

# KELP FOREST MONITORING ANNUAL REPORT 2000



CHANNEL ISLANDS NATIONAL PARK





National Park Service  
Channel Islands National Park

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**KELP FOREST MONITORING  
2000 ANNUAL REPORT**

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## ABSTRACT

Observations and results of the 2000 Channel Islands National Park, Kelp Forest Monitoring Project are described. Population dynamics of 68 taxa, or categories, of algae, fish and invertebrates were measured at 16 permanent sites around the five Park islands. Survey techniques utilized SCUBA and surface-supplied-air, and included quadrats, 5m<sup>2</sup>-quadrats, band transects, random point contacts, fish transects, roving diver fish counts, video transects, size frequency measurements, artificial recruitment modules, and species list surveys. Temperature data was collected using remote temperature loggers. In 2000, four sites had *Macrocystis pyrifera* (giant kelp) forests, and 12 sites were dominated by echinoderms. Of these 12 sites dominated by echinoderms, three were dominated by *Strongylocentrotus purpuratus* (purple sea urchins), five by both *S. purpuratus* (purple sea urchins) and *S. franciscanus* (red sea urchins), one by *S. purpuratus* and *Lytechinus anamesus*, two by *S. purpuratus* (purple sea urchins), *S. franciscanus* (red sea urchins) and *Ophiothrix spiculata* (brittle stars), and one by *Pachythyone rubra* (aggregated red sea cucumbers), *S. purpuratus* (purple sea urchins), *S. franciscanus* (red sea urchins), and *Astrangia lajollaensis* (cup coral).

## EXECUTIVE SUMMARY

Channel Islands National Park has conducted long-term ecological monitoring of the kelp forests around Santa Barbara, Anacapa, Santa Cruz, Santa Rosa, and San Miguel Islands since 1982. Permanent transects were established at 16 sites between 1981 and 1986. In 2000, sites were monitored during seven five-day cruises between June and September. The 2000 kelp forest monitoring was completed at all 16 monitoring sites by 31 National Park Service (NPS) and volunteer divers completing a total of 694 dives with over 590 hours of bottom time. This annual report contains a summary of the methods used to conduct the monitoring in 2000 and a brief description of the sites along with the results. All of the data collected during 2000 can be found summarized in the Appendices.

Divers using SCUBA or surface-supply-air completed all quadrats, 5m<sup>2</sup>-quadrats, band transects, random point contacts, fish transects, roving diver fish counts, size frequencies, artificial recruitment modules (ARMs) and video transects. Temperature loggers were retrieved and deployed at all sites.

In 2000, *Macrocystis pyrifera* (giant kelp) forests were present at four of the 16 Kelp Forest Monitoring sites. These sites included Wyckoff Ledge at San Miguel Island, Johnson's Lee South at Santa Rosa Island, and Cathedral Cove and Landing Cove at Anacapa Island. The remaining 12 sites were dominated by echinoderms. Pelican Bay, and Scorpion Anchorage at Santa Cruz Island, and Johnson's Lee North at Santa Rosa Island were dominated by *Strongylocentrotus purpuratus*. Hare Rock at San Miguel Island, Rodes Reef at Santa Rosa Island, Gull Island South at Santa Cruz Island, and Arch Point and Cat Canyon at Santa Barbara Island were dominated by both *S. purpuratus* and *Strongylocentrotus franciscanus*. Yellowbanks at Santa Cruz Islands was dominated by *S. purpuratus* and *Lytechinus anamesus*. Admiral's Reef at Anacapa Island and Southeast Sea Lion Rookery at Santa Barbara Island were dominated by *S. purpuratus*, *S. franciscanus*, and *Ophiothrix spiculata*. Fry's Harbor at Santa Cruz Island was dominated by *Pachythyone rubra* and *S. purpuratus*, and had moderate densities of *S. franciscanus*, and *Astrangia lajollaensis*.

All three monitoring sites on Santa Barbara Island were sea urchin barrens, and these appear to represent the Island well. Most of Santa Barbara Island appears to be dominated by *S. purpuratus*, *S. franciscanus* and *Ophiothrix spiculata*. *Macrocystis pyrifera* forests were only present in a few small areas around Sutil Island and scattered around the island close to shore in shallow areas. Densities of *Strongylocentrotus purpuratus* dramatically increased and *S. franciscanus* densities remained relatively high at all three sites.

At Anacapa Island, the status of the two sites within the ecological reserve and one site outside the reserve continue to well represent the area around this Island. The kelp forests within the reserve increased this year, while they remained virtually absent from the rest of Anacapa Island. Anacapa



Islands is similar to Santa Barbara Island as it is dominated by echinoderm barrens with high densities of *Strongylocentrotus purpuratus* and *Ophiothrix spiculata*, with the exception of the ecological reserve.

All five sites on Santa Cruz Island continued to be dominated by echinoderms. *Strongylocentrotus purpuratus* was the most dominant and increased in density at all five monitoring sites. Similar to last year, kelp forests were present on the West End and scattered in shallow areas around the remainder of the Island. However most of the island was dominated by echinoderms and is represented well by the monitoring sites.

Kelp forests continued to be relatively abundant around Santa Rosa and San Miguel Islands. However, sea urchin densities continued to increase at all five monitoring sites at these Islands. Densities of *Strongylocentrotus purpuratus* were high enough this year to almost completely exclude kelp at the Johnson's Lee North site, and created localized sea urchin barrens at Johnson's Lee South. Both Johnson's Lee sites have been lush kelp forests for most of the past decade.

The most distinct pattern at all 16 of the monitoring sites this year was an increase in *Strongylocentrotus purpuratus*. *Strongylocentrotus purpuratus* densities increased at all 16 sites this year compared to 11 in 1999. Eleven sites had high ( $> 15/\text{m}^2$ ) *S. purpuratus* densities compared to nine in 1999 and seven in 1998. Similar to the last several years, *S. purpuratus* dominated many areas on Santa Barbara, Anacapa, and Santa Cruz Islands. In addition, they continued to be more dominant in areas on Santa Rosa Island. Overall, *S. franciscanus* densities continued to increase, but these increases were not as widespread as in *S. purpuratus*. *Strongylocentrotus franciscanus* densities increased at five sites, decreased at two and changed little or remained the same at nine sites. Sea urchin recruitment was noticeably lower than in 1999. Recruitment of *Strongylocentrotus purpuratus* and *S. franciscanus* was still relatively high at some sites, though lower than in 1999.

There appears to be little sign of change from the current state of sea urchin barrens at Santa Barbara, Anacapa and Santa Cruz Islands. However, with the recent increase in *Pycnopodia helianthoides* at San Miguel and Santa Rosa Islands we expect to see declines of *Strongylocentrotus purpuratus* and possibly the return of kelp forests at some of these sites. Sea urchin wasting disease (Lafferty and Kushner, 1999, and Richards and Kushner, 1992) was noticeably more prevalent this year. This disease was observed at 11 sites during 2000, compared to four in 1999. In past years, this disease appears to have caused mass mortality of *Strongylocentrotus spp.* at some sites.

## INTRODUCTION

The waters of Channel Islands National Park and Channel Islands National Marine Sanctuary contain one-third of southern California's kelp forests (Davies, 1968). Giant kelp, *Macrocystis pyrifera*, is the primary constituent of a southern California kelp forest, and over 1,000 species of macro flora and fauna live in this community (Woodhouse 1981, Engle pers. comm.). The kelp forest serves as food, shelter, substrate and a nursery to resident as well as migratory species. Many species, while not residents of the kelp forest, are dependent upon the existence and productivity of kelp forests; detrital flux from kelp forests provides an important source of nutrients to nearby rocky shore, sandy beach, and estuary communities. The kelp forests are essential to California's commercial and sport fisheries as well as the recreation and tourist industries.

Channel Islands National Park consists of five of the eight California Channel Islands (San Miguel, Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara) and the submerged lands and waters within one nautical mile of each of the islands. The Channel Islands National Marine Sanctuary overlaps the subtidal portions of the park, and its boundary extends six miles seaward from the Park Islands. Channel Islands National Park also bears the designation of International Biosphere Reserve and State of California Areas of Special Biological Significance. The State of California maintains jurisdiction over the resources within the Park and manages them through the California Department of Fish and Game.

The Kelp Forest Monitoring project is part of the long-term ecological monitoring program at the Park, which is designed to measure the health of the ecosystems. By determining the limits of normal variation and diagnosing abnormal conditions we hope to prescribe remedial action through management recommendations.

Following a five-year design study that began in 1982, the Kelp Forest Monitoring Program was implemented in 1987 by the Park's resource management division, using the protocol established during the design phase (Davis and Halvorson, 1988). Preliminary results and specific design considerations can be found in reports written by Davis (1985, 1986). Richards et al. (1997), describe monitoring efforts and results for 1982-1989. Richards et al. (1993a), Richards et al. (1993b), Richards and Kushner (1994), Kushner et al. (1995a), Kushner et al. (1995b), Kushner et al. (1997a), Kushner et al. (1997b), Kushner et al. (2000), Kushner et al. (2000), and Kushner et al. (2001) describe the 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, and 2000 monitoring efforts and results respectively. A review of the Kelp Forest Monitoring Program was conducted in 1995 (Davis et al., 1996).

This report summarizes the monitoring efforts and results from 2000, our nineteenth year of monitoring. It is hoped that these reports will provide some insight into kelp forest dynamics and stimulate further research into the long-term trends and changes in this near-shore ecosystem. We have highlighted some

of the most important observations, and tried to provide a characterization for each site. Organisms are referred to by genus and species, except in the abstract and executive summary where both scientific and common names are used. Common names are cross-referenced to their scientific names in Table 1. Since the design of the kelp forest monitoring project, several genera and species names have been changed. For the most part, the new and the old genus are listed together in this text. The new names are cross-referenced in Table 1.

## METHODS

Abundance's and in some cases size structure of 68 taxa or categories of algae, fish, and invertebrates (Table 1) were measured at 16 permanent sites (Table 2) around the five Park islands (Figure 1). Site and species selection criteria, and sampling protocol are described in the Kelp Forest Monitoring Handbook (Davis et al., 2000). Sites were monitored between June 12<sup>th</sup> and September 29<sup>th</sup> 2000.

Each site is marked by a 100 m long transect affixed to the seabed. The sampling techniques employed to gather patterns of abundance and age structure are summarized in Table 3. At each station, 24 paired 1 m x 1 m quadrats were systematically arranged along the transect with a random start, 40 continuous and adjacent 1m x 5m quadrats, and 24 paired 3 m x 10 m band transects were systematically arranged along the transect with a random start, were used to determine densities and distribution of discrete benthic organisms; 600 random non-adjacent points (random point contacts - RPCs) were used to determine percent cover of encrusting invertebrates, algae, and substrate composition; four 2 m x 3 m x 50 m fixed transects were used to determine fish abundance; roving diver fish counts with a time component and estimated abundance were used to determine an index of abundance and diversity; video taped transects provide a record of the site appearance; and size frequency measurements were collected to determine age structure and recruitment cohorts. All animals measured for the natural size frequency distributions were located using a band transect type search method. A general species list was established for each site, noting presence/absence and relative abundance for all recognizable species. Artificial recruitment modules (ARMs) were in place at ten of the sites to measure recruitment and population structure of indicator species within the ARMs. A complete description of the monitoring protocols can be found in Davis et. al, 2000.

STOWAWAY<sup>TM</sup>. temperature loggers were deployed at all sites. Loggers were encased in underwater housings and attached to stainless steel thread rods cemented to the bottom at each site. HOBOTEMP<sup>TM</sup>. temperature loggers were also deployed at each site as a backup in case of STOWAWAY<sup>TM</sup>. failure. The HOBOTEMP<sup>TM</sup>. loggers were programmed to record temperature every 4.8 hours, and the STOWAWAY<sup>TM</sup>. loggers programmed to record temperature every hour. All STOWAWAY<sup>TM</sup> and HOBOTEMP<sup>TM</sup> loggers were factory serviced and calibrated and new O-rings were installed in each underwater logger housing in 2000. At several sites, loggers were deployed in the beginning of the summer that were not recently calibrated. These loggers were replaced later on in the summer with recently calibrated loggers.

When both the STOWAWAY<sup>TM</sup> and HOBOTEMP<sup>TM</sup> loggers were working properly, a comparison of several temperatures from both loggers was made to see if the loggers were recording within their specifications (+/- 0.2 °C). The data from the STOWAWAY<sup>TM</sup> loggers was used whenever possible, as

these have consistently been the most accurate when the loggers have been sent in for calibration. However, if the STOWAWAY™ Logger failed, the data from the HOBOTEMP™ were used.

## STATION RESULTS

Sampling was completed at all 16 monitoring sites and a summary of the 2000 status of each site is presented in Table 4. Thirty-two divers (Table 5) collected data on seven five-day cruises between June and September, and two additional divers assisted with lead line repair during pre-season non-sampling cruises in May. A total of 794 dives with 625 hours of bottom time were completed.

A brief description of each site is included with the station results below. Complete data summaries from the sampling protocol are listed in the appendices. Means for quadrats (Appendix A) represent average counts obtained from 24 paired 1 m x 1 m quadrats systematically arranged along the transect with a random start. Means for 5m<sup>2</sup>-quadrats (Appendix B) represent average counts obtained from 40 continuous and adjacent 1m x 5m quadrats. Note that when adult, subadult and juvenile densities for *Macrocystis pyrifera* are listed in the station descriptions, the adult and subadult densities are derived from the 5m<sup>2</sup>-quadrats, and the juvenile densities from the quadrat data unless otherwise noted.

Means for band transects (Appendix C) represent average counts obtained from 24 paired 3 m X 10 m transects systematically arranged along the transect with a random start. Means for random point contacts (Appendix D) represent average percent cover for a given organism, group of taxa, or substrate at 15 quadrats systematically arranged along the transect with a random start. Forty points from each quadrat (600 points total) are used to determine percent cover of selected organisms and substrate within one meter of the bottom. Percent cover may total more than 100% due to layering, Davis et al., 2000.

Means for fish transects (Appendix E) represent the average of four adjacent and continuous 2 m X 3 m X 50 m transects along the line. It should be noted that this is different from previous years when fish transects were 2m x 3m x 100m. Cases listed refer to the total number of passes over the transect made during sampling. All counts were conducted between 0900 and 1500 hours unless otherwise noted.

The Roving Diver Fish Count data are presented in Appendix F. The first page of this Appendix contains the number of observers that sampled and the total number of species observed for each sampling date and site. The following pages contain the average timed score and estimated abundance of each sampling date and site.

Natural habitat size frequency distributions for invertebrates other than gorgonians and *Stylaster (Allopora) californica* are in Appendix G. *Macrocystis pyrifera* size frequency distributions are in Appendix H. Gorgonian and *Stylaster (Allopora) californica* size frequency distributions are in Appendix I. Size

frequency measurements taken from the Artificial Recruitment Modules were kept separate from the natural habitat measurements and their distributions are in Appendix J. Species lists for all locations are in Appendix K. Video transects were completed for all locations, and the videotapes are stored at the Park's headquarters in Ventura.

Temperature data were collected at 16 sites using STOWAWAY™ and HOBOTEMP™ temperature loggers. Temperature data are collected from the loggers during our regular sampling season June – September. To expedite report writing we will present 12 months of temperature data from June 1, 1999 to May 31, 2000 (Appendix L). Temperature data was collected from all 16 sites. However, there were some missing data for the time period mentioned above at Johnson's Lee North, Pelican Bay and Scorpions Anchorage. For explanations of the missing data, please see the site results below or Appendix L.

This year, as with previous years, sampling at the monitoring sites typically occurred over at least two separate dates, ranging from two weeks to several months apart. Separate sampling dates enabled us to conduct fish transects and roving diver fish counts at two different dates at least two weeks apart. During our first visit we attempt to conduct all of the abundance estimate techniques (quadrats, 5m<sup>2</sup>-quadrats, band transects, random point contacts, fish transects, and roving diver fish count). During the second and subsequent visits, a second set of fish transects, and roving diver fish counts, as well as any remaining size frequencies, ARMs, line repair or other work is conducted. Occasionally abundance techniques are not completed during our first visit, and are finished during our second visit and this is noted in the appropriate Location section below. If there appears to be large changes in abundance between visits within a sampling season, a second sampling may be conducted to document these changes and differences are reported in the appropriate Location section below. In the text we report numbers to two significant digits.

### **Location: Wyckoff Ledge, San Miguel Island**

2000 sampling dates: 6/28, 8/30.

2000 status: Kelp forest.

This site appeared similar to previous years, except for a decrease in mature *Macrocystis pyrifera* plants and occasional small high density aggregations of *Strongylocentrotus franciscanus* and *S. purpuratus*. On June 28<sup>th</sup>, *M. pyrifera* surface canopy cover over the transect was 0%, a decrease from the 80% cover present in June 1999. Overall, the *M. pyrifera* plants appeared healthy. Adult, subadult, and juvenile *M. pyrifera* densities decreased from last year. Their densities were 0.005/m<sup>2</sup>, 0.09/m<sup>2</sup>, and 1.5/m<sup>2</sup> respectively. The adult and subadult densities were the lowest ever recorded at this site. *M. pyrifera*

cover on the bottom was similar to the previous two years and was recorded at 17.2%. *Cystoseira* spp. was common with cover of 6.2%. Adult and juvenile *Pterygophora californica* were relatively abundant with densities of 1.2/m<sup>2</sup> and 2.1/m<sup>2</sup>, they're highest densities recorded at this site since 1982. *P. californica* cover was also high at 17.7%, the highest recorded since 1993, when the monitoring program began monitoring this species separately. Several juvenile *Eisenia arborea* plants were observed and adults were common. Adult and juvenile *E. arborea* densities were 0.0/m<sup>2</sup> and 0.083/m<sup>2</sup> respectively and cover was 1.0%. No adult or juvenile *Laminaria farlowii* were observed. Miscellaneous brown algae covered 4.3% of the bottom, similar to last year. *Desmarestia* increased, covering 55.3% of the bottom, the highest cover since 1988. Understory red algae cover increased to 73.5%. *Gigartina* sp. cover was 5.2%. Articulated and encrusting coralline algae covered 12.3% and 46% of the bottom respectively. Bare substrate covered 17.5% of the bottom.

The most common miscellaneous invertebrate on random point contacts (RPCs) was the worm *Pista elongata*. This category covered 12.2% of the bottom. *Diopatra ornata* were abundant with a cover of 16.7%, similar to last year. *Phragmatopoma californica* cover decreased to 2.7%. Miscellaneous bryozoan cover decreased to 2.7%, the lowest since we began monitoring this category in 1985. Tunicates and sponges covered 2.0% and 1.3% of the bottom respectively. *Styela montereyensis* density was 0.33/m<sup>2</sup>. Other tunicates were common, but noticeably less abundant than in 1999. *Tethya aurantia* were abundant with a density of 0.094/m<sup>2</sup>, but this is a slight decline compared to the previous four years. *Telia lofotensis* were abundant on the tops and sides of rocks with a density of 0.25/m<sup>2</sup>.

*Asterina miniata* density was 1.5/m<sup>2</sup>. Several *Dermasterias imbricata* were observed. As usual for this site, *Pisaster giganteus* were common on the rocky outcrops within the transect area, but there were few stars directly along the transect where they are counted. Their densities on quadrats and 5-meter quadrats were 0.042/m<sup>2</sup> and 0.045/m<sup>2</sup> respectively. Both small and large *Pycnopodia helianthoides* were common, and their density increased to 0.025/m<sup>2</sup>, the highest recorded since 1991. *Strongylocentrotus franciscanus* density increased to 1.9/m<sup>2</sup>. *S. purpuratus* density continued to increase for the fourth consecutive year. Their density was recorded at 6.7/m<sup>2</sup>, the highest recorded since monitoring began at this site in 1982. Different from previous years, both *S. franciscanus* and *S. purpuratus* were noticeably out in the open. In past years at this site *Strongylocentrotus* spp. have usually been confined to crevices. Several patches of high density *Strongylocentrotus* spp. were observed creating small patches (several square meters) of urchin barrens. Similar to past years, *S. franciscanus* were often abundant near *Haliotis rufescens*. It appears that the two species may be competing for space and food. Several *Lytechinus anamesus* were observed on band transects with a density of 0.0097/m<sup>2</sup>. However, we observed several unusually light colored *S. purpuratus* that could have been confused with *L. anamesus* if they were not carefully looked at. As best the observers could tell they were *L. anamesus*.

*Parastichopus parvimensis* were common with a density of 0.13/m<sup>2</sup>. Several *Parastichopus californica* were observed. No sea urchin or sea star wasting disease was observed.

*Kelletia kelletii* were abundant and counted on both quadrats and band transects. *K. kelletii* density on quadrats was recorded at 1.0/m<sup>2</sup>, the same as 1999 and the highest density recorded using this technique. However, the density on band transects declined to 0.083/m<sup>2</sup>, the lowest density recorded since 1984; in 1999 *K. kelletii* was recorded at its highest density (0.46/m<sup>2</sup>) using this technique. The discrepancy in densities between these two sampling techniques makes the band transect data for *K. kelletii* highly suspect. There were four observers conducting the band transect, two of which did not observe as many *K. kelletii* as the other two. There was substantial understory algae on the bottom making band transects difficult. Typical for this site, many of the *K. kelletii* were half buried in the sand making them difficult to observe, especially during band transects. Eggs of *K. kelletii* were common, but not as abundant as the previous two years.

*Lithopoma gibberosum* density was 0.13/m<sup>2</sup> the lowest recorded since 1990. Several juvenile *L. gibberosum* less than 15mm were observed indicating recent recruitment. *Haliotis rufescens* were common with a density of 0.018/m<sup>2</sup>, similar to recent years. *H. rufescens* shells were collected around the transect, measured and disposed of off the transect. Several red rock crab, *Cancer antennarius* were observed along the transect and *Pugettia richii* were abundant. There were three crab traps within 500 meters of the transect this year, but none directly along the transect. The boat the "Sal-Sea" was observed pulling the traps. Mysids were abundant along the bottom.

As usual, fish were more abundant on the western end of the transect at this site, but there appeared to be lower abundance and diversity than previous years. Juvenile *Sebastes spp.* were rare compared to last year. Adult *Aulorhynchus flavidus* (Tubesnouts) were abundant in large schools. Similar to the last two years, only one large *Sebastes miniatus* was observed during the roving diver fish count. No juvenile *S. mystinus* were observed this year. Adult *S. mystinus* were common along the western end of the transect. No juvenile *S. serranoides* were observed this year and only one adult was observed during the roving diver fish count. Juvenile *S. mystinus* and juvenile *S. serranoides* were both abundant in 1999. No juvenile *S. miniatus* were observed this year. Adult *Embiotoca jacksoni* were rare and adult *E. lateralis* were common. No juvenile *E. jacksoni* and a few *E. lateralis* were observed. One large male, one large female, and no juvenile *Semicossyphus pulcher* were observed during the roving diver fish counts. However, several other male and female *S. pulcher* appeared along the transect later on in the day while we were sampling. Adult *Oxyjulis californica* were common, and no juveniles were observed. *Oxyjulis californica* and *A. flavidus* were the most abundant fish along the transect. Painted greenlings, *Oxylebius pictus*, were common. One large *Atractoscion nobilis* (white seabass) was observed. Roving diver fish



counts were conducted on June 28<sup>th</sup> with four divers observing 16 species of fish, and on August 30<sup>th</sup> with six divers observing 24 species of fish.

The temperature loggers were retrieved and deployed. Both units were recording data within the manufacturer specifications of each other ( $\pm 0.2^{\circ}\text{C}$ ).

### **Location: Hare Rock, San Miguel Island**

2000 sampling dates: 6/29, 8/30.

2000 status: *Strongylocentrotus franciscanus* and *S. purpuratus* barren.

The most notable change at this site was an increase in *Strongylocentrotus purpuratus*. The site continued to be mostly devoid of macroalgae. No algae were observed in quadrats. Only one juvenile *Eisenia arborea* was observed along the transect. Three subadult *Macrocystis pyrifera* plants were observed along the outer edge of the transect. However, all of these were attached to the temperature logger and had nearly pulled the thread rod that the logger is attached to out of the rock. These plants were removed when the temperature logger was retrieved. Several large clumps of *Desmarestia* sp. were present on the tops of the large rocks. *Desmarestia* sp. cover was recorded at 2.2%. The most abundant alga at this site was the red algae *Laurencia pacifica*. Miscellaneous red algae cover was 8.2%, and consisted mostly of *L. pacifica* and some filamentous red algae. Miscellaneous plants covered 5.8% of the bottom and consisted entirely of filamentous brown diatoms. Several small *Codium fragile* were observed. Articulated coralline algae were uncommon with a cover of 0.17%. Encrusting coralline algae covered 40.8% of the bottom, a decrease from last year. Inversely, bare substrate increased to 41.8%. Rock substrate cover remained similar to past years, but cobble decreased to 6.8% (about a 10% decrease), while sand increased to 9.8% (about a 9% increase). This data was collected by a new observer who was calling off sand where their finger could be pushed through small cobble. These should have been called off as cobble, and only sediment/sand deep enough for a finger to go through without hitting rock called off as sand.

Similar to previous years, the most common miscellaneous invertebrates on RPCs were the worms, *Dodecaceria fewkesi*, and terebellids. This category decreased to cover 14.7% of the bottom. Similar to past years, terebellid worms were moderately abundant in the cobble areas around the transect. *Corynactis californica* cover was similar to last year at 7.3%. *Balanophyllia elegans* and *Astrangia lajollaensis* covered 1.0% and 2.2% of the bottom respectively. The feather duster worms, *Eudistylia polymorpha*, were moderately abundant. *Tethya aurantia* density decreased to 0.0069/m<sup>2</sup>, the lowest density recorded since 1989.

For the first time since 1987, *Strongylocentrotus purpuratus* density surpassed *S. franciscanus* density. *S. franciscanus* density decreased to 14.8/m<sup>2</sup>, while *S. purpuratus* density increased for the third consecutive year to 30.3/m<sup>2</sup>. This is the highest density recorded for *S. purpuratus* since 1986, and mimics similar increases in density after the 1983/1984 El Niño. As usual for this site, the *S. franciscanus* were observed to have notably long and brittle spines that were easily broken. Many of the *S. purpuratus* were small and almost completely covered with the red algae *Laurencia pacifica*. Several patches of small (<5mm) juvenile *S. purpuratus* were observed. All of the *Strongylocentrotus* spp. were out in the open and not confined to crevices, typical for this site. No sea star wasting disease was observed at this site.

Some *Ophiothrix spiculata* were present, and did not appear as common as last year. *Asterina miniata* were noticeably more abundant and continued to increase in density for the second consecutive year. *Asterina miniata* density was 1.1/m<sup>2</sup>. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats with densities of 0.21/m<sup>2</sup> and 0.51/m<sup>2</sup> respectively, similar to last year. Small and large *Pycnopodia helianthoides* were common, similar to last year, with a density of 0.029/m<sup>2</sup>. *Parastichopus parvimensis* were uncommon (0.083/m<sup>2</sup>), and were very large, similar to previous years.

Small fresh *Haliotis rufescens* shells were more abundant than last year, indicating either higher recruitment or higher mortality. No time was available to turn over small rocks to look for live juveniles, but several juveniles were observed in quadrats. Shells were collected, measured and moved off the site. No *H. rufescens* were observed on band transects. *Kelletia kelletii* were present in low numbers with a density of 0.013/m<sup>2</sup>. No *Crassedoma giganteus* were observed on band transects for the first time since monitoring began for this species in 1983. *Aplysia californica* were present in low numbers with a density of 0.0056/m<sup>2</sup>. *Cypraea spadicea* density decreased to 0.21/m<sup>2</sup>, the lowest density recorded at this site since we began monitoring them in 1983. *Cypraea spadicea* density has been remarkably stable over the past six years, ranging from 0.50/m<sup>2</sup> – 0.67/m<sup>2</sup>.

The nudibranch, *Navanax inermis*, was rare with only a few observed; last year they were abundant. The nudibranch, *Hermisenda crassicornis*, and the bubble snail, *Haminoea vesicula*, were abundant with eggs. Both of these are preferred food for *N. inermis*. *Hermisenda crassicornis* were more abundant than previously observed. They were present over the entire site, but noticeably more abundant in the cobble areas where it appeared there were several per square meter.

Mysids were abundant on the bottom. *Pandalus danae* were more abundant than usual in the cobble areas of the transect and most were small. Barnacles were common, but not as abundant as last year. Barnacles seem to be the preferred food for *Pisaster giganteus*. The crab, *Pugettia richii*, was moderately abundant.

Fish were abundant, diverse and some were notably large at this site. Adult *Sebastes mystinus*, some very large, were common and several juveniles were observed. Adult *S. serranoides*, some very large, were common, but no juveniles were observed. Adult *S. atrovirens* were common and no juveniles were observed. Several adult *S. chrysomelas* were observed, but were notably less abundant than last year. At least two adult *S. caurinus* were observed. Small groups of less than ten juvenile *S. caurinus/carnatus* were present near the clumps of *Desmarestia* spp.. *Oxylebius pictus* were relatively abundant, similar to last year. Small and large females, one large juvenile, one large male, and several transitional (between female and male) *Semicossyphus pulcher* were observed. Adult *Chromis punctipinnis* were common and some were notably large. Several cabezon, *Scorpaenichthys marmoratus*, were observed. Several adult *Oxyjulis californica* were observed. *Coryphopterus nicholsii* were more abundant than last year with a density of 0.83/m<sup>2</sup>, the highest density recorded since 1992. Roving diver fish counts were conducted on June 29<sup>th</sup> with six divers observing 24 species, and on August 30<sup>th</sup> with six divers observing 23 species of fish.

The StowAway and HoboTemp temperature loggers were retrieved and deployed. The StowAway logger was consistently reading 1°C higher than the HoboTemp logger. This StowAway unit was calibrated and was recording within specifications so the data was used. A new thread rod was installed in June to replace the aging and poorly attached original one. The temperature logger was attached to this new thread rod in August.

Several new eyes were attached to the new thread rods that were installed last year. These additional thread rods aided with the location of the transect.

### **Location: Kid Rock at Prince Island, San Miguel Island**

2000 sampling dates: 8/30.

2000 status: Open area with a high diversity and abundance of encrusting invertebrates.

A brief survey dive around Kid Rock which is located just below the northern group of Cassin's Auklet boxes on Prince Island. Though there were patches of high densities of *Strongylocentrotus franciscanus* in some areas, most of Kid Rock to a depth of about 10 meters was completely covered with a high diversity of encrusting invertebrates. Most noticeable were sponges, *Corynactis californica*, bryozoans and other species. This was only a brief dive, and not many notes were taken. Male and female *Semicossyphus pulcher* were relatively abundant, and several notably large males were present.

### **Location: Wilson Rock, San Miguel Island**

2000 sampling dates: 8/31.

2000 status: Open area with a high diversity and abundance of encrusting invertebrates.

Latitude: 34 06.329 N

Longitude: 120 23.766 W

We dropped anchor in about 5m of water on a shelf off the east end of Wilson Rock. Though the anchor was at a depth of 5m, the boat was over a depth of 44m. Just off the shelf was a near vertical wall. At the base of the wall at a depth of about 38m, an intact bomb was found. The Island Ranger was notified.

The top of the reef (like a plateau) was covered with large adult *Eisenia arborea* and a subtidal *Mytilus californianus* bed that extended to a depth of 7 meters. The *M. californica* bed was healthy and thick with many very large individuals. Most of the *M. californianus* were surprisingly clean with few epibionts. Below a depth of about 7 meters, the vertical walls were covered with an abundance of encrusting invertebrates. These consisted mostly of *Anthopleura elegantissima*, bryozoans, sponges, tunicates, hydroids and worms such as *Eudistylia polymorpha*. There were some areas that had a more gentle downward slope, at about a 45 degree angle. These areas had moderate densities of *Strongylocentrotus franciscanus* and a more barren bottom. This gentle sloping area persisted to a depth of 44m, where the bottom flattened out with large boulders/rocks. At this depth, one wolf eel, *Anarrhichthys ocellatus*, was observed. Adult *Sebastes miniatus*, two year old *S. mystinus*, and adult *S. atrovirens* were common.

### **Location: Johnson's Lee North, Santa Rosa Island**

2000 sampling dates: 7/19, 7/20, 9/26.

2000 status: *Strongylocentrotus purpuratus* barren.

As we predicted in 1999, this site has changed drastically and can now be described as a *Strongylocentrotus purpuratus* barren. In 1999, the site was a mature kelp forest with a thick canopy. Canopy cover this year was less than 5%, and consisted of several mature *Macrocystis pyrifera* plants on the west end of the transect. *Macrocystis pyrifera* densities are the lowest they have been at this site since 1987. Adult, subadult and juvenile densities were 0.04/m<sup>2</sup>, 0.01/m<sup>2</sup>, and 0.29/m<sup>2</sup> respectively. The few adult and subadult *M. pyrifera* plants at the site were currently being fed on by *Strongylocentrotus* spp., and we do not expect the plants to survive the summer. Understory algae was rare compared to previous years. Several adult and juvenile *Pterygophora californica* were present, but were relatively rare with none observed on quadrats. Similar to *M. pyrifera*, this was the lowest density recorded since 1987. No *Eisenia arborea* were observed on quadrats, this is not uncommon, but *E. arborea* were rare in places along the transect where they are usually present. Several adult and juvenile *Laminaria farlowii* were

present along the transect, but were rare, with densities of 0.0/m<sup>2</sup> and 0.042/m<sup>2</sup> respectively, and a cover of 0.0%. *M. pyrifera*, *E. arborea*, and *P. californica* covered 6.0%, 0.0%, and 0.17% of the bottom respectively, these are the lowest covers recorded since they have been counted separately, and the lowest combined since 1987. No *Cystoseira* spp. was observed on RPCs, the lowest cover recorded since 1987. A small amount of *Desmarestia* spp. was present and recorded at 0.17%. Miscellaneous red algae covered 3.7% of the bottom, the lowest since 1987. *Gigartina* spp. was rare covering 0.33% of the bottom. Articulated coralline cover was 1.0%, also it's lowest since 1987. Encrusting coralline cover was 35.8%, the highest since 1988. Bare substrate was relatively high covering 27.0% of the bottom, the highest since 1996.

During our September 26<sup>th</sup> visit to this site, we noted that what little algae was present in July had mostly vanished. The only macroalgae present at the site during our September visit was a small clump of *Gigartina corymbifera* and three adult *Macrocystis pyrifera* plants on the south end of the transect.

The most common miscellaneous invertebrates on RPCs were hydroids, *Cucumaria* spp., and an unidentified anemone. This category covered 26.5% of the bottom, similar to last year. Tunicate cover was 1.3%, a large decrease from last year. Sponge cover was 1.8%, similar to last year. *Phragmatopoma californica* cover continued to decline for the second year, covering 8.2% of the bottom. Bryozoans noticeably decreased and were rare. Miscellaneous bryozoans covered 0.83% of the bottom, the lowest since 1987. *Diaperoecia californica* covered 0.5% of the bottom. *Tethya aurantia* were abundant with the highest density recorded at this site, 0.13/m<sup>2</sup>, but similar to last year. *Styela montereyensis* density decreased to 0.083/m<sup>2</sup>, the lowest density recorded since 1987. *Corynactis californica*, *Balanophyllia elegans*, and *Astrangia lajollaensis* covered 3.0%, 1.2%, and 3.2% of the bottom respectively.

*Strongylocentrotus* spp. populations greatly increased this year, and were probably responsible for most of the changes observed at this site. *Strongylocentrotus purpuratus* and *S. franciscanus* were noticeably out in the open and not confined to crevices as they usually are at this site. *Strongylocentrotus purpuratus* and *S. franciscanus* densities continued to increase for the third consecutive year and were recorded at 83/m<sup>2</sup> and 5.4/m<sup>2</sup> respectively. These were the highest densities recorded for this site since monitoring began in 1982. This pattern of increasing densities of *Strongylocentrotus* spp. several years following the 1997/1998 El Niño is almost identical to the observation several years following the 1982/1983 El Niño. Though high densities of *S. purpuratus* were along the entire length of the transect, higher density fronts were common. Sea urchin wasting disease was observed in several *S. purpuratus* on September 26<sup>th</sup>.

At this site, we usually measure *Strongylocentrotus* spp. underwater, because they are typically in crevices and difficult to access. As a result, in past years we were not able to access many of the

*Strongylocentrotus* spp. for size frequency measurements. This year, we were able to access almost all of the *Strongylocentrotus* spp. for size frequencies because most were out in the open and not confined to crevices. Large *S. purpuratus* were more common than we expected. We presume that these were present in past years, but hidden in crevices.

*Asterina miniata* continued to be rare with a density of 0.042/m<sup>2</sup>, similar to the last several years.

*Pisaster giganteus* were counted on both quadrats and 5-meter quadrats, with densities of 0.25/m<sup>2</sup> and 0.35/m<sup>2</sup> respectively. The quadrat density was similar to last year, while the 5-meter quadrat density was an increase. *Parastichopus parvimensis* density was 0.38/m<sup>2</sup>, similar to previous years.

Band transects were conducted during our first visit in July, and *Pycnopodia helianthoides* density was recorded at a low density of 0.0069/m<sup>2</sup>. During our September visit to the site, this had drastically changed. Small *Pycnopodia helianthoides* were abundant. David Kushner noted that he had “never seen so many *P. helianthoides* in one place”. In an area of approximately 100m<sup>2</sup> he counted over 75. This is similar to what was observed several years after the 1982/3 El Niño. We believe that *P. helianthoides* predation of *Strongylocentrotus purpuratus* is what has controlled their population after the 1982/3 El Niño and the same scenario may occur again. We predict that the *P. helianthoides* will have a major impact on the *S. purpuratus* population and kelp forest will return quickly to this site.

*Cypraea spadicea* density greatly increased to 1.5/m<sup>2</sup>, the highest density ever recorded at this site. The *C. spadicea* were noticeably more out in the open and patchily distributed than has been observed in previous years. This is similar to our observations at the deeper, Johnson's Lee South site. Several large *Lithopoma undosum* were observed, but as usual, they were rare at this site. Their density in quadrats was 0.083/m<sup>2</sup>. *Kelletia kelletii* density was 0.0028/m<sup>2</sup>. *Megathura crenulata* were common on the rocky outcrops with a density of 0.018/m<sup>2</sup>. The few *Haliotis rufescens* observed were noticeably more out in the open than usual and appeared hungry when offered a piece of *M. pyrifera*. With the high densities of *Strongylocentrotus* spp., it appears that the *H. rufescens* may not be able to compete well for food. Eight *H. rufescens* were observed during band transects, a density of 0.011/m<sup>2</sup>.

Fish were noticeably less abundant and diverse than in 1999 and most previous years. *Oxyjulis californica* were present but not abundant and were usually in small groups of less than 10. Juvenile rockfish were rare with only one juvenile *Sebastes serriceps* observed. Several adult *S. serranoides* and *S. atrovirens* were observed. Several black and yellow rockfish, *S. chrysomelas* were observed. Female *Semicossyphus pulcher* were common, but most were small. Two small males and no juveniles were observed. Several *Halichoeres semicinctus* were observed. Adult *Embiotoca jacksoni* were common while juveniles were rare. *E. lateralis* were less common and no juveniles were observed. The resident *Hypsypops rubicundus* at 73m along the transect was present as usual, and at least one other was

observed along the transect. Several *Paralabrax clathratus* were observed but they were rare. *Alloclinus holderi* were rare; one was observed during quadrats, 0.042/m<sup>2</sup>. *Coryphopterus nicholsii* were relatively abundant for this site with a density of 0.17/m<sup>2</sup>, the highest density recorded since 1988. Roving diver fish counts were conducted on July 18<sup>th</sup> with two divers observing 20 species, and on September 26 with seven divers observing 23 species.

The five ARMs present last year remained intact and were sampled. An additional ARM was located inshore of the transect, but was in disrepair and not used in the data. Three ARMs from the South group and two ARMs from the middle group were sampled. On September 26, four new ARMs were installed to replace ones that have disappeared over the last several years. Two of these were placed at the middle group and two at the North end group. The new ARMs were numbered 2446, 2447, 2448 and 2449. The new ARMs contain half cinder blocks that were approximately 15% larger than the cinder blocks that were originally deployed at this site.

One *Haliotis rufescens* was observed in the ARMs, measuring 171mm. We presume this is a different large abalone than was found last year because it had different wear marks on its shell and was found in a different ARM, #2354. *Cypraea spadicea* density was 2.6/ARM. *Megathura crenulata* density was 0.60/ARM. *Crassidoma giganteum* density remained low, similar to previous years at 0.60/ARM. *Asterina miniata* density was 1.0/ARM, an increase from the last four years. There was a noticeable recruitment of *Pisaster giganteus* with a density of 7.8/ARM and a mean size of 30.8mm. This is the highest density and the lowest mean size since we began monitoring *P. giganteus* in the ARMs in 1992. *Pycnopodia helianthoides* density was higher than last year at 0.6/ARM and all were small (<31mm). *Strongylocentrotus franciscanus* density declined 55% to 8.6/ARM. *S. purpuratus* density continued to increase for the third consecutive year and was 165/ARM. There were at least two noticeable size cohorts and mean size was 23.9mm.

The temperature loggers were retrieved and deployed. The loggers were working properly and recording data within their specifications.

### **Location: Johnson's Lee South, Santa Rosa Island**

2000 sampling dates: 7/19, 7/20, 8/29, 9/26.

2000 status: Mature kelp forest with small patches of *Strongylocentrotus* spp. barrens.

This site was in the only large patch of *Macrocystis pyrifera* in Johnson's Lee that was not within approximately 100 meters of the shore. In 1999, *M. pyrifera* was abundant in the entire area, creating a canopy over most of Johnson's Lee.

*Macrocystis pyrifera* canopy cover over the site was estimated at 50% on July 20<sup>th</sup>, but there was a noticeable decrease on our September 26<sup>th</sup> visit when we estimated canopy cover at 15%. Though this site was a mature kelp forest with large, widely spaced *M. pyrifera* plants with a moderate understory of algae, there was noticeably less macroalgae than last year. Adult, subadult, and juvenile *M. pyrifera* densities were 0.09/m<sup>2</sup>, 0.05/m<sup>2</sup>, and 0.88/m<sup>2</sup> respectively, and covered 4.7% of the bottom. This was a decrease in density for adult and subadult plants, and juvenile density was similar to 1999. The *M. pyrifera* appeared healthy with few epiphytes growing on the blades. Adult and juvenile *Eisenia arborea* and *Pterygophora californica* plants were rare and none were observed on quadrats, but covered 0.33% and 4.3% on RPCs. Adult and juvenile *Laminaria farlowii* densities were 0.54/m<sup>2</sup> and 0.75/m<sup>2</sup> respectively, similar to last year. *Laminaria farlowii* covered 10.8% of the bottom, less than last year, but still relatively high for this site. *Desmarestia* spp. and *Cystoseira* spp. covered 1.7% and 2.0% of the bottom respectively. Miscellaneous red algae cover was 53.8%, relatively high, but similar to the last two years. *Gigartina* spp. cover was recorded at 2.7%, also similar to last year. Articulated and encrusting coralline algae covered 8.2% and 28.8% of the bottom respectively. Bare substrate covered 9.7% of the bottom.

Though the data directly along the transect was not much different than last year, there were small patches near the transect that were *Strongylocentrotus* spp. barrens, mostly devoid of algae. In addition many of the *M. pyrifera* holdfasts at the site were actively being eaten by *Strongylocentrotus* spp.

Similar to the last four years, hydroids (mostly *Aglaophenia latirostris*) were the most common miscellaneous invertebrate on RPCs. This category covered 23.5% of the bottom, similar to last year. Miscellaneous bryozoan cover decreased to 12.0%, similar to Johnson's Lee North. Tunicate and sponge covered 5.2% and 0.67% of the bottom respectively. *Balanophyllia elegans*, *Astrangia lajollaensis*, and *Corynactis californica* covered 1.7%, 1.5%, and 2.8% of the bottom respectively. *Diopatra ornata* were abundant in the low-lying sandy areas of the transect, and covered 16.2% of the bottom. Almost all of the *D. ornata* had miscellaneous red algae growing on them. *Styela montereyensis* density was lower than last year, but still relatively high at 1.3/m<sup>2</sup>. *S. montereyensis* have declined at most of the other sites where they are usually common. *Tethya aurantia* were abundant with a density of 0.24/m<sup>2</sup>, similar to last year. *Lophogorgia chilensis* density was 0.096/m<sup>2</sup>, similar to last year. *Tealia lofotensis* has gradually increased for the past four years and was recorded at 0.11/m<sup>2</sup>.

*Strongylocentrotus purpuratus* density continued to increase for the third consecutive year. This year, density was 14.5/m<sup>2</sup>; the highest recorded since 1986. *Strongylocentrotus franciscanus* density was similar to last year at 1.5/m<sup>2</sup>. Several small high density aggregations of *S. franciscanus* and *S. purpuratus* were scattered around the transect. These patches were mostly devoid of algae and the



urchins often appeared to be moving in a front foraging for algae. *Strongylocentrotus* spp. were out in the open and not confined to crevices as they usually are at this site. This made sampling for size frequencies easy, and animals were collected and brought to the surface for measurement. We usually have a difficult time measuring *Strongylocentrotus* spp. at this site because they are deep in crevices making them inaccessible. This year, almost all of the *Strongylocentrotus* spp. were accessible for measuring.

*Pycnopodia helianthoides* density was 0.033/m<sup>2</sup>, similar to the past several years. *Asterina miniata* density was similar to last year at 1.3/m<sup>2</sup>. *P. giganteus* were counted on both quadrats and 5-meter quadrats, with densities of 0.29/m<sup>2</sup> and 0.13/m<sup>2</sup> respectively. *Parastichopus parvimensis* density was 0.17/m<sup>2</sup>.

Similar to Johnson's Lee North, *Haliotis rufescens* appeared to be more out in the open than usual. This year, seven *H. rufescens* were observed on band transects, a density of 0.0097/m<sup>2</sup>. *Kelletia kelletii* density was 0.15/m<sup>2</sup>.

On August 29<sup>th</sup>, three fresh *Pteria sterna* shells were found. These shells appeared smaller (they measured 64, 62 and 52mm from the hinge to the largest diameter of the shell) than the shells found at Anacapa and Santa Barbara Islands.

Fish were less abundant and diverse than usual for this site. Similar to other sites this year, but different than last year, juvenile *Sebastes* spp. were rare. Several juvenile *S. mystinus* and one juvenile *S. serranoides/flavidus* were observed this year. *Damalichthys vacca*, adult *Embiotoca jacksoni*, *E. lateralis*, *Oxylebius pictus*, *S. chrysomelas*, *S. atrovirens* and *Chromis punctipinnis* were all common. Several *Medialuna californiensis* were observed. Only one *Paralabrax clathratus* was observed. *Coryphopterus nicholsii* remained relatively abundant for this site with a density of 0.46/m<sup>2</sup>. On September 26<sup>th</sup>, a red brotula, *Brosmophycis marginata*, was observed at the edge of one of the ARMs. This is a rare sighting, but interesting to note that a *B. marginata* was observed at Johnson's Lee North in 1999. Roving diver fish counts were conducted on July 19<sup>th</sup> with four divers observing 23 species and on August 29<sup>th</sup> with six divers observing 22 species of fish.

Five ARMs were present at this site, but one was not sampled because it was in poor condition. Four ARMs were monitored for all indicator species, one cage was replaced and two new ARMs (#2450 and #2451) were deployed. There are now a total of seven ARMs at this site.

Similar to last year, one *Haliotis rufescens* measuring 19mm was found in the four ARMs. *Cypraea spadicea* density declined to 2.5/ARM, a 52% decline. *Megathura crenulata* density was 1.0/ARM,

relatively common for this site; these were all small (<23mm). *Crassedoma giganteus* density was 1.0/ARM, similar to past years. *Asterina miniata* density was similar to last year at 5.75/ARM. *Pisaster giganteus* density increased to 5.25/ARM, the highest density recorded for this site, similar to what we observed at Johnson's Lee North. One *Pycnopodia helianthoides* was found in the ARMs, 0.25/ARM. *Strongylocentrotus franciscanus* density decreased by 39% to 28.8/ARM. *Strongylocentrotus purpuratus* density was 11.5/ARM, similar to last year.

The temperature loggers were retrieved and deployed. Both units were reading within the manufacturer specifications of each other (+0.2C<sup>0</sup>). No temperature data is reported from June 1<sup>st</sup>, 1999 to July 21<sup>st</sup>, 1999 because the temperature loggers were damaged.

### **Location: Rodes Reef, Santa Rosa Island**

2000 sampling dates: 8/1, 8/31.

2000 status: *Strongylocentrotus franciscanus* and *Strongylocentrotus purpuratus* barren.

This site is increasingly barren as sea urchin densities continue to rise. Foliose algae continued to decrease. Other than encrusting coralline algae, miscellaneous red algae were the only recorded algae on RPCs or quadrats. This category continued to decrease for the fourth consecutive year and covered only 2.0% of the bottom. No brown macroalgae were observed anywhere near the transect this year. In addition, no canopy forming *Macrocystis pyrifera* were observed anywhere around the reef break just northwest of the transect. Articulated coralline algae were rare and none were observed on RPCs this year. Encrusting coralline algae covered 64.2% of the bottom. Bare substrate covered 16.2% of the bottom, an increase from last year. This is the most barren this transect has been since 1987.

The most common miscellaneous invertebrates on RPCs were *Ophiothrix spiculata*, the worm *Pista elongata*, and sea cucumbers, *Cucumaria* sp.; this category covered 18.7% of the bottom. Overall, encrusting invertebrates were much more abundant on the rocky western half of this transect. *Ophiothrix spiculata* appeared to be more abundant than last year, especially along the eastern half of the transect. We kept track of *O. spiculata* separately on RPCs, and then added them to the miscellaneous invertebrate category. *Ophiothrix spiculata* covered 5.5% of the bottom. The parchment tubeworm, *Chaetopterus variopedatus* that has been relatively abundant in past years was rare, similar to last year. *Diopatra ornata* abundance remained low at 1.2%. *Astrangia lajollaensis* cover increased to 12.7%, the highest recorded at this site since 1987. *Balanophyllia elegans* cover was 1.7%, and were more abundant on the western/rocky end of the transect. Bryozoan cover remained low at 1.5%. *Telia lofotensis* were common on the tops of rocks, and had a density of 0.035/m<sup>2</sup>. *Telia coriacea* and *T. colombiana* were also common as usual for this site. *Lophogorgia chilensis* were rare along the transect

with a density of 0.0014/m<sup>2</sup>. *Styela montereyensis* were noticeably rare, and none were observed in quadrats this year (0.0/m<sup>2</sup>), this is the lowest density recorded since 1987. *Tethya aurantia* density noticeably decreased to 0.072/m<sup>2</sup>, about half its average density over the past 10 years. This is the lowest recorded at this site since monitoring began; though similar to densities recorded between 1985-1989. This decrease is similar to what was experienced following the 1982/1983 El Niño. The bright orange encrusting tunicate that has been present at this site for the past several years appeared to continue to increase in abundance. This tunicate easily stands out with its fluorescent orange coloration, and often covers relatively large patches of rock or large cobble. This tunicate dominated the miscellaneous tunicate category on RPCs. This category covered 3.5% of the bottom.

Both *Strongylocentrotus purpuratus* and *S. franciscanus* continued to increase in density for the fifth consecutive year. Their densities were 29.2/m<sup>2</sup> and 11.0/m<sup>2</sup> respectively; the highest recorded densities for this site since monitoring began in 1983. These densities are similar to the post 1982/1983 El Niño densities recorded in 1986. Juvenile *Strongylocentrotus* spp. appeared less abundant than last year. *Lytechinus anamesus* were less abundant than last year. They were counted on both quadrats and band transects with densities of 0.5/m<sup>2</sup> and 0.12/m<sup>2</sup> respectively. One *Centrostephanus coronatus* was observed on quadrats this year, 0.042/m<sup>2</sup>. This is the first time *C. coronatus* has been recorded on quadrats, they are extremely rare on Santa Rosa Island. An estimated 10% of the *S. franciscanus* and 5% of the *S. purpuratus* had sea urchin wasting disease on August 1<sup>st</sup>. By August 31<sup>st</sup>, there was a noticeable increase in wasting disease, with an estimated 15-20% of both *S. purpuratus* and *S. franciscanus* showing signs of wasting disease. On August 31<sup>st</sup>, whole fresh *S. franciscanus* tests were common indicating recent mortality.

Sea stars continued to increase in abundance at this site, recovering from their decrease during the 1997/8 El Niño. Their increase is similar to what we observed following the 1982/3 El Niño. *Asterina miniata* density increased for the second year to 0.71/m<sup>2</sup>. *Pisaster giganteus* densities also increased for the second year and were monitored on both quadrats and 5-meter quadrats, with densities of 0.71/m<sup>2</sup> and 0.52/m<sup>2</sup> respectively. These are the highest densities recorded since 1989. *Pycnopodia helianthoides* were relatively abundant at 0.072/m<sup>2</sup>, and most were small. This is the highest density recorded since 1990. As mentioned earlier, *Ophiothrix spiculata* abundance increased. Several *Orthasterias koehleri* (rainbow stars) and one *Dermasterias imbricata* (leather star) were observed along the transect. *Henricia* sp. (blood stars) was common. Similar to past years, *Pisaster brevispinus* (short spined sea star) were relatively abundant along the eastern half of the transect. Similar to past years, large *Parastichopus parvimensis* were present on the western/rocky half of the transect and two were observed in quadrats this year, 0.83/m<sup>2</sup>. No sea star wasting disease was observed.

*Kelletia kelletii* were less abundant than the last several years with a density of 0.0028/m<sup>2</sup>, the lowest density recorded since 1990. Several *Lithopoma gibberosum* were observed along the transect, and one was counted on quadrats, 0.042/m<sup>2</sup>. *Lithopoma undosum* were less abundant than the previous two

years with a density of 0.083/m<sup>2</sup>. *Megathura crenulata* were common on the western/rocky end of the transect with a density of 0.029/m<sup>2</sup>. *Aplysia californica* were noticeably less abundant than last year, and were rare at 0.0028/m<sup>2</sup>. One small live *Haliotis rufescens* measuring 25mm was observed in a crevice during quadrats. Two fresh *H. rufescens* shells about the same size were also observed, indicating some recent recruitment at this site. Mysids were abundant on the bottom.

Similar to previous years, fish were concentrated at the western/rocky end of the transect.

*Semicossyphus pulcher* were noticeably less abundant than usual for this site. Only a few medium sized females and one male were observed on August 1<sup>st</sup>. On August 31<sup>st</sup>, there were no more than two male *S. pulcher* and females were more common than on August 1<sup>st</sup>. Typically, there are many more females and large males observed at this site. Adult *Chromis punctipinnis* were common. Several small (probably two-year-old) *Sebastes miniatus*, vermillion rockfish, were observed. Several *Damalichthys vacca* and *Rhacochilus toxotes* (rubberlip surfperch) were observed off the western end of the transect. Adult *Sebastes mystinus* were common, with about 30 observed on the west end of the transect. Only one juvenile *S. mystinus* was observed on August 1<sup>st</sup>. Adult and juvenile *Embiotoca jacksoni* were common, and several *E. lateralis* were observed. Several large *Paralabrax clathratus* were observed. Several small (probably two-year-old), one juvenile and no adult *S. serriceps* were observed. Several small (probably two-year-old) *S. serranoides* were observed. No juvenile *S. serranoides* were observed this year. Adult *Sebastes atrovirens* were relatively rare for this site, and only one was observed during the roving diver fish count on August 1<sup>st</sup>. *Rathbunella hypoplecta* (stripefin ronquil) were relatively rare along the rocky western half of the transect compared to past years. *Oxylebius pictus* (painted greenlings) were common. No *Alloclinus holderi* were observed this year. Roving diver fish counts were conducted on August 1<sup>st</sup> with three divers observing 19 species, and on August 31<sup>st</sup> with six divers observing 25 species of fish.

The temperature loggers was retrieved and deployed. Both units were recording data within the manufacturer specifications of each other.

### **Location: West of Brockway Point, Santa Rosa Island**

2000 sampling dates: 8/31.

2000 status: Kelp forest with an abundance of *Phragmatopoma californica*, and *Strongylocentrotus purpuratus* barrens.

Latitude: 34 01.957 N

Longitude: 120 06.420 W

We conducted a brief survey dive just off Brockway Point where there was a small patch of *Macrocystis pyrifera* forest. We dove at a depth range of 3 – 13 meters. The outer edge of the kelp forest was at a depth of about 8 meters. From 8 meters to a depth of 13 meters (as far as we swam) the reef was mostly sea urchin barrens dominated by *Strongylocentrotus purpuratus*, but *S. franciscanus* were moderately abundant in patches. Pholads and *Megathura crenulata* were common in these areas. Between the sea urchin barren and the kelp forest, there was a sandy area about 20 meters wide, which appeared to act as a barrier to the sea urchins. At the outer edge of the kelp forest (offshore edge), adult *M. pyrifera* plants were widely spaced and there was a moderate understory of adult and juvenile *Cystoseira sp.* and *Laminaria farlowii*. As we moved further inshore, to a depth of about 10 meters, *Phragmatopoma californica* became abundant. Though *M. pyrifera* was still present, much of the bottom was covered with dense patches of reef forming *P. californica*. This *P. californica* reef continued inshore to a depth of about 3 meters. *Lithopoma undosum* were abundant everywhere, and their large size was very impressive. In shallow, small *Panulirus interruptus* were common in crevices. In the shallow sandy areas, *Olivella biplicata* were common.

### **Location: East Point, Santa Rosa Island**

2000 sampling dates: 9/27

Latitude: 33 56.458                      UTM 0225912

Longitude 119 58.550                      UTM 3759759

A brief survey dive was conducted just off East Point, near the intertidal monitoring site. We anchored at a depth of about 8m in an area that had rocky relief with large sand patches. The rocky bottom where we anchored had patches of *Pachythyone rubra* barrens. Other patches of reef had high coverages of other encrusting invertebrates such as the feather duster worm, *Eudistylia polymorpha*, and moon sponge, *Spheciospongia confoederata*. The anemone, *Anthopleura elegantissima*, was also moderately abundant. In the area around the boat there was some macro algae, but it was not particularly abundant. *Macrocystis pyrifera*, *Eisenia arborea*, *Pterygophora californica*, *Gigartina spp.* and *Cystoseira spp.* were all common, but not notably abundant.

