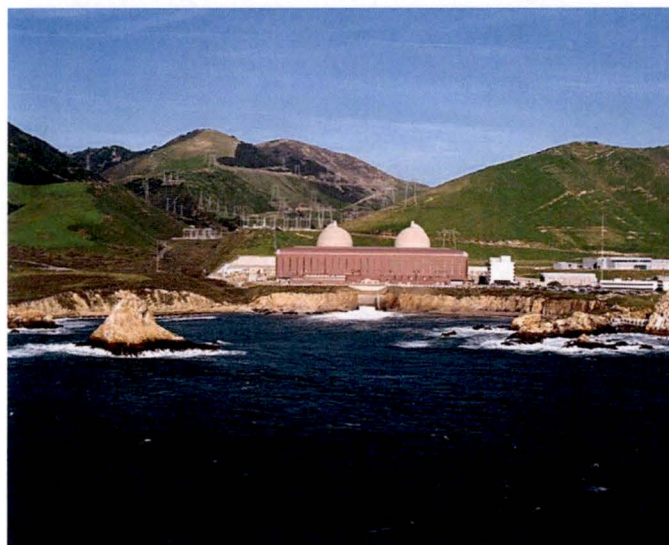




*Pacific Gas and Electric Company
Diablo Canyon Power Plant*

NPDES RECEIVING WATER MONITORING PROGRAM: 2015 ANNUAL REPORT



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1.0 Introduction

Monitoring of the marine environment near the Diablo Canyon Power Plant (DCPP) is required by WDR Order No. 90-09 (National Pollutant Discharge Elimination System (NPDES) Permit No. CA0003751), as revised in a letter from the Central Coast Regional Water Quality Control Board in December 1998. Changes in the marine environment in the vicinity of DCPP (**Figure 1**) are monitored by the Receiving Water Monitoring Program (RWMP) in accordance with the NPDES Permit.

This report presents seawater temperature and biological data collected for the 2015 reporting period from the program's intertidal and subtidal monitoring tasks (**Table 1**). The sampling methods for each task are described, and the 2015 results are presented in the report appendices.

The biological monitoring tasks were completed at fixed stations in areas that experience increased seawater temperatures from the DCPP thermal discharge, and in areas outside the influence of the discharge (**Table 1**). With the exception of the habitat-forming kelp survey task, the sampling frequency for the tasks was four surveys per year. A survey consisted of sampling several locations (stations) over a period of time, which varied depending on logistics, staffing resources, weather, sea state, and tide conditions. The survey date listed in the appendix tables for any particular task represents the mean date for the time period that each station was sampled for that survey. All monitoring tasks and surveys were completed for the 2015 reporting period with the exception of the fourth quarter fish surveys. Due to rough sea conditions only the North Diablo Cove and Patton Cove fish stations were surveyed during the fourth quarter; those surveys were completed in January 2016.

This report does not include analysis or discussion of the results of the biological or temperature monitoring. Comprehensive analyses of changes in the marine environment resulting from the DCPP discharge have been presented in Tenera (1988, 1997, 1999a, 1999b, 2002).



Table 1. Tasks, stations, and frequency of surveys for the DCPW RWMP, 2015. (See text for sampling method descriptions and station locations).

Task and Sampling Frequency	Stations
Temperature Monitoring	
Intertidal (recorded every 20 min)	NC 2, FC 1, FC 2, FC 3, NDC 1, NDC 2, NDC 3, SDC 1, SDC 2, SDC 3, SDP 1, SDP 2, SC 1, and SC 1V
Subtidal (recorded every 20 min)	NC 1 -3m, FC 1 -3m, NDC 2 -3m, NDC 3 -3m, NDC 4 -4m, SDC 1 -3m, SDC 4 -4m, SC 1 -3m, and SC 2 -6m
Intertidal Horizontal Band Transects (algae, seagrasses, invertebrates, substrate)	
4 surveys per year	NC 1, NC 2, FC 1, FC 2, FC 3, NDC 1, NDC 2, NDC 3, SDC 1, SDC 2, SDC 3, SDP 1, SDP 2, and SC 1
Intertidal Vertical Band Transects (fishes)	
4 surveys per year	NC 1V, FC 1V, NDC 1V, SDC 2V, and SC 1V
Subtidal Benthic Stations (algae, invertebrates, substrate)	
4 surveys per year	FC 1 -3m, NDC 2 -3m, NDC 3 -3m, NDC 4 -4m, SDC 2 -3m, SDC 3 -4m, SC 1 -3m, and SC 2 -6m
Subtidal Fish Observations (fishes)	
4 surveys per year	FC FO-1, FC FO-2, FC FO-3, NDC FO-1, NDC FO-2, NDC FO-3, SDC FO-1, SDC FO-2, SDC FO-3; SC FO-1, SC FO-2, and SC FO-3
Habitat-Forming Kelp Survey (bull kelp, giant kelp)	
1 survey per year	Diablo Cove



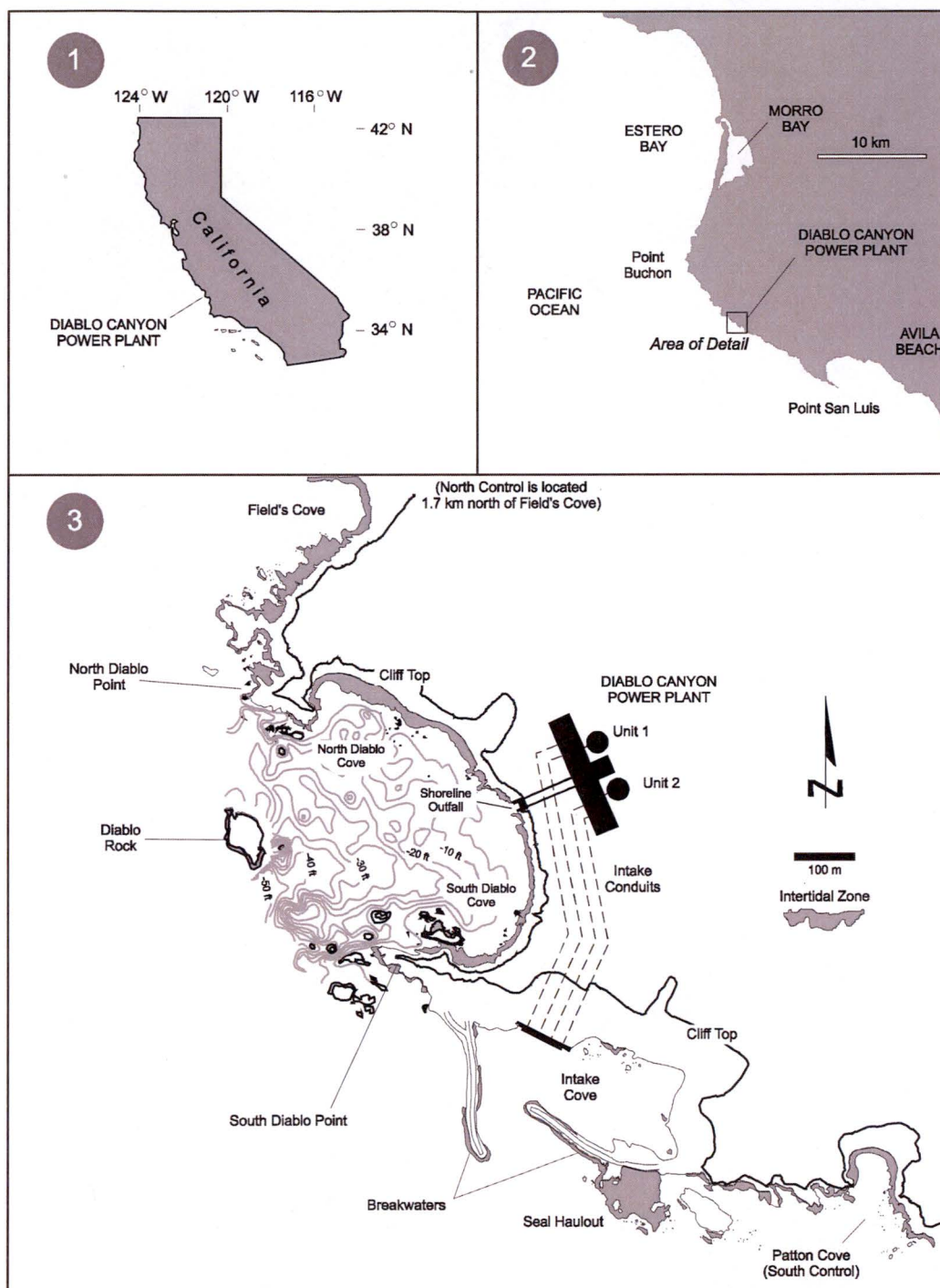


Figure 1. Location of the Diablo Canyon Power Plant.



2.0 Temperature Monitoring

Intertidal and subtidal seawater temperatures were recorded at permanent stations located along the Diablo Canyon coastline. Temperature units at intertidal stations were located along the rocky shore at the +0.6 m (+2.0 ft) mean lower low water (MLLW) elevation (**Figure 2**). Subtidal temperature recorders were located at depths from -3 m to -6 m (-10 ft to -20 ft) MLLW (**Figure 3**). The designations for the individual stations reflects the area location and station number, and, for subtidal stations, includes the station's depth relative to MLLW (e.g., NDC 1 - 3 m is north Diablo Cove subtidal Station 1 at a depth of -3 m (-10 ft) MLLW).

There were 13 stations in Diablo Cove regularly contacted by the discharge plume:

Intertidal: NDC 1, NDC 2, NDC 3, SDC 1, SDC 2, SDC 3, SDP 1, and SDP 2.

Subtidal: NDC 2 -3m, NDC 3 -3m, NDC 4 -4m, SDC 1 -3m, and SDC 4 -4m.

There were four stations in Field's Cove, approximately one kilometer upcoast from Diablo Cove, contacted intermittently by the discharge plume:

Intertidal: FC 1, FC 2, and FC 3.

Subtidal: FC 1 -3m.

There were six control stations beyond the influence of the discharge, which measured ambient ocean temperatures:

Intertidal: NC 2, SC 1, and SC 1V.

Subtidal: NC 1 -3m, SC 1 -3m, and SC 2 -6m.

The intertidal stations in South Control and Stillwater Cove use the same acronym, but are located in different locations as shown in **Figure 3**.

Each instrument synchronously logged temperatures every 20 minutes throughout its deployment period. Instrument precision was 0.025°C with an accuracy of $\pm 0.05^\circ\text{C}$. Temperature units were deployed at a station for approximately 60–90 days and then exchanged with a serviced, calibrated unit. Intertidal temperature units recorded water temperatures only when tide levels were higher than about +0.6 m (+2.0 ft) MLLW. Air temperatures were removed from the database by matching the temperature records with the times that the tide level dropped below +0.6 m (+2.0 ft) MLLW, using a tidal height database derived from NOAA tide gauges at Morro Bay and Port San Luis.

Seawater temperatures recorded at the intertidal and subtidal temperature monitoring stations in 2015 are presented in **Appendix A** and **Appendix B**, respectively. Below is a summary of seawater temperatures recorded in the year, based on data from a subset of the temperature recording stations in the control areas, north Diablo Cove, south Diablo Cove, and Field's Cove.



Intertidal monthly mean, maximum, and minimum temperatures recorded in 2015 at the +0.6 m (+2.0 ft) (MLLW) elevation at stations in North Control (NC 2), south Diablo Cove (SDC 2), north Diablo Cove (NDC 2), and Field's Cove (FC 2) are shown in **Figure 4a**. Monthly mean ambient seawater temperatures at the North Control station ranged from a low of 11.8°C (53.2°F) in April to a high of 17.7°C (63.8°F) in September. Intertidal seawater temperatures are usually warmest at the Diablo Cove stations from late summer to early fall. Compared to the control station, intertidal seawater temperatures averaged 3.8°C (6.8°F) warmer in south Diablo Cove and 3.9°C (7.0°F) warmer in north Diablo Cove. Intertidal seawater temperatures at the Field's Cove station were 0.9°C (1.7°F) warmer than the control station, on average.

Subtidal monthly mean, maximum, and minimum temperatures recorded in 2015 at -3 m MLLW in South Control (SC 1 -3m), south Diablo Cove (SDC 1 -3m), north Diablo Cove (NDC 2 -3m), and Field's Cove (FC 1 -3m) are shown in **Figure 4b**. Monthly mean ambient seawater temperatures at the South Control station ranged from a low of 11.2°C (52.2°F) in April to a high of 17.3°C (63.2°F) in September. Subtidal temperatures are usually warmest at the Diablo Cove stations in summer to early fall. Compared to the control station, subtidal temperatures averaged 2.6°C (4.6°F) warmer in south Diablo Cove and 4.2°C (7.5°F) warmer in north Diablo Cove. Subtidal temperatures at the Field's Cove station were 1.1°C (1.9°F) warmer than the control station on average.

DCPP typically operates at full capacity, but there were several periods in 2015 when one or two of the four main circulating water pumps (CWP) were not in service due to scheduled and unscheduled outages or curtailments. This resulted in lower volumes of heated seawater flowing into Diablo Cove. The effects of these four outages or curtailments can be seen in **Figure 5**:

- August 14, 2015: Unit 2 curtailment to clean debris from the condenser and circulating water tunnels. One CWP removed from service.
- September 12 – 16, 2015: Unit 2 maintenance outage and curtailment to clean biofouling from the circulating water tunnels. One CWP removed from service.
- October 3, 2015 – November 10, 2015: Unit 1 refueling outage (1R19). Two CWPs removed from service.
- December 11 – 14, 2015: Major storm event that required the curtailment of plant operations to allow storm debris (kelp and other seaweeds) to be cleaned from the Unit 1 and Unit 2 condensers and circulating water tunnels.

In addition to those activities that reduced the volume of heated seawater discharged by DCPP, there was also a maintenance outage / curtailment that reduced the amount of power being generated without necessitating any reduction in cooling water flow. During the period from January 1, 2015 through January 5, 2015, Unit 1 power generation was curtailed to allow the repair of a feedwater heater (FWH) tube leak and a residual heat removal (RHR) valve. This activity reduced the temperature of the discharge water without any corresponding decrease in the seawater discharge volume (**Figure 5**).



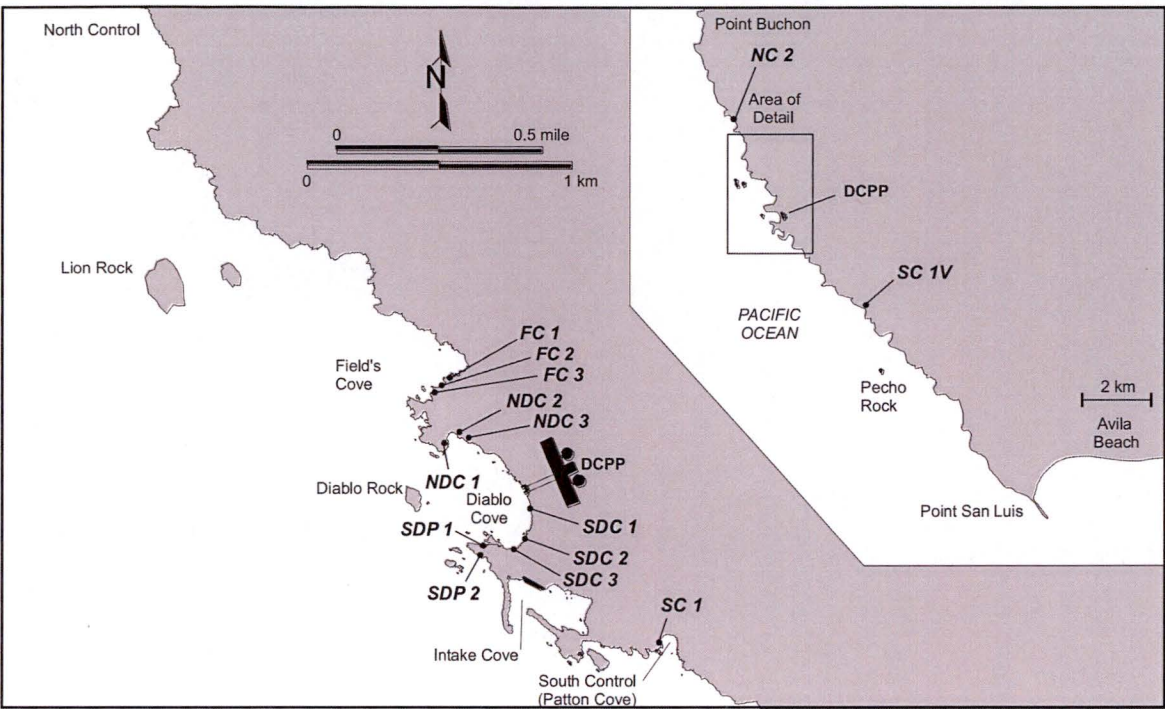


Figure 2. Locations of intertidal temperature monitoring stations.

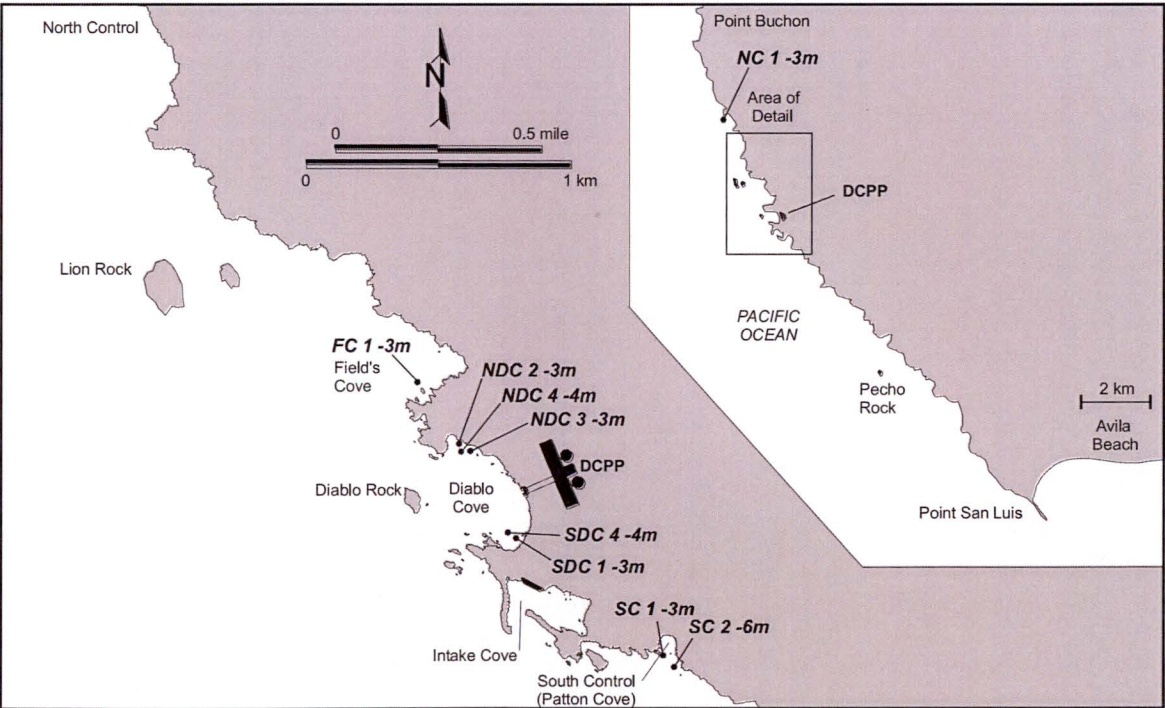


Figure 3. Locations of subtidal temperature monitoring stations.



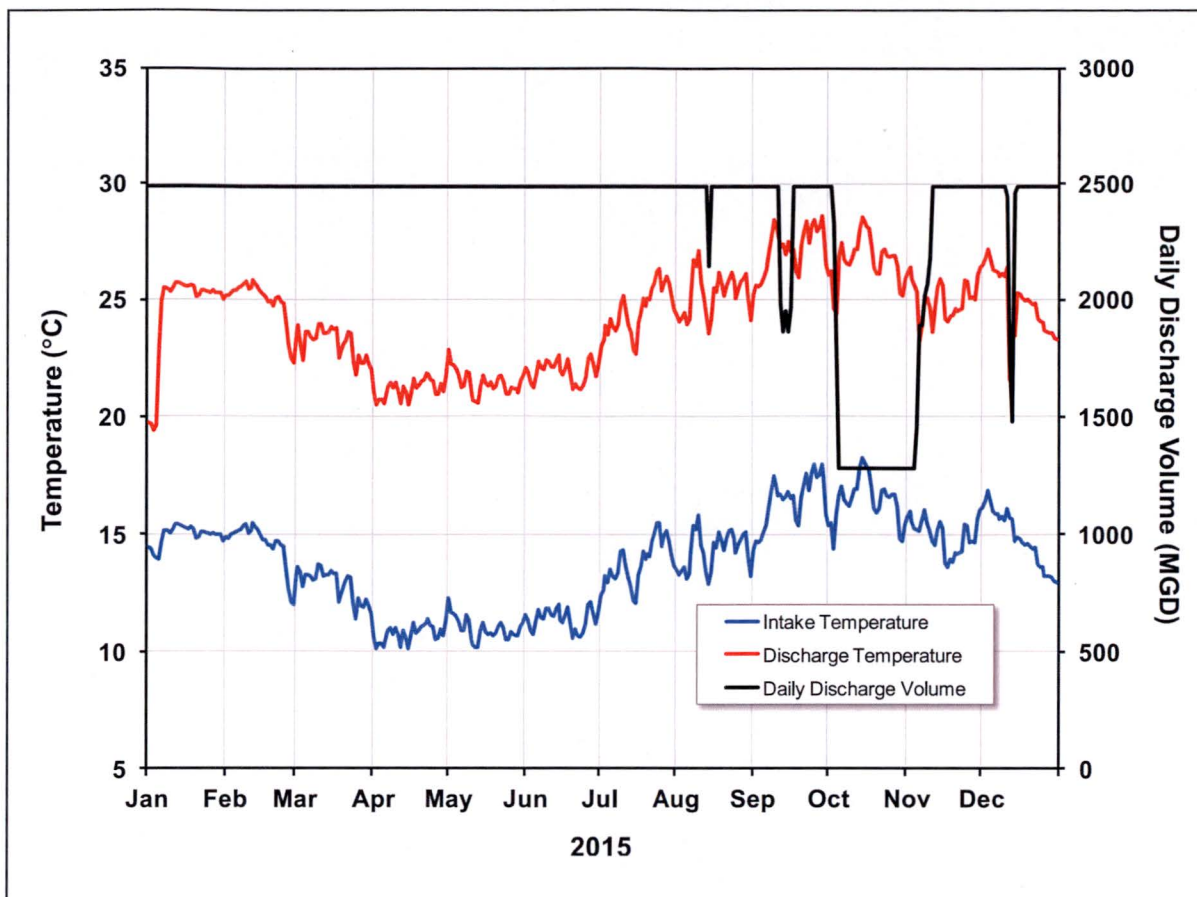


Figure 5. DCPD 2015 average daily intake and discharge seawater temperatures (°C), and daily cooling water discharge volume (MGD).



