	40.0	32	30.9	118	12.9	JD	02	03	29	0338	80	39	502
93.3	45.0	32	20.8	118	33.3	JD	02	03	29	0737	82	4	1542
93.3	50.0	32	10.8	118	53.4	JD	02	03	29	1152	77	0	99
93.3	55.0	32	00.8	119	13.9	JD	02	03	29	1620	84	1	172
93.3	60.0	31	50.8	119	34.3	JD	02	03	29	2038	83	30	57
93.3	70.0	31	30.9	120	14.9	JD	02	03	30	0239	74	12	117
93.3	80.0	31	10.8	120	55.1	JD	02	03	30	0749	85	2	45
93.3	90.0	30	50.8	121	35.4	JD	02	03	30	1552	85	0	29
93.3	100.0	30	30.9	122	15.4	JD	02	03	30	2155	82	40	28
93.3	110.0	30	10.9	122	55.4	JD	02	03	31	0347	93	6	83
93.3	120.0	29	50.9	123	35.1	JD	02	03	31	0848	92	1	34

TABLE 1. (cont.) CalCOFI Cruise 0207

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	NH	02	07	17	0152	81	3	314
76.7	51.0	35	01.3	120	55.1	NH	02	07	16	2323	78	15	7
76.7	55.0	34	53.2	121	11.8	NH	02	07	16	1954	78	74	2
76.7	60.0	34	43.4	121	32.9	NH	02	07	16	1604	78	5	8
76.7	70.0	34	23.0	122	14.6	NH	02	07	16	0757	73	3	6
76.7	80.0	34	03.0	122	56.6	NH	02	07	16	0125	70	2	3
76.7	90.0	33	43.4	123	38.0	NH	02	07	15	1910	88	4	0
76.7	100.0	33	23.1	124	19.4	NH	02	07	15	1238	95	0	8
80.0	51.0	34	27.0	120	31.4	NH	02	07	13	2100	76	10	456
80.0	55.0	34	19.0	120	48.1	NH	02	07	14	0029	69	2	3
80.0	60.0	34	09.1	121	09.0	NH	02	07	14	0440	80	62	1
80.0	70.0	33	49.0	121	50.6	NH	02	07	14	0943	71	0	15
80.0	80.0	33	28.8	122	31.9	NH	02	07	14	1751	67	3	2
80.0	90.0	33	09.0	123	13.3	NH	02	07	14	2323	71	6	0
80.0	100.0	32	49.0	123	54.4	NH	02	07	15	0456	65	9	8
81.8	46.9	34	16.5	120	01.5	NH	02	07	13	1640	98	0	39
83.3	40.6	34	13.5	119	24.7	NH	02	07	13	0801	93	4	8561
83.3	42.0	34	10.7	119	30.5	NH	02	07	13	0925	88	1	6466
83.3	51.0	33	52.7	120	08.0	NH	02	07	13	0144	75	3	812
83.3	55.0	33	44.8	120	24.8	NH	02	07	12	2159	79	0	0
83.3	60.0	33	34.7	120	45.3	NH	02	07	12	1807	84	0	0
83.3	70.0	33	14.7	121	26.6	NH	02	07	12	0948	89	2	203
83.3	80.0	32	54.7	122	07.7	NH	02	07	12	0448	81	8	486
83.3	90.0	32	34.7	122	48.6	NH	02	07	11	2319	95	26	3458
83.3	100.0	32	14.7	123	29.5	NH	02	07	11	1758	87	0	3269
83.3	110.0	31	54.7	124	10.2	NH	02	07	11	1230	100	2	49
86.7	33.0	33	53.1	118	29.4	NH	02	07	08	2100	101	9	1664
86.7	35.0	33	49.4	118	37.8	NH	02	07	08	2334	99	9	43
86.7	40.0	33	39.4	118	58.6	NH	02	07	09	0416	87	14	302
86.7	45.0	33	29.4	119	19.1	NH	02	07	09	0813	82	0	1
86.7	50.0	33	19.4	119	39.8	NH	02	07	09	1306	81	1	86
86.7	55.0	33	09.4	120	00.5	NH	02	07	09	1731	86	1	0
86.7	60.0	32	59.5	120	20.9	NH	02	07	09	2118	84	18	6
86.7	70.0	32	39.3	121	02.0	NH	02	07	10	0312	71	12	28
86.7	80.0	32	19.4	121	42.9	NH	02	07	10	0945	85	0	1
86.7	90.0	31	59.4	122	23.5	NH	02	07	10	1756	77	2	32
86.7	100.0	31	39.5	123	04.3	NH	02	07	10	2332	81	15	62
86.7	110.0	31	19.4	123	44.6	NH	02	07	11	0529	84	10	293
90.0	28.0	33	29.1	117	46.3	NH	02	07	08	1501	95	14	2305
90.0	30.0	33	25.1	117	54.3	NH	02	07	08	1000	116	8	108
90.0	35.0	33	15.1	118	15.0	NH	02	07	08	0648	91	2	1182
90.0	37.0	33	11.1	118	23.1	NH	02	07	08	0335	79	20	4662
90.0	45.0	32	55.1	118	56.2	NH	02	07	07	2151	65	4	0
90.0	53.0	32	39.1	119	28.9	NH	02	07	07	1616	78	9	1
90.0	60.0	32	25.1	119	57.6	NH	02	07	07	0846	70	6	3
90.0	70.0	32	05.1	120	38.4	NH	02	07	07	0143	68	2	3
90.0	80.0	31	44.9	121	18.8	NH	02	07	06	1918	87	15	3
90.0	90.0	31	25.1	121	59.4	NH	02	07	06	1305	101	4	73

TABLE 1. (cont.)

CalCOFI Cruise 0207

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	NH	02	07	06	0616	74	3	35
90.0	110.0	30	45.1	123	19.9	NH	02	07	06	0025	81	44	10
90.0	120.0	30	24.9	123	59.9	NH	02	07	05	1807	72	11	93
93.3	26.7	32	57.4	117	18.5	NH	02	07	02	1214	50	5	838
93.3	28.0	32	54.7	117	23.7	NH	02	07	02	1518	82	0	103
93.3	30.0	32	50.6	117	31.9	NH	02	07	02	1817	83	0	0
93.3	35.0	32	40.8	117	52.5	NH	02	07	02	2219	87	2	3942
93.3	40.0	32	30.9	118	12.8	NH	02	07	03	0233	83	3	236
93.3	45.0	32	20.8	118	33.2	NH	02	07	03	0624	82	4	8
93.3	50.0	32	10.8	118	53.5	NH	02	07	03	0929	100	0	13
93.3	55.0	32	00.8	119	14.0	NH	02	07	03	1548	70	1	6
93.3	60.0	31	50.8	119	34.3	NH	02	07	03	1934	91	8	4
93.3	70.0	31	30.8	120	14.7	NH	02	07	04	0135	64	16	4
93.3	80.0	31	10.6	120	55.1	NH	02	07	04	0751	76	0	33
93.3	90.0	30	50.8	121	35.6	NH	02	07	04	1643	78	4	125
93.3	100.0	30	30.8	122	15.6	NH	02	07	04	2224	68	15	789
93.3	110.0	30	10.9	122	55.4	NH	02	07	05	0419	90	51	27
93.3	120.0	29	50.8	123	35.1	NH	02	07	05	0926	83	11	170

CalCOFI Cruise 0211

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	05.2	120	46.9	NH	02	11	24	2251	92	48	57
76.7	51.0	35	01.5	120	55.2	NH	02	11	24	2022	79	5	2
76.7	55.0	34	53.3	121	12.0	NH	02	11	24	1638	71	2	2
76.7	60.0	34	43.2	121	33.2	NH	02	11	24	1210	77	0	0
76.7	70.0	34	23.2	122	14.9	NH	02	11	24	0537	84	2	0
76.7	80.0	34	03.1	122	56.7	NH	02	11	23	2309	75	0	5
76.7	90.0	33	43.3	123	38.0	NH	02	11	23	1638	66	1	2
76.7	100.0	33	23.0	124	19.0	NH	02	11	23	0847	76	0	0
80.0	51.0	34	27.0	120	31.2	NH	02	11	21	1900	88	0	2
80.0	55.0	34	19.2	120	47.8	NH	02	11	21	2220	78	0	2
80.0	60.0	34	09.0	121	09.1	NH	02	11	22	0247	79	1	1
80.0	70.0	33	49.0	121	50.5	NH	02	11	22	0819	85	0	1
80.0	80.0	33	29.0	122	32.1	NH	02	11	22	1614	84	1	1
80.0	90.0	33	08.9	123	13.0	NH	02	11	22	2151	81	0	0
80.0	100.0	32	49.1	123	54.5	NH	02	11	23	0353	82	2	0
81.8	46.9	34	16.5	120	01.7	NH	02	11	21	1501	99	0	0
83.3	40.6	34	13.4	119	24.6	NH	02	11	21	0724	92	0	5
83.3	42.0	34	11.1	119	31.5	NH	02	11	21	0836	98	0	13
83.3	51.0	33	52.8	120	08.2	NH	02	11	21	0121	97	21	208
83.3	55.0	33	44.6	120	24.9	NH	02	11	20	2156	112	3	10
83.3	60.0	33	34.5	120	45.6	NH	02	11	20	1807	92	0	28
83.3	70.0	33	14.7	121	26.6	NH	02	11	20	1157	90	1	25
83.3	80.0	32	54.8	122	07.8	NH	02	11	20	0434	90	3	0
83.3	90.0	32	34.5	122	48.9	NH	02	11	19	2235	122	0	0
83.3	100.0	32	14.7	123	29.5	NH	02	11	19	1644	80	3	0

TABLE 1. (cont.) CalCOFI Cruise 0211

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	110.0	31	54.7	124	10.2	NH	02	11	19	0818	84	1	0
86.7	33.0	33	52.7	118	29.5	NH	02	11	16	2014	86	1	20
86.7	35.0	33	49.5	118	37.5	NH	02	11	16	2255	76	3	1
86.7	40.0	33	39.4	118	58.5	NH	02	11	17	0258	91	5	0
86.7	45.0	33	29.4	119	18.8	NH	02	11	17	0652	80	3	40
86.7	50.0	33	19.3	119	40.1	NH	02	11	17	0938	83	1	44
86.7	55.0	33	09.3	120	00.4	NH	02	11	17	1457	71	0	3
86.7	60.0	32	59.4	120	20.6	NH	02	11	17	1848	69	0	0
86.7	70.0	32	39.6	121	01.8	NH	02	11	18	0100	79	1	0
86.7	80.0	32	19.4	121	43.0	NH	02	11	18	0803	74	0	0
86.7	90.0	31	59.4	122	23.7	NH	02	11	18	1605	83	4	0
86.7	100.0	31	39.4	123	04.1	NH	02	11	18	2139	82	0	0
86.7	110.0	31	19.4	123	44.6	NH	02	11	19	0328	69	0	2
90.0	28.0	33	29.1	117	46.2	NH	02	11	16	1417	94	0	0
90.0	30.0	33	25.5	117	54.7	NH	02	11	16	1113	117	0	141
90.0	35.0	33	15.2	118	15.0	NH	02	11	16	0539	91	8	18
90.0	37.0	33	11.2	118	23.4	NH	02	11	16	0301	87	0	146
90.0	45.0	32	55.1	118	56.4	NH	02	11	15	2142	103	0	0
90.0	53.0	32	39.3	119	28.8	NH	02	11	15	1634	87	0	9
90.0	60.0	32	25.1	119	57.6	NH	02	11	15	1142	84	1	78
90.0	70.0	32	05.1	120	38.5	NH	02	11	15	0455	82	0	2
90.0	80.0	31	45.0	121	19.2	NH	02	11	14	2235	82	0	1
90.0	90.0	31	25.2	121	59.5	NH	02	11	14	1626	74	0	1
90.0	100.0	31	05.3	122	40.2	NH	02	11	14	0753	86	0	0
90.0	110.0	30	45.0	123	20.2	NH	02	11	14	0001	61	1	0
90.0	120.0	30	24.8	123	59.7	NH	02	11	13	1747	72	9	1
93.3	26.7	32	57.1	117	18.4	NH	02	11	10	1303	89	0	0
93.3	28.0	32	54.8	117	23.8	NH	02	11	10	1631	81	0	2
93.3	30.0	32	50.8	117	32.1	NH	02	11	10	1933	88	3	0
93.3	35.0	32	41.0	117	52.1	NH	02	11	10	2340	73	0	0
93.3	40.0	32	30.7	118	12.9	NH	02	11	11	0409	69	1	1
93.3	45.0	32	20.8	118	33.3	NH	02	11	11	0742	82	1	0
93.3	50.0	32	10.8	118	53.7	NH	02	11	11	1453	74	0	1
93.3	55.0	32	00.7	119	13.6	NH	02	11	11	1855	74	0	2
93.3	60.0	31	51.0	119	33.8	NH	02	11	11	2310	95	3	6
93.3	70.0	31	31.1	120	14.9	NH	02	11	12	0510	89	1	3
93.3	80.0	31	10.9	120	55.0	NH	02	11	12	1155	86	0	14
93.3	90.0	30	50.8	121	35.1	NH	02	11	12	1805	78	1	2
93.3	100.0	30	30.8	122	15.5	NH	02	11	12	2351	78	4	3
93.3	110.0	30	10.4	122	55.8	NH	02	11	13	0533	72	2	0
93.3	120.0	29	50.9	123	35.4	NH	02	11	13	1153	74	1	1

TABLE 2. Pooled occurrences of fish larvae taken in Manta net tows on the 2002 CalCOFI survey.

Rank	Taxon	Occurrences
1	*Cololabis saira*	80
2	*Engraulis mordax*	55
3	*Sebastes* spp.	44
4	*Sardinops sagax*	40
5	*Scorpaenichthys marmoratus*	27
6	*Sebastes jordani*	13
6	*Trachurus symmetricus*	13
8	*Hypsoblennius jenkinsi*	11
9	*Hypsoblennius gilberti*	10
10	*Sebastes diploproa*	9
11	*Merluccius productus*	8
12	*Vinciguerria lucetia*	7
12	*Ceratoscopelus townsendi*	7
14	*Citharichthys stigmaeus*	6
14	*Atherinopsis californiensis*	6
14	*Hexagrammos decagrammus*	6
17	*Stenobrachius leucopsarus*	5
18	*Citharichthys sordidus*	4
19	*Diaphus* spp.	3
19	*Oxylebius pictus*	3
19	*Bathylagus ochotensis*	3
19	*Hemilepidotus spinosus*	3
23	*Tarletonbeania crenularis*	2
23	*Pleuronichthys coenosus*	2
23	*Triphoturus mexicanus*	2
23	*Tetragonurus cuvieri*	2
23	*Icichthys lockingtoni*	2
23	*Leuresthes tenuis*	2
23	*Hypsoblennius* spp.	2
23	*Aristostomias scintillans*	2
23	*Sebastes aurora*	2
23	*Symbolophorus californiensis*	2
23	*Cryptotrema corallinum*	2
23	*Chromis punctipinnis*	2
23	*Seriphus politus*	2
23	*Genyonemus lineatus*	2
23	*Cheilopogon pinnatibarbatus*	2
38	*Leuroglossus stilbius*	1
38	*Nannobrachium ritteri*	1
38	*Cataetyx rubrirostris*	1
38	*Gigantactis* spp.	1
38	*Anoplopoma fimbria*	1
38	Disintegrated fish larvae	1
38	*Zaniolepis frenata*	1
38	*Hexagrammos lagocephalus*	1
38	*Menticirrhus undulatus*	1
38	*Oxyjulis californica*	1
38	*Neoclinus blanchardi*	1
38	*Pleuronichthys decurrens*	1
38	*Sebastes levis*	1
	Total	406

TABLE 3. Pooled raw counts of fish larvae taken in Manta net tows on the 2002 CalCOFI survey.

Rank	Taxon	Count
1	*Sardinops sagax*	605
2	*Engraulis mordax*	580
3	*Cololabis saira*	409
4	*Scorpaenichthys marmoratus*	239
5	*Sebastes* spp.	149
6	*Sebastes diploproa*	62
7	*Trachurus symmetricus*	60
8	*Atherinopsis californiensis*	50
9	*Sebastes jordani*	48
9	*Merluccius productus*	48
11	*Hypsoblennius jenkinsi*	45
12	*Hexagrammos decagrammus*	37
13	*Hypsoblennius gilberti*	31
14	*Stenobrachius leucopsarus*	22
15	*Ceratoscopelus townsendi*	11
16	*Vinciguerria lucetia*	9
16	*Hemilepidotus spinosus*	9
18	*Leuresthes tenuis*	7
18	*Aristostomias scintillans*	7
20	*Citharichthys stigmaeus*	6
21	*Bathylagus ochotensis*	5
22	*Genyonemus lineatus*	4
22	*Diaphus* spp.	4
22	*Citharichthys sordidus*	4
22	*Neoclinus blanchardi*	4
26	*Symbolophorus californiensis*	3
26	*Seriphus politus*	3
26	*Cryptotrema corallinum*	3
26	*Oxylebius pictus*	3
26	*Chromis punctipinnis*	3
31	Disintegrated fish larvae	2
31	*Sebastes aurora*	2
31	*Icichthys lockingtoni*	2
31	*Hypsoblennius* spp.	2
31	*Triphoturus mexicanus*	2
31	*Tarletonbeania crenularis*	2
31	*Anoplopoma fimbria*	2
31	*Pleuronichthys coenosus*	2
31	*Cheilopogon pinnatibarbatus*	2
31	*Tetragonurus cuvieri*	2
41	*Leuroglossus stilbius*	1
41	*Nannobrachium ritteri*	1
41	*Oxyjulis californica*	1
41	*Gigantactis* spp.	1
41	*Sebastes levis*	1
41	*Hexagrammos lagocephalus*	1
41	*Zaniolepis frenata*	1
41	*Cataetyx rubrirostris*	1
41	*Pleuronichthys decurrens*	1
41	*Menticirrhus undulatus*	1
	Total	2500

TABLE 4. Numbers of fish larvae taken in Manta net tows on the 2002 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	51.0	-	0.0	-	0.0	-	-	1.6	-	-	-	0.0	-
76.7	55.0	-	0.0	-	0.8	-	-	6.2	-	-	-	0.0	-
76.7	60.0	-	0.0	-	1.7	-	-	0.0	-	-	-	0.0	-
76.7	70.0	-	0.0	-	3.2	-	-	0.0	-	-	-	0.0	-
76.7	80.0	-	0.0	-	0.0	-	-	1.4	-	-	-	0.0	-
76.7	100.0	-	0.0	-	2.6	-	-	0.0	-	-	-	0.0	-
80.0	51.0	-	0.0	-	1.0	-	-	0.0	-	-	-	0.0	-
80.0	55.0	-	0.0	-	1.7	-	-	0.0	-	-	-	0.0	-
80.0	100.0	-	0.0	-	1.6	-	-	4.5	-	-	-	0.0	-
83.3	55.0	-	0.0	-	17.7	-	-	0.0	-	-	-	0.0	-
83.3	60.0	-	0.0	-	4.1	-	-	0.0	-	-	-	0.0	-
83.3	70.0	-	0.0	-	7.7	-	-	0.0	-	-	-	0.0	-
83.3	80.0	-	0.0	-	56.7	-	-	0.0	-	-	-	0.0	-
83.3	90.0	-	0.0	-	5.7	-	-	5.7	-	-	-	0.0	-
86.7	50.0	0.0	-	-	13.0	-	-	0.0	-	-	-	0.0	-
86.7	55.0	-	0.0	-	1.7	-	-	0.0	-	-	-	0.0	-
86.7	60.0	-	0.0	-	86.7	-	-	0.0	-	-	-	0.0	-
86.7	70.0	-	0.0	-	33.4	-	-	7.1	-	-	-	0.0	-
86.7	100.0	-	0.0	-	18.2	-	-	0.0	-	-	-	0.0	-
86.7	110.0	-	0.0	-	26.0	-	-	0.0	-	-	-	0.0	-
90.0	45.0	0.0	-	-	0.0	-	-	0.6	-	-	-	0.0	-
90.0	60.0	0.0	-	-	7.0	-	-	0.0	-	-	-	0.0	-
90.0	70.0	0.0	-	-	39.7	-	-	1.4	-	-	-	0.0	-
90.0	90.0	0.0	-	-	1.7	-	-	0.0	-	-	-	0.0	-
90.0	100.0	0.0	-	-	85.2	-	-	0.0	-	-	-	0.0	-
93.3	35.0	0.0	-	0.0	-	-	-	1.7	-	-	-	0.0	-
93.3	40.0	0.0	-	8.0	-	-	-	0.8	-	-	-	0.0	-
93.3	45.0	0.0	-	1.6	-	-	-	0.0	-	-	-	0.0	-
93.3	60.0	0.0	-	19.0	-	-	-	3.6	-	-	-	0.0	-
93.3	70.0	0.0	-	5.9	-	-	-	2.6	-	-	-	0.0	-

TABLE 4. (cont.)

Sardinops sagax (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 100.0	0.0	-	26.2	-	-	-	0.0	-	-	-	0.0	-
93.3 110.0	0.0	-	0.9	-	-	-	0.0	-	-	-	0.0	-

Engraulis mordax

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 49.0	-	0.8	-	0.0	-	-	1.6	-	-	-	0.0	-
76.7 55.0	-	0.0	-	0.0	-	-	29.6	-	-	-	0.0	-
76.7 60.0	-	0.7	-	0.8	-	-	0.0	-	-	-	0.0	-
80.0 51.0	-	2.8	-	1.0	-	-	5.3	-	-	-	0.0	-
80.0 55.0	-	2.5	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 60.0	-	11.0	-	0.0	-	-	5.6	-	-	-	0.0	-
80.0 70.0	-	3.7	-	0.0	-	-	0.0	-	-	-	0.0	-
81.8 46.9	-	7.5	-	-	-	-	0.0	-	-	-	0.0	-
83.3 40.6	-	2.3	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 51.0	-	1.9	-	44.8	-	-	0.7	-	-	-	0.0	-
83.3 55.0	-	1.4	-	4.8	-	-	0.0	-	-	-	0.0	-
83.3 60.0	-	0.6	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 80.0	-	1.9	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 33.0	0.0	-	-	0.0	-	-	3.0	-	-	-	0.0	-
86.7 35.0	0.7	-	-	45.5	-	-	1.0	-	-	-	0.0	-
86.7 40.0	6.5	-	-	61.7	-	-	0.9	-	-	-	0.9	-
86.7 45.0	0.0	-	-	7.1	-	-	0.0	-	-	-	0.0	-
86.7 50.0	1.5	-	-	7.0	-	-	0.0	-	-	-	0.0	-
86.7 55.0	-	0.0	-	1.7	-	-	0.0	-	-	-	0.0	-
86.7 60.0	-	2.2	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 100.0	-	0.0	-	10.0	-	-	0.0	-	-	-	0.0	-
86.7 110.0	-	0.0	-	0.8	-	-	0.0	-	-	-	0.0	-
90.0 28.0	5.5	-	-	1.7	-	-	3.8	-	-	-	0.0	-
90.0 30.0	0.7	-	-	67.4	-	-	0.0	-	-	-	0.0	-
90.0 35.0	2.1	-	-	0.8	-	-	0.0	-	-	-	0.0	-
90.0 37.0	0.0	-	-	0.9	-	-	3.2	-	-	-	0.0	-
90.0 70.0	0.0	-	-	59.1	-	-	0.0	-	-	-	0.0	-
93.3 26.7	0.0	-	0.0	-	-	-	2.5	-	-	-	0.0	-
93.3 28.0	3.3	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3 30.0	1.4	-	0.0	-	-	-	0.0	-	-	-	0.9	-

TABLE 4. (cont.)

