Southern California Bight
1998 Regional Marine Monitoring Survey
(Bight'98)

Information Management Manual

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I. INTRODUCTION

The Southern California Bight (SCB), an open embayment in the coast between Point Conception and Cabo Colnett (south of Ensenada), Baja California, is an important ecological and recreational resource. The SCB has a complex topography, with offshore islands, submarine canyons, ridges and basins, that provide a variety of habitats for more than 500 species of fish and 1,500 species of invertebrates. World renowned for its recreational waters, more than 100 million people visit Southern California beaches and coastal areas annually to sunbathe, surf, swim, skin- and SCUBA-dive.

Southern California is also one of the most densely populated coastal regions in the country, which creates stress upon these resources. Nearly 20 million people inhabit coastal Southern California, a number that is expected to increase another 20% by 2010 (NRC 1990). Population growth generally results in conversion of open land into non-permeable surfaces. This "hardening of the coast" increases the rate of runoff and can impact water quality through addition of sediment, toxic chemicals, microbial pathogens and nutrients to the ocean. Besides the impacts of land conversion, the SCB is home to fifteen municipal wastewater treatment facilities, eight power generating stations, 10 industrial treatment facilities, and 18 oil platforms that discharge to the open coast.

Each year, local, state, and federal agencies spend in excess of $10M to monitor the environmental quality of the SCB. Most of this monitoring is associated with National Pollutant Discharge Elimination System (NPDES) permits and is intended to assess compliance of waste discharge with the California Ocean Plan and the Federal Clean Water Act, which set water quality standards for effluent and receiving waters. While these monitoring programs have provided important information, they were designed to evaluate impacts near individual discharges. Today, resource managers are being encouraged to develop management strategies for the entire SCB. To accomplish this task, they need regionally-based information to assess cumulative impacts of contaminant inputs and to evaluate relative risk among different types of stresses. It is difficult to use existing data to evaluate regional issues because the monitoring was designed to be site-specific and is limited to specific geographic areas. The monitoring provides substantial data for some areas, but there is little or no data for the areas in between. Beyond the spatial limitations, data from these programs are not easily merged to examine relative risk. The parameters measured often differ among programs. Even when the same parameters are measured, the methodologies used to collect the data often differ and interlaboratory quality assurance (QA) exercises to assess data comparability are rare.

To begin addressing these concerns, twelve agencies joined in a cooperative sampling effort in 1994, called the Southern California Bight Pilot Project (SCBPP). The SCBPP involved sampling 261 sites, using common methods, along the continental shelf between Point Conception and the United States/Mexico border. Assessments were made of water quality, sediment contamination, the status of biological resources and species diversity, and the presence of marine debris. The SCBPP provided a much-needed first "snapshot" of the state of the SCB.

The proposed Southern California Bight 1998 Regional Monitoring Project (Bight'98) is a continuation of the successful cooperative regional-scale monitoring begun in southern California in 1994 during the SCBPP. Bight'98 expands on the 1994 survey by including more participants,

sampling more habitats, and measuring more parameters. Fifty-five organizations, including international and volunteer organizations, have agreed to participate (Table I-1).

Information Management Challenges

The inclusion of new participants in cooperative regional monitoring provides several benefits, but it also provides additional challenges, one of which is information management. Bight'98 involves the simultaneous sampling of a wide range of biological, chemical and physical parameters by many project participants. Each organization will use its own equipment to collect and analyze the samples (using standardized methods), and most will use their own information management systems to record, process and report the data they collect. A cooperative information management system is necessary to meet the goal of sharing data among participants in order to conduct a regional assessment.

Information management within Bight'98 must occur on several levels. First, a process must be developed to ensure the quality, compatibility, and timeliness of the data each organization collects. Once the information has been collected and organized, it must be readily available to the project scientists for review, analysis and interpretation. Eventually this information will be made available to other interested organizations and the general public. Perhaps most important, the information collected during Bight'98 must persist in a usable form for future analyses of the long-term, broad-scale processes occurring in the Bight.

This document describes the information management system (IMS) that will support Bight'98. The document focuses on four major functions of the Bight'98 IMS:

- The standard protocols each participating agency will use to transfer the measurement and supporting data from their IMS to the Bight'98 IMS.

- The process by which data will be submitted to the Bight'98 data manager (SCCWRP), including the path and quality control procedures the data will follow until it has been accepted.

- The technical specification of how the data will be organized in the Bight'98 database.

- The milestones and mechanisms by which the data in the Bight'98 database will be made accessible to project participants, other organizations, and the general public.

Additional details about Bight'98 are available in work plans that describe the technical aspects of the three study components: 1) Coastal ecology, 2) Shoreline microbiology, and 3) Water quality. The Coastal Ecology component is also supported by companion documents detailing Field Methods and Logistics, Quality Assurance (QA), Benthic Laboratory Procedures.

TABLE I-1. Participants in the Bight'98 Regional Monitoring Program.

AES Corporation
Algalita Marine Research Foundation
Aliso Water Management Authority (AWMA)
Aquatic Bioassay and Consulting Laboratories (ABCL)
Center for Environmental Cooperation (CEC)
Central Coast Regional Water Quality Control Board
Channel Islands National Marine Sanctuary (CINMS)
Chevron USA Products Company
City of Long Beach
City of Los Angeles Environmental Monitoring Division (CLAEMD)
City of Los Angeles Stormwater Division
City of Oceanside
City of Oxnard
City of San Diego
City of Santa Barbara
City of Ventura
Columbia Analytical Services
Divers Involved Voluntarily in Environmental Rehabilitation & Safety (DIVERS)
Encina Wastewater Authority
Goleta Sanitation District
Granite Canyon Marine Pollution Studies Lab
Houston Industries, Inc.
Instituto de Investigacione, Oceanologicas (UABC)
Los Angeles Department of Water and Power (LADWP)
Los Angeles County Dept. of Beaches & Harbors
Los Angeles County Dept. of Health Services
Los Angeles Regional Water Quality Control Board
Los Angeles County Sanitation Districts (LACSD)
Marine Corps Base - Camp Pendleton
National Fisheries Institute of Mexico (SEMARNAP)
NOAA International Programs Office
NRG Energy, Inc.
Orange County Environmental Health Division
Orange County Public Facilities and Resources (OCPFRD)
Orange County Sanitation District (OCSD)
San Diego County Dept. of Environmental Health
San Diego Interagency Water Quality Panel (Bay Panel)
San Diego Regional Water Quality Control Board (SDRWQCB)
San Elijo Joint Powers Authority
Santa Ana Regional Water Quality Control Board
Santa Barbara County Health Service
Santa Monica Bay Restoration Project
Secretaria de Marina (Mexican Navy)

TABLE I-1 (continued). Participants in the Bight'98 Regional Monitoring Program.

Southeast Regional Reclamation Authority (SERRA)
Southern California Coastal Water Research Project (SCCWRP)
Southern California Edison (SCE)
Southern California Marine Institute (SCMI)
State Water Resources Control Board (SWRCB)
Surfrider Foundation
University of California, Santa Barbara
USC Wrigley Institute for Environmental Studies (WIES)
US EPA Region IX
US EPA Office of Research and Development
US Geological Survey
US Navy, Space & Naval Warfare Systems Center, San Diego (USN)

II. APPROACH TO INFORMATION MANAGEMENT

The Information Management System (IMS) has several purposes, the primary of which is to provide a mechanism for sharing of data collected within a single project (Bight'98) among project participants; data sharing is required if the Bight'98 goal of producing an integrated regional assessment of the condition of southern California's coastal waters is to be achieved. While this is the primary focus, the IMS has been developed in recognition that Bight'98 represents an unprecedented level of data standardization among the many monitoring organizations in the SCB and there is a possibility that the protocols adopted here may be later used for other purposes or future regional surveys. Thus, the system was designed to be flexible to future adaptation. In addition, while the system was constructed primarily to serve the project scientists, the system was also designed in recognition that the data produced will provide a significant baseline for comparing future conditions in the SCB. Therefore, the IMS needs to include a mechanism for transmitting data to non-project scientists and the interested public.

The Bight'98 IMS will be based on a centralized data storage system. A centralized system was selected because Bight'98 is an integrated project and the typical data user will be interested in obtaining the whole data set (or large parts thereof), rather than the smaller units of data (individual parameters, subset of the geographic range) that would reside at individual participating laboratories. The centralized system was selected over the alternative of a distributed system linked through a series of FTP sites because of an inconsistent level of computer and internet sophistication among the participating organizations, plus the difficulty of maintaining a linked-distributed system over an extended number of years.

Standardized data transfer protocols (SDTP) will be used for inputting data into the centralized data storage system (Appendix A). SDTP detail the information to be submitted with each sample collection or processing element, the units and allowable values for each parameter, and the order in which that information will be submitted. They are necessary to ensure that data submitted by the many participants are comparable and easily merged, without significant effort or assumptions by the organization responsible for maintaining the centralized data system. Use of SDTP allows each participating organization to retain their existing data management system, yet output the data in a format that allows sharing among organizations.

Role of Information Management Committee

The IMS was developed and will be administered by the Information Management Committee (IMC; Table II-1), which is one of eight technical committees supporting the Bight'98 Steering Committee. Membership on the IMC is open to all Bight'98 participating organizations through appointment by a Steering Committee member (Table II-2). Open membership is intended to provide a framework of communication and consensus. The IMC makes recommendations and presents draft documents to the Steering Committee. The Steering Committee is responsible for assessing whether these recommendations and documents are consistent with the project objectives, and for assessing whether the costs of the recommendations are consistent with the resources available for conducting the project.

The IMC will implement its activities primarily through an Information Management Officer (IMO), who will also serve as the chairperson of the Committee. The IMO will be responsible for

checking data as it is submitted, concatenating data from participating organizations, and serving as the focal point for data distribution. Larry Cooper of the Southern California Coastal Water Research Project (SCCWRP) will serve as the IMO at the project's outset and the data base will be housed at SCCWRP.

III. STANDARDIZED DATA TRANSFER PROTOCOLS

The SDTP used in Bight'98 represent an extension of the formats developed for the SCBPP and in previous efforts by the Santa Monica Bay Restoration Program. The number of SDTP were expanded for Bight'98 to incorporate new data types, such as those collected in the Shoreline Microbiology survey. Existing protocols were modified to add parameter fields that scientists felt were necessary (e.g. latitude and longitude for every sampling event, rather than a single latitude/longitude for the site) and to delete fields that were found to be superfluous or repetitive.

The SDTP were constructed to capture data at the level of individual replicate, rather than in a summarized format. This level was selected because the primary clients for the data are the project scientists, who need individual replicate information in order to conduct statistical analyses. In some cases, data summarization is desirable to achieve inter-laboratory comparability. For instance, sediment grain size analysis will be conducted by laser technology that provides approximately 100 different size fractions, but the number of size fractions differs among machines; the project scientists recommended that the raw data be summarized into 40 size categories that allow comparison among machine outputs. All decisions about data summarization were made by project scientists through the project's Technical Committees, rather than by information managers. When the SDTP call for summarized data, the original data will be archived in machine output format by each participating laboratory.

The SDTP include fields for summary quality assurance (QA) information, though routine laboratory QA procedure data (e.g. blanks, spikes) will be retained at the individual laboratory. Our objective in selecting which QA data to carry within the IMS was to provide the user enough information to evaluate the data.

The SDTP also include fields for sampling design information, which will be populated by the project designers, rather than by the field or laboratory crews. A stratified random sampling design was used to select sample sites for the Coastal Ecology and Shoreline Microbiology components of Bight'98; this means that the data are not equally weighted in their contribution to an overall project mean. The inclusion probability for each sample type at each sample site will be included to ensure that samples are properly weighted in data analysis.

Relational Model Structure

The IMS is based on a relational structure in which 25 data tables (Appendix A), each containing different types of data, are linked by one or more common fields. Use of multiple data tables allows data created at different times (e.g., lab vs. field data) to be entered at the time of data production, minimizing the possibility of data loss. Linking tables that contain data recorded at different frequencies also minimizes redundant data entry.

The relational structure is based on a four-level model. The first level is a station table, which contains a single data record for each site that is sampled in the survey. The table includes station descriptors, such as latitude, longitude and landmarks, that can be used to locate the site, as well as sample design information, such as sampling strata and inclusion probability.

The second level is the station occupation table, which contains a record for each visit to a sampling site. This level includes data describing sampling date, time, and environment descriptors such as weather and sea state. The station occupation table is linked to the station table by a StationID field.

The third level is the sampling event table, which contains a record for each sampling activity during a visit to a site. This level exists only within the Coastal Ecology portion of Bight'98, in which multiple trawls or benthic grabs may be conducted on a site visit. This level is used to record information about each of these events (e.g. trawl duration, observations about sediment type in the grab). For the Shoreline Microbiology and Water Quality components, event information is merged into the station occupation level because each visit to a site involves a single sampling event.

The fourth level includes a series of results tables, which contain a record for every laboratory result. There are multiple results tables corresponding to the different types of laboratory analyses. The results tables are linked to the sampling events tables by StationID and Date.

While the same basic structure is used across all three of the Bight'98 project components (Coastal Ecology, Shoreline Microbiology, and Water Quality), each component will have their own relational structure. The three project components are treated separately because each contains data of different types and is based on its own sampling design. Each component has a unique geographical set of sampling stations and the Water Quality component has a distinct temporal schedule, offset by several months from the others.

Figures III-1 through III-3 show the table structure for each of the three components. The station table is shown at the highest level, while the lower levels appear as "children" of the "parent" levels. While the relational model is not truly hierarchical, as chemistry data and fish chemistry data can be linked directly, a hierarchical model is presented to illustrate relationships between the tables.

Appendix A of this document contains the particulars of the standard table formats. Each table structure is defined in terms of field name, field order, and field data type. There is also additional description of the intent of each table and a definition of a record in that table. Appendix B contains the values for each of the constrained lists where specified in the table structures. There are 18 tables in the Coastal Ecology component, three in the Microbiology component, and four in the Water Quality component.

Figure III-1. Coastal Ecology table structure.

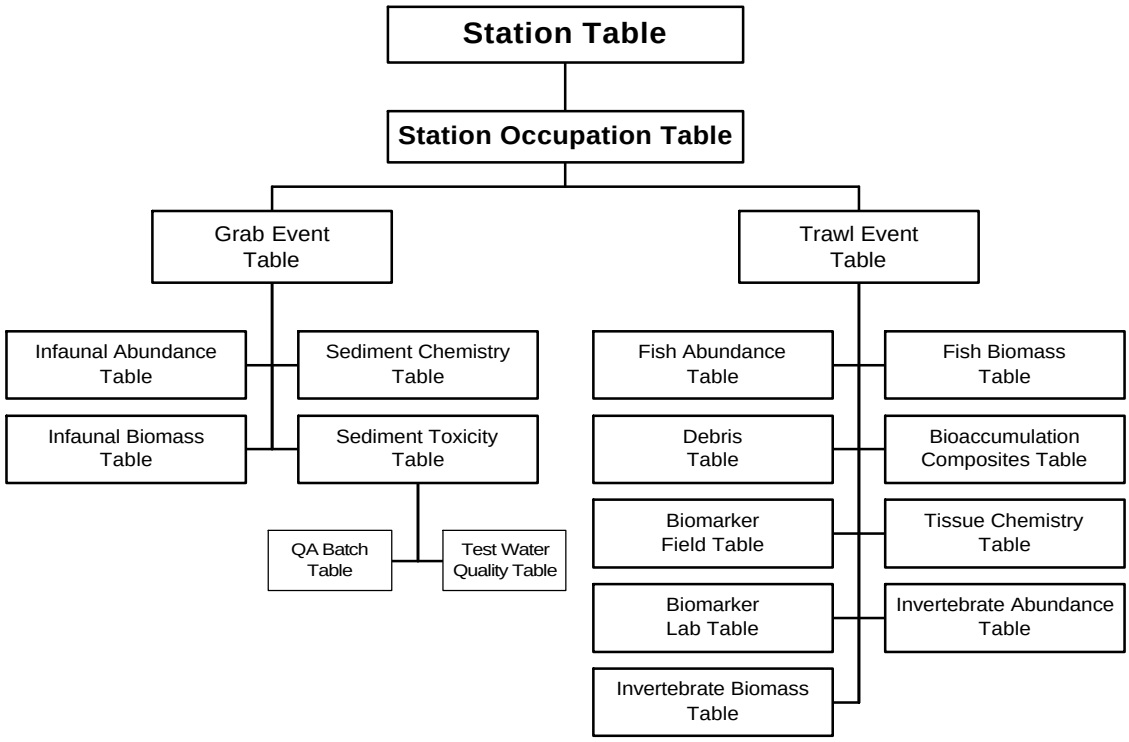


Figure III-2. Shoreline microbiology table structure.

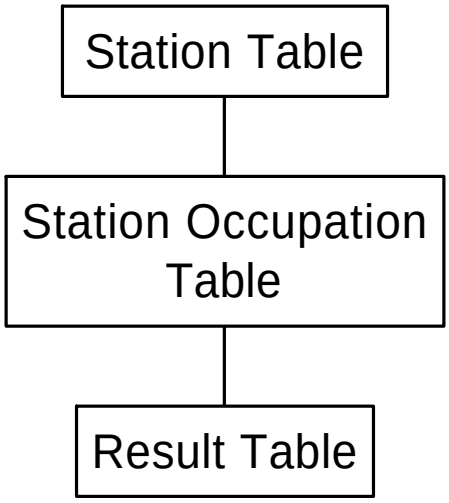
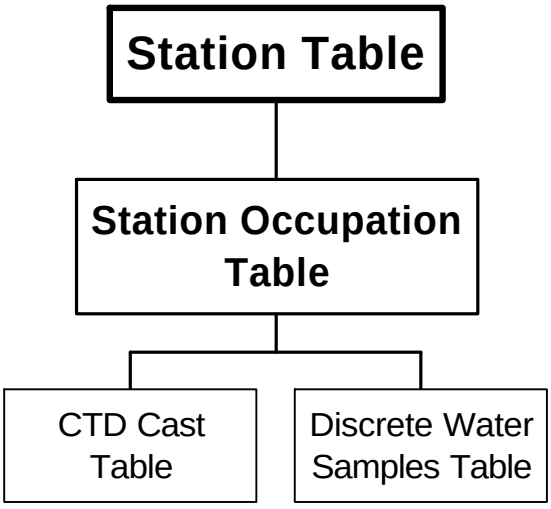


Figure III-3. Water Quality table structure.



IV. DATA FLOW AND QUALITY ASSURANCE

Each field crew or laboratory generating data will initially enter it into their own data management system and subject it to their internal QA/QC procedures. Recommended QA will include double entry of data and range checks. Data will next be reformatted following the SDTP and submitted to the Information Management Officer in comma-delimited, ASCII format. Submission protocols are detailed in Table IV-1.

Standardized data files will be submitted to the IMO by diskette, e-mail, or FTP. Each file will be named using the conventions described in Appendix A. Each submitting agency will retain a copy of each ASCII file it submits as a back-up at least until the central database is declared complete by the IMO.

Upon receipt, the IMO will update a data submission log to document the data received from each submitting agency. The IMO will then create a temporary data table and initiate a series of error checks to ensure the data: 1) are within specified ranges appropriate to each parameter measured, 2) contain all required fields, 3) have encoded valid values from constrained look-up lists where specified, and 4) are in correct format (text in text fields, values in numeric fields, etc.).

If the data emerge from the error check routine with no errors or suspected outliers, the IMO will append the temporary table to the appropriate table for that data type. If there are only a few, easily correctable errors, the IMO will make the changes, with the consent of the submitting agency, and send a list documenting the changes back to the submitting agency. If there are numerous errors or the corrections are difficult to implement, the IMO will send the data file back to the submitting agency with a list of necessary corrections. The submitting agency will make the corrections and resubmit the file within one week to the IMO, who will subject the file to error checking again. Each of these paths will be documented by the IMO as part of the submittal tracking process.

When all data of a particular type (e.g. sediment toxicity) have been submitted, error checked, and corrected, the IMO will certify that the file is consistent with the SDTP format requirements and complete. The IMO will then notify the chairperson of the Technical Committee responsible for that data type that the data are ready for technical review. The IMO will distribute the file to the chairperson as a comma-delimited ASCII file in the SDTP format. The Technical Committee Chair (TCC), with assistance of their Technical Committee, will review the data with respect to scientific content. This review will involve plotting of data and examining interrelationships among individual parameter responses and will address more extensive data quality issues than can be accomplished by range checking alone. Any further corrections resulting from this review process will be documented by the Committee and returned to the IMO, who will determine whether he can make the changes or if the data must be returned to the submitting agency for correction and resubmittal. The IMO will continue to include any data correction paths resulting from Technical Committee review in his documentation of submittal tracking

As data updates become necessary after the initial submittal and review process, project participants can initiate a request for changing data by notifying the IMO, who will contact the IMC to assess the degree to which the change may impact prior data analysis. If the change is minor, the IMO will have authority to make it; if major, the IMO will make a proposal for review by the Steering Committee. Any changes will be documented on a Request for Change form (Table IV-2). No

attempt will be made as part of Bight'98 data maintenance to update species names in order to keep the taxonomy current with future name changes.

All corrections to the data will be made by the IMO; access to the database for other users will be in read-only form. Prior to making any changes, the IMO will document the changes and receive (written or electronic) concurrence from the organization that originated the data. The IMO will only make changes in the centralized data base; originating organizations will be responsible for making corresponding changes in their own internal data storage systems. All changes to the data will be documented in a computerized file available to all data users.

Data Entry Templates

Not all organizations participating in Bight'98 have sophisticated computer capability. To assist these organizations and improve the efficiency of data input for others, the IMC has created a series of computerized data entry templates that automatically output the data in SDTP. These templates provide drop-down lists for station designation, fish and invertebrate species, sea surface, weather, sediment quality observations, and most other data types. They reduce errors through the elimination of hand entry and the reentry of hand entered data into the database. The templates also eliminate spelling errors, ensure that the data entered is appropriate for that field, and that the data are complete.

Data entry templates are available for the coastal ecology (fish trawling and benthic sampling) field sampling effort, in which the system links to a shipboard global positioning system to automatically download date, time, location and trawl direction/speed. They are also available for the Shoreline Microbiology component, the water quality field component and for toxicology laboratory data. Updated versions of these templates will be maintained for download at www.sccwrp.org.

