

*Scattergood Generating Station*

## **Appendix A**

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# **Physical Oceanographic Data**

A1. Source Water Currents

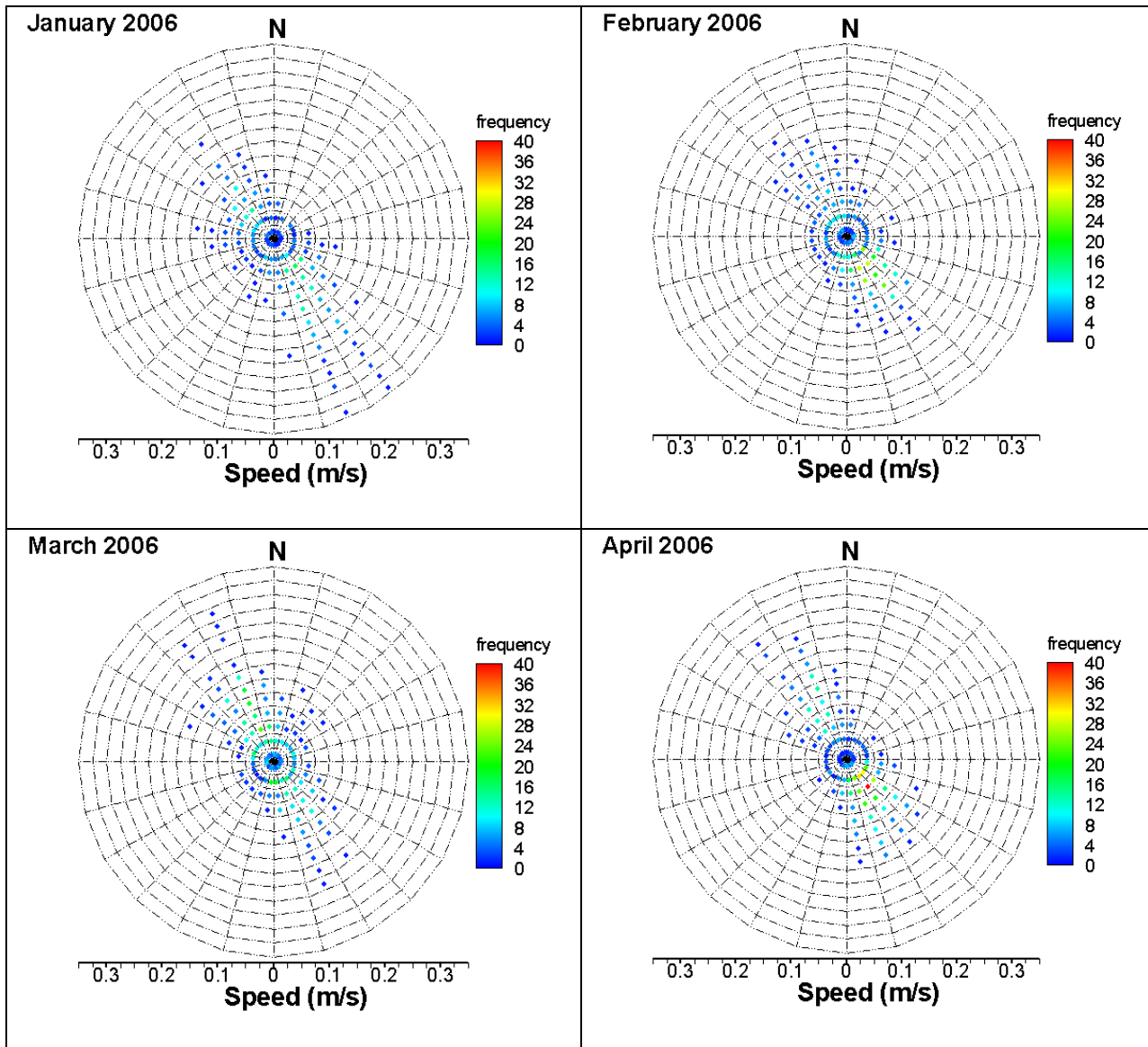
A2. Source Water Temperatures from ADCP Instruments

## Appendix A1 Source Water Currents

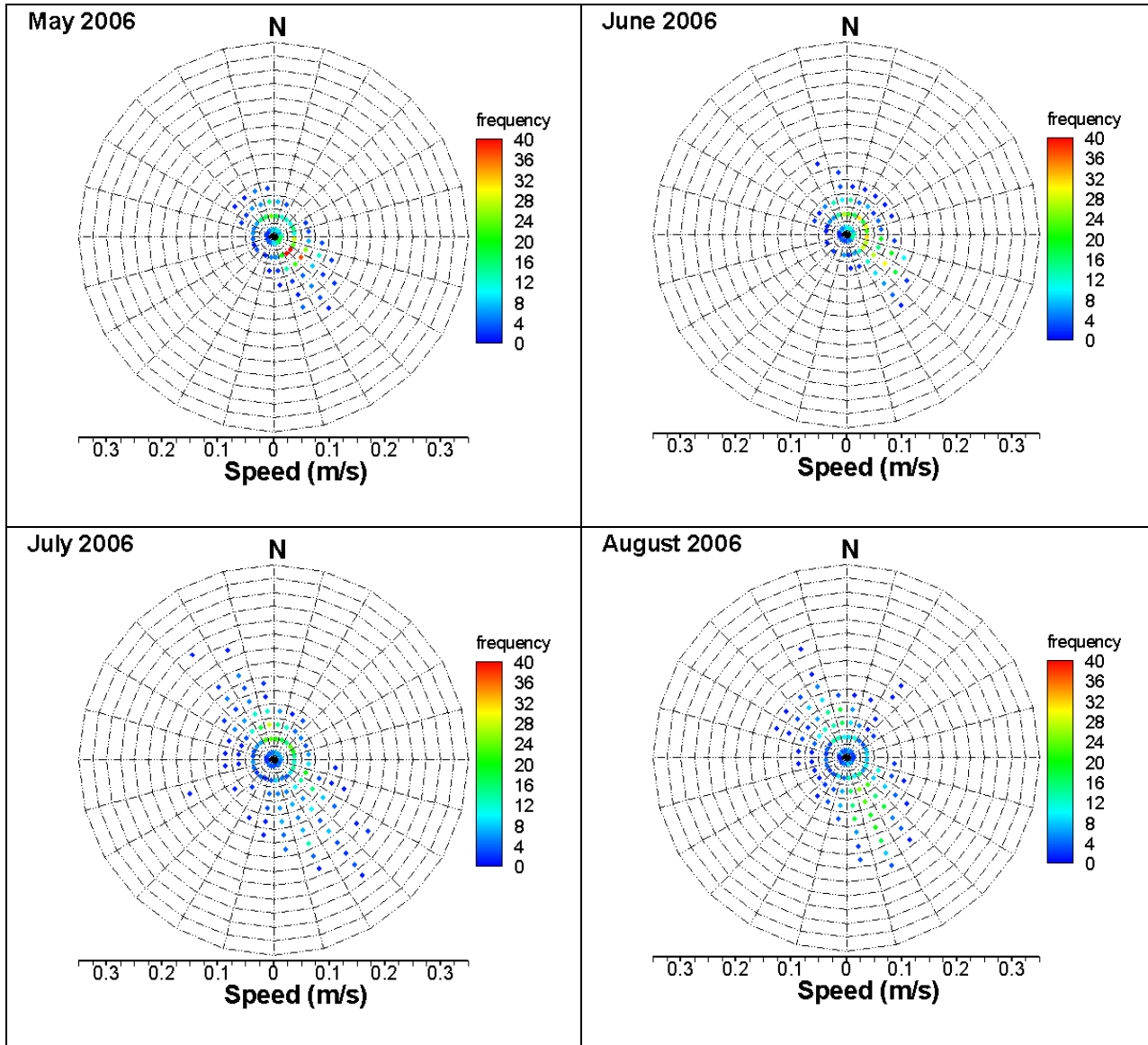
Physical oceanographic data were collected from the source water body to describe current regimes that can affect larval transport in the vicinity of the SGS. Two Nortek Aquadopp® acoustic Doppler current profilers (ADCPs) were positioned in separate locations, one (CM 3) approximately 2.3 km (1.4 mi) from shore at a depth of -24.4 m (-80.0 ft) MLLW, and a second unit (CM 4) approximately 1.1 km (2.0 mi) from at a depth of -12.8 m (-41.9 ft) MLLW. The latitudes and longitudes of the two stations were 33.89020°N, -118.44324°W and 33.89442°N, -118.43126°W. Both stations were commissioned on January 10, 2006. Station CM 3 was decommissioned on January 12, 2007 and Station CM 4 was decommissioned on January 22, 2007. Data were downloaded on February 3, 2006, May 3, 2006, and July 18, 2006, and September 1, 2006. The unit at CM 4 had an operating frequency of 1 MHz, while the unit at CM 3 had an operating frequency of 600 kHz (Table A1-1). Both units collected data at hourly intervals in a usable range that extended from 0.5 m (1.6 ft) from the ADCP to somewhat less than 90% of the distance to the surface. The half-power full beam-width was 2.4 degrees for both units. Water temperature and water depth (pressure) were also measured concurrently by the units. Water temperatures were calibrated over an approximately four-month period from September 2006 to January 2007 using two calibrated Starr-Oddi thermistors. Pressure measurements were adjusted using barometric pressure data measured at the Los Angeles International Airport and corrected for sea level.

Table A1-1. ADCP deployment parameters for current meters in the vicinity of SGS (Stations CM 3 and CM 4).

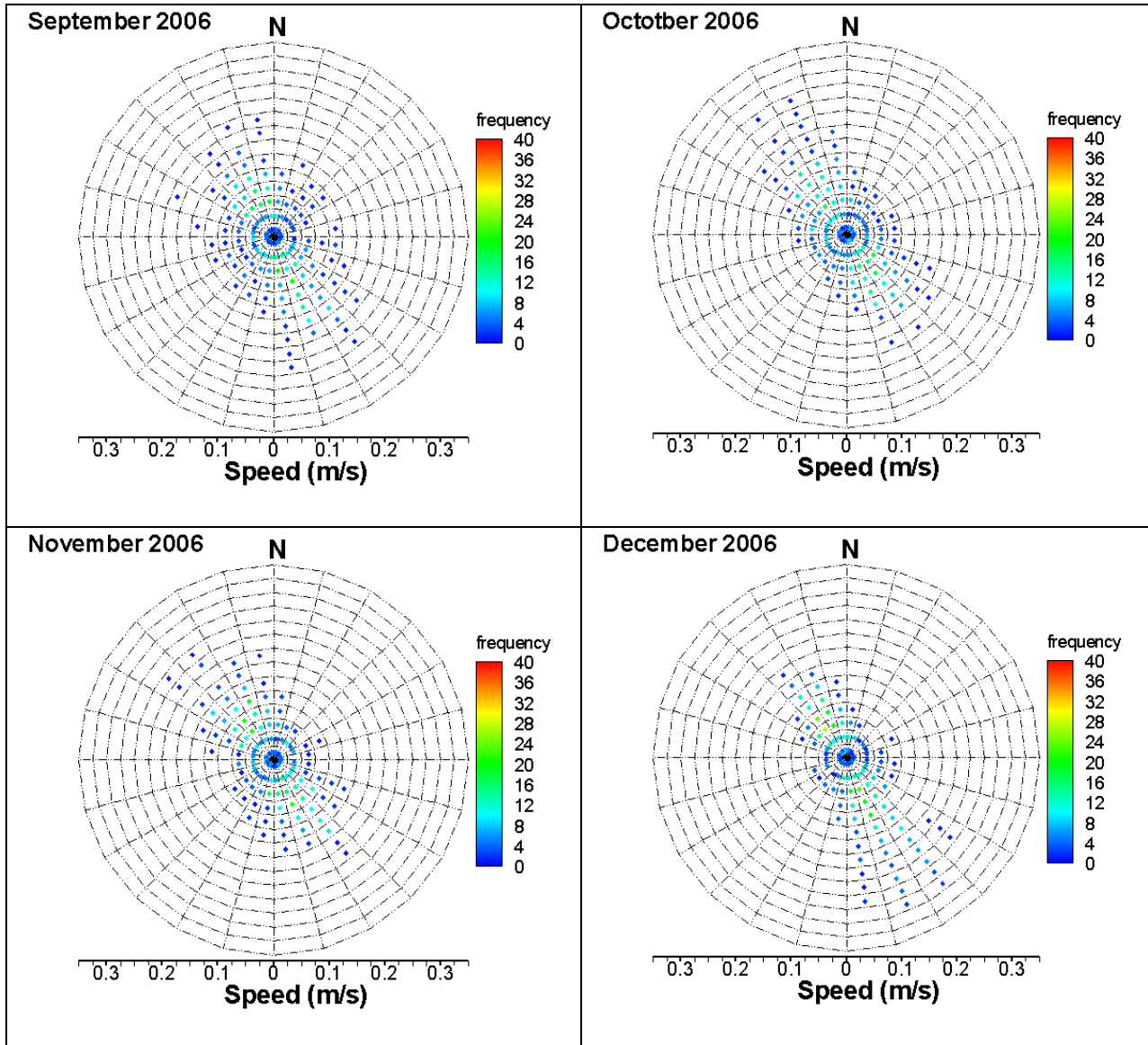
Unit	Oper. Freq.	Deploy depth (m)	Cells (#)	Cell size (m)	Max. range (m)	Cell precision (cm/s)	Ping rate	Averaging Interval (s)	Repetition rate (hr)
CM 3	600 kHz	24.4	15	1.0	15	1.4	100%	280	1.0
CM 4	1 MHz	12.8	26	1.0	26	0.8	87%	180	1.0



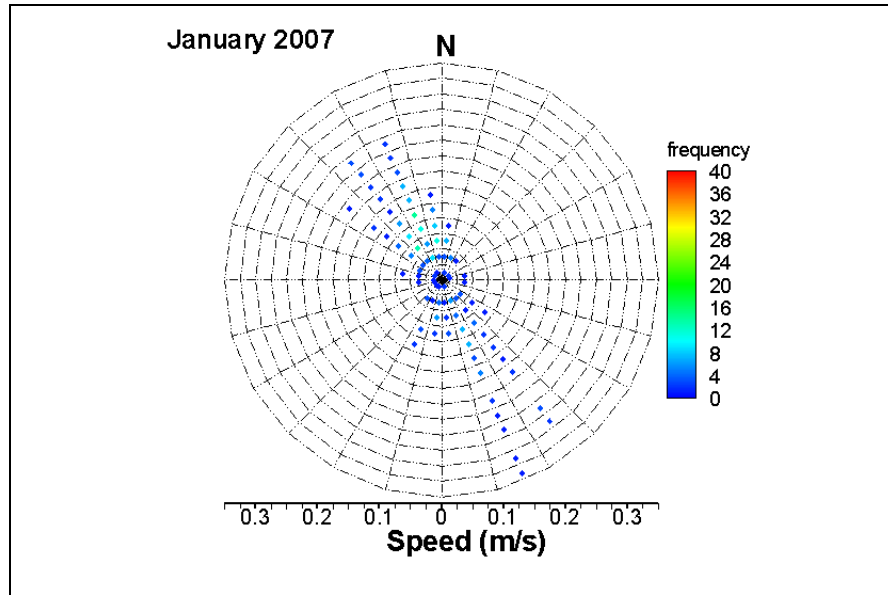
**Figure A1-1.** Hourly estimates of water column speed and direction at location CM 3, January to April 2006. Frequency is number of hourly observations.



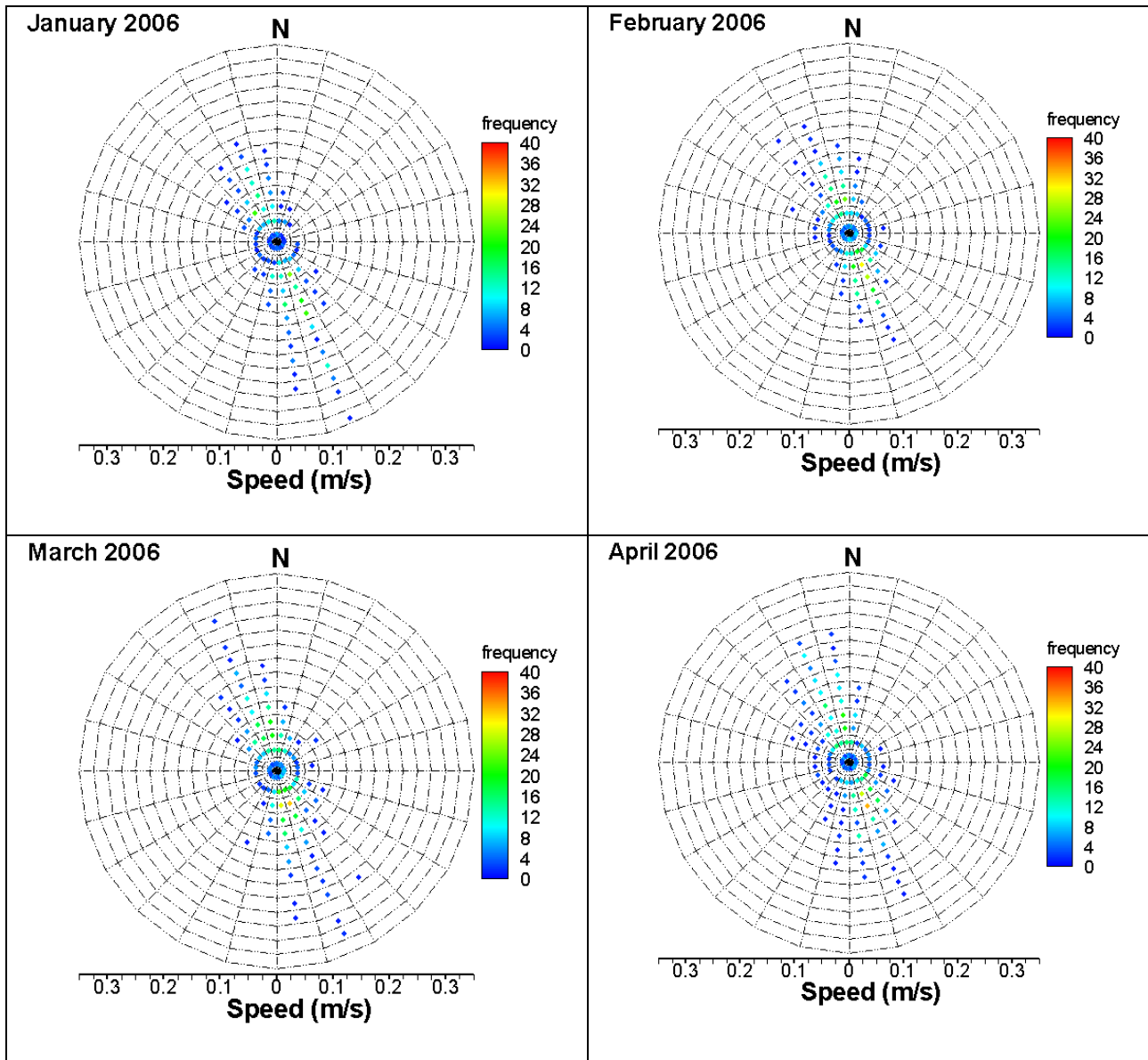
**Figure A1-2.** Hourly estimates of water column speed and direction at location CM 3, May to August 2006. Frequency is number of hourly observations.



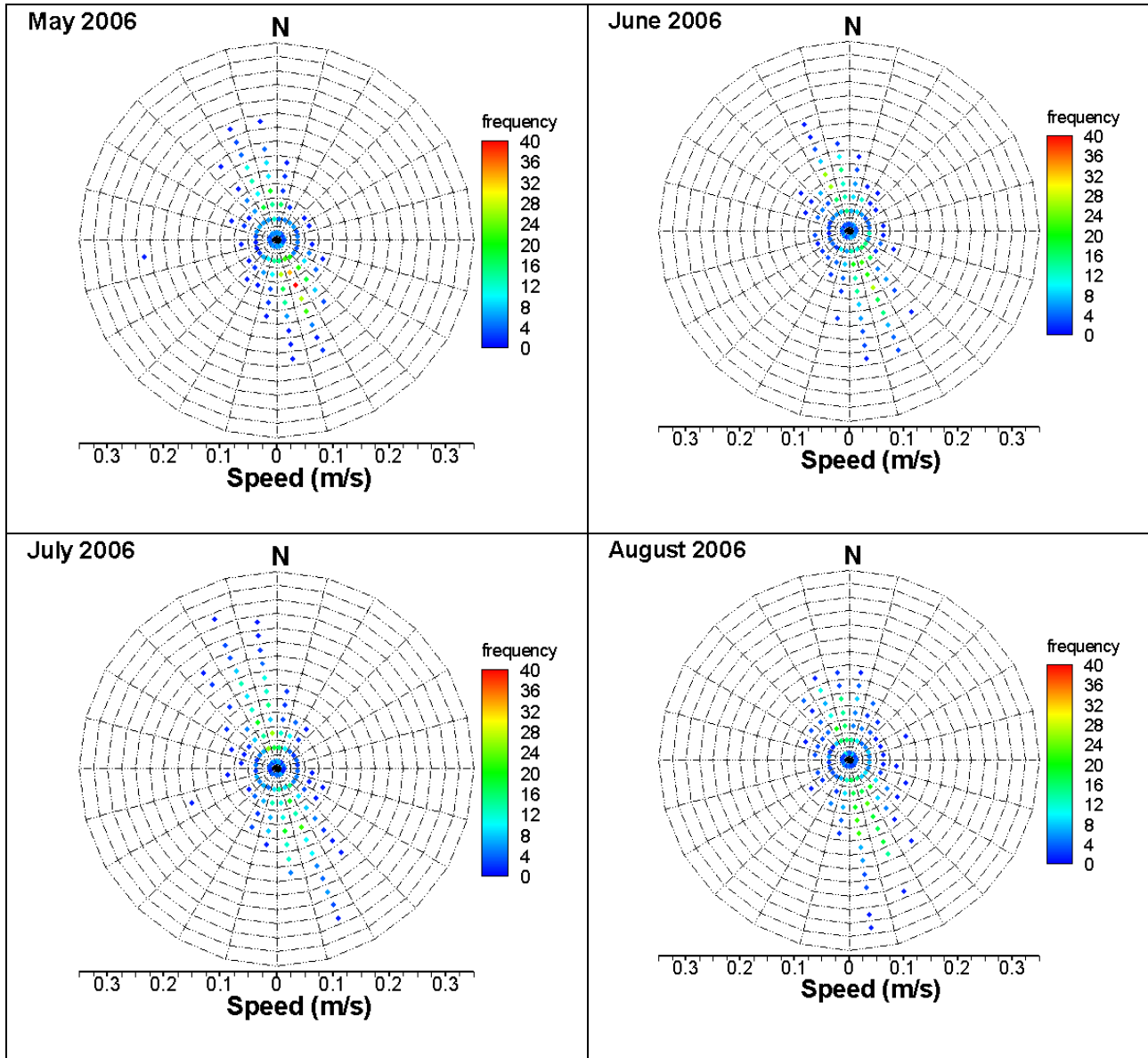
**Figure A1-3.** Hourly estimates of water column speed and direction at location CM 3, September to December 2006. Frequency is number of hourly observations.



**Figure A1-4.** Hourly estimates of water column speed and direction at location CM 3, January 2007. Frequency is number of hourly observations.a

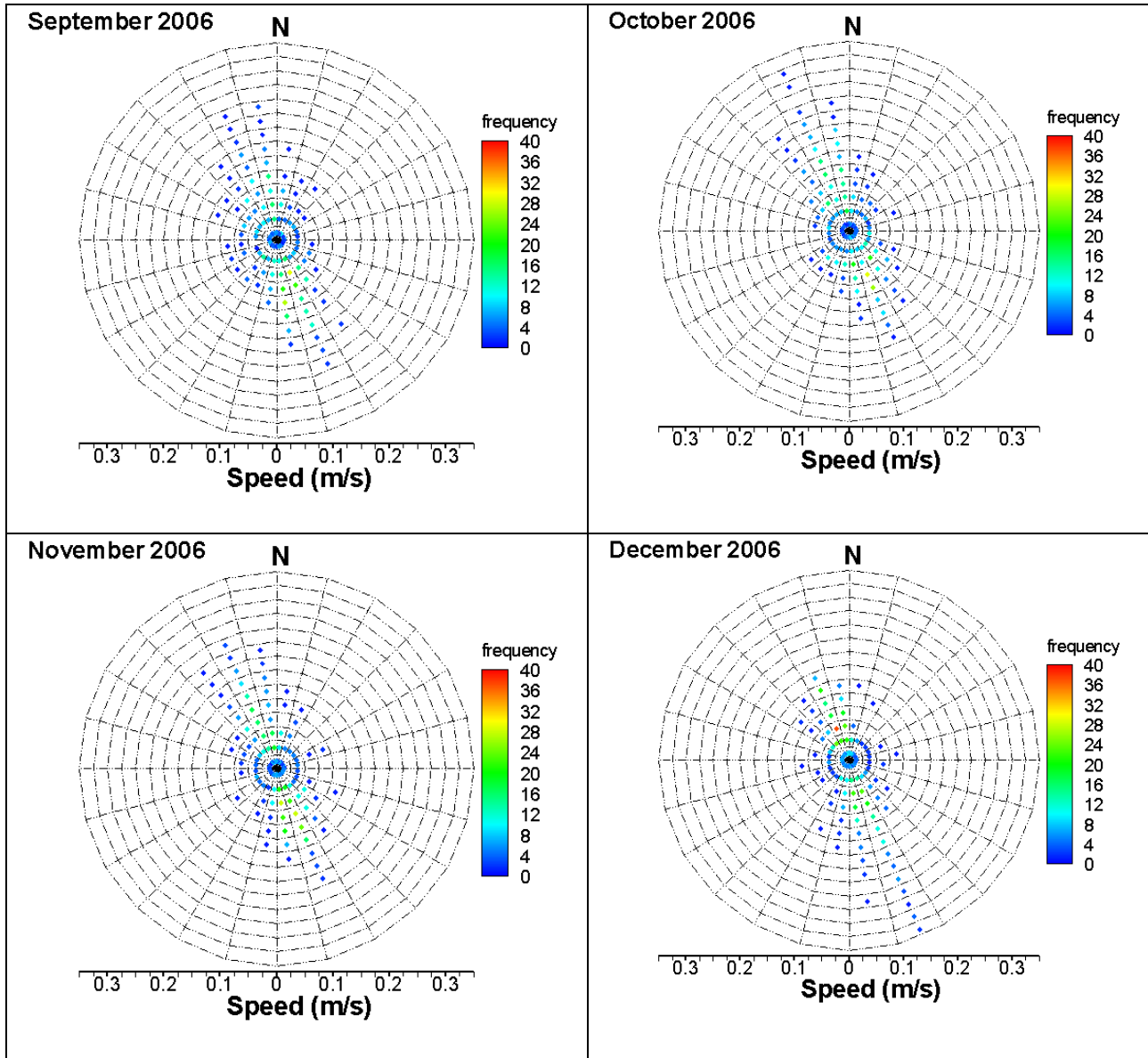


**Figure A1-5.** Hourly estimates of water column speed and direction at location CM 4, January to April 2006. Frequency is number of hourly observations.

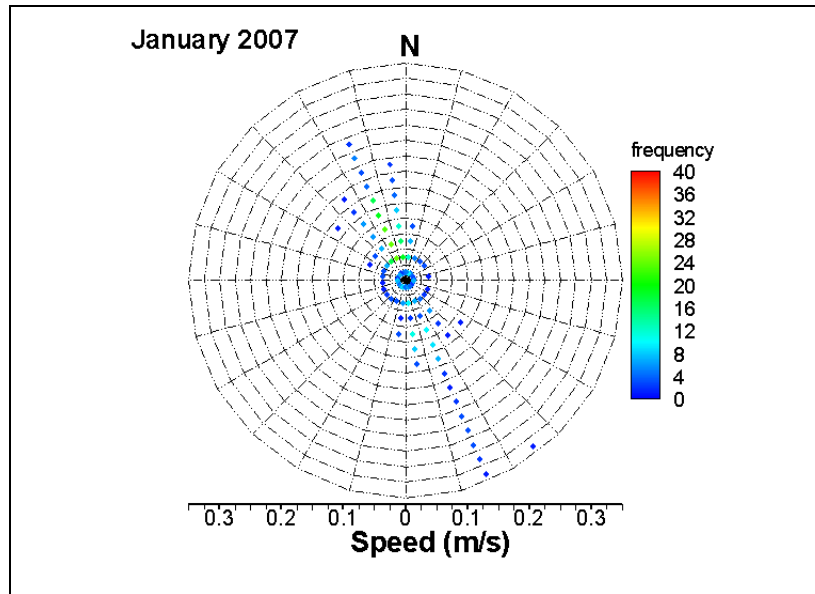


**Figure A1-6.** Hourly estimates of water column speed and direction at location CM 4, May to August 2006. Frequency is number of hourly observations





**Figure A1-7.** Hourly estimates of water column speed and direction at location CM 4, September to December 2006. Frequency is number of hourly observations



**Figure A1-8.** Hourly estimates of water column speed and direction at location CM 4, January 2007. Frequency is number of hourly observations

## **Appendix A2**

# **Source Water Temperatures from ADCP Instruments**

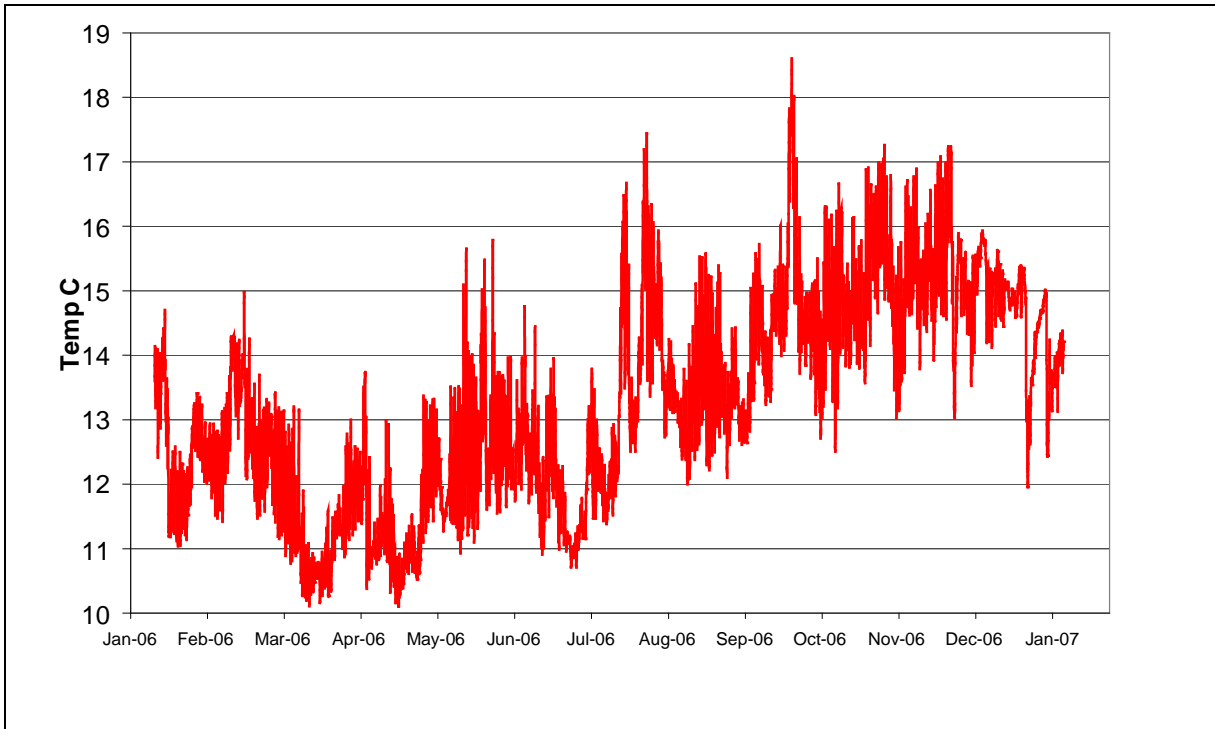
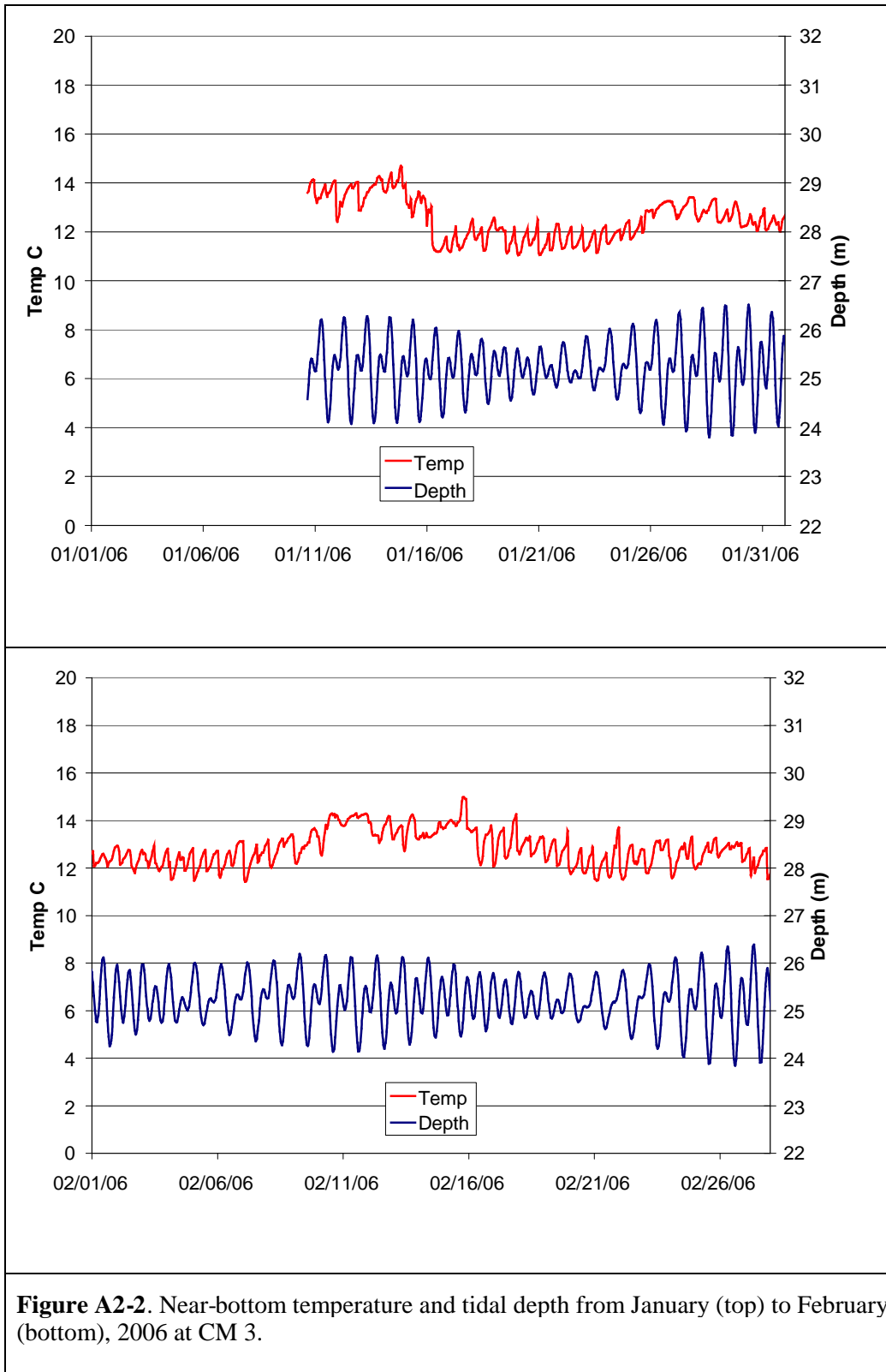
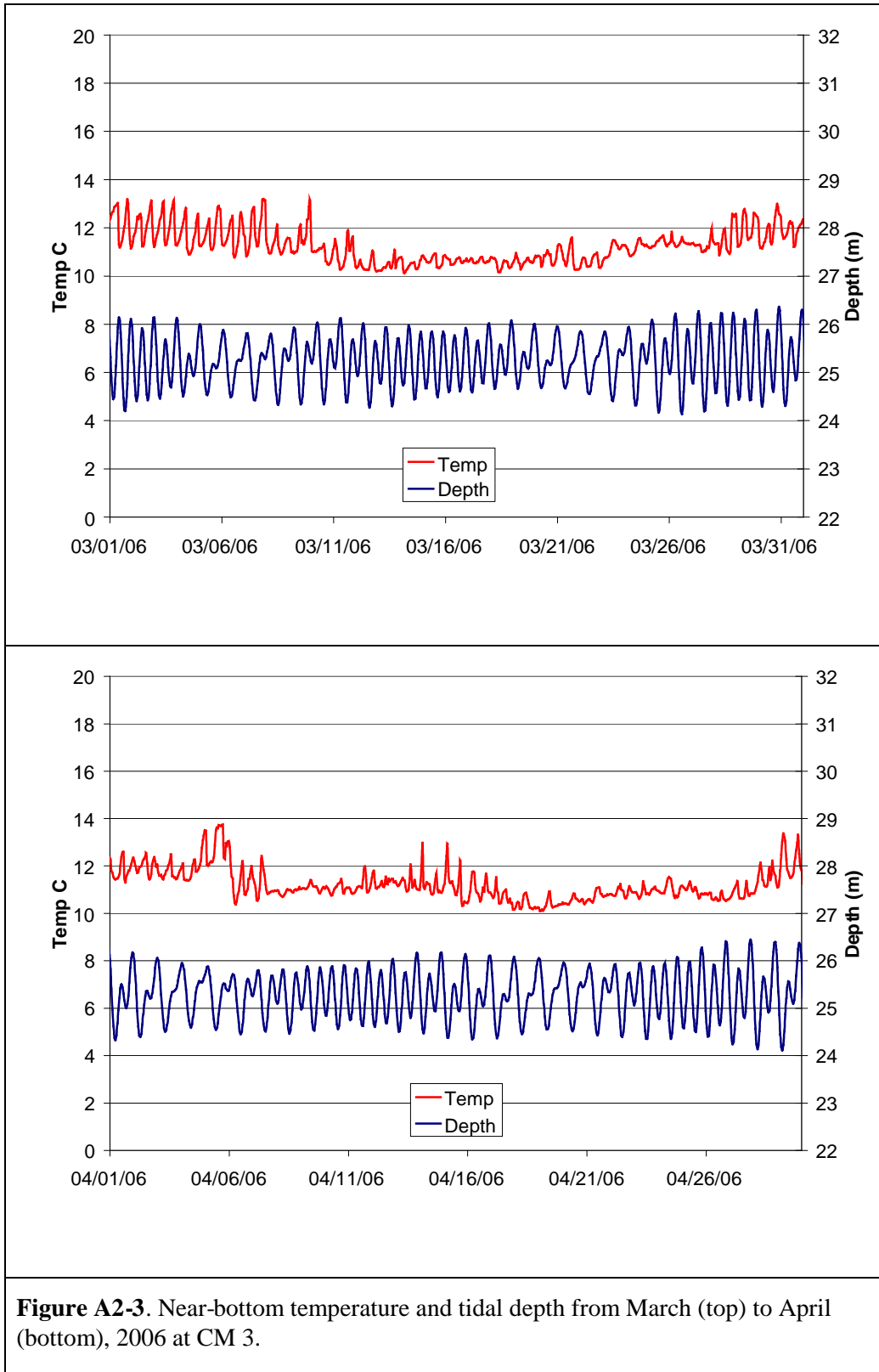


Figure A2-1. Yearly temperature from January 2006 to January 2007 at CM3.

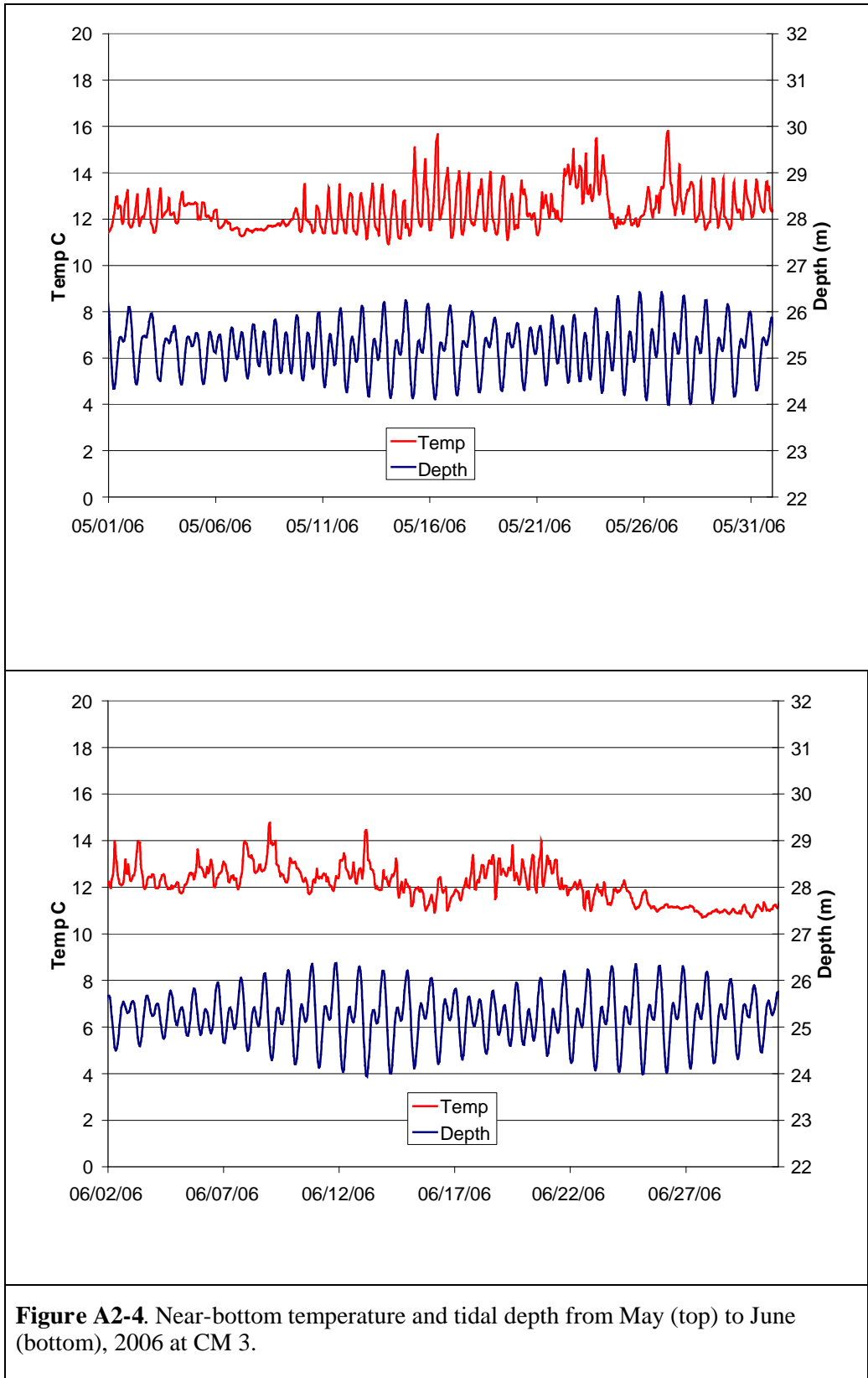
Table A2-1. Monthly and yearly mean temperatures recorded from January 2006 through January 2007 at CM3.

Month	Mean	Standard Dev	Max	Min
January	12.51	0.87	14.70	11.04
February	12.82	0.72	14.98	11.41
March	11.24	0.71	13.20	10.11
April	11.23	0.68	13.74	10.10
May	12.41	0.84	15.79	10.93
June	12.11	0.78	14.76	10.71
July	13.18	1.48	17.44	11.15
August	13.45	0.75	15.93	12.00
September	14.43	1.18	18.60	12.61
October	14.83	0.93	17.05	12.51
November	15.25	0.87	17.26	13.03
December	14.88	0.73	15.93	11.96
January 07	14.05	0.62	15.01	12.43
<b>Total Year</b>	<b>13.24</b>	<b>1.61</b>	<b>18.60</b>	<b>10.10</b>

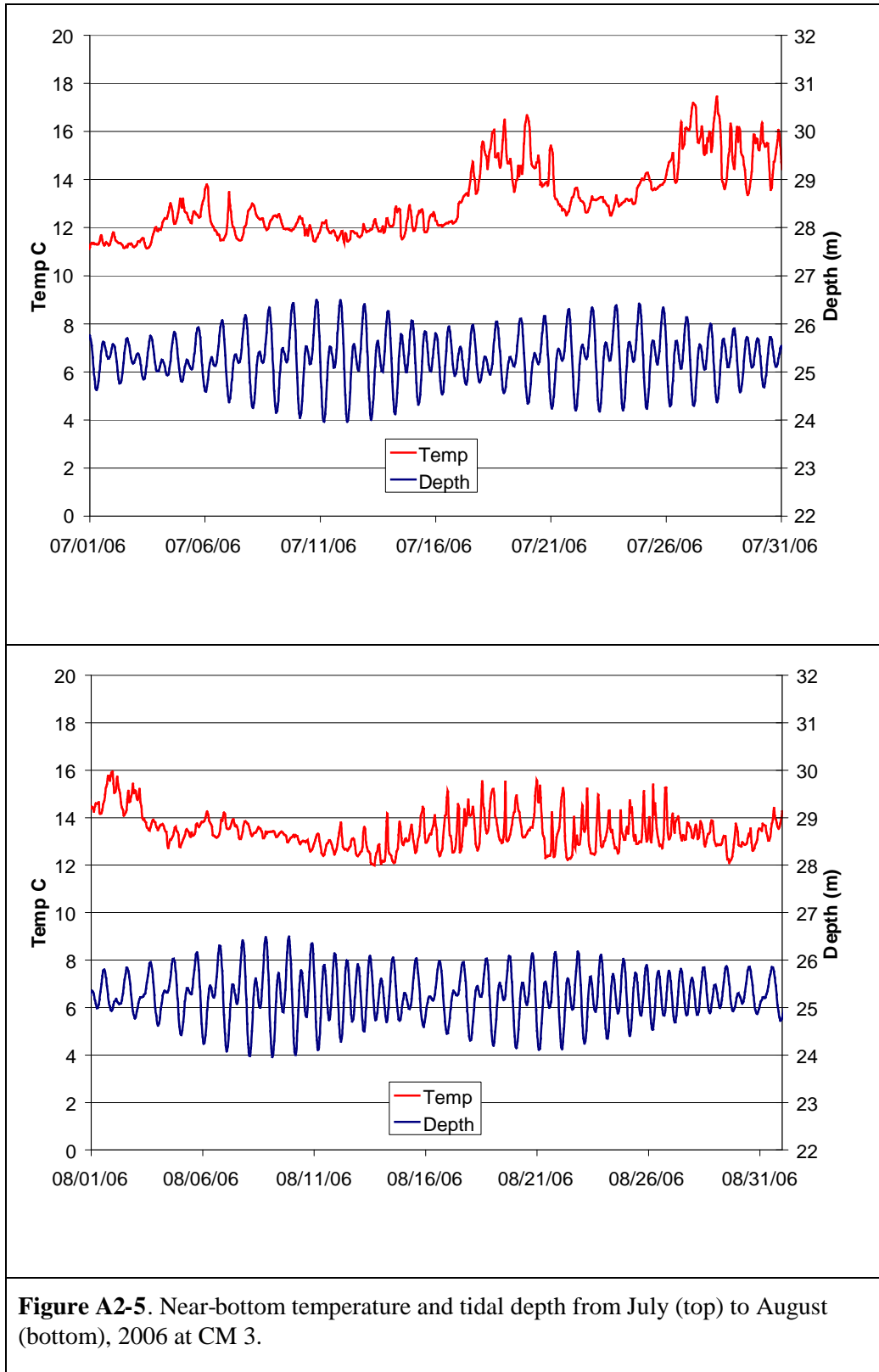




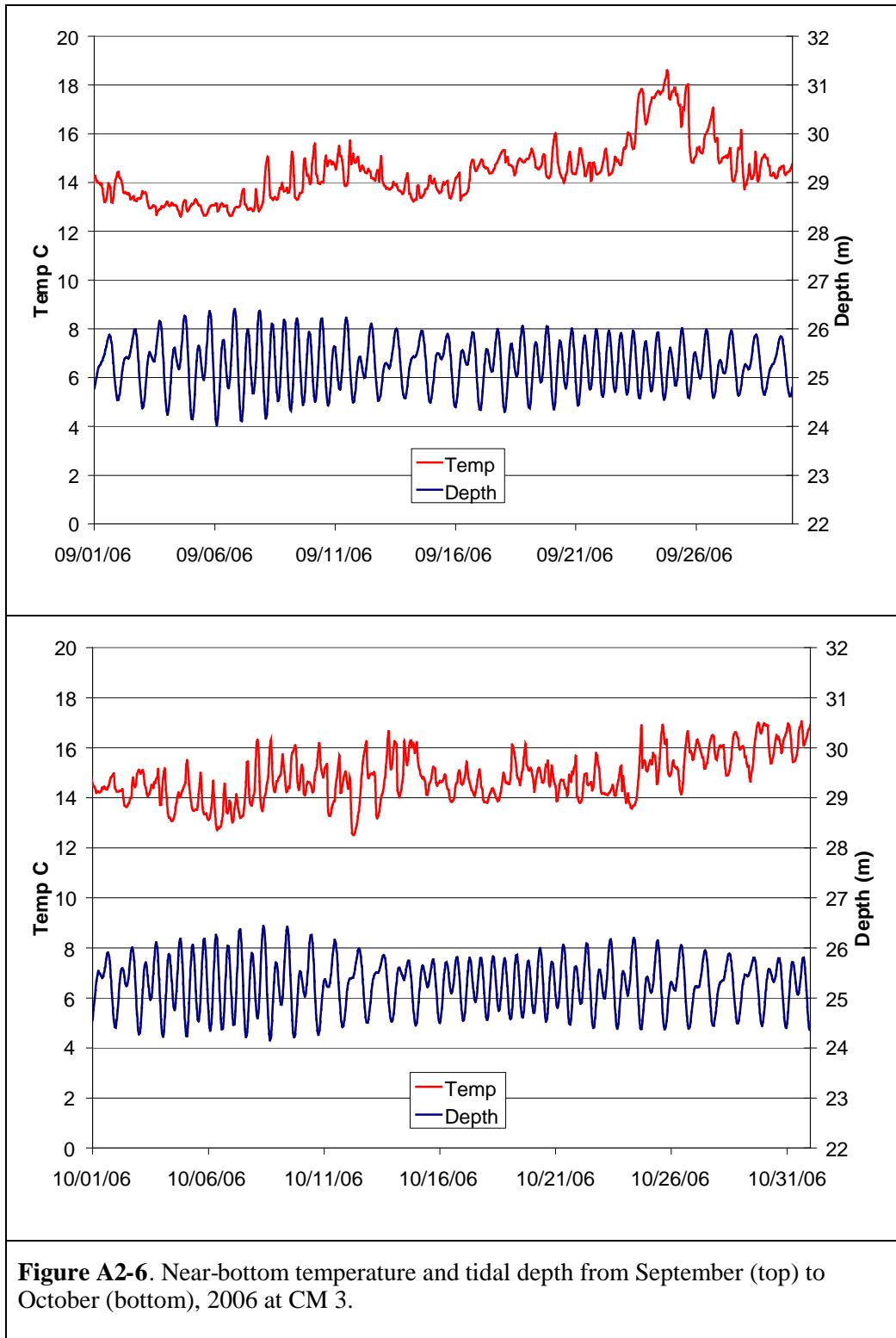
**Figure A2-3.** Near-bottom temperature and tidal depth from March (top) to April (bottom), 2006 at CM 3.



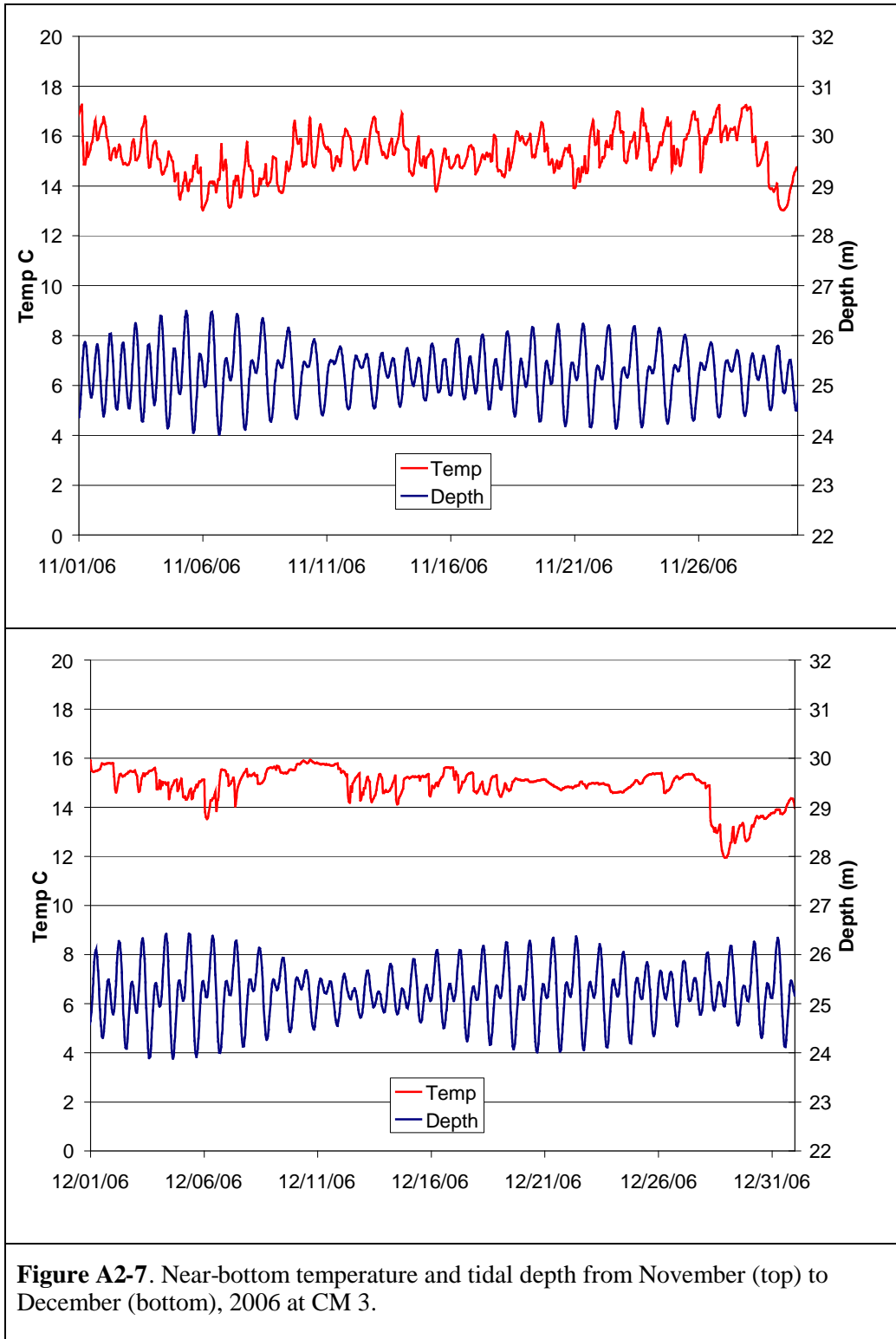
**Figure A2-4.** Near-bottom temperature and tidal depth from May (top) to June (bottom), 2006 at CM 3.

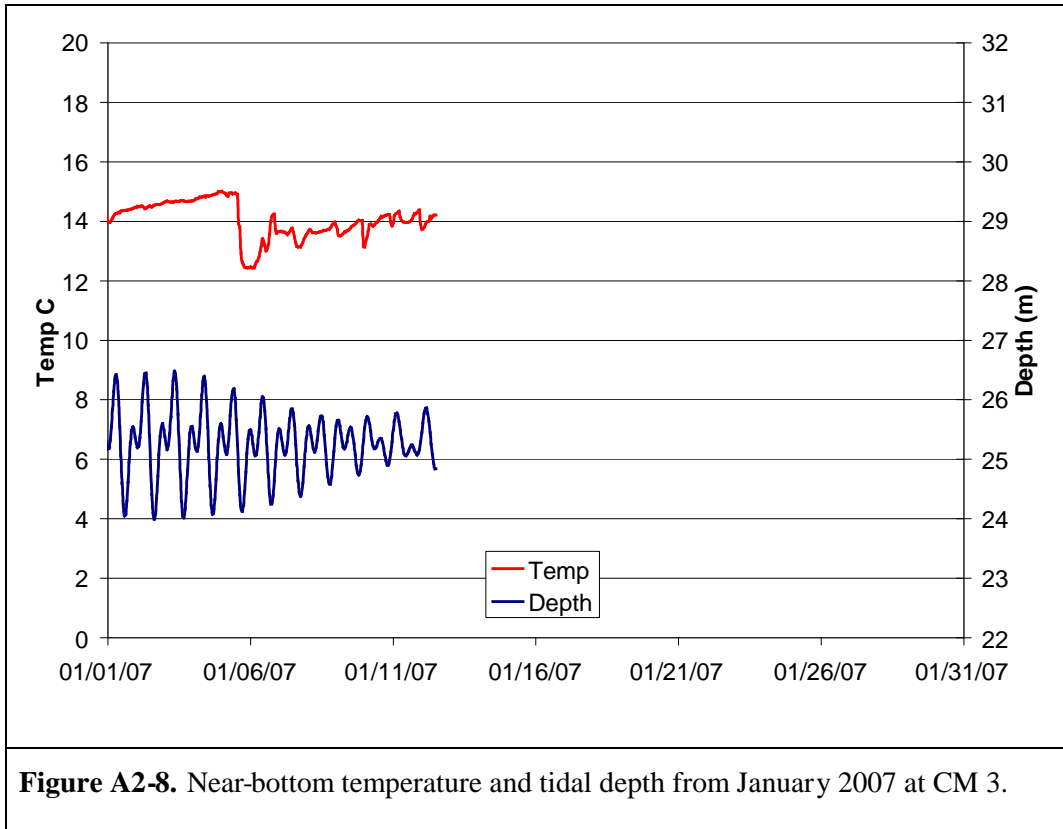




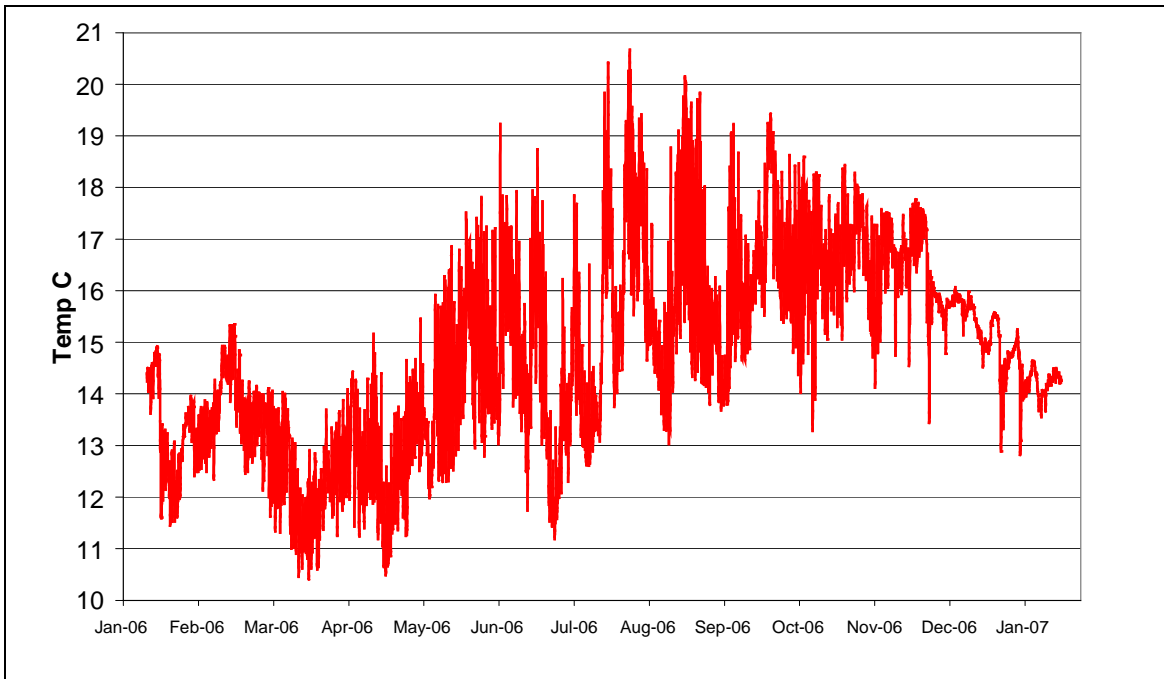


**Figure A2-6.** Near-bottom temperature and tidal depth from September (top) to October (bottom), 2006 at CM 3.





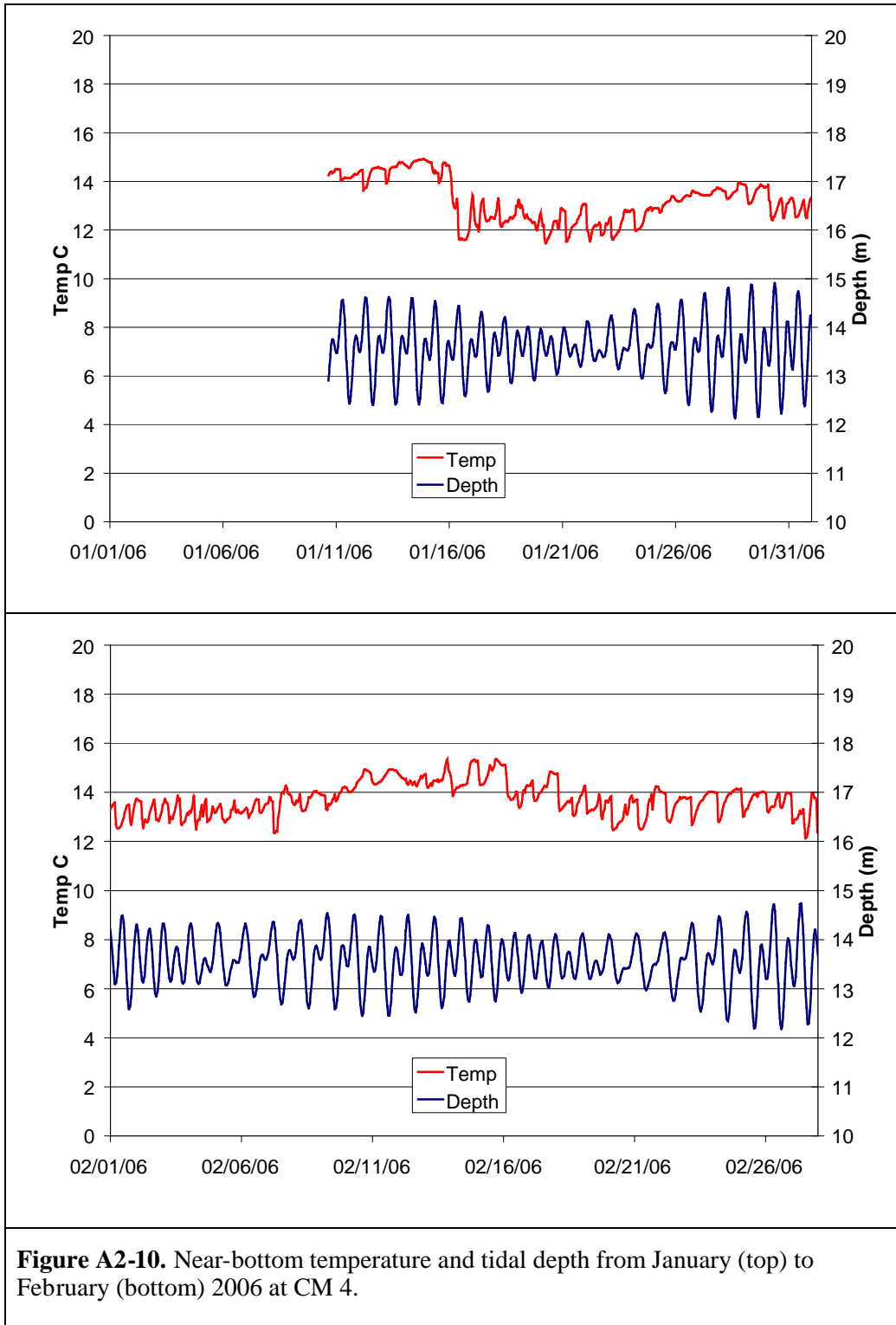
**Figure A2-8.** Near-bottom temperature and tidal depth from January 2007 at CM 3.