In the shallower areas at about 5m, there were denser patches of *M. pyrifera*, and the tops of the reefs were covered with *Eisenia arborea* and *Cystoseira spp.* There were also large areas of *Phyllospadix spp.* *Strongylocentrotus purpuratus* were moderately abundant and noticeably large in some areas.

In shallow, fish were moderately abundant. Large and small *Semicossyphus pulcher* were common. *Girella nigricans*, *Embiotoca jacksoni*, *Embiotoca lateralis*, *Atherinops affinis*, *Medialuna californica*,

*Damalichthys vacca*, and Cabezon, *Scorpaenichthys marmoratus*, were all common. Several grass rockfish, *Sebastes rastrelliger*, and bat rays, *Myliobatis californica* were observed.

There was a commercial live fish boat working with two small skiffs in the immediate area we were diving. The skiffs cruised right over the heads of at least one diver. They were fishing with Portuguese long lines, mostly in less than 6m, and were possibly targeting grass rockfish, *Sebastes rastrelliger*.

**Location: Potato Patch, midway between Santa Rosa and Santa Cruz Island.**

2000 sampling dates: 9/1

2000 status: "Barren" with no dominating invertebrate

Latitude: 34 00.749 N

Longitude: 120 02.675 W

Since weather conditions were optimal and we had time, we decided to conduct a brief survey dive in the "Potato Patch" midway between Santa Rosa and Santa Cruz Islands. We searched for a dive spot in an area that ranged from 23-33 meters, and anchored at a depth of 23 meters. There was a moderate current. A fisherman was setting crab traps and a long-line several hundred meters away.

Water visibility was clear on the surface and on the bottom, but was murky at a depth of about 12 meters, at a thermocline. Water temperature on the bottom was cold, about 10 °C. The bottom around the anchor was mildly sloping with an occasional one to two foot ledge. Some of the ledges had an abundance of rockfish, usually consisting of *Sebastes miniatus*, *S. mystinus*, *S. carnatus*, and *S. caurinus*, some of which were notably large. *Strongylocentrotus franciscanus* were common but evenly dispersed on the bottom with no aggregations. They ranged in size from small to very large "basketball" size. Understory algae were rare and consisted only of a small amount of the brown alga *Dictyoneuropsis* sp., red algae (*Gigartina* sp.), and encrusting and articulated coralline algae. Much of the bottom was bare substrate. Encrusting invertebrates were common and consisted mostly of sponges (red and yellow volcano sponges, *Tethya aurantia*, *Tetilla arb*, and a large deep-water sponge). *Tetilla arb* were notably abundant. Surprisingly, there were no gorgonians and only a few *Astrangia lajollaensis*, *Balanophyllia elegans* and *Corynactis californica*. *Pisaster giganteus* and *Asterina miniata* were common, and several *Pycnopodia helianthoides* were observed. Only one large *Cancer productus* was observed.

Two old *Haliotis sorenseni* shells were found. These measured 61 and 118mm. From the look of their shell growth, these abalone appeared to be slow growers.

## **Location: Johnson's Lee, Santa Rosa Island**

2000 sampling dates: 8/29.

2000 status: Kelp forest.

Derek Lerma and David Kushner conducted a brief survey dive towards the western end of Johnson's Lee. We were anchored at a depth of about 10 meters. This area consisted of patches of sand and rocky reef. High densities of *Strongylocentrotus purpuratus* and moderate densities of *S. franciscanus* created localized sea urchin barrens, though much of the area was *M. pyrifera* forest. Adult and subadult *M. pyrifera* were common. *Cystoseira* spp. was the most abundant understory alga, but some *Laminaria farlowii*, *Desmarestia* sp., *Pterygophora californica* and *Eisenia arborea* were also present. In shallow, *Phyllospadix* spp. was common. Several *Panulirus interruptus* were observed, but they were uncommon. No live *Haliotis* spp. were observed. *Blepharipoda occidentalis* and *Olivella biplicata* were common, but patchy in the sandy areas.

## **Location: Gull Island South, Santa Cruz Island**

2000 sampling dates: 6/27, 8/2, 8/28.

2000 status: *Strongylocentrotus purpuratus* and *S. franciscanus* barrens.

Overall, this site continued to be dominated by both *Strongylocentrotus purpuratus* and *S. franciscanus*, and is considered barrens. Juvenile *Macrocystis pyrifera* were scattered around the transect, and several small patches of subadults were present and persisted through the summer. Adult, subadult, and juvenile *M. pyrifera* densities were 0.0/m<sup>2</sup>, 0.020/m<sup>2</sup>, and 0.083/m<sup>2</sup> respectively, and covered 1.0% of the bottom. *Macrocystis pyrifera* was less abundant in the surrounding areas of Gull Island than last year. Several adult *Eisenia arborea* were observed in the higher relief areas of the transects, and several juvenile plants were also observed on the tops of rocks. No adult or juvenile *E. arborea* were present in quadrats, and cover was recorded at 1.3% on RPCs. No *Laminaria farlowii* or *Pterygophora californica* were observed this year. Miscellaneous red algae covered 3.7% of the bottom, similar to last year. Miscellaneous plants, usually consisting entirely of brown filamentous diatoms, continued to decline, covering only 0.33% of the bottom. Encrusting coralline algae covered 55.5% of the bottom, similar to past years. Algae combined, not including miscellaneous plants or coralline algae, covered 6.2% of the bottom, similar to last year. Bare substrate cover was 19.0%, the highest since 1989.

On RPCs, the most common miscellaneous invertebrates were Christmas tree worms, *Spirobranchus spinosus*. This category covered 10.0% of the bottom. *Corynactis californica*, *Balanophyllia elegans*, and *Astrangia lajollaensis* covered 8.2%, 2.5% and 3.5% of the bottom. Similar to past years, *Diopatra ornata* were present in the low-lying sandy areas of the transect, but were rare directly along the transect where

they are monitored on RPCs. *Diopatra ornata* cover was 0.17%. *Diaperoecia californica* and miscellaneous bryozoans were rare, combined they covered 1.7% of the bottom. *Stylaster (Allopora) californica* density remained high and was slightly higher than last year at 0.094/m<sup>2</sup>, the highest density recorded for this site. Both large and small *S. californica* colonies were present. *Lophogorgia chilensis* were abundant as usual with a density of 0.10/m<sup>2</sup>, a decrease from last year. *Tethya aurantia* density was 0.021/m<sup>2</sup>.

*Strongylocentrotus purpuratus* continued to increase in density to 82/m<sup>2</sup>, the highest recorded at this site since monitoring began in 1982. *Strongylocentrotus franciscanus* density remained similar to last year at 10.2/m<sup>2</sup>. Juvenile *Strongylocentrotus* spp. were much less common than last year. Similar to previous years, *S. purpuratus* were more abundant on the northern half of the transect. *Lytechinus anamesus* were counted on both quadrats and band transects with densities of 2.9/m<sup>2</sup> and 2.6/m<sup>2</sup> respectively. No sea urchin wasting disease was observed on June 26<sup>th</sup> or August 2<sup>nd</sup>, but it was observed on August 28<sup>th</sup> when we estimated that less than 5% of the *S. purpuratus* showed signs of disease.

*Asterina miniata* density was similar to last year at 0.96/m<sup>2</sup>. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats, with densities of 0.13/m<sup>2</sup> and 0.095/m<sup>2</sup> respectively, similar to last year. No *Pycnopodia helianthoides* were observed along the transect this year. Similar to last year, *Pachythyone rubra* were common on the northern half of the transect. On RPCs, they covered 0.17%. No sea star wasting disease was observed.

*Cypraea spadicea* density increased to 1.33/m<sup>2</sup>. *Lithopoma undosum* density remained relatively high for this site at 1.4/m<sup>2</sup>. *Megathura crenulata* density decreased to 0.11/m<sup>2</sup>. *Kelletia kelletii* density was low at 0.0069/m<sup>2</sup>. *Aplysia californica* density was similar to last year at 0.036/m<sup>2</sup>. *Crassedoma giganteus* density was 0.025/m<sup>2</sup>.

The most noticeable change in the fish population from last year was the relative abundance of two-year-old *Sebastes mystinus*. *Sebastes mystinus* YOY were common, but were not nearly as abundant as in 1999. Two-year-old *S. serranoides* were common and several two-year-old *S. miniatus* were observed, but no YOY of these species were observed this year. Several female, one male, and one large juvenile *Semicossyphus pulcher* were observed. Several *Paralabrax clathratus* and *Sebastes atrovirens* were observed. One *Alloclinus holderi* was observed during each of the roving diver fish counts. *Coryphopterus nicholsii* were moderately abundant in the sandy areas, and their density in quadrats was 0.96/m<sup>2</sup>, similar to last year. Roving diver fish counts were conducted on August 2<sup>nd</sup> with seven divers observing 20 species, and on August 28<sup>th</sup> with six divers observing 22 species of fish.



All 14 ARMs were intact and in good condition. Twelve ARMs were sampled on August 2<sup>nd</sup> and the remaining two on August 28<sup>th</sup>. The ARMs at this site are in three groups along the transect line, one group at each end and a group in the middle. Six ARMs were monitored for all indicator species, two from each group, and the remaining 8 ARMs were monitored for all species except sea urchins. Two *Haliotis corrugata* were found in the ARMs this year; these are the first *Haliotis* sp. found since 1997. These *H. corrugata* were both juveniles, measuring 12mm and 46mm. *Cypraea spadicea* density continued to decrease for the third consecutive year. This year density was 1.93/ARM, about half of last year's and the lowest recorded since we began monitoring the ARMs in 1992. Small *Megathura crenulata* were relatively common with 0.64/ARM. *Crassidoma giganteus* density was 0.86/ARM. *Asterina miniata* density was 3.5/ARM, a increase from last year. *Pisaster giganteus* density also increased, and was recorded at 0.79/ARM. *Pycnopodia helianthoides* were observed for the first time since 1996, and were relatively common in the ARMs at this site; four were observed for a density of 0.29/ARM, the highest recorded since we began monitoring ARMs at this site in 1992. *Strongylocentrotus franciscanus* density decreased 54% to 24.8/ARM, and their mean size increased to 18.3mm. *Strongylocentrotus purpuratus* density also declined, to 82.2/ARM, a decrease of 71% from last year, and their mean size increased to 11.1mm. *Centrostephanus coronatus* density was 0.67/ARM, similar to last year.

The temperature loggers were working properly and all temperature data was successfully downloaded. Both loggers were recording temperatures within specifications of each other.

### **Location: Fry's Harbor, Santa Cruz Island**

2000 sampling dates: 7/20, 7/21, 8/17.

2000 status: Open area with high densities of aggregating red sea cucumbers, *Pachythyone rubra*, *Strongylocentrotus purpuratus* and *Astrangia lajollaensis*.

This site continued to be dominated by echinoderms and is nearly devoid of macroalgae. Both *Pachythyone rubra* and *Strongylocentrotus purpuratus* were noticeably more abundant than last year. *Astrangia lajollaensis* was abundant as usual for this site and covered a significant portion of the bottom.

No macroalgae was observed on quadrats this year, typical for this site. Only one adult *Eisenia arborea* was observed on top of the large boulder at the north end of the transect. Above the transect, adult *E. arborea* were common in the shallow areas. Other than coralline algae, the only algae observed during RPCs was miscellaneous red algae with a cover of 0.5%. Articulated coralline algae were rare with none observed during RPCs. Encrusting coralline algae covered 45.7% of the bottom. Bare substrate covered 12.2% of the bottom.

The most common miscellaneous invertebrates on RPCs were the octocoral, *Clavularia sp.*, the brittle star, *Ophiothrix spiculata*, and Christmas tree worm, *Spirobranchus spinosus*. This category covered 20.3% of the bottom. *Ophiothrix spiculata* appeared more abundant than last year, but was not counted separately on RPCs. Megan Donahue conducted RPCs, and estimated that about 20% of the miscellaneous invertebrates were *O. spiculata*. This translates to a cover estimate of about 4%. *Astrangia lajollaensis* were abundant covering 17.5% of the bottom. *Corynactis californica* and *Balanophyllia elegans* covered 0.5% and 0.16% of the bottom respectively. Miscellaneous bryozoans and *Diaperoecia californica* covered 3.0% and 2.5% of the bottom respectively. *Lophogorgia chilensis* were abundant, but were mostly on the deeper side of the transect. *Lophogorgia chilensis* density was 0.34/m<sup>2</sup>, only slightly higher than last year, but the highest recorded density for this site. Similar to last year, small *L. chilensis* were common.

*Strongylocentrotus franciscanus* and *S. purpuratus* continued to increase in density for the second year. *Strongylocentrotus franciscanus* density was recorded at 7.8/m<sup>2</sup>, the highest density recorded since sampling began at this site in 1982. *Strongylocentrotus purpuratus* density was 32.8/m<sup>2</sup>, also the highest density recorded at this site. *Centrostephanus coronatus* density was 0.17/m<sup>2</sup>, the highest recorded at this site. *Lytechinus anamesus* were relatively abundant for this site and were counted on both quadrats and band transects. Their densities were 2.2/m<sup>2</sup> and 3.1/m<sup>2</sup> respectively. Similar to other sites this year, juvenile *Strongylocentrotus spp.* appeared less abundant than last year. Sea urchin wasting disease was prevalent at this site. An estimated 5% of the *S. purpuratus* were diseased and less than ten individuals of *S. franciscanus* and *L. anamesus* were observed with the disease on July 21<sup>st</sup>. The disease was also observed in these species on August 17<sup>th</sup>.

*Pachythyone rubra* were noticeably more abundant than last year, covering 29.3% of the bottom. They were mostly abundant on the northern third of the transect. As mentioned above, *Ophiothrix spiculata* were more common than last year. *Parastichopus parvimensis* density remained relatively low for this site at a density of 0.25/m<sup>2</sup>. *Pisaster giganteus* were common and most were large. They were counted on both quadrats (0.042/m<sup>2</sup>) and 5-meter quadrats (0.04/m<sup>2</sup>). *Asterina miniata* density continued to increase for the second year to 1.2/m<sup>2</sup>. No sea star wasting disease was observed.

*Cypraea spadicea* density was 0.67/m<sup>2</sup>, similar to last year. *Lithopoma undosum* density continued to increase for the second year and was recorded at 0.88/m<sup>2</sup>. *Kelletia kelletii* density was 0.042/m<sup>2</sup>, and most were large. *Aplysia californica* were rare with a density of 0.0014/m<sup>2</sup>. *Megathura crenulata* density was 0.050/m<sup>2</sup>. No live *Pteria sterna* were observed at this site this year.

Adult *Chromis punctipinnis* were the most abundant fish at this site. On July 20<sup>th</sup>, we observed the first juvenile, YOY *C. punctipinnis* this year, however only three were observed. *Chromis punctipinnis* egg

masses were common in the ARMs and several of the masses had already hatched out. Adult *Paralabrax clathratus* were common, and no juveniles were observed. Several juvenile *Sebastes mystinus* were observed. One small “adult” *S. mystinus* (probably a two-year-old fish) was observed during both roving diver fish counts. Female *Semicossyphus pulcher* were common, one male and no juveniles were observed. Both large and small adult *Damalichthys vacca* were common and several *Rhacochilus toxotes* (rubberlip surfperch) were observed. Adult and juvenile *Oxylebius pictus* were common. Stripefin ronquils, *Rathbunella hypoplecta*, were rare, similar to last year. *Coryphopterus nicholsii* density was similar to last year at 0.88/m<sup>2</sup>. *Alloclinus holderi* were rare, and continued to decrease in density for the second year. Only one *A. holderi* was observed on quadrats for a density of 0.042/m<sup>2</sup>. *Lythrypnus dalli* were common with a density of 0.33/m<sup>2</sup>, noticeably less abundant than last year. *Lythrypnus zebra* were moderately abundant. Roving diver fish counts were conducted on July 20<sup>th</sup> with four divers observing 26 species, and on August 17<sup>th</sup> with six divers observing 27 species of fish.

All seven ARMs were intact and in good condition. Four ARMs were monitored for all indicator species, and three for all except *Strongylocentrotus purpuratus*, *S. franciscanus*, and *Centrostephanus coronatus*. No *Haliotis* spp. were found in the ARMs this year. *Cypraea spadicea* density was 9.7/ARM, similar to previous years. *Megathura crenulata* density was 1.0/ARM, similar to previous years. *Crassedoma giganteum* density was 5.3/ARM, their highest density in the ARMs since 1994. *Asterina miniata* density was 8.6/ARM, similar to the last two years. *Pisaster giganteus* density increased from the previous two years to 1.6/ARM. *Strongylocentrotus purpuratus* density continued to increase for the second year, 116.75/ARM. *Strongylocentrotus franciscanus* density decreased slightly to 42.25/ARM. *Centrostephanus coronatus* density was similar to last year at 0.75/ARM.

The temperature loggers were working properly and all temperature data was successfully downloaded. Both loggers were recording temperatures within specifications of each other.

### **Location: Pelican Bay, Santa Cruz Island**

2000 sampling dates: 8/3, 8/17.

2000 status: *Strongylocentrotus purpuratus* barren.

This site has changed little from last year and remains a *Strongylocentrotus purpuratus* barren. The site was almost completely devoid of macroalgae. *Macrocystis pyrifera*, *Eisenia arborea*, *Pterygophora californica*, *Laminaria farlowii*, *Cystoseira* spp., *Desmarestia* spp., *Gigartina* spp. and *Gelidium* spp. were all absent from this site. Except for a small amount of the red alga *Laurencia pacifica* and brown alga, *Colpomenia* sp. on the tops of rocks, there was no other notable foliose algae at this site. Articulated coralline algae were rare, covering 0.17% of the bottom. Encrusting coralline algae covered 35.8% of the bottom, similar to past years. Miscellaneous plants consisting of brown filamentous diatoms covered

0.5% of the bottom, a decrease from last year. Bare substrate covered 47.0% of the bottom, similar to last year.

Miscellaneous invertebrates on RPCs covered 11.3% of the bottom and consisted mostly of the worms *Spirobranchus spinosus* and terebellids. Barnacles were common, but not as abundant as last year. *Astrangia lajollaensis* covered 11.5% of the bottom, higher than last year, but similar to previous years. *Serpulorbis squamigerus* were relatively abundant on the tops of large rocks, however they are typically rare directly along the transect, covering 0.33% of the bottom. *Diaperoecia californica* were common on the steep sides of large rocks on the inshore side of the transect and other Bryozoans were rare directly along the transect, combined they covered 0.17% of the bottom. *Lophogorgia chilensis* density continued to increase for the third consecutive year. They were abundant with a density of 0.18/m<sup>2</sup>, the highest density recorded since monitoring began at this site.

*Strongylocentrotus purpuratus* dominated the transect with a density of 29.3/m<sup>2</sup>, similar to the past six years. *Strongylocentrotus franciscanus* density remained relatively high at 4.2/m<sup>2</sup>, similar to last year. *Lytechinus anamesus* were abundant along the transect and offshore side. They were counted on both quadrats and band transects with densities of 9.5/m<sup>2</sup> and 4.0/m<sup>2</sup> respectively. *Centrostephanus coronatus* density was 0.083/m<sup>2</sup>. *Strongylocentrotus franciscanus* and *S. purpuratus* were out in the open and not confined to crevices. *Asterina miniata* density was 0.21/m<sup>2</sup>. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats with densities of 0.042/m<sup>2</sup> and 0.015/m<sup>2</sup> respectively. The sea star, *Linckia columbiae*, was common, similar to the last several years. *Parastichopus parvimensis* density was 0.13/m<sup>2</sup>, similar to last year. A few (less than 10) *S. purpuratus* and *L. anamesus* were observed with wasting disease on August 3<sup>rd</sup> and 17<sup>th</sup>. No sea star wasting disease was observed.

*Crassedoma giganteus* density was 0.051/m<sup>2</sup>, similar to last year. *Aplysia californica* were relatively uncommon with a density of 0.0028/m<sup>2</sup>, similar to the last two years. *Lithopoma undosum* density was 0.79/m<sup>2</sup>, similar to last year. *Kelletia kelletii* density was relatively low at 0.0083/m<sup>2</sup>, the lowest since 1987. On August 17<sup>th</sup>, three fresh *Haliotis* spp. shells were found at the entrance of an octopus den. Octopuses appear to be a significant predator of bivalves and gastropods at this site as noted by their dens and association with empty shells. The three fresh *Haliotis* spp. shells consisted of a 19mm *H. fulgens*, and 33mm and 35mm *H. corrugata*. In addition, one old *H. fulgens* shell measuring 37mm was found at the site.

Similar to last year, fish were relatively abundant at this site. In 1999, we observed many small (less than 25 cm) ocean whitefish, *Caulolatilus princeps*. This year these were still abundant on August 3<sup>rd</sup>, but noticeably larger. If they are not the same fish, they, at the least, appear to be from the same age cohort. During our August 17<sup>th</sup> visit, fish appeared less abundant and there were no *C. princeps* observed during

the roving diver fish count. No juvenile *Semicossyphus pulcher* were observed this year. Several small female and one very large male (estimated at greater than 7kg) *S. pulcher* were observed. Several 2-year-old *Sebastes mystinus* and *S. serranoides* were observed. No juveniles of either of these were observed this year. One or two adult and two juvenile *S. serriceps* were observed. Small adult *S. atrovirens* were noticeably abundant on the northern half of the transect. Adult *Embiotoca jacksoni* were relatively abundant, but no juveniles were observed. Several adult *Hypsypops rubicundus* were observed along the transect, but no juveniles. One small juvenile was observed inshore of the transect. *Coryphopterus nicholsii* were abundant with a density of 4.6/m<sup>2</sup>, similar to last year. *Alloclinus holderi* density continued to decline and was recorded at 0.17/m<sup>2</sup>, similar to 1996. *Lythrypnus dalli* were much less abundant than last year with a density of 0.42/m<sup>2</sup>. *Lythrypnus zebra* were common. Roving diver fish counts were conducted on August 3<sup>rd</sup> with seven divers observing 26 species, and on August 17<sup>th</sup> with six divers observing 24 species of fish. In general, fish appeared less abundant during our second visit on August 17<sup>th</sup>.

All six ARMs at this site were intact and sampled for all indicator species. Similar to past years, the ARMs were relatively bare. No *Haliotis spp.* were found in the ARMs. *Cypraea spadicea* density was 5.3/ARM, similar to last year. *Crassidoma giganteum* density decreased for the second consecutive year to 0.83/ARM, while mean size increased, indicating lower recruitment. *Asterina miniata* density was 4.3/ARM, an increase from last year. *Pisaster giganteus* density increased for the second year to 1.3/ARM. *Lytechinus anamesus* remained common at a density of 3.5/ARM. *Strongylocentrotus franciscanus* density decreased slightly to 33/ARM and mean size increased to 25mm. *Strongylocentrotus purpuratus* density remained similar to the past three years at 29/ARM. *Centrostephanus coronatus* density was 1.7/ARM, similar to last year.

The temperature loggers were retrieved, deployed and the temperature data successfully downloaded. The StowAway unit #2916 had several erroneous data points that were deleted. These data points were way below normal readings and when compared with the data from the Hobotemp logger were concluded to be erroneous. The other data points were within company specifications when compared with the Hobotemp loggers, and were used. Temperature data are missing for this site from June 1<sup>st</sup>, 1999 to October 1, 2000 because no temperature logger was installed.

A large boulder, with a transect thread rod that moved several years ago, was realigned with the transect.

### **Location: Scorpion Anchorage, Santa Cruz Island**

2000 sampling dates: 8/4, 8/17.

2000 status: *Strongylocentrotus purpuratus* barrens.

This site continues to be a sea urchin barren, dominated by *Strongylocentrotus purpuratus*. The site is almost completely devoid of macroalgae. The most noticeable macroalgae along the transect was the red alga *Laurencia pacifica*. Miscellaneous red algae covered 3.17% of the bottom and consisted mostly of *L. pacifica*. Green algae covered 1.17% of the bottom. Other than coralline algae, these were the only algae recorded along the transect on RPCs, and no algae was observed on quadrats. Articulated coralline algae was rare, covering 0.5% of the bottom, similar to last year. Encrusting coralline algae covered 50.2% of the bottom, also similar to last year. Miscellaneous plants, consisting of brown filamentous diatoms, covered 10.5% of the bottom. This is a relatively high cover for this category at this site, but similar to last year. Bare substrate covered 15.0% of the bottom, similar to last year.

Miscellaneous invertebrates on RPCs covered 23.7% of the bottom, similar to last year. The most common miscellaneous invertebrates were the Christmas tree worm, *Spirobranchus spinosus*, and the brittle star, *Ophiopsilla* sp.. Although barnacles were common along the transect, they were noticeably less abundant than last year. *Serpulorbis squamigerus* covered 0.67% of the bottom. Bryozoans were uncommon covering 0.17% of the bottom. No *Diaperoecia californica* was present directly along the line where RPCs are conducted, but it was observed on the steep faces of large boulders around the transect. Three *Lophogorgia chilensis* were observed during band transects (0.0042/m<sup>2</sup>), similar to last year. Although *L. chilensis* are rare along the transect, they appear to be more common during the past six years than previous years. *Tethya aurantia* density was 0.033/m<sup>2</sup>.

*Asterina miniata* were more abundant than last year, with a density of 0.17/m<sup>2</sup>. *Pisaster giganteus* were uncommon as usual for this site, with a density of 0.042/m<sup>2</sup>. *Parastichopus parvimensis* density was 0.13/m<sup>2</sup>. *Strongylocentrotus purpuratus* has dominated the site since 1986 with densities between 27-64/m<sup>2</sup>. However, this year density increased over 300% to 103.5/m<sup>2</sup>, the highest recorded at this site since monitoring began in 1982. *Strongylocentrotus franciscanus* density also increased to 2.83/m<sup>2</sup>, the highest recorded since 1987. *Lytechinus anamesus* density was 0.046/m<sup>2</sup> on band transects, similar to last year. *Strongylocentrotus* spp. were out in the open and not confined to crevices. *Centrostephanus coronatus* density continued to decline, and none were observed in quadrats this year, 0.0/m<sup>2</sup>. However, *C. coronatus* were still present at the site. No sea urchin wasting disease was observed on August 4<sup>th</sup>, and only two *S. purpuratus* were observed with wasting disease on August 17<sup>th</sup>.

*Aplysia californica* density was recorded at 0.025/m<sup>2</sup>, similar to last year. *Megathura crenulata* density was 0.025/m<sup>2</sup>, similar to last year. Adult and juvenile *Lithopoma undosum* were abundant with a density of 12.3/m<sup>2</sup>, the highest recorded density for all of the monitoring sites since monitoring began in 1982. *Crassedoma giganteum* were common with a density of 0.093/m<sup>2</sup>. Several *Panulirus interruptus* were

observed around the transect, and two were observed on band transects (0.0028/m<sup>2</sup>). Octopus were abundant at this site, similar to observations at other sites this year.

Although fish are not particularly abundant at this site, there is relatively high diversity for a sea urchin barren. Adult *Chromis punctipinnis*, *Oxyjulis californica*, *Paralabrax clathratus*, female *Halichoeres semicinctus*, *Oxylebius pictus*, adult *Embiotoca jacksoni* and adult *Hypsypops rubicundus* were all common. Several juvenile *C. punctipinnis* were observed on August 17<sup>th</sup>, but not on August 4<sup>th</sup>, these are presumed to have settled between the two visits. Male and female *Semicossyphus pulcher* were rare, and no juveniles were observed. *Coryphopterus nicholsii* were relatively abundant for this site with a density of 1.2/m<sup>2</sup>. *Alloclinus holderi* continued to decline and were rare along the transect with none observed in quadrats this year, 0.0/m<sup>2</sup>. *Lythrypnus dalli* were less abundant than last year, with only one observed along the transect during roving diver fish counts; none were observed in quadrats, 0.0/m<sup>2</sup>. Zebra gobies, *Lythrypnus zebra* were common. Roving diver fish counts were conducted on August 4<sup>th</sup> with six divers observing 25 species, and on August 17<sup>th</sup> with six divers observing 24 species of fish.

All seven ARMs were monitored for all indicator species. Similar to past years, the ARMs were relatively bare with few indicator species in them. *Cypraea spadicea* density was similar to last year at 10.7/ARM. *Lithopoma undosum* continued to increase and had a density of 7.4/ARM. Most were small with a mean size of 31mm. *Crassedoma giganteum* density in the ARMs was 3.1/ARM. *Asterina miniata* remained rare with a density of 0.14/ARM, similar to last year. Similar to past years, no *Pisaster giganteus* were observed in the ARMs. *Strongylocentrotus franciscanus* and *S. purpuratus* increased for the second consecutive year in the ARMs, their densities were 14.9/ARM and 50/ARM respectively. Juveniles of both species were less abundant, and correspondingly, mean size increased. *Centrostephanus coronatus* were less abundant than last year with a density of 0.14/ARM.

The temperature loggers were missing from this site in 1999 and new ones were deployed. As a result temperature data is missing for this report from June 1<sup>st</sup>, 1999 to October 1<sup>st</sup>, 2000.

### **Location: Yellowbanks, Santa Cruz Island**

2000 sampling dates: 6/26, 6/27, 9/25.

2000 status: *Strongylocentrotus purpuratus* barrens.

This site continues to be barren dominated by *Strongylocentrotus purpuratus* and *Lytechinus anamesus*. Other than a few juvenile *Macrocystis pyrifera* plants growing epiphytically on gorgonians, and a few small clumps of the brown algae *Dictyota/Pachydictyon*, the site was devoid of macroalgae. No adult *M. pyrifera*, *Pterygophora californica*, *Eisenia arborea*, *Laminaria farlowii* or *Cystoseira spp.* were present

along the transect. This is the second consecutive year the transect has been devoid of algae. Excluding coralline algae and miscellaneous plants, all algae combined covered only 1.8% of the bottom.

Miscellaneous plants, consisting of filamentous diatoms, continued to decline, covering 2.3% of the bottom. Similar to the last several years, articulated coralline algae was rare, covering 2.2% of the bottom. Encrusting coralline algae covered 48.2% of the bottom, similar to last year. Bare substrate covered 45% of the bottom.

Miscellaneous invertebrates on RPCs covered 7.8% of the bottom. Similar to last year, there were no particular species that composed the majority of this category, but hydroids were one of the most common. The hydroid, *Aglaophenia latirostris*, was common. Bryozoans were rare and none were observed on RPCs this year. *Tethya aurantia* density was 0.046/m<sup>2</sup>. *Tethya aurantia* were easy to see due to the lack of algae and silt that has been present in past years. *Lophogorgia chilensis* were the most abundant of the gorgonians, with a density of 0.060/m<sup>2</sup>. *Muricea californica* and *M. fruticosa* densities were 0.019/m<sup>2</sup> and 0.0042/m<sup>2</sup> respectively, similar to past years. Tunicates and sponges were rare, covering 0.33% and 0.17% of the bottom respectively.

Both *Strongylocentrotus franciscanus* and *S. purpuratus* densities increased from last year to 4.5/m<sup>2</sup> and 32.2/m<sup>2</sup> respectively. These were the highest recorded densities for these species since monitoring began at this site in 1986. Most of the *S. purpuratus* and *S. franciscanus* were out in the open, however many of the small *S. purpuratus* were in small cracks or irregularities in the rock. *Centrostephanus coronatus* were common in the rocky areas with a density of 0.17/m<sup>2</sup>. *Lytechinus anamesus* were relatively abundant and were counted on both quadrats and band transects. Their densities were 25.6/m<sup>2</sup> and 22.5/m<sup>2</sup> respectively. On June 26<sup>th</sup>, many of the *S. purpuratus* were in varying stages of sea urchin wasting disease, and whole tests were common, indicating recent mortality. Several *S. franciscanus* were also observed with varying degrees of wasting disease. On September 25<sup>th</sup>, many *S. purpuratus*, a moderate number of *S. franciscanus* and several *L. anamesus* were observed with sea urchin wasting disease.

*Pisaster giganteus* were rare, with densities similar to last year. Densities on quadrats and 5-meter quadrats were 0.0/m<sup>2</sup> and 0.025/m<sup>2</sup> respectively. *Asterina miniata* density was 0.13/m<sup>2</sup>. *Parastichopus parvimensis* were common with a density of 0.38/m<sup>2</sup>. No sea star wasting disease was observed this year.

*Lithopoma undosum* density continued to increase for the second year, and was again recorded at its highest density for this site at 3.5/m<sup>2</sup>. Large *L. undosum* were common, though most of the population consisted of small (<25mm) juveniles. Small *L. undosum* were difficult to see, but observers on quadrats were careful not to miss them. *Kelletia kelletii* were relatively rare for this site with a density of 0.018/m<sup>2</sup>, the lowest since



1989. *Megathura crenulata* and *Crassedoma giganteum* densities were 0.0056/m<sup>2</sup> and 0.0056/m<sup>2</sup> respectively. Mysids were abundant along the bottom of the entire transect, which is unusual for this site.

No live *Haliotis* spp. were observed during band transects, and none, other than those found in the ARMS (see below), were observed anywhere along the transect. In addition to the juvenile abalone found in the ARMS, we also found two small fresh shells. The shells were identified by Buzz Owen, an abalone specialist confirming what we had thought. One was a *Haliotis sorenseni*, measuring 30mm, and the other was a threaded abalone, *Haliotis assimilis kamtschatkana*, measuring 27mm. This is the first fresh *H. assimilis kamtschatkana* shell we have observed in well over a decade. As well, no live *H. assimilis kamtschatkana* have been observed in at least this long. Including the live *Haliotis* spp. found in the ARMS and shell previously mentioned, a total of five species of *Haliotis* were observed at this site in 2000.

Fish diversity and abundance were noticeably lower than last year. *Coryphopterus nicholsii* were the most abundant fish at the site. *Coryphopterus nicholsii* increased in density for the second year and were recorded at 2.3/m<sup>2</sup>, the highest density ever recorded at this site. Adult *Paralabrax clathratus* and adult *Chromis punctipinnis* were common, and no juveniles of either species were observed. One *Sebastes atrovirens* and one juvenile *S. serriceps* were observed. *Sebastes miniatus* were common and noticeably larger than last year, but still with juvenile coloration, 19 juveniles were counted by David Kushner on the June 26<sup>th</sup> roving diver fish count. No *S. mystinus* were observed this year. No *Hypsypops rubicundus* were observed. *Alloclinus holderi* were rare, with a density of 0.042/m<sup>2</sup>. Small female *Semicossyphus pulcher* were common, and no juveniles or males were observed. No *Oxyjulis californica* were observed. Male *Halichoeres semicinctus* were common and only one female was observed on June 26<sup>th</sup>. *Lythrypnus dalli* were common under the ledge that parallels the transect; David Kushner counted 11 under the ledge, similar to last year. Several *Embiotoca jacksoni* and *Damalichthys vacca* were observed. *Oxylebius pictus* were common. Roving diver fish counts were conducted on June 26<sup>th</sup> with four divers observing 13 species, and on August 17<sup>th</sup> with three divers observing 16 species of fish.

The ARMs in the middle and west end of the transect were sampled on July 17<sup>th</sup>, and the remaining ARMs sampled on September 25<sup>th</sup>. All 15 ARMs along the transect were monitored for all indicator species, and the three ARMs east of the east end of the transect were monitored for only *Haliotis* spp.. The 15 ARMs along the transect are in three groups of five at the east, middle and west ends of the transect. These ARMs were in good condition, but the three ARMs east of the east end of the transect were in poor condition.

Four species of juvenile *Haliotis* spp. were found in the ARMs this year. Two juvenile *Haliotis sorenseni* were found in ARM#2364 measuring 32 and 38mm. These juvenile *H. sorenseni* were the first found since the kelp forest monitoring project began in 1982. Both of the *H. sorenseni* had a distinct orange

band on their shell. One small (15mm) *H. rufescens* and six small (all less than 37mm) *H. corrugata* were found in the 18 ARMs sampled for *Haliotis* spp.. One small (23mm) *H. fulgens* was found in an ARM, the first of this species observed in the ARMs at this site since we began monitoring them in 1992. *Cypraea spadicea* decline in density over the previous five years ended. Density was 1.53/ARM this year and remains relatively low for this site. *Crassedoma giganteus* density was unchanged from last year, 1.07/ARM. *Asterina miniata* density was higher than last year at 5.47/ARM; the highest recorded for this site. *Pisaster giganteus* density continued to decline and was recorded at 0.13/ARM, the lowest density at this site since we began monitoring ARMs in 1982. Four *Pycnopodia helianthoides* were found in the ARMs, 0.27/ARM. This is the first time *P. helianthoides* was observed in the ARMs at this site. *Lytechinus anamesus* density was lower than last year, but remained relatively abundant in the ARMs at 14.7/ARM. *Strongylocentrotus franciscanus* density in the ARMs was 33.2/ARM, similar to the last four years. Only 17% were less than 15mm, compared to 84% in 1999, indicating lower recruitment. *Strongylocentrotus purpuratus* density decreased drastically to 28.0/ARM, down from 335.20/ARM in 1999. Mean size increased to 16.6mm and the percent less than 15mm decreased to 50.5%, indicating lower recruitment than in 1999. *Centrostephanus coronatus* decreased to 0.27/ARM.

The temperature loggers was retrieved and deployed. Both units were recording data within the manufacturer specifications of each other.

### **Location: Arch point, Santa Cruz Island**

2000 sampling dates: 9/27.

Latitude: 34 03.532                      UTM 0240916

Longitude 119 48.422                    UTM 3772239

A brief survey dive was conducted, and Don Canestro collected four *Girella nigricans* and one *Embiotoca lateralis*. The fish were to be used for genetic analysis and comparison to other populations within California.

We anchored in sand at a depth of 10m. Several small patch reefs with *Macrocystis pyrifera* and *Eisenia arborea* were present. Most of the rocky habitat was inshore. Here, *M. pyrifera* was abundant in patches and *E. arborea* was common in the shallower areas. A moderate amount of *Egorgia menziesii* was present, but it was also patchy.

*Pachythyone rubra* were abundant in patches, but not widespread over the entire area. *Phragmatopoma californica* were abundant in patches. *Balanus* spp. were abundant in shallow areas, about 5m and shallower. *Crassedoma giganteus* were moderately abundant. Adult and juvenile *Embiotoca jacksoni*

and adult *Girella nigricans* were abundant. *Damalichthys vacca* and adult *Paralabrax clathratus* were common. Several young-of-year *P. clathratus* were observed. Several two-year-old *Sebastes serranoides* and several young-of-year *Sebastes mystinus* were observed. Several harbor seals watched us during the dive.

**Location: Yellowbanks (not the monitoring site), Santa Cruz Island**

2000 sampling dates: 9/28.

Latitude: 33 59.163

Longitude: 119 33.232

We conducted a brief survey dive almost directly offshore (approximately one third of a mile south) of the monitoring site at a depth of 23-30 meters to search for white abalone, *Haliotis sorenseni*. Having found two to three juvenile *H. sorenseni* at the monitoring site, we thought it would be worthwhile to search deeper areas nearby. This was a large rocky area, with a moderate amount of relief, surrounded by sand.

The most abundant macroalgae were patches of *Eisenia arborea* and *Cystoseira* spp.. Small patches of *M. pyrifera* plants were also present, but there was no elk kelp, *Pelagophycus porra*. Encrusting coralline algae were abundant and articulated coralline were common on the tops of ledges. *Strongylocentrotus franciscanus* were the most dominant sea urchin; these were patchy and often in small sea urchin "fronts". The *S. franciscanus* were not particularly large, and most were estimated to be well under the commercial legal size limit of 83mm. *Strongylocentrotus purpuratus* were common and *Lytechinus anamesus* were moderately abundant and mostly in the sandy areas. *Asterina Miniata* and the red sea star, *Mediaster aequalis*, were both common.

*Paracyathus sterna* were relatively abundant and the most common cup coral. *Balanophyllia elegans* were uncommon. *Lophogorgia chilensis* were common on the steeper drop-offs. *Diaperoecia californica* were abundant. Large *Lithopoma undosum* and *Kelletia kelletii* were common. Four old *H. sorenseni* shells were found and measured 110, 142, 146, and 159mm. Old *Haliotis corrugata* shells were common and several old *H. rufescens* shells were also observed. Small *Panulirus interruptus* were common under ledges, but only one was estimated to be of legal size.

*Chromis punctipinnis* and *Oxyjulis californica* were the most abundant fish. Adult *Sebastes atrovirens*, two-year-old *Sebastes serranoides*, two-year-old vermillion rockfish (*Sebastes miniatus*), juvenile *Sebastes serriceps*, *Paralabrax clathratus*, female *Semicossyphus pulcher*, *Damalichthys vacca*, and rubberlip surfperch (*Rhacochilus toxotes*) were all common. A dead Angel shark (*Squatina californica*) was present on the bottom.

**Location: West Cove, Santa Cruz Island**

2000 sampling dates: 9/1.

2000 status: Kelp forest and *Strongylocentrotus purpuratus* barrens.

We conducted a brief survey dive in the kelp forests just offshore of the Frazer Cove intertidal monitoring site. Overall, high densities of *Strongylocentrotus purpuratus* dominated this area. However, there were patches of canopy forming *Macrocystis pyrifera* with moderate understory algae. In shallow, patches of canopy forming *Egregia menziesii* were also common. Most of the understory algae consisted of *Gigartina* sp., *Laminaria farlowii* and *Cystoseira* sp.. *Phyllospadix taylori* was common in the shallower depths less than 6 meters. The red algae, *Laurencia pacifica*, was moderately abundant in the sea urchin barrens.

Sea urchin wasting disease was common in the high density *Strongylocentrotus purpuratus* areas. Diseased sea urchins were patchy in distribution, and in some areas, 25% of the *S. purpuratus* showed signs of disease. Whole *S. purpuratus* tests were common indicating recent mortality. *Strongylocentrotus franciscanus* were moderately abundant. We observed between 3-5 live *Haliotis rufescens* (it was unclear if observers were observing the same abalone). Small fresh *H. rufescens* shells were moderately abundant and were collected and measured. Their measurements are listed here: fresh shells - 28, 28, 32, 43, 47, and 52mm and older shells - 27, 39, 39, 45, 47, and 87mm. Female *Semicossyphus pulcher*, *Sebastes atrovirens*, *Girella nigricans*, *Embiotoca jacksoni* and *Embiotoca lateralis* were all common.

There was a live-fish fisherman observed in the cove. He was using a skiff to fish Portuguese long lines, right next to shore, probably at a depth less than 10 meters.

**Location: Admiral's Reef, Anacapa Island**

2000 sampling dates: 6/15, 8/14.

2000 status: *Strongylocentrotus purpuratus*, *S. franciscanus*, and *Ophiothrix spiculata* (brittle star) barrens.

This site was an echinoderm barren, dominated by *Strongylocentrotus purpuratus*, *S. franciscanus*, and *Ophiothrix spiculata*. Macroalgae was rare along the transect, though several juvenile and subadult *Macrocystis pyrifera* were observed on top of large rocks. Adult, subadult, and juvenile densities were 0.0/m<sup>2</sup>, 0.0/m<sup>2</sup>, and 0.083/m<sup>2</sup> respectively, and recorded at 0.0% cover on RPCs. *Eisenia arborea* continued to decline, with several juveniles observed on the tops of rocks, and none observed in

quadrats. No adult *E. arborea*, *Pterygophora californica*, *Laminaria farlowii* or *Cystoseira* spp. were observed along the transect. *Agarum fimbriatum* was also absent from the site. Small patches of *Dictyota/Pachydictyon* were common around the transect. Miscellaneous red algae covered 6.2% of the bottom and consisted mostly of the foliose alga, *Laurencia pacifica*. Other plants, mostly filamentous brown diatoms, covered 1.3% of the bottom, a notable decrease from last year. Articulated and encrusting coralline algae covered 0.17% and 33% of the bottom respectively. Bare substrate composed 44% of the bottom, an increase from last year.

The kelp forest located just inshore of the transect on top of the reef continued to decrease in algal cover; with noticeably less *M. pyrifera* and understory algae. Patches of *Gelidium purpurescens* and *E. arborea* were present, but were not as abundant as in 1999. Similar to last year, both *S. franciscanus* and *S. purpuratus* dominated most of the area on the upper reef. High densities of both *S. franciscanus* and *S. purpuratus* were surrounding the few remaining adult *M. pyrifera* plants.

Miscellaneous invertebrates covered 45.7% of the bottom. The most common miscellaneous invertebrates encountered on RPCs were *Ophiothrix spiculata* and *Spirobranchus spinosus*. *Ophiothrix spiculata* was counted separately and covered 30.3% of the bottom. The cover of *O. spiculata* was noticeably higher than last year. Similar to past years, *Eugorgia rubens* was relatively abundant along the transect, however it appeared less abundant than last year. *Lophogorgia chilensis* also appeared less abundant and was recorded at about 50% of its 1999 density. *Lophogorgia chilensis*, *Muricea fruticosa*, and *M. californica* densities were 0.076/m<sup>2</sup>, 0.0028/m<sup>2</sup> and 0.033/m<sup>2</sup> respectively. *Corynactis californica* noticeably increased and appeared unusually large and healthy. *Corynactis californica* covered 6.2% of the bottom, their highest cover recorded at this site since monitoring began in 1982. *Astrangia lajollaensis* covered 2.2% of the bottom. Bryozoans were relatively uncommon, covering only 0.5% of the bottom, their lowest cover recorded at this site. The worms, *Dodecaceria fewkesi*, were common. The anemone, *Telia coriacea*, were noticeably abundant in the deeper areas of the transect.

Echinoderms dominated the site; *Strongylocentrotus purpuratus* and *Ophiothrix spiculata* dominated the eastern two thirds of the transect, and *S. franciscanus* dominated the western third. *Strongylocentrotus franciscanus* density was similar to past years at 8.0/m<sup>2</sup>. Though similar to last year, *S. purpuratus* density increased to 78/m<sup>2</sup>, the highest density recorded at this site since monitoring began. Many of the *S. purpuratus* counted in quadrats were small, approximately 15 mm. Smaller *S. purpuratus* (<10mm) were abundant in patches, indicating recent recruitment. *Ophiothrix spiculata* abundance notably increased from last year and covered 30% of the bottom. *Lytechinus anamesus* density was similar to last year at 1.1/m<sup>2</sup> on band transects. Only one of the quadrat observers counted *L. anamesus* finding 22 in the 12 1/m<sup>2</sup> quadrats, for a density of 1.8/m<sup>2</sup>. This data was could not be entered because it wasn't a complete set of data. *Centrostephanus coronatus* decreased in density to 0.92/m<sup>2</sup>. On June 15<sup>th</sup>, we

observed about 5% of the *S. franciscanus*, a few *S. purpuratus*, and a few *L. anamesus* with wasting disease. On August 14<sup>th</sup> sea urchin wasting disease was commonly observed in *S. franciscanus*, *S. purpuratus*, and a few *L. anamesus*. Some of the *S. franciscanus* had few to no spines, these were assumed to be diseased and near death.

Similar to previous years, *Pisaster giganteus* continued to be rare, with none observed in quadrats and only two observed in 5-meter quadrats (0.01/m<sup>2</sup>). *Asterina miniata* (0.42/m<sup>2</sup>) was more abundant than the previous two years. *Parastichopus parvimensis* density was recorded at 0.46/m<sup>2</sup>. No sea star wasting disease was observed this year.

*Crassedoma giganteus* density was 0.12/m<sup>2</sup>, and they were more common on the steep inshore side of the transect. *Megathura crenulata* was more abundant than in the past several years at a density of 0.024/m<sup>2</sup>. *Aplysia californica* density was similar to last year at 0.051/m<sup>2</sup>. *Kelletia kelletii* density was 0.024/m<sup>2</sup>. No *Haliotis corrugata* were observed during band transects, but two were found around the transect. These measured 71mm and 140mm. No *Panulirus interruptus* were found during band transects, and none were observed elsewhere along the transect on June 15<sup>th</sup>. The Pacific wing oyster, *Pteria sterna*, was common growing on *Eugorgia rubens* and *Lophogorgia chilensis*. There were notably fewer *P. sterna* than last year, but ones that were present were larger. Several fresh *P. sterna* shells were observed, indicating recent mortality. Some of the *P. sterna* were so large that they dwarfed the small *E. rubens* that they were attached to.

Fish continued to decline in both abundance and diversity at this site. Adult *Chromis punctipinnis* were abundant and large. Several juvenile *C. punctipinnis* were observed on August 14<sup>th</sup>. Only one *Sebastes mystinus* was observed and appeared to be from last year's recruitment, or a two-year-old fish. Only one juvenile *S. miniatus* was observed on June 15<sup>th</sup>, however it was not observed during the roving diver fish count. Adult *Sebastes serriceps* were less common than last year; two adults and no juveniles were observed on June 15<sup>th</sup>. Small female *Semicossyphus pulcher* were common, one juvenile and no males were observed. No *Oxyjulis californica* were observed on June 15<sup>th</sup>. Only one female *Halichoeres semicinctus* was observed and no males were observed. *Oxylebius pictus* were common. *Paralabrax clathratus* were relatively rare. Several *Hypsypops rubicundus* were observed. *Coryphopterus nicholsii* density increased for the second consecutive year. This year's density was 2.3/m<sup>2</sup>; the highest recorded since 1988 at this site. *Alloclinus holderi* noticeably declined in density to 0.17/m<sup>2</sup>. Roving diver fish counts were conducted on June 15<sup>th</sup> with four divers observing 16 species, and on August 14<sup>th</sup> with four divers observing 17 species of fish.

Six ARMs were intact at this site. Five ARMs were sampled for all indicator species, and one for all but sea urchins. Similar to past years, no *Haliotis* spp. were observed in the ARMs. *Cypraea spadicea*

abundance continued to decrease for the second year and was recorded at 0.83/ARM, the lowest recorded in the ARMs at this site. Similar to previous years, several small *Megathura crenulata* were found in the ARMs, 0.67/ARM. *Crassedoma giganteum* abundance was lower than last year with 1.7/ARM. *Asterina miniata* density increased and were abundant at 15/ARM. *Pisaster giganteus* were uncommon with only one found in the six ARMs (0.17/ARM). *Lytechinus anamesus* were relatively abundant with 9.4/ARM, the highest density recorded for the ARMs at this site. *Strongylocentrotus franciscanus* decreased to 23.8/ARM, about half of its 1999 density. *Strongylocentrotus purpuratus* also decreased considerably to 134/ARM. In 1999, their density was 484/ARM. The mean size of both *S. purpuratus* and *S. franciscanus* increased from 1999. *Centrostephanus coronatus* density was slightly lower than last year with 3.2/ARM. One *Arbacia incisa*, measuring 35mm, was found in an ARM #2442. This was possibly the same *A. incisa* that was observed in the same ARM measuring 25mm in 1999.

The temperature loggers were retrieved and deployed. Both units were recording data within the manufacturer specifications of each other.

### **Location: Cathedral Cove, Anacapa Island**

2000 sampling dates: 6/16, 6/30, 9/28.

2000 status: Mature kelp forest.

*Macrocystis pyrifera* canopy cover was estimated at 75% over the transect on June 16th, higher than last year. This site had noticeably more macroalgae than in 1999. Adult, subadult, and juvenile *M. pyrifera* densities were 0.17/m<sup>2</sup>, 0.32/m<sup>2</sup>, and 5.9/m<sup>2</sup> respectively, and bottom cover was 9.8%. The densities of adults and juveniles were both large increases, while subadult density and cover decreased from last year. Adult and juvenile *Laminaria farlowii* densities were 0.13/m<sup>2</sup> and 2.4 /m<sup>2</sup> respectively, and cover was recorded at 3.3%. All measures of *L. farlowii* were increases from last year. Several juvenile *Eisenia arborea* were observed along the transect, but none were observed in quadrats. *Cystoseira* spp. covered 5.8% of the bottom, similar to last year, and juvenile plants were common. *Coilodesme* sp. was observed growing on *Cystoseira* spp. Miscellaneous brown algae (mostly *Dictyota/Pachydictyon*) covered 14% of the bottom, a decrease from last year. Miscellaneous plants, consisting entirely of the filamentous brown diatoms, covered 2.2% of the bottom, a large decrease from the last two years and similar to previous years. Articulated and encrusting coralline algae covered 20% and 50% of the bottom, respectively. Bare substrate covered 23% of the bottom, an increase from last year and similar to years previous.

Miscellaneous invertebrates covered 20% of the bottom. Similar to past years, the most common miscellaneous invertebrates on RPCs were *Spirobranchus spinosus*, but there were also a moderate number of hydroids, mostly *Aglaophenia latirostris*. Bryozoans continued to increase for the second year and were noticeably more abundant than last year. Bryozoans combined covered 14.2% of the bottom.

Gorgonians were rare at this site, but were abundant just north of the site, around the point, where there is typically more current. Similar to last year, one *Lophogorgia chilensis* was observed on band transects ( $0.0014/\text{m}^2$ ). Gamarid amphipods were abundant on the *M. pyrifera* stipes.

*Strongylocentrotus franciscanus* and *S. purpuratus* densities were  $4.0/\text{m}^2$  and  $2.7/\text{m}^2$  respectively, similar to past years. Small high density patches of *S. franciscanus* were scattered around the transect, and these urchins were often actively feeding on *M. pyrifera* holdfasts. *Centrostephanus coronatus* were relatively common for this site with a density of  $0.21/\text{m}^2$ , the same as 1999. Emergent *Asterina miniata* were noticeably more abundant than past years with a density of  $0.38/\text{m}^2$ , the highest density recorded at this site since monitoring began in 1982. *Pisaster giganteus* were rare, but more common than last year. They were counted in 1-meter and 5-meter quadrats with densities of  $0.082/\text{m}^2$  and  $0.02/\text{m}^2$  respectively. *Parastichopus parvimensis* density was similar to the past several years at  $1.6/\text{m}^2$ .

Adult and juvenile *Lithopoma undosum* were abundant with a density of  $6.9/\text{m}^2$ , a decrease from last years highest recorded density for this site. *Crassidoma giganteum* were abundant along the steep areas on the inshore side of the transect and had an overall density of  $0.12/\text{m}^2$ , similar to past years. *Aplysia californica* density was  $0.014/\text{m}^2$ , similar to last year. Several large *A. vaccaria* were observed along the transect, similar to the past several years. Two *Haliotis corrugata* were observed on band transects ( $0.0028/\text{m}^2$ ). A total of four *H. corrugata* were found and measured along the transect and one fresh *H. corrugata* shell was found on June 16<sup>th</sup>. *Panulirus interruptus* density remained relatively low for this site at  $0.0069/\text{m}^2$ , the same as 1999. Gamarid amphipods were abundant in the kelp stipes, and were noticed while conducting *Macrocystis pyrifera* size frequencies.

Fish were abundant and diverse as usual for this site. *Girella nigricans*, *Paralabrax clathratus*, adult *Chromis punctipinnis*, adult and juvenile *Embiotoca jacksoni*, adult and juvenile *Hypsypops rubicundus*, and female *Semicossyphus pulcher* were all common along the transect. One male and one juvenile *S. pulcher* were observed. At least one tagged *Hypsypops rubicundus* and over ten juveniles were observed this year. Male *Halichoeres semicinctus* were abundant and females were common. Small adult *Sebastes atrovirens* were common and appeared to be 2-3 years old, large adults were rare. No juvenile *S. serranoides* were observed, but two-year-olds were relatively abundant near the kelp canopy. Only one adult *S. serriceps* was observed, however juveniles were abundant. David Kushner counted 26 during the roving diver fish count, and noted that these were more abundant than he has ever observed. *Coryphopterus nicholsii* were noticeably more abundant than last year, but were mostly along the rock/sand interface and not directly along the transect where they are counted on quadrats. *Coryphopterus nicholsii* density was  $0.17/\text{m}^2$ . *Alloclinus holderi* were moderately abundant, but density continued to decrease for the second year and was recorded at  $0.63/\text{m}^2$ . On June 16<sup>th</sup>, two juvenile giant black sea bass, *Stereolepis gigas*, were observed. The roving diver fish counts were conducted on June



30<sup>th</sup> with six divers observing 24 species, and on September 28<sup>th</sup> with seven divers observing 27 species of fish.

The ARMs were all intact and in good condition. Three ARMs were monitored for all indicator species, and four for all indicator species but *Strongylocentrotus purpuratus* and *S. franciscanus*. Two small (21mm and 23mm) *Haliotis corrugata* were found this year, a density of 0.29/ARM. Similar to past years, *Cypraea spadicea* density was high with 11.29/ARM. *Crassedoma giganteum* density was 3.29/ARM, similar to last year. *Asterina miniata* density was 9.43/ARM, similar to last year. *Pisaster giganteus* density was also similar to last year at 1.57/ARM. *Strongylocentrotus franciscanus* and *S. purpuratus* continued to increase in the ARMs for the second consecutive year. However, their rate of increase has declined. Their densities were 94.67/ARM and 204.67/ARM respectively. *Centrostephanus coronatus* abundance decreased to 0.86/ARM, similar to what we have observed at other sites.

The temperature loggers was retrieved and deployed. Both units were recording data within the manufacturer specifications of each other.

### **Location: Landing Cove, Anacapa Island**

2000 sampling dates: 6/30, 7/31, 8/18.

2000 status: Sparse kelp forest.

Canopy cover of *Macrocystis pyrifera* was higher than last year and was estimated to cover 35% of the transect on July 31st. Low canopy cover is common for this site and was probably a result of high boat traffic which is common in the Cove. Adult, subadult, and juvenile *M. pyrifera* densities were 0.065/m<sup>2</sup>, 0.93/m<sup>2</sup>, and 4.29/m<sup>2</sup> respectively, and covered 14% of the bottom. Overall, densities were similar to last year. Understory algae were abundant on the top of the reef at the east end of the transect, and along the middle, but towards the west end of the transect, there was little understory algae. Understory brown algae was patchy, but more abundant than last year. Adult and juvenile *Eisenia arborea*, *Pterygophora californica* and *Laminaria farlowii* all had higher densities than last year. Adult and juvenile *E. arborea* densities were 1.0/m<sup>2</sup> and 0.96/m<sup>2</sup> respectively. Adult and juvenile *P. californica* densities were 0.17/m<sup>2</sup> and 1.29/m<sup>2</sup> respectively. Adult and juvenile *L. farlowii* densities were 1.58/m<sup>2</sup> and 13.0/m<sup>2</sup> respectively. Adults and juveniles combined for *P. californica* and *L. farlowii* were the highest densities recorded for these algae since monitoring began in 1982. Miscellaneous brown algae covered 7.5% of the bottom. *Cystoseira* spp. covered 4.8% of the bottom. *Gelidium* spp. cover was 17.4% and as usual was mostly on the top of the reef at the eastern end of the transect. Miscellaneous plants continued to decline for the second year, and covered only 0.83% of the bottom. Articulated coralline algae covered 11.8% of the bottom. Encrusting coralline algae

decreased to cover 38.2% of the bottom. This cover is similar to past years, but a decline from the previous two years. Bare substrate covered 20.8% of the bottom, higher than last year.