Data storage

Project data will be stored in Microsoft Access at the Southern California Coastal Water Research Project (SCCWRP). Original data submissions that pass initial QC will be stored in the Bight'98 database and will also be archived onto another media type such as a CD-ROM which has a higher degree of temporal stability than other storage media such as tape and floppy disks. A copy will be stored in a fireproof safe at SCCWRP and an additional copy will be stored off-site.

Any other information collected, including summary datasets generated during scientific analysis, will not be stored in the database. Satellite imagery, archival data files, GIS maps, CADD drawings, and voucher sheets will be stored as hard copies and computer files and perhaps cross-referenced from the database. Similarly, any textual information, including reports, project documents, etc. will be stored in digital form and made available on-line to project members and eventually other users. It is envisioned that this information will be made available to the public on an interactive Web site that can be queried.

Table IV-1. ASCII Submission Protocols

The first line in the ASCII file will be the entire string of Field Names in the order specified by the for the particular data type (refer to Appendix A for these lists). Data in any text or character field will be in quotes. Because all the Field Names are text, each will appear bounded by quotation marks and separated by commas.

Example: For a TrawlFishBiomass file, the first line would be:
"StationID","Species","Qualifier","NetWeight","Units","Comments"

The next line following the Field Names will be the first data record. If a field is null or blank, it will be represented by successive commas with no text, values, or spaces between them (unless the null field is last in the order). Required fields by definition are not null and will never appear in this manner; instead they will always have the appropriate type text, number, or date/time information filled in. Only character fields will have bounding quotes; numeric and date/time information will not appear with quotes.

Example: For a TrawlFishBiomass file, the second line may be:
"StationID","Microstomus pacificus",,1.2,"kg","None"

The double comma after "Microstomus pacificus" indicates absence of a qualifier for this record.

Table IV-2. Data Change Request Form

BIGHT'98 DATABASE CHANGE DOCUMENTATION FORM

PARENT DATABASE TRAWL CTD BENTHIC MICRO
circle one

TABLE IN DATABASE _____
Debris, Inverts, etc.

GLOBAL Y/N Do we need to change the entire database?
circle one

DATA _____/_____/_____

REQUESTOR: _____

CHANGER: _____

STATIONID: _____

REQUESTING AGENCY: _____

STATION: _____

ORIGINAL DATA: _____

CHANGED DATA: _____

COMMENTS: _____

_____

_____

_____

V. DATA ACCESS

All measurement and supporting data gathered during Bight'98 will be made available to all participating agencies and the general public, though the schedule of availability will vary by user class. The different schedules recognize the differing levels of quality assurance and data documentation that will have been completed at various stages in the project. Four classes of user have been identified:

- Information Management Officer: All organizations will submit their data in accordance with the SDTP to the IMO within one month of completing their assigned sample collection or laboratory processing tasks. The schedule for this initial submission of data to the IMO is summarized in Table V-1. Upon receipt of an organization's data, the IMO will subject the data to the review procedures outlined in Section III. Once the IMO has certified the data meet the SDTP criteria, the data will be available for release to the Technical Committees. It is anticipated that the review and certification process by the IMO will take approximately one month.

- Technical Committee Members: The Technical Committee Chairs will be provided data of the type for which they are responsible immediately following certification by the IMO that the data is complete. The TCCs will work with their technical committee members to review the scientific content of the data.

- Steering Committee Members: All project participants will have access to data once the TCC has conducted initial scientific review for data quality. TCCs will be asked to complete this review within three months.

- General Public: Data will be released to the general public once the TCC has conducted initial data analysis and the Steering Committee has accepted an oral report from the TCC that summarizes the major project results for that data type. TCCs will be asked to make this presentation, and provide summary results tables from the presentation, within six months of releasing data to the Steering Committee.

The primary method of data release will occur by way of the SDTP, but the SDTP contain data at the level of individual replicate, which may not be the most appropriate way to transmit data to the general public. In addition, there may be many calculated variables not contained in the SDTP that are of value to the public. The Technical Committees will have the opportunity to define alternate data sets that may be made available to the public once the committee's analysis and reports are finished. Release of alternative data sets will be accompanied by documentation detailing the manipulations that have been performed.

While the SDTP will be the primary mechanism for data distribution, the data will be distributed as a group of files relevant to a particular project data type. For instance, one group of files will providing trawl data will include comma delimited ASCII files for the trawl event, fish abundance, fish biomass, trawl inverts, trawl debris and station tables. Because of the relational structure, these files will be of limited value alone. Users will have the opportunity to download groups of files for: trawls, benthic infauna, toxicity, chemistry, water quality or microbiology.

Metadata

Each release of data will include comprehensive documentation about Bight'98 and the accompanying data sets. Referred to as metadata, this documentation will include lookup tables used to populate specific fields in specific tables, access control, and database table structures (including table relationships). It will also include quality assurance classifications of the data and documentation of the methodologies by which the data were collected.

A second type of metadata will document changes that are made to the data over time. As the data are used, we anticipate that errors will be found. As changes to the data are made, they will be documented in a file organized by date and data table. Including this file with each data download will allow users to reconcile potential differences in analysis output that result from using different versions of the data.

Metadata will be automatically included with each data retrieval. The related data files, including an ASCII narrative text file of the metadata, will be distributed through download of single compressed (zipped) file. In this manner, the data user must receive the accompanying metadata file, maximizing the likelihood that the data will be used properly.

Table V-1. Expected elapsed time between the end of sampling and the transfer of data to the Information Management Officer (IMO), including the time required for sample processing, internal QC checks, and data entry using the SDTP.

Data Type	Transfer to IMO
Benthic infauna	12 mo.
Grain size	6 mo.
Total organic carbon	6 mo.
Mineralogy	9 mo.
Sediment organics	12 mo.
Sediment metals	6 mo.
Sediment acid volatile sulfides	6 mo.
Interstitial water metals	6 mo.
Amphipod survival	3 mo.
Microtox	6 mo.
QwikLite	3 mo.
RGS 450	12 mo.
Fish biomarkers	6 mo.
Fish and megabenthic invertebrate assemblages	3 mo.
Fish pathology	3 mo.
Fish tissue chemistry	12 mo.
Debris	3 mo.

APPENDIX A. TABLE STRUCTURES

Many agencies are participating in this project and each one has a unique way of storing and distributing data. In order to facilitate data exchange all participating agencies have agreed to submit and exchange data in Standardized Data Transfer Protocol formats (STDP). These formats include tables with fields arranged in specific order as well as specific values allowable for each field where only a constrained list of values is allowed. These values come from a source list in Appendix B of this document.

There are three distinct portions of the project: Coastal Ecology, Microbiology, and Water Quality. The Coastal Ecology portion includes data collected using otter trawls and grabs and the resulting chemistry data. The Microbiology component includes shoreline sampling of bacteriological samples and shoreline trash surveys. The Water Quality component includes samples taken with remote sensing gear and discrete water samples.

All tables will be submitted to the Information Management Officer (IMO) in comma delimited ASCII format and all text fields will be further delimited by quotation marks to indicate that the filed contains text type data. This format lends itself to use by virtually all existing commercial database management and spreadsheet software. The following table definitions specify the format for each of the data types collected in the Bight'98 project.

A. Coastal Ecology Tables

Station Table

The station table is created by SCCWRP and is central to data relations in the Bight'98 database. Each record represents a description of a geographical location including a label and latitude and longitude data. Each record also contains information necessary to determine the analysis sub-population to which the station belongs and acompanying inclusion probabilities and area weight for the various sub-populations.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label
Strata	Text	Y	The subpopulation to which the sample belongs
Lat	Number	Y	Degrees of Latitude (NAD 83)
LatMin	Number	Y	Decimal Degrees of Latitude (NAD 83)
Lon	Number	Y	Degrees of Longitude (NAD 83)
LonMin	Number	Y	Decimal Degrees of Longitude (NAD 83)
Level1IP	Number	Y	Inclusion Probability
Level1AW	Number	Y	Area Weight
Level2IP	Number	Y	Inclusion Probability
Level2AW	Number	Y	Area Weight
Level3IP	Number	Y	Inclusion Probability
Level3AW	Number	Y	Area Weight
Level4IP	Number	Y	Inclusion Probability
Level4AW	Number	Y	Area Weight

Level5IP	Number	Y	Inclusion Probability
Level5AW	Number	Y	Area Weight
Level6IP	Number	Y	Inclusion Probability
Level6AW	Number	Y	Area Weight

Station Occupation

There is one file that is used for both benthic and trawl sampling regimes to describe occupation of a station for sampling. Each agency will submit a copy of the station occupation file to SCCWRP.

The station occupation table holds data that is descriptive of station occupation during sampling events. Each record contains a characterization of the station at the time of sampling in terms of the weather, sea state, sample type, vessel name, agency, and quality of the GPS signal at the time of sampling. A record can also contain information about station sampling failures where the station is abandoned due to one of the acceptable reasons for station abandonment. The NavType field allows the collecting agency to record the loss of the differential GPS signal. Additional comments may be included as well with up to 80 characters. This file will be provided to the IMO with the name STATION.MST by each agency.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
Date	Date/Time	Y	The date the sample was collected dd/mmm/yyyy
Time	Date/Time	Y	The time the sample was collected expressed in 24 hour time
SampleType	Text	Y	The type of sample (Grab, Trawl)
AgencyCode	Text	Y	A two letter agency code from list 1
Vessel	Text	Y	Vessel Name
NavType	Text	Y	DGPS for diffential / GPS for non-differential
WeatherCode	Text	Y	Predetermined weather codes from list 8
WindSpeed	Number	Y	Meters/second
WindDirection	Text	Y	N,NE,E,SE,S,SW,W,NW
SwellHeight	Number	Y	Meters
SwellPeriod	Number	Y	Seconds
SwellDirection	Text	Y	N,NE,E,SE,S,SW,W,NW
SeaState	Text	Y	Description from calm, choppy, or rough
StationFailCode	Text		Acceptable failure codes from list 9
Comments	Text		Additional remarks

Grab Event

This table carries records of each grab taken at a station. Each record contains data used to describe the characteristics of the sediment collected in terms of composition, odor, penetration and the presence or absence of shell hash as well as the time and latitude and longitude of the sampling event. Each record can also represent a failed sampling attempt. The yes/no fields indicate whether or not the individual grab provided an infaunal, chemical, toxicity or TOC sample. Additional comments may be recorded in the comments field. This file will be provided to the IMO with the name GRAB.MST.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
Depth	Number	Y	The sample depth expressed in meters
Date	Date/Time	Y	The date the sample was collected dd/mmm/yyyy
Time	Date/Time	Y	The time the sample was collected expressed in 24
hour	time		
LatDegrees	Number	Y	Degrees (0 decimal places)
LatMin	Number	Y	Decimal Minutes (3 places)
LonDegrees	Number	Y	Degrees (0 decimal places)
LonMin	Number	Y	Decimal Minutes (3 places)
Penetration	Number	Y	The penetration of the grab expressed in cm
Color	Text	Y	The color of the sediment from list 26
Composition	Text	Y	The composition of the sediment from list 6
Odor	Text	Y	The odor of the sediment from list 7
ShellHash	Yes/No	Y	Is shell hash present in the sediment?
BenthicInfauna	Yes/No	Y	Was this grab used for benthic infauna?
SedimentChemistry	Yes/No	Y	Was this grab used for sediment chemistry?
Toxicity	Yes/No	Y	Was this grab used for sediment toxicity?
Interstitial	Yes/No	Y	Was this grab used for Interstital AVS-SEM?
GrabFailCode	Text		If the grab failed record a code from List 9,
FailCodes			
Comments	Text		Additional comments

Infaunal Abundance

The infaunal abundance table carries information about benthic infauna species abundance collected from the grab samples. Each record represents the abundance of a particular infaunal species at an individual station and the agency that collected the species. The "Exclude" field is used to flag species that should be excluded from the certain analyses based upon the guidelines set forth in the Benthic QA document. Additional remarks can be carried in the comments field. This file will be transmitted by each agency to the IMO with the file name INFAUNA.ABN.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
Species	Text	Y	The species of infauna collected from luList_10_SpeciesList
Abundance	Number	Y	Number of animals
Exclude	Yes/No		Flag to exclude from analysis
LabCode	Text	Y	A two letter agency code from list 1
Comments	Text		Additional comments

Infaunal Biomass

This table contains infaunal phyla biomass data for each phyla group collected at each station. Each record represents the total biomass of each phyla collected at a station. A record may also represent a biomass outlier species where an individual or several individuals were collected but have higher than acceptable biomass due to a shell or an individual that is not strictly considered infauna such as a sea star or sea cucumber. The units field will contain a "g" for grams and is carried for historical documentation of the mass units in this table. The Qualifier field carries information pertaining to special circumstances where the biomass is less than a certain value or greater than a certain value. If the outlier flag is "yes", then the remaining fields must be filled out, while a "no" value will cause all of the outlier fields to be left blank. The species identification of the outlier, the number of individuals of that species, and the total biomass of those individuals will be recorded for outlier species. Additional remarks may be carried in the comments field. The file will be transmitted to the IMO with the file name INFAUNA.BMS.

Name	Type	Required	Description
Station Id	Text	Y	A geographic location label from the station table
GroupCode	Text	Y	Phyla group code from luList_11_BenthicSpeciesGroups
Qualifier	Text		Any applicable qualifier from luList_13_QualifierCodes
Biomass	Number	Y	The collective biomass of the group in GroupCode
Units	Text	Y	Default "g" for grams
OutlierFlag	Text		Is this an indiviual biomass outlier?
LabCode	Text	Y	The two digit labcode from list 1
OutlierSpecies	Text		The spcecies name of the outlier from list10
NumIndividOut	Number		Number of individuals in outlier species
OutlierBioMass	Number		Biomass of individuals
Comments	Text		Additional comments

Sediment Toxicity Data

The Sediment Toxicity table carries data relevant to sediment toxicity tests and their replicates. Each record represents the results of an individual replicate for an individual species processed in a batch of replicates The QA Batch field refers to the batch processing of samples and will be the same identifier for all samples processed in the same batch. Species/TestType refers to the species used for the test (*e.g.*. *Eohaustorius*) or the type of test (*e.g.*. qwiklite, microtox). Dilution is the factor by which the test material was diluted. The Concentration field is used only for reference toxicant test sample records. EndPoint refers to the type of end result of a particular test. For example the Microtox Luminescence value for a particular sample. Units are entered for the appropriate test. The Value is the numerical value for the end point of the test. The QAcode describes the confidence in the test result. Additional remarks may be entered in the Comment field. The file will be submitted to the IMO with the file name SEDTOX.DAT in comma delimited ASCII format.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
SampleType	Text	Y	Sample Type from list 4
QABatch	Text	Y	Batch number for batch processed samples
Labcode	Text	Y	The two digit labcode from list 1

Species/TestType	Text	Y	From list 20
Dilution	Number		The dilution factor expressed as a proportion
Concentration	Number		Concentration in mg/L
Endpoint	Text	Y	The type of end point for the test from list 23
Units	Text	Y	The units for the endpoint
LabRep	Number		Count
Value	Number	Y	The numerical result of the test
QAcode	Text	Y	The quality assurance code from list 19 QACodes
Comment	Text		Additional comments

Sediment Toxicity Test

This table is used to record information specific to each test batch processed in the laboratory and is used as supporting documentation for the Toxicity Test data. Each record represents specific information common to a group of samples processed at the same time and is pertinent to all replicates processed. This is QA/QC data needed to document the test results. The QABatch field is used to create the relationship with the Sediment Toxicity Data table. LabCode is the two digit code for the processing lab. Species is the species name of the test animal. Protocol is the protocol from list 21. Test date is the date the test started. Matrix refers to the material being tested (*e.g.* sediment or pore water). Test duration is the length of the test expressed in days. Temperature is the temperature at which the test was conducted and is expressed in degrees Centigrade. TestAcceptability describes the confidence in the test results from a constrained list of descriptors (list 25). The file will be submitted to the IMO with the name SEDTOX.TST in comma delimited ASCII format.

Name	**Type**	**Required**	**Description**
QABatch	Text	Y	The batch code for the sample processing batch
Labcode	Text	Y	A two digit code form list 1
Species	Text	Y	The species from list 20
Protocol	Text	Y	The test protocol from list 21
Testdate	Date/Time	Y	The date of the text expressed as dd/mmm/yyyy
Matrix	Text	Y	The test matrix from list 22
Testduration	Number	Y	The duration of the test expressed in days
Temperature	Number	Y	The temperature at which the test was conducted expressed in degrees C
TestAcceptability	Text	Y	Evaluation of test results from list 25

Sediment Toxicity Water Quality

This table is used to document water quality during the course of a toxicity test. Each record represents a measurement of an individual water quality parameter at a specific time interval during the course of the test batch. The Parameter field describes the water quality parameter for the record (*e.g.* pH, NH_3, etc.). The Matrix field describes the test matrix used in the test. The Dilution field is the number describing the degree of dilution in the water sample. The Concentration field is used only for reference toxicant test sample records. The TimePoint field documents the time point from the beginning of the test at which the parameter was measured in terms of days. The value field is the numerical result of the parameter being measured. The file will be submitted to the IMO with

the file name SEDTOX.WQ in comma delimited ASCII format.

Name	Type	Required	Description
LabCode	Text	Y	A two digit code from list 1
QABatch	Number	Y	The batch code for the sample processing batch
StationID	Text	Y	A geographic location label from the station table
Parameter	Text	Y	The water quality parameter from list 24
Matrix	Text	Y	The test matrix from list 22
Dilution	Number		The dilution factor expressed as a proportion
Concentration	Number		Concentration in mg/L
Timepoint	Number		The number of days from the start of the test
Qualifier	Text		From list 13
Value	Number	Y	The numerical result for the parameter

Biomarker and Comet Field Data

The Biomarker and Comet Field Data table contains data documenting samples collected in the field for analysis. Each record represents the results of an individual tissue dissected from and individual fish at a particular station.. The Species field documents the species of fish from which the sample was dissected. Replicate samples are numbered in the "Replicate" field. The Size field contains the length of the fish in millimeters. The TissueType field describes the tissue type from which the sample was taken (i.e. blood, etc. from list 17). SampleID is a 12 digit code used to create a unique record in the database. The SampleID is represented in the form SSXXXXTTSP00 where SS is the two digit agency code, XXXX is the station number, TT is the tissue type and 00 is the number. The gender of the fish will be recorded in the "Sex" field as Male, Female, or Indeterminate. The "maturity" field is an estimate of the fish's reproductive maturity and is described by the values in list 27. The DissectionTime field documents the time of dissection. The "condition" field describes the fish's condition at time of dissection. Additional remarks may be carried in the "Comment" field. The file will be submitted to the IMO with the file name BIOMARKER.FLD in comma delimited ASCII format.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
Species	Text	Y	The species from list 12
Replicate	Number	Y	Count
Size	Number	Y	The size of the fish expressed in mm standard length
TissueType	Text	Y	The type of tissue dissected from the fish from List 17 Fish BioaccumulationTest Material
SampleID	Text	Y	12 digit code
Sex	Text	Y	M (male), F (female), or I (indeterminate)
Maturity	Text	Y	Estimated from list 27
DissectionTime	Date/Time	Y	The time the dissection was performed expressed in 24 hour time hh:mm
Condition	Text	Y	Condition of the fish at the time of dissection (Dead/Alive)
Comment	Text		Additional comments

Biomarker and Comet Lab Data

The Biomarker and Comet Lab Data table contains data documenting samples analyzed in the laboratory. Each record represents the results of a measurement on a specific parameter in a tissue type. The SampleID is represented in the form SSXXXXTTSP00 where SS is the two digit agency

code, XXXX is the station number, TT is the tissue type and 00 is the number. The "LabCode" field contains the two digit laboratory code from list 1 for the laboratory processing the samples. The "AnalysisDate" field contains the date the analysis was preformed where dd is the day, mmm is the abbreviation for the month and yyyy is the year expressed in 4 digits. The "parameter" field contains a valid parameter code from list 29. The "Value" field is the numerical result for the measured parameter. Each parameter has a particular unit associated with it and is included in the "Units" field using values from list 30. The "Dilution" field documents the degree of dilution for the sample. The "CellType" filed contains the cell type of the sample. The "CellNumber" field documents the number of cells in the sample. The "QA field" describes the level of confidence for the measured parameter using a code from list 19. Additional remarks may be included in the Comments field. The file will be submitted to the IMO with the file name BIOMARKER.LAB in comma delimited ASCII format.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
Species	Text	Y	Species from list 12
SampleID	Text	Y	12 digit code
LabCode	Text	Y	Two digit agency code from list1
AnalysisMethod	Text	Y	Method from list 28 BiomarkerAnalysisMethodCodes
AnalysisDate	Date/Time	Y	The date of the analysis expressed as dd/mmm/yyyy
Parameter	Text	Y	The measured parameter from list 29
Value	Number	Y	A numerical value for the parameter result
Units	Text	Y	Units from list 30
Dilution	Number		Dilution factor
CellType	Text		The type of cell
CellNumber	Number		The number of cells
QA	Text		Qualifty assurance code form list 19
Comments	Text		Additional comments

Trawl Event

The trawl data table carries station identification, date, and trawl position data. Each record represents a record of a particular trawl track. A record may represent either at successful or failed trawl. There are four positions recorded during a trawl, net over, net on the bottom, end of trawl, and net on deck. The time is recorded for each of these positions. The latitude and longitude are recorded for the net over position in terms of degrees and decimal minutes. All of the other positions latitude and longitude are reported only in decimal minutes. This reporting procedure is based on the assumption that trawls are short distances and it is unlikely that any degree lines of latitude or longitude will be crossed in the course of a trawl. Depth is recorded at the net on the bottom position and at the end of trawl position. The amount of wire paid out for the trawl is recorded and expressed in meters. The fields "Assemblage", "Bioaccumulation", and "Biomarker" are all yes/no fields that indicate if an individual trawl produced samples of any of those three types. The "TrawlFailCode" field allows for documentation of failed trawls. A constrained list of trawl failure codes in included in list nine of the appendix. Additional remarks may be recorded in the "Comments" field. The file will be transmitted to the IMO with the file name TRAWL.MST.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
Date	Date/Time	Y	The date sample taken expressed as dd/mmm/yyyy
TrawlNumber	Number	Y	Number of trawl taken at station

OverTime	Date/Time	Y	the time the net was deployed 24 hour time hh:mm
OverLatDegree	Number	Y	degrees (0 decimal places)
OverLatMin	Number	Y	decimal minutes (3 decimal places)
OverLonDegree	Number	Y	degrees (0 decimal places)
OverLonMin	Number	Y	decimal minutes (3 decimal places)
BeginTime	Date/Time	Y	hh:mm
BeginLatMin	Number	Y	Decimal minutes (3 decimal places)
BeginLonMin	Number	Y	Decimal minutes (3 decimal places)
StartDepth	Number	Y	The depth at the start of trawl expressed in meters
WireOut	Number	Y	The amount of wire deployed for the trawl expressed in meters
EndTime	Date/Time	Y	The time at the end of the trawl expressed in 24 hour time hh:mm
EndLatMin	Number	Y	Decimal minutes (3 decimal places)
EndLonMin	Number	Y	Decimal minutes (3 decimal places)
EndDepth	Number	Y	The depth at the end of the trawl expressed in meters
DeckTime	Date/Time	Y	The time the net is back on deck expressed in 24 hour time hh:mm
DeckLatMin	Number	Y	Decimal minutes (3 decimal places)
DeckLonMin	Number	Y	Decimal minutes (3 decimal places)
Assemblage	Yes/No	Y	Was this trawl used for assemblage?
Bioaccumulation	Yes/No	Y	Was this trawl used for Bioaccumulation?
Biomarker	Yes/No	Y	Was this trawl used for biomarker?
TrawlFailCode	Text		Failure code from list 9
Comments	Text		Additional comments

Trawl Fish Abundance

The trawl fish abundance table carries information about fish abundance and fish anomalies collected in the trawls. Each record represents the number of individual fish of a particular species in a specific size class at a particular station and a record of any anomalies observed on fish within that size class. Each fish is measured individually and examined for anomalies. The fish abundance table includes station identification, species, size information in terms of size class (described in the field manual), a qualifier code numerical abundance within each size class and encountered anomalies (from list 31 of the appendix). Although this table is simple in structure, the actual application is sometimes confusing and so an example is included to clarify the use of this table. This file will be transmitted by each agency to the IMO with the file name FISH.ABN.