Engraulis mordax (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 35.0	0.0	-	2.7	-	-	-	0.0	-	-	-	0.0	-
93.3 40.0	0.0	-	17.7	-	-	-	0.0	-	-	-	0.0	-
93.3 55.0	9.0	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3 60.0	0.0	-	5.0	-	-	-	0.0	-	-	-	0.0	-
93.3 70.0	0.0	-	2.2	-	-	-	0.0	-	-	-	0.0	-

Bathylagus ochotensis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 80.0	-	1.3	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 80.0	-	1.4	-	0.0	-	-	0.0	-	-	-	0.0	-
93.3 40.0	0.7	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Leuroglossus stilbius

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 51.0	-	0.7	-	0.0	-	-	0.0	-	-	-	0.0	-

Vinciguerria lucetia

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 110.0	-	0.0	-	0.0	-	-	0.0	-	-	-	0.8	-
90.0 80.0	0.0	-	-	0.0	-	-	0.9	-	-	-	0.0	-
90.0 110.0	0.0	-	0.9	-	-	-	0.0	-	-	-	0.0	-
90.0 120.0	0.0	-	0.0	-	-	-	0.0	-	-	-	0.7	-
93.3 40.0	0.0	-	0.0	-	-	-	0.0	-	-	-	0.7	-
93.3 100.0	0.0	-	0.0	-	-	-	0.7	-	-	-	2.3	-

Aristostomias scintillans

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 100.0	-	0.0	-	0.0	-	-	0.0	-	-	-	2.4	-
86.7 90.0	-	0.0	-	0.0	-	-	0.0	-	-	-	3.3	-

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	-	-	-	0.7	-
86.7 110.0	-	1.4	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0 80.0	0.0	-	-	0.0	-	-	0.9	-	-	-	0.0	-
90.0 100.0	0.0	-	-	1.7	-	-	0.0	-	-	-	0.0	-
90.0 110.0	0.0	-	0.9	-	-	-	0.0	-	-	-	0.0	-

TABLE 4. (cont.)

Ceratoscopelus townsendi (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 120.0	0.0	-	0.0	-	-	-	0.0	-	-	-	2.2	-
93.3 110.0	0.0	-	0.0	-	-	-	0.9	-	-	-	0.0	-

***Diaphus* spp.**

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 60.0	-	0.7	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 51.0	-	0.0	-	0.8	-	-	0.0	-	-	-	0.0	-
93.3 45.0	0.0	-	1.6	-	-	-	0.0	-	-	-	0.0	-

Nannobrachium ritteri

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

Stenobrachius leucopsarus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 51.0	-	0.0	-	5.7	-	-	0.0	-	-	-	0.0	-
80.0 60.0	-	10.2	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 51.0	-	0.0	-	1.5	-	-	0.0	-	-	-	0.0	-
83.3 80.0	-	0.6	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 55.0	-	0.0	-	0.0	-	-	0.9	-	-	-	0.0	-

Triphoturus mexicanus

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

Symbolophorus californiensis

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	-
90.0 100.0	0.0	-	-	1.7	-	-	0.0	-	-	-	0.0	-

Tarletonbeania crenularis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 55.0	-	0.0	-	0.0	-	-	0.7	-	-	-	0.0	-
80.0 60.0	-	0.8	-	0.0	-	-	0.0	-	-	-	0.0	-

TABLE 4. (cont.)

Merluccius productus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 60.0	-	11.7	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 51.0	-	1.4	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 55.0	-	0.0	-	0.8	-	-	0.0	-	-	-	0.0	-
80.0 60.0	-	10.2	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 80.0	-	8.3	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 80.0	-	0.7	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0 53.0	0.6	-	-	0.0	-	-	0.0	-	-	-	0.0	-
93.3 45.0	0.7	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Cataetyx rubrirostris

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 51.0	-	0.0	-	0.8	-	-	0.0	-	-	-	0.0	-

***Gigantactis* spp.**

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

Atherinopsis californiensis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 40.6	-	2.3	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 33.0	23.4	-	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 35.0	7.3	-	-	0.0	-	-	0.0	-	-	-	1.5	-
93.3 26.7	0.7	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3 30.0	1.4	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Leuresthes tenuis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 28.0	0.0	-	-	5.1	-	-	0.0	-	-	-	0.0	-
90.0 30.0	0.0	-	-	0.9	-	-	0.0	-	-	-	0.0	-

Cololabis saira

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 51.0	-	0.0	-	0.0	-	-	8.6	-	-	-	0.0	-
76.7 60.0	-	0.0	-	0.0	-	-	3.9	-	-	-	0.0	-
76.7 70.0	-	0.0	-	0.0	-	-	2.2	-	-	-	0.8	-
76.7 90.0	-	3.0	-	0.0	-	-	3.5	-	-	-	0.0	-

TABLE 4. (cont.)

Cololabis saira (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	60.0	-	0.0	-	0.0	-	-	2.4	-	-	-	0.0	-
80.0	80.0	-	0.7	-	0.0	-	-	2.0	-	-	-	0.8	-
80.0	90.0	-	0.0	-	0.0	-	-	4.3	-	-	-	0.0	-
80.0	100.0	-	0.0	-	0.0	-	-	0.0	-	-	-	1.6	-
83.3	40.6	-	0.0	-	0.0	-	-	0.9	-	-	-	0.0	-
83.3	70.0	-	0.0	-	0.0	-	-	1.8	-	-	-	0.9	-
83.3	80.0	-	0.0	-	0.0	-	-	4.1	-	-	-	2.7	-
83.3	90.0	-	0.0	-	0.0	-	-	19.0	-	-	-	0.0	-
83.3	110.0	-	1.4	-	0.0	-	-	2.0	-	-	-	0.0	-
86.7	33.0	0.0	-	-	0.0	-	-	2.0	-	-	-	0.0	-
86.7	40.0	0.0	-	-	0.8	-	-	3.5	-	-	-	0.0	-
86.7	45.0	0.0	-	-	0.9	-	-	0.0	-	-	-	0.0	-
86.7	50.0	0.0	-	-	0.0	-	-	0.8	-	-	-	0.0	-
86.7	60.0	-	0.0	-	0.0	-	-	15.0	-	-	-	0.0	-
86.7	70.0	-	0.0	-	0.0	-	-	1.4	-	-	-	0.8	-
86.7	90.0	-	0.0	-	0.0	-	-	1.5	-	-	-	0.0	-
86.7	100.0	-	0.0	-	1.8	-	-	12.2	-	-	-	0.0	-
86.7	110.0	-	0.7	-	2.4	-	-	8.4	-	-	-	0.0	-
90.0	30.0	0.0	-	-	0.0	-	-	1.2	-	-	-	0.0	-
90.0	35.0	0.0	-	-	1.7	-	-	0.9	-	-	-	0.0	-
90.0	37.0	0.0	-	-	0.0	-	-	1.6	-	-	-	0.0	-
90.0	45.0	0.0	-	-	7.3	-	-	1.3	-	-	-	0.0	-
90.0	53.0	0.0	-	-	0.9	-	-	7.0	-	-	-	0.0	-
90.0	60.0	0.0	-	-	0.0	-	-	4.2	-	-	-	0.8	-
90.0	70.0	0.0	-	-	1.8	-	-	0.0	-	-	-	0.0	-
90.0	80.0	0.0	-	-	0.0	-	-	11.2	-	-	-	0.0	-
90.0	90.0	0.0	-	-	0.0	-	-	4.0	-	-	-	0.0	-
90.0	100.0	1.3	-	-	2.5	-	-	1.5	-	-	-	0.0	-
90.0	110.0	0.7	-	0.9	-	-	-	35.6	-	-	-	0.6	-
90.0	120.0	2.8	-	0.8	-	-	-	8.0	-	-	-	3.6	-
93.3	26.7	0.0	-	0.8	-	-	-	0.0	-	-	-	0.0	-
93.3	40.0	0.0	-	0.8	-	-	-	0.0	-	-	-	0.0	-
93.3	45.0	0.0	-	0.0	-	-	-	0.8	-	-	-	0.8	-
93.3	55.0	0.0	-	0.0	-	-	-	0.7	-	-	-	0.0	-
93.3	60.0	0.0	-	0.8	-	-	-	3.6	-	-	-	2.8	-

TABLE 4. (cont.)

Cololabis saira (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 70.0	0.0	-	0.0	-	-	-	7.7	-	-	-	0.9	-
93.3 90.0	0.0	-	0.0	-	-	-	2.3	-	-	-	0.8	-
93.3 100.0	0.0	-	0.0	-	-	-	9.5	-	-	-	0.8	-
93.3 110.0	16.1	-	0.9	-	-	-	45.0	-	-	-	0.7	-
93.3 120.0	5.6	-	0.9	-	-	-	9.2	-	-	-	0.7	-

Cheilopogon pinnatibarbatus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 45.0	0.0	-	-	0.0	-	-	0.6	-	-	-	0.0	-
93.3 45.0	0.0	-	0.0	-	-	-	0.8	-	-	-	0.0	-

Sebastes spp.

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 49.0	-	1.6	-	0.9	-	-	0.8	-	-	-	0.9	-
76.7 51.0	-	0.8	-	0.0	-	-	1.6	-	-	-	0.0	-
76.7 55.0	-	2.6	-	0.8	-	-	0.8	-	-	-	0.0	-
76.7 60.0	-	1.4	-	2.5	-	-	0.0	-	-	-	0.0	-
76.7 70.0	-	0.0	-	0.0	-	-	0.0	-	-	-	0.8	-
80.0 51.0	-	0.0	-	1.9	-	-	0.0	-	-	-	0.0	-
80.0 55.0	-	13.3	-	0.0	-	-	0.7	-	-	-	0.0	-
80.0 60.0	-	4.2	-	0.0	-	-	7.2	-	-	-	0.0	-
80.0 90.0	-	0.7	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 100.0	-	0.0	-	0.0	-	-	0.6	-	-	-	0.0	-
83.3 40.6	-	5.4	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 42.0	-	0.0	-	0.9	-	-	0.0	-	-	-	0.0	-
83.3 51.0	-	1.9	-	9.9	-	-	0.0	-	-	-	0.0	-
83.3 55.0	-	0.0	-	1.6	-	-	0.0	-	-	-	0.0	-
83.3 60.0	-	1.9	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 80.0	-	6.4	-	0.0	-	-	0.8	-	-	-	0.0	-
86.7 35.0	0.7	-	-	6.0	-	-	0.0	-	-	-	0.0	-
86.7 40.0	3.9	-	-	1.6	-	-	0.0	-	-	-	0.0	-
86.7 50.0	1.5	-	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 90.0	-	0.7	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0 35.0	0.7	-	-	0.0	-	-	0.0	-	-	-	0.9	-
90.0 37.0	0.6	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0 45.0	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.
90.0 53.0	0.6	-	-	0.9	-	-	0.0	-	-	-	0.0	-
93.3 26.7	0.0	-	11.9	-	-	-	0.0	-	-	-	0.0	-
93.3 28.0	0.0	-	1.7	-	-	-	0.0	-	-	-	0.0	-
93.3 30.0	1.4	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3 55.0	2.8	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3 60.0	0.7	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Sebastes aurora

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 51.0	-	0.0	-	0.8	-	-	0.0	-	-	-	0.0	-
86.7 40.0	0.0	-	-	0.8	-	-	0.0	-	-	-	0.0	-

Sebastes diploproa

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 51.0	-	0.0	-	0.0	-	-	0.0	-	-	-	3.1	-
76.7 55.0	-	0.0	-	0.0	-	-	21.0	-	-	-	0.0	-
80.0 60.0	-	0.0	-	0.0	-	-	19.1	-	-	-	0.0	-
80.0 100.0	-	0.0	-	0.0	-	-	0.6	-	-	-	0.0	-
83.3 80.0	-	0.0	-	0.0	-	-	1.6	-	-	-	0.0	-
86.7 40.0	0.0	-	-	0.0	-	-	0.0	-	-	-	0.9	-
90.0 30.0	0.0	-	-	0.0	-	-	1.2	-	-	-	0.0	-
90.0 35.0	0.0	-	-	0.0	-	-	0.0	-	-	-	0.9	-
93.3 40.0	0.0	-	0.8	-	-	-	0.0	-	-	-	0.0	-

Sebastes jordani

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 55.0	-	1.3	-	0.0	-	-	0.0	-	-	-	0.0	-
76.7 60.0	-	0.7	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 51.0	-	0.0	-	5.7	-	-	0.0	-	-	-	0.0	-
80.0 55.0	-	1.9	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 40.6	-	16.3	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 42.0	-	0.0	-	0.9	-	-	0.0	-	-	-	0.0	-
83.3 51.0	-	1.9	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 35.0	0.7	-	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 40.0	1.3	-	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 45.0	1.5	-	-	0.0	-	-	0.0	-	-	-	0.0	-

TABLE 4. (cont.)

Sebastes jordani (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 28.0	0.7	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0 53.0	0.6	-	-	0.0	-	-	0.0	-	-	-	0.0	-
93.3 40.0	0.0	-	3.2	-	-	-	0.0	-	-	-	0.0	-

Sebastes levis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7 35.0	0.7	-	-	0.0	-	-	0.0	-	-	-	0.0	-

Anoplopoma fimbria

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 70.0	-	1.5	-	0.0	-	-	0.0	-	-	-	0.0	-

Oxylebius pictus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 60.0	-	0.0	-	0.0	-	-	0.8	-	-	-	0.0	-
86.7 55.0	-	0.6	-	0.0	-	-	0.0	-	-	-	0.0	-
93.3 70.0	0.6	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Zaniolepis frenata

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 51.0	-	0.0	-	0.8	-	-	0.0	-	-	-	0.0	-

Hexagrammos decagrammus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 49.0	-	14.7	-	0.0	-	-	0.0	-	-	-	0.0	-
76.7 55.0	-	1.3	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 51.0	-	0.7	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 60.0	-	11.0	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 40.6	-	0.8	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 50.0	0.8	-	-	0.0	-	-	0.0	-	-	-	0.0	-

Hexagrammos lagocephalus

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

Hemilepidotus spinosus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 90.0	-	0.8	-	0.0	-	-	0.0	-	-	-	0.0	-

TABLE 4. (cont.)

Hemilepidotus spinosus (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	60.0	-	0.8	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0	70.0	-	5.2	-	0.0	-	-	0.0	-	-	-	0.0	-

Scorpaenichthys marmoratus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	49.0	-	1.6	-	0.0	-	-	0.0	-	-	-	38.5	-
76.7	55.0	-	0.0	-	0.0	-	-	0.0	-	-	-	1.4	-
76.7	80.0	-	0.6	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0	60.0	-	1.7	-	0.0	-	-	0.0	-	-	-	0.8	-
81.8	46.9	-	2.7	-	-	-	-	0.0	-	-	-	0.0	-
83.3	40.6	-	0.8	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	51.0	-	0.0	-	0.8	-	-	0.0	-	-	-	20.3	-
83.3	55.0	-	0.0	-	0.0	-	-	0.0	-	-	-	3.4	-
86.7	33.0	3.7	-	-	0.0	-	-	0.0	-	-	-	0.9	-
86.7	35.0	4.4	-	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	40.0	0.0	-	-	1.6	-	-	0.0	-	-	-	0.0	-
86.7	45.0	0.0	-	-	0.0	-	-	0.0	-	-	-	2.4	-
86.7	50.0	71.0	-	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	55.0	-	12.4	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	28.0	4.1	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	30.0	1.4	-	-	1.8	-	-	0.0	-	-	-	0.0	-
90.0	35.0	0.0	-	-	0.8	-	-	0.0	-	-	-	5.4	-
90.0	70.0	0.0	-	-	5.3	-	-	0.0	-	-	-	0.0	-
93.3	30.0	0.7	-	0.0	-	-	-	0.0	-	-	-	0.9	-
93.3	55.0	3.5	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Trachurus symmetricus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	90.0	-	0.0	-	0.9	-	-	0.0	-	-	-	0.0	-
83.3	80.0	-	0.0	-	2.6	-	-	0.0	-	-	-	0.0	-
83.3	90.0	-	0.0	-	0.8	-	-	0.0	-	-	-	0.0	-
83.3	110.0	-	0.0	-	0.9	-	-	0.0	-	-	-	0.0	-
86.7	100.0	-	0.0	-	2.7	-	-	0.0	-	-	-	0.0	-
86.7	110.0	-	0.0	-	3.9	-	-	0.0	-	-	-	0.0	-
90.0	100.0	0.0	-	-	8.4	-	-	0.0	-	-	-	0.0	-

TABLE 4. (cont.)

Trachurus symmetricus (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 110.0	0.0	-	17.3	-	-	-	0.0	-	-	-	0.0	-
93.3 55.0	0.0	-	0.8	-	-	-	0.0	-	-	-	0.0	-
93.3 70.0	0.0	-	0.7	-	-	-	0.0	-	-	-	0.0	-
93.3 80.0	0.0	-	1.7	-	-	-	0.0	-	-	-	0.0	-
93.3 100.0	0.0	-	6.6	-	-	-	0.0	-	-	-	0.0	-
93.3 110.0	0.0	-	3.7	-	-	-	0.0	-	-	-	0.0	-

Genyonemus lineatus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
81.8 46.9	-	2.0	-	-	-	-	0.0	-	-	-	0.0	-
93.3 28.0	0.7	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Menticirrhus undulatus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 51.0	-	0.0	-	0.0	-	-	0.8	-	-	-	0.0	-

Seriphus politus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 51.0	-	0.0	-	0.0	-	-	0.8	-	-	-	0.0	-
90.0 28.0	0.0	-	-	0.0	-	-	1.9	-	-	-	0.0	-

Chromis punctipinnis

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	-
90.0 28.0	0.0	-	-	0.0	-	-	1.9	-	-	-	0.0	-

Oxyjulis californica

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 40.0	0.0	-	0.8	-	-	-	0.0	-	-	-	0.0	-

Cryptotrema corallinum

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 51.0	-	0.0	-	0.0	-	-	1.5	-	-	-	0.0	-
86.7 50.0	0.0	-	-	0.0	-	-	0.0	-	-	-	0.8	-

Neoclinus blanchardi

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 49.0	-	0.0	-	0.0	-	-	0.0	-	-	-	3.7	-

TABLE 4. (cont.)

***Hypsoblennius* spp.**

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	-
90.0 28.0	0.0	-	-	0.0	-	-	0.9	-	-	-	0.0	-

Hypsoblennius gilberti

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 51.0	-	0.0	-	0.0	-	-	0.0	-	-	-	0.8	-
80.0 60.0	-	0.0	-	0.0	-	-	13.5	-	-	-	0.0	-
83.3 40.6	-	0.0	-	0.0	-	-	0.9	-	-	-	0.0	-
86.7 35.0	0.0	-	-	0.0	-	-	0.0	-	-	-	0.8	-
86.7 40.0	0.0	-	-	0.0	-	-	2.6	-	-	-	2.7	-
90.0 28.0	0.0	-	-	0.0	-	-	0.9	-	-	-	0.0	-
90.0 30.0	0.0	-	-	0.0	-	-	2.3	-	-	-	0.0	-
90.0 37.0	0.0	-	-	0.0	-	-	0.8	-	-	-	0.0	-
93.3 30.0	0.0	-	0.0	-	-	-	0.0	-	-	-	0.9	-

Hypsoblennius jenkinsi

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 51.0	-	0.0	-	0.0	-	-	0.8	-	-	-	0.0	-
83.3 40.6	-	0.0	-	0.0	-	-	0.9	-	-	-	0.0	-
86.7 33.0	0.0	-	-	0.0	-	-	4.0	-	-	-	0.0	-
86.7 35.0	0.0	-	-	0.0	-	-	7.9	-	-	-	0.0	-
86.7 40.0	0.0	-	-	0.0	-	-	5.2	-	-	-	0.0	-
90.0 28.0	0.0	-	-	0.0	-	-	3.8	-	-	-	0.0	-
90.0 30.0	0.0	-	-	0.0	-	-	4.6	-	-	-	0.0	-
90.0 35.0	0.0	-	-	0.0	-	-	0.9	-	-	-	0.0	-
90.0 37.0	0.0	-	-	0.0	-	-	10.3	-	-	-	0.0	-
93.3 40.0	0.0	-	0.0	-	-	-	1.7	-	-	-	0.0	-
93.3 45.0	0.0	-	0.0	-	-	-	0.8	-	-	-	0.0	-

Icichthys lockingtoni

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 70.0	-	0.7	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 70.0	-	0.0	-	0.8	-	-	0.0	-	-	-	0.0	-

Tetragonurus cuvieri

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 100.0	0.0	-	-	0.0	-	-	0.7	-	-	-	0.0	-

TABLE 4. (cont.)

Tetragonurus cuvieri (cont.)

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

Citharichthys sordidus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 70.0	-	0.7	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 55.0	-	0.6	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 60.0	-	0.8	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 51.0	-	0.0	-	0.8	-	-	0.0	-	-	-	0.0	-

Citharichthys stigmaeus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 70.0	-	0.7	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 55.0	-	0.0	-	0.8	-	-	0.0	-	-	-	0.0	-
80.0 60.0	-	0.0	-	0.0	-	-	0.8	-	-	-	0.0	-
83.3 55.0	-	0.7	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 100.0	-	0.0	-	0.9	-	-	0.0	-	-	-	0.0	-
90.0 60.0	0.0	-	-	1.0	-	-	0.0	-	-	-	0.0	-

Pleuronichthys coenosus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 35.0	0.0	-	-	0.8	-	-	0.0	-	-	-	0.0	-
90.0 45.0	0.0	-	-	1.0	-	-	0.0	-	-	-	0.0	-

Pleuronichthys decurrens

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7 40.0	0.0	-	-	0.8	-	-	0.0	-	-	-	0.0	-

Disintegrated fish larvae

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 35.0	1.3	-	0.0	-	-	-	0.0	-	-	-	0.0	-

TABLE 5. Station and Bongo net tow data for CalCOFI cruises in 2002. Counts for fish eggs and larvae are not adjusted for standard haul factor or percent of sample sorted. Plankton volume given as milliliters per 1000 cubic meters of water strained.

CalCOFI Cruise 0201

Line	Station	Latitude (N) deg.	min.	Longitude (W) deg.	min.	Ship Code	Tow Date yr.	mo.	day	Time (PST)	Tow Depth (m)	Volume Water Strained	Standard Haul Factor	Plankton Volume	Percent Sorted	Total Larvae	Total Eggs
76.7	49.0	35	05.3	120	46.7	JD	02	02	09	1645	48	114	4.19	158	100.0	17	0
76.7	51.0	35	01.3	120	55.2	JD	02	02	09	1410	209	426	4.91	87	45.9	2	0
76.7	55.0	34	53.2	121	12.1	JD	02	02	09	0914	214	442	4.85	91	50.0	23	49
76.7	60.0	34	43.2	121	32.9	JD	02	02	09	0518	211	456	4.61	169	48.0	22	3030
76.7	70.0	34	23.2	122	14.8	JD	02	02	08	2233	204	474	4.30	95	53.3	36	79
76.7	80.0	34	02.9	122	56.6	JD	02	02	08	1202	200	472	4.22	324	50.9	8	31
76.7	90.0	33	43.2	123	38.1	JD	02	02	08	0540	210	466	4.50	54	100.0	7	3
76.7	100.0	33	23.2	124	18.9	JD	02	02	07	2327	209	476	4.38	50	100.0	9	7
80.0	51.0	34	27.1	120	33.2	JD	02	02	06	0302	82	183	4.47	44	100.0	9	646
80.0	55.0	34	19.1	120	48.0	JD	02	02	06	0657	209	383	5.45	882	49.4	18	52
80.0	60.0	34	09.0	121	09.1	JD	02	02	06	1159	211	335	6.29	808	50.5	4	213
80.0	70.0	33	49.1	121	50.5	JD	02	02	06	2048	213	439	4.84	193	47.0	30	25
80.0	80.0	33	28.9	122	31.9	JD	02	02	07	0330	212	428	4.95	37	100.0	4	4
80.0	90.0	33	08.9	123	13.2	JD	02	02	07	0853	206	439	4.70	155	48.5	18	15
80.0	100.0	32	49.0	123	54.4	JD	02	02	07	1655	210	449	4.67	145	100.0	432	17
81.8	46.9	34	16.5	120	01.6	JD	02	02	05	2018	216	411	5.24	143	54.2	25	691
83.3	40.6	34	13.6	119	24.7	JD	02	02	05	0631	25	72	3.43	112	100.0	21	2843
83.3	42.0	34	10.5	119	30.8	JD	02	02	05	0908	141	284	4.96	60	100.0	27	438
83.3	51.0	33	52.5	120	07.9	JD	02	02	05	0012	105	206	5.10	73	100.0	303	201
83.3	55.0	33	44.8	120	24.7	JD	02	02	04	2056	212	421	5.02	128	53.7	74	200
83.3	60.0	33	34.7	120	45.4	JD	02	02	04	1658	209	464	4.50	125	51.7	467	4312
83.3	70.0	33	14.7	121	26.7	JD	02	02	04	0917	208	428	4.86	58	100.0	102	4620
83.3	80.0	32	54.3	122	07.8	JD	02	02	03	2332	210	441	4.77	152	50.7	546	1606
83.3	90.0	32	34.7	122	48.7	JD	02	02	03	1650	212	448	4.73	85	100.0	71	31
83.3	100.0	32	14.7	123	29.7	JD	02	02	03	0834	225	400	5.63	22	100.0	11	7
83.3	110.0	31	54.7	124	10.2	JD	02	02	03	0055	210	437	4.80	32	100.0	33	4
86.7	33.0	33	53.2	118	29.3	JD	02	01	31	0219	46	114	4.02	97	100.0	3	709
86.7	35.0	33	49.3	118	37.7	JD	02	01	31	0453	205	440	4.65	25	100.0	113	468
86.7	40.0	33	39.7	118	58.5	JD	02	01	31	0836	219	410	5.33	73	53.3	30	210
86.7	45.0	33	29.5	119	19.0	JD	02	01	31	1445	212	419	5.05	57	100.0	88	522
86.7	50.0	33	19.6	119	39.7	JD	02	01	31	1831	63	139	4.53	72	100.0	341	106

TABLE 5. (cont.)