3.0 Intertidal Algae and Invertebrates

Intertidal algae, seagrasses, and invertebrates were sampled using the horizontal band transect (HBT) sampling method at the locations shown in **Figure 6**. Most HBT stations consisted of two 30 m long transects oriented parallel to the waterline, one at the +0.9 m (+3 ft) MLLW tide level and the other at the +0.3 m (+1 ft) MLLW tide level. Stations SDP 1 and SDP 2 each consisted of one transect at the +0.9 m (+3 ft) tide level. The substrate at the +0.9 m (+3 ft) MLLW level at Station SDC 1 was mainly uncolonized cobble. Therefore, the upper transect at that station was located at a lower elevation at the +0.6 m (+2 ft) MLLW tide level on bedrock where intertidal species were more abundant. The sampling area of each transect consisted of ten 1.0 m² (10.8 ft²) permanent quadrats. The quadrats were mainly located on bedrock and boulders, but various amounts of cobble and sand that occurred seasonally were also sampled. Three control stations were located outside the influence of the DCPD thermal discharge, while the remaining 11 stations in Field's Cove, Diablo Cove, and on South Diablo Point (south headland of Diablo Cove) had varying levels of contact with the warm water from the discharge.

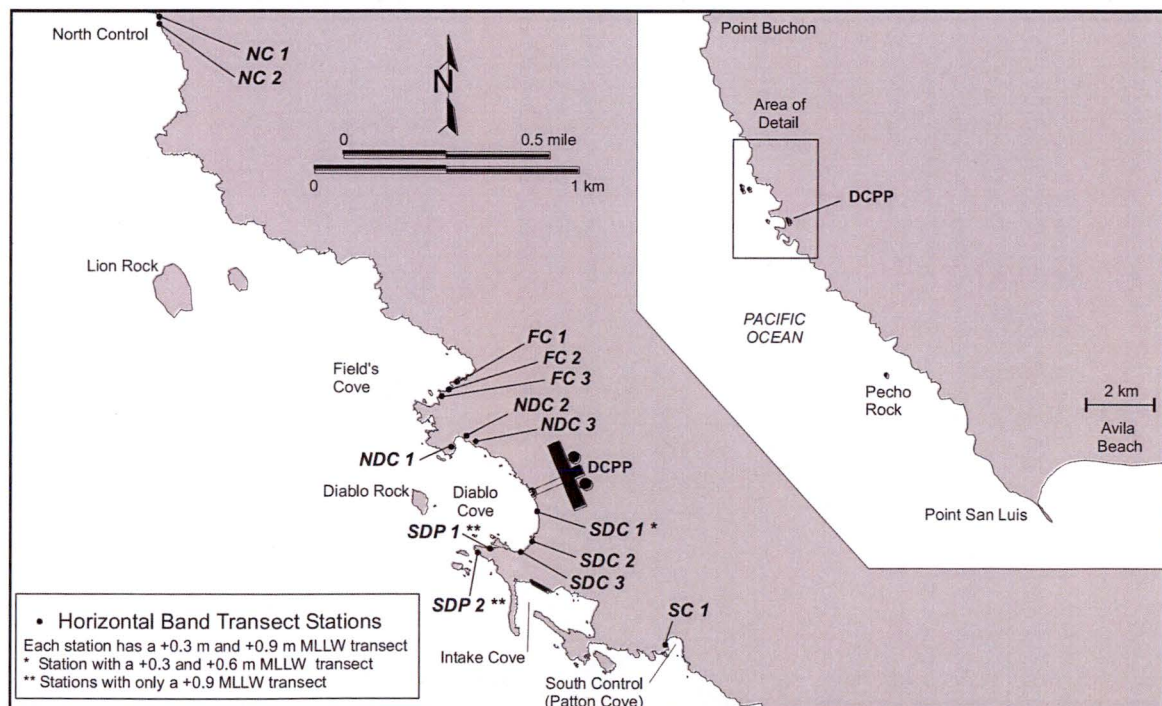


Figure 6. Locations of horizontal band transect stations.

The sampling was conducted by taking visual estimates of percent cover for all algal species, seagrasses, and bare substrate. Coverage estimates were first done for overstory species and then the overstory branches and blades were moved aside to allow estimation of the percent cover of the understory species and bare substrates. Species that occupied less than 0.7% of the area of the



quadrat were recorded as “present.” Due to the overlapping layers of multiple algal taxa, the total algal cover plus bare substrate cover almost always exceeded 100 percent in a quadrat.

Intertidal invertebrates were sampled concurrently in the same quadrats as the algae. In five of the ten quadrats, all species were recorded as either present or absent, except individuals that were larger than 2.5 cm (1 in.) in greatest dimension were counted. In the remaining five quadrats (“count quadrats”), the same method was used except that select species of invertebrates were counted regardless of size. The percent cover of sessile invertebrates, such as sponges and tunicates, was estimated using the same methods used for the algae. All invertebrates, algae, and seagrasses were identified to the lowest taxonomic level practical. All black abalone, regardless of size, were counted in the ten permanent quadrats and in five additional quadrats on each transect.

The survey mean and standard deviation, and annual mean abundance for each taxon at each transect level are presented in **Appendix C**. Survey statistics for algae and substrates were calculated from all ten quadrats along the transect, while statistics for the invertebrates were calculated from the five “count” quadrats. If a taxon was only recorded as present in a quadrat, its abundance was given a value of 0.01 if it was recorded as percent cover and a value of one if it was recorded as a count.



4.0 Intertidal Fishes

Intertidal fishes were sampled using the Vertical Band Transect (VBT) sampling method. At each of five stations (**Figure 7**), three transects were positioned perpendicular to the shoreline at fixed locations. Each transect originated in the high intertidal zone (approximately +1.5 m [4.9 ft] MLLW) and terminated in the low intertidal zone (approximately -0.2 m [0.6 ft] MLLW). Transects at each station were separated by approximately 3 m (9.8 ft). Each transect was used as a reference line to position twelve 1.0 m² (10.8 ft²) permanent sampling quadrats, for a total of thirty-six 1.0 m² (10.8 ft²) quadrats per station. Two control stations were located beyond the influence of the DCPD thermal discharge, while the remaining three stations in Field's Cove and Diablo Cove had varying levels of contact with the warm water from the discharge.

In sampling, moveable rocks were carefully lifted and any fishes seen were captured in small hand nets. Foliose algae were also searched for cryptic fishes. Fishes were identified to the lowest practical taxonomic level, measured, and returned to the quadrat following sampling. Newly settled juvenile fishes were not identified to the species level but were grouped into composite taxa (e.g., *Pholididae/Stichaeidae*, *Anoplarchus/Cebidichthys*).

The total numbers observed at each station during the four surveys of the year, and annual mean abundance and standard deviation of fishes for each taxon are presented in **Appendix D**.

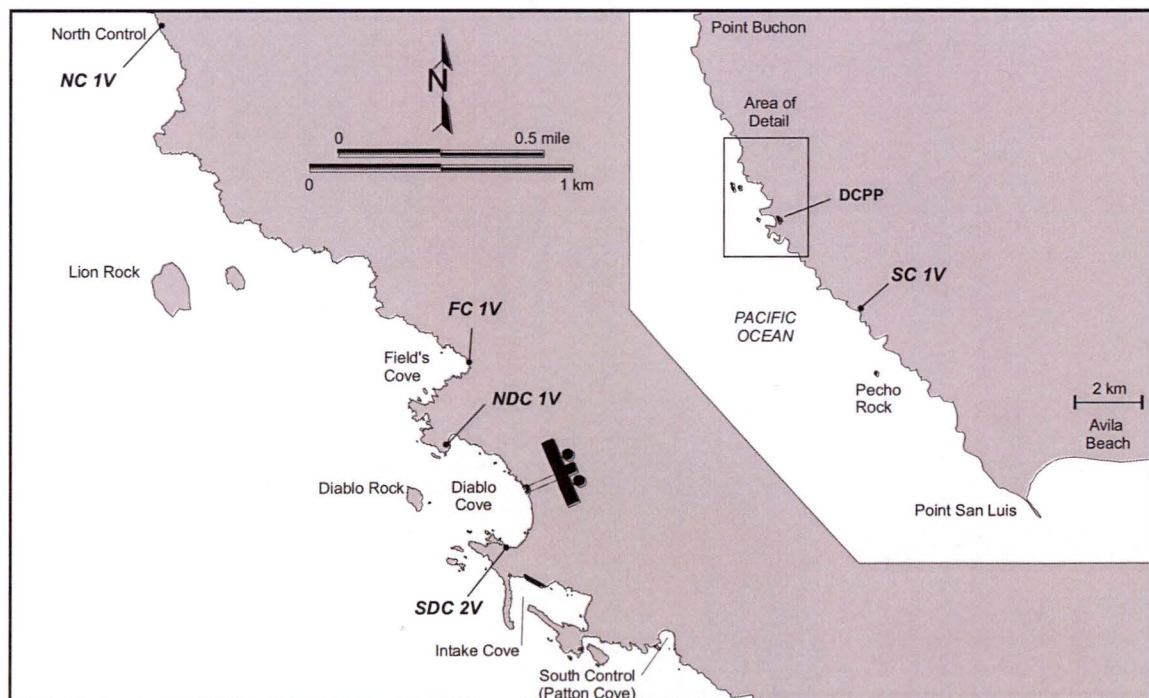


Figure 7. Locations of vertical band transect stations.



5.0 Subtidal Algae and Invertebrates

Eight permanent subtidal benthic sampling stations located in depths ranging from -3 m to -6 m (-10 ft to -20 ft) MLLW were sampled during the year (**Figure 8**). Two control stations were located in Patton Cove, beyond the influence of the DCPD thermal discharge, while the remaining six stations had varying levels of contact with the warm water from the discharge. Stations were circular with a radius of 3.15 m (10.33 ft), and a sampling area of 28.0 m² (301.4 ft²). The center 3.1 m² (33.4 ft²) of each station, which surrounded a mooring anchor (railcar wheel), was not sampled in order to avoid any unnatural algal and invertebrate growth associated with the mooring. Each station was divided into four equal sections, or “arc quadrants,” 7.0 m² (75.3 ft²) in area. All stations were established primarily on substrates of mixed bedrock and boulders with varying amounts of cobble and sand.

Divers used three sampling methods at each station to sample the benthic algae and invertebrates. In the first method, individual species of kelp (brown algae of the order Laminariales and Fucales) and macroinvertebrates were counted in each subtidal arc quadrant (SAQ sampling method). Kelp plants and individuals of select invertebrate taxa were counted regardless of their size. Individuals of other non-encrusting invertebrates were counted if they were larger than 2.5 cm (1.0 in.) (length or width). Juvenile kelp plants that could not be identified to the species level were counted and recorded as “Laminariales.” Five common species that generally occurred in numbers too high to accurately count in a large area were sampled in the same one-third area (2.33 m² [25.1 ft²]) of each quadrant, each survey. The count for each of these species was multiplied by three to provide an abundance estimate for the entire quadrant.

In the second sampling method, all understory algal species were quantified at the stations as percent cover using a series of pre-selected random points along radius lines spaced equally through the station (subtidal line contact or SLC method). The radius line used for sampling has ten lead markers positioned at decreasing intervals toward the station perimeter. The line is attached to the center of the station and used to locate sampling loci in each quadrant. Fifty random contact points were sampled within each quadrant (total of 200 points per station), and the same pre-selected set of points was used at all stations. Random sampling points were changed for each survey. The presence of all algal species, sessile invertebrates, and substrates observed directly under or over the points was recorded. Holdfasts of kelp species were also included when contacted by the sample points. The percent cover of each species and substrate type was calculated by dividing the number of “contacts” by the number of points sampled. All algal species on the station were identified to the lowest taxonomic level practical. In each quadrant, algal species that were present but not contacted by the sample points were noted separately as being ‘present’ in the quadrant.

In the third method, invertebrates were sampled using the subtidal fixed quadrat (SFQ) method in four permanent circular 0.25 m² (2.7 ft²) quadrats at each station. The method quantified



species composition and abundance of all invertebrate taxa visible to the naked eye. One permanent quadrat was located within each of the four SAQ quadrants, generally on bedrock or boulder substrate. Depending upon the degree of topographical relief, two quadrats were located on horizontal-aspect surfaces and two quadrats were located on vertical-aspect surfaces. All non-encrusting taxa were identified and counted. The coverage of encrusting taxa (e.g., colonial/social tunicates) was quantified in square inch units if the total equaled, or exceeded 6.5 cm^2 (1 square inch). Otherwise, the encrusting taxon was recorded as “present.”

The survey mean and standard deviation for each taxon at each station from the four surveys completed during the year are presented in **Appendices E** (SAQ), **F** (SLC), and **G** (SFQ). The means are based on the data from the four quadrats or quadrants at each station. The tables also list annual mean taxa abundances by station based on the average of all surveys sampled over the year. Algal taxa in the SLC study, and encrusting taxa in the SFQ study, that were recorded as only present (no numeric value) were given a value of 0.1 if recorded as cover, or a value of one if recorded as a count for calculating abundance statistics.

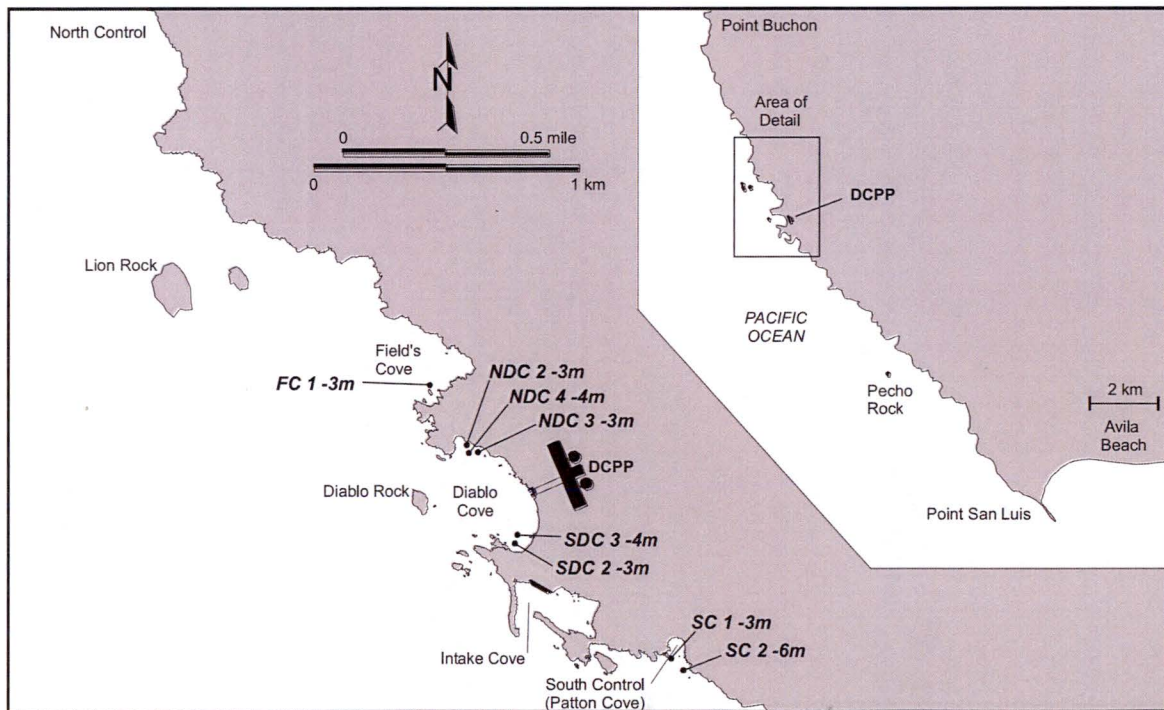


Figure 8. Locations of subtidal benthic stations.



6.0 Surface Canopy Kelps

The locations and extent of the surface kelp canopies of *Nereocystis luetkeana* (bull kelp) and *Macrocystis pyrifera* (giant kelp) in Diablo Cove within and outside the fixed benthic stations were mapped from direct observations. This task has been completed annually since the 1970s to document long-term changes in the annual maximum extent of the surface kelp canopies in Diablo Cove. Near the end of the annual growth cycle in October, nearly all bull kelp plants have reached the surface and can be counted. Surface canopies of giant kelp also tend to be abundant during this period. Two observers at the headland of north Diablo Cove and two observers at the headland of south Diablo Cove (south Diablo Point) counted and mapped the distribution of individual bull kelp plants and mapped the spatial extent of giant kelp canopies (**Figure 9**). Bull kelp plants with bare bulbs only and no attached fronds, indicating senescence in the plants, were noted when observed.

The annual habitat-forming kelp survey was conducted on October 23, 2015. No bull kelp plants were observed in Diablo Cove during the survey. Small scattered giant kelp canopies occurred in south Diablo Cove and a single giant kelp plant was observed in north Diablo Cove. (**Figure 9**). There are no appendix figures or data tables associated with this task.

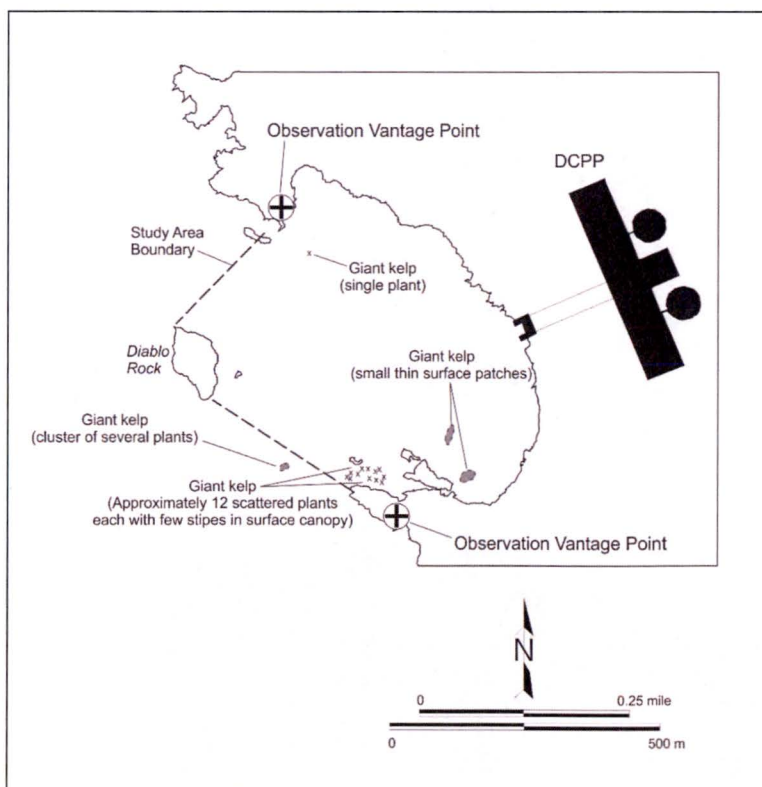


Figure 9. Map of surface kelp in Diablo Cove on October 23, 2015.



7.0 Subtidal Fishes

Visual counts of fishes were conducted by divers at 12 permanent subtidal stations (three stations in each of four areas) located within and outside of Diablo Cove (**Figure 10**). Three control stations located in Patton Cove beyond the influence of the DCPD thermal discharge, while the remaining nine stations in Field's Cove, north Diablo Cove, and south Diablo Cove had varying levels of contact with the warm water from the discharge.

Each station consisted of a benthic transect 50 m (164 ft) long by 4 m (13 ft) wide by 1 m (3.3 ft) above the bottom, and a 50 m (164 ft) long by 4 m (13 ft) diameter midwater transect located above and parallel to the benthic transect approximately midway between the surface and the bottom. A station was sampled by first deploying a fiberglass measuring tape to delineate the centerline of the benthic transect, beginning at a permanent station buoy and extending 50 m (164 ft) away from the buoy along a pre-determined compass course. Some transects crossed over each other where a transect parallel to the depth contour crossed over a transect positioned perpendicular to the depth contour. The area common to both transects in these cases was approximately 2%. This small overlap did not affect the data summaries because the numbers of fish counted were averaged by area, and the mobility of most fish added to the independence of transects.