In this example the collected species will be *Paralabrax nebulifer*. There will be five fish in size class 10, one of which has a lesion. There will be 2 fish in size class 11, both of which have no anomalies.

StationID	Species	SizeClass	Qualifier	Abundance	Anomaly	Comments
2500	Paralabrax nebulifer	10		4		
2500	Paralabrax nebulifer	10		1	L	
2500	Paralabrax nebulifer	11		2		

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
Species	Text	Y	The species being measured from list 10
SizeClass	Number	Y	The size class into which the fish falls expressed in cm
Qualifier	Text		Any necessary qualifier from list 13
Abundance	Number	Y	The number of fish in the size class
Anomaly	Text		Any present anomalies from list 31
Comments	Text		Additional comments

Trawl Fish Biomass

The trawl fish biomass table contains biomass of fish collected at a particular station. Each record represents the collective biomass of all fish of a single species collected at a particular station. The species names are expressed using the scientific name The "units" field default value is kg and is carried to document the units used in this survey for historical purposes. Additional remarks may be carried in the comments field. This file will be transmitted by each agency to the IMO with the file name FISH.BMS.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
Species	Text	Y	The species measured from list 10
Qualifier	Text		Any necessary qualifier from list 13
NetWeight	Number	Y	The weight of the collected members of the species in kg
Units	Text	Y	kg
Comments	Text		Additional comments

Trawl Invertebrates Abundance

The trawl invertebrate Abundance table is used to document information about megabenthic invertebrates collected in trawls. Each record represents the abundance, and occurrence of anomalies in an individual species. The abundance qualifier field may carry and "A" indicating that the abundance was estimated by aliquot. In the case of certain species like urchins, where very large numbers of individuals may be encountered, a number (100 or 200) may be weighed and the total haul number is estimated from the total weight. Additional remarks may be carried in the comments field. This file will be transmitted by each agency to the IMO with the file name INVERT.ABN.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
Species	Text	Y	The species being counted from list 10
Qualifier	Text		Any necessary qualifier from list 13
Abundance	Number	Y	The number of indiviuals collected
Anomaly	Text		Any present anomalies from list 32
Comments	Text		Additional comments

Trawl Invertebrates Biomass

The trawl invertebrate Biomass table is used to document information about megabenthic invertebrates collected in trawls. Each record represents the biomass of an individual species. Additional

remarks may be carried in the comments field. This file will be transmitted by each agency to the IMO with the file name INVERT.BMS.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
Species	Text	Y	The species measured from list 10
Qualifier	Text		Any necessary qualifier from list 13
NetWeight	Number	Y	The weight of the collected members of the species in kg
Units	Text	Y	kg
Comments	Text		Additional comments

Trawl Debris Data

The trawl debris table carries data concerning debris collected in the trawl. Each record represents the presence of a particular debris type and estimates of its weight and abundance. The debris descriptions are included in list 14 of the appendix. Codes for abundance and weight estimates are carried in lists 15 and 16 of the appendix. Additional remarks may be carried in the comments field. This file will be transmitted by each agency to the IMO with the file name DEBRIS.DAT.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
DebrisType	Text	Y	Debris type from List 14 DebrisType
AbunEstimate	Text	Y	Estimated numerical abundance from list 15
WtEstimate	Text	Y	Estimated weight of debris from list 16
Comments	Text		Additional comments

Whole Fish Composites

This table contains fish size and weight data. Each record represents an individual fish that was included in a composite sample on a certain date. Species names are expressed as scientific names. The units of weight are expressed in grams and are carried to document the units used for historical purposes. Composite ID is the sample identifier into which a number of individuals are placed for chemical analysis. This file will be transmitted by each agency to the IMO with the file name COMPOSIT.DAT.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
Species	Text	Y	Collected species name from list 12
SizeClass	Number	Y	Size class into which the individual falls expressed in cm
Weight	Number	Y	Weight of the individual expressed in grams
Units	Text	Y	g (grams)
CompositeID	Text	Y	A four digit code assigned by SCCWRP
HomoginizationDate	Date/Time	Y	The date the fish was homogenized expressed as dd/mmm/yyyy

Chemistry

The chemistry table will hold all of the chemical data from sediment chemistry, fish tissue analysis, Mineralogy, Acid Volatile Sulfides, and sediment grain size analysis. Each record represents a result from a specific analysis for a particular parameter at a single station. Some of the fields may not be relevant to sediment grain size and need not be completed (MDL, RL, Preparation code, and dilution). The "units" field is important because different compounds and analysis types produce values with various units associated with the method or result. Dilution is intended to document the whole fish composite chemistry data where water is added in the homogenization process. To distinguish the dates of sample processing, preparation date and analysis date are included. The field QA Type is used to distinguish QA and blank data from actual sample results. This file will be transmitted by each agency to the IMO with the file name CHEM.DAT.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
TestMaterial	Text	Y	Sediment/Tissue
ParameterCode	Text	Y	The measured parameter from list 18
QA Batch	Text	Y	The code for all of the samples processed in the same batch
QAType	Text	Y	The type of result from list 19
Lab Rep	Text	Y	Count
Qualifier	Text	Y	Any necessary qualifier from list 13
Result	Number	Y	The numerical result expressed in dry wt.
Units	Text	Y	Units for result
True Value	Number		QA samples only
MDL	Number	Y	Method detection limit
RL	Number	Y	Reporting limit
Dilution	Number		Dilution factor
PreparationCode	Text	Y	Preparation code from List 34
PreparationDate	Date/Time	Y	The date the sample was extracted expressed as dd/mmm/yyyy
AnalysisMethod	Text	Y	The analysis method from list 33
Analysis Date	Date/Time	Y	The date the sample was processed by the instrument expressed as dd/mmm/yyyy
QACode	Text		Any necessary quailfier from list 13
LabCode	Text	Y	The two digit agency code from List 1
Comments	Text		Additional comments

B. Microbiology Tables

The following three tables are used in the Microbiology component of the project.

Microbiology Stations

The Microbiology Station table contains the location and description of the sampling stations for this component of the project. Each record represents the station identifier, location, and description of an individual station. Additional stations may be assigned when results exceed a specified threshold as called for in the Microbiology Work Plan. The file will be submitted to the IMO in comma delimited ASCII format with the filename STATIONS.DAT

Name	Type	Required	Description
StationID	Text	Y	A geographic location label
StationDesc	Text		Physical description if the location
Lat	Number	Y	2 digit degree (NAD 83)
LatMin	Number	Y	Decimal minutes (NAD 83) 3 decimal places
Lon	Number	Y	2 digit degree (NAD 83)
LonMin	Number	Y	Decimal minutes (NAD 83) 3 decimal places
Comments	Text		Additional comments

Microbiology Station Occupation

The Microbiology Samples table contains data collected when is sample is taken. Each record represents the conditions at the station where the sample was collected. It may also represent a failure to collect a sample. If the "EvidenceOfSewage" field contains a "Yes" value it must be accompanied by a comment. The "WaterOutletFl" field records whether or not water was flowing from a water outlet at the station. The file will be submitted to the IMO in comma delimited ASCII format with the file name SAMPLES.DAT

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
SampleDate	Date	Y	The date the sample was collected expressed as dd/mmm/yy
SampleTime	Time	Y	The time the sample was collected expressed as 24 hour time hh:mm
AgencyCode	Text	Y	The two digit agency code from list 1
WeatherCode	Text	Y	The weather code from list 8
Surf	Text	Y	The surf conditions list 38
SeaState	Text	Y	The sea state conditions list 39
EvidenceOfSewage	Yes/No	Y	Odor or floatables
WaterOutletFl	Yes/No	Y	If the station is a water outlet is water flowing?
PeopleInWater	Number	Y	Count of people in the water
StationFailCode	Text		Was the station abandoned for any reason?
Comments	Text	Y	if yes to EvidenceOfSewage

Microbiology Results

The Microbiology results table contains bacteriological results data. Each record represents the results of an individual sample including collected samples, QA samples and QA check samples. Lab code is carried in both the results table and the samples table because one agency may collect samples that are analyzed by another laboratory. The file will be submitted to the IMO in comma delimited ASCII with the file name RESULTS.DAT.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
SampleDate	Date	Y	the date the sample was collected dd/mmm/yyyy
ParameterCode	Text	Y	Parameter from list 36
Qualifier	Text	Y	any qualifier necessary from List 13
Result	Number	Y	the numerical result of the measurement
Units	Text	Y	Units for parameter
LabCode	Text	Y	a two digit code from List 1
AnalysisMethod	Text	Y	analysis method from list 35
StartTime	Time	Y	the time the analysis started expressed in 24 hour time hh:mm
SampleType	Text	Y	the type of sample from list 37
Comments	Text		Additional comments

C. Water Quality Tables

The following four tables are used in the Water Quality component of the project.

Water Quality Stations

This table contains the nominal station location for the sampling stations in the Water Quality portion of the project. Each record represents the station position, the collecting agency, and expected depth of the station. The table will be submitted to the IMO in ASCII comma delimited format with the file name STATIONS.DAT.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label
AgencyCode	Text	Y	Two digit code from list 1
LatDegrees	Number	Y	Two digit degree (NAD 83)
LatMin	Number	Y	Decimal minutes (NAD 83) three places
LonDegrees	Number	Y	Three digit degree (NAD 83)
LonMin	Number	Y	Decimal minutes (NAD 83) three places
ExpectedDepth	Number	Y	meters

Water Quality Station Occupation

The master sample table holds data that is descriptive of station occupation during sampling events. Each record contains a characterization of the station at the time of sampling in terms of the weather, sea state, sample type, vessel name, agency, and quality of the GPS signal at the time of sampling. The NavType field allows the collecting agency to record the loss of the differential GPS signal. Additional comments may be included as well with up to 80 characters. This file will be provided to the IMO with the name STATION.MST by each agency.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
Date	Date	Y	dd/mmm/yy
LatDegrees	Number	Y	Two digit degree (NAD 83)
LatMin	Text	Y	Decimal minutes (NAD 83) three places
LonDegrees	Text	Y	Three digit degree (NAD 83)
LonMin	Text	Y	Decimal minutes (NAD 83) three places
StartTime	Date/Time	Y	hh:mm
AgencyCode	Text	Y	Two digit code from list 1
Vessel	Text	Y	Name of the vessel
NavType	Text	Y	DGPS, GPS
WeatherCode	Text	Y	Predetermined weather codes from list 8
WindSpeed	Number	Y	Meters/second
WindDirection	Text	Y	Degrees
SeaSwellHeight	Number	Y	Meters
SwellPeriod	Number	Y	Seconds
SeaSwellDirection	Text	Y	Degrees
SeaState	Text	Y	Calm, rough, choppy
StationFailureCode	Text		From list 9
ChlorophyllVolume	Text		ml
Comments	Text		Additional comments

Water Quality Cast Data

This table contains the raw qualified cast data as collected by an instrument. Each record represents a discrete set of measurements taken by the instrument during its descent throughout the water column. The "CastPortion" field flags the record as Equilibration, Downcast, or Upcast referring to its position in the cast. The "QAFlag" will be added by the Water Quality Technical Committee after a review of the data.

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
Date	Date	Y	dd/mmm/yy
Seconds	Number	Y	From the instrument
DescentRate	Number	Y	Meters per second

Depth	Number	Y	meters
Temperature	Number	Y	Degrees centigrade
Conductivity	Number	Y	Siemens/m
Salinity	Number	Y	PSS
OxygenMgL	Number	Y	Mg/L
Oxygen%saturation	Number	Y	%Saturation
Transmissivity	Number	Y	%light
pH	Number	Y	Hydrogen ion concentration
Density	Number	Y	Theta
Fluorescence	Number		From the instrument
CastPortion	Text	Y	E (equilibration) ,D (downcast) ,U (upcast)
QAFlag	Text	Y	000000000

Water Quality Discrete Water Samples Table

This table contains chemical and particulate data collected at a subset of stations. Each record represents the result of an individual analysis for an individual parameter. This table will be submitted to the IMO in comma delimited ASCII format with the file name DISWTR.DAT.

Columns

Name	Type	Required	Description
StationID	Text	Y	A geographic location label from the station table
TestMaterial	Text	Y	Sediment/Tissue
ParameterCode	Text	Y	From list 18
QA Batch	Text	Y	batch number
QAType	Text	Y	From list 19
Lab Rep	Text	Y	count
Qualifier	Text	Y	From list 13
Result	Number	Y	(dry wt.)
Units	Text	Y	Units for result
True Value	Number		QA samples only
MDL	Number	Y	method detection limit
RL	Number	Y	reporting limit
Dilution	Number	Y	Dilution factor
PreparationCode	Text	Y	From list 34
PreparationDate	Date/Time	Y	dd/mmm/yyyy
AnalysisMethod	Text	Y	From list 33
Analysis Date	Date/Time	Y	dd/mmm/yyyy
QACode	Text	Y	From list 13
LabCode	Text	Y	From list 1
Comments	Text		Additional comments

APPENDIX B. LOOK UP TABLES

List 1. Agency Codes

AgencyCode	AgencyName
AB	Aquatic Bioassay and Consulting (ABCL)*
AM	Algalita Marine Research Foundation*
AW	Aliso Water Management Authority (AWMA)*
BC	Santa Barbara County Health Service
BH	Los Angeles County Dept. of Beaches & Harbors*
CC	Center for Environmental Cooperation (CEC)*
CE	Southern California Edison (SCE)*
CH	Chevron USA Products Company*
CI	Channel Islands National Marine Sanctuary (CINMS)*
CM	Cabrillo Marine Aquarium
CP	Marine Corps Base - Camp Pendleton
CS	Columbia Analytical Services*
CV	City of Ventura
DC	San Diego Regional Water Quality Control Board (SDRWQCB)*
DW	Los Angeles Department of Water and Power (LADWP)*
EH	Orange County Environmental Health Division
EW	Encina Wastewater Authority*
GC	Granite Canyon Marine Pollution Studies Lab*
GS	Goleta Sanitation District
HS	Los Angeles County Dept. of Health Services
HY	City of Los Angeles Environmental Monitoring Division (CLAEMD)*
IP	San Diego Interagency Water Quality Panel (Bay Panel)*
IX	US EPA Region IX*
LA	Los Angeles County Sanitation Districts (LACSD)*
LB	City of Long Beach
ME	MEC Analytical Systems Inc.
MI	Southern California Marine Institute(SCMI)
MX	National Fisheries Institute of Mexico (SEMARNAP)*
NV	US Navy, Space & Naval Warfare Systems Center, San Diego (USN)*
OC	Orange County Sanitation Districts (OCSD)*
OS	City of Oceanside*
OX	City of Oxnard*
PF	Orange County Public Facilities and Resources (OCPFRD)*
RA	Southeast Regional Reclamation Authority (SERRA)*
RB	Los Angeles County Regional Water Quality Control Board*
RD	US EPA Office of Research and Development*
RP	Santa Monica Bay Restoration Project*
SA	Santa Ana Regional Water Quality Control Board*
SB	City of Santa Barbara
SC	Southern California Coastal Water Research Project(SCCWRP)*
SD	City of San Diego*
SE	San Elijo Joint Powers Authority*

SF	Surfrider Foundation
SH	San Diego County Dept. of Environmental Health
SR	State Water Resources Control Board (SWRCB)*
UA	University Autonomous de Baja California*
UB	University of California, Santa Barbara
WI	USC Wrigley Institute for Environmental Studies (WIES)*

List 2. Analysis Type Codes

AnalysisCode	AnalysisType
WQ	Water Quality
BE	Benthic Infauna
GS	Grain Size
TO	Organic Carbon and Nitrogen
MT	Metals
OR	Organics
ST	Sediment Toxicity
LS	Longfin Sanddab
PS	Pacific Sanddab
HT	Hornyhead Turbot
CS	California Scorpionfish
DS	Dover Sole
SS	Speckled Sanddab
WC	White Croaker
ES	English Sole

List 3 has been deleted.

List 4. Sample Codes

SampleCode	**SampleType**
S	Sample
B	Laboratory Blank
R	Laboratory Contorl Material (LCM) or Certified Reference Material (CRM)
M	Matrix spike and matrix spike duplicate
Result	Numerical Result
QA	Qualifty Assurance Value
RFCD	Cadmium Reference Toxicant
RFCU	Copper Reference Toxicant
RFPH	Phenol Reference Toxicant
CNEG	Negative Control

List 5. Sampling Equipment

EquipCode	EquipType
103	Van Veen Grab
26	Marinovich Otter trawl w. 7.62 m head rope

List 6. Sediment Composition Codes

SedComp
Coarse Sand
Fine Sand
Silt/Clay
Gravel
Mixed

List 7. Sediment Odor Codes

OdorCode	**OdorDescription**
N	None
P	Petoleum
H	Hydrogen Sulfide
X	Other

List 8. Weather Codes

WeatherCode
Clear
Overcast
Partly Cloudy
Blowing Sand
Thunderstorm
Rain
Drizzle
Fog
Continuous layers of Clouds

List 9. Failure Codes

FailCode	**FailureReason**
A	Canted
B	Washed
C	Poor Closure
D	Disturbed Surface
E	< 5 cm pentreation
F	>5 & < 8 cm penetration
G	Fouled Net
H	Torn Net
I	No contact w/ bottom

J	improper distance/Time
K	Irregular Bottom
L	Beyond Border
M	Kelp Bed
N	Obstructions
O	<3m (bay)
P	<6M (Ocean)
Q	> 200m
R	Abandoned
S	Rocky Bottom

List 10. Species List (This list may be amended as new species are encountered)

Species	**Common Name**
Abarenicola pacifica	
Abietinaria sp	
Acanthodoris brunnea	
Acanthodoris lutea	
Acanthodoris rhodoceras	
Acanthodoris sp	
Acanthomysis brunnea	
Acanthomysis californica	
Acanthomysis sp	
Acanthoptilum sp	
Acarina	
Aciconula acanthosoma	
Aciconula sp	
Acidostoma hancocki	
Acidostoma sp	
Acila castrensis	
Acila sp	
Acmaea mitra	
Acmaea sp	
Acmaeidae	
Acmaeoidea	
Acoetes mortenseni	
Acoetes pacifica	
Acoetes sp	
Acoetidae	
Acotylea	
Acrocirridae	
Acrocirrus sp	
Acteocina culcitella	
Acteocina eximia	
Acteocina harpa	
Acteocina inculta	

Acteocina sp
Acteon sp
Acteon traskii
Acteonidae
Acteonoidea
Actiniaria
Actiniidae
Aculifera
Acuminodeutopus heteruropus
Acuminodeutopus sp
Adelogorgia phyllosclera
Adelogorgia sp
Adeorbidae
Admete gracilior
Admete sp
Adontorhina cyclia
Adontorhina sp
Adontorhina sphaericosa
Adula sp
Aegidae
Aegires albopunctatus
Aegires sp
Aeolidia papillosa
Aeolidia sp
Aeolidiella sp
Aeolidiidae
Aeolidioidea
Aeolidoida
Aesophus eurytoideus
Aesophus sp
Aglaja ocelligera
Aglaja sp
Aglajidae
Aglaophamus erectans
Aglaophamus eugeniae
Aglaophamus paucilamellata
Aglaophamus sp
Aglaophamus verrilli
Aglaophenia sp
Aglaopheniidae
Agnezia septentrionalis
Agnezia sp
Agneziidae
Alaba sp
Albuneidae
Alcyonacea
Alcyonaria

Alcyonidiidae
Alcyonidioidea
Alcyonidium sp
Alcyonidium sp A
Alderia modesta
Alderia sp
Alia carinata
Alia sp
Alia tuberosa
Alienacanthomysis macropsis
Alienacanthomysis sp
Allocentrotus fragilis
Allocentrotus sp
Alpheidae
Alpheoidea
Alpheopsis equidactylus
Alpheopsis sp
Alpheus bellimanus
Alpheus californiensis
Alpheus clamator
Alpheus sp
Alvania acutelirata
Alvania rosana
Alvania sp
Alvania tumida
Amaeana occidentalis
Amaeana sp
Amage anops
Amage sp
Amakusanthura californiensis
Amakusanthura sp
Amathia distans
Amathia sp
Amathimysis sp
Amathimysis trigibba
Americardia biangulata
Americardia sp
Ammotheidae
Ammothella setosa
Ammothella sp
Ampelisca agassizi
Ampelisca brachycladus
Ampelisca brevisimulata
Ampelisca careyi
Ampelisca cf. brevisimulata
Ampelisca cristata cristata
Ampelisca cristata microdentata