CalCOFI Cruise 0201

Line	Station	Latitude (N) deg.	min.	Longitude (W) deg.	min.	Ship Code	Tow Date yr.	mo.	day	Time (PST)	Tow Depth (m)	Volume Water Strained	Standard Haul Factor	Plankton Volume	Percent Sorted	Total Larvae	Total Eggs
86.7	55.0	33	09.4	120	00.9	JD	02	02	01	0110	212	415	5.11	149	48.3	128	177
86.7	60.0	32	59.7	120	20.9	JD	02	02	01	0906	217	391	5.55	146	47.3	25	1533
86.7	70.0	32	39.5	121	01.9	JD	02	02	01	1716	212	417	5.10	120	50.0	318	787
86.7	80.0	32	19.4	121	42.7	JD	02	02	01	2329	212	429	4.95	93	50.0	36	34
86.7	90.0	31	59.5	122	23.5	JD	02	02	02	0525	211	438	4.81	128	48.2	103	9
86.7	100.0	31	39.5	123	03.9	JD	02	02	02	1210	209	431	4.84	19	100.0	12	44
86.7	110.0	31	19.6	123	44.6	JD	02	02	02	1836	211	454	4.66	20	100.0	23	26
90.0	30.0	33	25.2	117	54.3	JD	02	01	30	1758	211	414	5.09	65	48.1	46	36
90.0	35.0	33	15.2	118	15.0	JD	02	01	30	1346	199	397	5.00	58	100.0	35	121
90.0	37.0	33	11.1	118	23.2	JD	02	01	30	0902	212	444	4.77	43	100.0	36	172
90.0	45.0	32	55.1	118	56.1	JD	02	01	30	0422	206	443	4.65	70	51.6	62	179
90.0	53.0	32	39.1	119	28.9	JD	02	01	29	2219	217	427	5.08	112	52.0	197	4040
90.0	60.0	32	25.1	119	57.7	JD	02	01	29	1705	209	422	4.94	26	100.0	4	8
90.0	70.0	32	05.2	120	38.4	JD	02	01	29	0821	210	452	4.65	35	100.0	6	13
90.0	80.0	31	45.0	121	18.9	JD	02	01	29	0143	210	441	4.77	163	48.6	19	6
90.0	90.0	31	25.1	121	59.4	JD	02	01	28	1911	213	432	4.92	23	100.0	13	8
90.0	100.0	31	05.2	122	39.9	JD	02	01	28	1252	211	435	4.86	28	100.0	9	21
90.0	110.0	30	45.2	123	19.9	JD	02	01	28	0607	207	468	4.43	24	100.0	12	21
90.0	120.0	30	26.2	124	00.6	JD	02	01	27	2337	219	444	4.94	38	100.0	13	12
93.3	26.7	32	57.5	117	18.2	JD	02	01	24	1226	47	124	3.79	24	100.0	8	7
93.3	28.0	32	54.9	117	23.6	JD	02	01	24	1512	217	442	4.91	34	100.0	12	99
93.3	30.0	32	50.9	117	31.9	JD	02	01	24	1825	206	464	4.44	54	100.0	23	63
93.3	35.0	32	40.7	117	52.2	JD	02	01	24	2247	216	435	4.98	147	51.5	35	131
93.3	40.0	32	30.8	118	12.8	JD	02	01	25	0334	209	469	4.47	87	53.6	15	107
93.3	45.0	32	21.1	118	33.2	JD	02	01	25	0753	215	463	4.63	104	50.0	135	152
93.3	50.0	32	10.7	118	53.6	JD	02	01	25	1233	213	449	4.74	78	51.4	52	102
93.3	55.0	32	00.8	119	13.9	JD	02	01	25	1645	205	467	4.39	152	47.8	734	2720
93.3	60.0	31	50.8	119	34.4	JD	02	01	25	2056	218	440	4.96	61	51.8	12	15
93.3	70.0	31	30.8	120	14.8	JD	02	01	26	0301	215	469	4.59	53	100.0	8	2
93.3	80.0	31	10.7	120	55.1	JD	02	01	26	0810	212	415	5.11	29	100.0	10	9
93.3	90.0	30	50.9	121	35.3	JD	02	01	26	1655	209	419	4.98	50	100.0	15	267
93.3	100.0	30	30.7	122	15.4	JD	02	01	26	2242	217	423	5.12	35	100.0	112	22
93.3	110.0	30	10.9	122	55.4	JD	02	01	27	0435	204	467	4.36	32	100.0	16	17
93.3	120.0	29	49.7	123	35.3	JD	02	01	27	1011	222	424	5.23	26	100.0	21	16

TABLE 5. (cont.)

CalCOFI Cruise 0204

Line	Station	Latitude (N) deg.	min.	Longitude (W) deg.	min.	Ship Code	Tow Date yr.	mo.	day	Time (PST)	Tow Depth (m)	Volume Water Strained	Standard Haul Factor	Plankton Volume	Percent Sorted	Total Larvae	Total Eggs
76.7	49.0	35	05.3	120	46.5	JD	02	04	12	0923	71	165	4.29	146	100.0	18	15
76.7	51.0	35	01.1	120	55.2	JD	02	04	12	0711	208	427	4.88	129	52.7	13	6
76.7	55.0	34	53.3	121	12.0	JD	02	04	12	0345	207	442	4.69	177	50.0	6	16
76.7	60.0	34	43.1	121	32.8	JD	02	04	11	2325	204	470	4.34	115	48.1	8	13
76.7	70.0	34	23.3	122	14.7	JD	02	04	11	1648	208	426	4.89	178	51.3	32	49
76.7	80.0	34	03.3	122	57.1	JD	02	04	11	0823	207	465	4.46	67	48.3	10	6
76.7	90.0	33	43.3	123	38.1	JD	02	04	11	0216	208	457	4.56	153	48.5	11	15
76.7	100.0	33	23.1	124	19.5	JD	02	04	10	1933	214	419	5.12	91	100.0	20	40
80.0	55.0	34	18.8	120	47.9	JD	02	04	08	2311	206	422	4.89	235	50.5	29	35
80.0	60.0	34	09.0	121	09.1	JD	02	04	09	0249	212	441	4.81	177	48.7	54	73
80.0	70.0	33	49.0	121	50.4	JD	02	04	09	0822	212	446	4.76	155	52.1	57	6
80.0	80.0	33	29.1	122	32.1	JD	02	04	09	1600	212	415	5.10	51	100.0	162	330
80.0	90.0	33	09.1	123	13.4	JD	02	04	09	2211	209	420	4.98	71	53.3	69	57
80.0	100.0	32	49.1	123	54.4	JD	02	04	10	0358	212	426	4.97	63	100.0	139	61
81.8	46.9	34	16.5	120	01.5	JD	02	04	08	1530	213	375	5.67	235	51.1	8	76
83.3	40.6	34	13.6	119	24.9	JD	02	04	08	0957	27	67	4.00	298	100.0	8	75
83.3	42.0	34	10.5	119	30.5	JD	02	04	08	0810	141	289	4.87	211	52.4	7	24
83.3	51.0	33	52.7	120	08.1	JD	02	04	08	0212	92	123	7.46	794	52.0	17	4
83.3	55.0	33	44.5	120	24.6	JD	02	04	07	2256	211	478	4.41	178	48.2	27	61
83.3	60.0	33	34.6	120	45.4	JD	02	04	07	1840	211	435	4.86	138	50.0	45	44
83.3	70.0	33	14.6	121	26.7	JD	02	04	07	1212	213	470	4.52	132	51.6	81	41
83.3	80.0	32	54.6	122	08.1	JD	02	04	07	0524	209	449	4.64	53	100.0	41	43
83.3	90.0	32	34.5	122	48.9	JD	02	04	06	2257	204	437	4.66	94	100.0	44	21
83.3	100.0	32	14.6	123	29.6	JD	02	04	06	1638	211	463	4.56	43	100.0	68	52
83.3	110.0	31	54.6	124	10.0	JD	02	04	06	0851	203	449	4.51	7	100.0	12	98
86.7	33.0	33	53.3	118	29.4	JD	02	04	03	1443	40	99	4.09	375	48.6	13	144
86.7	35.0	33	49.6	118	37.3	JD	02	04	03	1800	213	435	4.91	274	51.2	43	23
86.7	40.0	33	39.6	118	58.4	JD	02	04	03	2200	214	428	4.99	166	52.1	70	38
86.7	45.0	33	29.5	119	19.1	JD	02	04	04	0154	212	428	4.96	234	50.0	64	68
86.7	50.0	33	19.5	119	39.5	JD	02	04	04	0522	62	149	4.16	181	48.1	40	1
86.7	55.0	33	09.4	120	00.4	JD	02	04	04	0811	211	455	4.64	99	51.1	7	12
86.7	60.0	32	59.5	120	20.6	JD	02	04	04	1951	214	445	4.80	106	51.0	70	28
86.7	70.0	32	39.3	121	01.9	JD	02	04	05	0217	211	465	4.54	110	52.9	135	47
86.7	80.0	32	19.4	121	42.9	JD	02	04	05	0819	209	433	4.82	86	54.0	69	16

TABLE 5. (cont.)

CalCOFI Cruise 0204

Line	Station	Latitude (N) deg.	min.	Longitude (W) deg.	min.	Ship Code	Tow Date yr.	mo.	day	Time (PST)	Tow Depth (m)	Volume Water Strained	Standard Haul Factor	Plankton Volume	Percent Sorted	Total Larvae	Total Eggs
86.7	90.0	31	59.4	122	23.5	JD	02	04	05	1549	211	440	4.79	80	51.4	40	20
86.7	100.0	31	39.4	123	04.1	JD	02	04	05	2135	213	438	4.87	105	54.3	37	20
86.7	110.0	31	19.4	123	44.6	JD	02	04	06	0326	210	427	4.92	26	100.0	38	110
90.0	28.0	33	29.0	117	46.3	JD	02	04	03	0550	57	121	4.72	207	100.0	19	59
90.0	30.0	33	25.3	117	54.3	JD	02	04	03	0345	211	437	4.83	82	47.2	33	63
90.0	35.0	33	14.9	118	15.1	JD	02	04	02	2358	210	416	5.05	140	50.0	35	81
90.0	37.0	33	11.0	118	23.4	JD	02	04	02	2118	214	425	5.04	89	50.0	26	57
90.0	45.0	32	55.1	118	56.1	JD	02	04	02	1618	211	461	4.58	65	46.6	16	61
90.0	53.0	32	39.2	119	29.2	JD	02	04	02	1102	210	455	4.62	119	51.8	157	122
90.0	60.0	32	25.2	119	57.9	JD	02	04	02	0553	211	450	4.69	120	51.8	36	28
90.0	70.0	32	04.9	120	38.5	JD	02	04	01	2344	209	455	4.60	227	52.4	221	13
90.0	80.0	31	45.0	121	19.2	JD	02	04	01	1740	213	466	4.57	107	52.0	38	43
90.0	90.0	31	25.1	121	59.6	JD	02	04	01	1152	207	473	4.37	76	50.0	36	111
90.0	100.0	31	05.1	122	39.8	JD	02	04	01	0538	214	425	5.04	66	100.0	90	29
90.0	110.0	30	45.1	123	20.1	JD	02	03	31	2345	210	456	4.60	37	100.0	42	19
90.0	120.0	30	24.8	123	59.7	JD	02	03	31	1737	215	454	4.74	18	100.0	34	36
93.3	26.7	32	57.3	117	18.3	JD	02	03	28	1252	42	73	5.78	152	100.0	35	12
93.3	28.0	32	54.8	117	23.7	JD	02	03	28	1529	215	452	4.76	53	100.0	32	49
93.3	30.0	32	50.9	117	31.8	JD	02	03	28	1823	213	448	4.75	56	100.0	76	74
93.3	35.0	32	40.8	117	52.4	JD	02	03	28	2217	214	447	4.78	72	53.1	197	28
93.3	40.0	32	30.9	118	12.9	JD	02	03	29	0357	214	448	4.79	248	51.3	108	55
93.3	45.0	32	20.8	118	33.3	JD	02	03	29	0756	215	453	4.75	161	49.3	22	102
93.3	50.0	32	10.8	118	53.4	JD	02	03	29	1212	206	437	4.71	149	49.2	135	149
93.3	55.0	32	00.8	119	13.9	JD	02	03	29	1637	218	448	4.88	83	48.6	31	74
93.3	60.0	31	50.8	119	34.3	JD	02	03	29	2102	214	455	4.71	114	51.9	52	34
93.3	70.0	31	30.9	120	14.9	JD	02	03	30	0259	206	453	4.55	152	49.2	39	66
93.3	80.0	31	10.8	120	55.1	JD	02	03	30	0808	215	456	4.70	114	48.0	33	52
93.3	90.0	30	50.8	121	35.4	JD	02	03	30	1612	215	468	4.59	77	50.0	63	52
93.3	100.0	30	30.9	122	15.4	JD	02	03	30	2216	218	438	4.97	41	100.0	89	52
93.3	110.0	30	10.9	122	55.4	JD	02	03	31	0407	213	452	4.72	35	100.0	35	72
93.3	120.0	29	50.9	123	35.1	JD	02	03	31	0930	219	455	4.81	18	100.0	32	83

TABLE 5. (cont.)

CalCOFI Cruise 0207

Line	Station	Latitude (N) deg.	min.	Longitude (W) deg.	min.	Ship Code	Tow Date yr.	mo.	day	Time (PST)	Tow Depth (m)	Volume Water Strained	Standard Haul Factor	Plankton Volume	Percent Sorted	Total Larvae	Total Eggs
76.7	49.0	35	05.3	120	46.6	NH	02	07	17	0210	62	141	4.39	85	100.0	4	132
76.7	51.0	35	01.3	120	55.1	NH	02	07	16	2342	204	423	4.83	175	48.6	23	1
76.7	55.0	34	53.2	121	11.8	NH	02	07	16	2017	211	403	5.23	132	49.0	2	0
76.7	60.0	34	43.4	121	32.9	NH	02	07	16	1623	215	378	5.70	215	48.1	3	2
76.7	70.0	34	23.0	122	14.6	NH	02	07	16	0820	209	426	4.91	148	46.0	6	0
76.7	80.0	34	03.0	122	56.6	NH	02	07	16	0144	213	412	5.18	219	48.8	18	0
76.7	90.0	33	43.4	123	38.0	NH	02	07	15	1941	209	430	4.87	63	51.8	12	1
76.7	100.0	33	23.1	124	19.4	NH	02	07	15	1309	214	431	4.96	70	53.3	7	3
80.0	51.0	34	27.0	120	31.4	NH	02	07	13	2121	66	138	4.79	73	100.0	2	155
80.0	55.0	34	19.0	120	48.1	NH	02	07	14	0047	213	427	4.99	80	47.0	0	1
80.0	60.0	34	09.1	121	09.0	NH	02	07	14	0458	211	407	5.19	133	48.1	0	1
80.0	70.0	33	49.0	121	50.6	NH	02	07	14	1006	216	403	5.35	174	48.5	7	3
80.0	80.0	33	28.8	122	31.9	NH	02	07	14	1811	212	400	5.29	52	100.0	1	2
80.0	90.0	33	09.0	123	13.3	NH	02	07	14	2343	218	437	4.98	124	51.8	2	1
80.0	100.0	32	49.0	123	54.4	NH	02	07	15	0514	200	466	4.30	189	47.7	3	7
81.8	46.9	34	16.5	120	01.5	NH	02	07	13	1707	216	392	5.50	64	100.0	2	6
83.3	40.6	34	13.5	119	24.7	NH	02	07	13	0820	33	74	4.49	40	100.0	0	248
83.3	42.0	34	10.7	119	30.5	NH	02	07	13	0947	115	233	4.93	64	100.0	4	333
83.3	51.0	33	52.7	120	08.0	NH	02	07	13	0203	115	257	4.49	43	100.0	1	77
83.3	55.0	33	44.8	120	24.8	NH	02	07	12	2229	211	392	5.39	128	50.0	1	0
83.3	60.0	33	34.7	120	45.3	NH	02	07	12	1827	207	412	5.03	141	51.7	3	0
83.3	70.0	33	14.7	121	26.6	NH	02	07	12	1010	209	392	5.34	148	48.2	4	5
83.3	80.0	32	54.7	122	07.7	NH	02	07	12	0506	202	415	4.88	256	52.8	3	34
83.3	90.0	32	34.7	122	48.6	NH	02	07	11	2340	208	409	5.09	176	47.2	10	87
83.3	100.0	32	14.7	123	29.5	NH	02	07	11	1817	214	388	5.53	72	100.0	16	52
83.3	110.0	31	54.7	124	10.2	NH	02	07	11	1250	207	421	4.93	21	100.0	17	76
86.7	33.0	33	53.1	118	29.4	NH	02	07	08	2121	38	97	3.95	93	100.0	1	69
86.7	35.0	33	49.4	118	37.8	NH	02	07	08	2354	199	421	4.73	83	48.5	1	0
86.7	40.0	33	39.4	118	58.6	NH	02	07	09	0434	208	384	5.42	62	100.0	1	6
86.7	45.0	33	29.4	119	19.1	NH	02	07	09	0832	207	421	4.91	17	100.0	0	2
86.7	50.0	33	19.4	119	39.8	NH	02	07	09	1327	58	127	4.58	24	100.0	1	1
86.7	55.0	33	09.4	120	00.5	NH	02	07	09	1758	213	434	4.91	60	53.8	0	0
86.7	60.0	32	59.5	120	20.9	NH	02	07	09	2139	217	406	5.34	232	51.0	14	1
86.7	70.0	32	39.3	121	02.0	NH	02	07	10	0337	208	426	4.88	326	48.9	6	1

TABLE 5. (cont.)

CalCOFI Cruise 0207

Line	Station	Latitude (N) deg.	min.	Longitude (W) deg.	min.	Ship Code	Tow Date yr.	mo.	day	Time (PST)	Tow Depth (m)	Volume Water Strained	Standard Haul Factor	Plankton Volume	Percent Sorted	Total Larvae	Total Eggs
86.7	80.0	32	19.4	121	42.9	NH	02	07	10	1035	209	384	5.45	96	48.6	2	3
86.7	90.0	31	59.4	122	23.5	NH	02	07	10	1819	213	404	5.26	45	100.0	79	128
86.7	100.0	31	39.5	123	04.3	NH	02	07	11	0006	204	423	4.82	66	100.0	45	141
86.7	110.0	31	19.4	123	44.6	NH	02	07	11	0547	208	407	5.10	59	100.0	20	99
90.0	28.0	33	29.1	117	46.3	NH	02	07	08	1521	71	145	4.93	97	100.0	2	114
90.0	30.0	33	25.1	117	54.3	NH	02	07	08	1020	205	397	5.17	50	100.0	2	11
90.0	35.0	33	15.1	118	15.0	NH	02	07	08	0707	207	371	5.60	49	100.0	4	90
90.0	37.0	33	11.1	118	23.1	NH	02	07	08	0354	207	393	5.26	79	48.3	1	120
90.0	45.0	32	55.1	118	56.2	NH	02	07	07	2211	216	387	5.58	212	50.0	2	0
90.0	53.0	32	39.1	119	28.9	NH	02	07	07	1643	218	372	5.88	94	45.7	5	0
90.0	60.0	32	25.1	119	57.6	NH	02	07	07	0906	215	384	5.59	86	51.5	5	2
90.0	70.0	32	05.1	120	38.4	NH	02	07	07	0204	206	423	4.89	54	100.0	13	11
90.0	80.0	31	44.9	121	18.8	NH	02	07	06	1939	212	383	5.54	84	100.0	23	30
90.0	90.0	31	25.1	121	59.4	NH	02	07	06	1333	206	432	4.77	25	100.0	14	62
90.0	100.0	31	05.0	122	39.7	NH	02	07	06	0634	210	437	4.82	30	100.0	72	355
90.0	110.0	30	45.1	123	19.9	NH	02	07	06	0054	203	473	4.28	70	100.0	7	225
90.0	120.0	30	24.9	123	59.9	NH	02	07	05	1829	212	416	5.08	19	100.0	23	151
93.3	26.7	32	57.4	117	18.5	NH	02	07	02	1241	71	152	4.67	40	100.0	1	61
93.3	28.0	32	54.7	117	23.7	NH	02	07	02	1540	210	403	5.21	22	100.0	4	11
93.3	30.0	32	50.6	117	31.9	NH	02	07	02	1841	210	415	5.07	43	100.0	1	15
93.3	35.0	32	40.8	117	52.5	NH	02	07	02	2240	204	401	5.08	142	47.3	7	0
93.3	40.0	32	30.9	118	12.8	NH	02	07	03	0258	201	423	4.74	187	49.3	5	8
93.3	45.0	32	20.8	118	33.2	NH	02	07	03	0643	214	393	5.46	66	50.0	1	0
93.3	50.0	32	10.8	118	53.5	NH	02	07	03	0957	210	399	5.27	105	52.3	1	0
93.3	55.0	32	00.8	119	14.0	NH	02	07	03	1612	216	420	5.15	119	54.0	4	2
93.3	60.0	31	50.8	119	34.3	NH	02	07	03	1953	219	381	5.74	144	50.9	19	6
93.3	70.0	31	30.8	120	14.7	NH	02	07	04	0155	207	398	5.19	110	45.4	17	5
93.3	80.0	31	10.6	120	55.1	NH	02	07	04	0817	218	399	5.45	28	100.0	39	114
93.3	90.0	30	50.8	121	35.6	NH	02	07	04	1703	218	417	5.22	19	100.0	10	180
93.3	100.0	30	30.8	122	15.6	NH	02	07	04	2246	213	425	5.02	35	100.0	69	477
93.3	110.0	30	10.9	122	55.4	NH	02	07	05	0438	211	453	4.66	29	100.0	2	104
93.3	120.0	29	50.8	123	35.1	NH	02	07	05	0947	210	416	5.05	14	100.0	48	238

TABLE 5. (cont.)