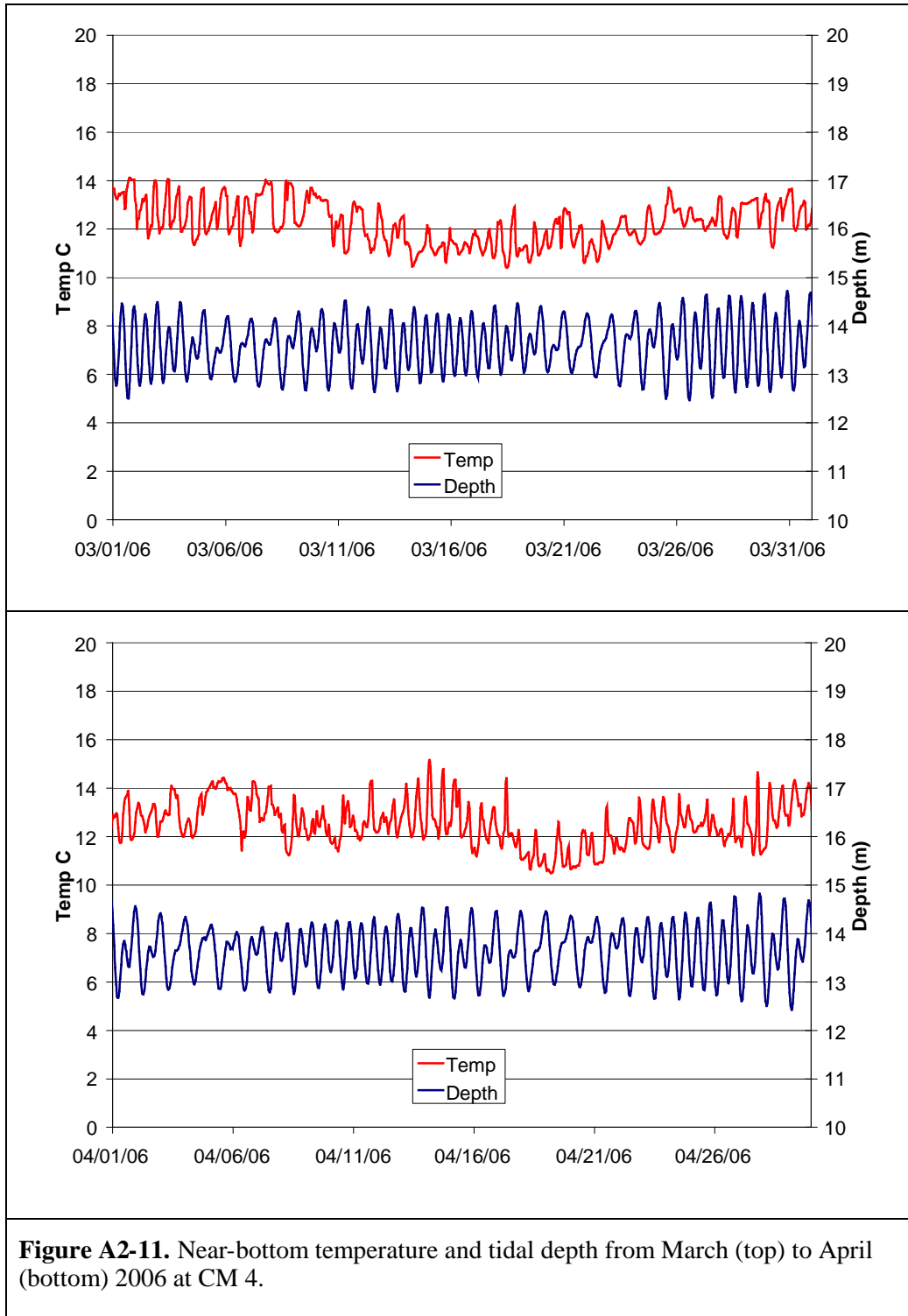


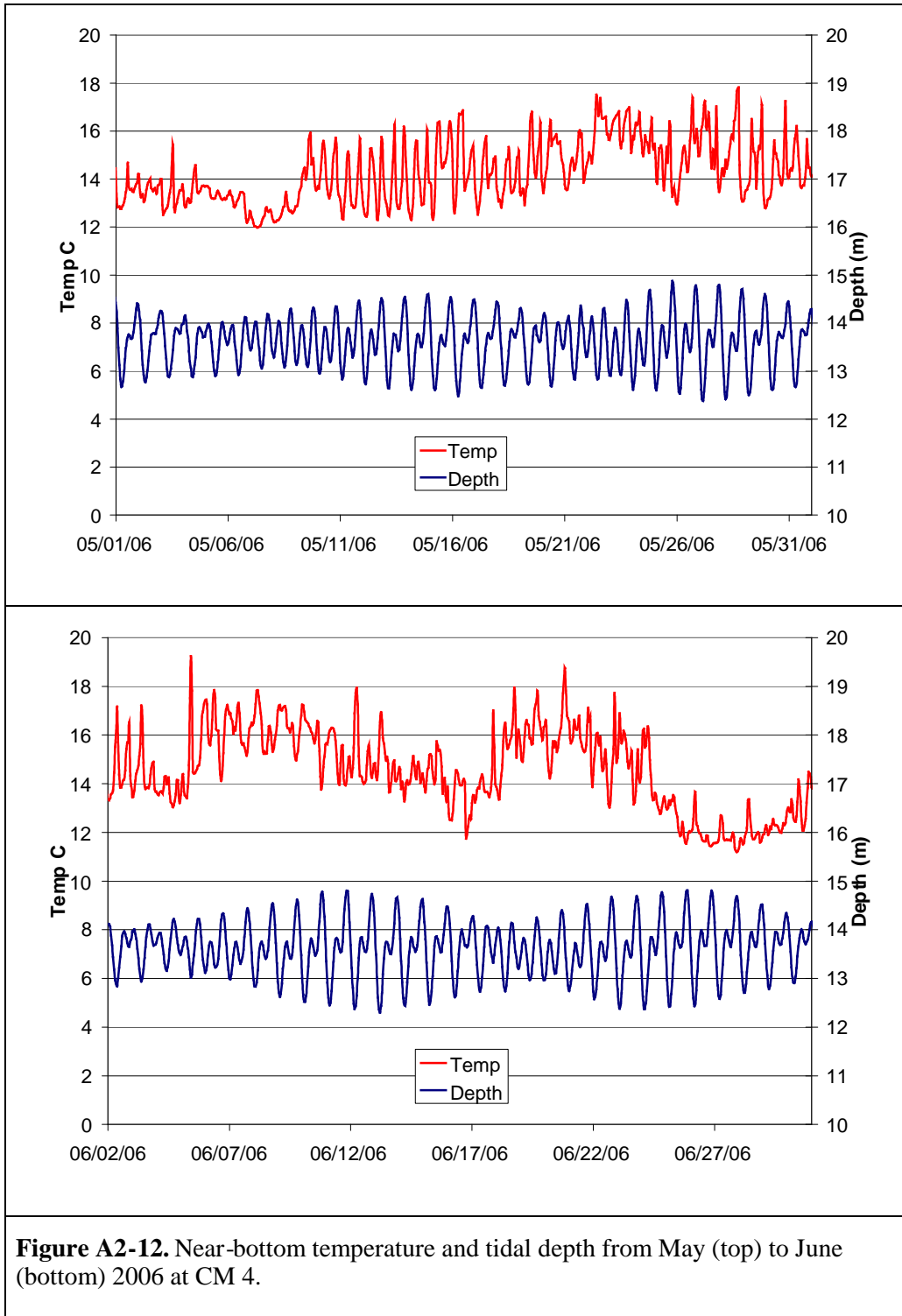
**Figure A2-9.** Annual temperature from January 2006 to January 2007 at CM 4.

Table A2-2. Monthly and yearly mean temperatures recorded from January 2006 through January 2007 at CM4.

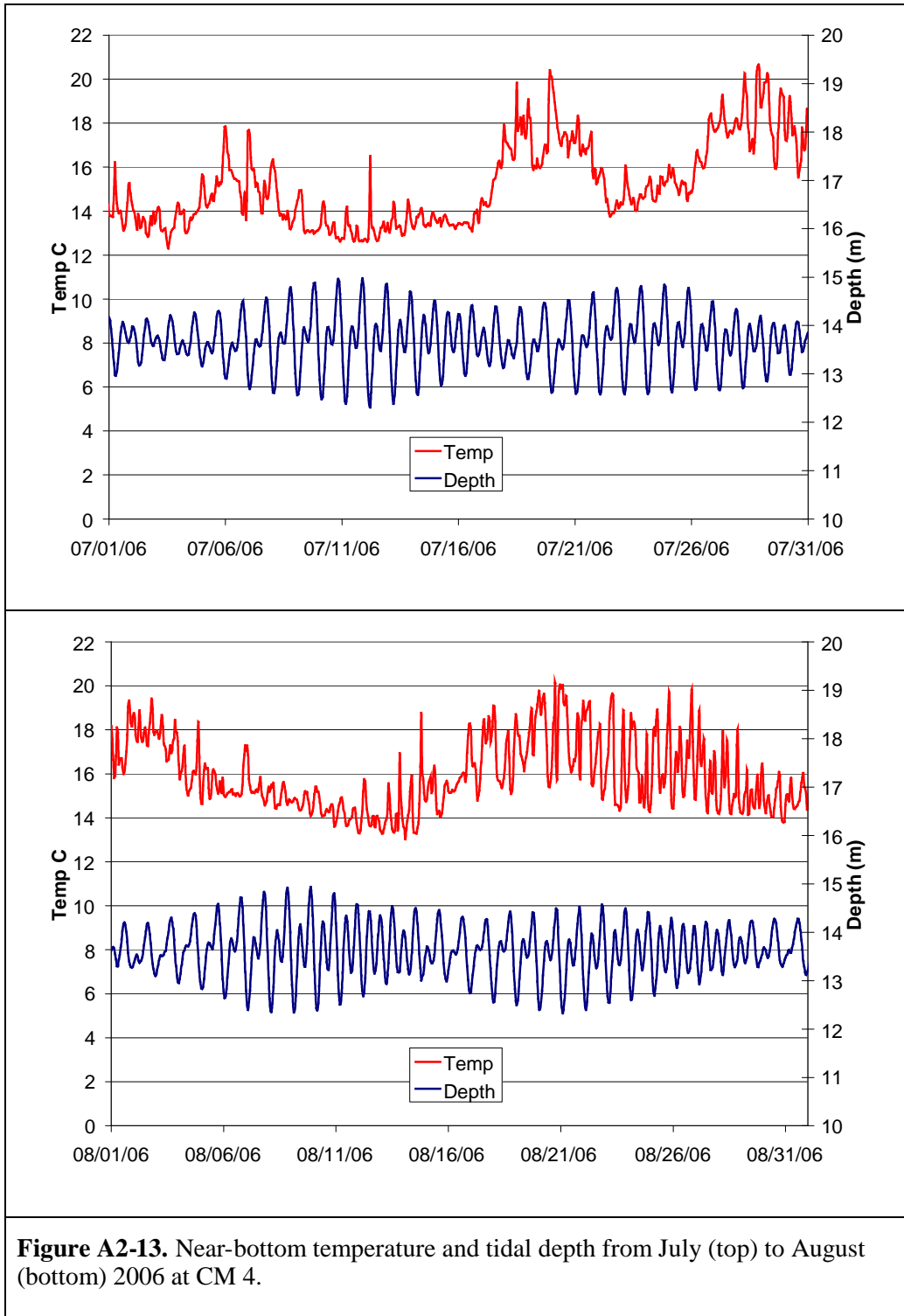
<b>Month</b>	<b>Mean</b>	<b>Standard Dev</b>	<b>Max</b>	<b>Min</b>
January	13.21	0.93	14.92	11.45
February	13.74	0.66	15.35	12.13
March	12.23	1.87	14.11	10.41
April	12.55	0.93	15.16	10.49
May	14.27	1.28	17.82	11.98
June	14.53	1.65	19.23	11.19
July	15.24	1.91	20.67	12.30
August	15.93	1.59	20.12	13.03
September	16.15	1.32	19.43	13.68
October	16.53	0.93	18.63	13.28
November	16.54	0.81	17.87	13.44
December	15.38	0.56	16.16	12.89
January 07	14.32	0.39	15.25	12.82
<b>Total Year</b>	<b>14.71</b>	<b>1.83</b>	<b>20.67</b>	<b>10.41</b>



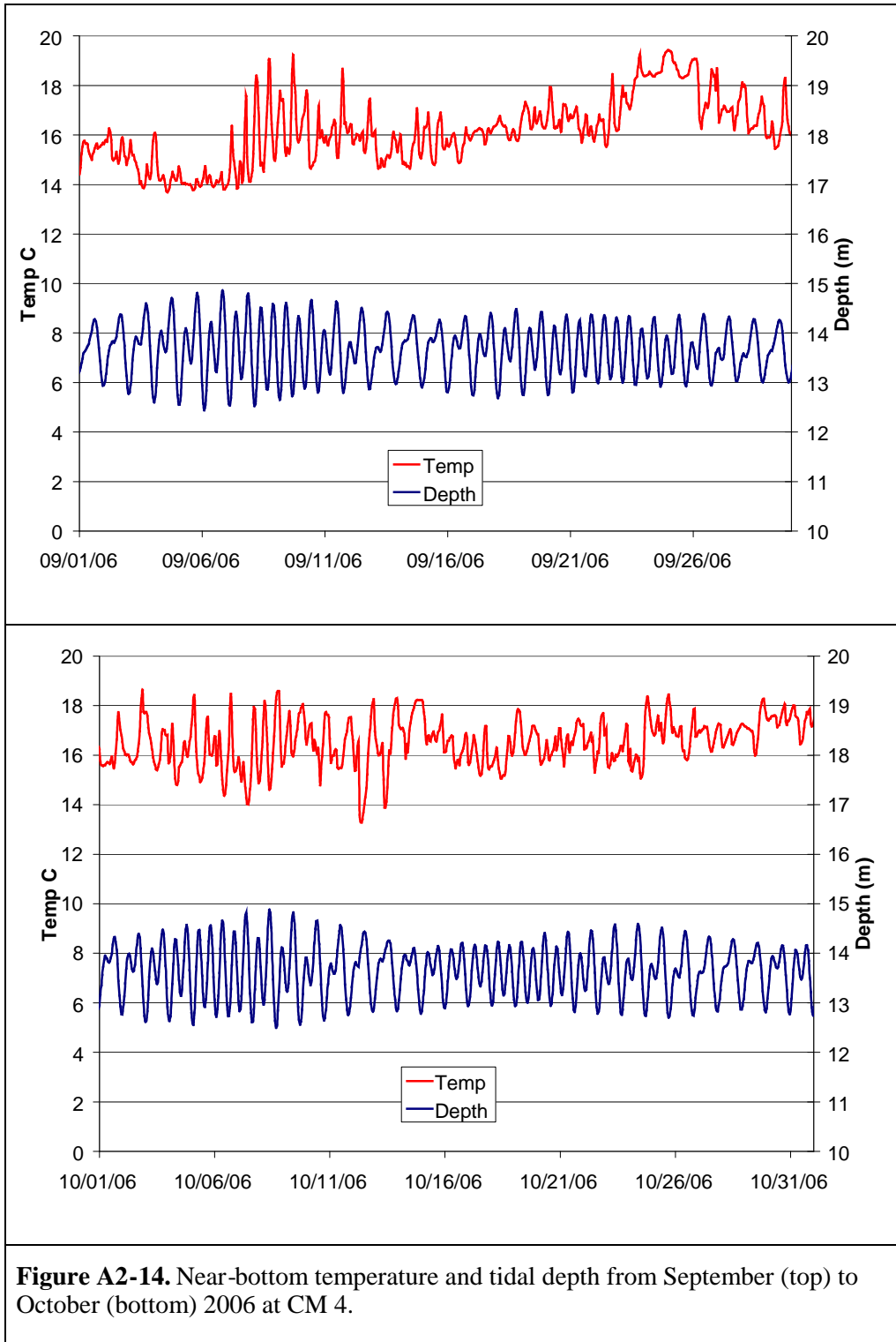




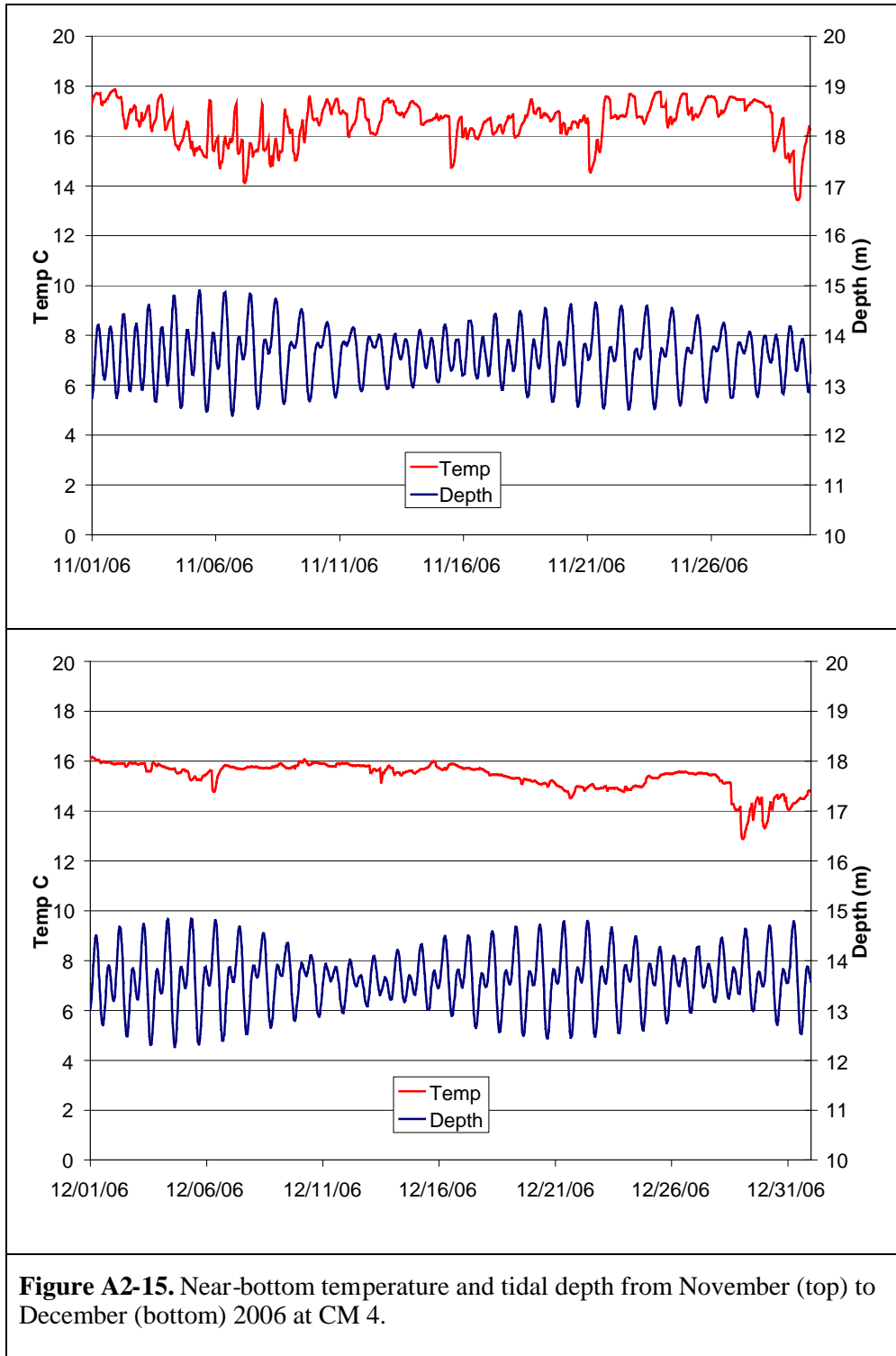
**Figure A2-12.** Near-bottom temperature and tidal depth from May (top) to June (bottom) 2006 at CM 4.

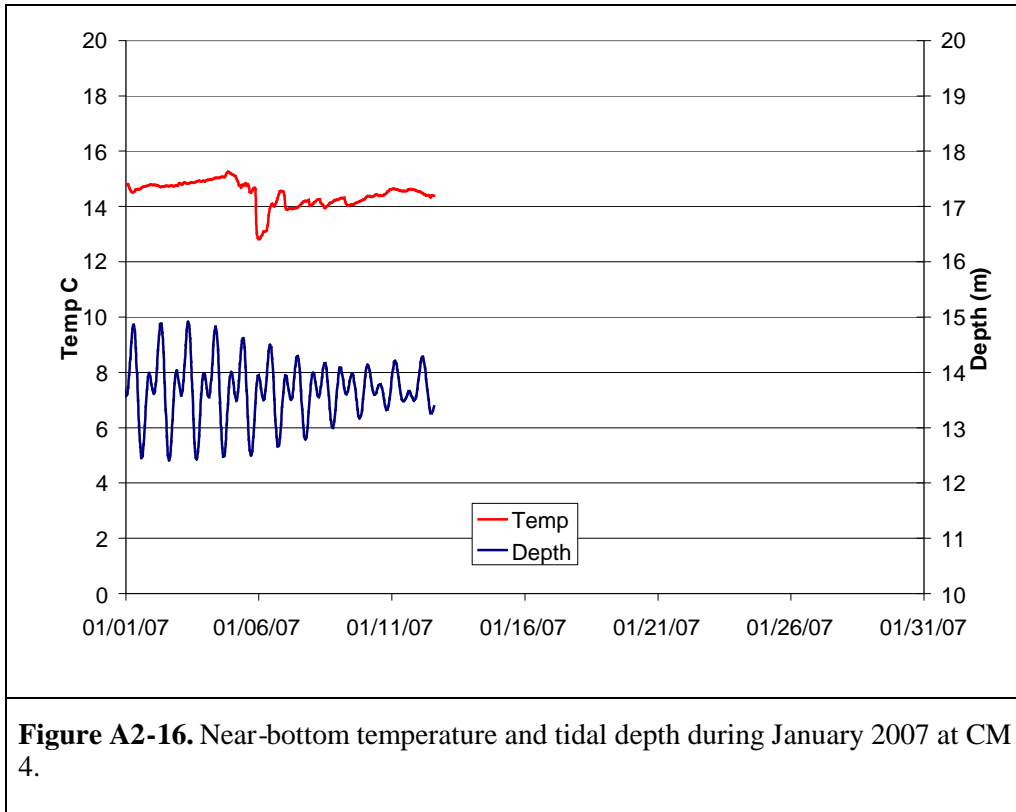






**Figure A2-14.** Near-bottom temperature and tidal depth from September (top) to October (bottom) 2006 at CM 4.





*Scattergood Generating Station*

## **Appendix B**

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# **Field Sampling and Sample Processing Procedures**

- B1. Entrainment Field Sampling
- B2. Entrainment Sample Sorting
- B3. Entrainment Sample Identification
- B4. Impingement Field Sampling

**APPENDIX B1: PROCEDURE FOR COLLECTING PLANKTON SAMPLES  
FOR ENTRAINMENT STUDIES**

1.0 PURPOSE

The purpose of this document is to define the steps and equipment necessary to accurately collect plankton samples using a wheeled bongo frame near the Scattergood Generating Station (SGS).

2.0 RESPONSIBILITIES

2.1 Task/Field leader:

- Notify the station of the proposed sampling dates.
- Schedule and coordinate sampling surveys and notifying the U.S. Coast Guard prior to sampling.
- Verify that all investigating biologists conducting the sampling have read and understand these procedures.
- Verify that procedures have been followed during sample collection and that the sampling has been conducted safely.
- Verify that information on data sheets have been reviewed and properly recorded.

2.2 Investigating biologist:

- Conduct sampling using the following procedures.

3.0 SGS CONTACT INFORMATION

<b>Name</b>	<b>Cell/Outside Line</b>	<b>E-mail Information</b>
Gary Laney	(310) 524-8506	Gary.Laney@ladwp.com
John Abdelmalak	(310) 524-8503	John.Abdelmalak@ladwp.com
Control Room	(310) 524-8510	On-site # 48510
On-Site Emergency Number	(310) 524-8300	On-site # 48300

4.0 PROCEDURES

4.1 Mobilization

- Notify plant personnel of the dates of field sampling prior to the sampling day.
- Ensure there are enough jars, labels, and preservative (formalin) for the sample collection. Print the required number of blank field data sheets on waterproof paper.
- Inspect the wheeled bongo frame, nets and codends for any damage. If damaged, repairs must be made before sampling begins. Ensure that the flowmeters have been calibrated within the past 90 days and that they are operational. Attach a flowmeter in approximately the center of each frame mouth.
- Ensure that all additional equipment (Table 1) is in good operating condition. Make repairs if necessary.

4.2 Sample Collection

- Samples will be collected every six hours in a 24-hr period (four cycles) according to the schedule developed by the Task Leader. A survey team consists of at least a boat driver and two investigating biologists to conduct the sampling.
- Locate the station using the latitude/longitude coordinates. Determine the water depth with the fathometer and record the water depth on the field data sheet.
- Ensure that the winch line and a weight (15-20 lb salmon ball) are securely attached to the center of the bongo frame. Ensure that the nets, codends and flowmeters are securely attached. The nets should be 333- $\mu$ m mesh.
- Record each flowmeter's serial number on the field data sheet (Attachment 1). Record the number from the flowmeter counter spins on the field data sheet prior to lowering the frame into the water. Record the start time (local time) on the field data sheet.
- Using the measured marks on the winch cable, lower the frame and nets through the water column until the wheels on the sides of the frame are on the bottom. When the cable starts to slack, the boat is motored forward and the cable is retrieved trying to maintain a 45-degree tow angle. When the frame reaches the surface, carefully pull it into the boat. Verify that the nets have not picked up any sediment from the bottom. If there is any sediment in the nets or codends, discard both samples by detaching the codends and rinsing the nets of collected material and then reattach the codends. Repeat the sample collection at that station.
- Check that the number of spins on each flowmeter counter to verify that the target volume of 15-20 m<sup>3</sup> has been collected (number of spins should be about 2,000). If the target volume has not been met with one tow, subsequent tows will be performed at the station until the target volume has been collected.
- If the correct volume has been collected record the end number of spins from each flowmeter on the field data sheet. Subtract the initial number of spins from the end number and record the total on the field data sheet. If the integrity of either or both flowmeter readings is questionable (e.g., seaweed wrapped around the propellers), discard both samples by detaching the codends and rinsing the nets of collected material and then reattach the codends. Repeat the sample collection at that station.
- Record the end time (local time) on the field data sheet.
- Beginning at the top of the net, rinse the collected material down into the codend. Since the wash water is not filtered and may contain plankton, rinse the net from the outside ensuring that unfiltered water does not contaminate the sample. Inspect the net to ensure that it has been thoroughly rinsed. Samples will then be carefully transferred to pre-labeled jars with preprinted internal labels. The sample from each net will be placed in separate labeled jars.
- Detach the codend from net #1 and rinse the sample from the codend into a labeled sample jar using a squirt bottle containing sea water. Then, using a graduated cylinder or other measuring device, add enough formalin to make a 10%-formalin seawater solution. Rinse and inspect the codend of net #1 before reattaching to the net. Follow the same procedure for net #2. Sample preservation should be completed soon after collection.
- If the collected material will fill over ½ of the sample jar, split the sample into at least two labeled jars so that there is enough ethanol for proper preservation.
- Ensure that the sample jar contains both an inner label and an exterior label.
- The following is an explanation of the coding for the field datasheet survey and station numbers and jar labels:
  - a) Each survey number on the data sheet consists of a series of 5 letters followed by 2 numbers (SMBEA##). The first three letters are "SMB" refers to Santa Monica Bay, and the "EA" refers to entrainment abundance. The two numbers refer to the survey number with the first survey being 01. The survey number increases by one for each new 24-hour sampling effort.

- b) The station designation consists of a letter-number-letter-number combination. This letter/numbering system was set up for all three Santa Monica Bay generating stations (Scattergood, El Segundo, and Redondo Beach). The first letter refers to the station being an Outer, Mid, Shore, Harbor, or Entrainment station (see map in Attachment 2). The first number refers to the number of the station that links to the station letter. The numbers for each of the stations listed above are as follows:

<b>Station letter</b>	<b>Station number</b>
<u>O</u> uter	1-5
<u>M</u> id	1-3
<u>S</u> hore	1-7
<u>H</u> arbor	1-2
<u>E</u> ntrainment	1-4

- c) Entrainment Station E1 is located near Scattergood’s intake structure, E2 and E3 are at El Segundo, and E4 is at Redondo Beach.
- d) The second letter designates the replicate, either “A” or “B”. The source water stations only have one sample so always use the letter “A”. There are two samples collected at the entrainment location so the letters “A” and “B” will be used to separate these two replicates. The second number designates the net number, either “1” or “2.” For example, O3A1 means that the sample was collected from Station O3, Sample A, and Net 1.
- e) The date of sampling will correspond to the actual start date of each sample. At the start of a new day (midnight), use a new field data sheet.
- Deliver the samples to the laboratory at the completion of the sampling effort.

#### 4.3 Sample Voiding in the Field

- Samples should be voided if any of the following occurs: 1) possible flowmeter obstruction due to kelp or other debris on the propeller, 2) obviously malfunctioning or damaged flowmeters; 3) damaged (torn) nets found after a sample is collected; 4) large quantities of sediment in the net that were collected when the wheeled bongo frame was on the bottom; 5) gear failure which prevents completion of any tows/hauls; 6) an incident or situation which may prevent reliable data collection; 7) an incident or situation which may jeopardize the safety of sampling personnel.
- If a hole or tear is found in the net mesh, mark the damaged area and either repair or replace the net. Discard both samples and repeat the sample collection. Record this on the data sheet.
- The number of flowmeter spins from the paired bongo nets needs to be checked in the field to confirm that the measured volumes were similar.

#### 5.0 ATTACHMENTS

- 5.1 Equipment List
- 5.2 Field Datasheet for Santa Monica Bay Station Sampling
- 5.3 Map of Santa Monica Bay Stations
- 5.4

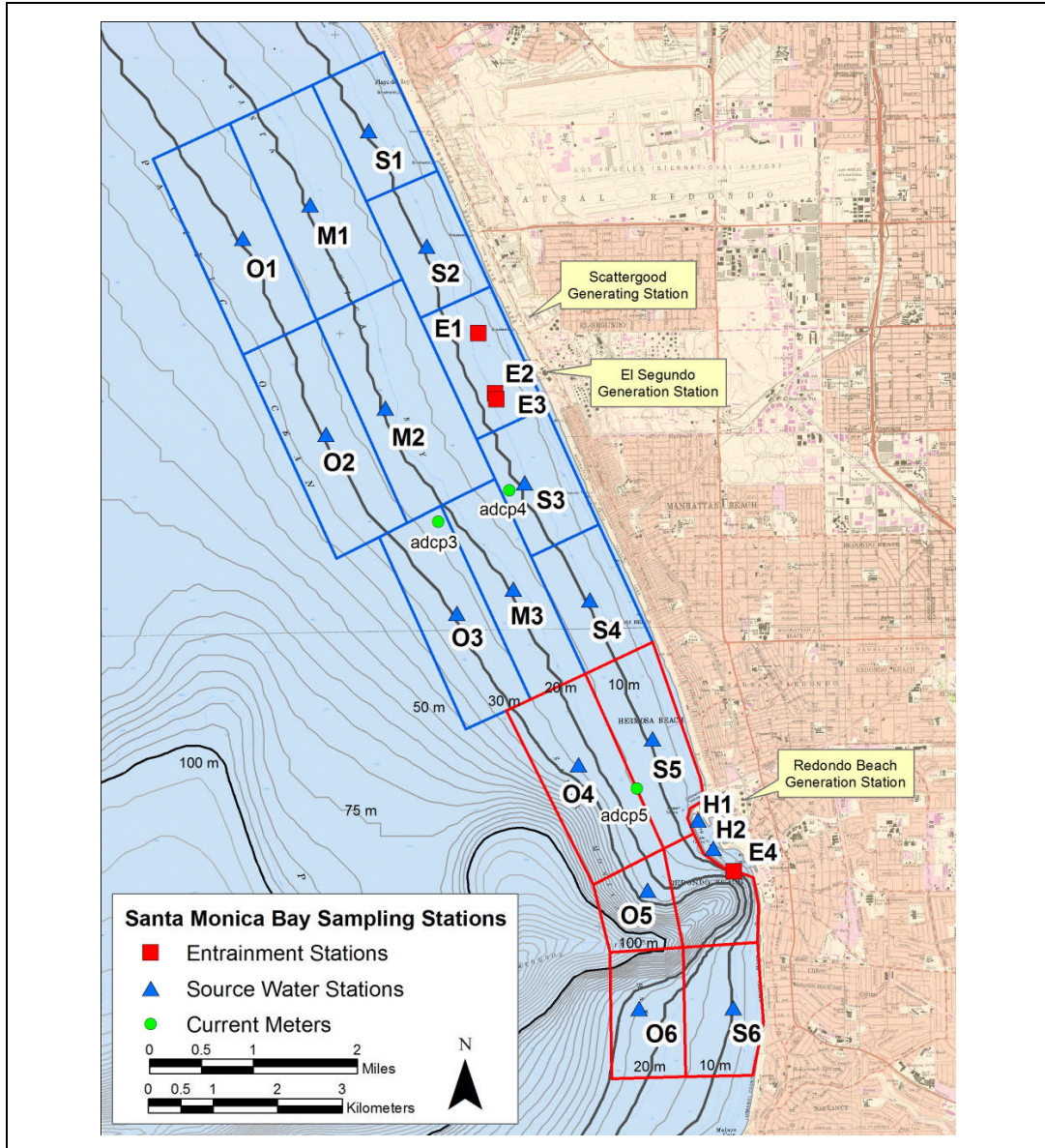
**Attachment 5.1.** Equipment List.

1. Wheeled bongo net frame, attached 333/335 micron mesh nets, codends, and calibrated flowmeters (include at least 1 back up net and flowmeter)
2. Winch (davits) and line for net deployment and retrieval
3. Stock solution of formalin
4. Squeeze bottles
5. Labeled jars for sample storage
6. Data sheets, pencils, permanent markers, and labels
7. Wash-down pump
8. Watch
9. Fathometer
10. GPS





Attachment 5.3. Map of Santa Monica Bay stations.



## APPENDIX B2: PROCEDURE FOR SORTING PLANKTON SAMPLES IN THE LABORATORY

### 1.0 PURPOSE

The purpose of this procedure is to define the steps for sorting target organisms from plankton samples collected at Scattergood Power Plant, and to describe the Quality Control Program (QC) used to monitor the sorting accuracy of individual sorters.

### 2.0 RESPONSIBILITIES

- Laboratory Supervisor is responsible for assuring that plankton sample sorting is in accordance with written procedures.
- The Quality Control Supervisor is responsible for implementing the Quality Control Program which monitors sorting accuracy in accordance with written procedures.
- Investigating biologists are responsible for sorting samples in accordance with written procedures.

### 3.0 INSTRUCTIONS

#### 3.1 Sorting Procedures

##### 3.1.1 Sample Processing

- a. Ensure that the proper equipment necessary for sample processing is available (Attachment 5.1).
- b. Transfer the samples to be sorted to the laboratory trailer.
- c. Samples that were originally fixed in formaldehyde after collection, must be transferred to 100% ethanol before laboratory processing. This is done outside to lessen the exposure to formaldehyde fumes.
  1. A funnel with the appropriate mesh size attached to its bottom opening is placed into a jar or can. The mesh must not be larger than that used during sample collection. Place the jar and funnel in a tray so the sample can be retrieved if spillage occurs.
  2. Pour the sample carefully into the canning funnel. The sample jar and jar lid are rinsed with water, directing the water and organisms into the funnel. Rinse the sample with water to flush the formaldehyde from the sample.
  3. Rinse the sample into a labeled jar with 100% ethanol from a squeeze bottle. Make certain that the jar has both an inner label and a jar top label. Additional ethanol is added to the sample jar to cover the sample.
  4. The waste formaldehyde and rinse water is then discarded into the appropriate hazardous waste container.
- d. Consult the sorting schedule posted in the processing laboratory to determine sorting priorities.
- e. Sign out the sample on the Laboratory Sample Tracking Sheet (Attachment 5.2) by writing your initials under the 'sorter' column. Transcribe information from the sample label into the Sorter's Log Book (Attachment 5.3) and into

the sorter's notebook (each sorter has separate log sheets and a notebook for this purpose).

- f. Take two clean canning funnels with attached mesh netting, one labeled 'sorted' and the other labeled 'unsorted'. The mesh size should be no larger than that used to collect the samples.
- g. Place the 'unsorted' canning funnel on a clean jar. Next, place the jar and funnel in a dish so samples can be retrieved if spillage occurs. Pour a sample into the funnel. The funnel will contain the material to be sorted, while the ethanol will drain into the jar.
- h. Place the 'unsorted' funnel on a second jar or can. Using fresh water in a squeeze bottle, rinse any remaining sample from the sample jar, the jar lid and inner sample label into the funnel containing the unsorted sample.
- i. Pour the ethanol that was filtered through the canning funnel into the original sample jar. Keep the original ethanol-filled sample jar with the sample. Dispose of the alcohol waste-water from the second jar into the appropriate waste container.
- j. Place the 'unsorted' funnel containing the sample and the empty 'sorted' funnel into individual glass bowls in a tray. Do not let the sample dehydrate during processing.
- k. Transfer a small amount of the sample from the 'unsorted' funnel to the sorting tray. Add enough water to cover the sample. Distribute the sample in the sorting tray.
- l. Place the sorting tray on the base of the dissecting microscope. Adjust the magnification so that the field of view is slightly larger than the width of an individual marked grid.
- m. Arrange the light source to provide adequate illumination.
- n. Carefully scan the entire sorting tray using the grids for orientation. Remove the target organism with forceps and place them either into a shell vial containing 70-80% ethanol or into a small dish containing water.
- o. Log the number of organisms removed from the sample in the sorter notebook.
- p. Scan the tray a second time. If target organisms are found on the second pass, repeat a third time. Continue this process until a scan does not produce any additional target organisms.
- q. Once sorted, pour the sorted sample into the 'sorted' funnel and rinse with a small amount of water. Take a second aliquot from the 'unsorted' funnel as described above. Repeat the above steps until the entire sample has been sorted.
- r. When the sorting has been completed, the sorted organisms should be placed into a shell vial containing ethanol. Place cotton into the top end of the vial to keep the organisms inside. Place the vial into a labeled jar containing ethanol.
- s. Add enough ethanol to at least cover the shell vials and label each jar lid with a colored dot label. (The jar lid color coding system is posted in the lab.) Prepare a waterproof inner label for the jar containing the shell vial. Both labels should contain the following information:
  1. Serial number
  2. Date the sample was collected

3. Station, cycle and sample number
  4. Collection start time
  5. Jar number (if more than one jar)
  6. Sorter's initials
  7. Number of organisms in shell vial
- t. The total number of sorted organisms and the total time required to process the sample is recorded in the sorter's notebook.
  - u. Put the sorted sample back into the original sample jar containing the ethanol. Rinse any remaining sample from the funnel into the jar using a squirt bottle containing ethanol. Make sure the inner waterproof label is in the sample jar. Thoroughly clean the funnels of all the remaining sample.
  - v. For samples that do not contain any larval fish, an empty jar is labeled with the above information with zero (0) organisms indicated, and placed in the appropriate storage location.
  - w. If a sample must be stored before completion:
    1. Put the sorted portion of the sample back into the original sample jar. Rinse any remaining material from the funnel into the jar using a squirt bottle containing ethanol. Make sure that the sample is adequately covered with ethanol.
    2. Put the unsorted sample into a second jar. Rinse any sample from the 'unsorted' funnel into the jar using a squirt bottle containing ethanol. Using a dot label, label the jar lid with the sample identification information, sorter's initials, and the word "unsorted". Make an additional inner label with the sample identification information and marked 'unsorted'. Place the label inside the jar with the 'unsorted' sample. Make certain that the 'unsorted' sample is adequately covered with ethanol.
    3. The sorted and unsorted portion of the sample should be stored in a flammable materials storage cabinet until sorting can continue.
- 3.1.2 Once the sample is completed, place an appropriately colored dot label on the jar top with the sorter's initials and date of sorting. Return the jar to the box from which it was originally removed.
- a. Transcribe the information recorded in the sorter's notebook to the Laboratory Sample Tracking Sheet (*Attachment 5.2*), and to the Sorter's Log (*Attachment 5.3*).

### 3.2 Sorting Quality Control Program

#### 3.2.1 QC Sorting Criteria

- a. The first ten samples that are sorted by an individual are completely resorted by a designated QC sorter. A sorter is allowed to miss one target organism when the original sorted count is 1–19. For original counts above 20 a sorter must maintain a sorting accuracy of 90%.
- b. After the sorter has passed 10 consecutive sorts, the program is switched to a '1 sample in 10' QC program for that sorter. After the sorter has completed another 10 samples, one sample is randomly selected by the designated QC sorter for a QC resort.

- c. If the sorter maintains the 90% accuracy sorting rate for this sample, then the sorter continues in the '1 sample in 10' QC mode.
- d. If a sample does not meet the 90% accuracy rate their subsequent samples will be resorted until 10 consecutive samples meet the criteria.

#### 3.2.2 QC Resorting

- a. Sorting procedures used during the QC resort are the same as the sorting procedures described in Section 3.1.
- b. All fish and selected invertebrate larvae that were missed by the sorter are removed during the QC resort.
- c. For the QC process, a larval fish is defined as having a head plus at least 50% of the body. Any parts without a head and/or less than 50% of the body will be considered a fragments and will not be counted against the original sorter as a missed fish. However, it is important for each sorter to remove all fish and fragments from each sample that is sorted and correctly record them as # fish / # fragments in the sorter's notebook and on the tracking sheet.
- d. Any vials of fish larvae or selected invertebrate larvae generated from the resort are labeled with an orange dot label, and labeled as described in the sorting procedures with the addition of "QC" added to the label.
- e. An orange dot label should also be placed on the top of the jar of the sample that was resorted and labeled with the QC person's initials, survey number, sample number, and date the resort was completed.
- f. The vials are stored in the appropriate location.

#### 3.3 Waste Disposal

- 3.3.1 No formaldehyde or water contaminated with formaldehyde should be disposed of into the sewage system. Dispose of any water contaminated with this chemical in the designated waste water container to be disposed of at a local hazardous materials waste depository.

#### 4.0 RECORDS

- 4.1 All data sheets are later reviewed, initialed, and coded by the Task Leader or his designate, and submitted to the Data Coordinator for logging, computer entry, and storage.
- 4.2 Original data sheets are permanently stored.

#### 5.0 ATTACHMENTS

- 5.1 Equipment List
- 5.2 Laboratory Sample Tracking Sheet
- 5.3 Sorter's Log Book Sheet

**Attachment 5.1.** Equipment List.

1. Tray or dish
2. Bowls
3. Sample jars
4. Two canning funnels with attached plankton mesh netting, labeled with mesh size, and labeled 'sorted' and 'unsorted'
5. Squeeze bottle containing 100 percent ethanol (denatured)
6. Squeeze bottle containing fresh water
7. Sorting tray or petri dish marked with a sorting grid
8. Dissecting microscope with light source
9. Dissecting microscope with camera attachment connected to computer equipped with Optimas 6.2
10. Glass shell vials and cotton
11. Jar/vials with lids
12. Forceps
13. Waterproof labels
14. Dot labels
15. Sorter's notebook
16. Plankton splitter
17. Micrometer





Attachment 5.3. Sorter's Log Book Sheet

**Sorters Log:**

Name: \_\_\_\_\_

Serial Number	Sample Identification					Sort Information			Quality control Checks				
	Collection Date	Station	Cycle	Sample	Start Time	Date Sorted	Sort Time	By	Date QC'ed	Resort Time	Count Sort/Resort	Count Sort/Resort	Pass / Fail

## APPENDIX B3: PROCEDURES FOR THE IDENTIFICATION OF LARVAL FISHES and TARGET INVERTEBRATES

### 1.0 PURPOSE

The purpose of these procedures is to define the steps for identifying planktonic organisms, and to describe the Quality Control (QC) Program used to monitor the accuracy of each individual's identification performance.

### 2.0 RESPONSIBILITIES

- The Lead Taxonomist is responsible for assuring that plankton identifications are performed in accordance with written procedures and for implementing the Quality Control Program.
- Investigating biologists are responsible for plankton identifications and for monitoring accuracy in accordance with written procedures.

### 3.0 INSTRUCTIONS

#### 3.1 Identification procedures for larval fishes and target invertebrate larvae.

- a. Ensure that the proper equipment necessary for the identification of target organisms is available (*Attachment 5.1*).
- b. The fish and target invertebrates from each sample are kept in separate containers and processed following this procedure in essentially the same manner.
- c. Sign out the sample to be identified by placing your initials in the "ID'er" column on the Laboratory Sample Tracking Sheet (*Attachment 5.2*).
- d. The container of target organisms to be identified is carefully emptied into a dish. The dish is placed on the microscope stage and the lighting adjusted to provide adequate illumination.
- e. Each target organism is identified to the lowest taxonomic classification possible. The total number of each taxon is recorded on the Entrainment /Source Water Plankton Tow Lab Data Sheet (*Attachment 5.3*).
- f. All individuals of each identified taxon of larvae from a sample should be put into a shell vial containing 100% ethanol. Each vial should contain a label with the taxon name and sample number. Cotton should be pushed into the upper end of the vial to keep the label and organisms enclosed.
- g. Mutilated larvae (partial organisms that are missing body parts and are unable to be identified) are placed in a separate labeled vial. Whole larvae that are unidentified, are placed in a separate labeled vial.
- h. All vials containing target organisms from an individual sample should be put into a labeled jar containing enough ethanol to cover the vials. The jar should contain both an inside label and a label attached to the outside of the lid denoting the sample number, date and time collected, and identifier's initials. Tighten the jar lid to prevent evaporation of the preservative. Samples with many different fish taxa may require more than one labeled jar.
- i. On the Laboratory Sample Tracking Sheet, record the identifier's initials and date sample was logged in. The identifier's log will contain the total number of larvae identified and the date identified. If more than one day was needed

to complete the identification, record the date the sample identification was completed.

- j. Place the jar into the appropriate box containing identified samples.
- k. Dispose of any liquids containing ethanol into the appropriate waste container.

### 3.2 Identification Quality Control (QC) Program

#### 3.2.1 Fishes

- a. The first ten samples of larval fishes that are identified by an individual identifying biologist will be completely re-identified by a designated identification QC biologist. A total of at least 50 individuals from at least 5 taxa (50/5 criteria) must be present in these first ten samples. If the first 10 consecutive samples do not pass the 50/5 criteria, additional samples must be re-identified until this criteria is met.
- b. The identifying biologist must maintain a 95% identification accuracy level in these first 10 samples. For all samples, if a sample contains between 1–19 larvae, one larvae can be misidentified and the sample will not fail the QC check.
- c. If the identifying biologist identifies a larval fish to a certain family or genus and subsequently the identification QC biologist is able to refine the identification to a lower taxonomic level, this will not be considered a misidentification pertaining to the 95% identification accuracy level. A misidentification will be one in which the identifying biologist identifies the fish as belonging to a certain family, genus or species, and then the identification QC biologist determines that the initial identification was incorrect and changes the identification to a different family, genus or species or changes it to a higher taxonomic group.
- d. After the identifying biologist has passed 10 consecutive samples, the program is switched to a “1 sample in 10” QC program. After the identifying biologist has completed another 10 samples, one sample is randomly selected by the designated identification QC biologist for a QC review.
- e. If this sample maintains the 95% accuracy level as determined by the identification QC biologist, then the identifying biologist continues in the “1 sample in 10” QC mode. If a sample does not meet the 95% accuracy level, their subsequent samples will be re-identified until 10 consecutive samples meet this level of accuracy.
- f. Any misidentified fish found by the identification QC biologist, will be placed into the appropriate labeled vial for that sample. This information will be recorded on the Fish Identification Data Sheet.

#### 3.2.2 Invertebrate Larvae

- a. The first ten samples identified by an individual identifying biologist will be completely re-identified by a designated identification QC biologist.
- b. The identifying biologist must maintain a 95% accuracy level in these first 10 samples. For all samples, if a sample contains between 1-19 larvae, one larvae can be misidentified and the sample will not fail the QC check.
- c. After the identifying biologist has passed 10 consecutive samples, the program is switched to a “1 sample in 10” QC program. After the identifying biologist has completed another 10 samples, one sample is randomly selected by the designated identification QC biologist for a QC review.

- d. If this sample maintains the 95% accuracy level as determined by the identification QC biologist, then the identifying biologist continues in the “1 sample in 10” QC mode.
- e. If an identifier’s sample does not meet the 95% accuracy level, their subsequent samples will be re-identified until 10 consecutive samples meet this level.
- f. Any misidentified larva found by the identification QC biologist, will be placed into the appropriate labeled vial for that sample and recorded on the appropriate laboratory identification data sheet.

### 3.3 Larval Fish Measuring

#### 3.3.1 Larval Fish Measuring Procedure

- a. Turn on the computer, camera, and light source at the measuring station.
- b. Consult posted notices near the measuring station to determine measuring priorities and retrieve the binder containing the appropriate data sheets.
- c. Locate the box containing the fish to be measured and place it in a easily accessible area close to the measuring station.
- d. Open the Optimas Image Analysis software by clicking with the mouse on the Optimas icon.
- e. Open the Larval Fish Measuring macro in Optimas, and follow the macro’s directions.
- f. Select the jar of fish to be measured and consult the jar label. Compare data on the jar label with the inner label and the data sheet for this sample. Consult an identifier regarding discrepancies between labels.
- g. Enter the data queried for by the macro including the last five digits of the serial number, the measurer’s initials, the data sheet sequence number and the species code.
- h. Open the jar and remove the vials for the target taxa to be measured as per the posted list. Place the vials in a rack designed to allow the vials to maintain an upright posture so as to reduce spillage.
- i. Select the first vial to be measured. Remove the cotton and the label. Compare the label with the data sheet for confirmation.
- j. Empty the vial into a shallow dish. Remove any fish that have adhered to the vial, cotton, the label, or any tools used in the transferring process and place the fish in the dish. Add alcohol to the dish if necessary to prevent desiccation.
- k. If the number of larval fish in the vial exceeds fifty or what can be reasonably measured on a single image capture, transfer some of the fish to another glass dish and immerse them in alcohol.
- l. Place the dish on the stage of the microscope. Arrange the fish so that all fish appear on the screen. Adjust the zoom, focus, and lighting for the best possible image. If this is the first group of larval fish being measured, or if the magnification has been changed, it is necessary to re-calibrate. Place the micrometer on the stage of the microscope and re-calibrate by drawing a line from one of the micrometers millimeter marks to another, noting the distance between the two marks, and entering that value when queried. Replace the dish containing the larval fish to be measured.

- m. Measure larval fish by drawing a line from the pre-maxillary to the end of the notochord, being careful to follow the contours of the fish. If the fish is too damaged to find either the pre-maxillary or to estimate the path taken by the notochord, do not measure, and proceed to the next larval fish. If the line does not adequately approximate the larval fish's length it must be re-measured.
- n. Note the program's display of the measurement, check that it seems reasonable. If it does not seem reasonable, it may be necessary to re-calibrate and re-measure. If the problem persists, contact an identifier. Make note of any problems in measuring and post near the measuring station.
- o. The macro will store the measurement in at least two separate data files along with the necessary sample information.
- p. Repeat the above steps for all fish in the dish.
- q. When all larval fish in the dish have been measured, fill the vial that originally contained the fish with alcohol and transfer the measured fish to the vial.
- r. If the larval fish from this vial have been segregated into two or more groups, place another group into the dish, being careful to submerge them in alcohol, and measure as above. Do not measure more than fifty larval fish of any one taxon from each sample.

#### 4.0 RECORDS

- 4.1 All data sheets are later reviewed, initialed, and coded by the Task Leader or his designate, and submitted to the Data Coordinator for logging, computer entry, and storage.
- 4.2 Original data sheets are permanently stored.

#### 5.0 ATTACHMENTS

- 5.1 Equipment List
- 5.2 Laboratory Sample Tracking Sheet
- 5.3 Entrainment Abundance/ Source Water Plankton Tow Lab Data Sheet
- 5.4 Larval Fish Length Data Sheet (not needed for measurements completed with a computer-based measuring system.)

**Attachment 5.1. Equipment List**

1. Dissecting microscope with light source and calibrated ocular micrometer
2. Sorting tray or petri dish
3. Squeeze bottle containing 100% ethanol (denatured)
4. Glass shell vials
5. Holder for shell vials
6. Jar containing target organisms to be identified
7. Cotton
8. Forceps
9. Waterproof labels
10. Dot labels
11. Data sheets
12. Identifier's log sheet
13. Taxonomic references

Attachment 5.2. Laboratory Sample Tracking Sheet

SGS 316(b) Entrainment / Source Water / Plankton Tow      Serial Number \_\_\_\_\_  
 Lab Sample Tracking Sheet

Sample Information						Invertebrate Sort Information										Fish Sort Information													
Collection Date	Station	Cycle	Sample	Start Time	% Detrit	Sorter	Date Sorted	Time (hrs)	# Invt.	# Jars	QC Sorter	Date QC'd	# Invt.	ID'er	Date ID'd	QC ID'er	Date QC ID	Sorter	Date Sorted	Time (hrs)	# Invt.	# Jars	QC Sorter	Date QC'd	# Invt.	ID'er	Date ID'd	QC ID'er	Date QC ID

**Attachment 5.3.** Entrainment /Source Water Plankton Tow Lab Data Sheet

SGS 316(b) Entrainment / Source Water Plankton Tow Sequence \_\_\_\_\_  
 Lab Data Sheet,

Serial No. \_\_\_\_\_ Collection Date \_\_\_\_\_ Station \_\_\_\_\_ Tow / Cycle # \_\_\_\_\_  
 Sample \_\_\_\_\_ Start Time \_\_\_\_\_ Sort Type \_\_\_\_\_

Species Code	Species	Count	QC Resort Additional Count	Total Count	Notes / Comments
Total					

Notes: \_\_\_\_\_

Identification By / Date: \_\_\_\_\_  
 QC Resort ID By / Date: \_\_\_\_\_  
 Entered By / Date: \_\_\_\_\_

Identification QC By / Date: \_\_\_\_\_  
 Reviewed By / Date: \_\_\_\_\_  
 Copied By / Date: \_\_\_\_\_



Attachment 5.4. Larval Fish Length Data Sheet

SGS 316(b) Demonstration Larval Fish Lengths, Form # \_\_\_\_\_

Sequence # \_\_\_\_\_

Serial # \_\_\_\_\_

Sample \_\_\_\_\_

Microscope \_\_\_\_\_

Page \_\_\_\_\_ of \_\_\_\_\_

Species	Species Code	Mag.	Ocular Unit																

Measurements By / Date: \_\_\_\_\_ Entered By / Date: \_\_\_\_\_ Verified By / Date: \_\_\_\_\_ Copied By / Date: \_\_\_\_\_

**APPENDIX B4: IMPINGEMENT PROCEDURES**

1.0 PURPOSE

The purpose of this document is to identify the procedures and equipment necessary to accurately collect and process impingement samples at the Scattergood Generating Station (SGS).

2.0 RESPONSIBILITIES

2.1 Task/Field leader:

- Contact plant to obtain clearance for personnel that will be conducting the sampling.
- Verify that all investigating biologists conducting the sampling have read and understand these procedures.
- Verify that procedures have been followed during sample collection and that the sampling has been conducted safely.

2.2 Investigating biologist:

- Conduct sampling using the following procedures.

3.0 SGS CONTACT INFORMATION

<b>Name</b>	<b>Cell/Outside Line</b>	<b>E-mail Information</b>
Gary Laney	(310) 524-8506	Gary.Laney@ladwp.com
John Abdelmalak	(310) 524-8503	John.Abelmalak@ladwp.com
Shift Supervisor	(310) 524-8501	
Control Room	(310) 524-8510	On-site # 48510
On-Site Emergency Number	(310) 524-8300	On-site # 48300

4.0 PROCEDURES

Impingement sampling will only be undertaken when there is water passing through the traveling screens for Unit 1,2 or 3. If only one pump is in operation, proceed with sample collection using the following procedures. Each normal operation impingement survey consists of an initial cleaning period followed by four 6-hr sampling cycles. Table B4-1 presents the target schedule for each survey.

4.1 Mobilization

- a. Notify plant personnel of the dates, times, and names of the biologists that will be onsite during each survey. All personnel will require a photo identification (driver’s license, passport, etc.) to obtain access to the plant site.
- b. The equipment listed in Table B4-2 is required for sampling and should be checked before leaving for the plant. Verify that any scales used for the sampling have been calibrated within the previous three months.

4.2 Traveling Screen Sample Collection

- a. Material impinged at Units 1-2 and Unit 3 is rinsed from the traveling screens (TS) into metal collection baskets placed in one of two sumps (Figures B4-1 and B4-2). The bar rack area does not require daily cleaning, thus no collections will be conducted from this area.

- b. Make sure that the collection basket has been emptied prior to the survey. If there is any debris in it, contact an operator to have them remove the basket using a crane so that it can be emptied.
- c. The initial screenwash is for cleaning purposes only; do not process any materials from the sump after the cleaning rinse. The time at the end of the initial TS rinse is the beginning of Cycle 1. Record this on the appropriate datasheet.
- d. The mesh in the collection basket has a larger mesh than the mesh of the TS. Secure a mesh net/vexar basket (with mesh of the same size or smaller than the TS mesh) inside of the metal basket so that impinged materials can easily be removed. If the debris load is too heavy for the mesh net/vexar basket or it is damaged and materials accumulate in the metal basket, make sure an operator is available to use a crane to pull the metal basket out for sample collection.
- e. Have plant personnel activate the TS wash system thirty (30) minutes prior to the end of each cycle so that all impinged material is rinsed from the screens into the collection basket.
- f. Remove all impinged fish and invertebrates from the impinged debris.
- g. Replace the mesh net/vexar basket in the rectangular sump before initiation of the screenwash for the next cycle.
- h. All collected impinged material will be processed using the procedures in following section.

4.3 Sample Processing

- a. Remove all fishes and invertebrates from the impinged debris. Record the volume of the debris (gallons) on the datasheet. Also record the composition and percentage of the debris.
- b. All fishes, crabs, shrimps and prawns, and cephalopod mollusks are identified, counted, measured (see measurement criteria below), and weighed. This information is recorded on the appropriate datasheet. All other invertebrates are identified and recorded as present by entering a “P” in the count box.