Ampelisca hancocki Cmplx
Ampelisca indentata
Ampelisca lobata
Ampelisca milleri
Ampelisca pacifica
Ampelisca pugetica
Ampelisca romigi
Ampelisca shoemakeri
Ampelisca sp
Ampelisca unsocalae
Ampeliscidae
Ampelisciphotis podophthalma
Ampelisciphotis sp
Ampeliscoidea
Ampharete acutifrons
Ampharete arctica
Ampharete labrops
Ampharete sp
Ampharetidae
Ampharetidae sp 1
Amphianthus californicus
Amphianthus sp
Amphichondrius granulatus
Amphichondrius sp
Amphicteis glabra
Amphicteis mucronata
Amphicteis scaphobranchiata
Amphicteis sp
Amphideutopus oculatus
Amphideutopus sp
Amphiduros pacificus
Amphiduros sp
Amphilochidae
Amphilochus litoralis
Amphilochus neapolitanus Cmplx
Amphilochus picadurus
Amphilochus sp
Amphinemertes caeca
Amphinemertes sp
Amphinomida
Amphinomidae
Amphiodia digitata
Amphiodia psara
Amphiodia sp
Amphiodia urtica
Amphioplus sp
Amphioplus strongyloplax

Amphipholis pugetana
Amphipholis sp
Amphipholis squamata
Amphipoda
Amphiporidae
Amphiporidae sp B
Amphiporus bimaculatus
Amphiporus californicus
Amphiporus cruentatus
Amphiporus flavescens
Amphiporus imparispinosus
Amphiporus rubellus
Amphiporus sp
Amphiporus sp A
Amphiporus sp B
Amphissa bicolor
Amphissa reticulata
Amphissa sp
Amphissa undata
Amphissa versicolor
Amphitrite robusta
Amphitrite sp
Amphiura arcystata
Amphiura diomedeae
Amphiura sp
Amphiuridae
Amphoriscidae
Ampithoe plumulosa
Ampithoe raymondi
Ampithoe sp
Ampithoe valida
Ampithoidae
Amygdalum politum
Amygdalum sp
Anarthruridae
Anasca
Anaspidea
Anatoma crispata
Anatoma sp
Anchicolurus occidentalis
Anchicolurus sp
Ancinidae
Ancinus granulatus
Ancinus sp
Ancistrosyllis breviceps
Ancistrosyllis groenlandica
Ancistrosyllis hamata

Ancistrosyllis sp
Ancula lentiginosa
Ancula pacifica
Ancula sp
Anemonactis sp
Anguinella palmata
Anguinella sp
Anisodoris nobilis
Anisodoris sp
Annectocymidae
Annelida
Anobothrus gracilis
Anobothrus sp
Anomalodesmata
Anomia peruviana
Anomia sp
Anomiidae
Anomioidea
Anomura
Anonyx lilljeborgi
Anonyx sp
Anopla
Anopla sp A
Anopla sp B
Anopla sp C
Anopla sp D
Anoplodactylida
Anoplodactylus californicus
Anoplodactylus erectus
Anoplodactylus nodosus
Anoplodactylus oculospinus
Anoplodactylus pacificus
Anoplodactylus sp
Anoropallene palpida
Anoropallene sp
Anotomastus gordiodes
Anotomastus sp
Antedonidae
Antedonoidea
Anthozoa
Anthozoa #49
Anthozoa #76
Anthuridae
Anthuridea
Antiplanes catalinae
Antiplanes sp
Antiplanes thalea

Antropora sp
Antropora tincta
Aonides sp
Aoridae
Aoroides columbiae
Aoroides exilis
Aoroides inermis
Aoroides intermedia
Aoroides sp
Aoroides sp A
Aoroides spinosa
Aphelochaeta glandaria
Aphelochaeta monilaris
Aphelochaeta petersenae
Aphelochaeta phillipsi
Aphelochaeta sp
Aphelochaeta sp A
Aphelochaeta tigrina
Aphelochaeta williamsae
Aphrocallistes sp
Aphrocallistes vastus
Aphrocallistidae
Aphrodita armifera
Aphrodita brevitentaculata
Aphrodita castanea
Aphrodita japonica
Aphrodita negligens
Aphrodita refulgida
Aphrodita sp
Aphroditidae
Aphroditiformia
Aphroditoidea
Apionsoma misakianum
Apionsoma sp
Apistobranchidae
Apistobranchus ornatus
Apistobranchus sp
Aplacophora
Aplousobranchiata
Aplysia californica
Aplysia sp
Aplysiidae
Aplysioidea
Apodacea
Apodida
Apoprionospio pygmaea
Apoprionospio sp

Arabella endonata
Arabella iricolor
Arabella sp
Arachnanthus sp
Arachnanthus sp A
Arachnida
Arachnidiidae
Arachnidioidea
Araphura breviaria
Araphura cuspirostris
Araphura sp
Archaeobalanidae
Archaeogastropoda
Archidorididae
Archidoris montereyensis
Archidoris sp
Archinemertea
Architectibranchia
Arcoida
Arcteobia cf. anticostiensis
Arcteobia sp
Arctonoe pulchra
Arctonoe sp
Arcturidae
Arenicola cristata
Arenicola sp
Arenicolidae
Argissa hamatipes
Argissa sp
Argissidae
Argopecten sp
Argopecten ventricosus
Arhynchite californicus
Arhynchite sp
Aricidea (Acmira) catherinae
Aricidea (Acmira) cerrutii
Aricidea (Acmira) horikoshii
Aricidea (Acmira) lopezi
Aricidea (Acmira) rubra
Aricidea (Acmira) simplex
Aricidea (Aedicira) pacifica
Aricidea (Allia) antennata
Aricidea (Allia) hartleyi
Aricidea (Allia) monicae
Aricidea (Allia) quadrilobata
Aricidea (Allia) sp A
Aricidea (Aricidea) pseudoarticulata

Aricidea (Aricidea) wassi
Aricidea sp
Aristeidae
Aristias sp
Aristias sp A
Armandia brevis
Armandia sp
Armina californica
Armina sp
Arminidae
Arminoidea
Arminoidea
Artacama coniferi
Artacama sp
Artacamella hancocki
Artacamella sp
Arthropoda
Articulata
Articulata
Articulata
Aruga holmesi
Aruga oculata
Aruga sp
Asabellides lineata
Asabellides sp
Ascidiacea
Asclerocheilus californicus
Asclerocheilus sp
Ascophora
Asellota
Aspidochirotida
Aspidochotacea
Aspidosiphon (Paraspidosiphon) sp
Aspidosiphonidae
Asteriadina
Asteriidae
Asterina miniata
Asterina sp
Asterinidae
Asteroidea
Asteropella slatteryi
Asteropella sp
Asterozoa
Asthenothaerus diegensis
Asthenothaerus sp
Astrometis sertulifera
Astrometis sp

Astropecten armatus
Astropecten ornatissimus
Astropecten sp
Astropecten verrilli
Astropectinidae
Astyris aurantiaca
Astyris sp
Atelostomata
Athecatae
Atylus sp
Atylus tridens
Atyoidea
Austrotrophon catalinensis
Austrotrophon sp
Autolytus sp
Automate sp
Automate sp A
Axiidae
Axinella sp
Axinellida
Axinellidae
Axinodon redondoensis
Axinodon sp
Axinopsida serricata
Axinopsida sp
Axiothella rubrocincta
Axiothella sp
Babelomurex oldroydi
Babelomurex sp
Balanidae
Balanoglossus sp
Balanoidea
Balanomorpha
Balanus crenatus
Balanus nubilus
Balanus pacificus
Balanus sp
Balanus trigonus
Balcis berryi
Balcis compacta
Balcis micans
Balcis oldroydae
Balcis sp
Barentsia benedeni
Barentsia discreta
Barentsia parva
Barentsia sp

Barentsiidae
Barleeia californica
Barleeia sp
Barleeia subtenuis
Barleeidae
Baseodiscus sp
Batea sp
Batea transversa
Bateidae
Bathydrilus litoreus
Bathydrilus parkeri
Bathydrilus sp
Bathyleberis garthi
Bathyleberis hancocki
Bathyleberis sp
Bathymedon kassites
Bathymedon pumilus
Bathymedon roquedo
Bathymedon sp
Bathymedon vulpeculus
Bathypera feminalba
Bathypera ovoida
Bathypera sp
Belonectes sp
Belonectes sp A
Bemlos audbettius
Bemlos concavus
Bemlos sp
Bentheogennema burkenroadi
Bentheogennema sp
Bernardinidae
Berthella californica
Berthella sp
Betaeus ensenadensis
Betaeus harfordi
Betaeus harrimani
Betaeus longidactylus
Betaeus sp
Bimeria sp
Bispira sp
Bivalvia
Blepharipoda occidentalis
Blepharipoda sp
Boccardia basilaria
Boccardia pugettensis
Boccardia sp
Boccardiella hamata

Boccardiella sp
Bodotriidae
Boltenia sp
Boltenia villosa
Bonelliidae
Bonelloinea
Bopyridae
Bopyroidea
Boreotrophon bentleyi
Boreotrophon eucymatus
Boreotrophon sp
Bougainvilliidae
Bowerbankia gracilis
Bowerbankia sp
Brachiopoda
Brachyura
Brada pluribranchiata
Brada sp
Brada villosa
Branchiostoma californiense
Branchiostoma sp
Branchiostomatidae
Brania californiensis
Brania sp
Brisaster latifrons
Brisaster sp
Brissidae
Brissopsis pacifica
Brissopsis sp
Bruzelia sp
Bruzelia tuberculata
Buccinidae
Bugula longirostata
Bugula neritina
Bugula pacifica
Bugula sp
Bugulidae
Bulla gouldiana
Bulla sp
Bullidae
Bulloidea
Bullomorpha sp A
Bursidae
Byblis millsi
Byblis sp
Byblis veleronis
Cactosoma arenaria

Cactosoma sp
Cadlina flavomaculata
Cadlina modesta
Cadlina sp
Cadlina sparsa
Cadlinidae
Caecianiropsis psammophila
Caecianiropsis sp
Caecidae
Caecum californicum
Caecum crebricinctum
Caecum dalli
Caecum sp
Caenogastropoda
Calappidae
Calcaronea
Calcerea
Calcinea
Califanthura sp
Califanthura squamosissima
Calinaticina oldroydii
Calinaticina sp
Callianassidae
Callioplanidae
Calliostoma canaliculatum
Calliostoma gloriosum
Calliostoma keenae
Calliostoma sp
Calliostoma supragranosum
Calliostoma tricolor
Calliostoma turbinum
Calliostoma variegatum
Callipallene pacifica
Callipallene sp
Callipallenidae
Callistochiton decoratus
Callistochiton palmulatus
Callistochiton sp
Calloporidae
Calocarides quinqueseriatus
Calocarides sp
Calocarides spinulicauda
Calycella sp
Calycella syringa
Calycellidae
Calyptraea contorta
Calyptraea fastigiata

Calyptraea sp
Calyptraeidae
Calyptraeoidea
Campanularia sp
Campanularia volubilis
Campanulariidae
Campanulina sp
Campanulinidae
Campylaspis biplicata
Campylaspis blakei
Campylaspis canaliculata
Campylaspis hartae
Campylaspis maculinodulosa
Campylaspis rubromaculata
Campylaspis rufa
Campylaspis sp
Campylaspis sp A
Campylaspis sp C
Cancellaria cooperii
Cancellaria crawfordiana
Cancellaria decussata
Cancellaria sp
Cancellariidae
Cancellaroidea
Cancellothyrididae
Cancellothyridoidea
Cancer amphioetus
Cancer antennarius
Cancer anthonyi
Cancer branneri
Cancer gracilis
Cancer jordani
Cancer oregonensis
Cancer productus
Cancer sp
Cancridae
Candidae
Capitata
Capitella capitata Cmplx
Capitella sp
Capitellida
Capitellidae
Caprella californica
Caprella equilibra
Caprella gracilior
Caprella mendax
Caprella natalensis

Caprella penantis
Caprella sp
Caprella sp E
Caprella verrucosa
Caprellidae
Caprellidea
Caprelloidea
Carazziella sp
Carazziella sp A
Cardiidae
Cardioidea
Cardiomya pectinata
Cardiomya planetica
Cardiomya sp
Carditidae
Carditoidea
Caridea
Carinoma mutabilis
Carinoma sp
Carinomella lactea
Carinomella sp
Carinomidae
Caryocorbula porcella
Caryocorbula sp
Caryophylliidae
Caryophylliina
Caryophyllioidea
Caudina arenicola
Caudina sp
Caudinidae
Caulibugula californica
Caulibugula sp
Caulleriella alata
Caulleriella apicula
Caulleriella hamata
Caulleriella sp
Cauloramphus echinus
Cauloramphus sp
Cecina sp
Cellaria diffusa
Cellaria mandibulata
Cellaria sp
Cellariidae
Celleporaria brunnea
Celleporaria sp
Celleporella hyalina
Celleporella sp

Celleporidae
Celleporina souleae
Celleporina sp
Celloporariidae
Cellularoidea
Cephalaspidea
Cephalochordata
Cephalophoxoides homilis
Cephalophoxoides sp
Cephalopoda
Cephalothricidae
Ceractinomorpha
Ceradocus sp
Ceradocus spinicaudus
Cerapus sp
Cerapus tubularis Cmplx
Ceratonereis mirabilis
Ceratonereis sp
Ceratostoma nuttalli
Ceratostoma sp
Cerberilla mosslandica
Cerberilla sp
Cerberilla sp 1
Cerebratulus albifrons
Cerebratulus californiensis
Cerebratulus lineolatus
Cerebratulus marginatus
Cerebratulus montgomeryi
Cerebratulus sp
Ceriantharia
Ceriantharia sp C
Ceriantharia sp D
Cerianthidae
Ceriantipatharia
Cerithiidae
Cerithioidea
Cerithiopsidae
Cerithiopsis sp
Cestoplanoidea
Chaetoderma hancocki
Chaetoderma pacificum
Chaetoderma sp
Chaetodermatida
Chaetodermatidae
Chaetodermatimorpha
Chaetodermomorpha
Chaetopteridae

Chaetopteriformia
Chaetopterus sp
Chaetopterus variopedatus Cmplx
Chaetozone armata
Chaetozone columbiana
Chaetozone corona
Chaetozone hartmanae
Chaetozone hedgpethi
Chaetozone setosa Cmplx
Chaetozone sp
Chaetozone spinosa
Chama arcana
Chama sp
Chamidae
Chamoidea
Chapperiidae
Chapperiopsis californica
Chapperiopsis patula
Chapperiopsis sp
Chauliopleona dentata
Chauliopleona sp
Cheilostomata
Cheliceriformia
Chelyosoma productum
Chelyosoma sp
Chevalia inaequalis
Chevalia sp
Chilophiurina
Chione californiensis
Chione sp
Chione undatella
Chionoecetes sp
Chionoecetes tanneri
Chiridota sp
Chiridotidae
Chitinopoma groenlandica
Chitinopoma sp
Chlamys hastata
Chlamys sp
Chloeia pinnata
Chloeia sp
Chone albocincta
Chone minuta
Chone mollis
Chone sp
Chone sp B
Chone sp C

Chone sp SD1
Chone veleronis
Chordata
Chorilia longipes
Chorilia sp
Choristida
Chromopleustes sp
Chrysopetalidae
Chrysopetaloidea
Cidarina cidaris
Cidarina sp
Cingulopsidoidea
Ciona intestinalis
Ciona sp
Cionidae
Circulus sp
Cirolana diminuta
Cirolana sp
Cirolanidae
Cirolanoidea
Cirrata
Cirratulidae
Cirratuliformia
Cirratulus cirratus
Cirratulus sp
Cirriformia sp
Cirriformia spirabrancha
Cirriformia tentaculata
Cirripedia
Cirrophorus branchiatus
Cirrophorus furcatus
Cirrophorus sp
Cladocarpus sp
Cladocarpus sp A
Clathriidae
Clathrina sp
Clathrinida
Clathrinidae
Clausidiidae
Clausidium sp
Clausidium vancouverense
Clavopora occidentalis
Clavopora sp
Clavoporidae
Clavularia sp
Clavularia sp H
Clavulariidae

Clinocardium nuttallii
Clinocardium sp
Clymenella complanata
Clymenella sp
Clymenella sp A
Clymenura gracilis
Clymenura sp
Clypeasteroida
Clytia sp
Clytia universitatis
Cnemidocarpa rhizopus
Cnemidocarpa sp
Cnidaria
Coboldus hedgpethi
Coboldus sp
Coenocyathus bowersi
Coenocyathus sp
Coilostegoidea
Coleoidea
Coloniales
Columbaora cyclocoxa
Columbaora sp
Columbellidae
Comatulida
Compsomyax sp
Compsomyax subdiaphana
Conchifera
Conidae
Conoidea
Conopea galeata
Conopea sp
Conopeum commensale
Conopeum sp
Conualevia alba
Conualevia sp
Conualeviidae
Conus californicus
Conus sp
Cooperella sp
Cooperella subdiaphana
Copepoda
Corallanidae
Corallimorpharia
Corallimorphidae
Coralliophilidae
Corambidae
Corbulidae

Corella sp
Corella willmeriana
Corellidae
Corophiidae
Corophioidea
Corymorpha bigelowi
Corymorpha palma
Corymorpha sp
Corymorpha sp A
Corymorphidae
Corynactis californica
Corynactis sp
Coryphelloidea
Cossura candida
Cossura pygodactylata
Cossura sp
Cossura sp A
Cossurida
Cossuridae
Cotylea
Crangon alaskensis
Crangon alba
Crangon handi
Crangon holmesi
Crangon nigricauda
Crangon nigromaculata
Crangon sp
Crangonidae
Crangonoidea
Cranopsis multistriata
Cranopsis sp
Crassadoma gigantea
Crassadoma sp
Crassispira semiinflata
Crassispira sp
Crenella decussata
Crenella sp
Crepidula aculeata
Crepidula adunca
Crepidula glottidiarum
Crepidula naticarum
Crepidula norrisiarum
Crepidula onyx
Crepidula perforans
Crepidula sp
Crepipatella dorsata
Crepipatella orbiculata

Crepipatella sp
Crinoidea
Crinozoa
Crisia occidentalis
Crisia sp
Crisiidae
Crockerella eriphyle
Crockerella evadne
Crockerella sp
Crossata californica
Crossata sp
Crucibulum sp
Crucibulum spinosum
Crustacea
Cryptocelididae
Cryptocelis occidentalis
Cryptocelis sp
Cryptodromiopsis larraburei
Cryptodromiopsis sp
Cryptomya californica
Cryptomya sp
Cryptonemertes actinophila
Cryptonemertes sp
Ctenodrilida
Ctenodrilidae
Ctenostomata
Cubanomysis mysteriosa
Cubanomysis sp
Cucumaria piperata
Cucumaria salma
Cucumaria sp
Cucumariidae
Cumacea
Cumanotidae
Cumanotus fernaldi
Cumanotus sp
Cumella californica
Cumella sp
Cumella sp B
Cumingia californica
Cumingia sp
Cuspidaria parapodema
Cuspidaria sp
Cuspidariidae
Cuspidarioidea
Cuthona divae
Cuthona sp

Cyamon neon
Cyamon sp
Cyamonidae
Cyathodonta pedroana
Cyathodonta sp
Cyathura munda
Cyathura sp
Cyclaspis nubila
Cyclaspis sp
Cyclaspis sp A
Cyclaspis sp B
Cyclaspis sp C
Cyclocardia barbarensis
Cyclocardia crassidens
Cyclocardia sp
Cyclocardia ventricosa
Cyclodorippidae
Cyclopecten benthalis
Cyclopecten catalinensis
Cyclopecten sp
Cyclostomata
Cyclostremella californica
Cyclostremella coronadoensis
Cyclostremella sp
Cylichna attonsa
Cylichna diegensis
Cylichna sp
Cylichnidae
Cylindroleberididae
Cymadusa sp
Cymadusa uncinata
Cymatioa electilis
Cymatioa sp
Cymatioidea
Cymothoidae
Cypraeoidea
Cyprideis sp
Cyprideis stewarti
Cyprididae
Cypridinidae
Cypridinoidea
Cypridoidea
Cystodytes lobatus
Cystodytes sp
Dactylopleustes sp
Dactylopleustes sp A
Daphnella clathrata

Daphnella sp
Dasybranchus glabrus
Dasybranchus sp
Decabrachia
Decamastus gracilis
Decamastus sp
Decapoda
Deflexilodes norvegicus
Deflexilodes sp
Deilocerus decorus
Deilocerus planus
Deilocerus sp
Delectopecten sp
Delectopecten vancouverensis
Demonax sp
Demonax sp 1
Demospongiae
Dendraster excentricus
Dendraster sp
Dendrasteridae
Dendrochirotida
Dendrodoridae
Dendrodoridoidea
Dendrodoris fulva
Dendrodoris sp
Dendronotidae
Dendronotoidea
Dendronotus albus
Dendronotus diversicolor
Dendronotus frondosus
Dendronotus iris
Dendronotus sp
Dendronotus subramosus
Dentaliida
Dentaliidae
Dentalium neohexagonum
Dentalium sp
Dentalium vallicolens
Dermatomya sp
Dermatomya tenuiconcha
Desdimelita desdichada
Desdimelita sp
Desmophyllum dianthus
Desmophyllum sp
Deutella californica
Deutella sp
Dexaminidae

Dexaminoidea
Diadumene sp
Diadumenidae
Diaperoforma californica
Diaperoforma sp
Diaphana californica
Diaphana sp
Diaphanidae
Diaphanoidea
Diaphorodoris lirulatocauda
Diaphorodoris sp
Diastylidae
Diastylis californica
Diastylis crenellata
Diastylis pellucida
Diastylis santamariensis
Diastylis sentosa
Diastylis sp
Diastylis sp C
Diastylopsis sp
Diastylopsis tenuis
Diaulula sandiegensis
Diaulula sp
Dichonemertes hartmanae
Dichonemertes sp
Diogenidae
Diopatra ornata
Diopatra sp
Diopatra splendidissima
Diopatra tridentata
Diplocheilus allmani
Diplocheilus sp
Diplodonta sericata
Diplodonta sp
Dipolydora akaina
Dipolydora armata
Dipolydora bidentata
Dipolydora caulleryi
Dipolydora cf. armata
Dipolydora commensalis
Dipolydora giardi
Dipolydora socialis
Dipolydora sp
Dirona picta
Dirona sp
Dironidae
Dironoidea