CalCOFI Cruise 0211

Line	Station	Latitude (N) deg.	min.	Longitude (W) deg.	min.	Ship Code	Tow Date yr.	mo.	day	Time (PST)	Tow Depth (m)	Volume Water Strained	Standard Haul Factor	Plankton Volume	Percent Sorted	Total Larvae	Total Eggs
76.7	49.0	35	05.2	120	46.9	NH	02	11	24	2311	55	143	3.84	140	100.0	10	25
76.7	51.0	35	01.5	120	55.2	NH	02	11	24	2052	218	480	4.53	35	100.0	0	3
76.7	55.0	34	53.3	121	12.0	NH	02	11	24	1702	220	474	4.65	67	53.1	2	2
76.7	60.0	34	43.2	121	33.2	NH	02	11	24	1234	213	441	4.82	34	100.0	2	13
76.7	70.0	34	23.2	122	14.9	NH	02	11	24	0557	220	459	4.78	70	53.1	1	7
76.7	80.0	34	03.1	122	56.7	NH	02	11	23	2329	205	486	4.22	130	49.2	2	5
76.7	90.0	33	43.3	123	38.0	NH	02	11	23	1730	213	436	4.90	64	46.4	1	0
76.7	100.0	33	23.0	124	19.0	NH	02	11	23	0906	206	459	4.49	15	100.0	11	8
80.0	51.0	34	27.0	120	31.2	NH	02	11	21	1932	70	160	4.37	25	100.0	3	7
80.0	55.0	34	19.2	120	47.8	NH	02	11	21	2243	205	478	4.29	77	51.3	1	2
80.0	60.0	34	09.0	121	09.1	NH	02	11	22	0308	212	454	4.67	73	48.4	0	0
80.0	70.0	33	49.0	121	50.5	NH	02	11	22	0838	203	472	4.30	51	100.0	4	8
80.0	80.0	33	29.0	122	32.1	NH	02	11	22	1639	215	474	4.54	51	100.0	2	3
80.0	90.0	33	08.9	123	13.0	NH	02	11	22	2210	218	446	4.88	34	100.0	4	0
80.0	100.0	32	49.1	123	54.5	NH	02	11	23	0432	215	479	4.48	23	100.0	14	5
81.8	46.9	34	16.5	120	01.7	NH	02	11	21	1527	213	488	4.36	20	100.0	0	2
83.3	40.6	34	13.4	119	24.6	NH	02	11	21	0745	26	79	3.26	63	100.0	2	225
83.3	42.0	34	11.1	119	31.5	NH	02	11	21	0910	101	243	4.13	41	100.0	4	108
83.3	51.0	33	52.8	120	08.2	NH	02	11	21	0142	53	134	3.96	75	100.0	1	93
83.3	55.0	33	44.6	120	24.9	NH	02	11	20	2221	202	463	4.36	65	50.0	0	1
83.3	60.0	33	34.5	120	45.6	NH	02	11	20	1821	213	473	4.50	61	48.2	1	1
83.3	70.0	33	14.7	121	26.6	NH	02	11	20	1220	208	497	4.18	24	100.0	5	3
83.3	80.0	32	54.8	122	07.8	NH	02	11	20	0454	210	462	4.55	41	100.0	3	0
83.3	90.0	32	34.5	122	48.9	NH	02	11	19	2254	198	482	4.11	58	100.0	15	5
83.3	100.0	32	14.7	123	29.5	NH	02	11	19	1704	204	490	4.17	20	100.0	16	7
83.3	110.0	31	54.7	124	10.2	NH	02	11	19	0844	205	470	4.36	13	100.0	5	0
86.7	33.0	33	52.7	118	29.5	NH	02	11	16	2040	72	191	3.75	89	100.0	19	28
86.7	35.0	33	49.5	118	37.5	NH	02	11	16	2320	206	460	4.49	128	47.4	1	0
86.7	40.0	33	39.4	118	58.5	NH	02	11	17	0318	205	467	4.39	169	48.1	0	0
86.7	45.0	33	29.4	119	18.8	NH	02	11	17	0712	209	449	4.65	33	100.0	51	22
86.7	50.0	33	19.3	119	40.1	NH	02	11	17	1000	74	182	4.05	38	100.0	19	16
86.7	55.0	33	09.3	120	00.4	NH	02	11	17	1517	217	444	4.89	23	100.0	0	3
86.7	60.0	32	59.4	120	20.6	NH	02	11	17	1922	216	494	4.38	36	100.0	0	2
86.7	70.0	32	39.6	121	01.8	NH	02	11	18	0124	214	471	4.55	70	45.4	0	0

TABLE 5. (cont.)

CalCOFI Cruise 0211

Line	Station	Latitude (N) deg.	min.	Longitude (W) deg.	min.	Ship Code	Tow Date yr.	mo.	day	Time (PST)	Tow Depth (m)	Volume Water Strained	Standard Haul Factor	Plankton Volume	Percent Sorted	Total Larvae	Total Eggs
86.7	80.0	32	19.4	121	43.0	NH	02	11	18	0823	218	451	4.84	31	100.0	5	0
86.7	90.0	31	59.4	122	23.7	NH	02	11	18	1629	210	472	4.44	13	100.0	3	2
86.7	100.0	31	39.4	123	04.1	NH	02	11	18	2159	208	495	4.20	30	100.0	9	1
86.7	110.0	31	19.4	123	44.6	NH	02	11	19	0349	211	474	4.45	38	100.0	19	3
90.0	28.0	33	29.1	117	46.2	NH	02	11	16	1443	216	461	4.69	24	100.0	3	3
90.0	30.0	33	25.5	117	54.7	NH	02	11	16	1135	203	444	4.58	25	100.0	87	1
90.0	35.0	33	15.2	118	15.0	NH	02	11	16	0644	213	425	5.01	59	100.0	7	14
90.0	37.0	33	11.2	118	23.4	NH	02	11	16	0321	210	437	4.81	53	100.0	3	75
90.0	45.0	32	55.1	118	56.4	NH	02	11	15	2202	196	462	4.24	97	53.3	2	0
90.0	53.0	32	39.3	119	28.8	NH	02	11	15	1712	216	460	4.69	91	47.6	1	0
90.0	60.0	32	25.1	119	57.6	NH	02	11	15	1206	204	480	4.26	123	50.8	3	3
90.0	70.0	32	05.1	120	38.5	NH	02	11	15	0515	212	479	4.42	52	100.0	7	1
90.0	80.0	31	45.0	121	19.2	NH	02	11	14	2300	212	454	4.66	53	100.0	8	5
90.0	90.0	31	25.2	121	59.5	NH	02	11	14	1655	214	485	4.41	25	100.0	7	7
90.0	100.0	31	05.3	122	40.2	NH	02	11	14	0813	212	526	4.04	17	100.0	0	5
90.0	110.0	30	45.0	123	20.2	NH	02	11	14	0024	214	468	4.57	36	100.0	7	10
90.0	120.0	30	24.8	123	59.7	NH	02	11	13	1807	213	453	4.70	29	100.0	23	26
93.3	26.7	32	57.1	117	18.4	NH	02	11	10	1344	204	469	4.34	23	100.0	0	2
93.3	28.0	32	54.8	117	23.8	NH	02	11	10	1657	209	469	4.46	17	100.0	0	1
93.3	30.0	32	50.8	117	32.1	NH	02	11	10	1956	206	471	4.39	66	48.3	1	0
93.3	35.0	32	41.0	117	52.1	NH	02	11	11	0004	219	450	4.87	53	100.0	1	0
93.3	40.0	32	30.7	118	12.9	NH	02	11	11	0514	212	466	4.56	34	100.0	7	2
93.3	45.0	32	20.8	118	33.3	NH	02	11	11	0805	219	463	4.73	28	100.0	0	3
93.3	50.0	32	10.8	118	53.7	NH	02	11	11	1514	210	492	4.27	35	100.0	1	5
93.3	55.0	32	00.7	119	13.6	NH	02	11	11	1926	211	484	4.36	39	100.0	6	4
93.3	60.0	31	51.0	119	33.8	NH	02	11	11	2332	211	493	4.27	51	100.0	14	4
93.3	70.0	31	31.1	120	14.9	NH	02	11	12	0530	203	509	3.98	85	51.1	1	6
93.3	80.0	31	10.9	120	55.0	NH	02	11	12	1218	214	459	4.65	68	100.0	3	3
93.3	90.0	30	50.8	121	35.1	NH	02	11	12	1824	212	433	4.90	32	100.0	5	1
93.3	100.0	30	30.8	122	15.5	NH	02	11	13	0013	218	468	4.66	45	100.0	26	8
93.3	110.0	30	10.4	122	55.8	NH	02	11	13	0553	214	473	4.52	27	100.0	26	3
93.3	120.0	29	50.9	123	35.4	NH	02	11	13	1216	214	464	4.61	35	100.0	28	21

TABLE 6. Pooled occurrences of fish larvae taken in Bongo net tows on CalCOFI cruises in 2002.

Rank	Taxon	Occurrences
1	*Stenobrachius leucopsarus*	104
2	*Bathylagus ochotensis*	100
3	*Protomyctophum crockeri*	95
4	*Sebastes* spp.	92
5	*Leuroglossus stilbius*	89
6	*Merluccius productus*	87
7	*Engraulis mordax*	71
8	*Diogenichthys atlanticus*	47
8	*Symbolophorus californiensis*	47
10	*Nannobrachium* spp.	46
10	*Vinciguerria lucetia*	46
10	*Nannobrachium ritteri*	46
13	*Tarletonbeania crenularis*	41
14	*Sardinops sagax*	39
15	*Citharichthys stigmaeus*	37
16	*Bathylagus wesethi*	35
17	*Diaphus* spp.	34
18	*Citharichthys sordidus*	30
19	*Ceratoscopelus townsendi*	29
20	*Cyclothone signata*	28
21	*Sebastes jordani*	26
22	*Triphoturus mexicanus*	23
22	*Idiacanthus antrostomus*	23
24	*Danaphos oculatus*	22
25	*Lestidiops ringens*	20
26	*Trachurus symmetricus*	19
27	*Chauliodus macouni*	17
27	*Argyropelecus sladeni*	17
29	*Microstoma* spp.	12
29	*Icichthys lockingtoni*	12
31	*Nansenia candida*	11
31	*Sebastes paucispinis*	11
31	*Argyropelecus lychnus*	11
34	*Poromitra crassiceps*	7
34	*Melamphaes lugubris*	7
34	*Scopelosaurus* spp.	7
34	*Sebastes diploproa*	7
38	*Parophrys vetulus*	6
38	*Stomias atriventer*	6
38	*Cyclothone* spp.	6
38	*Coryphopterus nicholsii*	6
42	*Sternoptyx* spp.	5
42	*Lyopsetta exilis*	5
42	*Melamphaes parvus*	5
42	*Trachipterus altivelis*	5
46	*Benthalbella dentata*	4
46	*Scopelogadus bispinosus*	4
46	*Vinciguerria* spp.	4
46	*Hygophum reinhardtii*	4
50	*Argentina sialis*	3

TABLE 6. (cont.)

Rank	Taxon	Occurrences
50	*Ichthyococcus irregularis*	3
50	*Bathylagus pacificus*	3
50	*Argyropelecus* spp.	3
50	*Nannobrachium regale*	3
50	*Icosteus aenigmaticus*	3
50	*Myctophum nitidulum*	3
50	*Cataetyx rubrirostris*	3
50	*Chiasmodon niger*	3
59	*Scopelarchus guentheri*	2
59	*Xeneretmus latifrons*	2
59	*Rosenblattichthys volucris*	2
59	*Oxylebius pictus*	2
59	*Aristostomias scintillans*	2
59	*Loweina rara*	2
59	*Arctozenus risso*	2
59	*Vinciguerria poweriae*	2
59	*Argyropelecus affinis*	2
59	*Argyropelecus hemigymnus*	2
59	*Ruscarius creaseri*	2
59	*Tactostoma macropus*	2
59	*Tetragonurus cuvieri*	2
59	*Cryptotrema corallinum*	2
59	*Sebastes aurora*	2
59	*Pleuronichthys verticalis*	2
59	*Neoclinus stephensae*	2
59	*Nannobrachium bristori*	2
59	*Zaniolepis latipinnis*	2
59	Disintegrated fish larvae	2
59	*Notolychnus valdiviae*	2
80	*Liparis mucosus*	1
80	*Microstomus pacificus*	1
80	*Glyptocephalus zachirus*	1
80	Stichaeidae	1
80	*Atractoscion nobilis*	1
80	*Bathylagus milleri*	1
80	*Rathbunella* spp.	1
80	*Dolichopteryx longipes*	1
80	*Anisotremus davidsoni*	1
80	*Sebastolobus* spp.	1
80	*Electrona risso*	1
80	*Diogenichthys laternatus*	1
80	Bythitidae	1
80	*Oneirodes* spp.	1
80	*Gobiesox maeandricus*	1
80	*Atherinopsis californiensis*	1
80	*Cololabis saira*	1
80	*Zaniolepis frenata*	1
80	*Sebastes goodei*	1
80	*Scorpaenichthys marmoratus*	1
80	*Scopelarchus analis*	1
80	*Sebastolobus altivelis*	1
80	*Cyema atrum*	1

TABLE 6. (cont.)

Rank	Taxon	Occurrences
80	*Bathophilus flemingi*	1
80	*Hexagrammos decagrammus*	1
80	*Leptocottus armatus*	1
80	*Orthonopias triacis*	1
80	Myctophidae	1
	Total	1552

TABLE 7. Pooled counts of fish larvae taken in Bongo net tows on CalCOFI cruises in 2002. Counts are adjusted for percent of sample sorted and standard haul factor (see text).

Rank	Taxon	Count
1	*Merluccius productus*	24202
2	*Sardinops sagax*	6994
3	*Engraulis mordax*	6657
4	*Stenobrachius leucopsarus*	6041
5	*Sebastes* spp.	5615
6	*Leuroglossus stilbius*	5055
7	*Bathylagus ochotensis*	3424
8	*Sebastes jordani*	2637
9	*Vinciguerria lucetia*	1183
10	*Protomyctophum crockeri*	1103
11	*Diaphus* spp.	860
12	*Bathylagus wesethi*	796
13	*Diogenichthys atlanticus*	744
14	*Symbolophorus californiensis*	728
15	*Trachurus symmetricus*	697
16	*Nannobrachium* spp.	577
17	*Citharichthys stigmaeus*	547
18	*Nannobrachium ritteri*	535
19	*Tarletonbeania crenularis*	435
20	*Triphoturus mexicanus*	424
21	*Citharichthys sordidus*	402
22	*Ceratoscopelus townsendi*	388
23	*Sebastes diploproa*	287
24	*Cyclothone signata*	283
25	*Vinciguerria* spp.	272
26	*Danaphos oculatus*	214
27	*Idiacanthus antrostomus*	156
28	*Lestidiops ringens*	151
29	*Chauliodus macouni*	142
30	*Nansenia candida*	139
31	*Sebastes paucispinis*	132
32	*Argyropelecus sladeni*	126
33	*Icichthys lockingtoni*	119
34	*Cryptotrema corallinum*	109
35	*Microstoma* spp.	106
36	*Argyropelecus lychnus*	71
36	*Parophrys vetulus*	71
38	*Melamphaes lugubris*	56
39	*Stomias atriventer*	53
40	*Cyclothone* spp.	50
41	*Scopelosaurus* spp.	45
41	*Poromitra crassiceps*	45
43	*Lyopsetta exilis*	42
43	*Coryphopterus nicholsii*	42
45	*Xeneretmus latifrons*	39
45	*Trachipterus altivelis*	39
47	*Melamphaes parvus*	37
48	*Sternoptyx* spp.	35
48	*Myctophum nitidulum*	35
50	*Cataetyx rubrirostris*	34

TABLE 7. (cont.)

Rank	Taxon	Count
51	*Neoclinus stephensae*	33
52	*Benthalbella dentata*	31
53	*Sebastes aurora*	29
54	*Hygophum reinhardtii*	28
55	*Nannobrachium regale*	27
56	*Icosteus aenigmaticus*	25
57	*Scorpaenichthys marmoratus*	23
58	*Scopelogadus bispinosus*	20
58	*Argentina sialis*	20
58	*Sebastolobus altivelis*	20
61	*Bathylagus pacificus*	19
61	*Ichthyococcus irregularis*	19
61	*Hexagrammos decagrammus*	19
61	*Notolychnus valdiviae*	19
61	*Argyropelecus* spp.	19
61	*Oxylebius pictus*	19
67	*Argyropelecus hemigymnus*	16
68	*Rosenblattichthys volucris*	15
68	*Vinciguerria poweriae*	15
70	*Argyropelecus affinis*	14
70	*Chiasmodon niger*	14
70	*Zaniolepis latipinnis*	14
70	*Loweina rara*	14
74	*Sebastes goodei*	11
74	*Ruscarius creaseri*	11
74	*Tactostoma macropus*	11
77	Disintegrated fish larvae	10
77	*Tetragonurus cuvieri*	10
77	*Nannobrachium bristori*	10
77	*Scopelarchus guentheri*	10
77	*Microstomus pacificus*	10
77	*Glyptocephalus zachirus*	10
77	*Aristostomias scintillans*	10
77	*Arctozenus risso*	10
85	*Cololabis saira*	9
85	*Liparis mucosus*	9
85	*Zaniolepis frenata*	9
85	*Rathbunella* spp.	9
85	*Sebastolobus* spp.	9
85	Bythitidae	9
85	*Dolichopteryx longipes*	9
92	*Pleuronichthys verticalis*	8
93	*Atractoscion nobilis*	6
94	*Bathylagus milleri*	5
94	*Bathophilus flemingi*	5
94	*Atherinopsis californiensis*	5
94	Myctophidae	5
94	*Electrona risso*	5
94	*Oneirodes* spp.	5
94	*Scopelarchus analis*	5
94	*Cyema atrum*	5
94	*Anisotremus davidsoni*	5

TABLE 7. (cont.)

Rank	Taxon	Count
94	*Diogenichthys laternatus*	5
104	Stichaeidae	4
104	*Gobiesox maeandricus*	4
104	*Orthonopias triacis*	4
107	*Leptocottus armatus*	3
	Total	73701

TABLE 8. Number of fish larvae taken in Bongo net tows at stations occupied on CalCOFI cruises in 2002. Counts are adjusted for percent of sample sorted and standard haul factor (see text). Unoccupied stations are indicated by a dash.

Cyema atrum

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3	120.0	5.2	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Sardinops sagax

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	51.0	-	0.0	-	18.5	-	-	0.0	-	-	-	0.0	-
76.7	70.0	-	0.0	-	95.3	-	-	0.0	-	-	-	0.0	-
76.7	100.0	-	0.0	-	35.8	-	-	0.0	-	-	-	0.0	-
80.0	60.0	-	0.0	-	98.8	-	-	0.0	-	-	-	0.0	-
80.0	70.0	-	0.0	-	155.3	-	-	0.0	-	-	-	0.0	-
80.0	80.0	-	0.0	-	612.0	-	-	0.0	-	-	-	0.0	-
80.0	90.0	-	0.0	-	383.1	-	-	0.0	-	-	-	0.0	-
80.0	100.0	-	0.0	-	367.8	-	-	0.0	-	-	-	0.0	-
83.3	55.0	-	0.0	-	36.6	-	-	0.0	-	-	-	0.0	-
83.3	60.0	-	0.0	-	233.3	-	-	0.0	-	-	-	0.0	-
83.3	70.0	-	0.0	-	376.7	-	-	0.0	-	-	-	0.0	-
83.3	80.0	-	0.0	-	9.3	-	-	0.0	-	-	-	0.0	-
83.3	90.0	-	0.0	-	14.0	-	-	0.0	-	-	-	0.0	-
83.3	100.0	-	0.0	-	228.0	-	-	0.0	-	-	-	0.0	-
86.7	50.0	0.0	-	-	8.6	-	-	0.0	-	-	-	0.0	-
86.7	60.0	-	0.0	-	320.0	-	-	0.0	-	-	-	0.0	-
86.7	70.0	-	0.0	-	926.9	-	-	10.0	-	-	-	0.0	-
86.7	80.0	-	0.0	-	35.7	-	-	0.0	-	-	-	0.0	-
86.7	90.0	-	0.0	-	18.6	-	-	5.3	-	-	-	0.0	-
86.7	100.0	-	0.0	-	44.8	-	-	0.0	-	-	-	0.0	-
86.7	110.0	-	0.0	-	34.4	-	-	0.0	-	-	-	0.0	-
90.0	53.0	0.0	-	-	178.4	-	-	0.0	-	-	-	0.0	-
90.0	60.0	0.0	-	-	36.2	-	-	0.0	-	-	-	0.0	-
90.0	70.0	0.0	-	-	588.2	-	-	0.0	-	-	-	0.0	-
90.0	80.0	0.0	-	-	35.2	-	-	0.0	-	-	-	0.0	-
90.0	90.0	0.0	-	-	78.7	-	-	0.0	-	-	-	0.0	-
90.0	100.0	0.0	-	-	191.5	-	-	0.0	-	-	-	0.0	-
93.3	40.0	0.0	-	9.3	-	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Sardinops sagax (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3	45.0	0.0	-	19.3	-	-	-	0.0	-	-	-	0.0	-
93.3	50.0	0.0	-	804.1	-	-	-	0.0	-	-	-	0.0	-
93.3	55.0	0.0	-	100.4	-	-	-	0.0	-	-	-	0.0	-
93.3	60.0	0.0	-	54.5	-	-	-	0.0	-	-	-	0.0	-
93.3	70.0	0.0	-	74.0	-	-	-	0.0	-	-	-	0.0	-
93.3	80.0	0.0	-	205.6	-	-	-	0.0	-	-	-	0.0	-
93.3	90.0	0.0	-	440.6	-	-	-	0.0	-	-	-	0.0	-
93.3	100.0	0.0	-	104.4	-	-	-	0.0	-	-	-	0.0	-
93.3	110.0	0.0	-	4.7	-	-	-	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	-	0.0	-	-	0.0	-	-	-	3.8	-
76.7	55.0	-	29.1	-	0.0	-	-	0.0	-	-	-	0.0	-
76.7	60.0	-	9.6	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0	51.0	-	0.0	-	-	-	-	0.0	-	-	-	4.4	-
80.0	55.0	-	0.0	-	48.4	-	-	0.0	-	-	-	0.0	-
80.0	70.0	-	0.0	-	54.8	-	-	0.0	-	-	-	0.0	-
81.8	46.9	-	19.3	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	40.6	-	24.0	-	8.0	-	-	0.0	-	-	-	0.0	-
83.3	42.0	-	19.8	-	9.3	-	-	14.8	-	-	-	0.0	-
83.3	51.0	-	418.2	-	129.1	-	-	0.0	-	-	-	0.0	-
83.3	55.0	-	56.1	-	18.3	-	-	0.0	-	-	-	0.0	-
83.3	70.0	-	4.9	-	52.6	-	-	0.0	-	-	-	0.0	-
83.3	80.0	-	18.8	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	33.0	0.0	-	-	42.1	-	-	0.0	-	-	-	7.5	-
86.7	35.0	102.3	-	-	306.9	-	-	9.8	-	-	-	9.5	-
86.7	40.0	0.0	-	-	258.6	-	-	0.0	-	-	-	0.0	-
86.7	45.0	5.1	-	-	248.0	-	-	0.0	-	-	-	190.7	-
86.7	50.0	18.1	-	-	17.3	-	-	0.0	-	-	-	24.3	-
86.7	55.0	-	10.6	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	60.0	-	11.7	-	9.4	-	-	0.0	-	-	-	0.0	-
86.7	80.0	-	0.0	-	80.3	-	-	0.0	-	-	-	0.0	-
86.7	90.0	-	10.0	-	28.0	-	-	0.0	-	-	-	0.0	-
86.7	100.0	-	0.0	-	9.0	-	-	0.0	-	-	-	0.0	-
90.0	28.0	-	-	-	14.2	-	-	4.9	-	-	-	4.7	-

TABLE 8. (cont.)

Engraulis mordax (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0	30.0	0.0	-	-	174.0	-	-	10.3	-	-	-	389.3	-
90.0	35.0	0.0	-	-	121.2	-	-	11.2	-	-	-	5.0	-
90.0	37.0	0.0	-	-	0.0	-	-	10.9	-	-	-	0.0	-
90.0	45.0	9.0	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	53.0	0.0	-	-	133.8	-	-	0.0	-	-	-	0.0	-
90.0	60.0	0.0	-	-	27.2	-	-	0.0	-	-	-	0.0	-
90.0	70.0	0.0	-	-	676.0	-	-	0.0	-	-	-	0.0	-
90.0	80.0	19.6	-	-	0.0	-	-	0.0	-	-	-	0.0	-
93.3	26.7	3.8	-	28.9	-	-	-	4.7	-	-	-	0.0	-
93.3	28.0	0.0	-	90.4	-	-	-	15.6	-	-	-	0.0	-
93.3	30.0	8.9	-	218.5	-	-	-	0.0	-	-	-	9.1	-
93.3	35.0	9.7	-	1395.3	-	-	-	0.0	-	-	-	0.0	-
93.3	40.0	0.0	-	550.9	-	-	-	0.0	-	-	-	0.0	-
93.3	45.0	9.3	-	96.3	-	-	-	0.0	-	-	-	0.0	-
93.3	50.0	9.2	-	114.9	-	-	-	0.0	-	-	-	0.0	-
93.3	55.0	0.0	-	20.1	-	-	-	0.0	-	-	-	0.0	-
93.3	60.0	0.0	-	118.0	-	-	-	0.0	-	-	-	0.0	-

Argentina sialis

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
81.8	46.9	-	9.7	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	35.0	4.7	-	-	0.0	-	-	0.0	-	-	-	0.0	-
93.3	28.0	0.0	-	4.8	-	-	-	0.0	-	-	-	0.0	-

Microstoma spp.