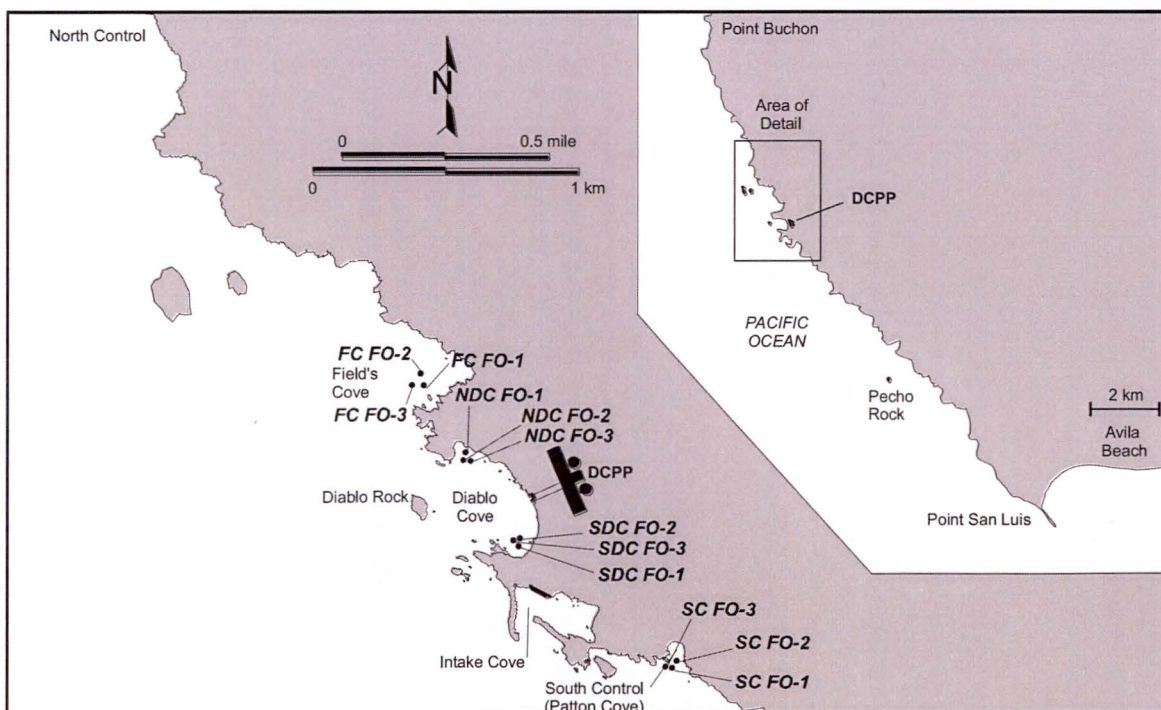


Figure 10. Locations of subtidal fish observation transects.



A survey team consisted of two divers. Each diver counted fish along the benthic and midwater transect sampling areas, swimming in opposite directions along the transect lines. This sampling technique allowed a more thorough inspection of potential fish habitats from all angles of view than would have been possible by a single diver progressing along a transect in only one direction. Fish were identified to species if possible, but juveniles of some species with similar appearances were combined into broader categories if necessary.

The resulting survey data per transect were the combined species counts of both divers, divided by two. This yielded an average count for each taxon per 50 m (164 ft) by 4 m (13 ft) benthic transect and per 50 m (164 ft) long by 4 m (13 ft) diameter midwater transect. During each survey, the stations (midwater and benthic transects) were usually sampled a second time (replicate two) within two weeks of the initial sampling effort (replicate one), unless adverse sea conditions precluded a second replicate. The data from the two replicates for each area were pooled separately for the three midwater transects, and the three benthic transects for each survey.

The survey mean abundance and standard deviation for each taxon within each of the four sampling areas for the four surveys during the year are presented in **Appendix H**. The tables are further divided according to midwater and benthic transects in each area. The tables also show overall mean abundances for the entire year. The survey dates shown for each area in the tables represent the average date of the combined stations sampled in replicates one and two.



8.0 RWMP Project Personnel

Project Personnel 2015

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Diablo Canyon Power Plant

Appendix A

Intertidal Temperatures

Table A1. Monthly statistical summary of intertidal temperatures (°C), January–December 2015, North Control Station NC 2 +0.6m (2+2).

Month	Max	Min	Mean	Std. Dev	N
Station: NC 2 +0.6m					
Jan	16.35	12.38	14.83	0.72	1157
Feb	16.45	12.43	14.87	0.76	1007
Mar	15.85	11.50	13.57	0.95	1092
Apr	14.07	9.93	11.77	0.87	1028
May	15.23	10.43	12.55	0.89	1078
Jun	15.35	11.38	13.38	0.83	1094
Jul	17.95	13.05	15.60	1.00	1194
Aug	18.98	14.27	16.52	1.05	1234
Sep	20.50	14.15	17.65	1.31	1219
Oct	19.17	14.18	16.95	1.11	1248
Nov	16.88	12.23	14.78	0.95	1212
Dec	16.95	11.93	14.43	1.26	1204



Table A2. Monthly statistical summary of intertidal temperatures (°C), January–December 2015, Field's Cove Stations FC 1 +0.6m (4+2), FC 2 +0.6m (5+2) and FC 3 +0.6m (6+2).

Month	Max	Min	Mean	Std. Dev	N
Station: FC 1 +0.6m					
Jan	17.52	13.25	15.89	0.82	1420
Feb	18.05	12.25	15.89	1.01	1232
Mar	17.40	11.35	14.49	1.22	1320
Apr	16.98	10.30	12.44	1.18	1252
May	17.35	11.02	13.41	1.11	1313
Jun	17.65	11.73	14.34	1.15	1345
Jul	20.27	14.07	17.24	1.18	1467
Aug	21.67	14.95	18.18	1.35	1461
Sep	22.38	15.13	19.00	1.41	1405
Oct	20.65	14.15	17.51	1.24	1446
Nov	17.85	12.93	15.67	0.84	1394
Dec	18.10	12.73	15.13	1.18	1453
Station: FC 2 +0.6m					
Jan	17.30	13.65	15.92	0.77	1157
Feb	18.17	12.30	15.92	0.97	1007
Mar	17.17	11.45	14.42	1.17	1092
Apr	16.77	10.30	12.31	1.09	1028
May	16.73	11.07	13.28	1.03	1078
Jun	17.30	11.68	14.12	1.02	1094
Jul	19.88	14.13	16.97	1.11	1194
Aug	21.30	15.10	17.90	1.24	1234
Sep	22.20	15.07	18.96	1.36	1219
Oct	20.17	14.23	17.46	1.20	1248
Nov	17.88	13.32	15.72	0.83	1212
Dec	18.13	13.00	15.18	1.14	1204
Station: FC 3 +0.6m					
Jan	17.30	13.55	15.93	0.78	1157
Feb	18.23	12.32	15.90	0.97	1007
Mar	17.10	11.43	14.39	1.15	1092
Apr	16.58	10.27	12.26	1.06	1028
May	16.73	11.07	13.16	1.00	1078
Jun	16.70	11.63	13.97	0.97	1094
Jul	19.88	14.00	16.82	1.10	1194
Aug	20.88	15.10	17.77	1.19	1234
Sep	22.05	15.02	18.91	1.34	1219
Oct	20.13	14.23	17.45	1.19	1248
Nov	17.92	13.40	15.73	0.83	1212
Dec	18.13	12.95	15.19	1.14	1204



Table A3. Monthly statistical summary of intertidal temperatures (°C), January–December 2015, North Diablo Cove Stations NDC 1 +0.6m (7+2), NDC 2 +0.6m (8+2) and NDC 3 +0.6m (9+2).

Month	Max	Min	Mean	Std. Dev.	N
Station: NDC 1 +0.6m					
Jan	21.90	14.18	18.52	1.55	1420
Feb	21.90	13.98	18.54	1.53	1232
Mar	20.55	11.35	17.05	1.58	1320
Apr	18.77	10.20	14.62	1.62	1252
May	20.00	12.23	16.53	1.47	1313
Jun	21.25	13.23	17.44	1.45	1345
Jul	23.92	16.70	20.81	1.25	1467
Aug	24.85	15.90	20.64	1.30	1461
Sep	24.95	18.00	21.90	1.22	1405
Oct	24.40	14.68	19.87	1.82	1446
Nov	22.83	13.52	18.38	1.49	1394
Dec	22.73	13.60	17.03	1.86	1453
Station: NDC 2 +0.6m					
Jan	21.55	14.60	18.56	1.55	1122
Feb	22.00	15.07	18.76	1.46	978
Mar	20.45	11.52	17.29	1.59	1057
Apr	18.95	10.52	15.02	1.70	992
May	20.35	12.85	16.96	1.41	1042
Jun	21.98	13.93	17.82	1.36	1056
Jul	24.08	16.77	21.09	1.29	1158
Aug	24.55	16.38	20.76	1.26	1201
Sep	24.38	18.52	22.03	1.14	1185
Oct	24.27	14.70	20.11	1.78	1215
Nov	22.52	13.57	18.45	1.47	1169
Dec	22.30	13.73	17.03	1.84	1164
Station: NDC 3 +0.6m					
Jan	22.30	14.65	18.72	1.62	1438
Feb	22.95	14.63	18.88	1.57	1250
Mar	20.60	11.55	17.34	1.50	1337
Apr	19.23	10.50	15.16	1.65	1262
May	20.42	12.85	16.96	1.39	1325
Jun	21.83	13.77	17.78	1.36	1366
Jul	23.90	16.85	21.06	1.22	1491
Aug	24.65	16.60	20.69	1.23	1481
Sep	24.63	18.65	21.93	1.18	1420
Oct	24.77	14.73	20.18	1.80	1459
Nov	22.98	13.57	18.63	1.48	1403
Dec	22.95	13.68	17.21	1.96	1466



Table A4. Monthly statistical summary of intertidal temperatures (°C), January–December 2015, South Diablo Cove Stations SDC 1 +0.6m (10+2), SDC 2 +0.6m (11+2) and SDC 3 +0.6m (12+2).

Month	Max	Min	Mean	Std. Dev	N
Station: SDC 1 +0.6m					
Jan	25.15	15.55	18.49	1.74	1454
Feb	25.90	14.27	18.63	2.37	1268
Mar	22.77	13.70	16.90	1.63	1350
Apr	22.08	12.73	15.80	1.99	1275
May	21.60	12.38	16.06	1.79	1336
Jun	22.20	13.77	17.21	1.72	1379
Jul	24.08	17.23	20.32	1.40	1512
Aug	24.13	17.67	20.34	1.18	1499
Sep	24.38	17.63	21.06	1.31	1441
Oct	26.25	17.10	20.92	1.68	1461
Nov	25.35	15.93	19.01	1.71	1414
Dec	26.45	14.45	19.23	2.49	1480
Station: SDC 2 +0.6m					
Jan	23.40	15.45	18.19	1.27	1157
Feb	24.80	14.27	18.12	1.57	1007
Mar	22.35	13.85	16.91	1.51	1092
Apr	21.63	12.80	15.64	1.77	1028
May	21.35	12.63	16.20	1.71	1078
Jun	22.00	13.85	17.30	1.74	1094
Jul	23.83	17.48	20.50	1.44	1194
Aug	23.88	17.70	20.61	1.20	1234
Sep	24.55	18.10	21.19	1.25	1219
Oct	25.85	16.98	20.70	1.62	1248
Nov	23.08	15.77	18.65	1.42	1212
Dec	22.30	14.57	17.89	1.47	1204
Station: SDC 3 +0.6m					
Jan	20.70	15.18	17.90	0.89	1292
Feb	20.65	13.68	17.50	1.09	1123
Mar	19.10	13.65	16.18	0.90	1210
Apr	18.20	12.60	14.53	1.06	1154
May	18.95	12.18	15.02	1.13	1209
Jun	19.95	13.55	16.31	1.28	1230
Jul	23.25	16.02	19.69	1.47	1326
Aug	23.15	17.30	20.02	1.13	1360
Sep	23.85	17.27	20.88	1.43	1321
Oct	23.88	16.13	20.29	1.62	1351
Nov	22.00	15.25	18.41	1.35	1304
Dec	21.48	14.63	17.70	1.45	1349



Table A5. Monthly statistical summary of intertidal temperatures (°C), January–December 2015, South Diablo Point Stations SDP 1 +0.6m (22+2) and SDP 2 +0.6m (14+2).

Month	Max	Min	Mean	Std. Dev	N
Station: SDP 1 +0.6m					
Jan	20.80	15.40	17.94	0.88	1521
Feb	20.88	13.38	17.48	1.10	1321
Mar	19.10	13.65	16.15	0.88	1397
Apr	17.83	12.38	14.48	1.04	1320
May	18.67	12.18	14.93	1.10	1386
Jun	19.83	13.50	16.12	1.26	1434
Jul	23.45	15.50	19.49	1.51	1580
Aug	23.27	16.73	19.82	1.20	1548
Sep	23.95	17.20	20.79	1.47	1471
Oct	24.17	15.73	20.27	1.68	1503
Nov	22.35	15.30	18.41	1.34	1451
Dec	21.58	14.77	17.70	1.46	1519
Station: SDP 2 +0.6m					
Jan	19.02	15.27	17.10	0.72	1420
Feb	19.55	13.13	16.62	1.02	1232
Mar	18.45	12.23	15.53	0.94	1320
Apr	16.27	11.13	13.72	0.86	1252
May	16.20	10.52	13.35	1.17	1313
Jun	17.10	10.50	14.25	1.29	1345
Jul	21.38	12.30	16.40	1.86	1467
Aug	21.27	13.95	17.67	1.27	1461
Sep	22.27	14.88	18.73	1.51	1405
Oct	20.70	14.93	18.06	1.11	1446
Nov	20.20	14.52	17.17	0.79	1394
Dec	20.27	13.50	16.75	1.27	1453



Table A6. Monthly statistical summary of intertidal temperatures (°C), January–December 2015, South Control Stations SC 1 +0.6m (19+2) and SC 1V.

Month	Max	Min	Mean	Std. Dev	N
Station: SC 1 +0.6m					
Jan	16.13	13.15	14.88	0.56	1267
Feb	16.55	11.65	14.76	0.86	1101
Mar	14.80	11.23	13.22	0.82	1191
Apr	12.80	9.88	11.27	0.65	1137
May	14.10	10.05	11.75	0.71	1189
Jun	14.35	10.95	12.59	0.71	1204
Jul	17.83	12.75	15.21	1.03	1304
Aug	19.05	13.65	15.86	1.05	1340
Sep	20.05	14.00	17.41	1.28	1312
Oct	18.88	14.07	16.90	1.02	1343
Nov	16.67	12.50	14.90	0.82	1294
Dec	17.13	12.40	14.63	1.21	1327
Station: SC 1V					
Jan	16.50	11.90	14.79	0.88	1620
Feb	16.92	11.98	15.06	0.83	1424
Mar	16.92	11.45	14.05	1.09	1498
Apr	16.55	9.85	12.37	1.32	1409
May	17.70	10.25	13.00	1.31	1477
Jun	18.42	11.27	14.33	1.43	1533
Jul	20.70	14.15	16.85	1.23	1665
Aug	21.05	14.85	17.93	1.19	1658
Sep	21.65	14.75	18.28	1.44	1564
Oct	20.35	14.35	17.50	1.15	1588
Nov	16.90	12.27	14.87	1.01	1522
Dec	17.17	11.27	14.39	1.34	1621



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Appendix B

Subtidal Temperatures

Table B1. Monthly statistical summary of subtidal temperatures (°C), January–December 2015, North Control Station NC 1 -3m (1-10).

Month	Max	Min	Mean	Std. Dev	N
Station: NC 1 -3m					
Jan	16.45	12.73	14.97	0.63	2232
Feb	16.55	12.35	14.90	0.80	2016
Mar	15.73	11.38	13.52	0.92	2232
Apr	13.45	9.95	11.52	0.74	2159
May	14.25	10.30	12.19	0.75	2232
Jun	14.45	11.00	12.83	0.72	2160
Jul	17.25	12.63	15.19	0.97	2231
Aug	18.52	13.63	15.83	1.02	2232
Sep	20.13	13.90	17.47	1.28	2160
Oct	19.05	14.15	16.93	1.12	2231
Nov	16.90	12.43	14.93	0.87	2160
Dec	16.88	12.20	14.59	1.20	2232

Table B2. Monthly statistical summary of subtidal temperatures (°C), January–December 2015, Field's Cove Station FC 1 -3m (22-10).

Month	Max	Min	Mean	Std. Dev	N
Station: FC 1 -3m					
Jan	17.67	13.82	16.09	0.71	2232
Feb	18.45	12.30	15.99	1.00	2015
Mar	17.20	11.27	14.45	1.14	2232
Apr	15.70	10.13	12.19	0.98	2160
May	15.43	10.60	12.94	0.84	2232
Jun	15.70	11.43	13.46	0.83	2159
Jul	19.17	13.27	16.16	1.17	2232
Aug	20.40	14.25	16.87	1.11	2232
Sep	21.42	15.05	18.69	1.28	2160
Oct	19.77	14.25	17.43	1.16	2232
Nov	17.85	13.10	15.88	0.80	2160
Dec	18.33	13.05	15.30	1.12	2232



Table B3. Monthly statistical summary of subtidal temperatures (°C), January–December 2015, North Diablo Cove Stations NDC 2 -3m (8-10), NDC 3 -3m (9-10), and NDC 4 -4m (9-15).

Month	Max	Min	Mean	Std. Dev	N
Station: NDC 2 -3m					
Jan	22.85	14.80	18.99	1.73	2231
Feb	23.60	14.48	19.04	1.71	2016
Mar	20.83	11.52	17.43	1.42	2232
Apr	19.45	10.45	15.12	1.75	2160
May	20.88	12.50	16.76	1.51	2232
Jun	21.63	13.18	17.36	1.49	2160
Jul	24.05	16.23	20.23	1.55	2231
Aug	24.95	15.45	20.02	1.50	2232
Sep	24.90	16.40	21.43	1.38	2160
Oct	25.08	14.73	20.07	1.85	2232
Nov	23.63	13.45	18.77	1.69	2160
Dec	23.75	13.55	17.42	2.09	2232
Station: NDC 3 -3m					
Jan	23.45	15.15	19.15	1.80	2231
Feb	23.92	14.82	19.30	1.77	2016
Mar	21.08	11.65	17.51	1.46	2232
Apr	19.83	10.60	15.28	1.81	2160
May	21.33	12.50	16.86	1.60	2232
Jun	21.65	13.20	17.24	1.63	2160
Jul	24.48	15.50	19.86	1.70	2231
Aug	24.83	15.05	19.80	1.63	2232
Sep	25.10	16.23	21.32	1.52	2160
Oct	25.42	15.15	20.12	1.85	2232
Nov	24.40	13.48	18.88	1.85	2160
Dec	24.05	13.93	17.77	2.18	2232
Station: NDC 4 -4m					
Jan	22.88	14.85	18.89	1.72	2232
Feb	23.52	14.00	18.76	1.82	2015
Mar	20.88	11.35	17.13	1.48	2232
Apr	19.38	10.07	14.84	1.73	2160
May	21.02	11.25	16.17	1.68	2232
Jun	20.90	12.07	16.21	1.70	2160
Jul	24.05	13.98	18.61	2.00	2232
Aug	24.00	13.88	18.41	1.88	2232
Sep	24.52	15.88	20.36	1.76	2160
Oct	24.55	14.82	19.34	1.75	2232
Nov	23.80	13.48	18.36	1.84	2160
Dec	23.05	13.57	17.35	2.07	2232



Table B4. Monthly statistical summary of subtidal temperatures (°C), January–December 2015, South Diablo Cove Stations SDC 1 -3m (11-10) and SDC 4 -4m (11-15).

Month	Max	Min	Mean	Std. Dev	N
Station: SDC 1 -3m					
Jan	24.42	14.50	18.16	1.73	2232
Feb	24.17	13.10	17.77	1.78	2015
Mar	22.13	13.32	16.25	1.51	2232
Apr	21.25	11.48	14.90	1.80	2160
May	21.05	11.43	14.67	1.75	2232
Jun	20.35	11.27	14.40	1.85	2159
Jul	23.27	12.32	16.48	2.18	2232
Aug	22.80	13.45	16.59	1.93	2232
Sep	24.05	15.30	18.57	1.56	2160
Oct	24.05	15.20	19.41	1.72	2232
Nov	24.58	13.95	18.12	2.01	2160
Dec	24.85	14.00	18.34	1.95	2232
Station: SDC 4 -4m					
Jan	23.92	14.00	16.81	1.71	2159
Feb	20.63	11.75	14.68	1.24	684
Mar	21.80	11.68	14.76	1.49	2232
Apr	20.13	10.40	13.52	1.80	2160
May	18.83	10.18	12.76	1.53	2232
Jun	19.50	10.63	12.43	1.42	2159
Jul	22.20	11.52	14.56	1.67	2232
Aug	22.35	12.73	14.86	1.35	2232
Sep	21.02	13.57	16.90	1.22	2159
Oct	22.80	14.18	17.96	1.71	2232
Nov	23.30	13.27	16.80	2.27	2160
Dec	23.45	13.00	17.63	2.21	2232



Table B5. Monthly statistical summary of subtidal temperatures (°C), January–December 2015, South Control Stations SC 1 -3m (19-10) and SC 2 -6m (20-20).