Discerceis granulosa
Discerceis sp
Discodorididae
Discopoda
Discoporella sp
Discoporella umbellata
Discosolenia burchami
Discosolenia sp
Dispio sp
Dispio uncinata
Dissiminassa dissimilis
Dissiminassa sp
Distaplia occidentalis
Distaplia sp
Dodecaceria concharum
Dodecaceria sp
Dodecaseta oraria
Dodecaseta sp
Doridoida
Doridoidea
Doriopsilla albopunctata
Doriopsilla sp
Dorvillea (Dorvillea) sp
Dorvillea (Schistomeringos) annulata
Dorvillea (Schistomeringos) longicornis
Dorvillea sp
Dorvilleidae
Doto amyra
Doto columbiana
Doto kya
Doto sp
Dotoidae
Dougaloplus amphacanthus
Dougaloplus sp
Drilonereis falcata
Drilonereis filum
Drilonereis mexicana
Drilonereis nuda
Drilonereis sp
Drilonereis sp A
Dromalia alexandri
Dromalia sp
Dromiidae
Dulichiella sp
Dulichiella spinosa
Dynamena sp
Dyopedos monacanthus

Dyopedos sp
Echinacea
Echinasteridae
Echinodermata
Echinoida
Echinoidea
Echinozoa
Echiura
Echiurida
Echiuroinea
Eclysippe sp
Eclysippe trilobata
Ectoprocta
Edotia sp
Edotia sp B
Edotia sublittoralis
Edwardsia californica
Edwardsia sipunculoides
Edwardsia sp
Edwardsia sp A
Edwardsia sp G
Edwardsiidae
Elaeocyma empyrosia
Elaeocyma sp
Elasipodida
Elasmopus bampo
Elasmopus mutatus
Elasmopus sp
Emerita analoga
Emerita sp
Emplectonema sp
Emplectonematidae
Emprosthopharyngidae
Emprosthopharynx gracilis
Emprosthopharynx sp
Enallopaguropsis guatemoci
Enallopaguropsis sp
Ennucula sp
Ennucula tenuis
Enopla
Enopla sp A
Ensis myrae
Ensis sp
Enteropneusta
Entodesma navicula
Entodesma pictum
Entodesma sp

Entoprocta
Eobrolgus sp
Eobrolgus spinosus
Eohaustorius barnardi
Eohaustorius sp
Ephesiella brevicapitis
Ephesiella sp
Epiactis prolifera
Epiactis sp
Epicaridea
Epilucina californica
Epilucina sp
Epistomiidae
Epitoniidae
Epitonium bellastriatum
Epitonium hindsii
Epitonium indianorum
Epitonium lowei
Epitonium politum
Epitonium sawinae
Epitonium sp
Epitonium tinctum
Epizoanthidae
Epizoanthus induratus
Epizoanthus leptoderma
Epizoanthus sp
Eranno bicirrata
Eranno lagunae
Eranno sp
Erato columbella
Erato sp
Ericthonius brasiliensis
Ericthonius rubricornis
Ericthonius sp
Erileptus sp
Erileptus spinosus
Eteone fauchaldi
Eteone leptotes
Eteone pigmentata
Eteone sp
Eualus herdmani
Eualus lineatus
Eualus sp
Euborlasia nigrocincta
Euborlasia sp
Eucarida
Euchone arenae

Euchone hancocki
Euchone incolor
Euchone limnicola
Euchone sp
Euchone sp A
Euchone velifera
Euclymene campanula
Euclymene delineata
Euclymene sp
Euclymeninae sp A
Eudendriidae
Eudendrium sp
Eudistylia sp
Eudistylia vancouveri
Eudorella pacifica
Eudorella sp
Eudorellopsis longirostris
Eudorellopsis sp
Eugorgia rubens
Eugorgia sp
Eugyra arenosa californica
Eugyra sp
Eulalia californiensis
Eulalia levicornuta
Eulalia quadrioculata
Eulalia sp
Eulima almo
Eulima raymondi
Eulima sp
Eulimidae
Eulimoidea
Eulithidium compta
Eulithidium pulloides
Eulithidium rubrilineata
Eulithidium sp
Eulithidium substriata
Eumalacostraca
Eumida longicornuta
Eumida sp
Eunice americana
Eunice multicylindri
Eunice multipectinata
Eunice sp
Eunicida
Eunicidae
Eunicoidea
Eupantopodida

Euphilomedes carcharodonta
Euphilomedes longiseta
Euphilomedes producta
Euphilomedes sp
Euphrosine arctia
Euphrosine sp
Euphrosinidae
Euphysa sp
Euphysa sp A
Eupolymnia heterobranchia
Eupolymnia sp
Eupyrigidae
Euryalina
Eurycyde sp
Eurycyde spinosa
Eurydice caudata
Eurydice sp
Eurylepta sp
Euryleptidae
Euryleptoidea
Eusarsiella sp
Eusarsiella sp A
Eusarsiella thominx
Eusiridae
Eusiroides monoculoides
Eusiroides sp
Eusirus sp
Eusyllis habei
Eusyllis sp
Eusyllis transecta
Euthyneura
Euvola diegensis
Euvola sp
Exacanthomysis davisi
Exacanthomysis sp
Excorallana sp
Excorallana truncata
Exogone breviseta
Exogone cf. verugera
Exogone dwisula
Exogone lourei
Exogone molesta
Exogone sp
Exogone uniformis
Exogonella brunnea
Exogonella sp
Exosphaeroma rhomburum

Exosphaeroma sp
Eyakia robusta
Eyakia sp
Fabia concharum
Fabia sp
Fabia subquadrata
Fabricinuda limnicola
Fabricinuda sp
Fabriciola sp
Fabrisabella sp
Fabrisabella sp A
Facelinidae
Falcidens hartmanae
Falcidens sp
Falcidens sp A
Falcidens sp B
Fartulum occidentale
Fartulum sp
Fasciolariidae
Fauveliopsida
Fauveliopsidae
Fauveliopsis armata
Fauveliopsis glabra
Fauveliopsis magna
Fauveliopsis sp
Filifera
Filiformia
Finella sp
Fissurellidae
Fissurelloidea
Flabellifera
Flabelligera infundibularis
Flabelligera sp
Flabelligerida
Flabelligeridae
Flabellina iodinea
Flabellina pricei
Flabellina sp
Flabellina trilineata
Flabellinidae
Florometra serratissima
Florometra sp
Forcipulatida
Forreria belcheri
Forreria sp
Foxiphalus cognatus
Foxiphalus golfensis

Foxiphalus obtusidens
Foxiphalus similis
Foxiphalus sp
Fusinus barbarensis
Fusinus luteopictus
Fusinus sp
Gadila aberrans
Gadila sp
Gadilida
Gadilidae
Galathea californiensis
Galathea sp
Galatheidae
Galeommatidae
Galeommatidae sp A
Galeommatoidea
Gammaridea
Gammaropsis barnardi
Gammaropsis mamola
Gammaropsis martesia
Gammaropsis ociosa
Gammaropsis sp
Gammaropsis thompsoni
Gari californica
Gari fucata
Gari sp
Garosyrrhoe bigarra Cmplx
Garosyrrhoe sp
Garveia formosa
Garveia sp
Gastropoda
Gastropteridae
Gastropteron pacificum
Gastropteron sp
Geitodoris heathi
Geitodoris sp
Gibberosus myersi
Gibberosus sp
Gitana calitemplado
Gitana sp
Globivenus fordii
Globivenus sp
Glottidia albida
Glottidia sp
Glycera americana
Glycera convoluta
Glycera nana

Glycera oxycephala
Glycera robusta
Glycera sp
Glycera tenuis
Glycera tesselata
Glyceridae
Glyceriformia
Glycinde armigera
Glycinde sp
Glycymeridídae
Glycymeridoidea
Glycymeris septentrionalis
Glycymeris sp
Glyphocuma sp
Glyphocuma sp A
Glyptolithodes cristatipes
Glyptolithodes sp
Gnathia crenulatifrons
Gnathia productatridens
Gnathia sanctaecrucis
Gnathia sp
Gnathia tridens
Gnathia trilobata
Gnathiidae
Gnathiidea
Gnathophiurina
Gnathostomata
Golfingia margaritacea
Golfingia sp
Golfingiidae
Golfingiiformes
Goniada acicula
Goniada annulata
Goniada brunnea
Goniada littorea
Goniada maculata
Goniada sp
Goniadidae
Goniasteridae
Goniodoridídae
Gonodactyloidea
Gorgoniidae
Gorgonocephalidae
Gorgonocephalus eucnemis
Gorgonocephalus sp
Grandidierella japonica
Grandidierella sp

Grantiidae
Granulina margaritula
Granulina sp
Granulosina
Grapsidae
Gregariella coarctata
Gregariella sp
Guernea reduncans
Guernea sp
Gymnolaemata
Gymnonereis crosslandi
Gymnonereis sp
Gyptis brunnea
Gyptis sp
Hadromerida
Haigia diegensis
Haigia sp
Halcampa decemtentaculata
Halcampa sp
Halcampidae
Halcampoididae
Halianthella sp
Halianthella sp A
Haliclona sp
Haliclonidae
Halicoides sp
Halicoides synopiae
Haliophasma geminatum
Haliophasma sp
Halistylus pupoideus
Halistylus sp
Haloclavidae
Halocynthia igaboja
Halocynthia sp
Halodakra salmonea
Halodakra sp
Halodakra subtrigona
Halosydna brevisetosa
Halosydna johnsoni
Halosydna latior
Halosydna sp
Hamatoscalpellum californicum
Hamatoscalpellum sp
Haminaea sp
Haminaea vesicula
Haminaea virescens
Haminaeidae

Hanleyella oldroydi
Hanleyella sp
Haplosclerida
Haplosyllis sp
Haplosyllis spongicola
Harbansus bradmyersi
Harbansus sp
Harmothoe fragilis
Harmothoe hirsuta
Harmothoe imbricata
Harmothoe multisetosa
Harmothoe sp
Harpacticoida
Harpiniopsis epistomata
Harpiniopsis fulgens
Harpiniopsis galera
Harpiniopsis sp
Harrimaniidae
Hartmanodes hartmanae
Hartmanodes sp
Haustoriidae
Havelockia benti
Havelockia sp
Hebellidae
Hebellopsis expansa
Hebellopsis sp
Hemectyon hyle
Hemectyon sp
Hemiasterina
Hemichordata
Hemicyclops sp
Hemicyclops thysanotus
Hemigrapsus nudus
Hemigrapsus oregonensis
Hemigrapsus sp
Hemilamprops californicus
Hemilamprops sp
Hemipodus borealis
Hemipodus sp
Hemiproto sp
Hemiproto sp A
Hemisquilla ensigera californiensis
Hemisquilla sp
Hemisquillidae
Henricia leviuscula
Henricia sp
Heptacarpus brevirostris

Heptacarpus decorus
Heptacarpus flexus
Heptacarpus fuscimaculatus
Heptacarpus palpator
Heptacarpus sitchensis
Heptacarpus sp
Heptacarpus stimpsoni
Heptacarpus taylori
Heptacarpus tenuissimus
Heptacarpus tridens
Hermaeidae
Hermissenda crassicornis
Hermissenda sp
Hesionella mccullochae
Hesionella sp
Hesionidae
Hesionura coineaui difficilis
Hesionura sp
Hesperonoe complanata
Hesperonoe laevis
Hesperonoe sp
Heterobranchia
Heterobranchia
Heterocrypta occidentalis
Heterocrypta sp
Heterodonta
Heterogorgia sp
Heterogorgia tortuosa
Heteromastus filiformis
Heteromastus filobranchus
Heteromastus sp
Heteromysis odontops
Heteromysis sp
Heteronemertea
Heterophoxus affinis
Heterophoxus ellisi
Heterophoxus oculatus
Heterophoxus sp
Heteropodarke heteromorpha
Heteropodarke sp
Heteroserolis carinata
Heteroserolis sp
Heterospio catalinensis
Heterospio sp
Heterostropha
Hexactinellida
Hexactinosa

Hexasterophora
Hiatella arctica
Hiatella sp
Hiatellidae
Hiatelloidea
Hincksinidae
Hippasteria sp
Hippasteria spinosa
Hippidae
Hippolyte californiensis
Hippolyte clarki
Hippolyte sp
Hippolytidae
Hippomedon columbianus
Hippomedon sp
Hippomedon sp A
Hippomedon subrobustus
Hippomedon tenax
Hippomedon zetesimus
Hipponicidae
Hipponix antiquatus
Hipponix sp
Hippothoidae
Hirudinea
Histioteuthidae
Histioteuthis heteropsis
Histioteuthis sp
Holaxonia
Holmesiella anomala
Holmesiella sp
Holmesimysis costata
Holmesimysis sp
Hololepida magna
Hololepida sp
Holothuroidea
Homolidae
Hoplocarida
Hoplonemertea
Hoplonemertea sp A
Hoplonemertea sp B
Hoploplana sp
Hoploplana sp A
Hoploplanidae
Hormathiidae
Hornellia occidentalis
Hornellia sp
Huxleyia munita

Huxleyia sp
Hyale sp
Hyalidae
Hyalinoecia juvenalis
Hyalinoecia sp
Hyalopomatus biformis
Hyalopomatus sp
Hydatinidae
Hydractinia sp
Hydractiniidae
Hydroides pacificus
Hydroides sp
Hydrozoa
Idarcturus allelomorphus
Idarcturus sp
Idotea montereyensis
Idotea resecata
Idotea sp
Idoteidae
Ilyarachna acarina
Ilyarachna sp
Imogine exiguus
Imogine sp
Inarticulata
Incirrata
Incisocalliope bairdi
Incisocalliope sp
Inusitatomysis insolita
Inusitatomysis sp
Iothia lindbergi
Iothia sp
Iphimediidae
Irusella lamellifera
Irusella sp
Isaeidae
Isanthidae
Isanthidae sp A
Ischnochiton sp
Ischnochitonidae
Ischnochitonina
Ischyroceridae
Ischyrocerus anguipes
Ischyrocerus pelagops
Ischyrocerus sp
Ischyrocerus sp B
Ischyrocerus sp C
Iselica ovoidea

Iselica sp
Isocheles pilosus
Isocheles sp
Isocirrus longiceps
Isocirrus sp
Isopoda
Isorobitella sp
Isorobitella trigonalis
Iuventivellendoidea
Janiralata occidentalis
Janiralata solasteri
Janiralata sp
Janiridae
Janiroidea
Janthinoidea
Jasmineira sp
Jasmineira sp B
Jassa slatteryi
Jassa sp
Joeropsididae
Joeropsis concava
Joeropsis dubia
Joeropsis sp
Juliacorbula luteola
Juliacorbula sp
Kaburakia excelsa
Kaburakia sp
Kelletia kelletii
Kelletia sp
Kellia sp
Kellia suborbicularis
Kurtzia arteaga
Kurtzia sp
Kurtziella plumbea
Kurtziella sp
Kurtzina beta
Kurtzina sp
Kylix halocydne
Kylix sp
Lacuna sp
Lacuna unifasciata
Lacunidae
Lacydonia sp
Lacydoniidae
Laemophiurina
Laetmogonidae
Laevicardium sp

Laevicardium substriatum
Laevidentaliidae
Lagenipora sp
Lagisca extenuata
Lagisca sp
Lamellaria diegoensis
Lamellaria sp
Lamellariidae
Lamellaroidea
Lampropidae
Lamprops carinatus
Lamprops quadriplicatus
Lamprops sp
Lanassa gracilis
Lanassa sp
Lanassa sp D
Lanassa venusta venusta
Lanice conchilega
Lanice sp
Laomediidae
Laonice cirrata
Laonice nuchala
Laonice sp
Laphania sp
Laqueidae
Laqueus californianus
Laqueus sp
Lasaea adansoni
Lasaea sp
Lasaeidae
Laticorophium baconi
Laticorophium sp
Latocestidae
Leitoscoloplos panamensis
Leitoscoloplos pugettensis
Leitoscoloplos sp
Lepadomorpha
Lepetidae
Lepidasthenia berkeleyae
Lepidasthenia longicirrata
Lepidasthenia sp
Lepidepecreum garthi
Lepidepecreum gurjanovae
Lepidepecreum sp
Lepidepecreum sp A
Lepidonotus sp
Lepidonotus spiculus

Lepidopa californica
Lepidopa sp
Lepidopleurina
Lepidozona interstincta
Lepidozona mertensii
Lepidozona retiporosa
Lepidozona scabricostata
Lepidozona sinudentata
Lepidozona sp
Leporimetis obesa
Leporimetis sp
Leptasterias hexactis
Leptasterias sp
Leptochelia dubia
Leptochelia sp
Leptocheliidae
Leptochiton nexus
Leptochiton rugatus
Leptochiton sp
Leptochitonidae
Leptocuma forsmani
Leptocuma sp
Leptognathina
Leptopecten latiauratus
Leptopecten sp
Leptoplanidae
Leptoplanidae sp A
Leptostraca
Leptostylis abditus
Leptostylis calva
Leptostylis sp
Leptostylis sp B
Leptosynapta sp
Leucandra heathi
Leucandra sp
Leucilla nuttingi
Leucilla sp
Leucon bishopi
Leucon falcicosta
Leucon sp
Leucon subnasica
Leuconidae
Leucosiidae
Leucosolenia sp
Leucosoleniida
Leucosoleniidae
Leucothoe sp

Leucothoe spinicarpa
Leucothoidae
Leucothoidea
Leuroleberis sharpei
Leuroleberis sp
Levinsenia gracilis
Levinsenia multibranchiata
Levinsenia oculata
Levinsenia sp
Liljeborgia geminata
Liljeborgia sp
Liljeborgiidae
Liljeborgioidea
Limaria hemphilli
Limaria sp
Limatula saturna
Limatula sp
Limidae
Limifossor fratula
Limifossor sp
Limifossorida
Limifossoridae
Limifossorimorpha
Limnactiniidae
Limnactiniidae sp A
Limnodriloides barnardi
Limnodriloides monothecus
Limnodriloides sp
Limnoria algarum
Limnoria sp
Limnoriidae
Limoida
Limoidea
Lineidae
Lineidae sp A
Lineus bilineatus
Lineus flavescens
Lineus ruber
Lineus rubescens
Lineus sp
Lineus sp A
Lingulida
Lingulidae
Linguloidea
Lirobarleeia kelseyi
Lirobarleeia sp
Lirobittium fetellum

Lirobittium larum
Lirobittium quadrifilatum
Lirobittium rugatum
Lirobittium sp
Lirularia acuticostata
Lirularia parcipicta
Lirularia sp
Listriella albina
Listriella diffusa
Listriella eriopisa
Listriella goleta
Listriella melanica
Listriella sp
Listriella sp A
Listriolobus pelodes
Listriolobus sp
Lithodidae
Lithophaga plumula
Lithophaga sp
Lithopoma sp
Lithopoma undosum
Litiopidae
Littorinoidea
Livoneca californica
Livoneca convexa
Livoneca sp
Livoneca vulgaris
Loimia medusa
Loimia sp
Loliginiidae
Loligo opalescens
Loligo sp
Longosomatidae
Lophelia pertusa
Lophelia sp
Lophogorgia chilensis
Lophogorgia sp
Lopholithodes foraminatus
Lopholithodes sp
Lophopanopeus bellus
Lophopanopeus frontalis
Lophopanopeus leucomanus
Lophopanopeus sp
Lottia sp
Lottia strigatella
Lottiidae
Lovenella nodosa

Lovenella sp
Lovenellidae
Lovenia cordiformis
Lovenia sp
Loveniidae
Loxorhynchus crispatus
Loxorhynchus grandis
Loxorhynchus sp
Loxosomatidae
Lucinidae
Lucinisca nuttalli
Lucinisca sp
Lucinoidea
Lucinoma annulatum
Lucinoma sp
Lugia sp
Lugia uschakovi
Luidia armata
Luidia asthenosoma
Luidia foliolata
Luidia sp
Luidiidae
Lumbrineridae
Lumbrinerides platypygos
Lumbrinerides sp
Lumbrineris californiensis
Lumbrineris cruzensis
Lumbrineris index
Lumbrineris japonica
Lumbrineris latreilli
Lumbrineris limicola
Lumbrineris sp
Lunulariidae
Lyonsia californica
Lyonsia sp
Lyonsiidae
Lysianassidae
Lysianassoidea
Lysippe sp
Lysippe sp A
Lysippe sp B
Lysmata californica
Lysmata sp
Lyssacinosa
Lytechinus pictus
Lytechinus sp
Macoma carlottensis

Macoma indentata
Macoma nasuta
Macoma secta
Macoma sp
Macoma yoldiformis
Macrocyprididae
Macrocyprina pacifica
Macrocyprina sp
Macromeris hemphilli
Macromeris sp
Mactridae
Mactroidea
Mactromeris catilliformis
Mactromeris sp
Mactrotoma californica
Mactrotoma sp
Maera simile
Maera sp
Maera vigota
Magelona berkeleyi
Magelona hartmanae
Magelona hobsonae
Magelona longicornis
Magelona pitelkai
Magelona riojai
Magelona sacculata
Magelona sp
Magelona sp A
Magelona sp SD10
Magelonidae
Majidae
Majoxiphalus major
Majoxiphalus sp
Malacoceros punctata
Malacoceros sp
Malacoplax californiensis
Malacoplax sp
Malacostegoidea
Malacostraca
Maldane sarsi
Maldane sp
Maldanidae
Malmgreniella bansei
Malmgreniella baschi
Malmgreniella liei
Malmgreniella macginitiei
Malmgreniella nigralba