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	90.0	-	4.5	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	100.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.2	-
86.7	100.0	-	4.8	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	45.0	0.0	-	-	0.0	-	-	0.0	-	-	-	8.0	-
90.0	53.0	0.0	-	-	0.0	-	-	12.9	-	-	-	0.0	-
90.0	110.0	0.0	-	0.0	-	-	-	4.3	-	-	-	0.0	-
93.3	40.0	8.3	-	0.0	-	-	-	9.6	-	-	-	0.0	-
93.3	55.0	0.0	-	0.0	-	-	-	9.5	-	-	-	0.0	-
93.3	60.0	0.0	-	0.0	-	-	-	22.6	-	-	-	0.0	-
93.3	70.0	0.0	-	0.0	-	-	-	11.4	-	-	-	0.0	-
93.3	80.0	5.1	-	0.0	-	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Nansenia candida

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	80.0	-	0.0	-	10.2	-	-	0.0	-	-	-	0.0	-
80.0	90.0	-	0.0	-	18.7	-	-	0.0	-	-	-	0.0	-
80.0	100.0	-	0.0	-	9.9	-	-	0.0	-	-	-	0.0	-
83.3	100.0	-	0.0	-	4.6	-	-	5.5	-	-	-	0.0	-
86.7	60.0	-	0.0	-	9.4	-	-	0.0	-	-	-	0.0	-
86.7	110.0	-	0.0	-	9.8	-	-	0.0	-	-	-	0.0	-
90.0	80.0	0.0	-	-	8.8	-	-	0.0	-	-	-	0.0	-
90.0	90.0	0.0	-	-	8.7	-	-	0.0	-	-	-	0.0	-
90.0	100.0	0.0	-	-	15.1	-	-	0.0	-	-	-	0.0	-
93.3	90.0	0.0	-	36.7	-	-	-	0.0	-	-	-	0.0	-

Bathylagus milleri

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0	110.0	0.0	-	4.6	-	-	-	0.0	-	-	-	0.0	-

Bathylagus ochotensis

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	49.0	-	0.0	-	4.3	-	-	0.0	-	-	-	0.0	-
76.7	55.0	-	19.4	-	0.0	-	-	0.0	-	-	-	0.0	-
76.7	60.0	-	28.8	-	9.0	-	-	0.0	-	-	-	0.0	-
76.7	70.0	-	96.8	-	57.2	-	-	0.0	-	-	-	0.0	-
76.7	80.0	-	16.6	-	27.7	-	-	10.6	-	-	-	0.0	-
76.7	90.0	-	9.0	-	18.8	-	-	0.0	-	-	-	0.0	-
76.7	100.0	-	0.0	-	10.2	-	-	0.0	-	-	-	0.0	-
80.0	55.0	-	0.0	-	19.4	-	-	0.0	-	-	-	0.0	-
80.0	60.0	-	0.0	-	128.4	-	-	0.0	-	-	-	0.0	-
80.0	70.0	-	92.7	-	109.6	-	-	11.0	-	-	-	0.0	-
80.0	80.0	-	0.0	-	30.6	-	-	0.0	-	-	-	0.0	-
80.0	90.0	-	48.5	-	9.3	-	-	0.0	-	-	-	0.0	-
80.0	100.0	-	93.4	-	14.9	-	-	0.0	-	-	-	0.0	-
83.3	42.0	-	5.0	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	55.0	-	56.1	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	60.0	-	87.0	-	9.7	-	-	0.0	-	-	-	0.0	-
83.3	70.0	-	38.9	-	8.8	-	-	11.1	-	-	-	0.0	-
83.3	80.0	-	47.0	-	41.8	-	-	9.2	-	-	-	0.0	-
83.3	90.0	-	37.8	-	9.3	-	-	43.1	-	-	-	8.2	-
86.7	33.0	8.0	-	-	8.4	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Bathylagus ochotensis (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7	35.0	4.7	-	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	40.0	0.0	-	-	9.6	-	-	5.4	-	-	-	0.0	-
86.7	45.0	40.4	-	-	29.8	-	-	0.0	-	-	-	0.0	-
86.7	50.0	4.5	-	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	55.0	-	84.6	-	27.2	-	-	0.0	-	-	-	0.0	-
86.7	60.0	-	11.7	-	84.7	-	-	20.9	-	-	-	0.0	-
86.7	70.0	-	10.2	-	60.1	-	-	0.0	-	-	-	0.0	-
86.7	80.0	-	168.3	-	26.8	-	-	0.0	-	-	-	0.0	-
86.7	90.0	-	259.5	-	28.0	-	-	0.0	-	-	-	4.4	-
86.7	100.0	-	9.7	-	53.8	-	-	0.0	-	-	-	0.0	-
86.7	110.0	-	4.7	-	4.9	-	-	0.0	-	-	-	0.0	-
90.0	28.0	-	-	-	9.4	-	-	0.0	-	-	-	0.0	-
90.0	30.0	74.1	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	35.0	35.0	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	37.0	47.7	-	-	20.2	-	-	0.0	-	-	-	0.0	-
90.0	45.0	54.1	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	53.0	48.8	-	-	115.9	-	-	12.9	-	-	-	0.0	-
90.0	60.0	4.9	-	-	9.1	-	-	0.0	-	-	-	0.0	-
90.0	70.0	9.3	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	80.0	9.8	-	-	8.8	-	-	0.0	-	-	-	0.0	-
90.0	90.0	4.9	-	-	17.5	-	-	0.0	-	-	-	0.0	-
90.0	110.0	0.0	-	0.0	-	-	-	4.3	-	-	-	0.0	-
93.3	26.7	0.0	-	34.7	-	-	-	0.0	-	-	-	0.0	-
93.3	28.0	19.6	-	4.8	-	-	-	0.0	-	-	-	0.0	-
93.3	30.0	4.4	-	9.5	-	-	-	0.0	-	-	-	0.0	-
93.3	35.0	58.0	-	9.0	-	-	-	10.7	-	-	-	0.0	-
93.3	40.0	41.7	-	9.3	-	-	-	9.6	-	-	-	0.0	-
93.3	45.0	101.9	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	50.0	92.2	-	38.3	-	-	-	0.0	-	-	-	0.0	-
93.3	55.0	91.8	-	40.2	-	-	-	0.0	-	-	-	0.0	-
93.3	60.0	19.2	-	54.5	-	-	-	0.0	-	-	-	0.0	-
93.3	70.0	4.6	-	9.2	-	-	-	0.0	-	-	-	0.0	-
93.3	80.0	0.0	-	9.8	-	-	-	0.0	-	-	-	0.0	-
93.3	90.0	0.0	-	9.2	-	-	-	0.0	-	-	-	0.0	-
93.3	100.0	0.0	-	5.0	-	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Bathylagus pacificus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3	70.0	-	4.9	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	90.0	-	0.0	-	4.7	-	-	0.0	-	-	-	0.0	-
93.3	70.0	0.0	-	9.2	-	-	-	0.0	-	-	-	0.0	-

Bathylagus wesethi

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	100.0	-	0.0	-	0.0	-	-	0.0	-	-	-	22.5	-
80.0	80.0	-	0.0	-	10.2	-	-	0.0	-	-	-	0.0	-
80.0	100.0	-	0.0	-	5.0	-	-	0.0	-	-	-	13.4	-
83.3	55.0	-	0.0	-	9.1	-	-	0.0	-	-	-	0.0	-
83.3	100.0	-	0.0	-	0.0	-	-	0.0	-	-	-	8.3	-
83.3	110.0	-	0.0	-	4.5	-	-	4.9	-	-	-	0.0	-
86.7	90.0	-	0.0	-	9.3	-	-	205.1	-	-	-	0.0	-
86.7	100.0	-	0.0	-	9.0	-	-	62.7	-	-	-	0.0	-
86.7	110.0	-	0.0	-	4.9	-	-	0.0	-	-	-	8.9	-
90.0	70.0	0.0	-	-	0.0	-	-	19.6	-	-	-	4.4	-
90.0	80.0	0.0	-	-	8.8	-	-	22.2	-	-	-	4.7	-
90.0	90.0	0.0	-	-	8.7	-	-	23.9	-	-	-	0.0	-
90.0	100.0	0.0	-	-	10.1	-	-	120.5	-	-	-	0.0	-
90.0	110.0	0.0	-	4.6	-	-	-	0.0	-	-	-	4.6	-
90.0	120.0	0.0	-	4.7	-	-	-	20.3	-	-	-	42.3	-
93.3	55.0	0.0	-	20.1	-	-	-	9.5	-	-	-	0.0	-
93.3	70.0	0.0	-	9.2	-	-	-	0.0	-	-	-	0.0	-
93.3	80.0	0.0	-	0.0	-	-	-	49.1	-	-	-	0.0	-
93.3	100.0	0.0	-	5.0	-	-	-	20.1	-	-	-	0.0	-
93.3	120.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.6	-

Leuroglossus stilbius

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	51.0	-	0.0	-	9.3	-	-	0.0	-	-	-	0.0	-
76.7	55.0	-	9.7	-	18.8	-	-	0.0	-	-	-	0.0	-
76.7	60.0	-	28.8	-	0.0	-	-	0.0	-	-	-	0.0	-
76.7	70.0	-	24.2	-	38.1	-	-	0.0	-	-	-	0.0	-
76.7	80.0	-	8.3	-	0.0	-	-	0.0	-	-	-	0.0	-
76.7	90.0	-	0.0	-	18.8	-	-	0.0	-	-	-	0.0	-
80.0	55.0	-	11.0	-	19.4	-	-	0.0	-	-	-	0.0	-
80.0	60.0	-	12.5	-	19.8	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Leuroglossus stilbius (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	70.0	-	10.3	-	36.5	-	-	0.0	-	-	-	0.0	-
80.0	100.0	-	14.0	-	5.0	-	-	0.0	-	-	-	0.0	-
81.8	46.9	-	48.3	-	11.1	-	-	0.0	-	-	-	0.0	-
83.3	40.6	-	3.4	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	42.0	-	24.8	-	27.9	-	-	0.0	-	-	-	0.0	-
83.3	51.0	-	30.6	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	55.0	-	196.3	-	73.2	-	-	0.0	-	-	-	0.0	-
83.3	60.0	-	182.8	-	9.7	-	-	0.0	-	-	-	0.0	-
83.3	70.0	-	53.5	-	8.8	-	-	0.0	-	-	-	0.0	-
83.3	80.0	-	169.3	-	18.6	-	-	0.0	-	-	-	0.0	-
83.3	90.0	-	18.9	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	100.0	-	16.9	-	4.6	-	-	5.5	-	-	-	0.0	-
86.7	35.0	125.6	-	-	57.5	-	-	0.0	-	-	-	0.0	-
86.7	40.0	160.0	-	-	28.7	-	-	0.0	-	-	-	0.0	-
86.7	45.0	176.8	-	-	49.6	-	-	0.0	-	-	-	0.0	-
86.7	55.0	-	222.2	-	18.2	-	-	0.0	-	-	-	0.0	-
86.7	60.0	-	105.6	-	9.4	-	-	0.0	-	-	-	0.0	-
86.7	70.0	-	163.2	-	34.3	-	-	10.0	-	-	-	0.0	-
86.7	80.0	-	29.7	-	8.9	-	-	0.0	-	-	-	4.8	-
86.7	90.0	-	29.9	-	28.0	-	-	0.0	-	-	-	0.0	-
86.7	100.0	-	0.0	-	17.9	-	-	0.0	-	-	-	0.0	-
86.7	110.0	-	0.0	-	0.0	-	-	5.1	-	-	-	0.0	-
90.0	30.0	105.8	-	-	51.2	-	-	0.0	-	-	-	0.0	-
90.0	35.0	90.0	-	-	80.8	-	-	0.0	-	-	-	0.0	-
90.0	37.0	42.9	-	-	100.8	-	-	0.0	-	-	-	0.0	-
90.0	45.0	306.4	-	-	9.8	-	-	11.2	-	-	-	0.0	-
90.0	53.0	214.9	-	-	115.9	-	-	0.0	-	-	-	0.0	-
90.0	60.0	0.0	-	-	27.2	-	-	0.0	-	-	-	0.0	-
90.0	70.0	4.7	-	-	193.1	-	-	0.0	-	-	-	0.0	-
90.0	80.0	39.3	-	-	17.6	-	-	0.0	-	-	-	0.0	-
90.0	90.0	0.0	-	-	17.5	-	-	0.0	-	-	-	0.0	-
93.3	26.7	0.0	-	5.8	-	-	-	0.0	-	-	-	0.0	-
93.3	28.0	19.6	-	19.0	-	-	-	0.0	-	-	-	0.0	-
93.3	30.0	26.6	-	80.8	-	-	-	0.0	-	-	-	0.0	-
93.3	35.0	106.4	-	117.0	-	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Leuroglossus stilbius (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3	40.0	50.0	-	74.7	-	-	-	9.6	-	-	-	0.0	-
93.3	45.0	166.7	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	50.0	267.4	-	28.7	-	-	-	0.0	-	-	-	0.0	-
93.3	55.0	91.8	-	10.0	-	-	-	0.0	-	-	-	0.0	-
93.3	60.0	19.2	-	27.2	-	-	-	0.0	-	-	-	0.0	-
93.3	70.0	0.0	-	27.7	-	-	-	0.0	-	-	-	0.0	-

Dolichopteryx longipes

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0	45.0	9.0	-	-	0.0	-	-	0.0	-	-	-	0.0	-

Cyclothone spp.

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3	110.0	-	0.0	-	0.0	-	-	4.9	-	-	-	0.0	-
86.7	100.0	-	0.0	-	0.0	-	-	4.8	-	-	-	0.0	-
93.3	100.0	25.6	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	110.0	4.4	-	4.7	-	-	-	0.0	-	-	-	0.0	-
93.3	120.0	0.0	-	0.0	-	-	-	5.1	-	-	-	0.0	-

Cyclothone signata

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	100.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.5	-
83.3	80.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.6	-
83.3	90.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.1	-
83.3	100.0	-	0.0	-	0.0	-	-	0.0	-	-	-	8.3	-
83.3	110.0	-	9.6	-	0.0	-	-	9.9	-	-	-	8.7	-
86.7	60.0	-	0.0	-	9.4	-	-	0.0	-	-	-	0.0	-
86.7	100.0	-	4.8	-	0.0	-	-	4.8	-	-	-	4.2	-
86.7	110.0	-	4.7	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	70.0	0.0	-	-	0.0	-	-	0.0	-	-	-	4.4	-
90.0	80.0	0.0	-	-	0.0	-	-	0.0	-	-	-	4.7	-
90.0	90.0	0.0	-	-	0.0	-	-	0.0	-	-	-	4.4	-
90.0	100.0	0.0	-	-	5.0	-	-	0.0	-	-	-	0.0	-
90.0	110.0	0.0	-	4.6	-	-	-	0.0	-	-	-	0.0	-
90.0	120.0	4.9	-	9.5	-	-	-	15.2	-	-	-	9.4	-
93.3	70.0	0.0	-	9.2	-	-	-	0.0	-	-	-	0.0	-
93.3	100.0	20.5	-	44.7	-	-	-	0.0	-	-	-	14.0	-

TABLE 8. (cont.)

Cyclothone signata (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 110.0	0.0	-	28.3	-	-	-	0.0	-	-	-	18.1	-
93.3 120.0	0.0	-	9.6	-	-	-	0.0	-	-	-	0.0	-

***Argyropelecus* spp.**

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 80.0	0.0	-	-	8.8	-	-	0.0	-	-	-	0.0	-
90.0 100.0	0.0	-	-	5.0	-	-	0.0	-	-	-	0.0	-
93.3 120.0	0.0	-	4.8	-	-	-	0.0	-	-	-	0.0	-

Argyropelecus affinis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 50.0	9.2	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3 90.0	5.0	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Argyropelecus hemigymnus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 60.0	0.0	-	0.0	-	-	-	11.3	-	-	-	0.0	-
93.3 120.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.6	-

Argyropelecus lychnus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7 90.0	-	0.0	-	0.0	-	-	5.3	-	-	-	0.0	-
86.7 100.0	-	4.8	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0 30.0	0.0	-	-	10.2	-	-	0.0	-	-	-	0.0	-
90.0 80.0	0.0	-	-	0.0	-	-	5.5	-	-	-	0.0	-
90.0 100.0	4.9	-	-	5.0	-	-	0.0	-	-	-	0.0	-
93.3 60.0	0.0	-	9.1	-	-	-	11.3	-	-	-	0.0	-
93.3 80.0	0.0	-	0.0	-	-	-	5.5	-	-	-	0.0	-
93.3 100.0	0.0	-	0.0	-	-	-	5.0	-	-	-	0.0	-
93.3 110.0	0.0	-	4.7	-	-	-	0.0	-	-	-	0.0	-

Argyropelecus sladeni

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 90.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.9	-
83.3 70.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.2	-
83.3 110.0	-	9.6	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 35.0	4.7	-	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 40.0	10.0	-	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 55.0	-	10.6	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0 35.0	0.0	-	-	0.0	-	-	0.0	-	-	-	5.0	-

TABLE 8. (cont.)

Argyropelecus sladeni (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 80.0	0.0	-	-	0.0	-	-	11.1	-	-	-	0.0	-
90.0 90.0	0.0	-	-	0.0	-	-	4.8	-	-	-	0.0	-
90.0 100.0	0.0	-	-	0.0	-	-	4.8	-	-	-	0.0	-
90.0 120.0	4.9	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3 60.0	0.0	-	0.0	-	-	-	11.3	-	-	-	0.0	-
93.3 80.0	0.0	-	9.8	-	-	-	0.0	-	-	-	0.0	-
93.3 90.0	5.0	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3 100.0	10.2	-	5.0	-	-	-	0.0	-	-	-	0.0	-
93.3 110.0	8.7	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Danaphos oculatus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 70.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.3	-
80.0 100.0	-	4.7	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 60.0	-	8.7	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 80.0	-	9.4	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 90.0	-	10.0	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0 35.0	0.0	-	-	20.2	-	-	0.0	-	-	-	5.0	-
90.0 60.0	0.0	-	-	18.1	-	-	0.0	-	-	-	0.0	-
90.0 80.0	0.0	-	-	0.0	-	-	5.5	-	-	-	0.0	-
90.0 100.0	0.0	-	-	10.1	-	-	0.0	-	-	-	0.0	-
90.0 110.0	0.0	-	4.6	-	-	-	0.0	-	-	-	0.0	-
90.0 120.0	0.0	-	9.5	-	-	-	0.0	-	-	-	0.0	-
93.3 50.0	18.4	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3 60.0	9.6	-	0.0	-	-	-	11.3	-	-	-	0.0	-
93.3 70.0	0.0	-	0.0	-	-	-	11.4	-	-	-	0.0	-
93.3 80.0	0.0	-	9.8	-	-	-	0.0	-	-	-	0.0	-
93.3 90.0	14.9	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3 100.0	5.1	-	9.9	-	-	-	0.0	-	-	-	0.0	-
93.3 110.0	0.0	-	9.4	-	-	-	0.0	-	-	-	0.0	-
93.3 120.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.6	-

***Sternoptyx* spp.**

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 70.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.2	-
83.3 100.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.2	-
86.7 60.0	-	11.7	-	0.0	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

***Sternoptyx* spp.** (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7 110.0	-	4.7	-	0.0	-	-	0.0	-	-	-	0.0	-
93.3 120.0	0.0	-	9.6	-	-	-	0.0	-	-	-	0.0	-

Ichthyococcus irregularis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 45.0	9.0	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0 120.0	0.0	-	4.7	-	-	-	0.0	-	-	-	0.0	-
93.3 100.0	5.1	-	0.0	-	-	-	0.0	-	-	-	0.0	-

***Vinciguerria* spp.**

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 80.0	0.0	-	0.0	-	-	-	10.9	-	-	-	0.0	-
93.3 100.0	0.0	-	0.0	-	-	-	115.5	-	-	-	0.0	-
93.3 110.0	0.0	-	0.0	-	-	-	4.7	-	-	-	0.0	-
93.3 120.0	0.0	-	0.0	-	-	-	141.4	-	-	-	0.0	-

Vinciguerria lucetia

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 100.0	-	0.0	-	0.0	-	-	0.0	-	-	-	18.0	-
80.0 90.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.9	-
80.0 100.0	-	0.0	-	0.0	-	-	0.0	-	-	-	22.4	-
83.3 100.0	-	5.6	-	0.0	-	-	0.0	-	-	-	4.2	-
83.3 110.0	-	19.2	-	0.0	-	-	34.5	-	-	-	4.4	-
86.7 90.0	-	0.0	-	0.0	-	-	52.6	-	-	-	0.0	-
86.7 100.0	-	4.8	-	0.0	-	-	33.7	-	-	-	0.0	-
86.7 110.0	-	18.6	-	0.0	-	-	40.8	-	-	-	26.7	-
90.0 70.0	0.0	-	-	0.0	-	-	9.8	-	-	-	8.8	-
90.0 80.0	0.0	-	-	0.0	-	-	22.2	-	-	-	4.7	-
90.0 90.0	4.9	-	-	0.0	-	-	0.0	-	-	-	4.4	-
90.0 100.0	9.7	-	-	0.0	-	-	72.3	-	-	-	0.0	-
90.0 110.0	8.9	-	18.4	-	-	-	4.3	-	-	-	4.6	-
90.0 120.0	19.8	-	0.0	-	-	-	20.3	-	-	-	37.6	-
93.3 40.0	0.0	-	0.0	-	-	-	0.0	-	-	-	9.1	-
93.3 55.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.4	-
93.3 60.0	0.0	-	0.0	-	-	-	0.0	-	-	-	29.9	-
93.3 90.0	5.0	-	0.0	-	-	-	20.9	-	-	-	4.9	-
93.3 100.0	189.4	-	39.8	-	-	-	45.2	-	-	-	55.9	-
93.3 110.0	8.7	-	14.2	-	-	-	0.0	-	-	-	63.3	-
93.3 120.0	5.2	-	19.2	-	-	-	60.6	-	-	-	64.5	-

TABLE 8. (cont.)

Vinciguerria poweriae

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 110.0	0.0	-	4.6	-	-	-	0.0	-	-	-	0.0	-
93.3 100.0	0.0	-	9.9	-	-	-	0.0	-	-	-	0.0	-

Chauliodus macouni

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 60.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.8	-
76.7 80.0	-	0.0	-	0.0	-	-	10.6	-	-	-	0.0	-
80.0 60.0	-	0.0	-	9.9	-	-	0.0	-	-	-	0.0	-
80.0 80.0	-	0.0	-	5.1	-	-	0.0	-	-	-	0.0	-
80.0 100.0	-	4.7	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 60.0	-	0.0	-	0.0	-	-	9.7	-	-	-	0.0	-
86.7 60.0	-	0.0	-	0.0	-	-	10.5	-	-	-	0.0	-
86.7 80.0	-	0.0	-	8.9	-	-	0.0	-	-	-	0.0	-
86.7 100.0	-	0.0	-	9.0	-	-	0.0	-	-	-	4.2	-
86.7 110.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.5	-
90.0 35.0	0.0	-	-	0.0	-	-	5.6	-	-	-	0.0	-
90.0 45.0	0.0	-	-	0.0	-	-	11.2	-	-	-	0.0	-
90.0 80.0	0.0	-	-	0.0	-	-	0.0	-	-	-	4.7	-
93.3 55.0	0.0	-	0.0	-	-	-	9.5	-	-	-	0.0	-
93.3 60.0	0.0	-	0.0	-	-	-	22.6	-	-	-	0.0	-
93.3 70.0	4.6	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Stomias atriventer

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7 80.0	-	0.0	-	8.9	-	-	0.0	-	-	-	0.0	-
86.7 110.0	-	0.0	-	0.0	-	-	10.2	-	-	-	0.0	-
90.0 80.0	0.0	-	-	0.0	-	-	5.5	-	-	-	0.0	-
90.0 90.0	0.0	-	-	8.7	-	-	0.0	-	-	-	0.0	-
93.3 70.0	0.0	-	9.2	-	-	-	0.0	-	-	-	0.0	-
93.3 100.0	10.2	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Bathophilus flemingi

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7 90.0	-	0.0	-	0.0	-	-	5.3	-	-	-	0.0	-

Tactostoma macropus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 100.0	-	0.0	-	0.0	-	-	5.5	-	-	-	0.0	-
90.0 70.0	0.0	-	-	0.0	-	-	4.9	-	-	-	0.0	-

TABLE 8. (cont.)