Organism Group	Length Measuring Criteria
Fishes	Total body length for sharks, disc width for skates and rays and standard lengths for bony fishes
Crabs	Maximum carapace width
Spiny lobster and Shrimps	Carapace length, measured from the anterior margin of carapace between the eyes to the posterior margin of the carapace
Octopus	Maximum “arm” spread, measured from the tip of one tentacle to the tip of the opposite tentacle
Squid	Dorsal mantle length, measured from the edge of the mantle to the posterior end of the body

- c. Record all organism names on the appropriate datasheet, using their scientific names whenever possible. The taxa codes are recorded after the datasheets are returned to the office.
- d. Make certain of all identifications before recording the name on the datasheets. If an organism cannot be positively identified it should be saved. The voucher specimen should be placed in a plastic bag with a waterproof label indicating the location, cycle, date, time, and the initials of the collector. If personnel on the next cycle can positively identify the organism record the organism’s name on the datasheet. If positive identification cannot be made the organism is returned to the laboratory for identification.

- e. If a large number (more than 30) of any individual countable species is collected during a cycle, individually measure and weigh 30 randomly selected individuals of this species and then count and measure the remaining individuals and record this information on a separate line on the datasheet. For example: if 198 anchovies were collected, randomly select 30 individuals and record on the first row Engraulidae, count = 1, Length = standard length (the distance from the tip of the snout to the posterior vertical margin of the hypural plate) to the nearest mm, weight = weight to nearest gram, sex = “-“ (if the sex cannot be determined without dissection, record a “-“), and condition = alive (A), dead (D), or mutilated (M). Continue this procedure for the other 29 randomly chosen anchovies. Then individually measure, but batch weigh, the remaining individuals (up to 200). In instances where more than 200 individuals of any species are impinged during one cycle, record a batch weight for the rest of the individuals of that species. If all of the individuals are alive, put an “A” in the Cond. box. If some are dead and some mutilated, use additional rows to fill in the appropriate information in the corresponding row(s).

	1 to 30 individuals	31 to 200 individuals	>200 individuals
<b>Length</b>	Measure each individual	Measure each individual	Measure up to 200 individuals
<b>Weight</b>	Weigh each individual	Weigh 30 individually, then batch weigh up to 200	Weigh 30 individually, then batch weigh up to 200, then batch weigh the remaining

- f. Determine the sex of the countable organisms to the extent possible without dissection. Assign the letter M to refer to males, F for females, J for juveniles, G for gravid. Put a “-“ if the sex cannot be determined without dissection.
- g. Record the condition of each countable organisms: A for alive; D for dead; M for mutilated. If an individual is mutilated, do not measure the length. If there are more than 30 non-mutilated individuals, the mutilated individual(s) can be weighed with the batch weight of the additional individuals. If there are less than 30 non-mutilated individuals, record the weight of the mutilated individual(s) but not their lengths.
- h. Record any anomalies or other notes (encountered in each cycle) in the notes section on the datasheet.
- i. At the end of each cycle verify that: a) the sampling procedures have been followed correctly, b) the data has been recorded correctly and legibly, and then c) sign and date the “Reviewed by/Date” section at the bottom of the datasheet.
- j. Put all dead animals and discarded debris in trash dumpsters. Make sure to double bag the material as collection of the trash may not occur for several days.
- k. Quality control (QC) checks will be performed on at least a quarterly basis to verify all organisms are being removed from the debris and that the correct identification, enumeration, length and weight measurements of the organisms are being recorded on the datasheet. The QC team will randomly choose the actual impingement cycles that will be checked and will resort the debris for any missed organisms. All organisms will then be identified, remeasured and reweighed by the QC team to ensure that the data is being recorded correctly. If a sampling team fails a QC check, they will be retrained on fish identification and sample collection. QC checks will be performed on the sampling team until they pass the QC requirements. The QC checks will be fully documented and reported to the Project Manager.

#### 4.4 General

- a. All information recorded on the datasheets must be written legibly with a pencil.
- b. Keep information separate for each cycle
- c. The survey number will be determined based on the week corresponding to that survey (eg., week 1 = survey 1). Make sure the correct survey number is recorded.
- d. Make certain that the unit #s and cycle numbers are correct on the datasheet you are using. Record the date and time for the start and end of each screen wash (generally 15 to 20 minutes) and cycle duration times (generally 6 hours). Each 24-hr survey is divided into 4 six-hour cycles.
- e. Record the names of all personnel present during each cycle.
- f. Use military time (0000 – 2400) to record every cycle collected. Record all times as local time (Pacific Standard Time or Pacific Daylight Time).
- g. During each screen wash, verify that the screens are operating properly (the screens should be moving and the water should be spraying). Check with the operator to find out how many circulating water pumps are operating.
- h. If a survey cannot be completed or is cancelled, make a note on the appropriate data sheet explaining the reason for the cancellation. Write the survey number that corresponds to that week, date and sign the datasheet.
- i. At the end of each screen wash, record the relevant meteorological data.
- j. If the traveling screens trip before the 6-hour cycle is over, collect all material and process it as part of the upcoming cycle. If possible, have the screen wash system run at the scheduled times.

#### 4.5 Heat Treatments

During heat treatments follow the same procedures as during normal impingement sampling. Use a separate data sheet for each species collected. A single data sheet can be used for several species if low numbers of these species are collected.

If an extremely large amount of material is collected in the sump basket, sub-sampling of the most abundant fishes/shellfishes should occur to minimize the time taken to process the sample. Sub-sampling procedures are as follows:

- a. Remove the less abundant fishes/shellfishes from the impinged material; and record as individuals on the datasheets.
- b. Collect a sub-sample (for example, two 3-gallon sub-samples) from the pile of impinged material. Make sure to randomly sample the pile by collecting organisms from different areas of the pile. Discard the remaining material and record the volume discarded on the data sheets.
- c. The number and weight of the organisms collected from each sub-sample should not be recorded with the other data. Record the sub-sample data on a separate datasheet. Make certain that record of the organisms from the sub-samples can be linked back to the quantity of material discarded and not sampled.

**Table B4-1.** Target schedule for 24-hour impingement sampling effort (schedule assumes that at least one circulating water pump is in operation). Based on 30 minutes for complete rotation of travel screens at each unit.

Time	Units 1/2	Unit 3
6:00	Rinse and Clean	
6:30	Start Cycle 1	Rinse and Clean
7:00		Start Cycle 1
7:30		
8:00		
8:30		
9:00		
9:30		
10:00		
10:30		
11:00		
11:30		
12:00	Rinse Cycle 1	
12:30	Start Cycle 2	Rinse Cycle 1
13:00	Process Cycle 1	Start Cycle 2
13:30		Process Cycle 1
14:00		
14:30		
15:00		
15:30		
16:00		
16:30		
17:00		
17:30		
18:00	Rinse Cycle 2	
18:30	Start Cycle 3	Rinse Cycle 2
19:00	Process Cycle 2	Start Cycle 3
19:30		Process Cycle 2
20:00		
20:30		
21:00		
21:30		
22:00		
22:30		
23:00		
23:30		
0:00	Rinse Cycle 3	
0:30	Start Cycle 4	Rinse Cycle 3
1:00	Process Cycle 3	Start Cycle 4
1:30		Process Cycle 3
2:00		
2:30		
3:00		
3:30		
4:00		
4:30		
5:00		
5:30		
6:00	Rinse Cycle 4	
6:30	Process Cycle 4	Rinse Cycle 4
7:00		Process Cycle 4
7:30		

Note: Schedule is separated into 30-minute increments to show activities associated with each cleaning and collection cycle at the two sets of traveling screens.

**Table B4-2.** Equipment List.

1. Datasheets printed on waterproof paper
2. Pencils
3. Scales (Electronic and spring)
4. Measuring boards
5. Fish and invertebrate identification keys
6. Buckets and plastic totes
7. Floodlights and extension cords
8. Calipers
9. Calculator
10. Hardhats
11. Safety Glasses
12. Rubber/latex gloves
13. Clipboard



**Figure B4-1.** Collection sump next to traveling screens, SGS Units 1-2



**Figure B4-2.** Collection basket at SGS Unit 3.



*Scattergood Generating Station*

## **Appendix C**

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### **Model Parameterization**

- C1. Estimating Total Entrainment
- C2. Estimating Proportional Entrainment  
and the ETM Calculations
- C3. Demographic Model Calculations

## Appendix C1 Estimating Total Entrainment

The following section describes calculations used for assessing entrainment effects at the Scattergood Generating Station (SGS). The equations are presented in a general form that is applicable to sample designs that may have differing numbers of stations, sampling periods, or replicates. The SGS entrainment study will sample only one station. While the summation signs over stations are presented in the equations they will be summing over an n of one in the actual calculations and therefore will drop out of the formulas.

A general form can be written for summing entrainment over stations at an intake or entrainment site using cycles within a day and days within time periods. Let

- $i = \text{period } (i = 1, \dots, N);$
- $j = \text{day within period } (j = 1, \dots, N_i);$
- $k = \text{cycle within day } (k = 1, \dots, N_{ij});$
- $l = \text{station } (l = 1, \dots, N_{ijk});$
- $m = \text{volume at station within cycle } (m = 1, \dots, N_{ijkl}).$

The total larval entrainment at an intake source can be expressed as

$$E_T = \sum_{i=1}^N \sum_{j=1}^{N_i} \sum_{k=1}^{N_{ij}} \sum_{l=1}^{N_{ijk}} \rho_{ijkl} V_{ijkl} \tag{A1}$$

where

$\rho_{ijkl}$  = density of larvae at the  $l$ th station within the  $k$ th cycle on the  $j$ th day in the  $i$ th time period;

$V_{ijkl}$  = volume of water passing the at the  $l$ th station within the  $k$ th cycle on the  $j$ th day in the  $i$ th time period.

This summation assumes that stations represent the total intake volume of the power plant. It also assumes that the larval density in the volume of water passing a station is constant over time and space over any cycle. An estimate of the total larval entrainment can be made by taking  $n_{ijkl}$  samples of the  $N_{ijkl}$  volumes passing a station as

$$\hat{E}_T = \sum_{i=1}^N \sum_{j=1}^{N_i} \sum_{k=1}^{N_{ij}} \sum_{l=1}^{N_{ijk}} \frac{V_{ijkl}}{n_{ijkl}} \sum_{m=1}^{n_{ijkl}} \rho_{ijklm} \quad (\text{A2})$$

If we also assume that entrainment volume is constant and the same at all stations then

$$\hat{E}_T = \sum_{i=1}^N V_{ijkl} \sum_{j=1}^{N_i} \sum_{k=1}^{N_{ij}} \sum_{l=1}^{N_{ijk}} \frac{1}{n_{ijkl}} \sum_{m=1}^{n_{ijkl}} \rho_{ijklm} \quad (\text{A3})$$

Strata will be defined as the stations and cycles with constant  $N_{ij}$  and  $N_{ijk}$ . In addition, we sample  $n_i$  days of the  $N_i$  possible during a period so that

$$\begin{aligned} \hat{E}_T &= \sum_{i=1}^N N_i N_{ij} N_{ijk} V_{ijkl} \frac{1}{n_i} \sum_{j=1}^{n_i} \sum_{k=1}^{N_{ij}} \sum_{l=1}^{N_{ijk}} \left( \frac{1}{N_{ij} N_{ijk} n_{ijkl}} \right) \sum_{m=1}^{n_{ijkl}} \rho_{ijklm} \\ &= \sum_{i=1}^N V_i \frac{1}{n_i} \sum_{j=1}^{n_i} \sum_{k=1}^{N_{ij}} \sum_{l=1}^{N_{ijk}} \left( \frac{1}{N_{ij} N_{ijk} n_{ijkl}} \right) \sum_{m=1}^{n_{ijkl}} \rho_{ijklm} \end{aligned} \quad (\text{A4})$$

where

$$V_i = \sum_{j=1}^{N_i} \sum_{l=1}^{N_{ij}} \sum_{k=1}^{N_{ijk}} V_{ijkl}$$

If only one day per period is sampled Equation A4 can be expressed as

$$\begin{aligned} \hat{E}_T &= \sum_{i=1}^N V_i \sum_{k=1}^{N_{ij}} \sum_{l=1}^{N_{ijk}} \left( \frac{1}{N_{ij} N_{ijk} n_{ijkl}} \right) \sum_{m=1}^{n_{ijkl}} \rho_{ijklm} \\ &= \sum_{i=1}^N V_i \sum_{k=1}^{N_{ij}} \sum_{l=1}^{N_{ijk}} \left( \frac{1}{N_{ij} N_{ijk}} \right) \hat{\rho}_{ijkl} \end{aligned} \quad (\text{A5})$$

with estimated variance

$$\widehat{Var}(\hat{E}_T) = \sum_{i=1}^N V_i^2 \sum_{k=1}^{N_{ij}} \sum_{l=1}^{N_{ijk}} \left( \frac{1}{N_{ij} N_{ijk}} \right)^2 \left( 1 - \frac{n_{ijkl}}{N_{ijkl}} \right) \frac{\widehat{Var}(\rho_{ijkl})}{n_{ijkl}} \quad (\text{A6})$$

where

$$\widehat{Var}(\rho_{ijkl}) = \frac{\sum_{m=1}^{n_{ijkl}} (\rho_{ijklm} - \widehat{\rho}_{ijkl})^2}{(n_{ijkl} - 1)};$$

$$\widehat{\rho}_{ijkl} = \frac{\sum_{m=1}^{n_{ijkl}} \rho_{ijklm}}{n_{ijkl}}.$$

Estimates of  $E_T$  based on Equation A5 will be used in *FH* and *AEL* calculations to estimate annual effects of entrainment on fishes and invertebrates. Equation A6 will underestimate the true variance because it does not include within-period variance. In practice, we ignore the finite population correction,  $\left(1 - \frac{n_{ijkl}}{N_{ijkl}}\right)$  because  $N_{ijkl}$  is large. Estimators similar to Equation A5 and Equation A6 are used for calculating survey period estimates of intake and source populations for use in ETM calculations.

## Appendix C2

### Estimating Proportional Entrainment and the *ETM* Calculations

The empirical transport model (*ETM*) is used to estimate the total mortality probability for larvae from power plant entrainment. The estimate is based on periodic estimates of the probability of entrainment mortality based on daily samples. In the following calculations we assume all larvae entrained die. Generally, sampling takes place over the course of a year so that larval mortality of various species is estimated.

The daily probability of entrainment can be defined as

$$PE_i = \frac{\text{abundance of entrained larvae}_i}{\text{abundance of larvae in source population}_i}$$

= probability of entrainment in *i*th time period ( $i = 1, \dots, N$ ).

In turn, the daily probability can be estimated and expressed as

$$PE_i = \frac{\widehat{E}_i}{\widehat{R}_i} \tag{B1}$$

where

$\widehat{E}_i$  = estimated abundance of larvae entrained in the *i*th time period ( $i = 1, \dots, N$ );

$\widehat{R}_i$  = estimated abundance of larvae at risk of entrainment from the source population in the *i*th time period ( $i = 1, \dots, N$ ).

### Estimating Daily Entrainment

The estimate of total Scattergood Generating Station (SGS) entrainment on day *j* in period *i* can be expressed from equation (A4) as

$$\begin{aligned}\widehat{E}_{ij} &= \sum_{k=1}^4 \sum_{l=1}^1 V_{ijkl} \frac{1}{3} \sum_{m=1}^3 \rho_{ijklm} \\ &= V_{ij} \sum_{k=1}^4 \sum_{l=1}^1 \left( \frac{1}{12} \right) \sum_{m=1}^3 \rho_{ijklm}\end{aligned}\quad (\text{B2})$$

with associated variance

$$\text{Var}\left(\widehat{E}_{ij} \mid E_{ij}\right) = V_{ij}^2 \sum_{k=1}^4 \sum_{l=1}^1 \left( \frac{1}{12} \right)^2 \left( 1 - \frac{3}{N_{ijkl}} \right) S_{\rho_{ijkl}}^2 \quad (\text{B3})$$

which can be estimated by

$$\widehat{\text{Var}}\left(\widehat{E}_{ij}\right) = V_{ij}^2 \sum_{k=1}^4 \sum_{l=1}^1 \left( \frac{1}{12} \right)^2 \left( 1 - \frac{3}{N_{ijkl}} \right) s_{\rho_{ijkl}}^2. \quad (\text{B4})$$

The finite population correction [i.e.,  $\left( 1 - \frac{3}{N_{ijkl}} \right)$ ] can be ignored because  $N_{ijkl}$  is exceedingly

large. Only one day is sampled per period. The period estimated entrainment and variance are

$$\widehat{E}_i = V_i \sum_{k=1}^4 \sum_{l=1}^1 \left( \frac{1}{12} \right) \sum_{m=1}^3 \rho_{ijklm} \quad (\text{B5})$$

$$\widehat{\text{Var}}\left(\widehat{E}_i\right) = V_i^2 \sum_{k=1}^4 \sum_{l=1}^1 \left( \frac{1}{12} \right)^2 s_{\rho_{ijkl}}^2. \quad (\text{B6})$$

## Estimating Numbers of Larvae at Risk

With the defined and agreed-upon sources of central San Francisco Bay (S) larvae, the daily abundance of larvae at risk can be estimated by

$$\widehat{R}_{ij} = V_S \cdot \widehat{\rho}_{S_{ij}} \quad (\text{B7})$$

where  $V_S$  denotes daily exchanged and static volumes at central San Francisco Bay (S), and

$\widehat{\rho}$  denotes an estimate of average density in each respective source water bodies. The variance of Expression B7 can be written as

$$\text{Var}\left(\widehat{R}_{ij} \mid R_{ij}\right) = V_S^2 \cdot \text{Var}\left(\widehat{\rho}_{S_{ij}} \mid \bar{\rho}_{S_{ij}}\right) \quad (\text{B8})$$

The individual variances within Formula B8 describe temporal-spatial variance in density within the source population during the day of sampling. Seven source water locations are sampled in central San Francisco Bay. Ideally, tow samples would be collected randomly through time and

space during a sampling day over a potential source population. However, practical limitations due to sampling a large area required a directed and fixed time and location sampling scheme. Our source water estimates of population and variance are made for each period using only one day, i.e.  $\widehat{R}_i = \widehat{R}_{ij}$  and  $\widehat{Var}(\widehat{R}_i) = Var(\widehat{R}_{ij} | R_{ij})$ .

## Period Entrainment and ETM Calculations

By dividing estimated period entrainment (B5) by the corresponding source population (B7) an estimate of entrainment mortality can be written as

$$\widehat{PE}_i = \frac{\widehat{E}_i}{\widehat{R}_i} \quad (B9)$$

### Variance for the Estimate of $PE_i$

The variance for the period estimate of  $\widehat{PE}_i$  can be expressed as

$$Var(\widehat{PE}_i | PE_i) = Var\left(\frac{\widehat{E}_i}{\widehat{R}_{ij}} \middle| E_i, R_i\right).$$

Assuming zero covariance between the entrainment and source and using the delta method (Seber 1982), the variance of an estimator formed from a quotient (like  $\widehat{PE}_i$ ) can be effectively approximated by

$$Var\left(\frac{A}{B}\right) \approx Var(A) \left(\frac{\partial \left[\frac{A}{B}\right]}{\partial A}\right)^2 + Var(B) \left(\frac{\partial \left[\frac{A}{B}\right]}{\partial B}\right)^2.$$

The delta method approximation of  $Var(\widehat{PE}_i)$  is shown as

$$Var(\widehat{PE}_i) = Var\left(\frac{\widehat{E}_i}{V_s \cdot \widehat{\rho}_{S_i}}\right)$$

which by the Delta method can be approximated by

$$\widehat{Var}(\widehat{PE}_i) \approx \widehat{Var}(\widehat{E}_i) \left( \frac{1}{V_s \cdot \widehat{\rho}_{S_i}} \right)^2 + \widehat{Var}(V_s \cdot \widehat{\rho}_{S_i}) \left( \frac{-\widehat{E}_i}{V_s \cdot (\widehat{\rho}_{S_i})^2} \right)^2 \quad (B10)$$

and is equivalent to

$$= PE_i^2 \left[ CV(\widehat{E}_i)^2 + CV(V_s \cdot \widehat{\rho}_{S_i})^2 \right]$$

where

$$\widehat{R}_i = V_s \cdot \widehat{\rho}_{S_{ij}} \quad \text{and}$$

$$CV(\widehat{\theta}|\theta) = \frac{\widehat{Var}(\widehat{\theta}|\theta)}{\widehat{\theta}^2}.$$

Regardless of whether the species has a single spawning period per year or multiple overlapping spawnings the estimate of total larval entrainment mortality can be expressed by

$$\widehat{P}_M = 1 - \sum_{i=1}^N \widehat{f}_i (1 - \widehat{PE}_i)^q \quad (B11)$$

where

$q$  = number of days of larval life, and

$\widehat{f}_i$  = estimated annual fraction of total larvae hatched during the  $i$ th survey period.

Formula (B11) is based on the total probability law where

$$P(A) = \sum_{i=1}^N P(A|B_i) \cdot P(B_i).$$

In the above example, the event A is larval survival and event B is hatching with  $P(B)$

estimated by  $\widehat{f}_i$  where

$$\widehat{f}_i = \frac{\widehat{E}_i}{\widehat{E}_T},$$

where  $\widehat{E}_i$  = estimated entrainment for the  $i$ th survey period. Then based on the Delta method



$$\begin{aligned}
\widehat{Var}(\widehat{f}_i) &= \widehat{Var} \left[ \frac{\widehat{E}_i}{\widehat{E}_T} \right] \\
&= \widehat{Var} \left[ \frac{\widehat{E}_i}{\widehat{E}_i + \sum_{j \neq i}^N \widehat{E}_j} \right] \\
&= \widehat{f}_i^2 (1 - \widehat{f}_i)^2 \left[ \frac{\widehat{Var}(\widehat{E}_i)}{\widehat{E}_i^2} + \frac{\widehat{Var}(\widehat{E}_T)}{\widehat{E}_T^2} \right].
\end{aligned}$$

The estimates of  $PE_i$  and  $f_i$  and their respective variance estimates can be combined in an estimate of the variance for  $\widehat{P}_M$  following the Delta method (Seber 1982) for variance and covariance as follows:

$$\begin{aligned}
\widehat{Var}(\widehat{P}_M) &= \widehat{Var} \left( 1 - \sum_{i=1}^N \widehat{f}_i (1 - \widehat{PE}_i)^q \right) \\
&= \widehat{Var} \left( \sum_{i=1}^N \widehat{f}_i (1 - \widehat{PE}_i)^q \right) \\
&= \sum_{i=1}^N \left[ \widehat{Var}(\widehat{f}_i) (1 - \widehat{PE}_i)^{2q} \right] \\
&\quad + \sum_{i=1}^N \left[ \widehat{Var}(\widehat{PE}_i) (\widehat{f}_i q (1 - \widehat{PE}_i)^{q-1})^2 \right] \\
&\quad + 2 \sum_{i=1}^N \sum_{j>i}^N \text{cov}(\widehat{f}_i, \widehat{f}_j) (1 - \widehat{PE}_j)^q (1 - \widehat{PE}_i)^q \quad \text{where} \\
\text{cov}(\widehat{f}_i, \widehat{f}_j) &= \left( \frac{1}{\widehat{E}_T} \right)^2 \left[ \widehat{f}_i \widehat{f}_j \widehat{Var} \left( \sum_{g \neq i, j}^N \widehat{E}_g \right) + \widehat{f}_i (1 - \widehat{f}_j) \widehat{E}_i + \widehat{f}_j (1 - \widehat{f}_i) \widehat{E}_j \right].
\end{aligned}$$

## Appendix C3 Demographic Model Calculations

### Fecundity Hindcasting (FH)

The estimated total larval entrainment for a species ( $\widehat{E}_T$ ) was used to estimate the number of breeding females needed to produce the number of larvae entrained. The estimated number of breeding females ( $\widehat{FH}$ ) whose fecundity was equal to the estimated total loss of entrained larvae is calculated as follows:

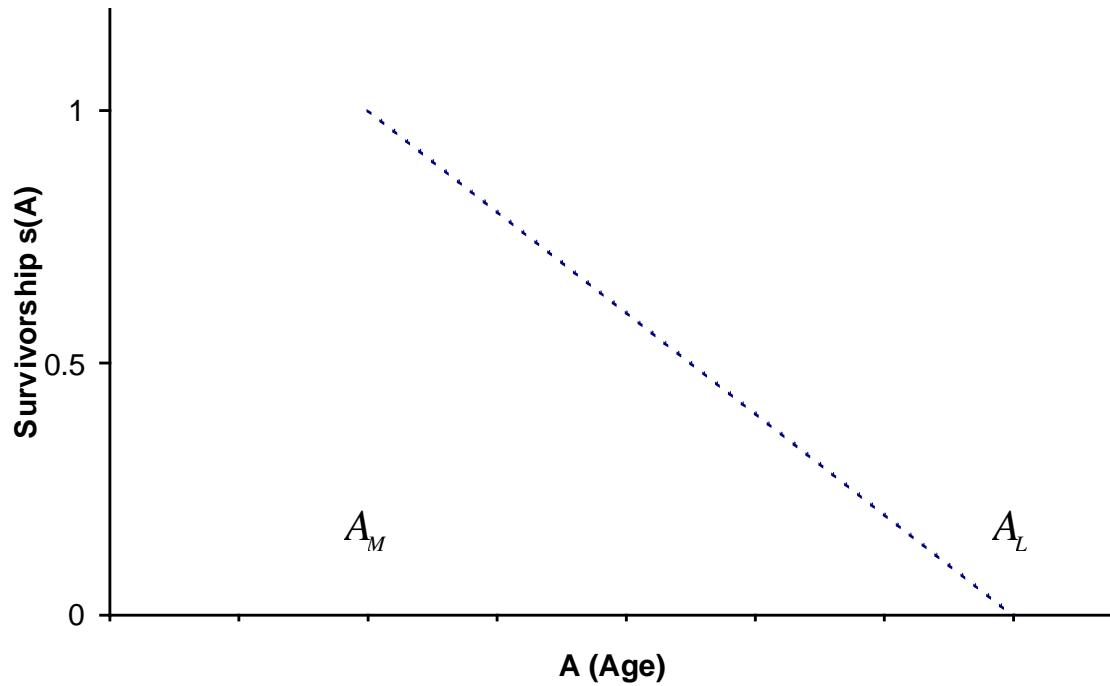
$$\widehat{FH} = \frac{\widehat{E}_T}{\widehat{TLF} \cdot \prod_{i=1}^n S_i} \quad (C1)$$

where

- $n$  = number of larval stages vulnerable to entrainment,
- $\widehat{E}_T$  = estimated total entrainment,
- $S_i$  = survival rate from eggs to larvae of the  $i$ th stage, and
- $\widehat{TLF}$  = estimated total life time fecundity for females, equivalent to the average number of eggs spawned per female over their reproductive years.

Equation C1 is based on the simplified case of a single synchronized spawning by a species. For species with overlapping or continuous spawning, larval abundance would have to be specified by week and age class (i.e.,  $\widehat{E}_{ij}$ ). However, we used the mean size of all larvae entrained to estimate a representative age of larvae, and then estimated a survival rate to this representative age. Two input parameters in Equation C1 that may not be available for many species, and thus may limit the method, are lifetime fecundity ( $TLF$ ) and survival rates ( $S_i$ ) from spawning to entrainment.

In practice, survival was estimated by either one or several age classes, depending on the data source, to the estimated age at entrainment. The expected total lifetime fecundity  $E(TLF)$  was approximated by modeling a linear survivorship for a female once she reached the age of maturity, and using a constant number of eggs produced per year.



The number of eggs produced per year was approximated as the average number of eggs per year. Thus

$$\begin{aligned} \widehat{TLF} &= \int_{A_M}^{A_L} F(A)s(A)dA \\ &= \bar{F} \int_{A_M}^{A_L} \frac{A_L - A}{A_L - A_M} dA \\ &= \bar{F} \left( \frac{A_L - A_M}{2} \right) \end{aligned}$$

where

- $s(A)$  = survivorship of a female;
- $F(A)$  = eggs produced;
- $A_M$  = age of maturity; and
- $A_L$  = age at death.

In other words,

$$\begin{aligned}
 \widehat{TLF} &= \text{Estimated Total Lifetime Fecundity} \\
 &= \text{Average eggs/year} \cdot \text{Average number of years of reproductive life} \\
 &= \text{Average eggs/year} \cdot \left( \frac{\text{Longevity} - \text{Age at maturation}}{2} \right).
 \end{aligned}
 \tag{C2}$$

The expected length of reproductive life was approximated as the midpoint between the times of maturation and longevity. The approximation of linear survivorship between these events implies uniform survival. For exploited species such as northern anchovy and sardine, the expected number of years of reproductive life may be much less than predicted using this assumption.

Simulation, comparing exponential survival, shows that the calculation of  $\widehat{TLF}$  will be negatively biased for species with short reproductive lifespans, and positively biased for those with longer durations.

The variance of  $\widehat{FH}$  was approximated by the Delta method (Appendix E2) (Seber 1982):

$$\widehat{Var}(\widehat{FH}) = (\widehat{FH})^2 \left[ CV^2(\widehat{E}_T) + \sum_{j=1}^n CV^2(\widehat{S}_j) + CV^2(\widehat{F}) + \left( \frac{\widehat{Var}(A_L) + \widehat{Var}(A_M)}{(A_L - A_m)^2} \right) \right]$$

where

$CV(\widehat{E}_T)$  = CV of estimated entrainment (estimated by  $CV(\widehat{I})$  when available),

$CV(\widehat{S}_j)$  = CV of estimated survival of eggs and larvae up to entrainment,

$CV(\widehat{F})$  = CV of estimated average annual fecundity,

$A_M$  = age at maturation, and

$A_L$  = age at maturity.

The behavior of the estimator for  $FH$  appears log-linear, suggesting that an approximate confidence interval can be based on the assumptions that  $\ln(\widehat{FH})$  is normally distributed and uses the pivotal quantity

$$Z = \frac{\ln \widehat{FH} - \ln FH}{\sqrt{\frac{\widehat{Var}(\widehat{FH})}{\widehat{FH}^2}}}.$$

A 90% confidence interval for  $FH$  was estimated by solving for  $FH$  and setting  $Z$  equal to  $\pm 1.645$ , i.e.

$$\widehat{FH} \cdot e^{-1.645 \sqrt{\frac{\widehat{Var}(FH)}{\widehat{FH}^2}}} \text{ to } \widehat{FH} \cdot e^{+1.645 \sqrt{\frac{\widehat{Var}(FH)}{\widehat{FH}^2}}}.$$

## Adult Equivalent Loss (AEL)

The *AEL* approach uses estimates of the abundance of entrained or impinged organisms to forecast the loss of equivalent numbers of adults. Starting with the number of age class  $j$  larvae entrained ( $\widehat{E}_j$ ), it is conceptually easy to convert these numbers to an equivalent number of adults lost ( $\widehat{AEL}$ ) at some specified age class from the formula:

$$\widehat{AEL} = \sum_{j=1}^n \widehat{E}_j \widehat{S}_j \quad (C3)$$

where

$n$  = number of age classes,

$\widehat{E}_j$  = estimated number of larvae lost in age class  $j$ , and

$\widehat{S}_j$  = survival rate for the  $j$ th age class to adulthood (Goodyear 1978).

Age-specific survival rates from larval stage to recruitment into the fishery (through juvenile and early adult stages) must be included in this assessment method. For some commercial species, survival rates are known for adults in the fishery; but for most species, age-specific larval survivorship has not been well described.

When age-specific survival rates from larval stage to recruitment into the fishery were available, *AEL* was calculated using survival from a representative age of the entrained larvae at DCP. This age was calculated by dividing the average larval length at entrainment (minus hatch length) by a literature-based growth rate. Age-specific survivorship for any interval of time ( $t$ ) was then calculated following the formula (Ricker 1975)

$$\frac{N_t}{N_0} = e^{-Zt}$$

where

$N_t$  = number of animals in the population at time  $t$ ,  
 $N_0$  = number of animals in the population at time  $t = 0$ ,  
 $\frac{N_t}{N_0} = S$  (finite survivorship to time  $t$ ),  
 $e = 2.71828\dots$ (base of the natural log), and  
 $Z$  = instantaneous mortality rate.

Survivorship to recruitment, to an adult age, was apportioned into several age stages, and  $AEL$  was calculated using the total entrainment as

$$\widehat{AEL} = \hat{E}_T \prod_{j=1}^n \hat{S}_j \quad (C4)$$

where

$n$  = number of age classes from entrainment to recruitment and  
 $\hat{S}_j$  = survival rate from the beginning to end of the  $j$ th age class.

The variance of  $\widehat{AEL}$  can be estimated using a Taylor series approximation (Delta method of Seber 1982) as

$$\widehat{Var}(\widehat{AEL}) = \widehat{AEL}^2 \left( CV^2(\hat{E}_T) + \sum_{j=1}^n CV^2(\hat{S}_j) \right). \quad (C5)$$

An alternative analysis would be to compare  $\widehat{AEL}$  with the size of the adult population of interest or with fishery harvest data. This method converts numbers of adult losses into fractional loss of the population of interest (e.g., stock assessment). However, information describing adult stocks is limited for many species, and independent field estimates of survival from time of entrainment to adulthood are not available for some species. For some species where such information is unavailable, we can estimate this parameter by assuming a stationary population where an adult female must produce two adults (i.e., one male and one female). Overall survival ( $S_T$ ) can then be estimated from total lifetime fecundity ( $TLF$ ) by the quantity

$$\hat{S}_T = \frac{2}{TLF} = \hat{S}_{egg} \cdot \hat{S}_{larvae} \cdot \hat{S}_{adult},$$

which leads to

$$\hat{S}_{adult} = \frac{2}{\widehat{TLF} \cdot \hat{S}_{egg} \cdot \hat{S}_{larvae}}. \quad (C6)$$

Substituting Equation 11 into the overall form of the *AEL* equation where

$$\widehat{AEL} = \hat{E}_T \cdot \hat{S}_{adult} \quad (C7)$$

yields

$$\widehat{AEL} = \frac{2(\hat{E}_T)}{\hat{S}_{egg} \cdot \hat{S}_{larva} \cdot \widehat{TLF}}$$

where

$$\widehat{AEL} \equiv 2\widehat{FH} . \quad (C8)$$

Without independent adult survival rates and assuming a 50:50 sex ratio,  $\widehat{AEL}$  and  $\widehat{FH}$  are deterministically related according to Equation 13, with an associated standard error of  $\widehat{SE}(\widehat{AEL}) = 2\widehat{SE}(\widehat{FH})$ . Equation 13 should be aligned so that the average female age is also the age of recruitment used in computing  $\widehat{AEL}$ . This alignment is accomplished by solving the simple exponential survival equation (Ricker 1975)

$$N_t = N_0 \cdot e^{-Z(t-t_0)}$$

by substituting numbers of either equivalent adults or hindcast females, their associated ages, and mortality rates into the equation where,

$N_t$  = number of adults at time  $t$ ,

$N_0$  = number of adults at time  $t_0$ ,

$Z$  = instantaneous rate of natural mortality, and

$t$  = age of hindcast animals ( $FH$ ) or extrapolated age of animals ( $AEL$ ).

This allows for the alignment of ages in either direction such that  $2FH \equiv AEL$  since they are either hindcast or extrapolated to the same age.

The estimates of mortality calculated from the *AEL* and *FH* approaches can be compared for the same time periods for taxa where independent estimates are available for (1) survival from entrainment to recruitment into the fishery and (2) entrainment back to hatching. These comparisons serve as a method of cross-validation for the demographic approaches to impact assessment.

*Scattergood Generating Station*

## **Appendix D**

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### **Entrainment Data**

D1. Data by Survey and Station

D2. Calculated Total Annual Entrainment and Standard  
Error Data



Appendix D1. Data by Survey and Station

Survey: SMBEA01  
Start Date: 1/11/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
Gobiidae unid.	gobies	5	13.44
<i>Atherinopsis californiensis</i>	jacksmelt	3	8.74
<i>Pleuronichthys guttulatus</i>	diamond turbot	3	7.09
<i>Genyonemus lineatus</i>	white croaker	4	6.13
<i>Paralichthys californicus</i>	California halibut	1	1.43
		<b>Total Fishes: 16</b>	
<b>Eggs</b>			
<i>Genyonemus lineatus</i> (eggs)	white croaker eggs	1,261	3,142.13
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	482	1,147.80
<i>Paralichthys californicus</i> (eggs)	California halibut eggs	72	154.24
fish eggs unid.	unidentified fish eggs	56	113.01
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	26	74.34
		<b>Total Eggs: 1,897</b>	
<b>Target Invertebrates</b>			
<i>Hemigrapsus</i> spp. (megalops)	shore crab megalops	5	11.02
Brachyura unid. (megalops)	unidentified crab megalops	1	2.19
		<b>Total Target Invertebrates: 6</b>	

Survey: SMBEA02  
Start Date: 1/25/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
Atherinopsidae unid.	silversides	1	3.27
<i>Pleuronichthys guttulatus</i>	diamond turbot	1	3.27
<i>Atherinopsis californiensis</i>	jacksmelt	1	2.75
		<b>Total Fishes: 3</b>	
<b>Eggs</b>			
<i>Paralichthyidae</i> unid. (eggs)	sand flounder eggs	707	2,196.40
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	192	584.99
<i>Genyonemus lineatus</i> (eggs)	white croaker eggs	32	98.28
fish eggs unid.	unidentified fish eggs	21	56.66
<i>Paralichthys californicus</i> (eggs)	California halibut eggs	2	6.75
Engraulidae unid. (eggs)	anchovy eggs	2	5.51
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	1	2.81
		<b>Total Eggs: 957</b>	
<b>Target Invertebrates</b>			
No Invertebrates			

Survey: SMBEA02  
Start Date: 1/25/2006  
Stations: M1-M3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Genyonemus lineatus</i>	white croaker	4	8.33
<i>Paralichthys californicus</i>	California halibut	2	3.57
<i>Merluccius productus</i>	Pacific hake	1	1.87
<i>Atherinopsis californiensis</i>	jacksmelt	1	1.75
Atherinopsidae unid.	silversides	1	1.70
<i>Citharichthys stigmaeus</i>	speckled sanddab	1	1.67
<i>Pleuronichthys guttulatus</i>	diamond turbot	1	1.52
		<b>Total Fishes: 11</b>	
<b>Target Invertebrates</b>			
No Invertebrates			

Survey: SMBEA02  
Start Date: 1/25/2006  
Stations: O1-O3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Genyonemus lineatus</i>	white croaker	12	18.90
<i>Pleuronichthys guttulatus</i>	diamond turbot	2	3.08
<i>Citharichthys sordidus</i>	Pacific sanddab	2	2.97
Atherinopsidae unid.	silversides	1	1.78
Bathymasteridae unid.	ronquils	1	1.69
<i>Engraulis mordax</i>	northern anchovy	1	1.37
<i>Stenobranchius leucopsarus</i>	northern lampfish	1	1.37
<i>Leptocottus armatus</i>	Pacific staghorn sculpin	1	1.31
<i>Pleuronichthys verticalis</i>	hornyhead turbot	1	1.31
<i>Sebastes</i> spp.	rockfishes	1	1.31
		<b>Total Fishes: 23</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	3	4.39
<i>Loligo opalescens</i>	market squid	3	4.22
		<b>Total Target Invertebrates: 6</b>	

Survey: SMBEA02  
Start Date: 1/25/2006  
Stations: S1-S4

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Pleuronichthys guttulatus</i>	diamond turbot	2	3.00
<i>Atherinopsis californiensis</i>	jacksmelt	2	2.94
Gobiidae unid.	gobies	2	2.74
<i>Genyonemus lineatus</i>	white croaker	1	1.47
		<b>Total Fishes: 7</b>	
<b>Target Invertebrates</b>			
No Invertebrates			

Survey: SMBEA03  
Start Date: 2/8/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Atherinopsis californiensis</i>	jacksmelt	2	5.61
<i>Pleuronichthys guttulatus</i>	diamond turbot	1	2.72
		<b>Total Fishes: 3</b>	
<b>Eggs</b>			
<i>Paralichthyidae</i> unid. (eggs)	sand flounder eggs	950	2,693.56
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	92	424.91
<i>Genyonemus lineatus</i> (eggs)	white croaker eggs	58	193.60
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	4	11.07
<i>Paralichthys californicus</i> (eggs)	California halibut eggs	2	5.77
		<b>Total Eggs: 1,106</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	5	24.28
		<b>Total Target Invertebrates: 5</b>	

Survey: SMBEA04  
Start Date: 2/23/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
Gobiidae unid.	gobies	36	117.30
<i>Atherinopsis californiensis</i>	jacksmelt	8	25.33
<i>Genyonemus lineatus</i>	white croaker	4	12.37
<i>Pleuronichthys guttulatus</i>	diamond turbot	3	10.31
larval fish fragment	unidentified larval fishes	1	3.32
<i>Leptocottus armatus</i>	Pacific staghorn sculpin	1	3.18
<i>Citharichthys stigmaeus</i>	speckled sanddab	1	3.10
		<b>Total Fishes: 54</b>	
<b>Eggs</b>			
Paralichthyidae unid. (eggs)	sand flounder eggs	2,098	6,974.45
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	497	1,626.99
<i>Genyonemus lineatus</i> (eggs)	white croaker eggs	62	202.96
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	8	25.82
		<b>Total Eggs: 2,665</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	3	9.75
<i>Pachycheles</i> spp. (megalops)	porcelain crabs megalops	1	3.60
Porcellanidae unid. (megalops)	porcelain crab megalops	1	3.32
<i>Cancer gracilis</i> (megalops)	slender crab megalops	1	3.10
		<b>Total Target Invertebrates: 6</b>	

Survey: SMBEA04  
Start Date: 2/23/2006  
Stations: M1-M3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Pleuronichthys guttulatus</i>	diamond turbot	5	8.81
<i>Genyonemus lineatus</i>	white croaker	4	5.78
<i>Atherinopsis californiensis</i>	jacksmelt	2	3.05
<i>Paralichthys californicus</i>	California halibut	2	3.02
<i>Sebastes</i> spp.	rockfishes	2	2.81
<i>Pleuronichthys verticalis</i>	hornyhead turbot	1	1.77
<i>Citharichthys stigmaeus</i>	speckled sanddab	1	1.72
<i>Parophrys vetulus</i>	English sole	1	1.72
larval/post-larval fish unid.	larval fishes	1	1.60
		<b>Total Fishes: 19</b>	
<b>Target Invertebrates</b>			
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	1	1.60
		<b>Total Target Invertebrates: 1</b>	

Survey: SMBEA04  
Start Date: 2/23/2006  
Stations: O1-O3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Genyonemus lineatus</i>	white croaker	7	9.67
<i>Lepidogobius lepidus</i>	bay goby	4	5.49
<i>Paralichthys californicus</i>	California halibut	3	3.84
<i>Pleuronichthys ritteri</i>	spotted turbot	2	2.56
<i>Isopsetta isolepis</i>	butter sole	2	2.51
Gobiidae unid.	gobies	2	2.46
Paralichthyidae unid.	sand flounders	1	1.61
<i>Hypsoblennius</i> spp.	combtooth blennies	1	1.40
<i>Atherinopsis californiensis</i>	jacksmelt	1	1.29
<i>Pleuronichthys guttulatus</i>	diamond turbot	1	1.24
Pleuronectiformes unid.	flatfishes	1	1.22
Sciaenidae unid.	croakers	1	1.22
		<b>Total Fishes: 26</b>	
<b>Target Invertebrates</b>			
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	1	1.39
Porcellanidae unid. (megalops)	porcelain crab megalops	1	1.39
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	1	1.39
		<b>Total Target Invertebrates: 3</b>	

Survey: SMBEA04  
Start Date: 2/23/2006  
Stations: S1-S4

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Pleuronichthys guttulatus</i>	diamond turbot	9	14.10
<i>Atherinopsis californiensis</i>	jacksmelt	6	9.86
<i>Genyonemus lineatus</i>	white croaker	5	7.72
Gobiidae unid.	gobies	3	4.67
<i>Engraulis mordax</i>	northern anchovy	1	1.69
<i>Paralichthys californicus</i>	California halibut	1	1.57
<i>Typhlogobius californiensis</i>	blind goby	1	1.51
Pleuronectidae unid.	righteye flounders	1	1.50
		<b>Total Fishes: 27</b>	
<b>Target Invertebrates</b>			
<i>Emerita analoga</i> (megalops)	mole crabs megalops	2	3.51
<i>Pachycheles</i> spp. (megalops)	porcelain crabs megalops	2	3.36
Porcellanidae unid. (megalops)	porcelain crab megalops	1	1.76
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	1	1.69
		<b>Total Target Invertebrates: 6</b>	

Survey: SMBEA06  
Start Date: 3/22/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Genyonemus lineatus</i>	white croaker	206	547.76
<i>Stenobranchius leucopsarus</i>	northern lampfish	70	182.42
<i>Parophrys vetulus</i>	English sole	60	169.29
Gobiidae unid.	gobies	39	110.29
<i>Lepidogobius lepidus</i>	bay goby	30	77.32
Pleuronectidae unid.	righteye flounders	11	28.17
<i>Engraulis mordax</i>	northern anchovy	7	18.86
Sciaenidae unid.	croakers	7	18.40
larval fish - damaged	unidentified larval fishes	5	12.25
<i>Paralichthys californicus</i>	California halibut	5	11.19
<i>Leptocottus armatus</i>	Pacific staghorn sculpin	4	10.28
<i>Merluccius productus</i>	Pacific hake	4	10.27
<i>Atherinopsis californiensis</i>	jacksmelt	4	10.02
<i>Gobiesox</i> spp.	clingfishes	2	6.84
<i>Pleuronichthys verticalis</i>	hornyhead turbot	3	6.47
<i>Citharichthys stigmaeus</i>	speckled sanddab	2	5.14
larvae, unidentified yolksac	unidentified yolksac larvae	2	5.00
<i>Lyopsetta exilis</i>	slender sole	2	4.58
<i>Bathylagus ochotensis</i>	popeye blacksmelt	1	3.42
<i>Rhinogobiops nicholsi</i>	blackeye goby	1	3.42
<i>Pleuronichthys ritteri</i>	spotted turbot	1	2.94
<i>Gibbonsia</i> spp.	clinid kelpfishes	1	2.85
<i>Ruscarius creaseri</i>	roughcheek sculpin	1	2.85
<i>Hypsoblennius</i> spp.	combtooth blennies	1	2.77
<i>Atherinops affinis</i>	topsmelt	1	2.29
Atherinopsidae unid.	silversides	1	2.29
<i>Isopsetta isolepis</i>	butter sole	1	2.29
<i>Gillichthys mirabilis</i>	longjaw mudsucker	1	2.18
Pleuronectiformes unid.	flatfishes	1	2.18
		<b>Total Fishes: 474</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	3,841	9,730.94
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	675	1,850.40
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	488	1,266.80
Paralichthyidae unid. (eggs)	sand flounder eggs	354	900.10
Sciaenidae unid. (eggs)	croaker eggs	243	639.73
Engraulidae unid. (eggs)	anchovy eggs	65	169.77
<i>Microstomus pacificus</i> (eggs)	Dover sole eggs	2	5.62
		<b>Total Eggs: 5,668</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	100	250.45
Majidae unid. (megalops)	spider crab megalops	7	20.24
<i>Emerita analoga</i> (megalops)	mole crabs megalops	4	10.17
Paguridae unid. (megalops)	hermit crab megalops	2	5.03

(continued)

Survey: SMBEA06  
 Start Date: 3/22/2006  
 Stations: E1 (continued)

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Target Invertebrates (continued)</b>			
unidentified crab (megalops)	unidentified crab megalops	2	5.03
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	1	2.29
		<b>Total Target Invertebrates: 116</b>	

Survey: SMBEA06  
Start Date: 3/22/2006  
Stations: M1-M3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Parophrys vetulus</i>	English sole	543	670.20
<i>Genyonemus lineatus</i>	white croaker	308	384.71
<i>Engraulis mordax</i>	northern anchovy	72	75.25
<i>Stenobranchius leucopsarus</i>	northern lampfish	58	69.89
larval fish fragment	unidentified larval fishes	50	61.91
Pleuronectidae unid.	righteye flounders	37	48.27
<i>Pleuronichthys verticalis</i>	hornyhead turbot	35	40.05
<i>Paralichthys californicus</i>	California halibut	27	31.89
<i>Citharichthys stigmaeus</i>	speckled sanddab	25	27.33
larval fish - damaged	unidentified larval fishes	19	23.69
<i>Merluccius productus</i>	Pacific hake	19	22.72
<i>Pleuronichthys</i> spp.	turbots	19	21.67
<i>Icelinus</i> spp.	sculpins	15	19.88
larvae, unidentified yolksac	unidentified yolksac larvae	14	18.88
Sciaenidae unid.	croakers	10	13.71
<i>Bathylagus ochotensis</i>	popeye blacksmelt	8	11.98
<i>Citharichthys</i> spp.	sanddabs	5	7.91
<i>Pleuronichthys guttulatus</i>	diamond turbot	5	6.85
<i>Lepidogobius lepidus</i>	bay goby	6	6.84
<i>Pleuronichthys ritteri</i>	spotted turbot	5	6.46
Pleuronectiformes unid.	flatfishes	5	6.15
<i>Sebastes</i> spp.	rockfishes	4	5.07
Engraulidae unid.	anchovies	5	4.38
<i>Odontopyxis trispinosa</i>	pygmy poacher	3	3.52
<i>Citharichthys sordidus</i>	Pacific sanddab	2	2.82
<i>Hypsoblennius</i> spp.	combtooth blennies	3	2.75
Gobiidae unid.	gobies	3	2.74
<i>Semicossyphus pulcher</i>	California sheephead	2	2.53
<i>Isopsetta isolepis</i>	butter sole	2	2.43
<i>Leuroglossus stilbius</i>	California smoothtongue	2	2.27
<i>Lyopsetta exilis</i>	slender sole	2	1.94
<i>Typhlogobius californiensis</i>	blind goby	2	1.82
<i>Argentina sialis</i>	Pacific argentine	1	1.64
<i>Atherinopsis californiensis</i>	jacksmelt	1	1.64
<i>Liparis</i> spp.	snailfishes	1	1.64
Ophidiidae unid.	cusks-eels	1	1.64
Bathymasteridae unid.	ronquils	1	1.39
<i>Seriphus politus</i>	queenfish	1	1.26
<i>Gillichthys mirabilis</i>	longjaw mudsucker	1	1.25
Labrisomidae unid.	labrisomid blennies	1	1.25
<i>Ruscarius creaseri</i>	roughcheek sculpin	1	1.25
Paralichthyidae unid.	sand flounders	1	0.81
		<b>Total Fishes: 1,325</b>	

(continued)



Survey: SMBEA06  
 Start Date: 3/22/2006  
 Stations: M1-M3 (continued)

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	13	20.72
Majidae unid. (megalops)	spider crab megalops	10	11.32
unidentified crab (megalops)	unidentified crab megalops	8	8.62
Paguridae unid. (megalops)	hermit crab megalops	6	7.49
<i>Loligo opalescens</i>	market squid	8	7.35
<i>Emerita analoga</i> (megalops)	mole crabs megalops	6	6.82
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	4	6.65
<i>Cancer gracilis</i> (megalops)	slender crab megalops	2	2.66
<i>Pachycheles</i> spp. (megalops)	porcelain crabs megalops	2	1.82
Anomura unid. (megalops)		1	1.73
Diogenidae (megalops)	left-handed hermit crabs megalops	1	1.02
<b>Total Target Invertebrates:</b>		<b>61</b>	

Survey: SMBEA06  
Start Date: 3/22/2006  
Stations: O1-O3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Parophrys vetulus</i>	English sole	594	562.37
<i>Genyonemus lineatus</i>	white croaker	203	199.87
<i>Engraulis mordax</i>	northern anchovy	111	101.87
larval fish fragment	unidentified larval fishes	92	92.26
Pleuronectidae unid.	righteye flounders	97	91.61
<i>Citharichthys stigmaeus</i>	speckled sanddab	97	87.07
<i>Stenobranchius leucopsarus</i>	northern lampfish	72	68.63
<i>Merluccius productus</i>	Pacific hake	72	68.37
<i>Pleuronichthys verticalis</i>	hornyhead turbot	36	35.71
Pleuronectiformes unid.	flatfishes	30	32.10
larval fish - damaged	unidentified larval fishes	32	30.98
larvae, unidentified yolksac	unidentified yolksac larvae	31	29.53
<i>Pleuronichthys</i> spp.	turbots	27	25.21
Sciaenidae unid.	croakers	23	24.60
<i>Paralichthys californicus</i>	California halibut	21	20.23
<i>Sebastes</i> spp.	rockfishes	19	19.78
Bathymasteridae unid.	ronquils	12	10.63
<i>Citharichthys</i> spp.	sanddabs	9	9.79
<i>Bathylagus ochotensis</i>	popeye blacksmelt	6	6.06
<i>Icelinus</i> spp.	sculpins	6	5.46
<i>Pleuronichthys ritteri</i>	spotted turbot	6	5.29
<i>Odontopyxis trispinosa</i>	pygmy poacher	4	4.89
Engraulidae unid.	anchovies	3	4.31
<i>Pleuronichthys guttulatus</i>	diamond turbot	4	4.21
Ophidiidae unid.	cusk-eels	3	3.78
Myctophidae unid.	lanternfishes	4	3.38
<i>Microstomus pacificus</i>	Dover sole	4	3.27
Bathylagidae unid.	blacksmelt	3	2.63
<i>Leuoglossus stilbius</i>	California smoothtongue	3	2.54
<i>Typhlogobius californiensis</i>	blind goby	3	2.54
Chitonotus / Icelinus	sculpins	3	2.53
<i>Citharichthys sordidus</i>	Pacific sanddab	2	1.80
<i>Lepidogobius lepidus</i>	bay goby	2	1.80
larval/post-larval fish unid.	larval fishes	2	1.79
<i>Clinocottus</i> spp.	sculpins	1	1.69
<i>Atherinopsis californiensis</i>	jacksmelt	1	1.45
Chaenopsidae unid.	tube blennies	1	1.45
Cottidae unid.	sculpins	1	1.45
<i>Syngnathus</i> spp.	pipefishes	1	1.45
<i>Zaniolepis</i> spp.	combfishes	1	1.06
<i>Hypsoblennius</i> spp.	combtooth blennies	1	0.93
Hexagrammidae unid.	greenlings	1	0.89
<i>Isopsetta isolepis</i>	butter sole	1	0.89

(continued)

Survey: SMBEA06  
Start Date: 3/22/2006  
Stations: O1-O3 (continued)

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes (continued)</b>			
<i>Clinocottus analis</i>	wooly sculpin	1	0.88
<i>Icelinus quadriseriatus</i>	yellowchin sculpin	1	0.88
<i>Zaniolepis frenata</i>	shortspine combfish	1	0.88
<i>Gibbonsia</i> spp.	clinid kelpfishes	1	0.74
Gobiidae unid.	gobies	1	0.74
		<b>Total Fishes: 1,650</b>	
<b>Target Invertebrates</b>			
Majidae unid. (megalops)	spider crab megalops	25	21.59
<i>Loligo opalescens</i>	market squid	8	8.69
unidentified crab (megalops)	unidentified crab megalops	9	8.14
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	6	6.19
Paguridae unid. (megalops)	hermit crab megalops	2	1.88
<i>Emerita analoga</i> (megalops)	mole crabs megalops	1	0.93
		<b>Total Target Invertebrates: 51</b>	

Survey: SMBEA06  
Start Date: 3/22/2006  
Stations: S1-S4

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Genyonemus lineatus</i>	white croaker	513	622.26
<i>Parophrys vetulus</i>	English sole	88	107.79
<i>Stenobranchius leucopsarus</i>	northern lampfish	88	104.38
Gobiidae unid.	gobies	52	63.16
<i>Lepidogobius lepidus</i>	bay goby	33	38.73
<i>Paralichthys californicus</i>	California halibut	19	23.45
<i>Engraulis mordax</i>	northern anchovy	18	23.13
Pleuronectidae unid.	righteye flounders	18	21.60
larval fish fragment	unidentified larval fishes	15	20.07
<i>Merluccius productus</i>	Pacific hake	16	19.24
<i>Pleuronichthys</i> spp.	turbots	8	9.79
<i>Pleuronichthys verticalis</i>	hornyhead turbot	7	8.14
Sciaenidae unid.	croakers	7	7.60
<i>Pleuronichthys guttulatus</i>	diamond turbot	7	7.41
<i>Citharichthys stigmaeus</i>	speckled sanddab	6	7.37
<i>Atherinopsis californiensis</i>	jacksmelt	6	7.35
larvae, unidentified yolksac	unidentified yolksac larvae	6	6.61
larval fish - damaged	unidentified larval fishes	4	4.61
<i>Citharichthys sordidus</i>	Pacific sanddab	3	3.47
<i>Lyopsetta exilis</i>	slender sole	2	2.76
Engraulidae unid.	anchovies	2	2.58
Pleuronectiformes unid.	flatfishes	2	2.37
<i>Isopsetta isolepis</i>	butter sole	2	2.34
<i>Atherinops affinis</i>	topsmelt	2	2.25
<i>Hypsoblennius</i> spp.	combtooth blennies	2	2.16
<i>Scorpaenichthys marmoratus</i>	cabezon	1	1.74
<i>Oligocottus</i> spp.	sculpins	1	1.51
<i>Citharichthys</i> spp.	sanddabs	1	1.41
Paralichthyidae unid.	sand flounders	1	1.41
<i>Pleuronichthys ritteri</i>	spotted turbot	1	1.38
<i>Bathylagus ochotensis</i>	popeye blacksmelt	1	1.21
Chitonotus / Icelinus	sculpins	1	1.17
Syngnathidae unid.	pipefishes	1	1.17
<i>Leptocottus armatus</i>	Pacific staghorn sculpin	1	1.12
<i>Liparis mucosus</i>	slimy snailfish	1	1.06
<i>Sebastes</i> spp.	rockfishes	1	1.06
larval/post-larval fish unid.	larval fishes	1	1.01
<i>Zaniolepis frenata</i>	shortspine combfish	1	1.01
Ophidiidae unid.	cusk-eels	1	0.99
<i>Leuroglossus stilbius</i>	California smoothtongue	1	0.93
		<b>Total Fishes: 941</b>	

(continued)

Survey: SMBEA06  
 Start Date: 3/22/2006  
 Stations: S1-S4 (continued)

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	19	22.18
<i>Emerita analoga</i> (megalops)	mole crabs megalops	11	12.13
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	9	11.92
unidentified crab (megalops)	unidentified crab megalops	6	7.58
<i>Pachycheles</i> spp. (megalops)	porcelain crabs megalops	2	2.41
<i>Cancer productus</i> (megalops)	red rock crab megalops	1	1.08
Grapsidae unid. (megalops)	shore crab megalops	1	1.01
Paguridae unid. (megalops)	hermit crab megalops	1	1.01
<b>Total Target Invertebrates:</b>		<b>50</b>	

Survey: SMBEA07  
Start Date: 4/13/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Engraulis mordax</i>	northern anchovy	51	117.54
<i>Citharichthys stigmaeus</i>	speckled sanddab	17	37.49
<i>Genyonemus lineatus</i>	white croaker	11	28.41
<i>Hypsoblennius</i> spp.	combtooth blennies	4	10.70
<i>Stenobranchius leucopsarus</i>	northern lampfish	4	9.30
<i>Pleuronichthys</i> spp.	turbots	2	5.02
larvae, unidentified yolksac	unidentified yolksac larvae	2	4.62
larval/post-larval fish unid.	larval fishes	2	4.59
Atherinopsidae unid.	silversides	1	3.05
Paralichthyidae unid.	sand flounders	1	2.69
larval fish - damaged	unidentified larval fishes	1	2.68
<i>Parophrys vetulus</i>	English sole	1	2.33
Ophidiidae unid.	cusks-eels	1	2.29
Sciaenidae unid.	croakers	1	2.29
Labridae unid.	wrasses	1	2.04
Pleuronectidae unid.	righteye flounders	1	2.04
		<b>Total Fishes: 101</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	4,837	11,512.09
Paralichthyidae unid. (eggs)	sand flounder eggs	885	2,290.12
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	474	1,128.51
Engraulidae unid. (eggs)	anchovy eggs	339	822.25
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	212	501.41
Sciaenidae unid. (eggs)	croaker eggs	135	313.60
Pleuronectidae unid. (eggs)	righteye flounder eggs	3	8.40
<i>Scomber japonicus</i> (eggs)	Pacific mackerel eggs	1	2.33
		<b>Total Eggs: 6,886</b>	
<b>Target Invertebrates</b>			
<i>Loligo opalescens</i>	market squid	58	175.16
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	6	16.48
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	3	6.50
<i>Pinnotheres</i> spp. (megalops)	pea crab megalops	1	2.69
<i>Cancer productus</i> (megalops)	red rock crab megalops	1	2.29
<i>Pachycheles rudis</i> (megalops)	thickclaw porcelain crab	1	2.29
Porcellanidae unid. (megalops)	porcelain crab megalops	1	2.29
Majidae unid. (megalops)	spider crab megalops	1	2.17
		<b>Total Target Invertebrates: 72</b>	