Malmgreniella sanpedroensis
Malmgreniella scriptoria
Malmgreniella sp
Malmgreniella sp A
Mandibulophoxus gilesi
Mandibulophoxus sp
Mangelia hexagona
Mangelia sp
Marginellidae
Mariansabellaria harrisae
Mariansabellaria sp
Marphysa conferta
Marphysa disjuncta
Marphysa sp
Marphysa sp A
Maxwellia santarosana
Maxwellia sp
Mayerella banksia
Mayerella sp
Mediaster aequalis
Mediaster sp
Mediomastus acutus
Mediomastus ambiseta
Mediomastus californiensis
Mediomastus sp
Megabalanus californicus
Megabalanus sp
Megalomma pigmentum
Megalomma sp
Megalomma splendida
Megalomphalus californicus
Megalomphalus sp
Megaluropidae
Megaluropidae sp A
Megamoera sp
Megamoera subtener
Megasurcula carpenteriana
Megasurcula sp
Megasurcula stearnsiana
Meiodorvillea sp
Melanochlamys diomedea
Melanochlamys sp
Melibe leonina
Melibe sp
Melinna heterodonta
Melinna oculata
Melinna sp

Melitidae
Melphidippidae
Melphidippoidea
Melphisana bola Cmplx
Melphisana sp
Membranipora savarti
Membranipora sp
Membranipora tenuis
Membranipora tuberculata
Membraniporidae
Mesochaetopterus sp
Mesochaetopterus sp
Mesocrangon munitella
Mesocrangon sp
Mesolamprops bispinosus
Mesolamprops sp
Metacaprella kennerlyi
Metacaprella sp
Metacrangon sp
Metacrangon spinosissima
Metamysidopsis elongata
Metamysidopsis sp
Metapenaeopsis mineri
Metapenaeopsis sp
Metaphoxus frequens
Metaphoxus sp
Metasychis disparidentatus
Metasychis sp
Metedwardsia sp
Metedwardsia sp A
Metharpinia coronadoi
Metharpinia jonesi
Metharpinia sp
Metopa dawsoni
Metopa sp
Metopella aporpis
Metopella sp
Metridiidae
Metridium senile Cmplx
Metridium sp
Metzgeria sp
Mexamage longibranchiata
Mexamage sp
Micrasterina
Microciona parthena
Microciona sp
Microcosmus sp

Microcosmus squamiger
Microglyphis brevicula
Microglyphis sp
Microjassa litotes
Microjassa sp
Microphthalmus hystrix
Microphthalmus sp
Micropleustes nautilus
Micropleustes sp
Micropodarke dubia
Micropodarke sp
Micropora sp
Microporella sp
Microporellidae
Microporidae
Microspio pigmentata
Microspio sp
Micrura alaskensis
Micrura olivaris
Micrura pardalis
Micrura sp
Micrura wilsoni
Mitra idae
Mitra sp
Mitridae
Modiolus capax
Modiolus neglectus
Modiolus rectus
Modiolus sacculifer
Modiolus sp
Molgula napiformis
Molgula pugetiensis
Molgula regularis
Molgula sp
Molgulidae
Mollusca
Moloha faxoni
Moloha sp
Molpadia intermedia
Molpadia sp
Molpadida
Molpadiidae
Monobrachiidae
Monobrachium parasitum
Monobrachium sp
Monocorophium acherusicum
Monocorophium insidiosum

Monocorophium sp
Monoculodes emarginatus
Monoculodes latissimanus
Monoculodes sp
Monostylifera sp A
Monostylifera sp B
Monostylifera sp C
Monostyliferoidea
Monstrilloida
Monticellina cryptica
Monticellina serratiseta
Monticellina siblina
Monticellina sp
Monticellina tesselata
Mooreonuphis exigua
Mooreonuphis litoralis
Mooreonuphis nebulosa
Mooreonuphis segmentispadix
Mooreonuphis sp
Mooreonuphis stigmatis
Mooresamytha bioculata
Mooresamytha sp
Mopalia phorminx
Mopalia sp
Mopaliidae
Munida hispida
Munida sp
Munna sp
Munna spinifrons
Munna stephenseni
Munnidae
Munnogonium sp
Munnogonium tillerae
Munnopsidae
Munnopsurus sp
Munnopsurus sp A
Muricea californica
Muricea sp
Muriceidae
Muricidae
Muricoidea
Musculista senhousia
Musculista sp
Musculus sp
Mya arenaria
Mya sp
Mycale psila

Mycale sp
Mycalidae
Myidae
Myina
Myodocopa
Myodocopida
Myodocopina
Myoida
Myoidea
Myopsida
Myriaporidae
Myriochele gracilis
Myriochele pygidialis
Myriochele sp
Myriochele sp M
Myriowenia californiensis
Myriowenia sp
Myriozoum sp
Mysella pedroana
Mysella planata
Mysella sp
Mysella sp C
Mysella sp E
Mysida
Mysidacea
Mysidae
Mysidella americana
Mysidella sp
Mysidopsis brattegardi
Mysidopsis californica
Mysidopsis cathengelae
Mysidopsis intii
Mysidopsis onofrensis
Mysidopsis sp
Mystides sp
Mytilidae
Mytiloida
Mytiloidea
Mytilus californianus
Mytilus galloprovincialis
Mytilus sp
Myxicola sp
Myxilla incrustans
Myxilla sp
Myxillidae
Nacellina
Naineris dendritica

Naineris sp
Naineris uncinata
Nannastacidae
Nassariidae
Nassarina penicillata
Nassarina sp
Nassarius delosi
Nassarius fossatus
Nassarius insculptus
Nassarius mendicus
Nassarius perpinguis
Nassarius sp
Naticidae
Naticoidea
Naushonia macginitiei
Naushonia sp
Navanax inermis
Navanax sp
Neaeromya compressa
Neaeromya rugifera
Neaeromya sp
Neaeromya stearnsii
Neanthes acuminata
Neanthes sp
Neastacilla californica
Neastacilla sp
Nebalia daytoni
Nebalia pugettensis Cmplx
Nebalia sp
Nebaliidae
Nellobia eusoma
Nellobia sp
Nemertea
Nemertea sp A
Nemocardium centifilosum
Nemocardium sp
Neocrangon communis
Neocrangon resima
Neocrangon sp
Neocrangon zacae
Neogastropoda
Neoischyrocerus claustris
Neoischyrocerus sp
Neoleprea japonica
Neoleprea sp
Neoleprea spiralis
Neoloricata

Neomysis kadiakensis
Neomysis rayi
Neomysis sp
Neosabellaria cementarium
Neosabellaria sp
Neosimnia aequalis
Neosimnia barbarensis
Neosimnia loebbeckeana
Neosimnia sp
Neotaenioglossa
Neotrypaea affinis
Neotrypaea californiensis
Neotrypaea sp
Nephasoma diaphanes
Nephasoma eremita
Nephasoma sp
Nephtyidae
Nephtys assignis
Nephtys caecoides
Nephtys californiensis
Nephtys cornuta
Nephtys ferruginea
Nephtys punctata
Nephtys simoni
Nephtys sp
Neptunea sp
Neptunea tabulata
Nereididae
Nereidiformia
Nereiphylla castanea
Nereiphylla sp
Nereis latescens
Nereis procera
Nereis sp
Nerocila acuminata
Nerocila sp
Netastoma rostratum
Netastoma sp
Neverita reclusiana
Neverita sp
Nicippe sp
Nicippe tumida
Nicomache lumbricalis
Nicomache personata
Nicomache sp
Nicon moniloceras
Nicon sp

Ninoe sp
Ninoe tridentata
Nodiscala sp
Nodiscala spongiosa
Nolella sp
Norrisia norrisi
Norrisia sp
not recognized
Notaspidea
Nothria occidentalis
Nothria sp
Notocirrus californiensis
Notocirrus sp
Notodorididae
Notomastus latericeus
Notomastus lineatus
Notomastus magnus
Notomastus sp
Notomastus tenuis
Notoplana sp
Notoproctus pacificus
Notoproctus sp
Novafabricia sp
Nucinellidae
Nucinelloidea
Nuculana conceptionis
Nuculana elenensis
Nuculana hamata
Nuculana penderi
Nuculana sp
Nuculana taphria
Nuculanidae
Nuculanoidea
Nuculidae
Nuculoida
Nuculoidea
Nudibranchia
Nutricola cymata
Nutricola lordi
Nutricola ovalis
Nutricola sp
Nutricola tantilla
Nuttallia nuttallii
Nuttallia sp
Nymphon heterodenticulatum
Nymphon pixellae
Nymphon sp

Nymphonidae
Nymphonoidea
Nynantheae
Obelia geniculata
Obelia sp
Obelia sp A
Ocinebrina beta
Ocinebrina foveolata
Ocinebrina sp
Octobrachia
Octopoda
Octopodidae
Octopus bimaculoides
Octopus californicus
Octopus rubescens
Octopus sp
Octopus veligero
Odontosyllis phosphorea
Odontosyllis sp
Odostomia astricta
Odostomia canfieldi
Odostomia clementina
Odostomia columbiana
Odostomia eucosmia
Odostomia eugena
Odostomia gravida
Odostomia laxa
Odostomia ritteri
Odostomia sp
Odostomia sp D
Odostomia tenuisculpta
Odostomia virginalis
Oedicerotidae
Oedicerotoidea
Oegopsida
Oenonidae
Oenopota regulus
Oenopota sp
Oerstedia dorsalis
Oerstedia sp
Ogyrides sp
Ogyrides sp A
Ogyrididae
Okenia angelensis
Okenia sp
Okenia sp A
Olea hansineensis

Olea sp
Oleidae
Oligochaeta
Olivella baetica
Olivella biplicata
Olivella pycna
Olivella sp
Olividae
Onchidorididae
Onchidoris sp
Onuphidae
Onuphis elegans
Onuphis eremita parva
Onuphis geophiliformis
Onuphis iridescens
Onuphis multiannulata
Onuphis pallida
Onuphis sp
Onuphis sp 1
Opalia borealis
Opalia funiculata
Opalia montereyensis
Opalia sp
Ophelia pulchella
Ophelia sp
Opheliida
Opheliidae
Ophelina acuminata
Ophelina sp
Ophelina sp SD1
Ophiacantha diplasia
Ophiacantha phragma
Ophiacantha sp
Ophiacanthidae
Ophiactidae
Ophiactis sp
Ophiocomidae
Ophiocten sp
Ophioderma panamense
Ophioderma sp
Ophiodermatidae
Ophiodermella cancellata
Ophiodermella fancherae
Ophiodermella inermis
Ophiodermella sp
Ophionereidae
Ophionereis annulata

Ophionereis eurybrachiplax
Ophionereis sp
Ophiopholis bakeri
Ophiopholis sp
Ophiopsila californica
Ophiopsila sp
Ophiopteris papillosa
Ophiopteris sp
Ophiosphalma jolliense
Ophiosphalma sp
Ophiothrix sp
Ophiothrix spiculata
Ophiotricidae
Ophiura leptoctenia
Ophiura luetkenii
Ophiura sarsi
Ophiura sp
Ophiurida
Ophiuridae
Ophiuroconis bispinosa
Ophiuroconis sp
Ophiuroidea
Ophryotrocha sp
Ophryotrocha sp A
Ophryotrocha sp B
Ophryotrocha sp C
Opiliones
Opilionoidea
Opisa sp
Opisa tridentata
Opisthobranchia
Opisthodonta mitchelli
Opisthodonta sp
Opisthopus sp
Opisthopus transversus
Opisthosyllis sp
Opisthoteuthidae
Opisthoteuthis sp
Opisthoteuthis sp A
Oplophoridae
Oplorhiza gracilis
Oplorhiza sp
Oradarea longimana
Oradarea sp
Orbinia johnsoni
Orbinia sp
Orbiniida

Orbiniidae
Orchomene anaquelus
Orchomene decipiens
Orchomene pacificus
Orchomene pinguis
Orchomene sp
Orobitella californica
Orobitella sp
Orthopagurus minimus
Orthopagurus sp
Orthopyxis everta
Orthopyxis sp
Ostracoda
Ostreoida
Ototyphlonemertes sp
Ototyphlonemertes spiralis
Ototyphlonemertidae
Ovulidae
Owenia fusiformis
Owenia sp
Oweniida
Oweniidae
Oxyurostylis pacifica
Oxyurostylis sp
Pachastrellidae
Pachycerianthus fimbriatus
Pachycerianthus sp
Pachycheles pubescens
Pachycheles sp
Pachygrapsus crassipes
Pachygrapsus sp
Pachynus barnardi
Pachynus sp
Pachythyone rubra
Pachythyone sp
Pacifacanthomysis nephrophthalma
Pacifacanthomysis sp
Paguridae
Paguristes bakeri
Paguristes parvus
Paguristes sp
Paguristes turgidus
Paguristes ulreyi
Pagurus armatus
Pagurus granosimanus
Pagurus quaylei
Pagurus redondoensis

Pagurus retrorsimanus
Pagurus samuelis
Pagurus sp
Pagurus sp 4
Pagurus spilocarpus
Palaemonidae
Palaemonoidea
Palaeonemertea
Palaeonemertea sp A
Palaeonemertea sp B
Palaeonemertea sp C
Paleanotus bellis
Paleanotus sp
Palicidae
Palicus lucasii
Palicus sp
Palinura
Palinuridae
Pandalidae
Pandaloidea
Pandalopsis ampla
Pandalopsis sp
Pandalus danae
Pandalus jordani
Pandalus platyceros
Pandalus sp
Pandora bilirata
Pandora filosa
Pandora punctata
Pandora sp
Pandoridae
Pandoroidea
Pannychia moseleyi
Pannychia sp
Panopea abrupta
Panopea sp
Pantomus affinis
Pantomus sp
Panulirus interruptus
Panulirus sp
Paracaudina chilensis
Paracaudina sp
Paracerceis cordata
Paracerceis sculpta
Paracerceis sp
Paracyathus sp
Paracyathus stearnsii

Paradiopatra parva
Paradiopatra sp
Paradoneis eliasoni
Paradoneis lyra
Paradoneis sp
Paradoneis spinifera
Paralithodes californiensis
Paralithodes rathbuni
Paralithodes sp
Paramage scutata
Paramage sp
Parametaphoxus quaylei
Parametaphoxus sp
Parametopella ninis
Parametopella sp
Paramicrodeutopus schmitti
Paramicrodeutopus sp
Paramunnidae
Paranaitis polynoides
Paranaitis sp
Parandalia fauveli
Parandalia ocularis
Parandalia sp
Paranemertes californica
Paranemertes peregrina
Paranemertes sp
Paraninoe fusca
Paraninoe sp
Paranthura elegans
Paranthura sp
Paranthuridae
Paraonidae
Parapaguridae
Parapagurodes laurentae
Parapagurodes makarovi
Parapagurodes sp
Paraphoxus sp
Paraphoxus sp 1
Paraplanocera oligoglena
Paraplanocera sp
Paraprionospio pinnata
Paraprionospio sp
Parasmittina sp
Parasmittina trispinosa
Parasterope hulingsi
Parasterope sp
Parastichopus californicus

Parastichopus parvimensis
Parastichopus sp
Paratanaidae
Paratanais intermedius
Paratanais sp
Paratanaoidea
Paraxanthias sp
Paraxanthias taylori
Pardalisca sp
Pardalisca tenuipes
Pardaliscella sp
Pardaliscella symmetrica
Pardaliscidae
Pardaliscoidea
Pareurythoe californica
Pareurythoe sp
Parhyalella sp
Pariambidae
Pariphinotus escabrosus
Pariphinotus sp
Parougia caeca
Parougia sp
Parthenopidae
Parvaplustrum sp
Parvaplustrum sp A
Parvaplustrum sp B
Parvilucina sp
Parvilucina tenuisculpta
Parviplana californica
Parviplana sp
Pasiphaea pacifica
Pasiphaea sp
Pasiphaeidae
Pasiphaeoidea
Patellogastropoda
Paxillosida
Pectinaria californiensis
Pectinaria sp
Pectinariidae
Pectinidae
Pectinina
Pectinoidea
Pegmata
Pelia sp
Pelia tumida
Penaeidae
Penaeidea

Penaeoidea
Penaeus californiensis
Penaeus sp
Pennariidae
Pennatula phosphorea
Pennatula sp
Pennatulacea
Pennatulidae
Pentactinia californica
Pentactinia sp
Pentamera lissoplaca
Pentamera populifera
Pentamera pseudocalcigera
Pentamera pseudopopulifera
Pentamera sp
Peracarida
Peramphithoe humeralis
Peramphithoe lindbergi
Peramphithoe mea
Peramphithoe plea
Peramphithoe sp
Peramphithoe tea
Perigonimus serpens Cmplx
Perigonimus sp
Perigonimus sp A
Perigonimus yoldiarcticae
Periploma discus
Periploma sp
Periplomatidae
Perischoechinoidea
Perotripus brevis
Perotripus sp
Petaloclymene pacifica
Petaloclymene sp
Petaloconchus sp
Petaloproctus borealis
Petaloproctus neoborealis
Petaloproctus sp
Petaloproctus tenuis
Petricola carditoides
Petricola hertzana
Petricola sp
Petricolidae
Petrolisthes cinctipes
Petrolisthes sp
Pettiboneia sp
Pharidae

Phascolion sp
Phascolion sp A
Phascolionidae
Phascolosomatidae
Phascolosomatidea
Phascolosomatiformes
Pherusa capulata
Pherusa inflata
Pherusa negligens
Pherusa neopapillata
Pherusa sp
Phidiana sp
Philine alba
Philine auriformis
Philine bakeri
Philine californica
Philine sp
Philine sp A
Philinidae
Philinoidea
Philomedes dentata
Philomedes sp
Philomedes sp A
Philomedidae
Phimochirus californiensis
Phimochirus sp
Phlebobranchiata
Phliantidae
Pholadidae
Pholadina
Pholadoidea
Pholadomyoida
Pholoe glabra
Pholoe sp
Pholoidae
Pholoides asperus
Pholoides sp
Phorona
Phoronida
Phoronidae
Phoronis sp
Phoronopsis sp
Photis bifurcata
Photis brevipes
Photis californica
Photis conchicola
Photis lacia

Photis linearmanus
Photis macinerneyi
Photis macrotica
Photis parvidons
Photis sp
Photis sp A
Photis sp B
Photis sp C
Photis sp E
Photis viuda
Phoxichilidiidae
Phoxocephalidae
Phoxocephaloidea
Phragmatopoma californica
Phragmatopoma sp
Phrynophiurida
Phtiscidae
Phtisicoidea
Phylactellidae
Phyllocarida
Phyllochaetopterus limicolus
Phyllochaetopterus prolifica
Phyllochaetopterus sp
Phyllodoce cuspidata
Phyllodoce groenlandica
Phyllodoce hartmanae
Phyllodoce longipes
Phyllodoce medipapillata
Phyllodoce pettiboneae
Phyllodoce sp
Phyllodocida
Phyllodocidae
Phyllodociformia
Phyllodurus abdominalis
Phyllodurus sp
Phyllophoridae
Phylo felix
Phylo sp
Physonectae
Pilargidae
Pilargis berkeleyae
Pilargis sp
Pilumnoides rotundus
Pilumnoides sp
Pilumnus sp
Pilumnus spinohirsutus
Pinnixa barnharti

Pinnixa forficulimanus
Pinnixa franciscana
Pinnixa hiatus
Pinnixa longipes
Pinnixa minuscula
Pinnixa occidentalis
Pinnixa scamit
Pinnixa schmitti
Pinnixa sp
Pinnixa tomentosa
Pinnixa tubicola
Pinnotheres pugettensis
Pinnotheres sp
Pinnotheridae
Pionosyllis articulata
Pionosyllis sp
Pionosyllis uraga
Piromis hospitis
Piromis sp
Piromis sp A
Pisaster brevispinis
Pisaster giganteus capitatus
Pisaster ochraceus
Pisaster sp
Pisione remota
Pisione sp
Pisionidae
Pisionoidea
Pista alata
Pista disjuncta
Pista elongata
Pista moorei
Pista sp
Pista sp B
Pitar newcombianus
Pitar sp
Placiphorella mirabilis
Placiphorella sp
Placostegus californicus
Placostegus sp
Planoceridae
Planoceroidea
Platonea sp
Platyasteracea
Platydoridae
Platydoris macfarlandi
Platydoris sp

Platyhelminthes
Platyischnopidae
Platymera gaudichaudii
Platymera sp
Platynereis bicanaliculata
Platynereis dumerilii
Platynereis sp
Platyodon cancellatus
Platyodon sp
Plectodon scaber
Plectodon sp
Plehnia caeca
Plehnia sp
Plehniidae
Pleioplana inquieta
Pleioplana sp
Plesionika beebei
Plesionika sp
Plesionika trispinus
Pleurobranchaea californica
Pleurobranchaea sp
Pleurobranchidae
Pleurobranchoidea
Pleurogonium californiense
Pleurogonium sp
Pleurogonium sp A
Pleuroncodes planipes
Pleuroncodes sp
Pleusirus secorrus
Pleusirus sp
Pleustidae
Pleusymtes sp
Pleusymtes subglaber
Plexauridae
Plumularia corrugata
Plumularia integra
Plumularia plumularioides
Plumularia sp
Plumulariidae
Podarke pugettensis
Podarke sp
Podarkeopsis glabra
Podarkeopsis sp
Podarkeopsis sp A
Podoceridae
Podocerus brasiliensis
Podocerus cristatus

Podocerus fulanus
Podocerus sp
Podochela hemphillii
Podochela lobifrons
Podochela sp
Podocopida
Podocopina
Pododesmus macrochisma
Pododesmus sp
Poecillastra sp
Poecillastra tenuilaminaris
Poecilochaetidae
Poecilochaetus johnsoni
Poecilochaetus sp
Poecilochaetus sp A
Poecilosclerida
Poecilostomatoida
Polinices draconis
Polinices lewisii
Polinices sp
Polyandrocarpa sp
Polyandrocarpa zorritensis
Polycera sp
Polycera tricolor
Polyceratidae
Polychaeta
Polycirrus californicus
Polycirrus sp
Polycirrus sp A
Polycirrus sp I
Polycirrus sp III
Polycirrus sp V
Polycitoridae
Polycladida
Polycladida sp 27
Polycladida sp 43
Polycladida sp A
Polycladida sp P
Polycladida sp R
Polyclinidae
Polyclinum planum
Polyclinum sp
Polydora bioccipitalis
Polydora cirrosa
Polydora cornuta
Polydora heterochaeta
Polydora limicola