Aristostomias scintillans

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 120.0	5.2	-	4.8	-	-	-	0.0	-	-	-	0.0	-

Idiacanthus antrostomus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 100.0	-	4.4	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 90.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.9	-
80.0 100.0	-	0.0	-	0.0	-	-	0.0	-	-	-	9.0	-
83.3 70.0	-	4.9	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 90.0	-	0.0	-	0.0	-	-	0.0	-	-	-	16.4	-
83.3 100.0	-	5.6	-	0.0	-	-	0.0	-	-	-	20.9	-
83.3 110.0	-	4.8	-	0.0	-	-	0.0	-	-	-	4.4	-
86.7 80.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.8	-
86.7 100.0	-	0.0	-	0.0	-	-	0.0	-	-	-	8.4	-
86.7 110.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.5	-
90.0 80.0	0.0	-	-	0.0	-	-	0.0	-	-	-	4.7	-
90.0 90.0	4.9	-	-	0.0	-	-	0.0	-	-	-	4.4	-
90.0 110.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.6	-
90.0 120.0	4.9	-	0.0	-	-	-	5.1	-	-	-	0.0	-
93.3 100.0	0.0	-	0.0	-	-	-	5.0	-	-	-	4.7	-
93.3 110.0	4.4	-	0.0	-	-	-	0.0	-	-	-	4.5	-
93.3 120.0	15.7	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Benthalbella dentata

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 70.0	-	0.0	-	0.0	-	-	11.0	-	-	-	0.0	-
90.0 100.0	0.0	-	-	5.0	-	-	0.0	-	-	-	0.0	-
93.3 80.0	0.0	-	9.8	-	-	-	0.0	-	-	-	0.0	-
93.3 100.0	0.0	-	0.0	-	-	-	5.0	-	-	-	0.0	-

Rosenblattichthys volucris

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 100.0	10.2	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3 120.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.6	-

Scopelarchus analis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 70.0	0.0	-	-	0.0	-	-	4.9	-	-	-	0.0	-

TABLE 8. (cont.)

Scopelarchus guentheri

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 80.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.6	-93.3
100.0 0.0	-	5.0	-	-	-	0.0	-	-	-	0.0	-	

***Scopelosaurus* spp.**

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 90.0	-	9.7	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 110.0	-	0.0	-	4.5	-	-	4.9	-	-	-	0.0	-
86.7 80.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.8	-
86.7 90.0	-	0.0	-	9.3	-	-	0.0	-	-	-	0.0	-
90.0 80.0	0.0	-	-	0.0	-	-	5.5	-	-	-	0.0	-
90.0 100.0	0.0	-	-	0.0	-	-	4.8	-	-	-	0.0	-

Arctozenus risso

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 100.0	-	0.0	-	5.0	-	-	0.0	-	-	-	0.0	-
93.3 100.0	0.0	-	5.0	-	-	-	0.0	-	-	-	0.0	-

Lestidiops ringens

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 100.0	-	4.4	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 60.0	-	0.0	-	9.9	-	-	0.0	-	-	-	0.0	-
80.0 90.0	-	0.0	-	0.0	-	-	9.6	-	-	-	0.0	-
83.3 80.0	-	0.0	-	4.6	-	-	0.0	-	-	-	0.0	-
83.3 110.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.4	-
86.7 80.0	-	0.0	-	8.9	-	-	0.0	-	-	-	0.0	-
86.7 90.0	-	0.0	-	0.0	-	-	15.8	-	-	-	0.0	-
86.7 100.0	-	0.0	-	17.9	-	-	4.8	-	-	-	0.0	-
86.7 110.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.5	-
90.0 80.0	0.0	-	-	8.8	-	-	0.0	-	-	-	0.0	-
90.0 100.0	0.0	-	-	5.0	-	-	14.5	-	-	-	0.0	-
90.0 110.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.6	-
93.3 55.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.4	-
93.3 60.0	9.6	-	0.0	-	-	-	0.0	-	-	-	4.3	-
93.3 80.0	5.1	-	0.0	-	-	-	0.0	-	-	-	4.7	-
93.3 120.0	0.0	-	4.8	-	-	-	0.0	-	-	-	0.0	-

Myctophidae

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 120.0	0.0	-	4.8	-	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Ceratoscopelus townsendi

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	80.0	-	8.3	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	80.0	-	0.0	-	0.0	-	-	9.2	-	-	-	0.0	-
83.3	90.0	-	0.0	-	0.0	-	-	10.8	-	-	-	4.1	-
83.3	100.0	-	0.0	-	0.0	-	-	22.1	-	-	-	0.0	-
86.7	90.0	-	0.0	-	0.0	-	-	42.1	-	-	-	0.0	-
86.7	100.0	-	0.0	-	0.0	-	-	4.8	-	-	-	0.0	-
86.7	110.0	-	9.3	-	0.0	-	-	15.3	-	-	-	0.0	-
90.0	70.0	0.0	-	-	0.0	-	-	9.8	-	-	-	0.0	-
90.0	80.0	0.0	-	-	0.0	-	-	0.0	-	-	-	4.7	-
90.0	100.0	4.9	-	-	25.2	-	-	4.8	-	-	-	0.0	-
90.0	110.0	4.4	-	18.4	-	-	-	0.0	-	-	-	0.0	-
90.0	120.0	9.9	-	23.7	-	-	-	0.0	-	-	-	4.7	-
93.3	55.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.4	-
93.3	80.0	0.0	-	0.0	-	-	-	5.5	-	-	-	0.0	-
93.3	90.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.9	-
93.3	100.0	51.2	-	5.0	-	-	-	15.1	-	-	-	0.0	-
93.3	110.0	0.0	-	9.4	-	-	-	0.0	-	-	-	0.0	-
93.3	120.0	5.2	-	38.5	-	-	-	15.2	-	-	-	0.0	-

***Diaphus* spp.**

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	70.0	-	0.0	-	0.0	-	-	10.7	-	-	-	0.0	-
76.7	80.0	-	0.0	-	0.0	-	-	84.9	-	-	-	0.0	-
76.7	90.0	-	0.0	-	0.0	-	-	75.2	-	-	-	0.0	-
76.7	100.0	-	0.0	-	0.0	-	-	65.1	-	-	-	0.0	-
80.0	70.0	-	0.0	-	0.0	-	-	33.1	-	-	-	0.0	-
80.0	90.0	-	0.0	-	0.0	-	-	9.6	-	-	-	0.0	-
80.0	100.0	-	0.0	-	0.0	-	-	18.0	-	-	-	0.0	-
83.3	70.0	-	0.0	-	0.0	-	-	11.1	-	-	-	0.0	-
83.3	90.0	-	0.0	-	0.0	-	-	21.6	-	-	-	0.0	-
83.3	100.0	-	0.0	-	0.0	-	-	11.1	-	-	-	0.0	-
83.3	110.0	-	0.0	-	0.0	-	-	9.9	-	-	-	0.0	-
86.7	60.0	-	0.0	-	0.0	-	-	73.3	-	-	-	0.0	-
86.7	70.0	-	0.0	-	0.0	-	-	10.0	-	-	-	0.0	-
86.7	80.0	-	0.0	-	0.0	-	-	11.2	-	-	-	0.0	-
86.7	90.0	-	0.0	-	0.0	-	-	10.5	-	-	-	0.0	-

TABLE 8. (cont.)

***Diaphus* spp.** (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7 100.0	-	0.0	-	0.0	-	-	4.8	-	-	-	4.2	-
86.7 110.0	-	4.7	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0 35.0	0.0	-	-	0.0	-	-	0.0	-	-	-	5.0	-
90.0 53.0	0.0	-	-	0.0	-	-	25.7	-	-	-	0.0	-
90.0 60.0	0.0	-	-	0.0	-	-	54.3	-	-	-	0.0	-
90.0 70.0	0.0	-	-	0.0	-	-	4.9	-	-	-	0.0	-
90.0 80.0	0.0	-	-	0.0	-	-	5.5	-	-	-	4.7	-
90.0 90.0	0.0	-	-	0.0	-	-	23.9	-	-	-	0.0	-
90.0 100.0	0.0	-	-	5.0	-	-	19.3	-	-	-	0.0	-
90.0 120.0	0.0	-	0.0	-	-	-	5.1	-	-	-	0.0	-
93.3 35.0	0.0	-	0.0	-	-	-	10.7	-	-	-	0.0	-
93.3 55.0	0.0	-	0.0	-	-	-	9.5	-	-	-	0.0	-
93.3 60.0	0.0	-	0.0	-	-	-	67.7	-	-	-	0.0	-
93.3 70.0	0.0	-	0.0	-	-	-	137.2	-	-	-	0.0	-
93.3 80.0	0.0	-	0.0	-	-	-	5.5	-	-	-	0.0	-
93.3 100.0	5.1	-	0.0	-	-	-	0.0	-	-	-	0.0	-

***Nannobrachium* spp.**

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 90.0	-	0.0	-	0.0	-	-	9.4	-	-	-	0.0	-
76.7 100.0	-	4.4	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 80.0	-	9.9	-	10.2	-	-	5.3	-	-	-	0.0	-
80.0 90.0	-	0.0	-	37.4	-	-	0.0	-	-	-	0.0	-
83.3 70.0	-	14.6	-	0.0	-	-	11.1	-	-	-	0.0	-
83.3 90.0	-	0.0	-	18.6	-	-	21.6	-	-	-	0.0	-
83.3 100.0	-	5.6	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 110.0	-	19.2	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 60.0	-	0.0	-	0.0	-	-	10.5	-	-	-	0.0	-
86.7 80.0	-	9.9	-	26.8	-	-	0.0	-	-	-	0.0	-
86.7 90.0	-	10.0	-	0.0	-	-	5.3	-	-	-	0.0	-
86.7 100.0	-	0.0	-	35.9	-	-	0.0	-	-	-	0.0	-
86.7 110.0	-	0.0	-	14.8	-	-	10.2	-	-	-	0.0	-
90.0 53.0	0.0	-	-	8.9	-	-	0.0	-	-	-	0.0	-
90.0 60.0	0.0	-	-	18.1	-	-	0.0	-	-	-	0.0	-
90.0 70.0	0.0	-	-	17.6	-	-	0.0	-	-	-	4.4	-
90.0 80.0	0.0	-	-	26.4	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

***Nannobrachium* spp.** (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0	100.0	4.9	-	-	5.0	-	-	14.5	-	-	-	0.0	-
90.0	110.0	13.3	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	28.0	0.0	-	4.8	-	-	-	0.0	-	-	-	0.0	-
93.3	35.0	19.3	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	40.0	16.7	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	55.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.4	-
93.3	60.0	19.2	-	0.0	-	-	-	22.6	-	-	-	0.0	-
93.3	70.0	9.2	-	9.2	-	-	-	0.0	-	-	-	0.0	-
93.3	80.0	0.0	-	0.0	-	-	-	10.9	-	-	-	0.0	-
93.3	90.0	14.9	-	0.0	-	-	-	5.2	-	-	-	0.0	-
93.3	100.0	5.1	-	9.9	-	-	-	10.0	-	-	-	0.0	-
93.3	110.0	4.4	-	4.7	-	-	-	0.0	-	-	-	0.0	-
93.3	120.0	0.0	-	4.8	-	-	-	0.0	-	-	-	0.0	-

Nannobrachium bristori

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0	120.0	4.9	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	120.0	0.0	-	4.8	-	-	-	0.0	-	-	-	0.0	-

Nannobrachium regale

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	70.0	-	0.0	-	0.0	-	-	11.0	-	-	-	0.0	-
83.3	90.0	-	0.0	-	4.7	-	-	0.0	-	-	-	0.0	-
93.3	60.0	0.0	-	0.0	-	-	-	11.3	-	-	-	0.0	-

Nannobrachium ritteri

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	80.0	-	0.0	-	0.0	-	-	0.0	-	-	-	8.6	-
76.7	100.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.5	-
80.0	90.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.9	-
80.0	100.0	-	0.0	-	5.0	-	-	0.0	-	-	-	4.5	-
83.3	80.0	-	0.0	-	4.6	-	-	0.0	-	-	-	0.0	-
83.3	90.0	-	0.0	-	14.0	-	-	0.0	-	-	-	0.0	-
83.3	100.0	-	0.0	-	9.1	-	-	5.5	-	-	-	0.0	-
83.3	110.0	-	4.8	-	4.5	-	-	0.0	-	-	-	0.0	-
86.7	45.0	5.1	-	-	0.0	-	-	0.0	-	-	-	4.7	-
86.7	60.0	-	0.0	-	18.8	-	-	0.0	-	-	-	0.0	-
86.7	80.0	-	29.7	-	17.9	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Nannobrachium ritteri (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7	90.0	-	20.0	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	110.0	-	0.0	-	24.6	-	-	5.1	-	-	-	0.0	-
90.0	30.0	10.6	-	-	0.0	-	-	0.0	-	-	-	4.6	-
90.0	35.0	0.0	-	-	10.1	-	-	0.0	-	-	-	0.0	-
90.0	37.0	0.0	-	-	0.0	-	-	0.0	-	-	-	14.4	-
90.0	53.0	0.0	-	-	0.0	-	-	12.9	-	-	-	0.0	-
90.0	60.0	0.0	-	-	0.0	-	-	0.0	-	-	-	8.4	-
90.0	70.0	0.0	-	-	0.0	-	-	0.0	-	-	-	4.4	-
90.0	80.0	9.8	-	-	35.2	-	-	11.1	-	-	-	0.0	-
90.0	90.0	0.0	-	-	8.7	-	-	0.0	-	-	-	0.0	-
90.0	100.0	0.0	-	-	40.3	-	-	0.0	-	-	-	0.0	-
90.0	110.0	0.0	-	4.6	-	-	-	0.0	-	-	-	9.1	-
93.3	35.0	0.0	-	9.0	-	-	-	0.0	-	-	-	0.0	-
93.3	40.0	0.0	-	0.0	-	-	-	0.0	-	-	-	13.7	-
93.3	50.0	0.0	-	19.1	-	-	-	0.0	-	-	-	0.0	-
93.3	60.0	0.0	-	27.2	-	-	-	0.0	-	-	-	12.8	-
93.3	70.0	0.0	-	37.0	-	-	-	0.0	-	-	-	0.0	-
93.3	80.0	5.1	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	90.0	5.0	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	100.0	5.1	-	5.0	-	-	-	0.0	-	-	-	0.0	-
93.3	110.0	4.4	-	4.7	-	-	-	0.0	-	-	-	4.5	-

Notolychnus valdiviae

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0	110.0	0.0	-	13.8	-	-	-	0.0	-	-	-	0.0	-
93.3	100.0	5.1	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Stenobrachius leucopsarus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	49.0	-	8.4	-	0.0	-	-	0.0	-	-	-	0.0	-
76.7	51.0	-	10.7	-	46.3	-	-	0.0	-	-	-	0.0	-
76.7	55.0	-	0.0	-	18.8	-	-	0.0	-	-	-	0.0	-
76.7	60.0	-	76.8	-	18.0	-	-	0.0	-	-	-	0.0	-
76.7	70.0	-	112.9	-	38.1	-	-	0.0	-	-	-	0.0	-
76.7	80.0	-	8.3	-	64.6	-	-	10.6	-	-	-	0.0	-
76.7	90.0	-	0.0	-	28.2	-	-	0.0	-	-	-	0.0	-
76.7	100.0	-	4.4	-	46.1	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Station		*Stenobrachius leucopsarus* (cont.)											
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	51.0	-	8.9	-	-	-	-	4.8	-	-	-	0.0	-
80.0	55.0	-	33.1	-	77.5	-	-	0.0	-	-	-	0.0	-
80.0	60.0	-	0.0	-	108.6	-	-	0.0	-	-	-	0.0	-
80.0	70.0	-	113.3	-	100.5	-	-	0.0	-	-	-	0.0	-
80.0	80.0	-	0.0	-	71.4	-	-	0.0	-	-	-	0.0	-
80.0	90.0	-	0.0	-	84.1	-	-	0.0	-	-	-	0.0	-
80.0	100.0	-	98.1	-	169.0	-	-	0.0	-	-	-	0.0	-
81.8	46.9	-	9.7	-	22.2	-	-	0.0	-	-	-	0.0	-
83.3	40.6	-	0.0	-	4.0	-	-	0.0	-	-	-	0.0	-
83.3	42.0	-	39.7	-	9.3	-	-	0.0	-	-	-	0.0	-
83.3	51.0	-	153.0	-	14.3	-	-	0.0	-	-	-	0.0	-
83.3	55.0	-	84.1	-	27.4	-	-	10.8	-	-	-	0.0	-
83.3	60.0	-	200.2	-	136.1	-	-	9.7	-	-	-	0.0	-
83.3	70.0	-	306.2	-	131.4	-	-	11.1	-	-	-	0.0	-
83.3	80.0	-	348.1	-	106.7	-	-	0.0	-	-	-	0.0	-
83.3	90.0	-	118.3	-	116.5	-	-	0.0	-	-	-	0.0	-
83.3	100.0	-	0.0	-	13.7	-	-	0.0	-	-	-	0.0	-
83.3	110.0	-	4.8	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	33.0	4.0	-	-	8.4	-	-	0.0	-	-	-	0.0	-
86.7	35.0	144.2	-	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	40.0	40.0	-	-	28.7	-	-	0.0	-	-	-	0.0	-
86.7	45.0	111.1	-	-	29.8	-	-	0.0	-	-	-	0.0	-
86.7	50.0	22.7	-	-	17.3	-	-	0.0	-	-	-	0.0	-
86.7	55.0	-	84.6	-	9.1	-	-	0.0	-	-	-	0.0	-
86.7	60.0	-	23.5	-	84.7	-	-	10.5	-	-	-	0.0	-
86.7	70.0	-	51.0	-	103.0	-	-	20.0	-	-	-	0.0	-
86.7	80.0	-	69.3	-	89.3	-	-	11.2	-	-	-	0.0	-
86.7	90.0	-	369.2	-	9.3	-	-	0.0	-	-	-	0.0	-
86.7	100.0	-	0.0	-	80.7	-	-	0.0	-	-	-	0.0	-
86.7	110.0	-	0.0	-	24.6	-	-	0.0	-	-	-	0.0	-
90.0	28.0	-	-	-	14.2	-	-	0.0	-	-	-	0.0	-
90.0	30.0	10.6	-	-	20.5	-	-	0.0	-	-	-	0.0	-
90.0	35.0	0.0	-	-	60.6	-	-	0.0	-	-	-	0.0	-
90.0	37.0	4.8	-	-	60.5	-	-	0.0	-	-	-	0.0	-
90.0	45.0	72.1	-	-	19.7	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Stenobrachius leucopsarus (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0	53.0	48.8	-	-	231.9	-	-	0.0	-	-	-	0.0	-
90.0	60.0	4.9	-	-	9.1	-	-	0.0	-	-	-	0.0	-
90.0	70.0	0.0	-	-	140.5	-	-	0.0	-	-	-	0.0	-
90.0	80.0	39.3	-	-	123.0	-	-	0.0	-	-	-	0.0	-
90.0	90.0	0.0	-	-	26.2	-	-	0.0	-	-	-	0.0	-
90.0	110.0	4.4	-	0.0	-	-	-	4.3	-	-	-	0.0	-
93.3	26.7	0.0	-	46.2	-	-	-	0.0	-	-	-	0.0	-
93.3	30.0	13.3	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	35.0	0.0	-	18.0	-	-	-	0.0	-	-	-	0.0	-
93.3	40.0	0.0	-	121.4	-	-	-	9.6	-	-	-	0.0	-
93.3	45.0	18.5	-	19.3	-	-	-	0.0	-	-	-	0.0	-
93.3	50.0	0.0	-	38.3	-	-	-	0.0	-	-	-	0.0	-
93.3	55.0	9.2	-	10.0	-	-	-	0.0	-	-	-	0.0	-
93.3	60.0	0.0	-	63.5	-	-	-	0.0	-	-	-	0.0	-
93.3	70.0	0.0	-	64.7	-	-	-	0.0	-	-	-	0.0	-
93.3	80.0	0.0	-	9.8	-	-	-	0.0	-	-	-	0.0	-
93.3	90.0	5.0	-	18.4	-	-	-	0.0	-	-	-	0.0	-

Triphoturus mexicanus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3	100.0	-	0.0	-	0.0	-	-	5.5	-	-	-	0.0	-
86.7	90.0	-	0.0	-	0.0	-	-	26.3	-	-	-	0.0	-
86.7	100.0	-	0.0	-	0.0	-	-	33.7	-	-	-	0.0	-
90.0	53.0	0.0	-	-	0.0	-	-	0.0	-	-	-	9.9	-
90.0	70.0	0.0	-	-	0.0	-	-	9.8	-	-	-	0.0	-
90.0	80.0	0.0	-	-	0.0	-	-	5.5	-	-	-	0.0	-
90.0	100.0	0.0	-	-	10.1	-	-	28.9	-	-	-	0.0	-
90.0	120.0	0.0	-	4.7	-	-	-	15.2	-	-	-	0.0	-
93.3	28.0	0.0	-	0.0	-	-	-	5.2	-	-	-	0.0	-
93.3	40.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.6	-
93.3	50.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.3	-
93.3	55.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.4	-
93.3	60.0	0.0	-	9.1	-	-	-	0.0	-	-	-	4.3	-
93.3	70.0	0.0	-	9.2	-	-	-	0.0	-	-	-	0.0	-
93.3	80.0	0.0	-	0.0	-	-	-	92.7	-	-	-	0.0	-
93.3	90.0	0.0	-	0.0	-	-	-	15.7	-	-	-	0.0	-

TABLE 8. (cont.)