Survey: SMBEA08  
Start Date: 4/19/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Genyonemus lineatus</i>	white croaker	264	828.38
<i>Engraulis mordax</i>	northern anchovy	205	658.85
Gobiidae unid.	gobies	87	279.31
<i>Atherinopsis californiensis</i>	jacksmelt	25	87.96
Engraulidae unid.	anchovies	14	44.88
<i>Stenobranchius leucopsarus</i>	northern lampfish	13	42.38
<i>Hypsoblennius</i> spp.	combtooth blennies	10	34.98
larval fish fragment	unidentified larval fishes	7	22.18
larvae, unidentified yolksac	unidentified yolksac larvae	6	18.32
<i>Citharichthys stigmaeus</i>	speckled sanddab	5	14.93
Sciaenidae unid.	croakers	4	11.95
<i>Lepidogobius lepidus</i>	bay goby	2	5.65
<i>Acanthogobius flavimanus</i>	yellowfin goby	1	3.59
Atherinopsidae unid.	silversides	1	3.59
larval fish - damaged	unidentified larval fishes	1	3.59
<i>Paralichthys californicus</i>	California halibut	1	3.59
Pleuronectiformes unid.	flatfishes	1	3.59
<i>Hippoglossina stomata</i>	bigmouth sole	1	3.50
<i>Pleuronichthys</i> spp.	turbots	1	3.50
<i>Artedius lateralis</i>	smoothhead sculpin	1	3.02
<i>Syngnathus</i> spp.	pipefishes	1	2.65
		<b>Total Fishes: 651</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	6,563	21,665.77
Engraulidae unid. (eggs)	anchovy eggs	1,714	5,753.42
Paralichthyidae unid. (eggs)	sand flounder eggs	1,307	4,543.15
Sciaen. / Paralich. / Labridae (eggs)	fish eggs	633	2,009.97
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	535	1,724.10
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	449	1,422.99
Sciaenidae unid. (eggs)	croaker eggs	105	331.35
<i>Genyonemus lineatus</i> (eggs)	white croaker eggs	26	92.69
Pleuronectidae unid. (eggs)	righteye flounder eggs	12	43.08
		<b>Total Eggs: 11,344</b>	
<b>Target Invertebrates</b>			
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	35	114.83
<i>Petrolisthes</i> spp. (megalops)	porcelain crab megalops	21	69.04
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	16	52.69
Brachyura unid. (megalops)	unidentified crab megalops	8	26.33
Paguridae unid. (megalops)	hermit crab megalops	8	24.82
Grapsidae unid. (megalops)	shore crab megalops	7	23.94
<i>Loligo opalescens</i>	market squid	4	13.93
<i>Emerita analoga</i> (megalops)	mole crabs megalops	3	10.17
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	3	9.29
<i>Cancer</i> spp. (megalops)	cancer crabs megalops	1	3.59

(continued)

Survey: SMBEA08  
 Start Date: 4/19/2006  
 Stations: E1 (continued)

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Target Invertebrates (continued)</b>			
<i>Fabia subquadrata</i>	grooved mussel crab	1	3.59
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	1	3.59
Majidae unid. (megalops)	spider crab megalops	1	2.99
<i>Pinnotheres</i> spp. (megalops)	pea crab megalops	1	2.65
<b>Total Target Invertebrates:</b>		<b>110</b>	



Survey: SMBEA08  
Start Date: 4/19/2006  
Stations: M1-M3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Genyonemus lineatus</i>	white croaker	352	581.17
<i>Engraulis mordax</i>	northern anchovy	215	353.52
Engraulidae unid.	anchovies	170	283.34
<i>Icelinus</i> spp.	sculpins	49	76.93
<i>Paralichthys californicus</i>	California halibut	44	74.13
larvae, unidentified yolksac	unidentified yolksac larvae	43	72.79
<i>Parophrys vetulus</i>	English sole	22	37.59
<i>Citharichthys stigmaeus</i>	speckled sanddab	21	34.83
Pleuronectidae unid.	righteye flounders	19	32.16
Sciaenidae unid.	croakers	17	28.50
larval fish fragment	unidentified larval fishes	16	26.29
<i>Stenobranchius leucopsarus</i>	northern lampfish	10	16.86
<i>Pleuronichthys verticalis</i>	hornyhead turbot	7	10.87
<i>Hypsoblennius</i> spp.	combtooth blennies	7	10.74
<i>Pleuronichthys ritteri</i>	spotted turbot	5	8.22
Chitonotus / Icelinus	sculpins	4	6.56
<i>Bathylagus ochotensis</i>	popeye blacksmelt	4	6.54
Bathymasteridae unid.	ronquils	3	5.00
Pleuronectiformes unid.	flatfishes	3	4.94
<i>Chitonotus pugetensis</i>	roughback sculpin	3	4.92
<i>Leuroglossus stilbius</i>	California smoothtongue	3	4.77
<i>Atherinopsis californiensis</i>	jacksmelt	2	3.73
Gobiidae unid.	gobies	2	3.73
<i>Gillichthys mirabilis</i>	longjaw mudsucker	2	3.28
<i>Merluccius productus</i>	Pacific hake	2	3.28
<i>Pleuronichthys guttulatus</i>	diamond turbot	2	3.19
<i>Lyopsetta exilis</i>	slender sole	2	3.12
<i>Pleuronichthys</i> spp.	turbots	1	1.94
<i>Citharichthys sordidus</i>	Pacific sanddab	1	1.72
<i>Sebastes</i> spp.	rockfishes	1	1.72
Atherinopsidae unid.	silversides	1	1.64
Ophidiidae unid.	cusk-eels	1	1.64
larval fish - damaged	unidentified larval fishes	1	1.63
Paralichthyidae unid.	sand flounders	1	1.63
<i>Typhlogobius californiensis</i>	blind goby	1	1.63
<i>Artedius lateralis</i>	smoothhead sculpin	1	1.60
larval/post-larval fish unid.	larval fishes	1	1.49
Cottidae unid.	sculpins	1	1.47
		<b>Total Fishes: 1,040</b>	
<b>Target Invertebrates</b>			
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	149	224.35
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	29	48.21
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	27	37.93

(continued)

Survey: SMBEA08  
Start Date: 4/19/2006  
Stations: M1-M3 (continued)

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Target Invertebrates (continued)</b>			
<i>Pinnotheres</i> spp. (megalops)	pea crab megalops	17	26.95
Paguridae unid. (megalops)	hermit crab megalops	13	20.99
Majidae unid. (megalops)	spider crab megalops	7	11.43
<i>Emerita analoga</i> (megalops)	mole crabs megalops	6	10.72
<i>Cancer antennarius</i> (megalops)	brown rock crab megalops	5	8.14
<i>Loligo opalescens</i>	market squid	5	7.25
Grapsidae unid. (megalops)	shore crab megalops	4	6.41
<i>Cancer gracilis</i> (megalops)	slender crab megalops	2	3.40
Brachyura unid. (megalops)	unidentified crab megalops	1	1.76
Diogenidae (megalops)	left-handed hermit crabs megalops	1	1.76
<i>Petrolisthes</i> spp. (megalops)	porcelain crab megalops	1	1.64
Porcellanidae unid. (megalops)	porcelain crab megalops	1	1.64
unidentified crab (megalops)	unidentified crab megalops	1	1.64
<b>Total Target Invertebrates:</b>		<b>269</b>	

Survey: SMBEA08  
Start Date: 4/19/2006  
Stations: O1-O3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Engraulis mordax</i>	northern anchovy	175	232.99
<i>Genyonemus lineatus</i>	white croaker	156	208.42
<i>Icelinus</i> spp.	sculpins	97	129.30
<i>Parophrys vetulus</i>	English sole	60	74.40
Engraulidae unid.	anchovies	44	64.29
larvae, unidentified yolksac	unidentified yolksac larvae	44	59.59
<i>Paralichthys californicus</i>	California halibut	33	43.52
Pleuronectidae unid.	righteye flounders	27	38.27
<i>Citharichthys stigmaeus</i>	speckled sanddab	14	19.53
Bathymasteridae unid.	ronquils	13	16.96
<i>Leuroglossus stilbius</i>	California smoothtongue	10	12.58
<i>Merluccius productus</i>	Pacific hake	8	10.32
Sciaenidae unid.	croakers	5	7.28
larval/post-larval fish unid.	larval fishes	5	7.09
<i>Lyopsetta exilis</i>	slender sole	5	6.97
<i>Stenobranchius leucopsarus</i>	northern lampfish	6	6.92
<i>Pleuronichthys verticalis</i>	hornyhead turbot	5	6.57
<i>Pleuronichthys</i> spp.	turbots	4	5.98
<i>Bathylagus ochotensis</i>	popeye blacksmelt	4	4.91
<i>Zaniolepis frenata</i>	shortspine combfish	4	4.65
<i>Hypsoblennius</i> spp.	combtooth blennies	3	4.40
<i>Pleuronichthys guttulatus</i>	diamond turbot	3	4.23
<i>Ruscarius creaseri</i>	roughcheek sculpin	4	4.23
<i>Pleuronichthys ritteri</i>	spotted turbot	3	4.19
<i>Lepidopsetta bilineata</i>	rock sole	2	2.65
<i>Lepidogobius lepidus</i>	bay goby	1	1.62
Ophidiidae unid.	cusk-eels	1	1.62
<i>Triphoturus mexicanus</i>	Mexican lampfish	1	1.62
Bathylagidae unid.	blacksmelt	1	1.51
<i>Chitonotus / Icelinus</i>	sculpins	1	1.51
<i>Chitonotus pugetensis</i>	roughback sculpin	1	1.51
<i>Icelinus quadriseriatus</i>	yellowchin sculpin	1	1.51
<i>Syngnathus</i> spp.	pipefishes	1	1.29
Gobiidae unid.	gobies	1	1.28
<i>Odontopyxis trispinosa</i>	pygmy poacher	1	1.28
<i>Sebastes</i> spp.	rockfishes	1	1.18
<i>Artedius lateralis</i>	smoothhead sculpin	1	1.06
larval fish fragment	unidentified larval fishes	1	1.06
		<b>Total Fishes: 747</b>	
<b>Target Invertebrates</b>			
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	126	152.67
<i>Loligo opalescens</i>	market squid	58	73.83
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	38	50.49

(continued)

Survey: SMBEA08  
 Start Date: 4/19/2006  
 Stations: O1-O3 (continued)

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Target Invertebrates (continued)</b>			
Paguridae unid. (megalops)	hermit crab megalops	15	20.77
<i>Cancer antennarius</i> (megalops)	brown rock crab megalops	12	15.39
<i>Cancer gracilis</i> (megalops)	slender crab megalops	5	7.38
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	5	6.88
Majidae unid. (megalops)	spider crab megalops	4	6.12
<i>Petrolisthes</i> spp. (megalops)	porcelain crab megalops	4	4.92
<i>Pinnotheres</i> spp. (megalops)	pea crab megalops	2	2.92
Porcellanidae unid. (megalops)	porcelain crab megalops	2	2.54
<i>Emerita analoga</i> (megalops)	mole crabs megalops	1	1.62
Diogenidae (megalops)	left-handed hermit crabs megalops	1	1.39
unidentified crab (megalops)	unidentified crab megalops	1	1.36
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	1	1.28
<b>Total Target Invertebrates:</b>		<b>275</b>	

Survey: SMBEA08  
Start Date: 4/19/2006  
Stations: S1-S4

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Genyonemus lineatus</i>	white croaker	604	811.91
<i>Engraulis mordax</i>	northern anchovy	420	603.27
Engraulidae unid.	anchovies	136	168.09
Gobiidae unid.	gobies	80	110.44
larvae, unidentified yolksac	unidentified yolksac larvae	37	53.83
<i>Citharichthys stigmaeus</i>	speckled sanddab	26	37.68
<i>Stenobranchius leucopsarus</i>	northern lampfish	25	35.35
<i>Hypsoblennius</i> spp.	combtooth blennies	24	34.97
<i>Paralichthys californicus</i>	California halibut	20	31.20
<i>Atherinopsis californiensis</i>	jacksmelt	17	24.88
Atherinopsidae unid.	silversides	14	19.33
<i>Lepidogobius lepidus</i>	bay goby	13	18.64
Sciaenidae unid.	croakers	14	18.40
larval fish fragment	unidentified larval fishes	11	16.25
Pleuronectidae unid.	righteye flounders	11	15.96
<i>Pleuronichthys guttulatus</i>	diamond turbot	4	5.25
<i>Parophrys vetulus</i>	English sole	4	5.11
<i>Pleuronichthys ritteri</i>	spotted turbot	2	3.24
Labrisomidae unid.	labrisomid blennies	2	2.73
larval fish - damaged	unidentified larval fishes	2	2.44
Pleuronectiformes unid.	flatfishes	2	2.44
<i>Bathylagus ochotensis</i>	popeye blacksmelt	1	1.50
larval/post-larval fish unid.	larval fishes	1	1.48
<i>Triphoturus mexicanus</i>	Mexican lampfish	1	1.48
<i>Icelinus</i> spp.	sculpins	1	1.31
<i>Citharichthys sordidus</i>	Pacific sanddab	1	1.29
		<b>Total Fishes: 1,473</b>	
<b>Target Invertebrates</b>			
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	280	383.30
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	68	92.44
<i>Pinnotheres</i> spp. (megalops)	pea crab megalops	29	39.96
Majidae unid. (megalops)	spider crab megalops	19	26.46
<i>Petrolisthes</i> spp. (megalops)	porcelain crab megalops	13	17.61
Paguridae unid. (megalops)	hermit crab megalops	11	14.07
<i>Emerita analoga</i> (megalops)	mole crabs megalops	8	11.23
Brachyura unid. (megalops)	unidentified crab megalops	7	9.58
Porcellanidae unid. (megalops)	porcelain crab megalops	5	6.56
Grapsidae unid. (megalops)	shore crab megalops	3	3.88
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	2	2.76
Diogenidae (megalops)	left-handed hermit crabs megalops	2	2.44
unidentified crab (megalops)	unidentified crab megalops	2	2.26
		<b>Total Target Invertebrates: 449</b>	

Survey: SMBEA09  
Start Date: 5/3/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Engraulis mordax</i>	northern anchovy	329	956.11
Engraulidae unid.	anchovies	207	616.28
Sciaenidae unid.	croakers	22	65.10
<i>Genyonemus lineatus</i>	white croaker	12	36.45
larvae, unidentified yolksac	unidentified yolksac larvae	10	31.03
<i>Hypsoblennius</i> spp.	combtooth blennies	8	23.89
<i>Stenobranchius leucopsarus</i>	northern lampfish	8	22.93
Gobiidae unid.	gobies	5	14.71
<i>Paralichthys californicus</i>	California halibut	5	14.47
<i>Citharichthys stigmaeus</i>	speckled sanddab	4	11.08
larval fish fragment	unidentified larval fishes	3	10.00
<i>Pleuronichthys guttulatus</i>	diamond turbot	3	9.51
<i>Seriphus politus</i>	queenfish	2	5.74
<i>Oxyjulis californica</i>	senorita	2	5.45
<i>Atherinopsis californiensis</i>	jacksmelt	2	5.34
<i>Citharichthys sordidus</i>	Pacific sanddab	1	3.35
<i>Gibbonsia</i> spp.	clinid kelpfishes	1	2.72
<i>Cheilotrema saturnum</i>	black croaker	1	2.67
Pleuronectidae unid.	righteye flounders	1	2.67
		<b>Total Fishes: 626</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	10,116	29,900.89
Paralichthyidae unid. (eggs)	sand flounder eggs	2,825	8,357.53
Engraulidae unid. (eggs)	anchovy eggs	1,748	5,255.72
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	934	2,871.35
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	492	1,427.86
Sciaenidae unid. (eggs)	croaker eggs	227	697.05
<i>Genyonemus lineatus</i> (eggs)	white croaker eggs	51	137.93
Pleuronectidae unid. (eggs)	righteye flounder eggs	12	32.04
		<b>Total Eggs: 16,405</b>	
<b>Target Invertebrates</b>			
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	9	24.62
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	5	13.35
<i>Petrolisthes</i> spp. (megalops)	porcelain crab megalops	2	5.54
Paguridae unid. (megalops)	hermit crab megalops	1	2.67
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	1	2.67
<i>Loligo opalescens</i>	market squid	1	2.67
		<b>Total Target Invertebrates: 19</b>	

Survey: SMBEA10  
 Start Date: 5/16/2006  
 Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Engraulis mordax</i>	northern anchovy	62	179.34
Engraulidae unid.	anchovies	56	155.01
<i>Hypsoblennius</i> spp.	combtooth blennies	16	43.08
larvae, unidentified yolksac	unidentified yolksac larvae	5	14.48
<i>Icelinus</i> spp.	sculpins	3	9.10
Atherinopsidae unid.	silversides	2	4.98
<i>Typhlogobius californiensis</i>	blind goby	2	4.98
<i>Genyonemus lineatus</i>	white croaker	1	3.03
larval fish fragment	unidentified larval fishes	1	3.03
<i>Pleuronichthys guttulatus</i>	diamond turbot	1	3.03
<i>Citharichthys stigmaeus</i>	speckled sanddab	1	2.55
<i>Atherinopsis californiensis</i>	jacksmelt	1	2.42
<i>Atractoscion nobilis</i>	white seabass	1	2.42
Sciaenidae unid.	croakers	1	2.42
		<b>Total Fishes: 153</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	3,435	9,391.72
Engraulidae unid. (eggs)	anchovy eggs	1,290	3,746.94
Paralichthyidae unid. (eggs)	sand flounder eggs	722	2,052.02
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	219	637.25
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	17	60.63
Pleuronectidae unid. (eggs)	righteye flounder eggs	1	3.57
<i>Genyonemus lineatus</i> (eggs)	white croaker eggs	1	3.03
		<b>Total Eggs: 5,685</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	1	3.03
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	1	2.55
unidentified crab (megalops)	unidentified crab megalops	1	2.55
		<b>Total Target Invertebrates: 3</b>	

Survey: SMBEA10  
Start Date: 5/16/2006  
Stations: M1-M3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
Engraulidae unid.	anchovies	633	959.90
<i>Engraulis mordax</i>	northern anchovy	108	167.46
<i>Hypsoblennius</i> spp.	combtooth blennies	22	32.41
Chitonotus / Icelinus	sculpins	17	25.31
<i>Genyonemus lineatus</i>	white croaker	16	24.84
larvae, unidentified yolksac	unidentified yolksac larvae	9	13.71
<i>Paralichthys californicus</i>	California halibut	7	10.42
larval fish fragment	unidentified larval fishes	6	9.10
<i>Zaniolepis</i> spp.	combfishes	6	8.89
<i>Citharichthys stigmaeus</i>	speckled sanddab	6	8.72
Sciaenidae unid.	croakers	3	4.51
<i>Pleuronichthys ritteri</i>	spotted turbot	3	4.48
<i>Icelinus quadriseriatus</i>	yellowchin sculpin	2	3.65
<i>Typhlogobius californiensis</i>	blind goby	2	3.31
Hexagrammidae unid.	greenlings	2	2.89
<i>Gillichthys mirabilis</i>	longjaw mudsucker	2	2.88
larval/post-larval fish unid.	larval fishes	2	2.88
<i>Seriphus politus</i>	queenfish	2	2.84
<i>Peprilus simillimus</i>	Pacific butterfish	2	2.73
<i>Atractoscion nobilis</i>	white seabass	1	1.70
larval fish - damaged	unidentified larval fishes	1	1.70
Cottidae unid.	sculpins	1	1.56
Gobiidae unid.	gobies	1	1.56
Atherinopsidae unid.	silversides	1	1.52
<i>Cheilotrema saturnum</i>	black croaker	1	1.52
<i>Pleuronichthys</i> spp.	turbots	1	1.52
<i>Icelinus</i> spp.	sculpins	1	1.48
<i>Citharichthys</i> spp.	sanddabs	1	1.32
		<b>Total Fishes: 859</b>	
<b>Target Invertebrates</b>			
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	30	43.60
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	7	10.70
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	2	2.89
unidentified crab (megalops)	unidentified crab megalops	2	2.84
<i>Emerita analoga</i> (megalops)	mole crabs megalops	1	1.56
Majidae unid. (megalops)	spider crab megalops	1	1.56
Paguridae unid. (megalops)	hermit crab megalops	1	1.44
<i>Cancer</i> spp. (megalops)	cancer crabs megalops	1	1.40
		<b>Total Target Invertebrates: 45</b>	



Survey: SMBEA10  
Start Date: 5/16/2006  
Stations: O1-O3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
Engraulidae unid.	anchovies	1,405	1,944.42
<i>Engraulis mordax</i>	northern anchovy	275	341.15
<i>Genyonemus lineatus</i>	white croaker	27	38.88
<i>Paralichthys californicus</i>	California halibut	21	26.82
<i>Hypsoblennius</i> spp.	combtooth blennies	11	16.73
<i>Citharichthys stigmaeus</i>	speckled sanddab	9	12.36
<i>Pleuronichthys verticalis</i>	hornyhead turbot	4	8.33
<i>Pleuronichthys ritteri</i>	spotted turbot	6	7.72
<i>Icelinus quadriseriatus</i>	yellowchin sculpin	5	6.44
<i>Pleuronichthys</i> spp.	turbots	4	6.43
larval fish fragment	unidentified larval fishes	5	6.39
Gobiidae unid.	gobies	4	5.55
Pleuronectidae unid.	righteye flounders	4	5.21
Pleuronectiformes unid.	flatfishes	3	4.97
<i>Zaniolepis</i> spp.	combfishes	3	3.96
larvae, unidentified yolksac	unidentified yolksac larvae	3	3.86
Sciaenidae unid.	croakers	3	3.25
Cottidae unid.	sculpins	2	2.78
<i>Parophrys vetulus</i>	English sole	2	2.70
<i>Pleuronichthys guttulatus</i>	diamond turbot	2	2.59
<i>Atractoscion nobilis</i>	white seabass	2	2.35
<i>Zaniolepis latipinnis</i>	longspine combfish	2	1.80
<i>Gillichthys mirabilis</i>	longjaw mudsucker	1	1.45
Chitonotus / Icelinus	sculpins	1	1.34
<i>Citharichthys</i> spp.	sanddabs	1	1.33
<i>Hypsypops rubicundus</i>	garibaldi	1	1.32
<i>Zaniolepis frenata</i>	shortspine combfish	1	1.30
<i>Peprilus simillimus</i>	Pacific butterfish	1	0.90
		<b>Total Fishes: 1,808</b>	
<b>Target Invertebrates</b>			
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	52	49.04
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	5	9.27
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	6	8.36
<i>Cancer antennarius</i> (megalops)	brown rock crab megalops	3	3.89
unidentified crab (megalops)	unidentified crab megalops	2	3.01
<i>Emerita analoga</i> (megalops)	mole crabs megalops	2	1.80
<i>Pinnotheres</i> spp. (megalops)	pea crab megalops	1	1.39
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	1	1.27
		<b>Total Target Invertebrates: 72</b>	

Survey: SMBEA10  
Start Date: 5/16/2006  
Stations: S1-S4

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
Engraulidae unid.	anchovies	186	262.57
<i>Engraulis mordax</i>	northern anchovy	51	68.42
<i>Hypsoblennius</i> spp.	cometooth blennies	33	50.32
<i>Genyonemus lineatus</i>	white croaker	14	22.02
larval fish fragment	unidentified larval fishes	9	12.24
Gobiidae unid.	gobies	7	11.17
Chitonotus / Icelinus	sculpins	7	11.11
Sciaenidae unid.	croakers	4	5.75
larvae, unidentified yolksac	unidentified yolksac larvae	4	5.42
Atherinopsidae unid.	silversides	3	4.33
<i>Hypsypops rubicundus</i>	garibaldi	2	2.85
<i>Cheilotrema saturnum</i>	black croaker	2	2.82
larval fish - damaged	unidentified larval fishes	2	2.71
<i>Peprilus simillimus</i>	Pacific butterfish	2	2.70
<i>Zaniolepis frenata</i>	shortspine combfish	2	2.70
<i>Seriphus politus</i>	queenfish	1	1.70
<i>Pleuronichthys</i> spp.	turbots	1	1.44
<i>Paralichthys californicus</i>	California halibut	1	1.40
<i>Semicossyphus pulcher</i>	California sheephead	1	1.40
<i>Atractoscion nobilis</i>	white seabass	1	1.38
<i>Citharichthys stigmaeus</i>	speckled sanddab	1	1.25
		<b>Total Fishes: 334</b>	
<b>Target Invertebrates</b>			
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	18	24.80
unidentified crab (megalops)	unidentified crab megalops	3	4.80
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	3	4.23
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	3	4.16
Diogenidae (megalops)	left-handed hermit crabs megalops	1	1.40
<i>Cancer antennarius</i> (megalops)	brown rock crab megalops	1	1.38
		<b>Total Target Invertebrates: 29</b>	

Survey: SMBEA11  
Start Date: 6/1/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Hypsoblennius</i> spp.	combtooth blennies	35	114.09
<i>Genyonemus lineatus</i>	white croaker	9	29.53
<i>Engraulis mordax</i>	northern anchovy	7	22.67
<i>Icelinus</i> spp.	sculpins	3	9.88
<i>Paralichthys californicus</i>	California halibut	2	6.51
larvae, unidentified yolksac	unidentified yolksac larvae	1	3.96
<i>Semicossyphus pulcher</i>	California sheephead	1	3.96
Gobiidae unid.	gobies	1	3.39
larval/post-larval fish unid.	larval fishes	1	3.39
<i>Oxylebius pictus</i>	painted greenling	1	3.39
<i>Pleuronichthys guttulatus</i>	diamond turbot	1	3.39
<i>Pleuronichthys ritteri</i>	spotted turbot	1	3.39
larval fish fragment	unidentified larval fishes	1	3.36
		<b>Total Fishes: 64</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	1,504	5,162.21
Sciaen. / Paralich. / Labridae (eggs)	fish eggs	369	1,263.27
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	185	617.82
Sciaenidae unid. (eggs)	croaker eggs	9	35.70
<i>Roncador stearnsi</i> (eggs)	spotfin croaker eggs	6	23.80
<i>Oxyjulis californica</i> (eggs)	senorita eggs	1	3.97
Pleuronectidae unid. (eggs)	righteye flounder eggs	1	3.22
		<b>Total Eggs: 2,075</b>	
<b>Target Invertebrates</b>			
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	16	51.59
<i>Pachycheles rudis</i> (megalops)	thickclaw porcelain crab	2	6.77
<i>Emerita analoga</i> (megalops)	mole crabs megalops	1	3.39
<i>Lophopanopeus bellus</i> (megalops)	black-claw crestleg crab	1	3.39
<i>Petrolisthes cinctipes</i> (megalops)	flat porcelain crab megalops	1	3.39
		<b>Total Target Invertebrates: 21</b>	

Survey: SMBEA12  
Start Date: 6/14/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
Sciaenidae unid.	croakers	86	346.16
<i>Seriphus politus</i>	queenfish	31	125.98
<i>Hypsoblennius</i> spp.	combtooth blennies	23	82.82
Gobiidae unid.	gobies	17	58.38
<i>Paralichthys californicus</i>	California halibut	14	57.39
<i>Citharichthys stigmaeus</i>	speckled sanddab	14	51.45
larval fish - damaged	unidentified larval fishes	9	35.97
<i>Cheilotrema saturnum</i>	black croaker	6	22.11
<i>Pleuronichthys</i> spp.	turbots	5	19.07
Atherinopsidae unid.	silversides	5	16.73
larval fish fragment	unidentified larval fishes	4	16.62
<i>Sphyræna argentea</i>	Pacific barracuda	4	16.11
<i>Genyonemus lineatus</i>	white croaker	3	12.05
<i>Oxyjulis californica</i>	senorita	2	8.57
<i>Pleuronichthys verticalis</i>	hornyhead turbot	2	8.05
Pleuronectidae unid.	righteye flounders	2	7.28
<i>Citharichthys sordidus</i>	Pacific sanddab	1	4.29
<i>Xystreurus liolepis</i>	fantail sole	1	4.29
Engraulidae unid.	anchovies	1	4.02
Myctophidae unid.	lanternfishes	1	3.48
<i>Pleuronichthys guttulatus</i>	diamond turbot	1	3.48
<i>Engraulis mordax</i>	northern anchovy	1	3.26
<i>Oxylebius pictus</i>	painted greenling	1	3.26
		<b>Total Fishes: 234</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	8,702	33,467.29
Sciaen. / Paralich. / Labridae (eggs)	fish eggs	1,029	3,701.10
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	132	520.29
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	125	435.12
Sciaenidae unid. (eggs)	croaker eggs	2	8.05
Engraulidae unid. (eggs)	anchovy eggs	1	4.34
		<b>Total Eggs: 9,991</b>	
<b>Target Invertebrates</b>			
<i>Pachycheles rudis</i> (megalops)	thickclaw porcelain crab	6	20.42
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	2	6.95
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	2	6.73
Paguridae unid. (megalops)	hermit crab megalops	1	3.48
<i>Pachycheles pubescens</i> (megalops)	pubescent porcelain crab	1	3.26
Porcellanidae unid. (megalops)	porcelain crab megalops	1	3.26
		<b>Total Target Invertebrates: 13</b>	

Survey: SMBEA12  
Start Date: 6/14/2006  
Stations: M1-M3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
Sciaenidae unid.	croakers	61	235.27
<i>Seriphus politus</i>	queenfish	48	133.33
<i>Hypsoblennius</i> spp.	combtooth blennies	50	119.46
<i>Citharichthys stigmaeus</i>	speckled sanddab	36	119.27
<i>Paralichthys californicus</i>	California halibut	25	97.93
larvae, unidentified yolksac	unidentified yolksac larvae	30	91.39
<i>Sphyræna argentea</i>	Pacific barracuda	21	63.10
<i>Pleuronichthys verticalis</i>	hornyhead turbot	14	41.06
<i>Engraulis mordax</i>	northern anchovy	12	30.44
<i>Icelinus</i> spp.	sculpins	5	21.56
larval fish fragment	unidentified larval fishes	7	21.46
<i>Citharichthys sordidus</i>	Pacific sanddab	3	16.86
<i>Stenobranchius leucopsarus</i>	northern lampfish	4	15.55
<i>Pleuronichthys</i> spp.	turbots	3	13.04
<i>Lepidogobius lepidus</i>	bay goby	1	6.59
Myctophidae unid.	lanternfishes	1	6.59
Engraulidae unid.	anchovies	2	5.81
<i>Zaniolepis frenata</i>	shortspine combfish	2	4.68
Chitonotus / <i>Icelinus</i>	sculpins	1	4.55
<i>Parophrys vetulus</i>	English sole	1	4.55
<i>Semicossyphus pulcher</i>	California sheephead	2	4.48
Ophidiidae unid.	cusk-eels	2	4.27
larval fish - damaged	unidentified larval fishes	1	3.68
<i>Cheilotrema saturnum</i>	black croaker	1	2.34
<i>Triphoturus mexicanus</i>	Mexican lampfish	1	2.34
<i>Genyonemus lineatus</i>	white croaker	1	2.14
larval/post-larval fish unid.	larval fishes	1	2.14
<i>Oxyjulis californica</i>	senorita	1	2.14
		<b>Total Fishes: 337</b>	
<b>Target Invertebrates</b>			
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	7	19.92
Majidae unid. (megalops)	spider crab megalops	3	11.00
<i>Pachycheles</i> spp. (megalops)	porcelain crabs megalops	3	8.99
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	2	4.27
<i>Panulirus interruptus</i> (phyllosome)	California spiny lobster	1	3.68
Brachyura unid. (megalops)	unidentified crab megalops	1	2.14
<i>Petrolisthes</i> spp. (megalops)	porcelain crab megalops	1	2.14
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	1	2.14
		<b>Total Target Invertebrates: 19</b>	

Survey: SMBEA12  
Start Date: 6/14/2006  
Stations: O1-O3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Seriphus politus</i>	queenfish	73	224.84
<i>Hypsoblennius</i> spp.	combtooth blennies	55	156.94
<i>Engraulis mordax</i>	northern anchovy	39	119.39
<i>Citharichthys stigmaeus</i>	speckled sanddab	31	93.32
<i>Pleuronichthys verticalis</i>	hornyhead turbot	24	91.76
<i>Paralichthys californicus</i>	California halibut	27	90.43
<i>Pleuronichthys</i> spp.	turbots	23	74.74
Sciaenidae unid.	croakers	23	69.09
<i>Icelinus</i> spp.	sculpins	21	62.53
<i>Sphyaena argentea</i>	Pacific barracuda	21	57.90
larvae, unidentified yolksac	unidentified yolksac larvae	16	44.41
<i>Citharichthys sordidus</i>	Pacific sanddab	15	42.06
Engraulidae unid.	anchovies	7	24.05
<i>Citharichthys</i> spp.	sanddabs	5	14.87
<i>Pleuronichthys ritteri</i>	spotted turbot	4	13.26
larval fish fragment	unidentified larval fishes	5	12.45
<i>Symphurus atricauda</i>	California tonguefish	4	12.07
<i>Atractoscion nobilis</i>	white seabass	3	7.50
<i>Genyonemus lineatus</i>	white croaker	3	7.47
<i>Zaniolepis frenata</i>	shortspine combfish	2	7.21
<i>Stenobranchius leucopsarus</i>	northern lampfish	2	7.18
unidentified fish, damaged	unidentified damaged fish	2	5.04
Pleuronectiformes unid.	flatfishes	1	5.03
Myctophidae unid.	lanternfishes	2	4.98
<i>Lepidogobius lepidus</i>	bay goby	2	4.95
<i>Peprilus simillimus</i>	Pacific butterfish	2	4.86
<i>Umbrina roncadior</i>	yellowfin croaker	1	4.69
Chitonotus / <i>Icelinus</i>	sculpins	1	3.53
<i>Parophrys vetulus</i>	English sole	1	3.53
<i>Cheilotrema saturnum</i>	black croaker	1	2.52
<i>Icelinus quadriseriatus</i>	yellowchin sculpin	1	2.52
<i>Roncadior stearnsi</i>	spotfin croaker	1	2.52
<i>Sebastes</i> spp.	rockfishes	1	2.52
<i>Artedius lateralis</i>	smoothhead sculpin	1	2.49
Gobiidae unid.	gobies	1	2.49
<i>Hippoglossina stomata</i>	bigmouth sole	1	2.49
Labridae unid.	wrasses	1	2.49
larval/post-larval fish unid.	larval fishes	1	2.49
<i>Brosmophycis marginata</i>	red brotula	1	2.43
<i>Oxyjulis californica</i>	senorita	1	2.43
		<b>Total Fishes: 426</b>	

(continued)

Survey: SMBEA12  
 Start Date: 6/14/2006  
 Stations: O1-O3 (continued)

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Target Invertebrates</b>			
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	11	38.52
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	9	28.15
Majidae unid. (megalops)	spider crab megalops	7	19.91
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	4	16.01
<i>Pachycheles</i> spp. (megalops)	porcelain crabs megalops	2	10.05
Grapsidae unid. (megalops)	shore crab megalops	3	9.98
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	3	9.95
Brachyura unid. (megalops)	unidentified crab megalops	2	7.46
<i>Cancer gracilis</i> (megalops)	slender crab megalops	2	7.46
<i>Cancer antennarius</i> (megalops)	brown rock crab megalops	1	5.03
Pinnotheridae (megalops)	pea crab megalops	1	3.53
<i>Petrolisthes</i> spp. (megalops)	porcelain crab megalops	1	2.52
Paguridae unid. (megalops)	hermit crab megalops	1	2.49
<b>Total Target Invertebrates:</b>		<b>47</b>	

Survey: SMBEA12  
Start Date: 6/14/2006  
Stations: S1-S4

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
Sciaenidae unid.	croakers	155	310.86
larvae, unidentified yolksac	unidentified yolksac larvae	80	143.51
<i>Seriphus politus</i>	queenfish	50	105.56
<i>Citharichthys stigmaeus</i>	speckled sanddab	48	90.31
<i>Paralichthys californicus</i>	California halibut	36	68.20
Gobiidae unid.	gobies	37	66.00
larval fish fragment	unidentified larval fishes	26	56.10
<i>Cheilotrema saturnum</i>	black croaker	12	25.73
<i>Sphyræna argentea</i>	Pacific barracuda	10	20.58
<i>Hypsoblennius</i> spp.	combtooth blennies	10	16.67
larval fish - damaged	unidentified larval fishes	8	16.05
<i>Pleuronichthys</i> spp.	turbots	7	12.31
<i>Icelinus</i> spp.	sculpins	7	11.81
<i>Umbrina roncador</i>	yellowfin croaker	4	9.14
Atherinopsidae unid.	silversides	3	8.08
<i>Hypsypops rubicundus</i>	garibaldi	3	6.12
<i>Menticirrhus undulatus</i>	California corbina	3	6.12
<i>Oxyjulis californica</i>	senorita	3	5.81
<i>Pleuronichthys guttulatus</i>	diamond turbot	1	3.97
<i>Pleuronichthys verticalis</i>	hornyhead turbot	2	3.31
<i>Symphurus atricauda</i>	California tonguefish	1	2.04
Engraulidae unid.	anchovies	1	1.73
<i>Pleuronichthys ritteri</i>	spotted turbot	1	1.73
<i>Engraulis mordax</i>	northern anchovy	1	1.59
<i>Genyonemus lineatus</i>	white croaker	1	1.52
Pleuronectiformes unid.	flatfishes	1	1.52
<i>Typhlogobius californiensis</i>	blind goby	1	1.52
<i>Citharichthys</i> spp.	sanddabs	1	1.50
<i>Zaniolepis frenata</i>	shortspine combfish	1	1.50
		<b>Total Fishes: 514</b>	
<b>Target Invertebrates</b>			
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	8	12.37
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	8	12.31
<i>Petrolisthes</i> spp. (megalops)	porcelain crab megalops	8	12.21
<i>Pachycheles</i> spp. (megalops)	porcelain crabs megalops	8	12.14
Paguridae unid. (megalops)	hermit crab megalops	6	9.18
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	3	4.70
Porcellanidae unid. (megalops)	porcelain crab megalops	3	4.54
<i>Panulirus interruptus</i> (phyllosome)	California spiny lobster	1	1.59
<i>Cancer antennarius</i> (megalops)	brown rock crab megalops	1	1.52
Grapsidae unid. (megalops)	shore crab megalops	1	1.52
		<b>Total Target Invertebrates: 47</b>	



Survey: SMBEA13  
Start Date: 6/28/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
Gobiidae unid.	gobies	6	15.44
<i>Hypsoblennius</i> spp.	combtooth blennies	5	13.82
Sciaenidae unid.	croakers	2	5.52
<i>Cheilotrema saturnum</i>	black croaker	1	3.52
<i>Menticirrhus undulatus</i>	California corbina	1	2.57
<i>Paralabrax</i> spp.	sand bass	1	2.27
<i>Pleuronichthys</i> spp.	turbots	1	2.27
		<b>Total Fishes: 17</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	1,205	3,138.90
Sciaen. / Paralich. / Labridae (eggs)	fish eggs	337	880.10
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	69	187.08
		<b>Total Eggs: 1,611</b>	
<b>Target Invertebrates</b>			
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	3	8.33
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	3	8.33
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	3	8.01
unidentified crab (megalops)	unidentified crab megalops	1	2.88
Hippoidea (megalops)	mole crab megalops	1	2.57
Paguridae unid. (megalops)	hermit crab megalops	1	2.57
<i>Panulirus interruptus</i> (phyllosome)	California spiny lobster	1	2.57
		<b>Total Target Invertebrates: 13</b>	

Survey: SMBEA14  
Start Date: 7/12/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
larvae, unidentified yolksac	unidentified yolksac larvae	62	202.48
Sciaenidae unid.	croakers	43	136.07
<i>Paralichthys californicus</i>	California halibut	24	64.55
<i>Seriphus politus</i>	queenfish	9	29.73
<i>Pleuronichthys ritteri</i>	spotted turbot	7	18.89
<i>Hypsoblennius</i> spp.	combtooth blennies	4	14.12
<i>Citharichthys stigmaeus</i>	speckled sanddab	5	13.12
<i>Cheilotrema saturnum</i>	black croaker	4	11.60
<i>Xystreurus liolepis</i>	fantail sole	4	11.41
<i>Paralabrax</i> spp.	sand bass	3	10.23
<i>Genyonemus lineatus</i>	white croaker	3	7.37
<i>Menticirrhus undulatus</i>	California corbina	2	6.95
larval/post-larval fish unid.	larval fishes	2	6.04
<i>Engraulis mordax</i>	northern anchovy	2	5.80
<i>Pleuronichthys</i> spp.	turbots	2	4.47
Labrisomidae unid.	labrisomid blennies	1	3.50
<i>Symphurus atricauda</i>	California tonguefish	1	3.45
Atherinopsidae unid.	silversides	1	2.90
<i>Hippoglossina stomata</i>	bigmouth sole	1	2.90
<i>Icelinus</i> spp.	sculpins	1	2.90
<i>Pleuronichthys verticalis</i>	hornyhead turbot	1	2.90
<i>Atractoscion nobilis</i>	white seabass	1	2.60
larval fish fragment	unidentified larval fishes	1	2.60
Hexagrammidae unid.	greenlings	1	2.24
Pleuronectidae unid.	righteye flounders	1	2.24
<i>Pleuronichthys guttulatus</i>	diamond turbot	1	2.24
<i>Roncador stearnsi</i>	spotfin croaker	1	2.24
<i>Zaniolepis</i> spp.	combfishes	1	2.24
		<b>Total Fishes: 189</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	923	5,651.02
Sciaen. / Paralich. / Labridae (eggs)	fish eggs	309	1,914.65
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	59	401.32
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	51	297.58
<i>Paralabrax</i> spp. (eggs)	sand bass eggs	2	13.96
Engraulidae unid. (eggs)	anchovy eggs	2	12.28
<i>Sphyraena argentea</i> (eggs)	Pacific barracuda eggs	1	6.83
		<b>Total Eggs: 1,347</b>	

(continued)

Survey: SMBEA14  
Start Date: 7/12/2006  
Stations: E1 (continued)

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Target Invertebrates</b>			
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	26	64.76
<i>Pachycheles</i> spp. (megalops)	porcelain crabs megalops	13	32.38
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	13	31.72
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	12	29.48
<i>Cancer antennarius</i> (megalops)	brown rock crab megalops	4	10.27
Paguridae unid. (megalops)	hermit crab megalops	3	8.03
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	3	8.03
Diogenidae (megalops)	left-handed hermit crabs	1	2.90
Hippoidea (megalops)	mole crab megalops	1	2.90
Majidae unid. (megalops)	spider crab megalops	1	2.90
<i>Petrolisthes</i> spp. (megalops)	porcelain crab megalops	1	2.90
Porcellanidae unid. (megalops)	porcelain crab megalops	1	2.24
<b>Total Target Invertebrates:</b>		<b>79</b>	

Survey: SMBEA14  
Start Date: 7/12/2006  
Stations: M1-M3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
larvae, unidentified yolksac	unidentified yolksac larvae	294	411.77
<i>Paralabrax</i> spp.	sand bass	203	280.25
Sciaenidae unid.	croakers	189	255.43
<i>Seriphus politus</i>	queenfish	175	238.01
Haemulidae unid.	grunts	104	146.94
<i>Paralichthys californicus</i>	California halibut	96	136.14
<i>Pleuronichthys verticalis</i>	hornyhead turbot	61	83.21
<i>Citharichthys stigmaeus</i>	speckled sanddab	53	74.53
<i>Hypsoblennius</i> spp.	combtooth blennies	44	64.00
larval fish - damaged	unidentified larval fishes	43	58.39
<i>Symphurus atricauda</i>	California tonguefish	33	45.50
<i>Genyonemus lineatus</i>	white croaker	18	26.10
<i>Umbrina roncadora</i>	yellowfin croaker	18	24.80
<i>Pleuronichthys ritteri</i>	spotted turbot	18	23.32
<i>Xystreurus liolepis</i>	fantail sole	12	15.85
<i>Cheilotrema saturnum</i>	black croaker	11	14.31
Engraulidae unid.	anchovies	7	11.06
<i>Pleuronichthys</i> spp.	turbots	8	10.07
Gobiidae unid.	gobies	6	9.60
larval fish fragment	unidentified larval fishes	7	8.71
Ophidiidae unid.	cusk-eels	6	8.18
<i>Peprilus simillimus</i>	Pacific butterfish	5	7.42
Paralichthyidae unid.	sand flounders	5	7.26
larval/post-larval fish unid.	larval fishes	5	6.58
Chitonotus / Icelinus	sculpins	3	5.33
<i>Sphyrnaea argentea</i>	Pacific barracuda	3	5.14
<i>Semicossyphus pulcher</i>	California sheephead	3	4.50
<i>Oxyjulis californica</i>	senorita	3	4.31
<i>Hypsypops rubicundus</i>	garibaldi	2	3.25
<i>Anisotremus davidsonii</i>	sargo	2	2.95
<i>Typhlogobius californiensis</i>	blind goby	2	2.93
<i>Zaniolepis</i> spp.	combfishes	2	2.81
Pleuronectiformes unid.	flatfishes	2	2.57
<i>Atractoscion nobilis</i>	white seabass	2	2.56
<i>Platichthys stellatus</i>	starry flounder	2	2.36
Cynoglossidae unid.	tongue soles	1	1.75
<i>Pleuronichthys guttulatus</i>	diamond turbot	1	1.61
Labrisomidae unid.	labrisomid blennies	1	1.50
<i>Citharichthys sordidus</i>	Pacific sanddab	1	1.43
<i>Triphoturus mexicanus</i>	Mexican lampfish	1	1.43
Pleuronectidae unid.	righteye flounders	1	1.38
<i>Odontopyxis trispinosa</i>	pygmy poacher	1	1.29
<i>Hypsoblennius jenkinsi</i>	mussel blenny	1	1.18

(continued)

Survey: SMBEA14  
Start Date: 7/12/2006  
Stations: M1-M3 (continued)

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes (continued)</b>			
<i>Roncador stearnsi</i>	spotfin croaker	1	1.08
<i>Sebastes</i> spp.	rockfishes	1	1.08
<i>Syngnathus</i> spp.	pipefishes	1	1.08
		<b>Total Fishes: 1,458</b>	
<b>Target Invertebrates</b>			
<i>Panulirus interruptus</i> (phyllosome)	California spiny lobster	109	154.41
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	97	145.09
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	64	92.90
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	42	64.11
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	24	36.46
<i>Cancer antennarius</i> (megalops)	brown rock crab megalops	21	32.07
Porcellanidae unid. (megalops)	porcelain crab megalops	12	20.25
Majidae unid. (megalops)	spider crab megalops	14	19.76
<i>Pachycheles</i> spp. (megalops)	porcelain crabs megalops	9	14.56
Brachyura unid. (megalops)	unidentified crab megalops	5	7.96
Paguridae unid. (megalops)	hermit crab megalops	3	4.40
<i>Petrolisthes</i> spp. (megalops)	porcelain crab megalops	3	4.34
Diogenidae (megalops)	left-handed hermit crabs megalops	1	1.83
<i>Emerita analoga</i> (megalops)	mole crabs megalops	1	1.29
<i>Pinnotheres</i> spp. (megalops)	pea crab megalops	1	1.29
<i>Portunus xantusii</i> (megalops)	Xantus' swimming crab	1	1.29
<i>Cancer</i> spp. (megalops)	cancer crabs megalops	1	1.08
		<b>Total Target Invertebrates: 408</b>	

Survey: SMBEA14  
Start Date: 7/12/2006  
Stations: O1-O3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Seriphus politus</i>	queenfish	139	191.33
larvae, unidentified yolksac	unidentified yolksac larvae	143	189.11
<i>Paralichthys californicus</i>	California halibut	119	147.90
<i>Paralabrax</i> spp.	sand bass	104	135.46
Haemulidae unid.	grunts	84	111.32
<i>Pleuronichthys verticalis</i>	hornyhead turbot	73	94.81
Sciaenidae unid.	croakers	45	60.13
<i>Pleuronichthys ritteri</i>	spotted turbot	36	49.34
<i>Citharichthys stigmaeus</i>	speckled sanddab	36	46.26
larval fish - damaged	unidentified larval fishes	25	31.56
Engraulidae unid.	anchovies	19	29.26
<i>Hypsoblennius</i> spp.	combtooth blennies	19	25.24
<i>Xystreurus liolepis</i>	fantail sole	18	21.67
<i>Symphurus atricauda</i>	California tonguefish	12	16.06
<i>Genyonemus lineatus</i>	white croaker	14	15.85
larval fish fragment	unidentified larval fishes	12	14.77
<i>Pleuronichthys</i> spp.	turbots	7	10.59
<i>Sphyræna argentea</i>	Pacific barracuda	9	10.59
<i>Umbrina roncador</i>	yellowfin croaker	8	10.33
<i>Cheilotrema saturnum</i>	black croaker	6	8.10
<i>Oxyjulis californica</i>	senorita	4	5.22
<i>Engraulis mordax</i>	northern anchovy	3	4.99
<i>Menticirrhus undulatus</i>	California corbina	2	4.83
Gobiidae unid.	gobies	3	4.28
Chitonotus / Icelinus	sculpins	3	4.02
Paralichthyidae unid.	sand flounders	3	3.33
<i>Icelinus quadriseriatus</i>	yellowchin sculpin	2	3.21
Ophidiidae unid.	cusk-eels	2	2.20
Pleuronectiformes unid.	flatfishes	2	2.01
<i>Roncador stearnsi</i>	spotfin croaker	1	1.78
Cottidae unid.	sculpins	1	1.61
<i>Odontopyxis trispinosa</i>	pygmy poacher	1	1.61
<i>Peprilus simillimus</i>	Pacific butterfish	1	1.55
<i>Typhlogobius californiensis</i>	blind goby	1	1.55
larval/post-larval fish unid.	larval fishes	1	1.43
<i>Gibbonsia</i> spp.	clinid kelpfishes	1	1.13
Labrisomidae unid.	labrisomid blennies	1	1.13
<i>Citharichthys sordidus</i>	Pacific sanddab	1	1.07
<i>Hypsypops rubicundus</i>	garibaldi	1	0.93
		<b>Total Fishes: 962</b>	
<b>Target Invertebrates</b>			
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	255	381.26
<i>Panulirus interruptus</i> (phyllosome)	California spiny lobster	201	256.37

(continued)

Survey: SMBEA14  
Start Date: 7/12/2006  
Stations: O1-O3 (continued)

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Target Invertebrates (continued)</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	162	224.70
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	134	188.01
Majidae unid. (megalops)	spider crab megalops	81	115.40
<i>Cancer antennarius</i> (megalops)	brown rock crab megalops	73	98.25
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	54	74.55
Brachyura unid. (megalops)	unidentified crab megalops	10	13.97
<i>Petrolisthes</i> spp. (megalops)	porcelain crab megalops	9	12.02
Grapsidae unid. (megalops)	shore crab megalops	6	9.95
Diogenidae (megalops)	left-handed hermit crabs megalops	6	8.56
Paguridae unid. (megalops)	hermit crab megalops	6	8.14
<i>Pinnotheres</i> spp. (megalops)	pea crab megalops	6	7.62
<i>Pachycheles</i> spp. (megalops)	porcelain crabs megalops	5	7.29
<i>Loligo opalescens</i>	market squid	3	4.30
Porcellanidae unid. (megalops)	porcelain crab megalops	2	3.51
<i>Portunus xantusii</i> (megalops)	Xantus' swimming crab	2	2.57
<i>Cancer</i> spp. (megalops)	cancer crabs megalops	1	1.43
<i>Cancer gracilis</i> (megalops)	slender crab megalops	1	1.33
<b>Total Target Invertebrates:</b>		<b>1,017</b>	

Survey: SMBEA14  
Start Date: 7/12/2006  
Stations: S1-S4

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
larvae, unidentified yolksac	unidentified yolksac larvae	253	359.35
Sciaenidae unid.	croakers	45	60.86
<i>Paralichthys californicus</i>	California halibut	42	53.52
<i>Paralabrax</i> spp.	sand bass	38	50.73
<i>Hypsoblennius</i> spp.	combtooth blennies	35	46.76
Haemulidae unid.	grunts	26	34.92
<i>Seriphus politus</i>	queenfish	20	25.82
larval fish fragment	unidentified larval fishes	17	24.09
<i>Citharichthys stigmaeus</i>	speckled sanddab	14	19.71
<i>Umbrina roncador</i>	yellowfin croaker	13	18.49
Gobiidae unid.	gobies	12	18.41
<i>Symphurus atricauda</i>	California tonguefish	10	14.81
<i>Menticirrhus undulatus</i>	California corbina	10	13.90
<i>Pleuronichthys verticalis</i>	hornyhead turbot	10	12.91
<i>Pleuronichthys</i> spp.	turbots	8	10.32
<i>Cheilotrema saturnum</i>	black croaker	7	9.05
<i>Pleuronichthys ritteri</i>	spotted turbot	6	7.03
larval fish - damaged	unidentified larval fishes	5	5.90
<i>Genyonemus lineatus</i>	white croaker	4	5.45
<i>Xystreurus liolepis</i>	fantail sole	4	4.57
<i>Oxyjulis californica</i>	senorita	3	4.34
<i>Semicossyphus pulcher</i>	California sheephead	2	2.87
Engraulidae unid.	anchovies	2	2.28
<i>Typhlogobius californiensis</i>	blind goby	1	1.61
<i>Halichoeres semicinctus</i>	rock wrasse	1	1.50
Labrisomidae unid.	labrisomid blennies	1	1.47
<i>Gobiesox</i> spp.	clingfishes	1	1.39
<i>Sphyræna argentea</i>	Pacific barracuda	1	1.25
<i>Engraulis mordax</i>	northern anchovy	1	1.04
<i>Xenistius californiensis</i>	salema	1	1.04
		<b>Total Fishes: 593</b>	
<b>Target Invertebrates</b>			
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	19	23.30
<i>Pachycheles</i> spp. (megalops)	porcelain crabs megalops	14	19.10
<i>Panulirus interruptus</i> (phyllosome)	California spiny lobster	11	16.23
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	10	14.24
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	10	13.72
Porcellanidae unid. (megalops)	porcelain crab megalops	4	5.83
Majidae unid. (megalops)	spider crab megalops	4	5.48
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	2	3.18
Brachyura unid. (megalops)	unidentified crab megalops	2	2.99
Grapsidae unid. (megalops)	shore crab megalops	1	1.61
		<b>Total Target Invertebrates: 77</b>	



Survey: SMBEA15  
Start Date: 7/26/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
Sciaenidae unid.	croakers	46	109.13
<i>Seriphus politus</i>	queenfish	15	36.74
larvae, unidentified yolksac	unidentified yolksac larvae	14	32.20
Haemulidae unid.	grunts	13	30.34
<i>Paralichthys californicus</i>	California halibut	12	27.12
<i>Hypsoblennius</i> spp.	combtooth blennies	10	22.42
<i>Hypsypops rubicundus</i>	garibaldi	7	16.72
<i>Xystreurus liolepis</i>	fantail sole	5	10.62
larval fish - damaged	unidentified larval fishes	3	7.37
<i>Cheilotrema saturnum</i>	black croaker	3	7.26
larval/post-larval fish unid.	larval fishes	3	6.80
larval fish fragment	unidentified larval fishes	3	6.61
<i>Pleuronichthys ritteri</i>	spotted turbot	3	6.35
<i>Paralabrax</i> spp.	sand bass	2	5.03
<i>Symphurus atricauda</i>	California tonguefish	2	4.79
Labrisomidae unid.	labrisomid blennies	2	4.53
Pomacentridae unid.	damsel fishes	1	2.55
Paralichthyidae unid.	sand flounders	1	2.52
<i>Semicossyphus pulcher</i>	California sheephead	1	2.51
<i>Oxyjulis californica</i>	senorita	1	2.27
<i>Sardinops sagax</i>	Pacific sardine	1	2.08
		<b>Total Fishes: 148</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	1,749	8,486.37
Sciaen. / Paralich. / Labridae (eggs)	fish eggs	357	1,723.87
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	59	278.85
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	27	133.42
<i>Sphyræna argentea</i> (eggs)	Pacific barracuda eggs	2	10.38
		<b>Total Eggs: 2,194</b>	
<b>Target Invertebrates</b>			
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	3	7.08
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	1	2.27
		<b>Total Target Invertebrates: 4</b>	

Survey: SMBEA16  
Start Date: 8/9/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
larvae, unidentified yolksac	unidentified yolksac larvae	51	151.32
Sciaenidae unid.	croakers	46	130.87
<i>Paralabrax</i> spp.	sand bass	26	74.15
<i>Seriphus politus</i>	queenfish	17	51.39
Haemulidae unid.	grunts	16	48.87
larval/post-larval fish unid.	larval fishes	11	34.20
<i>Halichoeres semicinctus</i>	rock wrasse	10	31.15
<i>Sphyrna argentea</i>	Pacific barracuda	9	27.83
larval fish fragment	unidentified larval fishes	9	25.89
<i>Paralichthys californicus</i>	California halibut	8	25.36
<i>Hypsoblennius</i> spp.	cometooth blennies	8	24.47
<i>Oxyjulis californica</i>	senorita	8	24.06
Ophidiidae unid.	cusk-eels	8	21.72
<i>Cheilotrema saturnum</i>	black croaker	5	15.86
<i>Symphurus atricauda</i>	California tonguefish	5	15.68
<i>Pleuronichthys ritteri</i>	spotted turbot	5	14.97
<i>Menticirrhus undulatus</i>	California corbina	5	13.86
<i>Ophidion scrippsae</i>	basketweave cusk-eel	4	12.80
<i>Semicossyphus pulcher</i>	California sheephead	4	12.60
<i>Pleuronichthys</i> spp.	turbots	3	9.00
<i>Engraulis mordax</i>	northern anchovy	2	6.20
<i>Genyonemus lineatus</i>	white croaker	2	6.00
<i>Citharichthys stigmaeus</i>	speckled sanddab	2	5.77
Paralichthyidae unid.	sand flounders	1	3.42
Gobiidae unid.	gobies	1	3.20
<i>Clupea pallasii</i>	Pacific herring	1	3.00
Labridae unid.	wrasses	1	3.00
<i>Sebastolobus altivelis</i>	longspine thornyhead	1	2.73
		<b>Total Fishes: 269</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	2,919	17,192.50
Sciaen. / Paralich. / Labridae (eggs)	fish eggs	246	1,453.51
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	96	555.64
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	30	183.78
Pleuronectidae unid. (eggs)	righteye flounder eggs	10	57.44
<i>Sphyrna argentea</i> (eggs)	Pacific barracuda eggs	9	56.46
		<b>Total Eggs: 3,310</b>	
<b>Target Invertebrates</b>			
Majidae unid. (megalops)	spider crab megalops	1	3.00
Porcellanidae unid. (megalops)	porcelain crab megalops	1	2.91
		<b>Total Target Invertebrates: 2</b>	

Survey: SMBEA16  
Start Date: 8/9/2006  
Stations: M1-M3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Hypsoblennius</i> spp.	cometooth blennies	53	99.49
larvae, unidentified yolksac	unidentified yolksac larvae	31	57.23
<i>Paralichthys californicus</i>	California halibut	17	29.34
Sciaenidae unid.	croakers	17	27.99
<i>Engraulis mordax</i>	northern anchovy	14	25.12
<i>Hypsoblennius jenkinsi</i>	mussel blenny	12	22.29
<i>Paralabrax</i> spp.	sand bass	11	19.54
larval fish fragment	unidentified larval fishes	8	18.03
<i>Pleuronichthys ritteri</i>	spotted turbot	8	15.35
<i>Citharichthys stigmaeus</i>	speckled sanddab	7	13.35
<i>Oxyjulis californica</i>	senorita	5	9.90
<i>Chromis punctipinnis</i>	blacksmith	6	8.73
<i>Typhlogobius californiensis</i>	blind goby	4	7.54
Ophidiidae unid.	cusk-eels	3	5.66
<i>Pleuronichthys</i> spp.	turbots	3	5.23
Haemulidae unid.	grunts	3	5.21
<i>Xystreurus liolepis</i>	fantail sole	3	4.78
Gobiidae unid.	gobies	2	4.11
Engraulidae unid.	anchovies	2	3.93
<i>Sphyræna argentea</i>	Pacific barracuda	2	3.31
<i>Symphurus atricauda</i>	California tonguefish	2	3.30
<i>Genyonemus lineatus</i>	white croaker	2	2.95
<i>Xenistius californiensis</i>	salema	1	2.28
Labridae unid.	wrasses	1	2.27
<i>Seriphus politus</i>	queenfish	1	2.27
<i>Hypsypops rubicundus</i>	garibaldi	1	1.83
<i>Rhinogobiops nicholsi</i>	blackeye goby	1	1.83
<i>Sardinops sagax</i>	Pacific sardine	1	1.83
<i>Icelinus</i> spp.	sculpins	1	1.65
Pleuronectidae unid.	righteye flounders	1	1.65
<i>Menticirrhus undulatus</i>	California corbina	1	1.56
<i>Lepidogobius lepidus</i>	bay goby	1	1.47
Myctophidae unid.	lanternfishes	1	1.47
		<b>Total Fishes: 226</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	67	119.31
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	29	53.66
Majidae unid. (megalops)	spider crab megalops	12	21.33
<i>Panulirus interruptus</i> (phyllosome)	California spiny lobster	5	8.16
<i>Cancer antennarius</i> (megalops)	brown rock crab megalops	2	3.73
Brachyura unid. (megalops)	unidentified crab megalops	2	3.39
Grapsidae unid. (megalops)	shore crab megalops	2	3.39
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	1	2.28

(continued)

Survey: SMBEA16  
 Start Date: 8/9/2006  
 Stations: M1-M3 (continued)

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Target Invertebrates (continued)</b>			
<i>Portunus xantusii</i> (megalops)	Xantus' swimming crab	1	2.27
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	1	2.16
<i>Cancer gracilis</i> (megalops)	slender crab megalops	1	2.16
Diogenidae (megalops)	left-handed hermit crabs megalops	1	1.65
<b>Total Target Invertebrates:</b>		<b>124</b>	