Miscellaneous invertebrates covered 14% of the bottom and consisted mostly of hydroids and the Christmas tree worm, *Spirobranchus spinosus*. Bryozoans combined covered 14.0% of the bottom, similar to last year. Bryozoans were common covering the *Gelidium purpurescens*, similar to past years. Tunicates, sponges, and *Corynactis californica* were mostly on the shallow/eastern end of the transect, and covered 3.0%, 3.5%, and 3.7% respectively.

Emergent *Asterina miniata* and *Pisaster giganteus* were rare as usual for this site. No *A. miniata* were observed on quadrats this year. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats with densities of 0.042/m<sup>2</sup> and 0.0/m<sup>2</sup> respectively. Since 5-meter quadrats cover all of the transect and out one meter, the only way to explain the one *P. giganteus* observed on Quadrats and not 5-meter quadrats is that these protocols are not conducted simultaneously or one of the observers did not see the *P. giganteus*. *Strongylocentrotus franciscanus* density was similar to past years at 3.3/m<sup>2</sup>. *Strongylocentrotus purpuratus* density was 4.0/m<sup>2</sup>, the highest recorded density for this site. *Strongylocentrotus purpuratus* were patchy, as reflected by a high standard deviation. *Centrostephanus coronatus* were common on the shallow reef on the eastern part of the transect. *Centrostephanus coronatus* density was 0.13/m<sup>2</sup>, similar to last year. *Parastichopus parvimensis* density was 0.79/m<sup>2</sup>, similar to previous years. No sea star wasting disease or sea urchin wasting disease was observed at this site this year.

Large and small *Lithopoma undosum* were relatively abundant, with a density of 2.6/m<sup>2</sup>, similar to last year. *Crassidoma giganteum* were abundant along the vertical walls as usual for this site; their density was 0.27/m<sup>2</sup>. *Aplysia californica* were rare, with only one observed during band transects, 0.0014/ m<sup>2</sup>. *Haliotis corrugata* density continued to decline. None were counted during band transects (0.0/m<sup>2</sup>), and this is the lowest density recorded at this site since monitoring began in 1982. A good search effort was made for *H. corrugata* size frequency measurements within the transect area, and only two abalone were found. No fresh shells were found, and there were few old shells.

Adult *Chromis punctipinnis*, adult and large juvenile *Hypsypops rubicundus*, adult *Paralabrax clathratus*, adult *Medialuna californiensis*, male and female *Halichoeres semicinctus*, and adult *Girella nigricans* were all common, especially on top of the reef at the eastern end of the transect. One juvenile *P. clathratus* was observed. About 10 juvenile *C. punctipinnis* were observed on July 31<sup>st</sup>. Several female, one large juvenile, and one male *Semicossyphus pulcher* were observed. About 10 adult and 25 juvenile *Oxyjulis californica* were observed. *Oxylebius pictus* were common. No juvenile *Sebastes serranoides* were observed, but one two-year-old was observed along the transect. In the underwater arch, about 30

meters east of the transect, we estimated about 100 two-year-old *S. serranoides* on the bottom and top of the inside part of the arch. *Sebastes atrovirens* and *S. mystinus* were rare, with only one of each observed on the roving diver fish count on June 30<sup>th</sup>. Only one juvenile and one adult *S. serriceps* were observed. Juvenile *Heterostichus rostratus* were common in the *Macrocystis pyrifera* canopy. *Lythrypnus dalli* were common, and *Lythrypnus zebra* were relatively abundant along the wall, several meters from the transect line. However no *L. dalli* were observed directly along the transect where they are counted on quadrats. Roving diver fish counts were conducted on June 30<sup>th</sup> with six divers observing 25 species, and on July 31<sup>st</sup> with six divers observing 23 species.

All seven ARMs were in good condition and had moved little during the past year. Three ARMs were monitored for all indicator species, and four for all but *Lytechinus anamesus*, *Strongylocentrotus purpuratus*, and *S. franciscanus*. No *Haliotis* spp. were found in the ARMs this year. *Cypraea spadicea* density was 4.86/ARM, similar to previous years. *Crassidoma giganteum* density was similar to the past several years at 2.0/ARM. *Asterina miniata* continued to increase in the ARMs and were abundant with 17.9/ARM, the highest density recorded at this site. Most of the *A. miniata* were small with a mean size of 17.9mm. *Pisaster giganteus* density was similar to last year at 1.71/ARM. *Strongylocentrotus franciscanus* declined slightly from last year, but remained high at 101.3/ARM. Mean size increased from 28.9mm, and there was a lower percentage (28.3%) less than 15mm. *Strongylocentrotus purpuratus* density continued to increase to 296.7/ARM, while mean size remained almost the same as last year. This density was similar to 1995. *Centrostephanus coronatus* density decreased considerably to 1.0/ARM.

The temperature loggers were retrieved and deployed. Both units were recording data within the manufacturer specifications of each other.

### **Location: Abalone Haven, Anacapa Island**

2000 sampling dates: 9/29

2000 status: Kelp Forest

We conducted several dives at this site to monitor the ARMs and conduct an abalone survey. All seven ARMs were monitored for *Haliotis* spp. Only one live *Haliotis corrugata*, measuring 32mm, was found in the ARMs. In addition to the ARMs, divers surveyed the entire reef where the ARMs are located and where tagged *H. corrugata* were out-planted. A total of 14 live adult *H. corrugata* were found on this reef. Only two of these were tagged (tag #206 at 140mm and tag #529 at 171mm), the remaining 12 were assumed to be non-introduced animals. David Kushner continued to survey areas inshore and to the east of the reef where the abalones were out-planted. Here, he located an additional 21 *H. corrugata*, one of which was tagged (tag#400 at 162mm).

The measurement of 140mm for tagged abalone #206, is suspect because all of the out-planted abalone were supposed to be legal size. We checked the original measurement of #206 and found that it was measured at 159mm. So, the measurement 140mm is either erroneous or the shell had been broken or worn.

Shells were collected and measured from the site. A total of 58 non-tagged (presumably not introduced) and 14 tagged *H. corrugata* shells were collected. Of the non-tagged shells, five were fresh (recently dead abalone) and the remaining 53 were old. Of the tagged shells, only one was fresh and the remaining 13 were old.

### **Location: Southeast Sea Lion, Santa Barbara Island**

2000 sampling dates: 6/12, 6/13, 8/15.

2000 status: *Strongylocentrotus purpuratus* and *Ophiothrix spiculata* barrens.

This site continues to be dominated by echinoderms. The most prevalent echinoderms were *Strongylocentrotus purpuratus* and *Ophiothrix spiculata*. In 1999, *S. purpuratus* and *S. franciscanus* were the most prevalent.

Similar to the previous five years, this site is mostly devoid of macroalgae. Similar to last year, no macroalgae were observed in the quadrats. The only macroalgae present along the transects were several small patches of the brown algae, *Dictyota/Pachydictyon*, and the red algae, *Laurencia pacifica*. Miscellaneous brown algae and miscellaneous red algae covered 0.67% and 0.83% of the bottom respectively. Miscellaneous plants covered 3.5% of the bottom and consisted of brown filamentous diatoms. Encrusting coralline algae were abundant, covering 56% of the bottom. Articulated coralline algae were rare, covering only 0.33% of the bottom. Bare substrate increased to 30% of the bottom.

The miscellaneous invertebrate category on RPCs covered 24% of the bottom. This category consisted mostly of a small-unidentified anemone believed to be *Cactosoma arenaria* or *Sagartia catalinensis* and *Ophiothrix spiculata*. *Ophiothrix spiculata* were counted separately and then added to the miscellaneous invertebrate category. *Ophiothrix spiculata* covered 11.8% of the bottom, while the remaining miscellaneous invertebrate cover was 12.2%. *Cactosoma arenaria/Sagartia catalinensis* was more abundant along the northern half of the transect. *Corynactis californica* covered 3.2% of the bottom. *Astrangia lajollaensis* cover declined for the second year, to 1.7%. Tunicates and bryozoans covered 3.2% and 0.33% of the bottom respectively. *Tethya aurantia* were abundant with a density of 0.15/m<sup>2</sup>, similar to previous years. *Lophogorgia chilensis* were relatively abundant with a density of 0.22/m<sup>2</sup>,

similar to the previous several years. As usual for this site, *Muricea californica* were common, while *M. fruticosa* were less common. Their densities were 0.022/m<sup>2</sup> and 0.0028/m<sup>2</sup> respectively.

*Strongylocentrotus purpuratus* continued to increase for the second consecutive year. Their density increased 131% from 1999 to 80/m<sup>2</sup>. Conversely, *S. franciscanus* density decreased 5.1/m<sup>2</sup>. It is typical for divers conducting quadrats not to see sea urchins smaller than about 8mm. These small urchins are often covered with sand and are difficult to see during quadrat counts. In order to sample and identify properly, these urchins would have to be removed or the attached sand removed, this would be invasive sampling. No invasive sampling is conducted during quadrat sampling. Small (<10mm) *S. purpuratus* recruits were common, but not nearly as abundant as in 1999. *Lytechinus anamesus* were sampled on both quadrats and band transects. Their densities were similar to last year, 1.7/m<sup>2</sup> and 2.4/m<sup>2</sup> respectively. As usual, these were difficult to see because they were covered with pebbles and/or shell fragments. The three species of sea urchins mentioned above were mostly out in the open and not confined to crevices. *Centrostephanus coronatus* were relatively abundant, but decreased in density to 1.7/m<sup>2</sup>. Small, fresh whole *S. purpuratus* and *L. anamesus* tests were common indicating recent mortality. Sea urchin wasting disease was observed on June 12<sup>th</sup>, 13<sup>th</sup> and August 15<sup>th</sup> in a few *S. purpuratus*.

Several 0.5m<sup>2</sup> quadrats were used to sample *Strongylocentrotus spp.* for size frequency measurements. Additionally, we searched for *S. franciscanus* using the band transect search method. Unfortunately, only one of the 0.5m<sup>2</sup> quadrats sampled was kept separately, and the others were combined together. This quadrat had 152 (304/m<sup>2</sup>) *S. purpuratus* and 14 (28/m<sup>2</sup>) *S. franciscanus* in it. This is much lower than the 1,160 – 3,000 *S. purpuratus* found in the 1m<sup>2</sup> quadrats sampled in 1999.

*Arbacia incisa* were also counted in quadrats this year, but these were not added to the database since they are not one of our indicator species. Their density was 0.13/m<sup>2</sup>, a decline from last year. The raw data is shown below:

Arbacia incisa count A	0	0	0	0	0	0	0	0	1	0	0	0
Quadrat #	1	2	3	4	5	6	7	8	9	10	11	12
Arbacia incisa count B	0	0	0	1	0	0	0	0	1	0	0	0

*Asterina miniata* density was 0.33/m<sup>2</sup>. *Pisaster giganteus* densities were 0.042/m<sup>2</sup> and 0.08/m<sup>2</sup> on quadrats and 5-meter quadrats, respectively. Two small *Pycnopodia helianthoides* were observed along the transect. One was counted in band transects for a density of 0.0014/m<sup>2</sup>. *Parastichopus parvimensis* were common, with a density of 0.83/m<sup>2</sup>. The brittle star, *Ophiothrix spiculata*, were noticeably more abundant than last year, covering 11.8% of the bottom. No sea star wasting disease was observed.

*Lithopoma undosum* density declined to 1.8/m<sup>2</sup>, but remained relatively abundant for this site. *Megathura crenulata* density was recorded at 0.013/m<sup>2</sup>. No live *Haliotis* spp. were observed this year. This is the sixth consecutive year that no live *Haliotis* spp. were found along the transect. Several large old *H. corrugata* shells were present, but not collected. Small *Aplysia californica* were relatively abundant, and their density was similar to last year at 0.12/m<sup>2</sup>. *Crassedoma giganteus* density was recorded at 0.022/m<sup>2</sup>, the highest density recorded at this site. The turban snail, *Tegula eiseni*, was common. The Pacific winged oyster, *Pteria sterna*, which grows on gorgonians, were common and noticeably larger than last year. No small *Pteria sterna* were observed, indicating little or no recent recruitment. Several octopi were observed, and they appeared more common than usual.

Fish diversity and abundance were noticeably low on June 12<sup>th</sup>, especially while fish sampling was conducted, when only seven species of fish were observed. The following day, June 13<sup>th</sup>, several fish appeared that were not observed during the fish sampling protocol, however abundance and diversity were still low. During our second visit on August 15<sup>th</sup>, diversity was higher with 18 species of fish, but most were not very abundant. The most abundant fish at this site appeared to be *Coryphopterus nicholsii*. Their density was recorded at 0.21/m<sup>2</sup>. *Alloclinus holderi* continued to decrease for the third consecutive year to a density of 0.21/m<sup>2</sup>. On June 12<sup>th</sup>, several adult *Chromis punctipinnis* were observed, about 100 more were observed the following day. On August 15<sup>th</sup>, several small groups of juvenile *C. punctipinnis* were observed, but overall there were few at the site. No *Semicossyphus pulcher* were observed on June 12<sup>th</sup>, and they were rare on August 15<sup>th</sup>, with no more than two females observed. Typically small female *S. pulcher* are moderately abundant at this site. Several *Oxylebius pictus*, an *Orthonopias triacis* (snubnose sculpin), a *Pleuronichthys coenosus* (c-o turbot), and several *Hypsypops rubicundus* were observed on June 12<sup>th</sup>. On June 13<sup>th</sup>, we observed several *Paralabrax clathratus*, several female *Semicossyphus pulcher*, three *Caulolatilus princeps* (ocean whitefish), and a *Lythrypnus zebra* (zebra gobi). On June 12<sup>th</sup>, the roving diver fish count was conducted with five divers observing seven species of fish, all with relatively low abundance.

The StowAway temperature logger stopped working on 11/7/99, but the HoboTemp continued to record data. Temperature data was successfully downloaded from both temperature units, and the data from the Hobotemp will be used where no data from the Stowaway was available. There were several temperatures logged from the two loggers that were up to 3°C apart. However, the averages of all the temperatures were less than 0.5°C apart, almost with Onset Company specifications. All of the data from both loggers was entered in the database for this site.

### **Location: Arch Point, Santa Barbara Island**

2000 sampling dates: 6/13, 6/14, 8/15.

2000 status: *Strongylocentrotus purpuratus* and *S. franciscanus* barrens.

Macroalgae continued to decline at this site, as it is increasingly dominated by *Strongylocentrotus purpuratus*. No *Macrocystis pyrifera* plants were observed along the transect in June. No macroalgae were observed on quadrats. *Pterygophora californica*, *Laminaria farlowii* and *Eisenia arborea* were all absent from the site. The most abundant algae along the transect was the red alga, *Laurencia pacifica*. Miscellaneous red algae covered 19.7% of the bottom, consisting entirely of *L. pacifica*. This is the highest cover for this category since 1983. There was a small amount of *Gelidium purpurescens* and the brown algae, *Dictyota/Pachydictyon*. *Codium setchellii* was noticeably less abundant than last year. Miscellaneous plants, mostly filamentous diatoms, covered 2.0% of the bottom, a decline from 1999. Articulated coralline algae continued to decline and were recorded at its lowest cover (0.17%) since monitoring began at this site in 1982. Encrusting coralline algae declined to 38.8, its lowest percent cover since 1987. Bare substrate increased to 28.0% of the bottom.

Similar to last year, the most common miscellaneous invertebrates on RPCs were hydroids and *Spirobranchus spinosus*; however there appeared to be fewer *S. spinosus* than in previous years. This category covered 13.7% of the bottom, similar to the last two years. Amphipod tube mats were common, as we have observed at other sites this year. *Phragmatopoma californica* noticeably decreased, to cover only 0.5% of the bottom. In 1999, *P. californica* were abundant for this site. This dramatic increase and then decrease is nearly identical to what was observed in 1985/1986, a year after the previous major El Niño. *Corynactis californica* noticeably increased, similar to other sites. It covered 4.8% of the bottom, the highest recorded since 1990. Tunicate cover was 0.17%, similar to last year. No sponges were observed on RPCs this year. Bryozoans were less abundant than 1999, and none were observed on RPCs. *Lophogorgia chilensis*, *Muricea fruticosa*, and *M. californica* were all present, but uncommon with densities of 0.0/m<sup>2</sup>, 0.0014/m<sup>2</sup>, and 0.0/m<sup>2</sup> respectively.

*Strongylocentrotus purpuratus* continued to increase dramatically for the second consecutive year. *Strongylocentrotus purpuratus* density increased 150% from 1999 to a density of 127/m<sup>2</sup>. Similar to Southeast Sea Lion Rookery, small (<10mm) *S. purpuratus* recruits were common, but not nearly as abundant as in 1999. *Strongylocentrotus franciscanus* density remained high at 15.2/m<sup>2</sup>, similar to last year, but set a new record for the highest density since monitoring began at this site in 1982. *Lytechinus anamesus* remained relatively abundant at 1.6/m<sup>2</sup>, similar to last year. *Lytechinus anamesus* were also counted on quadrats with a density of 3.4/m<sup>2</sup>. *Centrostephanus coronatus* were relatively abundant and recorded at 1.1/m<sup>2</sup>, the highest density recorded for this site. On June 14, several *S. purpuratus* and *S. franciscanus* were observed with sea urchin wasting syndrome, however, most of the sea urchins appeared healthy on this date. On August 15<sup>th</sup>, we noticed a increase in wasting disease in *S.*

purpuratus. On this date, we estimated that less than 5% of the *S. purpuratus*, and only a few *S. franciscanus* had wasting disease.

*Asterina miniata* were relatively abundant for this site and continued to increase for the second year. *Asterina miniata* were recorded at a density of 0.58/m<sup>2</sup>, the highest density recorded at this site since monitoring began in 1982. *Pisaster giganteus* were present in low numbers and were counted on both quadrats and 5-meter quadrats with densities of 0.13/m<sup>2</sup> and 0.07/m<sup>2</sup> respectively. One small *Pycnopodia helianthoides* was observed during band transects, 0.0014/m<sup>2</sup>. This is the first time a *P. helianthoides* has been observed on band transects at this site since monitoring began in 1983. No sea star wasting disease was observed. *Parastichopus parvimensis* density was 0.13/m<sup>2</sup>.

*Aplysia californica* were more abundant than last year, with a density of 0.18/m<sup>2</sup>. Similar to Southeast Sea Lion Rookery, *Lithopoma undosum* greatly decreased in density. *Lithopoma undosum* density was recorded at 0.83/m<sup>2</sup>, down from 9.0/m<sup>2</sup> in 1999. *Crassostoma giganteus* density was similar to previous years at 0.18/m<sup>2</sup>. No live *Haliotis* spp. were observed this year. The turban snails, *Tegula aureotincta* and *T. eiseni*, were moderately abundant. One *Panulirus interruptus* was observed on band transects (0.0014/m<sup>2</sup>). Several octopi were observed, and they appeared more common than usual.

Overall, fish appeared to be lower in abundance and diversity than last year. *Chromis punctipinnis* were the most abundant fish at this site. No juvenile *C. punctipinnis* were observed on June 13<sup>th</sup>, but a large school was observed on August 15<sup>th</sup>. No *Oxyjulis californica* were observed on June 13<sup>th</sup>, however a large school of juvenile *O. californica* was observed on August 15<sup>th</sup>. *Paralabrax clathratus*, *Medialuna californiensis* and female *Semicossyphus pulcher* were all common. One male and no Juvenile *S. pulcher* were observed. Several female *Halichoeres semicinctus* were observed on June 13<sup>th</sup>, but no males. As usual for this site, adult *Hypsypops rubicundus* were relatively abundant, along with their nests. No juvenile *H. rubicundus* were observed on June 13<sup>th</sup>. One tagged *H. rubicundus* was observed. No *Sebastes mystinus* or *S. miniatus* were observed this year. Similar to last year only one adult *S. serripes* was observed. No *Lythrypnus dalli* and only one *L. zebra* were observed. No *Coryphopterus nicholsii* were observed on quadrats, but they were relatively common along the sandy edge of the deeper side of the transect. *Alloclinus holderi* were common, but have greatly decreased over the last three years. This year's density was 0.46/m<sup>2</sup>, the lowest since 1994. Roving diver fish counts were conducted on June 13<sup>th</sup> with seven divers observing 15 species, and on August 15<sup>th</sup> with six divers observing 16 species of fish.

The temperature loggers were working properly and all temperature data were successfully downloaded. However, the StowAway #4987 was reading about 1°C warmer than the HoboTemp #6103.



Unfortunately, these loggers were re-deployed at Admiral's Reef, Anacapa Island. These loggers will need to be brought in for calibrations to see which was recording the most accurate data.

### **Location: Cat Canyon, Santa Barbara Island**

2000 sampling dates: 6/13, 6/14, 8/15.

2000 status: *Strongylocentrotus franciscanus* and *S. purpuratus* barrens.

Similar to last year, there was no *Macrocystis pyrifera* canopy over the transect, and only a couple juvenile and subadult plants were present within the transect area. The small patch of *M. pyrifera* that in 1999 was inside the edge of the 10 meter transect boundary on the inshore side of the transect remained. This small area consisted of several large rocks surrounded by sand, and had an understory of *Cystoseira* spp. and *Desmarestia* sp.. Only one subadult (0.005/m<sup>2</sup>) *M. pyrifera* plant was observed in the 5-meter quadrats. No *M. pyrifera* were observed on quadrats, 5-meter quadrats or RPCs. No *Eisenia arborea*, *Pterygophora californica* or *Laminaria farlowii* were observed. No macroalgae were observed on quadrats this year. Excluding encrusting coralline algae, the most abundant alga was the red alga, *Laurencia pacifica*, similar to the other two Santa Barbara Island sites. This alga is counted as miscellaneous red algae and was recorded at 3.8% cover. Several small patches of the brown algae *Dictyota/Pachydictyon* were observed and, and *Colpomenia* sp. was common on top of rocks. Miscellaneous plants covered 12.2% of the bottom and consisted of brown filamentous diatoms. Articulated and encrusting coralline algae covered 1.2% and 53% of the bottom respectively. Bare substrate covered 31% of the bottom, similar to last year.

Similar to last year, relatively few encrusting invertebrates were present along the bottom. Miscellaneous invertebrate cover on RPCs was similar to the last three years covering 7.2% of the bottom. This category consisted mostly of the worm, *Spirobranchus spinosus*. Hydroids and *Clavularia* sp. were common. *Phragmatopoma californica* were relatively uncommon and none were observed on RPCs this year. Bryozoans were less abundant than last year with a cover of 0.17%. Tunicate cover remained low covering 1.0% of the bottom.

The entire transect was sea urchin barrens, and was dominated by *Strongylocentrotus franciscanus*. However, high-density patches of *S. purpuratus* were also present. *Strongylocentrotus franciscanus* density was similar to last year at 9.0/m<sup>2</sup>. *Strongylocentrotus purpuratus* ended its decline over the previous two years and increased to 13/m<sup>2</sup>. Most of the *S. franciscanus* and *S. purpuratus* were out in the open and not confined to crevices. Juvenile *S. franciscanus* were rare. Juvenile *S. purpuratus* were moderately abundant in some areas, but were noticeably less abundant than last year. Sea urchin wasting disease was observed in several *S. franciscanus*, but not *S. purpuratus* on June 13<sup>th</sup> and August 16<sup>th</sup>. *Centrostephanus coronatus* density declined to 0.17/m<sup>2</sup>.

*Asterina miniata* and *Pisaster giganteus* were more common than usual at this site. *Asterina miniata* density was recorded at 0.13/m<sup>2</sup>. This is only the second time they have been recorded on quadrats since monitoring began at this site in 1986, and it is the highest density recorded. *Pisaster giganteus* density increased on both quadrats and 5-meter quadrats. Their density was 0.29/m<sup>2</sup> and 0.085/m<sup>2</sup> respectively. *Parastichopus parvimensis* were common with a density of 0.46/m<sup>2</sup>, similar to previous years. No sea star wasting disease was observed this summer.

Unlike the other two Santa Barbara Island sites, *Lithopoma undosum* density remained about the same, and was recorded at 2.2/m<sup>2</sup>. This is the highest density recorded for this site since monitoring began, but only slightly higher than 1999. No *Haliotis* spp. were observed on band transects, for the third consecutive year. One live *Haliotis corrugata*, measuring 80mm, and one fresh *H. corrugata* shell, measuring 36mm, were found along the transect. On August 16<sup>th</sup>, small *Panulirus interruptus* were common in crevices offshore of the transect. They may have moved offshore due to a recent large south swell. We caught several of the lobster to check their reproductive status and then released them. All of the females had recently dropped their eggs, and the males were noticeably smaller than the females.

*Megathura crenulata* density was 0.0097/m<sup>2</sup>. *Aplysia californica* continued to decline for the second year, this year's density was 0.056/m<sup>2</sup>. Although several *Panulirus interruptus* were observed within the transect, none were observed on band transects this year. This is the first year since monitoring began at this site in 1986 that their density was recorded at 0.0/m<sup>2</sup>. The turban snails, *Tegula eiseni* and *T. aureotincta*, remained relatively abundant, similar to past years. Octopi (*Bimaculatus/Bimaculoides*) were abundant, and one group of four was observed in what appeared to be some sort of social interaction. Two old abandoned lobster traps were found several meters away from the transect.

The most abundant fish were adult *Chromis punctipinnis*, no juveniles were observed on June 13<sup>th</sup>. Several juvenile *Chromis punctipinnis* were observed during our August visit, similar to the other sites at Santa Barbara Island. Adult *Girella nigricans*, adult *Oxyjulis californica*, male and female *Halichoeres semicinctus*, adult *Paralabrax clathratus*, *Oxylebius pictus*, and *Medialuna californiensis* were all common. Female *Semicossyphus pulcher* were common, but no juveniles and only one male were observed at this site. Adult *Hypsypops rubicundus* were moderately abundant, and no juveniles were observed. One two-year-old *Sebastes mystinus* and one two-year-old *S. serranoides* were observed. Bat rays, *Myliobatis californica* were moderately abundant, as is usual for this site. *Coryphopterus nicholsii* were rare and none were observed during quadrats. *Alloclinus holderi* were noticeably less abundant than last year and were recorded at a density of 0.33/m<sup>2</sup>, the lowest since 1994. No *Lythrypnus dalli* were observed this year. Roving diver fish counts were conducted on June 13<sup>th</sup> with six divers observing 21 species, and on August 16<sup>th</sup> with five divers observing 17 species of fish.

The StowAway temperature logger shut off prematurely, however the HoboTemp logger was still operating properly. Temperature data were successfully downloaded from both temperature units, and the data from the HoboTemp were used where no data from the StowAway was available. All of the data from both loggers were entered in the database for this site.

### **Location: Angel Shark Cove, Santa Barbara Island**

2000 sampling dates: 8/15.

2000 status: Kelp forest.

Latitude: 33 29.00 N

Longitude: 119 02.30 W

We made a brief survey dive in the cove just east of Elephant Cove. We anchored at a depth of 12m in sand and swam inshore to a rocky reef area that had an abundance of canopy forming *Macrocystis pyrifera* plants. This is one of the few areas around the Island that had an abundance of *M. pyrifera*. Most of the plants appeared healthy, and juvenile, subadult and adult plants were all common. The *M. pyrifera* bed extended from Shag Rock along the coast to Webster Point. The rocky reef began at a depth of about 10m, and was a typical mature *M. pyrifera* forest, with a moderate understory of brown and red algae. *Strongylocentrotus purpuratus* and *S. franciscanus* were present, but only abundant in small patches.

One of the reasons we chose this area to dive was that David Kushner thought the boulder field in shallow might be good habitat for *Haliotis fulgens*. Only one diver made it to this area, several hundred meters from the boat. A total of seven live *H. fulgens* were found at a depth between 3-5m. One large fresh and several old *H. fulgens* shells were found. The rest of the area looked like good habitat for *H. corrugata*, but none were found.

Michael Behrens collected five *Girella nigricans* for gut analysis. *Girella nigricans* were abundant at this location. Several large (25-35 lbs.) California halibut, *Paralichthys californicus*, were observed under the boat in the sand. We also observed four medium sized (about 4 ft) Angel Sharks, *Squatina californica*. This is more *S. californica* than any of us have observed in over a decade. Hence, we named this cove, Angel Shark Cove.

### **Location: Sutil Island, Santa Barbara Island**

2000 sampling dates: 8/16.

2000 status: *Ophiothrix spiculata*, *Strongylocentrotus purpuratus* and *S. franciscanus* barren.

We conducted a brief survey dive for *Haliotis sorenseni* on the south side of Sutil Island to a depth of 123 ft. This site was almost completely devoid of macroalgae. The area was mostly *Ophiothrix spiculata* barrens with a moderately high density of *Strongylocentrotus purpuratus* and *S. franciscanus*.

*Strongylocentrotus franciscanus* were the dominant sea urchin. Sea urchin wasting disease was estimated to effect 5-10% of the *S. purpuratus*, but was only observed effecting several *S. franciscanus*.

*Parastichopus parvimensis* were surprisingly abundant, and most were medium to small in size.

*Lophogorgia chilensis* were common.

In the deeper areas/depressions, old *Haliotis corrugata* shells were common and two old *H. sorenseni* shells were found. The *H. sorenseni* shells measured at 182mm and 196mm.

Overall, fish were relatively uncommon. Small female *Semicossyphus pulcher* and adult *Chromis punctipinnis* were the most common fish. Several *Sebastes atrovirens*, a *S. carnatus*, and several juvenile *S. miniatus* were observed in the deeper areas.

## DISCUSSION

### General Biology:

In 2000, *Macrocystis pyrifera* (giant kelp) forests were present at four of the 16 Kelp Forest Monitoring sites. These sites included Wyckoff Ledge at San Miguel Island, Johnson's Lee South at Santa Rosa Island, and Cathedral Cove and Landing Cove at Anacapa Island. The remaining 12 sites were dominated by echinoderms. Pelican Bay, and Scorpion Anchorage at Santa Cruz Island, and Johnson's Lee North at Santa Rosa Island were dominated by *Strongylocentrotus purpuratus*. Hare Rock at San Miguel Island, Rodes Reef at Santa Rosa Island, Gull Island South at Santa Cruz Island, and Arch Point and Cat Canyon at Santa Barbara Island were dominated by both *S. purpuratus* and *Strongylocentrotus franciscanus*. Yellowbanks at Santa Cruz Islands was dominated by *S. purpuratus* and *Lytechinus anamesus*. Admiral's Reef at Anacapa Island and Southeast Sea Lion Rookery at Santa Barbara Island were dominated by *S. purpuratus*, *S. franciscanus*, and *Ophiothrix spiculata*. Fry's Harbor at Santa Cruz Island was dominated by *Pachythyone rubra* and *S. purpuratus*, and had moderate densities of *S. franciscanus*, and *Astrangia lajollaensis*.

All three monitoring sites on Santa Barbara Island were sea urchin barrens. *Strongylocentrotus purpuratus* densities dramatically increased, and *S. franciscanus* densities remained relatively high at all three sites. These changes are similar to what was observed several years after the 1982/3 El Niño, as well as the several smaller El Niño events during the last decade. Similar to the past several years, it appears that the three monitoring sites well represent the remainder of the Island. Most of Santa Barbara Island appears to be dominated by *S. purpuratus*, *S. franciscanus* and *Ophiothrix spiculata*. *Macrocystis pyrifera* forests were only present in a few small areas around Sutil Island, close to shore in shallow areas and at Angel Shark cove where we made a dive (see description in results section)

At Anacapa Island, the status of the two sites within the ecological reserve and site outside the reserve continue to represent the Island well. Overall, there was little change at these sites compared to 1999. *Macrocystis pyrifera* continued to increase at both Landing Cove and Cathedral cove, while it remained virtually absent from Admirals Reef. These sites continue to represent the other areas within the reserve. Admiral's Reef, outside of the reserve, continued to be a barren dominated by both *Strongylocentrotus purpuratus* and *Ophiothrix spiculata*. These two species dominate most of the south side of East Anacapa, and both the south and north sides of middle and West Anacapa Island. Similar to 1999, Anacapa Island is mostly echinoderm barrens, with the exception of the ecological reserve and some small patches of kelp forest scattered in shallow areas. *Strongylocentrotus purpuratus* densities increased at all three Anacapa sites this year, though they are low at the two sites within the reserve and high at the site outside the reserve.

All five sites on Santa Cruz Island continued to be dominated by echinoderms. *Strongylocentrotus purpuratus* was the most dominant echinoderm and increased in density at all five monitoring sites. Similar to last year, kelp forests were present on the West end and scattered in shallow areas around the remainder of the Island. However most of the island is dominated by echinoderms and is well represented by the monitoring sites.

Kelp forests continued to be relatively abundant around Santa Rosa and San Miguel Islands. However, sea urchin densities continued to increase at all three monitoring sites on Santa Rosa, and both sites on San Miguel. *Strongylocentrotus purpuratus* densities increased at all five monitoring sites at these two Islands. Densities were high enough this year to almost completely exclude kelp at the Johnson's Lee North site, and created localized sea urchin barrens at Johnson's Lee South.

The most distinct pattern at all 16 of the monitoring sites this year was an increase in *Strongylocentrotus purpuratus*. *Strongylocentrotus purpuratus* densities increased at all 16 sites this year compared to 11 in 1999. Eleven sites had high ( $> 15/\text{m}^2$ ) *S. purpuratus* densities compared to nine in 1999 and seven in 1998. Similar to the last several years, *S. purpuratus* dominated many areas on Santa Barbara, Anacapa, and Santa Cruz Islands. In addition, they continued to be more dominant in areas on Santa Rosa Island.

Overall, *Strongylocentrotus franciscanus* densities continued to increase, but these increases were not as widespread as in *S. purpuratus*. *Strongylocentrotus franciscanus* densities increased at five sites, decreased at two and changed little or remained the same at nine sites. *Lytechinus anamesus* densities increased at one site, decreased at five sites, remained about the same at two sites, and were zero or nearly zero at eight sites where they are typically rare or absent. There was a slight downward trend with respect to *Centrostephanus coronatus* densities compared to 1999. *Centrostephanus coronatus* densities decreased at three sites, and remained about the same or were zero at the remaining 13 sites.

Sea urchin recruitment was noticeably lower this year than in 1999. Though lower than last year, recruitment of *Strongylocentrotus purpuratus* and *S. franciscanus* was still relatively high at some sites. Low recruitment of *C. coronatus* was observed and we expect this species to continue to decline in abundance unless there is another recruitment event. Recruitment events of *C. coronatus* are typically associated with anomalous warm water events.

Sea urchin wasting disease (Lafferty and Kushner, 1999, and Richards and Kushner, 1994) was noticeably more prevalent in 2000 than the previous several years. Sea urchin wasting disease was observed at 11 sites during 2000, compared to four in 1999. The wasting disease was observed at all of the Park Islands except for San Miguel. Similar to past years, we observed this disease affecting mostly

*Strongylocentrotus purpuratus*. Diseased *S. purpuratus* were present at 10 of the 11 sites where disease was observed. Diseased *Lytechinus anamesus* were observed at four sites and diseased *S. franciscanus* were observed at 6 sites. No sea star wasting disease was observed this year.

There appears to be little sign of change from the current state of sea urchin barrens at Santa Barbara, Anacapa and Santa Cruz Islands. However, with the recent increase in *Pycnopodia helianthoides* at San Miguel and Santa Rosa Islands we expect to see declines of *Strongylocentrotus purpuratus* and possibly the return of kelp forests at some of these sites.

Overall densities of *Asterina miniata* and *Pisaster giganteus* remain relatively low since their drastic decline during the 1997/1998 El Niño. In general *P. giganteus* densities remained the same or changed little from last year. However, *A. miniata* densities increased at ten, decreased at one and changed slightly or remained the same at five sites. If we experience normal water temperatures in the future, we expect these populations to increase.

Abundance of the brittle star *Ophiothrix spiculata* appeared to have increased at several of the sites where they have been present in past years. Overall, there appears to be no sign of this species decreasing and it continues to remain an important biological feature covering much of the bottom at Santa Barbara and Anacapa Islands, and to a lesser extent at Santa Cruz and Santa Rosa Islands.

Increases in *O. spiculata* are difficult to assess since we have only monitored them separately during recent years and only when they are relatively abundant. *Ophiothrix spiculata* is not one of our indicator species and no data field exists in our database for this species. We have attempted to count them separately during RPCs, and then have added them to the miscellaneous invertebrate category, noting this in the result sections of the reports only. Theoretically, this species should be counted using the quadrat protocol since it is a motile invertebrate. However, due to their high densities this is logistically prohibitive for this monitoring program at this time and we have counted them on RPCs. *Ophiothrix spiculata* have increased at the Channel Islands over the past decade and they have become an important feature and should be monitored.

In 2000, *Lithopoma undosum* ended their dramatic increase in abundance that we observed since the 1997/1998 El Niño. *Lithopoma undosum* densities increased at three, decreased at five and changed little or remained the same at eight sites this year. As noted last year, this episodic increase and now decrease continues to be similar to the pattern observed several years after the 1982/1983 El Niño.

Overall, *Haliotis spp.* continue to be rare at most of the monitoring sites. Wyckoff Ledge at San Miguel, and both the sites at Johnson's Lee, Santa Rosa Island have the most significant abalone population of

all the sites. *Haliotis rufescens* was the only abalone present at these three sites. Similar to the last several years, *H. rufescens* recruitment in the ARMs was low. Only two juvenile *H. rufescens* were found in the ARMs this year.

*Haliotis corrugata* continue to be present at only a few monitoring sites and continue to decline. No *H. corrugata* were observed during band transects at Landing Cove; this is the first time since monitoring began that a density of 0.0/m<sup>2</sup> was recorded at this site. Recruitment of *H. corrugata* was similar to last year with 10 juveniles found in the ARMs compared to 11 in 1999.

*Haliotis fulgens* sightings continue to be rare. One juvenile *H. fulgens* was observed in a ARM at Yellowbanks, and one juvenile fresh shell was observed at Pelican Bay, Santa Cruz Island. In addition we found seven adult *H. fulgens* during a survey dive at Angel Shark Cove, Santa Barbara Island. This may be one of the few places on this Island where adults can be found, but we generally don't spend much time in the shallow habitat that is preferred by *H. fulgens*.

Densities of *Styela montereyensis* decreased at all four sites where it was present in 1999. This is similar to the pattern we observed after the 1982/1983 El Niño.

There was a noticeable decrease in the abundance of juvenile/YOY (young of year) *Sebastes spp.* compared to 1999. Juvenile/YOY *S. mystinus* were present at many of the sites this year, but were not nearly as abundant as in 1999. No juvenile/YOY *S. miniatus* or *S. serranoides* were observed this year. We observed relatively large numbers of two-year-old *S. mystinus*, *S. serranoides* and some *S. miniatus*. We presume these fish were survivors from last year's recruitment event. Juvenile *Chromis punctipinnis* and juvenile *Oxyjulis californica* were first observed during the fifth cruise (August 14-18) this summer at Santa Barbara Island. Juvenile *C. punctipinnis* were observed during the later half of the season, but we never observed large schools and typically only observed small groups of about 2-20 fish. The only exception to this was a large school of juveniles that was observed at Arch Point, Santa Barbara Island.

Overall, densities of *Coryphopterus nicholsii* increased this year. We observed increases at five sites, a decrease at one site and little to no change at the remaining 10 sites. Fry's Harbor and Pelican Bay at Santa Cruz Island are the two sites that typically have the highest abundance of *Lythrypnus dalli*. At both of these sites densities decreased. In 2000, the remaining sites didn't have high enough densities to observe any decreases. Similar to *L. dalli*, we observed decreases in *Alloclinus holderi*. *Alloclinus holderi* decreased in abundance at seven sites, increased at one site and remained the same or changed little at eight sites. *Lythrypnus dalli* and *A. holderi* are warm water species that increased in abundance during the 1997/1998 El Niño. We expect to see lower recruitment with cooler water and subsequent declines in their populations.



Sardines, *Sardinops sagax*, were noticeably more abundant than during the past several years. Flying fish, *Cypselurus californicus*, were common at Santa Barbara, Anacapa, and Santa Cruz Islands, and were observed as far North/west as the east end of Santa Rosa Island. Several ocean sunfish, *Mola mola*, were observed on the way to Santa Barbara Island in June. Two *Stereolepis gigas* (giant black sea bass) were observed at one of our monitoring sites this year Cathedral Cove, Anacapa Island. John Provo (a NPS employee) mentioned he observed up to 12 *S. gigas* at one time from the inspiration point trail at Anacapa Island.

**Unusual Species / Non-Indicator Species:**

The red algae, *Laurencia pacifica*, noticeably increased in abundance at many of the sites that were barrens this year. This algae contains chemicals that render it unpalatable to most marine herbivores and as a result was often the only foliose algae present on sea urchin dominated reefs.

We continued to observe the sea urchin *Arbacia incisa* at Southeast Sea Lion, Santa Barbara Island and one in a ARM at Admiral's Reef, Anacapa Island. The population at Southeast Sea Lion appeared to be declining. The individual we observed at Admiral's Reef is probably the same *A. incisa* found last year in the same ARM. All of the *A. incisa* observed this year were noticeably larger than last year, indicating healthy animals that are growing.

We continued to observe Pacific wing oysters, *Pteria sterna* at Santa Barbara, Anacapa, and Santa Cruz Islands. However they were noticeably more rare and larger than the previous two years indicating no recruitment. Fresh shells were common at the three Islands mentioned above, indicating recent mortality. Three fresh shells were found at Johnson's Lee South, Santa Rosa Island, a range extension for the species (Engle and Richards, 2001).

Mysids were more abundant than usual near the bottom at many sites this year. *Navanax inermis* were relatively abundant in 1999 and noticeably decreased this year as they were rare. Octopuses were noticeably abundant at many of the sites this year, especially at Anacapa, Santa Barbara and Santa Cruz Islands.

Pelagic salps were abundant and small jellyfish and ctenophores were common early in the summer and were observed at all five of the Park Islands. Pyrosomes were rare with only a few seen in 2000, these were abundant in 1999. The ctenophore, *Leucothea pulchra* was notably abundant and the most abundant scyphomedusae (jellyfish) was *Somatis spp.* on Santa Barbara and Anacapa Islands. In general, these pelagic species were less common and became increasingly rare as the summer progressed.

This was the first year since the kelp forest monitoring project began that we observed white abalone, *Haliotis sorenseni*, at any of the monitoring sites. Two juvenile *H. sorenseni* were found in a ARM at Yellowbanks, Santa Cruz Island. It is possible that these are the first *H. sorenseni* juveniles that have been observed in California since the 1970's. Both of the *H. sorenseni* had a bright orange band on their shell. According to Buzz Owen, a abalone specialist, about one forth of the *H. sorenseni* have this band. Finding two juvenile *H. sorenseni* was encouraging evidence that there is still successful spawning of this species in the wild.

**Artificial Recruitment Modules (ARMs):**

ARMs were present at 10 monitoring sites in 2000. No noticeable trends among the 10 sites were observed with *Cypraea spadicea*. *Megathura crenulata* densities in the ARMs increased at seven of the 10 sites. *Megathura crenulata* found in the ARMs were relatively small and this combined with their increase in density indicates recent recruitment. *Crassostoma giganteus* densities were lower than last year with declines at five sites, increase at one site and little or no change at four sites. *Asterina miniata* densities were higher in the ARMs this year, with an increase at six sites, decrease at one site and little or no change at three sites. Similarly, *Pisaster giganteus* densities were higher, increasing at five sites, decreasing at one site, and little or no change at four sites. Overall, sea urchin density and recruitment were lower in the ARMs compared to last year. *Strongylocentrotus purpuratus* densities increased at five sites, decreased at four sites and changed little at one site. *Strongylocentrotus franciscanus* densities increased at two sites and decreased at eight sites. No recent recruitment of *Centrostephanus coronatus* was observed in the ARMs this year. Their density decreased at six sites and changed little at two sites. *Haliotis spp.* recruitment in the ARMs was discussed previously above.

We realized this year that the original bricks (1/2 cinder blocks) placed in the ARMs were smaller than the 8x8x16 blocks that we thought. The ARMs recently deployed and new bricks replacing old broken ones are larger than the original bricks. Though this increases the height of an ARM about 20% we think the overall effect of the two different sized bricks is minimal. Unfortunately, we will not know the real effects of brick size without someone conducting a study designed to look at their differences.

**Temperature:**

For the most part, the temperature for the year 2000 was average with no significant cold or warm water anomalies.

**Protocol Changes:**

There were no protocol changes in 2000.

**Sampling Difficulties:**

All proposed data collection was completed this year except for some temperature data as a result of missing temperature loggers or temperature logger failures.

**Data Requests:**

In 2000, Kelp Forest Monitoring data was requested by the following: Ian Taniguchi with the California Department of Fish and Game was sent all *Strongylocentrotus purpuratus* and *S. franciscanus* data. Dr. Laura Rogers-Bennett with the California Department of Fish and Game was sent the raw and summarized *S. franciscanus*, *S. purpuratus*, *Parastichopus parvimensis*, and *Haliotis spp.* density and size frequency data, she presented some of this data at the Abalone Symposium in South Africa. Dr. Ralph Larson at San Francisco State University was sent the 1988-1999 fish transect and *Macrocystis pyrifera* data. Dr. Allan Stewart Oaten at the University of California Santa Barbara was sent all of the kelp forest monitoring data. Michelle McCutchen who is working on a GIS project with the Channel Islands National Marine Sanctuary was sent the Handbook and roving diver fish count data. Jim Marshal, a commercial fisherman who is working on a proposal to establish some abalone transects and ARMs to look at *Haliotis rufescens* populations was sent the kelp forest monitoring handbook. Jenny Brady who is working on a online secondary school teaching program titled "Invisible Boundries" was sent the roving diver fish count and other density data. This interactive educational program will concentrate on the distribution of fishes in Channel Islands National Park and Channel Islands National Marine Sanctuary. Dr. Joshua Sladek Nowlis, a Senior Scientist for the Center for Marine Conservation was sent all of the kelp forest monitoring data. Stuart Levenbach, a Ph.D. student at the University of California, Santa Barbara was sent all of the kelp forest monitoring data. He is studying the effect of terrestrial runoff on kelp reefs as part of the Santa Barbara Coastal Long Term Ecological Research Program (LTER).

**Information Requests:**

If you are interested in obtaining raw data, please write to the address below:

Superintendent  
Channel Islands National Park  
1901 Spinnaker Drive  
Ventura, CA 93001

## **ACKNOWLEDGEMENTS**

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We are deeply indebted to the many divers who have participated in this project in 2000 (Table 5). All of our volunteer divers are associated with other agencies such as NOAA, California Dept. of Fish and Game, and Universities. Without this volunteer base of well-trained and qualified divers it would be impossible to conduct this program at its current funding level. Dan Richards and Gary E. Davis continue to provide advice and support for the project. We also greatly appreciate the efforts of Diane Brooks, Keith Duran, Dave Stoltz, and Dwight Willey for supporting us on the boats, keeping us afloat and underwater. Gordon Bailey drew the cover illustration.

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**Table 1.** Regularly monitored species by taxonomic grouping, common name, scientific name and associated monitoring technique.

TAXA/COMMON NAME	SCIENTIFIC NAME	TECHNIQUE
<b>ALGAE</b>		
Miscellaneous green algae		R
Miscellaneous red algae		R
Articulated coralline algae		R
Encrusting coralline algae		R
Agar weed	<i>Gelidium spp.</i>	R
Sea tongue	<i>Gigartina spp.</i>	R
Miscellaneous brown algae		R
Acid weed	<i>Desmarestia spp.</i>	R
Oar weed	<i>Laminaria farlowii</i>	R,Q
Bladder chain kelp	<i>Cystoseira spp.</i>	R
Giant kelp	<i>Macrocystis pyrifera</i>	R,Q,M
California sea palm	<i>Pterygophora californica</i>	R,Q
Southern sea palm	<i>Eisenia arborea</i>	R,Q
Miscellaneous plants		R
<b>INVERTEBRATES</b>		
Miscellaneous sponges		R
Orange puffball sponge	<i>Tethya aurantia</i>	B,S
Southern staghorn bryozoan	<i>Diaperoecia californica</i>	R
Miscellaneous bryozoans		R
California hydrocoral	<i>Stylaster californica</i>	B,S
White-spotted rose anemone	<i>Tealia lofotensis</i>	B
Red gorgonian	<i>Lophogorgia chilensis</i>	B,S
Brown gorgonian	<i>Muricea fruticosa</i>	B,S
Californian golden gorgonian	<i>Muricea californica</i>	B,S
Strawberry anemone	<i>Corynactis californica</i>	R
Orange cup coral	<i>Balanophyllia elegans</i>	R
Cup coral	<i>Astrangia lajollaensis</i>	R
Ornate tube worm	<i>Diopatra ornata</i>	R
Colonial sand-tube worm	<i>Phragmatopoma californica</i>	R
Scaled-tube snail	<i>Serpulorbis squamigerus</i>	R
Chestnut cowrie	<i>Cypraea spadicea</i>	Q
Wavy turban snail	<i>Lithopoma undosum</i>	Q,S
Red turban snail	<i>Lithopoma undosum</i>	Q,S
Bat star	<i>Asterina miniata</i>	Q,S
Giant-spined sea star	<i>Pisaster giganteus</i>	Q,S,M
Sunflower star	<i>Pycnopodia helianthoides</i>	B,S
White sea urchin	<i>Lytechinus anamesus</i>	B,S
Red sea urchin	<i>Strongylocentrotus franciscanus</i>	Q,S
Purple sea urchin	<i>Strongylocentrotus purpuratus</i>	Q,S
Warty sea cucumber	<i>Parastichopus parvimensis</i>	Q
Aggregated red sea cucumber	<i>Pachythyone rubra</i>	R
Red abalone	<i>Haliotis rufescens</i>	B,S
Pink abalone	<i>Haliotis corrugata</i>	B,S

Table 1. Continued.

TAXA/COMMON NAME	SCIENTIFIC NAME	TECHNIQUE
<b>INVERTEBRATES Continued:</b>		
Green abalone	<i>Haliotis fulgens</i>	B,S
Kellett's whelk	<i>Kelletia kelletii</i>	B,S
Giant keyhole limpet	<i>Megathura crenulata</i>	B,S
California brown sea hare	<i>Aplysia californica</i>	B
Rock scallop	<i>Crassedoma giganteum</i>	B,S
California spiny lobster	<i>Panulirus interruptus</i>	B
Tunicates		R
Stalked tunicate	<i>Styela montereyensis</i>	Q
Miscellaneous invertebrates		R
<b>FISH</b>		
Bluebanded goby	<i>Lythrypnus dalli</i>	Q
Blackeye goby	<i>Coryphopterus nicholsii</i>	Q
Island kelpfish	<i>Alloclinus holderi</i>	Q
Blacksmith	<i>Chromis punctipinnis</i>	V
Señorita	<i>Oxyjulis californica</i>	V
Blue rockfish	<i>Sebastes mystinus</i>	V
Olive rockfish	<i>Sebastes serranoides</i>	V
Kelp rockfish	<i>Sebastes atrovirens</i>	V
Kelp bass	<i>Paralabrax clathratus</i>	V
California Sheephead	<i>Semicossyphus pulcher</i>	V
Black surfperch	<i>Embiotoca jacksoni</i>	V
Striped surfperch	<i>Embiotoca lateralis</i>	V
Pile perch	<i>Damalichthys vacca</i>	V
Garibaldi	<i>Hypsypops rubicundus</i>	V
Opaleye	<i>Girella nigricans</i>	V
Rock Wrasse	<i>Halichoeres semicinctus</i>	V
<b>SUBSTRATE:</b>		
Bare substrate		R
Substrate types: Rock		R
Cobble		R
Sand		R
<b>Technique Codes:</b>		
B= Band Transect	M= 5m <sup>2</sup> -Quadrat	
Q= Quadrat	S= Size frequency Measurement	
R= Random Point Contact	V= Visual Transect	
<b>CHANGES IN SCIENTIFIC NOMENCLATURE:</b>		
<i>Patiria miniata</i>	=	<i>Asterina miniata</i>
<i>Astraea undosum</i>	=	<i>Lithopoma undosum</i>
<i>Astraea gibberosa</i>	=	<i>Lithopoma gibberosum</i>
<i>Hinnites giganteum</i>	=	<i>Crassedoma giganteum</i>
<i>Allopora californica</i>	=	<i>Stylaster californica</i>
<i>Telia lofotensis</i>	=	<i>Urticina lofotensis</i>



**Table 2.** Station Information.

<b>ISLAND</b>	<b>LOCATION</b>	<b>ABBREVIATION</b>	<b>DEPTH METERS</b>	<b>YEAR ESTABLISHED</b>
San Miguel	Wyckoff Ledge	SMWL	13-15	1981
San Miguel	Hare Rock	SMHR	6-9	1981
Santa Rosa	Johnson's Lee North	SRJLNO	9-11	1981
Santa Rosa	Johnson's Lee South	SRJLSO	14-16	1981
Santa Rosa	Rodes Reef	SRRR	13-15	1983
Santa Cruz	Gull Island South	SCGI	14-16	1981
Santa Cruz	Fry's Harbor	SCFH	12-13	1981
Santa Cruz	Pelican Bay	SCPB	6-8	1981
Santa Cruz	Scorpion Anchorage	SCSA	5-6	1981
Santa Cruz	Yellowbanks	SCYB	14-15	1986
Anacapa	Admiral's Reef	ANAR	13-15	1981
Anacapa	Cathedral Cove	ANCC	6-11	1981
Anacapa	Landing Cove	ANLC	5-12	1981
Santa Barbara	Southeast Sea Lion Rookery	SBSESL	12-14	1981
Santa Barbara	Arch Point	SBAR	7-8	1981
Santa Barbara	Cat Canyon	SBCAT	7-9	1986

**Table 3.** Summary of sampling techniques used to monitor population dynamics of selected kelp forest taxa.

<b>TECHNIQUE</b>	<b>SAMPLE NUMBER OF SIZE REPLICATES</b>
Quadrat count	1 m X 1 m 24X / site
Band Transect count	3 m X 10 m 24X / site
5m <sup>2</sup> -Quadrat	1 m X 5m 40X/ site
Random Point Contact	40 points 15X / site (0.5 x 3 m)
Visual Fish transects	2 m(w) X 3 m(h) X 50 m(l) 8X / sites
Video transects	5 minutes / 100 m; 2X / site, and also a 360° pan at 0, 50 and 100m along transect.
Size frequency measurements	30 to 200 / species: 1X / site (see size frequency measurement dimensions below)
Species Checklist	30 - 90 minutes, 1X / site
Artificial Recruitment Modules	7 - 15 modules / site

**Size Frequency measurement dimensions:**

<b>Genus</b>	<b>Sample Size</b>	<b>Measurement</b>
<i>Macrocystis</i>	100	Stipe count (1 m above bottom), maximum holdfast diameter, mm
<i>Tethya</i>	60	Max. diameter, mm
<i>Stylaster (Allopora)</i>	60	Max. height and width, mm
<i>Lophogorgia</i>	60	Max. height and width, mm
<i>Muricea</i>	60	Max. height and width, mm
<i>Megathura</i>	60	Max. shell length, mm
<i>Haliotis</i>	60	Max. shell length, mm
<i>Lithopoma (Astraea)</i>	60	Max. shell diameter, mm
<i>Kellettia</i>	60	Max. shell length, mm
<i>Crassedoma (Hinnites)</i>	60	Max. shell length, mm
<i>Strongylocentrotus</i>	200	Max. shell diameter, mm
<i>Lytechinus</i>	200	Max. shell diameter, mm
<i>Pycnopodia</i>	60	Length of longest ray, mm
<i>Asterina (Patiria)</i>	60	Length of longest ray, mm
<i>Pisaster</i>	60	Length of longest ray, mm

**Table 4.** 2000 Kelp forest monitoring site status.

<b>ISLAND/SITE</b>	<b>STATUS</b>
<b><u>San Miguel Island:</u></b>	
Wyckoff Ledge	Kelp forest.
Hare Rock	<i>Strongylocentrotus franciscanus</i> and <i>S. purpuratus</i> barrens.
<b><u>Santa Rosa Island:</u></b>	
Johnson's Lee North	<i>Strongylocentrotus purpuratus</i> barrens.
Johnson's Lee South	Mature kelp forest.
Rodes Reef	<i>Strongylocentrotus franciscanus</i> and <i>S. purpuratus</i> barrens.
<b><u>Santa Cruz Island:</u></b>	
Gull Island South	<i>Strongylocentrotus purpuratus</i> and <i>S. franciscanus</i> barrens.
Fry's Harbor	Open area with high densities of aggregating red sea cucumbers, <i>Pachythyone rubra</i> , <i>Strongylocentrotus purpuratus</i> , <i>S. franciscanus</i> , and <i>Astrangia lajollaensis</i> .
Pelican Bay	<i>Strongylocentrotus purpuratus</i> barrens.
Scorpion Anchorage	<i>Strongylocentrotus purpuratus</i> barrens.
Yellowbanks	<i>Strongylocentrotus purpuratus</i> and <i>Lytechinus anamesus</i> barrens.
<b><u>Anacapa Island:</u></b>	
Admiral's Reef	<i>Strongylocentrotus purpuratus</i> , <i>S. franciscanus</i> , and <i>Ophiothrix spiculata</i> (brittle star) barrens.
Cathedral Cove	Mature kelp Forest
Landing Cove	Open kelp forest.
<b><u>Santa Barbara Island:</u></b>	
Southeast Sea Lion Rookery	<i>Strongylocentrotus purpuratus</i> , <i>S. franciscanus</i> , and <i>Ophiothrix spiculata</i> barrens.
Arch Point	<i>Strongylocentrotus purpuratus</i> and <i>S. franciscanus</i> barrens.
Cat Canyon	<i>Strongylocentrotus franciscanus</i> and <i>S. purpuratus</i> barrens.