Polydora narica
Polydora nuchalis
Polydora sp
Polygireulima rutila
Polygireulima sp
Polygordiidae
Polygordius sp
Polynoidae
Polyodontes panamensis
Polyodontes sp
Polyonyx quadriungulatus
Polyonyx sp
Polyophthalmus pictus
Polyophthalmus sp
Polyplacophora
Polyschides californicus
Polyschides sp
Polyschides tolmiei
Pontogeneia inermis
Pontogeneia rostrata
Pontogeneia sp
Pontogeneioidea
Pontoporeioidea
Poraniidae
Poraniopsis inflata
Poraniopsis sp
Porcellanidae
Porifera
Poromyidae
Poromyoidea
Portunidae
Portunus sp
Portunus xantusii
Postasterope barnesi
Postasterope sp
Potamethus sp
Potamethus sp A
Prachynella lodo
Prachynella sp
Praxillella gracilis
Praxillella pacifica
Praxillella sp
Praxillura maculata
Praxillura sp
Prionospio (Minuspio) lighti
Prionospio (Minuspio) multibranchiata
Prionospio (Prionospio) dubia

Prionospio (Prionospio) ehlersi
Prionospio (Prionospio) heterobranchia
Prionospio (Prionospio) jubata
Prionospio sp
Procampylaspis caenosa
Procampylaspis sp
Proceraea sp
Procerastea sp
Processa peruviana
Processa sp
Processidae
Proclea sp
Proclea sp A
Proneomysis sp
Proneomysis wailesi
Propeamussidae
Prosobranchia
Prosorhochmidae
Prosorhochmus albidus
Prosorhochmus sp
Prosthiostomum latocelis
Prosthiostomum sp
Prostiostomidae
Protellidae
Protobranchia
Protocirrineris sp
Protocirrineris sp A
Protocirrineris sp B
Protoctenostomata
Protodorvillea gracilis
Protodorvillea sp
Protomedeia articulata
Protomedeia prudens
Protomedeia sp
Protomystides sp
Protothaca laciniata
Protothaca sp
Protothaca staminea
Protothaca tenerrima
Prototrygaeus jordanae
Prototrygaeus sp
Protula sp
Protula superba
Psammobiidae
Psammodoris sp
Psammodoris thompsoni
Pseudarchaster pusillus

Pseudarchaster sp
Pseudatherospio fauchaldi
Pseudatherospio sp
Pseudoceros sp
Pseudocerotidae
Pseudocerotoidea
Pseudochama exogyra
Pseudochama granti
Pseudochama sp
Pseudocnus lubricus
Pseudocnus sp
Pseudocoutierea elegans
Pseudocoutierea sp
Pseudodoridoidea
Pseudofabriciola californica
Pseudofabriciola sp
Pseudomelatoma penicillata
Pseudomelatoma sp
Pseudomelatomidae
Pseudomma berkeleyi
Pseudomma californica
Pseudomma sp
Pseudopolydora paucibranchiata
Pseudopolydora sp
Pseudopotamilla socialis
Pseudopotamilla sp
Pseudopotamilla sp 1
Pseudosabinella bakeri
Pseudosabinella sp
Pseudosquillidae
Pseudosquillopsis marmorata
Pseudosquillopsis sp
Pseudostegoidea
Pseudotanaidae
Pseudotanais makrothrix
Pseudotanais sp
Psolidae
Psolus chitonoides
Psolus sp
Pteriomorphia
Pterocirrus californiensis
Pterocirrus montereyensis
Pterocirrus sp
Pterocirrus sp A
Pteropurpura festiva
Pteropurpura macroptera
Pteropurpura sp

Pteropurpura trialata
Pteropurpura vokesae
Ptilosarcus gurneyi
Ptilosarcus sp
Ptychoderidae
Pugettia dalli
Pugettia producta
Pugettia richii
Pugettia sp
Pugettia venetiae
Puncturella cooperi
Puncturella sp
Pycnogonida
Pycnogonidae
Pycnogonomorpha
Pycnogonum rickettsi
Pycnogonum sp
Pycnogonum stearnsi
Pycnopodia helianthoides
Pycnopodia sp
Pylopagurus holmesi
Pylopagurus sp
Pyramidellidae
Pyramidelloidea
Pyromaia sp
Pyromaia tuberculata
Pyura haustor
Pyura lignosa
Pyura mirabilis
Pyura sp
Pyuridae
Randallia bulligera
Randallia ornata
Randallia sp
Raricirrus maculatus
Raricirrus sp
Raspailiidae
Rathbunaster californicus
Rathbunaster sp
Renilla kollikeri
Renilla sp
Renillidae
Reptantia
Retusidae
Rhabdocoela
Rhabdocoela sp A
Rhabdus rectius

Rhabdus sp
Rhachotropis bernardi
Rhachotropis distincta
Rhachotropis sp
Rhachotropis sp A
Rhamphidonta retifera
Rhamphidonta sp
Rhamphobrachium longisetosum
Rhamphobrachium sp
Rhamphostomella sp
Rhamphostomellidae
Rhepoxynius abronius
Rhepoxynius bicuspidatus
Rhepoxynius daboius
Rhepoxynius fatigans
Rhepoxynius heterocuspidatus
Rhepoxynius lucubrans
Rhepoxynius menziesi
Rhepoxynius sp
Rhepoxynius sp A
Rhepoxynius stenodes
Rhepoxynius variatus
Rhizocaulus sp
Rhizocaulus verticillatus
Rhodaliidae
Rhodine bitorquata
Rhodine sp
Rhynchospio glutaea
Rhynchospio sp
Rhynocrangon alata
Rhynocrangon sp
Rictaxis painei
Rictaxis punctocaelatus
Rictaxis sp
Rimakoroga rima
Rimakoroga sp
Rissoidae
Rochefortia grippi
Rochefortia sp
Rochefortia sp A
Rochefortia sp B
Rochefortia tumida
Rocinela angustata
Rocinela belliceps
Rocinela sp
Rossellidae
Rossia pacifica

Rossia sp
Rudilemboides sp
Rudilemboides stenopropodus
Rutiderma lomae
Rutiderma rostratum
Rutiderma rotundum
Rutiderma sp
Rutidermatidae
Sabellariidae
Sabellida
Sabellidae
Sabellides manriquei
Sabellides sp
Saccocirridae
Saccocirrus sp
Saccoglossus sp
Sacoglossa
Sagartia catalinensis
Sagartia sp
Sagartiidae
Samytha californiensis
Samytha sp
Sareptidae
Sarsiella sp
Sarsiella sp C
Sarsiellidae
Saxicavella nybakkeni
Saxicavella pacifica
Saxicavella sp
Saxidomus nuttalli
Saxidomus sp
Scabrotrophon grovesi
Scabrotrophon maltzani
Scabrotrophon sp
Scalibregma inflatum
Scalibregma sp
Scalibregmatidae
Scalpellidae
Scalpelloidea
Scaphandridae
Scaphopoda
Schistocomus hiltoni
Schistocomus sp
Schistocomus sp A
Schisturella cocula
Schisturella dorotheae
Schisturella sp

Schisturella tracalero
Schizasteridae
Schizocardium sp
Schizoporella sp
Schizoporellidae
Schmittius politus
Schmittius sp
Scionella japonica
Scionella sp
Scissurellidae
Scissurelloidea
Scleractinia
Sclerasterias heteropaes
Sclerasterias sp
Scleroconcha sp
Scleroconcha trituberculata
Sclerodactylidae
Scleroplax granulata
Scleroplax sp
Scolanthus sp
Scolanthus sp A
Scolelepis occidentalis
Scolelepis sp
Scolelepis sp 1
Scolelepis squamata
Scolelepis tridentata
Scoletoma tetraura Cmplx
Scoletoma sp
Scoloplos acmeceps
Scoloplos acmeceps profundus
Scoloplos armiger Cmplx
Scoloplos sp
Scoloura phillipsi
Scoloura sp
Scopularia
Scrupocellaria diegensis
Scrupocellaria ferox
Scrupocellaria sp
Scutellina
Scycettida
Scyphoproctus oculatus
Scyphoproctus sp
Scyra acutifrons
Scyra sp
Semele decisa
Semele rubropicta
Semele sp

Semele venusta
Semelidae
Sepioidea
Sepiolidae
Septibranchida
Sergestes similis
Sergestes sp
Sergestidae
Sergestoidea
Serolidae
Seroloidea
Serpulidae
Sertularella pedrensis
Sertularella sp
Sertulariidae
Sessiliflorae
Sicyonia disedwardsi
Sicyonia ingentis
Sicyonia penicillata
Sicyonia sp
Sicyoniidae
Sigalion sp
Sigalion spinosus
Sigalionidae
Sigambra sp
Sigambra tentaculata
Sige sp
Sige sp A
Sige sp B
Siliqua lucida
Siliqua sp
Simomactra falcata
Simomactra planulata
Simomactra sp
Sinelobus sp
Sinelobus stanfordi
Sinum scopulosum
Sinum sp
Siphonodentaliidae
Siphonodentalium quadrifissatum
Siphonodentalium sp
Siphonolabrum californiensis
Siphonolabrum sp
Siphonophora
Siphonosoma ingens
Siphonosoma sp
Sipuncula

Sipunculidae
Sipunculidea
Sipunculiformes
Sipunculus nudus
Sipunculus sp
Siriella pacifica
Siriella sp
Smittina sp
Smittinidae
Socarnes hartmani
Socarnes sp
Socarnoides illudens
Socarnoides sp
Solamen columbianum
Solamen sp
Solariella nuda
Solariella peramabilis
Solariella sp
Solecurtidae
Solecurtus guaymasensis
Solecurtus sp
Solemya reidi
Solemya sp
Solemyidae
Solemyoida
Solemyoidea
Solen rostiformis
Solen sicarius
Solen sp
Solenidae
Solenocera mutator
Solenocera sp
Solenoceridae
Solenoidea
Solitaria
Sosane occidentalis
Sosane sp
Sosanopsis sp
Sosanopsis sp A
Spatangidae
Spatangoida
Spatangus californicus
Spatangus sp
Spengeliidae
Sphaerephesia longisetis
Sphaerephesia similisetis
Sphaerephesia sp

Sphaerodoridae
Sphaerodoridium sp
Sphaerodoridium sp A
Sphaerodoropsis minuta
Sphaerodoropsis sp
Sphaerodoropsis sphaerulifer
Sphaerodorum papillifer
Sphaerodorum sp
Sphaeromatidae
Sphaerosyllis bilineata
Sphaerosyllis californiensis
Sphaerosyllis ranunculus
Sphaerosyllis sp
Spheciospongia confoederata
Spheciospongia sp
Sphenia luticola
Sphenia sp
Spinosphaera oculata
Spinosphaera sp
Spinosphaera sp SD1
Spinulosida
Spio filicornis
Spio maciolekae
Spio maculata
Spio sp
Spiochaetopterus costarum
Spiochaetopterus sp
Spionida
Spionidae
Spioniformia
Spiophanes berkeleyorum
Spiophanes bombyx
Spiophanes duplex
Spiophanes fimbriata
Spiophanes sp
Spiophanes wigleyi
Spiophanicola sp
Spiophanicola spinulosus
Spiophanicolidae
Spirastrellidae
Spirontocaris holmesi
Spirontocaris lamellicornis
Spirontocaris prionota
Spirontocaris sica
Spirontocaris snyderi
Spirontocaris sp
Spirophorida

Spirorbidae
Spirorbis sp
Spirularia
Squillidae
Squilloidea
Staurocalyptus solidus
Staurocalyptus sp
Stegocephalidae
Stegocephaloidea
Stegocephalus hancocki
Stegocephalus sp
Stelletta clarella
Stelletta sp
Stellettidae
Stenolaemata
Stenopleustes monocuspis
Stenopleustes sp
Stenothoe estacola
Stenothoe frecanda
Stenothoe sp
Stenothoidae
Stenothoides bicoma
Stenothoides burbanki
Stenothoides sp
Stenula modosa
Stenula sp
Stephanauge annularis
Stephanauge sp
Stephanauge sp A
Sternaspida
Sternaspidae
Sternaspis fossor
Sternaspis sp
Sterobalanus sp
Sthenelais berkeleyi
Sthenelais fusca
Sthenelais sp
Sthenelais tertiaglabra
Sthenelais verruculosa
Sthenelanella sp
Sthenelanella uniformis
Stichopodidae
Stolidobranchiata
Stolonata
Stolonifera
Stomatopoda
Streblosoma crassibranchia

Streblosoma sp
Streblosoma sp B
Streptosyllis sp
Strongylocentrotidae
Strongylocentrotus franciscanus
Strongylocentrotus purpuratus
Strongylocentrotus sp
Styela coriacea
Styela gibbsii
Styela montereyensis
Styela plicata
Styela sp
Styela truncata
Styelidae
Stylactis sp
Stylasterias forreri
Stylasterias sp
Stylatula elongata
Stylatula sp
Stylatula sp A
Stylochidae
Stylochoidea
Stylochoplana longipenis
Stylochoplana sp
Stylochus californicus
Stylochus franciscanus
Stylochus sp
Stylochus tripartitus
Stylostomum sp
Subadyte mexicana
Subadyte sp
Suberites sp
Suberites suberea
Suberitidae
Subselliflorae
Sulcoretusa sp
Sulcoretusa xystrum
Swiftia sp
Syllidae
Syllides japonica
Syllides longocirrata
Syllides mikeli
Syllides minutus
Syllides reishi
Syllides sp
Syllis (Ehlersia) heterochaeta
Syllis (Ehlersia) hyperioni

Syllis (Syllis) elongata
Syllis (Syllis) gracilis
Syllis (Syllis) spongiphila
Syllis (Typosyllis) farallonensis
Syllis sp
Sympagurus haigae
Sympagurus sp
Synaptidae
Synaptotanais notabilis
Synaptotanais sp
Synchelidium rectipalmum
Synchelidium shoemakeri
Synchelidium sp
Syncoryne eximia
Syncoryne sp
Synidotea calcarea
Synidotea magnifica
Synidotea media
Synidotea sp
Synnotum aegyptiacum
Synnotum sp
Synopiidae
Synopioidea
Syrrhoe longifrons
Syrrhoe sp
Syrrhoe sp A
Tagelus affinis
Tagelus sp
Tagelus subteres
Taliepus nuttallii
Taliepus sp
Talitroidea
Tanaella propinquus
Tanaella sp
Tanaidacea
Tanaidae
Tanaidoidea
Tanaidomorpha
Tanaopsis cadieni
Tanaopsis sp
Tanystylidae
Tanystylum californicum
Tanystylum sp
Tectidrilus diversus
Tectidrilus profusus
Tectidrilus sp
Tegella aquilirostris

Tegella circumclathrata
Tegella sp
Tegula aureotincta
Tegula sp
Teinostoma sp
Teinostoma supravallatum
Telesto sp
Tellina bodegensis
Tellina carpenteri
Tellina idae
Tellina meropsis
Tellina modesta
Tellina nuculoides
Tellina sp
Tellina sp A
Tellinidae
Tellinoidea
Temnopleuroida
Tenonia priops
Tenonia sp
Terebellida
Terebellidae
Terebellides californica
Terebellides reishi
Terebellides sp
Terebellides sp Type C
Terebellides sp Type D
Terebra hemphilli
Terebra pedroana
Terebra sp
Terebratalia occidentalis
Terebratalia sp
Terebratellidina
Terebratelloidea
Terebratulida
Terebratulidina
Terebratulina crossei
Terebratulina sp
Terebridae
Tergipedidae
Tergipedoidea
Tethya aurantium
Tethya sp
Tethygeneia opata
Tethygeneia sp
Tethyidae
Tethyidae

Tetilla arb
Tetilla sp
Tetillidae
Tetractinomorpha
Tetrastemma candidum
Tetrastemma nigrifrons
Tetrastemma reticulatum
Tetrastemma signifer
Tetrastemma sp
Tetrastemma sp A
Tetrastemmatidae
Teuthoidea
Thalamoporella californica
Thalamoporella sp
Thalamoporellidae
Thalassematidae
Thalassinidea
Thecatae
Thelepus hamatus
Thelepus setosus
Thelepus sp
Theora lubrica
Theora sp
Thesea sp
Thesea sp B
Thespesiopsyllidae
Thoracica
Thorlaksonius depressus
Thorlaksonius platypus
Thorlaksonius sp
Thracia curta
Thracia sp
Thracia trapezoides
Thraciidae
Thracioidea
Thuiaria cylindrica
Thuiaria sp
Thyasira flexuosa
Thyasira sp
Thyasiridae
Thysanocardia nigra
Thysanocardia sp
Tiburonella sp
Tiburonella viscana
Timarete luxuriosa
Timarete sp
Tindaria sp

Tindariidae
Tiron biocellata
Tiron sp
Tiron tropakis
Tivela sp
Tivela stultorum
Tochuina sp
Tochuina tetraquetra
Tonnoidea
Toxopneustidae
Trachycardium quadragenarium
Trachycardium sp
Travisia brevis
Travisia gigas
Travisia pupa
Travisia sp
Tresus nuttallii
Tresus sp
Tricellaria occidentalis
Tricellaria praescuta
Tricellaria sp
Trichobranchidae
Tridentella quinicornis
Tridentella sp
Tridentellidae
Trigonulina pacifica
Trigonulina sp
Trikentrion flabelliformis
Trikentrion sp
Triopha catalinae
Triopha maculata
Triopha sp
Triphoroidea
Tritella pilimana
Tritella sp
Triticella elongata
Triticella sp
Triticellidae
Tritonia diomedea
Tritonia festiva
Tritonia sp
Tritoniidae
Trivia californiana
Trivia ritteri
Trivia sp
Triviidae
Trochidae

Trochina
Trochochaeta multisetosa
Trochochaeta sp
Trochochaetidae
Trochoidea
Trombidiformes
Truncatellidae
Tubificidae
Tubificoides bakeri
Tubificoides sp
Tubulanidae
Tubulanidae sp A
Tubulanus albocinctus
Tubulanus capistratus
Tubulanus cingulatus
Tubulanus frenatus
Tubulanus nothus
Tubulanus polymorphus
Tubulanus sp
Tubularia crocea
Tubularia sp
Tubulariidae
Tubularoidea
Tubulipora sp
Tubulipora tuba
Tubuliporidae
Tubuliporina
Turbellaria
Turbinellidae
Turbinidae
Turbonilla almo
Turbonilla castanea
Turbonilla chocolata
Turbonilla diegensis
Turbonilla kelseyi
Turbonilla nuttingi
Turbonilla raymondi
Turbonilla regina
Turbonilla santarosana
Turbonilla sp
Turbonilla sp A
Turbonilla tenuicula
Turridae
Turritella cooperi
Turritella sp
Turritellidae
Typhlotanaidae

Typhlotanais crassus
Typhlotanais sp
Typhlotanais williamsi
uncertain
Ungulinidae
Upogebia lepta
Upogebia macginitieorum
Upogebia sp
Upogebiidae
Urechidae
Urechis caupo
Urechis sp
Uristes entalladurus
Uristes sp
Urochordata
Uromunna sp
Uromunna ubiquita
Urothoe sp
Urothoe varvarini
Urothoidae
Urticina sp
Valenciniidae
Valkerioidea
Valvatacea
Valvatida
Valvifera
Vanikoridae
Vanikoroidea
Vargula sp
Vargula tsujii
Vaunthompsonia pacifica
Vaunthompsonia sp
Vellendoidea
Veneridae
Veneroida
Veneroidea
Venerupis philippinarum
Venerupis sp
Vermetidae
Vermetoidea
Vermiliopsis infundibulum
Vermiliopsis sp
Verticordiidae
Verticordioidea
Vesiculariidae
Vesicularoidea
Vetigastropoda

Virgularia bromleyi	
Virgularia galapagensis	
Virgularia sp	
Virgulariidae	
Vitreolina columbiana	
Vitreolina macra	
Vitreolina sp	
Vitrinella berryi	
Vitrinella oldroydi	
Vitrinella sp	
Vitrinellidae	
Volutoidea	
Volvulella californica	
Volvulella catharia	
Volvulella cylindrica	
Volvulella panamica	
Volvulella sp	
Westwoodilla caecula	
Westwoodilla sp	
Xanthidae	
Xenoleberis californica	
Xenoleberis sp	
Xenopneusta	
Xylophaga sp	
Xylophaga washingtona	
Yoldia cooperii	
Yoldia seminuda	
Yoldia sp	
Ysideria hastata	
Ysideria sp	
Zaolutus actius	
Zaolutus sp	
Zeuxo normani	
Zeuxo sp	
Zoantharia	
Zoanthidea	
Zygeupolia rubens	
Zygeupolia sp	
Zygonemertes sp	
Zygonemertes virescens	
Clevelandia ios	arrow goby
Sebastes aurora	aurora rockfish
Zapteryx exasperata	banded guitarfish
Sebastes rufus	bank rockfish
Syngnathus exilis	barcheek pipefish
Paralabrax nebulifer	barred sand bass
Amphistichus argenteus	barred surfperch

Ophidion scrippsae	basketweave cusk-eel
Myliobatis californica	bat ray
Lepidogobius lepidus	bay goby
Syngnathus leptorhynchus	bay pipefish
Lyconema barbatum	bearded eelpout
Raja binoculata	big skate
Bathyagonus pentacanthus	bigeye poacher
Lycodes cortezianus	bigfin eelpout
Hippoglossina stomata	bigmouth sole
Cheilotrema saturnum	black croaker
Lycodes diapterus	black eelpout
Eptatretus deani	black hagfish
Embiotoca jacksoni	black perch
Stomias atriventer	blackbelly dragonfish
Lycodopsis pacifica	blackbelly eelpout
Coryphopterus nicholsii	blackeye goby
Sebastes melanostomus	blackgill rockfish
Lycodapus fierasfer	blackmouth eelpout
Chromis punctipinnis	blacksmith
Careproctus melanurus	blacktail snailfish
Xeneretmus latifrons	blacktip poacher
Sebastes mystinus	blue rockfish
Lythrypnus dalli	bluebanded goby
Plectobranchus evides	bluebarred prickleback
Xeneretmus triacanthus	bluespotted poacher
Sebastes paucispinis	bocaccio
Artedius notospilotus	bonehead sculpin
Apristurus brunneus	brown cat shark
Sebastes auriculatus	brown rockfish
Mustelus henlei	brown smoothhound
Enophrys taurina	bull sculpin
Pleuronectes isolepis	butter sole
Pleuronichthys coenosus	C-O sole
Scorpaenichthys marmoratus	cabezon
Sebastes dallii	calico rockfish
Gymnura marmorata	California butterfly ray
Gobiesox rhessodon	California clingfish
Menticirrhus undulatus	California corbina
Nezumia stelgidolepis	California grenadier
Paralichthys californicus	California halibut
Diaphus theta	California headlightfish
Synodus lucioceps	California lizardfish
Scorpaena guttata	California scorpionfish
Semicossyphus pulcher	California sheephead
Raja inornata	California skate
Alepocephalus tenebrosus	California slickhead
Symphurus atricauda	California tonguefish