Survey: SMBEA16  
Start Date: 8/9/2006  
Stations: O1-O3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Hypsoblennius</i> spp.	combtooth blennies	24	35.94
<i>Engraulis mordax</i>	northern anchovy	14	21.15
larvae, unidentified yolksac	unidentified yolksac larvae	11	14.86
<i>Paralichthys californicus</i>	California halibut	7	10.23
<i>Diaphus theta</i>	California headlight fish	5	6.30
larval fish fragment	unidentified larval fishes	3	4.26
<i>Genyonemus lineatus</i>	white croaker	3	4.09
<i>Pleuronichthys ritteri</i>	spotted turbot	3	4.08
Engraulidae unid.	anchovies	3	3.89
<i>Pleuronichthys verticalis</i>	hornyhead turbot	2	3.36
<i>Lepidogobius lepidus</i>	bay goby	2	3.15
<i>Pleuronichthys</i> spp.	turbots	2	3.09
Sciaenidae unid.	croakers	2	2.92
<i>Sardinops sagax</i>	Pacific sardine	2	2.90
Gobiidae unid.	gobies	1	1.76
<i>Oxyjulis californica</i>	senorita	1	1.60
Pleuronectidae unid.	righteye flounders	1	1.60
<i>Rhinogobiops nicholsi</i>	blackeye goby	1	1.47
<i>Chromis punctipinnis</i>	blacksmith	1	1.46
<i>Paralabrax clathratus</i>	kelp bass	1	1.46
<i>Seriphus politus</i>	queenfish	1	1.46
<i>Hypsypops rubicundus</i>	garibaldi	1	1.41
Ophidiidae unid.	cusk-eels	1	1.41
<i>Citharichthys sordidus</i>	Pacific sanddab	1	1.15
<i>Paralabrax</i> spp.	sand bass	1	1.15
		<b>Total Fishes: 94</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	100	154.92
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	73	108.20
Majidae unid. (megalops)	spider crab megalops	9	14.70
Grapsidae unid. (megalops)	shore crab megalops	9	13.19
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	6	9.13
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	4	5.70
<i>Panulirus interruptus</i> (phyllosome)	California spiny lobster	2	3.07
<i>Cancer antennarius</i> (megalops)	brown rock crab megalops	2	2.83
Brachyura unid. (megalops)	unidentified crab megalops	1	1.54
<i>Cancer gracilis</i> (megalops)	slender crab megalops	1	1.52
<i>Cancer oregonensis</i> (megalops)	pygmy rock crab	1	1.52
Paguridae unid. (megalops)	hermit crab megalops	1	1.46
<i>Pinnotheres</i> spp. (megalops)	pea crab megalops	1	1.46
<i>Portunus xantusii</i> (megalops)	Xantus' swimming crab	1	1.41
<i>Loligo opalescens</i>	market squid	1	1.15
		<b>Total Target Invertebrates: 212</b>	

Survey: SMBEA16  
Start Date: 8/9/2006  
Stations: S1-S4

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
larvae, unidentified yolksac	unidentified yolksac larvae	247	376.32
<i>Paralabrax</i> spp.	sand bass	98	151.46
Sciaenidae unid.	croakers	70	105.62
<i>Hypsoblennius</i> spp.	combtooth blennies	34	52.22
<i>Paralichthys californicus</i>	California halibut	22	35.35
<i>Sphyræna argentea</i>	Pacific barracuda	21	32.56
Ophidiidae unid.	cusk-eels	19	29.80
<i>Hypsypops rubicundus</i>	garibaldi	19	28.93
<i>Symphurus atricauda</i>	California tonguefish	15	23.98
<i>Citharichthys stigmaeus</i>	speckled sanddab	13	20.56
<i>Oxyjulis californica</i>	senorita	14	20.54
Haemulidae unid.	grunts	12	19.13
<i>Menticirrhus undulatus</i>	California corbina	10	16.01
<i>Halichoeres semicinctus</i>	rock wrasse	9	14.62
larval/post-larval fish unid.	larval fishes	8	13.63
<i>Xenistius californiensis</i>	salema	9	12.91
<i>Engraulis mordax</i>	northern anchovy	7	10.75
larval fish fragment	unidentified larval fishes	7	10.36
<i>Semicossyphus pulcher</i>	California sheephead	5	8.06
Labridae unid.	wrasses	5	7.91
<i>Seriphus politus</i>	queenfish	4	6.44
<i>Pleuronichthys ritteri</i>	spotted turbot	4	6.24
<i>Cheilotrema saturnum</i>	black croaker	4	5.41
<i>Pleuronichthys</i> spp.	turbots	3	4.96
Paralichthyidae unid.	sand flounders	2	3.50
<i>Ophidion scrippsae</i>	basketweave cusk-eel	2	3.24
<i>Xystreurus liolepis</i>	fantail sole	2	3.21
Gobiidae unid.	gobies	2	3.03
Pleuronectidae unid.	righteye flounders	2	2.94
<i>Citharichthys</i> spp.	sanddabs	1	1.75
larval fish - damaged	unidentified larval fishes	1	1.75
<i>Pleuronichthys verticalis</i>	hornyhead turbot	1	1.75
<i>Sardinops sagax</i>	Pacific sardine	1	1.75
<i>Chilara taylori</i>	spotted cusk-eel	1	1.71
Engraulidae unid.	anchovies	1	1.48
<i>Girella nigricans</i>	opaleye	1	1.48
<i>Triphoturus mexicanus</i>	Mexican lampfish	1	1.37
		<b>Total Fishes: 677</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	13	20.73
<i>Panulirus interruptus</i> (phyllosome)	California spiny lobster	6	9.97
Majidae unid. (megalops)	spider crab megalops	6	9.50
Diogenidae (megalops)	left-handed hermit crabs megalops	1	1.48
		<b>Total Target Invertebrates: 26</b>	

Survey: SMBEA17  
Start Date: 8/23/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
larvae, unidentified yolksac	unidentified yolksac larvae	897	2,422.21
Sciaenidae unid.	croakers	383	1,083.99
<i>Paralabrax</i> spp.	sand bass	382	1,053.07
larval fish fragment	unidentified larval fishes	161	429.97
<i>Seriphus politus</i>	queenfish	120	346.21
<i>Sphyaena argentea</i>	Pacific barracuda	95	262.59
<i>Paralichthys californicus</i>	California halibut	84	240.16
larval/post-larval fish unid.	larval fishes	71	194.60
larval fish - damaged	unidentified larval fishes	59	162.07
<i>Menticirrhus undulatus</i>	California corbina	25	74.01
<i>Citharichthys stigmatæus</i>	speckled sanddab	25	69.75
Ophidiidae unid.	cusks-eels	27	69.54
<i>Hypsoblennius</i> spp.	combtooth blennies	15	43.49
Haemulidae unid.	grunts	12	32.32
<i>Xenistius californiensis</i>	salema	11	29.91
<i>Pleuronichthys guttulatus</i>	diamond turbot	10	29.57
<i>Semicossyphus pulcher</i>	California sheephead	9	25.28
<i>Pleuronichthys ritteri</i>	spotted turbot	8	22.85
Pleuronectidae unid.	righteye flounders	9	22.82
<i>Oxyjulis californica</i>	senorita	6	16.66
<i>Xystreurus liolepis</i>	fantail sole	4	11.66
<i>Symphurus atricauda</i>	California tonguefish	4	10.91
<i>Anisotremus davidsonii</i>	sargo	3	9.12
<i>Pleuronichthys</i> spp.	turbots	3	8.53
Kyphosidae unid.	sea chubs	3	8.04
<i>Triphoturus mexicanus</i>	Mexican lampfish	3	8.04
<i>Chilara taylori</i>	spotted cusk-eel	3	7.56
<i>Genyonemus lineatus</i>	white croaker	2	5.95
<i>Engraulis mordax</i>	northern anchovy	2	5.93
<i>Hippoglossina stomata</i>	bigmouth sole	2	5.27
<i>Gillichthys mirabilis</i>	longjaw mudsucker	2	4.94
<i>Icelinus</i> spp.	sculpins	1	3.13
Gobiidae unid.	gobies	1	2.87
Myctophidae unid.	lanternfishes	1	2.80
Pomacentridae unid.	damsel-fishes	1	2.80
<i>Chromis punctipinnis</i>	blacksmith	1	2.60
<i>Sebastes</i> spp.	rockfishes	1	2.47
		<b>Total Fishes: 2,446</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	402	2,229.68
Sciaen. / Paralich. / Labridae (eggs)	fish eggs	266	1,533.39
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	26	147.54
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	21	120.30
<i>Sphyaena argentea</i> (eggs)	Pacific barracuda eggs	2	11.30

(continued)

Survey: SMBEA17  
 Start Date: 8/23/2006  
 Stations: E1 (continued)

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Eggs (continued)</b>			
Paralichthyidae unid. (eggs)	sand flounder eggs	1	5.53
		<b>Total Eggs: 718</b>	
<b>Target Invertebrates</b>			
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	2	6.26
		<b>Total Target Invertebrates: 2</b>	



Survey: SMBEA18  
Start Date: 9/6/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
larvae, unidentified yolksac	unidentified yolksac larvae	273	670.89
Sciaenidae unid.	croakers	145	366.44
<i>Paralabrax</i> spp.	sand bass	142	348.51
<i>Sphyræna argentea</i>	Pacific barracuda	116	283.31
<i>Oxyjulis californica</i>	senorita	53	126.78
<i>Citharichthys stigmaeus</i>	speckled sanddab	50	123.26
<i>Pleuronichthys ritteri</i>	spotted turbot	43	110.33
larval fish fragment	unidentified larval fishes	37	90.23
<i>Ophidion scrippsae</i>	basketweave cusk-eel	37	88.75
larval/post-larval fish unid.	larval fishes	36	86.65
<i>Symphurus atricauda</i>	California tonguefish	31	74.26
<i>Anisotremus davidsonii</i>	sargo	27	62.72
<i>Xenistius californiensis</i>	salema	26	61.46
<i>Menticirrhus undulatus</i>	California corbina	22	53.07
<i>Halichoeres semicinctus</i>	rock wrasse	19	44.56
Ophidiidae unid.	cusk-eels	15	37.51
<i>Paralichthys californicus</i>	California halibut	14	33.65
<i>Pleuronichthys</i> spp.	turbots	10	25.04
<i>Hypsoblennius</i> spp.	combtooth blennies	10	24.88
Haemulidae unid.	grunts	10	23.49
<i>Sardinops sagax</i>	Pacific sardine	6	14.69
<i>Seriphus politus</i>	queenfish	5	12.51
<i>Pleuronichthys guttulatus</i>	diamond turbot	5	12.18
<i>Hippoglossina stomata</i>	bigmouth sole	4	10.49
<i>Genyonemus lineatus</i>	white croaker	3	7.89
<i>Semicossyphus pulcher</i>	California sheephead	3	6.95
<i>Pleuronichthys verticalis</i>	hornyhead turbot	2	5.01
<i>Chilara taylori</i>	spotted cusk-eel	2	4.77
larval fish - damaged	unidentified larval fishes	1	2.80
<i>Roncador stearnsi</i>	spotfin croaker	1	2.59
<i>Citharichthys sordidus</i>	Pacific sanddab	1	2.57
Pleuronectidae unid.	righteye flounders	1	2.57
<i>Etrumeus teres</i>	round herring	1	2.42
<i>Sebastolobus</i> spp.	thornyheads	1	2.42
<i>Girella nigricans</i>	opaleye	1	2.34
<i>Paralabrax clathratus</i>	kelp bass	1	2.34
<i>Xystreurus liolepis</i>	fantail sole	1	2.34
		<b>Total Fishes: 1,155</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	1,280	6,478.77
Sciaen. / Paralich. / Labridae (eggs)	fish eggs	496	2,559.56
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	155	800.77
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	69	341.09
<i>Sphyræna argentea</i> (eggs)	Pacific barracuda eggs	12	59.36

(continued)

Survey: SMBEA18  
 Start Date: 9/6/2006  
 Stations: E1 (continued)

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Eggs (continued)</b>			
Paralichthyidae unid. (eggs)	sand flounder eggs	3	13.48
		<b>Total Eggs: 2,015</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	4	9.79
Grapsidae unid. (megalops)	shore crab megalops	1	2.51
Majidae unid. (megalops)	spider crab megalops	1	2.42
<i>Petrolisthes</i> spp. (megalops)	porcelain crab megalops	1	2.34
		<b>Total Target Invertebrates: 7</b>	

Survey: SMBEA19  
Start Date: 9/20/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
larvae, unidentified yolksac	unidentified yolksac larvae	35	97.64
larval fish fragment	unidentified larval fishes	12	31.66
<i>Paralabrax</i> spp.	sand bass	10	27.69
<i>Paralichthys californicus</i>	California halibut	9	25.76
<i>Hypsoblennius</i> spp.	combtooth blennies	7	19.41
<i>Xystreurus liolepis</i>	fantail sole	3	8.09
Ophidiidae unid.	cusk-eels	2	5.04
<i>Citharichthys stigmaeus</i>	speckled sanddab	2	4.81
<i>Engraulis mordax</i>	northern anchovy	1	2.80
Gobiidae unid.	gobies	1	2.72
<i>Hippoglossina stomata</i>	bigmouth sole	1	2.72
<i>Paralabrax clathratus</i>	kelp bass	1	2.72
Sciaenidae unid.	croakers	1	2.72
Pleuronectidae unid.	righteye flounders	1	2.32
<i>Pleuronichthys ritteri</i>	spotted turbot	1	2.32
		<b>Total Fishes: 87</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	1,131	6,217.89
Sciaen. / Paralich. / Labridae (eggs)	fish eggs	318	1,809.06
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	78	436.19
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	52	292.68
Paralichthyidae unid. (eggs)	sand flounder eggs	8	43.41
<i>Sphyaena argentea</i> (eggs)	Pacific barracuda eggs	1	5.28
		<b>Total Eggs: 1,588</b>	
<b>Target Invertebrates</b>			
Grapsidae unid. (megalops)	shore crab megalops	3	7.71
		<b>Total Target Invertebrates: 3</b>	

Survey: SMBEA19  
Start Date: 9/20/2006  
Stations: M1-M3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Paralabrax</i> spp.	sand bass	211	388.23
larvae, unidentified yolksac	unidentified yolksac larvae	81	152.37
<i>Paralichthys californicus</i>	California halibut	30	52.84
<i>Citharichthys stigmaeus</i>	speckled sanddab	26	47.12
<i>Seriphus politus</i>	queenfish	25	46.54
Haemulidae unid.	grunts	18	34.68
<i>Genyonemus lineatus</i>	white croaker	17	30.29
Engraulidae unid.	anchovies	15	27.87
Sciaenidae unid.	croakers	11	19.32
<i>Pleuronichthys ritteri</i>	spotted turbot	10	18.86
<i>Oxyjulis californica</i>	senorita	9	16.68
larval fish fragment	unidentified larval fishes	9	15.28
<i>Symphurus atricauda</i>	California tonguefish	7	13.64
<i>Xystreureys liolepis</i>	fantail sole	6	11.31
<i>Hypsoblennius</i> spp.	combtooth blennies	6	10.38
<i>Citharichthys sordidus</i>	Pacific sanddab	5	9.05
<i>Semicossyphus pulcher</i>	California sheephead	5	9.03
larval fish - damaged	unidentified larval fishes	4	6.76
<i>Pleuronichthys verticalis</i>	hornyhead turbot	3	5.44
<i>Halichoeres semicinctus</i>	rock wrasse	3	5.35
<i>Sphyræna argentea</i>	Pacific barracuda	2	4.53
Ophidiidae unid.	cusk-eels	2	3.63
<i>Chromis punctipinnis</i>	blacksmith	1	2.23
Gobiidae unid.	gobies	1	1.81
<i>Pleuronichthys</i> spp.	turbots	1	1.81
<i>Scorpaena guttata</i>	California scorpionfish	1	1.81
Pleuronectiformes unid.	flatfishes	1	1.78
Labridae unid.	wrasses	1	1.73
Paralichthyidae unid.	sand flounders	1	1.73
<i>Pleuronichthys guttulatus</i>	diamond turbot	1	1.63
<i>Engraulis mordax</i>	northern anchovy	1	1.49
		<b>Total Fishes: 514</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	2	3.80
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	2	3.63
Majidae unid. (megalops)	spider crab megalops	1	2.30
Brachyura unid. (megalops)	unidentified crab megalops	1	1.78
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	1	1.73
<i>Loligo opalescens</i>	market squid	1	1.63
		<b>Total Target Invertebrates: 8</b>	

Survey: SMBEA19  
Start Date: 9/20/2006  
Stations: O1-O3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Paralabrax</i> spp.	sand bass	91	150.18
<i>Genyonemus lineatus</i>	white croaker	53	92.99
larvae, unidentified yolksac	unidentified yolksac larvae	23	38.59
Engraulidae unid.	anchovies	20	33.09
<i>Paralichthys californicus</i>	California halibut	18	30.92
<i>Seriphus politus</i>	queenfish	10	16.80
Gobiidae unid.	gobies	9	16.24
larval fish - damaged	unidentified larval fishes	7	12.30
<i>Halichoeres semicinctus</i>	rock wrasse	7	12.08
<i>Citharichthys stigmaeus</i>	speckled sanddab	7	11.52
<i>Chromis punctipinnis</i>	blacksmith	6	10.00
<i>Oxyjulis californica</i>	senorita	6	9.26
<i>Pleuronichthys ritteri</i>	spotted turbot	5	7.91
<i>Symphurus atricauda</i>	California tonguefish	5	7.46
<i>Hypsoblennius</i> spp.	combtooth blennies	4	6.45
<i>Pleuronichthys guttulatus</i>	diamond turbot	4	6.45
<i>Citharichthys sordidus</i>	Pacific sanddab	3	5.20
Haemulidae unid.	grunts	3	4.96
<i>Triphoturus mexicanus</i>	Mexican lampfish	3	4.66
<i>Peprilus simillimus</i>	Pacific butterfish	3	4.64
Ophidiidae unid.	cusk-eels	3	4.61
larval fish fragment	unidentified larval fishes	3	4.60
<i>Pleuronichthys verticalis</i>	hornyhead turbot	2	4.06
<i>Paralabrax maculatofasciatus</i>	spotted sand bass	2	3.61
Sciaenidae unid.	croakers	2	3.42
<i>Hypsoblennius jenkinsi</i>	mussel blenny	2	3.35
<i>Semicossyphus pulcher</i>	California sheephead	2	3.12
<i>Hippoglossina stomata</i>	bigmouth sole	1	2.03
<i>Citharichthys</i> spp.	sanddabs	1	1.80
Chitonotus / Icelinus	sculpins	1	1.78
Labridae unid.	wrasses	1	1.78
<i>Engraulis mordax</i>	northern anchovy	1	1.67
<i>Pleuronichthys</i> spp.	turbots	1	1.62
<i>Diaphus theta</i>	California headlight fish	1	1.51
Pleuronectidae unid.	righteye flounders	1	1.46
<i>Rhinogobiops nicholsi</i>	blackeye goby	1	1.46
Pleuronectiformes unid.	flatfishes	1	1.40
		<b>Total Fishes: 313</b>	
<b>Target Invertebrates</b>			
Majidae unid. (megalops)	spider crab megalops	5	8.37
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	5	8.02
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	4	6.48
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	2	3.45

(continued)

Survey: SMBEA19  
 Start Date: 9/20/2006  
 Stations: O1-O3 (continued)

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Target Invertebrates (continued)</b>			
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	2	3.24
<i>Panulirus interruptus</i> (phyllosome)	California spiny lobster	2	3.02
<i>Loligo opalescens</i>	market squid	1	1.78
<i>Cancer antennarius</i> (megalops)	brown rock crab megalops	1	1.67
<i>Emerita analoga</i> (megalops)	mole crabs megalops	1	1.62
Brachyura unid. (megalops)	unidentified crab megalops	1	1.51
Grapsidae unid. (megalops)	shore crab megalops	1	1.51
<b>Total Target Invertebrates:</b>		<b>25</b>	

Survey: SMBEA19  
Start Date: 9/20/2006  
Stations: S1-S4

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Paralabrax</i> spp.	sand bass	124	166.10
larvae, unidentified yolksac	unidentified yolksac larvae	81	105.94
<i>Paralichthys californicus</i>	California halibut	11	14.89
<i>Hypsoblennius</i> spp.	combtooth blennies	11	14.09
<i>Symphurus atricauda</i>	California tonguefish	10	13.46
<i>Citharichthys stigmaeus</i>	speckled sanddab	8	11.30
Haemulidae unid.	grunts	8	9.44
<i>Oxyjulis californica</i>	senorita	7	9.23
Engraulidae unid.	anchovies	6	8.09
<i>Pleuronichthys guttulatus</i>	diamond turbot	6	7.50
larval fish - damaged	unidentified larval fishes	5	7.04
<i>Seriphus politus</i>	queenfish	4	5.52
<i>Sphyræna argentea</i>	Pacific barracuda	3	4.08
larval fish fragment	unidentified larval fishes	3	3.89
Sciaenidae unid.	croakers	3	3.88
<i>Halichoeres semicinctus</i>	rock wrasse	2	2.82
<i>Pleuronichthys ritteri</i>	spotted turbot	2	2.81
Ophidiidae unid.	cusks-eels	2	2.74
<i>Citharichthys sordidus</i>	Pacific sanddab	2	2.70
Labrisomidae unid.	labrisomid blennies	2	2.64
<i>Genyonemus lineatus</i>	white croaker	2	2.52
Pleuronectidae unid.	righteye flounders	1	1.58
<i>Chilara taylori</i>	spotted cusk-eel	1	1.44
Paralichthyidae unid.	sand flounders	1	1.44
Gobiidae unid.	gobies	1	1.30
<i>Platichthys stellatus</i>	starry flounder	1	1.30
<i>Pleuronichthys</i> spp.	turbots	1	1.29
<i>Xystreureys liolepis</i>	fantail sole	1	1.29
<i>Pleuronichthys verticalis</i>	hornyhead turbot	1	1.24
Labridae unid.	wrasses	1	1.03
		<b>Total Fishes: 311</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	2	2.74
<i>Panulirus interruptus</i> (phyllosome)	California spiny lobster	1	1.41
<i>Cancer antennarius</i> (megalops)	brown rock crab megalops	1	1.30
Grapsidae unid. (megalops)	shore crab megalops	1	1.21
		<b>Total Target Invertebrates: 5</b>	

Survey: SMBEA20  
Start Date: 10/4/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Hypsoblennius</i> spp.	combtooth blennies	11	27.26
<i>Pleuronichthys guttulatus</i>	diamond turbot	4	10.74
Sciaenidae unid.	croakers	4	10.74
Ophidiidae unid.	cusk-eels	3	6.67
<i>Paralichthys californicus</i>	California halibut	3	6.67
<i>Paralabrax</i> spp.	sand bass	3	6.37
<i>Genyonemus lineatus</i>	white croaker	2	4.44
Gobiidae unid.	gobies	2	4.21
larval fish fragment	unidentified larval fishes	2	4.16
Labrisomidae unid.	labrisomid blennies	1	2.86
<i>Engraulis mordax</i>	northern anchovy	1	2.77
<i>Hippoglossina stomata</i>	bigmouth sole	1	2.51
Pleuronectidae unid.	righteye flounders	1	2.24
Pleuronectiformes unid.	flatfishes	1	2.24
larval/post-larval fish unid.	larval fishes	1	2.23
<i>Pleuronichthys</i> spp.	turbots	1	2.23
<i>Xystreurus liolepis</i>	fantail sole	1	2.23
larvae, unidentified yolksac	unidentified yolksac larvae	1	1.93
larval fish - damaged	unidentified larval fishes	1	1.93
<i>Pleuronichthys ritteri</i>	spotted turbot	1	1.93
		<b>Total Fishes: 45</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	706	3,266.80
Sciaen. / Paralich. / Labridae (eggs)	fish eggs	156	653.96
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	70	349.99
Paralichthyidae unid. (eggs)	sand flounder eggs	61	316.21
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	14	74.18
Sciaenidae unid. (eggs)	croaker eggs	4	21.17
Labridae unid. (eggs)	wrasse eggs	1	6.09
<i>Pleuronectes guttulatus</i> (eggs)	diamond turbot eggs	1	3.61
		<b>Total Eggs: 1,013</b>	
<b>Target Invertebrates</b>			
No Invertebrates			



Survey: SMBEA21  
Start Date: 10/18/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Hypsoblennius</i> spp.	cometooth blennies	9	22.96
<i>Pleuronichthys guttulatus</i>	diamond turbot	8	21.29
<i>Engraulis mordax</i>	northern anchovy	7	17.58
larvae, unidentified yolksac	unidentified yolksac larvae	6	14.79
Gobiidae unid.	gobies	3	8.35
larval fish - damaged	unidentified larval fishes	2	5.51
<i>Paralichthys californicus</i>	California halibut	2	5.17
<i>Citharichthys stigmaeus</i>	speckled sanddab	2	4.95
<i>Paralabrax</i> spp.	sand bass	2	4.68
Sciaenidae unid.	croakers	1	2.41
<i>Semicossyphus pulcher</i>	California sheephead	1	2.41
<i>Citharichthys</i> spp.	sanddabs	1	2.27
larval fish fragment	unidentified larval fishes	1	2.27
		<b>Total Fishes: 45</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	1,148	6,039.55
Sciaen. / Paralich. / Labridae (eggs)	fish eggs	359	1,825.84
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	84	472.98
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	73	358.41
Engraulidae unid. (eggs)	anchovy eggs	2	9.13
Pleuronectidae unid. (eggs)	righteye flounder eggs	1	4.57
		<b>Total Eggs: 1,667</b>	
<b>Target Invertebrates</b>			
Grapsidae unid. (megalops)	shore crab megalops	2	4.68
		<b>Total Target Invertebrates: 2</b>	

Survey: SMBEA21  
Start Date: 10/18/2006  
Stations: M1-M3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Genyonemus lineatus</i>	white croaker	96	149.22
<i>Paralichthys californicus</i>	California halibut	51	79.26
<i>Engraulis mordax</i>	northern anchovy	41	65.98
larvae, unidentified yolksac	unidentified yolksac larvae	28	44.80
<i>Citharichthys stigmaeus</i>	speckled sanddab	25	42.62
<i>Pleuronichthys guttulatus</i>	diamond turbot	20	33.33
<i>Xystreurus liolepis</i>	fantail sole	17	24.90
<i>Hypsoblennius</i> spp.	combtooth blennies	15	23.66
<i>Pleuronichthys ritteri</i>	spotted turbot	13	21.69
<i>Paralabrax</i> spp.	sand bass	11	19.07
<i>Pleuronichthys verticalis</i>	hornyhead turbot	8	13.92
Paralichthyidae unid.	sand flounders	8	13.70
Gobiidae unid.	gobies	6	10.83
larval fish fragment	unidentified larval fishes	4	5.96
Ophidiidae unid.	cusk-eels	3	5.22
<i>Pleuronichthys</i> spp.	turbots	3	4.71
larval fish - damaged	unidentified larval fishes	3	4.33
<i>Semicossyphus pulcher</i>	California sheephead	2	3.40
<i>Hippoglossina stomata</i>	bigmouth sole	2	3.00
<i>Triphoturus mexicanus</i>	Mexican lampfish	1	2.03
Chaenopsidae unid.	tube blennies	1	1.85
<i>Citharichthys sordidus</i>	Pacific sanddab	1	1.82
Pleuronectiformes unid.	flatfishes	1	1.62
Engraulidae unid.	anchovies	1	1.54
		<b>Total Fishes: 361</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	4	6.67
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	2	3.68
Brachyura unid. (megalops)	unidentified crab megalops	1	1.85
Grapsidae unid. (megalops)	shore crab megalops	1	1.82
<i>Loligo opalescens</i>	market squid	1	1.44
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	1	1.24
		<b>Total Target Invertebrates: 10</b>	

Survey: SMBEA21  
Start Date: 10/18/2006  
Stations: O1-O3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Genyonemus lineatus</i>	white croaker	53	80.71
<i>Engraulis mordax</i>	northern anchovy	26	40.29
<i>Paralichthys californicus</i>	California halibut	25	37.22
<i>Pleuronichthys ritteri</i>	spotted turbot	17	27.18
<i>Hypsoblennius</i> spp.	combtooth blennies	10	14.78
<i>Citharichthys stigmaeus</i>	speckled sanddab	7	11.09
<i>Paralabrax</i> spp.	sand bass	6	8.84
<i>Pleuronichthys verticalis</i>	hornyhead turbot	5	7.67
<i>Citharichthys sordidus</i>	Pacific sanddab	4	6.35
<i>Xystreurus liolepis</i>	fantail sole	4	6.01
<i>Pleuronichthys</i> spp.	turbots	3	5.20
larvae, unidentified yolksac	unidentified yolksac larvae	3	4.97
Gobiidae unid.	gobies	3	4.58
larval fish fragment	unidentified larval fishes	3	4.37
Engraulidae unid.	anchovies	2	3.07
Ophidiidae unid.	cusk-eels	2	2.95
<i>Hippoglossina stomata</i>	bigmouth sole	2	2.90
<i>Xenistius californiensis</i>	salema	1	2.07
Sciaenidae unid.	croakers	1	1.68
<i>Menticirrhus undulatus</i>	California corbina	1	1.50
<i>Chromis punctipinnis</i>	blacksmith	1	1.45
<i>Cyclothone signata</i>	showy bristlemouth	1	1.45
Pleuronectidae unid.	righteye flounders	1	1.39
<i>Triphoturus mexicanus</i>	Mexican lampfish	1	1.39
		<b>Total Fishes: 182</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	5	7.78
<i>Loligo opalescens</i>	market squid	4	6.86
Majidae unid. (megalops)	spider crab megalops	2	2.86
Grapsidae unid. (megalops)	shore crab megalops	2	2.83
Brachyura unid. (megalops)	unidentified crab megalops	1	1.79
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	1	1.50
		<b>Total Target Invertebrates: 15</b>	

Survey: SMBEA21  
Start Date: 10/18/2006  
Stations: S1-S4

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Citharichthys stigmaeus</i>	speckled sanddab	52	58.55
<i>Hypsoblennius</i> spp.	combtooth blennies	29	33.91
larvae, unidentified yolksac	unidentified yolksac larvae	26	30.56
<i>Engraulis mordax</i>	northern anchovy	23	26.78
<i>Pleuronichthys guttulatus</i>	diamond turbot	23	25.90
<i>Paralabrax</i> spp.	sand bass	18	21.01
<i>Genyonemus lineatus</i>	white croaker	18	20.28
Gobiidae unid.	gobies	15	18.72
<i>Paralichthys californicus</i>	California halibut	8	8.99
<i>Pleuronichthys ritteri</i>	spotted turbot	8	8.91
larval fish fragment	unidentified larval fishes	6	6.73
Sciaenidae unid.	croakers	3	3.51
<i>Pleuronichthys verticalis</i>	hornyhead turbot	2	2.26
Pleuronectidae unid.	righteye flounders	1	1.30
<i>Pleuronichthys</i> spp.	turbots	1	1.27
Atherinopsidae unid.	silversides	1	1.20
<i>Hippoglossina stomata</i>	bigmouth sole	1	1.15
<i>Xystreurus liolepis</i>	fantail sole	1	1.13
<i>Diaphus theta</i>	California headlight fish	1	1.10
Engraulidae unid.	anchovies	1	1.10
larval fish - damaged	unidentified larval fishes	1	1.10
Paralichthyidae unid.	sand flounders	1	1.10
		<b>Total Fishes: 240</b>	
<b>Target Invertebrates</b>			
Grapsidae unid. (megalops)	shore crab megalops	4	5.04
<i>Panulirus interruptus</i> (phyllosome)	California spiny lobster	1	1.13
		<b>Total Target Invertebrates: 5</b>	

Survey: SMBEA22  
Start Date: 11/1/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Genyonemus lineatus</i>	white croaker	19	51.56
Gobiidae unid.	gobies	13	34.27
<i>Engraulis mordax</i>	northern anchovy	7	19.01
<i>Pleuronichthys guttulatus</i>	diamond turbot	7	18.68
larvae, unidentified yolksac	unidentified yolksac larvae	2	4.96
<i>Hypsoblennius</i> spp.	combtooth blennies	2	4.92
larval fish - damaged	unidentified larval fishes	1	2.65
<i>Syngnathus</i> spp.	pipefishes	1	2.65
<i>Paralichthys californicus</i>	California halibut	1	2.48
Pleuronectidae unid.	righteye flounders	1	2.48
		<b>Total Fishes: 54</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	884	4,719.38
Paralichthyidae unid. (eggs)	sand flounder eggs	122	648.36
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	53	274.28
Sciaen. / Paralich. / Labridae (eggs)	fish eggs	42	211.60
Sciaenidae unid. (eggs)	croaker eggs	4	20.54
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	1	4.27
		<b>Total Eggs: 1,106</b>	
<b>Target Invertebrates</b>			
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	1	2.73
Majidae unid. (megalops)	spider crab megalops	1	2.73
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	1	2.65
Brachyura unid. (megalops)	unidentified crab megalops	1	2.46
		<b>Total Target Invertebrates: 4</b>	

Survey: SMBEA23  
Start Date: 11/15/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
Gobiidae unid.	gobies	63	183.27
<i>Pleuronichthys guttulatus</i>	diamond turbot	9	25.58
<i>Engraulis mordax</i>	northern anchovy	2	5.65
larvae, unidentified yolksac	unidentified yolksac larvae	1	3.14
<i>Gibbonsia</i> spp.	clinid kelpfishes	1	3.00
<i>Hypsoblennius</i> spp.	combtooth blennies	1	2.91
<i>Genyonemus lineatus</i>	white croaker	1	2.89
larval fish - damaged	unidentified larval fishes	1	2.89
Syngnathidae unid.	pipefishes	1	2.55
		<b>Total Fishes: 80</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	476	2,716.03
Paralichthyidae unid. (eggs)	sand flounder eggs	98	553.51
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	14	88.93
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	12	70.66
		<b>Total Eggs: 600</b>	
<b>Target Invertebrates</b>			
Grapsidae unid. (megalops)	shore crab megalops	1	2.89
		<b>Total Target Invertebrates: 1</b>	

Survey: SMBEA23  
Start Date: 11/15/2006  
Stations: M1-M3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Genyonemus lineatus</i>	white croaker	122	220.90
larval fish fragment	unidentified larval fishes	13	23.26
Sciaenidae unid.	croakers	9	17.33
<i>Engraulis mordax</i>	northern anchovy	8	15.39
<i>Citharichthys stigmaeus</i>	speckled sanddab	8	14.77
Engraulidae unid.	anchovies	8	14.28
<i>Hypsoblennius</i> spp.	combtooth blennies	7	12.59
larvae, unidentified yolksac	unidentified yolksac larvae	6	11.06
<i>Paralichthys californicus</i>	California halibut	6	10.84
<i>Chromis punctipinnis</i>	blacksmith	5	9.46
<i>Pleuronichthys guttulatus</i>	diamond turbot	4	7.32
<i>Pleuronichthys</i> spp.	turbots	3	5.47
Gobiidae unid.	gobies	3	5.34
<i>Gillichthys mirabilis</i>	longjaw mudsucker	2	3.54
<i>Xystreureys liolepis</i>	fantail sole	2	3.50
larval fish - damaged	unidentified larval fishes	1	2.02
<i>Citharichthys</i> spp.	sanddabs	1	1.93
Pleuronectiformes unid.	flatfishes	1	1.92
<i>Citharichthys sordidus</i>	Pacific sanddab	1	1.89
<i>Semicossyphus pulcher</i>	California sheephead	1	1.83
<i>Nannobranchium</i> spp.	lanternfishes	1	1.78
larval/post-larval fish unid.	larval fishes	1	1.75
Ophidiidae unid.	cusk-eels	1	1.75
		<b>Total Fishes: 214</b>	
<b>Target Invertebrates</b>			
Brachyura unid. (megalops)	unidentified crab megalops	1	1.89
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	1	1.89
Majidae unid. (megalops)	spider crab megalops	1	1.65
		<b>Total Target Invertebrates: 3</b>	

Survey: SMBEA23  
Start Date: 11/15/2006  
Stations: O1-O3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Genyonemus lineatus</i>	white croaker	301	474.02
<i>Engraulis mordax</i>	northern anchovy	15	26.27
larval fish fragment	unidentified larval fishes	17	25.60
Sciaenidae unid.	croakers	14	24.47
Engraulidae unid.	anchovies	14	20.93
larvae, unidentified yolksac	unidentified yolksac larvae	11	16.47
Ophidiidae unid.	cusk-eels	8	13.52
<i>Paralichthys californicus</i>	California halibut	8	13.44
<i>Chromis punctipinnis</i>	blacksmith	8	13.10
<i>Pleuronichthys</i> spp.	turbots	8	13.10
<i>Hypsoblennius</i> spp.	combtooth blennies	3	4.94
Pleuronectiformes unid.	flatfishes	3	4.73
<i>Lythrypnus zebra</i>	zebra goby	2	3.43
Pleuronectidae unid.	righteye flounders	2	3.38
<i>Lepidogobius lepidus</i>	bay goby	2	3.21
<i>Girella nigricans</i>	opaleye	2	3.16
<i>Citharichthys sordidus</i>	Pacific sanddab	2	2.93
Pomacentridae unid.	damsel fishes	1	2.06
<i>Sebastes</i> spp.	rockfishes	1	2.06
<i>Stenobranchius leucopsarus</i>	northern lampfish	1	1.82
<i>Citharichthys</i> spp.	sanddabs	1	1.80
larval/post-larval fish unid.	larval fishes	1	1.60
<i>Zaniolepis frenata</i>	shortspine combfish	1	1.51
Myctophidae unid.	lanternfishes	1	1.47
<i>Argentina sialis</i>	Pacific argentine	1	1.37
<i>Icelinus quadriseriatus</i>	yellowchin sculpin	1	1.26
		<b>Total Fishes: 429</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	3	5.11
<i>Cancer antennarius</i> (megalops)	brown rock crab megalops	1	1.82
Majidae unid. (megalops)	spider crab megalops	1	1.82
		<b>Total Target Invertebrates: 5</b>	



Survey: SMBEA23  
Start Date: 11/15/2006  
Stations: S1-S4

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Pleuronichthys guttulatus</i>	diamond turbot	30	39.65
<i>Genyonemus lineatus</i>	white croaker	26	34.58
<i>Citharichthys stigmaeus</i>	speckled sanddab	13	17.03
Gobiidae unid.	gobies	9	11.60
larvae, unidentified yolksac	unidentified yolksac larvae	6	8.01
<i>Engraulis mordax</i>	northern anchovy	5	6.95
<i>Hypsoblennius</i> spp.	combtooth blennies	5	6.57
larval fish fragment	unidentified larval fishes	5	6.49
Pleuronectidae unid.	righteye flounders	4	5.28
Labridae unid.	wrasses	3	4.24
<i>Paralichthys californicus</i>	California halibut	3	4.05
<i>Girella nigricans</i>	opaleye	2	2.77
<i>Pleuronichthys ritteri</i>	spotted turbot	2	2.60
Sciaenidae unid.	croakers	1	1.38
<i>Chilara taylori</i>	spotted cusk-eel	1	1.31
<i>Chromis punctipinnis</i>	blacksmith	1	1.31
Engraulidae unid.	anchovies	1	1.31
larval fish - damaged	unidentified larval fishes	1	1.31
<i>Sebastes</i> spp.	rockfishes	1	1.28
<i>Pleuronectes</i> spp.	righteye flounders	1	1.22
		<b>Total Fishes: 120</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	4	5.12
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	3	3.96
Majidae unid. (megalops)	spider crab megalops	1	1.46
		<b>Total Target Invertebrates: 8</b>	

Survey: SMBEA24  
 Start Date: 11/27/2006  
 Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Pleuronichthys guttulatus</i>	diamond turbot	4	45.44
<i>Citharichthys stigmaeus</i>	speckled sanddab	1	12.66
<i>Hypsoblennius</i> spp.	combtooth blennies	1	12.66
Gobiidae unid.	gobies	1	10.06
<i>Paralichthys californicus</i>	California halibut	1	10.06
<i>Pleuronichthys ritteri</i>	spotted turbot	1	10.06
<i>Ruscarius meanyi</i>	Puget Sound sculpin	1	10.06
	<b>Total Fishes:</b>	<b>10</b>	
<b>Eggs</b>			
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	41	904.39
Paralichthyidae unid. (eggs)	sand flounder eggs	35	793.34
fish eggs unid.	unidentified fish eggs	23	492.80
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	3	63.37
Sciaenidae unid. (eggs)	croaker eggs	2	43.99
	<b>Total Eggs:</b>	<b>104</b>	
<b>Target Invertebrates</b>			
No Invertebrates			

Survey: SMBEA25  
Start Date: 12/13/2006  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
Gobiidae unid.	gobies	10	23.25
<i>Genyonemus lineatus</i>	white croaker	7	17.84
Atherinopsidae unid.	silversides	4	9.84
<i>Engraulis mordax</i>	northern anchovy	3	6.98
<i>Pleuronichthys guttulatus</i>	diamond turbot	2	5.82
larval fish fragment	unidentified larval fishes	2	5.46
<i>Gibbonsia</i> spp.	clinid kelpfishes	2	5.35
<i>Hypsoblennius</i> spp.	combtooth blennies	2	4.98
Sciaenidae unid.	croakers	1	2.47
<i>Symphurus atricauda</i>	California tonguefish	1	2.47
Engraulidae unid.	anchovies	1	2.44
		<b>Total Fishes: 35</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	183	895.96
Paralichthyidae unid. (eggs)	sand flounder eggs	27	125.81
Sciaen. / Paralich. / Labridae (eggs)	fish eggs	19	76.20
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	12	59.49
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	4	18.78
Sciaenidae unid. (eggs)	croaker eggs	3	14.24
		<b>Total Eggs: 248</b>	
<b>Target Invertebrates</b>			
Grapsidae unid. (megalops)	shore crab megalops	3	7.32
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	3	7.17
Majidae unid. (megalops)	spider crab megalops	3	6.59
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	2	4.78
		<b>Total Target Invertebrates: 11</b>	

Survey: SMBEA25  
Start Date: 12/13/2006  
Stations: M1-M3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Genyonemus lineatus</i>	white croaker	175	293.54
<i>Engraulis mordax</i>	northern anchovy	17	27.91
Engraulidae unid.	anchovies	14	24.02
larval fish fragment	unidentified larval fishes	8	13.40
<i>Pleuronichthys ritteri</i>	spotted turbot	6	10.37
<i>Paralichthys californicus</i>	California halibut	5	8.73
<i>Pleuronichthys guttulatus</i>	diamond turbot	5	8.47
Gobiidae unid.	gobies	4	6.84
larvae, unidentified yolksac	unidentified yolksac larvae	4	6.81
<i>Lepidogobius lepidus</i>	bay goby	2	3.40
<i>Hypsoblennius</i> spp.	combtooth blennies	2	3.38
<i>Citharichthys stigmatæus</i>	speckled sanddab	2	3.25
Sciaenidae unid.	croakers	2	3.12
larval fish - damaged	unidentified larval fishes	2	3.06
<i>Citharichthys</i> spp.	sanddabs	1	1.81
Paralichthyidae unid.	sand flounders	1	1.81
Atherinopsidae unid.	silversides	1	1.73
larval/post-larval fish unid.	larval fishes	1	1.72
Pleuronectidae unid.	righteye flounders	1	1.72
<i>Stenobranchius leucopsarus</i>	northern lampfish	1	1.72
<i>Clinocottus</i> spp.	sculpins	1	1.66
<i>Pleuronichthys verticalis</i>	hornyhead turbot	1	1.53
		<b>Total Fishes: 256</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	34	60.04
Majidae unid. (megalops)	spider crab megalops	5	8.91
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	3	4.79
Brachyura unid. (megalops)	unidentified crab megalops	1	1.72
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	1	1.72
Paguridae unid. (megalops)	hermit crab megalops	1	1.65
<i>Cancer antennarius</i> (megalops)	brown rock crab megalops	1	1.47
		<b>Total Target Invertebrates: 46</b>	

Survey: SMBEA25  
Start Date: 12/13/2006  
Stations: O1-O3

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Genyonemus lineatus</i>	white croaker	208	324.26
<i>Engraulis mordax</i>	northern anchovy	27	42.41
larval fish fragment	unidentified larval fishes	20	31.24
Sciaenidae unid.	croakers	14	23.43
Engraulidae unid.	anchovies	10	16.21
<i>Pleuronichthys ritteri</i>	spotted turbot	5	8.08
<i>Citharichthys stigmaeus</i>	speckled sanddab	5	7.77
Gobiidae unid.	gobies	5	7.35
<i>Pleuronichthys</i> spp.	turbots	2	3.22
<i>Citharichthys</i> spp.	sanddabs	2	3.11
<i>Hypsoblennius</i> spp.	combtooth blennies	2	3.00
<i>Paralichthys californicus</i>	California halibut	2	2.94
Labrisomidae unid.	labrisomid blennies	1	1.71
Pleuronectidae unid.	righteye flounders	1	1.60
Cottidae unid.	sculpins	1	1.55
larvae, unidentified yolksac	unidentified yolksac larvae	1	1.51
<i>Lepidogobius lepidus</i>	bay goby	1	1.51
<i>Sebastes</i> spp.	rockfishes	1	1.50
larval/post-larval fish unid.	larval fishes	1	1.39
		<b>Total Fishes: 309</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	32	48.58
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	7	10.72
Majidae unid. (megalops)	spider crab megalops	3	4.97
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	2	3.32
<i>Cancer antennarius</i> (megalops)	brown rock crab megalops	2	3.26
Brachyura unid. (megalops)	unidentified crab megalops	1	1.71
Grapsidae unid. (megalops)	shore crab megalops	1	1.71
Paguridae unid. (megalops)	hermit crab megalops	1	1.44
		<b>Total Target Invertebrates: 49</b>	

Survey: SMBEA25  
Start Date: 12/13/2006  
Stations: S1-S4

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
<i>Genyonemus lineatus</i>	white croaker	30	35.69
Gobiidae unid.	gobies	25	27.98
<i>Hypsoblennius</i> spp.	combtooth blennies	14	15.51
<i>Pleuronichthys guttulatus</i>	diamond turbot	10	13.16
Atherinopsidae unid.	silversides	6	7.85
larval fish fragment	unidentified larval fishes	6	7.20
<i>Atherinopsis californiensis</i>	jacksmelt	4	5.22
<i>Leuresthes tenuis</i>	California grunion	3	4.01
<i>Engraulis mordax</i>	northern anchovy	3	3.34
Sciaenidae unid.	croakers	3	3.15
Engraulidae unid.	anchovies	2	2.40
<i>Citharichthys stigmaeus</i>	speckled sanddab	2	2.26
larval fish - damaged	unidentified larval fishes	2	2.18
<i>Pleuronichthys</i> spp.	turbots	1	1.31
larvae, unidentified yolksac	unidentified yolksac larvae	1	1.25
<i>Gibbonsia</i> spp.	clinid kelpfishes	1	1.11
<i>Pleuronichthys ritteri</i>	spotted turbot	1	1.11
Pleuronectidae unid.	righteye flounders	1	1.07
		<b>Total Fishes: 115</b>	
<b>Target Invertebrates</b>			
<i>Pugettia</i> spp. (megalops)	kelp crabs megalops	15	18.54
Majidae unid. (megalops)	spider crab megalops	5	6.08
Grapsidae unid. (megalops)	shore crab megalops	3	3.60
<i>Pinnixa</i> spp. (megalops)	pea crabs megalops	1	1.34
<i>Cancer anthonyi</i> (megalops)	yellow crab megalops	1	1.25
Brachyura unid. (megalops)	unidentified crab megalops	1	1.11
<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops	1	1.09
		<b>Total Target Invertebrates: 27</b>	

Survey: SMBEA26  
Start Date: 1/8/2007  
Stations: E1

Taxon	Common Name	Count	Mean Concentration (#/1,000m <sup>3</sup> )
<b>Fishes</b>			
larvae, unidentified yolksac	unidentified yolksac larvae	7	16.95
larval fish fragment	unidentified larval fishes	1	2.30
Engraulidae unid.	anchovies	1	2.16
<i>Genyonemus lineatus</i>	white croaker	1	2.01
		<b>Total Fishes: 10</b>	
<b>Eggs</b>			
fish eggs unid.	unidentified fish eggs	217	987.48
Paralichthyidae unid. (eggs)	sand flounder eggs	51	237.81
Sciaenidae unid. (eggs)	croaker eggs	50	225.87
Engraulidae unid. (eggs)	anchovy eggs	11	53.16
<i>Citharichthys</i> spp. (eggs)	sanddab eggs	4	18.74
<i>Pleuronichthys</i> spp. (eggs)	turbot eggs	2	7.93
Labridae unid. (eggs)	wrasse eggs	1	5.09
Sciaen. / Paralich. / Labridae (eggs)	fish eggs	1	3.97
		<b>Total Eggs: 337</b>	
<b>Target Invertebrates</b>			
Grapsidae unid. (megalops)	shore crab megalops	3	6.72
		<b>Total Target Invertebrates:</b>	

**Appendix D2. Calculated Annual Entrainment and Standard Error Data**

Table D2-1. Calculated total annual entrainment and standard error of larval fish and eggs at SGS in 2006 based on actual and design cooling water intake flow volumes.

Taxon	Common Name	Calculated Annual Entrainment (Actual Flows)	Standard Error	Calculated Annual Entrainment (Design Flows)	Standard Error
<b>Larval Fish</b>					
larvae, unidentified yolksac	unidentified yolksac larvae	71,105,628	6,746,592	97,034,455	9,183,536
Engraulidae unid.	anchovies	44,584,991	2,050,508	70,732,578	3,143,338
Sciaenidae unid.	croakers	42,076,568	2,723,106	59,935,823	3,925,418
<i>Genyonemus lineatus</i>	white croaker	32,104,891	2,816,731	46,634,188	3,995,679
<i>Paralabrax</i> spp.	sand bass	29,681,768	2,045,706	40,350,936	2,759,901
unidentified fish, damaged	unidentified damaged fish	16,873,865	1,163,001	23,667,890	1,602,100
Gobiidae unid.	gobies	16,188,141	725,797	24,432,450	1,086,316
<i>Sphyræna argentea</i>	Pacific barracuda	11,426,718	953,759	15,454,497	1,260,305
<i>Seriphus politus</i>	queenfish	10,845,071	786,287	15,732,743	1,182,109
<i>Paralichthys californicus</i>	California halibut	9,901,902	515,914	14,119,061	746,557
<i>Hypsoblennius</i> spp.	combt tooth blennies	8,324,912	389,829	14,230,416	797,487
<i>Stenobranchius leucopsarus</i>	northern lampfish	6,802,760	419,835	9,850,466	602,362
<i>Citharichthys</i> spp.	sanddabs	6,752,119	258,709	9,704,922	380,216
larval/post-larval fish unid.	larval fishes	6,518,392	640,173	8,886,496	867,014
<i>Parophrys vetulus</i>	English sole	5,321,852	625,397	7,679,874	898,531
<i>Pleuronichthys guttulatus</i>	diamond turbot	3,849,543	161,624	5,715,338	236,224
<i>Pleuronichthys ritteri</i>	spotted turbot	3,819,479	171,028	5,149,021	227,060
<i>Oxyjulis californica</i>	senorita	3,557,915	446,417	4,808,587	585,441
Atherinopsidae unid.	silversides	3,262,545	354,131	5,118,106	508,953
<i>Menticirrhus undulatus</i>	California corbina	2,923,692	297,142	3,949,712	399,471
Ophidiidae unid.	cusks-eels	2,736,151	285,228	3,748,116	388,881
Haemulidae unid.	grunts	2,639,783	230,575	3,544,185	308,608
<i>Lepidogobius lepidus</i>	bay goby	2,486,739	356,361	3,585,709	511,978
<i>Symphurus atricauda</i>	California tonguefish	2,223,026	260,951	2,960,941	341,635
<i>Ophidion scrippsae</i>	basketweave cusk-eel	2,020,099	388,616	2,666,075	508,390

(table continued)



Table D2-1 (continued). Calculated total annual entrainment and standard error of larval fish and eggs at SGS in 2006 based on actual and design cooling water intake flow volumes.

Taxon	Common Name	Calculated Annual		Calculated Annual	
		Entrainment (Actual Flows)	Standard Error	Entrainment (Design Flows)	Standard Error
<i>Xenistius californiensis</i>	salema	1,802,466	288,933	2,398,412	379,179
Pleuronectidae unid.	righteye flounders	1,705,131	134,524	2,479,133	186,855
<i>Halichoeres semicinctus</i>	rock wrasse	1,485,009	234,652	1,987,553	308,060
<i>Anisotremus davidsonii</i>	sargo	1,429,808	320,539	1,885,888	418,988
<i>Pleuronichthys</i> spp.	turbots	1,371,357	84,199	2,015,258	124,346
<i>Cheilotrema saturnum</i>	black croaker	1,057,263	80,757	1,612,817	121,329
<i>Semicossyphus pulcher</i>	California sheephead	996,476	125,912	1,410,524	173,320
<i>Xystreurus liolepis</i>	fantail sole	947,250	87,159	1,321,097	117,367
<i>Hippoglossina stomata</i>	bigmouth sole	504,168	40,052	692,795	54,929
<i>Pleuronichthys verticalis</i>	hornyhead turbot	458,506	59,023	695,163	90,256
<i>Leptocottus armatus</i>	Pacific staghorn sculpin	396,988	41,929	587,603	61,525
<i>Hypsypops rubicundus</i>	garibaldi	342,045	92,019	439,007	117,330
<i>Sardinops sagax</i>	Pacific sardine	336,514	61,574	440,204	80,385
<i>Icelinus</i> spp.	sculpins	332,245	39,714	673,518	76,157
<i>Gibbonsia</i> spp.	clinid kelpfishes	323,127	31,483	483,606	46,663
<i>Merluccius productus</i>	Pacific hake	320,228	26,497	462,059	38,069
<i>Chilara taylori</i>	spotted cusk-eel	240,042	41,524	323,484	56,427
Gobiesocidae unid.	clingfishes	213,464	43,760	308,008	62,872
Labrisomidae unid.	labrisomid blennies	206,915	33,388	285,812	44,891
<i>Ruscarius meanyi</i>	Puget Sound sculpin	192,282	0	264,225	0
Paralichthyidae unid.	sand flounders	164,761	25,884	226,429	35,259
<i>Gillichthys mirabilis</i>	longjaw mudsucker	162,636	28,940	227,901	40,026
<i>Triphoturus mexicanus</i>	Mexican lampfish	153,952	25,950	211,113	35,456
Kyphosidae unid.	sea chubs	153,952	25,950	211,113	35,456
Pleuronectiformes unid.	flatfishes	151,803	22,816	224,418	33,206
<i>Lyopsetta exilis</i>	slender sole	142,944	29,304	206,255	42,102
<i>Syngnathus</i> spp.	pipefishes	125,294	20,686	181,415	29,830
<i>Rhinogobiops nicholsi</i>	blackeye goby	106,732	21,880	154,004	31,436

(table continued)

Table D2-1 (continued). Calculated total annual entrainment and standard error of larval fish and eggs at SGS in 2006 based on actual and design cooling water intake flow volumes.

Taxon	Common Name	Calculated Annual		Calculated Annual	
		Entrainment (Actual Flows)	Standard Error	Entrainment (Design Flows)	Standard Error
Bathylagidae unid.	blacksmelt	106,732	21,880	154,004	31,436
Pomacentridae unid.	damsel fishes	105,813	20,100	140,515	26,583
<i>Sebastolobus</i> spp.	thornyheads	100,556	19,174	135,379	25,630
Myctophidae unid.	lanternfishes	96,636	18,942	158,229	30,629
<i>Roncador stearnsi</i>	spotfin croaker	95,473	18,174	126,622	23,993
Labridae unid.	wrasses	93,572	18,296	132,172	25,425
<i>Ruscarius creaseri</i>	roughcheek sculpin	88,773	18,199	128,091	26,146
<i>Atractoscion nobilis</i>	white seabass	83,223	16,056	136,452	25,354
<i>Oxylebius pictus</i>	painted greenling	72,573	14,462	168,293	32,394
<i>Isopsetta isolepis</i>	butter sole	71,472	14,652	103,128	21,051
<i>Typhlogobius californiensis</i>	blind goby	66,577	17,446	140,052	36,161
<i>Clupea pallasii</i>	Pacific herring	57,162	15,463	78,803	21,061
<i>Chromis punctipinnis</i>	blacksmith	49,752	13,345	68,224	18,234
<i>Etrumeus teres</i>	round herring	48,516	13,017	63,639	17,008
<i>Acanthogobius flavimanus</i>	yellowfin goby	47,765	15,153	67,380	21,308
<i>Sebastes</i> spp.	rockfishes	47,244	12,672	64,785	17,315
<i>Girella nigricans</i>	opaleye	46,855	12,572	61,460	16,426
<i>Zaniolepis</i> spp.	combfishes	43,694	11,718	58,703	15,689
Hexagrammidae unid.	greenlings	43,694	11,718	58,703	15,689
<i>Artedius</i> spp.	sculpins	40,139	12,733	56,622	17,905
<b>Total</b>		<b>365,258,133</b>		<b>524,202,652</b>	
<b>Fish Eggs</b>					
fish eggs unid.	unidentified fish eggs	3,186,607,290	65,120,749	4,957,177,075	96,648,522
Paralichthyidae unid.	sand flounder eggs	581,532,916	16,080,686	943,922,353	24,719,764
Sciaenidae/Paralichthyidae/Labridae	fish eggs	363,868,587	14,234,876	546,560,618	21,981,543
<i>Citharichthys</i> spp.	sanddab eggs	264,262,380	8,657,737	407,681,780	12,825,952
Engraulidae unid.	anchovy eggs	236,042,601	10,339,278	382,782,525	15,117,656
<i>Pleuronichthys</i> spp.	turbot eggs	196,522,432	5,134,411	300,553,243	8,257,910

(table continued)

Table D2-1 (continued). Calculated total annual entrainment and standard error of larval fish and eggs at SGS in 2006 based on actual and design cooling water intake flow volumes.

Taxon	Common Name	Calculated Annual		Calculated Annual	
		Entrainment (Actual Flows)	Standard Error	Entrainment (Design Flows)	Standard Error
Sciaenidae unid.	croaker eggs	48,599,063	1,749,918	71,832,520	2,554,700
<i>Genyonemus lineatus</i>	white croaker eggs	34,295,926	2,437,843	68,597,355	5,174,405
<i>Sphyraena argentea</i>	Pacific barracuda eggs	2,921,818	325,670	3,927,243	437,133
Pleuronectidae unid.	righteye flounder eggs	2,514,297	377,912	3,682,243	530,807
<i>Paralichthys californicus</i>	California halibut eggs	1,240,920	69,969	2,653,308	149,108
<i>Paralabrax</i> spp.	sand bass eggs	272,775	73,152	366,476	97,945
<i>Roncador stearnsi</i>	spotfin croaker eggs	226,555	61,075	624,741	166,969
Labridae unid.	wrasse eggs	201,832	37,942	303,034	56,496
<i>Microstomus pacificus</i>	Dover sole eggs	175,271	20,748	252,900	29,810
<i>Pleuronichthys guttulatus</i>	diamond turbot eggs	57,905	15,812	94,696	25,309
<i>Scomber japonicus</i>	Pacific mackerel eggs	41,699	11,220	61,110	16,332
<i>Oxyjulis californica</i>	senorita eggs	37,759	10,179	104,124	27,828
<b>Total</b>		<b>4,919,422,026</b>		<b>7,691,177,343</b>	

Table D2-2. Calculated total annual entrainment and standard error of target shellfishes at SGS in 2006 based on actual and design cooling water intake flow volumes.