Triphoturus mexicanus (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3	100.0	0.0	-	5.0	-	-	-	100.4	-	-	-	0.0	-
93.3	110.0	0.0	-	9.4	-	-	-	0.0	-	-	-	0.0	-
93.3	120.0	0.0	-	9.6	-	-	-	0.0	-	-	-	0.0	-

Diogenichthys atlanticus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	100.0	-	4.4	-	5.1	-	-	0.0	-	-	-	4.5	-
80.0	70.0	-	10.3	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0	80.0	-	0.0	-	5.1	-	-	0.0	-	-	-	0.0	-
80.0	90.0	-	0.0	-	9.3	-	-	0.0	-	-	-	0.0	-
80.0	100.0	-	0.0	-	14.9	-	-	0.0	-	-	-	0.0	-
83.3	90.0	-	0.0	-	0.0	-	-	0.0	-	-	-	8.2	-
83.3	100.0	-	11.3	-	0.0	-	-	11.1	-	-	-	12.5	-
83.3	110.0	-	38.4	-	9.0	-	-	0.0	-	-	-	0.0	-
86.7	90.0	-	0.0	-	0.0	-	-	0.0	-	-	-	8.9	-
86.7	100.0	-	14.5	-	0.0	-	-	9.6	-	-	-	4.2	-
86.7	110.0	-	32.6	-	24.6	-	-	5.1	-	-	-	22.3	-
90.0	60.0	0.0	-	-	0.0	-	-	0.0	-	-	-	8.4	-
90.0	80.0	0.0	-	-	0.0	-	-	11.1	-	-	-	0.0	-
90.0	90.0	14.8	-	-	0.0	-	-	0.0	-	-	-	4.4	-
90.0	100.0	19.4	-	-	5.0	-	-	0.0	-	-	-	0.0	-
90.0	110.0	4.4	-	13.8	-	-	-	0.0	-	-	-	0.0	-
90.0	120.0	9.9	-	19.0	-	-	-	0.0	-	-	-	0.0	-
93.3	60.0	9.6	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	70.0	4.6	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	80.0	5.1	-	9.8	-	-	-	0.0	-	-	-	0.0	-
93.3	90.0	10.0	-	9.2	-	-	-	5.2	-	-	-	0.0	-
93.3	100.0	138.2	-	24.9	-	-	-	0.0	-	-	-	23.3	-
93.3	110.0	0.0	-	14.2	-	-	-	0.0	-	-	-	9.0	-
93.3	120.0	47.1	-	14.4	-	-	-	5.1	-	-	-	41.5	-

Diogenichthys laternatus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3	40.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.6	-

Electrona risso

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7	110.0	-	4.7	-	0.0	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Hygophum reinhardtii

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	90.0	-	0.0	-	0.0	-	-	9.4	-	-	-	0.0	-
90.0	100.0	0.0	-	-	0.0	-	-	4.8	-	-	-	0.0	-
93.3	100.0	10.2	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	110.0	4.4	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Loweina rara

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7	60.0	-	0.0	-	9.4	-	-	0.0	-	-	-	0.0	-
93.3	120.0	0.0	-	0.0	-	-	-	5.1	-	-	-	0.0	-

Myctophum nitidulum

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7	110.0	-	4.7	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	110.0	4.4	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	100.0	25.6	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Protomyctophum crockeri

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	55.0	-	0.0	-	0.0	-	-	0.0	-	-	-	8.8	-
76.7	60.0	-	9.6	-	0.0	-	-	0.0	-	-	-	4.8	-
76.7	70.0	-	0.0	-	9.5	-	-	0.0	-	-	-	0.0	-
76.7	80.0	-	0.0	-	0.0	-	-	31.8	-	-	-	0.0	-
76.7	90.0	-	13.5	-	18.8	-	-	9.4	-	-	-	10.6	-
76.7	100.0	-	8.8	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0	55.0	-	0.0	-	9.7	-	-	0.0	-	-	-	0.0	-
80.0	70.0	-	0.0	-	9.1	-	-	0.0	-	-	-	4.3	-
80.0	80.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.5	-
80.0	90.0	-	9.7	-	9.3	-	-	0.0	-	-	-	0.0	-
80.0	100.0	-	28.0	-	9.9	-	-	0.0	-	-	-	4.5	-
83.3	55.0	-	0.0	-	9.1	-	-	0.0	-	-	-	0.0	-
83.3	60.0	-	0.0	-	9.7	-	-	0.0	-	-	-	9.3	-
83.3	70.0	-	9.7	-	17.5	-	-	0.0	-	-	-	8.4	-
83.3	80.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.6	-
83.3	90.0	-	4.7	-	0.0	-	-	10.8	-	-	-	12.3	-
83.3	100.0	-	5.6	-	4.6	-	-	11.1	-	-	-	0.0	-
83.3	110.0	-	24.0	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	45.0	0.0	-	-	0.0	-	-	0.0	-	-	-	4.7	-
86.7	55.0	-	10.6	-	0.0	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Protomyctophum crockeri (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7	60.0	-	0.0	-	9.4	-	-	0.0	-	-	-	0.0	-
86.7	70.0	-	30.6	-	0.0	-	-	10.0	-	-	-	0.0	-
86.7	80.0	-	9.9	-	0.0	-	-	0.0	-	-	-	4.8	-
86.7	90.0	-	29.9	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	100.0	-	14.5	-	9.0	-	-	0.0	-	-	-	8.4	-
86.7	110.0	-	18.6	-	0.0	-	-	0.0	-	-	-	8.9	-
90.0	30.0	10.6	-	-	20.5	-	-	0.0	-	-	-	4.6	-
90.0	35.0	5.0	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	37.0	14.3	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	45.0	27.0	-	-	0.0	-	-	0.0	-	-	-	8.0	-
90.0	60.0	4.9	-	-	9.1	-	-	0.0	-	-	-	0.0	-
90.0	70.0	0.0	-	-	0.0	-	-	0.0	-	-	-	4.4	-
90.0	80.0	9.8	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	90.0	29.5	-	-	0.0	-	-	4.8	-	-	-	8.8	-
90.0	100.0	0.0	-	-	0.0	-	-	4.8	-	-	-	0.0	-
90.0	110.0	4.4	-	4.6	-	-	-	4.3	-	-	-	4.6	-
90.0	120.0	4.9	-	14.2	-	-	-	15.2	-	-	-	4.7	-
93.3	30.0	17.8	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	35.0	19.3	-	9.0	-	-	-	10.7	-	-	-	0.0	-
93.3	50.0	0.0	-	0.0	-	-	-	10.1	-	-	-	0.0	-
93.3	55.0	0.0	-	30.1	-	-	-	0.0	-	-	-	4.4	-
93.3	60.0	28.7	-	9.1	-	-	-	0.0	-	-	-	4.3	-
93.3	70.0	0.0	-	9.2	-	-	-	11.4	-	-	-	7.8	-
93.3	80.0	5.1	-	0.0	-	-	-	5.5	-	-	-	4.7	-
93.3	90.0	0.0	-	18.4	-	-	-	0.0	-	-	-	0.0	-
93.3	100.0	35.8	-	24.9	-	-	-	0.0	-	-	-	14.0	-
93.3	110.0	26.2	-	14.2	-	-	-	4.7	-	-	-	13.6	-
93.3	120.0	5.2	-	4.8	-	-	-	0.0	-	-	-	0.0	-

Symbolophorus californiensis

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	55.0	-	0.0	-	0.0	-	-	0.0	-	-	-	8.8	-
80.0	80.0	-	0.0	-	15.3	-	-	0.0	-	-	-	0.0	-
80.0	90.0	-	0.0	-	28.0	-	-	0.0	-	-	-	0.0	-
80.0	100.0	-	0.0	-	9.9	-	-	0.0	-	-	-	4.5	-
83.3	90.0	-	0.0	-	9.3	-	-	0.0	-	-	-	4.1	-

TABLE 8. (cont.)

Symbolophorus californiensis (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3	100.0	-	11.3	-	0.0	-	-	5.5	-	-	-	0.0	-
83.3	110.0	-	19.2	-	18.0	-	-	14.8	-	-	-	0.0	-
86.7	45.0	0.0	-	-	0.0	-	-	0.0	-	-	-	4.7	-
86.7	90.0	-	0.0	-	0.0	-	-	26.3	-	-	-	0.0	-
86.7	100.0	-	0.0	-	0.0	-	-	43.4	-	-	-	4.2	-
86.7	110.0	-	0.0	-	9.8	-	-	10.2	-	-	-	0.0	-
90.0	80.0	0.0	-	-	0.0	-	-	11.1	-	-	-	0.0	-
90.0	90.0	4.9	-	-	0.0	-	-	4.8	-	-	-	0.0	-
90.0	100.0	0.0	-	-	40.3	-	-	43.4	-	-	-	0.0	-
90.0	110.0	8.9	-	18.4	-	-	-	0.0	-	-	-	0.0	-
90.0	120.0	0.0	-	42.7	-	-	-	10.2	-	-	-	9.4	-
93.3	55.0	0.0	-	10.0	-	-	-	0.0	-	-	-	0.0	-
93.3	60.0	0.0	-	0.0	-	-	-	22.6	-	-	-	4.3	-
93.3	70.0	0.0	-	27.7	-	-	-	11.4	-	-	-	0.0	-
93.3	80.0	15.3	-	9.8	-	-	-	10.9	-	-	-	0.0	-
93.3	90.0	0.0	-	0.0	-	-	-	5.2	-	-	-	14.7	-
93.3	100.0	15.4	-	34.8	-	-	-	25.1	-	-	-	9.3	-
93.3	110.0	4.4	-	23.6	-	-	-	0.0	-	-	-	0.0	-
93.3	120.0	20.9	-	14.4	-	-	-	10.1	-	-	-	0.0	-

Tarletonbeania crenularis

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	60.0	-	0.0	-	0.0	-	-	11.9	-	-	-	0.0	-
76.7	70.0	-	8.1	-	9.5	-	-	21.3	-	-	-	0.0	-
76.7	80.0	-	0.0	-	0.0	-	-	31.8	-	-	-	8.6	-
76.7	90.0	-	0.0	-	0.0	-	-	9.4	-	-	-	0.0	-
80.0	55.0	-	0.0	-	0.0	-	-	0.0	-	-	-	8.4	-
80.0	60.0	-	0.0	-	9.9	-	-	0.0	-	-	-	0.0	-
80.0	70.0	-	10.3	-	18.3	-	-	11.0	-	-	-	4.3	-
80.0	80.0	-	0.0	-	5.1	-	-	0.0	-	-	-	4.5	-
80.0	100.0	-	9.3	-	9.9	-	-	0.0	-	-	-	0.0	-
83.3	60.0	-	17.4	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	70.0	-	14.6	-	0.0	-	-	0.0	-	-	-	4.2	-
83.3	80.0	-	18.8	-	0.0	-	-	9.2	-	-	-	0.0	-
83.3	90.0	-	18.9	-	9.3	-	-	0.0	-	-	-	0.0	-
86.7	50.0	0.0	-	-	8.6	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Tarletonbeania crenularis (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7	55.0	-	10.6	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	60.0	-	0.0	-	0.0	-	-	10.5	-	-	-	0.0	-
86.7	80.0	-	9.9	-	0.0	-	-	0.0	-	-	-	4.8	-
86.7	90.0	-	20.0	-	0.0	-	-	5.3	-	-	-	0.0	-
90.0	30.0	0.0	-	-	10.2	-	-	0.0	-	-	-	0.0	-
90.0	35.0	5.0	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	37.0	0.0	-	-	10.1	-	-	0.0	-	-	-	0.0	-
90.0	45.0	0.0	-	-	9.8	-	-	0.0	-	-	-	0.0	-
90.0	80.0	9.8	-	-	0.0	-	-	0.0	-	-	-	4.7	-
90.0	90.0	0.0	-	-	0.0	-	-	0.0	-	-	-	4.4	-
93.3	50.0	0.0	-	9.6	-	-	-	0.0	-	-	-	0.0	-
93.3	55.0	9.2	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	60.0	0.0	-	9.1	-	-	-	0.0	-	-	-	0.0	-

Trachipterus altivelis

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	90.0	-	9.7	-	0.0	-	-	0.0	-	-	-	0.0	-
93.3	55.0	9.2	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	80.0	0.0	-	9.8	-	-	-	0.0	-	-	-	4.7	-
93.3	90.0	5.0	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Merluccius productus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	49.0	-	8.4	-	12.9	-	-	0.0	-	-	-	0.0	-
76.7	51.0	-	0.0	-	18.5	-	-	0.0	-	-	-	0.0	-
76.7	55.0	-	48.5	-	9.4	-	-	0.0	-	-	-	0.0	-
76.7	60.0	-	19.2	-	18.0	-	-	0.0	-	-	-	0.0	-
76.7	70.0	-	0.0	-	38.1	-	-	0.0	-	-	-	0.0	-
76.7	90.0	-	0.0	-	18.8	-	-	0.0	-	-	-	0.0	-
76.7	100.0	-	0.0	-	5.1	-	-	0.0	-	-	-	0.0	-
80.0	51.0	-	8.9	-	-	-	-	0.0	-	-	-	0.0	-
80.0	55.0	-	88.3	-	9.7	-	-	0.0	-	-	-	0.0	-
80.0	60.0	-	24.9	-	98.8	-	-	0.0	-	-	-	0.0	-
80.0	70.0	-	30.9	-	18.3	-	-	0.0	-	-	-	0.0	-
80.0	80.0	-	0.0	-	5.1	-	-	0.0	-	-	-	0.0	-
80.0	90.0	-	38.8	-	9.3	-	-	0.0	-	-	-	0.0	-
80.0	100.0	-	1727.9	-	9.9	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Merluccius productus (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
81.8	46.9	-	87.0	-	22.2	-	-	0.0	-	-	-	0.0	-
83.3	40.6	-	3.4	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	42.0	-	24.8	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	51.0	-	479.4	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	55.0	-	224.4	-	64.0	-	-	0.0	-	-	-	0.0	-
83.3	60.0	-	3516.4	-	19.4	-	-	0.0	-	-	-	0.0	-
83.3	70.0	-	38.9	-	96.4	-	-	0.0	-	-	-	0.0	-
83.3	80.0	-	4431.3	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	90.0	-	108.8	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	100.0	-	0.0	-	45.6	-	-	0.0	-	-	-	0.0	-
86.7	35.0	0.0	-	-	9.6	-	-	0.0	-	-	-	0.0	-
86.7	40.0	0.0	-	-	28.7	-	-	0.0	-	-	-	0.0	-
86.7	45.0	60.6	-	-	9.9	-	-	0.0	-	-	-	0.0	-
86.7	50.0	18.1	-	-	8.6	-	-	0.0	-	-	-	0.0	-
86.7	55.0	-	105.8	-	9.1	-	-	0.0	-	-	-	0.0	-
86.7	60.0	-	82.1	-	56.5	-	-	0.0	-	-	-	0.0	-
86.7	70.0	-	2764.2	-	25.7	-	-	0.0	-	-	-	0.0	-
86.7	80.0	-	9.9	-	241.0	-	-	0.0	-	-	-	0.0	-
86.7	90.0	-	249.5	-	139.8	-	-	0.0	-	-	-	0.0	-
86.7	100.0	-	0.0	-	35.9	-	-	0.0	-	-	-	0.0	-
90.0	28.0	-	-	-	4.7	-	-	0.0	-	-	-	0.0	-
90.0	30.0	63.5	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	35.0	35.0	-	-	10.1	-	-	0.0	-	-	-	5.0	-
90.0	37.0	42.9	-	-	10.1	-	-	0.0	-	-	-	0.0	-
90.0	45.0	36.0	-	-	19.7	-	-	0.0	-	-	-	0.0	-
90.0	53.0	127.0	-	-	276.5	-	-	0.0	-	-	-	0.0	-
90.0	60.0	4.9	-	-	126.8	-	-	0.0	-	-	-	0.0	-
90.0	70.0	14.0	-	-	193.1	-	-	0.0	-	-	-	0.0	-
90.0	80.0	29.4	-	-	35.2	-	-	0.0	-	-	-	0.0	-
90.0	90.0	0.0	-	-	122.4	-	-	0.0	-	-	-	0.0	-
93.3	28.0	9.8	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	30.0	26.6	-	14.3	-	-	-	0.0	-	-	-	0.0	-
93.3	35.0	19.3	-	27.0	-	-	-	0.0	-	-	-	0.0	-
93.3	40.0	8.3	-	46.7	-	-	-	0.0	-	-	-	0.0	-
93.3	45.0	842.7	-	28.9	-	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Merluccius productus (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3	50.0	64.6	-	86.2	-	-	-	0.0	-	-	-	0.0	-
93.3	55.0	6484.0	-	50.2	-	-	-	0.0	-	-	-	0.0	-
93.3	60.0	0.0	-	27.2	-	-	-	0.0	-	-	-	0.0	-
93.3	70.0	0.0	-	18.5	-	-	-	0.0	-	-	-	0.0	-
93.3	90.0	0.0	-	9.2	-	-	-	0.0	-	-	-	0.0	-

Bythitidae

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0	70.0	0.0	-	-	8.8	-	-	0.0	-	-	-	0.0	-

Cataetyx rubrirostris

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7	40.0	0.0	-	-	19.2	-	-	0.0	-	-	-	0.0	-
90.0	28.0	-	-	-	4.7	-	-	0.0	-	-	-	0.0	-
90.0	30.0	0.0	-	-	10.2	-	-	0.0	-	-	-	0.0	-

***Oneirodes* spp.**

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3	120.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.6	-

Gobiesox maeandricus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	49.0	-	0.0	-	4.3	-	-	0.0	-	-	-	0.0	-

Atherinopsis californiensis

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7	35.0	4.7	-	-	0.0	-	-	0.0	-	-	-	0.0	-

Cololabis saira

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0	110.0	0.0	-	0.0	-	-	-	8.6	-	-	-	0.0	-

Melamphaes lugubris

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	80.0	-	0.0	-	5.1	-	-	0.0	-	-	-	0.0	-
86.7	110.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.5	-
90.0	80.0	0.0	-	-	17.6	-	-	0.0	-	-	-	0.0	-
90.0	110.0	0.0	-	9.2	-	-	-	0.0	-	-	-	0.0	-
93.3	80.0	5.1	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	100.0	0.0	-	9.9	-	-	-	0.0	-	-	-	0.0	-
93.3	110.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.5	-

TABLE 8. (cont.)

Melamphaes parvus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 90.0	-	4.5	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 100.0	-	0.0	-	5.0	-	-	0.0	-	-	-	0.0	-
83.3 80.0	-	9.4	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0 53.0	0.0	-	-	8.9	-	-	0.0	-	-	-	0.0	-
90.0 70.0	0.0	-	-	8.8	-	-	0.0	-	-	-	0.0	-

Poromitra crassiceps

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 90.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.1	-
83.3 110.0	-	4.8	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 60.0	-	0.0	-	9.4	-	-	0.0	-	-	-	0.0	-
86.7 90.0	-	0.0	-	0.0	-	-	5.3	-	-	-	0.0	-
90.0 80.0	0.0	-	-	0.0	-	-	5.5	-	-	-	0.0	-
90.0 90.0	0.0	-	-	0.0	-	-	4.8	-	-	-	0.0	-
93.3 70.0	0.0	-	0.0	-	-	-	11.4	-	-	-	0.0	-

Scopelogadus bispinosus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7 90.0	-	0.0	-	0.0	-	-	5.3	-	-	-	0.0	-
86.7 100.0	-	0.0	-	0.0	-	-	4.8	-	-	-	0.0	-
90.0 100.0	0.0	-	-	0.0	-	-	4.8	-	-	-	0.0	-
90.0 120.0	0.0	-	4.7	-	-	-	0.0	-	-	-	0.0	-

***Sebastes* spp.**

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 49.0	-	50.3	-	51.5	-	-	0.0	-	-	-	3.8	-
76.7 51.0	-	10.7	-	27.8	-	-	19.9	-	-	-	0.0	-
76.7 55.0	-	77.6	-	0.0	-	-	0.0	-	-	-	0.0	-
76.7 60.0	-	28.8	-	9.0	-	-	23.7	-	-	-	0.0	-
76.7 70.0	-	16.1	-	19.1	-	-	0.0	-	-	-	9.0	-
80.0 51.0	-	13.4	-	-	-	-	4.8	-	-	-	8.7	-
80.0 55.0	-	44.1	-	48.4	-	-	0.0	-	-	-	0.0	-
80.0 60.0	-	12.5	-	29.6	-	-	0.0	-	-	-	0.0	-
80.0 70.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.3	-
80.0 80.0	-	5.0	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 90.0	-	9.7	-	0.0	-	-	0.0	-	-	-	0.0	-
81.8 46.9	-	48.3	-	33.3	-	-	5.5	-	-	-	0.0	-
83.3 40.6	-	10.3	-	8.0	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Sebastes **spp.** (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3	42.0	-	9.9	-	9.3	-	-	0.0	-	-	-	12.4	-
83.3	51.0	-	142.8	-	71.7	-	-	4.5	-	-	-	4.0	-
83.3	55.0	-	65.4	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	60.0	-	17.4	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	80.0	-	28.2	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	33.0	0.0	-	-	25.2	-	-	4.0	-	-	-	56.3	-
86.7	35.0	120.9	-	-	19.2	-	-	0.0	-	-	-	0.0	-
86.7	40.0	70.0	-	-	249.0	-	-	0.0	-	-	-	0.0	-
86.7	45.0	15.2	-	-	218.2	-	-	0.0	-	-	-	23.3	-
86.7	50.0	276.3	-	-	268.1	-	-	4.6	-	-	-	12.2	-
86.7	55.0	-	243.3	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	60.0	-	35.2	-	9.4	-	-	0.0	-	-	-	0.0	-
86.7	80.0	-	9.9	-	44.6	-	-	0.0	-	-	-	0.0	-
90.0	28.0	-	-	-	4.7	-	-	0.0	-	-	-	9.4	-
90.0	30.0	158.7	-	-	40.9	-	-	0.0	-	-	-	0.0	-
90.0	35.0	5.0	-	-	40.4	-	-	0.0	-	-	-	10.0	-
90.0	37.0	9.5	-	-	60.5	-	-	0.0	-	-	-	0.0	-
90.0	45.0	0.0	-	-	78.6	-	-	0.0	-	-	-	0.0	-
90.0	53.0	1103.9	-	-	276.5	-	-	0.0	-	-	-	0.0	-
90.0	60.0	0.0	-	-	36.2	-	-	0.0	-	-	-	0.0	-
90.0	70.0	0.0	-	-	79.0	-	-	0.0	-	-	-	0.0	-
90.0	80.0	9.8	-	-	0.0	-	-	0.0	-	-	-	0.0	-
93.3	26.7	19.0	-	80.9	-	-	-	0.0	-	-	-	0.0	-
93.3	28.0	4.9	-	28.6	-	-	-	0.0	-	-	-	0.0	-
93.3	30.0	4.4	-	38.0	-	-	-	0.0	-	-	-	0.0	-
93.3	35.0	96.7	-	180.0	-	-	-	43.0	-	-	-	0.0	-
93.3	40.0	0.0	-	186.7	-	-	-	9.6	-	-	-	0.0	-
93.3	45.0	18.5	-	19.3	-	-	-	10.9	-	-	-	0.0	-
93.3	50.0	0.0	-	114.9	-	-	-	0.0	-	-	-	0.0	-
93.3	55.0	36.7	-	20.1	-	-	-	0.0	-	-	-	0.0	-
93.3	60.0	0.0	-	63.5	-	-	-	0.0	-	-	-	0.0	-
93.3	70.0	4.6	-	9.2	-	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Sebastes aurora

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	55.0	-	19.4	-	0.0	-	-	0.0	-	-	-	0.0	-
93.3	45.0	0.0	-	9.6	-	-	-	0.0	-	-	-	0.0	-

Sebastes diploproa

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	51.0	-	0.0	-	0.0	-	-	208.7	-	-	-	0.0	-
76.7	55.0	-	0.0	-	0.0	-	-	21.3	-	-	-	0.0	-
76.7	70.0	-	0.0	-	0.0	-	-	32.0	-	-	-	0.0	-
76.7	80.0	-	0.0	-	0.0	-	-	10.6	-	-	-	0.0	-
81.8	46.9	-	0.0	-	0.0	-	-	5.5	-	-	-	0.0	-
86.7	33.0	0.0	-	-	0.0	-	-	0.0	-	-	-	3.8	-
86.7	50.0	0.0	-	-	0.0	-	-	0.0	-	-	-	4.1	-

Sebastes goodei

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7	55.0	-	10.6	-	0.0	-	-	0.0	-	-	-	0.0	-

Sebastes jordani

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	49.0	-	4.2	-	0.0	-	-	0.0	-	-	-	3.8	-
80.0	55.0	-	22.1	-	0.0	-	-	0.0	-	-	-	0.0	-
81.8	46.9	-	19.3	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	40.6	-	30.9	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	51.0	-	300.9	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	60.0	-	8.7	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	80.0	-	9.4	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	33.0	0.0	-	-	8.4	-	-	0.0	-	-	-	0.0	-
86.7	35.0	14.0	-	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	40.0	20.0	-	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	45.0	15.2	-	-	39.7	-	-	0.0	-	-	-	0.0	-
86.7	50.0	1087.2	-	-	17.3	-	-	0.0	-	-	-	0.0	-
86.7	55.0	-	507.8	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	30.0	52.9	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	35.0	0.0	-	-	10.1	-	-	0.0	-	-	-	0.0	-
90.0	45.0	27.0	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	53.0	312.6	-	-	35.7	-	-	0.0	-	-	-	0.0	-
93.3	28.0	4.9	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	35.0	9.7	-	0.0	-	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Sebastes jordani (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 45.0	46.3	-	19.3	-	-	-	0.0	-	-	-	0.0	-
93.3 50.0	0.0	-	9.6	-	-	-	0.0	-	-	-	0.0	-

Sebastes paucispinis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 80.0	-	8.3	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 70.0	-	4.9	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 80.0	-	9.4	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 40.0	0.0	-	-	9.6	-	-	0.0	-	-	-	0.0	-
86.7 45.0	15.2	-	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 50.0	40.8	-	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 55.0	-	10.6	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 70.0	-	10.2	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 80.0	-	0.0	-	8.9	-	-	0.0	-	-	-	0.0	-
90.0 37.0	4.8	-	-	0.0	-	-	0.0	-	-	-	0.0	-
93.3 45.0	9.3	-	0.0	-	-	-	0.0	-	-	-	0.0	-

***Sebastolobus* spp.**

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 100.0	-	0.0	-	0.0	-	-	9.0	-	-	-	0.0	-

Sebastolobus altivelis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 60.0	-	0.0	-	19.8	-	-	0.0	-	-	-	0.0	-

Oxylebius pictus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 55.0	-	0.0	-	9.7	-	-	0.0	-	-	-	0.0	-
90.0 53.0	0.0	-	-	8.9	-	-	0.0	-	-	-	0.0	-

Zaniolepis frenata

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 28.0	-	-	-	9.4	-	-	0.0	-	-	-	0.0	-

Zaniolepis latipinnis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7 33.0	0.0	-	-	0.0	-	-	0.0	-	-	-	3.8	-
90.0 53.0	9.8	-	-	0.0	-	-	0.0	-	-	-	0.0	-

Hexagrammos decagrammus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 55.0	-	19.4	-	0.0	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Leptocottus armatus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3	40.6	-	0.0	-	0.0	-	-	0.0	-	-	-	3.3	-

Orthonopias triacis

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7	50.0	0.0	-	-	0.0	-	-	0.0	-	-	-	4.1	-

Ruscarius creaseri

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0	28.0	-	-	-	4.7	-	-	0.0	-	-	-	0.0	-
93.3	26.7	0.0	-	5.8	-	-	-	0.0	-	-	-	0.0	-

Scorpaenichthys marmoratus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	49.0	-	0.0	-	0.0	-	-	0.0	-	-	-	23.0	-

Xeneretmus latifrons

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3	51.0	-	0.0	-	28.7	-	-	0.0	-	-	-	0.0	-
90.0	45.0	0.0	-	-	9.8	-	-	0.0	-	-	-	0.0	-

Liparis mucosus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	49.0	-	0.0	-	0.0	-	-	8.8	-	-	-	0.0	-

Trachurus symmetricus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	51.0	-	4.5	-	-	-	-	0.0	-	-	-	0.0	-
80.0	80.0	-	0.0	-	40.8	-	-	0.0	-	-	-	0.0	-
80.0	90.0	-	0.0	-	56.1	-	-	0.0	-	-	-	0.0	-
80.0	100.0	-	0.0	-	39.8	-	-	0.0	-	-	-	0.0	-
83.3	80.0	-	0.0	-	4.6	-	-	0.0	-	-	-	0.0	-
83.3	110.0	-	0.0	-	13.5	-	-	0.0	-	-	-	0.0	-
86.7	60.0	-	0.0	-	9.4	-	-	0.0	-	-	-	0.0	-
86.7	90.0	-	0.0	-	102.5	-	-	0.0	-	-	-	0.0	-
86.7	100.0	-	0.0	-	9.0	-	-	0.0	-	-	-	0.0	-
86.7	110.0	-	0.0	-	34.4	-	-	0.0	-	-	-	0.0	-
90.0	100.0	0.0	-	-	70.6	-	-	0.0	-	-	-	0.0	-
90.0	110.0	0.0	-	69.0	-	-	-	0.0	-	-	-	0.0	-
90.0	120.0	0.0	-	23.7	-	-	-	0.0	-	-	-	0.0	-
93.3	70.0	0.0	-	27.7	-	-	-	0.0	-	-	-	0.0	-
93.3	80.0	0.0	-	39.2	-	-	-	10.9	-	-	-	0.0	-

TABLE 8. (cont.)