Sebastes pinniger	canary rockfish
Gnathophis catalinensis	Catalina conger
Sebastes goodei	chilipepper
Scomber japonicus	chub mackerel
Sebastes caurinus	copper rockfish
Sebastes levis	cowcod
Pleuronichthys decurrens	curlfin sole
Sebastes crameri	darkblotched rockfish
Radulinus boleoides	darter sculpin
Anchoa compressa	deepbody anchovy
Embassichthys bathybius	deepsea sole
Cryptotrema corallinum	deepwater blenny
Hypsopsetta guttulata	diamond turbot
Facciolella gilbertii	dogface witch-eel
Microstomus pacificus	Dover sole
Micrometrus minimus	dwarf perch
Pleuronectes vetulus	English sole
Xystreurys liolepis	fantail sole
Parmaturus xaniurus	filetail catshark
Sebastes rubrivinctus	flag rockfish
Icelinus fimbriatus	fringed sculpin
Icelinus oculatus	frogmouth sculpin
Heterostichus rostratus	giant kelpfish
Stereolepis gigas	giant sea bass
Sebastes carnatus	gopher rockfish
Sebastes rastrelliger	grass rockfish
Mustelus californicus	gray smoothhound
Sebastes rosenblatti	greenblotched rockfish
Sebastes chlorostictus	greenspotted rockfish
Sebastes elongatus	greenstriped rockfish
Rhamphocottus richardsonii	grunt sculpin
Citharichthys fragilis	gulf sanddab
Sebastes semicinctus	halfbanded rockfish
Medialuna californiensis	halfmoon
Sebastes umbrosus	honeycomb rockfish
Heterodontus francisci	horn shark
Pleuronichthys verticalis	hornyhead turbot
Physiculus rastrelliger	hundred-fathom codling
Alloclinus holderi	island kelpfish
Trachurus symmetricus	jack mackerel
Atherinopsis californiensis	jacksmelt
Paralabrax clathratus	kelp bass
Hexagrammos decagrammus	kelp greenling
Ulvicola sanctaerosae	kelp gunnel
Brachyistius frenatus	kelp perch
Syngnathus californiensis	kelp pipefish
Leiocottus hirundo	lavender sculpin

Triakis semifasciata	leopard shark
Gobiesox eugrammus	lined clingfish
Ophiodon elongatus	lingcod
Citharichthys xanthostigma	longfin sanddab
Raja rhina	longnose skate
Zaniolepis latipinnis	longspine combfish
Sebastolobus altivelis	longspine thornyhead
Argyropelecus sladeni	lowcrest hatchetfish
Prionotus stephanophrys	lumptail searobin
Icichthys lockingtoni	medusafish
Triphoturus mexicanus	Mexican lampfish
Sebastes macdonaldi	Mexican rockfish
Melanostigma pammelas	midwater eelpout
Engraulis mordax	northern anchovy
Stenobrachius leucopsarus	northern lampfish
Agonopsis vulsa	northern spearnose poacher
Caulolatilus princeps	ocean whitefish
Sebastes serranoides	olive rockfish
Neoclinus uninotatus	onespot fringehead
Girella nigricans	opaleye
Squatina californica	Pacific angel shark
Argentina sialis	Pacific argentine
Sarda chiliensis	Pacific bonito
Torpedo californica	Pacific electric ray
Eptatretus stoutii	Pacific hagfish
Merluccius productus	Pacific hake
Sebastes alutus	Pacific ocean perch
Peprilus simillimus	Pacific pompano
Citharichthys sordidus	Pacific sanddab
Sardinops sagax	Pacific sardine
Lepidopus fitchi	Pacific scabbardfish
Leptocottus armatus	Pacific staghorn sculpin
Oxylebius pictus	painted greenling
Lycodapus mandibularis	pallid eelpout
Apodichthys flavidus	penpoint gunnel
Eucryphycus californicus	persimmon eelpout
Eopsetta jordani	petrale sole
Paraliparis albescens	phantom snailfish
Rhacochilus vacca	pile perch
Sebastes eos	pink rockfish
Zalembius rosaceus	pink seaperch
Sebastes simulator	pinkrose rockfish
Icelinus cavifrons	pit-head sculpin
Porichthys notatus	plainfin midshipman
Stellerina xyosterna	pricklebreast poacher
Odontopyxis trispinosa	pygmy poacher
Sebastes wilsoni	pygmy rockfish

Seriphus politus	queenfish
Hypsurus caryi	rainbow seaperch
Brosmophycis marginata	red brotula
Sebastes babcocki	redbanded rockfish
Errex zachirus	rex sole
Bathylagus milleri	robust blacksmelt
Pleuronectes bilineatus	rock sole
Halichoeres semicinctus	rock wrasse
Sebastes rosaceus	rosy rockfish
Rathbunella alleni	rough ronquil
Chitonotus pugetensis	roughback sculpin
Etrumeus teres	round herring
Urolophus halleri	round stingray
Zalieutes elator	roundel batfish
Rhacochilus toxotes	rubberlip seaperch
Cataetyx rubrirostris	rubynose brotula
Anoplopoma fimbria	sablefish
Xenistius californiensis	salema
Psettichthys melanostictus	sand sole
Bathyraja interrupta	sandpaper skate
Neoclinus blanchardi	sarcastic fringehead
Artedius harringtoni	scalyhead sculpin
Oxyjulis californica	senorita
Sebastes zacentrus	sharpchin rockfish
Phanerodon atripes	sharpnose seaperch
Cymatogaster aggregata	shiner perch
Sebastes jordani	shortbelly rockfish
Zaniolepis frenata	shortspine combfish
Sebastolobus alascanus	shortspine thornyhead
Caelorinchus scaphopsis	shoulderspot grenadier
Rhinobatos productus	shovelnose guitarfish
Macroramphosus gracilis	slender snipefish
Eopsetta exilis	slender sole
Radulinus asprellus	slim sculpin
Liparis mucosus	slimy snailfish
Anchoa delicatissima	slough anchovy
Nezumia liolepis	smooth grenadier
Kathetostoma averruncus	smooth stargazer
Xeneretmus leiops	smootheye poacher
Artedius lateralis	smoothhead sculpin
Orthonopias triacis	snubnose sculpin
Agonopsis sterletus	southern spearnose poacher
Sebastes ovalis	speckled rockfish
Citharichthys stigmaeus	speckled sanddab
Porichthys myriaster	specklefin midshipman
Squalus acanthias	spiny dogfish
Sebastes diploproa	splitnose rockfish

Bellator xenisma	splitnose searobin
Roncador stearnsii	spotfin croaker
Icelinus tenuis	spotfin sculpin
Hyperprosopon anale	spotfin seaperch
Chilara taylori	spotted cusk-eel
Gibbonsia elegans	spotted kelpfish
Hydrolagus colliei	spotted ratfish
Paralabrax maculatofasciatus	spotted sand bass
Pleuronichthys ritteri	spotted turbot
Sebastes hopkinsi	squarespot rockfish
Platichthys stellatus	starry flounder
Sebastes constellatus	starry rockfish
Raja stellulata	starry skate
Gibbonsia metzi	striped kelpfish
Embiotoca lateralis	striped seaperch
Rathbunella hypoplecta	stripedfin ronquil
Xeneretmus ritteri	stripefin poacher
Sebastes saxicola	stripetail rockfish
Cephaloscyllium ventriosum	swell shark
Sebastes ensifer	swordspine rockfish
Platyrhinoidis triseriata	thornback
Pronotogrammus multifasciatus	threadfin bass
Icelinus filamentosus	threadfin sculpin
Atherinops affinis	topsmelt
Sebastes serriceps	treefish
Aulorhynchus flavidus	tube-snout
Bothrocara brunneum	twoline eelpout
Sebastes miniatus	vermilion rockfish
Hyperprosopon argenteum	walleye surfperch
Genyonemus lineatus	white croaker
Atractoscion nobilis	white seabass
Phanerodon furcatus	white seaperch
Poroclinus rothrocki	whitebarred prickleback
Anarrhichthys ocellatus	wolf-eel
Ophichthus zophochir	yellow snake eel
Icelinus quadriseriatus	yellowchin sculpin
Umbrina roncador	yellowfin croaker
Sebastes flavidus	yellowtail rockfish
Lythrypnus zebra	zebra goby

List 11. Benthic Species Groups

Group
Ophiuroidea
Echinodermata
Mollusca

Annilida
Crustacea
Other

List 12. Fish Tissue Codes

Common Name	Scientific Name
Category I	
Longfin sanddab	*Citharichthys xanthostigma*
Pacific sanddab	*Citharichthys sordidus*
Gulf sanddab	*Citharichthys fragilis*
Speckled sanddab	*Citharichthys stigmaeus*
Slender sole	*Eopsetta exilis*
California halibut (<20 cm)	*Paralichthys californicus*
Petrale sole (<20 cm)	*Eopsetta jordani*
Category II	
Diamond turbot	*Hypsopsetta guttulata*
Spotted turbot	*Pleuronichthys ritteri*
C-O sole	*Pleuronichthys coenosus*
Hornyhead turbot	*Pleuronichthys decurrens*
Dover sole	*Microstomus pacificus*
English sole	*Pleuronectes vetulus*
Rock sole	*Pleuronectes bilineatus*

List 13. Qualifier Codes

Qualifier	Description
>	greater than
<	less than
ND	Not Detected
NA	Not Analyzed
NS	Not Sampled
P	Present, not counted
A	Count base on calculation of Aliquot

List 14. Debris Types

DebrisCode	DebrisType
A	Rocks
B	Terrestrial Vegetation
C	Marine Vegetation
D	Lumber
E	Plastic

F	Metal Debris
G	Paper
H	Medical Waste
I	Cans
J	Glass Bottles
K	Fishing Gear
L	Tires
M	Other
N	Benthic Debris

List 15. Debris Abundance Codes

Code	Description	Estimate
P	Present	1
L	Low	1 to 10
M	Moderate	11-100
H	High	>100

List 16. Debris Weight Estimates

Code	Description	Estimate
T	Trace	0.0-0.1Kg
L	Low	0.2-1.0Kg
M	Moderate	1.1-10Kg
H	High	>10Kg

List 17. Fish Bioaccumulation Test Material

TestMaterialCode	TestMaterialName
MU	Muscle
LG	Liver/Gall
BL	Blood

List 18. Chemical Parameter Codes

Odes Code	Target Analytes	Proposed Code
ALUMINUM	Aluminum	
ANTIMONY	Antimony	
ARSENIC	Arsenic	
BARIUM	Barium	
BERYLLIUM	Beryllium	
CADMIUM	Cadmium	

CHROMIUM-T	Chromium
COPPER	Copper
IRON	Iron
LEAD	Lead
MERCURY	Mercury
NICKEL	Nickel
SELENIUM	Selenium
SILVER	Silver
ZINC	Zinc

NAPTHALENE	Naphthalene
2-METHNAP	2-Methylnapthalene
1-MPHENAH	1-Methylnapthalene
BIPHENYL	Biphenyl
26-2MNAP	2,6-Dimethylnaphthalene
ACENAPTYLE	Acenaphthylene
ACENAPE	Acenaphthene
167-3MNAP	1,6,7-Trimethylnaphthalene
FLUORENE	Fluorene
PHENANTHRN	Phenanthrene
ANTHRACENE	Anthracene
1-MPHENAH	1-Methylphenanthrene
FLUORANTHN	Fluoranthene
PYRENE	Pyrene
BAA	Benz[a]anthracene
CHRYSENE	Chrysene
BAF	Benzo[b]fluoranthene
BKF	Benzo[k]fluoranthene
BEP	Benzo[e]pyrene
BAP	Benzo[a]pyrene
PERYLENE	Perylene
ICDP	Indeno(1,2,3-c,d)pyrene
2BANTH	Dibenz[a,h]anthracene
BGHIP	Benzo[g,h,i]perylene
PCB18	PCB 18
PCB28	PCB 28
PCB37	PCB 37
PCB44	PCB 44
PCB49	PCB 49
PCB52	PCB 52
PCB66	PCB 66
PCB70	PCB 70
PCB74	PCB 74
PCB77	PCB 77
PCB81	PCB 81
PCB87	PCB 87
PCB99	PCB 99

PCB101	PCB 101
PCB105	PCB 105
PCB110	PCB 110
PCB114	PCB 114
PCB118	PCB 118
PCB119	PCB 119
PCB123	PCB 123
PCB126	PCB 126
PCB128	PCB 128
PCB138	PCB 138
PCB149	PCB 149
PCB151	PCB 151
PCB153	PCB 153
PCB156	PCB 156
PCB157	PCB 157
PCB158	PCB 158
PCB167	PCB 167
PCB168	PCB 168
PCB169	PCB 169
PCB170	PCB 170
PCB177	PCB 177
PCB180	PCB 180
PCB183	PCB 183
PCB187	PCB 187
PCB189	PCB 189
PCB195	PCB 194
PCB201	PCB 201
PCB209	PCB 206
PP DDT	4,4'-DDT
OP DDT	2,4'-DDT
PP DDD	4,4'-DDD
OP DDD	2,4'-DDD
PP DDE	4,4'-DDE
OP DDE	2,4'-DDE
CHLORDANE	Chlordane
DIELDRIN	Dieldrin
	Lindane

5-phenyldecane	C10LAB-5
4-phenyldecane	C10LAB-4
3-phenyldecane	C10LAB-3
2-phenyldecane	C10LAB-2
6-phenylundecane	C11LAB-6
5-phenylundecane	C11LAB-5
4-phenylundecane	C11LAB-4
3-phenylundecane	C11LAB-3
2-phenylundecane	C11LAB-2

	6-phenyldodecane	C12LAB-6
	5-phenyldodecane	C12LAB-5
	4-phenyldodecane	C12LAB-4
	3-phenyldodecane	C12LAB-3
	2-phenyldodecane	C12LAB-2
	7&6-phenyltridecane	C13LAB-7/6
	5-phenyltridecane	C13LAB-5
	4-phenyltridecane	C13LAB-4
	3-phenyltridecane	C13LAB-3
	2-phenyltridecane	C13LAB-2
	7-phenyltetradecane	C14LAB-7
	6-phenyltetradecane	C14LAB-6
	5-phenyltetradecane	C14LAB-5
	4-phenyltetradecane	C14LAB-4
	3-phenyltetradecane	C14LAB-3
	2-phenyltetradecane	C14LAB-2
TOC	TOC	
	Lipid	LIPID

List 19. QA Codes

Code	**Description**
E	Estimated Value
Q	Questionable Data
D	Lab Contamination

List 20. Sediment Toxicity Species

SpeciesCode	**SpeciesName**
EE	Eohaustorius estuarius
VF	Vibrio fisheri
GP	Gonyaulax polyedra
PL	Pyrocystis lunula
HEPG2	RGS cell line
PF	Pyrocystis fusiformis

List 21. Sediment Toxicity Protocol

ProtocolCode	**ProtocolDescription**
EPA 1994	EPA amphipod test method (EPA/600/R-94/025)
QLB 1996	QwikLite Basics 1996
Microbics 1992	Microbics Corp. 1992
ASTM 1853	ASTM. 1997. E 1853-96

List 22. Sediment Toxicity Matrix

MatrixCode	MatrixDescription
BS	bulk sediment
IW	interstitial water
EL	elutriate
EX	extract
OL	overlaying water
RT	reference toxicant

List 23. Sediment Toxicity End Points

EPCode	EndPoint
SP	survial percent
RL	relative luminescence
B[a]Peq	Benzo [a] Pyrene equivalents
EC50	median effective concentration
IC50	median inhibatory concentration

List 24. Sediment Toxicity Water Quality

STWQCode	STWQName	Units
DO	Dissolved Oxygen	mg/L
PH	pH	pH
SAL	Salinity	g/L
TEMP	Temperature	C
NH3T	Total Ammonia	mg/L
ST	Total Sulfide	ug/L
NH3U	Unionized Ammonia	mg/L
H2S	Hydrogen Sulfide	mg/L

List 25. Toxicity Test Acceptability Codes

AcceptCode	CodeDescription
A	Acceptable data for analysis
C	Reduced number of replicates
D	Control performance criteria not met
E	Sample stored > 14 days
G	Reference test missing or outside limits
H	Water quality data incomplete
J	Minor deviation in test conditions

List 26. Sediment Colors

Color
Olive Green
Brown
Black
Red
Gray

List 27. Biomarker Fish Maturity Codes

MaturityCode	**MaturityState**
U	Unidentifiable
MM	Male Mature
FM	Female Mature
MI	Male Immature
FI	Female Immature

List 28. Biomarker Analysis Methods

AnalysisCode	**Method**
FACS	Fluorescent Aromatic Compounds
Comet	Steinert 1996

List 29. Biomarker Parameters

Parameter
Protein
NPH
PHN
BAP
OI
TM

List 30. Biomarker Units

Units
mg protein/ml bile
ng equivalents/ml bile
um

List 31. Fish Anomaly Codes

Code	Anomaly
A	Ambicoloration

B	Albinism
D	Deformity (Skeletal)
F	Fin Erosion
L	Lesion
P	Parasite
T	Tumor
AB	Ambicoloration/Albinism
AD	Ambicoloration/Deformity (Skeletal)
AF	Ambicoloration/Fin Erosion
AL	Ambicoloration/Lesion
AP	Ambicoloration/Parasite
AT	Ambicoloration/Tumor
BD	Albinism/Deformity (Skeletal)
BF	Albinism/Fin Erosion
BL	Albinism/Lesion
BP	Albinism/Parasite
BT	Albinism/Tumor
DF	Deformity (Skeletal)/Fin Erosion
DL	Deformity (Skeletal)/Lesion
DP	Deformity (Skeletal)/Parasite
DT	Deformity (Skeletal)/Tumor
FL	Fin Erosion/Lesion
FP	Fin Erosion/Parasite
FT	Fin Erosion/Tumor
LP	Lesion/Parasite
LT	Lesion/Tumor
PT	Parasite/Tumor
ABD	Ambicoloration/Albinism/Deformity (Skeletal)
ABF	Ambicoloration/Albinism/Fin Erosion
ABL	Ambicoloration/Albinism/Lesion
ABP	Ambicoloration/Albinism/Parasite
ABT	Ambicoloration/Albinism/Tumor
ADF	Ambicoloration/Deformity (Skeletal)/Fin Erosion
ADL	Ambicoloration/Deformity (Skeletal)/Lesion
ADP	Ambicoloration/Deformity (Skeletal)/Parasite
ADT	Ambicoloration/Deformity (Skeletal)/Tumor
AFL	Ambicoloration/Fin Erosion/Lesion
AFP	Ambicoloration/Fin Erosion/Parasite
AFT	Ambicoloration/Fin Erosion/Tumor
ALP	Ambicoloration/Lesion/Parasite
ALT	Ambicoloration/Lesion/Tumor
APT	Ambicoloration/Parasite/Tumor
BDF	Albinism/Deformity (Skeletal)/Fin Erosion
BDL	Albinism/Deformity (Skeletal)/Lesion
BDP	Albinism/Deformity (Skeletal)/Parasite
BDT	Albinism/Deformity (Skeletal)/Tumor
BFL	Albinism/Fin Erosion/Lesion

BFP	Albinism/Fin Erosion/Parasite
BFT	Albinism/Fin Erosion/Tumor
DFL	Deformity (Skeletal)/Fin Erosion/Lesion
DFP	Deformity (Skeletal)/Fin Erosion/Parasite
DFT	Deformity (Skeletal)/Fin Erosion/Tumor
DLP	Deformity (Skeletal)/Lesion/Parasite
DLT	Deformity (Skeletal)/Lesion/Tumor
DPT	Deformity (Skeletal)/Parasite/Tumor
FLP	Fin Erosion/Lesion/Parasite
FLT	Fin Erosion/Lesion/Tumor
FPT	Fin Erosion/Parasite/Tumor
LPT	Lesion/Parasite/Tumor

List 32. Invertebrate Anomaly Codes

Anomaly Code	Anomaly
P	Parasite
U	Burnspot Disease
PU	Burnspot Disease/Parasite

List 33. Chemistry Analysis Method Codes

MethodCode	**Method**
CHN	EA1108 CHN Elemental Analyzer
GCECD	CG/ECD
GCMS	GS/MS
IONGCMS	Ion Trap GC/MS
FAA	Flame Atomic Absorption Spectrometer
GFAA	Graphite Furnace Atomic Absorption Analysis
CVAA	Cold Vapor Atomic Absorption Analysis
HAA	Hydride Atomic Absorption Analysis
FIAS	Flow Injection Analysis System
ICPAES	Inductively Coupled Plasma Atomic Emmision Spectrometer
ICPMS	Inductively Coupled Plasma Mass Spectrometer

List 34. Chemistry Preparation Codes

PrepCode	**Preparation Method**
ASE	Accelerated Solvent Extraction
ROLLER	Roller Table Extraction
SOXHLET	Soxhlet Solvent Extraction
SFE	Supercritical Fluid Extraction
MASE	Microwave Assisted Solvent Extraction
SONIC	Ultrasonic Extraction
EPA3050A	Strong Acid Hot Plate Method (EPA3050A)

EPA3050B	Strong Acid Hot Plate or Microwave Method (EPA3050B)
EPA3051	Strong Acid Microwave Method (EPA 3051)
EPA3055	Strong Acid Hot Plate Method (EPA 3055)
EPA245.5	Mercury in Sediment (Cold Vapor with Permanganate Digestion)

List 35. Microbiology Method Codes

Method
MTF
CLT MPN
CLT QT
MF

List 36. Microbiology Parameters

Parameter	Description
Total Coliforms	
Fecal Coliforms	
Enterococcus	

List 37. Microbiology Sample Types

Type
Results
QC Check
Duplicate

List 38. Microbiology Surf Conditions

Height
Low (1-3)
Mid (4-6)
High (7+)

List 39. Microbiology Sea State

State
Calm
Choppy
White Caps

List 40. Microbiology Units

Units
cfu / 100ml
MPN Index/100ml