Taxon	Common Name	Calculated Annual Entrainment (Actual Flows)	Standard Error	Calculated Annual Entrainment (Design Flows)	Standard Error
<i>Pugettia</i> spp.	kelp crabs megalops	10,007,018	944,340	14,664,011	1,359,390
<i>Pinnixa</i> spp.	pea crabs megalops	4,328,231	449,766	6,809,148	694,127
<i>Loligo opalescens</i>	market squid	3,367,525	779,783	4,929,707	1,134,986
<i>Cancer</i> spp.	cancer crabs megalops	1,634,850	226,996	2,380,819	311,708
<i>Petrolisthes</i> spp.	porcelain crab megalops	1,113,720	171,732	1,577,486	241,880
Majidae unid.	spider crab megalops	1,092,243	92,777	1,573,624	133,064
<i>Lophopanopeus</i> spp.	black-clawed crab megalops	1,074,059	176,770	1,537,121	239,043
Grapsidae unid.	shore crab megalops	1,047,391	86,623	1,553,225	124,189
Paguridae unid.	hermit crab megalops	776,523	89,619	1,124,963	126,468
<i>Pachycheles</i> spp.	porcelain crabs megalops	719,490	170,762	992,034	229,295
<i>Emerita analoga</i>	mole crabs megalops	484,611	56,178	737,259	82,774
Brachyura unid.	unidentified crab megalops	409,418	52,776	591,144	74,855
<i>Pachycheles rudis</i>	thickclaw porcelain crab	358,426	75,340	735,780	146,900
Porcellanidae unid.	porcelain crab megalops	260,586	30,506	405,689	47,157
unidentified crab	unidentified crab megalops	241,620	36,048	373,902	53,748
Hippoidea unid.	mole crab megalops	101,667	19,420	143,472	27,164
<i>Pinnotheres</i> spp.	pea crab megalops	83,454	17,125	120,369	24,571
Diogenidae	left-handed hermit crabs	56,636	15,188	76,091	20,336
<i>Fabia subquadrata</i>	grooved mussel crab megalops	47,765	15,153	67,380	21,308
<i>Panulirus interruptus</i>	California spiny lobster (larval)	45,031	12,102	67,381	18,008
<i>Pachycheles pubescens</i>	pubescent porcelain crab	40,343	11,561	79,418	22,027
<i>Petrolisthes cinctipes</i>	flat porcelain crab megalops	32,230	8,688	88,875	23,753
<b>Total</b>		<b>27,322,839</b>		<b>40,628,889</b>	

*Scattergood Generating Station*

## **Appendix E**

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### **Impingement Data**

- E1. Normal Operation Impingement Data - Fish
- E2. Velocity Cap Study Impingement Data – Fish
- E3. Heat Treatment Impingement Data – Fish
- E4. Normal Operation Impingement Data –  
Invertebrates
- E5. Velocity Cap Study Impingement Data –  
Invertebrates
- E6. Heat Treatment Impingement Data – Invertebrates

**Appendix E1. Normal Operation Impingement Data - Fish**

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI1

Start Date: January 10 - 11, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Hypsoblennius gilberti</i>	rockpool blenny	7	0.115
	<i>Citharichthys stigmaeus</i>	speckled sanddab	4	0.043
	<i>Engraulis mordax</i>	northern anchovy	3	0.025
	<i>Seriphus politus</i>	queenfish	2	0.056
	<i>Brachyistius frenatus</i>	kelp perch	1	0.008
	<i>Oxylebius pictus</i>	painted greenling	1	0.023
	<i>Pleuronichthys ritteri</i>	spotted turbot	1	0.003
	<i>Scorpaena guttata</i>	California scorpionfish	1	0.024
	<i>Sebastes rastrelliger</i>	grass rockfish	1	0.556
	<i>Syngnathus californiensis</i>	kelp pipefish	1	0.001
	<i>Synodus lucioceps</i>	California lizardfish	1	0.005
			23	0.859

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI2

Start Date: January 17, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1&2	<i>Brachyistius frenatus</i>	kelp perch	1	0.007
	<i>Heterostichus rostratus</i>	giant kelpfish	1	0.047
	<i>Platyrrhinoidis triseriata</i>	thornback	1	0.376
			3	0.43
3	<i>Engraulis mordax</i>	northern anchovy	14	0.049
	<i>Syngnathus californiensis</i>	kelp pipefish	4	0.009
	<i>Heterodontus francisci</i>	horn shark	1	0.027
	<i>Hypsoblennius gilberti</i>	rockpool blenny	1	0.014
	<i>Platyrrhinoidis triseriata</i>	thornback	1	0.731
	<i>Pleuronichthys ritteri</i>	spotted turbot	1	0.077
	<i>Scorpaena guttata</i>	California scorpionfish	1	0.01
			23	0.917

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI3  
 Start Date: January 24, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1&2	<i>Engraulis mordax</i>	northern anchovy	1	0.002
			1	0.002
3	<i>Engraulis mordax</i>	northern anchovy	1	0.003
	<i>Syngnathus sp</i>	pipefish	1	0.003
			2	0.006



Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI4

Start Date: January 31, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1&2	Atherinopsidae	atherinopsid eggs	-	0.005
	<i>Atherinopsis californiensis</i>	jacksmelt	2	0.159
	<i>Citharichthys stigmaeus</i>	speckled sanddab	4	0.031
	<i>Engraulis mordax</i>	northern anchovy	3	0.012
	<i>Seriphus politus</i>	queenfish	4	0.04
	<i>Syngnathus leptorhynchus</i>	bay pipefish	2	0.003
	<i>Urobatis halleri</i>	round stingray	1	0.025
			16	0.275
3	<i>Citharichthys stigmaeus</i>	speckled sanddab	2	0.011
	<i>Engraulis mordax</i>	northern anchovy	10	0.044
	<i>Peprilus simillimus</i>	Pacific pompano	1	0.018
	<i>Pleuronichthys ritteri</i>	spotted turbot	2	0.106
	<i>Seriphus politus</i>	queenfish	3	0.007
	<i>Syngnathus leptorhynchus</i>	bay pipefish	5	0.011
	<i>Urobatis halleri</i>	round stingray	1	0.036
		24	0.233	

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI5  
 Start Date: February 7, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1&2	<i>Heterostichus rostratus</i>	giant kelpfish	1	0.012
	<i>Odontopyxis trispinosa</i>	pygmy poacher	1	0.002
	<i>Syngnathus californiensis</i>	kelp pipefish	1	0.01
	<i>Triakis semifasciata</i>	leopard shark	1	0.011
			4	0.035
3	<i>Engraulis mordax</i>	northern anchovy	3	0.014
	<i>Syngnathus californiensis</i>	kelp pipefish	6	0.014
			9	0.028

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI6  
Start Date: February 14, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1&2	No Fish			
3	<u>Atherinopsidae*</u>	<u>atherinopsid eggs</u>	<u>1347</u>	<u>0.013</u>
			-	0.013

\* Not included in total abundance.

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI7

Start Date: February 21, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1&2	<i>Odontopyxis trispinosa</i>	pygmy poacher	1	0.002
	<i>Peprilus simillimus</i>	Pacific pompano	1	0.015
	<i>Syngnathus leptorhynchus</i>	bay pipefish	1	0.001
	Atherinopsidae*	atherinopsid eggs	5	0.001
			3	0.018
3	<i>Engraulis mordax</i>	northern anchovy	3	0.004
	<i>Ophidion scrippsae</i>	basketweave cusk-eel	1	0.035
	<i>Syngnathus leptorhynchus</i>	bay pipefish	3	0.005
	<i>Syngnathus</i> sp	pipefish	1	0.001
	Atherinopsidae*	atherinopsid eggs	80	0.001
			8	0.045

\* Not included in total abundance.

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI8

Start Date: February 28, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1&2	<i>Engraulis mordax</i>	northern anchovy	7	0.029
	<i>Seriphus politus</i>	queenfish	14	0.053
	<i>Syngnathus leptorhynchus</i>	bay pipefish	1	0.001
	<i>Synodus lucioceps</i>	California lizardfish	1	0.009
				23
3	<i>Citharichthys stigmaeus</i>	speckled sanddab	1	0.006
	<i>Engraulis mordax</i>	northern anchovy	8	0.038
	<i>Peprilus simillimus</i>	Pacific pompano	4	0.042
	<i>Platyrrhinoidis triseriata</i>	thornback	1	0.163
	<i>Scorpaenichthys marmoratus</i>	cabezon	1	0.115
	<i>Seriphus politus</i>	queenfish	4	0.012
	<i>Syngnathus leptorhynchus</i>	bay pipefish	1	0.003
			20	0.379

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI9  
Start Date: March 7, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Engraulis mordax</i>	northern anchovy	3	0.014
	<i>Synodus lucioceps</i>	California lizardfish	1	0.009
			4	0.023
2	<i>Chromis punctipinnis</i>	blacksmith	5	1.374
	<i>Seriphus politus</i>	queenfish	2	0.034
	<i>Syngnathus californiensis</i>	kelp pipefish	1	0.001
			8	1.409
3	<i>Engraulis mordax</i>	northern anchovy	5	0.017
	<i>Hypsoblennius gilberti</i>	rockpool blenny	1	0.004
	<i>Odontopyxis trispinosa</i>	pygmy poacher	3	0.009
	<i>Peprilus simillimus</i>	Pacific pompano	1	0.014
	<i>Platyrrhinoidis triseriata</i>	thornback	1	0.02
	<i>Pleuronichthys ritteri</i>	spotted turbot	1	0.017
	<i>Scorpaena guttata</i>	California scorpionfish	1	0.037
	<i>Seriphus politus</i>	Queenfish	1	0.005
	<i>Syngnathus californiensis</i>	kelp pipefish	3	0.008
	<i>Syngnathus sp</i>	Pipefish	2	0.002
	<i>Synodus lucioceps</i>	California lizardfish	9	0.075
		28	0.208	

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI10  
 Start Date: March 14, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Engraulis mordax</i>	northern anchovy	1	0.01
	<i>Pleuronichthys ritteri</i>	spotted turbot	1	0.011
			2	0.021
2	<i>Oxylebius pictus</i>	painting greenling	1	0.003
			1	0.003
3	<i>Hypsoblennius gilberti</i>	rockpool blenny	1	0.012
	<i>Syngnathus californiensis</i>	kelp pipefish	1	0.004
	<i>Urobatis halleri</i>	round stingray	1	0.161
			3	0.177

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI11  
Start Date: March 21, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Engraulis mordax</i>	northern anchovy	1	0.005
	<i>Gobiesox rhesodon</i>	California clingfish	1	0.001
			2	0.006
2	<i>Atherinops affinis</i>	Topsmelt	2	0.065
	<i>Engraulis mordax</i>	northern anchovy	2	0.008
	<i>Paralabrax nebulifer</i>	barred sand bass	1	1.45
	<i>Sebastes auriculatus</i>	brown rockfish	1	0.179
	<i>Synodus lucioceps</i>	California lizardfish	1	0.005
		7	1.707	
3	<i>Anchoa delicatissima</i>	slough anchovy	1	0.008
	<i>Atherinops affinis</i>	Topsmelt	1	0.059
	<i>Odontopyxis trispinosa</i>	pygmy poacher	1	0.002
	<i>Synodus lucioceps</i>	California lizardfish	8	0.055
		11	0.124	



Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI12  
Start Date: March 28, 2006

Unit	Taxon	Common Name	Survey Totals			
			Abundance	Biomass (kg)		
1	<i>Synodus lucioceps</i>	California lizardfish	1	0.007		
			1	0.007		
1&2	<i>Engraulis mordax</i>	northern anchovy	1	0.012		
			1	0.012		
2	<i>Chromis punctipinnis</i>	blacksmith	1	0.358		
			<i>Rathbunella alleni</i>	stripefin ronquil	1	0.009
					2	0.367
3	<i>Engraulis mordax</i>	northern anchovy	1	0.001		
			<i>Heterodontus francisci</i>	horn shark	1	2.2
					<i>Myliobatis californica</i>	bat ray
			<i>Scorpaena guttata</i>	California scorpionfish		
			4	2.604		

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI13  
 Start Date: April 4, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	No Fish			
2	<i>Hypsoblennius gilberti</i>	rockpool blenny	1	0.004
	<i>Pleuronichthys ritteri</i>	spotted turbot	1	0.018
			2	0.022
3	<i>Hypsoblennius gilberti</i>	rockpool blenny	1	0.001
	<i>Scorpaena guttata</i>	California scorpionfish	1	0.033
			2	0.034

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI14  
Start Date: April 11, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Engraulis mordax</i>	northern anchovy	1	0.01
	<i>Myliobatis californica</i>	bat ray	1	0.322
	<i>Ophichthus zophochir</i>	yellow snake eel	1	0.187
	<i>Seriphus politus</i>	queenfish	3	0.078
			6	0.597
2	<i>Peprilus simillimus</i>	Pacific pompano	1	0.034
	<i>Seriphus politus</i>	queenfish	4	0.117
			5	0.151
3	<i>Engraulis mordax</i>	northern anchovy	3	0.028
	<i>Peprilus simillimus</i>	Pacific pompano	1	0.021
	<i>Platyrrhinoidis triseriata</i>	thornback	2	0.604
	<i>Pleuronichthys guttulatus</i>	diamond turbot	1	0.199
	<i>Pleuronichthys verticalis</i>	hornyhead turbot	1	0.03
	<i>Seriphus politus</i>	queenfish	27	0.51
	<i>Syngnathus californiensis</i>	kelp pipefish	1	0.001
	<i>Syngnathus leptorhynchus</i>	bay pipefish	2	0.002
	<i>Syngnathus</i> sp	pipefish	1	0.001
	<i>Synodus lucioceps</i>	California lizardfish	2	0.019
		41	1.415	

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI15  
Start Date: April 18, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Syngnathus californiensis</i>	kelp pipefish	1	0.001
			1	0.001
2	<i>Scorpaenichthys marmoratus</i>	cabezon	1	0.213
			1	0.213
3	<i>Atherinopsis californiensis</i>	jacksmelt	1	0.131
	<i>Engraulis mordax</i>	northern anchovy	1	0.011
	<i>Myliobatis californica</i>	bat ray	2	0.433
	<i>Ophidion scrippsae</i>	basketweave cusk-eel	1	0.023
	<i>Pleuronichthys guttulatus</i>	diamond turbot	1	0.111
	<i>Porichthys notatus</i>	plainfin midshipman	1	0.038
	<i>Scorpaena guttata</i>	California scorpionfish	1	0.02
	<i>Seriphus politus</i>	queenfish	6	0.136
<i>Syngnathus californiensis</i>	kelp pipefish	3	0.013	
			17	0.916

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI16  
Start Date: April 25, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Atherinopsis californiensis</i>	jacksmelt	2	0.171
	<i>Engraulis mordax</i>	northern anchovy	3	0.039
	<i>Peprilus simillimus</i>	Pacific pompano	1	0.018
	<i>Synodus lucioceps</i>	California lizardfish	2	0.025
			8	0.253
2	<i>Atherinopsis californiensis</i>	jacksmelt	5	0.4
	<i>Engraulis mordax</i>	northern anchovy	6	0.076
	<i>Myliobatis californica</i>	bat ray	2	0.504
	<i>Peprilus simillimus</i>	Pacific pompano	1	0.023
	<i>Pleuronichthys verticalis</i>	hornyhead turbot	1	0.011
	<i>Seriphus politus</i>	queenfish	4	0.075
	<i>Synodus lucioceps</i>	California lizardfish	5	0.062
		24	1.151	
3	<i>Atherinopsis californiensis</i>	jacksmelt	106	9.207
	<i>Brachyistius frenatus</i>	kelp perch	1	0.015
	<i>Citharichthys stigmaeus</i>	speckled sanddab	1	0.001
	<i>Embiotoca jacksoni</i>	black perch	4	0.023
	<i>Engraulis mordax</i>	northern anchovy	32	0.5
	<i>Genyonemus lineatus</i>	white croaker	1	0.001
	<i>Hyperprosopon argenteum</i>	walleye surfperch	2	0.006
	<i>Hypsoblennius jenkinsi</i>	mussel blenny	1	0.004
	<i>Myliobatis californica</i>	bat ray	4	1.05
	<i>Peprilus simillimus</i>	Pacific pompano	9	0.296
	<i>Pleuronichthys verticalis</i>	hornyhead turbot	1	0.027
	<i>Seriphus politus</i>	queenfish	28	0.67
	<i>Syngnathus californiensis</i>	kelp pipefish	1	0.009
	<i>Synodus lucioceps</i>	California lizardfish	42	0.487
	<i>Zalembius rosaceus</i>	pink seaperch	1	0.027
		234	12.323	

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI17  
Start Date: May 2, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Hypsoblennius gilberti</i>	rockpool blenny	1	0.019
			1	0.019
2	<i>Cymatogaster aggregata</i>	shiner perch	1	0.001
	<i>Seriphus politus</i>	queenfish	1	0.018
			2	0.019
3	<i>Atherinops affinis</i>	topsmelt	1	0.088
	<i>Atherinopsis californiensis</i>	jacksmelt	2	0.278
	<i>Citharichthys stigmaeus</i>	speckled sanddab	1	0.02
	<i>Engraulis mordax</i>	northern anchovy	1	0.014
	<i>Odontopyxis trispinosa</i>	pygmy poacher	1	0.001
	<i>Peprilus simillimus</i>	Pacific pompano	1	0.021
	<i>Scomber japonicus</i>	Pacific chub mackerel	1	0.109
	<i>Seriphus politus</i>	queenfish	9	0.303
	<i>Syngnathus californiensis</i>	kelp pipefish	1	0.004
	<i>Atherinopsidae*</i>	atherinopsid eggs	50	0.001
		18	0.838	

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI18  
Start Date: May 9, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	No Fish			
2	<i>Scorpaena guttata</i>	California scorpionfish	1	0.031
	<i>Syngnathus californiensis</i>	kelp pipefish	1	0.003
	<i>Atherinopsidae</i> *	atherinopsid eggs	1105	0.023
			2	0.034
3	<i>Artedius corallinus</i>	coralline sculpin	1	0.009
	<i>Peprilus simillimus</i>	Pacific pompano	2	0.157
	<i>Seriphus politus</i>	queenfish	13	0.272
	<i>Atherinopsidae</i> *	atherinopsid eggs	300	0.006
			16	0.438

\* Not included in total abundance.

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI19  
Start Date: May 16, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Hypsoblennius jenkinsi</i>	mussel blenny	1	0.003
	<i>Peprilus simillimus</i>	Pacific pompano	2	0.059
	<i>Seriphus politus</i>	queenfish	5	0.105
	<i>Atherinopsidae*</i>	atherinopsid eggs	100	0.007
			8	0.167
2	<i>Embiotoca jacksoni</i>	black perch	1	0.014
	<i>Myliobatis californica</i>	bat ray	1	0.189
	<i>Peprilus simillimus</i>	Pacific pompano	3	0.108
	<i>Seriphus politus</i>	queenfish	8	0.237
	<i>Atherinopsidae*</i>	atherinopsid eggs	125	0.005
		13	0.548	
3	<i>Cymatogaster aggregata</i>	shiner perch	1	0.002
	<i>Hyperprosopon argenteum</i>	walleye surfperch	1	0.003
	<i>Micrometrus minimus</i>	dwarf perch	1	0.001
	<i>Peprilus simillimus</i>	Pacific pompano	1	0.029
	<i>Seriphus politus</i>	queenfish	23	0.386
		27	0.421	

\* Not included in total abundance.



Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI20  
Start Date: May 23, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1				
	<i>Myliobatis californica</i>	bat ray	1	0.285
	<i>Seriphus politus</i>	queenfish	9	0.269
	<i>Atherinopsidae</i> *	atherinopsid eggs	515	0.008
			10	0.554
2				
	<i>Atherinopsis californiensis</i>	jacksmelt	1	0.147
	<i>Peprilus simillimus</i>	Pacific pompano	1	0.032
	<i>Sardinops sagax</i>	Pacific sardine	1	0.026
	<i>Seriphus politus</i>	queenfish	7	0.174
	<i>Atherinopsidae</i> *	atherinopsid eggs	325	0.005
			10	0.379
3	No Fish			

\* Not included in total abundance.

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI21  
 Start Date: May 30, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Cymatogaster aggregata</i>	shiner perch	1	0.002
	<i>Hyperprosopon argenteum</i>	walleye surfperch	1	0.004
	<i>Atherinopsidae</i> *	atherinopsid eggs	25	0.001
			2	0.006
2	<i>Seriphus politus</i>	Queenfish	6	0.125
	<i>Atherinopsidae</i> *	atherinopsid eggs	135	0.004
			6	0.125
3	No Fish			

\* Not included in total abundance.

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI22  
 Start Date: June 6, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	Atherinopsidae	atherinopsid eggs	-	0.001
	<i>Engraulis mordax</i>	northern anchovy	1	0.015
	<i>Genyonemus lineatus</i>	white croaker	1	0.003
	<i>Seriphus politus</i>	Queenfish	2	0.057
	<i>Syngnathus californiensis</i>	kelp pipefish	1	0.01
			5	0.086
2	<i>Genyonemus lineatus</i>	white croaker	8	0.017
	<i>Hypsoblennius gilberti</i>	rockpool blenny	2	0.013
	<i>Seriphus politus</i>	Queenfish	2	0.052
			12	0.082
3	No Fish			

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI23  
Start Date: June 13, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Cymatogaster aggregata</i>	shiner perch	1	0.015
	<i>Genyonemus lineatus</i>	white croaker	2	0.007
	<i>Seriphus politus</i>	queenfish	3	0.049
	<i>Urobatis halleri</i>	round stingray	1	0.289
			7	0.36
2	<i>Genyonemus lineatus</i>	white croaker	2	0.007
	<i>Seriphus politus</i>	queenfish	3	0.072
	<i>Syngnathus leptorhynchus</i>	bay pipefish	1	0.004
	Atherinopsidae*	atherinopsid eggs	80	0.001
			6	0.083
3	No Fish			

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI24  
Start Date: June 20, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Genyonemus lineatus</i>	white croaker	1	0.004
			1	0.004
2	<i>Embiotoca jacksoni</i>	black perch	1	0.007
	<i>Seriphus politus</i>	Queenfish	1	0.025
			2	0.032
3	<i>Embiotoca jacksoni</i>	black perch	1	0.004
	<i>Micrometrus minimus</i>	dwarf perch	2	0.007
	<i>Myliobatis californica</i>	bat ray	1	0.196
	<i>Seriphus politus</i>	Queenfish	1	0.004
			5	0.211

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI25  
 Start Date: June 27, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Myliobatis californica</i>	bat ray	1	0.21
			1	0.21
2	<i>Genyonemus lineatus</i>	white croaker	1	0.004
			1	0.004
3	<i>Genyonemus lineatus</i>	white croaker	5	0.015
	<i>Myliobatis californica</i>	bat ray	2	13.15
	<i>Phanerodon furcatus</i>	white seaperch	1	0.089
	<i>Pleuronichthys verticalis</i>	hornyhead turbot	1	0.035
	<i>Rhacochilus vacca</i>	pile perch	1	0.011
	<i>Seriphus politus</i>	queenfish	4	0.069
	<i>Syngnathus californiensis</i>	kelp pipefish	1	0.001
			15	13.37

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI26  
Start Date: July 5, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	Clinidae unid	kelp blenny unid	1	0.001
	<i>Engraulis mordax</i>	northern anchovy	1	0.009
	<i>Genyonemus lineatus</i>	white croaker	2	0.008
	<i>Heterostichus rostratus</i>	giant kelpfish	1	0.105
			5	0.123
2	<i>Engraulis mordax</i>	northern anchovy	3	0.051
	<i>Genyonemus lineatus</i>	white croaker	4	0.017
	<i>Platyrrhinoidis triseriata</i>	thornback	1	0.035
	<i>Seriphus politus</i>	queenfish	6	0.014
			14	0.117
3	<i>Atherinops affinis</i>	topsmelt	2	0.043
	<i>Cymatogaster aggregata</i>	shiner perch	1	0.003
	<i>Embiotoca jacksoni</i>	black perch	1	0.289
	<i>Genyonemus lineatus</i>	white croaker	25	0.098
	<i>Hyperprosopon argenteum</i>	walleye surfperch	1	0.084
	<i>Phanerodon furcatus</i>	white seaperch	1	0.002
	<i>Platyrrhinoidis triseriata</i>	thornback	1	0.104
	<i>Seriphus politus</i>	queenfish	35	0.168
			67	0.791

**Scattergood Generating Station - Normal Operation Impingement Data – Fish**

Survey: SGSFI27

Start Date: July 11, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Genyonemus lineatus</i>	white croaker	1	0.004
	<i>Hypsoblennius gilberti</i>	rockpool blenny	1	0.009
			2	0.013
2	<i>Cymatogaster aggregata</i>	shiner perch	3	0.023
	<i>Myliobatis californica</i>	bat ray	1	0.418
	<i>Phanerodon furcatus</i>	white seaperch	1	0.135
	<i>Scorpaena guttata</i>	California scorpionfish	1	0.048
	<i>Seriphus politus</i>	queenfish	3	0.018
		9	0.642	
3	<i>Atherinops affinis</i>	topsmelt	1	0.027
	<i>Cymatogaster aggregata</i>	shiner perch	4	0.007
	<i>Genyonemus lineatus</i>	white croaker	25	0.115
	<i>Myliobatis californica</i>	bat ray	1	2.65
	<i>Sardinops sagax</i>	Pacific sardine	2	0.036
	<i>Seriphus politus</i>	queenfish	9	0.039
	<i>Syngnathus californiensis</i>	kelp pipefish	1	0.002
		43	2.876	



**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI28  
Start Date: July 18, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Genyonemus lineatus</i>	white croaker	1	0.004
	<i>Seriphus politus</i>	queenfish	1	0.005
			2	0.009
2	<i>Cymatogaster aggregata</i>	shiner perch	1	0.007
	<i>Genyonemus lineatus</i>	white croaker	1	0.006
	<i>Pleuronichthys verticalis</i>	hornyhead turbot	1	0.108
	<i>Seriphus politus</i>	queenfish	3	0.016
		6	0.137	
3	<i>Atherinops affinis</i>	topsmelt	1	0.025
	<i>Genyonemus lineatus</i>	white croaker	16	0.079
	<i>Seriphus politus</i>	queenfish	24	0.139
		41	0.243	

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI29  
Start Date: July 25, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Cymatogaster aggregata</i>	shiner perch	1	0.005
	<i>Genyonemus lineatus</i>	white croaker	1	0.004
	<i>Scorpaenichthys marmoratus</i>	Cabezón	1	0.053
			3	0.062
2	<i>Cymatogaster aggregata</i>	shiner perch	1	0.007
	<i>Genyonemus lineatus</i>	white croaker	1	0.006
			2	0.013
3	<i>Atherinopsis californiensis</i>	Jacksmelt	1	0.085
	<i>Cymatogaster aggregata</i>	shiner perch	1	0.005
	<i>Genyonemus lineatus</i>	white croaker	10	0.078
	<i>Phanerodon furcatus</i>	white seaperch	1	0.097
	<i>Rathbunella alleni</i>	stripefin ronquil	1	0.009
	<i>Ruscarius creaseri</i>	roughcheek sculpin	1	0.001
	<i>Scomber japonicus</i>	Pacific chub mackerel	1	0.07
	<i>Seriphus politus</i>	Queenfish	1	0.037
	<i>Urobatis halleri</i>	round stingray	1	1
			18	1.382

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI30  
Start Date: August 1, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Anchoa delicatissima</i>	slough anchovy	1	0.013
	<i>Anisotremus davidsonii</i>	sargo	1	0.667
	<i>Atherinopsis californiensis</i>	jacksmelt	4	0.497
	<i>Cymatogaster aggregata</i>	shiner perch	6	0.083
	<i>Embiotoca jacksoni</i>	black perch	1	0.027
	<i>Engraulis mordax</i>	northern anchovy	5	0.046
	<i>Genyonemus lineatus</i>	white croaker	4	0.024
	<i>Paralabrax nebulifer</i>	barred sand bass	1	0.272
	<i>Peprilus simillimus</i>	Pacific pompano	1	0.04
	<i>Phanerodon furcatus</i>	white seaperch	1	0.037
	<i>Scorpaenichthys marmoratus</i>	cabezon	1	0.024
	<i>Seriphus politus</i>	queenfish	2	0.033
				28
2	<i>Atherinopsis californiensis</i>	Jacksmelt	9	0.913
	<i>Cymatogaster aggregata</i>	shiner perch	11	0.124
	<i>Embiotoca jacksoni</i>	black perch	1	0.04
	<i>Engraulis mordax</i>	northern anchovy	6	0.066
	<i>Genyonemus lineatus</i>	white croaker	10	0.056
	<i>Hypsoblennius gilberti</i>	rockpool blenny	2	0.008
	<i>Myliobatis californica</i>	bat ray	1	0.154
	<i>Paralabrax nebulifer</i>	barred sand bass	1	0.18
	<i>Peprilus simillimus</i>	Pacific pompano	4	0.174
	<i>Pleuronichthys ritteri</i>	spotted turbot	1	0.13
	<i>Sebastes paucispinis</i>	Bocaccio	1	0.023
	<i>Seriphus politus</i>	Queenfish	8	0.259
	<i>Xenistius californiensis</i>	Salema	1	0.081
			56	2.208
3	<i>Anchoa delicatissima</i>	slough anchovy	1	0.021
	<i>Anisotremus davidsonii</i>	Sargo	6	4.759
	<i>Atherinops affinis</i>	Topsmelt	77	9.019
	<i>Atherinopsis californiensis</i>	Jacksmelt	57	7.231

(continued on next page)

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI30 (Continued)

Start Date: August 1, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
3	(Continued)			
	<i>Chromis punctipinnis</i>	blacksmith	3	0.868
	<i>Cymatogaster aggregata</i>	shiner perch	15	0.204
	<i>Engraulis mordax</i>	northern anchovy	11	0.172
	<i>Genyonemus lineatus</i>	white croaker	7	0.523
	<i>Myliobatis californica</i>	bat ray	1	0.164
	<i>Paralabrax nebulifer</i>	barred sand bass	4	1.361
	<i>Pepilus simillimus</i>	Pacific pompano	3	0.207
	<i>Phanerodon furcatus</i>	white seaperch	10	1.315
	<i>Scomber japonicus</i>	Pacific chub mackerel	1	0.206
	<i>Sebastes miniatus</i>	vermillion rockfish	1	0.011
	<i>Seriphus politus</i>	Queenfish	49	1.5
	<i>Umbrina roncadior</i>	Yellowfin croaker	1	0.22
	<i>Urobatis halleri</i>	round stingray	2	0.826
			249	28.607

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI31

Start Date: August 8, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Myliobatis californica</i>	bat ray	20	7.5
			20	7.5
2	No Fish			
3	No Fish			

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI32

Start Date: August 16, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Sardinops sagax</i>	Pacific sardine	3	0.107
			3	0.107
2	<i>Atherinops affinis</i>	Topsmelt	20	0.26
	<i>Atherinopsis californiensis</i>	Jacksmelt	29	0.699
	<i>Cymatogaster aggregata</i>	shiner perch	1	0.004
	<i>Sardinops sagax</i>	Pacific sardine	1	0.04
			51	1.003
3	<i>Atherinops affinis</i>	Topsmelt	20	0.2
	<i>Atherinopsis californiensis</i>	Jacksmelt	21	0.79
			41	0.99

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI33  
 Start Date: August 22, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Myliobatis californica</i>	bat ray	1	1.2
			1	1.2
2	<i>Atherinops affinis</i>	topsmelt	1	0.019
			1	0.019
3	No Fish			

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI34  
 Start Date: August 29, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	No Fish			
2	No Fish			
3	<i>Scorpaena guttata</i>	California scorpionfish	1	0.266
			1	0.266

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI35

Start Date: September 5, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Scorpaena guttata</i>	California scorpionfish	1	0.263
			1	0.263
2	<i>Sardinops sagax</i>	Pacific sardine	1	0.038
			1	0.038
3	No Fish			

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

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Survey: SGSFI36

Start Date: September 12, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	No Fish			
2	<i>Engraulis mordax</i>	northern anchovy	1	0.002
			1	0.002
3	No Fish			



**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI37

Start Date: September 19, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	No Fish			
2	No Fish			
3	<i>Chromis punctipinnis</i>	blacksmith	1	0.306
	<i>Myliobatis californica</i>	bat ray	1	0.381
			2	0.687

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI38

Start Date: September 26, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Paralabrax clathratus</i>	kelp bass	1	0.004
	<i>Pleuronichthys ritteri</i>	spotted turbot	1	0.103
			2	0.107
2	<i>Hypsoblennius jenkinsi</i>	mussel blenny	1	0.002
	<i>Myliobatis californica</i>	bat ray	1	0.331
			2	0.333
3	<i>Sardinops sagax</i>	Pacific sardine	1	0.041
			1	0.041

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI39

Start Date: October 3, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Scomber japonicus</i>	Pacific chub mackerel	1	0.127
			1	0.127
2	No Fish			
3	<i>Hypsoblennius gilberti</i>	rockpool blenny	1	0.002
			1	0.002

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI40

Start Date: October 10, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Atherinops affinis</i>	Topsmelt	1	0.018
	<i>Phanerodon furcatus</i>	white seaperch	1	0.019
			2	0.037
2	<i>Atherinops affinis</i>	Topsmelt	3	0.062
			3	0.062
3	<i>Atherinops affinis</i>	Topsmelt	15	0.496
	<i>Atherinopsis californiensis</i>	Jacksmelt	1	0.035
	<i>Sardinops sagax</i>	Pacific sardine	3	0.142
			19	0.673

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI41

Start Date: October 17, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	No Fish			
2	<i>Paralabrax nebulifer</i>	barred sand bass	1	0.579
			1	0.579
3	No Fish			

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI45

Start Date: November 14, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Scomber japonicus</i>	Pacific chub mackerel	1	0.078
			1	0.078
2	No Fish			
3	<i>Myliobatis californica</i>	bat ray	1	2.6
	<i>Platyrrhoidis triseriata</i>	Thornback	1	0.438
			2	3.038

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI49

Start Date: December 12, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Anchoa compressa</i>	deepbody anchovy	1	0.004
	<i>Anchoa delicatissima</i>	slough anchovy	1	0.004
	<i>Atherinops affinis</i>	Topsmelt	9	0.561
	<i>Atherinopsis californiensis</i>	Jacksmelt	13	1.257
	<i>Engraulis mordax</i>	northern anchovy	1	0.003
	<i>Hypsoblennius gilberti</i>	rockpool blenny	1	0.002
	<i>Sardinops sagax</i>	Pacific sardine	24	0.5
	<i>Seriphus politus</i>	Queenfish	3	0.012
			53	2.343
2	<i>Anchoa compressa</i>	deepbody anchovy	1	0.006
	<i>Atherinopsis californiensis</i>	Jacksmelt	37	2.75
	<i>Engraulis mordax</i>	northern anchovy	5	0.013
	<i>Odontopyxis trispinosa</i>	pygmy poacher	1	0.002
	<i>Sardinops sagax</i>	Pacific sardine	44	0.841
	<i>Scorpaena guttata</i>	California scorpionfish	1	0.001
	<i>Seriphus politus</i>	Queenfish	3	0.006
			92	3.619
3	<i>Anchoa compressa</i>	deepbody anchovy	3	0.018
	<i>Atherinops affinis</i>	Topsmelt	40	0.923
	<i>Atherinopsis californiensis</i>	Jacksmelt	178	14.587
	<i>Engraulis mordax</i>	northern anchovy	42	0.11
	<i>Heterostichus rostratus</i>	giant kelpfish	1	0.012
	<i>Myliobatis californica</i>	bat ray	1	0.618
	<i>Paralichthys californicus</i>	California halibut	5	0.525
	<i>Peprilus simillimus</i>	Pacific pompano	5	0.125
	<i>Platyrhinoidis triseriata</i>	Thornback	1	0.33
	<i>Pleuronichthys ritteri</i>	spotted turbot	8	0.026
	<i>Pleuronichthys verticalis</i>	hornyhead turbot	5	0.13
	<i>Porichthys myriaster</i>	specklefin midshipman	1	0.063
	<i>Sardinops sagax</i>	Pacific sardine	28	0.693
	<i>Scorpaena guttata</i>	California scorpionfish	2	0.003
	<i>Sebastes paucispinis</i>	bocaccio	5	0.02
	<i>Seriphus politus</i>	queenfish	114	0.778
	<i>Syngnathus sp</i>	pipefish unid	10	0.015
			449	18.976

Scattergood Generating Station - Normal Operation Impingement Data - Fish

Survey: SGSFI50

Start Date: December 19, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Engraulis mordax</i>	northern anchovy	2	0.006
	<i>Platyrhinoidis triseriata</i>	Thornback	1	0.447
	<i>Seriphus politus</i>	Queenfish	9	0.024
			12	0.477
2	<i>Citharichthys stigmaeus</i>	speckled sanddab	1	0.001
	<i>Engraulis mordax</i>	northern anchovy	3	0.008
	<i>Seriphus politus</i>	queenfish	2	0.006
			6	0.015
3	<i>Anchoa delicatissima</i>	slough anchovy	1	0.003
	<i>Atherinops affinis</i>	topsmelt	2	0.018
	<i>Citharichthys stigmaeus</i>	speckled sanddab	10	0.02
	<i>Engraulis mordax</i>	northern anchovy	32	0.076
	<i>Heterodontus francisci</i>	horn shark	1	0.026
	<i>Heterostichus rostratus</i>	giant kelpfish	1	0.016
	<i>Odontopyxis trispinosa</i>	pygmy poacher	1	0.001
	<i>Paralabrax nebulifer</i>	barred sand bass	1	0.247
	<i>Peprilus simillimus</i>	Pacific pompano	2	0.055
	<i>Platyrhinoidis triseriata</i>	thornback	4	3.285
	<i>Pleuronichthys ritteri</i>	spotted turbot	1	0.002
	<i>Pleuronichthys verticalis</i>	hornyhead turbot	2	0.015
	<i>Sardinops sagax</i>	Pacific sardine	4	0.056
	<i>Scorpaena guttata</i>	California scorpionfish	3	0.099
	<i>Seriphus politus</i>	queenfish	43	0.108
	<i>Syngnathus sp</i>	pipefish unid	2	0.004
	<i>Trachurus symmetricus</i>	jack mackerel	1	0.022
	<i>Urobatis halleri</i>	round stingray	1	0.028
	<i>Xenistius californiensis</i>	salema	1	0.002
				113



**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI51

Start Date: December 26, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Myliobatis californica</i>	bat ray	1	0.262
	<i>Pleuronichthys ritteri</i>	spotted turbot	1	0.011
	<i>Scorpaenichthys marmoratus</i>	cabezon	1	0.161
	<i>Seriphus politus</i>	queenfish	2	0.004
			5	0.438
2	<i>Myliobatis californica</i>	bat ray	1	0.593
	<i>Scorpaena guttata</i>	California scorpionfish	1	0.002
	<i>Seriphus politus</i>	queenfish	1	0.002
			3	0.597
3	<i>Anchoa delicatissima</i>	slough anchovy	1	0.005
	<i>Engraulis mordax</i>	northern anchovy	5	0.015
	<i>Ophidion scrippsae</i>	basketweave cusk-eel	1	0.055
	<i>Paralichthys californicus</i>	California halibut	1	0.038
	<i>Platyrrhinoidis triseriata</i>	thornback	1	0.340
	<i>Seriphus politus</i>	queenfish	19	0.048
			28	0.501

**Scattergood Generating Station - Normal Operation Impingement Data - Fish**

Survey: SGSFI52  
Start Date: January 2, 2007

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
1	<i>Seriphus politus</i>	queenfish	1	0.005
			1	0.005
2	<i>Seriphus politus</i>	queenfish	1	0.004
	<i>Torpedo californica</i>	Pacific electric ray	1	9.100
			2	9.104
3	<i>Engraulis mordax</i>	northern anchovy	1	0.003
	<i>Heterostichus rostratus</i>	giant kelpfish	1	0.002
	<i>Platyrhinoidis triseriata</i>	thornback	1	0.794
	<i>Seriphus politus</i>	queenfish	29	0.146
	<i>Anchoa delicatissima</i>	slough anchovy	1	0.005
	<i>Menticirrhus undulatus</i>	California corbina	1	0.204
			34	1.154

**Appendix E2. Velocity Cap Study Impingement Data - Fish**

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Fish**

Survey: VC1 Velocity Cap Imp. Survey  
 Date: October 12, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Atherinops affinis</i>	topsmelt	2	0.061
	<i>Atherinopsis californiensis</i>	jacksmelt	1	0.052
	<i>Xenistius californiensis</i>	salema	1	0.006
			4	0.119

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Fish**

Survey: VC2 Velocity Cap Imp. Survey  
 Date: October 13, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Atherinops affinis</i>	topsmelt	2	0.028
	<i>Torpedo californica</i>	Pacific electric ray	1	5.960
			3	5.988

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Fish**

Survey: VC3 Velocity Cap Imp. Survey  
 Date: October 16, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Atherinops affinis</i>	topsmelt	1	0.027
	<i>Myliobatis californica</i>	bat ray	1	0.603
	<i>Sardinops sagax</i>	Pacific sardine	1	0.019
			3	0.649

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Fish**

Survey: VC4 Velocity Cap Imp. Survey  
 Date: October 17, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Scorpaenichthys marmoratus</i>	cabezon	1	0.228
	<i>Torpedo californica</i>	Pacific electric ray	1	6.050
			2	6.278

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Fish**

Survey: VC5 Velocity Cap Imp. Survey  
 Date: October 19, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Platyrhinoidis triseriata</i>	thornback	1	0.030
			1	0.030

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Fish**

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Survey: VC6 Velocity Cap Imp. Survey  
Date: October 20, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All	No fish			



**Scattergood Generating Station – Velocity Cap Study Impingement Data – Fish**

Survey: VC7 Velocity Cap Imp. Survey  
 Date: October 23, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Chromis punctipinnis</i>	blacksmith	1	0.048
	<i>Myliobatis californica</i>	bat ray	3	0.922
	<i>Torpedo californica</i>	Pacific electric ray	1	3.550
			5	4.520

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Fish**

Survey: VC18 Velocity Cap Imp. Survey  
Date: November 10, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Atherinops affinis</i>	topsmelt	252	6.253
	<i>Atherinopsis californiensis</i>	jacksmelt	48	4.459
	<i>Engraulis mordax</i>	northern anchovy	1	0.007
	<i>Leuresthes tenuis</i>	California grunion	1	0.004
	<i>Menticirrhus undulatus</i>	California corbina	3	0.706
	<i>Myliobatis californica</i>	bat ray	48	64.727
	<i>Paralabrax nebulifer</i>	barred sand bass	2	0.450
	<i>Paralichthys californicus</i>	California halibut	1	0.004
	<i>Sardinops sagax</i>	Pacific sardine	54	7.822
	<i>Scomber japonicus</i>	Pacific chub mackerel	4	0.218
	<i>Seriphus politus</i>	queenfish	4	0.015
	<i>Torpedo californica</i>	Pacific electric ray	1	3.800
	<i>Trachurus symmetricus</i>	jack mackerel	1	0.025
	<i>Urobatis halleri</i>	round stingray	1	0.411
			421	88.901

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Fish**

Survey: VC19 Velocity Cap Imp. Survey  
 Date: November 13, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Atherinopsidae</i>	silverside, unid.	113	2.780
	<i>Citharichthys stigmaeus</i>	speckled sanddab	4	0.016
	<i>Embiotocidae</i>	surfperch, unid.	1	0.156
	<i>Myliobatis californica</i>	bat ray	5	18.925
	<i>Paralabrax clathratus</i>	kelp bass	1	0.102
	<i>Pleuronichthys verticalis</i>	hornyhead turbot	1	0.006
	<i>Porichthys myriaster</i>	specklefin midshipman	1	0.275
	<i>Sardinops sagax</i>	Pacific sardine	94	2.216
	<i>Torpedo californica</i>	Pacific electric ray	1	3.100
			221	27.576

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Fish**

Survey: VC20 Velocity Cap Imp. Survey  
 Date: November 15, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Atherinopsis californiensis</i>	jacksmelt	1	0.087
	<i>Sardinops sagax</i>	Pacific sardine	1	0.036
	<i>Torpedo californica</i>	Pacific electric ray	1	4.400
			3	4.523

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Fish**

Survey: VC21 Velocity Cap Imp. Survey  
 Date: November 16, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Platyrhinoidis triseriata</i>	thornback	1	0.109
	<i>Porichthys myriaster</i>	specklefin midshipman	1	0.668
			2	0.777

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Fish**

Survey: VC22 Velocity Cap Imp. Survey

Date: November 17, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All	No fish			

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Fish**

Survey: VC23 Velocity Cap Imp. Survey  
 Date: November 20, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Atherinops affinis</i>	topsmelt	1	0.017
	<i>Atherinopsis californiensis</i>	jacksmelt	1	0.119
	<i>Sardinops sagax</i>	Pacific sardine	1	0.040
	<i>Scomber japonicus</i>	Pacific chub mackerel	1	0.039
	<i>Torpedo californica</i>	Pacific electric ray	1	6.000
			5	6.215

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Fish**

Survey: VC34 Velocity Cap Imp. Survey  
Date: December 12, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Anchoa compressa</i>	deepbody anchovy	8	0.053
	<i>Atherinops affinis</i>	topsmelt	603	16.479
	<i>Atherinopsis californiensis</i>	jacksmelt	822	84.432
	<i>Citharichthys stigmaeus</i>	speckled sanddab	4	0.022
	<i>Embiotoca jacksoni</i>	black perch	2	0.154
	<i>Engraulis mordax</i>	northern anchovy	5	0.017
	<i>Genyonemus lineatus</i>	white croaker	5	0.551
	<i>Heterodontus francisci</i>	horn shark	1	0.035
	<i>Hyperprosopon argenteum</i>	walleye surfperch	4	0.262
	<i>Menticirrhus undulatus</i>	California corbina	2	0.342
	<i>Myliobatis californica</i>	bat ray	4	2.100
	<i>Peprilus simillimus</i>	Pacific pompano	1	0.054
	<i>Platyrhinoidis triseriata</i>	thornback	2	1.147
	<i>Pleuronichthys ritteri</i>	spotted turbot	2	0.091
	<i>Pleuronichthys verticalis</i>	hornyhead turbot	1	0.126
	<i>Porichthys myriaster</i>	specklefin midshipman	1	0.006
	<i>Sardinops sagax</i>	Pacific sardine	1776	33.198
	<i>Scomber japonicus</i>	Pacific chub mackerel	22	1.662
	<i>Scorpaena guttata</i>	California scorpionfish	1	0.001
	<i>Seriphus politus</i>	queenfish	30	0.98
	<i>Torpedo californica</i>	Pacific electric ray	3	13.65
	<i>Trachurus symmetricus</i>	jack mackerel	4	0.234
	<i>Triakis semifasciata</i>	leopard shark	1	11.000
	<i>Umbrina roncador</i>	yellowfin croaker	5	0.766
	<i>Xenistius californiensis</i>	salema	3	0.136
			3312	167.498



**Scattergood Generating Station – Velocity Cap Study Impingement Data – Fish**

Survey: VC35 Velocity Cap Imp. Survey  
Date: December 14, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Anchoa compressa</i>	deepbody anchovy	1	0.005
	<i>Anisotremus davidsonii</i>	sargo	1	0.005
	<i>Atherinops affinis</i>	topsmelt	24	0.539
	<i>Atherinopsis californiensis</i>	jacksmelt	44	4.896
	<i>Citharichthys stigmaeus</i>	speckled sanddab	3	0.027
	<i>Engraulis mordax</i>	northern anchovy	20	0.064
	<i>Leuresthes tenuis</i>	California grunion	1	0.019
	<i>Menticirrhus undulatus</i>	California corbina	1	0.002
	<i>Ophichthus zophochir</i>	yellow snake eel	1	0.202
	<i>Pleuronichthys guttulatus</i>	diamond turbot	1	0.119
	<i>Pleuronichthys ritteri</i>	spotted turbot	1	0.009
	<i>Sardinops sagax</i>	Pacific sardine	50	0.878
	<i>Scomber japonicus</i>	Pacific chub mackerel	1	0.040
	<i>Seriphus politus</i>	queenfish	74	0.284
	<i>Syngnathus californiensis</i>	kelp pipefish	1	0.007
	<i>Trachurus symmetricus</i>	jack mackerel	1	0.032
	<i>Umbrina roncador</i>	yellowfin croaker	1	0.012
	<i>Xenistiurus californiensis</i>	salema	1	0.008
			227	7.148

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Fish**

Survey: VC36 Velocity Cap Imp. Survey  
Date: December 15, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Anchoa delicatissima</i>	slough anchovy	3	0.012
	<i>Atherinops affinis</i>	topsmelt	20	0.495
	<i>Atherinopsis californiensis</i>	jacksmelt	37	4.146
	<i>Chromis punctipinnis</i>	blacksmith	1	0.052
	<i>Citharichthys stigmaeus</i>	speckled sanddab	41	0.112
	<i>Engraulis mordax</i>	northern anchovy	152	0.431
	<i>Heterodontus francisci</i>	horn shark	2	0.062
	<i>Heterostichus rostratus</i>	giant kelpfish	1	0.007
	<i>Myliobatis californica</i>	bat ray	1	0.279
	<i>Odontopyxis trispinosa</i>	pygmy poacher	1	0.002
	<i>Ophichthus zophochir</i>	yellow snake eel	1	0.328
	<i>Paralichthys californicus</i>	California halibut	1	0.014
	<i>Parophrys vetulus</i>	English sole	2	0.032
	<i>Peprilus simillimus</i>	Pacific pompano	2	0.057
	<i>Platyrhinoidis triseriata</i>	thornback	10	3.919
	<i>Pleuronichthys guttulatus</i>	diamond turbot	4	0.365
	<i>Pleuronichthys ritteri</i>	spotted turbot	4	0.134
	<i>Porichthys myriaster</i>	specklefin midshipman	13	0.049
	<i>Porichthys notatus</i>	plainfin midshipman	1	0.001
	<i>Sardinops sagax</i>	Pacific sardine	30	0.615
	<i>Scomber japonicus</i>	Pacific chub mackerel	2	0.087
	<i>Scorpaena guttata</i>	California scorpionfish	3	0.007
	<i>Seriphus politus</i>	queenfish	153	0.771
	<i>Symphurus atricaudus</i>	California tonguefish	1	0.037
	<i>Syngnathus californiensis</i>	kelp pipefish	3	0.010
	<i>Torpedo californica</i>	Pacific electric ray	2	18.000
	<i>Trachurus symmetricus</i>	jack mackerel	1	0.028
	<i>Urobatis halleri</i>	round stingray	2	0.058
	<i>Xenistius californiensis</i>	salema	2	0.005
			496	30.115

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Fish**

Survey: VC37 Velocity Cap Imp. Survey  
 Date: December 18, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Citharichthys stigmaeus</i>	speckled sanddab	1	0.002
	<i>Engraulis mordax</i>	northern anchovy	3	0.008
	<i>Parophrys vetulus</i>	English sole	1	0.110
	<i>Sardinops sagax</i>	Pacific sardine	4	0.074
	<i>Seriphus politus</i>	queenfish	4	0.035
	<i>Syngnathus californiensis</i>	kelp pipefish	2	0.007
			15	0.236

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Fish**

Survey: VC38 Velocity Cap Imp. Survey  
 Date: December 19, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Engraulis mordax</i>	northern anchovy	2	0.006
	<i>Peprilus simillimus</i>	Pacific pompano	1	0.025
	<i>Pleuronichthys ritteri</i>	spotted turbot	1	0.007
	<i>Pleuronichthys verticalis</i>	hornyhead turbot	1	0.046
	<i>Sardinops sagax</i>	Pacific sardine	4	0.079
	<i>Seriphus politus</i>	queenfish	3	0.012
			12	0.175

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Fish**

Survey: VC39 Velocity Cap Imp. Survey  
 Date: December 21,2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Anchoa compressa</i>	deepbody anchovy	4	0.016
	<i>Citharichthys stigmaeus</i>	speckled sanddab	4	0.012
	<i>Engraulis mordax</i>	northern anchovy	48	0.122
	<i>Ophichthus zophochir</i>	yellow snake eel	1	0.128
	<i>Paralichthys californicus</i>	California halibut	1	0.050
	<i>Peprilus simillimus</i>	Pacific pompano	1	0.056
	<i>Pleuronichthys ritteri</i>	spotted turbot	5	0.052
	<i>Sardinops sagax</i>	Pacific sardine	4	0.059
	<i>Seriphus politus</i>	queenfish	39	0.101
	<i>Syngnathus californiensis</i>	kelp pipefish	2	0.004
	<i>Xenistius californiensis</i>	salema	1	0.003
			110	0.603

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Fish**

Survey: VC40 Velocity Cap Imp. Survey  
Date: December 22, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Anchoa compressa</i>	deepbody anchovy	1	0.003
	<i>Citharichthys stigmaeus</i>	speckled sanddab	1	0.019
	<i>Engraulis mordax</i>	northern anchovy	8	0.008
	<i>Heterodontus francisci</i>	horn shark	1	0.023
	<i>Platyrrhinoidis triseriata</i>	thornback	1	0.381
	<i>Pleuronichthys ritteri</i>	spotted turbot	3	0.014
	<i>Sardinops sagax</i>	Pacific sardine	2	0.040
	<i>Scorpaenichthys marmoratus</i>	cabezon	1	0.031
	<i>Seriphus politus</i>	queenfish	14	0.031
			32	0.550

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Fish**

Survey: VC41 Velocity Cap Imp. Survey  
Date: December 26, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Anchoa compressa</i>	deepbody anchovy	4	0.026
	<i>Anisotremus davidsonii</i>	sargo	1	0.007
	<i>Atherinops affinis</i>	topsmelt	5	0.081
	<i>Atherinopsis californiensis</i>	jacksmelt	1	0.110
	<i>Citharichthys stigmaeus</i>	speckled sanddab	4	0.018
	<i>Dorosoma petenense</i>	threadfin shad	1	0.013
	<i>Engraulis mordax</i>	northern anchovy	8	0.043
	<i>Heterostichus rostratus</i>	giant kelpfish	1	0.037
	<i>Hyperprosopon argenteum</i>	walleye surfperch	1	0.023
	<i>Leptocottus armatus</i>	Pacific staghorn sculpin	1	0.025
	<i>Myliobatis californica</i>	bat ray	3	1.669
	<i>Ophichthus zophochir</i>	yellow snake eel	1	0.134
	<i>Paralichthys californicus</i>	California halibut	1	0.019
	<i>Peprilus simillimus</i>	Pacific pompano	8	0.263
	<i>Platyrhinoidis triseriata</i>	thornback	7	2.471
	<i>Pleuronichthys verticalis</i>	hornyhead turbot	3	0.060
	<i>Sardinops sagax</i>	Pacific sardine	5	0.097
	<i>Scorpaena guttata</i>	California scorpionfish	3	0.210
	<i>Seriphus politus</i>	queenfish	27	0.392
	<i>Torpedo californica</i>	Pacific electric ray	7	31.600
			92	37.298

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Fish**

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
Survey:	VC42	Velocity Cap Imp. Survey		
Date:	December 28, 2006	Normal Flow Direction		
All				
	<i>Anchoa compressa</i>	deepbody anchovy	14	0.114
	<i>Citharichthys stigmaeus</i>	speckled sanddab	38	0.166
	<i>Engraulis mordax</i>	northern anchovy	19	0.095
	<i>Heterodontus francisci</i>	horn shark	2	0.050
	<i>Heterostichus rostratus</i>	giant kelpfish	2	0.024
	<i>Hypsoblennius jenkinsi</i>	mussel blenny	1	0.002
	<i>Leuresthes tenuis</i>	California grunion	1	0.025
	<i>Menticirrhus undulatus</i>	California corbina	1	0.012
	<i>Myliobatis californica</i>	bat ray	2	0.791
	<i>Odontopyxis trispinosa</i>	pygmy poacher	6	0.008
	<i>Oxyjulis californica</i>	senorita	1	0.051
	<i>Paralichthys californicus</i>	California halibut	2	0.320
	<i>Peprilus simillimus</i>	Pacific pompano	1	0.028
	<i>Platyrhinoidis triseriata</i>	thornback	3	1.532
	<i>Pleuronichthys ritteri</i>	spotted turbot	5	0.075
	<i>Pleuronichthys verticalis</i>	hornyhead turbot	3	0.138
	<i>Porichthys myriaster</i>	specklefin midshipman	2	0.234
	<i>Seriphus politus</i>	queenfish	58	0.216
	<i>Symphurus atricaudus</i>	California tonguefish	1	0.033
	<i>Syngnathus californiensis</i>	kelp pipefish	10	0.013
	<i>Torpedo californica</i>	Pacific electric ray	1	5.850
	<i>Urobatis halleri</i>	round stingray	1	0.017
			174	9.794



**Scattergood Generating Station – Velocity Cap Study Impingement Data - Fish**

Survey: VC43 Velocity Cap Imp. Survey  
Date: December 29, 2006 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Anchoa compressa</i>	deepbody anchovy	22	0.095
	<i>Atherinops affinis</i>	topsmelt	2	0.039
	<i>Citharichthys stigmaeus</i>	speckled sanddab	7	0.052
	<i>Engraulis mordax</i>	northern anchovy	11	0.040
	<i>Gymnura marmorata</i>	California butterfly ray	1	0.184
	<i>Heterodontus francisci</i>	horn shark	2	0.068
	<i>Heterostichus rostratus</i>	giant kelpfish	1	0.011
	<i>Leptocottus armatus</i>	Pacific staghorn sculpin	1	0.010
	<i>Myliobatis californica</i>	bat ray	2	0.657
	<i>Ophidion scrippsae</i>	basketweave cusk-eel	3	0.129
	<i>Paralabrax clathratus</i>	kelp bass	1	0.004
	<i>Platyrhinoidis triseriata</i>	thornback	2	1.031
	<i>Pleuronichthys ritteri</i>	spotted turbot	1	0.010
	<i>Pleuronichthys verticalis</i>	hornyhead turbot	1	0.059
	<i>Seriphus politus</i>	queenfish	36	0.230
	Syngnathus	pipefish unid	1	0.001
	<i>Torpedo californica</i>	Pacific electric ray	9	64.900
	<i>Urobatis halleri</i>	round stingray	2	0.206
	<i>Xenistius californiensis</i>	salema	1	0.003
			106	67.729

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Fish**

Survey: VC44 Velocity Cap Imp. Survey  
Date: January 1, 2007 Normal Flow Direction

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
All				
	<i>Engraulis mordax</i>	northern anchovy	2	0.005
	<i>Heterostichus rostratus</i>	giant kelpfish	1	0.014
	<i>Myliobatis californica</i>	bat ray	4	2.127
	<i>Platyrhinoidis triseriata</i>	thornback	2	1.445
	<i>Pleuronichthys ritteri</i>	spotted turbot	2	0.011
	<i>Sardinops sagax</i>	Pacific sardine	1	0.010
	<i>Seriphus politus</i>	queenfish	10	0.045
	<i>Syngnathus californiensis</i>	kelp pipefish	2	0.010
	<i>Torpedo californica</i>	Pacific electric ray	6	48.920
	<i>Urobatis halleri</i>	round stingray	1	0.025
			31	52.612

Appendix E3. Heat Treatment Impingement Data - Fish

Scattergood Generating Station - Heat Treatment Impingement Data - Fish

Survey: SGSHT1  
Date: January 25, 2006

Taxon	Common Name	Survey Totals	
		Abundance	Biomass (kg)
<i>Seriphus politus</i>	queenfish	20,984	441.399
<i>Engraulis mordax</i>	northern anchovy	4,784	33.987
<i>Hyperprosopon argenteum</i>	walleye surfperch	2,829	135.932
<i>Peprilus simillimus</i>	Pacific pompano	1,346	25.464
<i>Genyonemus lineatus</i>	white croaker	1,293	150.628
<i>Atherinopsis californiensis</i>	jacksmelt	456	50.773
<i>Atherinops affinis</i>	topsmelt	322	11.677
<i>Paralabrax nebulifer</i>	barred sand bass	62	24.63
<i>Embiotoca jacksoni</i>	black perch	60	6.142
<i>Menticirrhus undulatus</i>	California corbina	55	8.027
<i>Chromis punctipinnis</i>	blacksmith	46	7.68
<i>Hypsoblennius gilberti</i>	rockpool blenny	45	0.669
<i>Rhacochilus toxotes</i>	rubberlip seaperch	36	7.037
<i>Cheilotrema saturnum</i>	black croaker	35	2.4
<i>Pleuronichthys ritteri</i>	spotted turbot	35	4.544
<i>Sebastes auriculatus</i>	brown rockfish	26	10.016
<i>Halichoeres semicinctus</i>	rock wrasse	20	2.776
<i>Oxyjulis californica</i>	senorita	19	0.429
<i>Atractoscion nobilis</i>	white seabass	17	3.298
<i>Chilara taylori</i>	spotted cusk-eel	13	0.214
<i>Platyrrhinoidis triseriata</i>	thornback	13	7.082
<i>Urobatis halleri</i>	round stingray	13	4.442
<i>Brachyistius frenatus</i>	kelp perch	12	0.319
<i>Sardinops sagax</i>	Pacific sardine	10	0.617
<i>Umbrina roncadore</i>	yellowfin croaker	10	1.308
<i>Heterostichus rostratus</i>	giant kelpfish	8	0.451
<i>Rhacochilus vacca</i>	pile perch	8	1.896
<i>Scorpaena guttata</i>	California scorpionfish	8	0.882
<i>Paralichthys californicus</i>	California halibut	6	1.008
<i>Anisotremus davidsonii</i>	Sargo	5	0.04
<i>Xenistius californiensis</i>	Salema	5	0.086
<i>Girella nigricans</i>	Opaleye	4	3.731
<i>Oxylebius pictus</i>	painted greenling	4	0.164
<i>Paralabrax clathratus</i>	kelp bass	4	0.843
<i>Ophidion scrippsae</i>	basketweave cusk-eel	3	0.086
<i>Phanerodon furcatus</i>	white seaperch	3	0.154
<i>Pleuronichthys guttulatus</i>	diamond turbot	3	0.829
<i>Scorpaenichthys marmoratus</i>	Cabezon	2	0.85

(continued on next page)

**Scattergood Generating Station – Heat Treatment Impingement Data - Fish**

Survey: SGSHT1 (Continued)

Date: January 25, 2006

Taxon	Common Name	Survey Totals	
		Abundance	Abundance
<i>Sebastes rastrelliger</i>	grass rockfish	2	1.381
<i>Semicossyphus pulcher</i>	Sheephead	2	0.134
<i>Amphistichus argenteus</i>	barred surfperch	1	0.051
<i>Branchiostoma californiense</i>	California lancelet	1	0.002
<i>Heterodontus francisci</i>	horn shark	1	0.199
<i>Hypsypops rubicundus</i>	Garibaldi	1	0.436
<i>Mustelus henlei</i>	brown smoothhound	1	0.296
<i>Ophichthus zophochir</i>	yellow snake eel	1	0.144
<i>Rathbunella alleni</i>	stripetail ronquil	1	0.007
<i>Scomber japonicus</i>	Pacific chub mackerel	1	0.111
<i>Sebastes chrysomelas</i>	black-and-yellow rockfish	1	0.165
<i>Syngnathus californiensis</i>	kelp pipefish	1	0.004
		32,618	955.44

**Scattergood Generating Station - Heat Treatment Impingement Data - Fish**

Survey: SGSHT2  
Date: August 10, 2006

Taxon	Common Name	Survey Totals	
		Abundance	Biomass (kg)
<i>Atherinops affinis</i>	topsmelt	79	2.098
<i>Atherinopsis californiensis</i>	jacksmelt	1	0.061
<i>Embiotoca jacksoni</i>	black perch	8	0.213
<i>Myliobatis californica</i>	bat ray	1	1.711
<i>Paralabrax clathratus</i>	kelp bass	4	0.753
<i>Rhacochilus toxotes</i>	rubberlip seaperch	1	0.018
<i>Sardinops sagax</i>	Pacific sardine	28	0.957
<i>Scorpaena guttata</i>	California scorpionfish	1	0.125
<i>Scorpaenichthys marmoratus</i>	cabezon	4	0.613
<i>Sebastes auriculatus</i>	brown rockfish	4	2.421
<i>Seriphus politus</i>	queenfish	4	0.138
<i>Trachurus symmetricus</i>	jack mackerel	37	1.122
<i>Urobatis halleri</i>	round stingray	1	0.339
<i>Xenistius californiensis</i>	salema	1	0.085
		174	10.654