Month	Max	Min	Mean	Std. Dev	N
Station: SC 1 -3m					
Jan	16.17	13.25	14.97	0.53	2232
Feb	16.60	11.68	14.82	0.85	2016
Mar	14.90	11.25	13.30	0.82	2232
Apr	13.02	9.85	11.24	0.64	2160
May	14.20	10.05	11.62	0.68	2232
Jun	14.15	10.75	12.37	0.66	2160
Jul	17.42	12.70	15.01	1.04	2232
Aug	19.05	13.60	15.58	1.05	2232
Sep	19.83	14.02	17.32	1.24	2160
Oct	18.88	14.05	16.90	1.02	2231
Nov	16.75	12.48	14.96	0.80	2160
Dec	17.13	12.45	14.66	1.20	2232
Station: SC 2 -6m					
Jan	16.35	13.60	14.97	0.45	2232
Feb	16.02	11.07	14.25	1.05	1018
Mar	14.57	11.05	13.03	0.77	2232
Apr	12.80	9.82	10.98	0.59	2160
May	13.80	9.85	11.20	0.66	2232
Jun	13.15	10.38	11.67	0.58	2160
Jul	16.92	11.55	14.28	1.11	2232
Aug	18.55	12.65	14.87	1.06	2232
Sep	19.20	13.93	16.92	1.17	2160
Oct	19.00	13.93	16.68	1.04	2232
Nov	16.67	12.63	14.97	0.78	2160
Dec	17.05	12.68	14.69	1.17	2232

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Appendix C

Intertidal Algae, Invertebrates and Substrates (HBT Method)

Table C1 (continued). Intertidal algae, sessile invertebrates, and substrates (percent cover) and motile invertebrates (abundance per 1.0 m²) survey means, standard deviations and 2015 annual means for North Control Station NC 1 +0.3m (1+1).

Taxon	Survey Survey Date		180 3-Feb-15		181 16-Apr-15		182 28-Jul-15		183 11-Nov-15		Annual Mean
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Substrate Cover											
rock	7.4	10.2	4.1	3.6	15.0	13.8	6.0	5.6			8.1
sand (shell gravel)	1.8	2.2	4.2	5.3	15.8	19.9	4.4	5.2			6.5
cobble	0.6	1.4	2.8	6.0	<0.1	<0.1	0.6	1.3			1.0



Table C2 (continued). Intertidal algae, sessile invertebrates, and substrates (percent cover) and motile invertebrates (abundance per 1.0 m²) survey means, standard deviations and 2015 annual means for North Control Station NC 1 +0.9m (1+3).

Survey Survey Date	180 5-Feb-15		181 16-Apr-15		182 28-Jul-15		183 11-Nov-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts (continued)									
<i>Lottia scutum</i>	-	-	0.2	0.4	0.4	0.5	0.2	0.4	0.2
<i>Epiactis prolifera</i>	0.2	0.4	-	-	0.2	0.4	-	-	0.1
Nemertea	-	-	-	-	-	-	0.2	0.4	<0.1
<i>Mopalia</i> spp.	0.2	0.4	-	-	-	-	-	-	<0.1
Nereididae	0.2	0.4	-	-	-	-	-	-	<0.1
<i>Leptasterias</i> spp.	-	-	-	-	-	-	0.2	0.4	<0.1
<i>Haliotis</i> spp.	-	-	-	-	-	-	0.1	0.3	<0.1
Lottiidae	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<i>Crepidula</i> spp.	<0.1	<0.1	-	-	-	-	-	-	<0.1
<i>Lottia gigantea</i>	-	-	-	-	<0.1	<0.1	-	-	<0.1
<i>Petrolisthes</i> spp.	<0.1	<0.1	-	-	-	-	-	-	<0.1
Ischnochitonidae	-	-	-	-	<0.1	<0.1	-	-	<0.1
<i>Lirobittium</i> spp.	<0.1	<0.1	-	-	-	-	-	-	<0.1
<i>Lissothuria nutriens</i>	-	-	-	-	-	-	<0.1	<0.1	<0.1
<i>Mytilus</i> spp.	-	-	-	-	-	-	<0.1	<0.1	<0.1
Invertebrate Cover									
<i>Phragmatopoma californica</i>	0.8	2.2	<0.1	<0.1	<0.1	<0.1	0.6	1.1	0.3
Spirorbidae	<0.1	<0.1	0.1	0.4	<0.1	<0.1	<0.1	-	<0.1
<i>Chthamalus fissus</i>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<i>Salmacina tribranchiata</i>	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Porifera (encrusting)	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
tunicates, compound/social	-	-	-	-	<0.1	<0.1	-	-	<0.1
bryozoa (encrusting)	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Substrate Cover									
rock	8.3	4.1	11.0	5.8	22.5	16.7	13.0	12.1	13.7
cobble	3.3	8.7	3.8	9.9	2.1	4.1	3.6	9.8	3.2
sand (shell gravel)	1.5	3.9	0.3	1.1	0.3	0.8	2.2	4.2	1.1

Table C3 (continued). Intertidal algae, sessile invertebrates, and substrates (percent cover) and motile invertebrates (abundance per 1.0 m²) survey means, standard deviations and 2015 annual means for North Control Station NC 2 +0.3m (2+1).

Survey Survey Date		180 3-Feb-15		181 14-Apr-15		182 28-Aug-15		183 12-Nov-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
Invertebrate Cover (continued)										
Porifera (encrusting)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
bryozoa (encrusting)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<i>Chthamalus fissus</i>	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<i>Salmacina tribranchiata</i>	-	-	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Substrate Cover										
rock	6.9	7.1	4.4	4.7	10.2	9.1	6.9	4.3		7.1
sand (shell gravel)	1.8	2.2	2.3	2.9	7.1	4.6	9.6	8.4		5.2
cobble	3.0	4.9	1.9	3.2	1.8	3.0	2.3	5.2		2.3

Table C4 (continued). Intertidal algae, sessile invertebrates, and substrates (percent cover) and motile invertebrates (abundance per 1.0 m²) survey means, standard deviations and 2015 annual means for North Control Station NC 2 +0.9m (2+3).

Survey Survey Date	180 5-Feb-15		181 14-Apr-15		182 28-Aug-15		183 12-Nov-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts (continued)									
Lottiidae	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Crepidula spp.	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Littorina spp.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1
snail	-	-	<0.1	<0.1	-	-	-	-	<0.1
Epitonium/Opalia spp.	<0.1	<0.1	-	-	-	-	-	-	<0.1
Tetracita rubescens	-	-	-	-	-	-	<0.1	<0.1	<0.1
Lacuna spp.	-	-	-	-	<0.1	<0.1	-	-	<0.1
Trimusculus reticulatus	-	-	<0.1	<0.1	-	-	-	-	<0.1
Grapsidae	-	-	<0.1	<0.1	-	-	-	-	<0.1
Invertebrate Cover									
Phragmatopoma californica	0.6	1.3	0.3	0.4	0.3	0.9	0.3	0.9	0.4
Spirorbidae	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Chthamalus fissus	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Salmacina tribranchiata	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
tunicates, compound/social	-	-	-	-	<0.1	<0.1	-	-	<0.1
Porifera (encrusting)	-	-	-	-	<0.1	<0.1	-	-	<0.1
bryozoa (encrusting)	-	-	<0.1	<0.1	-	-	-	-	<0.1
Substrate Cover									
cobble	10.6	8.2	11.4	7.3	6.7	6.0	9.1	10.0	9.5
rock	7.9	7.2	7.9	6.2	10.6	11.5	8.1	6.4	8.6
sand (shell gravel)	1.0	2.0	0.3	1.1	0.7	2.0	0.2	0.7	0.6



Table C5 (continued). Intertidal algae, sessile invertebrates, and substrates (percent cover) and motile invertebrates (abundance per 1.0 m²) survey means, standard deviations and 2015 annual means for Field's Cove Station FC 1 +0.3m (4+1).

Survey Survey Date	180 18-Mar-15		181 4-May-15		182 27-Aug-15		183 23-Dec-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts (continued)									
<i>Okenia rosacea</i>	-	-	-	-	<0.1	<0.1	-	-	<0.1
Natantia	-	-	-	-	<0.1	<0.1	-	-	<0.1
<i>Mytilus</i> spp.	-	-	-	-	-	-	<0.1	<0.1	<0.1
Invertebrate Cover									
<i>Pista</i> spp.	0.3	1.1	2.6	4.4	6.0	9.7	3.5	4.6	3.1
<i>Phragmatopoma californica</i>	<0.1	-	1.0	2.8	<0.1	0.2	1.9	2.7	0.7
tunicates, compound/social	<0.1	<0.1	<0.1	<0.1	2.7	5.8	<0.1	<0.1	0.7
Spirorbidae	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<i>Chthamalus fissus</i>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
bryozoa (encrusting)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Porifera (encrusting)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<i>Salmacina tribranchiata</i>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Substrate Cover									
rock	14.9	6.8	10.9	6.2	19.4	12.6	22.8	11.9	17.0
sand (shell gravel)	0.2	0.5	0.3	1.1	0.8	2.4	1.0	1.7	0.6
cobble	0.2	0.5	-	-	0.6	1.2	<0.1	<0.1	0.2



Table C6 (continued). Intertidal algae, sessile invertebrates, and substrates (percent cover) and motile invertebrates (abundance per 1.0 m²) survey means, standard deviations and 2015 annual means for Field's Cove Station FC 1 +0.9m (4+3).

Survey Survey Date	180 4-Mar-15		181 4-May-15		182 27-Aug-15		183 8-Dec-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts (continued)									
Ischnochitonidae	-	-	-	-	<0.1	<0.1	-	-	<0.1
Grapsidae	<0.1	<0.1	-	-	-	-	-	-	<0.1
Invertebrate Cover									
<i>Phragmatopoma californica</i>	7.1	8.2	7.8	8.7	5.6	6.5	7.0	8.4	6.9
<i>Chthamalus fissus</i>	0.8	1.7	1.0	1.4	0.5	1.1	0.7	1.6	0.8
Spirorbidae	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1
Porifera (encrusting)	<0.1	<0.1	-	-	-	-	-	-	<0.1
Substrate Cover									
rock	25.2	11.7	34.4	14.3	36.7	12.0	45.3	12.5	35.4
cobble	5.1	7.0	3.1	6.2	3.2	6.7	2.4	5.0	3.4
sand (shell gravel)	3.1	5.8	0.6	1.2	<0.1	<0.1	5.9	6.3	2.4

Table C7 (continued). Intertidal algae, sessile invertebrates, and substrates (percent cover) and motile invertebrates (abundance per 1.0 m²) survey means, standard deviations and 2015 annual means for Field's Cove Station FC 2 +0.3m (5+1).

Survey Survey Date	180 3-Mar-15		181 5-May-15		182 14-Aug-15		183 8-Dec-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts (continued)									
<i>Amphissa</i> spp.	-	-	<0.1	<0.1	-	-	-	-	<0.1
<i>Lissothuria nutriens</i>	<0.1	<0.1	-	-	-	-	-	-	<0.1
Invertebrate Cover									
<i>Phragmatopoma californica</i>	3.7	4.3	0.6	1.5	0.8	1.3	7.9	6.1	3.2
<i>Pista</i> spp.	1.0	3.1	0.6	2.0	0.3	1.1	2.2	4.6	1.0
<i>Dodecaceria fewkesi</i>	-	-	0.1	0.4	0.1	0.4	0.1	0.4	0.1
Spirorbidae	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1
<i>Chthamalus fissus</i>	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Porifera (encrusting)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
tunicates, compound/social	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<i>Salmacina tribranchiata</i>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
bryozoa (encrusting)	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Hydroidolina	-	-	-	-	-	-	<0.1	<0.1	<0.1
Substrate Cover									
rock	15.1	8.6	13.5	6.8	17.4	10.4	26.2	13.6	18.1
sand (shell gravel)	0.8	2.0	1.0	2.5	1.8	3.3	1.8	2.2	1.4
cobble	-	-	0.7	1.3	1.0	2.2	0.9	1.3	0.7



Table C8 (continued). Intertidal algae, sessile invertebrates, and substrates (percent cover) and motile invertebrates (abundance per 1.0 m²) survey means, standard deviations and 2015 annual means for Field's Cove Station FC 2 +0.9m (5+3).

Survey Survey Date	180		181		182		183		Annual Mean
	3-Mar-15	Std.	5-May-15	Std.	14-Aug-15	Std.	10-Nov-15	Std.	
Taxon	Mean	Dev.	Mean	Dev.	Mean	Dev.	Mean	Dev.	
Invertebrate Counts (continued)									
<i>Epitonium/Opalia</i> spp.	-	-	-	-	<0.1	<0.1	-	-	<0.1
Grapsidae	-	-	<0.1	<0.1	-	-	-	-	<0.1
Invertebrate Cover									
<i>Phragmatopoma californica</i>	3.2	3.1	1.5	2.0	1.4	2.0	3.3	4.0	2.3
<i>Chthamalus fissus</i>	0.3	0.9	<0.1	0.2	0.1	0.4	0.3	1.1	0.2
Porifera (encrusting)	<0.1	<0.1	-	-	-	-	-	-	<0.1
Spirorbidae	-	-	-	-	-	-	<0.1	<0.1	<0.1
Substrate Cover									
rock	39.0	18.6	38.5	19.5	43.7	18.2	48.5	14.3	42.4
sand (shell gravel)	3.7	7.3	3.5	7.1	0.3	0.7	4.2	9.4	2.9
cobble	<0.1	<0.1	0.2	0.5	0.6	1.8	1.0	2.0	0.4



Table C9 (continued). Intertidal algae, sessile invertebrates, and substrates (percent cover) and motile invertebrates (abundance per 1.0 m²) survey means, standard deviations and 2015 annual means for Station FC 3 +0.3m (6+1).

Survey Survey Date	180		181		182		183		Annual Mean
	27-Feb-15	Std. Dev.	6-May-15	Std. Dev.	13-Aug-15	Std. Dev.	23-Dec-15	Std. Dev.	
Taxon	Mean	Dev.	Mean	Dev.	Mean	Dev.	Mean	Dev.	
Invertebrate Cover (continued)									
Porifera (encrusting)	<0.1	<0.1	-	-	<0.1	<0.1	-	-	<0.1
bryozoa (encrusting)	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
<i>Salmacina tribranchiata</i>	-	-	-	-	-	-	<0.1	<0.1	<0.1
Substrate Cover									
rock	8.7	7.2	6.0	4.9	13.3	6.5	20.5	13.7	12.1
sand (shell gravel)	<0.1	0.2	1.0	2.1	3.3	4.7	1.0	1.4	1.4
cobble	0.3	0.8	0.3	0.7	0.6	2.0	0.8	2.0	0.5

Table C10 (continued). Intertidal algae, sessile invertebrates, and substrates (percent cover) and motile invertebrates (abundance per 1.0 m²) survey means, standard deviations and 2015 annual means for Field's Cove Station FC 3 +0.9m (6+3).

Survey Survey Date	180 4-Mar-15		181 6-May-15		182 25-Sep-15		183 10-Nov-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Cover									
<i>Phragmatopoma californica</i>	10.8	8.6	6.5	5.7	5.1	5.3	10.2	7.5	8.2
<i>Chthamalus fissus</i>	0.2	0.7	0.2	0.7	0.8	2.0	0.9	2.9	0.5
Spirorbidae	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Substrate Cover									
rock	18.7	10.2	25.3	6.7	31.9	13.9	27.1	6.2	25.7
sand (shell gravel)	0.8	2.0	1.3	2.5	1.3	2.8	5.0	13.8	2.1
cobble	-	-	0.1	0.4	0.7	1.1	<0.1	<0.1	0.2



Table C12 (continued). Intertidal algae, sessile invertebrates, and substrates (percent cover) and motile invertebrates (abundance per 1.0 m²) survey means, standard deviations and 2015 annual means for North Diablo Cove Station NDC 1 +0.9m (7+3).

Survey Survey Date	180 4-Feb-15		181 22-Apr-15		182 26-Aug-15		183 26-Oct-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts (continued)									
<i>Serpulorhis squamigerus</i>	-	-	<0.1	<0.1	-	-	-	-	<0.1
<i>Octopus</i> spp.	-	-	-	-	-	-	<0.1	<0.1	<0.1
<i>Sipuncula</i>	-	-	-	-	<0.1	<0.1	-	-	<0.1
Invertebrate Cover									
<i>Chthamalus fissus</i>	4.8	7.6	4.2	7.8	3.5	6.8	4.4	4.8	4.2
<i>Phragmatopoma californica</i>	0.2	0.3	0.2	0.3	<0.1	<0.1	0.2	0.7	0.2
<i>Spirorbidae</i>	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
<i>Pista</i> spp.	<0.1	<0.1	-	-	-	-	-	-	<0.1
Substrate Cover									
rock	19.5	13.8	28.1	15.2	42.6	19.2	49.5	18.1	34.9
cobble	4.7	2.5	11.1	9.7	4.0	4.8	7.3	4.4	6.8
sand (shell gravel)	5.5	4.8	3.7	4.9	6.0	5.9	7.2	5.5	5.6



Table C14 (continued). Intertidal algae, sessile invertebrates, and substrates (percent cover) and motile invertebrates (abundance per 1.0 m²) survey means, standard deviations and 2015 annual means for North Diablo Cove Station NDC 2 +0.9m (8+3).

Survey Survey Date	180 17-Mar-15		181 17-Jun-15		182 15-Jul-15		183 26-Oct-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts (continued)									
<i>Pollicipes polymerus</i>	<0.1	<0.1	-	-	<0.1	<0.1	-	-	<0.1
<i>Heptacarpus</i> spp.	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Ischnochitonidae	-	-	-	-	<0.1	<0.1	-	-	<0.1
<i>Pugettia</i> spp.	-	-	<0.1	<0.1	-	-	-	-	<0.1
<i>Homolopoma lurid./Lirularia succincta</i>	-	-	<0.1	<0.1	-	-	-	-	<0.1
Invertebrate Cover									
<i>Chthamalus fissus</i>	12.7	6.9	4.8	5.7	6.7	7.8	8.3	5.0	8.1
<i>Phragmatopoma californica</i>	1.5	1.6	1.0	1.3	0.8	1.4	1.2	2.2	1.1
Spirorbidae	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Porifera (encrusting)	-	-	<0.1	<0.1	-	-	-	-	<0.1
<i>Salmacina tribranchiata</i>	-	-	-	-	-	-	<0.1	<0.1	<0.1
Substrate Cover									
rock	64.2	4.9	68.7	7.8	70.1	8.6	70.8	7.7	68.4
cobble	3.5	5.4	3.2	6.0	3.3	5.2	1.4	2.1	2.8
sand (shell gravel)	<0.1	<0.1	0.6	1.0	1.0	2.2	0.7	1.3	0.6

Table C20 (continued). Intertidal algae, sessile invertebrates, and substrates (percent cover) and motile invertebrates (abundance per 1.0 m²) survey means, standard deviations and 2015 annual means for South Diablo Cove Station SDC 2 +0.9m (11+3).

Survey Survey Date	180 21-Jan-15		181 21-Apr-15		182 1-Jul-15		183 29-Oct-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Cover									
<i>Chthamalus fissus</i>	2.7	2.2	1.1	1.4	2.5	2.6	2.4	1.7	2.2
<i>Phragmatopoma californica</i>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Spirorbidae	<0.1	<0.1	-	-	<0.1	<0.1	-	-	<0.1
Substrate Cover									
rock	48.8	24.4	52.1	27.6	40.4	17.7	53.8	19.4	48.8
sand (shell gravel)	6.4	8.5	10.6	16.4	13.2	17.2	11.3	16.5	10.4
cobble	5.0	8.2	0.6	0.8	3.9	8.6	1.8	2.6	2.8



Table C24 (continued). Intertidal algae, sessile invertebrates, and substrates (percent cover) and motile invertebrates (abundance per 1.0 m²) survey means, standard deviations and 2015 annual means for South Diablo Point Station SDP 2 +0.9m (14+3).

Survey Survey Date	180		181		182		183		Annual Mean
	17-Feb-15	Std. Dev.	19-May-15	Std. Dev.	2-Jul-15	Std. Dev.	26-Dec-15	Std. Dev.	
Taxon	Mean	Dev.	Mean	Dev.	Mean	Dev.	Mean	Dev.	
Invertebrate Cover									
<i>Dodecaceria fewkesi</i>	0.4	0.9	0.3	0.9	1.7	3.6	0.3	0.9	0.7
<i>Chthamalus fissus</i>	1.0	1.3	<0.1	<0.1	<0.1	<0.1	0.5	1.0	0.4
<i>Phragmatopoma californica</i>	0.3	0.9	<0.1	<0.1	<0.1	<0.1	0.1	0.3	0.1
Porifera (encrusting)	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hydroidolina	-	-	-	-	-	-	<0.1	0.2	<0.1
Spirorbidae	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
<i>Salmacina tribranchiata</i>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
bryozoa (encrusting)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
tunicates, compound/social	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Substrate Cover									
rock	6.2	4.0	3.1	2.4	2.3	3.0	3.3	1.3	3.7

Table C25 (continued). Intertidal algae, sessile invertebrates, and substrates (percent cover) and motile invertebrates (abundance per 1.0 m²) survey means, standard deviations and 2015 annual means for South Control Station SC 1 +0.3m (19+1).