**Table 5.** 2000 Kelp Forest Monitoring Program participant and cruise list.

<b>PARTICIPANTS</b>	<b>AFFILIATION</b>	<b>CRUISES PARTICIPATED</b>
Baltz, Kenneth	National Marine Fisheries Service	4
Becker, Bonnie	Cabrillo National Park/Monument	2
Behrens, Michael	University of California, Santa Barbara	5
Brooks, Diane	Channel Islands National Park	3,4,5
Canestro, Don	University of California, Santa Cruz	7
Conti, John	Volunteer, Channel Islands National Park	1,5
Donahue, Megan	University of California, Davis	1,2,3,4,5,6,7
Duran, Keith	Channel Islands National Park	2,6,7
Fangman, Sarah	Channel Islands National Marine Sanctuary	4
Fastenau, Henry	University of California, Davis	6
Francis, Laura	Channel Islands National Marine Sanctuary	6
Goodson, Julie	Channel Islands National Marine Sanctuary	6
Guardino, Michael	Monterey Bay Aquarium	4
Haaker, Peter	California Department of Fish and Game	2
Hajduczek, Barbara	Channel Islands National Park	4,5
Kushner, David	Channel Islands National Park	1,2,3,4,5,6,7
Lafferty, Kevin	Biological Resources Division, USGS	7
Lerma, Derek	Channel Islands National Park	1,2,3,4,5,6,7
Lima, Jim	Minerals Management Service	3
Lohuis, Derek	Channel Islands National Park	1,2
Provo, John	Channel Islands National Park	6
Readie, Mark	University of California, Santa Cruz	1
Reisenbichler, Reg	Biological Resources Division, USGS	7
Richards, Dan	Channel Islands National Park	1,7
Sanchez, Salvador	Volunteer, Channel Islands National Park	1,2,3,4
Shaffer, Jonathan	Channel Islands National Park	3
Taniguchi, Ian	California Department of Fish and Game	3
Trone, John	University of California, Santa Cruz	7
Ugoretz, John	California Department of Fish and Game	2
Willey, Dwight	Channel Islands National Park	1
Yonker, Cyd	Wrigley Marine Science Center	3

<b>CRUISE NUMBER</b>	<b>2000 CRUISE DATES</b>	<b>KELP FOREST MONITORING SITES VISITED</b>
Cruise #1	June 12 – 16	SBSESL, SBCAT, SBAP, ANLC, ANCC
Cruise #2	June 26 – 30	SCGI, SCYB, SMWL, SMHR, ANCC, ANLC
Cruise #3	July 17 – 21	SCYB, SRJLNO, SRJLSO, SCFH
Cruise #4	July 31 – August 4	ANLC, SCGI, SCPB, SCSA, SRRR
Cruise #5	August 14 – 18	ANAR, ANLC, SBSESL, SBAP, SBCAT, SCFH, SCPB, SCSA
Cruise #6	August 28 – Sept. 1	SCGI, SRJLS, SRJLNO, SMWL, SMHR, SRRR
Cruise #7	Sep. 25 – 29	ANCC, SCYB, SRJLNO, SRJLSO

**Table 6.** 2000 Echinoderm wasting disease/syndrome observations.

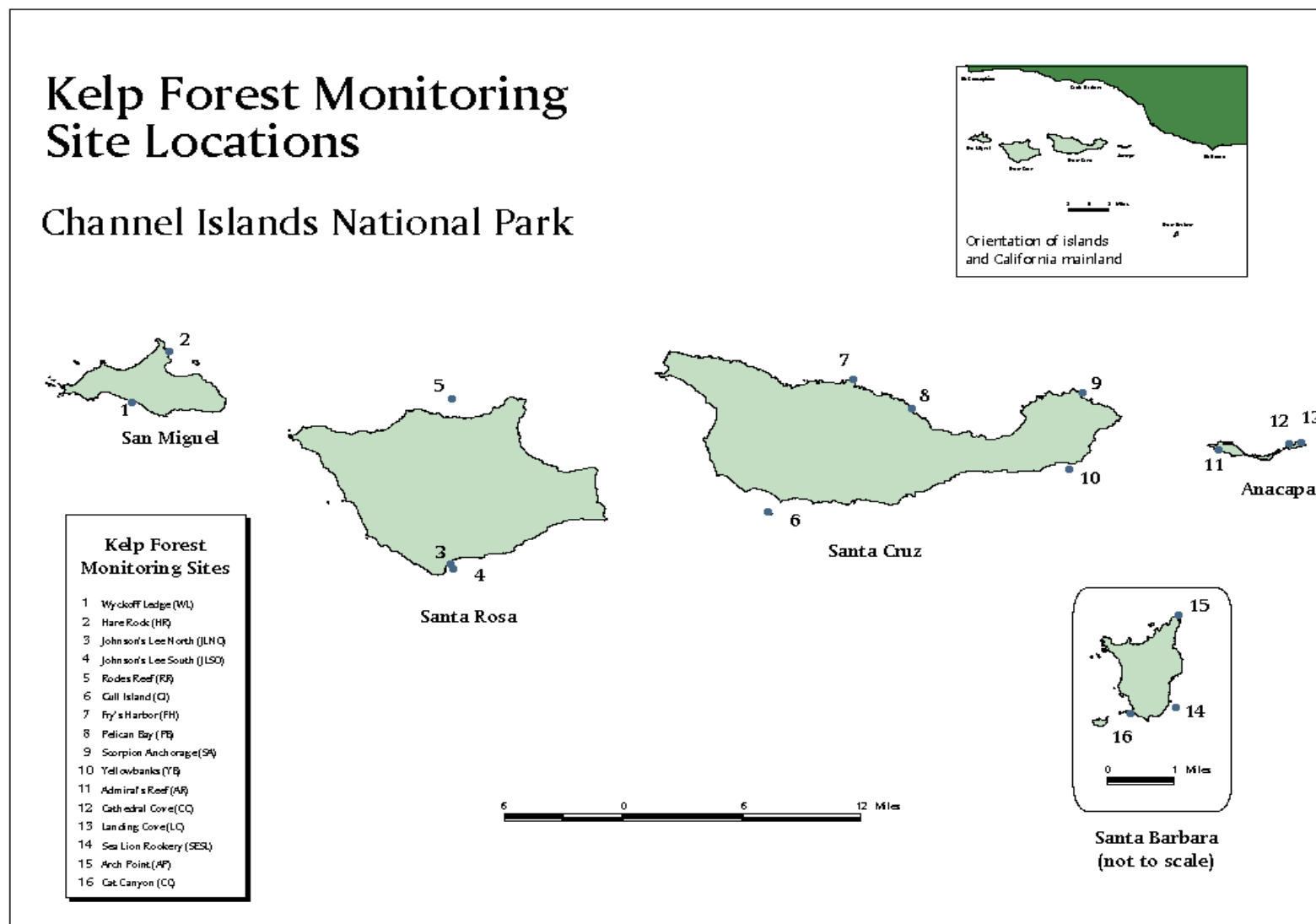
ISLAND/SITE	Sea Star Wasting Syndrome		Sea Urchin Wasting Syndrome	
	SPECIES OBSERVED	DATE(s)	SPECIES OBSERVED	DATE(s)
<b><u>San Miguel Island</u></b>				
Wyckoff Ledge	none		none	
Hare Rock	none		none	
<b><u>Santa Rosa Island</u></b>				
Johnson's Lee North	none		2	9/26
Johnson's Lee South	none		none	
Rodes Reef	none		2,6	8/1, 8/31
<b><u>Santa Cruz Island</u></b>				
Gull Island South	none		2	8/28
Fry's Harbor	none		2,3,6	7/21, 8/17
Pelican Bay	none		2,3	8/3, 8/17
Scorpion Anchorage	none		2	8/17
Yellowbanks	none		2,6	6/26
"			2,3	7/17
"			2,3,6	9/25
<b><u>Anacapa Island</u></b>				
Admiral's Reef	none		2,3,6	6/15, 8/14
Cathedral Cove	none		none	
Landing Cove	none		none	
<b><u>Santa Barbara Island</u></b>				
SE Sea Lion Rookery	none		2	6/12, 6/13, 8/15
Arch Point	none		2,6	6/14, 8/15
Cat Canyon	none		6	6/13, 8/16

**SPECIES LEGEND:**

- 1 = *Asterina (Asterina (Patiria)) miniata*
- 2 = *Strongylocentrotus purpuratus*
- 3 = *Lytechinus anamesus*
- 4 = *Pisaster giganteus*
- 5 = *Astrometis sertulifera*
- 6 = *Strongylocentrotus franciscanus*
- 7 = *Parastichopus parvimensis*
- 8 = *Dermasterias imbricata*
- 9 = *Mediaster aequalis*

none = not observed at this site during our visits in 2000

date = date(s) disease/syndrome was observed



**Figure 1.** Kelp Forest Monitoring Locations at Channel Islands National Park.

# Appendix A: Quadrat Data

## 2000 QUADRAT DATA: MEAN NUMBER PER M<sup>2</sup>

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<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>San Miguel Island - Wyckoff Ledge</b>			
<i>Macrocystis pyrifera</i> Ad.(>1m)	0.0417	0.1443	12
<i>Macrocystis pyrifera</i> Juvenile (<1m)	1.5417	2.2306	12
<i>Eisenia arborea</i> adult	0.0000	0.0000	12
<i>Eisenia arborea</i> juvenile	0.0833	0.1946	12
<i>Pterygophora californica</i> adult	1.2917	3.5641	12
<i>Pterygophora californica</i> juvenile	2.0833	3.8779	12
<i>Laminaria farlowii</i> adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	1.0000	1.3652	12
<i>Lithopoma undosum</i>	0.0000	0.0000	12
<i>Lithopoma gibberosum</i>	0.1250	0.2261	12
<i>Asterina miniata</i>	1.4583	0.9160	12
<i>Pisaster giganteus</i>	0.0417	0.1443	12
<i>Strongylocentrotus franciscanus</i>	1.8750	5.6170	12
<i>Strongylocentrotus purpuratus</i>	6.6667	10.3404	12
<i>Parastichopus parvimensis</i>	0.1250	0.2261	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.3333	1.0075	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsii</i>	0.0000	0.0000	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12
<b>San Miguel Island - Hare Rock</b>			
<i>Macrocystis pyrifera</i> Ad.(>1m)	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> Juvenile (<1m)	0.0000	0.0000	12
<i>Eisenia arborea</i> adult	0.0000	0.0000	12
<i>Eisenia arborea</i> juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> adult	0.0000	0.0000	12
<i>Pterygophora californica</i> juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.2083	0.3343	12
<i>Lithopoma undosum</i>	0.0000	0.0000	12
<i>Asterina miniata</i>	1.1250	1.1104	12
<i>Pisaster giganteus</i>	0.2083	0.2575	12
<i>Strongylocentrotus franciscanus</i>	14.7500	9.0767	12
<i>Strongylocentrotus purpuratus</i>	30.2917	27.0559	12
<i>Parastichopus parvimensis</i>	0.0833	0.1946	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsii</i>	0.8333	1.1146	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Santa Rosa Island - Johnson's Lee North</b>			
<i>Macrocystis pyrifera</i> Ad.(>1m)	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> Juvenile (<1m)	0.2917	0.7217	12
<i>Eisenia arborea</i> adult	0.0000	0.0000	12
<i>Eisenia arborea</i> juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> adult	0.0000	0.0000	12
<i>Pterygophora californica</i> juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> juvenile	0.0417	0.1443	12
<i>Cypraea spadicea</i>	1.5417	2.6922	12
<i>Lithopoma undosum</i>	0.0833	0.2887	12
<i>Asterina miniata</i>	0.0417	0.1443	12
<i>Pisaster giganteus</i>	0.2500	0.3989	12
<i>Strongylocentrotus franciscanus</i>	5.3750	4.5533	12
<i>Strongylocentrotus purpuratus</i>	82.9583	47.9434	12
<i>Parastichopus parvimensis</i>	0.3750	0.3769	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.0833	0.1946	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsii</i>	0.1667	0.3257	12
<i>Alloclinus holderi</i>	0.0417	0.1443	12
<b>Santa Rosa Island - Johnson's Lee South</b>			
<i>Macrocystis pyrifera</i> Ad.(>1m)	0.2917	0.3965	12
<i>Macrocystis pyrifera</i> Juvenile (<1m)	0.8750	1.1506	12
<i>Eisenia arborea</i> adult	0.0000	0.0000	12
<i>Eisenia arborea</i> juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> adult	0.0000	0.0000	12
<i>Pterygophora californica</i> juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> adult	0.5417	0.6895	12
<i>Laminaria farlowii</i> juvenile	0.7500	1.0553	12
<i>Cypraea spadicea</i>	0.1667	0.3257	12
<i>Lithopoma undosum</i>	0.0417	0.1443	12
<i>Asterina miniata</i>	1.3333	1.3371	12
<i>Pisaster giganteus</i>	0.2917	0.3343	12
<i>Strongylocentrotus franciscanus</i>	1.5417	2.4070	12
<i>Strongylocentrotus purpuratus</i>	14.4583	11.1079	12
<i>Parastichopus parvimensis</i>	0.1667	0.3257	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	1.2500	1.3899	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsii</i>	0.4583	0.8107	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12



<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Santa Rosa Island - Rodes Reef</b>			
<i>Macrocystis pyrifera</i> Ad.(>1m)	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> Juvenile (<1m)	0.0000	0.0000	12
<i>Eisenia arborea</i> adult	0.0000	0.0000	12
<i>Eisenia arborea</i> juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> adult	0.0000	0.0000	12
<i>Pterygophora californica</i> juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.2500	0.3371	12
<i>Lithopoma undosum</i>	0.0833	0.1946	12
<i>Lithopoma gibberosum</i>	0.0417	0.1443	12
<i>Asterina miniata</i>	1.6250	1.0472	12
<i>Pisaster giganteus</i>	0.7083	0.8382	12
<i>Lytechinus anamesus</i>	0.5000	1.1871	12
<i>Strongylocentrotus franciscanus</i>	10.9583	7.2440	12
<i>Strongylocentrotus purpuratus</i>	29.2083	20.2714	12
<i>Parastichopus parvimensis</i>	0.0833	0.1946	12
<i>Centrostephanus coronatus</i>	0.0417	0.1443	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsii</i>	0.0000	0.0000	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12
<b>Santa Cruz Island - Gull Island South</b>			
<i>Macrocystis pyrifera</i> Ad.(>1m)	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> Juvenile (<1m)	0.0833	0.2887	12
<i>Eisenia arborea</i> adult	0.0000	0.0000	12
<i>Eisenia arborea</i> juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> adult	0.0000	0.0000	12
<i>Pterygophora californica</i> juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> juvenile	0.0833	0.2887	12
<i>Cypraea spadicea</i>	1.3333	1.4512	12
<i>Lithopoma undosum</i>	1.3750	1.3672	12
<i>Asterina miniata</i>	0.9583	1.1172	12
<i>Pisaster giganteus</i>	0.1250	0.2261	12
<i>Lytechinus anamesus</i>	2.9167	2.4479	12
<i>Strongylocentrotus franciscanus</i>	10.1667	4.8539	12
<i>Strongylocentrotus purpuratus</i>	82.0000	29.5589	12
<i>Parastichopus parvimensis</i>	0.5417	0.6895	12
<i>Centrostephanus coronatus</i>	0.0417	0.1443	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsii</i>	0.9583	1.6849	12
<i>Alloclinus holderi</i>	0.0417	0.1443	12

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Santa Cruz Island - Fry's Harbor</b>			
<i>Macrocystis pyrifera</i> Ad.(>1m)	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> Juvenile (<1m)	0.0000	0.0000	12
<i>Eisenia arborea</i> adult	0.0000	0.0000	12
<i>Eisenia arborea</i> juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> adult	0.0000	0.0000	12
<i>Pterygophora californica</i> juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.6667	0.6155	12
<i>Lithopoma undosum</i>	0.8750	1.2271	12
<i>Asterina miniata</i>	1.2083	1.0967	12
<i>Pisaster giganteus</i>	0.0417	0.1443	12
<i>Lytechinus anamesus</i>	2.1667	2.5614	12
<i>Strongylocentrotus franciscanus</i>	7.7917	3.9281	12
<i>Strongylocentrotus purpuratus</i>	32.8333	17.1429	12
<i>Parastichopus parvimensis</i>	0.2500	0.4523	12
<i>Centrostephanus coronatus</i>	0.1667	0.3257	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.3333	0.3257	12
<i>Coryphopterus nicholsii</i>	0.8750	0.8823	12
<i>Alloclinus holderi</i>	0.0417	0.1443	12
<b>Santa Cruz Island - Pelican Bay</b>			
<i>Macrocystis pyrifera</i> Ad.(>1m)	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> Juvenile (<1m)	0.0000	0.0000	12
<i>Eisenia arborea</i> adult	0.0000	0.0000	12
<i>Eisenia arborea</i> juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> adult	0.0000	0.0000	12
<i>Pterygophora californica</i> juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0000	0.0000	12
<i>Lithopoma undosum</i>	0.7917	0.7821	12
<i>Asterina miniata</i>	0.2083	0.4502	12
<i>Pisaster giganteus</i>	0.0417	0.1443	12
<i>Lytechinus anamesus</i>	9.5000	5.9122	12
<i>Strongylocentrotus franciscanus</i>	4.1667	3.2567	12
<i>Strongylocentrotus purpuratus</i>	29.2500	13.5151	12
<i>Parastichopus parvimensis</i>	0.1250	0.2261	12
<i>Centrostephanus coronatus</i>	0.0833	0.1946	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.4167	0.5967	12
<i>Coryphopterus nicholsii</i>	4.5833	2.2946	12
<i>Alloclinus holderi</i>	0.1667	0.4438	12

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Santa Cruz Island - Scorpion Anchorage</b>			
<i>Macrocystis pyrifera</i> Ad.(>1m)	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> Juvenile (<1m)	0.0000	0.0000	12
<i>Eisenia arborea</i> adult	0.0000	0.0000	12
<i>Eisenia arborea</i> juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> adult	0.0000	0.0000	12
<i>Pterygophora californica</i> juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.2083	0.3343	12
<i>Lithopoma undosum</i>	12.3333	9.2105	12
<i>Asterina miniata</i>	0.1667	0.2462	12
<i>Pisaster giganteus</i>	0.0417	0.1443	12
<i>Lytechinus anamesus</i>	0.1250	0.2261	12
<i>Strongylocentrotus franciscanus</i>	2.8333	1.3707	12
<i>Strongylocentrotus purpuratus</i>	103.4583	40.4680	12
<i>Parastichopus parvimensis</i>	0.1250	0.2261	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsii</i>	1.2083	0.6201	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12
<b>Santa Cruz Island - Yellow Banks</b>			
<i>Macrocystis pyrifera</i> Ad.(>1m)	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> Juvenile (<1m)	0.0000	0.0000	12
<i>Eisenia arborea</i> adult	0.0000	0.0000	12
<i>Eisenia arborea</i> juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> adult	0.0000	0.0000	12
<i>Pterygophora californica</i> juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0417	0.1443	12
<i>Lithopoma undosum</i>	3.4583	2.3106	12
<i>Asterina miniata</i>	0.1250	0.2261	12
<i>Pisaster giganteus</i>	0.0000	0.0000	12
<i>Lytechinus anamesus</i>	25.6250	8.7701	12
<i>Strongylocentrotus franciscanus</i>	4.4583	3.1870	12
<i>Strongylocentrotus purpuratus</i>	32.1667	22.2551	12
<i>Parastichopus parvimensis</i>	0.3750	0.6784	12
<i>Centrostephanus coronatus</i>	0.1667	0.2462	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsii</i>	2.2500	1.1580	12
<i>Alloclinus holderi</i>	0.0417	0.1443	12

2000 QUADRAT DATA: MEAN NUMBER PER M<sup>2</sup>

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<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Anacapa Island - Admiral's Reef</b>			
<i>Macrocystis pyrifera</i> Ad.(>1m)	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> Juvenile (<1m)	0.0833	0.2887	12
<i>Eisenia arborea</i> adult	0.0000	0.0000	12
<i>Eisenia arborea</i> juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> adult	0.0000	0.0000	12
<i>Pterygophora californica</i> juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0417	0.1443	12
<i>Lithopoma undosum</i>	0.0417	0.1443	12
<i>Asterina miniata</i>	0.5417	0.6201	12
<i>Pisaster giganteus</i>	0.0000	0.0000	12
<i>Strongylocentrotus franciscanus</i>	8.0000	3.8376	12
<i>Strongylocentrotus purpuratus</i>	78.1667	34.1190	12
<i>Parastichopus parvimensis</i>	0.4583	0.6895	12
<i>Centrostephanus coronatus</i>	0.9167	1.0188	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsii</i>	2.2500	2.2714	12
<i>Alloclinus holderi</i>	0.1667	0.2462	12
<b>Anacapa Island - Cathedral Cove</b>			
<i>Macrocystis pyrifera</i> Ad.(>1m)	0.6667	2.1567	12
<i>Macrocystis pyrifera</i> Juvenile (<1m)	5.9167	5.1205	12
<i>Eisenia arborea</i> adult	0.0000	0.0000	12
<i>Eisenia arborea</i> juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> adult	0.0000	0.0000	12
<i>Pterygophora californica</i> juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> adult	0.1250	0.3108	12
<i>Laminaria farlowii</i> juvenile	2.3750	2.6035	12
<i>Cypraea spadicea</i>	0.4583	0.7217	12
<i>Lithopoma undosum</i>	6.9167	5.5996	12
<i>Asterina miniata</i>	0.3750	0.5691	12
<i>Pisaster giganteus</i>	0.0833	0.2887	12
<i>Strongylocentrotus franciscanus</i>	4.0417	2.8956	12
<i>Strongylocentrotus purpuratus</i>	2.7083	4.3456	12
<i>Parastichopus parvimensis</i>	1.5833	0.9495	12
<i>Centrostephanus coronatus</i>	0.2083	0.5823	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsii</i>	0.1667	0.2462	12
<i>Alloclinus holderi</i>	0.6250	0.4827	12

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Anacapa Island - Landing Cove</b>			
<i>Macrocystis pyrifera</i> Ad.(>1m)	1.7083	2.0500	12
<i>Macrocystis pyrifera</i> Juvenile (<1m)	4.2917	4.3089	12
<i>Eisenia arborea</i> adult	1.0000	1.4460	12
<i>Eisenia arborea</i> juvenile	0.9583	1.5588	12
<i>Pterygophora californica</i> adult	0.1667	0.4438	12
<i>Pterygophora californica</i> juvenile	1.2917	3.1149	12
<i>Laminaria farlowii</i> adult	1.5833	3.1611	12
<i>Laminaria farlowii</i> juvenile	13.0000	14.5446	12
<i>Cypraea spadicea</i>	0.3750	0.7111	12
<i>Lithopoma undosum</i>	2.6250	3.0684	12
<i>Asterina miniata</i>	0.0000	0.0000	12
<i>Pisaster giganteus</i>	0.0417	0.1443	12
<i>Strongylocentrotus franciscanus</i>	3.2917	2.9190	12
<i>Strongylocentrotus purpuratus</i>	4.0000	4.2959	12
<i>Parastichopus parvimensis</i>	0.7917	0.6895	12
<i>Centrostephanus coronatus</i>	0.1250	0.3108	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsii</i>	0.4583	0.8908	12
<i>Alloclinus holderi</i>	0.5417	0.5823	12
<b>Santa Barbara Island - SE Sea Lion Rookery</b>			
<i>Macrocystis pyrifera</i> Ad.(>1m)	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> Juvenile (<1m)	0.0000	0.0000	12
<i>Eisenia arborea</i> adult	0.0000	0.0000	12
<i>Eisenia arborea</i> juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> adult	0.0000	0.0000	12
<i>Pterygophora californica</i> juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.1250	0.3108	12
<i>Lithopoma undosum</i>	1.8333	1.9462	12
<i>Asterina miniata</i>	0.3333	0.4438	12
<i>Pisaster giganteus</i>	0.0417	0.1443	12
<i>Lytechinus anamesus</i>	2.6667	2.3484	12
<i>Strongylocentrotus franciscanus</i>	5.1250	6.5370	12
<i>Strongylocentrotus purpuratus</i>	80.1250	40.2933	12
<i>Parastichopus parvimensis</i>	0.8333	0.7785	12
<i>Centrostephanus coronatus</i>	1.6667	1.8257	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsii</i>	0.2083	0.2575	12
<i>Alloclinus holderi</i>	0.2083	0.2575	12

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Santa Barbara Island - Arch Point</b>			
<i>Macrocystis pyrifera</i> Ad.(>1m)	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> Juvenile (<1m)	0.0000	0.0000	12
<i>Eisenia arborea</i> adult	0.0000	0.0000	12
<i>Eisenia arborea</i> juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> adult	0.0000	0.0000	12
<i>Pterygophora californica</i> juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0000	0.0000	12
<i>Lithopoma undosum</i>	0.8333	0.8876	12
<i>Asterina miniata</i>	0.5833	0.7334	12
<i>Pisaster giganteus</i>	0.1250	0.2261	12
<i>Lytechinus anamesus</i>	3.4167	3.5473	12
<i>Strongylocentrotus franciscanus</i>	15.2083	4.5400	12
<i>Strongylocentrotus purpuratus</i>	126.7917	44.3439	12
<i>Parastichopus parvimensis</i>	0.1250	0.2261	12
<i>Centrostephanus coronatus</i>	1.0833	0.9731	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsii</i>	0.0000	0.0000	12
<i>Alloclinus holderi</i>	0.4583	0.3343	12
<b>Santa Barbara Island - Cat Canyon</b>			
<i>Macrocystis pyrifera</i> Ad.(>1m)	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> Juvenile (<1m)	0.0000	0.0000	12
<i>Eisenia arborea</i> adult	0.0000	0.0000	12
<i>Eisenia arborea</i> juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> adult	0.0000	0.0000	12
<i>Pterygophora californica</i> juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0000	0.0000	12
<i>Lithopoma undosum</i>	2.1667	0.9847	12
<i>Asterina miniata</i>	0.1250	0.2261	12
<i>Pisaster giganteus</i>	0.2917	0.3343	12
<i>Strongylocentrotus franciscanus</i>	9.0000	2.6884	12
<i>Strongylocentrotus purpuratus</i>	12.9583	9.3431	12
<i>Parastichopus parvimensis</i>	0.4583	0.6895	12
<i>Centrostephanus coronatus</i>	0.1667	0.3257	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsii</i>	0.0000	0.0000	12
<i>Alloclinus holderi</i>	0.3333	0.3892	12

## Appendix B: 5-Meter Quadrat Data

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### 2000 5-METER QUADRAT DATA: MEAN NUMBER PER M<sup>2</sup>

NOTE: *Macrocystis pyrifera* Adult = >1m and haptera above the primary dichotomy

*Macrocystis pyrifera* Subadult = >1m and NO haptera above the primary dichotomy

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>San Miguel Island - Wyckoff Ledge</b>			
<i>Macrocystis pyrifera</i> Adult	0.0050	0.0316	40
<i>Macrocystis pyrifera</i> Subadult	0.0900	0.1355	40
<i>Pisaster giganteus</i>	0.0450	0.1154	40
<b>San Miguel Island - Hare Rock</b>			
<i>Macrocystis pyrifera</i> Adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> Subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.5050	0.6883	40
<b>Santa Rosa Island - Johnson's Lee North</b>			
<i>Macrocystis pyrifera</i> Adult	0.0400	0.1707	40
<i>Macrocystis pyrifera</i> Subadult	0.0100	0.0441	40
<i>Pisaster giganteus</i>	0.3450	0.3869	40
<b>Santa Rosa Island - Johnson's Lee South</b>			
<i>Macrocystis pyrifera</i> Adult	0.0900	0.1355	40
<i>Macrocystis pyrifera</i> Subadult	0.0500	0.1177	40
<i>Pisaster giganteus</i>	0.1250	0.1905	40
<b>Santa Rosa Island - Rodes Reef</b>			
<i>Macrocystis pyrifera</i> Adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> Subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.5200	0.4292	40
<b>Santa Cruz Island - Gull Island South</b>			
<i>Macrocystis pyrifera</i> Adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> Subadult	0.0200	0.0758	40
<i>Pisaster giganteus</i>	0.0950	0.1501	40
<b>Santa Cruz Island - Fry's Harbor</b>			
<i>Macrocystis pyrifera</i> Adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> Subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.0400	0.0928	40
<b>Santa Cruz Island - Pelican Bay</b>			
<i>Macrocystis pyrifera</i> Adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> Subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.0150	0.0533	40

**2000 5-METER QUADRAT DATA: MEAN NUMBER PER M<sup>2</sup>**NOTE: *Macrocystis pyrifera* Adult = >1m and haptera above the primary dichotomy*Macrocystis pyrifera* Subadult = >1m and NO haptera above the primary dichotomy

<b><u>Species</u></b>	<b><u>Mean</u></b>	<b><u>Std. Dev.</u></b>	<b><u>n</u></b>
<b>Santa Cruz Island - Scorpion Anchorage</b>			
<i>Macrocystis pyrifera</i> Adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> Subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.0100	0.0441	40
<b>Santa Cruz Island - Yellow Banks</b>			
<i>Macrocystis pyrifera</i> Adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> Subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.0250	0.0809	40
<b>Anacapa Island - Admiral's Reef</b>			
<i>Macrocystis pyrifera</i> Adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> Subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.0100	0.0441	40
<b>Anacapa Island - Cathedral Cove</b>			
<i>Macrocystis pyrifera</i> Adult	0.1700	0.3123	40
<i>Macrocystis pyrifera</i> Subadult	0.3200	0.7522	40
<i>Pisaster giganteus</i>	0.0200	0.0608	40
<b>Anacapa Island - Landing Cove</b>			
<i>Macrocystis pyrifera</i> Adult	0.0650	0.1231	40
<i>Macrocystis pyrifera</i> Subadult	0.9250	1.1571	40
<i>Pisaster giganteus</i>	0.0000	0.0000	40
<b>Santa Barbara Island - SE Sea Lion Rookery</b>			
<i>Macrocystis pyrifera</i> Adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> Subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.0800	0.1344	40
<b>Santa Barbara Island - Arch Point</b>			
<i>Macrocystis pyrifera</i> Adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> Subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.0700	0.1244	40
<b>Santa Barbara Island - Cat Canyon</b>			
<i>Macrocystis pyrifera</i> Adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> Subadult	0.0050	0.0316	40
<i>Pisaster giganteus</i>	0.0850	0.1272	40



## Appendix C: Band Transect Data

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### 2000 BAND TRANSECT DATA: MEAN NUMBER PER M<sup>2</sup>

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>San Miguel Island - Wyckoff Ledge</b>			
<i>Tethya aurantia</i>	0.0944	0.0604	12
<i>Stylaster californica</i>	0.0000	0.0000	12
<i>Urticina lofotensis</i>	0.2514	0.2435	12
<i>Lophogorgia chilensis</i>	0.0000	0.0000	12
<i>Muricea fruticosa</i>	0.0000	0.0000	12
<i>Muricea californica</i>	0.0000	0.0000	12
<i>Panulirus interruptus</i>	0.0000	0.0000	12
<i>Haliotis rufescens</i>	0.0181	0.0279	12
<i>Haliotis corrugata</i>	0.0000	0.0000	12
<i>Haliotis fulgens</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.0833	0.0586	12
<i>Megathura crenulata</i>	0.0000	0.0000	12
<i>Crassedoma giganteum</i>	0.0028	0.0065	12
<i>Aplysia californica</i>	0.0056	0.0192	12
<i>Pycnopodia helianthoides</i>	0.0250	0.0151	12
<i>Lytechinus anamesus</i>	0.0097	0.0111	12
<b>San Miguel Island - Hare Rock</b>			
<i>Tethya aurantia</i>	0.0069	0.0150	12
<i>Stylaster californica</i>	0.0000	0.0000	12
<i>Urticina lofotensis</i>	0.0139	0.0255	12
<i>Lophogorgia chilensis</i>	0.0000	0.0000	12
<i>Muricea fruticosa</i>	0.0000	0.0000	12
<i>Muricea californica</i>	0.0000	0.0000	12
<i>Panulirus interruptus</i>	0.0000	0.0000	12
<i>Haliotis rufescens</i>	0.0000	0.0000	12
<i>Haliotis corrugata</i>	0.0000	0.0000	12
<i>Haliotis fulgens</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.0125	0.0267	12
<i>Megathura crenulata</i>	0.0000	0.0000	12
<i>Crassedoma giganteum</i>	0.0000	0.0000	12
<i>Aplysia californica</i>	0.0056	0.0130	12
<i>Pycnopodia helianthoides</i>	0.0292	0.0247	12
<i>Lytechinus anamesus</i>	0.0014	0.0048	12
<b>Santa Rosa Island - Johnson's Lee North</b>			
<i>Tethya aurantia</i>	0.1347	0.0575	12
<i>Stylaster californica</i>	0.0000	0.0000	12
<i>Urticina lofotensis</i>	0.0111	0.0164	12
<i>Lophogorgia chilensis</i>	0.0014	0.0048	12
<i>Muricea fruticosa</i>	0.0000	0.0000	12
<i>Muricea californica</i>	0.0000	0.0000	12
<i>Panulirus interruptus</i>	0.0000	0.0000	12
<i>Haliotis rufescens</i>	0.0111	0.0179	12
<i>Haliotis corrugata</i>	0.0000	0.0000	12
<i>Haliotis fulgens</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.0028	0.0065	12
<i>Megathura crenulata</i>	0.0181	0.0194	12
<i>Crassedoma giganteum</i>	0.0097	0.0150	12
<i>Aplysia californica</i>	0.0000	0.0000	12
<i>Pycnopodia helianthoides</i>	0.0069	0.0150	12
<i>Lytechinus anamesus</i>	0.0000	0.0000	12

**2000 BAND TRANSECT DATA: MEAN NUMBER PER M<sup>2</sup>**

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Santa Rosa Island - Johnson's Lee South</b>			
<i>Tethya aurantia</i>	0.2389	0.0792	12
<i>Stylaster californica</i>	0.0000	0.0000	12
<i>Urticina lofotensis</i>	0.1069	0.0740	12
<i>Lophogorgia chilensis</i>	0.0958	0.0415	12
<i>Muricea fruticosa</i>	0.0000	0.0000	12
<i>Muricea californica</i>	0.0014	0.0048	12
<i>Panulirus interruptus</i>	0.0000	0.0000	12
<i>Haliotis rufescens</i>	0.0097	0.0150	12
<i>Haliotis corrugata</i>	0.0000	0.0000	12
<i>Haliotis fulgens</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.0153	0.0181	12
<i>Megathura crenulata</i>	0.0194	0.0292	12
<i>Crassedoma giganteum</i>	0.0056	0.0109	12
<i>Aplysia californica</i>	0.0000	0.0000	12
<i>Pycnopodia helianthoides</i>	0.0333	0.0310	12
<i>Lytechinus anamesus</i>	0.0014	0.0048	12
<b>Santa Rosa Island - Rodes Reef</b>			
<i>Tethya aurantia</i>	0.0722	0.0489	12
<i>Stylaster californica</i>	0.0000	0.0000	12
<i>Urticina lofotensis</i>	0.0347	0.0207	12
<i>Lophogorgia chilensis</i>	0.0014	0.0048	12
<i>Muricea fruticosa</i>	0.0000	0.0000	12
<i>Muricea californica</i>	0.0000	0.0000	12
<i>Panulirus interruptus</i>	0.0000	0.0000	12
<i>Haliotis rufescens</i>	0.0000	0.0000	12
<i>Haliotis corrugata</i>	0.0000	0.0000	12
<i>Haliotis fulgens</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.0028	0.0096	12
<i>Megathura crenulata</i>	0.0292	0.0403	12
<i>Crassedoma giganteum</i>	0.0069	0.0132	12
<i>Aplysia californica</i>	0.0028	0.0065	12
<i>Pycnopodia helianthoides</i>	0.0722	0.0440	12
<i>Lytechinus anamesus</i>	0.1181	0.0897	12
<b>Santa Cruz Island - Gull Island South</b>			
<i>Tethya aurantia</i>	0.0208	0.0144	12
<i>Stylaster californica</i>	0.0944	0.1666	12
<i>Urticina lofotensis</i>	0.0014	0.0048	12
<i>Lophogorgia chilensis</i>	0.1014	0.0557	12
<i>Muricea fruticosa</i>	0.0000	0.0000	12
<i>Muricea californica</i>	0.0000	0.0000	12
<i>Panulirus interruptus</i>	0.0000	0.0000	12
<i>Haliotis rufescens</i>	0.0000	0.0000	12
<i>Haliotis corrugata</i>	0.0000	0.0000	12
<i>Haliotis fulgens</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.0069	0.0166	12
<i>Megathura crenulata</i>	0.1056	0.0509	12
<i>Crassedoma giganteum</i>	0.0250	0.0261	12
<i>Aplysia californica</i>	0.0361	0.0382	12
<i>Pycnopodia helianthoides</i>	0.0000	0.0000	12
<i>Lytechinus anamesus</i>	2.5847	1.9044	12

**2000 BAND TRANSECT DATA: MEAN NUMBER PER M<sup>2</sup>**

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Santa Cruz Island - Fry's Harbor</b>			
<i>Tethya aurantia</i>	0.0069	0.0150	12
<i>Stylaster californica</i>	0.0000	0.0000	12
<i>Urticina lofotensis</i>	0.0000	0.0000	12
<i>Lophogorgia chilensis</i>	0.3458	0.3247	12
<i>Muricea fruticosa</i>	0.0000	0.0000	12
<i>Muricea californica</i>	0.0000	0.0000	12
<i>Panulirus interruptus</i>	0.0000	0.0000	12
<i>Haliotis rufescens</i>	0.0000	0.0000	12
<i>Haliotis corrugata</i>	0.0000	0.0000	12
<i>Haliotis fulgens</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.0042	0.0075	12
<i>Megathura crenulata</i>	0.0500	0.0396	12
<i>Crassedoma giganteum</i>	0.0097	0.0150	12
<i>Aplysia californica</i>	0.0014	0.0048	12
<i>Pycnopodia helianthoides</i>	0.0000	0.0000	12
<i>Lytechinus anamesus</i>	3.1472	2.0875	12
<b>Santa Cruz Island - Pelican Bay</b>			
<i>Tethya aurantia</i>	0.0028	0.0065	12
<i>Stylaster californica</i>	0.0000	0.0000	12
<i>Urticina lofotensis</i>	0.0000	0.0000	12
<i>Lophogorgia chilensis</i>	0.1792	0.1429	12
<i>Muricea fruticosa</i>	0.0000	0.0000	12
<i>Muricea californica</i>	0.0014	0.0048	12
<i>Panulirus interruptus</i>	0.0000	0.0000	12
<i>Haliotis rufescens</i>	0.0000	0.0000	12
<i>Haliotis corrugata</i>	0.0000	0.0000	12
<i>Haliotis fulgens</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.0083	0.0167	12
<i>Megathura crenulata</i>	0.0000	0.0000	12
<i>Crassedoma giganteum</i>	0.0514	0.0337	12
<i>Aplysia californica</i>	0.0028	0.0065	12
<i>Pycnopodia helianthoides</i>	0.0000	0.0000	12
<i>Lytechinus anamesus</i>	4.0208	2.5837	12
<b>Santa Cruz Island - Scorpion Anchorage</b>			
<i>Tethya aurantia</i>	0.0333	0.0414	12
<i>Stylaster californica</i>	0.0000	0.0000	12
<i>Urticina lofotensis</i>	0.0000	0.0000	12
<i>Lophogorgia chilensis</i>	0.0042	0.0104	12
<i>Muricea fruticosa</i>	0.0000	0.0000	12
<i>Muricea californica</i>	0.0000	0.0000	12
<i>Panulirus interruptus</i>	0.0028	0.0065	12
<i>Haliotis rufescens</i>	0.0000	0.0000	12
<i>Haliotis corrugata</i>	0.0000	0.0000	12
<i>Haliotis fulgens</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.0000	0.0000	12
<i>Megathura crenulata</i>	0.0250	0.0280	12
<i>Crassedoma giganteum</i>	0.0931	0.0534	12
<i>Aplysia californica</i>	0.0250	0.0337	12
<i>Pycnopodia helianthoides</i>	0.0000	0.0000	12
<i>Lytechinus anamesus</i>	0.0458	0.0841	12

**2000 BAND TRANSECT DATA: MEAN NUMBER PER M<sup>2</sup>**

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Santa Cruz Island - Yellow Banks</b>			
<i>Tethya aurantia</i>	0.0458	0.0384	12
<i>Stylaster californica</i>	0.0000	0.0000	12
<i>Urticina lofotensis</i>	0.0000	0.0000	12
<i>Lophogorgia chilensis</i>	0.0597	0.0495	12
<i>Muricea fruticosa</i>	0.0042	0.0075	12
<i>Muricea californica</i>	0.0194	0.0264	12
<i>Panulirus interruptus</i>	0.0000	0.0000	12
<i>Haliotis rufescens</i>	0.0000	0.0000	12
<i>Haliotis corrugata</i>	0.0000	0.0000	12
<i>Haliotis fulgens</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.0181	0.0207	12
<i>Megathura crenulata</i>	0.0056	0.0109	12
<i>Crassedoma giganteum</i>	0.0056	0.0130	12
<i>Aplysia californica</i>	0.0097	0.0111	12
<i>Pycnopodia helianthoides</i>	0.0000	0.0000	12
<i>Lytechinus anamesus</i>	22.4569	5.6430	12
<b>Anacapa Island - Admiral's Reef</b>			
<i>Tethya aurantia</i>	0.0097	0.0150	12
<i>Stylaster californica</i>	0.0000	0.0000	12
<i>Urticina lofotensis</i>	0.0000	0.0000	12
<i>Lophogorgia chilensis</i>	0.0764	0.0417	12
<i>Muricea fruticosa</i>	0.0028	0.0065	12
<i>Muricea californica</i>	0.0333	0.0318	12
<i>Panulirus interruptus</i>	0.0000	0.0000	12
<i>Haliotis rufescens</i>	0.0000	0.0000	12
<i>Haliotis corrugata</i>	0.0000	0.0000	12
<i>Haliotis fulgens</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.0236	0.0372	12
<i>Megathura crenulata</i>	0.0236	0.0251	12
<i>Crassedoma giganteum</i>	0.1208	0.0962	12
<i>Aplysia californica</i>	0.0514	0.0379	12
<i>Pycnopodia helianthoides</i>	0.0000	0.0000	12
<i>Lytechinus anamesus</i>	1.1375	1.1725	12
<b>Anacapa Island - Cathedral Cove</b>			
<i>Tethya aurantia</i>	0.0069	0.0194	12
<i>Stylaster californica</i>	0.0000	0.0000	12
<i>Urticina lofotensis</i>	0.0000	0.0000	12
<i>Lophogorgia chilensis</i>	0.0014	0.0048	12
<i>Muricea fruticosa</i>	0.0000	0.0000	12
<i>Muricea californica</i>	0.0000	0.0000	12
<i>Panulirus interruptus</i>	0.0069	0.0150	12
<i>Haliotis rufescens</i>	0.0000	0.0000	12
<i>Haliotis corrugata</i>	0.0028	0.0065	12
<i>Haliotis fulgens</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.0014	0.0048	12
<i>Megathura crenulata</i>	0.0028	0.0065	12
<i>Crassedoma giganteum</i>	0.1028	0.1015	12
<i>Aplysia californica</i>	0.0139	0.0244	12
<i>Pycnopodia helianthoides</i>	0.0000	0.0000	12
<i>Lytechinus anamesus</i>	0.0000	0.0000	12

**2000 BAND TRANSECT DATA: MEAN NUMBER PER M<sup>2</sup>**

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Anacapa Island - Landing Cove</b>			
<i>Tethya aurantia</i>	0.0000	0.0000	12
<i>Stylaster californica</i>	0.0000	0.0000	12
<i>Urticina lofotensis</i>	0.0000	0.0000	12
<i>Lophogorgia chilensis</i>	0.0069	0.0150	12
<i>Muricea fruticosa</i>	0.0014	0.0048	12
<i>Muricea californica</i>	0.0014	0.0048	12
<i>Panulirus interruptus</i>	0.0319	0.0730	12
<i>Haliotis rufescens</i>	0.0000	0.0000	12
<i>Haliotis corrugata</i>	0.0000	0.0000	12
<i>Haliotis fulgens</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.0028	0.0065	12
<i>Megathura crenulata</i>	0.0111	0.0164	12
<i>Crassedoma giganteum</i>	0.2694	0.2339	12
<i>Aplysia californica</i>	0.0014	0.0048	12
<i>Pycnopodia helianthoides</i>	0.0000	0.0000	12
<i>Lytechinus anamesus</i>	0.0028	0.0065	12
<b>Santa Barbara Island - SE Sea Lion Rookery</b>			
<i>Tethya aurantia</i>	0.1542	0.0921	12
<i>Stylaster californica</i>	0.0000	0.0000	12
<i>Urticina lofotensis</i>	0.0000	0.0000	12
<i>Lophogorgia chilensis</i>	0.2222	0.0914	12
<i>Muricea fruticosa</i>	0.0028	0.0065	12
<i>Muricea californica</i>	0.0236	0.0207	12
<i>Panulirus interruptus</i>	0.0000	0.0000	12
<i>Haliotis rufescens</i>	0.0000	0.0000	12
<i>Haliotis corrugata</i>	0.0000	0.0000	12
<i>Haliotis fulgens</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.0000	0.0000	12
<i>Megathura crenulata</i>	0.0125	0.0176	12
<i>Crassedoma giganteum</i>	0.0222	0.0304	12
<i>Aplysia californica</i>	0.1222	0.0543	12
<i>Pycnopodia helianthoides</i>	0.0014	0.0048	12
<i>Lytechinus anamesus</i>	2.4472	1.9398	12
<b>Santa Barbara Island - Arch Point</b>			
<i>Tethya aurantia</i>	0.0000	0.0000	12
<i>Stylaster californica</i>	0.0000	0.0000	12
<i>Urticina lofotensis</i>	0.0000	0.0000	12
<i>Lophogorgia chilensis</i>	0.0000	0.0000	12
<i>Muricea fruticosa</i>	0.0014	0.0048	12
<i>Muricea californica</i>	0.0000	0.0000	12
<i>Panulirus interruptus</i>	0.0014	0.0048	12
<i>Haliotis rufescens</i>	0.0000	0.0000	12
<i>Haliotis corrugata</i>	0.0000	0.0000	12
<i>Haliotis fulgens</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.0000	0.0000	12
<i>Megathura crenulata</i>	0.0000	0.0000	12
<i>Crassedoma giganteum</i>	0.0125	0.0176	12
<i>Aplysia californica</i>	0.1819	0.0597	12
<i>Pycnopodia helianthoides</i>	0.0014	0.0048	12
<i>Lytechinus anamesus</i>	1.5639	0.8689	12

**2000 BAND TRANSECT DATA: MEAN NUMBER PER M<sup>2</sup>**

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Santa Barbara Island - Cat Canyon</b>			
<i>Tethya aurantia</i>	0.0000	0.0000	12
<i>Stylaster californica</i>	0.0000	0.0000	12
<i>Urticina lofotensis</i>	0.0000	0.0000	12
<i>Lophogorgia chilensis</i>	0.0000	0.0000	12
<i>Muricea fruticosa</i>	0.0000	0.0000	12
<i>Muricea californica</i>	0.0000	0.0000	12
<i>Panulirus interruptus</i>	0.0000	0.0000	12
<i>Haliotis rufescens</i>	0.0000	0.0000	12
<i>Haliotis corrugata</i>	0.0000	0.0000	12
<i>Haliotis fulgens</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.0000	0.0000	12
<i>Megathura crenulata</i>	0.0097	0.0111	12
<i>Crassidoma giganteum</i>	0.0056	0.0109	12
<i>Aplysia californica</i>	0.0556	0.0312	12
<i>Pycnopodia helianthoides</i>	0.0000	0.0000	12
<i>Lytechinus anamesus</i>	0.0000	0.0000	12

## Appendix D: Random Point Contact Data

### 2000 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

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<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>San Miguel Island - Wyckoff Ledge</b>			
<i>Green Algae</i>	0.667	1.4840	15
<i>Miscellaneous Brown Algae</i>	4.333	11.5522	15
<i>Desmarestia Spp.</i>	55.333	35.8676	15
<i>Cystoseira Spp.</i>	6.167	11.5289	15
<i>Macrocystis pyrifera All</i>	17.167	15.6373	15
<i>Eisenia arborea All</i>	1.000	2.6390	15
<i>Pterygophora californica All</i>	17.667	22.5093	15
<i>Laminaria farlowii All</i>	0.000	0.0000	15
<i>Miscellaneous Red Algae</i>	73.500	16.7652	15
<i>Articulated Coralline Algae</i>	12.333	14.0302	15
<i>Encrusting Coralline Algae</i>	46.000	19.5895	15
<i>Gelidium Spp.</i>	0.000	0.0000	15
<i>Gigartina Spp.</i>	5.167	11.1990	15
<i>Miscellaneous Plants (ie: Diatoms)</i>	0.000	0.0000	15
<i>Sponges</i>	1.333	2.0845	15
<i>Corynactis californica</i>	0.000	0.0000	15
<i>Balanophyllia elegans</i>	1.333	2.6502	15
<i>Astrangia lajollaensis</i>	0.000	0.0000	15
<i>Diopatra ornata</i>	16.667	15.3724	15
<i>Phragmatopoma californica</i>	2.667	4.5774	15
<i>Serpulorbis squamigerus</i>	0.000	0.0000	15
<i>Miscellaneous Bryozoans</i>	2.667	4.1690	15
<i>Diaperoecia californica</i>	0.000	0.0000	15
<i>Pachythyone rubra</i>	0.000	0.0000	15
<i>Tunicates</i>	2.000	4.0311	15
<i>Miscellaneous Invertebrates</i>	12.167	7.1256	15
<i>Bare Substrate</i>	17.500	19.4110	15
<i>Rock</i>	67.167	25.8233	15
<i>Cobble</i>	2.333	4.4788	15
<i>Sand</i>	30.500	26.0528	15
<b>San Miguel Island - Hare Rock</b>			
<i>Green Algae</i>	0.000	0.0000	15
<i>Miscellaneous Brown Algae</i>	0.167	0.6455	15
<i>Desmarestia Spp.</i>	2.167	8.3915	15
<i>Cystoseira Spp.</i>	0.000	0.0000	15
<i>Macrocystis pyrifera All</i>	0.000	0.0000	15
<i>Eisenia arborea All</i>	0.000	0.0000	15
<i>Pterygophora californica All</i>	0.000	0.0000	15
<i>Laminaria farlowii All</i>	0.000	0.0000	15
<i>Miscellaneous Red Algae</i>	8.167	7.7613	15
<i>Articulated Coralline Algae</i>	0.167	0.6455	15
<i>Encrusting Coralline Algae</i>	40.833	15.8020	15
<i>Gelidium Spp.</i>	0.000	0.0000	15
<i>Gigartina Spp.</i>	0.000	0.0000	15
<i>Miscellaneous Plants (ie: Diatoms)</i>	5.833	7.9433	15
<i>Sponges</i>	0.000	0.0000	15
<i>Corynactis californica</i>	7.333	8.7355	15
<i>Balanophyllia elegans</i>	1.000	1.8420	15
<i>Astrangia lajollaensis</i>	2.167	2.9681	15
<i>Diopatra ornata</i>	0.000	0.0000	15
<i>Phragmatopoma californica</i>	0.000	0.0000	15
<i>Serpulorbis squamigerus</i>	0.000	0.0000	15
<i>Miscellaneous Bryozoans</i>	0.000	0.0000	15
<i>Diaperoecia californica</i>	0.000	0.0000	15
<i>Pachythyone rubra</i>	0.000	0.0000	15
<i>Tunicates</i>	0.000	0.0000	15
<i>Miscellaneous Invertebrates</i>	14.667	12.3515	15
<i>Bare Substrate</i>	41.833	17.1252	15
<i>Rock</i>	83.333	25.8544	15
<i>Cobble</i>	6.833	15.6829	15
<i>Sand</i>	9.833	15.3083	15

## 2000 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Santa Rosa Island - Johnson's Lee North</b>			
<i>Green Algae</i>	0.000	0.0000	15
<i>Miscellaneous Brown Algae</i>	0.000	0.0000	15
<i>Desmarestia Spp.</i>	0.167	0.6455	15
<i>Cystoseira Spp.</i>	0.000	0.0000	15
<i>Macrocystis pyrifera All</i>	6.000	21.2511	15
<i>Eisenia arborea All</i>	0.000	0.0000	15
<i>Pterygophora californica All</i>	0.167	0.6455	15
<i>Laminaria farlowii All</i>	0.000	0.0000	15
<i>Miscellaneous Red Algae</i>	3.667	7.8414	15
<i>Articulated Coralline Algae</i>	1.000	1.2677	15
<i>Encrusting Coralline Algae</i>	35.833	14.1316	15
<i>Gelidium Spp.</i>	0.000	0.0000	15
<i>Gigartina Spp.</i>	0.333	1.2910	15
<i>Miscellaneous Plants (ie: Diatoms)</i>	5.000	5.4281	15
<i>Sponges</i>	1.833	3.7161	15
<i>Corynactis californica</i>	3.000	5.0178	15
<i>Balanophyllia elegans</i>	1.167	1.5999	15
<i>Astrangia lajollaensis</i>	3.167	3.1997	15
<i>Diopatra ornata</i>	0.833	1.2199	15
<i>Phragmatopoma californica</i>	8.167	9.8863	15
<i>Serpulorbis squamigerus</i>	0.333	0.8797	15
<i>Miscellaneous Bryozoans</i>	0.833	1.8094	15
<i>Diaperoecia californica</i>	0.500	1.4015	15
<i>Pachythyone rubra</i>	0.000	0.0000	15
<i>Tunicates</i>	1.333	2.2887	15
<i>Miscellaneous Invertebrates</i>	26.500	11.3311	15
<i>Bare Substrate</i>	27.000	11.3074	15
<i>Rock</i>	94.167	6.3854	15
<i>Cobble</i>	3.000	3.0178	15
<i>Sand</i>	2.833	4.2117	15
<b>Santa Rosa Island - Johnson's Lee South</b>			
<i>Green Algae</i>	0.000	0.0000	15
<i>Miscellaneous Brown Algae</i>	1.667	2.7817	15
<i>Desmarestia Spp.</i>	1.667	4.3983	15
<i>Cystoseira Spp.</i>	2.000	7.7460	15
<i>Macrocystis pyrifera All</i>	14.667	18.9658	15
<i>Eisenia arborea All</i>	0.333	1.2910	15
<i>Pterygophora californica All</i>	4.333	11.0384	15
<i>Laminaria farlowii All</i>	10.833	12.8406	15
<i>Miscellaneous Red Algae</i>	53.833	15.8358	15
<i>Articulated Coralline Algae</i>	8.167	9.3287	15
<i>Encrusting Coralline Algae</i>	28.833	13.6561	15
<i>Gelidium Spp.</i>	0.000	0.0000	15
<i>Gigartina Spp.</i>	2.667	3.7161	15
<i>Miscellaneous Plants (ie: Diatoms)</i>	3.000	5.1060	15
<i>Sponges</i>	0.667	1.7593	15
<i>Corynactis californica</i>	2.833	5.3341	15
<i>Balanophyllia elegans</i>	1.667	2.2493	15
<i>Astrangia lajollaensis</i>	1.500	2.8031	15
<i>Diopatra ornata</i>	16.167	19.6593	15
<i>Phragmatopoma californica</i>	0.667	1.9970	15
<i>Serpulorbis squamigerus</i>	0.000	0.0000	15
<i>Miscellaneous Bryozoans</i>	12.000	12.3996	15
<i>Diaperoecia californica</i>	0.833	2.0412	15
<i>Pachythyone rubra</i>	0.000	0.0000	15
<i>Tunicates</i>	5.167	4.7684	15
<i>Miscellaneous Invertebrates</i>	23.500	12.4929	15
<i>Bare Substrate</i>	9.667	8.1211	15
<i>Rock</i>	75.500	24.3340	15
<i>Cobble</i>	1.500	2.8031	15
<i>Sand</i>	23.000	24.3340	15