Scattergood Generating Station - Heat Treatment Impingement Data - Fish

Survey: SGSHT3  
Date: August 15, 2006

Taxon	Common Name	Survey Totals	
		Abundance	Biomass (kg)
<i>Arteidius corallinus</i>	coralline sculpin	1	0.003
<i>Atherinops affinis</i>	topsmelt	783	22.832
<i>Atherinopsis californiensis</i>	jacksmelt	785	106.928
<i>Chromis punctipinnis</i>	blacksmith	1	0.076
<i>Cymatogaster aggregata</i>	shiner perch	194	1.567
<i>Embiotoca jacksoni</i>	black perch	7	0.133
<i>Engraulis mordax</i>	northern anchovy	2,048	4.874
<i>Hermosilla azurea</i>	zebraperch	1	0.003
<i>Hyperprosopon argenteum</i>	walleye surfperch	34	0.658
<i>Hypsoblennius gilberti</i>	rockpool blenny	5	0.026
<i>Leuresthes tenuis</i>	California grunion	1	0.016
<i>Medialuna californiensis</i>	halfmoon	1	0.103
<i>Myliobatis californica</i>	bat ray	164	180.717
<i>Oxyjulis californica</i>	senorita	1	0.02
<i>Paralabrax clathratus</i>	kelp bass	6	0.943
<i>Paralabrax nebulifer</i>	barred sand bass	9	2.769
<i>Phanerodon furcatus</i>	white seaperch	16	0.925
<i>Sardinops sagax</i>	Pacific sardine	13,689	521.538
<i>Scomber japonicus</i>	Pacific chub mackerel	2	0.117
<i>Scorpaena guttata</i>	California scorpionfish	1	0.1
<i>Sebastes auriculatus</i>	brown rockfish	1	0.157
<i>Seriphus politus</i>	queenfish	9	0.226
<i>Sphyræna argentea</i>	Pacific barracuda	4	0.338
<i>Syngnathus californiensis</i>	kelp pipefish	2	0.002
<i>Trachurus symmetricus</i>	jack mackerel	6	0.165
<i>Urobatis halleri</i>	round stingray	1	0.484
<i>Xenistius californiensis</i>	salema	1	0.094
		17,773	845.814

Scattergood Generating Station - Heat Treatment Impingement Data - Fish

Survey: SGSHT4  
Date: October 4, 2006

Taxon	Common Name	Survey Totals	
		Abundance	Biomass (kg)
<i>Anisotremus davidsonii</i>	sargo	2	0.014
<i>Atherinops affinis</i>	topsmelt	49	2.148
<i>Cheilotrema saturnum</i>	black croaker	9	0.987
<i>Chromis punctipinnis</i>	blacksmith	4	0.018
<i>Cymatogaster aggregata</i>	shiner perch	2	0.016
<i>Embiotoca jacksoni</i>	black perch	39	2.49
<i>Halichoeres semicinctus</i>	rock wrasse	4	0.731
<i>Hyperprosopon argenteum</i>	walleye surfperch	3	0.087
<i>Hypsoblennius gilberti</i>	rockpool blenny	10	0.02
<i>Myliobatis californica</i>	bat ray	10	17.276
<i>Oxylebius pictus</i>	painted greenling	3	0.122
<i>Paralabrax clathratus</i>	kelp bass	68	2.621
<i>Paralabrax nebulifer</i>	barred sand bass	13	3.313
<i>Phanerodon furcatus</i>	white seaperch	3	0.216
<i>Rhacochilus toxotes</i>	rubberlip seaperch	7	0.28
<i>Sardinops sagax</i>	Pacific sardine	7,595	341.706
<i>Scomber japonicus</i>	Pacific chub mackerel	2	0.085
<i>Scorpaena guttata</i>	California scorpionfish	4	1.006
<i>Scorpaenichthys marmoratus</i>	cabezon	3	0.517
<i>Sebastes auriculatus</i>	brown rockfish	3	1.195
<i>Seriphus politus</i>	queenfish	9	0.142
<i>Torpedo californica</i>	Pacific electric ray	1	10.4
<i>Trachurus symmetricus</i>	jack mackerel	35	1.925
<i>Urobatis halleri</i>	round stingray	13	8.226
<i>Xenistius californiensis</i>	Salema	2	0.121
		7,893	395.662

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Fish**

Survey: VCHT1 Heat Treatment IM Survey  
Date: October 23, 2006 Normal Flow Direction

Taxon	Common Name	Survey Totals	
		Abundance	Biomass (kg)
<i>Atherinops affinis</i>	topsmelt	48	1.507
<i>Cheilotrema saturnum</i>	black croaker	10	0.407
<i>Chromis punctipinnis</i>	blacksmith	1	0.001
<i>Embiotoca jacksoni</i>	black perch	15	0.707
<i>Engraulis mordax</i>	northern anchovy	81	0.323
<i>Myliobatis californica</i>	bat ray	2	1.164
<i>Paralabrax clathratus</i>	kelp bass	3	0.278
<i>Paralabrax nebulifer</i>	barred sand bass	5	0.811
<i>Phanerodon furcatus</i>	white seaperch	2	0.025
<i>Rhacochilus toxotes</i>	rubberlip seaperch	1	0.050
<i>Sardinops sagax</i>	Pacific sardine	607	16.407
<i>Scomber japonicus</i>	Pacific chub mackerel	2	0.197
<i>Scorpaena guttata</i>	California scorpionfish	3	0.943
<i>Scorpaenichthys marmoratus</i>	cabezon	1	0.122
<i>Seriphus politus</i>	queenfish	121	0.576
<i>Torpedo californica</i>	Pacific electric ray	1	8.600
<i>Trachurus symmetricus</i>	jack mackerel	1	0.024
<i>Urobatis halleri</i>	round stingray	1	1.095
<i>Xenistius californiensis</i>	salema	106	0.242
		1011	33.479



**Scattergood Generating Station – Velocity Cap Study Impingement Data - Fish**

Survey: VCHT3 Heat Treatment IM Survey  
Date: November 20, 2006 Normal Flow Direction

Taxon	Common Name	Survey Totals	
		Abundance	Biomass (kg)
<i>Anchoa compressa</i>	deepbody anchovy	2	0.009
<i>Anisotremus davidsonii</i>	sargo	3	0.024
<i>Atherinops affinis</i>	topsmelt	95	2.732
<i>Atherinopsis californiensis</i>	jacksmelt	2	0.295
<i>Cheilotrema saturnum</i>	black croaker	9	0.375
<i>Chromis punctipinnis</i>	blacksmith	1	0.055
<i>Citharichthys stigmaeus</i>	speckled sanddab	1	0.029
<i>Cymatogaster aggregata</i>	shiner perch	2	0.023
<i>Embiotoca jacksoni</i>	black perch	5	0.275
<i>Engraulis mordax</i>	northern anchovy	7	0.033
<i>Genyonemus lineatus</i>	white croaker	1	0.075
<i>Heterostichus rostratus</i>	giant kelpfish	1	0.004
<i>Myliobatis californica</i>	bat ray	1	0.232
<i>Paralabrax clathratus</i>	kelp bass	8	0.685
<i>Paralabrax nebulifer</i>	barred sand bass	7	1.794
<i>Paralichthys californicus</i>	California halibut	1	0.027
<i>Phanerodon furcatus</i>	white seaperch	2	0.058
<i>Pleuronichthys ritteri</i>	spotted turbot	1	0.034
<i>Rhacochilus toxotes</i>	rubberlip seaperch	3	0.218
<i>Rhacochilus vacca</i>	pile perch	6	0.460
<i>Sardinops sagax</i>	Pacific sardine	34	0.879
<i>Scomber japonicus</i>	Pacific chub mackerel	20	1.433
<i>Scorpaenichthys marmoratus</i>	cabezon	1	0.156
<i>Seriphus politus</i>	queenfish	136	0.769
<i>Xenistius californiensis</i>	salema	46	0.136
		395	10.810

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Fish**

Survey: VCHT6 Heat Treatment IM Survey  
Date: January 3, 2006 Normal Flow Direction

Taxon	Common Name	Survey Totals	
		Abundance	Biomass (kg)
<i>Anchoa compressa</i>	deepbody anchovy	190	1.153
<i>Anisotremus davidsonii</i>	sargo	7	0.066
<i>Atherinops affinis</i>	topsmelt	186	6.020
<i>Atherinopsis californiensis</i>	jacksmelt	249	24.784
<i>Atractoscion nobilis</i>	white seabass	15	1.140
<i>Cheilotrema saturnum</i>	black croaker	19	1.272
<i>Chromis punctipinnis</i>	blacksmith	4	0.145
<i>Cymatogaster aggregata</i>	shiner perch	1	0.015
<i>Embiotoca jacksoni</i>	black perch	2	0.438
<i>Engraulis mordax</i>	northern anchovy	1222	4.333
<i>Genyonemus lineatus</i>	white croaker	103	11.156
<i>Gibbonsia elegans</i>	spotted kelpfish	1	0.007
<i>Heterodontus francisci</i>	horn shark	1	1.442
<i>Heterostichus rostratus</i>	giant kelpfish	2	0.024
<i>Hyperprosopon argenteum</i>	walleye surfperch	37	2.127
<i>Hypsoblennius gilberti</i>	rockpool blenny	4	0.040
<i>Hypsoblennius jenkinsi</i>	mussel blenny	2	0.007
<i>Leptocottus armatus</i>	Pacific staghorn sculpin	2	0.058
<i>Leuresthes tenuis</i>	California grunion	3	0.070
<i>Menticirrhus undulatus</i>	California corbina	8	0.887
<i>Myliobatis californica</i>	bat ray	5	4.004
<i>Oxylebius pictus</i>	painted greenling	1	0.021
<i>Paralabrax clathratus</i>	kelp bass	11	0.821
<i>Paralabrax nebulifer</i>	barred sand bass	11	1.157
<i>Peprilus simillimus</i>	Pacific pompano	198	6.197
<i>Phanerodon furcatus</i>	white seaperch	7	0.577
<i>Platyrrhinoidis triseriata</i>	thornback	8	5.408
<i>Pleuronichthys ritteri</i>	spotted turbot	8	0.094
<i>Pleuronichthys verticalis</i>	hornyhead turbot	1	0.084
<i>Rathbunella alleni</i>	stripefin ronquil	1	0.003
<i>Rhacochilus toxotes</i>	rubberlip seaperch	9	2.148
<i>Rhacochilus vacca</i>	pile perch	2	0.127
<i>Sardinops sagax</i>	Pacific sardine	189	5.851
<i>Scomber japonicus</i>	Pacific chub mackerel	7	0.532
<i>Scorpaena guttata</i>	California scorpionfish	13	0.169
<i>Scorpaenichthys marmoratus</i>	cabezon	6	1.111

(continued on next page)

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Fish**

Survey: VCHT6 (Continued) Heat Treatment IM Survey  
 Date: January 3, 2006 Normal Flow Direction

Taxon	Common Name	Survey Totals	
		Abundance	Biomass (kg)
<i>Seriphus politus</i>	queenfish	8165	147.418
<i>Sphyræna argentea</i>	Pacific barracuda	1	0.045
<i>Trachurus symmetricus</i>	jack mackerel	13	0.437
<i>Umbrina roncadora</i>	yellowfin croaker	24	1.075
<i>Urobatis halleri</i>	round stingray	10	3.766
<i>Xenistius californiensis</i>	salema	64	0.263
		10812	236.492

Appendix E4. Normal Operation Impingement Data – Invertebrates

Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate

Survey: SGSFI1

Start Date: January 10, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	161	0.090
		<i>Portunus xantusii</i>	Xantus swimming crab	21	0.361
		<i>Cancer anthonyi</i>	yellow crab	7	0.012
		<i>Cancer antennarius</i>	Pacific rock crab	5	0.009
		<i>Cancer productus</i>	red rock crab	2	0.003
		<i>Heptacarpus</i> sp	coastal shrimp unk	2	0.002
		<i>Pachycheles rudis</i>	thick claw porcelain crab	2	0.002
		<i>Puggetia dalli</i>	spined kelp crab	2	0.002
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	1	0.001
		<i>Pilumnus spinohirsutus</i>	retiring hairy crab	1	0.001
		<i>Pinnixa</i> sp	pea crab unid	1	0.001
		<i>Polyonyx quadriungulatus</i>	western tube crab	1	0.001
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	1	0.001
				207	0.486
Non-Shellfish	All				
		<i>Ophioderma panamense</i>	Panama brittle star	6	0.002
		<i>Polyorchis penicillatus</i>	red jellyfish	6	0.007
		<i>Ophiothrix spiculata</i>	shiny brittle star	5	0.003
		<i>Astropecten armatus</i>	spiny sand star	3	0.012
		<i>Elthusa californica</i>	parasitic isopod (no common name)	3	0.002
		<i>Conus californicus</i>	California cone	2	0.003
		<i>Aphrodita</i> sp	sea mouse	1	0.001
		<i>Asterina miniata</i>	bat star	1	0.028
		<i>Nassarius perpinguis</i>	fat western nassa	1	0.001
				28	0.059

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI2

Start Date: January 17, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1&2	<i>Heptacarpus palpator</i>	intertidal coastal shrimp	14	0.011
		<i>Portunus xantusii</i>	Xantus swimming crab	5	0.121
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	2	0.002
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	2	0.002
		<i>Cancer anthonyi</i>	yellow crab	1	0.001
		<i>Cancer jordani</i>	hairy rock crab	1	0.001
		<i>Pachycheles holosericus</i>	sponge porcelain crab	1	0.001
		<i>Pachycheles pubescens</i>	pubescent porcelain crab	1	0.001
		<i>Pagurus</i> sp	hermit crab unid	1	0.001
				28	0.141
	3	<i>Heptacarpus palpator</i>	intertidal coastal shrimp	156	0.084
		<i>Portunus xantusii</i>	Xantus swimming crab	25	0.653
		<i>Cancer antennarius</i>	Pacific rock crab	9	0.011
		<i>Puggetia dalli</i>	spined kelp crab	3	0.004
		<i>Cancer anthonyi</i>	yellow crab	2	0.002
		<i>Octopus bimaculatus/bimaculoides</i>	two-spot octopus	2	0.604
		<i>Pachycheles pubescens</i>	pubescent porcelain crab	2	0.002
		<i>Alpheus clamator</i>	twistclaw pistol shrimp	1	0.001
		<i>Cancer gracilis</i>	graceful crab	1	0.006
		<i>Cancer jordani</i>	hairy rock crab	1	0.001
		<i>Cancer productus</i>	red rock crab	1	0.031
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	1	0.002
		<i>Herbstia parvifrons</i>	crevice spider crab	1	0.001
		<i>Heteracrypta occidentalis</i>	Sandflat elbow crab	1	0.001
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	1	0.001
		<i>Pachycheles holosericus</i>	sponge porcelain crab	1	0.001
		<i>Podochela hemphill</i>	hemphill kelp crab	1	0.001
		<i>Polyonyx quadriungulatus</i>	Western tube crab	1	0.001
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	1	0.001
				211	1.408

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI2 (Continued)

Start Date: January 17, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
Non-Shellfish 1&2				
	<i>Astropecten armatus</i>	spiny sand star	1	0.002
	<i>Astropecten verrilli</i>	sand star	1	0.001
	<i>Cnidaria</i> sp	sea jelly unid	1	0.001
	<i>Conus californicus</i>	California cone	1	0.005
			4	0.009
3				
	<i>Astropecten armatus</i>	spiny sand star	4	0.003
	Ophiuroidea unid	brittle star unid	3	0.001
	<i>Ophiothrix spiculata</i>	shiny brittle star	2	0.002
	<i>Navanax inermis</i>	California aglaja	1	0.006
			10	0.012

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI3

Start Date: January 24, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1&2	<i>Heptacarpus palpator</i>	intertidal coastal shrimp	78	0.072
		<i>Pugettia producta</i>	northern kelp crab	3	0.008
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	2	0.002
		<i>Cancer anthonyi</i>	yellow crab	1	0.001
		<i>Cancer gracilis</i>	graceful crab	1	0.008
		<i>Cancer jordani</i>	hairy rock crab	1	0.001
		<i>Heptacarpus stimpsoni</i>	Stimpson coastal shrimp	1	0.001
		<i>Pagurus</i> sp	hermit crab unid	1	0.001
		<i>Pinnixa</i> sp	pea crab unid	1	0.001
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	1	0.001
				90	0.096
	3	<i>Heptacarpus palpator</i>	intertidal coastal shrimp	6	0.006
		<i>Octopus bimaculatus/bimaculoides</i>	two-spot octopus	2	0.473
		<i>Pagurus</i> sp	hermit crab unid	2	0.002
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.005
				11	0.486
Non-Shellfish	1&2	<i>Astropecten armatus</i>	spiny sand star	6	0.035
		<i>Conus californicus</i>	California cone	2	0.002
		<i>Amphissa versicolor</i>	variegate amphissa	1	0.001
		Gastropoda unid	unknown nudibranch	1	0.001
		<i>Haminoea virescens</i>	green glassy bubble	1	0.001
		<i>Kelletia kelletii</i>	Kellet's whelk	1	0.001
		Ophiuroidea unid	brittle star unid	1	0.001
		<i>Pteropurpura festiva</i>	festive murex	1	0.003
				14	0.045
	3	<i>Conus californicus</i>	California cone	2	0.004
		<i>Astropecten armatus</i>	spiny sand star	1	0.004
				3	0.008

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI4

Start Date: January 31, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1&2				
		<i>Portunus xantusii</i>	Xantus swimming crab	10	0.112
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	5	0.010
		<i>Cancer anthonyi</i>	yellow crab	4	0.004
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	1	0.001
		<i>Pinnixa</i> sp	pea crab unid	1	0.001
				21	0.128
	3				
		<i>Pinnixa</i> sp	pea crab unid	26	0.011
		<i>Portunus xantusii</i>	Xantus swimming crab	7	0.187
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	5	0.009
		<i>Cancer antennarius</i>	Pacific rock crab	2	0.006
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	1	0.001
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	1	0.001
		<i>Pachycheles pubescens</i>	pubescent porcelain crab	1	0.001
		<i>Pilumnus spinohirsutus</i>	retiring hairy crab	1	0.001
				44	0.217
Non-Shellfish	1&2				
		<i>Astropecten armatus</i>	spiny sand star	1	0.001
		<i>Polyorchis penicillatus</i>	red jellyfish	1	0.010
				2	0.011
	3				
		<i>Aeolidia papillosa</i>	shag-rug aeolis	1	0.001
				1	0.001



**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI5

Start Date: February 7, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1&2				
		<i>Portunus xantusii</i>	Xantus swimming crab	3	0.011
		<i>Cancer antennarius</i>	Pacific rock crab	2	0.003
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	2	0.002
		<i>Cancer anthonyi</i>	yellow crab	1	0.002
		<i>Pinnixa</i> sp	pea crab unid	1	0.001
		<i>Pugettia producta</i>	northern kelp crab	1	0.003
				10	0.022
	3				
		<i>Portunus xantusii</i>	Xantus swimming crab	20	0.459
		<i>Pinnixa</i> sp	pea crab unid	5	0.004
		<i>Cancer antennarius</i>	Pacific rock crab	3	0.005
		<i>Cancer gracilis</i>	graceful crab	1	0.007
				29	0.475
Non-Shellfish	3				
		<i>Salpa</i> sp	salp unid	1	0.001
				1	0.001

Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate

Survey: SGSFI6

Start Date: February 14, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1&2				
		No shellfish			
	3				
		<i>Portunus xantusii</i>	Xantus swimming crab	5	0.107
		<i>Cancer antennarius</i>	Pacific rock crab	4	0.004
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	1	0.001
		<i>Octopus bimaculatus/bimaculoides</i>	two-spot octopus	1	0.471
		<i>Paraxanthias taylori</i>	lumpy rubble crab	1	0.001
		<i>Pugettia producta</i>	northern kelp crab	1	0.002
				13	0.586
Non-Shellfish	3				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	1	0.001
				1	0.001

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI7

Start Date: February 21, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1&2				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	7	0.007
		<i>Portunus xantusii</i>	Xantus swimming crab	3	0.012
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	1	0.004
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	1	0.001
		<i>Octopus bimaculatus/bimaculoides</i>	two-spot octopus	1	0.349
		<i>Pinnixa</i> sp	pea crab unid	1	0.001
		<i>Pugettia producta</i>	northern kelp crab	1	0.001
				15	0.375
	3				
		<i>Portunus xantusii</i>	Xantus swimming crab	13	0.174
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	8	0.025
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	3	0.003
		<i>Cancer antennarius</i>	Pacific rock crab	2	0.003
		<i>Octopus bimaculatus/bimaculoides</i>	two-spot octopus	1	0.057
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.457
		<i>Pinnixa</i> sp	pea crab unid	1	0.001
				29	0.720
Non-Shellfish	1&2				
		Aeolididae unid	unk aeolid nudibranch	1	0.001
		<i>Cnidaria</i> sp	sea jelly unid	1	0.002
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	1	0.001
				3	0.004
	3				
		<i>Dendronotus frondosus</i>	leafy dendronotid	4	0.003
		<i>Polyorchis penicillatus</i>	red jellyfish	1	0.001
				5	0.004

Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate

Survey: SGSFI8

Start Date: February 28, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1&2				
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	11	0.028
		<i>Portunus xantusii</i>	Xantus swimming crab	10	0.161
		<i>Octopus bimaculatus/bimaculoides</i>	two-spot octopus	5	0.651
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	3	0.001
		<i>Pinnixa</i> sp	pea crab unid	2	0.001
		<i>Cancer antennarius</i>	Pacific rock crab	1	0.019
		<i>Cancer anthonyi</i>	yellow crab	1	0.004
		<i>Pinnixa tomentosa</i>	pea crab 2 (no common name)	1	0.001
				34	0.866
	3				
		<i>Portunus xantusii</i>	Xantus swimming crab	12	0.213
		<i>Pinnixa</i> sp	pea crab unid	11	0.004
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	6	0.017
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	3	0.002
		<i>Octopus bimaculatus/bimaculoides</i>	two-spot octopus	3	1.047
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	2	0.001
		<i>Lepidopa californica</i>	California mole crab	1	0.016
		<i>Neotrypaea gigas</i>	giant ghost shrimp	1	0.015
		<i>Pugettia</i> sp	unk kelp crab	1	0.002
				40	1.317
Non-Shellfish		None			

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI9

Start Date: March 7, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	6	0.005
		<i>Loligo opalescens</i>	California market squid	5	0.061
		<i>Portunus xantusii</i>	Xantus swimming crab	4	0.044
		<i>Cancer jordani</i>	hairy rock crab	1	0.001
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	1	0.003
				17	0.114
	2				
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	9	0.031
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	5	0.005
		<i>Loligo opalescens</i>	California market squid	2	0.057
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	2	0.003
		<i>Loxorhynchus crispatus</i>	moss crab	2	0.097
		<i>Panulirus interruptus</i>	California spiny lobster	2	0.587
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.002
		<i>Cancer antennarius</i>	Pacific rock crab	1	0.008
		<i>Pinnixa</i> sp	pea crab unid	1	0.001
		<i>Scyra acutifrons</i>	sharpnose crab	1	0.003
				27	0.794
	3				
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	42	0.087
		<i>Portunus xantusii</i>	Xantus swimming crab	12	0.237
		<i>Loligo opalescens</i>	California market squid	10	0.229
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	6	0.005
		<i>Cancer anthonyi</i>	yellow crab	2	0.003
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	2	0.002
		<i>Cancer jordani</i>	hairy rock crab	1	0.004
		<i>Loxorhynchus grandis</i>	sheep crab	1	0.637
		<i>Lysmata californica</i>	red rock shrimp	1	0.001
		<i>Pinnixa</i> sp	pea crab unid	1	0.001
				78	1.206
Non-Shellfish	3				
		<i>Chrysaora colorata</i>	purple-striped jellyfish	1	0.220
				1	0.220

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI10

Start Date: March 14, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	12	0.008
		<i>Loligo opalescens</i>	California market squid	2	0.050
		<i>Cancer antennarius</i>	Pacific rock crab	1	0.003
		<i>Cancer productus</i>	red rock crab	1	0.010
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	1	0.002
		<i>Pinnixa</i> sp	pea crab unid	1	0.001
				18	0.074
	2				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	3	0.002
		<i>Cancer anthonyi</i>	yellow crab	2	0.001
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	1	0.002
		<i>Loligo opalescens</i>	California market squid	1	0.028
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.008
				8	0.041
	3				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	22	0.015
		<i>Loligo opalescens</i>	California market squid	13	0.342
		<i>Pinnixa</i> sp	pea crab unid	5	0.003
		<i>Cancer antennarius</i>	Pacific rock crab	2	0.004
		<i>Cancer productus</i>	red rock crab	1	0.004
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	1	0.002
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	1	0.001
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.026
		<i>Pugettia producta</i>	northern kelp crab	1	0.009
				47	0.406
Non-Shellfish	1				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	2	0.001
				2	0.001
	3				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	4	0.002
		<i>Chrysaora colorata</i>	purple-striped jellyfish	1	1.191
				5	1.193

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI11

Start Date: March 21, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1				
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	6	0.013
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	6	0.005
		<i>Cancer antennarius</i>	Pacific rock crab	3	0.092
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.012
				16	0.122
	2				
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	9	0.019
		<i>Pinnixa tomentosa</i>	pea crab 2 (no common name)	8	0.003
		<i>Cancer anthonyi</i>	yellow crab	4	0.009
		<i>Portunus xantusii</i>	Xantus swimming crab	3	0.078
		<i>Cancer productus</i>	red rock crab	1	0.001
		<i>Loligo opalescens</i>	California market squid	1	0.024
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	1	0.001
		<i>Pagurus redondoensis</i>	unnamed hermit crab	1	0.001
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	1	0.001
				29	0.137
	3				
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	46	0.092
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	15	0.009
		<i>Portunus xantusii</i>	Xantus swimming crab	5	0.066
		<i>Cancer antennarius</i>	Pacific rock crab	2	0.010
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	1	0.002
		<i>Loxorhynchus grandis</i>	sheep crab	1	0.556
		<i>Pinnixa tomentosa</i>	pea crab 2 (no common name)	1	0.001
				71	0.736
Non-Shellfish	1				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	8	0.003
				8	0.003
	2				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	5	0.002
				5	0.002
	3				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	62	0.019
		<i>Polyorchis penicillatus</i>	red jellyfish	1	0.001
				63	0.020

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI12

Start Date: March 28, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	<i>Crangon nigromaculata</i>	blackspotted bay shrimp	2	0.006
		<i>Cancer antennarius</i>	Pacific rock crab	1	0.004
		<i>Cancer anthonyi</i>	yellow crab	1	0.002
				4	0.012
	1&2	<i>Heptacarpus palpator</i>	intertidal coastal shrimp	9	0.009
		<i>Cancer antennarius</i>	Pacific rock crab	3	0.005
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	1	0.001
		<i>Lysmata californica</i>	red rock shrimp	1	0.001
				14	0.016
	3	<i>Heptacarpus palpator</i>	intertidal coastal shrimp	14	0.01
		<i>Cancer anthonyi</i>	yellow crab	3	0.037
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	2	0.003
		<i>Cancer antennarius</i>	Pacific rock crab	1	0.001
		<i>Loxorhynchus grandis</i>	sheep crab	1	0.65
		<i>Octopus bimaculatus/bimaculoides</i>	two-spot octopus	1	0.181
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.6
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.026
				24	1.508
Non-Shellfish	1	<i>Hermisenda crassicornis</i>	opalescent nudibranch	81	0.021
		<i>Polyorchis penicillatus</i>	red jellyfish	9	0.024
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	7	0.003
		<i>Pinnixa</i> sp	pea crab unid	1	0.001
				98	0.049
	1&2	<i>Leptopecten</i> sp	scallop unid	26	0.005
		<i>Polyorchis penicillatus</i>	red jellyfish	1	0.002
				27	0.007
	3	<i>Hermisenda crassicornis</i>	opalescent nudibranch	165	0.065
		<i>Polyorchis penicillatus</i>	red jellyfish	12	0.017
				177	0.082



**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI13

Start Date: April 4, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	6	0.002
		<i>Cancer anthonyi</i>	yellow crab	4	0.013
		<i>Cancer jordani</i>	hairy rock crab	3	0.009
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	3	0.012
		<i>Panulirus interruptus</i>	California spiny lobster	3	1.374
		<i>Pugettia producta</i>	northern kelp crab	1	0.017
				20	1.427
	2				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	9	0.006
		<i>Cancer anthonyi</i>	yellow crab	4	0.007
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	2	0.006
		<i>Cancer antennarius</i>	Pacific rock crab	1	0.031
		<i>Loxorhynchus crispatus</i>	moss crab	1	0.173
		<i>Octopus bimaculatus/bimaculoides</i>	two-spot octopus	1	0.190
		<i>Octopus rubescens</i>	red octopus	1	0.001
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.655
		<i>Pinnixa</i> sp	pea crab unid	1	0.001
				21	1.070
	3				
		<i>Cancer anthonyi</i>	yellow crab	17	0.027
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	10	0.010
		<i>Cancer jordani</i>	hairy rock crab	5	0.014
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	3	0.009
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	2	0.010
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.054
		<i>Cancer productus</i>	red rock crab	1	0.001
		<i>Lysmata californica</i>	red rock shrimp	1	0.001
				41	0.126
Non-Shellfish	1				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	88	0.052
		<i>Polyorchis penicillatus</i>	red jellyfish	6	0.043
				94	0.095
	2				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	23	0.010
		<i>Polyorchis penicillatus</i>	red jellyfish	5	0.006
				28	0.016

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI13 (Continued)

Start Date: April 4, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
Non-Shellfish	3			
	<i>Hermisenda crassicornis</i>	opalescent nudibranch	79	0.039
	<i>Polyorchis penicillatus</i>	red jellyfish	34	0.113
	<i>Leptopecten</i> sp	scallop unid	2	0.004
			115	0.156

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI14

Start Date: April 11, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1				
		<i>Cancer jordani</i>	hairy rock crab	34	0.074
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	14	0.006
		<i>Cancer anthonyi</i>	yellow crab	4	0.019
		<i>Cancer productus</i>	red rock crab	3	0.009
		<i>Cancer antennarius</i>	Pacific rock crab	2	0.025
		<i>Cancer gracilis</i>	graceful crab	2	0.009
		<i>Loxorhynchus grandis</i>	sheep crab	2	1.595
		<i>Lysmata californica</i>	red rock shrimp	2	0.001
		<i>Loligo opalescens</i>	California market squid	1	0.084
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.026
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	1	0.001
				66	1.849
	2				
		<i>Cancer jordani</i>	hairy rock crab	34	0.087
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	21	0.011
		<i>Cancer antennarius</i>	Pacific rock crab	14	0.043
		<i>Loligo opalescens</i>	California market squid	5	0.203
		<i>Cancer productus</i>	red rock crab	3	0.009
		<i>Cancer anthonyi</i>	yellow crab	2	0.019
		<i>Lysmata californica</i>	red rock shrimp	2	0.001
		<i>Cancer gracilis</i>	graceful crab	1	0.012
		<i>Loxorhynchus grandis</i>	sheep crab	1	0.460
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.039
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.015
		<i>Pugettia producta</i>	northern kelp crab	1	0.004
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	1	0.001
				87	0.904
	3				
		<i>Cancer antennarius</i>	Pacific rock crab	40	0.167
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	22	0.018
		<i>Cancer jordani</i>	hairy rock crab	9	0.021
		<i>Loligo opalescens</i>	California market squid	9	0.122
		<i>Portunus xantusii</i>	Xantus swimming crab	5	0.058
		<i>Cancer anthonyi</i>	yellow crab	4	0.038
		<i>Lysmata californica</i>	red rock shrimp	4	0.002

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**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI14 (Continued)

Start Date: April 11, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	3	(Continued)			
		<i>Cancer productus</i>	red rock crab	3	0.006
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	2	0.003
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	2	0.004
		<i>Pugettia producta</i>	northern kelp crab	2	0.008
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	2	0.002
		<i>Loxorhynchus grandis</i>	sheep crab	1	1.048
		<i>Neotrypaea gigas</i>	giant ghost shrimp	1	0.002
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.003
		<i>Podochela hemphill</i>	hemphill kelp crab	1	0.004
		<i>Pugettia dalli</i>	spined kelp crab	1	0.001
				109	1.507
Non-Shellfish	1				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	135	0.051
		<i>Polyorchis penicillatus</i>	red jellyfish	12	0.041
		<i>Navanax inermis</i>	California aglaja	1	0.002
				148	0.094
	2				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	53	0.017
		<i>Polyorchis penicillatus</i>	red jellyfish	6	0.015
		<i>Triopha maculata</i>	spotted triopha	1	0.001
				60	0.033
	3				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	290	0.108
		<i>Polyorchis penicillatus</i>	red jellyfish	14	0.027
		<i>Flabellina trilineata</i>	three lined aeolid	1	0.001
		<u>Gastropoda unid</u>	unknown nudibranch	1	0.003
				306	0.139

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI15

Start Date: April 18, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1				
		<i>Cancer jordani</i>	hairy rock crab	24	0.091
		<i>Cancer anthonyi</i>	yellow crab	15	0.085
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	14	0.008
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	5	0.010
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	2	0.002
		<i>Cancer productus</i>	red rock crab	1	0.001
		<i>Lysmata californica</i>	red rock shrimp	1	0.001
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.157
				63	0.355
	2				
		<i>Cancer jordani</i>	hairy rock crab	54	0.172
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	33	0.016
		<i>Cancer anthonyi</i>	yellow crab	19	0.095
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	12	0.029
		<i>Cancer productus</i>	red rock crab	5	0.018
		<i>Panulirus interruptus</i>	California spiny lobster	4	2.162
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	3	0.002
		<i>Cancer antennarius</i>	Pacific rock crab	2	0.046
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	1	0.001
		<i>Lysmata californica</i>	red rock shrimp	1	0.001
		<i>Octopus rubescens</i>	red octopus	1	0.001
		<i>Pachycheles pubescens</i>	pubescent porcelain crab	1	0.001
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.032
				137	2.576
	3				
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	49	0.070
		<i>Cancer jordani</i>	hairy rock crab	39	0.135
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	31	0.020
		<i>Cancer anthonyi</i>	yellow crab	15	0.076
		<i>Lysmata californica</i>	red rock shrimp	7	0.005
		<i>Portunus xantusii</i>	Xantus swimming crab	5	0.019
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	3	0.002
		<i>Cancer productus</i>	red rock crab	2	0.004
		<i>Loxorhynchus grandis</i>	sheep crab	2	1.554
		<i>Cancer antennarius</i>	Pacific rock crab	1	0.038
		<i>Pugettia producta</i>	northern kelp crab	1	0.011
		<i>Loligo opalescens eggs</i>	California market squid eggs	NA	0.017
				155	1.951

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI15 (Continued)

Start Date: April 18, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
Non-Shellfish 1	<i>Polyorchis penicillatus</i>	red jellyfish	91	0.293
	<i>Hermisenda crassicornis</i>	opalescent nudibranch	22	0.009
			113	0.302
2	<i>Polyorchis penicillatus</i>	red jellyfish	155	0.620
	<i>Hermisenda crassicornis</i>	opalescent nudibranch	61	0.021
			216	0.641
3	<i>Polyorchis penicillatus</i>	red jellyfish	245	0.590
	<i>Hermisenda crassicornis</i>	opalescent nudibranch	99	0.042
	<i>Pisaster giganteus</i>	giant-spined sea star	1	1.600
			345	2.232

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI16

Start Date: April 25, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1				
		<i>Cancer anthonyi</i>	yellow crab	8	0.043
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	7	0.006
		<i>Cancer antennarius</i>	Pacific rock crab	6	0.016
		<i>Cancer</i> sp	rock crab unid	6	0.017
		<i>Lysmata californica</i>	red rock shrimp	4	0.001
		<i>Cancer jordani</i>	hairy rock crab	2	0.005
		<i>Cancer productus</i>	red rock crab	1	0.004
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	1	0.004
				35	0.096
	2				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	31	0.011
		<i>Cancer antennarius</i>	Pacific rock crab	25	0.139
		<i>Cancer</i> sp	rock crab unid	21	0.124
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	5	0.004
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	3	0.012
		<i>Lysmata californica</i>	red rock shrimp	3	0.003
		<i>Cancer anthonyi</i>	yellow crab	2	0.015
		<i>Cancer productus</i>	red rock crab	2	0.002
		<i>Loxorhynchus grandis</i>	sheep crab	2	1.868
		<i>Cancer gracilis</i>	graceful crab	1	0.006
		<i>Octopus rubescens</i>	red octopus	1	0.001
				96	2.185
	3				
		<i>Cancer antennarius</i>	Pacific rock crab	53	0.314
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	37	0.015
		<i>Cancer</i> sp	rock crab unid	32	0.127
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	21	0.057
		<i>Cancer anthonyi</i>	yellow crab	17	0.140
		<i>Lysmata californica</i>	red rock shrimp	16	0.005
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	14	0.009
		<i>Cancer productus</i>	red rock crab	6	0.033
		<i>Cancer jordani</i>	hairy rock crab	4	0.010
		<i>Loxorhynchus</i> sp	unk moss crab	3	2.501
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.048
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	1	0.001
		<i>Loxorhynchus grandis</i>	sheep crab	1	1.060
				207	4.320

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI16 (Continued)

Start Date: April 25, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
Non-Shellfish 1	<i>Hermisenda crassicornis</i>	opalescent nudibranch	15	0.005
	<i>Polyorchis penicillatus</i>	red jellyfish	5	0.014
			20	0.019
2	<i>Hermisenda crassicornis</i>	opalescent nudibranch	12	0.005
	<i>Polyorchis penicillatus</i>	red jellyfish	5	0.017
			17	0.022
3	<i>Hermisenda crassicornis</i>	opalescent nudibranch	48	0.014
	<i>Polyorchis penicillatus</i>	red jellyfish	8	0.023
			56	0.037



**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI17

Start Date: May 2, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	25	0.014
		<i>Cancer anthonyi</i>	yellow crab	9	0.080
		<i>Cancer antennarius</i>	Pacific rock crab	7	0.026
		<i>Cancer jordani</i>	hairy rock crab	5	0.017
		<i>Cancer productus</i>	red rock crab	5	0.032
		<i>Lysmata californica</i>	red rock shrimp	5	0.002
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	2	0.005
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	1	0.004
				59	0.180
	2				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	66	0.028
		<i>Cancer antennarius</i>	Pacific rock crab	30	0.103
		<i>Cancer anthonyi</i>	yellow crab	14	0.104
		<i>Cancer jordani</i>	hairy rock crab	9	0.023
		<i>Cancer productus</i>	red rock crab	7	0.052
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	2	0.008
		<i>Lysmata californica</i>	red rock shrimp	2	0.002
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	2	0.002
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.004
				133	0.326
	3				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	77	0.038
		<i>Cancer antennarius</i>	Pacific rock crab	31	0.132
		<i>Cancer anthonyi</i>	yellow crab	18	0.108
		<i>Cancer sp</i>	rock crab unid	18	0.055
		<i>Cancer jordani</i>	hairy rock crab	12	0.037
		<i>Cancer productus</i>	red rock crab	11	0.082
		<i>Lysmata californica</i>	red rock shrimp	10	0.005
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	7	0.006
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.039
		<i>Cancer amphioetus</i>	bigtooth rock crab	1	0.005
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	1	0.001
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	1	0.001
		<i>Octopus rubescens</i>	red octopus	1	0.001
				190	0.510

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI17 (Continued)

Start Date: May 2, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
Non-Shellfish 1	<i>Hemissenda crassicornis</i>	opalescent nudibranch	15	0.006
	<i>Polyorchis penicillatus</i>	red jellyfish	2	0.019
	<i>Flabellina trilineata</i>	three lined aeolid	1	0.001
			18	0.026
2	<i>Hemissenda crassicornis</i>	opalescent nudibranch	37	0.016
	<i>Flabellina trilineata</i>	three lined aeolid	5	0.001
	<i>Polyorchis penicillatus</i>	red jellyfish	2	0.006
	<i>Salpa</i> sp	salp unid	1	0.056
			45	0.079
3	<i>Hemissenda crassicornis</i>	opalescent nudibranch	46	0.018
	<i>Polyorchis penicillatus</i>	red jellyfish	2	0.012
	<i>Flabellina trilineata</i>	three lined aeolid	1	0.001
			49	0.031

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI18

Start Date: May 9, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	None			
	2	<i>Heptacarpus palpator</i>	intertidal coastal shrimp	351	0.139
		<i>Cancer jordani</i>	hairy rock crab	24	0.056
		<i>Cancer anthonyi</i>	yellow crab	7	0.066
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	6	0.006
		<i>Cancer antennarius</i>	Pacific rock crab	5	0.065
		<i>Loxorhynchus grandis</i>	sheep crab	3	1.812
		<i>Lysmata californica</i>	red rock shrimp	3	0.001
		<i>Pachycheles rudis</i>	thick claw porcelain crab	2	0.001
		<i>Cancer productus</i>	red rock crab	1	0.001
		<i>Octopus rubescens</i>	red octopus	1	0.001
				403	2.148
	3	<i>Heptacarpus palpator</i>	intertidal coastal shrimp	194	0.061
		<i>Cancer jordani</i>	hairy rock crab	24	0.065
		<i>Lysmata californica</i>	red rock shrimp	13	0.003
		<i>Cancer productus</i>	red rock crab	10	0.079
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	7	0.008
		<i>Cancer antennarius</i>	Pacific rock crab	6	0.074
		<i>Cancer anthonyi</i>	yellow crab	6	0.043
		<i>Loxorhynchus grandis</i>	sheep crab	1	0.047
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.015
		<i>Porcellanidae unid</i>	unk porcelain crab	1	0.001
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.035
		<i>Pugettia producta</i>	northern kelp crab	1	0.049
				265	0.480
Non-Shellfish	2	<i>Hermisenda crassicornis</i>	opalescent nudibranch	143	0.048
		<i>Flabellina trilineata</i>	three lined aeolid	15	0.003
		<i>Lamellaria diegoensis</i>	San Diego ear shell	1	0.003
				159	0.054
	3	<i>Hermisenda crassicornis</i>	opalescent nudibranch	222	0.082
		<i>Flabellina trilineata</i>	three lined aeolid	66	0.005
		<i>Dendronotus frondosus</i>	leafy dendronotid	1	0.001
				289	0.088

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI19  
Start Date: May 16, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	186	0.042
		<i>Lysmata californica</i>	red rock shrimp	14	0.007
		<i>Cancer jordani</i>	hairy rock crab	7	0.018
		<i>Cancer anthonyi</i>	yellow crab	2	0.030
		<i>Cancer productus</i>	red rock crab	2	0.005
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	2	0.002
		<i>Cancer antennarius</i>	Pacific rock crab	1	0.012
				214	0.116
	2				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	511	0.128
		<i>Lysmata californica</i>	red rock shrimp	11	0.003
		<i>Cancer jordani</i>	hairy rock crab	5	0.015
		<i>Cancer anthonyi</i>	yellow crab	3	0.613
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	3	0.003
		<i>Cancer gracilis</i>	graceful crab	2	0.096
		<i>Pachygrapsus crassipes</i>	striped shore crab	2	0.001
		<i>Cancer antennarius</i>	Pacific rock crab	1	0.029
		<i>Cancer productus</i>	red rock crab	1	0.001
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.617
		<i>Pugettia producta</i>	northern kelp crab	1	0.001
				541	1.507
	3				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	493	0.116
		<i>Cancer jordani</i>	hairy rock crab	37	0.097
		<i>Lysmata californica</i>	red rock shrimp	17	0.008
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	6	0.017
		<i>Cancer productus</i>	red rock crab	5	0.011
		<i>Cancer anthonyi</i>	yellow crab	3	0.014
		<i>Cancer antennarius</i>	Pacific rock crab	2	0.013
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	1	0.001
		<i>Octopus bimaculatus/bimaculoides</i>	two-spot octopus	1	0.288
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.024
				566	0.589

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI19 (Continued)

Start Date: May 16, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
Non-Shellfish 1	<i>Hermisenda crassicornis</i>	opalescent nudibranch	276	0.116
	<i>Flabellina trilineata</i>	three lined aeolid	20	0.002
	<i>Dendronotus frondosus</i>	leafy dendronotid	1	0.001
			297	0.119
2	<i>Hermisenda crassicornis</i>	opalescent nudibranch	291	0.116
	<i>Flabellina trilineata</i>	three lined aeolid	54	0.003
	<i>Dendronotus frondosus</i>	leafy dendronotid	9	0.002
			354	0.121
3	<i>Hermisenda crassicornis</i>	opalescent nudibranch	201	0.091
	<i>Flabellina trilineata</i>	three lined aeolid	43	0.003
	<i>Chrysaora colorata</i>	purple-striped jellyfish	3	4.170
	<i>Dendronotus frondosus</i>	leafy dendronotid	3	0.001
			250	4.265

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI20

Start Date: May 23, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	216	0.048
		<i>Lysmata californica</i>	red rock shrimp	20	0.012
		<i>Cancer antennarius</i>	Pacific rock crab	2	0.004
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	2	0.003
		<i>Cancer anthonyi</i>	yellow crab	1	0.004
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.024
				242	0.095
	2				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	890	0.207
		<i>Lysmata californica</i>	red rock shrimp	52	0.030
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	5	0.007
		<i>Cancer antennarius</i>	Pacific rock crab	4	0.011
		<i>Cancer productus</i>	red rock crab	4	0.027
		<i>Cancer jordani</i>	hairy rock crab	2	0.003
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.019
		<i>Cancer gracilis</i>	graceful crab	1	0.047
		<i>Loxorhynchus grandis</i>	sheep crab	1	1.271
		<i>Octopus bimaculatus/bimaculoides</i>	two-spot octopus	1	0.003
		<i>Octopus rubescens</i>	red octopus	1	0.002
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.001
		<i>Pugettia producta</i>	northern kelp crab	1	0.001
				965	1.629
	3				
		None			
Non-Shellfish	1				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	120	0.035
		<i>Dendronotus frondosus</i>	leafy dendronotid	6	0.002
		<i>Flabellina trilineata</i>	three lined aeolid	1	0.001
				127	0.038
	2				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	157	0.049
		<i>Leptopecten sp</i>	scallop unid	7	0.045
		<i>Flabellina trilineata</i>	three lined aeolid	6	0.002
		<i>Dendronotus frondosus</i>	leafy dendronotid	5	0.002
				175	0.098

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI21  
Start Date: May 30, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	126	0.041
		<i>Lysmata californica</i>	red rock shrimp	37	0.034
		<i>Cancer anthonyi</i>	yellow crab	8	0.075
		<i>Cancer jordani</i>	hairy rock crab	3	0.007
		<i>Cancer productus</i>	red rock crab	2	0.004
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	2	0.008
		<i>Loxorhynchus grandis</i>	sheep crab	1	0.751
				179	0.920
	2				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	312	0.090
		<i>Lysmata californica</i>	red rock shrimp	48	0.036
		<i>Cancer anthonyi</i>	yellow crab	4	0.013
		<i>Cancer jordani</i>	hairy rock crab	3	0.007
		<i>Portunus xantusii</i>	Xantus swimming crab	3	0.069
		<i>Cancer antennarius</i>	Pacific rock crab	2	0.023
		<i>Pachycheles pubescens</i>	pubescent porcelain crab	2	0.002
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	2	0.007
		<i>Lophopanopeus bellus</i>	blackclaw crested crab	1	0.001
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.001
		<i>Pugettia producta</i>	northern kelp crab	1	0.001
				379	0.250
	3	None			
Non-Shellfish	1				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	695	0.319
				695	0.319
	2				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	785	0.348
		<i>Leptopecten</i> sp	scallop unid	1	0.002
				786	0.350

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI22

Start Date: June 6, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	162	0.058
		<i>Lysmata californica</i>	red rock shrimp	68	0.067
		<i>Cancer antennarius</i>	Pacific rock crab	10	0.076
		<i>Cancer productus</i>	red rock crab	9	0.187
		<i>Cancer anthonyi</i>	yellow crab	3	0.046
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	3	0.006
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.013
				256	0.453
	2				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	973	0.321
		<i>Lysmata californica</i>	red rock shrimp	176	0.154
		<i>Cancer antennarius</i>	Pacific rock crab	12	0.372
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	9	0.014
		<i>Cancer productus</i>	red rock crab	8	0.042
		<i>Cancer anthonyi</i>	yellow crab	6	0.126
		<i>Loxorhynchus grandis</i>	sheep crab	2	1.570
		<i>Pachygrapsus crassipes</i>	striped shore crab	2	0.014
		<i>Pinnixa</i> sp	pea crab unid	2	0.001
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	1	0.004
		<i>Pachycheles pubescens</i>	pubescent porcelain crab	1	0.001
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.035
		<i>Puggetia dalli</i>	spined kelp crab	1	0.001
				1194	2.655
	3	None			
Non-Shellfish	1				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	368	0.108
		<i>Leptopecten</i> sp	scallop unid	4	0.003
		<i>Triopha maculata</i>	spotted triopha	1	0.001
				373	0.112
	2				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	635	0.254
		<i>Leptopecten</i> sp	scallop unid	11	0.012
		<i>Dendronotus frondosus</i>	leafy dendronotid	4	0.001
		<i>Triopha maculata</i>	spotted triopha	1	0.001
				651	0.268



**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI23  
Start Date: June 13, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	150	0.053
		<i>Lysmata californica</i>	red rock shrimp	36	0.043
		<i>Cancer antennarius</i>	Pacific rock crab	5	0.020
		<i>Cancer anthonyi</i>	yellow crab	4	0.178
		<i>Cancer productus</i>	red rock crab	2	0.022
		<i>Pugettia producta</i>	northern kelp crab	2	0.002
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	2	0.002
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.001
		<i>Panulirus interruptus</i>	California spiny lobster	1	1.602
				203	1.923
	2				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	304	0.097
		<i>Lysmata californica</i>	red rock shrimp	85	0.105
		<i>Cancer anthonyi</i>	yellow crab	15	0.717
		<i>Cancer antennarius</i>	Pacific rock crab	11	0.052
		<i>Cancer productus</i>	red rock crab	6	0.238
		<i>Loxorhynchus grandis</i>	sheep crab	4	1.685
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	4	0.005
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.029
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.001
		<i>Pugettia dalli</i>	spined kelp crab	1	0.001
				433	2.930
	3	None			
Non-Shellfish					
	1				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	59	0.014
		<i>Dendronotus frondosus</i>	leafy dendronotid	1	0.001
				60	0.015
	2				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	50	0.013
		<i>Doto amyra</i>	hammerhead doto	1	0.001
		<i>Leptopecten</i> sp	scallop unid	1	0.001
				52	0.015

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI24  
Start Date: June 20, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	76	0.027
		<i>Lysmata californica</i>	red rock shrimp	54	0.048
		<i>Cancer anthonyi</i>	yellow crab	20	0.730
		<i>Cancer antennarius</i>	Pacific rock crab	8	0.055
		<i>Cancer productus</i>	red rock crab	6	0.229
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	2	0.006
		<i>Cancer jordani</i>	hairy rock crab	1	0.005
		<i>Loxorhynchus crispatus</i>	moss crab	1	0.001
		<i>Loxorhynchus grandis</i>	sheep crab	1	0.768
		Majidae	decorator crab unid	1	0.001
		<i>Pugettia producta</i>	northern kelp crab	1	0.001
				171	1.871
	2				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	324	0.123
		<i>Lysmata californica</i>	red rock shrimp	92	0.100
		<i>Cancer anthonyi</i>	yellow crab	23	0.912
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	11	0.017
		<i>Cancer antennarius</i>	Pacific rock crab	9	0.116
		<i>Cancer productus</i>	red rock crab	4	0.096
		<i>Pugettia producta</i>	northern kelp crab	3	0.002
		<i>Cancer jordani</i>	hairy rock crab	1	0.003
		<i>Octopus bimaculatus/bimaculoides</i>	two-spot octopus	1	0.015
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.009
		Porcellanidae unid	unk porcelain crab	1	0.001
				470	1.394
	3				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	113	0.049
		<i>Cancer anthonyi</i>	yellow crab	112	5.560
		<i>Lysmata californica</i>	red rock shrimp	47	0.052
		<i>Cancer antennarius</i>	Pacific rock crab	34	0.465
		<i>Cancer productus</i>	red rock crab	20	0.423
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	11	0.017
		<i>Loxorhynchus grandis</i>	sheep crab	6	2.467
		<i>Cancer jordani</i>	hairy rock crab	5	0.023
		<i>Portunus xantusii</i>	Xantus swimming crab	4	0.081
		<i>Loxorhynchus crispatus</i>	moss crab	3	0.111
		<i>Pugettia dalli</i>	spined kelp crab	1	0.001
				356	9.249

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI24 (Continued)

Start Date: June 20, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
Non-Shellfish 1	<i>Hermisenda crassicornis</i>	opalescent nudibranch	17	0.006
			17	0.006
2	<i>Hermisenda crassicornis</i>	opalescent nudibranch	9	0.004
	<i>Leptopecten</i> sp	scallop unid	4	0.004
			13	0.008
3	<i>Hermisenda crassicornis</i>	opalescent nudibranch	17	0.003
	<i>Leptopecten</i> sp	scallop unid	4	0.003
			21	0.006

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI25  
Start Date: June 27, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	71	0.022
		<i>Cancer anthonyi</i>	yellow crab	21	1.161
		<i>Lysmata californica</i>	red rock shrimp	21	0.024
		<i>Cancer antennarius</i>	Pacific rock crab	9	0.137
		<i>Cancer productus</i>	red rock crab	7	0.255
		<i>Pilumnus spinohirsutus</i>	retiring hairy crab	1	0.007
		<i>Pugettia producta</i>	northern kelp crab	1	0.001
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	1	0.001
				132	1.608
	2				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	249	0.074
		<i>Lysmata californica</i>	red rock shrimp	63	0.078
		<i>Cancer anthonyi</i>	yellow crab	17	0.517
		<i>Cancer antennarius</i>	Pacific rock crab	5	0.199
		<i>Cancer productus</i>	red rock crab	2	0.053
		<i>Hemigrapsus nudus</i>	purple shore crab	2	0.002
		<i>Loxorhynchus grandis</i>	sheep crab	2	0.690
		<i>Pachycheles pubescens</i>	pubescent porcelain crab	2	0.001
		<i>Pugettia producta</i>	northern kelp crab	2	0.001
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	2	0.002
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.002
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.014
				348	1.633
	3				
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	293	0.164
		<i>Lysmata californica</i>	red rock shrimp	134	0.155
		<i>Cancer anthonyi</i>	yellow crab	33	1.810
		<i>Cancer antennarius</i>	Pacific rock crab	14	0.110
		<i>Cancer productus</i>	red rock crab	9	0.255
		<i>Panulirus interruptus</i>	California spiny lobster	3	0.276
		<i>Octopus bimaculatus/bimaculoides</i>	two-spot octopus	2	0.237
		Porcellanidae unid	unk porcelain crab	2	0.001
		<i>Pugettia producta</i>	northern kelp crab	2	0.002

(continued on next page)

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrate**

Survey: SGSFI25 (Continued)

Start Date: June 27, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	3	(Continued)			
		<i>Cancer amphioetus</i>	bigtooth rock crab	1	0.001
		<i>Cancer</i> sp	rock crab unid	1	0.001
		<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	1	0.001
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.029
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	1	0.003
				497	3.045
Non-Shellfish	2				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	2	0.002
		<i>Leptopecten</i> sp	scallop unid	1	0.001
				3	0.003
	3				
		<i>Hermisenda crassicornis</i>	opalescent nudibranch	18	0.005
		<i>Leptopecten</i> sp	scallop unid	1	0.001
		<i>Scrippsia pacifica</i>	giant bell jelly	1	0.032
		<i>Triopha maculata</i>	spotted triopha	1	0.001
				21	0.039

Scattergood Generating Station - Normal Operation Impingement Data – Invertebrates

Survey: SGSFI26

Start Date: July 5, 2006

Unit	Taxon	Common Name	Survey Totals		
			Abundance	Biomass (kg)	
Shellfish	1				
		<i>Cancer antennarius</i>	Pacific rock crab	2	0.03
		<i>Cancer anthonyi</i>	yellow crab	35	1.587
		<i>Cancer jordani</i>	hairy rock crab	3	0.011
		<i>Cancer productus</i>	red rock crab	3	0.122
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	51	0.028
		<i>Lysmata californica</i>	red rock shrimp	35	0.04
		<i>Pachycheles pubescens</i>	pubescent porcelain crab	1	0.001
		<i>Pachycheles rudis</i>	thick claw porcelain crab	1	0.001
		<i>Pugettia producta</i>	northern kelp crab	1	0.001
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	1	0.001
			133	1.822	
	2				
		<i>Cancer antennarius</i>	Pacific rock crab	2	0.136
		<i>Cancer anthonyi</i>	yellow crab	27	1.4
		<i>Cancer jordani</i>	hairy rock crab	1	0.003
		<i>Cancer productus</i>	red rock crab	8	0.273
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	148	0.066
		<i>Loxorhynchus crispatus</i>	moss crab	2	0.002
		<i>Loxorhynchus grandis</i>	sheep crab	1	0.898
		<i>Lysmata californica</i>	red rock shrimp	77	0.087
		<i>O. bimaculatus/bimaculoides</i>	California two-spot octopus	1	0.158
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.998
		<i>Pugettia producta</i>	northern kelp crab	1	0.001
			267	3.886	
	3				
		<i>Cancer antennarius</i>	Pacific rock crab	4	0.062
		<i>Cancer anthonyi</i>	yellow crab	89	3.76
		<i>Cancer jordani</i>	hairy rock crab	2	0.006
		<i>Cancer productus</i>	red rock crab	13	0.887
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	108	0.054
		<i>Loxorhynchus grandis</i>	sheep crab	3	2.21
		<i>Lysmata californica</i>	red rock shrimp	71	0.057
		<i>O. bimaculatus/bimaculoides</i>	California two-spot octopus	2	0.273
		<i>Pachycheles rudis</i>	thick claw porcelain crab	1	0.001
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.018
		<i>Pugettia producta</i>	northern kelp crab	2	0.043
		<i>Pugettia richii</i>	cryptic kelp crab	1	0.001
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	1	0.001
			203	3.545	

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI26 (Continued)

Start Date: July 5, 2006

Unit	Taxon	Common Name	Survey Totals			
			Abundance	Biomass (kg)		
Non-Shellfish 1	<i>Hermisenda crassicornis</i>	Hermisenda	1	0.001		
			1	0.001		
2	<i>Hermisenda crassicornis</i>	Hermisenda	1	0.001		
			<i>Leptopecten</i> sp	scallop unid	1	0.001
					2	0.002
3	<i>Hermisenda crassicornis</i>	Hermisenda	14	0.003		
			<i>Leptopecten</i> sp	scallop unid	1	0.001
					15	0.004

Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates

Survey: SGSFI27

Start Date: July 11, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1				
		<i>Cancer antennarius</i>	Pacific rock crab	1	0.166
		<i>Cancer anthonyi</i>	yellow crab	27	1.319
		<i>Cancer jordani</i>	hairy rock crab	3	0.009
		<i>Cancer productus</i>	red rock crab	2	0.05
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	55	0.022
		<i>Lysmata californica</i>	red rock shrimp	11	0.011
		<i>Panulirus interruptus</i>	California spiny lobster	2	3.499
		<i>Puggetia dalli</i>	spined kelp crab	1	0.001
				102	5.077
	2				
		<i>Cancer antennarius</i>	Pacific rock crab	5	0.08
		<i>Cancer anthonyi</i>	yellow crab	15	0.601
		<i>Cancer productus</i>	red rock crab	2	0.124
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	110	0.044
		<i>Lysmata californica</i>	red rock shrimp	36	0.047
		<i>O. bimaculatus/bimaculoides</i>	California two-spot octopus	1	0.053
		<i>Pachycheles pubescens</i>	pubescent porcelain crab	2	0.002
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.207
		<i>Portunus xantusii</i>	Xantus swimming crab	3	0.064
		<i>Pugettia producta</i>	northern kelp crab	1	0.001
		<i>Puggetia dalli</i>	spined kelp crab	1	0.001
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	1	0.001
				178	1.225
	3				
		<i>Cancer antennarius</i>	Pacific rock crab	4	0.228
		<i>Cancer anthonyi</i>	yellow crab	38	1.616
		<i>Cancer gracilis</i>	graceful crab	3	0.228
		<i>Cancer jordani</i>	hairy rock crab	2	0.009
		<i>Cancer productus</i>	red rock crab	4	0.22
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	55	0.027
		<i>Lysmata californica</i>	red rock shrimp	36	0.053
		<i>Pachycheles pubescens</i>	pubescent porcelain crab	3	0.002
		<i>Pachygrapsus crassipes</i>	striped shore crab	2	0.004
		<i>Panulirus interruptus</i>	California spiny lobster	2	0.748
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.03
		<i>Pugettia producta</i>	northern kelp crab	3	0.002
				154	3.167



**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI27 (Continued)

Start Date: July 11, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Abundance
Non-Shellfish	1	<i>Aeolidia papillosa</i>	shag-rug aeolis	1	0.001
				1	0.001
	2	<i>Hermisenda crassicornis</i>	hermissenda	3	0.002
		<i>Leptopecten</i> sp	scallop unid	1	0.001
		<i>Pisaster giganteus</i>	giant-spined sea star	1	0.964
				5	0.967
	3	<i>Aeolidia papillosa</i>	shag-rug aeolis	2	0.002
		<i>Hermisenda crassicornis</i>	hermissenda	3	0.001
		<i>Leptopecten</i> sp	scallop unid	3	0.002
				8	0.005

Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates

Survey: SGSFI28

Start Date: July 18, 2006

		Survey Totals			
Unit	Taxon	Common Name	Abundance	Biomass (kg)	
Shellfish	1	<i>Cancer antennarius</i>	Pacific rock crab	1	0.008
		<i>Cancer anthonyi</i>	yellow crab	31	1.513
		<i>Cancer jordani</i>	hairy rock crab	2	0.008
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	31	0.018
		<i>Loxorhynchus grandis</i>	sheep crab	1	0.744
		<i>Lysmata californica</i>	red rock shrimp	29	0.045
		<i>Pachycheles pubescens</i>	pubescent porcelain crab	1	0.003
		<i>Pugettia producta</i>	northern kelp crab	1	0.001
				97	2.34
		2		<i>Cancer antennarius</i>	Pacific rock crab
<i>Cancer anthonyi</i>	yellow crab			26	0.608
<i>Cancer jordani</i>	hairy rock crab			7	0.027
<i>Cancer productus</i>	red rock crab			4	0.17
<i>Cancer sp</i>	cancer crab unid			1	0.01
<i>Heptacarpus palpator</i>	intertidal coastal shrimp			92	0.044
<i>Lophopanopeus bellus</i>	blackclaw crestleg crab			1	0.001
<i>Loxorhynchus grandis</i>	sheep crab			1	0.145
<i>Lysmata californica</i>	red rock shrimp			49	0.059
<i>Pachycheles pubescens</i>	pubescent porcelain crab			2	0.002
<i>Panulirus interruptus</i>	California spiny lobster			3	0.907
<i>Portunus xantusii</i>	Xantus swimming crab			1	0.018
<i>Pugettia producta</i>	northern kelp crab			1	0.001
				191	2.974
3		<i>Cancer antennarius</i>	Pacific rock crab	8	0.299
		<i>Cancer anthonyi</i>	yellow crab	108	4.666
		<i>Cancer jordani</i>	hairy rock crab	9	0.036
		<i>Cancer productus</i>	red rock crab	20	1.068
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	94	0.054
		<i>Loxorhynchus crispatus</i>	moss crab	1	0.053
		<i>Lysmata californica</i>	red rock shrimp	64	0.087
		<i>O. bimaculatus/bimaculoides</i>	California two-spot octopus	2	0.098
		<i>O. rubescens</i>	East Pacific red octopus	1	0.059
		<i>Pachycheles rudis</i>	thick claw porcelain crab	1	0.001
		<i>Panulirus interruptus</i>	California spiny lobster	2	0.001
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.028
		<i>Pugettia producta</i>	northern kelp crab	1	0.001
				312	6.451

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI28 (Continued)

Start Date: July 18, 2006

		Survey Totals			
Unit	Taxon	Common Name	Abundance	Biomass (kg)	
Non-Shellfish 1	<i>Aeolidiidae</i> unid	aeolid nudibranch unid	3	0.002	
	<i>Leptopecten</i> sp	scallop unid	1	0.001	
			4	0.003	
2	<i>Aeolidiidae</i> unid	aeolid nudibranch unid	6	0.003	
	<i>Hermisenda crassicornis</i>	hermissenda	1	0.001	
			7	0.004	
3	<i>Aeolidiidae</i> unid	aeolid nudibranch unid	5	0.003	
	<i>Dendronotus frondosus</i>	leafy dendronotid	1	0.001	
	<i>Hermisenda crassicornis</i>	hermissenda	1	0.001	
	<i>Triopha maculata</i>	spotted triopha	1	0.001	
			8	0.006	

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI29

Start Date: July 25, 2006

Unit	Taxon	Common Name	Survey Totals		
			Abundance	Biomass (kg)	
Shellfish 1	<i>Cancer antennarius</i>	Pacific rock crab	1	0.04	
	<i>Cancer anthonyi</i>	yellow crab	42	2.916	
	<i>Cancer jordani</i>	hairy rock crab	5	0.013	
	<i>Cancer productus</i>	red rock crab	10	0.588	
	<i>Heptacarpus palpator</i>	intertidal coastal shrimp	26	0.016	
	<i>Lysmata californica</i>	red rock shrimp	20	0.026	
	<i>Portunus xantusii</i>	Xantus swimming crab	1	0.016	
			105	3.615	
	2	<i>Cancer antennarius</i>	Pacific rock crab	3	0.133
		<i>Cancer anthonyi</i>	yellow crab	50	2.327
<i>Cancer jordani</i>		hairy rock crab	4	0.014	
<i>Cancer productus</i>		red rock crab	5	0.336	
<i>Heptacarpus palpator</i>		intertidal coastal shrimp	71	0.035	
<i>Lophopanopeus bellus</i>		blackclaw crested crab	1	0.001	
<i>Loxorhynchus grandis</i>		sheep crab	1	0.001	
<i>Lysmata californica</i>		red rock shrimp	42	0.06	
<i>Pachycheles pubescens</i>		pubescent porcelain crab	6	0.004	
<i>Pachygrapsus crassipes</i>		striped shore crab	2	0.002	
<i>Pugettia producta</i>		northern kelp crab	2	0.006	
<i>Pugettia dalli</i>		spined kelp crab	1	0.001	
			188	2.92	
3	<i>Cancer antennarius</i>	Pacific rock crab	9	0.612	
	<i>Cancer anthonyi</i>	yellow crab	82	4.395	
	<i>Cancer jordani</i>	hairy rock crab	11	0.05	
	<i>Cancer productus</i>	red rock crab	15	1.188	
	<i>Heptacarpus palpator</i>	intertidal coastal shrimp	59	0.024	
	<i>Loxorhynchus grandis</i>	sheep crab	1	0.164	
	<i>Lysmata californica</i>	red rock shrimp	62	0.092	
	<i>O. bimaculatus/bimaculoides</i>	California two-spot octopus	1	0.06	
	<i>Pachycheles rudis</i>	thick claw porcelain crab	2	0.002	
	<i>Panulirus interruptus</i>	California spiny lobster	2	1.236	
	<i>Portunus xantusii</i>	Xantus swimming crab	1	0.023	
	<i>Pugettia producta</i>	northern kelp crab	2	0.002	
	<i>Pugettia richii</i>	cryptic kelp crab	1	0.001	
	<i>Pyromaia tuberculata</i>	tuberculate pear crab	2	0.002	
		250	7.851		

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI29 (Continued)

Start Date: July 25, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
Non-Shellfish 1	<i>Aeolidia papillosa</i>	shag-rug aeolis	3	0.002
	<i>Leptopecten</i> sp	scallop unid	3	0.002
			6	0.004
2	<i>Aeolidia papillosa</i>	shag-rug aeolis	1	0.003
	<i>Leptopecten</i> sp	scallop unid	1	0.001
			2	0.004
3	<i>Aeolidia papillosa</i>	shag-rug aeolis	4	0.003
	<i>Hermisenda crassicornis</i>	hermissenda	2	0.001
			6	0.004

Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates

Survey: SGSFI30

Start Date: August 1, 2006

Unit	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
Shellfish 1	<i>Cancer antennarius</i>	Pacific rock crab	2	0.01
	<i>Cancer anthonyi</i>	yellow crab	21	0.657
	<i>Cancer jordani</i>	hairy rock crab	1	0.004
	<i>Cancer productus</i>	red rock crab	4	0.306
	<i>Heptacarpus palpator</i>	intertidal coastal shrimp	4	0.003
	<i>Lysmata californica</i>	red rock shrimp	26	0.048
	<i>O. bimaculatus/bimaculoides</i>	California two-spot octopus	1	0.214
	<i>Pachycheles pubescens</i>	pubescent porcelain crab	2	0.002
	<i>Pugettia producta</i>	northern kelp crab	2	0.003
				63
2	<i>Cancer antennarius</i>	Pacific rock crab	8	0.115
	<i>Cancer anthonyi</i>	yellow crab	25	0.751
	<i>Cancer jordani</i>	hairy rock crab	2	0.008
	<i>Cancer productus</i>	red rock crab	2	0.103
	<i>Crangon nigromaculata</i>	blackspotted bay shrimp	1	0.001
	<i>Heptacarpus palpator</i>	intertidal coastal shrimp	2	0.002
	<i>Loxorhynchus grandis</i>	sheep crab	1	0.692
	<i>Lysmata californica</i>	red rock shrimp	8	0.012
	<i>O. bimaculatus/bimaculoides</i>	California two-spot octopus	5	0.451
	<i>Pachycheles pubescens</i>	pubescent porcelain crab	1	0.001
	<i>Pachycheles rudis</i>	thick claw porcelain crab	2	0.002
	<i>Pachycheles</i> sp	Pachycheles porcelain crab unid	1	0.001
	<i>Pachygrapsus crassipes</i>	striped shore crab	3	0.014
	<i>Panulirus interruptus</i>	California spiny lobster	2	0.991
	<i>Portunus xantusii</i>	Xantus swimming crab	1	0.014
	<i>Pyromaia tuberculata</i>	tuberculate pear crab	1	0.001
			65	3.159
3	<i>Cancer antennarius</i>	Pacific rock crab	5	0.395
	<i>Cancer anthonyi</i>	yellow crab	93	4.74
	<i>Cancer jordani</i>	hairy rock crab	1	0.002
	<i>Cancer productus</i>	red rock crab	6	0.364
	<i>Heptacarpus palpator</i>	intertidal coastal shrimp	10	0.004
	<i>Loxorhynchus grandis</i>	sheep crab	1	0.908
	<i>Lysmata californica</i>	red rock shrimp	28	0.046
	<i>Pachycheles pubescens</i>	pubescent porcelain crab	1	0.001
	<i>Panulirus interruptus</i>	California spiny lobster	1	0.48
	<i>Pugettia producta</i>	northern kelp crab	3	0.004
				149

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI30 (Continued)  
 Start Date: August 1, 2006

		Survey Totals			
	Unit	Taxon	Common Name	Abundance	Biomass (kg)
Non-Shellfish	3				
		<i>Hermissenda crassicornis</i>	hermissenda	2	0.001
				2	0.001

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI31  
 Start Date: August 8, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	<i>Cancer anthonyi</i>	yellow crab	20	0.24
				20	0.24
	2	<i>Cancer anthonyi</i>	yellow crab	80	4.8
		<i>Cancer jordani</i>	hairy rock crab	20	0.06
			100	4.86	
	3	<i>Cancer antennarius</i>	Pacific rock crab	20	0.06
		<i>Cancer anthonyi</i>	yellow crab	80	2.9
		<i>Cancer jordani</i>	hairy rock crab	20	0.06
			120	3.02	
	Non-Shellfish		None		



**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI32  
 Start Date: August 16, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	<i>Cancer anthonyi</i>	yellow crab	1	0.008
		<i>Cancer productus</i>	red rock crab	1	0.041
				2	0.049
	2	<i>Cancer anthonyi</i>	yellow crab	8	0.08
		<i>Portunus xantusii</i>	Xantus swimming crab	8	0.176
				16	0.256
	3	<i>Cancer anthonyi</i>	yellow crab	1	0.036
		<i>Pachygrapsus crassipes</i>	striped shore crab	20	0.03
				21	0.066
	Non-Shellfish	2	<i>Dirona picta</i>	spotted dirona	1
				1	0.001

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI33  
 Start Date: August 22, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	None			
	2	<i>Cancer anthonyi</i>	yellow crab	3	0.073
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.004
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.031
				<u>5</u>	<u>0.108</u>
	3	<i>Cancer anthonyi</i>	yellow crab	1	0.001
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.036
				<u>3</u>	<u>0.037</u>
Non-Shellfish		None			

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI34  
 Start Date: August 29, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	None			
	2	None			
	3	<i>Portunus xantusii</i>	Xantus swimming crab	1	0.034
				1	0.034
Non-Shellfish		None			

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI35  
 Start Date: September 5, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	None			
	2	None			
	3	<i>Cancer anthonyi</i>	yellow crab	1	0.001
				1	0.001
Non-Shellfish		None			

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI36

Start Date: September 12, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	None			
	2	<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.004
		<i>Panulirus interruptus</i>	California spiny lobster	2	5.2
				3	5.204
	3	<i>Cancer anthonyi</i>	yellow crab	1	0.004
		<i>Lysmata californica</i>	red rock shrimp	1	0.001
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.018
				3	0.023
Non-Shellfish		None			

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrates**

Survey: SGSFI37  
 Start Date: September 19, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	None			
	2	None			
	3	<i>Lysmata californica</i>	red rock shrimp	1	0.001
				1	0.001
Non-Shellfish		None			

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI38  
 Start Date: September 26, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	None			
	2	<i>Panulirus interruptus</i>	California spiny lobster	1	0.001
				1	0.001
	3	<i>Lysmata californica</i>	red rock shrimp	7	0.003
				7	0.003
Non-Shellfish	1	<i>Hermisenda crassicornis</i>	hermissenda	1	0.001
				1	0.001
	3	<i>Polyorchis penicillatus</i>	red jellyfish	1	0.012
				1	0.012

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI39  
Start Date: October 3, 2006

	Unit	Taxon	Common Name	Survey Totals		
				Abundance	Biomass (kg)	
Shellfish	1	<i>Lysmata californica</i>	red rock shrimp	3	0.001	
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.529	
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.025	
				5	0.555	
	2	None				
	3		<i>Cancer anthonyi</i>	yellow crab	3	0.002
			<i>Heptacarpus palpator</i>	intertidal coastal shrimp	1	0.001
			<i>Lysmata californica</i>	red rock shrimp	10	0.004
			<i>O. rubescens</i>	East Pacific red octopus	1	0.103
			<i>Portunus xantusii</i>	Xantus swimming crab	2	0.002
				17	0.112	
Non-Shellfish	3	<i>Hermisenda crassicornis</i>	hermissenda	15	0.004	
		<i>Navanax inermis</i>	California aglaja	2	0.003	
				17	0.007	



**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI40  
 Start Date: October 10, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.001
				1	0.001
	2	None			
	3	<i>Panulirus interruptus</i>	California spiny lobster	1	1.65
				1	1.65
Non-Shellfish		None			

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI41  
 Start Date: October 17, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	<i>Portunus xantusii</i>	Xantus swimming crab	1	0.018
				1	0.018
	2	<i>Portunus xantusii</i>	Xantus swimming crab	1	0.002
				1	0.002
	3	<i>Lysmata californica</i>	red rock shrimp	1	0.001
				1	0.001
Non-Shellfish		None			

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI42 Reverse Flow

Start Date: October 24, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	None			
	2	<i>Pugettia producta</i>	northern kelp crab	1	0.002
	3	<i>Cancer antennarius</i>	Pacific rock crab	4	0.005
		<i>Cancer anthonyi</i>	yellow crab	7	0.004
		<i>Cancer gracilis</i>	graceful crab	1	0.069
		<i>Podochela hemphill</i>	hemphill kelp crab	1	0.001
				13	0.079
Non-Shellfish		None			

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI43 Reverse Flow  
 Start Date: October 31, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	None			
	2	<i>Portunus xantusii</i>	Xantus swimming crab	1	0.005
				1	0.005
	3	<i>Portunus xantusii</i>	Xantus swimming crab	1	0.009
				1	0.009
Non-Shellfish		None			

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI44 Reverse Flow  
 Start Date: November 7, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	None			
	2	<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.002
		<i>Portunus xantusii</i>	Xantus swimming crab	4	0.061
				5	0.063
	3	<i>Cancer jordani</i>	hairy rock crab	1	0.001
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.014
				3	0.015
Non-Shellfish		None			

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI45

Start Date: November 14, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	<i>Portunus xantusii</i>	Xantus swimming crab	1	0.003
				1	0.003
	2	<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	1	0.002
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.017
				2	0.019
3	None				
Non-Shellfish		None			

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI46 Reverse Flow  
 Start Date: November 21, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	None			
	2	None			
	3	<i>Cancer anthonyi</i>	yellow crab	3	0.004
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.006
				4	0.01
Non-Shellfish		None			

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI47 Reverse Flow  
 Start Date: November 28, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	<i>Portunus xantusii</i>	Xantus swimming crab	5	0.036
				5	0.036
	2	<i>Farfantepenaeus californiensis</i>	yellowleg shrimp	1	0.022
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.23
		<i>Portunus xantusii</i>	Xantus swimming crab	3	0.012
				5	0.264
	3	<i>Portunus xantusii</i>	Xantus swimming crab	1	0.007
		<i>Pyromaia tuberculata</i>	tuberculate pear crab	1	0.001
				2	0.008
	Non-Shellfish	2	<i>Polyorchis penicillatus</i>	red jellyfish	1
				1	0.003



**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI48 Reverse Flow  
 Start Date: December 5, 2006

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	None			
	2	<i>Portunus xantusii</i>	Xantus swimming crab	1	0.003
	3	None		1	0.003
Non-Shellfish		None			

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI49

Start Date: December 12, 2006

	Unit	Taxon	Common Name	Survey Totals		
				Abundance	Biomass (kg)	
Shellfish	1	<i>Portunus xantusii</i>	Xantus swimming crab	4	0.02	
				4	0.02	
	2	<i>Cancer anthonyi</i>	yellow crab	2	0.003	
		<i>O. bimaculatus/bimaculoides</i>	California two-spot octopus	1	0.039	
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.001	
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.009	
				6	0.052	
	3	<i>Lepidopa californica</i>	California mole crab	1	0.002	
		<i>O. bimaculatus/bimaculoides</i>	California two-spot octopus	1	0.028	
		<i>Portunus xantusii</i>	Xantus swimming crab	34	0.194	
		<i>Pugettia producta</i>	northern kelp crab	1	0.001	
				37	0.225	
	Non-Shellfish		None			

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI50

Start Date: December 19, 2006

	Unit	Taxon	Common Name	Survey Totals		
				Abundance	Biomass (kg)	
Shellfish	1	<i>Crangon nigromaculata</i>	blackspotted bay shrimp	2	0.003	
		<i>Portunus xantusii</i>	Xantus swimming crab	4	0.065	
				6	0.068	
	2	<i>Blepharipoda occidentalis</i>	spiny mole crab	1	0.011	
		<i>Cancer antennarius</i>	Pacific rock crab	1	0.067	
		<i>Portunus xantusii</i>	Xantus swimming crab	14	0.077	
				16	0.155	
	3	<i>Cancer anthonyi</i>	yellow crab	3	0.002	
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	3	0.005	
		<i>Loligo opalescens</i>	California market squid	1	0.033	
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.798	
		<i>Portunus xantusii</i>	Xantus swimming crab	35	0.162	
				43	1.000	
	Non-Shellfish		None			

**Scattergood Generating Station - Normal Operation Impingement Data - Invertebrates**

Survey: SGSFI51  
Start Date: December 26, 2006

	Unit	Taxon	Common Name	Survey Totals		
				Abundance	Biomass (kg)	
Shellfish	1	<i>Cancer anthonyi</i>	yellow crab	1	0.002	
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	1	0.001	
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.003	
					3	0.006
	2	<i>Cancer anthonyi</i>	yellow crab	1	0.002	
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.001	
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.004	
					3	0.007
	3	<i>Cancer anthonyi</i>	yellow crab	4	0.006	
		<i>Cancer gracilis</i>	graceful crab	1	0.082	
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.028	
					7	0.116
Non-Shellfish	3	<i>Polyorchis penicillatus</i>	red jellyfish	1	0.001	
						1

**Scattergood Generating Station - Normal Operation Impingement Data – Invertebrates**

Survey: SGSFI52  
 Start Date: January 2, 2007

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	1	None			
	2	<i>Cancer anthonyi</i>	yellow crab	1	0.006
				1	0.006
	3	<i>Cancer anthonyi</i>	yellow crab	4	0.008
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.03
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.056
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	2	0.001
				9	0.095
Non-Shellfish 1&2		<i>Polyorchis penicillatus</i>	red jellyfish	1	0.004
		<i>Dendronotus frondosus</i>	leafy dendronotid	3	0.001
		<i>Hermisenda crassicornis</i>	hermissenda	3	0.001
				7	0.006
	3	<i>Hermisenda crassicornis</i>	hermissenda	4	0.001
		<i>Dendronotus frondosus</i>	leafy dendronotid	51	0.012
				55	0.013

**Appendix E5. Velocity Cap Study Impingement Data – Invertebrates**

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Invertebrates**

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Survey: VC1 Velocity Cap Imp. Survey  
Date: October 12, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish		No shellfish			
Non-Shellfish		None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Invertebrates**

Survey: VC2 Velocity Cap Imp. Survey  
 Date: October 13, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.243
		<i>Portunus xantusii</i>	Xantus swimming crab	3	0.009
				4	0.252
Non-Shellfish	All				
		<i>Dendronotus</i>	dendronotid nudibranch unid	1	0.002
				1	0.002

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Invertebrates**

Survey: VC3 Velocity Cap Imp. Survey  
 Date: October 16, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.004
		<i>Panulirus interruptus</i>	California spiny lobster	2	0.851
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.053
				5	0.908
Non-Shellfish		None			



**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VC4 Velocity Cap Imp. Survey  
 Date: October 17, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Cancer amphiotus</i>	bigtooth rock crab	1	0.001
		<i>Oct. bimaculatus/bimaculoides</i>	California two-spot octopus	1	0.094
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.002
				3	0.097
Non-Shellfish		None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Invertebrates**

Survey: VC5 Velocity Cap Imp. Survey  
 Date: October 19, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.040
				2	0.040
Non-Shellfish		None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VC6 Velocity Cap Imp. Survey  
 Date: October 20, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.001
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.026
				2	0.027
Non-Shellfish		None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VC7 Velocity Cap Imp. Survey  
 Date: October 23, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Oct. bimaculatus/bimaculoides</i>	California two-spot octopus	1	0.201
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.003
				2	0.204
Non-Shellfish		None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VC18 Velocity Cap Imp. Survey  
 Date: November 10, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Cancer antennarius</i>	Pacific rock crab	1	0.003
		<i>Oct. bimaculatus/bimaculoides</i>	California two-spot octopus	1	0.610
		<i>Pachygrapsus crassipes</i>	striped shore crab	2	0.009
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.461
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.045
		<i>Pugettia producta</i>	northern kelp crab	1	0.073
				8	1.201
Non-Shellfish		None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Invertebrates**

Survey: VC19 Velocity Cap Imp. Survey  
 Date: November 13, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Pachycheles rudis</i>	thick claw porcelain crab	8	0.008
		<i>Panulirus interruptus</i>	California spiny lobster	2	3.287
		<i>Portunus xantusii</i>	Xantus swimming crab	13	0.089
				23	3.384
Non-Shellfish		None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VC20 Velocity Cap Imp. Survey  
 Date: November 15, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.012
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.623
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.006
				4	0.641
Non-Shellfish		None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VC21 Velocity Cap Imp. Survey  
 Date: November 16, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All	<i>Portunus xantusii</i>	Xantus swimming crab	2	0.010
				2	0.010
Non-Shellfish		None			



**Scattergood Generating Station – Velocity Cap Study Impingement Data - Invertebrates**

Survey: VC22 Velocity Cap Imp. Survey  
 Date: November 17, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Portunus xantusii</i>	Xantus swimming crab	1	0.002
				1	0.002
Non-Shellfish		None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VC23 Velocity Cap Imp. Survey  
 Date: November 20, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.259
				1	0.259
Non-Shellfish		None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VC34 Velocity Cap Imp. Survey  
 Date: December 12, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Blepharipoda occidentalis</i>	spiny mole crab	3	0.058
		<i>Cancer anthonyi</i>	yellow crab	1	0.004
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	1	0.001
		<i>Oct. bimaculatus/bimaculoides</i>	California two-spot octopus	1	0.521
		<i>Pachygrapsus crassipes</i>	striped shore crab	1	0.003
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.011
				9	0.598
Non-Shellfish		None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VC35 Velocity Cap Imp. Survey  
 Date: December 14, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Cancer antennarius</i>	Pacific rock crab	2	0.002
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	2	0.003
		<i>Portunus xantusii</i>	Xantus swimming crab	14	0.103
				18	0.108
Non-Shellfish		None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VC36 Velocity Cap Imp. Survey  
 Date: December 15, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Cancer anthonyi</i>	yellow crab	1	0.006
		<i>Cancer gracilis</i>	graceful crab	1	0.002
		<i>Cancer jordani</i>	hairy rock crab	1	0.001
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	18	0.023
		<i>Heptacarpus palpator</i>	intertidal coastal shrimp	1	0.001
		<i>Loligo opalescens</i>	California market squid	1	0.023
		<i>Lysmata californica</i>	red rock shrimp	1	0.002
		<i>Octopus rubescens</i>	East Pacific red octopus	2	0.148
		<i>Portunus xantusii</i>	Xantus swimming crab	55	0.391
				81	0.597
Non-Shellfish		None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VC37 Velocity Cap Imp. Survey  
 Date: December 18, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Cancer antennarius</i>	Pacific rock crab	1	0.007
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.500
		<i>Portunus xantusii</i>	Xantus swimming crab	3	0.029
				5	0.536
Non-Shellfish		None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VC38 Velocity Cap Imp. Survey  
 Date: December 19, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Cancer antennarius</i>	Pacific rock crab	1	0.004
		<i>Portunus xantusii</i>	Xantus swimming crab	5	0.027
				6	0.031
Non-Shellfish		None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VC39 Velocity Cap Imp. Survey  
 Date: December 21,2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Cancer antennarius</i>	Pacific rock crab	2	0.014
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	1	0.004
		<i>Portunus xantusii</i>	Xantus swimming crab	21	0.152
				24	0.170
Non-Shellfish		None			



**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VC40 Velocity Cap Imp. Survey  
 Date: December 22, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Cancer anthonyi</i>	yellow crab	3	0.003
		<i>Cancer gracilis</i>	graceful crab	1	0.001
		<i>Cancer jordani</i>	hairy rock crab	1	0.001
		<i>Oct. bimaculatus/bimaculoides</i>	California two-spot octopus	1	0.280
		<i>Portunus xantusii</i>	Xantus swimming crab	14	0.061
				20	0.346
Non-Shellfish		None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Invertebrates**

Survey: VC41 Velocity Cap Imp. Survey  
 Date: December 26, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Cancer anthonyi</i>	yellow crab	4	0.017
		<i>Cancer gracilis</i>	graceful crab	1	0.001
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	1	0.002
		<i>Panulirus interruptus</i>	California spiny lobster	1	0.279
		<i>Portunus xantusii</i>	Xantus swimming crab	15	0.064
				22	0.363
Non-Shellfish	All				
		<i>Caudina arenicola</i>	sweet potato sea cucumber	1	0.006
				1	0.006

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VC42 Velocity Cap Imp. Survey  
 Date: December 28, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Blepharipoda occidentalis</i>	spiny mole crab	1	0.004
		<i>Cancer antennarius</i>	Pacific rock crab	1	0.004
		<i>Cancer anthonyi</i>	yellow crab	5	0.013
		<i>Cancer jordani</i>	hairy rock crab	1	0.004
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	103	0.139
		<i>Oct. bimaculatus/bimaculoides</i>	California two-spot octopus	1	0.157
		<i>Portunus xantusii</i>	Xantus swimming crab	10	0.088
				122	0.409
Non-Shellfish	All				
		<i>Caudina arenicola</i>	sweet potato sea cucumber	1	0.016
				1	0.016

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VC43 Velocity Cap Imp. Survey  
 Date: December 29, 2006 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Cancer antennarius</i>	Pacific rock crab	2	0.113
		<i>Cancer anthonyi</i>	yellow crab	5	0.013
		<i>Cancer productus</i>	red rock crab	1	0.001
		<i>Crangon nigromaculata</i>	blackspotted bay shrimp	13	0.027
		<i>Lysmata californica</i>	red rock shrimp	1	0.001
		<i>Oct. bimaculatus/bimaculoides</i>	California two-spot octopus	1	0.138
		<i>Portunus xantusii</i>	Xantus swimming crab	12	0.106
		<i>Pugettia producta</i>	northern kelp crab	3	0.008
				38	0.407
Non-Shellfish	All	None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Invertebrates**

Survey: VC44 Velocity Cap Imp. Survey  
 Date: January 1, 2007 Normal Flow Direction

	Unit	Taxon	Common Name	Survey Totals	
				Abundance	Biomass (kg)
Shellfish	All				
		<i>Cancer antennarius</i>	Pacific rock crab	1	0.005
		<i>Cancer anthonyi</i>	yellow crab	8	0.029
		<i>Cancer jordani</i>	hairy rock crab	2	0.010
		<i>Pachycheles rudis</i>	thick claw porcelain crab	1	0.002
		<i>Portunus xantusii</i>	Xantus swimming crab	2	0.018
				14	0.064
Non-Shellfish		None			

Appendix E6. Heat Treatment Impingement Data – Invertebrates

Scattergood Generating Station - Heat Treatment Impingement Data – Invertebrates

Survey: SGSHT1  
Date: January 25, 2006

Taxon	Common Name	Survey Totals	
		Abundance	Biomass (kg)
<b>Shellfish</b>			
<i>Heptacarpus palpator</i>	intertidal coastal shrimp	851	1.494
<i>Cancer anthonyi</i>	yellow crab	60	0.194
<i>Cancer antennarius</i>	Pacific rock crab	52	0.082
<i>Cancer gracilis</i>	graceful crab	43	0.189
<i>Octopus bimaculatus/bimaculoides</i>	two-spot octopus	38	18.051
<i>Alpheus clamator</i>	twistclaw pistol shrimp	34	0.069
<i>Lysmata californica</i>	red rock shrimp	26	0.344
<i>Portunus xantusii</i>	Xantus swimming crab	26	0.172
<i>Panulirus interruptus</i>	California spiny lobster	22	10.871
<i>Pyromaia tuberculata</i>	tuberculate pear crab	22	0.030
<i>Lophopanopeus bellus</i>	blackclaw crestleg crab	17	0.017
<i>Scyra acutifrons</i>	sharpnose crab	9	0.030
<i>Cancer productus</i>	red rock crab	4	0.013
<i>Paraxanthias taylori</i>	lumpy rubble crab	4	0.008
<i>Pugettia producta</i>	northern kelp crab	4	0.021
<i>Loxorhynchus grandis</i>	sheep crab	3	0.833
<i>Farfantepenaeus californiensis</i>	yellowleg shrimp	1	0.037
		1,216	32.455
<b>Non-Shellfish</b>			
<i>Astropecten armatus</i>	spiny sand star	3	0.029
<i>Navanax inermis</i>	California aglaja	3	0.013
<i>Conus californicus</i>	California cone	1	0.005
<i>Hermisenda crassicornis</i>	opalescent nudibranch	1	0.001
<i>Parastichopus californicus</i>	California sea cucumber	1	0.102
		9	0.150

**Scattergood Generating Station - Heat Treatment Impingement Data – Invertebrates**

Survey: SGSHT2  
 Date: August 10, 2006

Taxon	Common Name	Survey Totals	
		Abundance	Biomass (kg)
<b>Shellfish</b>			
<i>Cancer antennarius</i>	Pacific rock crab	300	13.186
<i>Cancer anthonyi</i>	yellow crab	72	2.018
<i>Cancer jordani</i>	hairy rock crab	7	0.036
<i>Cancer</i> sp	cancer crab unid	6	0.013
<i>Heptacarpus palpator</i>	intertidal coastal shrimp	20	0.02
<i>Lysmata californica</i>	red rock shrimp	100	0.24
<i>O. bimaculatus/bimaculoides</i>	California two-spot octopus	5	0.413
<i>Panulirus interruptus</i>	California spiny lobster	58	35.14
<i>Pugettia producta</i>	northern kelp crab	1	0.052
		569	51.118
<b>Non-Shellfish</b>			
	None		

**Scattergood Generating Station - Heat Treatment Impingement Data – Invertebrates**

Survey: SGSHT3  
 Date: August 15, 2006

Taxon	Common Name	Survey Totals	
		Abundance	Biomass (kg)
<b>Shellfish</b>			
<i>Cancer antennarius</i>	Pacific rock crab	27	1.313
<i>Cancer anthonyi</i>	yellow crab	39	1.555
<i>Cancer productus</i>	red rock crab	2	0.071
<i>Lysmata californica</i>	red rock shrimp	6	0.019
<i>Cancer antennarius</i>	Pacific rock crab	27	1.313
<i>Cancer anthonyi</i>	yellow crab	39	1.555
<i>Cancer productus</i>	red rock crab	2	0.071
<i>Lysmata californica</i>	red rock shrimp	6	0.019
<i>Panulirus interruptus</i>	California spiny lobster	9	5.023
		83	7.981

Non-Shellfish  
 None



**Scattergood Generating Station - Heat Treatment Impingement Data – Invertebrates**

Survey: SGSHT4  
Date: October 4, 2006

Taxon	Common Name	Survey Totals	
		Abundance	Biomass (kg)
<b>Shellfish</b>			
<i>Cancer anthonyi</i>	yellow crab	15	0.036
<i>Cancer jordani</i>	hairy rock crab	15	0.015
<i>Lysmata californica</i>	red rock shrimp	1,700	1.2
<i>O. bimaculatus/bimaculoides</i>	California two-spot octopus	20	1.525
<i>Pachygrapsus crassipes</i>	striped shore crab	45	0.26
<i>Panulirus interruptus</i>	California spiny lobster	40	30.074
<i>Portunus xantusii</i>	Xantus swimming crab	5	0.005
		1840	33.115
<b>Non-Shellfish</b>			
<i>Navanax inermis</i>	California aglaja	13	0.029
		13	0.029

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Invertebrates**

Survey: VCHT1 Heat Treatment IM Survey  
 Date: October 23, 2006 Normal Flow Direction

	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
Shellfish	<i>Heptacarpus palpator</i>	intertidal coastal shrimp	2	0.002
	<i>Lysmata californica</i>	red rock shrimp	2	0.002
	<i>Oct. bimaculatus/bimaculoides</i>	California two-spot octopus	4	1.201
	<i>Panulirus interruptus</i>	California spiny lobster	8	4.556
	<i>Portunus xantusii</i>	Xantus swimming crab	3	0.047
			19	5.808
Non-Shellfish	None			

**Scattergood Generating Station – Velocity Cap Study Impingement Data - Invertebrates**

Survey: VCHT3 Heat Treatment IM Survey  
 Date: November 20, 2006 Normal Flow Direction

	Taxon	Common Name	Survey Totals	
			Abundance	Biomass (kg)
Shellfish	<i>Lysmata californica</i>	red rock shrimp	1	0.002
	<i>Oct. bimaculatus/bimaculoides</i>	California two-spot octopus	3	1.861
	<i>Panulirus interruptus</i>	California spiny lobster	1	0.354
			5	2.217
Non-Shellfish	<i>Pisaster brevispinus</i>	short-spined sea star	1	0.021
			1	0.021

**Scattergood Generating Station – Velocity Cap Study Impingement Data – Invertebrates**

Survey: VCHT6 Heat Treatment IM Survey  
Date: January 3, 2006 Normal Flow Direction

Taxon	Common Name	Survey Totals	
		Abundance	Biomass (kg)
<b>Shellfish</b>			
<i>Cancer antennarius</i>	Pacific rock crab	4	0.028
<i>Cancer anthonyi</i>	yellow crab	8	0.045
<i>Cancer gracilis</i>	graceful crab	2	0.005
<i>Cancer jordani</i>	hairy rock crab	2	0.008
<i>Heptacarpus palpator</i>	intertidal coastal shrimp	2	0.002
<i>Lysmata californica</i>	red rock shrimp	13	0.024
<i>Oct. bimaculatus/bimaculoides</i>	California two-spot octopus	9	3.064
<i>Panulirus interruptus</i>	California spiny lobster	14	4.233
<i>Portunus xantusii</i>	Xantus swimming crab	15	0.081
<i>Pugettia producta</i>	northern kelp crab	4	0.022
		73	7.512
<b>Non-Shellfish</b>			
<i>Navanax inermis</i>	California aglaja	6	0.024
		6	0.024

*Scattergood Generating Station*

## **Appendix F**

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### **Master Species Lists**

F1. Entrainment Master Species List

F2. Impingement Master Species List – Invertebrates

F3. Impingement Master Species List - Fishes

## Appendix F1

### Master Species List of Target Invertebrates and Fishes Identified in the Entrainment Samples

TaxaName	Taxon	Common Name
<b>Cephalopoda</b>	<i>Loligo opalescens</i>	market squid
<b>Decapoda</b>	unidentified crab (megalops)	unid. crab megalops
<b>Palinuridae</b>	<i>Panulirus interruptus</i> (phyllosome)	California spiny lobster (larval)
<b>Anomura</b>	Anomura unid. (megalops)	crustaceans
<b>Paguridae</b>	Paguridae unid. (megalops)	hermit crab megalops
<b>Porcellanidae</b>	<i>Pachycheles pubescens</i> (megalops)	pubescent porcelain crab megalops
	<i>Pachycheles rudis</i> (megalops)	thickclaw porcelain crab megalops
	<i>Pachycheles</i> spp. (megalops)	porcelain crabs megalops
	<i>Petrolisthes cinctipes</i> (megalops)	flat porcelain crab megalops
	<i>Petrolisthes</i> spp. (megalops)	porcelain crab megalops
	Porcellanidae unid. (megalops)	porcelain crab megalops
<b>Hippoidea</b>	Hippoidea (megalops)	mole crab megalops
<b>Hippidae</b>	<i>Emerita analoga</i> (megalops)	mole crabs megalops
<b>Diogenidae</b>	Diogenidae (megalops)	left-handed hermit crabs megalops
<b>Brachyura</b>	Brachyura unid. (megalops)	unidentified crab megalops
<b>Majidae</b>	<i>Pugettia</i> spp. (megalops)	kelp crabs megalops
<b>Canceridae</b>	<i>Cancer antennarius</i> (megalops)	brown rock crab megalops
	<i>Cancer anthonyi</i> (megalops)	yellow crab megalops
	<i>Cancer gracilis</i> (megalops)	slender crab megalops
	<i>Cancer oregonensis</i> (megalops)	pygmy rock crab
	<i>Cancer productus</i> (megalops)	red rock crab megalops
	<i>Cancer</i> spp. (megalops)	cancer crabs megalops
<b>Portunidae</b>	<i>Portunus xantusii</i> (megalops)	Xantus' swimming crab megalops
<b>Xanthidae</b>	<i>Lophopanopeus bellus</i> (megalops)	black-claw crestleg crab megalops
	<i>Lophopanopeus</i> spp. (megalops)	black-clawed crab megalops
<b>Pinnotheridae</b>	<i>Fabia subquadrata</i>	grooved mussel crab
	<i>Pinnixa</i> spp. (megalops)	pea crabs megalops
	<i>Pinnotheres</i> spp. (megalops)	pea crab megalops
	Pinnotheridae (megalops)	pea crab megalops
<b>Grapsidae</b>	Grapsidae unid. (megalops)	shore crab megalops
	<i>Hemigrapsus</i> spp. (megalops)	shore crab megalops
<b>Actinopterygii</b>	fish eggs unid.	unidentified fish eggs
	larvae, unidentified yolksac	unidentified yolksac larvae
	larval fish - damaged	unidentified larval fishes
	larval fish fragment	unidentified larval fishes

(table continued)

TaxaName	Taxon	Common Name
<b>Actinopterygii</b>	larval/post-larval fish unid.	larval fishes
<b>Acanthopterygii</b>	Sciaenidae / Paralichthyidae / Labridae (eggs)	fish eggs
<b>Clupeidae</b>	<i>Clupea pallasii</i>	Pacific herring
	<i>Etrumeus teres</i>	round herring
	<i>Sardinops sagax</i>	Pacific sardine
<b>Engraulidae</b>	Engraulidae unid.	anchovies
	Engraulidae unid. (eggs)	anchovy eggs
	<i>Engraulis mordax</i>	northern anchovy
<b>Argentiniidae</b>	<i>Argentina sialis</i>	Pacific argentine
<b>Bathylagidae</b>	Bathylagidae unid.	blacksmelt
	<i>Bathylagus ochotensis</i>	popeye blacksmelt
	<i>Leuroglossus stilbius</i>	California smoothtongue
<b>Gonostomatidae</b>	<i>Cyclothone signata</i>	showy bristlemouth
<b>Myctophidae</b>	<i>Diaphus theta</i>	California headlight fish
	Myctophidae unid.	lanternfishes
	<i>Nannobranchium</i> spp.	lanternfishes
	<i>Stenobranchius leucopsarus</i>	northern lampfish
	<i>Triphoturus mexicanus</i>	Mexican lampfish
<b>Gobiesocidae</b>	<i>Gobiesox</i> spp.	clingfishes
<b>Merlucciidae</b>	<i>Merluccius productus</i>	Pacific hake
<b>Ophidiidae</b>	<i>Chilara taylori</i>	spotted cusk-eel
	Ophidiidae unid.	cusk-eels
	<i>Ophidion scrippsae</i>	basketweave cusk-eel
<b>Bythitidae</b>	<i>Brosmophycis marginata</i>	red brotula
<b>Atherinopsidae</b>	<i>Atherinops affinis</i>	topsmelt
	Atherinopsidae unid.	silversides
	<i>Atherinopsis californiensis</i>	jacksmelt
	<i>Leuresthes tenuis</i>	California grunion
<b>Syngnathidae</b>	Syngnathidae unid.	pipefishes
	<i>Syngnathus</i> spp.	pipefishes
<b>Scorpaenidae</b>	<i>Scorpaena guttata</i>	California scorpionfish
	<i>Sebastes</i> spp.	rockfishes
	<i>Sebastolobus altivelis</i>	longspine thornyhead
	<i>Sebastolobus</i> spp.	thornyheads
<b>Hexagrammidae</b>	Hexagrammidae unid.	greenlings
	<i>Oxylebius pictus</i>	painted greenling
	<i>Zaniolepis frenata</i>	shortspine combfish
	<i>Zaniolepis latipinnis</i>	longspine combfish
	<i>Zaniolepis</i> spp.	combfishes
<b>Cottidae</b>	<i>Artedius lateralis</i>	smoothhead sculpin
	<i>Chitonotus / Icelinus</i>	sculpins
	<i>Chitonotus pugetensis</i>	roughback sculpin
	<i>Clinocottus analis</i>	wooly sculpin

(table continued)

TaxaName	Taxon	Common Name
<b>Cottidae</b>	<i>Clinocottus</i> spp.	sculpins
	Cottidae unid.	sculpins
	<i>Icelinus quadriseriatus</i>	yellowchin sculpin
	<i>Icelinus</i> spp.	sculpins
	<i>Leptocottus armatus</i>	Pacific staghorn sculpin
	<i>Oligocottus</i> spp.	sculpins
	<i>Ruscarius creaseri</i>	roughcheek sculpin
	<i>Ruscarius meanyi</i>	Puget Sound sculpin
	<i>Scorpaenichthys marmoratus</i>	cabezon
<b>Agonidae</b>	<i>Odontopyxis trispinosa</i>	pygmy poacher
<b>Liparidae</b>	<i>Liparis mucosus</i>	slimy snailfish
	<i>Liparis</i> spp.	snailfishes
<b>Serranidae</b>	<i>Paralabrax clathratus</i>	kelp bass
	<i>Paralabrax maculatofasciatus</i>	spotted sand bass
	<i>Paralabrax</i> spp.	sand bass
	<i>Paralabrax</i> spp. (eggs)	sand bass eggs
<b>Haemulidae</b>	<i>Anisotremus davidsonii</i>	sargo
	Haemulidae unid.	grunts
	<i>Xenistius californiensis</i>	salema
<b>Sciaenidae</b>	<i>Atractoscion nobilis</i>	white seabass
	<i>Cheilotrema saturnum</i>	black croaker
	<i>Genyonemus lineatus</i>	white croaker
	<i>Genyonemus lineatus</i> (eggs)	white croaker eggs
	<i>Menticirrhus undulatus</i>	California corbina
	<i>Roncador stearnsii</i>	spotfin croaker
	<i>Roncador stearnsii</i> (eggs)	spotfin croaker eggs
	Sciaenidae unid.	Croakers
	Sciaenidae unid. (eggs)	croaker eggs
	<i>Seriphus politus</i>	queenfish
<i>Umbrina roncadore</i>	yellowfin croaker	
<b>Kyphosidae</b>	<i>Girella nigricans</i>	opaleye
	Kyphosidae unid.	Sea chubs
<b>Pomacentridae</b>	<i>Chromis punctipinnis</i>	blacksmith
	<i>Hypsypops rubicundus</i>	garibaldi
	Pomacentridae unid.	Damselfishes
<b>Sphyraenidae</b>	<i>Sphyraena argentea</i>	Pacific barracuda
	<i>Sphyraena argentea</i> (eggs)	Pacific barracuda eggs
<b>Labridae</b>	<i>Halichoeres semicinctus</i>	rock wrasse
	Labridae unid.	Wrasses
	Labridae unid. (eggs)	wrasse eggs
	<i>Oxyjulis californica</i>	senorita
	<i>Oxyjulis californica</i> (eggs)	senorita eggs
	<i>Semicossyphus pulcher</i>	California sheephead

(table continued)



TaxaName	Taxon	Common Name
<b>Bathymasteridae</b>	<i>Bathymasteridae</i> unid.	ronquils
<b>Blenniidae</b>	<i>Hypsoblennius jenkinsi</i>	mussel blenny
	<i>Hypsoblennius</i> spp.	cometooth blennies
<b>Clinidae</b>	<i>Gibbonsia</i> spp.	clinid kelpfishes
<b>Chaenopsidae</b>	Chaenopsidae unid.	tube blennies
<b>Labrisomidae</b>	Labrisomidae unid.	labrisomid blennies
<b>Gobiidae</b>	<i>Acanthogobius flavimanus</i>	yellowfin goby
	<i>Gillichthys mirabilis</i>	longjaw mudsucker
	Gobiidae unid.	gobies
	<i>Lepidogobius lepidus</i>	bay goby
	<i>Lythrypnus zebra</i>	zebra goby
	<i>Rhinogobiops nicholsii</i>	blackeye goby
	<i>Typhlogobius californiensis</i>	blind goby
<b>Scombridae</b>	<i>Scomber japonicus</i> (eggs)	Pacific mackerel eggs
<b>Stromateidae</b>	<i>Peprilus simillimus</i>	Pacific butterfish
<b>Pleuronectiformes</b>	Pleuronectiformes unid.	flatfishes
<b>Pleuronectidae</b>	<i>Isopsetta isolepis</i>	butter sole
	<i>Lepidopsetta bilineata</i>	rock sole
	<i>Lyopsetta exilis</i>	slender sole
	<i>Microstomus pacificus</i>	Dover sole
	<i>Microstomus pacificus</i> (eggs)	Dover sole eggs
	<i>Parophrys vetulus</i>	English sole
	<i>Platichthys stellatus</i>	starry flounder
	<i>Pleuronectes</i> spp.	righteye flounders
	Pleuronectidae unid.	righteye flounders
	Pleuronectidae unid. (eggs)	righteye flounder eggs
	<i>Pleuronichthys guttulatus</i>	diamond turbot
	<i>Pleuronichthys guttulatus</i> (eggs)	diamond turbot eggs
	<i>Pleuronichthys ritteri</i>	spotted turbot
	<i>Pleuronichthys</i> spp.	turbots
	<i>Pleuronichthys</i> spp. (eggs)	turbot eggs
	<i>Pleuronichthys verticalis</i>	hornyhead turbot
<b>Paralichthyidae</b>	<i>Citharichthys sordidus</i>	Pacific sanddab
	<i>Citharichthys</i> spp.	sanddabs
	<i>Citharichthys</i> spp. (eggs)	sanddab eggs
	<i>Citharichthys stigmaeus</i>	speckled sanddab
	<i>Hippoglossina stomata</i>	bigmouth sole
	Paralichthyidae unid.	sand flounders
	Paralichthyidae unid. (eggs)	sand flounder eggs
	<i>Paralichthys californicus</i>	California halibut
	<i>Paralichthys californicus</i> (eggs)	California halibut eggs
	<i>Xystreureys liolepis</i>	fantail sole
<b>Cynoglossidae</b>	Cynoglossidae unid.	tongue soles
	<i>Symphurus atricaudus</i>	California tonguefish

## Appendix F2

### Master Species List of Invertebrates Identified in Impingement Samples

TaxaName	Taxon	Common Name
<b>Cnidaria</b>	Cnidaria	sea jelly, unid.
<b>Polyorchidae</b>	<i>Polyorchis penicillatus</i>	red jellyfish
	<i>Scrippsia pacifica</i>	giant bell jelly
<b>Pelagiidae</b>	<i>Chrysaora colorata</i>	purple-striped jellyfish
<b>Aphroditidae</b>	<i>Aphrodita</i> sp.	sea mouse, unid.
<b>Penaeidae</b>	<i>Farfantepenaeus californiensis</i>	yellowleg shrimp
<b>Alpheidae</b>	<i>Alpheus clamator</i>	twistclaw pistol shrimp
<b>Crangonidae</b>	<i>Crangon nigromaculata</i>	blackspotted bay shrimp
<b>Hippolytidae</b>	<i>Heptacarpus palpator</i>	intertidal coastal shrimp
	<i>Heptacarpus</i> sp.	coastal shrimp, unid.
	<i>Heptacarpus stimpsoni</i>	Stimpson coastal shrimp
	<i>Lysmata californica</i>	red rock shrimp
<b>Callianassidae</b>	<i>Neotrypaea gigas</i>	giant ghost shrimp
<b>Palinuridae</b>	<i>Panulirus interruptus</i>	California spiny lobster
<b>Paguridae</b>	<i>Pagurus</i> sp.	hermit crab, unid.
	<i>Pagurus redondoensis</i>	unnamed hermit crab
<b>Porcellanidae</b>	<i>Pachycheles holosericus</i>	sponge porcelain crab
	<i>Pachycheles pubescens</i>	pubescent porcelain crab
	<i>Pachycheles rudis</i>	thick claw porcelain crab
	<i>Pachycheles</i> sp.	porcelain crab, unid.
	<i>Polyonyx quadriungulatus</i>	western tube crab
	Porcellanidae	porcelain crab, unid.
<b>Albuneidae</b>	<i>Blepharipoda occidentalis</i>	spiny mole crab
	<i>Lepidopa californica</i>	California mole crab
<b>Majidae</b>	Majidae	spider crab, unid.
	<i>Pugettia dalli</i>	spined kelp crab
	<i>Pugettia producta</i>	northern kelp crab
	<i>Pugettia richii</i>	cryptic kelp crab
	<i>Pugettia</i> sp.	kelp crab, unid.
<b>Inachidae</b>	<i>Podochela hemphill</i>	hemphill kelp crab
<b>Inachoididae</b>	<i>Pyromaia tuberculata</i>	tuberculate pear crab
<b>Pisidae</b>	<i>Herbstia parvifrons</i>	crevice spider crab
	<i>Loxorhynchus crispatus</i>	moss crab
	<i>Loxorhynchus grandis</i>	sheep crab
	<i>Loxorhynchus</i> sp.	moss/sheep crab, unid.

(table continued)

TaxaName	Taxon	Common Name
<b>Pisidae</b>	<i>Scyra acutifrons</i>	sharpnose crab
<b>Parthenopidae</b>	<i>Heterocrypta occidentalis</i>	sandflat elbow crab
<b>Canceridae</b>	<i>Cancer amphioetus</i>	bigtooth rock crab
	<i>Cancer antennarius</i>	Pacific rock crab
	<i>Cancer anthonyi</i>	yellow crab
	<i>Cancer gracilis</i>	graceful crab
	<i>Cancer jordani</i>	hairy rock crab
	<i>Cancer productus</i>	red rock crab
	<i>Cancer</i> sp.	cancer crab, unid.
<b>Portunidae</b>	<i>Portunus xantusii</i>	Xantus swimming crab
<b>Xanthidae</b>	<i>Lophopanopeus bellus</i>	blackclaw crestleg crab
	<i>Paraxanthias taylori</i>	lumpy rubble crab
<b>Pilumnidae</b>	<i>Pilumnus spinohirsutus</i>	retiring hairy crab
<b>Pinnotheridae</b>	<i>Pinnixa</i> sp.	pea crab, unid.
	<i>Pinnixa tomentosa</i>	pea crab
<b>Grapsidae</b>	<i>Hemigrapsus nudus</i>	purple shore crab
	<i>Pachygrapsus crassipes</i>	striped shore crab
<b>Muricidae</b>	<i>Pteropurpura festiva</i>	festive murex
<b>Columbellidae</b>	<i>Amphissa versicolor</i>	variegate amphissa
<b>Buccinidae</b>	<i>Kelletia kelletii</i>	Kellet's whelk
<b>Nassariidae</b>	<i>Nassarius perpinguis</i>	fat western nassa
<b>Conidae</b>	<i>Conus californicus</i>	California cone
<b>Lamellariidae</b>	<i>Lamellaria diegoensis</i>	San Diego lamellaria
<b>Aglajidae</b>	<i>Navanax inermis</i>	California aglaja
<b>Haminoeidae</b>	<i>Haminoea virescens</i>	green glassy bubble
<b>Nudibranchia</b>	<i>Nudibranchia</i>	nudibranch, unid.
<b>Dendronotidae</b>	<i>Dendronotus frondosus</i>	leafy dendronotid
	<i>Dendronotus</i> sp.	nudibranch, unid.
<b>Dironidae</b>	<i>Dirona picta</i>	spotted dirona
<b>Dotoidae</b>	<i>Doto amyra</i>	hammerhead doto
<b>Polyceridae</b>	<i>Triopha maculata</i>	spotted triopha
<b>Aeolidiidae</b>	<i>Aeolidia papillosa</i>	shag-rug aeolis
	Aeolidiidae	aeolid nudibranch
<b>Facelinidae</b>	<i>Hermisenda crassicornis</i>	hermissenda
<b>Flabellinidae</b>	<i>Flabellina trilineata</i>	threeline aeolis
<b>Pectinidae</b>	<i>Leptopecten</i> sp.	scallop, unid.
<b>Cephalopoda</b>	<i>Loligo opalescens</i>	California market squid
<b>Cephalopoda</b>	<i>O. bimaculatus/bimaculoides</i>	California two-spot octopus
<b>Cephalopoda</b>	<i>Octopus rubescens</i>	East Pacific red octopus
<b>Astropectinidae</b>	<i>Astropecten armatus</i>	spiny sand star
<b>Astropectinidae</b>	<i>Astropecten verrilli</i>	sand star
<b>Asterinidae</b>	<i>Asterina miniata</i>	bat star

(table continued)

TaxaName	Taxon	Common Name
Asterinidae	<i>Pisaster brevispinus</i>	short-spined sea star
	<i>Pisaster giganteus</i>	giant-spined sea star
Ophiuroidea	Ophiuroidea	brittle star, unid.
Ophiodermatidae	<i>Ophioderma panamense</i>	Panama brittle star
Ophiothricidae	<i>Ophiothrix spiculata</i>	shiny brittle star
Dendrasteridae	<i>Dendraster excentricus</i>	Pacific sand dollar
Stichopodidae	<i>Parastichopus californicus</i>	California sea cucumber
Caudinidae	<i>Caudina arenicola</i>	sweet potato sea cucumber
Salpidae	<i>Salpa</i> sp.	salp, unid.
	<i>Thetys vagina</i>	common salp

## Appendix F3

### Master Species List of fishes identified in the impingement samples.

TaxaName	Taxon	Common Name
<b>Heterodontidae</b>	<i>Heterodontus francisci</i>	horn shark
<b>Triakidae</b>	<i>Mustelus henlei</i>	brown smoothhound
	<i>Triakis semifasciata</i>	leopard shark
<b>Torpedinidae</b>	<i>Torpedo californica</i>	Pacific electric ray
<b>Platyrrhinidae</b>	<i>Platyrrhinoidis triseriata</i>	thornback
<b>Urolophidae</b>	<i>Urobatis halleri</i>	round stingray
<b>Gymnuridae</b>	<i>Gymnura marmorata</i>	California butterfly ray
<b>Myliobatidae</b>	<i>Myliobatis californica</i>	bat ray
<b>Branchiostomatidae</b>	<i>Branchiostoma californiense</i>	California lancelet
<b>Ophichthidae</b>	<i>Ophichthus zophochir</i>	yellow snake eel
<b>Clupeidae</b>	<i>Dorosoma petenense</i>	threadfin shad
	<i>Sardinops sagax</i>	Pacific sardine
<b>Engraulidae</b>	<i>Anchoa compressa</i>	deepbody anchovy
	<i>Anchoa delicatissima</i>	slough anchovy
	<i>Anchoa</i> sp.	deepbody/slough anchovy
	<i>Engraulis mordax</i>	northern anchovy
<b>Synodontidae</b>	<i>Synodus lucioceps</i>	California lizardfish
<b>Ophidiidae</b>	<i>Chilara taylori</i>	spotted cusk-eel
	<i>Ophidion scrippsae</i>	basketweave cusk-eel
<b>Batrachoididae</b>	<i>Porichthys myriaster</i>	specklefin midshipman
	<i>Porichthys notatus</i>	plainfin midshipman
<b>Atherinopsidae</b>	<i>Atherinops affinis</i>	topsmelt
	<i>Atherinopsis californiensis</i>	jacksmelt
	Atherinopsidae	silverside, unid.
	<i>Leuresthes tenuis</i>	California grunion
<b>Syngnathidae</b>	<i>Syngnathus californiensis</i>	kelp pipefish
	<i>Syngnathus leptorhynchus</i>	bay pipefish
	<i>Syngnathus</i> sp.	pipefish, unid.
<b>Scorpaenidae</b>	<i>Scorpaena guttata</i>	California scorpionfish
	<i>Sebastes auriculatus</i>	brown rockfish
	<i>Sebastes chrysomelas</i>	black-and-yellow rockfish
	<i>Sebastes miniatus</i>	vermilion rockfish
	<i>Sebastes paucispinis</i>	bocaccio
	<i>Sebastes rastrelliger</i>	grass rockfish
<b>Hexagrammidae</b>	<i>Oxylebius pictus</i>	painted greenling

(table continued)

TaxaName	Taxon	Common Name
<b>Cottidae</b>	<i>Artedius corallinus</i>	coralline sculpin
	<i>Leptocottus armatus</i>	Pacific staghorn sculpin
	<i>Ruscarius creaseri</i>	roughcheek sculpin
	<i>Scorpaenichthys marmoratus</i>	cabezon
<b>Agonidae</b>	<i>Odontopyxis trispinosa</i>	pygmy poacher
<b>Serranidae</b>	<i>Paralabrax clathratus</i>	kelp bass
	<i>Paralabrax nebulifer</i>	barred sand bass
<b>Carangidae</b>	<i>Trachurus symmetricus</i>	jack mackerel
<b>Haemulidae</b>	<i>Anisotremus davidsonii</i>	sargo
	<i>Xenistius californiensis</i>	salema
<b>Sciaenidae</b>	<i>Atractoscion nobilis</i>	white seabass
	<i>Cheilotrema saturnum</i>	black croaker
	<i>Genyonemus lineatus</i>	white croaker
	<i>Menticirrhus undulatus</i>	California corbina
	<i>Seriphus politus</i>	queenfish
	<i>Umbrina roncadior</i>	yellowfin croaker
<b>Kyphosidae</b>	<i>Girella nigricans</i>	opaleye
	<i>Medialuna californiensis</i>	halfmoon
<b>Embiotocidae</b>	<i>Amphistichus argenteus</i>	barred surfperch
	<i>Brachyistius frenatus</i>	kelp perch
	<i>Cymatogaster aggregata</i>	shiner perch
	<i>Embiotoca jacksoni</i>	black perch
	Embiotocidae	surfperch, unid.
	<i>Hermosilla azurea</i>	zebraperch
	<i>Hyperprosopon argenteum</i>	walleye surfperch
	<i>Micrometrus minimus</i>	dwarf perch
	<i>Phanerodon furcatus</i>	white seaperch
	<i>Rhacochilus toxotes</i>	rubberlip seaperch
	<i>Rhacochilus vacca</i>	pile perch
	<i>Zalembius rosaceus</i>	pink seaperch
	<b>Pomacentridae</b>	<i>Chromis punctipinnis</i>
<i>Hypsypops rubicundus</i>		garibaldi
<b>Labridae</b>	<i>Halichoeres semicinctus</i>	rock wrasse
	<i>Oxyjulis californica</i>	senorita
	<i>Semicossyphus pulcher</i>	California sheephead
<b>Bathymasteidae</b>	<i>Rathbunella alleni</i>	stripefin ronquil
<b>Clinidae</b>	Clinidae	kelp blenny, unid.
	<i>Gibbonsia elegans</i>	spotted kelpfish
	<i>Heterostichus rostratus</i>	giant kelpfish
<b>Blennidae</b>	<i>Hypsoblennius gilberti</i>	rockpool blenny
	<i>Hypsoblennius jenkinsi</i>	mussel blenny
<b>Gobiesocidae</b>	<i>Gobiesox rhesodon</i>	California clingfish
<b>Sphyraenidae</b>	<i>Sphyraena argentea</i>	Pacific barracuda

(table continued)

TaxaName	Taxon	Common Name
<b>Scombridae</b>	<i>Scomber japonicus</i>	Pacific chub mackerel
<b>Stromateidae</b>	<i>Peprilus simillimus</i>	Pacific pompano
<b>Paralichthyidae</b>	<i>Citharichthys stigmaeus</i>	speckled sanddab
	<i>Paralichthys californicus</i>	California halibut
	<i>Parophrys vetulus</i>	English sole
<b>Pleuronectidae</b>	<i>Pleuronichthys guttulatus</i>	diamond turbot
	<i>Pleuronichthys ritteri</i>	spotted turbot
	<i>Pleuronichthys verticalis</i>	hornyhead turbot
<b>Cynoglossidae</b>	<i>Symphurus atricaudus</i>	California tonguefish