Survey Survey Date	180 16-Mar-15		181 3-Jun-15		182 17-Jul-15		183 27-Oct-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Cover									
<i>Phragmatopoma californica</i>	9.6	12.0	6.2	9.8	8.2	9.4	14.7	10.9	9.7
<i>Pista</i> spp.	<0.1	<0.1	2.5	6.0	<0.1	<0.1	1.9	5.9	1.1
tunicates, compound/social	<0.1	<0.1	<0.1	<0.1	0.9	2.9	1.7	5.5	0.7
Spirorbidae	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Porifera (encrusting)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<i>Chthamalus fissus</i>	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	-	<0.1
bryozoa (encrusting)	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1
Substrate Cover									
rock	9.4	4.5	10.9	9.0	5.1	4.1	6.4	4.5	7.9
sand (shell gravel)	1.9	4.2	3.9	8.0	1.6	5.1	2.4	4.7	2.4
cobble	2.5	3.5	2.2	2.5	0.3	0.9	2.8	3.2	1.9

Table C26 (continued). Intertidal algae, sessile invertebrates, and substrates (percent cover) and motile invertebrates (abundance per 1.0 m²) survey means, standard deviations and 2015 annual means for South Control Station SC 1 +0.9m (19+3).

Survey Survey Date	180 16-Mar-15		181 3-Jun-15		182 17-Jul-15		183 27-Oct-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts (continued)									
<i>Cyanoplax</i> spp.	-	-	0.2	0.4	-	-	-	-	<0.1
<i>Haliotis</i> spp.	-	-	0.1	0.3	-	-	0.1	0.3	<0.1
Lottiidae	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<i>Littorina</i> spp.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
<i>Mytilus</i> spp.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ischnochitonidae	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<i>Crepidula</i> spp.	<0.1	<0.1	-	-	<0.1	<0.1	-	-	<0.1
<i>Lottia instabilis</i>	-	-	-	-	-	-	<0.1	<0.1	<0.1
<i>Lacuna</i> spp.	-	-	<0.1	<0.1	-	-	-	-	<0.1
Invertebrate Cover									
<i>Phragmatopoma californica</i>	1.9	5.9	1.9	5.9	1.6	5.1	3.8	11.8	2.3
<i>Chthamalus fissus</i>	0.6	1.2	<0.1	<0.1	<0.1	<0.1	<0.1	-	0.1
Spirorbidae	<0.1	<0.1	<0.1	<0.1	0.1	0.4	<0.1	<0.1	<0.1
tunicates, compound/social	-	-	-	-	<0.1	<0.1	-	-	<0.1
Substrate Cover									
rock	18.2	12.0	16.3	6.2	12.8	9.4	11.5	8.2	14.7
cobble	12.5	13.7	12.4	9.3	7.0	8.2	10.1	8.1	10.5
sand (shell gravel)	1.7	3.9	1.7	2.0	1.4	1.9	3.5	4.8	2.1

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Appendix D

Intertidal Fishes (VBT Method)

Table D1. Intertidal fish survey totals, 2015 annual means, and standard deviations, North Control Station NC 1V (N).

Survey Survey Date	140 19-Feb-15	141 2-Jun-15	142 13-Jul-15	143 27-Dec-15	Annual Mean	Std. Dev.
Taxon	Total	Total	Total	Total		
<i>Xiphister mucosus</i>	12	10	13	5	10.0	3.6
<i>Xiphister atropurpureus</i>	10	3	1	17	7.8	7.3
Pholidae/Stichaeidae	8	3	4	11	6.5	3.7
<i>Anoplarchus purpureus</i>	6	4	2	8	5.0	2.6
<i>Cebidichthys violaceus</i>	-	2	5	4	2.8	2.2
<i>Gobiesox maeandricus</i>	2	1	-	5	2.0	2.2
Cottidae	-	-	8	-	2.0	4.0
<i>Apodichthys fucorum</i>	-	3	-	-	0.8	1.5
<i>Oligocottus snyderi</i>	-	-	2	-	0.5	1.0

Table D2. Intertidal fish survey totals, 2015 annual means, and standard deviations, Field's Cove Station FC 1V (C).

Survey Survey Date	140 20-Feb-15	141 16-Jun-15	142 31-Jul-15	143 26-Dec-15	Annual Mean	Std. Dev.
Taxon	Total	Total	Total	Total		
<i>Cebidichthys violaceus</i>	4	10	13	23	12.5	7.9
<i>Xiphister mucosus</i>	4	11	9	3	6.8	3.9
Pholidae/Stichaeidae	4	5	8	5	5.5	1.7
<i>Xiphister atropurpureus</i>	-	4	1	7	3.0	3.2
<i>Gobiesox maeandricus</i>	1	-	-	7	2.0	3.4
<i>Anoplarchus purpureus</i>	2	2	2	1	1.8	0.5
<i>Oligocottus snyderi</i>	-	4	2	1	1.8	1.7
Cottidae	5	-	1	-	1.5	2.4
Pholidae	-	1	-	-	0.3	0.5

Table D3. Intertidal fish survey totals, 2015 annual means, and standard deviations, North Diablo Cove Station NDC 1V (L).

Survey Survey Date	140 17-Mar-15	141 22-Apr-15	142 31-Jul-15	143 24-Dec-15	Annual Mean	Std. Dev.
Taxon	Total	Total	Total	Total		
Pholidae/Stichaeidae	-	1	2	-	0.8	1.0
<i>Xiphister atropurpureus</i>	-	-	1	1	0.5	0.6
<i>Cebidichthys violaceus</i>	-	-	-	1	0.3	0.5
<i>Anoplarchus purpureus</i>	1	-	-	-	0.3	0.5



Table D4. Intertidal fish survey totals, 2015 annual means, and standard deviations, South Diablo Cove Station SDC 2V (H).

Survey Survey Date	140 17-Feb-15	141 4-Jun-15	142 30-Jul-15	143 30-Oct-15	Annual Mean	Std. Dev.
Taxon	Total	Total	Total	Total		
<i>Cebidichthys violaceus</i>	32	22	39	14	26.8	11.0
<i>Xiphister mucosus</i>	17	-	1	-	4.5	8.4
<i>Xiphister atropurpureus</i>	-	9	7	-	4.0	4.7
Pholidae/Stichaeidae	-	2	5	7	3.5	3.1
<i>Anoplarchus purpureus</i>	3	3	1	1	2.0	1.2
<i>Oligocottus snyderi</i>	-	-	5	2	1.8	2.4
Cottidae	1	-	2	3	1.5	1.3
<i>Girella nigricans</i>	-	-	-	1	0.3	0.5
<i>Anoplarchus/Cebidichthys</i>	-	-	1	-	0.3	0.5
<i>Typhlogobius californiensis</i>	-	-	-	1	0.3	0.5

Table D5. Intertidal fish survey totals, 2015 annual means, and standard deviations, South Control Station SC 1V (S).

Survey Survey Date	140 20-Jan-15	141 5-Jun-15	142 29-Jul-15	143 28-Oct-15	Annual Mean	Std. Dev.
Taxon	Total	Total	Total	Total		
<i>Cebidichthys violaceus</i>	8	30	11	11	15.0	10.1
<i>Anoplarchus purpureus</i>	26	17	5	6	13.5	10.0
Pholidae/Stichaeidae	9	8	7	7	7.8	1.0
<i>Oligocottus snyderi</i>	2	2	15	-	4.8	6.9
<i>Xiphister mucosus</i>	1	10	2	1	3.5	4.4
Cottidae	-	4	9	-	3.3	4.3
<i>Oligocottus</i> spp.	-	-	-	10	2.5	5.0
<i>Xiphister atropurpureus</i>	2	4	-	2	2.0	1.6
<i>Hypsoblennius</i> spp.	-	-	-	7	1.8	3.5
<i>Gibbonsia</i> spp.	2	-	1	3	1.5	1.3
<i>Gobiesox maeandricus</i>	3	-	1	-	1.0	1.4
<i>Apodichthys flavidus</i>	-	-	-	2	0.5	1.0
<i>Artedius</i> spp.	1	-	1	-	0.5	0.6
Pholidae	-	1	-	-	0.3	0.5
<i>Apodichthys fucorum</i>	-	-	1	-	0.3	0.5
<i>Porichthys notatus</i>	-	1	-	-	0.3	0.5
<i>Anoplarchus/Cebidichthys</i>	-	-	1	-	0.3	0.5

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Appendix E

Subtidal Algae and Invertebrates (SAQ Method)

Table E2. Subtidal algae and invertebrates (SAQ Method) survey means (abundance per 7 m²), standard deviations and annual means, North Diablo Cove Station NDC 2 -3m (8-10).

Survey Survey Date	168 25-Feb-15		169 11-Jun-15		170 18-Aug-15		171 7-Oct-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Algae									
<i>Sargassum muticum</i>	-	-	-	-	-	-	70.3	20.8	17.6
<i>Cystoseira osmundacea</i>	-	-	-	-	-	-	0.8	1.5	0.2
Invertebrates									
<i>Strongylocentrotus purpuratus</i>	853.3	118.1	624.8	367.7	379.3	192.0	336.3	78.3	548.4
<i>Ophiothrix spiculata</i>	24.0	8.0	40.0	16.9	117.0	132.5	20.0	5.4	50.3
Anthozoa	13.8	12.2	13.3	13.4	6.8	7.7	4.0	1.8	9.4
<i>Anthopleura elegantissima</i>	4.0	0.8	2.5	1.3	6.5	3.4	14.0	14.2	6.8
Serpulidae	1.0	0.8	2.0	1.4	2.5	2.4	3.8	1.0	2.3
<i>Fissurella volcano</i>	1.0	1.4	2.5	2.1	2.0	0.8	-	-	1.4
<i>Strongylocentrotus franciscanus</i>	2.3	1.9	0.8	1.0	0.3	0.5	0.8	0.5	1.0
<i>Acmaea mitra</i>	0.8	1.5	1.5	1.7	-	-	-	-	0.6
<i>Diodora</i> spp.	0.5	0.6	0.3	0.5	1.0	1.4	-	-	0.4
<i>Haliotis</i> spp.	0.3	0.5	-	-	0.5	1.0	-	-	0.2
<i>Diopatra ornata</i>	-	-	0.3	0.5	0.3	0.5	-	-	0.1
<i>Serpulorbis squamigerus</i>	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Octopus</i> spp.	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Patiria miniata</i>	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Parastichopus</i> spp.	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Placiphorella velata</i>	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Ophioplocus esmarki</i>	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Eudistylia polymorpha</i>	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Navanax inermis</i>	-	-	-	-	-	-	0.3	0.5	<0.1



Table E3. Subtidal algae and invertebrates (SAQ Method) survey means (abundance per 7 m²), standard deviations and annual means, North Diablo Cove Station NDC 3 -3m (9-10).

Taxon	Survey Survey Date		168 3-Mar-15		169 12-Jun-15		170 24-Jul-15		171 2-Oct-15		Annual Mean
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrates											
<i>Strongylocentrotus purpuratus</i>	772.8	113.6	332.0	93.8	479.5	144.6	223.3	103.9			451.9
Anthozoa	71.8	11.4	48.8	20.0	141.0	69.8	14.8	8.0			69.1
<i>Ophiothrix spiculata</i>	98.3	31.9	30.3	7.8	54.0	14.9	23.8	10.7			51.6
<i>Anthopleura elegantissima</i>	9.5	5.2	5.3	2.6	11.0	3.6	5.5	2.7			7.8
<i>Fissurella volcano</i>	4.8	1.5	2.3	1.3	5.8	2.9	-	-			3.2
Serpulidae	1.0	1.4	4.8	1.7	2.5	1.7	3.3	3.6			2.9
<i>Strongylocentrotus franciscanus</i>	2.8	1.7	0.5	1.0	3.0	2.9	0.5	1.0			1.7
<i>Eudistylia polymorpha</i>	0.5	0.6	0.5	0.6	-	-	0.3	0.5			0.3
<i>Aplysia</i> spp.	-	-	1.3	1.3	-	-	-	-			0.3
<i>Serpulorbis squamigerus</i>	-	-	0.3	0.5	0.8	1.0	-	-			0.3
Pelecypoda boring	0.3	0.5	-	-	0.5	1.0	0.3	0.5			0.3
<i>Diodora</i> spp.	-	-	0.3	0.5	-	-	0.3	0.5			0.1
<i>Parastichopus</i> spp.	-	-	0.3	0.5	0.3	0.5	-	-			0.1
<i>Megathura crenulata</i>	-	-	-	-	0.5	0.6	-	-			0.1
<i>Pagurus</i> spp.	0.3	0.5	-	-	-	-	-	-			<0.1
<i>Patiria miniata</i>	0.3	0.5	-	-	-	-	-	-			<0.1
<i>Diaulula sandiegensis</i>	-	-	-	-	-	-	0.3	0.5			<0.1
<i>Navanax inermis</i>	-	-	-	-	-	-	0.3	0.5			<0.1



Table E8 (continued). Subtidal algae and invertebrates (SAQ Method) survey means (abundance per 7 m²), standard deviations and annual means, South Control Station SC 2 -6m (20-20).

Survey Survey Date	168 10-Mar-15		169 29-Jun-15		170 20-Aug-15		171 31-Dec-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrates (continued)									
<i>Placiphorella velata</i>	-	-	-	-	0.5	0.6	-	-	0.1
<i>Pisaster giganteus</i>	-	-	-	-	0.5	0.6	-	-	0.1
<i>Romaleon antennarius</i>	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Phidiana hiltoni</i>	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Lophopanopeus</i> spp.	-	-	-	-	-	-	0.3	0.5	<0.1



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Appendix F

Subtidal Algae (SLC Method)

Table F8 (continued). Subtidal algae (SLC Method) survey means (percent cover), standard deviations and annual means, South Control Station SC 2 -6m (20-20).

Survey Survey Date	168		169		170		171		Annual Mean
	10-Mar-15		29-Jun-15		20-Aug-15		31-Dec-15		
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrates (continued)									
bryozoa (encrusting)	1.0	2.0	-	-	-	-	0.5	1.0	0.4
Balanophyllia elegans	-	-	0.5	1.0	-	-	0.5	1.0	0.3
Tetraclita rubescens	-	-	-	-	-	-	0.5	1.0	0.1
Balanus/Tetraclita spp.	-	-	-	-	-	-	0.5	1.0	0.1
Substrates									
colonized rock	75.0	6.2	76.5	6.2	72.5	8.7	71.0	8.3	73.8
colonized cobble	6.0	4.3	5.0	6.2	8.5	8.1	8.0	4.9	6.9
sand (shell gravel)	1.0	2.0	-	-	1.0	1.2	3.0	3.5	1.3
cobble	-	-	0.5	1.0	-	-	-	-	0.1



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Appendix G

Subtidal Invertebrates (SFQ Method)

Table G1 (continued). Subtidal invertebrates (SFQ Method) survey means (abundance per 0.25 m²; percent cover) standard deviations and annual means, Field's Cove Station FC 1 -3m (22-10).

Survey Survey Date	168 11-Mar-15		169 26-Jun-15		170 21-Aug-15		171 28-Dec-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts (continued)									
<i>Lepidozona</i> spp.	0.3	0.5	0.3	0.5	-	-	-	-	0.1
<i>Mopalia</i> spp.	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Octopus</i> spp.	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Promartynia pulligo</i>	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Epitonium/Opalia</i> spp.	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Loxorhynchus</i> spp.	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Phidiana hiltoni</i>	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Cryptochiton stelleri</i>	0.3	0.5	-	-	-	-	-	-	<0.1
Pelecypoda boring	-	-	0.3	0.5	-	-	-	-	<0.1
Ophiuroidea	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Mimulus foliatus</i>	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Crassadoma gigantea</i>	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Pisaster/Henricia</i> spp. (juv.)	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Paraxanthias taylori</i>	-	-	-	-	0.3	0.5	-	-	<0.1
Cirratulidae/Terebellidae	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Nassarina penicillata</i>	0.3	0.5	-	-	-	-	-	-	<0.1
Invertebrate Cover									
Porifera (encrusting)	<0.1	<0.01	<0.1	<0.01	0.1	0.3	<0.1	-	<0.1
bryozoa (encrusting)	<0.1	-	<0.1	-	<0.1	-	<0.1	-	<0.1
tunicates, compound/social	<0.1	-	<0.1	-	<0.1	-	<0.1	<0.01	<0.1
Spirorbidae	<0.1	<0.01	<0.1	<0.01	<0.1	-	<0.1	-	<0.1
<i>Salmacina tribranchiata</i>	-	-	<0.1	<0.01	<0.1	<0.01	-	-	<0.1
Hydroidolina	<0.1	<0.01	-	-	-	-	-	-	<0.1



Table G3. Subtidal invertebrates (SFQ Method) survey means (abundance per 0.25 m²; percent cover) standard deviations and annual means, North Diablo Cove Station NDC 3 -3m (9-10).

Survey Survey Date	168		169		170		171		Annual Mean
	3-Mar-15	Std. Dev.	12-Jun-15	Std. Dev.	24-Jul-15	Std. Dev.	2-Oct-15	Std. Dev.	
Taxon	Mean	Dev.	Mean	Dev.	Mean	Dev.	Mean	Dev.	
Invertebrate Counts									
Pelecypoda boring	27.8	20.8	19.0	15.2	52.8	31.2	12.8	8.9	28.1
<i>Strongylocentrotus purpuratus</i>	21.3	16.0	24.3	19.4	37.0	27.0	13.0	19.0	23.9
Anthozoa	8.3	6.6	19.3	18.6	29.0	24.3	18.3	15.4	18.7
<i>Ophiactis simplex</i>	8.0	5.1	6.5	4.0	26.8	15.0	2.8	1.7	11.0
<i>Ophiothrix spiculata</i>	4.5	4.7	5.8	4.4	2.3	1.3	1.3	1.9	3.4
Sipuncula	1.0	0.8	4.0	1.4	3.5	1.7	4.0	1.4	3.1
<i>Phragmatopoma californica</i>	7.3	5.1	4.8	6.2	0.5	1.0	-	-	3.1
<i>Fissurella volcano</i>	2.3	1.0	3.0	2.2	2.0	1.4	0.8	0.5	2.0
Chaetopteridae	-	-	0.8	1.0	4.3	2.6	-	-	1.3
<i>Lottia ochracea</i>	1.3	1.5	2.0	1.6	-	-	0.3	0.5	0.9
<i>Anthopleura elegantissima</i>	0.3	0.5	0.8	1.0	0.3	0.5	1.0	1.2	0.6
Serpulidae	1.0	0.8	0.5	1.0	0.3	0.5	0.3	0.5	0.5
<i>Epiactis prolifera</i>	0.5	0.6	0.3	0.5	0.5	1.0	-	-	0.3
Lottiidae	0.5	0.6	-	-	0.3	0.5	0.5	0.6	0.3
<i>Lissothuria nutriens</i>	-	-	0.8	1.0	-	-	0.3	0.5	0.3
<i>Balanus/Tetraclita</i> spp.	-	-	0.8	1.5	0.3	0.5	-	-	0.3
Sabellidae	0.3	0.5	0.3	0.5	0.3	0.5	-	-	0.2
<i>Eudistylia polymorpha</i>	0.3	0.5	0.3	0.5	-	-	0.3	0.5	0.2
Nemertea	-	-	-	-	0.5	1.0	-	-	0.1
Polychaeta	-	-	0.5	1.0	-	-	-	-	0.1
Ophiuroidea	0.5	1.0	-	-	-	-	-	-	0.1
<i>Acmaea mitra</i>	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Alia</i> spp.	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Serpulorbis squamigerus</i>	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Epitonium/Opalia</i> spp.	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Diaulula sandiegensis</i>	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Lirobittium</i> spp.	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Cucumaria</i> spp.	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Lophopanopeus</i> spp.	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Haliotis</i> spp.	0.3	0.5	-	-	-	-	-	-	<0.1
Invertebrate Cover									
Spirorbidae	<0.1	<0.01	<0.1	<0.01	-	-	<0.1	<0.01	<0.1
Porifera (encrusting)	<0.1	<0.01	<0.1	<0.01	-	-	<0.1	<0.01	<0.1
tunicates, compound/social	-	-	-	-	<0.1	<0.01	-	-	<0.1



Table G4. Subtidal invertebrates (SFQ Method) survey means (abundance per 0.25 m²; percent cover) standard deviations and annual means, North Diablo Cove Station NDC 4 -4m (9-15).