## 2000 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

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<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Santa Rosa Island - Rodes Reef</b>			
<i>Green Algae</i>	0.000	0.0000	15
<i>Miscellaneous Brown Algae</i>	0.000	0.0000	15
<i>Desmarestia Spp.</i>	0.000	0.0000	15
<i>Cystoseira Spp.</i>	0.000	0.0000	15
<i>Macrocystis pyrifera All</i>	0.000	0.0000	15
<i>Eisenia arborea All</i>	0.000	0.0000	15
<i>Pterygophora californica All</i>	0.000	0.0000	15
<i>Laminaria farlowii All</i>	0.000	0.0000	15
<i>Miscellaneous Red Algae</i>	2.000	2.8661	15
<i>Articulated Coralline Algae</i>	0.000	0.0000	15
<i>Encrusting Coralline Algae</i>	64.167	9.7131	15
<i>Gelidium Spp.</i>	0.000	0.0000	15
<i>Gigartina Spp.</i>	0.000	0.0000	15
<i>Miscellaneous Plants (ie: Diatoms)</i>	0.000	0.0000	15
<i>Sponges</i>	0.000	0.0000	15
<i>Corynactis californica</i>	0.667	1.1443	15
<i>Balanophyllia elegans</i>	1.667	1.8094	15
<i>Astrangia lajollaensis</i>	12.667	11.7438	15
<i>Diopatra ornata</i>	1.167	1.8581	15
<i>Phragmatopoma californica</i>	0.000	0.0000	15
<i>Serpulorbis squamigerus</i>	0.000	0.0000	15
<i>Miscellaneous Bryozoans</i>	1.333	1.2910	15
<i>Diaperoecia californica</i>	0.167	0.6455	15
<i>Pachythyone rubra</i>	0.000	0.0000	15
<i>Tunicates</i>	3.500	4.9821	15
<i>Miscellaneous Invertebrates</i>	18.667	9.3478	15
<i>Bare Substrate</i>	16.167	8.4972	15
<i>Rock</i>	84.500	18.4730	15
<i>Cobble</i>	13.833	18.1479	15
<i>Sand</i>	1.667	2.9378	15
<b>Santa Cruz Island - Gull Island South</b>			
<i>Green Algae</i>	0.167	0.6455	15
<i>Miscellaneous Brown Algae</i>	0.000	0.0000	15
<i>Desmarestia Spp.</i>	0.000	0.0000	15
<i>Cystoseira Spp.</i>	0.000	0.0000	15
<i>Macrocystis pyrifera All</i>	1.000	2.2756	15
<i>Eisenia arborea All</i>	1.333	4.5185	15
<i>Pterygophora californica All</i>	0.000	0.0000	15
<i>Laminaria farlowii All</i>	0.000	0.0000	15
<i>Miscellaneous Red Algae</i>	3.667	3.8807	15
<i>Articulated Coralline Algae</i>	0.500	1.0351	15
<i>Encrusting Coralline Algae</i>	55.500	10.4454	15
<i>Gelidium Spp.</i>	0.000	0.0000	15
<i>Gigartina Spp.</i>	0.000	0.0000	15
<i>Miscellaneous Plants (ie: Diatoms)</i>	0.333	0.8797	15
<i>Sponges</i>	0.000	0.0000	15
<i>Corynactis californica</i>	8.167	9.1352	15
<i>Balanophyllia elegans</i>	2.500	2.3146	15
<i>Astrangia lajollaensis</i>	3.500	3.3806	15
<i>Diopatra ornata</i>	0.167	0.6455	15
<i>Phragmatopoma californica</i>	0.000	0.0000	15
<i>Serpulorbis squamigerus</i>	0.000	0.0000	15
<i>Miscellaneous Bryozoans</i>	0.833	1.2199	15
<i>Diaperoecia californica</i>	0.833	2.0412	15
<i>Pachythyone rubra</i>	0.167	0.6455	15
<i>Tunicates</i>	0.500	1.0351	15
<i>Miscellaneous Invertebrates</i>	10.000	8.2916	15
<i>Bare Substrate</i>	19.000	9.4397	15
<i>Rock</i>	94.833	6.7126	15
<i>Cobble</i>	2.167	2.6502	15
<i>Sand</i>	3.000	5.6061	15

## 2000 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

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<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Santa Cruz Island - Fry's Harbor</b>			
<i>Green Algae</i>	0.000	0.0000	15
<i>Miscellaneous Brown Algae</i>	0.000	0.0000	15
<i>Desmarestia Spp.</i>	0.000	0.0000	15
<i>Cystoseira Spp.</i>	0.000	0.0000	15
<i>Macrocystis pyrifera All</i>	0.000	0.0000	15
<i>Eisenia arborea All</i>	0.000	0.0000	15
<i>Pterygophora californica All</i>	0.000	0.0000	15
<i>Laminaria farlowii All</i>	0.000	0.0000	15
<i>Miscellaneous Red Algae</i>	0.500	1.0351	15
<i>Articulated Coralline Algae</i>	0.000	0.0000	15
<i>Encrusting Coralline Algae</i>	45.667	11.1990	15
<i>Gelidium Spp.</i>	0.000	0.0000	15
<i>Gigartina Spp.</i>	0.000	0.0000	15
<i>Miscellaneous Plants (ie: Diatoms)</i>	0.000	0.0000	15
<i>Sponges</i>	0.167	0.6455	15
<i>Corynactis californica</i>	0.500	1.4015	15
<i>Balanophyllia elegans</i>	0.167	0.6455	15
<i>Astrangia lajollaensis</i>	17.500	8.2375	15
<i>Diopatra ornata</i>	0.000	0.0000	15
<i>Phragmatopoma californica</i>	0.000	0.0000	15
<i>Serpulorbis squamigerus</i>	0.000	0.0000	15
<i>Miscellaneous Bryozoans</i>	3.000	2.3528	15
<i>Diaperoecia californica</i>	2.500	3.4069	15
<i>Pachythyone rubra</i>	29.333	29.9921	15
<i>Tunicates</i>	0.000	0.0000	15
<i>Miscellaneous Invertebrates</i>	20.333	8.0659	15
<i>Bare Substrate</i>	12.167	9.0567	15
<i>Rock</i>	86.500	15.1716	15
<i>Cobble</i>	11.500	12.9146	15
<i>Sand</i>	2.167	3.2550	15
<b>Santa Cruz Island - Pelican Bay</b>			
<i>Green Algae</i>	0.000	0.0000	15
<i>Miscellaneous Brown Algae</i>	0.000	0.0000	15
<i>Desmarestia Spp.</i>	0.000	0.0000	15
<i>Cystoseira Spp.</i>	0.000	0.0000	15
<i>Macrocystis pyrifera All</i>	0.000	0.0000	15
<i>Eisenia arborea All</i>	0.000	0.0000	15
<i>Pterygophora californica All</i>	0.000	0.0000	15
<i>Laminaria farlowii All</i>	0.000	0.0000	15
<i>Miscellaneous Red Algae</i>	1.167	2.2887	15
<i>Articulated Coralline Algae</i>	0.167	0.6455	15
<i>Encrusting Coralline Algae</i>	35.833	16.5472	15
<i>Gelidium Spp.</i>	0.000	0.0000	15
<i>Gigartina Spp.</i>	0.000	0.0000	15
<i>Miscellaneous Plants (ie: Diatoms)</i>	0.500	1.0351	15
<i>Sponges</i>	0.000	0.0000	15
<i>Corynactis californica</i>	0.000	0.0000	15
<i>Balanophyllia elegans</i>	1.000	1.8420	15
<i>Astrangia lajollaensis</i>	11.500	7.7229	15
<i>Diopatra ornata</i>	0.000	0.0000	15
<i>Phragmatopoma californica</i>	0.000	0.0000	15
<i>Serpulorbis squamigerus</i>	0.333	0.8797	15
<i>Miscellaneous Bryozoans</i>	0.000	0.0000	15
<i>Diaperoecia californica</i>	0.167	0.6455	15
<i>Pachythyone rubra</i>	0.000	0.0000	15
<i>Tunicates</i>	0.000	0.0000	15
<i>Miscellaneous Invertebrates</i>	11.333	8.5496	15
<i>Bare Substrate</i>	47.000	17.8336	15
<i>Rock</i>	48.667	24.9261	15
<i>Cobble</i>	15.167	14.2198	15
<i>Sand</i>	36.167	24.4560	15

## 2000 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Santa Cruz Island - Scorpion Anchorage</b>			
<i>Green Algae</i>	1.167	3.3894	15
<i>Miscellaneous Brown Algae</i>	0.000	0.0000	15
<i>Desmarestia Spp.</i>	0.000	0.0000	15
<i>Cystoseira Spp.</i>	0.000	0.0000	15
<i>Macrocystis pyrifera All</i>	0.000	0.0000	15
<i>Eisenia arborea All</i>	0.000	0.0000	15
<i>Pterygophora californica All</i>	0.000	0.0000	15
<i>Laminaria farlowii All</i>	0.000	0.0000	15
<i>Miscellaneous Red Algae</i>	3.167	3.1997	15
<i>Articulated Coralline Algae</i>	0.500	1.0351	15
<i>Encrusting Coralline Algae</i>	50.167	13.0064	15
<i>Gelidium Spp.</i>	0.000	0.0000	15
<i>Gigartina Spp.</i>	0.000	0.0000	15
<i>Miscellaneous Plants (ie: Diatoms)</i>	10.500	9.7834	15
<i>Sponges</i>	0.000	0.0000	15
<i>Corynactis californica</i>	0.833	2.0412	15
<i>Balanophyllia elegans</i>	0.000	0.0000	15
<i>Astrangia lajollaensis</i>	0.833	1.5430	15
<i>Diopatra ornata</i>	0.000	0.0000	15
<i>Phragmatopoma californica</i>	2.833	3.2550	15
<i>Serpulorbis squamigerus</i>	0.667	1.4840	15
<i>Miscellaneous Bryozoans</i>	0.167	0.6455	15
<i>Diaperoecia californica</i>	0.000	0.0000	15
<i>Pachythyone rubra</i>	0.000	0.0000	15
<i>Tunicates</i>	0.333	1.2910	15
<i>Miscellaneous Invertebrates</i>	23.667	14.8765	15
<i>Bare Substrate</i>	15.000	6.7480	15
<i>Rock</i>	88.167	10.7515	15
<i>Cobble</i>	2.500	2.6726	15
<i>Sand</i>	9.333	10.9978	15
<b>Santa Cruz Island - Yellow Banks</b>			
<i>Green Algae</i>	0.000	0.0000	15
<i>Miscellaneous Brown Algae</i>	0.167	0.6455	15
<i>Desmarestia Spp.</i>	0.000	0.0000	15
<i>Cystoseira Spp.</i>	0.000	0.0000	15
<i>Macrocystis pyrifera All</i>	0.000	0.0000	15
<i>Eisenia arborea All</i>	0.000	0.0000	15
<i>Pterygophora californica All</i>	0.000	0.0000	15
<i>Laminaria farlowii All</i>	0.000	0.0000	15
<i>Miscellaneous Red Algae</i>	1.667	2.2493	15
<i>Articulated Coralline Algae</i>	2.167	2.8137	15
<i>Encrusting Coralline Algae</i>	48.167	13.6430	15
<i>Gelidium Spp.</i>	0.000	0.0000	15
<i>Gigartina Spp.</i>	0.000	0.0000	15
<i>Miscellaneous Plants (ie: Diatoms)</i>	2.333	3.8344	15
<i>Sponges</i>	0.167	0.6455	15
<i>Corynactis californica</i>	0.833	1.8094	15
<i>Balanophyllia elegans</i>	0.333	1.2910	15
<i>Astrangia lajollaensis</i>	2.000	2.5355	15
<i>Diopatra ornata</i>	0.000	0.0000	15
<i>Phragmatopoma californica</i>	0.000	0.0000	15
<i>Serpulorbis squamigerus</i>	0.000	0.0000	15
<i>Miscellaneous Bryozoans</i>	0.000	0.0000	15
<i>Diaperoecia californica</i>	0.000	0.0000	15
<i>Pachythyone rubra</i>	0.000	0.0000	15
<i>Tunicates</i>	0.333	0.8797	15
<i>Miscellaneous Invertebrates</i>	7.833	7.8414	15
<i>Bare Substrate</i>	45.000	17.1391	15
<i>Rock</i>	76.667	24.3609	15
<i>Cobble</i>	10.500	13.3028	15
<i>Sand</i>	12.833	15.8076	15

## 2000 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Anacapa Island - Admiral's Reef</b>			
<i>Green Algae</i>	0.000	0.0000	15
<i>Miscellaneous Brown Algae</i>	0.000	0.0000	15
<i>Desmarestia Spp.</i>	0.000	0.0000	15
<i>Cystoseira Spp.</i>	0.000	0.0000	15
<i>Macrocystis pyrifera All</i>	0.000	0.0000	15
<i>Eisenia arborea All</i>	0.000	0.0000	15
<i>Pterygophora californica All</i>	0.000	0.0000	15
<i>Laminaria farlowii All</i>	0.000	0.0000	15
<i>Miscellaneous Red Algae</i>	6.167	4.9881	15
<i>Articulated Coralline Algae</i>	0.167	0.6455	15
<i>Encrusting Coralline Algae</i>	32.500	11.6496	15
<i>Gelidium Spp.</i>	0.000	0.0000	15
<i>Gigartina Spp.</i>	0.000	0.0000	15
<i>Miscellaneous Plants (ie: Diatoms)</i>	1.333	3.3894	15
<i>Sponges</i>	0.333	0.8797	15
<i>Corynactis californica</i>	6.167	8.6534	15
<i>Balanophyllia elegans</i>	0.000	0.0000	15
<i>Astrangia lajollaensis</i>	2.167	2.6502	15
<i>Diopatra ornata</i>	0.000	0.0000	15
<i>Phragmatopoma californica</i>	0.000	0.0000	15
<i>Serpulorbis squamigerus</i>	0.000	0.0000	15
<i>Miscellaneous Bryozoans</i>	0.500	1.4015	15
<i>Diaperoecia californica</i>	0.000	0.0000	15
<i>Pachythyone rubra</i>	0.000	0.0000	15
<i>Tunicates</i>	0.167	0.6455	15
<i>Miscellaneous Invertebrates</i>	45.667	23.7635	15
<i>Bare Substrate</i>	43.500	20.4372	15
<i>Rock</i>	84.833	16.5957	15
<i>Cobble</i>	3.667	3.3894	15
<i>Sand</i>	11.500	14.6019	15
<b>Anacapa Island - Cathedral Cove</b>			
<i>Green Algae</i>	0.000	0.0000	15
<i>Miscellaneous Brown Algae</i>	14.167	16.2752	15
<i>Desmarestia Spp.</i>	0.000	0.0000	15
<i>Cystoseira Spp.</i>	5.833	9.7590	15
<i>Macrocystis pyrifera All</i>	9.833	11.7817	15
<i>Eisenia arborea All</i>	0.000	0.0000	15
<i>Pterygophora californica All</i>	0.000	0.0000	15
<i>Laminaria farlowii All</i>	3.333	7.7728	15
<i>Miscellaneous Red Algae</i>	11.000	10.5136	15
<i>Articulated Coralline Algae</i>	19.833	11.1189	15
<i>Encrusting Coralline Algae</i>	49.833	18.7671	15
<i>Gelidium Spp.</i>	0.000	0.0000	15
<i>Gigartina Spp.</i>	0.000	0.0000	15
<i>Miscellaneous Plants (ie: Diatoms)</i>	2.167	3.7639	15
<i>Sponges</i>	0.333	0.8797	15
<i>Corynactis californica</i>	0.000	0.0000	15
<i>Balanophyllia elegans</i>	0.000	0.0000	15
<i>Astrangia lajollaensis</i>	0.667	1.1443	15
<i>Diopatra ornata</i>	0.333	0.8797	15
<i>Phragmatopoma californica</i>	0.833	1.8094	15
<i>Serpulorbis squamigerus</i>	0.333	0.8797	15
<i>Miscellaneous Bryozoans</i>	13.333	11.8648	15
<i>Diaperoecia californica</i>	0.833	1.2199	15
<i>Pachythyone rubra</i>	0.000	0.0000	15
<i>Tunicates</i>	1.667	2.0412	15
<i>Miscellaneous Invertebrates</i>	20.167	9.7955	15
<i>Bare Substrate</i>	23.000	14.9164	15
<i>Rock</i>	65.000	24.6584	15
<i>Cobble</i>	19.167	15.0792	15
<i>Sand</i>	15.833	13.2849	15

## 2000 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Anacapa Island - Landing Cove</b>			
<i>Green Algae</i>	0.667	1.1443	15
<i>Miscellaneous Brown Algae</i>	7.500	7.0076	15
<i>Desmarestia Spp.</i>	0.000	0.0000	15
<i>Cystoseira Spp.</i>	4.833	7.2866	15
<i>Macrocystis pyrifera All</i>	14.000	12.5996	15
<i>Eisenia arborea All</i>	18.000	29.1731	15
<i>Pterygophora californica All</i>	1.667	4.3983	15
<i>Laminaria farlowii All</i>	11.000	14.2302	15
<i>Miscellaneous Red Algae</i>	16.833	20.4736	15
<i>Articulated Coralline Algae</i>	11.833	7.2251	15
<i>Encrusting Coralline Algae</i>	38.167	19.0972	15
<i>Gelidium Spp.</i>	17.500	27.7746	15
<i>Gigartina Spp.</i>	1.167	1.8581	15
<i>Miscellaneous Plants (ie: Diatoms)</i>	0.833	2.6163	15
<i>Sponges</i>	3.500	6.0356	15
<i>Corynactis californica</i>	3.667	5.4989	15
<i>Balanophyllia elegans</i>	0.000	0.0000	15
<i>Astrangia lajollaensis</i>	1.500	2.2756	15
<i>Diopatra ornata</i>	0.000	0.0000	15
<i>Phragmatopoma californica</i>	0.167	0.6455	15
<i>Serpulorbis squamigerus</i>	0.333	0.8797	15
<i>Miscellaneous Bryozoans</i>	12.333	13.1090	15
<i>Diaperoecia californica</i>	1.667	3.0861	15
<i>Pachythyone rubra</i>	0.000	0.0000	15
<i>Tunicates</i>	3.000	4.0311	15
<i>Miscellaneous Invertebrates</i>	14.000	11.2520	15
<i>Bare Substrate</i>	20.833	18.3144	15
<i>Rock</i>	70.500	29.6588	15
<i>Cobble</i>	21.500	21.6671	15
<i>Sand</i>	8.000	9.5056	15
<b>Santa Barbara Island - SE Sea Lion Rookery</b>			
<i>Green Algae</i>	0.000	0.0000	15
<i>Miscellaneous Brown Algae</i>	0.667	1.4840	15
<i>Desmarestia Spp.</i>	0.000	0.0000	15
<i>Cystoseira Spp.</i>	0.000	0.0000	15
<i>Macrocystis pyrifera All</i>	0.000	0.0000	15
<i>Eisenia arborea All</i>	0.000	0.0000	15
<i>Pterygophora californica All</i>	0.000	0.0000	15
<i>Laminaria farlowii All</i>	0.000	0.0000	15
<i>Miscellaneous Red Algae</i>	0.833	1.5430	15
<i>Articulated Coralline Algae</i>	0.333	0.8797	15
<i>Encrusting Coralline Algae</i>	56.000	13.0521	15
<i>Gelidium Spp.</i>	0.000	0.0000	15
<i>Gigartina Spp.</i>	0.000	0.0000	15
<i>Miscellaneous Plants (ie: Diatoms)</i>	3.500	4.7056	15
<i>Sponges</i>	0.000	0.0000	15
<i>Corynactis californica</i>	3.167	3.7161	15
<i>Balanophyllia elegans</i>	0.333	0.8797	15
<i>Astrangia lajollaensis</i>	1.667	3.6187	15
<i>Diopatra ornata</i>	0.000	0.0000	15
<i>Phragmatopoma californica</i>	0.000	0.0000	15
<i>Serpulorbis squamigerus</i>	0.000	0.0000	15
<i>Miscellaneous Bryozoans</i>	0.333	0.8797	15
<i>Diaperoecia californica</i>	0.000	0.0000	15
<i>Pachythyone rubra</i>	0.000	0.0000	15
<i>Tunicates</i>	3.167	5.2156	15
<i>Miscellaneous Invertebrates</i>	24.000	19.1283	15
<i>Bare Substrate</i>	29.667	17.0049	15
<i>Rock</i>	80.167	20.7981	15
<i>Cobble</i>	5.667	7.5868	15
<i>Sand</i>	14.167	20.2367	15

# 2000 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

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<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<b>Santa Barbara Island - Arch Point</b>			
<i>Green Algae</i>	0.000	0.0000	15
<i>Miscellaneous Brown Algae</i>	0.500	1.0351	15
<i>Desmarestia Spp.</i>	0.000	0.0000	15
<i>Cystoseira Spp.</i>	0.000	0.0000	15
<i>Macrocystis pyrifera All</i>	0.000	0.0000	15
<i>Eisenia arborea All</i>	0.000	0.0000	15
<i>Pterygophora californica All</i>	0.000	0.0000	15
<i>Laminaria farlowii All</i>	0.000	0.0000	15
<i>Miscellaneous Red Algae</i>	19.667	7.4322	15
<i>Articulated Coralline Algae</i>	0.167	0.6455	15
<i>Encrusting Coralline Algae</i>	38.833	6.8051	15
<i>Gelidium Spp.</i>	0.000	0.0000	15
<i>Gigartina Spp.</i>	0.000	0.0000	15
<i>Miscellaneous Plants (ie: Diatoms)</i>	2.000	2.8661	15
<i>Sponges</i>	0.000	0.0000	15
<i>Corynactis californica</i>	4.833	6.0847	15
<i>Balanophyllia elegans</i>	0.167	0.6455	15
<i>Astrangia lajollaensis</i>	0.667	1.4840	15
<i>Diopatra ornata</i>	0.000	0.0000	15
<i>Phragmatopoma californica</i>	0.500	1.4015	15
<i>Serpulorbis squamigerus</i>	0.000	0.0000	15
<i>Miscellaneous Bryozoans</i>	0.000	0.0000	15
<i>Diaperoecia californica</i>	0.000	0.0000	15
<i>Pachythyone rubra</i>	0.000	0.0000	15
<i>Tunicates</i>	0.167	0.6455	15
<i>Miscellaneous Invertebrates</i>	13.667	12.0589	15
<i>Bare Substrate</i>	28.000	7.0204	15
<i>Rock</i>	85.667	9.3764	15
<i>Cobble</i>	12.667	8.5287	15
<i>Sand</i>	1.667	3.9716	15
<b>Santa Barbara Island - Cat Canyon</b>			
<i>Green Algae</i>	0.000	0.0000	15
<i>Miscellaneous Brown Algae</i>	0.000	0.0000	15
<i>Desmarestia Spp.</i>	0.000	0.0000	15
<i>Cystoseira Spp.</i>	0.000	0.0000	15
<i>Macrocystis pyrifera All</i>	0.000	0.0000	15
<i>Eisenia arborea All</i>	0.000	0.0000	15
<i>Pterygophora californica All</i>	0.000	0.0000	15
<i>Laminaria farlowii All</i>	0.000	0.0000	15
<i>Miscellaneous Red Algae</i>	3.833	2.8137	15
<i>Articulated Coralline Algae</i>	1.167	2.0845	15
<i>Encrusting Coralline Algae</i>	52.833	17.7750	15
<i>Gelidium Spp.</i>	0.000	0.0000	15
<i>Gigartina Spp.</i>	0.000	0.0000	15
<i>Miscellaneous Plants (ie: Diatoms)</i>	12.167	8.6534	15
<i>Sponges</i>	0.167	0.6455	15
<i>Corynactis californica</i>	0.000	0.0000	15
<i>Balanophyllia elegans</i>	0.500	1.0351	15
<i>Astrangia lajollaensis</i>	0.667	1.4840	15
<i>Diopatra ornata</i>	0.000	0.0000	15
<i>Phragmatopoma californica</i>	0.000	0.0000	15
<i>Serpulorbis squamigerus</i>	0.000	0.0000	15
<i>Miscellaneous Bryozoans</i>	0.167	0.6455	15
<i>Diaperoecia californica</i>	0.000	0.0000	15
<i>Pachythyone rubra</i>	0.000	0.0000	15
<i>Tunicates</i>	1.000	2.6390	15
<i>Miscellaneous Invertebrates</i>	7.167	9.2999	15
<i>Bare Substrate</i>	31.000	17.6220	15
<i>Rock</i>	85.833	20.4561	15
<i>Cobble</i>	5.833	7.5986	15
<i>Sand</i>	8.333	15.8584	15

2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## San Miguel Island - Wyckoff Ledge

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Chromis punctipinnis</i> Adult	6/28/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Adult	8/30/00	0.0000	0.0000	8
<i>Chromis punctipinnis</i> Juvenile	6/28/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Oxyjulis californica</i> Adult	6/28/00	6.0000	4.0825	4
<i>Oxyjulis californica</i> Adult	8/30/00	0.2500	0.7071	8
<i>Oxyjulis californica</i> Juvenile	6/28/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Sebastes mystinus</i> Adult	6/28/00	1.7500	2.8723	4
<i>Sebastes mystinus</i> Adult	8/30/00	1.1250	1.8851	8
<i>Sebastes mystinus</i> Juvenile	6/28/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Adult	6/28/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Adult	8/30/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Juvenile	6/28/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Sebastes atrovirens</i> Adult	6/28/00	0.7500	0.9574	4
<i>Sebastes atrovirens</i> Adult	8/30/00	0.5000	0.7559	8
<i>Sebastes atrovirens</i> Juvenile	6/28/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Paralabrax clathratus</i> Adult	6/28/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Adult	8/30/00	0.0000	0.0000	8
<i>Paralabrax clathratus</i> Juvenile	6/28/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Male	6/28/00	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> Male	8/30/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Female	6/28/00	0.5000	0.5774	4
<i>Semicossyphus pulcher</i> Female	8/30/00	0.2500	0.4629	8
<i>Semicossyphus pulcher</i> Juvenile	6/28/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Adult	6/28/00	0.2500	0.5000	4
<i>Embiotoca jacksoni</i> Adult	8/30/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Juvenile	6/28/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	8/30/00	0.2500	0.4629	8
<i>Embiotoca lateralis</i> Adult	6/28/00	0.7500	0.9574	4
<i>Embiotoca lateralis</i> Adult	8/30/00	0.5000	0.9258	8
<i>Embiotoca lateralis</i> Juvenile	6/28/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Adult	6/28/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Adult	8/30/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Juvenile	6/28/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	8/30/00	0.2500	0.4629	8
<i>Hypsypops rubicundus</i> Adult	6/28/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Adult	8/30/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Juvenile	6/28/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Girella nigricans</i> Adult	6/28/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	8/30/00	0.0000	0.0000	8
<i>Girella nigricans</i> Juvenile	6/28/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Male	6/28/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Male	8/30/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Female	6/28/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Female	8/30/00	0.0000	0.0000	8

2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## San Miguel Island - Hare Rock

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Chromis punctipinnis</i> Adult	6/29/00	1.2500	2.5000	4
<i>Chromis punctipinnis</i> Adult	8/30/00	0.8750	0.8345	8
<i>Chromis punctipinnis</i> Juvenile	6/29/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Oxyjulis californica</i> Adult	6/29/00	2.7500	4.2720	4
<i>Oxyjulis californica</i> Adult	8/30/00	2.3750	6.7175	8
<i>Oxyjulis californica</i> Juvenile	6/29/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Sebastes mystinus</i> Adult	6/29/00	4.5000	4.0415	4
<i>Sebastes mystinus</i> Adult	8/30/00	0.8750	1.1260	8
<i>Sebastes mystinus</i> Juvenile	6/29/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Adult	6/29/00	0.7500	1.5000	4
<i>Sebastes serranoides</i> Adult	8/30/00	0.6250	0.7440	8
<i>Sebastes serranoides</i> Juvenile	6/29/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Sebastes atrovirens</i> Adult	6/29/00	0.5000	0.5774	4
<i>Sebastes atrovirens</i> Adult	8/30/00	0.0000	0.0000	8
<i>Sebastes atrovirens</i> Juvenile	6/29/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Paralabrax clathratus</i> Adult	6/29/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Adult	8/30/00	0.0000	0.0000	8
<i>Paralabrax clathratus</i> Juvenile	6/29/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Male	6/29/00	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> Male	8/30/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Female	6/29/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Female	8/30/00	0.1250	0.3536	8
<i>Semicossyphus pulcher</i> Juvenile	6/29/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Adult	6/29/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Adult	8/30/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Juvenile	6/29/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Adult	6/29/00	0.2500	0.5000	4
<i>Embiotoca lateralis</i> Adult	8/30/00	0.5000	0.5345	8
<i>Embiotoca lateralis</i> Juvenile	6/29/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Adult	6/29/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Adult	8/30/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Juvenile	6/29/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Adult	6/29/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Adult	8/30/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Juvenile	6/29/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Girella nigricans</i> Adult	6/29/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	8/30/00	0.0000	0.0000	8
<i>Girella nigricans</i> Juvenile	6/29/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	8/30/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Male	6/29/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Male	8/30/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Female	6/29/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Female	8/30/00	0.0000	0.0000	8



2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## Santa Rosa Island - Johnson's Lee North

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Chromis punctipinnis</i> Adult	7/18/00	21.5000	13.7720	4
<i>Chromis punctipinnis</i> Adult	9/26/00	2.6250	4.1036	8
<i>Chromis punctipinnis</i> Juvenile	7/18/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Juvenile	9/26/00	0.0000	0.0000	8
<i>Oxyjulis californica</i> Adult	7/18/00	0.5000	1.0000	4
<i>Oxyjulis californica</i> Adult	9/26/00	0.0000	0.0000	8
<i>Oxyjulis californica</i> Juvenile	7/18/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	9/26/00	0.0000	0.0000	8
<i>Sebastes mystinus</i> Adult	7/18/00	0.2500	0.5000	4
<i>Sebastes mystinus</i> Adult	9/26/00	4.0000	2.0702	8
<i>Sebastes mystinus</i> Juvenile	7/18/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	9/26/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Adult	7/18/00	0.2500	0.5000	4
<i>Sebastes serranoides</i> Adult	9/26/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Juvenile	7/18/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	9/26/00	0.0000	0.0000	8
<i>Sebastes atrovirens</i> Adult	7/18/00	0.7500	1.5000	4
<i>Sebastes atrovirens</i> Adult	9/26/00	0.2500	0.4629	8
<i>Sebastes atrovirens</i> Juvenile	7/18/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	9/26/00	0.0000	0.0000	8
<i>Paralabrax clathratus</i> Adult	7/18/00	0.7500	0.9574	4
<i>Paralabrax clathratus</i> Adult	9/26/00	0.0000	0.0000	8
<i>Paralabrax clathratus</i> Juvenile	7/18/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	9/26/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Male	7/18/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	9/26/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Female	7/18/00	2.7500	2.2174	4
<i>Semicossyphus pulcher</i> Female	9/26/00	4.6250	2.9246	8
<i>Semicossyphus pulcher</i> Juvenile	7/18/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	9/26/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Adult	7/18/00	2.2500	0.9574	4
<i>Embiotoca jacksoni</i> Adult	9/26/00	3.0000	0.7559	8
<i>Embiotoca jacksoni</i> Juvenile	7/18/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	9/26/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Adult	7/18/00	0.5000	1.0000	4
<i>Embiotoca lateralis</i> Adult	9/26/00	0.5000	0.7559	8
<i>Embiotoca lateralis</i> Juvenile	7/18/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	9/26/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Adult	7/18/00	0.5000	0.5774	4
<i>Damalichthys vacca</i> Adult	9/26/00	0.7500	0.7071	8
<i>Damalichthys vacca</i> Juvenile	7/18/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	9/26/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Adult	7/18/00	0.5000	0.5774	4
<i>Hypsypops rubicundus</i> Adult	9/26/00	0.6250	0.5175	8
<i>Hypsypops rubicundus</i> Juvenile	7/18/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Juvenile	9/26/00	0.0000	0.0000	8
<i>Girella nigricans</i> Adult	7/18/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	9/26/00	0.0000	0.0000	8
<i>Girella nigricans</i> Juvenile	7/18/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	9/26/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Male	7/18/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Male	9/26/00	0.1250	0.3536	8
<i>Halichoeres semicinctus</i> Female	7/18/00	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> Female	9/26/00	0.2500	0.4629	8

2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## Santa Rosa Island - Johnson's Lee South

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Chromis punctipinnis</i> Adult	7/19/00	2.0000	2.4495	4
<i>Chromis punctipinnis</i> Adult	8/29/00	6.5000	7.1714	8
<i>Chromis punctipinnis</i> Juvenile	7/19/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Juvenile	8/29/00	0.0000	0.0000	8
<i>Oxyjulis californica</i> Adult	7/19/00	1.2500	1.5000	4
<i>Oxyjulis californica</i> Adult	8/29/00	1.5000	0.9258	8
<i>Oxyjulis californica</i> Juvenile	7/19/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	8/29/00	0.0000	0.0000	8
<i>Sebastes mystinus</i> Adult	7/19/00	0.7500	1.5000	4
<i>Sebastes mystinus</i> Adult	8/29/00	0.2500	0.4629	8
<i>Sebastes mystinus</i> Juvenile	7/19/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	8/29/00	0.1250	0.3536	8
<i>Sebastes serranoides</i> Adult	7/19/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Adult	8/29/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Juvenile	7/19/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	8/29/00	0.0000	0.0000	8
<i>Sebastes atrovirens</i> Adult	7/19/00	1.0000	1.4142	4
<i>Sebastes atrovirens</i> Adult	8/29/00	1.7500	2.2520	8
<i>Sebastes atrovirens</i> Juvenile	7/19/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	8/29/00	0.0000	0.0000	8
<i>Paralabrax clathratus</i> Adult	7/19/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Adult	8/29/00	0.2500	0.4629	8
<i>Paralabrax clathratus</i> Juvenile	7/19/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	8/29/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Male	7/19/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	8/29/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Female	7/19/00	1.0000	0.8165	4
<i>Semicossyphus pulcher</i> Female	8/29/00	1.5000	0.9258	8
<i>Semicossyphus pulcher</i> Juvenile	7/19/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	8/29/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Adult	7/19/00	1.0000	2.0000	4
<i>Embiotoca jacksoni</i> Adult	8/29/00	1.2500	1.1650	8
<i>Embiotoca jacksoni</i> Juvenile	7/19/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	8/29/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Adult	7/19/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	8/29/00	1.0000	1.0690	8
<i>Embiotoca lateralis</i> Juvenile	7/19/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	8/29/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Adult	7/19/00	0.7500	0.9574	4
<i>Damalichthys vacca</i> Adult	8/29/00	0.7500	1.1650	8
<i>Damalichthys vacca</i> Juvenile	7/19/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	8/29/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Adult	7/19/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Adult	8/29/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Juvenile	7/19/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Juvenile	8/29/00	0.0000	0.0000	8
<i>Girella nigricans</i> Adult	7/19/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	8/29/00	0.0000	0.0000	8
<i>Girella nigricans</i> Juvenile	7/19/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	8/29/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Male	7/19/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Male	8/29/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Female	7/19/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Female	8/29/00	0.0000	0.0000	8

# 2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## Santa Rosa Island - Rodes Reef

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Chromis punctipinnis</i> Adult	8/1/00	10.0000	19.3391	4
<i>Chromis punctipinnis</i> Adult	8/31/00	0.6250	1.4079	8
<i>Chromis punctipinnis</i> Juvenile	8/1/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Juvenile	8/31/00	0.0000	0.0000	8
<i>Oxyjulis californica</i> Adult	8/1/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Adult	8/31/00	0.0000	0.0000	8
<i>Oxyjulis californica</i> Juvenile	8/1/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	8/31/00	0.0000	0.0000	8
<i>Sebastes mystinus</i> Adult	8/1/00	0.2500	0.5000	4
<i>Sebastes mystinus</i> Adult	8/31/00	0.8750	0.9910	8
<i>Sebastes mystinus</i> Juvenile	8/1/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	8/31/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Adult	8/1/00	0.2500	0.5000	4
<i>Sebastes serranoides</i> Adult	8/31/00	0.1250	0.3536	8
<i>Sebastes serranoides</i> Juvenile	8/1/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	8/31/00	0.0000	0.0000	8
<i>Sebastes atrovirens</i> Adult	8/1/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Adult	8/31/00	0.1250	0.3536	8
<i>Sebastes atrovirens</i> Juvenile	8/1/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	8/31/00	0.0000	0.0000	8
<i>Paralabrax clathratus</i> Adult	8/1/00	0.2500	0.5000	4
<i>Paralabrax clathratus</i> Adult	8/31/00	0.2500	0.4629	8
<i>Paralabrax clathratus</i> Juvenile	8/1/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	8/31/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Male	8/1/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	8/31/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Female	8/1/00	0.7500	0.5000	4
<i>Semicossyphus pulcher</i> Female	8/31/00	0.2500	0.4629	8
<i>Semicossyphus pulcher</i> Juvenile	8/1/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	8/31/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Adult	8/1/00	1.2500	1.5000	4
<i>Embiotoca jacksoni</i> Adult	8/31/00	0.5000	0.5345	8
<i>Embiotoca jacksoni</i> Juvenile	8/1/00	1.0000	2.0000	4
<i>Embiotoca jacksoni</i> Juvenile	8/31/00	0.8750	0.9910	8
<i>Embiotoca lateralis</i> Adult	8/1/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	8/31/00	0.1250	0.3536	8
<i>Embiotoca lateralis</i> Juvenile	8/1/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	8/31/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Adult	8/1/00	0.2500	0.5000	4
<i>Damalichthys vacca</i> Adult	8/31/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Juvenile	8/1/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	8/31/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Adult	8/1/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Adult	8/31/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Juvenile	8/1/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Juvenile	8/31/00	0.0000	0.0000	8
<i>Girella nigricans</i> Adult	8/1/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	8/31/00	0.0000	0.0000	8
<i>Girella nigricans</i> Juvenile	8/1/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	8/31/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Male	8/1/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Male	8/31/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Female	8/1/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Female	8/31/00	0.0000	0.0000	8

2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## Santa Cruz Island - Gull Island South

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Chromis punctipinnis</i> Adult	6/27/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Adult	8/2/00	0.1250	0.3536	8
<i>Chromis punctipinnis</i> Adult	8/28/00	0.7500	1.1650	8
<i>Chromis punctipinnis</i> Juvenile	6/27/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Juvenile	8/2/00	0.0000	0.0000	8
<i>Chromis punctipinnis</i> Juvenile	8/28/00	0.0000	0.0000	8
<i>Oxyjulis californica</i> Adult	6/27/00	0.5000	1.0000	4
<i>Oxyjulis californica</i> Adult	8/2/00	0.0000	0.0000	8
<i>Oxyjulis californica</i> Adult	8/28/00	0.0000	0.0000	8
<i>Oxyjulis californica</i> Juvenile	6/27/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	8/2/00	0.0000	0.0000	8
<i>Oxyjulis californica</i> Juvenile	8/28/00	0.0000	0.0000	8
<i>Sebastes mystinus</i> Adult	6/27/00	0.7500	0.9574	4
<i>Sebastes mystinus</i> Adult	8/2/00	1.3750	1.1877	8
<i>Sebastes mystinus</i> Adult	8/28/00	3.0000	2.1381	8
<i>Sebastes mystinus</i> Juvenile	6/27/00	4.0000	2.9439	4
<i>Sebastes mystinus</i> Juvenile	8/2/00	0.6250	0.7440	8
<i>Sebastes mystinus</i> Juvenile	8/28/00	0.8750	1.6421	8
<i>Sebastes serranoides</i> Adult	6/27/00	0.7500	1.5000	4
<i>Sebastes serranoides</i> Adult	8/2/00	0.2500	0.4629	8
<i>Sebastes serranoides</i> Adult	8/28/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Juvenile	6/27/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	8/2/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Juvenile	8/28/00	0.0000	0.0000	8
<i>Sebastes atrovirens</i> Adult	6/27/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Adult	8/2/00	0.2500	0.4629	8
<i>Sebastes atrovirens</i> Adult	8/28/00	0.3750	0.5175	8
<i>Sebastes atrovirens</i> Juvenile	6/27/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	8/2/00	0.0000	0.0000	8
<i>Sebastes atrovirens</i> Juvenile	8/28/00	0.0000	0.0000	8
<i>Paralabrax clathratus</i> Adult	6/27/00	0.2500	0.5000	4
<i>Paralabrax clathratus</i> Adult	8/2/00	0.0000	0.0000	8
<i>Paralabrax clathratus</i> Adult	8/28/00	0.1250	0.3536	8
<i>Paralabrax clathratus</i> Juvenile	6/27/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	8/2/00	0.0000	0.0000	8
<i>Paralabrax clathratus</i> Juvenile	8/28/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Male	6/27/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	8/2/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Male	8/28/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Female	6/27/00	3.2500	1.7078	4
<i>Semicossyphus pulcher</i> Female	8/2/00	1.8750	0.9910	8
<i>Semicossyphus pulcher</i> Female	8/28/00	2.1250	1.2464	8
<i>Semicossyphus pulcher</i> Juvenile	6/27/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	8/2/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Juvenile	8/28/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Adult	6/27/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Adult	8/2/00	0.2500	0.4629	8
<i>Embiotoca jacksoni</i> Adult	8/28/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Juvenile	6/27/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	8/2/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Juvenile	8/28/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Adult	6/27/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	8/2/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Adult	8/28/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Juvenile	6/27/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	8/2/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Juvenile	8/28/00	0.0000	0.0000	8

2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## Santa Cruz Island - Gull Island South

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Damalichthys vacca</i> Adult	6/27/00	0.5000	0.5774	4
<i>Damalichthys vacca</i> Adult	8/2/00	0.8750	1.3562	8
<i>Damalichthys vacca</i> Adult	8/28/00	0.5000	0.9258	8
<i>Damalichthys vacca</i> Juvenile	6/27/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	8/2/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Juvenile	8/28/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Adult	6/27/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Adult	8/2/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Adult	8/28/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Juvenile	6/27/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Juvenile	8/2/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Juvenile	8/28/00	0.0000	0.0000	8
<i>Girella nigricans</i> Adult	6/27/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	8/2/00	0.3750	0.7440	8
<i>Girella nigricans</i> Adult	8/28/00	0.0000	0.0000	8
<i>Girella nigricans</i> Juvenile	6/27/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	8/2/00	0.0000	0.0000	8
<i>Girella nigricans</i> Juvenile	8/28/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Male	6/27/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Male	8/2/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Male	8/28/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Female	6/27/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Female	8/2/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Female	8/28/00	0.0000	0.0000	8

2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## Santa Cruz Island - Fry's Harbor

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Chromis punctipinnis</i> Adult	7/20/00	54.0000	13.8804	4
<i>Chromis punctipinnis</i> Adult	8/17/00	24.3750	16.8687	8
<i>Chromis punctipinnis</i> Juvenile	7/20/00	0.5000	0.5774	4
<i>Chromis punctipinnis</i> Juvenile	8/17/00	0.6250	1.0607	8
<i>Oxyjulis californica</i> Adult	7/20/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Adult	8/17/00	0.6250	1.0607	8
<i>Oxyjulis californica</i> Juvenile	7/20/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Sebastes mystinus</i> Adult	7/20/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Adult	8/17/00	0.7500	1.1650	8
<i>Sebastes mystinus</i> Juvenile	7/20/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	8/17/00	0.6250	1.1877	8
<i>Sebastes serranoides</i> Adult	7/20/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Adult	8/17/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Juvenile	7/20/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Sebastes atrovirens</i> Adult	7/20/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Adult	8/17/00	0.0000	0.0000	8
<i>Sebastes atrovirens</i> Juvenile	7/20/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Paralabrax clathratus</i> Adult	7/20/00	0.7500	0.9574	4
<i>Paralabrax clathratus</i> Adult	8/17/00	0.0000	0.0000	8
<i>Paralabrax clathratus</i> Juvenile	7/20/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Male	7/20/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	8/17/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Female	7/20/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Female	8/17/00	1.5000	1.6036	8
<i>Semicossyphus pulcher</i> Juvenile	7/20/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Adult	7/20/00	0.5000	0.5774	4
<i>Embiotoca jacksoni</i> Adult	8/17/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Juvenile	7/20/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Adult	7/20/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	8/17/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Juvenile	7/20/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Adult	7/20/00	0.5000	0.5774	4
<i>Damalichthys vacca</i> Adult	8/17/00	1.3750	1.7678	8
<i>Damalichthys vacca</i> Juvenile	7/20/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Adult	7/20/00	0.2500	0.5000	4
<i>Hypsypops rubicundus</i> Adult	8/17/00	0.1250	0.3536	8
<i>Hypsypops rubicundus</i> Juvenile	7/20/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Juvenile	8/17/00	0.1250	0.3536	8
<i>Girella nigricans</i> Adult	7/20/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	8/17/00	0.0000	0.0000	8
<i>Girella nigricans</i> Juvenile	7/20/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Male	7/20/00	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> Male	8/17/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Female	7/20/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Female	8/17/00	0.5000	0.7559	8



2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## Santa Cruz Island - Pelican Bay

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Chromis punctipinnis</i> Adult	8/3/00	0.2500	0.5000	4
<i>Chromis punctipinnis</i> Adult	8/17/00	1.7500	1.9086	8
<i>Chromis punctipinnis</i> Juvenile	8/3/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Oxyjulis californica</i> Adult	8/3/00	0.2500	0.5000	4
<i>Oxyjulis californica</i> Adult	8/17/00	0.2500	0.4629	8
<i>Oxyjulis californica</i> Juvenile	8/3/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Sebastes mystinus</i> Adult	8/3/00	0.7500	0.9574	4
<i>Sebastes mystinus</i> Adult	8/17/00	0.0000	0.0000	8
<i>Sebastes mystinus</i> Juvenile	8/3/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Adult	8/3/00	0.2500	0.5000	4
<i>Sebastes serranoides</i> Adult	8/17/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Juvenile	8/3/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Sebastes atrovirens</i> Adult	8/3/00	1.7500	1.2583	4
<i>Sebastes atrovirens</i> Adult	8/17/00	0.1250	0.3536	8
<i>Sebastes atrovirens</i> Juvenile	8/3/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Paralabrax clathratus</i> Adult	8/3/00	2.2500	0.9574	4
<i>Paralabrax clathratus</i> Adult	8/17/00	1.3750	0.9161	8
<i>Paralabrax clathratus</i> Juvenile	8/3/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Male	8/3/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	8/17/00	0.1250	0.3536	8
<i>Semicossyphus pulcher</i> Female	8/3/00	0.7500	0.9574	4
<i>Semicossyphus pulcher</i> Female	8/17/00	0.5000	0.9258	8
<i>Semicossyphus pulcher</i> Juvenile	8/3/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Adult	8/3/00	2.0000	1.1547	4
<i>Embiotoca jacksoni</i> Adult	8/17/00	1.7500	0.8864	8
<i>Embiotoca jacksoni</i> Juvenile	8/3/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Adult	8/3/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	8/17/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Juvenile	8/3/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Adult	8/3/00	0.7500	1.5000	4
<i>Damalichthys vacca</i> Adult	8/17/00	0.7500	1.0351	8
<i>Damalichthys vacca</i> Juvenile	8/3/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Adult	8/3/00	1.0000	0.8165	4
<i>Hypsypops rubicundus</i> Adult	8/17/00	0.8750	0.9910	8
<i>Hypsypops rubicundus</i> Juvenile	8/3/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Girella nigricans</i> Adult	8/3/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	8/17/00	0.0000	0.0000	8
<i>Girella nigricans</i> Juvenile	8/3/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Male	8/3/00	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> Male	8/17/00	0.1250	0.3536	8
<i>Halichoeres semicinctus</i> Female	8/3/00	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> Female	8/17/00	0.2500	0.4629	8

2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## Santa Cruz Island - Scorpion Anchorage

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Chromis punctipinnis</i> Adult	8/4/00	18.7500	15.8403	4
<i>Chromis punctipinnis</i> Adult	8/17/00	0.6250	0.7440	8
<i>Chromis punctipinnis</i> Juvenile	8/4/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Oxyjulis californica</i> Adult	8/4/00	2.7500	2.5000	4
<i>Oxyjulis californica</i> Adult	8/17/00	3.1250	3.3568	8
<i>Oxyjulis californica</i> Juvenile	8/4/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Sebastes mystinus</i> Adult	8/4/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Adult	8/17/00	0.2500	0.4629	8
<i>Sebastes mystinus</i> Juvenile	8/4/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Adult	8/4/00	0.5000	0.5774	4
<i>Sebastes serranoides</i> Adult	8/17/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Juvenile	8/4/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Sebastes atrovirens</i> Adult	8/4/00	0.2500	0.5000	4
<i>Sebastes atrovirens</i> Adult	8/17/00	0.0000	0.0000	8
<i>Sebastes atrovirens</i> Juvenile	8/4/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Paralabrax clathratus</i> Adult	8/4/00	0.5000	1.0000	4
<i>Paralabrax clathratus</i> Adult	8/17/00	0.2500	0.4629	8
<i>Paralabrax clathratus</i> Juvenile	8/4/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Male	8/4/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	8/17/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Female	8/4/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Female	8/17/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Juvenile	8/4/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Adult	8/4/00	2.2500	2.0616	4
<i>Embiotoca jacksoni</i> Adult	8/17/00	2.7500	1.1650	8
<i>Embiotoca jacksoni</i> Juvenile	8/4/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Adult	8/4/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	8/17/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Juvenile	8/4/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Adult	8/4/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Adult	8/17/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Juvenile	8/4/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Adult	8/4/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Adult	8/17/00	0.2500	0.4629	8
<i>Hypsypops rubicundus</i> Juvenile	8/4/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Girella nigricans</i> Adult	8/4/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	8/17/00	0.2500	0.4629	8
<i>Girella nigricans</i> Juvenile	8/4/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	8/17/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Male	8/4/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Male	8/17/00	0.3750	0.5175	8
<i>Halichoeres semicinctus</i> Female	8/4/00	0.7500	0.9574	4
<i>Halichoeres semicinctus</i> Female	8/17/00	1.0000	1.3093	8



2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## Santa Cruz Island - Yellow Banks

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Chromis punctipinnis</i> Adult	6/26/00	4.0000	4.5461	4
<i>Chromis punctipinnis</i> Adult	7/17/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Juvenile	6/26/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Juvenile	7/17/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Adult	6/26/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Adult	7/17/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	6/26/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	7/17/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Adult	6/26/00	0.2500	0.5000	4
<i>Sebastes mystinus</i> Adult	7/17/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	6/26/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	7/17/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Adult	6/26/00	0.2500	0.5000	4
<i>Sebastes serranoides</i> Adult	7/17/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	6/26/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	7/17/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Adult	6/26/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Adult	7/17/00	0.2500	0.5000	4
<i>Sebastes atrovirens</i> Juvenile	6/26/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	7/17/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Adult	6/26/00	0.7500	0.5000	4
<i>Paralabrax clathratus</i> Adult	7/17/00	1.2500	0.5000	4
<i>Paralabrax clathratus</i> Juvenile	6/26/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	7/17/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	6/26/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	7/17/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Female	6/26/00	1.0000	1.4142	4
<i>Semicossyphus pulcher</i> Female	7/17/00	2.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	6/26/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	7/17/00	0.5000	0.5774	4
<i>Embiotoca jacksoni</i> Adult	6/26/00	0.2500	0.5000	4
<i>Embiotoca jacksoni</i> Adult	7/17/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	6/26/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	7/17/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	6/26/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	7/17/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	6/26/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	7/17/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Adult	6/26/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Adult	7/17/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	6/26/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	7/17/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Adult	6/26/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Adult	7/17/00	0.2500	0.5000	4
<i>Hypsypops rubicundus</i> Juvenile	6/26/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Juvenile	7/17/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	6/26/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	7/17/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	6/26/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	7/17/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Male	6/26/00	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> Male	7/17/00	0.5000	1.0000	4
<i>Halichoeres semicinctus</i> Female	6/26/00	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> Female	7/17/00	0.0000	0.0000	4

2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## Anacapa Island - Admiral's Reef

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Chromis punctipinnis</i> Adult	6/15/00	242.5000	47.3462	4
<i>Chromis punctipinnis</i> Adult	8/14/00	5.2500	6.1847	4
<i>Chromis punctipinnis</i> Juvenile	6/15/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Juvenile	8/14/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Adult	6/15/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Adult	8/14/00	1.5000	1.7321	4
<i>Oxyjulis californica</i> Juvenile	6/15/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	8/14/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Adult	6/15/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Adult	8/14/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	6/15/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	8/14/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Adult	6/15/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Adult	8/14/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	6/15/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	8/14/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Adult	6/15/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Adult	8/14/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	6/15/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	8/14/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Adult	6/15/00	0.2500	0.5000	4
<i>Paralabrax clathratus</i> Adult	8/14/00	0.2500	0.5000	4
<i>Paralabrax clathratus</i> Juvenile	6/15/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	8/14/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	6/15/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	8/14/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Female	6/15/00	2.0000	1.6330	4
<i>Semicossyphus pulcher</i> Female	8/14/00	3.0000	2.4495	4
<i>Semicossyphus pulcher</i> Juvenile	6/15/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	8/14/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Adult	6/15/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Adult	8/14/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	6/15/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	8/14/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	6/15/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	8/14/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	6/15/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	8/14/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Adult	6/15/00	1.0000	1.4142	4
<i>Damalichthys vacca</i> Adult	8/14/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	6/15/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	8/14/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Adult	6/15/00	0.7500	0.9574	4
<i>Hypsypops rubicundus</i> Adult	8/14/00	0.5000	0.5774	4
<i>Hypsypops rubicundus</i> Juvenile	6/15/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Juvenile	8/14/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	6/15/00	0.5000	0.5774	4
<i>Girella nigricans</i> Adult	8/14/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	6/15/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	8/14/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Male	6/15/00	0.5000	1.0000	4
<i>Halichoeres semicinctus</i> Male	8/14/00	1.0000	0.8165	4
<i>Halichoeres semicinctus</i> Female	6/15/00	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> Female	8/14/00	1.5000	1.2910	4

2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## Anacapa Island - Cathedral Cove

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Chromis punctipinnis</i> Adult	6/30/00	15.2500	29.8371	4
<i>Chromis punctipinnis</i> Adult	9/28/00	32.6250	89.0601	8
<i>Chromis punctipinnis</i> Juvenile	6/30/00	0.7500	1.5000	4
<i>Chromis punctipinnis</i> Juvenile	9/28/00	50.8750	70.0193	8
<i>Oxyjulis californica</i> Adult	6/30/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Adult	9/28/00	0.3750	1.0607	8
<i>Oxyjulis californica</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	9/28/00	0.0000	0.0000	8
<i>Sebastes mystinus</i> Adult	6/30/00	0.2500	0.5000	4
<i>Sebastes mystinus</i> Adult	9/28/00	0.0000	0.0000	8
<i>Sebastes mystinus</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	9/28/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Adult	6/30/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Adult	9/28/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Juvenile	6/30/00	0.5000	0.5774	4
<i>Sebastes serranoides</i> Juvenile	9/28/00	0.0000	0.0000	8
<i>Sebastes atrovirens</i> Adult	6/30/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Adult	9/28/00	0.1250	0.3536	8
<i>Sebastes atrovirens</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	9/28/00	0.1250	0.3536	8
<i>Paralabrax clathratus</i> Adult	6/30/00	1.2500	1.5000	4
<i>Paralabrax clathratus</i> Adult	9/28/00	0.3750	0.5175	8
<i>Paralabrax clathratus</i> Juvenile	6/30/00	0.2500	0.5000	4
<i>Paralabrax clathratus</i> Juvenile	9/28/00	1.6250	1.9226	8
<i>Semicossyphus pulcher</i> Male	6/30/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	9/28/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Female	6/30/00	1.2500	1.5000	4
<i>Semicossyphus pulcher</i> Female	9/28/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	9/28/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Adult	6/30/00	0.5000	0.5774	4
<i>Embiotoca jacksoni</i> Adult	9/28/00	2.0000	2.2039	8
<i>Embiotoca jacksoni</i> Juvenile	6/30/00	0.2500	0.5000	4
<i>Embiotoca jacksoni</i> Juvenile	9/28/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Adult	6/30/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	9/28/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	9/28/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Adult	6/30/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Adult	9/28/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	9/28/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Adult	6/30/00	4.0000	3.5590	4
<i>Hypsypops rubicundus</i> Adult	9/28/00	5.5000	2.7255	8
<i>Hypsypops rubicundus</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Juvenile	9/28/00	0.0000	0.0000	8
<i>Girella nigricans</i> Adult	6/30/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	9/28/00	0.1250	0.3536	8
<i>Girella nigricans</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	9/28/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Male	6/30/00	4.0000	3.8297	4
<i>Halichoeres semicinctus</i> Male	9/28/00	0.8750	0.6409	8
<i>Halichoeres semicinctus</i> Female	6/30/00	3.2500	0.9574	4
<i>Halichoeres semicinctus</i> Female	9/28/00	1.8750	1.1260	8

2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## Anacapa Island - Landing Cove

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Chromis punctipinnis</i> Adult	6/30/00	2.7500	2.2174	4
<i>Chromis punctipinnis</i> Adult	7/31/00	10.7500	10.1448	4
<i>Chromis punctipinnis</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Juvenile	7/31/00	0.2500	0.5000	4
<i>Oxyjulis californica</i> Adult	6/30/00	0.7500	0.9574	4
<i>Oxyjulis californica</i> Adult	7/31/00	0.5000	0.5774	4
<i>Oxyjulis californica</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	7/31/00	0.7500	0.9574	4
<i>Sebastes mystinus</i> Adult	6/30/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Adult	7/31/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	7/31/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Adult	6/30/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Adult	7/31/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	7/31/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Adult	6/30/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Adult	7/31/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	7/31/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Adult	6/30/00	0.7500	0.9574	4
<i>Paralabrax clathratus</i> Adult	7/31/00	0.7500	0.9574	4
<i>Paralabrax clathratus</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	7/31/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	6/30/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	7/31/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Female	6/30/00	1.0000	0.8165	4
<i>Semicossyphus pulcher</i> Female	7/31/00	0.7500	0.5000	4
<i>Semicossyphus pulcher</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	7/31/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Adult	6/30/00	1.5000	1.7321	4
<i>Embiotoca jacksoni</i> Adult	7/31/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	7/31/00	1.2500	1.5000	4
<i>Embiotoca lateralis</i> Adult	6/30/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	7/31/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	7/31/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Adult	6/30/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Adult	7/31/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	7/31/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Adult	6/30/00	1.7500	2.2174	4
<i>Hypsypops rubicundus</i> Adult	7/31/00	2.2500	1.2583	4
<i>Hypsypops rubicundus</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Juvenile	7/31/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	6/30/00	1.2500	1.8930	4
<i>Girella nigricans</i> Adult	7/31/00	0.5000	1.0000	4
<i>Girella nigricans</i> Juvenile	6/30/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	7/31/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Male	6/30/00	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> Male	7/31/00	0.7500	0.9574	4
<i>Halichoeres semicinctus</i> Female	6/30/00	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> Female	7/31/00	0.7500	0.5000	4

2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## Santa Barbara Island - SE Sea Lion Rookery

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Chromis punctipinnis</i> Adult	6/12/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Adult	8/15/00	0.5000	1.0000	4
<i>Chromis punctipinnis</i> Juvenile	6/12/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Adult	6/12/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Adult	8/15/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	6/12/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Adult	6/12/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Adult	8/15/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	6/12/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Adult	6/12/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Adult	8/15/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	6/12/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Adult	6/12/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Adult	8/15/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	6/12/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Adult	6/12/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Adult	8/15/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	6/12/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	6/12/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	8/15/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Female	6/12/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Female	8/15/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	6/12/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Adult	6/12/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Adult	8/15/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	6/12/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	6/12/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	8/15/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	6/12/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Adult	6/12/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Adult	8/15/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	6/12/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Adult	6/12/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Adult	8/15/00	0.5000	1.0000	4
<i>Hypsypops rubicundus</i> Juvenile	6/12/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	6/12/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	8/15/00	0.5000	1.0000	4
<i>Girella nigricans</i> Juvenile	6/12/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Male	6/12/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Male	8/15/00	0.5000	0.5774	4
<i>Halichoeres semicinctus</i> Female	6/12/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Female	8/15/00	0.7500	1.5000	4