Trachurus symmetricus (cont.)

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 90.0	0.0	-	36.7	-	-	-	0.0	-	-	-	0.0	-
93.3 100.0	0.0	-	84.5	-	-	-	0.0	-	-	-	0.0	-
93.3 110.0	0.0	-	18.9	-	-	-	0.0	-	-	-	0.0	-

Anisotremus davidsoni

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 28.0	-	-	-	0.0	-	-	4.9	-	-	-	0.0	-

Atractoscion nobilis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 35.0	0.0	-	-	0.0	-	-	5.6	-	-	-	0.0	-

***Rathbunella* spp.**

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 49.0	-	0.0	-	0.0	-	-	8.8	-	-	-	0.0	-

Stichaeidae

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
93.3 26.7	3.8	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Chiasmodon niger

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 100.0	-	0.0	-	5.0	-	-	0.0	-	-	-	0.0	-
83.3 100.0	-	0.0	-	0.0	-	-	0.0	-	-	-	4.2	-
93.3 100.0	0.0	-	5.0	-	-	-	0.0	-	-	-	0.0	-

Cryptotrema corallinum

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7 50.0	77.0	-	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 55.0	-	31.7	-	0.0	-	-	0.0	-	-	-	0.0	-

Neoclinus stephensae

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 42.0	-	0.0	-	0.0	-	-	4.9	-	-	-	0.0	-
86.7 50.0	0.0	-	-	0.0	-	-	0.0	-	-	-	28.4	-

Icosteus aenigmaticus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 55.0	-	0.0	-	9.7	-	-	0.0	-	-	-	0.0	-
80.0 70.0	-	10.3	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 90.0	-	4.7	-	0.0	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Coryphopterus nicholsii

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 49.0	-	0.0	-	0.0	-	-	0.0	-	-	-	3.8	-
83.3 60.0	-	0.0	-	9.7	-	-	0.0	-	-	-	0.0	-
83.3 70.0	-	0.0	-	8.8	-	-	0.0	-	-	-	0.0	-
86.7 45.0	0.0	-	-	0.0	-	-	0.0	-	-	-	4.7	-
86.7 50.0	0.0	-	-	0.0	-	-	0.0	-	-	-	4.1	-
90.0 80.0	9.8	-	-	0.0	-	-	0.0	-	-	-	0.0	-

Icichthys lockingtoni

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0 51.0	-	4.5	-	-	-	-	0.0	-	-	-	0.0	-
80.0 90.0	-	29.1	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 100.0	-	4.7	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 42.0	-	5.0	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 60.0	-	8.7	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3 80.0	-	9.4	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 70.0	-	10.2	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7 80.0	-	9.9	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0 90.0	0.0	-	-	8.7	-	-	0.0	-	-	-	0.0	-
90.0 120.0	0.0	-	0.0	-	-	-	10.2	-	-	-	0.0	-
93.3 35.0	0.0	-	9.0	-	-	-	0.0	-	-	-	0.0	-
93.3 50.0	0.0	-	9.6	-	-	-	0.0	-	-	-	0.0	-

Tetragonurus cuvieri

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
90.0 100.0	0.0	-	-	0.0	-	-	4.8	-	-	-	0.0	-
93.3 80.0	0.0	-	0.0	-	-	-	5.5	-	-	-	0.0	-

Citharichthys sordidus

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7 55.0	-	0.0	-	9.4	-	-	0.0	-	-	-	0.0	-
76.7 60.0	-	0.0	-	9.0	-	-	0.0	-	-	-	0.0	-
76.7 70.0	-	16.1	-	0.0	-	-	0.0	-	-	-	0.0	-
76.7 80.0	-	16.6	-	0.0	-	-	0.0	-	-	-	0.0	-
76.7 100.0	-	8.8	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 55.0	-	0.0	-	9.7	-	-	0.0	-	-	-	0.0	-
80.0 70.0	-	10.3	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 80.0	-	5.0	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0 90.0	-	19.4	-	0.0	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Citharichthys sordidus (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
80.0	100.0	-	28.0	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	42.0	-	5.0	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	51.0	-	15.3	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	60.0	-	8.7	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	70.0	-	0.0	-	8.8	-	-	0.0	-	-	-	0.0	-
83.3	80.0	-	9.4	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	90.0	-	18.9	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	45.0	0.0	-	-	9.9	-	-	0.0	-	-	-	4.7	-
86.7	70.0	-	40.8	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	90.0	-	10.0	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	37.0	4.8	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	45.0	9.0	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	53.0	39.1	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	70.0	0.0	-	-	35.1	-	-	0.0	-	-	-	0.0	-
93.3	40.0	0.0	-	9.3	-	-	-	0.0	-	-	-	0.0	-
93.3	45.0	9.3	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	50.0	9.2	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	55.0	9.2	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	70.0	9.2	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	90.0	5.0	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Citharichthys stigmaeus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	60.0	-	9.6	-	9.0	-	-	0.0	-	-	-	0.0	-
76.7	70.0	-	16.1	-	0.0	-	-	0.0	-	-	-	0.0	-
80.0	55.0	-	0.0	-	19.4	-	-	0.0	-	-	-	0.0	-
80.0	70.0	-	20.6	-	18.3	-	-	0.0	-	-	-	0.0	-
80.0	100.0	-	4.7	-	5.0	-	-	0.0	-	-	-	0.0	-
83.3	42.0	-	0.0	-	9.3	-	-	0.0	-	-	-	4.1	-
83.3	51.0	-	5.1	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	55.0	-	9.3	-	9.1	-	-	0.0	-	-	-	0.0	-
83.3	60.0	-	8.7	-	9.7	-	-	0.0	-	-	-	0.0	-
83.3	80.0	-	18.8	-	0.0	-	-	0.0	-	-	-	0.0	-
83.3	90.0	-	4.7	-	4.7	-	-	0.0	-	-	-	0.0	-
86.7	35.0	0.0	-	-	9.6	-	-	0.0	-	-	-	0.0	-
86.7	40.0	0.0	-	-	19.2	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Citharichthys stigmaeus (cont.)

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7	55.0	-	10.6	-	0.0	-	-	0.0	-	-	-	0.0	-
86.7	60.0	-	11.7	-	9.4	-	-	0.0	-	-	-	0.0	-
86.7	70.0	-	163.2	-	8.6	-	-	0.0	-	-	-	0.0	-
86.7	80.0	-	0.0	-	8.9	-	-	0.0	-	-	-	0.0	-
86.7	90.0	-	10.0	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	53.0	19.5	-	-	0.0	-	-	0.0	-	-	-	0.0	-
90.0	60.0	0.0	-	-	9.1	-	-	0.0	-	-	-	8.4	-
90.0	90.0	0.0	-	-	8.7	-	-	0.0	-	-	-	0.0	-
93.3	30.0	0.0	-	0.0	-	-	-	5.1	-	-	-	0.0	-
93.3	35.0	0.0	-	0.0	-	-	-	0.0	-	-	-	4.9	-
93.3	45.0	27.8	-	0.0	-	-	-	0.0	-	-	-	0.0	-
93.3	50.0	9.2	-	9.6	-	-	-	0.0	-	-	-	0.0	-
93.3	80.0	5.1	-	0.0	-	-	-	0.0	-	-	-	0.0	-

Glyptocephalus zachirus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3	60.0	-	0.0	-	0.0	-	-	9.7	-	-	-	0.0	-

Lyopsetta exilis

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
76.7	49.0	-	0.0	-	4.3	-	-	0.0	-	-	-	0.0	-
90.0	28.0	-	-	-	9.4	-	-	0.0	-	-	-	0.0	-
90.0	45.0	0.0	-	-	9.8	-	-	0.0	-	-	-	0.0	-
90.0	53.0	0.0	-	-	8.9	-	-	0.0	-	-	-	0.0	-
93.3	50.0	0.0	-	9.6	-	-	-	0.0	-	-	-	0.0	-

Microstomus pacificus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7	60.0	-	0.0	-	0.0	-	-	10.5	-	-	-	0.0	-

Parophrys vetulus

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3	40.6	-	0.0	-	12.0	-	-	0.0	-	-	-	0.0	-
86.7	33.0	0.0	-	-	16.8	-	-	0.0	-	-	-	0.0	-
86.7	35.0	0.0	-	-	9.6	-	-	0.0	-	-	-	0.0	-
86.7	40.0	0.0	-	-	19.2	-	-	0.0	-	-	-	0.0	-
90.0	28.0	-	-	-	9.4	-	-	0.0	-	-	-	0.0	-
93.3	26.7	3.8	-	0.0	-	-	-	0.0	-	-	-	0.0	-

TABLE 8. (cont.)

Pleuronichthys verticalis

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
83.3 40.6	-	0.0	-	0.0	-	-	0.0	-	-	-	3.3	-
90.0 28.0	-	-	-	4.7	-	-	0.0	-	-	-	0.0	-

Disintegrated fish larvae

Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
86.7 100.0	-	0.0	-	0.0	-	-	4.8	-	-	-	0.0	-
93.3 120.0	0.0	-	4.8	-	-	-	0.0	-	-	-	0.0	-

PHYLOGENETIC INDEX TO TABLES 4 AND 8

Saccopharyngiformes
Cyematidae
Cyema atrum 56
Clupeiformes
Clupeidae
Sardinops sagax 29, 56
Engraulidae
Engraulis mordax 30, 57
Osmeriformes
Argentinidae
Argentina sialis 58
Microstomatidae
Microstoma spp. 58
Nansenia candida 59
Bathylagidae
Bathylagus milleri 59
Bathylagus ochotensis 31, 59
Bathylagus pacificus 61
Bathylagus wesethi 61
Leuroglossus stilbius 31, 61
Opisthoproctidae
Dolichopteryx longipes 63
Stomiiformes
Gonostomatidae
Cyclothone spp. 63
Cyclothone signata 63
Sternoptychidae
Argyropelecus spp. 64
Argyropelecus affinis 64
Argyropelecus hemigymnus 64
Argyropelecus lychnus 64
Argyropelecus sladeni 64
Danaphos oculatus 65
Sternoptyx spp. 65
Phosichthyidae
Ichthyococcus irregularis 66
Vinciguerria spp. 66
Vinciguerria lucetia 31, 66
Vinciguerria poweriae 67
Stomiidae
Chauliodontinae
Chauliodus macouni 67
Stomiinae
Stomias atriventer 67
Melanostomiinae
Bathophilus flemingi 67
Tactostoma macropus 67
Malacosteinae
Aristostomias scintillans 31, 68
Idiacanthinae
Idiacanthus antrostomus 68
Aulopiformes
Scopelarchidae
Benthalbella dentata 68
Rosenblattichthys volucris 68
Scopelarchus analis. 68
Scopelarchus guentheri. 69
Notosudidae
Scopelosaurus spp. 69
Paralepididae
Arctozenus risso 69
Lestidiops ringens 69
Myctophiformes
Myctophidae 69
Lampanyctinae
Ceratoscopelus townsendi 31, 70
Diaphus spp. 32, 70
Nannobrachium spp. 71
Nannobrachium bristori 72
Nannobrachium regale 72
Nannobrachium ritteri 32, 72
Notolychnus valdiviae 73
Stenobrachius leucopsarus 32, 73
Triphoturus mexicanus 32, 75
Myctophinae
Diogenichthys atlanticus 76
Diogenichthys laternatus 76
Electrona risso 76
Hygophum reinhardtii 77
Loweina rara 77
Myctophum nitidulum 77
Protomyctophum crockeri 77
Symbolophorus californiensis 32, 78
Tarletonbeania crenularis 32, 79
Lampridiformes
Trachipteridae
Trachipterus altivelis 80
Gadiformes
Merlucciidae
Merluccius productus 33, 80
Ophidiiformes
Bythitidae 82
Cataetyx rubrirostris 33, 82
Lophiiformes
Oneirodidae

Oneirodes spp. 82
Gigantactinidae
Gigantactis spp. 33
Gobiesociformes
Gobiesocidae
Gobiesox maeandricus 82
Atheriniformes
Atherinidae
Atherinopsis californiensis 33, 82
Leuresthes tenuis 33
Beloniformes
Scomberosocidae
Cololabis saira 33, 82
Exocoetidae
Cheilopogon pinnatibarbatus 35
Stephanoberyciformes
Melamphaidae
Melamphaes lugubris 82
Melamphaes parvus 83
Poromitra crassiceps 83
Scopelogadus bispinosus 83
Scorpaeniformes
Sebastidae
Sebastes spp. 35, 83
Sebastes aurora 36, 85
Sebastes diploproa 36, 85
Sebastes goodei 85
Sebastes jordani 36, 85
Sebastes levis 37
Sebastes paucispinis 86
Sebastolobus spp. 86
Sebastolobus altivelis 86
Anoplopomatidae
Anoplopoma fimbria 37
Zaniolepididae
Oxylebius pictus 37, 86
Zaniolepis frenata 37, 86
Zaniolepis latipinnis 86
Hexagrammidae
Hexagrammos decagrammus 37, 86
Hexagrammos lagocephalus 37
Cottidae
Hemilepidotus spinosus 37
Leptocottus armatus 87
Orthonopias triacis 87
Ruscarius creaseri 87
Scorpaenichthys marmoratus 38, 87
Agonidae
Xeneretmus latifons 87
Cyclopteridae
Liparis mucosus 87
Perciformes
Percoidei
Carangidae
Trachurus symmetricus 38, 87
Haemulidae
Anisotremus davidsoni 88
Sciaenidae
Atractoscion nobilis 88
Genyonemus lineatus 39
Menticirrhus undulatus 39
Seriphus politus 39
Labroidei
Pomacentridae
Chromis punctipinnis 39
Labridae
Oxyjulis californica 39
Zoarcoidei
Bathymasteridae
Rathbunella spp. 88
Stichaeidae 88
Trachinoidei
Chiasmodontidae
Chiasmodon niger 88
Blennioidei
Labrisomidae
Cryptotrema corallinum 39, 88
Chaenopsidae
Neoclinus blanchardi 39
Neoclinus stephensae 88
Blenniidae
Hypsoblennius spp. 40
Hypsoblennius gilberti 40
Hypsoblennius jenkinsi 40
Icosteoidei
Icosteidae
Icosteus aenigmaticus 88
Gobioidei
Gobiidae
Coryphopterus nicholsii 89
Stromateoidei
Centrolophidae
Icichthys lockingtoni 40, 89
Tetragonuridae
Tetragonurus cuvieri 40, 89
Pleuronectiformes
Paralichthyidae
Citharichthys sordidus 41, 89
Citharichthys stigmaeus 41, 90
Pleuronectidae

Glyptocephalus zachirus 91
Lyopsetta exilis 91
Microstomus pacificus 91
Parophrys vetulus 91
Pleuronichthys coenosus 41
Pleuronichthys decurrens 41
Pleuronichthys verticalis 92
Disintegrated fish larvae 41, 92

ALPHABETICAL INDEX TO TABLES 4 AND 8

Anisotremus davidsoni 88
Anoplopoma fimbria 37
Arctozenus risso 69
Argentina sialis 58
Argyropelecus affinis 64
Argyropelecus hemigymnus 64
Argyropelecus lychnus 64
Argyropelecus sladeni 64
Argyropelecus spp. 64
Aristostomias scintillans 31, 68
Atherinopsis californiensis 33, 82
Atractoscion nobilis 88
Bathophilus flemingi 67
Bathylagus milleri 59
Bathylagus ochotensis 31, 59
Bathylagus pacificus 61
Bathylagus wesethi 61
Benthalbella dentata 68
Bythitidae 82
Cataetyx rubrirostris 33, 82
Ceratoscopelus townsendi 31, 70
Chauliodus macouni 67
Cheilopogon pinnatibarbatus 35
Chiasmodon niger 88
Chromis punctipinnis 39
Citharichthys sordidus 41, 89
Citharichthys stigmaeus 41, 90
Cololabis saira 33, 82
Coryphopterus nicholsii 89
Cryptotrema corallinum 39, 88
Cyclothone signata 63
Cyclothone spp. 63
Cyema atrum 56
Danaphos oculatus 65
Diaphus spp. 32, 70
Diogenichthys atlanticus 76
Diogenichthys laternatus 76
Disintegrated fish larvae 41, 92
Dolichopteryx longipes 63
Electrona risso 76
Engraulis mordax 30, 57
Genyonemus lineatus 39
Gigantactis spp. 33
Glyptocephalus zachirus 91
Gobiesox maeandricus 82
Hemilepidotus spinosus 37
Hexagrammos decagrammus 37, 86
Hexagrammos lagocephalus 37
Hygophum reinhardtii 77
Hypsoblennius gilberti 40
Hypsoblennius jenkinsi 40
Hypsoblennius spp. 40
Ichthyococcus irregularis 66
Icichthys lockingtoni 40, 89
Icosteus aenigmaticus 88
Idiacanthus antrostomus 68
Leptocottus armatus 87
Lestidiops ringens 69
Leuresthes tenuis 33
Leuroglossus stilbius 31, 61
Liparis mucosus 87
Loweina rara 77
Lyopsetta exilis 91
Melamphaes lugubris 82
Melamphaes parvus 83
Menticirrhus undulatus 39
Merluccius productus 33, 80
Microstoma spp. 58
Microstomus pacificus 91
Myctophidae 69
Myctophum nitidulum 77
Nannobrachium bristori 72
Nannobrachium regale 72
Nannobrachium ritteri 32, 72
Nannobrachium spp. 71
Nansenia candida 59
Neoclinus blanchardi 39
Neoclinus stephensae 88
Notolychnus valdiviae 73
Oneirodes spp. 82
Orthonopias triacis 87
Oxyjulis californica 39
Oxylebius pictus 37, 86
Parophrys vetulus 91
Pleuronichthys coenosus 41
Pleuronichthys decurrens 41
Pleuronichthys verticalis 92
Poromitra crassiceps 83
Protomyctophum crockeri 77
Rathbunella spp. 88
Rosenblattichthys volucris 68
Ruscarius creaseri 87
Sardinops sagax 29, 56
Scopelarchus analis 68
Scopelarchus guentheri 69
Scopelogadus bispinosus 83

Scopelosaurus spp. 69
Scorpaenichthys marmoratus 38, 87
Sebastes aurora 36, 85
Sebastes diploproa 36, 85
Sebastes goodei 85
Sebastes jordani 36, 85
Sebastes levis 37
Sebastes paucispinis 86
Sebastes spp 35, 83
Sebastolobus altivelis 86
Sebastolobus spp. 86
Seriphus politus 39
Stenobrachius leucopsarus 32, 73
Sternoptyx spp. 65
Stichaeidae 88
Stomias atriventer 67
Symbolophorus californiensis 32, 78
Tactostoma macropus 67
Tarletonbeania crenularis 32, 79
Tetragonurus cuvieri 40, 89
Trachipterus altivelis 80
Trachurus symmetricus 38, 87
Triphoturus mexicanus 32, 75
Vinciguerria lucetia 31, 66
Vinciguerria poweriae 67
Vinciguerria spp. 66
Xeneretmus latifrons 87
Zaniolepis frenata 37, 86
Zaniolepis latipinnis 86

RECENT TECHNICAL MEMORANDUMS

Copies of this and other NOAA Technical Memorandums are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22167. Paper copies vary in price. Microfiche copies cost $9.00. Recent issues of NOAA Technical Memorandums from the NMFS Southwest Fisheries Science Center are listed below:

NOAA-TM-NMFS-SWFSC-342 Ichthyoplankton and station data for surface (Manta) and oblique (Bongo) plankton tows taken during a survey in the eastern tropical Pacific ocean July 28-December 9, 2000.
D.A. AMBROSE, R.L. CHARTER, H.G. MOSER, B.S. MACCALL, and W. WATSON
(August 2002)

343 Monthly mean coastal upwelling indices, west coast of south Africa 1981-2000: Trends and relationships.
J.G. NORTON, F.B. SCHWING, M.H. PICKETT, S.G. CUMMINGS, D.M. HUSBY, and P.G. JESSEN
(September 2002)

344 Comprehensive (1986-2001) characterization of size at sexual maturity for Hawaiian spiny lobster *(Panulirus marginatus)* and slipper lobster *(Scyllarides squammosus)* in the Northwestern Hawaiian Islands.
E.E. DEMARTINI, P. KLEIBER, and G.T. DINARDO
(September 2002)

345 Counts of northern elephant seals at rookeries in the Southern California Bight: 1981-2001.
M.S. Lowry
(November 2002)

346 U.S. Pacific marine mammal stock assessments: 2002.
J.V. Carretta, M.M. Muto, J. Barlow, J. Baker, K.A. Forney, and M. Lowry
(December 2002)

347 Comprehensive evaluation of shallow reef fish populations at French Frigate Shoals, Midway Atoll, Northwestern Hawaiian Islands (1992/93, 1995-2000).
E.E. DeMARTINI, F.A. PARRISH, and R.C. BOLAND
(December 2002)

348 Ichthyoplankton and station data for surface (Manta) and oblique (Bongo) plankton tows for California Cooperative Oceanic Fisheries Investigation Survey Cruises in 2001.
D.A. AMBROSE, R.L. CHARTER, and H.G. MOSER
(January 2003)

349 Report of ecosystem studies conducted during the 2001 Oregon, California and Washington (ORCAWALE) marine mammal survey on the research vessels *David Starr Jordan* and *McArthur*.
V.A. PHILBRICK, P.C. FIEDLER, L.T. BALLANCE, and D.A. DEMER
(January 2003)

350 AMLR 2001/2002 field season report: Objectives, accomplishments, and tentative conclusions.
J.D. LIPSKY, Editor
(March 2003)

351 Ichthyoplankton and station data for surface (Manta) and oblique (Bongo) plankton tows for Mini-California Cooperative Oceanic Fisheries Investigations Survey Cruises in 1997 and 1998.
D.A. AMBROSE, R.L. CHARTER, and H.G. MOSER
(May 2003)