Survey Survey Date	168 2-Feb-15		169 9-Jun-15		170 31-Jul-15		171 6-Nov-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts									
<i>Phragmatopoma californica</i>	52.5	49.9	17.5	18.0	15.5	6.7	81.3	74.9	41.7
<i>Strongylocentrotus purpuratus</i>	9.5	9.8	11.5	10.6	8.3	9.5	8.3	7.6	9.4
<i>Ophiactis simplex</i>	6.8	12.2	4.3	4.2	6.3	12.5	18.3	17.6	8.9
Pelecypoda boring	3.5	5.2	1.0	2.0	6.3	7.6	7.8	14.2	4.6
<i>Ophiothrix spiculata</i>	2.8	1.7	2.8	3.8	4.3	1.7	1.5	0.6	2.8
<i>Balanus/Tetraclita</i> spp.	0.5	1.0	2.5	1.7	0.8	1.0	2.3	3.2	1.5
<i>Anthopleura elegantissima</i>	1.0	1.4	1.0	2.0	1.5	1.9	1.0	1.4	1.1
<i>Fissurella volcano</i>	0.5	1.0	0.3	0.5	0.5	0.6	2.8	1.7	1.0
Serpulidae	0.5	0.6	1.0	0.8	0.3	0.5	1.8	1.7	0.9
Sipuncula	-	-	1.8	2.9	1.0	1.2	0.8	1.0	0.9
<i>Lissothuria nutriens</i>	0.5	0.6	0.3	0.5	1.8	2.4	1.0	2.0	0.9
<i>Leucilla nuttingi</i>	-	-	-	-	2.8	2.2	-	-	0.7
<i>Serpulorbis squamigerus</i>	0.3	0.5	0.3	0.5	0.3	0.5	1.5	1.3	0.6
<i>Lirobittium</i> spp.	-	-	-	-	-	-	2.3	1.3	0.6
<i>Pododesmus cepio</i>	-	-	-	-	0.3	0.5	1.5	2.4	0.4
<i>Epiactis prolifera</i>	0.5	0.6	0.8	1.0	0.3	0.5	-	-	0.4
Anthozoa	-	-	-	-	-	-	1.3	1.5	0.3
<i>Alia</i> spp.	0.3	0.5	-	-	1.0	0.8	-	-	0.3
<i>Amphissa</i> spp.	-	-	0.8	1.0	-	-	0.3	0.5	0.3
<i>Dendropoma</i> spp.	-	-	-	-	1.0	2.0	-	-	0.3
Lottiidae	0.3	0.5	0.3	0.5	0.3	0.5	-	-	0.2
<i>Tonicella lineata</i>	0.5	0.6	-	-	0.3	0.5	-	-	0.2
<i>Pagurus</i> spp.	-	-	-	-	0.8	1.0	-	-	0.2
Ischnochitonidae	-	-	0.5	0.6	-	-	0.3	0.5	0.2
<i>Anthopleura artemisia</i>	-	-	0.5	0.6	-	-	-	-	0.1
<i>Acmaea mitra</i>	-	-	-	-	0.3	0.5	0.3	0.5	0.1
<i>Cucumaria</i> spp.	-	-	0.5	0.6	-	-	-	-	0.1
Chaetopteridae	-	-	-	-	-	-	0.5	0.6	0.1
<i>Kelletia kelletii</i>	-	-	-	-	-	-	0.5	0.6	0.1
<i>Lottia ochracea</i>	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Epitonium/Opalia</i> spp.	-	-	-	-	-	-	0.3	0.5	<0.1
Sabellidae	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Pista</i> spp.	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Romaleon antennarius</i>	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Patiria miniata</i>	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Loxorhynchus</i> spp.	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Diaulula sandiegensis</i>	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Doriopsilla albopunctata</i>	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Mitra idae</i>	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Rostanga pulchra</i>	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Pisaster/Henricia</i> spp. (juv.)	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Pugettia</i> spp.	-	-	-	-	0.3	0.5	-	-	<0.1
Cancridae	-	-	-	-	0.3	0.5	-	-	<0.1

(table continued)



Table G4 (continued). Subtidal invertebrates (SFQ Method) survey means (abundance per 0.25 m²; percent cover) standard deviations and annual means, North Diablo Cove Station NDC 4 -4m (9-15).

Survey Survey Date	168 2-Feb-15		169 9-Jun-15		170 31-Jul-15		171 6-Nov-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts (continued)									
Cirratulidae/Terebellidae	-	-	-	-	0.3	0.5	-	-	<0.1
Navanax inermis	-	-	-	-	-	-	0.3	0.5	<0.1
Pteropurpura festiva	-	-	0.3	0.5	-	-	-	-	<0.1
Bivalve	-	-	-	-	0.3	0.5	-	-	<0.1
Aplysia spp.	-	-	-	-	0.3	0.5	-	-	<0.1
Invertebrate Cover									
Porifera (encrusting)	<0.1	<0.01	<0.1	<0.01	0.2	0.3	0.1	0.3	<0.1
bryozoa (encrusting)	<0.1	<0.01	<0.1	<0.01	<0.1	<0.01	0.2	0.4	<0.1
tunicates, compound/social	<0.1	<0.01	<0.1	<0.01	<0.1	<0.01	<0.1	<0.01	<0.1
Spirorbidae	<0.1	<0.01	<0.1	<0.01	<0.1	<0.01	<0.1	<0.01	<0.1
Hydroidolina	<0.1	<0.01	-	-	-	-	-	-	<0.1



Table G5. Subtidal invertebrates (SFQ Method) survey means (abundance per 0.25 m²; percent cover) standard deviations and annual means, South Diablo Cove Station SDC 2 -3m (12-10).

Survey Survey Date	168 7-Jan-15		169 10-Apr-15		170 7-Aug-15		171 18-Nov-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts									
<i>Ophiothrix spiculata</i>	5.0	3.6	17.5	7.2	10.8	11.7	1.3	1.9	8.6
<i>Phragmatopoma californica</i>	9.5	9.0	3.0	3.8	14.0	13.1	1.5	2.4	7.0
<i>Sipuncula</i>	2.0	2.7	1.0	0.8	13.5	6.4	4.3	1.7	5.2
<i>Pelecypoda</i> boring	0.8	1.0	1.0	0.8	16.0	16.0	0.8	1.0	4.6
<i>Pista</i> spp.	5.5	4.2	1.3	1.5	0.5	1.0	2.8	4.9	2.5
<i>Serpulorbis squamigerus</i>	-	-	1.3	1.9	3.8	3.3	2.3	2.6	1.8
<i>Ophiactis simplex</i>	1.0	0.8	3.5	3.4	2.0	2.5	0.3	0.5	1.7
<i>Diopatra ornata</i>	-	-	0.3	0.5	3.3	6.5	1.0	1.4	1.1
<i>Serpulidae</i>	1.0	0.8	1.3	1.3	0.3	0.5	1.8	1.5	1.1
<i>Chaetopteridae</i>	1.3	1.0	1.5	1.9	1.3	1.5	-	-	1.0
<i>Fissurella volcano</i>	1.0	1.2	1.3	1.3	0.3	0.5	0.8	0.5	0.8
<i>Balanus/Tetracitla</i> spp.	2.5	5.0	-	-	0.3	0.5	0.5	1.0	0.8
<i>Strongylocentrotus purpuratus</i>	1.0	-	0.8	0.5	0.3	0.5	0.8	1.0	0.7
<i>Alia</i> spp.	0.8	1.0	1.3	0.5	-	-	0.5	1.0	0.6
<i>Ophiuroidea</i>	0.5	0.6	1.0	0.8	-	-	1.0	0.8	0.6
<i>Pagurus</i> spp.	0.5	0.6	0.3	0.5	1.3	1.9	0.3	0.5	0.6
<i>Leucilla nuttingi</i>	-	-	-	-	2.0	2.5	-	-	0.5
<i>Lissothuria nutriens</i>	-	-	0.3	0.5	1.3	1.3	0.5	0.6	0.5
<i>Pododesmus cepio</i>	0.8	0.5	-	-	0.8	1.0	0.3	0.5	0.4
<i>Amphissa</i> spp.	-	-	0.5	0.6	0.8	1.0	0.5	1.0	0.4
<i>Acmaea mitra</i>	0.5	0.6	0.3	0.5	0.8	1.0	-	-	0.4
<i>Cucumaria</i> spp.	0.3	0.5	0.3	0.5	-	-	1.0	1.4	0.4
<i>Mitra idae</i>	0.8	0.5	0.3	0.5	-	-	0.3	0.5	0.3
<i>Anthopleura elegantissima</i>	0.3	0.5	0.3	0.5	-	-	0.5	0.6	0.3
<i>Epiactis prolifera</i>	-	-	-	-	0.3	0.5	0.8	1.5	0.3
<i>Lottiidae</i>	-	-	0.3	0.5	0.3	0.5	0.5	0.6	0.3
<i>Sabellidae</i>	0.3	0.5	0.3	0.5	0.5	0.6	-	-	0.3
<i>Balanophyllia elegans</i>	0.5	0.6	-	-	0.3	0.5	0.3	0.5	0.3
<i>Ischnochitonidae</i>	-	-	0.5	0.6	0.5	1.0	-	-	0.3
<i>Pugettia</i> spp.	0.3	0.5	-	-	0.8	1.0	-	-	0.3
<i>Dendropoma</i> spp.	-	-	-	-	1.0	1.4	-	-	0.3
<i>Eulithidium</i> spp.	-	-	1.0	2.0	-	-	-	-	0.3
<i>Mopalia</i> spp.	-	-	0.3	0.5	0.5	0.6	-	-	0.2
<i>Lottia ochracea</i>	0.3	0.5	-	-	0.5	0.6	-	-	0.2
<i>Diodora</i> spp.	-	-	-	-	0.5	0.6	-	-	0.1
<i>Placiphorella velata</i>	0.3	0.5	-	-	0.3	0.5	-	-	0.1
<i>Strongylocentrotus</i> spp.	-	-	-	-	0.5	0.6	-	-	0.1
<i>Scyra acutifrons</i>	0.3	0.5	-	-	-	-	0.3	0.5	0.1
<i>Cancridae</i>	-	-	-	-	0.5	1.0	-	-	0.1
<i>Okenia rosacea</i>	0.3	0.5	-	-	-	-	0.3	0.5	0.1
<i>Cirratulidae/Terebellidae</i>	-	-	-	-	0.5	0.6	-	-	0.1
<i>Anthopleura artemisia</i>	-	-	-	-	0.3	0.5	-	-	<0.1
Anthozoa	-	-	0.3	0.5	-	-	-	-	<0.1

(table continued)



Table G5 (continued). Subtidal invertebrates (SFQ Method) survey means (abundance per 0.25 m²; percent cover) standard deviations and annual means, South Diablo Cove Station SDC 2 -3m (12-10).

Survey Survey Date	168 7-Jan-15		169 10-Apr-15		170 7-Aug-15		171 18-Nov-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts (continued)									
<i>Octopus</i> spp.	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Conus californicus</i>	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Pycnogonida</i>	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Doriopsilla albopunctata</i>	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Ocenebrina</i> spp.	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Triopha catalinae</i>	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Lirobittium</i> spp.	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Lacuna</i> spp.	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Heptacarpus</i> spp.	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Lophopanopeus</i> spp.	-	-	0.3	0.5	-	-	-	-	<0.1
Doridacea	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Kelletia kelletii</i>	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Pteropurpura festiva</i>	-	-	-	-	-	-	0.3	0.5	<0.1
Pectinidae	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Aplysia</i> spp.	-	-	-	-	-	-	0.3	0.5	<0.1
Invertebrate Cover									
Porifera (encrusting)	<0.1	<0.01	<0.1	<0.01	0.3	0.4	<0.1	<0.01	<0.1
bryozoa (encrusting)	<0.1	-	<0.1	<0.01	<0.1	0.1	<0.1	-	<0.1
Spirorbidae	<0.1	<0.01	<0.1	<0.01	<0.1	-	<0.1	-	<0.1
tunicates, compound/social	<0.1	<0.01	<0.1	<0.01	<0.1	<0.01	<0.1	<0.01	<0.1
<i>Acanthancora cyanocrypta</i>	-	-	-	-	<0.1	<0.01	-	-	<0.1



Table G6. Subtidal invertebrates (SFQ Method) survey means (abundance per 0.25 m²; percent cover) standard deviations and annual means, South Diablo Cove Station SDC 3 -4m (10-15).

Taxon	Survey Survey Date		168 14-Jan-15		169 10-Jun-15		170 19-Aug-15		171 20-Nov-15		Annual Mean
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts											
<i>Balanophyllia elegans</i>	35.5	10.0	11.8	5.6	15.0	11.3	37.0	18.1	24.8		
<i>Phragmatopoma californica</i>	3.5	1.3	4.0	4.1	4.0	4.1	26.3	11.1	9.4		
Chaetopteridae	8.8	4.4	4.5	4.7	3.5	1.3	1.0	1.2	4.4		
Pelecypoda boring	0.8	1.0	1.8	2.2	0.5	0.6	10.3	11.6	3.3		
<i>Serpulorbis squamigerus</i>	1.3	1.3	3.3	1.9	1.5	0.6	5.5	3.1	2.9		
<i>Pagurus</i> spp.	4.3	3.3	-	-	2.3	1.9	4.8	8.2	2.8		
<i>Alia</i> spp.	4.0	2.8	1.0	2.0	0.3	0.5	4.5	4.2	2.4		
<i>Anthopleura elegantissima</i>	2.3	1.9	2.5	2.7	2.0	1.4	2.8	1.7	2.4		
<i>Corynactis californica</i>	1.0	2.0	3.5	7.0	3.0	6.0	1.3	1.9	2.2		
Serpulidae	1.5	1.0	2.8	1.7	2.0	-	1.5	0.6	1.9		
<i>Diopatra ornata</i>	1.0	1.2	4.3	5.4	0.8	1.0	0.5	1.0	1.6		
<i>Balanus/Tetracita</i> spp.	4.5	3.3	1.8	1.7	-	-	-	-	1.6		
<i>Strongylocentrotus purpuratus</i>	1.8	1.5	0.8	1.0	1.0	0.8	2.5	2.5	1.5		
Sipuncula	1.3	0.5	1.8	1.0	0.5	0.6	2.5	1.7	1.5		
<i>Mitra idae</i>	1.5	1.0	1.0	-	1.3	1.0	1.3	0.5	1.3		
<i>Amphissa</i> spp.	3.0	0.8	0.3	0.5	0.8	1.0	1.0	1.4	1.3		
Sabellidae	0.5	0.6	0.5	0.6	-	-	3.5	5.2	1.1		
<i>Pugettia</i> spp.	2.5	1.3	-	-	0.3	0.5	1.3	1.3	1.0		
<i>Acmaea mitra</i>	0.8	1.0	0.5	0.6	0.5	0.6	2.0	2.2	0.9		
<i>Crepidula</i> spp.	0.5	0.6	0.8	1.0	1.5	1.3	1.0	1.4	0.9		
<i>Pista</i> spp.	2.3	1.3	-	-	-	-	0.8	1.0	0.8		
<i>Paracyathus stearnsii</i>	0.5	1.0	0.8	1.0	0.3	0.5	1.5	2.4	0.8		
Ophiuroidea	1.5	1.7	0.5	0.6	0.8	1.0	-	-	0.7		
<i>Ophiothrix spiculata</i>	0.3	0.5	1.0	1.4	0.5	0.6	0.5	0.6	0.6		
Anthozoa	-	-	0.8	1.0	0.5	0.6	0.8	1.0	0.5		
<i>Pododesmus cepio</i>	0.8	1.0	-	-	0.3	0.5	0.8	1.0	0.4		
<i>Scyra acutifrons</i>	1.5	1.7	-	-	0.3	0.5	-	-	0.4		
<i>Dendropoma</i> spp.	-	-	-	-	-	-	1.3	1.5	0.3		
<i>Eulithidium</i> spp.	0.5	1.0	0.8	1.5	-	-	-	-	0.3		
Lottiidae	-	-	0.5	1.0	-	-	0.5	0.6	0.3		
<i>Anthopleura artemisia</i>	-	-	0.5	0.6	0.3	0.5	-	-	0.2		
<i>Diodora</i> spp.	0.3	0.5	-	-	-	-	0.5	0.6	0.2		
<i>Fissurella volcano</i>	-	-	0.5	1.0	-	-	0.3	0.5	0.2		
<i>Conus californicus</i>	0.3	0.5	0.3	0.5	0.3	0.5	-	-	0.2		
<i>Doriopsilla albopunctata</i>	0.3	0.5	-	-	-	-	0.5	0.6	0.2		
<i>Ocenebrina</i> spp.	0.5	0.6	-	-	-	-	0.3	0.5	0.2		
<i>Pseudomelatoma torosa</i>	0.8	0.5	-	-	-	-	-	-	0.2		
<i>Patiria miniata</i>	0.5	0.6	-	-	-	-	-	-	0.1		
<i>Cucumaria</i> spp.	0.5	0.6	-	-	-	-	-	-	0.1		
<i>Crassadoma gigantea</i>	-	-	-	-	-	-	0.5	0.6	0.1		
<i>Lissothuria nutriens</i>	-	-	-	-	0.3	0.5	0.3	0.5	0.1		
<i>Eupentacta quinquesemita</i>	-	-	0.3	0.5	-	-	0.3	0.5	0.1		
<i>Podochela hemphilli</i>	0.5	0.6	-	-	-	-	-	-	0.1		

(table continued)

Table G6. (continued) Subtidal invertebrates (SFQ Method) survey means (abundance per 0.25 m²; percent cover) standard deviations and annual means, South Diablo Cove Station SDC 3 -4m (10-15).

Survey Survey Date	168 14-Jan-15		169 10-Jun-15		170 19-Aug-15		171 20-Nov-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts (continued)									
<i>Mopalia</i> spp.	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Chlorostoma brunnea</i>	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Henricia leviuscula</i>	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Tethya californiana</i>	0.3	0.5	-	-	-	-	-	-	<0.1
Ischnochitonidae	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Lirobittium</i> spp.	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Ophioplocus esmarki</i>	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Mimulus foliatus</i>	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Paraxanthias taylori</i>	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Kelletia kelletii</i>	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Ophiactis simplex</i>	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Pteropurpura festiva</i>	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Doris</i> spp.	-	-	-	-	0.3	0.5	-	-	<0.1
Bivalve	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Aplysia</i> spp.	-	-	-	-	0.3	0.5	-	-	<0.1
Invertebrate Cover									
Porifera (encrusting)	0.6	0.5	<0.1	-	<0.1	-	1.0	0.6	0.4
<i>Acanthancora cyanocrypta</i>	0.6	0.8	0.1	0.3	<0.1	<0.01	0.9	1.5	0.4
bryozoa (encrusting)	0.3	0.3	<0.1	-	<0.1	-	0.8	1.0	0.3
tunicates, compound/social	<0.1	-	<0.1	<0.01	<0.1	-	<0.1	-	<0.1
Spirorbidae	<0.1	<0.01	<0.1	<0.01	<0.1	-	<0.1	<0.01	<0.1
Hydroïdolina	-	-	<0.1	<0.01	-	-	-	-	<0.1



Table G7. Subtidal invertebrates (SFQ Method) survey means (abundance per 0.25 m²; percent cover) standard deviations and annual means, South Control Station SC 1 -3m (19-10).

Survey Survey Date Taxon	168 9-Mar-15		169 25-Jun-15		170 6-Aug-15		171 23-Nov-15		Annual Mean
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts									
<i>Phragmatopoma californica</i>	185.8	370.8	143.3	271.2	142.3	222.8	115.5	203.2	146.7
<i>Chlorostoma brunnea</i>	14.0	5.4	4.5	2.4	12.3	9.3	11.0	11.2	10.4
<i>Homolo. luridum/Lirularia succincta</i>	9.8	4.2	6.0	0.8	6.0	5.9	7.5	4.4	7.3
<i>Dendropoma</i> spp.	-	-	0.8	1.5	-	-	23.8	38.2	6.1
<i>Pagurus</i> spp.	1.3	1.0	1.8	1.7	7.3	3.8	11.3	7.1	5.4
<i>Amphissa</i> spp.	1.8	2.2	1.5	1.9	6.3	12.5	2.8	1.0	3.1
<i>Balanus/Tetracita</i> spp.	3.3	3.0	1.8	2.4	2.8	3.4	4.3	7.2	3.0
<i>Balanophyllia elegans</i>	2.5	3.3	2.8	3.4	2.0	2.5	2.8	3.4	2.5
<i>Crepidula</i> spp.	3.0	2.9	1.0	0.8	0.5	0.6	4.0	3.3	2.1
<i>Tonicella lineata</i>	1.5	1.3	0.8	0.5	1.0	1.2	0.5	1.0	0.9
<i>Alia</i> spp.	1.0	1.4	0.3	0.5	1.0	0.8	0.8	1.0	0.8
<i>Mitra idae</i>	1.3	0.5	1.0	1.2	0.3	0.5	0.5	0.6	0.8
<i>Anthopleura elegantissima</i>	0.5	1.0	1.5	1.9	0.5	0.6	0.3	0.5	0.7
<i>Lottia instabilis</i>	1.8	1.0	-	-	1.0	2.0	-	-	0.7
<i>Pugettia</i> spp.	0.8	1.0	0.8	1.0	0.3	0.5	0.8	1.0	0.6
<i>Diopatra ornata</i>	-	-	1.0	1.4	0.8	1.5	0.5	1.0	0.6
Chaetopteridae	-	-	-	-	2.0	2.8	-	-	0.5
<i>Lissothuria nutriens</i>	0.5	1.0	0.5	1.0	-	-	0.8	1.0	0.4
<i>Leptasterias</i> spp.	0.8	0.5	0.5	1.0	0.3	0.5	-	-	0.4
<i>Strongylocentrotus purpuratus</i>	0.3	0.5	0.8	1.0	0.3	0.5	0.3	0.5	0.4
<i>Calliostoma ligatum</i>	0.5	0.6	-	-	0.5	0.6	0.3	0.5	0.3
<i>Acmaea mitra</i>	-	-	0.3	0.5	0.5	0.6	0.3	0.5	0.3
<i>Fissurella volcano</i>	0.3	0.5	0.3	0.5	0.5	0.6	-	-	0.3
<i>Pododesmus cepio</i>	0.5	0.6	-	-	-	-	0.5	1.0	0.3
<i>Serpulorbis squamigerus</i>	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5	0.3
<i>Lottia insessa</i>	-	-	1.0	1.2	-	-	-	-	0.3
Sabellidae	-	-	1.0	2.0	-	-	-	-	0.3
<i>Ocenebrina</i> spp.	0.3	0.5	0.5	0.6	0.3	0.5	-	-	0.3
<i>Pisaster/Henricia</i> spp. (juv.)	0.3	0.5	0.3	0.5	0.5	0.6	-	-	0.3
Serpulidae	0.3	0.5	0.5	0.6	0.3	0.5	-	-	0.3
<i>Scyra acutifrons</i>	0.3	0.5	0.5	0.6	0.3	0.5	-	-	0.3
<i>Mopalia</i> spp.	-	-	0.5	1.0	-	-	0.3	0.5	0.2
<i>Patiria miniata</i>	0.3	0.5	0.3	0.5	0.3	0.5	-	-	0.2
<i>Pseudomelatoma torosa</i>	0.3	0.5	0.3	0.5	0.3	0.5	-	-	0.2
<i>Lirobittium</i> spp.	-	-	-	-	0.8	1.0	-	-	0.2
<i>Okenia rosacea</i>	0.3	0.5	-	-	0.3	0.5	0.3	0.5	0.2
<i>Promartynia pulligo</i>	0.3	0.5	-	-	0.3	0.5	-	-	0.1
Pelecypoda boring	-	-	0.3	0.5	-	-	0.3	0.5	0.1
<i>Mimulus foliatus</i>	-	-	-	-	0.5	0.6	-	-	0.1
<i>Strongylocentrotus</i> spp.	-	-	-	-	-	-	0.5	0.6	0.1
Cancridae	-	-	-	-	-	-	0.5	1.0	0.1
<i>Eulithidium</i> spp.	0.5	1.0	-	-	-	-	-	-	0.1
Cirratulidae/Terebellidae	-	-	-	-	0.5	1.0	-	-	0.1

(table continued)

Table G7 (continued). Subtidal invertebrates (SFQ Method) survey means (abundance per 0.25 m²; percent cover) standard deviations and annual means, South Control Station SC 1 -3m (19-10).