2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## Santa Barbara Island - Arch Point

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Chromis punctipinnis</i> Adult	6/13/00	19.0000	22.1811	4
<i>Chromis punctipinnis</i> Adult	8/15/00	65.7500	30.4124	4
<i>Chromis punctipinnis</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Juvenile	8/15/00	11.7500	14.8857	4
<i>Oxyjulis californica</i> Adult	6/13/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Adult	8/15/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Adult	6/13/00	0.2500	0.5000	4
<i>Sebastes mystinus</i> Adult	8/15/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Adult	6/13/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Adult	8/15/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Adult	6/13/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Adult	8/15/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Adult	6/13/00	0.5000	0.5774	4
<i>Paralabrax clathratus</i> Adult	8/15/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	6/13/00	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> Male	8/15/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Female	6/13/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Female	8/15/00	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Adult	6/13/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Adult	8/15/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	6/13/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	8/15/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Adult	6/13/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Adult	8/15/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Adult	6/13/00	3.0000	1.6330	4
<i>Hypsypops rubicundus</i> Adult	8/15/00	3.7500	1.5000	4
<i>Hypsypops rubicundus</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	6/13/00	0.0000	0.0000	4
<i>Girella nigricans</i> Adult	8/15/00	1.0000	0.8165	4
<i>Girella nigricans</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	8/15/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Male	6/13/00	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> Male	8/15/00	0.7500	0.9574	4
<i>Halichoeres semicinctus</i> Female	6/13/00	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> Female	8/15/00	1.2500	0.9574	4



2000 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M<sup>3</sup>)

## Santa Barbara Island - Cat Canyon

	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Chromis punctipinnis</i> Adult	6/13/00	9.7500	11.1467	4
<i>Chromis punctipinnis</i> Adult	8/16/00	2.2500	4.2003	8
<i>Chromis punctipinnis</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Chromis punctipinnis</i> Juvenile	8/16/00	0.5000	0.9258	8
<i>Oxyjulis californica</i> Adult	6/13/00	7.0000	6.2183	4
<i>Oxyjulis californica</i> Adult	8/16/00	16.1250	9.1720	8
<i>Oxyjulis californica</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Oxyjulis californica</i> Juvenile	8/16/00	1.0000	2.8284	8
<i>Sebastes mystinus</i> Adult	6/13/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Adult	8/16/00	0.0000	0.0000	8
<i>Sebastes mystinus</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Sebastes mystinus</i> Juvenile	8/16/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Adult	6/13/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Adult	8/16/00	0.0000	0.0000	8
<i>Sebastes serranoides</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Sebastes serranoides</i> Juvenile	8/16/00	0.0000	0.0000	8
<i>Sebastes atrovirens</i> Adult	6/13/00	0.0000	0.0000	4
<i>Sebastes atrovirens</i> Adult	8/16/00	0.0000	0.0000	8
<i>Sebastes atrovirens</i> Juvenile	6/13/00	0.2500	0.5000	4
<i>Sebastes atrovirens</i> Juvenile	8/16/00	0.0000	0.0000	8
<i>Paralabrax clathratus</i> Adult	6/13/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Adult	8/16/00	0.3750	0.7440	8
<i>Paralabrax clathratus</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Paralabrax clathratus</i> Juvenile	8/16/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Male	6/13/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Male	8/16/00	0.0000	0.0000	8
<i>Semicossyphus pulcher</i> Female	6/13/00	1.0000	1.1547	4
<i>Semicossyphus pulcher</i> Female	8/16/00	1.2500	1.0351	8
<i>Semicossyphus pulcher</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> Juvenile	8/16/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Adult	6/13/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Adult	8/16/00	0.0000	0.0000	8
<i>Embiotoca jacksoni</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> Juvenile	8/16/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Adult	6/13/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Adult	8/16/00	0.0000	0.0000	8
<i>Embiotoca lateralis</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Embiotoca lateralis</i> Juvenile	8/16/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Adult	6/13/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Adult	8/16/00	0.0000	0.0000	8
<i>Damalichthys vacca</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Damalichthys vacca</i> Juvenile	8/16/00	0.0000	0.0000	8
<i>Hypsypops rubicundus</i> Adult	6/13/00	1.2500	1.2583	4
<i>Hypsypops rubicundus</i> Adult	8/16/00	2.2500	1.2817	8
<i>Hypsypops rubicundus</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> Juvenile	8/16/00	0.0000	0.0000	8
<i>Girella nigricans</i> Adult	6/13/00	1.7500	0.9574	4
<i>Girella nigricans</i> Adult	8/16/00	1.5000	1.6036	8
<i>Girella nigricans</i> Juvenile	6/13/00	0.0000	0.0000	4
<i>Girella nigricans</i> Juvenile	8/16/00	0.0000	0.0000	8
<i>Halichoeres semicinctus</i> Male	6/13/00	0.5000	1.0000	4
<i>Halichoeres semicinctus</i> Male	8/16/00	0.7500	1.1650	8
<i>Halichoeres semicinctus</i> Female	6/13/00	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> Female	8/16/00	2.2500	1.2817	8

**2000 ROVING DIVER FISH COUNT:**

<b>Island:</b>	<b>Site Name:</b>	<b>Date:</b>	<b>Number of Observers:</b>	<b>Number of species observed:</b>
San Miguel	Wyckoff Ledge	6/28/00	4	17
San Miguel	Wyckoff Ledge	8/30/00	6	24
San Miguel	Hare Rock	6/29/00	6	25
San Miguel	Hare Rock	8/30/00	6	23
Santa Rosa	Johnson's Lee North	7/18/00	2	20
Santa Rosa	Johnson's Lee North	9/26/00	7	23
Santa Rosa	Johnson's Lee South	7/19/00	4	23
Santa Rosa	Johnson's Lee South	8/29/00	6	22
Santa Rosa	Rodes Reef	8/1/00	3	19
Santa Rosa	Rodes Reef	8/31/00	6	25
Santa Cruz	Gull Island South	8/2/00	7	20
Santa Cruz	Gull Island South	8/28/00	6	22
Santa Cruz	Fry's Harbor	7/20/00	4	26
Santa Cruz	Fry's Harbor	8/17/00	6	27
Santa Cruz	Pelican Bay	8/3/00	7	26
Santa Cruz	Pelican Bay	8/17/00	6	24
Santa Cruz	Scorpion Anchorage	8/4/00	6	25
Santa Cruz	Scorpion Anchorage	8/17/00	6	24
Santa Cruz	Yellow Banks	6/26/00	4	13
Santa Cruz	Yellow Banks	7/17/00	3	16
Anacapa	Admiral's Reef	6/15/00	4	16
Anacapa	Admiral's Reef	8/14/00	4	17
Anacapa	Cathedral Cove	6/30/00	6	24
Anacapa	Cathedral Cove	9/28/00	7	27
Anacapa	Landing Cove	6/30/00	6	25
Anacapa	Landing Cove	7/31/00	6	23
Santa Barbara	SE Sea Lion Rookery	6/12/00	5	7
Santa Barbara	SE Sea Lion Rookery	8/16/00	6	17
Santa Barbara	Arch Point	6/13/00	7	15
Santa Barbara	Arch Point	8/15/00	6	16
Santa Barbara	Cat Canyon	6/13/00	6	21
Santa Barbara	Cat Canyon	8/16/00	5	17



# 2000 ROVING DIVER FISH COUNT:

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## San Miguel Island - Wyckoff Ledge

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black and yellow rockfish	8/30/00	6	5	7.20	2.17	1.60	0.55
black rockfish	6/28/00	4	2	8.50	0.71	2.50	0.71
black surfperch, adult	6/28/00	4	3	6.67	5.77	1.67	1.53
black surfperch, adult	8/30/00	6	6	9.17	0.98	1.83	0.41
black surfperch, all	6/28/00	4	4	7.50	5.00	2.00	1.41
black surfperch, all	8/30/00	6	6	9.17	0.98	2.33	0.52
black surfperch, juvenile	6/28/00	4	3	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/30/00	6	6	5.33	4.37	1.17	1.17
blackeye goby	6/28/00	4	4	3.75	4.35	0.75	0.96
blackeye goby	8/30/00	6	6	7.83	1.17	2.00	0.63
blacksmith, adult	6/28/00	4	3	0.00	0.00	0.00	0.00
blacksmith, adult	8/30/00	6	6	0.00	0.00	0.00	0.00
blacksmith, all	6/28/00	4	4	0.00	0.00	0.00	0.00
blacksmith, all	8/30/00	6	6	0.00	0.00	0.00	0.00
blacksmith, juvenile	6/28/00	4	3	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/30/00	6	6	0.00	0.00	0.00	0.00
blue rockfish, adult	6/28/00	4	3	9.00	1.00	3.00	0.00
blue rockfish, adult	8/30/00	6	6	6.83	1.72	2.67	0.52
blue rockfish, all	6/28/00	4	4	9.00	0.82	3.00	0.00
blue rockfish, all	8/30/00	6	6	7.00	1.55	2.67	0.52
blue rockfish, juvenile	6/28/00	4	3	0.00	0.00	0.00	0.00
blue rockfish, juvenile	8/30/00	6	6	1.00	2.45	0.17	0.41
blue-banded goby	6/28/00	4	4	0.00	0.00	0.00	0.00
blue-banded goby	8/30/00	6	6	0.00	0.00	0.00	0.00
California sheephead,	6/28/00	4	4	4.75	5.50	0.75	0.96
California sheephead,	8/30/00	6	6	5.00	4.00	1.50	1.22
California sheephead,	6/28/00	4	4	0.00	0.00	0.00	0.00
California sheephead,	8/30/00	6	6	0.00	0.00	0.00	0.00
California sheephead,	6/28/00	4	4	4.50	5.26	0.50	0.58
California sheephead,	8/30/00	6	6	7.33	0.52	1.83	0.41
copper rockfish	6/28/00	4	4	8.25	0.96	1.25	0.50
copper rockfish	8/30/00	6	5	8.60	1.95	1.60	0.55
coralline sculpin	8/30/00	6	2	7.50	0.71	1.50	0.71
garibaldi, adult	6/28/00	4	4	0.00	0.00	0.00	0.00
garibaldi, adult	8/30/00	6	6	0.00	0.00	0.00	0.00
garibaldi, juvenile	6/28/00	4	4	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/30/00	6	6	0.00	0.00	0.00	0.00
gopher rockfish	8/30/00	6	1	9.00		2.00	
island kelpfish	6/28/00	4	4	0.00	0.00	0.00	0.00
island kelpfish	8/30/00	6	6	0.00	0.00	0.00	0.00
kelp bass, adult	6/28/00	4	3	0.00	0.00	0.00	0.00
kelp bass, adult	8/30/00	6	6	0.00	0.00	0.00	0.00
kelp bass, calico bass, all	6/28/00	4	4	0.00	0.00	0.00	0.00
kelp bass, calico bass, all	8/30/00	6	6	0.00	0.00	0.00	0.00
kelp bass, juvenile	6/28/00	4	3	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/30/00	6	6	0.00	0.00	0.00	0.00
kelp rockfish, adult	6/28/00	4	3	9.33	0.58	2.67	0.58
kelp rockfish, adult	8/30/00	6	6	9.83	0.41	2.83	0.41
kelp rockfish, all	6/28/00	4	4	9.25	0.50	2.50	0.58
kelp rockfish, all	8/30/00	6	6	10.00	0.00	2.83	0.41
kelp rockfish, juvenile	6/28/00	4	3	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/30/00	6	6	1.67	4.08	0.17	0.41
kelpfish spp.	8/30/00	6	1	7.00		1.00	
lingcod	8/30/00	6	2	6.50	0.71	1.00	0.00

## 2000 ROVING DIVER FISH COUNT:

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mosshead warbonet	8/30/00	6	2	5.50	0.71	1.00	0.00
olive rockfish, adult	6/28/00	4	3	2.67	4.62	0.33	0.58
olive rockfish, adult	8/30/00	6	6	3.83	2.99	1.00	0.89
olive rockfish, all	6/28/00	4	4	2.00	4.00	0.25	0.50
olive rockfish, all	8/30/00	6	6	3.83	2.99	1.00	0.89
olive/yellowtail rockfish,	6/28/00	4	3	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	8/30/00	6	6	0.00	0.00	0.00	0.00
opaleye, adult	6/28/00	4	3	0.00	0.00	0.00	0.00
opaleye, adult	8/30/00	6	6	0.00	0.00	0.00	0.00
opaleye, all	6/28/00	4	4	0.00	0.00	0.00	0.00
opaleye, all	8/30/00	6	6	0.00	0.00	0.00	0.00
opaleye, juvenile	6/28/00	4	3	0.00	0.00	0.00	0.00
opaleye, juvenile	8/30/00	6	6	0.00	0.00	0.00	0.00
painted greenling	6/28/00	4	4	9.75	0.50	2.75	0.50
painted greenling	8/30/00	6	6	9.83	0.41	2.83	0.41
pile surfperch, adult	6/28/00	4	3	7.67	1.53	2.00	0.00
pile surfperch, adult	8/30/00	6	6	4.17	4.67	1.00	1.10
pile surfperch, all	6/28/00	4	4	8.25	1.71	2.25	0.50
pile surfperch, all	8/30/00	6	6	9.17	1.60	2.50	0.55
pile surfperch, juvenile	6/28/00	4	3	0.00	0.00	0.00	0.00
pile surfperch, juvenile	8/30/00	6	6	9.00	1.55	2.17	0.75
rainbow surfperch	6/28/00	4	2	7.50	0.71	1.50	0.71
rainbow surfperch	8/30/00	6	5	9.20	1.79	3.00	0.00
rock wrasse, female	6/28/00	4	4	0.00	0.00	0.00	0.00
rock wrasse, female	8/30/00	6	6	0.00	0.00	0.00	0.00
rock wrasse, male	6/28/00	4	4	0.00	0.00	0.00	0.00
rock wrasse, male	8/30/00	6	6	0.00	0.00	0.00	0.00
rubberlip surfperch	8/30/00	6	1	10.00		2.00	
senorita, adult	6/28/00	4	3	10.00	0.00	4.00	0.00
senorita, adult	8/30/00	6	6	9.17	2.04	2.33	0.52
senorita, all	6/28/00	4	4	10.00	0.00	4.00	0.00
senorita, all	8/30/00	6	6	9.17	2.04	2.33	0.52
senorita, juvenile	6/28/00	4	3	0.00	0.00	0.00	0.00
senorita, juvenile	8/30/00	6	6	0.00	0.00	0.00	0.00
snubnose sculpin	6/28/00	4	1	6.00		1.00	
snubnose sculpin	8/30/00	6	2	8.00	1.41	2.00	0.00
speckled sanddab	8/30/00	6	2	7.00	1.41	2.00	0.00
striped surfperch, adult	6/28/00	4	3	9.67	0.58	2.67	0.58
striped surfperch, adult	8/30/00	6	6	5.00	4.29	1.17	0.98
striped surfperch, all	6/28/00	4	4	9.75	0.50	2.75	0.50
striped surfperch, all	8/30/00	6	6	5.00	4.29	1.17	0.98
striped surfperch, juvenile	6/28/00	4	3	5.33	4.62	1.33	1.15
striped surfperch, juvenile	8/30/00	6	6	0.00	0.00	0.00	0.00
treefish, adult	6/28/00	4	4	0.00	0.00	0.00	0.00
treefish, adult	8/30/00	6	6	3.50	3.99	0.50	0.55
treefish, juvenile	6/28/00	4	4	0.00	0.00	0.00	0.00
treefish, juvenile	8/30/00	6	6	0.00	0.00	0.00	0.00
tubesnout	6/28/00	4	4	9.50	0.58	4.00	0.00
tubesnout	8/30/00	6	6	10.00	0.00	3.83	0.41
vermillion rockfish	6/28/00	4	3	8.33	0.58	1.00	0.00
vermillion rockfish	8/30/00	6	2	7.00	2.83	1.50	0.71
white seabass	6/28/00	4	1	6.00		1.00	

# 2000 ROVING DIVER FISH COUNT:

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## San Miguel Island - Hare Rock

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black and yellow rockfish	6/29/00	6	6	7.00	1.67	1.50	0.55
black and yellow rockfish	8/30/00	6	6	7.67	1.86	1.83	0.75
black surfperch, adult	6/29/00	6	6	9.00	1.10	1.83	0.41
black surfperch, adult	8/30/00	6	6	9.17	0.75	2.17	0.41
black surfperch, all	6/29/00	6	6	9.00	1.10	1.83	0.41
black surfperch, all	8/30/00	6	6	9.50	0.55	2.50	0.55
black surfperch, juvenile	6/29/00	6	6	4.50	4.97	1.00	1.10
black surfperch, juvenile	8/30/00	6	6	8.33	1.86	1.83	0.41
blackeye goby	6/29/00	6	6	10.00	0.00	2.83	0.75
blackeye goby	8/30/00	6	6	10.00	0.00	3.00	0.00
blacksmith, adult	6/29/00	6	5	6.60	3.97	2.40	1.34
blacksmith, adult	8/30/00	6	6	6.50	3.21	2.17	1.17
blacksmith, all	6/29/00	6	6	6.67	3.56	2.50	1.22
blacksmith, all	8/30/00	6	6	6.50	3.21	2.17	1.17
blacksmith, juvenile	6/29/00	6	5	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/30/00	6	6	0.00	0.00	0.00	0.00
blue rockfish, adult	6/29/00	6	5	9.80	0.45	3.00	0.71
blue rockfish, adult	8/30/00	6	6	9.83	0.41	3.17	0.41
blue rockfish, all	6/29/00	6	6	9.83	0.41	3.00	0.63
blue rockfish, all	8/30/00	6	6	9.83	0.41	3.17	0.41
blue rockfish, juvenile	6/29/00	6	5	3.00	4.12	0.60	0.89
blue rockfish, juvenile	8/30/00	6	6	5.00	4.20	1.33	1.21
blue-banded goby	6/29/00	6	6	0.00	0.00	0.00	0.00
blue-banded goby	8/30/00	6	6	0.00	0.00	0.00	0.00
c-o turbot	8/30/00	6	1	5.00		1.00	
cabezon	6/29/00	6	2	6.50	0.71	1.50	0.71
cabezon	8/30/00	6	3	7.33	1.53	1.67	0.58
California scorpionfish	6/29/00	6	1	8.00		1.00	
California sheephead,	6/29/00	6	6	9.00	1.10	2.83	0.41
California sheephead,	8/30/00	6	6	9.83	0.41	2.67	0.52
California sheephead,	6/29/00	6	6	1.17	2.86	0.17	0.41
California sheephead,	8/30/00	6	6	0.00	0.00	0.00	0.00
California sheephead,	6/29/00	6	6	3.33	3.78	1.00	1.10
California sheephead,	8/30/00	6	6	3.67	2.94	0.83	0.75
copper rockfish	6/29/00	6	6	7.33	1.63	1.33	0.52
copper rockfish	8/30/00	6	4	8.75	1.89	1.50	0.58
coralline sculpin	8/30/00	6	2	8.00	2.83	2.00	0.00
fringehead spp.	6/29/00	6	1	7.00		1.00	
garibaldi, adult	6/29/00	6	6	0.00	0.00	0.00	0.00
garibaldi, adult	8/30/00	6	6	0.00	0.00	0.00	0.00
garibaldi, juvenile	6/29/00	6	6	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/30/00	6	6	0.00	0.00	0.00	0.00
giant kelpfish	6/29/00	6	1	5.00		1.00	
gopher/copper rockfish,	6/29/00	6	3	5.67	0.58	2.00	1.00
island kelpfish	6/29/00	6	6	0.00	0.00	0.00	0.00
island kelpfish	8/30/00	6	6	0.00	0.00	0.00	0.00
kelp bass, adult	6/29/00	6	5	0.00	0.00	0.00	0.00
kelp bass, adult	8/30/00	6	6	0.00	0.00	0.00	0.00
kelp bass, calico bass, all	6/29/00	6	6	0.00	0.00	0.00	0.00
kelp bass, calico bass, all	8/30/00	6	6	0.00	0.00	0.00	0.00
kelp bass, juvenile	6/29/00	6	5	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/30/00	6	6	0.00	0.00	0.00	0.00
kelp rockfish, adult	6/29/00	6	5	9.40	0.89	2.20	0.45
kelp rockfish, adult	8/30/00	6	6	9.33	1.03	3.00	0.00

## 2000 ROVING DIVER FISH COUNT:

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kelp rockfish, all	6/29/00	6	6	9.17	0.98	2.17	0.41
kelp rockfish, all	8/30/00	6	6	9.33	1.03	3.00	0.00
kelp rockfish, juvenile	6/29/00	6	5	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/30/00	6	6	0.00	0.00	0.00	0.00
kelpfish spp.	6/29/00	6	1	5.00		2.00	
kelpfish spp.	8/30/00	6	4	10.00	0.00	1.75	0.50
ocean whitefish	6/29/00	6	2	9.00	0.00	1.00	0.00
olive rockfish, adult	6/29/00	6	5	9.40	0.89	2.20	0.45
olive rockfish, adult	8/30/00	6	6	8.67	0.82	2.50	0.84
olive rockfish, all	6/29/00	6	6	9.33	0.82	2.17	0.41
olive rockfish, all	8/30/00	6	6	8.67	0.82	2.50	0.84
olive/yellowtail rockfish,	6/29/00	6	5	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	8/30/00	6	6	0.00	0.00	0.00	0.00
opaleye, adult	6/29/00	6	5	0.00	0.00	0.00	0.00
opaleye, adult	8/30/00	6	6	0.00	0.00	0.00	0.00
opaleye, all	6/29/00	6	6	0.00	0.00	0.00	0.00
opaleye, all	8/30/00	6	6	0.00	0.00	0.00	0.00
opaleye, juvenile	6/29/00	6	5	0.00	0.00	0.00	0.00
opaleye, juvenile	8/30/00	6	6	0.00	0.00	0.00	0.00
painted greenling	6/29/00	6	6	10.00	0.00	3.00	0.00
painted greenling	8/30/00	6	6	10.00	0.00	3.17	0.41
pile surfperch, adult	6/29/00	6	5	4.00	5.48	0.80	1.10
pile surfperch, adult	8/30/00	6	6	4.33	4.84	1.17	1.33
pile surfperch, all	6/29/00	6	6	4.67	5.16	1.00	1.10
pile surfperch, all	8/30/00	6	6	4.33	4.84	1.17	1.33
pile surfperch, juvenile	6/29/00	6	5	0.00	0.00	0.00	0.00
pile surfperch, juvenile	8/30/00	6	6	0.00	0.00	0.00	0.00
rainbow surfperch	6/29/00	6	2	10.00	0.00	1.50	0.71
rainbow surfperch	8/30/00	6	3	7.00	1.00	2.00	1.00
rock wrasse, female	6/29/00	6	6	0.00	0.00	0.00	0.00
rock wrasse, female	8/30/00	6	6	0.00	0.00	0.00	0.00
rock wrasse, male	6/29/00	6	6	0.00	0.00	0.00	0.00
rock wrasse, male	8/30/00	6	6	0.00	0.00	0.00	0.00
rockfish spp., juvenile	8/30/00	6	3	8.67	1.15	2.00	0.00
senorita, adult	6/29/00	6	5	10.00	0.00	3.20	0.45
senorita, adult	8/30/00	6	6	9.67	0.52	3.83	0.41
senorita, all	6/29/00	6	6	10.00	0.00	3.17	0.41
senorita, all	8/30/00	6	6	9.67	0.52	3.83	0.41
senorita, juvenile	6/29/00	6	5	0.00	0.00	0.00	0.00
senorita, juvenile	8/30/00	6	6	0.00	0.00	0.00	0.00
snubnose sculpin	6/29/00	6	5	9.60	0.89	2.00	0.71
snubnose sculpin	8/30/00	6	5	8.80	0.84	2.20	0.45
striped surfperch, adult	6/29/00	6	6	7.00	3.69	1.67	1.03
striped surfperch, adult	8/30/00	6	6	8.17	0.98	1.83	0.41
striped surfperch, all	6/29/00	6	6	9.00	0.89	2.50	0.55
striped surfperch, all	8/30/00	6	6	8.17	0.98	2.17	0.75
striped surfperch, juvenile	6/29/00	6	6	6.00	4.69	1.50	1.22
striped surfperch, juvenile	8/30/00	6	6	4.67	3.61	1.33	1.03
stripedfin ronquil	6/29/00	6	3	8.00	1.73	1.33	0.58
stripedfin ronquil	8/30/00	6	5	8.60	1.67	2.00	0.00
treefish, adult	6/29/00	6	6	2.67	4.18	0.50	0.84
treefish, adult	8/30/00	6	6	2.17	3.49	0.50	0.84
treefish, juvenile	6/29/00	6	6	0.00	0.00	0.00	0.00
treefish, juvenile	8/30/00	6	6	0.00	0.00	0.00	0.00
tubesnout	6/29/00	6	2	9.00	0.00	1.00	0.00
zebra goby	8/30/00	6	2	5.50	0.71	1.00	0.00

# 2000 ROVING DIVER FISH COUNT:

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## Santa Rosa Island - Johnson's Lee North

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black and yellow rockfish	7/18/00	2	2	8.50	0.71	2.00	0.00
black and yellow rockfish	9/26/00	7	7	7.29	1.50	1.86	0.38
black surfperch, adult	7/18/00	2	2	10.00	0.00	3.00	0.00
black surfperch, adult	9/26/00	7	7	10.00	0.00	3.00	0.00
black surfperch, all	7/18/00	2	2	10.00	0.00	3.00	0.00
black surfperch, all	9/26/00	7	7	10.00	0.00	3.00	0.00
black surfperch, juvenile	7/18/00	2	2	0.00	0.00	0.00	0.00
black surfperch, juvenile	9/26/00	7	7	0.71	1.89	0.29	0.76
blackeye goby	7/18/00	2	2	8.50	2.12	2.50	0.71
blackeye goby	9/26/00	7	7	9.57	0.79	3.00	0.58
blacksmith, adult	7/18/00	2	2	10.00	0.00	3.00	0.00
blacksmith, adult	9/26/00	7	7	10.00	0.00	3.14	0.38
blacksmith, all	7/18/00	2	2	10.00	0.00	3.00	0.00
blacksmith, all	9/26/00	7	7	10.00	0.00	3.14	0.38
blacksmith, juvenile	7/18/00	2	2	0.00	0.00	0.00	0.00
blacksmith, juvenile	9/26/00	7	7	1.29	3.40	0.14	0.38
blue rockfish, adult	7/18/00	2	2	7.50	0.71	1.50	0.71
blue rockfish, adult	9/26/00	7	7	10.00	0.00	3.00	0.58
blue rockfish, all	7/18/00	2	2	7.50	0.71	1.50	0.71
blue rockfish, all	9/26/00	7	7	10.00	0.00	3.00	0.58
blue rockfish, juvenile	7/18/00	2	2	0.00	0.00	0.00	0.00
blue rockfish, juvenile	9/26/00	7	7	0.00	0.00	0.00	0.00
blue-banded goby	7/18/00	2	2	0.00	0.00	0.00	0.00
blue-banded goby	9/26/00	7	7	0.00	0.00	0.00	0.00
cabezon	7/18/00	2	2	9.00	0.00	1.00	0.00
cabezon	9/26/00	7	1	8.00		1.00	
California sheephead,	7/18/00	2	2	10.00	0.00	3.00	0.00
California sheephead,	9/26/00	7	7	10.00	0.00	3.00	0.00
California sheephead,	7/18/00	2	2	0.00	0.00	0.00	0.00
California sheephead,	9/26/00	7	7	0.00	0.00	0.00	0.00
California sheephead,	7/18/00	2	2	0.00	0.00	0.00	0.00
California sheephead,	9/26/00	7	7	6.86	4.71	1.29	0.95
fringehead spp.	9/26/00	7	1	6.00		1.00	
garibaldi, adult	7/18/00	2	2	9.00	0.00	2.00	0.00
garibaldi, adult	9/26/00	7	7	9.71	0.49	2.00	0.00
garibaldi, juvenile	7/18/00	2	2	0.00	0.00	0.00	0.00
garibaldi, juvenile	9/26/00	7	7	0.00	0.00	0.00	0.00
gopher rockfish	9/26/00	7	1	9.00		1.00	
halfmoon	7/18/00	2	2	5.50	0.71	1.50	0.71
halfmoon	9/26/00	7	2	10.00	0.00	1.50	0.71
island kelpfish	7/18/00	2	2	2.50	3.54	0.50	0.71
island kelpfish	9/26/00	7	7	0.00	0.00	0.00	0.00
kelp bass, adult	7/18/00	2	2	9.50	0.71	2.00	0.00
kelp bass, adult	9/26/00	7	7	9.86	0.38	2.29	0.49
kelp bass, calico bass, all	7/18/00	2	2	9.50	0.71	2.00	0.00
kelp bass, calico bass, all	9/26/00	7	7	9.86	0.38	2.29	0.49
kelp bass, juvenile	7/18/00	2	2	0.00	0.00	0.00	0.00
kelp bass, juvenile	9/26/00	7	7	0.00	0.00	0.00	0.00
kelp rockfish, adult	7/18/00	2	2	9.50	0.71	3.00	0.00
kelp rockfish, adult	9/26/00	7	7	9.29	1.50	2.86	0.38
kelp rockfish, all	7/18/00	2	2	9.50	0.71	3.00	0.00
kelp rockfish, all	9/26/00	7	7	9.29	1.50	2.86	0.38
kelp rockfish, juvenile	7/18/00	2	2	4.00	5.66	1.00	1.41
kelp rockfish, juvenile	9/26/00	7	7	0.00	0.00	0.00	0.00

## 2000 ROVING DIVER FISH COUNT:

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ocean whitefish	9/26/00	7	4	6.75	0.96	1.75	0.50
olive rockfish, adult	7/18/00	2	2	9.50	0.71	2.00	0.00
olive rockfish, adult	9/26/00	7	7	10.00	0.00	2.57	0.53
olive rockfish, all	7/18/00	2	2	9.50	0.71	2.00	0.00
olive rockfish, all	9/26/00	7	7	10.00	0.00	2.57	0.53
olive/yellowtail rockfish,	7/18/00	2	2	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	9/26/00	7	7	0.00	0.00	0.00	0.00
opaleye, adult	7/18/00	2	2	0.00	0.00	0.00	0.00
opaleye, adult	9/26/00	7	7	4.00	5.03	0.57	0.79
opaleye, all	7/18/00	2	2	0.00	0.00	0.00	0.00
opaleye, all	9/26/00	7	6	4.67	5.16	0.67	0.82
opaleye, juvenile	7/18/00	2	2	0.00	0.00	0.00	0.00
opaleye, juvenile	9/26/00	7	7	0.00	0.00	0.00	0.00
painted greenling	7/18/00	2	2	10.00	0.00	3.00	0.00
painted greenling	9/26/00	7	7	10.00	0.00	3.14	0.38
pile surfperch, adult	7/18/00	2	2	8.50	2.12	2.00	0.00
pile surfperch, adult	9/26/00	7	7	10.00	0.00	2.71	0.49
pile surfperch, all	7/18/00	2	2	8.50	2.12	2.00	0.00
pile surfperch, all	9/26/00	7	7	10.00	0.00	2.71	0.49
pile surfperch, juvenile	7/18/00	2	2	0.00	0.00	0.00	0.00
pile surfperch, juvenile	9/26/00	7	7	0.00	0.00	0.00	0.00
rock wrasse, female	7/18/00	2	2	2.50	3.54	0.50	0.71
rock wrasse, female	9/26/00	7	7	5.00	3.74	0.71	0.49
rock wrasse, male	7/18/00	2	2	6.00	1.41	2.00	0.00
rock wrasse, male	9/26/00	7	7	5.71	4.19	0.86	0.69
rubberlip surfperch	9/26/00	7	6	7.67	1.51	2.00	0.00
senorita, adult	7/18/00	2	2	8.50	0.71	2.50	0.71
senorita, adult	9/26/00	7	7	1.00	2.65	0.14	0.38
senorita, all	7/18/00	2	2	8.50	0.71	2.50	0.71
senorita, all	9/26/00	7	7	1.00	2.65	0.14	0.38
senorita, juvenile	7/18/00	2	2	0.00	0.00	0.00	0.00
senorita, juvenile	9/26/00	7	7	0.00	0.00	0.00	0.00
snubnose sculpin	7/18/00	2	1	9.00		1.00	
striped surfperch, adult	7/18/00	2	2	9.00	1.41	2.00	0.00
striped surfperch, adult	9/26/00	7	7	9.29	0.95	2.14	0.38
striped surfperch, all	7/18/00	2	2	9.00	1.41	2.00	0.00
striped surfperch, all	9/26/00	7	7	9.29	0.95	2.14	0.38
striped surfperch, juvenile	7/18/00	2	2	0.00	0.00	0.00	0.00
striped surfperch, juvenile	9/26/00	7	7	0.00	0.00	0.00	0.00
treefish, adult	7/18/00	2	2	8.00	0.00	1.00	0.00
treefish, adult	9/26/00	7	7	2.86	3.76	0.57	0.79
treefish, juvenile	7/18/00	2	2	3.50	4.95	0.50	0.71
treefish, juvenile	9/26/00	7	7	0.71	1.89	0.14	0.38

**2000 ROVING DIVER FISH COUNT:**

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**Santa Rosa Island - Johnson's Lee South**

<b>CommonName:</b>	<b>Date:</b>	<b>Maximum# of Observers:</b>	<b># of Observations:</b>	<b>Avg Score:</b>	<b>StDev Score:</b>	<b>Avg Abundance:</b>	<b>StDev Abundance:</b>
black and yellow rockfish	7/19/00	4	4	7.00	1.83	1.75	0.50
black and yellow rockfish	8/29/00	6	4	7.75	1.50	2.00	0.00
black surfperch, adult	7/19/00	4	4	9.75	0.50	2.50	0.58
black surfperch, adult	8/29/00	6	6	10.00	0.00	3.00	0.00
black surfperch, all	7/19/00	4	4	9.75	0.50	2.50	0.58
black surfperch, all	8/29/00	6	6	10.00	0.00	3.00	0.00
black surfperch, juvenile	7/19/00	4	4	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/29/00	6	6	0.00	0.00	0.00	0.00
blackeye goby	7/19/00	4	4	10.00	0.00	3.00	0.00
blackeye goby	8/29/00	6	6	10.00	0.00	3.83	0.41
blacksmith, adult	7/19/00	4	4	10.00	0.00	3.25	0.50
blacksmith, adult	8/29/00	6	6	9.67	0.52	3.17	0.75
blacksmith, all	7/19/00	4	4	10.00	0.00	3.25	0.50
blacksmith, all	8/29/00	6	6	9.67	0.52	3.17	0.75
blacksmith, juvenile	7/19/00	4	4	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/29/00	6	6	1.17	2.86	0.33	0.82
blue rockfish, adult	7/19/00	4	4	9.00	2.00	2.50	0.58
blue rockfish, adult	8/29/00	6	6	1.67	4.08	0.33	0.82
blue rockfish, all	7/19/00	4	4	9.50	1.00	2.75	0.50
blue rockfish, all	8/29/00	6	6	3.50	4.18	0.67	0.82
blue rockfish, juvenile	7/19/00	4	4	9.25	0.96	2.00	0.00
blue rockfish, juvenile	8/29/00	6	6	2.67	2.94	0.67	0.82
blue-banded goby	7/19/00	4	4	0.00	0.00	0.00	0.00
blue-banded goby	8/29/00	6	6	0.00	0.00	0.00	0.00
c-o turbot	8/29/00	6	1	5.00		1.00	
California sheephead,	7/19/00	4	4	9.75	0.50	3.00	0.00
California sheephead,	8/29/00	6	6	10.00	0.00	3.00	0.00
California sheephead,	7/19/00	4	4	0.00	0.00	0.00	0.00
California sheephead,	8/29/00	6	6	0.00	0.00	0.00	0.00
California sheephead,	7/19/00	4	4	4.75	5.50	0.50	0.58
California sheephead,	8/29/00	6	6	10.00	0.00	2.00	0.00
copper rockfish	8/29/00	6	1	7.00		1.00	
coralline sculpin	7/19/00	4	1	9.00		2.00	
garibaldi, adult	7/19/00	4	4	0.00	0.00	0.00	0.00
garibaldi, adult	8/29/00	6	6	0.00	0.00	0.00	0.00
garibaldi, juvenile	7/19/00	4	4	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/29/00	6	6	0.00	0.00	0.00	0.00
gopher rockfish	7/19/00	4	4	8.00	2.16	1.25	0.50
gopher rockfish	8/29/00	6	3	8.67	1.15	2.00	0.00
halfmoon	7/19/00	4	1	6.00		2.00	
island kelpfish	7/19/00	4	4	0.00	0.00	0.00	0.00
island kelpfish	8/29/00	6	6	1.33	3.27	0.17	0.41
kelp bass, adult	7/19/00	4	4	5.50	4.20	1.00	0.82
kelp bass, adult	8/29/00	6	6	9.50	0.84	2.00	0.00
kelp bass, calico bass, all	7/19/00	4	4	5.50	4.20	1.00	0.82
kelp bass, calico bass, all	8/29/00	6	6	9.50	0.84	2.00	0.00
kelp bass, juvenile	7/19/00	4	4	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/29/00	6	6	0.00	0.00	0.00	0.00
kelp rockfish, adult	7/19/00	4	4	10.00	0.00	3.00	0.00
kelp rockfish, adult	8/29/00	6	6	9.83	0.41	2.83	0.41
kelp rockfish, all	7/19/00	4	4	10.00	0.00	3.00	0.00
kelp rockfish, all	8/29/00	6	6	9.83	0.41	2.83	0.41
kelp rockfish, juvenile	7/19/00	4	4	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/29/00	6	6	1.17	2.86	0.33	0.82



## 2000 ROVING DIVER FISH COUNT:

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ocean whitefish	7/19/00	4	1	5.00		3.00	
ocean whitefish	8/29/00	6	2	8.50	0.71	1.50	0.71
olive rockfish, adult	7/19/00	4	4	8.00	2.16	1.75	0.50
olive rockfish, adult	8/29/00	6	6	6.67	3.72	1.50	0.84
olive rockfish, all	7/19/00	4	4	8.00	2.16	1.75	0.50
olive rockfish, all	8/29/00	6	6	6.67	3.72	1.50	0.84
olive/yellowtail rockfish,	7/19/00	4	4	1.50	3.00	0.25	0.50
olive/yellowtail rockfish,	8/29/00	6	6	0.00	0.00	0.00	0.00
opaleye, adult	7/19/00	4	4	5.50	4.20	1.50	1.00
opaleye, adult	8/29/00	6	6	3.67	4.08	0.67	0.82
opaleye, all	7/19/00	4	4	5.50	4.20	1.50	1.00
opaleye, all	8/29/00	6	6	3.67	4.08	0.67	0.82
opaleye, juvenile	7/19/00	4	4	0.00	0.00	0.00	0.00
opaleye, juvenile	8/29/00	6	6	0.00	0.00	0.00	0.00
painted greenling	7/19/00	4	4	10.00	0.00	3.00	0.00
painted greenling	8/29/00	6	6	10.00	0.00	3.17	0.41
pile surfperch, adult	7/19/00	4	4	9.50	1.00	2.25	0.96
pile surfperch, adult	8/29/00	6	6	9.33	0.52	2.50	0.55
pile surfperch, all	7/19/00	4	4	9.50	1.00	2.25	0.96
pile surfperch, all	8/29/00	6	6	9.33	0.52	2.50	0.55
pile surfperch, juvenile	7/19/00	4	4	0.00	0.00	0.00	0.00
pile surfperch, juvenile	8/29/00	6	6	0.00	0.00	0.00	0.00
rainbow surfperch	7/19/00	4	2	9.00	0.00	1.50	0.71
rock wrasse, female	7/19/00	4	4	0.00	0.00	0.00	0.00
rock wrasse, female	8/29/00	6	6	0.00	0.00	0.00	0.00
rock wrasse, male	7/19/00	4	4	0.00	0.00	0.00	0.00
rock wrasse, male	8/29/00	6	6	0.00	0.00	0.00	0.00
rubberlip surfperch	7/19/00	4	4	10.00	0.00	2.00	0.00
rubberlip surfperch	8/29/00	6	5	9.80	0.45	3.00	0.00
senorita, adult	7/19/00	4	4	10.00	0.00	3.50	0.58
senorita, adult	8/29/00	6	6	10.00	0.00	3.67	0.52
senorita, all	7/19/00	4	4	10.00	0.00	3.50	0.58
senorita, all	8/29/00	6	6	10.00	0.00	3.67	0.52
senorita, juvenile	7/19/00	4	4	0.00	0.00	0.00	0.00
senorita, juvenile	8/29/00	6	6	1.17	2.86	0.17	0.41
striped surfperch, adult	7/19/00	4	4	9.50	0.58	2.75	0.50
striped surfperch, adult	8/29/00	6	6	9.33	0.82	2.67	0.52
striped surfperch, all	7/19/00	4	4	9.50	0.58	2.75	0.50
striped surfperch, all	8/29/00	6	6	9.33	0.82	2.67	0.52
striped surfperch, juvenile	7/19/00	4	4	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/29/00	6	6	0.00	0.00	0.00	0.00
swell shark	7/19/00	4	1	6.00		1.00	
top smelt	8/29/00	6	1	10.00		2.00	
treefish, adult	7/19/00	4	4	2.25	4.50	0.50	1.00
treefish, adult	8/29/00	6	6	3.33	3.78	0.67	0.82
treefish, juvenile	7/19/00	4	4	4.50	3.32	1.00	0.82
treefish, juvenile	8/29/00	6	6	5.33	4.32	1.00	0.89



**2000 ROVING DIVER FISH COUNT:**

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**Santa Rosa Island - Rodes Reef**

<b>CommonName:</b>	<b>Date:</b>	<b>Maximum# of Observers:</b>	<b># of Observations:</b>	<b>Avg Score:</b>	<b>StDev Score:</b>	<b>Avg Abundance:</b>	<b>StDev Abundance:</b>
black and yellow rockfish	8/1/00	3	3	7.00	2.00	1.33	0.58
black and yellow rockfish	8/31/00	6	3	7.33	1.53	1.33	0.58
black surfperch, adult	8/1/00	3	3	10.00	0.00	2.00	0.00
black surfperch, adult	8/31/00	6	6	9.50	0.84	2.17	0.41
black surfperch, all	8/1/00	3	3	10.00	0.00	2.67	0.58
black surfperch, all	8/31/00	6	6	10.00	0.00	2.83	0.41
black surfperch, juvenile	8/1/00	3	3	10.00	0.00	2.00	0.00
black surfperch, juvenile	8/31/00	6	6	6.67	5.16	1.67	1.37
blackeye goby	8/1/00	3	3	7.33	0.58	2.00	0.00
blackeye goby	8/31/00	6	6	8.33	1.21	2.50	0.55
blacksmith, adult	8/1/00	3	3	9.33	0.58	3.00	0.00
blacksmith, adult	8/31/00	6	6	9.50	0.84	3.17	0.41
blacksmith, all	8/1/00	3	3	9.33	0.58	3.00	0.00
blacksmith, all	8/31/00	6	6	9.50	0.84	3.17	0.41
blacksmith, juvenile	8/1/00	3	3	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/31/00	6	6	0.00	0.00	0.00	0.00
blue rockfish, adult	8/1/00	3	3	9.00	1.00	2.67	0.58
blue rockfish, adult	8/31/00	6	6	10.00	0.00	2.67	0.82
blue rockfish, all	8/1/00	3	3	9.00	1.00	2.67	0.58
blue rockfish, all	8/31/00	6	6	10.00	0.00	2.67	0.82
blue rockfish, juvenile	8/1/00	3	3	4.33	4.04	0.67	0.58
blue rockfish, juvenile	8/31/00	6	6	0.00	0.00	0.00	0.00
blue-banded goby	8/1/00	3	3	0.00	0.00	0.00	0.00
blue-banded goby	8/31/00	6	6	0.00	0.00	0.00	0.00
c-o turbot	8/31/00	6	1	5.00		1.00	
California sheephead,	8/1/00	3	3	9.33	0.58	2.00	0.00
California sheephead,	8/31/00	6	6	9.33	1.03	2.67	0.52
California sheephead,	8/1/00	3	3	0.00	0.00	0.00	0.00
California sheephead,	8/31/00	6	6	0.00	0.00	0.00	0.00
California sheephead,	8/1/00	3	3	4.33	4.04	0.67	0.58
California sheephead,	8/31/00	6	6	8.33	4.08	1.67	0.82
copper rockfish	8/31/00	6	6	7.33	2.34	1.17	0.41
coralline sculpin	8/31/00	6	2	10.00	0.00	1.50	0.71
garibaldi, adult	8/1/00	3	3	0.00	0.00	0.00	0.00
garibaldi, adult	8/31/00	6	6	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/1/00	3	3	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/31/00	6	6	0.00	0.00	0.00	0.00
gopher/copper rockfish,	8/1/00	3	1	10.00		1.00	
gopher/copper rockfish,	8/31/00	6	3	8.00	1.00	2.00	0.00
island kelpfish	8/1/00	3	3	0.00	0.00	0.00	0.00
island kelpfish	8/31/00	6	6	0.00	0.00	0.00	0.00
kelp bass, adult	8/1/00	3	3	8.33	1.15	1.33	0.58
kelp bass, adult	8/31/00	6	6	8.67	1.75	2.00	0.00
kelp bass, calico bass, all	8/1/00	3	3	8.33	1.15	1.33	0.58
kelp bass, calico bass, all	8/31/00	6	6	8.67	1.75	2.00	0.00
kelp bass, juvenile	8/1/00	3	3	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/31/00	6	6	0.00	0.00	0.00	0.00
kelp rockfish, adult	8/1/00	3	3	6.00	5.20	1.00	1.00
kelp rockfish, adult	8/31/00	6	6	6.83	3.43	1.50	0.84
kelp rockfish, all	8/1/00	3	3	6.00	5.20	1.00	1.00
kelp rockfish, all	8/31/00	6	6	7.50	3.73	1.50	0.84
kelp rockfish, juvenile	8/1/00	3	3	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/31/00	6	6	4.67	5.13	0.50	0.55
lingcod	8/1/00	3	1	7.00		1.00	

## 2000 ROVING DIVER FISH COUNT:

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ocean whitefish	8/31/00	6	2	6.50	0.71	1.00	0.00
olive rockfish, adult	8/1/00	3	3	5.67	5.13	1.33	1.15
olive rockfish, adult	8/31/00	6	6	9.67	0.52	2.00	0.00
olive rockfish, all	8/1/00	3	3	5.67	5.13	1.33	1.15
olive rockfish, all	8/31/00	6	6	9.67	0.52	2.00	0.00
olive/yellowtail rockfish,	8/1/00	3	3	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	8/31/00	6	6	0.00	0.00	0.00	0.00
opaleye, adult	8/1/00	3	3	0.00	0.00	0.00	0.00
opaleye, adult	8/31/00	6	6	3.00	4.69	0.33	0.52
opaleye, all	8/1/00	3	3	0.00	0.00	0.00	0.00
opaleye, all	8/31/00	6	6	3.00	4.69	0.33	0.52
opaleye, juvenile	8/1/00	3	3	0.00	0.00	0.00	0.00
opaleye, juvenile	8/31/00	6	6	0.00	0.00	0.00	0.00
painted greenling	8/1/00	3	3	10.00	0.00	3.00	0.00
painted greenling	8/31/00	6	6	10.00	0.00	3.00	0.00
pile surfperch, adult	8/1/00	3	3	9.33	0.58	2.00	0.00
pile surfperch, adult	8/31/00	6	6	6.67	3.50	1.50	0.84
pile surfperch, all	8/1/00	3	3	9.33	0.58	2.00	0.00
pile surfperch, all	8/31/00	6	6	6.67	3.50	1.50	0.84
pile surfperch, juvenile	8/1/00	3	3	0.00	0.00	0.00	0.00
pile surfperch, juvenile	8/31/00	6	6	0.00	0.00	0.00	0.00
rainbow surfperch	8/1/00	3	2	10.00	0.00	2.00	0.00
rock wrasse, female	8/1/00	3	3	0.00	0.00	0.00	0.00
rock wrasse, female	8/31/00	6	6	0.00	0.00	0.00	0.00
rock wrasse, male	8/1/00	3	3	0.00	0.00	0.00	0.00
rock wrasse, male	8/31/00	6	6	0.00	0.00	0.00	0.00
rubberlip surfperch	8/1/00	3	2	9.00	1.41	1.50	0.71
rubberlip surfperch	8/31/00	6	1	6.00		1.00	
senorita, adult	8/1/00	3	3	0.00	0.00	0.00	0.00
senorita, adult	8/31/00	6	5	4.40	4.16	0.80	0.84
senorita, all	8/1/00	3	3	0.00	0.00	0.00	0.00
senorita, all	8/31/00	6	6	3.67	4.13	0.67	0.82
senorita, juvenile	8/1/00	3	3	0.00	0.00	0.00	0.00
senorita, juvenile	8/31/00	6	6	0.00	0.00	0.00	0.00
snubnose sculpin	8/1/00	3	1	10.00		2.00	
snubnose sculpin	8/31/00	6	5	8.80	1.10	1.60	0.55
striped surfperch, adult	8/1/00	3	3	8.33	1.53	1.33	0.58
striped surfperch, adult	8/31/00	6	6	7.83	3.92	1.83	0.98
striped surfperch, all	8/1/00	3	3	8.33	1.53	1.33	0.58
striped surfperch, all	8/31/00	6	6	7.83	3.92	1.83	0.98
striped surfperch, juvenile	8/1/00	3	3	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/31/00	6	6	1.17	2.86	0.17	0.41
stripedfin ronquil	8/31/00	6	2	8.00	0.00	1.00	0.00
treefish, adult	8/1/00	3	3	0.00	0.00	0.00	0.00
treefish, adult	8/31/00	6	6	0.00	0.00	0.00	0.00
treefish, juvenile	8/1/00	3	3	4.33	4.04	1.00	1.00
treefish, juvenile	8/31/00	6	6	1.33	3.27	0.17	0.41
vermillion rockfish	8/31/00	6	2	9.00	1.41	1.50	0.71
vermillion rockfish,	8/1/00	3	1	8.00		2.00	
vermillion rockfish,	8/31/00	6	3	7.33	0.58	1.33	0.58
wolf-eel	8/31/00	6	1	5.00		1.00	

**2000 ROVING DIVER FISH COUNT:**

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**Santa Cruz Island - Gull Island South**

<b>CommonName:</b>	<b>Date:</b>	<b>Maximum# of Observers:</b>	<b># of Observations:</b>	<b>Avg Score:</b>	<b>StDev Score:</b>	<b>Avg Abundance:</b>	<b>StDev Abundance:</b>
black and yellow rockfish	8/2/00	7	3	7.33	1.53	1.33	0.58
black and yellow rockfish	8/28/00	6	4	7.75	2.06	1.00	0.00
black surfperch, adult	8/2/00	7	4	1.75	3.50	0.25	0.50
black surfperch, adult	8/28/00	6	6	5.83	4.62	1.00	0.89
black surfperch, all	8/2/00	7	7	4.43	4.20	0.86	0.90
black surfperch, all	8/28/00	6	6	5.83	4.62	1.00	0.89
black surfperch, juvenile	8/2/00	7	4	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/28/00	6	6	0.00	0.00	0.00	0.00
blackeye goby	8/2/00	7	7	9.71	0.49	2.57	0.53
blackeye goby	8/28/00	6	6	10.00	0.00	4.00	0.00
blacksmith, adult	8/2/00	7	4	8.00	2.31	2.25	0.50
blacksmith, adult	8/28/00	6	6	10.00	0.00	4.00	0.00
blacksmith, all	8/2/00	7	7	6.29	3.35	1.86	0.90
blacksmith, all	8/28/00	6	6	10.00	0.00	4.00	0.00
blacksmith, juvenile	8/2/00	7	4	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/28/00	6	6	1.33	3.27	0.17	0.41
blue rockfish, adult	8/2/00	7	4	10.00	0.00	2.75	0.50
blue rockfish, adult	8/28/00	6	6	10.00	0.00	3.17	0.41
blue rockfish, all	8/2/00	7	7	10.00	0.00	3.00	0.00
blue rockfish, all	8/28/00	6	6	10.00	0.00	4.00	0.00
blue rockfish, juvenile	8/2/00	7	4	9.50	1.00	2.75	0.50
blue rockfish, juvenile	8/28/00	6	6	9.67	0.82	3.17	0.41
blue-banded goby	8/2/00	7	7	0.00	0.00	0.00	0.00
blue-banded goby	8/28/00	6	6	0.00	0.00	0.00	0.00
cabezon	8/2/00	7	2	10.00	0.00	1.00	0.00
cabezon	8/28/00	6	2	8.50	0.71	1.00	0.00
California scorpionfish	8/2/00	7	1	6.00		1.00	
California scorpionfish	8/28/00	6	2	9.00	0.00	1.00	0.00
California sheephead,	8/2/00	7	7	9.86	0.38	2.71	0.49
California sheephead,	8/28/00	6	6	9.67	0.52	2.67	0.52
California sheephead,	8/2/00	7	7	2.57	4.43	0.29	0.49
California sheephead,	8/28/00	6	6	0.00	0.00	0.00	0.00
California sheephead,	8/2/00	7	7	0.00	0.00	0.00	0.00
California sheephead,	8/28/00	6	6	1.17	2.86	0.17	0.41
copper rockfish	8/2/00	7	1	10.00		1.00	
garibaldi, adult	8/2/00	7	7	0.00	0.00	0.00	0.00
garibaldi, adult	8/28/00	6	6	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/2/00	7	7	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/28/00	6	6	0.00	0.00	0.00	0.00
gopher rockfish	8/2/00	7	6	8.33	1.37	1.83	0.41
gopher rockfish	8/28/00	6	4	6.50	1.29	1.50	0.58
island kelpfish	8/2/00	7	7	1.14	3.02	0.14	0.38
island kelpfish	8/28/00	6	6	1.17	2.86	0.17	0.41
kelp bass, adult	8/2/00	7	4	2.00	4.00	0.25	0.50
kelp bass, adult	8/28/00	6	6	6.67	3.67	1.33	0.82
kelp bass, calico bass, all	8/2/00	7	7	3.71	4.68	0.71	0.95
kelp bass, calico bass, all	8/28/00	6	6	6.67	3.67	1.33	0.82
kelp bass, juvenile	8/2/00	7	4	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/28/00	6	6	0.00	0.00	0.00	0.00
kelp rockfish, adult	8/2/00	7	4	6.00	4.08	1.25	0.96
kelp rockfish, adult	8/28/00	6	6	6.50	3.73	1.17	0.75
kelp rockfish, all	8/2/00	7	7	3.43	4.31	0.71	0.95
kelp rockfish, all	8/28/00	6	6	6.50	3.73	1.17	0.75
kelp rockfish, juvenile	8/2/00	7	4	0.00	0.00	0.00	0.00

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kelp rockfish, juvenile	8/28/00	6	6	0.00	0.00	0.00	0.00
olive rockfish, adult	8/2/00	7	4	7.00	0.82	1.00	0.00
olive rockfish, adult	8/28/00	6	6	6.33	4.93	1.33	1.03
olive rockfish, all	8/2/00	7	7	4.86	3.39	0.71	0.49
olive rockfish, all	8/28/00	6	6	6.33	4.93	1.33	1.03
olive/yellowtail rockfish,	8/2/00	7	4	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	8/28/00	6	6	0.00	0.00	0.00	0.00
opaleye, adult	8/2/00	7	4	4.00	4.69	0.75	0.96
opaleye, adult	8/28/00	6	6	4.83	3.87	0.67	0.52
opaleye, all	8/2/00	7	7	2.29	3.95	0.43	0.79
opaleye, all	8/28/00	6	6	4.83	3.87	0.67	0.52
opaleye, juvenile	8/2/00	7	4	0.00	0.00	0.00	0.00
opaleye, juvenile	8/28/00	6	6	0.00	0.00	0.00	0.00
Pacific sardine	8/2/00	7	1	5.00		4.00	
painted greenling	8/2/00	7	7	10.00	0.00	3.00	0.00
painted greenling	8/28/00	6	6	10.00	0.00	3.17	0.41
pile surfperch, adult	8/2/00	7	4	8.75	1.26	2.00	0.00
pile surfperch, adult	8/28/00	6	6	9.33	0.82	2.17	0.41
pile surfperch, all	8/2/00	7	7	7.14	3.44	1.57	0.79
pile surfperch, all	8/28/00	6	6	9.33	0.82	2.17	0.41
pile surfperch, juvenile	8/2/00	7	4	0.00	0.00	0.00	0.00
pile surfperch, juvenile	8/28/00	6	6	0.00	0.00	0.00	0.00
rock wrasse, female	8/2/00	7	7	0.00	0.00	0.00	0.00
rock wrasse, female	8/28/00	6	6	0.00	0.00	0.00	0.00
rock wrasse, male	8/2/00	7	7	0.00	0.00	0.00	0.00
rock wrasse, male	8/28/00	6	6	0.00	0.00	0.00	0.00
rubberlip surfperch	8/28/00	6	1	6.00		2.00	
senorita, adult	8/2/00	7	5	6.00	3.74	1.60	1.14
senorita, adult	8/28/00	6	6	7.33	3.67	2.00	1.26
senorita, all	8/2/00	7	6	6.00	3.41	1.67	1.21
senorita, all	8/28/00	6	6	7.33	3.67	2.00	1.26
senorita, juvenile	8/2/00	7	4	0.00	0.00	0.00	0.00
senorita, juvenile	8/28/00	6	6	0.00	0.00	0.00	0.00
snubnose sculpin	8/28/00	6	1	7.00		2.00	
striped surfperch, adult	8/2/00	7	4	0.00	0.00	0.00	0.00
striped surfperch, adult	8/28/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, all	8/2/00	7	7	0.00	0.00	0.00	0.00
striped surfperch, all	8/28/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/2/00	7	4	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/28/00	6	6	0.00	0.00	0.00	0.00
swell shark	8/28/00	6	2	8.50	0.71	1.00	0.00
treefish, adult	8/2/00	7	7	4.43	4.20	1.00	1.00
treefish, adult	8/28/00	6	6	8.67	1.03	1.83	0.41
treefish, juvenile	8/2/00	7	7	0.00	0.00	0.00	0.00
treefish, juvenile	8/28/00	6	6	5.83	4.54	1.00	0.89
zebra goby	8/28/00	6	1	9.00		1.00	

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## Santa Cruz Island - Fry's Harbor

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black and yellow rockfish	7/20/00	4	3	6.00	1.00	1.00	0.00
black and yellow rockfish	8/17/00	6	2	7.00	2.83	1.00	0.00
black surfperch, adult	7/20/00	4	4	6.50	1.73	1.25	0.50
black surfperch, adult	8/17/00	6	6	3.50	3.99	0.67	0.82
black surfperch, all	7/20/00	4	4	6.50	1.73	1.25	0.50
black surfperch, all	8/17/00	6	6	3.50	3.99	0.67	0.82
black surfperch, juvenile	7/20/00	4	4	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
blackeye goby	7/20/00	4	4	9.75	0.50	3.25	0.50
blackeye goby	8/17/00	6	6	10.00	0.00	4.00	0.00
blacksmith, adult	7/20/00	4	4	10.00	0.00	4.00	0.00
blacksmith, adult	8/17/00	6	6	10.00	0.00	3.83	0.41
blacksmith, all	7/20/00	4	4	10.00	0.00	4.00	0.00
blacksmith, all	8/17/00	6	6	10.00	0.00	3.83	0.41
blacksmith, juvenile	7/20/00	4	4	3.75	4.50	1.00	1.15
blacksmith, juvenile	8/17/00	6	6	6.50	3.78	1.83	1.17
blue rockfish, adult	7/20/00	4	4	2.00	4.00	0.25	0.50
blue rockfish, adult	8/17/00	6	6	6.33	4.93	1.17	0.98
blue rockfish, all	7/20/00	4	4	6.75	4.57	1.25	0.96
blue rockfish, all	8/17/00	6	6	7.67	3.83	1.67	0.82
blue rockfish, juvenile	7/20/00	4	4	6.25	4.50	1.00	0.82
blue rockfish, juvenile	8/17/00	6	6	4.33	4.76	1.00	1.10
blue-banded goby	7/20/00	4	4	9.25	0.50	3.00	0.00
blue-banded goby	8/17/00	6	6	9.83	0.41	3.33	0.52
cabezon	8/17/00	6	2	7.50	2.12	1.50	0.71
California scorpionfish	8/17/00	6	2	8.00	2.83	1.00	0.00
California sheephead,	7/20/00	4	4	8.75	1.50	2.50	0.58
California sheephead,	8/17/00	6	6	9.50	0.84	2.50	0.55
California sheephead,	7/20/00	4	4	0.00	0.00	0.00	0.00
California sheephead,	8/17/00	6	6	1.67	4.08	0.17	0.41
California sheephead,	7/20/00	4	4	6.00	4.32	0.75	0.50
California sheephead,	8/17/00	6	6	2.83	4.49	0.67	1.03
coralline sculpin	7/20/00	4	2	6.00	0.00	1.50	0.71
coralline sculpin	8/17/00	6	1	9.00		1.00	
garibaldi, adult	7/20/00	4	4	9.00	1.41	1.50	0.58
garibaldi, adult	8/17/00	6	6	8.83	1.33	2.17	0.41
garibaldi, juvenile	7/20/00	4	4	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
gopher rockfish	7/20/00	4	4	8.00	2.16	1.75	0.50
gopher rockfish	8/17/00	6	6	7.50	1.64	1.50	0.55
halfmoon	7/20/00	4	2	7.50	3.54	2.00	0.00
halfmoon	8/17/00	6	4	7.00	1.63	1.50	0.58
island kelpfish	7/20/00	4	4	4.50	5.20	0.75	0.96
island kelpfish	8/17/00	6	6	6.50	3.51	1.00	0.63
kelp bass, adult	7/20/00	4	4	9.75	0.50	2.25	0.50
kelp bass, adult	8/17/00	6	6	7.33	2.16	1.83	0.98
kelp bass, calico bass, all	7/20/00	4	4	9.75	0.50	2.25	0.50
kelp bass, calico bass, all	8/17/00	6	6	7.33	2.16	1.83	0.98
kelp bass, juvenile	7/20/00	4	4	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
kelp rockfish, adult	7/20/00	4	4	2.25	4.50	0.50	1.00
kelp rockfish, adult	8/17/00	6	6	5.33	2.73	1.33	0.82
kelp rockfish, all	7/20/00	4	4	2.25	4.50	0.50	1.00
kelp rockfish, all	8/17/00	6	6	5.33	2.73	1.33	0.82

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kelp rockfish, juvenile	7/20/00	4	4	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
lingcod	7/20/00	4	3	6.67	2.89	1.00	0.00
ocean whitefish	8/17/00	6	3	7.67	2.52	2.00	1.00
olive rockfish, adult	7/20/00	4	4	0.00	0.00	0.00	0.00
olive rockfish, adult	8/17/00	6	6	0.00	0.00	0.00	0.00
olive rockfish, all	7/20/00	4	4	0.00	0.00	0.00	0.00
olive rockfish, all	8/17/00	6	6	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	7/20/00	4	4	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	8/17/00	6	6	0.00	0.00	0.00	0.00
opaleye, adult	7/20/00	4	4	5.00	5.77	1.00	1.15
opaleye, adult	8/17/00	6	6	6.33	3.72	1.67	1.21
opaleye, all	7/20/00	4	4	5.00	5.77	1.00	1.15
opaleye, all	8/17/00	6	6	6.33	3.72	1.67	1.21
opaleye, juvenile	7/20/00	4	4	0.00	0.00	0.00	0.00
opaleye, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
Pacific sardine	7/20/00	4	2	6.00	1.41	4.00	0.00
painted greenling	7/20/00	4	4	9.75	0.50	3.00	0.00
painted greenling	8/17/00	6	6	10.00	0.00	3.00	0.00
pile surfperch, adult	7/20/00	4	4	10.00	0.00	2.75	0.50
pile surfperch, adult	8/17/00	6	6	7.50	3.78	1.83	0.98
pile surfperch, all	7/20/00	4	4	10.00	0.00	2.75	0.50
pile surfperch, all	8/17/00	6	6	7.50	3.78	1.83	0.98
pile surfperch, juvenile	7/20/00	4	4	0.00	0.00	0.00	0.00
pile surfperch, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
rock wrasse, female	7/20/00	4	4	6.50	4.43	1.25	0.96
rock wrasse, female	8/17/00	6	6	7.50	4.18	1.83	0.98
rock wrasse, male	7/20/00	4	4	3.00	3.56	0.75	0.96
rock wrasse, male	8/17/00	6	6	6.50	3.39	1.67	0.82
rubberlip surfperch	7/20/00	4	3	8.00	2.00	2.00	0.00
rubberlip surfperch	8/17/00	6	2	9.00	1.41	1.50	0.71
senorita, adult	7/20/00	4	4	3.00	3.56	0.50	0.58
senorita, adult	8/17/00	6	6	8.83	0.75	2.17	0.98
senorita, all	7/20/00	4	4	3.00	3.56	0.50	0.58
senorita, all	8/17/00	6	6	8.83	0.75	2.17	0.98
senorita, juvenile	7/20/00	4	4	0.00	0.00	0.00	0.00
senorita, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
snubnose sculpin	8/17/00	6	2	7.00	2.83	1.00	0.00
striped surfperch, adult	7/20/00	4	4	0.00	0.00	0.00	0.00
striped surfperch, adult	8/17/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, all	7/20/00	4	4	0.00	0.00	0.00	0.00
striped surfperch, all	8/17/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, juvenile	7/20/00	4	4	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
stripedfin ronquil	7/20/00	4	2	8.00	1.41	1.50	0.71
swell shark	7/20/00	4	1	6.00		1.00	
swell shark	8/17/00	6	2	8.50	0.71	1.00	0.00
treefish, adult	7/20/00	4	4	6.25	4.50	1.25	0.96
treefish, adult	8/17/00	6	6	9.33	0.82	2.17	0.41
treefish, juvenile	7/20/00	4	4	3.75	4.50	0.75	0.96
treefish, juvenile	8/17/00	6	6	8.83	1.17	1.50	0.55
zebra goby	7/20/00	4	2	9.50	0.71	2.00	1.41
zebra goby	8/17/00	6	4	8.00	2.00	2.00	0.82

# 2000 ROVING DIVER FISH COUNT:

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## Santa Cruz Island - Pelican Bay

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	8/3/00	7	2	8.00	0.00	1.00	0.00
black and yellow rockfish	8/17/00	6	1	7.00		1.00	
black surfperch, adult	8/3/00	7	4	10.00	0.00	3.00	0.00
black surfperch, adult	8/17/00	6	6	10.00	0.00	3.00	0.00
black surfperch, all	8/3/00	7	7	10.00	0.00	3.00	0.00
black surfperch, all	8/17/00	6	6	10.00	0.00	3.00	0.00
black surfperch, juvenile	8/3/00	7	4	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
blackeye goby	8/3/00	7	7	9.86	0.38	3.57	0.53
blackeye goby	8/17/00	6	6	10.00	0.00	4.00	0.00
blacksmith, adult	8/3/00	7	4	10.00	0.00	3.50	0.58
blacksmith, adult	8/17/00	6	6	9.00	0.89	3.17	0.75
blacksmith, all	8/3/00	7	7	10.00	0.00	3.29	0.49
blacksmith, all	8/17/00	6	6	9.00	0.89	3.17	0.75
blacksmith, juvenile	8/3/00	7	4	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/17/00	6	6	1.33	3.27	0.33	0.82
blue rockfish, adult	8/3/00	7	4	4.00	4.90	0.50	0.58
blue rockfish, adult	8/17/00	6	6	0.00	0.00	0.00	0.00
blue rockfish, all	8/3/00	7	7	5.14	5.01	0.86	0.90
blue rockfish, all	8/17/00	6	6	0.00	0.00	0.00	0.00
blue rockfish, juvenile	8/3/00	7	4	0.00	0.00	0.00	0.00
blue rockfish, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
blue-banded goby	8/3/00	7	7	9.71	0.49	3.29	0.76
blue-banded goby	8/17/00	6	6	9.67	0.82	3.50	0.55
c-o turbot	8/3/00	7	1	6.00		1.00	
California scorpionfish	8/3/00	7	1	7.00		1.00	
California sheephead,	8/3/00	7	7	10.00	0.00	2.00	0.00
California sheephead,	8/17/00	6	6	9.33	0.82	2.17	0.41
California sheephead,	8/3/00	7	7	0.00	0.00	0.00	0.00
California sheephead,	8/17/00	6	6	0.00	0.00	0.00	0.00
California sheephead,	8/3/00	7	7	2.00	3.61	0.29	0.49
California sheephead,	8/17/00	6	6	4.67	5.16	0.50	0.55
coralline sculpin	8/17/00	6	1	8.00		1.00	
fringehead spp.	8/3/00	7	2	8.00	1.41	2.00	0.00
fringehead spp.	8/17/00	6	3	8.67	0.58	1.33	0.58
garibaldi, adult	8/3/00	7	7	10.00	0.00	2.29	0.49
garibaldi, adult	8/17/00	6	6	9.67	0.52	2.50	0.55
garibaldi, juvenile	8/3/00	7	7	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
gopher rockfish	8/17/00	6	1	8.00		1.00	
grass rockfish	8/17/00	6	1	9.00		1.00	
halfmoon	8/3/00	7	4	7.25	1.26	1.75	0.50
halfmoon	8/17/00	6	1	7.00		2.00	
horn shark	8/3/00	7	5	7.40	2.07	1.60	0.55
island kelpfish	8/3/00	7	7	8.14	0.69	1.86	0.38
island kelpfish	8/17/00	6	6	9.00	1.55	2.00	0.00
kelp bass, adult	8/3/00	7	4	9.75	0.50	3.00	0.00
kelp bass, adult	8/17/00	6	6	10.00	0.00	2.83	0.41
kelp bass, calico bass, all	8/3/00	7	7	9.86	0.38	3.00	0.00
kelp bass, calico bass, all	8/17/00	6	6	10.00	0.00	2.83	0.41
kelp bass, juvenile	8/3/00	7	4	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
kelp rockfish, adult	8/3/00	7	4	9.50	1.00	2.75	0.50
kelp rockfish, adult	8/17/00	6	6	8.50	1.05	1.67	0.52



## 2000 ROVING DIVER FISH COUNT:

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kelp rockfish, all	8/3/00	7	7	9.71	0.76	2.71	0.49
kelp rockfish, all	8/17/00	6	6	8.50	1.05	1.67	0.52
kelp rockfish, juvenile	8/3/00	7	4	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
ocean whitefish	8/3/00	7	7	9.86	0.38	3.00	0.00
olive rockfish, adult	8/3/00	7	4	7.50	5.00	1.50	1.00
olive rockfish, adult	8/17/00	6	6	7.00	3.69	1.33	0.82
olive rockfish, all	8/3/00	7	7	5.71	5.35	1.14	1.07
olive rockfish, all	8/17/00	6	6	7.00	3.69	1.33	0.82
olive/yellowtail rockfish,	8/3/00	7	4	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	8/17/00	6	6	0.00	0.00	0.00	0.00
opaleye, adult	8/3/00	7	4	1.50	3.00	0.25	0.50
opaleye, adult	8/17/00	6	6	6.67	5.16	1.33	1.21
opaleye, all	8/3/00	7	7	0.86	2.27	0.14	0.38
opaleye, all	8/17/00	6	6	6.67	5.16	1.33	1.21
opaleye, juvenile	8/3/00	7	4	0.00	0.00	0.00	0.00
opaleye, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
painted greenling	8/3/00	7	7	9.00	1.15	2.57	0.53
painted greenling	8/17/00	6	6	9.83	0.41	2.67	0.52
pile surfperch, adult	8/3/00	7	4	9.75	0.50	2.25	0.50
pile surfperch, adult	8/17/00	6	6	9.17	1.17	2.33	0.52
pile surfperch, all	8/3/00	7	7	9.86	0.38	2.29	0.49
pile surfperch, all	8/17/00	6	6	9.17	1.17	2.33	0.52
pile surfperch, juvenile	8/3/00	7	4	0.00	0.00	0.00	0.00
pile surfperch, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
rock wrasse, female	8/3/00	7	7	4.57	4.28	0.86	0.90
rock wrasse, female	8/17/00	6	6	7.67	3.93	1.67	0.82
rock wrasse, male	8/3/00	7	7	1.00	2.65	0.14	0.38
rock wrasse, male	8/17/00	6	6	6.00	3.35	1.17	0.75
rubberlip surfperch	8/3/00	7	5	9.40	0.55	2.00	0.00
rubberlip surfperch	8/17/00	6	5	8.60	1.34	2.20	0.45
senorita, adult	8/3/00	7	4	9.00	0.82	1.75	0.50
senorita, adult	8/17/00	6	6	9.50	1.22	2.00	0.00
senorita, all	8/3/00	7	7	9.14	0.90	1.86	0.69
senorita, all	8/17/00	6	6	9.50	1.22	2.00	0.00
senorita, juvenile	8/3/00	7	4	0.00	0.00	0.00	0.00
senorita, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, adult	8/3/00	7	4	0.00	0.00	0.00	0.00
striped surfperch, adult	8/17/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, all	8/3/00	7	7	0.00	0.00	0.00	0.00
striped surfperch, all	8/17/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/3/00	7	4	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
treefish, adult	8/3/00	7	7	5.00	4.69	1.00	1.00
treefish, adult	8/17/00	6	6	6.83	3.66	1.33	0.82
treefish, juvenile	8/3/00	7	7	5.43	4.16	0.86	0.69
treefish, juvenile	8/17/00	6	6	4.17	4.62	0.50	0.55
zebra goby	8/3/00	7	4	6.75	1.71	1.75	0.96
zebra goby	8/17/00	6	4	6.75	1.71	1.75	0.50



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## Santa Cruz Island - Scorpion Anchorage

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	8/4/00	6	1	10.00		1.00	
bat ray	8/17/00	6	1	5.00		1.00	
black and yellow rockfish	8/4/00	6	2	9.00	1.41	2.00	0.00
black and yellow rockfish	8/17/00	6	2	9.50	0.71	1.00	0.00
black surfperch, adult	8/4/00	6	3	10.00	0.00	2.67	0.58
black surfperch, adult	8/17/00	6	6	10.00	0.00	3.00	0.00
black surfperch, all	8/4/00	6	6	9.83	0.41	2.67	0.52
black surfperch, all	8/17/00	6	6	10.00	0.00	3.00	0.00
black surfperch, juvenile	8/4/00	6	3	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/17/00	6	6	1.00	2.45	0.33	0.82
blackeye goby	8/4/00	6	6	10.00	0.00	3.50	0.55
blackeye goby	8/17/00	6	6	10.00	0.00	3.67	0.52
blacksmith, adult	8/4/00	6	3	9.67	0.58	3.33	0.58
blacksmith, adult	8/17/00	6	6	8.33	4.08	2.17	1.17
blacksmith, all	8/4/00	6	6	9.17	1.17	3.33	0.52
blacksmith, all	8/17/00	6	6	9.83	0.41	2.50	0.84
blacksmith, juvenile	8/4/00	6	3	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/17/00	6	6	7.67	3.78	1.33	0.82
blue rockfish, adult	8/4/00	6	3	2.33	4.04	0.33	0.58
blue rockfish, adult	8/17/00	6	6	2.00	3.16	0.33	0.52
blue rockfish, all	8/4/00	6	6	2.00	3.16	0.33	0.52
blue rockfish, all	8/17/00	6	6	6.17	3.76	0.83	0.41
blue rockfish, juvenile	8/4/00	6	3	0.00	0.00	0.00	0.00
blue rockfish, juvenile	8/17/00	6	6	4.17	4.92	0.50	0.55
blue-banded goby	8/4/00	6	6	5.33	4.55	1.00	0.89
blue-banded goby	8/17/00	6	6	5.00	5.48	0.83	0.98
brown rockfish	8/17/00	6	1	5.00		1.00	
California scorpionfish	8/17/00	6	2	8.50	0.71	1.50	0.71
California sheephead,	8/4/00	6	6	1.33	3.27	0.17	0.41
California sheephead,	8/17/00	6	6	7.00	3.58	1.50	0.84
California sheephead,	8/4/00	6	6	0.00	0.00	0.00	0.00
California sheephead,	8/17/00	6	6	0.00	0.00	0.00	0.00
California sheephead,	8/4/00	6	6	1.33	3.27	0.17	0.41
California sheephead,	8/17/00	6	6	0.00	0.00	0.00	0.00
fringehead spp.	8/4/00	6	1	5.00		2.00	
garibaldi, adult	8/4/00	6	6	9.50	0.84	2.00	0.00
garibaldi, adult	8/17/00	6	6	9.67	0.82	2.17	0.41
garibaldi, juvenile	8/4/00	6	6	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
halfmoon	8/4/00	6	5	8.40	1.34	2.40	0.55
horn shark	8/4/00	6	3	6.33	0.58	1.33	0.58
horn shark	8/17/00	6	2	10.00	0.00	1.00	0.00
island kelpfish	8/4/00	6	6	6.83	3.71	1.67	0.82
island kelpfish	8/17/00	6	6	7.33	3.72	1.33	0.82
kelp bass, adult	8/4/00	6	3	9.67	0.58	2.33	0.58
kelp bass, adult	8/17/00	6	6	9.83	0.41	2.17	0.41
kelp bass, calico bass, all	8/4/00	6	6	9.50	0.84	2.33	0.52
kelp bass, calico bass, all	8/17/00	6	6	9.83	0.41	2.17	0.41
kelp bass, juvenile	8/4/00	6	3	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/17/00	6	6	1.67	4.08	0.17	0.41
kelp rockfish, adult	8/4/00	6	3	9.33	1.15	1.67	0.58
kelp rockfish, adult	8/17/00	6	6	1.50	3.67	0.17	0.41
kelp rockfish, all	8/4/00	6	6	7.67	3.88	1.50	0.84
kelp rockfish, all	8/17/00	6	6	1.50	3.67	0.17	0.41

## 2000 ROVING DIVER FISH COUNT:

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kelp rockfish, juvenile	8/4/00	6	3	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
olive rockfish, adult	8/4/00	6	3	5.67	5.13	1.00	1.00
olive rockfish, adult	8/17/00	6	6	2.50	3.89	0.33	0.52
olive rockfish, all	8/4/00	6	6	3.67	4.32	0.67	0.82
olive rockfish, all	8/17/00	6	6	2.50	3.89	0.33	0.52
olive/yellowtail rockfish,	8/4/00	6	3	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	8/17/00	6	6	0.00	0.00	0.00	0.00
opaleye, adult	8/4/00	6	3	3.67	3.21	0.67	0.58
opaleye, adult	8/17/00	6	6	9.67	0.52	2.50	0.55
opaleye, all	8/4/00	6	6	6.00	3.52	1.17	0.75
opaleye, all	8/17/00	6	6	9.67	0.52	2.50	0.55
opaleye, juvenile	8/4/00	6	3	0.00	0.00	0.00	0.00
opaleye, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
painted greenling	8/4/00	6	6	9.67	0.52	2.67	0.52
painted greenling	8/17/00	6	6	9.50	0.55	2.17	0.41
pile surfperch, adult	8/4/00	6	3	6.00	5.29	1.33	1.53
pile surfperch, adult	8/17/00	6	6	8.67	1.86	1.67	0.52
pile surfperch, all	8/4/00	6	6	5.83	4.67	1.17	1.17
pile surfperch, all	8/17/00	6	6	8.67	1.86	1.67	0.52
pile surfperch, juvenile	8/4/00	6	3	0.00	0.00	0.00	0.00
pile surfperch, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
rock wrasse, female	8/4/00	6	6	9.33	0.52	2.00	0.63
rock wrasse, female	8/17/00	6	6	9.67	0.52	2.33	0.52
rock wrasse, male	8/4/00	6	6	4.17	4.62	0.67	0.82
rock wrasse, male	8/17/00	6	6	7.33	3.78	1.83	0.98
rubberlip surfperch	8/4/00	6	2	7.50	2.12	2.00	0.00
rubberlip surfperch	8/17/00	6	2	7.50	0.71	1.00	0.00
senorita, adult	8/4/00	6	3	9.67	0.58	3.00	0.00
senorita, adult	8/17/00	6	6	10.00	0.00	3.00	0.00
senorita, all	8/4/00	6	6	9.33	1.21	3.00	0.00
senorita, all	8/17/00	6	6	10.00	0.00	3.00	0.00
senorita, juvenile	8/4/00	6	3	0.00	0.00	0.00	0.00
senorita, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
snubnose sculpin	8/4/00	6	1	10.00		1.00	
striped surfperch, adult	8/4/00	6	3	0.00	0.00	0.00	0.00
striped surfperch, adult	8/17/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, all	8/4/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, all	8/17/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/4/00	6	3	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
treefish, adult	8/4/00	6	6	0.00	0.00	0.00	0.00
treefish, adult	8/17/00	6	6	1.33	3.27	0.17	0.41
treefish, juvenile	8/4/00	6	6	6.17	3.06	1.17	0.75
treefish, juvenile	8/17/00	6	6	0.00	0.00	0.00	0.00
zebra goby	8/4/00	6	1	8.00		2.00	
zebra goby	8/17/00	6	2	7.00	0.00	2.00	0.00

# 2000 ROVING DIVER FISH COUNT:

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## Santa Cruz Island - Yellow Banks

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black and yellow rockfish	7/17/00	3	1	9.00		1.00	
black surfperch, adult	6/26/00	4	3	5.33	4.62	1.33	1.15
black surfperch, adult	7/17/00	3	3	9.33	1.15	2.00	0.00
black surfperch, all	6/26/00	4	4	5.50	3.79	1.50	1.00
black surfperch, all	7/17/00	3	3	9.33	1.15	2.00	0.00
black surfperch, juvenile	6/26/00	4	3	0.00	0.00	0.00	0.00
black surfperch, juvenile	7/17/00	3	3	0.00	0.00	0.00	0.00
blackeye goby	6/26/00	4	4	10.00	0.00	4.00	0.00
blackeye goby	7/17/00	3	3	10.00	0.00	4.00	0.00
blacksmith, adult	6/26/00	4	3	9.33	0.58	3.00	0.00
blacksmith, adult	7/17/00	3	3	8.33	1.53	2.00	1.00
blacksmith, all	6/26/00	4	4	9.50	0.58	3.00	0.00
blacksmith, all	7/17/00	3	3	8.33	1.53	2.00	1.00
blacksmith, juvenile	6/26/00	4	3	0.00	0.00	0.00	0.00
blacksmith, juvenile	7/17/00	3	3	0.00	0.00	0.00	0.00
blue rockfish, adult	6/26/00	4	3	0.00	0.00	0.00	0.00
blue rockfish, adult	7/17/00	3	3	0.00	0.00	0.00	0.00
blue rockfish, all	6/26/00	4	4	0.00	0.00	0.00	0.00
blue rockfish, all	7/17/00	3	3	0.00	0.00	0.00	0.00
blue rockfish, juvenile	6/26/00	4	3	0.00	0.00	0.00	0.00
blue rockfish, juvenile	7/17/00	3	3	0.00	0.00	0.00	0.00
blue-banded goby	6/26/00	4	4	2.00	4.00	0.50	1.00
blue-banded goby	7/17/00	3	3	0.00	0.00	0.00	0.00
California scorpionfish	7/17/00	3	2	8.00	0.00	1.00	0.00
California sheephead,	6/26/00	4	4	10.00	0.00	3.00	0.00
California sheephead,	7/17/00	3	3	10.00	0.00	3.00	0.00
California sheephead,	6/26/00	4	4	0.00	0.00	0.00	0.00
California sheephead,	7/17/00	3	3	0.00	0.00	0.00	0.00
California sheephead,	6/26/00	4	4	0.00	0.00	0.00	0.00
California sheephead,	7/17/00	3	3	0.00	0.00	0.00	0.00
coralline sculpin	7/17/00	3	1	10.00		2.00	
garibaldi, adult	6/26/00	4	4	0.00	0.00	0.00	0.00
garibaldi, adult	7/17/00	3	3	0.00	0.00	0.00	0.00
garibaldi, juvenile	6/26/00	4	4	0.00	0.00	0.00	0.00
garibaldi, juvenile	7/17/00	3	3	0.00	0.00	0.00	0.00
gopher rockfish	7/17/00	3	2	5.00	0.00	1.00	0.00
island kelpfish	6/26/00	4	4	7.00	4.76	1.50	1.00
island kelpfish	7/17/00	3	3	8.00	1.00	1.67	0.58
kelp bass, adult	6/26/00	4	3	10.00	0.00	2.67	0.58
kelp bass, adult	7/17/00	3	3	10.00	0.00	3.00	0.00
kelp bass, calico bass, all	6/26/00	4	4	10.00	0.00	2.75	0.50
kelp bass, calico bass, all	7/17/00	3	3	10.00	0.00	3.00	0.00
kelp bass, juvenile	6/26/00	4	3	0.00	0.00	0.00	0.00
kelp bass, juvenile	7/17/00	3	3	0.00	0.00	0.00	0.00
kelp rockfish, adult	6/26/00	4	3	2.67	4.62	0.33	0.58
kelp rockfish, adult	7/17/00	3	3	6.67	1.53	1.33	0.58
kelp rockfish, all	6/26/00	4	4	2.00	4.00	0.25	0.50
kelp rockfish, all	7/17/00	3	3	6.67	1.53	1.33	0.58
kelp rockfish, juvenile	6/26/00	4	3	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	7/17/00	3	3	0.00	0.00	0.00	0.00
olive rockfish, adult	6/26/00	4	3	0.00	0.00	0.00	0.00
olive rockfish, adult	7/17/00	3	3	2.67	4.62	0.33	0.58
olive rockfish, all	6/26/00	4	4	0.00	0.00	0.00	0.00
olive rockfish, all	7/17/00	3	3	2.67	4.62	0.33	0.58

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olive/yellowtail rockfish,	6/26/00	4	3	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	7/17/00	3	3	0.00	0.00	0.00	0.00
opaleye, adult	6/26/00	4	3	0.00	0.00	0.00	0.00
opaleye, adult	7/17/00	3	3	0.00	0.00	0.00	0.00
opaleye, all	6/26/00	4	4	0.00	0.00	0.00	0.00
opaleye, all	7/17/00	3	3	0.00	0.00	0.00	0.00
opaleye, juvenile	6/26/00	4	3	0.00	0.00	0.00	0.00
opaleye, juvenile	7/17/00	3	3	0.00	0.00	0.00	0.00
painted greenling	6/26/00	4	4	9.00	0.82	2.50	0.58
painted greenling	7/17/00	3	3	9.67	0.58	2.67	0.58
pile surfperch, adult	6/26/00	4	3	3.33	5.77	0.67	1.15
pile surfperch, adult	7/17/00	3	3	0.00	0.00	0.00	0.00
pile surfperch, all	6/26/00	4	4	2.50	5.00	0.50	1.00
pile surfperch, all	7/17/00	3	3	0.00	0.00	0.00	0.00
pile surfperch, juvenile	6/26/00	4	3	0.00	0.00	0.00	0.00
pile surfperch, juvenile	7/17/00	3	3	0.00	0.00	0.00	0.00
rock wrasse, female	6/26/00	4	4	4.75	5.50	0.75	0.96
rock wrasse, female	7/17/00	3	3	7.33	1.15	2.00	0.00
rock wrasse, male	6/26/00	4	4	9.25	0.50	1.75	0.50
rock wrasse, male	7/17/00	3	3	10.00	0.00	2.00	0.00
senorita, adult	6/26/00	4	3	0.00	0.00	0.00	0.00
senorita, adult	7/17/00	3	3	0.00	0.00	0.00	0.00
senorita, all	6/26/00	4	4	0.00	0.00	0.00	0.00
senorita, all	7/17/00	3	3	0.00	0.00	0.00	0.00
senorita, juvenile	6/26/00	4	3	0.00	0.00	0.00	0.00
senorita, juvenile	7/17/00	3	3	0.00	0.00	0.00	0.00
striped surfperch, adult	6/26/00	4	3	0.00	0.00	0.00	0.00
striped surfperch, adult	7/17/00	3	3	0.00	0.00	0.00	0.00
striped surfperch, all	6/26/00	4	4	0.00	0.00	0.00	0.00
striped surfperch, all	7/17/00	3	3	0.00	0.00	0.00	0.00
striped surfperch, juvenile	6/26/00	4	3	0.00	0.00	0.00	0.00
striped surfperch, juvenile	7/17/00	3	3	0.00	0.00	0.00	0.00
treefish, adult	6/26/00	4	4	0.00	0.00	0.00	0.00
treefish, adult	7/17/00	3	3	0.00	0.00	0.00	0.00
treefish, juvenile	6/26/00	4	4	2.00	4.00	0.50	1.00
treefish, juvenile	7/17/00	3	3	3.33	2.89	0.67	0.58
vermillion rockfish,	6/26/00	4	4	10.00	0.00	2.50	0.58
vermillion rockfish,	7/17/00	3	3	8.33	2.08	2.00	0.00

**2000 ROVING DIVER FISH COUNT:**

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**Anacapa Island - Admiral's Reef**

<b>CommonName:</b>	<b>Date:</b>	<b>Maximum# of Observers:</b>	<b># of Observations:</b>	<b>Avg Score:</b>	<b>StDev Score:</b>	<b>Avg Abundance:</b>	<b>StDev Abundance:</b>
black surfperch, adult	6/15/00	4	3	4.67	4.51	0.67	0.58
black surfperch, adult	8/14/00	4	4	6.25	4.19	1.25	0.96
black surfperch, all	6/15/00	4	4	5.25	3.86	0.75	0.50
black surfperch, all	8/14/00	4	4	6.25	4.19	1.25	0.96
black surfperch, juvenile	6/15/00	4	3	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/14/00	4	4	0.00	0.00	0.00	0.00
blackeye goby	6/15/00	4	4	10.00	0.00	3.75	0.50
blackeye goby	8/14/00	4	4	10.00	0.00	4.00	0.00
blacksmith, adult	6/15/00	4	3	10.00	0.00	4.00	0.00
blacksmith, adult	8/14/00	4	4	9.75	0.50	4.00	0.00
blacksmith, all	6/15/00	4	4	10.00	0.00	4.00	0.00
blacksmith, all	8/14/00	4	4	9.75	0.50	4.00	0.00
blacksmith, juvenile	6/15/00	4	3	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/14/00	4	4	3.50	4.12	1.00	1.15
blue rockfish, adult	6/15/00	4	3	0.00	0.00	0.00	0.00
blue rockfish, adult	8/14/00	4	4	0.00	0.00	0.00	0.00
blue rockfish, all	6/15/00	4	4	0.00	0.00	0.00	0.00
blue rockfish, all	8/14/00	4	4	0.00	0.00	0.00	0.00
blue rockfish, juvenile	6/15/00	4	3	0.00	0.00	0.00	0.00
blue rockfish, juvenile	8/14/00	4	4	0.00	0.00	0.00	0.00
blue-banded goby	6/15/00	4	4	0.00	0.00	0.00	0.00
blue-banded goby	8/14/00	4	4	0.00	0.00	0.00	0.00
cabezon	6/15/00	4	1	5.00		1.00	
cabezon	8/14/00	4	2	9.50	0.71	1.50	0.71
California sheephead,	6/15/00	4	4	10.00	0.00	2.50	0.58
California sheephead,	8/14/00	4	4	10.00	0.00	2.75	0.50
California sheephead,	6/15/00	4	4	2.50	5.00	0.50	1.00
California sheephead,	8/14/00	4	4	0.00	0.00	0.00	0.00
California sheephead,	6/15/00	4	4	0.00	0.00	0.00	0.00
California sheephead,	8/14/00	4	4	0.00	0.00	0.00	0.00
garibaldi, adult	6/15/00	4	4	9.50	1.00	2.25	0.50
garibaldi, adult	8/14/00	4	4	9.50	0.58	2.00	0.00
garibaldi, juvenile	6/15/00	4	4	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/14/00	4	4	0.00	0.00	0.00	0.00
gopher rockfish	6/15/00	4	1	7.00		2.00	
halfmoon	6/15/00	4	2	6.00	1.41	1.00	0.00
halfmoon	8/14/00	4	2	8.00	0.00	1.00	0.00
island kelpfish	6/15/00	4	4	6.75	4.50	1.50	1.00
island kelpfish	8/14/00	4	4	7.25	4.86	1.25	0.96
kelp bass, adult	6/15/00	4	3	7.67	1.15	1.00	0.00
kelp bass, adult	8/14/00	4	4	5.67	5.13	1.00	1.15
kelp bass, calico bass, all	6/15/00	4	4	5.75	3.95	0.75	0.50
kelp bass, calico bass, all	8/14/00	4	4	4.25	5.06	1.00	1.15
kelp bass, juvenile	6/15/00	4	3	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/14/00	4	4	0.00	0.00	0.00	0.00
kelp rockfish, adult	6/15/00	4	3	5.00	4.36	1.00	1.00
kelp rockfish, adult	8/14/00	4	4	4.75	5.50	0.50	0.58
kelp rockfish, all	6/15/00	4	4	3.75	4.35	0.75	0.96
kelp rockfish, all	8/14/00	4	4	4.75	5.50	0.50	0.58
kelp rockfish, juvenile	6/15/00	4	3	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/14/00	4	4	0.00	0.00	0.00	0.00
olive rockfish, adult	6/15/00	4	3	0.00	0.00	0.00	0.00
olive rockfish, adult	8/14/00	4	4	0.00	0.00	0.00	0.00
olive rockfish, all	6/15/00	4	4	2.50	5.00	0.25	0.50

## 2000 ROVING DIVER FISH COUNT:

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olive rockfish, all	8/14/00	4	4	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	6/15/00	4	3	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	8/14/00	4	4	0.00	0.00	0.00	0.00
opaleye, adult	6/15/00	4	3	0.00	0.00	0.00	0.00
opaleye, adult	8/14/00	4	4	6.25	4.19	2.00	1.41
opaleye, all	6/15/00	4	4	1.75	3.50	0.50	1.00
opaleye, all	8/14/00	4	4	6.25	4.19	2.00	1.41
opaleye, juvenile	6/15/00	4	3	0.00	0.00	0.00	0.00
opaleye, juvenile	8/14/00	4	4	0.00	0.00	0.00	0.00
painted greenling	6/15/00	4	4	9.75	0.50	2.00	0.00
painted greenling	8/14/00	4	4	10.00	0.00	3.00	0.00
pile surfperch, adult	6/15/00	4	3	0.00	0.00	0.00	0.00
pile surfperch, adult	8/14/00	4	4	7.50	1.29	1.75	0.50
pile surfperch, all	6/15/00	4	4	0.00	0.00	0.00	0.00
pile surfperch, all	8/14/00	4	4	7.50	1.29	1.75	0.50
pile surfperch, juvenile	6/15/00	4	3	0.00	0.00	0.00	0.00
pile surfperch, juvenile	8/14/00	4	4	0.00	0.00	0.00	0.00
rock wrasse, female	6/15/00	4	4	5.25	3.59	1.00	0.82
rock wrasse, female	8/14/00	4	4	10.00	0.00	2.75	0.50
rock wrasse, male	6/15/00	4	4	0.00	0.00	0.00	0.00
rock wrasse, male	8/14/00	4	4	7.50	2.89	2.25	0.96
senorita, adult	6/15/00	4	3	0.00	0.00	0.00	0.00
senorita, adult	8/14/00	4	4	9.25	1.50	3.00	0.82
senorita, all	6/15/00	4	4	0.00	0.00	0.00	0.00
senorita, all	8/14/00	4	4	9.50	1.00	3.00	0.82
senorita, juvenile	6/15/00	4	3	0.00	0.00	0.00	0.00
senorita, juvenile	8/14/00	4	4	2.00	4.00	0.25	0.50
striped surfperch, adult	6/15/00	4	3	0.00	0.00	0.00	0.00
striped surfperch, adult	8/14/00	4	4	0.00	0.00	0.00	0.00
striped surfperch, all	6/15/00	4	4	0.00	0.00	0.00	0.00
striped surfperch, all	8/14/00	4	4	0.00	0.00	0.00	0.00
striped surfperch, juvenile	6/15/00	4	3	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/14/00	4	4	0.00	0.00	0.00	0.00
treefish, adult	6/15/00	4	4	5.50	3.87	1.00	0.82
treefish, adult	8/14/00	4	4	4.00	4.69	1.00	1.15
treefish, juvenile	6/15/00	4	4	0.00	0.00	0.00	0.00
treefish, juvenile	8/14/00	4	4	2.00	4.00	0.50	1.00
zebra goby	8/14/00	4	2	8.50	0.71	1.50	0.71

# 2000 ROVING DIVER FISH COUNT:

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## Anacapa Island - Cathedral Cove

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	6/30/00	6	1	10.00		2.00	
black and yellow rockfish	6/30/00	6	1	7.00		1.00	
black surfperch, adult	6/30/00	6	6	9.83	0.41	2.50	0.55
black surfperch, adult	9/28/00	7	7	9.86	0.38	2.29	0.49
black surfperch, all	6/30/00	6	6	10.00	0.00	2.67	0.52
black surfperch, all	9/28/00	7	7	9.86	0.38	2.43	0.53
black surfperch, juvenile	6/30/00	6	6	6.17	4.83	1.50	1.22
black surfperch, juvenile	9/28/00	7	7	1.43	3.78	0.29	0.76
blackeye goby	6/30/00	6	6	9.67	0.52	2.83	0.41
blackeye goby	9/28/00	7	7	9.86	0.38	2.86	0.38
blacksmith, adult	6/30/00	6	6	9.67	0.52	3.17	0.75
blacksmith, adult	9/28/00	7	6	10.00	0.00	3.33	0.52
blacksmith, all	6/30/00	6	6	9.67	0.52	3.17	0.75
blacksmith, all	9/28/00	7	7	10.00	0.00	4.00	0.00
blacksmith, juvenile	6/30/00	6	6	0.00	0.00	0.00	0.00
blacksmith, juvenile	9/28/00	7	6	9.50	0.84	4.00	0.00
blue rockfish, adult	6/30/00	6	5	1.60	3.58	0.40	0.89
blue rockfish, adult	9/28/00	7	7	1.00	2.65	0.29	0.76
blue rockfish, all	6/30/00	6	6	1.33	3.27	0.33	0.82
blue rockfish, all	9/28/00	7	7	1.00	2.65	0.29	0.76
blue rockfish, juvenile	6/30/00	6	5	0.00	0.00	0.00	0.00
blue rockfish, juvenile	9/28/00	7	7	0.00	0.00	0.00	0.00
blue-banded goby	6/30/00	6	6	0.00	0.00	0.00	0.00
blue-banded goby	9/28/00	7	7	1.71	2.98	0.29	0.49
California moray	6/30/00	6	1	6.00		1.00	
California scorpionfish	9/28/00	7	2	6.50	2.12	1.00	0.00
California sheephead,	6/30/00	6	6	9.17	1.17	2.17	0.75
California sheephead,	9/28/00	7	7	9.29	1.25	2.14	0.38
California sheephead,	6/30/00	6	6	1.50	3.67	0.17	0.41
California sheephead,	9/28/00	7	7	0.00	0.00	0.00	0.00
California sheephead,	6/30/00	6	6	1.17	2.86	0.17	0.41
California sheephead,	9/28/00	7	7	0.86	2.27	0.29	0.76
copper rockfish	9/28/00	7	1	6.00		1.00	
garibaldi, adult	6/30/00	6	6	9.67	0.82	3.00	0.00
garibaldi, adult	9/28/00	7	7	10.00	0.00	3.00	0.00
garibaldi, juvenile	6/30/00	6	6	0.00	0.00	0.00	0.00
garibaldi, juvenile	9/28/00	7	7	0.00	0.00	0.00	0.00
giant kelpfish	6/30/00	6	1	10.00		3.00	
giant kelpfish, juvenile	9/28/00	7	3	7.67	1.15	1.67	0.58
halfmoon	6/30/00	6	2	7.50	0.71	2.50	0.71
halfmoon	9/28/00	7	4	7.25	1.71	1.50	0.58
island kelpfish	6/30/00	6	6	10.00	0.00	3.17	0.41
island kelpfish	9/28/00	7	7	9.71	0.49	3.14	0.38
kelp bass, adult	6/30/00	6	5	10.00	0.00	3.00	0.00
kelp bass, adult	9/28/00	7	6	9.83	0.41	2.83	0.41
kelp bass, calico bass, all	6/30/00	6	6	10.00	0.00	3.00	0.00
kelp bass, calico bass, all	9/28/00	7	7	9.86	0.38	3.00	0.00
kelp bass, juvenile	6/30/00	6	5	0.00	0.00	0.00	0.00
kelp bass, juvenile	9/28/00	7	6	8.17	4.02	2.50	1.22
kelp rockfish, adult	6/30/00	6	5	6.00	3.39	1.40	0.89
kelp rockfish, adult	9/28/00	7	7	3.29	4.15	0.71	0.95
kelp rockfish, all	6/30/00	6	6	5.83	3.06	1.33	0.82
kelp rockfish, all	9/28/00	7	7	3.71	4.72	0.86	1.07
kelp rockfish, juvenile	6/30/00	6	5	0.00	0.00	0.00	0.00

## 2000 ROVING DIVER FISH COUNT:

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kelp rockfish, juvenile	9/28/00	7	7	2.43	4.24	0.43	0.79
kelp surfperch	6/30/00	6	2	10.00	0.00	1.50	0.71
kelp surfperch	9/28/00	7	3	7.67	2.08	2.00	0.00
kelpfish spp.	6/30/00	6	2	5.00	0.00	1.00	0.00
kelpfish spp.	9/28/00	7	1	8.00		1.00	
olive rockfish, adult	6/30/00	6	5	9.00	1.22	2.20	0.84
olive rockfish, adult	9/28/00	7	7	8.29	3.68	2.00	1.00
olive rockfish, all	6/30/00	6	6	7.50	3.83	1.83	1.17
olive rockfish, all	9/28/00	7	7	8.29	3.68	2.00	1.00
olive/yellowtail rockfish,	6/30/00	6	5	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	9/28/00	7	7	0.00	0.00	0.00	0.00
opaleye, adult	6/30/00	6	5	6.60	3.78	2.00	1.22
opaleye, adult	9/28/00	7	7	9.43	1.13	2.14	0.69
opaleye, all	6/30/00	6	6	6.67	3.39	1.83	1.17
opaleye, all	9/28/00	7	7	9.43	1.13	2.14	0.69
opaleye, juvenile	6/30/00	6	5	0.00	0.00	0.00	0.00
opaleye, juvenile	9/28/00	7	7	0.00	0.00	0.00	0.00
painted greenling	6/30/00	6	6	9.33	0.82	2.17	0.41
painted greenling	9/28/00	7	7	9.14	0.69	2.29	0.49
pile surfperch, adult	6/30/00	6	5	3.00	4.12	0.60	0.89
pile surfperch, adult	9/28/00	7	7	0.86	2.27	0.14	0.38
pile surfperch, all	6/30/00	6	6	3.67	4.03	0.83	0.98
pile surfperch, all	9/28/00	7	7	0.86	2.27	0.14	0.38
pile surfperch, juvenile	6/30/00	6	5	1.40	3.13	0.40	0.89
pile surfperch, juvenile	9/28/00	7	7	0.00	0.00	0.00	0.00
rock wrasse, female	6/30/00	6	6	9.50	0.84	2.67	0.52
rock wrasse, female	9/28/00	7	7	9.57	0.79	2.43	0.53
rock wrasse, male	6/30/00	6	6	9.33	0.52	2.50	0.55
rock wrasse, male	9/28/00	7	7	10.00	0.00	2.00	0.00
senorita, adult	6/30/00	6	5	8.00	1.58	2.60	1.14
senorita, adult	9/28/00	7	7	7.29	3.73	2.00	1.15
senorita, all	6/30/00	6	6	8.33	1.63	2.50	1.05
senorita, all	9/28/00	7	7	7.29	3.73	2.00	1.15
senorita, juvenile	6/30/00	6	5	2.00	4.47	0.20	0.45
senorita, juvenile	9/28/00	7	7	0.00	0.00	0.00	0.00
shiner surfperch	9/28/00	7	4	8.50	1.91	3.50	0.58
snubnose sculpin	6/30/00	6	1	10.00		1.00	
speckled sanddab	9/28/00	7	1	8.00		1.00	
striped surfperch, adult	6/30/00	6	5	0.00	0.00	0.00	0.00
striped surfperch, adult	9/28/00	7	7	0.00	0.00	0.00	0.00
striped surfperch, all	6/30/00	6	5	0.00	0.00	0.00	0.00
striped surfperch, all	9/28/00	7	7	0.00	0.00	0.00	0.00
striped surfperch, juvenile	6/30/00	6	5	0.00	0.00	0.00	0.00
striped surfperch, juvenile	9/28/00	7	7	0.00	0.00	0.00	0.00
top smelt	9/28/00	7	2	8.00	0.00	3.00	0.00
treefish, adult	6/30/00	6	6	1.00	2.45	0.17	0.41
treefish, adult	9/28/00	7	7	3.29	3.09	0.57	0.53
treefish, juvenile	6/30/00	6	6	7.67	3.88	2.00	1.10
treefish, juvenile	9/28/00	7	7	0.00	0.00	0.00	0.00
zebra goby	9/28/00	7	2	5.50	0.71	1.00	0.00



**2000 ROVING DIVER FISH COUNT:**

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**Anacapa Island - Landing Cove**

<b>CommonName:</b>	<b>Date:</b>	<b>Maximum# of Observers:</b>	<b># of Observations:</b>	<b>Avg Score:</b>	<b>StDev Score:</b>	<b>Avg Abundance:</b>	<b>StDev Abundance:</b>
bat ray	7/31/00	6	1	10.00		1.00	
black and yellow rockfish	6/30/00	6	1	9.00		1.00	
black and yellow rockfish	7/31/00	6	1	10.00		1.00	
black surfperch, adult	6/30/00	6	6	9.67	0.52	2.50	0.55
black surfperch, adult	7/31/00	6	4	8.75	1.50	1.75	0.50
black surfperch, all	6/30/00	6	6	9.67	0.52	2.83	0.41
black surfperch, all	7/31/00	6	6	9.67	0.82	2.50	0.55
black surfperch, juvenile	6/30/00	6	6	5.83	4.75	1.00	0.89
black surfperch, juvenile	7/31/00	6	4	7.50	5.00	2.25	1.50
blackeye goby	6/30/00	6	6	9.33	0.82	2.33	0.82
blackeye goby	7/31/00	6	6	9.50	0.55	2.50	0.84
blacksmith, adult	6/30/00	6	5	9.80	0.45	3.80	0.45
blacksmith, adult	7/31/00	6	4	10.00	0.00	4.00	0.00
blacksmith, all	6/30/00	6	6	9.83	0.41	3.83	0.41
blacksmith, all	7/31/00	6	6	9.83	0.41	4.00	0.00
blacksmith, juvenile	6/30/00	6	5	0.00	0.00	0.00	0.00
blacksmith, juvenile	7/31/00	6	4	7.75	1.50	2.50	0.58
blue rockfish, adult	6/30/00	6	5	1.40	3.13	0.40	0.89
blue rockfish, adult	7/31/00	6	4	0.00	0.00	0.00	0.00
blue rockfish, all	6/30/00	6	6	1.17	2.86	0.33	0.82
blue rockfish, all	7/31/00	6	6	0.00	0.00	0.00	0.00
blue rockfish, juvenile	6/30/00	6	5	0.00	0.00	0.00	0.00
blue rockfish, juvenile	7/31/00	6	4	0.00	0.00	0.00	0.00
blue-banded goby	6/30/00	6	6	3.67	4.03	1.00	1.26
blue-banded goby	7/31/00	6	6	2.50	3.99	0.83	1.33
cabezon	7/31/00	6	1	6.00		1.00	
California sheephead,	6/30/00	6	6	9.83	0.41	2.00	0.00
California sheephead,	7/31/00	6	6	6.33	3.44	1.83	0.98
California sheephead,	6/30/00	6	6	1.17	2.86	0.17	0.41
California sheephead,	7/31/00	6	6	1.67	4.08	0.33	0.82
California sheephead,	6/30/00	6	6	0.00	0.00	0.00	0.00
California sheephead,	7/31/00	6	6	0.83	2.04	0.17	0.41
garibaldi, adult	6/30/00	6	6	10.00	0.00	3.00	0.00
garibaldi, adult	7/31/00	6	6	9.50	0.84	2.67	0.52
garibaldi, juvenile	6/30/00	6	6	0.00	0.00	0.00	0.00
garibaldi, juvenile	7/31/00	6	6	0.00	0.00	0.00	0.00
giant kelpfish	6/30/00	6	3	7.67	2.31	2.33	0.58
giant kelpfish	7/31/00	6	4	6.00	1.41	2.00	0.00
gopher rockfish	6/30/00	6	1	9.00		1.00	
grass rockfish	7/31/00	6	1	6.00		1.00	
halfmoon	6/30/00	6	5	7.80	2.05	1.80	1.10
halfmoon	7/31/00	6	4	6.75	2.22	1.50	0.58
horn shark	7/31/00	6	1	6.00		1.00	
island kelpfish	6/30/00	6	6	9.83	0.41	2.67	0.52
island kelpfish	7/31/00	6	6	7.67	3.93	2.00	1.10
kelp bass, adult	6/30/00	6	5	10.00	0.00	2.40	0.55
kelp bass, adult	7/31/00	6	4	10.00	0.00	2.50	0.58
kelp bass, calico bass, all	6/30/00	6	6	10.00	0.00	2.50	0.55
kelp bass, calico bass, all	7/31/00	6	6	10.00	0.00	2.50	0.55
kelp bass, juvenile	6/30/00	6	5	0.00	0.00	0.00	0.00
kelp bass, juvenile	7/31/00	6	4	0.00	0.00	0.00	0.00
kelp rockfish, adult	6/30/00	6	5	3.20	4.38	0.60	0.89
kelp rockfish, adult	7/31/00	6	4	5.25	3.50	0.75	0.50
kelp rockfish, all	6/30/00	6	6	2.67	4.13	0.50	0.84

## 2000 ROVING DIVER FISH COUNT:

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kelp rockfish, all	7/31/00	6	6	3.50	3.83	0.50	0.55
kelp rockfish, juvenile	6/30/00	6	5	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	7/31/00	6	4	0.00	0.00	0.00	0.00
kelpfish spp.	6/30/00	6	1	10.00		1.00	
olive rockfish, adult	6/30/00	6	5	6.40	3.91	1.00	0.71
olive rockfish, adult	7/31/00	6	4	0.00	0.00	0.00	0.00
olive rockfish, all	6/30/00	6	6	5.33	4.37	0.83	0.75
olive rockfish, all	7/31/00	6	6	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	6/30/00	6	5	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	7/31/00	6	4	0.00	0.00	0.00	0.00
opaleye, adult	6/30/00	6	5	9.00	1.41	3.00	0.00
opaleye, adult	7/31/00	6	4	8.50	1.91	2.25	0.50
opaleye, all	6/30/00	6	6	9.17	1.33	3.00	0.00
opaleye, all	7/31/00	6	6	8.33	1.97	2.33	0.52
opaleye, juvenile	6/30/00	6	5	0.00	0.00	0.00	0.00
opaleye, juvenile	7/31/00	6	4	0.00	0.00	0.00	0.00
painted greenling	6/30/00	6	6	8.83	1.47	2.17	0.41
painted greenling	7/31/00	6	5	7.60	1.52	1.80	0.45
pile surfperch, adult	6/30/00	6	5	0.00	0.00	0.00	0.00
pile surfperch, adult	7/31/00	6	4	0.00	0.00	0.00	0.00
pile surfperch, all	6/30/00	6	6	1.00	2.45	0.17	0.41
pile surfperch, all	7/31/00	6	6	0.00	0.00	0.00	0.00
pile surfperch, juvenile	6/30/00	6	5	1.20	2.68	0.20	0.45
pile surfperch, juvenile	7/31/00	6	4	0.00	0.00	0.00	0.00
rock wrasse, female	6/30/00	6	6	8.83	1.83	2.00	0.00
rock wrasse, female	7/31/00	6	6	9.17	1.17	1.83	0.41
rock wrasse, male	6/30/00	6	6	8.67	1.75	2.00	0.00
rock wrasse, male	7/31/00	6	6	7.33	3.78	1.67	0.82
senorita, adult	6/30/00	6	5	10.00	0.00	2.80	0.84
senorita, adult	7/31/00	6	4	10.00	0.00	2.25	0.50
senorita, all	6/30/00	6	6	10.00	0.00	2.83	0.75
senorita, all	7/31/00	6	6	9.67	0.82	2.50	0.55
senorita, juvenile	6/30/00	6	5	0.00	0.00	0.00	0.00
senorita, juvenile	7/31/00	6	4	4.75	3.30	1.50	1.00
speckled sanddab	6/30/00	6	1	9.00		1.00	
striped surfperch, adult	6/30/00	6	5	0.00	0.00	0.00	0.00
striped surfperch, adult	7/31/00	6	4	0.00	0.00	0.00	0.00
striped surfperch, all	6/30/00	6	5	0.00	0.00	0.00	0.00
striped surfperch, all	7/31/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, juvenile	6/30/00	6	5	0.00	0.00	0.00	0.00
striped surfperch, juvenile	7/31/00	6	4	0.00	0.00	0.00	0.00
swell shark	6/30/00	6	1	9.00		2.00	
top smelt	7/31/00	6	5	7.00	2.35	2.20	0.45
treefish, adult	6/30/00	6	6	3.17	4.92	0.50	0.84
treefish, adult	7/31/00	6	6	0.00	0.00	0.00	0.00
treefish, juvenile	6/30/00	6	6	3.33	5.16	0.50	0.84
treefish, juvenile	7/31/00	6	6	4.33	4.84	0.67	0.82
zebra goby	6/30/00	6	2	7.00	0.00	2.50	0.71
zebra goby	7/31/00	6	2	8.00	0.00	1.50	0.71

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## Santa Barbara Island - SE Sea Lion Rookery

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	8/16/00	6	1	9.00		1.00	
black surfperch, adult	6/12/00	5	4	0.00	0.00	0.00	0.00
black surfperch, adult	8/16/00	6	6	0.00	0.00	0.00	0.00
black surfperch, all	6/12/00	5	5	0.00	0.00	0.00	0.00
black surfperch, all	8/16/00	6	6	0.00	0.00	0.00	0.00
black surfperch, juvenile	6/12/00	5	4	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/16/00	6	6	0.00	0.00	0.00	0.00
blackeye goby	6/12/00	5	5	9.40	0.55	3.00	0.00
blackeye goby	8/16/00	6	6	9.83	0.41	3.33	0.52
blacksmith, adult	6/12/00	5	4	5.50	3.79	1.50	1.00
blacksmith, adult	8/16/00	6	6	9.00	1.55	2.33	0.52
blacksmith, all	6/12/00	5	5	5.80	3.35	1.40	0.89
blacksmith, all	8/16/00	6	6	9.00	1.55	2.83	0.41
blacksmith, juvenile	6/12/00	5	4	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/16/00	6	6	7.67	1.97	2.00	0.00
blue rockfish, adult	6/12/00	5	4	0.00	0.00	0.00	0.00
blue rockfish, adult	8/16/00	6	6	0.00	0.00	0.00	0.00
blue rockfish, all	6/12/00	5	5	0.00	0.00	0.00	0.00
blue rockfish, all	8/16/00	6	6	0.00	0.00	0.00	0.00
blue rockfish, juvenile	6/12/00	5	4	0.00	0.00	0.00	0.00
blue rockfish, juvenile	8/16/00	6	6	0.00	0.00	0.00	0.00
blue-banded goby	6/12/00	5	5	0.00	0.00	0.00	0.00
blue-banded goby	8/16/00	6	6	0.00	0.00	0.00	0.00
c-o turbot	6/12/00	5	4	6.75	1.50	1.25	0.50
California sheephead,	6/12/00	5	5	0.00	0.00	0.00	0.00
California sheephead,	8/16/00	6	6	5.00	4.10	0.83	0.75
California sheephead,	6/12/00	5	5	0.00	0.00	0.00	0.00
California sheephead,	8/16/00	6	6	0.00	0.00	0.00	0.00
California sheephead,	6/12/00	5	5	0.00	0.00	0.00	0.00
California sheephead,	8/16/00	6	6	0.00	0.00	0.00	0.00
coralline sculpin	8/16/00	6	1	7.00		1.00	
fringehead spp.	8/16/00	6	2	6.00	1.41	1.00	0.00
garibaldi, adult	6/12/00	5	5	6.80	3.90	1.40	0.89
garibaldi, adult	8/16/00	6	6	9.50	1.22	2.00	0.00
garibaldi, juvenile	6/12/00	5	5	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/16/00	6	6	0.00	0.00	0.00	0.00
island kelpfish	6/12/00	5	5	8.00	2.12	1.80	0.45
island kelpfish	8/16/00	6	6	9.33	0.82	2.50	0.55
kelp bass, adult	6/12/00	5	4	0.00	0.00	0.00	0.00
kelp bass, adult	8/16/00	6	6	9.00	1.26	2.00	0.00
kelp bass, calico bass, all	6/12/00	5	5	0.00	0.00	0.00	0.00
kelp bass, calico bass, all	8/16/00	6	6	9.00	1.26	2.00	0.00
kelp bass, juvenile	6/12/00	5	4	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/16/00	6	6	0.00	0.00	0.00	0.00
kelp rockfish, adult	6/12/00	5	4	0.00	0.00	0.00	0.00
kelp rockfish, adult	8/16/00	6	6	0.00	0.00	0.00	0.00
kelp rockfish, all	6/12/00	5	5	0.00	0.00	0.00	0.00
kelp rockfish, all	8/16/00	6	6	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	6/12/00	5	4	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/16/00	6	6	0.00	0.00	0.00	0.00
ocean whitefish	8/16/00	6	3	9.00	1.00	1.67	0.58
olive rockfish, adult	6/12/00	5	4	0.00	0.00	0.00	0.00
olive rockfish, adult	8/16/00	6	6	0.00	0.00	0.00	0.00
olive rockfish, all	6/12/00	5	5	0.00	0.00	0.00	0.00