Survey Survey Date	168 9-Mar-15		169 25-Jun-15		170 6-Aug-15		171 23-Nov-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts (continued)									
<i>Epiactis prolifera</i>	-	-	-	-	0.3	0.5	-	-	<0.1
Anthozoa	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Diodora</i> spp.	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Pomaulax gibberosa</i>	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Romaleon antennarius</i>	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Loxorhynchus</i> spp.	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Rostanga pulchra</i>	-	-	-	-	-	-	0.3	0.5	<0.1
Ischnochitonidae	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Cryptochiton stelleri</i>	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Cryptolithodes sitchensis</i>	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Eupentacta quinquesemita</i>	-	-	-	-	-	-	0.3	0.5	<0.1
Invertebrate Cover									
tunicates, compound/social	<0.1	-	<0.1	-	0.3	0.5	<0.1	<0.01	<0.1
<i>Salmacina tribranchiata</i>	<0.1	<0.01	<0.1	<0.01	<0.1	0.1	0.1	0.3	<0.1
Spirorbidae	<0.1	-	<0.1	-	<0.1	-	0.1	0.3	<0.1
bryozoa (encrusting)	<0.1	-	<0.1	-	<0.1	-	0.1	0.3	<0.1
Porifera (encrusting)	<0.1	-	<0.1	-	<0.1	-	0.1	0.3	<0.1
Hydroidolina	-	-	-	-	<0.1	<0.01	-	-	<0.1
<i>Abiet./Sertularella/Sertularia</i> spp.	<0.1	<0.01	-	-	-	-	-	-	<0.1



Table G8. Subtidal invertebrates (SFQ Method) survey means (abundance per 0.25 m²; percent cover) standard deviations and annual means, South Control Station SC 2 -6m (20-20).

Survey Date	168		169		170		171		Annual Mean
	10-Mar-15	Std. Dev.	29-Jun-15	Std. Dev.	20-Aug-15	Std. Dev.	31-Dec-15	Std. Dev.	
Taxon	Mean	Dev.	Mean	Dev.	Mean	Dev.	Mean	Dev.	
Invertebrate Counts									
<i>Corynactis californica</i>	86.0	99.0	15.8	22.6	57.3	60.1	61.3	62.9	55.1
<i>Balanophyllia elegans</i>	64.0	74.2	11.0	10.5	36.5	41.8	32.8	34.3	36.1
<i>Serpulorbis squamigerus</i>	21.5	16.4	11.0	8.0	26.5	14.7	33.0	15.6	23.0
<i>Phragmatopoma californica</i>	15.0	7.1	2.5	1.3	15.0	9.1	13.8	14.4	11.6
<i>Chlorostoma brunnea</i>	3.8	1.3	6.8	3.3	9.0	10.0	7.0	4.1	6.6
<i>Pagurus</i> spp.	12.8	6.1	2.8	3.6	5.0	4.1	4.0	1.6	6.1
<i>Homolo. a luridum/Lirularia succincta</i>	6.3	1.7	5.5	2.1	6.0	2.5	5.3	1.3	5.8
<i>Cucumaria</i> spp.	2.0	1.4	0.5	0.6	10.3	3.3	-	-	3.2
<i>Dendropoma</i> spp.	4.0	5.4	-	-	6.3	12.5	2.5	3.0	3.2
<i>Strongylocentrotus purpuratus</i>	1.5	0.6	3.0	1.8	2.3	3.3	1.8	1.0	2.1
<i>Ophiothrix spiculata</i>	3.8	3.6	0.3	0.5	1.0	0.8	2.8	1.7	1.9
<i>Amphissa</i> spp.	0.3	0.5	1.0	1.4	4.8	6.3	1.3	1.0	1.8
<i>Balanus/Tetracita</i> spp.	4.0	4.3	1.5	1.9	1.0	2.0	-	-	1.6
Serpulidae	1.3	1.9	1.0	0.8	1.8	1.0	1.8	0.5	1.4
<i>Calliostoma ligatum</i>	1.5	0.6	1.0	0.8	0.8	0.5	2.0	1.4	1.3
<i>Tonicella lineata</i>	1.5	1.0	-	-	1.0	0.8	2.8	3.0	1.3
<i>Ocenebrina</i> spp.	2.8	2.9	0.3	0.5	1.0	1.2	1.3	1.0	1.3
<i>Pugettia</i> spp.	0.3	0.5	0.5	0.6	1.5	0.6	2.8	1.0	1.3
<i>Eupentacta quinquesemita</i>	0.3	0.5	0.5	0.6	1.3	1.3	2.8	2.2	1.2
<i>Pisaster/Henricia</i> spp. (juv.)	0.8	0.5	2.5	1.3	0.5	0.6	0.8	0.5	1.1
<i>Lottia instabilis</i>	1.8	1.3	0.8	1.0	1.0	1.4	0.5	1.0	1.0
<i>Crepidula</i> spp.	1.0	0.8	0.5	1.0	0.3	0.5	2.0	4.0	0.9
<i>Sipuncula</i>	1.8	0.5	0.5	0.6	1.3	1.0	-	-	0.9
<i>Epiactis prolifera</i>	1.3	1.5	0.3	0.5	0.8	0.5	0.3	0.5	0.6
Chaetopteridae	-	-	-	-	1.8	2.1	0.8	1.0	0.6
<i>Alia</i> spp.	0.8	1.0	0.3	0.5	0.3	0.5	1.0	1.4	0.6
<i>Leptasterias</i> spp.	0.3	0.5	1.0	0.8	0.5	0.6	0.5	0.6	0.6
Pelecypoda boring	1.3	1.3	-	-	0.5	0.6	0.5	1.0	0.6
<i>Aptyxis luteopictus</i>	1.0	1.4	0.8	0.5	-	-	-	-	0.4
<i>Chlorostoma montereyi</i>	1.3	1.9	0.3	0.5	-	-	-	-	0.4
<i>Mitra idae</i>	0.5	0.6	0.3	0.5	-	-	0.8	1.5	0.4
<i>Anthopleura elegantissima</i>	-	-	0.3	0.5	-	-	0.8	1.5	0.3
<i>Acmaea mitra</i>	-	-	-	-	0.8	1.5	0.3	0.5	0.3
<i>Promartynia pulligo</i>	-	-	0.3	0.5	-	-	0.8	1.0	0.3
<i>Anthopleura artemisia</i>	-	-	-	-	0.5	1.0	0.3	0.5	0.2
<i>Henricia leviuscula</i>	-	-	0.8	1.0	-	-	-	-	0.2
<i>Doriopsilla albopunctata</i>	-	-	-	-	0.5	1.0	0.3	0.5	0.2
<i>Mimulus foliatus</i>	-	-	0.5	0.6	0.3	0.5	-	-	0.2
<i>Scyra acutifrons</i>	0.5	0.6	0.3	0.5	-	-	-	-	0.2
Anthozoa	0.5	0.6	-	-	-	-	-	-	0.1
<i>Diodora</i> spp.	0.3	0.5	-	-	-	-	0.3	0.5	0.1
<i>Pododesmus cepio</i>	0.3	0.5	0.3	0.5	-	-	-	-	0.1
Sabellidae	0.3	0.5	-	-	0.3	0.5	-	-	0.1

(table continued)



Table G8 (continued). Subtidal invertebrates (SFQ Method) survey means (abundance per 0.25 m²; percent cover) standard deviations and annual means, South Control Station SC 2 -6m (20-20).

Survey Survey Date	168 10-Mar-15		169 29-Jun-15		170 20-Aug-15		171 31-Dec-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Invertebrate Counts (continued)									
<i>Patiria miniata</i>	0.3	0.5	0.3	0.5	-	-	-	-	0.1
<i>Paracyathus stearnsii</i>	0.3	0.5	0.3	0.5	-	-	-	-	0.1
<i>Fissurella volcano</i>	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Mopalia</i> spp.	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Pomaulax gibberosa</i>	0.3	0.5	-	-	-	-	-	-	<0.1
Nereididae	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Pista</i> spp.	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Romaleon antennarius</i>	-	-	0.3	0.5	-	-	-	-	<0.1
tunicate, solitary	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Leucilla nuttingi</i>	-	-	-	-	-	-	0.3	0.5	<0.1
<i>Tethya californiana</i>	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Phidiana hiltoni</i>	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Tritonia festiva</i>	-	-	-	-	-	-	0.3	0.5	<0.1
Ischnochitonidae	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Placiphorella velata</i>	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Ophioplocus esmarki</i>	-	-	-	-	0.3	0.5	-	-	<0.1
Majidae	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Crassadoma gigantea</i>	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Eulithidium</i> spp.	-	-	0.3	0.5	-	-	-	-	<0.1
<i>Okenia rosacea</i>	0.3	0.5	-	-	-	-	-	-	<0.1
<i>Haliotis</i> spp.	-	-	-	-	0.3	0.5	-	-	<0.1
<i>Cadlina</i> spp.	-	-	0.3	0.5	-	-	-	-	<0.1
Pectinidae	-	-	-	-	0.3	0.5	-	-	<0.1
Invertebrate Cover									
bryozoa (encrusting)	0.8	0.4	<0.1	-	1.2	1.0	1.9	1.8	1.0
Porifera (encrusting)	0.6	0.7	0.1	0.3	1.0	0.9	0.3	0.4	0.5
<i>Acanthancora cyanocrypta</i>	0.3	0.5	<0.1	<0.01	0.3	0.4	<0.1	0.1	0.1
bryozoa (erect)	<0.1	0.1	<0.1	<0.01	0.5	0.3	<0.1	<0.01	0.1
tunicates, compound/social	0.2	0.3	<0.1	-	<0.1	0.1	0.2	0.4	0.1
bryozoa (foliose)	-	-	<0.1	<0.01	<0.1	<0.01	<0.1	0.1	<0.1
Hydroidolina	<0.1	<0.01	-	-	<0.1	0.1	-	-	<0.1
Spirorbidae	<0.1	<0.01	<0.1	-	<0.1	<0.01	-	-	<0.1
<i>Salmacina tribranchiata</i>	-	-	<0.1	<0.01	-	-	<0.1	<0.01	<0.1



Diablo Canyon Power Plant

Appendix H

Subtidal Fishes (SFO Method)

Table H1. Subtidal fishes survey means (abundance per 50 x 4 x 2 m transect), standard deviations and annual means, Field's Cove Stations (FC FO-1 (1), FC FO-2 (2), FC FO-3 (3)).

Survey Survey Date	166		167		168		Annual Mean
	10-Mar-15	Std. Dev.	1-Jul-15	Std. Dev.	9-Sep-15	Std. Dev.	
Taxon	Mean	Dev.	Mean	Dev.	Mean	Dev.	Mean
Midwater							
<i>Oxyjulis californica</i> (juv.)	-	-	0.3	0.6	68.1	149.7	22.8
<i>Oxyjulis californica</i>	0.2	0.3	12.9	26.1	<0.1	0.2	4.4
<i>Sebastes chryso./S. camatus</i> (yoy)	-	-	4.0	6.2	-	-	1.3
<i>Aulorhynchus flavidus</i> (juv.)	-	-	3.3	8.2	-	-	1.1
<i>Sebastes mystinus</i> (juv.)	1.3	1.4	0.2	0.4	0.2	0.3	0.5
<i>Brachyistius frenatus</i>	-	-	0.3	0.5	-	-	0.1
<i>Aulorhynchus flavidus</i>	-	-	<0.1	0.2	-	-	<0.1
<i>Gibbonsia</i> spp.	-	-	-	-	<0.1	0.2	<0.1
<i>Rhacochilus vacca</i>	-	-	-	-	<0.1	0.2	<0.1
<i>Rhacochilus toxotes</i>	<0.1	0.2	-	-	-	-	<0.1
<i>Embiotoca jacksoni</i>	-	-	-	-	<0.1	0.2	<0.1
<i>Sebastes mystinus</i>	-	-	-	-	<0.1	0.2	<0.1
<i>Sebastes atrovirens</i>	-	-	<0.1	0.2	-	-	<0.1
<i>Embiotoca lateralis</i>	-	-	<0.1	0.2	-	-	<0.1
<i>Girella nigricans</i>	<0.1	0.2	-	-	-	-	<0.1
<i>Heterostichus rostratus</i> (juv.)	-	-	-	-	<0.1	0.2	<0.1
larval/post-larval fish	-	-	-	-	<0.1	0.2	<0.1
<i>Sebastes mystinus</i> (yoy)	-	-	<0.1	0.2	-	-	<0.1
Benthic							
<i>Oxyjulis californica</i>	0.3	0.8	15.8	28.6	-	-	5.4
<i>Sebastes mystinus</i> (juv.)	9.1	5.3	1.0	2.0	0.8	1.0	3.6
<i>Oxylebius pictus</i>	3.1	2.1	2.6	1.5	1.9	1.1	2.5
<i>Aulorhynchus flavidus</i>	-	-	5.0	12.3	-	-	1.7
<i>Embiotoca lateralis</i>	1.4	0.4	1.0	1.1	1.6	1.4	1.3
<i>Gibbonsia</i> spp.	1.3	1.3	1.5	1.3	0.8	0.3	1.2
<i>Rhacochilus vacca</i>	0.8	0.7	1.4	0.7	0.7	1.0	0.9
<i>Aulorhynchus flavidus</i> (juv.)	-	-	1.3	3.1	0.7	1.6	0.6
<i>Embiotoca lateralis</i> (juv.)	1.3	0.7	0.4	0.4	<0.1	0.2	0.6
<i>Sebastes chrysomelas</i>	0.4	0.5	0.8	1.4	0.6	0.5	0.6
<i>Embiotoca jacksoni</i>	0.8	0.9	0.3	0.4	0.5	0.3	0.5
<i>Sebastes rastrelliger</i>	0.3	0.4	0.5	0.3	0.3	0.6	0.4
<i>Rhacochilus vacca</i> (juv.)	<0.1	0.2	0.2	0.3	0.8	0.9	0.4
<i>Embiotoca jacksoni</i> (juv.)	0.8	0.8	-	-	0.3	0.4	0.4
<i>Sebastes atrovirens</i>	0.5	0.6	0.5	0.8	<0.1	0.2	0.4
<i>Scorpaenichthys marmoratus</i>	0.8	0.6	0.2	0.3	-	-	0.3
<i>Cebidichthys violaceus</i>	0.3	0.4	0.3	0.4	0.4	0.6	0.3
<i>Sebastes chryso./S. camatus</i> (yoy)	-	-	-	-	0.6	0.9	0.2
<i>Oxyjulis californica</i> (juv.)	-	-	-	-	0.4	0.8	0.1
<i>Brachyistius frenatus</i>	<0.1	0.2	<0.1	0.2	0.2	0.4	0.1
<i>Hexagrammos decagrammus</i>	<0.1	0.2	0.3	0.4	-	-	0.1
<i>Rhinogobiops nicholsi</i>	0.3	0.4	-	-	<0.1	0.2	0.1
<i>Sebastes mystinus</i>	-	-	0.3	0.4	-	-	<0.1
<i>Artedius</i> spp.	<0.1	0.2	-	-	0.2	0.3	<0.1
<i>Sebastes serranoi./S. flavidus</i> (yoy)	-	-	0.2	0.4	<0.1	0.2	<0.1

(table continued)



Table H1 (continued). Subtidal fishes survey means (abundance per 50 x 4 x 2 m transect), standard deviations and annual means, Field's Cove Stations (FC FO-1 (1), FC FO-2 (2), FC FO-3 (3)).

Taxon	Survey Survey Date		166 10-Mar-15		167 1-Jul-15		168 9-Sep-15		Annual Mean
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Benthic (continued)									
<i>Rhacochilus toxotes</i>	<0.1	0.2	-	-	<0.1	0.2	<0.1	0.2	<0.1
<i>Ophiodon elongatus</i>	<0.1	0.2	<0.1	0.2	-	-	<0.1	0.2	<0.1
<i>Sebastes chrysomelas</i> (juv.)	-	-	<0.1	0.2	<0.1	0.2	<0.1	0.2	<0.1
<i>Sebastes atrovirens</i> (yoy)	-	-	-	-	0.2	0.3	<0.1	0.2	<0.1
<i>Oxylebius pictus</i> (juv.)	-	-	<0.1	0.2	<0.1	0.2	<0.1	0.2	<0.1
<i>Orthonopias triacis</i>	-	-	-	-	<0.1	0.2	<0.1	0.2	<0.1
<i>Brachyistius frenatus</i> (juv.)	-	-	<0.1	0.2	-	-	<0.1	0.2	<0.1
<i>Semicossyphus pulcher</i>	-	-	<0.1	0.2	-	-	<0.1	0.2	<0.1
<i>Micrometrus minimus</i>	-	-	-	-	<0.1	0.2	<0.1	0.2	<0.1



Table H2. Subtidal fishes survey means (abundance per 50 x 4 x 2 m transect), standard deviations and annual means, North Diablo Cove Stations (NDC FO-1 (5), NDC FO-2 (6), NDC FO-3 (7)).

Survey Survey Date	166 9-Mar-15		167 11-Jul-15		168 7-Sep-15		169 31-Dec-15		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Midwater									
<i>Oxyjulis californica</i>	3.6	2.6	1.8	1.3	2.3	2.0	4.2	3.7	3.0
<i>Oxyjulis californica</i> (juv.)	-	-	-	-	5.3	9.2	-	-	1.3
<i>Medialuna californiensis</i>	0.3	0.4	-	-	0.8	1.4	0.8	1.0	0.5
<i>Brachyistius frenatus</i>	1.2	1.8	<0.1	0.2	0.3	0.4	-	-	0.4
<i>Paralabrax clathratus</i> (juv.)	<0.1	0.2	0.2	0.4	0.7	1.4	0.3	0.6	0.3
<i>Rhacochilus vacca</i>	<0.1	0.2	0.3	0.8	<0.1	0.2	0.3	0.6	0.2
<i>Girella nigricans</i>	-	-	0.4	0.5	-	-	0.3	0.6	0.2
<i>Paralabrax clathratus</i>	-	-	-	-	0.3	0.6	0.3	0.6	0.1
<i>Sebastes serranoides</i>	-	-	0.3	0.8	-	-	-	-	<0.1
<i>Chromis punctipinnis</i> (juv.)	-	-	-	-	0.3	0.6	-	-	<0.1
<i>Brachyistius frenatus</i> (juv.)	-	-	-	-	0.2	0.4	-	-	<0.1
<i>Sebastes serranoi</i> / <i>S. flavidus</i> (juv.)	-	-	<0.1	0.2	-	-	-	-	<0.1
<i>Gibbonsia</i> spp.	-	-	<0.1	0.2	-	-	-	-	<0.1
<i>Embiotoca jacksoni</i>	-	-	-	-	<0.1	0.2	-	-	<0.1
<i>Sebastes mystinus</i> (juv.)	<0.1	0.2	-	-	-	-	-	-	<0.1
<i>Rhacochilus vacca</i> (juv.)	<0.1	0.2	-	-	-	-	-	-	<0.1
<i>Sebastes chryso</i> / <i>S. carnatus</i> (yoy)	-	-	<0.1	0.2	-	-	-	-	<0.1
<i>Ulvicola sanctaerosae</i>	-	-	<0.1	0.2	-	-	-	-	<0.1
Benthic									
<i>Oxyjulis californica</i>	8.2	4.3	9.9	7.7	13.7	6.7	19.0	8.5	12.7
<i>Paralabrax clathratus</i> (juv.)	6.4	5.3	1.0	1.7	7.8	8.1	14.8	1.6	7.5
<i>Embiotoca jacksoni</i>	6.0	2.5	6.1	4.5	4.2	2.9	5.7	1.0	5.5
<i>Oxylebius pictus</i>	6.3	1.8	5.2	1.8	4.0	3.4	3.2	1.2	4.7
<i>Paralabrax clathratus</i>	2.4	2.6	2.5	2.3	4.7	3.4	9.0	5.4	4.6
<i>Atherinopsis californiensis</i>	-	-	18.3	28.8	-	-	-	-	4.6
<i>Medialuna californiensis</i>	2.7	1.7	1.9	4.7	2.3	1.9	6.2	5.6	3.3
<i>Rhinogobiops nicholsi</i>	3.2	1.1	2.5	1.4	2.9	1.5	1.8	0.8	2.6
<i>Rhacochilus vacca</i>	3.4	4.4	3.5	2.8	0.2	0.3	2.5	0.9	2.4
<i>Girella nigricans</i>	<0.1	0.2	1.0	1.8	2.5	4.5	2.8	1.6	1.6
<i>Embiotoca jacksoni</i> (juv.)	2.0	2.3	2.7	3.0	1.1	1.0	0.2	0.3	1.5
Atherinopsidae	-	-	2.9	7.1	-	-	-	-	0.7
<i>Oxyjulis californica</i> (juv.)	1.2	2.4	-	-	1.1	2.2	0.5	0.9	0.7
<i>Embiotoca lateralis</i>	0.3	0.5	0.5	0.8	-	-	1.0	0.5	0.5
<i>Sebastes chrysomelas</i>	0.9	1.2	0.6	0.6	0.3	0.4	-	-	0.4
<i>Sebastes mystinus</i> (juv.)	0.6	0.7	-	-	-	-	1.0	1.7	0.4
<i>Sebastes atrovirens</i> (yoy)	0.2	0.3	-	-	1.1	2.7	-	-	0.3
<i>Sebastes serranoides</i>	0.5	0.8	0.5	1.2	-	-	0.2	0.3	0.3
<i>Rhacochilus vacca</i> (juv.)	0.8	0.5	0.3	0.3	0.2	0.4	-	-	0.3
<i>Sebastes chryso</i> / <i>S. carnatus</i> (yoy)	-	-	1.2	2.0	-	-	-	-	0.3
<i>Paralabrax nebulifer</i> (juv.)	0.4	1.0	0.2	0.4	0.4	0.5	0.2	0.3	0.3
<i>Brachyistius frenatus</i>	0.8	1.4	-	-	-	-	0.3	0.6	0.3
<i>Halichoeres semicinctus</i> (yoy)	-	-	-	-	<0.1	0.2	1.0	0.9	0.3
<i>Scorpaenichthys marmoratus</i>	0.4	0.5	0.2	0.3	-	-	0.3	0.6	0.2
<i>Embiotoca lateralis</i> (juv.)	<0.1	0.2	0.3	0.6	0.5	0.8	-	-	0.2

(table continued)

Table H2 (continued). Subtidal fishes survey means (abundance per 50 x 4 x 2 m transect), standard deviations and annual means, North Diablo Cove Stations (NDC FO-1 (5), NDC FO-2 (6), NDC FO-3 (7)).

Survey Survey Date Taxon	166 9-Mar-15		167 11-Jul-15		168 7-Sep-15		169 31-Dec-15		Annual Mean
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Benthic (continued)									
<i>Hypsypops rubicundus</i>	-	-	<0.1	0.2	0.2	0.4	0.3	0.3	0.1
<i>Sebastes rastrelliger</i>	<0.1	0.2	0.2	0.4	0.3	0.3	-	-	0.1
<i>Sebastes serranoi</i> / <i>S. flavidus</i> (yoy)	0.3	0.5	-	-	0.2	0.3	-	-	0.1
<i>Urobatis halleri</i>	0.2	0.3	0.3	0.4	<0.1	0.2	-	-	0.1
<i>Gibbonsia</i> spp.	-	-	0.4	0.8	-	-	-	-	0.1
<i>Sebastes mystinus</i> (yoy)	0.4	1.0	-	-	-	-	-	-	0.1
<i>Sebastes rastrelliger</i> (juv.)	<0.1	0.2	0.2	0.3	0.2	0.3	-	-	0.1
<i>Sebastes atrovirens</i>	0.2	0.4	0.2	0.4	-	-	-	-	<0.1
<i>Paralabrax nebulifer</i>	-	-	0.2	0.4	-	-	0.2	0.3	<0.1
<i>Sebastes chrysomelas</i> (juv.)	-	-	0.2	0.3	-	-	-	-	<0.1
<i>Hypsypops rubicundus</i> (juv)	-	-	-	-	-	-	0.2	0.3	<0.1
<i>Sebastes serranoi</i> / <i>S. flavidus</i> (juv.)	<0.1	0.2	-	-	-	-	-	-	<0.1
<i>Rhacochilus toxotes</i>	<0.1	0.2	-	-	-	-	-	-	<0.1
<i>Brachyistius frenatus</i> (juv.)	-	-	-	-	<0.1	0.2	-	-	<0.1
<i>Myliobatis californica</i>	-	-	<0.1	0.2	-	-	-	-	<0.1
<i>Paralabrax clathratus</i> (yoy)	-	-	-	-	<0.1	0.2	-	-	<0.1



Table H3. Subtidal fishes survey means (abundance per 50 x 4 x 2 m transect), standard deviations and annual means, South Diablo Cove Stations (SDC FO-1 (8), SDC FO-2 (9), SDC FO-3 (10)).

Survey		166		167		168		169		Annual Mean
Survey Date		11-Mar-15		12-Jul-15		8-Sep-15		22-Feb-16		
Taxon		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Midwater										
<i>Oxyjulis californica</i> (juv.)		-	-	-	-	68.9	78.2	-	-	17.2
<i>Atherinopsis californiensis</i>		-	-	-	-	10.8	21.0	-	-	2.7
<i>Oxyjulis californica</i>		<0.1	0.2	2.1	3.2	5.0	5.5	-	-	1.8
<i>Brachyistius frenatus</i>		0.2	0.3	2.2	1.4	0.4	0.8	-	-	0.7
<i>Atractoscion nobilis</i>		-	-	-	-	2.5	4.1	-	-	0.6
Atherinopsidae		-	-	-	-	2.1	3.3	-	-	0.5
<i>Sebastes chryso./S. carnatus</i> (yoy)		-	-	1.7	2.1	-	-	-	-	0.4
<i>Brachyistius frenatus</i> (juv.)		-	-	1.4	2.8	-	-	-	-	0.4
<i>Sebastes serranoi./S. flavidus</i> (yoy)		-	-	1.3	1.9	-	-	-	-	0.3
<i>Paralabrax clathratus</i>		0.2	0.4	0.3	0.5	0.6	1.0	-	-	0.3
<i>Paralabrax clathratus</i> (juv.)		-	-	-	-	0.6	0.8	-	-	0.1
<i>Rhacochilus vacca</i>		0.2	0.4	0.2	0.3	-	-	-	-	<0.1
<i>Sebastes atrovirens</i>		-	-	0.3	0.3	<0.1	0.2	-	-	<0.1
<i>Embiotoca jacksoni</i>		<0.1	0.2	-	-	0.2	0.4	-	-	<0.1
<i>Girella nigricans</i>		0.3	0.6	-	-	-	-	-	-	<0.1
<i>Sebastes serranoi./S. flavidus</i> (juv.)		-	-	0.2	0.3	-	-	-	-	<0.1
<i>Embiotoca lateralis</i>		-	-	0.2	0.3	-	-	-	-	<0.1
<i>Sebastes atrovirens</i> (yoy)		-	-	-	-	0.2	0.4	-	-	<0.1
<i>Sebastes serranoides</i>		<0.1	0.2	-	-	-	-	-	-	<0.1
<i>Sebastes paucispinis</i> (juv.)		-	-	<0.1	0.2	-	-	-	-	<0.1
<i>Triakis semifasciata</i>		-	-	-	-	<0.1	0.2	-	-	<0.1
<i>Urobatis halleri</i>		-	-	<0.1	0.2	-	-	-	-	<0.1
<i>Medialuna californiensis</i>		<0.1	0.2	-	-	-	-	-	-	<0.1
Benthic										
<i>Sebastes chryso./S. carnatus</i> (yoy)		-	-	10.2	12.4	2.1	3.2	-	-	3.1
<i>Oxylebius pictus</i>		3.8	2.5	2.0	1.1	2.0	1.6	2.0	1.3	2.4
<i>Rhinogobiops nicholsi</i>		3.8	2.0	2.7	0.9	1.7	1.3	1.3	1.9	2.4
<i>Oxyjulis californica</i> (juv.)		1.2	2.9	-	-	7.8	9.8	-	-	2.2
<i>Rhacochilus vacca</i>		0.4	0.6	1.9	2.4	0.3	0.5	3.3	2.9	1.5
<i>Paralabrax clathratus</i>		0.9	1.2	<0.1	0.2	0.6	0.7	4.0	3.1	1.4
<i>Oxyjulis californica</i>		1.9	3.0	0.9	1.1	2.3	1.7	-	-	1.3
<i>Sebastes chrysomelas</i>		1.2	1.3	0.8	0.5	0.9	1.0	0.8	0.6	0.9
<i>Brachyistius frenatus</i>		0.3	0.6	1.9	2.9	1.0	1.0	-	-	0.8
<i>Paralabrax clathratus</i> (juv.)		0.5	0.8	-	-	0.3	0.8	2.3	1.6	0.8
<i>Embiotoca jacksoni</i>		0.4	0.5	1.3	1.1	0.7	0.9	0.5	-	0.7
<i>Sebastes rastrelliger</i>		0.8	0.9	0.5	0.3	0.6	0.6	0.5	0.5	0.6
<i>Sebastes atrovirens</i> (yoy)		-	-	0.5	1.2	1.8	2.4	-	-	0.6
<i>Citharichthys</i> spp.		<0.1	0.2	1.0	1.5	0.8	1.1	-	-	0.5
<i>Gibbonsia</i> spp.		0.6	0.7	0.6	0.6	0.5	0.5	0.2	0.3	0.5
<i>Sebastes atrovirens</i>		<0.1	0.2	0.8	0.4	0.3	0.4	0.3	0.6	0.4
<i>Embiotoca lateralis</i>		0.2	0.4	0.9	1.0	<0.1	0.2	0.2	0.3	0.3
<i>Urobatis halleri</i>		0.7	1.0	0.3	0.6	-	-	-	-	0.3
<i>Sebastes caurinus</i> (yoy)		-	-	0.7	1.0	0.3	0.5	-	-	0.3
<i>Ophiodon elongatus</i>		<0.1	0.2	0.3	0.4	0.3	0.4	0.3	0.3	0.2

(table continued)



Table H3 (continued). Subtidal fishes survey means (abundance per 50 x 4 x 2 m transect), standard deviations and annual means, South Diablo Cove Stations (SDC FO-1 (8), SDC FO-2 (9), SDC FO-3 (10)).

Survey Survey Date Taxon	166 11-Mar-15		167 12-Jul-15		168 8-Sep-15		169 22-Feb-16		Annual Mean
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Benthic (continued)									
<i>Rhacochilus vacca</i> (juv.)	-	-	0.3	0.5	0.5	0.6	-	-	0.2
<i>Brachyistius frenatus</i> (juv.)	-	-	0.5	1.2	0.2	0.4	-	-	0.2
<i>Artedius</i> spp.	0.2	0.4	0.2	0.3	0.3	0.3	-	-	0.1
<i>Medialuna californiensis</i>	-	-	-	-	-	-	0.5	0.9	0.1
<i>Sebastes serranoi</i> / <i>S. flavidus</i> (yoy)	-	-	0.3	0.3	0.3	0.4	-	-	0.1
<i>Hypsurus caryi</i>	-	-	0.4	0.7	-	-	-	-	0.1
<i>Scorpaenichthys marmoratus</i>	<0.1	0.2	-	-	0.2	0.3	-	-	<0.1
<i>Pleuronichthys coenosus</i> (yoy)	-	-	-	-	0.3	0.4	-	-	<0.1
<i>Aulorhynchus flavidus</i>	<0.1	0.2	<0.1	0.2	-	-	-	-	<0.1
<i>Hypsurus caryi</i> (juv.)	-	-	0.2	0.4	-	-	-	-	<0.1
<i>Cebidichthys violaceus</i>	-	-	-	-	0.2	0.3	-	-	<0.1
<i>Pleuronichthys coenosus</i>	-	-	-	-	-	-	0.2	0.3	<0.1
<i>Neoclinus stephensae</i>	-	-	-	-	-	-	0.2	0.3	<0.1
<i>Citharichthys stigmaeus</i>	-	-	-	-	0.2	0.4	-	-	<0.1
<i>Atractoscion nobilis</i>	-	-	-	-	0.2	0.4	-	-	<0.1
<i>Embiotoca lateralis</i> (juv.)	-	-	<0.1	0.2	-	-	-	-	<0.1
<i>Sebastes rastrelliger</i> (juv.)	-	-	-	-	<0.1	0.2	-	-	<0.1
<i>Embiotoca jacksoni</i> (juv.)	-	-	-	-	<0.1	0.2	-	-	<0.1
<i>Platyrrhionoidis triseriata</i>	<0.1	0.2	-	-	-	-	-	-	<0.1
<i>Paralichthys californicus</i>	-	-	-	-	<0.1	0.2	-	-	<0.1
<i>Parophrys vetulus</i>	-	-	<0.1	0.2	-	-	-	-	<0.1
<i>Sebastes</i> spp. (yoy)	-	-	<0.1	0.2	-	-	-	-	<0.1



Table H4. Subtidal fishes survey means (abundance per 50 x 4 x 2 m transect), standard deviations and annual means, Patton Cove Stations SC FO-1 (12), SC FO-2 (13), SC FO-3 (14).

Survey Survey Date	166 9-Mar-15		167 22-Jul-15		168 7-Sep-15		169 26-Jan-16		Annual Mean
Taxon	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Midwater									
<i>Sebastes chryso./S. carnatus</i> (yoy)	-	-	39.1	28.2	0.2	0.4	-	-	9.8
<i>Oxyjulis californica</i> (juv.)	4.6	11.2	-	-	9.4	22.6	21.8	53.0	9.0
<i>Oxyjulis californica</i>	16.8	20.4	-	-	-	-	15.8	15.4	8.1
<i>Sebastes atrovirens</i> (yoy)	-	-	3.7	9.0	0.4	0.7	-	-	1.0
<i>Sebastes mystinus</i> (juv.)	2.7	2.9	1.0	1.3	0.2	0.4	-	-	1.0
<i>Brachyistius frenatus</i>	0.5	0.8	0.8	0.9	0.3	0.6	0.8	1.6	0.6
<i>Sebastes serranoides</i>	<0.1	0.2	0.7	1.2	<0.1	0.2	0.2	0.3	0.3
<i>Atherinopsis californiensis</i>	-	-	-	-	0.9	2.3	-	-	0.2
<i>Sebastes mystinus</i>	<0.1	0.2	0.6	1.2	-	-	-	-	0.2
<i>Sebastes serranoi./S. flavidus</i> (yoy)	<0.1	0.2	0.4	0.4	0.2	0.3	-	-	0.2
<i>Rhacochilus vacca</i>	0.2	0.4	-	-	0.2	0.3	0.2	0.4	0.1
<i>Sebastes paucispinis</i> (juv.)	-	-	0.3	0.6	<0.1	0.2	-	-	<0.1
<i>Sebastes atrovirens</i>	-	-	<0.1	0.2	-	-	<0.1	0.2	<0.1
<i>Embiotoca lateralis</i>	-	-	0.2	0.4	-	-	-	-	<0.1
<i>Rhacochilus vacca</i> (juv.)	-	-	0.2	0.4	-	-	-	-	<0.1
<i>Paralabrax clathratus</i>	-	-	0.2	0.4	-	-	-	-	<0.1
<i>Sebastes serranoi./S. flavidus</i> (juv.)	-	-	<0.1	0.2	-	-	-	-	<0.1
<i>Rhacochilus toxotes</i>	<0.1	0.2	-	-	-	-	-	-	<0.1
<i>Embiotoca lateralis</i> (juv.)	<0.1	0.2	-	-	-	-	-	-	<0.1
<i>Embiotoca jacksoni</i> (juv.)	<0.1	0.2	-	-	-	-	-	-	<0.1
<i>Brachyistius frenatus</i> (juv.)	<0.1	0.2	-	-	-	-	-	-	<0.1
<i>Sebastes melanops</i> (yoy)	-	-	<0.1	0.2	-	-	-	-	<0.1
Benthic									
<i>Oxyjulis californica</i>	12.1	20.4	1.3	2.3	<0.1	0.2	25.9	22.5	9.9
<i>Oxylebius pictus</i>	4.0	0.6	5.7	2.1	6.2	2.0	2.5	0.9	4.6
<i>Oxyjulis californica</i> (juv.)	7.8	13.2	-	-	2.7	2.9	1.8	4.1	3.0
<i>Embiotoca lateralis</i>	2.3	2.0	2.0	0.7	2.8	1.5	1.9	1.2	2.2
<i>Sebastes mystinus</i> (juv.)	4.0	2.2	2.8	3.0	0.7	0.8	<0.1	0.2	1.9
<i>Sebastes chrysomelas</i>	2.3	1.6	1.7	1.0	2.1	1.7	0.8	0.9	1.7
<i>Rhinogobiops nicholsi</i>	1.2	1.7	2.2	2.5	1.7	1.6	0.8	0.8	1.5
<i>Rhacochilus vacca</i>	2.3	3.1	1.6	0.9	0.7	0.4	1.0	0.9	1.4
<i>Embiotoca jacksoni</i>	0.9	1.1	0.8	0.5	2.6	2.3	0.5	0.8	1.2
<i>Embiotoca lateralis</i> (juv.)	1.6	1.0	0.8	0.6	1.9	0.9	0.4	0.5	1.2
<i>Sebastes atrovirens</i>	0.9	0.9	0.5	0.5	0.8	0.6	1.0	0.5	0.8
<i>Gibbonsia</i> spp.	0.8	1.4	0.9	0.7	1.0	1.3	0.3	0.5	0.8
<i>Sebastes chryso./S. carnatus</i> (yoy)	-	-	0.7	0.5	2.0	1.6	-	-	0.7
<i>Sebastes fastrelliger</i>	1.0	0.9	0.5	0.5	0.6	0.6	0.4	0.4	0.6
<i>Scorpaenichthys marmoratus</i>	0.8	0.7	0.7	0.6	0.8	0.6	0.3	0.3	0.6
<i>Embiotoca jacksoni</i> (juv.)	0.7	0.8	0.6	1.0	1.0	1.6	0.3	0.4	0.6
<i>Sebastes mystinus</i>	<0.1	0.2	1.3	2.3	0.2	0.3	0.3	0.4	0.5
<i>Hexagrammos decagrammus</i>	0.7	0.6	0.4	0.4	0.3	0.4	0.5	0.8	0.5
<i>Brachyistius frenatus</i>	0.6	0.9	-	-	-	-	0.9	1.8	0.4
<i>Rhacochilus vacca</i> (juv.)	-	-	-	-	1.0	0.8	<0.1	0.2	0.3
<i>Cebidichthys violaceus</i>	<0.1	0.2	0.3	0.4	0.6	0.2	<0.1	0.2	0.3

(table continued)



Table H4 (continued). Subtidal fishes survey means (abundance per 50 x 4 x 2 m transect), standard deviations and annual means, Patton Cove Stations SC FO-1 (12), SC FO-2 (13), SC FO-3 (14).

Survey Survey Date Taxon	166 9-Mar-15		167 22-Jul-15		168 7-Sep-15		169 26-Jan-16		Annual Mean
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
Benthic (continued)									
<i>Artedius</i> spp.	<0.1	0.2	0.3	0.6	0.4	0.2	0.3	0.4	0.3
<i>Orthonopias triacis</i>	0.2	0.3	0.3	0.4	0.2	0.3	0.3	0.4	0.2
<i>Ophiodon elongatus</i>	0.3	0.4	<0.1	0.2	<0.1	0.2	0.3	0.3	0.2
<i>Sebastes chrysomelas</i> (juv.)	0.2	0.4	0.4	0.5	-	-	<0.1	0.2	0.2
<i>Sebastes serranoi</i> /S. <i>flavidus</i> (juv.)	<0.1	0.2	0.3	0.6	0.2	0.4	<0.1	0.2	0.1
<i>Sebastes serranoi</i> /S. <i>flavidus</i> (yoy)	-	-	0.4	1.0	0.2	0.3	-	-	0.1
<i>Rhacochilus toxotes</i>	0.3	0.3	<0.1	0.2	-	-	0.3	0.4	0.1
<i>Sebastes mystinus</i> (yoy)	-	-	0.4	1.0	-	-	-	-	0.1
<i>Sebastes miniatus</i> (yoy)	-	-	-	-	-	-	0.4	0.8	0.1
<i>Sebastes serranoides</i>	<0.1	0.2	0.3	0.4	-	-	<0.1	0.2	0.1
<i>Sebastes atrovirens</i> (yoy)	-	-	-	-	0.3	0.4	-	-	<0.1
<i>Hypsurus caryi</i>	-	-	-	-	0.2	0.4	-	-	<0.1
<i>Brachyistius frenatus</i> (juv.)	0.2	0.4	-	-	-	-	-	-	<0.1
<i>Oxylebius pictus</i> (juv.)	-	-	0.2	0.3	-	-	-	-	<0.1
<i>Hypsurus caryi</i> (juv.)	-	-	-	-	<0.1	0.2	-	-	<0.1
<i>Sebastes melanops</i>	-	-	-	-	<0.1	0.2	-	-	<0.1
<i>Sebastes paucispinis</i> (juv.)	-	-	-	-	<0.1	0.2	-	-	<0.1
<i>Paralabrax clathratus</i> (juv.)	-	-	-	-	<0.1	0.2	-	-	<0.1
<i>Anoplarchus purpureus</i>	-	-	-	-	-	-	<0.1	0.2	<0.1
<i>Paralabrax clathratus</i>	-	-	<0.1	0.2	-	-	-	-	<0.1
<i>Medialuna californiensis</i>	-	-	-	-	<0.1	0.2	-	-	<0.1
<i>Semicossyphus pulcher</i>	-	-	-	-	-	-	<0.1	0.2	<0.1