## 2000 ROVING DIVER FISH COUNT:

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olive rockfish, all	8/16/00	6	6	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	6/12/00	5	4	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	8/16/00	6	6	0.00	0.00	0.00	0.00
opaleye, adult	6/12/00	5	4	0.00	0.00	0.00	0.00
opaleye, adult	8/16/00	6	6	1.67	4.08	0.33	0.82
opaleye, all	6/12/00	5	5	0.00	0.00	0.00	0.00
opaleye, all	8/16/00	6	6	1.67	4.08	0.33	0.82
opaleye, juvenile	6/12/00	5	4	0.00	0.00	0.00	0.00
opaleye, juvenile	8/16/00	6	6	0.00	0.00	0.00	0.00
painted greenling	6/12/00	5	4	8.00	1.41	2.00	0.00
painted greenling	8/16/00	6	6	8.17	1.72	2.17	0.75
pile surfperch, adult	6/12/00	5	4	0.00	0.00	0.00	0.00
pile surfperch, adult	8/16/00	6	6	0.00	0.00	0.00	0.00
pile surfperch, all	6/12/00	5	5	0.00	0.00	0.00	0.00
pile surfperch, all	8/16/00	6	6	0.00	0.00	0.00	0.00
pile surfperch, juvenile	6/12/00	5	4	0.00	0.00	0.00	0.00
pile surfperch, juvenile	8/16/00	6	6	0.00	0.00	0.00	0.00
rock wrasse, female	6/12/00	5	5	0.00	0.00	0.00	0.00
rock wrasse, female	8/16/00	6	6	8.67	0.82	2.17	0.41
rock wrasse, male	6/12/00	5	5	0.00	0.00	0.00	0.00
rock wrasse, male	8/16/00	6	6	4.67	3.72	1.17	0.98
senorita, adult	6/12/00	5	4	0.00	0.00	0.00	0.00
senorita, adult	8/16/00	6	6	0.00	0.00	0.00	0.00
senorita, all	6/12/00	5	5	0.00	0.00	0.00	0.00
senorita, all	8/16/00	6	6	3.00	4.65	1.00	1.55
senorita, juvenile	6/12/00	5	4	0.00	0.00	0.00	0.00
senorita, juvenile	8/16/00	6	6	3.00	4.65	1.00	1.55
snubnose sculpin	6/12/00	5	1	8.00		1.00	
snubnose sculpin	8/16/00	6	1	10.00		1.00	
speckled sanddab	8/16/00	6	1	7.00		1.00	
striped surfperch, adult	6/12/00	5	4	0.00	0.00	0.00	0.00
striped surfperch, adult	8/16/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, all	6/12/00	5	5	0.00	0.00	0.00	0.00
striped surfperch, all	8/16/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, juvenile	6/12/00	5	4	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/16/00	6	6	0.00	0.00	0.00	0.00
treefish, adult	6/12/00	5	5	0.00	0.00	0.00	0.00
treefish, adult	8/16/00	6	6	0.00	0.00	0.00	0.00
treefish, juvenile	6/12/00	5	5	0.00	0.00	0.00	0.00
treefish, juvenile	8/16/00	6	6	0.00	0.00	0.00	0.00
zebra goby	8/16/00	6	1	6.00		1.00	

# 2000 ROVING DIVER FISH COUNT:

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## Santa Barbara Island - Arch Point

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black surfperch, adult	6/13/00	7	6	0.00	0.00	0.00	0.00
black surfperch, adult	8/15/00	6	6	0.00	0.00	0.00	0.00
black surfperch, all	6/13/00	7	7	0.00	0.00	0.00	0.00
black surfperch, all	8/15/00	6	6	0.00	0.00	0.00	0.00
black surfperch, juvenile	6/13/00	7	6	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/15/00	6	6	0.00	0.00	0.00	0.00
blackeye goby	6/13/00	7	7	7.57	3.55	2.29	1.11
blackeye goby	8/15/00	6	6	7.67	2.34	2.33	0.82
blacksmith, adult	6/13/00	7	6	9.83	0.41	4.00	0.00
blacksmith, adult	8/15/00	6	6	10.00	0.00	4.00	0.00
blacksmith, all	6/13/00	7	7	9.86	0.38	4.00	0.00
blacksmith, all	8/15/00	6	6	10.00	0.00	4.00	0.00
blacksmith, juvenile	6/13/00	7	6	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/15/00	6	6	8.83	1.17	4.00	0.00
blue rockfish, adult	6/13/00	7	6	0.00	0.00	0.00	0.00
blue rockfish, adult	8/15/00	6	6	0.00	0.00	0.00	0.00
blue rockfish, all	6/13/00	7	7	0.00	0.00	0.00	0.00
blue rockfish, all	8/15/00	6	6	0.00	0.00	0.00	0.00
blue rockfish, juvenile	6/13/00	7	6	0.00	0.00	0.00	0.00
blue rockfish, juvenile	8/15/00	6	6	0.00	0.00	0.00	0.00
blue-banded goby	6/13/00	7	7	0.00	0.00	0.00	0.00
blue-banded goby	8/15/00	6	6	0.00	0.00	0.00	0.00
cabezon	6/13/00	7	1	5.00		1.00	
California moray	8/15/00	6	1	9.00		1.00	
California scorpionfish	6/13/00	7	2	7.00	2.83	1.00	0.00
California sheephead,	6/13/00	7	7	9.57	0.53	2.43	0.53
California sheephead,	8/15/00	6	6	10.00	0.00	2.67	0.52
California sheephead,	6/13/00	7	7	0.00	0.00	0.00	0.00
California sheephead,	8/15/00	6	6	0.00	0.00	0.00	0.00
California sheephead,	6/13/00	7	7	2.43	4.16	0.43	0.79
California sheephead,	8/15/00	6	6	1.50	3.67	0.17	0.41
garibaldi, adult	6/13/00	7	7	10.00	0.00	3.00	0.00
garibaldi, adult	8/15/00	6	6	10.00	0.00	3.00	0.00
garibaldi, juvenile	6/13/00	7	7	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/15/00	6	6	0.00	0.00	0.00	0.00
halfmoon	6/13/00	7	4	8.75	1.89	1.75	0.50
halfmoon	8/15/00	6	6	9.17	0.98	2.67	0.52
island kelpfish	6/13/00	7	7	7.71	3.59	1.86	0.90
island kelpfish	8/15/00	6	6	9.67	0.52	2.67	0.52
kelp bass, adult	6/13/00	7	6	9.83	0.41	2.17	0.41
kelp bass, adult	8/15/00	6	6	9.17	1.17	2.33	0.52
kelp bass, calico bass, all	6/13/00	7	7	9.71	0.49	2.14	0.38
kelp bass, calico bass, all	8/15/00	6	6	9.17	1.17	2.33	0.52
kelp bass, juvenile	6/13/00	7	6	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/15/00	6	6	0.00	0.00	0.00	0.00
kelp rockfish, adult	6/13/00	7	6	0.00	0.00	0.00	0.00
kelp rockfish, adult	8/15/00	6	6	0.00	0.00	0.00	0.00
kelp rockfish, all	6/13/00	7	7	1.43	3.78	0.14	0.38
kelp rockfish, all	8/15/00	6	6	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	6/13/00	7	6	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/15/00	6	6	0.00	0.00	0.00	0.00
ocean whitefish	8/15/00	6	1	9.00		1.00	
olive rockfish, adult	6/13/00	7	6	0.00	0.00	0.00	0.00
olive rockfish, adult	8/15/00	6	6	0.00	0.00	0.00	0.00

## 2000 ROVING DIVER FISH COUNT:

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olive rockfish, all	6/13/00	7	7	0.00	0.00	0.00	0.00
olive rockfish, all	8/15/00	6	6	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	6/13/00	7	6	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	8/15/00	6	6	0.00	0.00	0.00	0.00
opaleye, adult	6/13/00	7	6	9.50	0.84	2.00	0.00
opaleye, adult	8/15/00	6	6	10.00	0.00	3.00	0.00
opaleye, all	6/13/00	7	7	8.00	3.61	1.86	0.90
opaleye, all	8/15/00	6	6	10.00	0.00	3.00	0.00
opaleye, juvenile	6/13/00	7	6	0.00	0.00	0.00	0.00
opaleye, juvenile	8/15/00	6	6	0.00	0.00	0.00	0.00
painted greenling	6/13/00	7	7	9.57	0.53	2.43	0.53
painted greenling	8/15/00	6	6	8.83	1.47	2.83	0.41
pile surfperch, adult	6/13/00	7	6	0.00	0.00	0.00	0.00
pile surfperch, adult	8/15/00	6	6	0.00	0.00	0.00	0.00
pile surfperch, all	6/13/00	7	7	0.00	0.00	0.00	0.00
pile surfperch, all	8/15/00	6	6	0.00	0.00	0.00	0.00
pile surfperch, juvenile	6/13/00	7	6	0.00	0.00	0.00	0.00
pile surfperch, juvenile	8/15/00	6	6	0.00	0.00	0.00	0.00
rock wrasse, female	6/13/00	7	7	7.14	3.58	1.43	0.79
rock wrasse, female	8/15/00	6	6	9.00	1.55	2.33	0.52
rock wrasse, male	6/13/00	7	7	0.00	0.00	0.00	0.00
rock wrasse, male	8/15/00	6	6	9.17	1.60	2.00	0.63
senorita, adult	6/13/00	7	6	0.00	0.00	0.00	0.00
senorita, adult	8/15/00	6	6	0.00	0.00	0.00	0.00
senorita, all	6/13/00	7	7	0.00	0.00	0.00	0.00
senorita, all	8/15/00	6	6	4.17	4.75	1.67	1.86
senorita, juvenile	6/13/00	7	6	0.00	0.00	0.00	0.00
senorita, juvenile	8/15/00	6	6	4.17	4.75	1.67	1.86
snubnose sculpin	8/15/00	6	2	8.00	1.41	1.50	0.71
striped surfperch, adult	6/13/00	7	6	0.00	0.00	0.00	0.00
striped surfperch, adult	8/15/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, all	6/13/00	7	7	0.00	0.00	0.00	0.00
striped surfperch, all	8/15/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, juvenile	6/13/00	7	6	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/15/00	6	6	0.00	0.00	0.00	0.00
treefish, adult	6/13/00	7	7	1.14	3.02	0.14	0.38
treefish, adult	8/15/00	6	6	2.67	4.13	0.33	0.52
treefish, juvenile	6/13/00	7	7	0.00	0.00	0.00	0.00
treefish, juvenile	8/15/00	6	6	1.33	3.27	0.33	0.82
zebra goby	6/13/00	7	1	7.00		1.00	
zebra goby	8/15/00	6	1	6.00		2.00	

# 2000 ROVING DIVER FISH COUNT:

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## Santa Barbara Island - Cat Canyon

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	6/13/00	6	6	8.00	1.10	2.17	0.41
bat ray	8/16/00	5	1	8.00		2.00	
black surfperch, adult	6/13/00	6	6	3.83	4.40	0.83	0.98
black surfperch, adult	8/16/00	5	5	0.00	0.00	0.00	0.00
black surfperch, all	6/13/00	6	6	3.83	4.40	0.83	0.98
black surfperch, all	8/16/00	5	5	0.00	0.00	0.00	0.00
black surfperch, juvenile	6/13/00	6	6	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/16/00	5	5	0.00	0.00	0.00	0.00
blackeye goby	6/13/00	6	6	6.83	3.66	1.50	0.84
blackeye goby	8/16/00	5	5	9.40	0.55	2.40	0.55
blacksmith, adult	6/13/00	6	6	10.00	0.00	4.00	0.00
blacksmith, adult	8/16/00	5	5	10.00	0.00	4.00	0.00
blacksmith, all	6/13/00	6	6	10.00	0.00	4.00	0.00
blacksmith, all	8/16/00	5	5	10.00	0.00	4.00	0.00
blacksmith, juvenile	6/13/00	6	6	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/16/00	5	5	6.40	3.91	1.80	1.10
blue rockfish, adult	6/13/00	6	6	4.33	4.84	0.50	0.55
blue rockfish, adult	8/16/00	5	5	0.00	0.00	0.00	0.00
blue rockfish, all	6/13/00	6	6	4.33	4.84	0.50	0.55
blue rockfish, all	8/16/00	5	5	0.00	0.00	0.00	0.00
blue rockfish, juvenile	6/13/00	6	6	0.00	0.00	0.00	0.00
blue rockfish, juvenile	8/16/00	5	5	0.00	0.00	0.00	0.00
blue-banded goby	6/13/00	6	6	0.00	0.00	0.00	0.00
blue-banded goby	8/16/00	5	5	0.00	0.00	0.00	0.00
cabezon	8/16/00	5	1	7.00		1.00	
California halibut	6/13/00	6	1	6.00		1.00	
California sheephead,	6/13/00	6	6	9.67	0.82	2.33	0.52
California sheephead,	8/16/00	5	5	9.40	1.34	2.60	0.55
California sheephead,	6/13/00	6	6	0.00	0.00	0.00	0.00
California sheephead,	8/16/00	5	5	0.00	0.00	0.00	0.00
California sheephead,	6/13/00	6	6	2.17	3.37	0.33	0.52
California sheephead,	8/16/00	5	5	2.00	4.47	0.40	0.89
fringehead spp.	8/16/00	5	2	5.00	0.00	1.00	0.00
garibaldi, adult	6/13/00	6	6	10.00	0.00	2.83	0.41
garibaldi, adult	8/16/00	5	5	10.00	0.00	2.60	0.55
garibaldi, juvenile	6/13/00	6	6	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/16/00	5	5	0.00	0.00	0.00	0.00
giant kelpfish	6/13/00	6	1	6.00		1.00	
giant kelpfish, juvenile	8/16/00	5	1	10.00		2.00	
grass rockfish	8/16/00	5	3	7.00	0.00	1.00	0.00
halfmoon	6/13/00	6	6	9.83	0.41	2.50	0.55
halfmoon	8/16/00	5	5	9.60	0.89	2.40	0.55
island kelpfish	6/13/00	6	6	9.50	0.55	2.50	0.55
island kelpfish	8/16/00	5	5	8.20	0.84	1.80	0.45
kelp bass, adult	6/13/00	6	6	9.67	0.82	2.00	0.00
kelp bass, adult	8/16/00	5	5	10.00	0.00	2.80	0.45
kelp bass, calico bass, all	6/13/00	6	6	9.67	0.82	2.00	0.00
kelp bass, calico bass, all	8/16/00	5	5	10.00	0.00	2.80	0.45
kelp bass, juvenile	6/13/00	6	6	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/16/00	5	5	0.00	0.00	0.00	0.00
kelp rockfish, adult	6/13/00	6	6	3.67	4.32	0.83	1.17
kelp rockfish, adult	8/16/00	5	5	1.40	3.13	0.20	0.45
kelp rockfish, all	6/13/00	6	6	3.67	4.32	0.83	1.17
kelp rockfish, all	8/16/00	5	5	1.40	3.13	0.20	0.45

## 2000 ROVING DIVER FISH COUNT:

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kelp rockfish, juvenile	6/13/00	6	6	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/16/00	5	5	0.00	0.00	0.00	0.00
ocean whitefish	6/13/00	6	1	7.00		1.00	
olive rockfish, adult	6/13/00	6	6	3.33	5.16	0.50	0.84
olive rockfish, adult	8/16/00	5	5	0.00	0.00	0.00	0.00
olive rockfish, all	6/13/00	6	6	3.33	5.16	0.50	0.84
olive rockfish, all	8/16/00	5	5	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	6/13/00	6	6	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	8/16/00	5	5	0.00	0.00	0.00	0.00
opaleye, adult	6/13/00	6	6	9.83	0.41	3.00	0.00
opaleye, adult	8/16/00	5	5	10.00	0.00	3.00	0.00
opaleye, all	6/13/00	6	6	9.83	0.41	3.00	0.00
opaleye, all	8/16/00	5	5	10.00	0.00	3.00	0.00
opaleye, juvenile	6/13/00	6	6	0.00	0.00	0.00	0.00
opaleye, juvenile	8/16/00	5	5	0.00	0.00	0.00	0.00
painted greenling	6/13/00	6	6	9.33	0.52	2.00	0.00
painted greenling	8/16/00	5	5	9.20	0.84	1.80	0.84
pile surfperch, adult	6/13/00	6	6	0.00	0.00	0.00	0.00
pile surfperch, adult	8/16/00	5	5	0.00	0.00	0.00	0.00
pile surfperch, all	6/13/00	6	6	0.00	0.00	0.00	0.00
pile surfperch, all	8/16/00	5	5	0.00	0.00	0.00	0.00
pile surfperch, juvenile	6/13/00	6	6	0.00	0.00	0.00	0.00
pile surfperch, juvenile	8/16/00	5	5	0.00	0.00	0.00	0.00
rock wrasse, female	6/13/00	6	6	10.00	0.00	2.50	0.55
rock wrasse, female	8/16/00	5	5	10.00	0.00	2.80	0.45
rock wrasse, male	6/13/00	6	6	8.00	1.41	1.67	0.52
rock wrasse, male	8/16/00	5	5	10.00	0.00	2.80	0.45
senorita, adult	6/13/00	6	6	10.00	0.00	3.33	0.52
senorita, adult	8/16/00	5	5	10.00	0.00	3.80	0.45
senorita, all	6/13/00	6	6	10.00	0.00	3.33	0.52
senorita, all	8/16/00	5	5	10.00	0.00	4.00	0.00
senorita, juvenile	6/13/00	6	6	0.00	0.00	0.00	0.00
senorita, juvenile	8/16/00	5	5	9.20	1.79	4.00	0.00
snubnose sculpin	6/13/00	6	1	8.00		1.00	
speckled sanddab	6/13/00	6	1	9.00		2.00	
striped surfperch, adult	6/13/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, adult	8/16/00	5	5	0.00	0.00	0.00	0.00
striped surfperch, all	6/13/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, all	8/16/00	5	5	0.00	0.00	0.00	0.00
striped surfperch, juvenile	6/13/00	6	6	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/16/00	5	5	0.00	0.00	0.00	0.00
treefish, adult	6/13/00	6	6	0.00	0.00	0.00	0.00
treefish, adult	8/16/00	5	5	0.00	0.00	0.00	0.00
treefish, juvenile	6/13/00	6	6	0.00	0.00	0.00	0.00
treefish, juvenile	8/16/00	5	5	0.00	0.00	0.00	0.00



## Appendix G: Natural Habitat Size Frequencies Distributions

### 2000 Natural Habitat Size Frequency Distributions

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#### San Miguel Island - Wyckoff Ledge

<i>Tethya aurantia</i>		<i>Kelletia kelletii</i>		<i>Asterina miniata</i>	
<10	0.0%	< 40	0.0%	<10	0.0%
10 - 19	0.0%	40 - 49	2.2%	10 - 19	0.0%
20 - 29	3.7%	50 - 59	8.7%	20 - 29	3.3%
30 - 39	7.3%	60 - 69	8.7%	30 - 39	1.7%
40 - 49	15.9%	70 - 79	2.2%	40 - 49	10.0%
50 - 59	15.9%	80 - 89	23.9%	50 - 59	11.7%
60 - 69	24.4%	90 - 99	39.1%	60 - 69	41.7%
70 - 79	12.2%	100 - 109	13.0%	70 - 79	30.0%
80 - 89	11.0%	110 - 119	2.2%	80 - 89	1.7%
90 - 99	6.1%	120 - 129	0.0%	90 - 99	0.0%
> 99	3.7%	130 - 139	0.0%	> 99	0.0%
(Cases) N=	82	140 - 149	0.0%	(Cases) N=	60
mean	63	> 149	0.0%	mean	63
min size (mm)	25	(Cases) N=	46	min size (mm)	24
max size (mm)	118	mean	86	max size (mm)	83
		min size (mm)	44		
		max size (mm)	110		
<i>Haliotis rufescens</i>		<i>Lithopoma gibberosum</i>		<i>Pisaster giganteus</i>	
<25	0.0%			< 20	0.0%
25 - 34	0.0%			20 - 39	19.7%
35 - 44	0.0%	<10	0.0%	40 - 59	23.0%
45 - 54	0.0%	10 - 19	13.0%	60 - 79	23.0%
55 - 64	0.0%	20 - 29	19.6%	80 - 99	24.6%
65 - 74	0.0%	30 - 39	13.0%	100 - 119	4.9%
75 - 84	0.0%	40 - 49	10.9%	120 - 139	0.0%
85 - 94	0.0%	50 - 59	32.6%	140 - 159	4.9%
95 - 104	5.9%	60 - 69	10.9%	160 - 179	0.0%
105 - 114	2.9%	70 - 79	0.0%	180 - 199	0.0%
115 - 124	5.9%	80 - 89	0.0%	200 - 219	0.0%
125 - 134	2.9%	90 - 99	0.0%	220 - 239	0.0%
135 - 144	2.9%	100 - 109	0.0%	> 239	0.0%
145 - 154	23.5%	110 - 119	0.0%	(Cases) N=	61
155 - 164	8.8%	> 119	0.0%	mean	68
165 - 174	20.6%	(Cases) N=	46	min size (mm)	25
175 - 184	8.8%	mean	40	min size (mm)	25
185 - 194	5.9%			max size (mm)	155
>195	5.9%	min size (mm)	15		
		max size (mm)	63		
(Cases) N=	34				
mean	159				
min size (mm)	95				
max size (mm)	204				

# 2000 Natural Habitat Size Frequency Distributions

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## San Miguel Island - Wyckoff Ledge

### *Pycnopodia helianthoides*

< 20	0.0%
20 - 39	12.5%
40 - 59	0.0%
60 - 79	12.5%
80 - 99	12.5%
100 - 119	12.5%
120 - 139	37.5%
140 - 159	0.0%
160 - 179	12.5%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	8
mean	105
min size (mm)	33
max size (mm)	160

### *Strongylocentrotus purpuratus*

< 5	2.1%
5 - 9	4.2%
10 - 14	4.2%
15 - 19	9.2%
20 - 24	21.8%
25 - 29	25.5%
30 - 34	11.3%
35 - 39	5.4%
40 - 44	4.6%
45 - 49	5.4%
50 - 54	2.9%
55 - 59	2.5%
60 - 64	0.8%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	239
mean	28
min size (mm)	3
max size (mm)	62

### *S. franciscanus*

< 5	0.0%
5 - 9	0.0%
10 - 14	0.4%
15 - 19	1.5%
20 - 24	3.8%
25 - 29	5.7%
30 - 34	12.6%
35 - 39	11.9%
40 - 44	6.9%
45 - 49	7.7%
50 - 54	5.0%
55 - 59	8.4%
60 - 64	11.5%
65 - 69	12.6%
70 - 74	5.4%
75 - 79	3.4%
80 - 84	1.1%
85 - 89	0.8%
90 - 94	0.8%
95 - 99	0.4%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	261
mean	50
min size (mm)	13
max size (mm)	98

# 2000 Natural Habitat Size Frequency Distributions

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## San Miguel Island - Hare Rock

<i>Tethya aurantia</i>		<i>Pisaster giganteus</i>		<i>S. franciscanus</i>	
<10	0.0%	< 20	0.0%	< 5	0.0%
10 - 19	6.7%	20 - 39	3.1%	5 - 9	0.0%
20 - 29	26.7%	40 - 59	4.7%	10 - 14	4.7%
30 - 39	26.7%	60 - 79	6.3%	15 - 19	7.0%
40 - 49	33.3%	80 - 99	15.6%	20 - 24	13.1%
50 - 59	0.0%	100 - 119	21.9%	25 - 29	12.1%
60 - 69	0.0%	120 - 139	31.3%	30 - 34	13.6%
70 - 79	6.7%	140 - 159	12.5%	35 - 39	11.7%
80 - 89	0.0%	160 - 179	4.7%	40 - 44	4.2%
90 - 99	0.0%	180 - 199	0.0%	45 - 49	2.8%
> 99	0.0%	200 - 219	0.0%	50 - 54	6.1%
(Cases) N=	15	220 - 239	0.0%	55 - 59	5.6%
mean	35	> 239	0.0%	60 - 64	7.0%
min size (mm)	14	(Cases) N=	64	65 - 69	5.6%
max size (mm)	71	mean	113	70 - 74	4.2%
		min size (mm)	34	75 - 79	1.4%
		max size (mm)	165	80 - 84	0.5%
				85 - 89	0.0%
				90 - 94	0.0%
				95 - 99	0.5%
				100 - 104	0.0%
				105 - 109	0.0%
				> 109	0.0%
				(Cases) N=	214
				mean	39
				min size (mm)	10
				max size (mm)	96
<i>Crassedoma giganteum</i>		<i>Pycnopodia helianthoides</i>		<i>Strongylocentrotus purpuratus</i>	
<10	0.0%	< 20	0.0%	< 5	1.8%
10 - 19	0.0%	20 - 39	0.0%	5 - 9	20.3%
20 - 29	0.0%	40 - 59	0.0%	10 - 14	48.2%
30 - 39	7.7%	60 - 79	0.0%	15 - 19	26.1%
40 - 49	0.0%	80 - 99	2.0%	20 - 24	2.7%
50 - 59	23.1%	100 - 119	8.2%	25 - 29	0.5%
60 - 69	0.0%	120 - 139	4.1%	30 - 34	0.5%
70 - 79	7.7%	140 - 159	2.0%	30 - 34	0.5%
80 - 89	15.4%	160 - 179	2.0%	35 - 39	0.0%
90 - 99	0.0%	180 - 199	6.1%	40 - 44	0.0%
100 - 109	7.7%	200 - 219	22.4%	45 - 49	0.0%
110 - 119	7.7%	220 - 239	16.3%	50 - 54	0.0%
120 - 129	15.4%	240 - 259	10.2%	55 - 59	0.0%
130 - 139	15.4%	260 - 279	16.3%	60 - 64	0.0%
> 139	0.0%	280 - 299	4.1%	65 - 69	0.0%
(Cases) N=	13	> 299	6.1%	70 - 74	0.0%
mean	89	(Cases) N=	49	75 - 79	0.0%
min size (mm)	35	mean	217	> 79	0.0%
max size (mm)	134	min size (mm)	90	(Cases) N=	222
		max size (mm)	385	mean	13
				min size (mm)	1
				max size (mm)	31
<i>Asterina miniata</i>					
<10	0.0%				
10 - 19	0.0%				
20 - 29	3.3%				
30 - 39	10.0%				
40 - 49	20.0%				
50 - 59	23.3%				
60 - 69	26.7%				
70 - 79	10.0%				
80 - 89	3.3%				
90 - 99	1.7%				
> 99	1.7%				
(Cases) N=	60				
mean	57				
min size (mm)	26				
max size (mm)	104				

# 2000 Natural Habitat Size Frequency Distributions

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## Santa Rosa Island - Johnson's Lee North

<i>Tethya aurantia</i>		<i>Lithopoma undosum</i>		<i>Pycnopodia helianthoides</i>	
<10	0.0%	<10	0.0%	< 20	0.0%
10 - 19	0.0%	10 - 19	0.0%	20 - 39	1.6%
20 - 29	5.1%	20 - 29	0.0%	40 - 59	24.2%
30 - 39	20.3%	30 - 39	0.0%	60 - 79	41.9%
40 - 49	15.3%	40 - 49	0.0%	80 - 99	22.6%
50 - 59	15.3%	50 - 59	0.0%	100 - 119	3.2%
60 - 69	13.6%	60 - 69	0.0%	120 - 139	0.0%
70 - 79	15.3%	70 - 79	2.9%	140 - 159	0.0%
80 - 89	6.8%	80 - 89	8.6%	160 - 179	0.0%
90 - 99	6.8%	90 - 99	0.0%	180 - 199	3.2%
> 99	1.7%	100 - 109	11.4%	200 - 219	0.0%
(Cases) N=	59	110 - 119	17.1%	220 - 239	1.6%
mean	57	> 119	60.0%	240 - 259	0.0%
min size (mm)	27	(Cases) N=	35	260 - 279	0.0%
max size (mm)	116	mean	121	280 - 299	1.6%
		min size (mm)	72	> 299	0.0%
		max size (mm)	160	(Cases) N=	62
				mean	79
				min size (mm)	36
				max size (mm)	282
<i>Haliotis rufescens</i>		<i>Asterina miniata</i>		<i>S. franciscanus</i>	
<25	0.0%	<10	0.0%	< 5	0.0%
25 - 34	0.0%	10 - 19	0.0%	5 - 9	0.0%
35 - 44	0.0%	20 - 29	5.1%	10 - 14	0.0%
45 - 54	0.0%	30 - 39	10.3%	15 - 19	0.0%
55 - 64	0.0%	40 - 49	12.8%	20 - 24	0.5%
65 - 74	0.0%	50 - 59	20.5%	25 - 29	1.6%
75 - 84	0.0%	60 - 69	25.6%	30 - 34	2.2%
85 - 94	0.0%	70 - 79	15.4%	35 - 39	6.0%
95 - 104	0.0%	80 - 89	10.3%	40 - 44	14.2%
105 - 114	0.0%	90 - 99	0.0%	45 - 49	8.2%
115 - 124	0.0%	> 99	0.0%	50 - 54	14.2%
125 - 134	0.0%	(Cases) N=	39	55 - 59	12.6%
135 - 144	0.0%	mean	59	60 - 64	9.8%
145 - 154	0.0%	min size (mm)	24	65 - 69	8.7%
155 - 164	15.0%	max size (mm)	85	70 - 74	1.6%
165 - 174	5.0%			75 - 79	5.5%
175 - 184	15.0%			80 - 84	5.5%
185 - 194	20.0%			85 - 89	6.0%
>195	40.0%			90 - 94	1.1%
(Cases) N=	20			95 - 99	1.6%
mean	191			100 - 104	0.5%
min size (mm)	157			105 - 109	0.0%
max size (mm)	220			> 109	0.0%
		<i>Pisaster giganteus</i>		(Cases) N=	183
		< 20	0.0%	mean	58
		20 - 39	0.0%	min size (mm)	20
		40 - 59	3.3%	max size (mm)	104
		60 - 79	29.5%		
		80 - 99	32.8%		
		100 - 119	8.2%		
		120 - 139	19.7%		
		140 - 159	4.9%		
		160 - 179	1.6%		
		180 - 199	0.0%		
		200 - 219	0.0%		
		220 - 239	0.0%		
		> 239	0.0%		
		(Cases) N=	61		
		mean	96		
		min size (mm)	54		
		max size (mm)	167		

## 2000 Natural Habitat Size Frequency Distributions

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### Santa Rosa Island - Johnson's Lee North

#### *Strongylocentrotus purpuratus*

< 5	6.1%
5 - 9	5.3%
10 - 14	8.2%
15 - 19	12.7%
20 - 24	10.6%
25 - 29	8.6%
30 - 34	15.9%
35 - 39	13.1%
40 - 44	12.2%
45 - 49	5.7%
50 - 54	0.8%
55 - 59	0.8%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	245
mean	27
min size (mm)	2
max size (mm)	59

# 2000 Natural Habitat Size Frequency Distributions

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## Santa Rosa Island - Johnson's Lee South

<i>Tethya aurantia</i>		<i>Kelletia kelletii</i>		<i>Crassedoma giganteum</i>	
<10	0.0%	< 40	0.0%	<10	0.0%
10 - 19	0.0%	40 - 49	0.0%	10 - 19	0.0%
20 - 29	0.0%	50 - 59	0.0%	20 - 29	0.0%
30 - 39	3.2%	60 - 69	0.0%	30 - 39	9.1%
40 - 49	12.9%	70 - 79	16.7%	40 - 49	9.1%
50 - 59	19.4%	80 - 89	8.3%	50 - 59	45.5%
60 - 69	29.0%	90 - 99	16.7%	60 - 69	36.4%
70 - 79	17.7%	100 - 109	8.3%	70 - 79	0.0%
80 - 89	12.9%	110 - 119	50.0%	80 - 89	0.0%
90 - 99	3.2%	120 - 129	0.0%	90 - 99	0.0%
> 99	1.6%	130 - 139	0.0%	100 - 109	0.0%
(Cases) N=	62	140 - 149	0.0%	110 - 119	0.0%
mean	65	> 149	0.0%	120 - 129	0.0%
min size (mm)	32	(Cases) N=	12	130 - 139	0.0%
max size (mm)	102	mean	101	> 139	0.0%
		min size (mm)	74	(Cases) N=	11
		max size (mm)	118	mean	56
				min size (mm)	39
				max size (mm)	68
<i>Haliotis rufescens</i>		<i>Megathura crenulata</i>		<i>Asterina miniata</i>	
<25	0.0%	<10	0.0%	<10	0.0%
25 - 34	0.0%	10 - 19	0.0%	10 - 19	0.0%
35 - 44	0.0%	20 - 29	0.0%	20 - 29	1.7%
45 - 54	0.0%	30 - 39	0.0%	30 - 39	3.4%
55 - 64	0.0%	40 - 49	0.0%	40 - 49	10.2%
65 - 74	0.0%	50 - 59	0.0%	50 - 59	22.0%
75 - 84	0.0%	60 - 69	7.1%	60 - 69	32.2%
85 - 94	0.0%	70 - 79	0.0%	70 - 79	18.6%
95 - 104	0.0%	80 - 89	42.9%	80 - 89	8.5%
105 - 114	0.0%	90 - 99	42.9%	90 - 99	3.4%
115 - 124	0.0%	100 - 109	7.1%	> 99	0.0%
125 - 134	0.0%	110 - 119	0.0%	(Cases) N=	59
135 - 144	0.0%	> 119	0.0%	mean	63
145 - 154	0.0%	(Cases) N=	14		
155 - 164	12.5%	mean	90	min size (mm)	28
165 - 174	6.3%	min size (mm)	68	max size (mm)	94
175 - 184	25.0%	max size (mm)	104		
185 - 194	12.5%				
>195	43.8%				
(Cases) N=	16				
mean	195				
min size (mm)	156				
max size (mm)	233				

# 2000 Natural Habitat Size Frequency Distributions

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## Santa Rosa Island - Johnson's Lee South

### *Pisaster giganteus*

< 20	0.0%
20 - 39	4.9%
40 - 59	23.0%
60 - 79	18.0%
80 - 99	27.9%
100 - 119	18.0%
120 - 139	3.3%
140 - 159	1.6%
160 - 179	0.0%
180 - 199	1.6%
200 - 219	1.6%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	61
mean	83
min size (mm)	31
max size (mm)	210

### *S. franciscanus*

< 5	0.0%
5 - 9	0.0%
10 - 14	0.5%
15 - 19	2.2%
20 - 24	8.2%
25 - 29	5.5%
30 - 34	4.4%
35 - 39	9.3%
40 - 44	12.0%
45 - 49	9.8%
50 - 54	11.5%
55 - 59	10.9%
60 - 64	4.9%
65 - 69	5.5%
70 - 74	4.9%
75 - 79	4.9%
80 - 84	2.2%
85 - 89	0.0%
90 - 94	1.6%
95 - 99	1.1%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.5%
(Cases) N=	183
mean	49
min size (mm)	14
max size (mm)	113

### *Pycnopodia helianthoides*

< 20	0.0%
20 - 39	2.8%
40 - 59	2.8%
60 - 79	0.0%
80 - 99	2.8%
100 - 119	2.8%
120 - 139	2.8%
140 - 159	8.3%
160 - 179	13.9%
180 - 199	16.7%
200 - 219	5.6%
220 - 239	13.9%
240 - 259	13.9%
260 - 279	8.3%
280 - 299	5.6%
> 299	0.0%
(Cases) N=	36
mean	197
min size (mm)	37
max size (mm)	290

### *Strongylocentrotus purpuratus*

< 5	0.4%
5 - 9	0.4%
10 - 14	2.9%
15 - 19	12.0%
20 - 24	23.7%
25 - 29	25.7%
30 - 34	7.5%
35 - 39	9.5%
40 - 44	8.7%
45 - 49	5.4%
50 - 54	1.7%
55 - 59	0.8%
60 - 64	1.2%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	241
mean	29
min size (mm)	4
max size (mm)	64

# 2000 Natural Habitat Size Frequency Distributions

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## Santa Rosa Island - Rodes Reef

### *Tethya aurantia*

<10	0.0%
10 - 19	1.9%
20 - 29	5.7%
30 - 39	11.3%
40 - 49	37.7%
50 - 59	20.8%
60 - 69	17.0%
70 - 79	1.9%
80 - 89	0.0%
90 - 99	3.8%
> 99	0.0%
(Cases) N=	53
mean	50
min size (mm)	15
max size (mm)	96

### *Kelletia kelletii*

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	25.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	50.0%
120 - 129	25.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	4
mean	109
min size (mm)	82
max size (mm)	121

### *Lithopoma undosum*

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	30.0%
60 - 69	40.0%
70 - 79	10.0%
80 - 89	0.0%
90 - 99	10.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	10.0%
(Cases) N=	10
mean	72
min size (mm)	54
max size (mm)	121

### *Lithopoma gibberosum*

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	50.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	50.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	2
mean	47
min size (mm)	33
max size (mm)	60

### *Megathura crenulata*

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	8.3%
70 - 79	8.3%
80 - 89	8.3%
90 - 99	33.3%
100 - 109	33.3%
110 - 119	8.3%
> 119	0.0%
(Cases) N=	12
mean	95
min size (mm)	69
max size (mm)	113

### *Crassedoma giganteum*

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	21.4%
50 - 59	7.1%
60 - 69	14.3%
70 - 79	7.1%
80 - 89	7.1%
90 - 99	7.1%
100 - 109	21.4%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	14.3%
> 139	0.0%
(Cases) N=	14
mean	81
min size (mm)	40
max size (mm)	139

### *Asterina miniata*

<10	0.0%
10 - 19	5.3%
20 - 29	14.0%
30 - 39	17.5%
40 - 49	29.8%
50 - 59	10.5%
60 - 69	21.1%
70 - 79	1.8%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	57
mean	44
min size (mm)	12
max size (mm)	70



# 2000 Natural Habitat Size Frequency Distributions

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## Santa Rosa Island - Rodes Reef

<i>Pisaster giganteus</i>		<i>Lytechinus anamesus</i>		<i>Strongylocentrotus purpuratus</i>	
< 20	0.0%	< 5	0.0%	< 5	0.5%
20 - 39	1.7%	5 - 9	0.0%	5 - 9	0.5%
40 - 59	23.3%	10 - 14	18.1%	10 - 14	14.4%
60 - 79	23.3%	15 - 19	35.5%	15 - 19	17.5%
80 - 99	26.7%	20 - 24	26.5%	20 - 24	17.0%
100 - 119	18.3%	25 - 29	17.4%	25 - 29	20.6%
120 - 139	5.0%	30 - 34	2.6%	30 - 34	12.4%
140 - 159	0.0%	35 - 39	0.0%	35 - 39	9.3%
160 - 179	0.0%	40 - 44	0.0%	40 - 44	5.7%
180 - 199	1.7%	45 - 49	0.0%	45 - 49	1.0%
200 - 219	0.0%	> 49	0.0%	50 - 54	1.0%
220 - 239	0.0%	(Cases) N=	155	55 - 59	0.0%
> 239	0.0%	mean	20	60 - 64	0.0%
(Cases) N=	60	min size (mm)	11	65 - 69	0.0%
mean	83	max size (mm)	32	70 - 74	0.0%
				75 - 79	0.0%
min size (mm)	37			> 79	0.0%
max size (mm)	180				
		<i>S. franciscanus</i>			
				(Cases) N=	194
				mean	25
				min size (mm)	4
				max size (mm)	50
<i>Pycnopodia helianthoides</i>					
< 20	0.0%	< 5	0.0%		
20 - 39	3.1%	5 - 9	0.0%		
40 - 59	43.8%	10 - 14	2.6%		
60 - 79	31.3%	15 - 19	16.6%		
80 - 99	0.0%	20 - 24	21.9%		
100 - 119	6.3%	25 - 29	10.6%		
120 - 139	6.3%	30 - 34	6.6%		
140 - 159	3.1%	35 - 39	5.3%		
160 - 179	3.1%	40 - 44	6.0%		
180 - 199	0.0%	45 - 49	2.0%		
200 - 219	0.0%	50 - 54	4.0%		
220 - 239	3.1%	55 - 59	6.0%		
240 - 259	0.0%	60 - 64	5.3%		
260 - 279	0.0%	65 - 69	4.6%		
280 - 299	0.0%	70 - 74	0.7%		
> 299	0.0%	75 - 79	4.0%		
(Cases) N=	32	80 - 84	2.0%		
mean	76	85 - 89	0.7%		
		90 - 94	0.7%		
		95 - 99	0.7%		
		100 - 104	0.0%		
min size (mm)	32	105 - 109	0.0%		
max size (mm)	225	> 109	0.0%		
		(Cases) N=	151		
		mean	37		
		min size (mm)	11		
		max size (mm)	99		

# 2000 Natural Habitat Size Frequency Distributions

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## Santa Cruz Island - Gull Island South

<i>Tethya aurantia</i>		<i>Asterina miniata</i>		<i>S. franciscanus</i>	
<10	0.0%	<10	0.0%	< 5	0.0%
10 - 19	0.0%	10 - 19	0.0%	5 - 9	0.5%
20 - 29	0.0%	20 - 29	0.0%	10 - 14	1.9%
30 - 39	14.3%	30 - 39	6.7%	15 - 19	11.2%
40 - 49	14.3%	40 - 49	16.7%	20 - 24	23.8%
50 - 59	57.1%	50 - 59	18.3%	25 - 29	27.7%
60 - 69	14.3%	60 - 69	33.3%	30 - 34	16.5%
70 - 79	0.0%	70 - 79	20.0%	35 - 39	6.8%
80 - 89	0.0%	80 - 89	3.3%	40 - 44	3.9%
90 - 99	0.0%	90 - 99	1.7%	45 - 49	2.9%
> 99	0.0%	> 99	0.0%	50 - 54	0.5%
(Cases) N=	7	(Cases) N=	60	55 - 59	1.5%
mean	52	mean	60	60 - 64	1.0%
min size (mm)	33	min size (mm)	32	65 - 69	1.0%
max size (mm)	62	max size (mm)	91	70 - 74	0.0%
				75 - 79	0.0%
				80 - 84	0.5%
				85 - 89	0.5%
				90 - 94	0.0%
				95 - 99	0.0%
				100 - 104	0.0%
				105 - 109	0.0%
				> 109	0.0%
				(Cases) N=	206
				mean	29
				min size (mm)	9
				max size (mm)	89
<i>Lithopoma undosum</i>		<i>Pisaster giganteus</i>		<i>Strongylocentrotus purpuratus</i>	
<10	0.0%	< 20	0.0%	< 5	0.0%
10 - 19	1.8%	20 - 39	0.0%	5 - 9	10.4%
20 - 29	0.0%	40 - 59	1.9%	10 - 14	29.7%
30 - 39	10.5%	60 - 79	1.9%	15 - 19	35.1%
40 - 49	45.6%	80 - 99	13.5%	20 - 24	14.4%
50 - 59	33.3%	100 - 119	50.0%	25 - 29	6.3%
60 - 69	7.0%	120 - 139	25.0%	30 - 34	3.2%
70 - 79	1.8%	140 - 159	5.8%	35 - 39	0.9%
80 - 89	0.0%	160 - 179	0.0%	40 - 44	0.0%
90 - 99	0.0%	180 - 199	1.9%	45 - 49	0.0%
100 - 109	0.0%	200 - 219	0.0%	50 - 54	0.0%
110 - 119	0.0%	220 - 239	0.0%	55 - 59	0.0%
> 119	0.0%	> 239	0.0%	60 - 64	0.0%
(Cases) N=	57	(Cases) N=	52	65 - 69	0.0%
mean	48	mean	112	70 - 74	0.0%
min size (mm)	17	min size (mm)	42	75 - 79	0.0%
max size (mm)	78	max size (mm)	182	> 79	0.0%
				(Cases) N=	222
				mean	17
				min size (mm)	5
				max size (mm)	38
<i>Megathura crenulata</i>		<i>Lytechinus anamesus</i>			
<10	0.0%	< 5	0.0%		
10 - 19	0.0%	5 - 9	0.9%		
20 - 29	0.0%	10 - 14	18.8%		
30 - 39	2.4%	15 - 19	61.0%		
40 - 49	4.8%	20 - 24	16.4%		
50 - 59	4.8%	25 - 29	2.3%		
60 - 69	40.5%	30 - 34	0.5%		
70 - 79	38.1%	35 - 39	0.0%		
80 - 89	9.5%	40 - 44	0.0%		
90 - 99	0.0%	45 - 49	0.0%		
100 - 109	0.0%	> 49	0.0%		
110 - 119	0.0%	(Cases) N=	213		
> 119	0.0%	mean	17		
(Cases) N=	42	min size (mm)	8		
mean	68	max size (mm)	30		
min size (mm)	32				
max size (mm)	84				

# 2000 Natural Habitat Size Frequency Distributions

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## Santa Cruz Island - Fry's Harbor

<i>Tethya aurantia</i>		<i>Crassedoma giganteum</i>		<i>Pisaster giganteus</i>	
<10	0.0%	<10	0.0%	< 20	0.0%
10 - 19	100.0%	10 - 19	0.0%	20 - 39	0.0%
20 - 29	0.0%	20 - 29	0.0%	40 - 59	3.9%
30 - 39	0.0%	30 - 39	10.3%	60 - 79	5.9%
40 - 49	0.0%	40 - 49	17.9%	80 - 99	3.9%
50 - 59	0.0%	50 - 59	20.5%	100 - 119	11.8%
60 - 69	0.0%	60 - 69	10.3%	120 - 139	23.5%
70 - 79	0.0%	70 - 79	5.1%	140 - 159	27.5%
80 - 89	0.0%	80 - 89	10.3%	160 - 179	11.8%
90 - 99	0.0%	90 - 99	5.1%	180 - 199	5.9%
> 99	0.0%	100 - 109	2.6%	200 - 219	5.9%
(Cases) N=	1	110 - 119	5.1%	220 - 239	0.0%
mean	18	120 - 129	7.7%	> 239	0.0%
min size (mm)	18	130 - 139	2.6%	(Cases) N=	51
135	51	> 139	2.6%	mean	(Cases) N=
max size (mm)	18				
		(Cases) N=	39	mean	135
		mean	72	min size (mm)	44
		min size (mm)	31	max size (mm)	208
		max size (mm)	142		
<i>Lithopoma undosum</i>		<i>Asterina miniata</i>		<i>Lytechinus anamesus</i>	
<10	0.0%			< 5	0.0%
10 - 19	1.3%			5 - 9	0.0%
20 - 29	7.5%			10 - 14	1.4%
30 - 39	7.5%			15 - 19	59.9%
40 - 49	63.7%	<10	0.0%	20 - 24	34.4%
50 - 59	13.8%	10 - 19	0.0%	25 - 29	4.2%
60 - 69	5.0%	20 - 29	1.2%	30 - 34	0.0%
70 - 79	1.3%	30 - 39	7.3%	35 - 39	0.0%
80 - 89	0.0%	40 - 49	11.0%	40 - 44	0.0%
90 - 99	0.0%	50 - 59	25.6%	45 - 49	0.0%
100 - 109	0.0%	60 - 69	36.6%	> 49	0.0%
110 - 119	0.0%	70 - 79	13.4%	(Cases) N=	212
> 119	0.0%	80 - 89	4.9%	mean	19
(Cases) N=	80	90 - 99	0.0%	min size (mm)	14
mean	45	> 99	0.0%	max size (mm)	29
min size (mm)	19	(Cases) N=	82		
max size (mm)	70	mean	59		
		min size (mm)	27		
		max size (mm)	84		
<i>Megathura crenulata</i>					
<10	0.0%				
10 - 19	0.0%				
20 - 29	0.0%				
30 - 39	0.0%				
40 - 49	3.2%				
50 - 59	12.9%				
60 - 69	29.0%				
70 - 79	22.6%				
80 - 89	19.4%				
90 - 99	12.9%				
100 - 109	0.0%				
110 - 119	0.0%				
> 119	0.0%				
(Cases) N=	31				
mean	72				
min size (mm)	49				
max size (mm)	94				

## 2000 Natural Habitat Size Frequency Distributions

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### Santa Cruz Island - Fry's Harbor

#### *S. franciscanus*

< 5	0.0%
5 - 9	0.0%
10 - 14	1.0%
15 - 19	4.5%
20 - 24	21.5%
25 - 29	23.5%
30 - 34	12.5%
35 - 39	9.5%
40 - 44	4.0%
45 - 49	4.0%
50 - 54	7.0%
55 - 59	2.5%
60 - 64	3.5%
65 - 69	1.5%
70 - 74	1.5%
75 - 79	0.5%
80 - 84	1.5%
85 - 89	0.5%
90 - 94	0.5%
95 - 99	0.5%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	200
mean	35
min size (mm)	13
max size (mm)	98

#### *Strongylocentrotus purpuratus*

< 5	0.0%
5 - 9	0.0%
10 - 14	8.2%
15 - 19	22.7%
20 - 24	28.2%
25 - 29	23.2%
30 - 34	11.4%
35 - 39	3.6%
40 - 44	1.4%
45 - 49	0.0%
50 - 54	1.4%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	220
mean	23
min size (mm)	10
max size (mm)	53

# 2000 Natural Habitat Size Frequency Distributions

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## Santa Cruz Island - Pelican Bay

<i>Tethya aurantia</i>		<i>Crassedoma giganteum</i>		<i>Pisaster giganteus</i>	
<10	0.0%	<10	0.0%	< 20	0.0%
10 - 19	0.0%	10 - 19	0.0%	20 - 39	0.0%
20 - 29	0.0%	20 - 29	2.0%	40 - 59	25.0%
30 - 39	100.0%	30 - 39	6.1%	60 - 79	15.0%
40 - 49	0.0%	40 - 49	19.4%	80 - 99	15.0%
50 - 59	0.0%	50 - 59	15.3%	100 - 119	25.0%
60 - 69	0.0%	60 - 69	20.4%	120 - 139	0.0%
70 - 79	0.0%	70 - 79	9.2%	140 - 159	0.0%
80 - 89	0.0%	80 - 89	8.2%	160 - 179	5.0%
90 - 99	0.0%	90 - 99	8.2%	180 - 199	0.0%
> 99	0.0%	100 - 109	5.1%	200 - 219	10.0%
(Cases) N=	5	110 - 119	5.1%	220 - 239	0.0%
mean	35	120 - 129	0.0%	> 239	5.0%
min size (mm)	33	130 - 139	1.0%	(Cases) N=	20
107	20	> 139	0.0%	mean	(Cases) N=
max size (mm)	38				
		(Cases) N=	98	mean	107
		mean	67	min size (mm)	47
		min size (mm)	21	max size (mm)	284
		max size (mm)	132		
<i>Lithopoma undosum</i>		<i>Asterina miniata</i>		<i>Lytechinus anamesus</i>	
<10	0.0%	<10	0.0%	< 5	0.0%
10 - 19	2.9%	10 - 19	0.0%	5 - 9	0.0%
20 - 29	4.3%	20 - 29	0.0%	10 - 14	0.5%
30 - 39	17.4%	30 - 39	6.7%	15 - 19	8.2%
40 - 49	30.4%	40 - 49	6.7%	20 - 24	69.7%
50 - 59	15.9%	50 - 59	20.0%	25 - 29	19.7%
60 - 69	13.0%	60 - 69	17.8%	30 - 34	1.9%
70 - 79	10.1%	70 - 79	17.8%	35 - 39	0.0%
80 - 89	5.8%	80 - 89	24.4%	40 - 44	0.0%
90 - 99	0.0%	90 - 99	4.4%	45 - 49	0.0%
100 - 109	0.0%	> 99	2.2%	> 49	0.0%
110 - 119	0.0%	(Cases) N=	45	(Cases) N=	208
> 119	0.0%	mean	68	mean	23
(Cases) N=	69	min size (mm)	31	min size (mm)	14
mean	50	max size (mm)	102	max size (mm)	34
min size (mm)	19				
max size (mm)	87				

## 2000 Natural Habitat Size Frequency Distributions

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### Santa Cruz Island - Pelican Bay

#### *S. franciscanus*

< 5	0.0%
5 - 9	0.0%
10 - 14	0.5%
15 - 19	6.3%
20 - 24	15.6%
25 - 29	26.6%
30 - 34	25.0%
35 - 39	13.0%
40 - 44	5.7%
45 - 49	1.0%
50 - 54	2.1%
55 - 59	1.0%
60 - 64	1.6%
65 - 69	1.6%
70 - 74	0.0%
75 - 79	0.0%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	192
mean	31
min size (mm)	12
max size (mm)	66

#### *Strongylocentrotus purpuratus*

< 5	0.0%
5 - 9	0.0%
10 - 14	1.4%
15 - 19	14.6%
20 - 24	26.9%
25 - 29	34.9%
30 - 34	16.0%
35 - 39	4.2%
40 - 44	1.4%
45 - 49	0.5%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	212
mean	26
min size (mm)	14
max size (mm)	46

# 2000 Natural Habitat Size Frequency Distributions

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## Santa Cruz Island - Scorpion Anchorage

<i>Tethya aurantia</i>		<i>Crassedoma giganteum</i>		<i>Pisaster giganteus</i>	
<10	0.0%	<10	0.0%	< 20	0.0%
10 - 19	0.0%	10 - 19	0.0%	20 - 39	0.0%
20 - 29	10.5%	20 - 29	0.0%	40 - 59	0.0%
30 - 39	10.5%	30 - 39	1.8%	60 - 79	0.0%
40 - 49	31.6%	40 - 49	7.0%	80 - 99	0.0%
50 - 59	15.8%	50 - 59	12.3%	100 - 119	40.0%
60 - 69	21.1%	60 - 69	12.3%	120 - 139	40.0%
70 - 79	5.3%	70 - 79	24.6%	140 - 159	20.0%
80 - 89	5.3%	80 - 89	7.0%	160 - 179	0.0%
90 - 99	0.0%	90 - 99	12.3%	180 - 199	0.0%
> 99	0.0%	100 - 109	10.5%	200 - 219	0.0%
(Cases) N=	19	110 - 119	7.0%	220 - 239	0.0%
mean	50	120 - 129	1.8%	> 239	0.0%
min size (mm)	22	130 - 139	1.8%	(Cases) N=	5
121	5	> 139	1.8%	mean	(Cases) N=
max size (mm)	80				
		(Cases) N=	57	mean	121
		mean	80	min size (mm)	103
		min size (mm)	35	max size (mm)	147
		max size (mm)	152		
<i>Lithopoma undosum</i>		<i>Asterina miniata</i>		<i>S. franciscanus</i>	
<10	0.0%			< 5	0.0%
10 - 19	7.8%			5 - 9	0.0%
20 - 29	55.6%			10 - 14	0.0%
30 - 39	8.5%	<10	0.0%	15 - 19	1.4%
40 - 49	13.1%	10 - 19	0.0%	20 - 24	5.3%
50 - 59	9.8%	20 - 29	0.0%	25 - 29	9.6%
60 - 69	2.6%	30 - 39	3.3%	30 - 34	20.2%
70 - 79	2.6%	40 - 49	15.0%	35 - 39	14.9%
80 - 89	0.0%	50 - 59	18.3%	40 - 44	15.4%
90 - 99	0.0%	60 - 69	13.3%	45 - 49	12.0%
100 - 109	0.0%	70 - 79	23.3%	50 - 54	9.1%
110 - 119	0.0%	80 - 89	18.3%	55 - 59	5.3%
> 119	0.0%	90 - 99	6.7%	60 - 64	2.9%
(Cases) N=	153	> 99	1.7%	65 - 69	2.9%
mean	33	(Cases) N=	60	70 - 74	0.0%
min size (mm)	13	mean	67	75 - 79	0.0%
max size (mm)	77			80 - 84	1.0%
		min size (mm)	37	85 - 89	0.0%
		max size (mm)	102	90 - 94	0.0%
				95 - 99	0.0%
				100 - 104	0.0%
				105 - 109	0.0%
				> 109	0.0%
<i>Megathura crenulata</i>				(Cases) N=	208
<10	0.0%			mean	40
10 - 19	0.0%			min size (mm)	17
20 - 29	0.0%			max size (mm)	83
30 - 39	0.0%				
40 - 49	4.3%				
50 - 59	8.7%				
60 - 69	13.0%				
70 - 79	47.8%				
80 - 89	26.1%				
90 - 99	0.0%				
100 - 109	0.0%				
110 - 119	0.0%				
> 119	0.0%				
(Cases) N=	23				
mean	73				
min size (mm)	40				
max size (mm)	86				

## 2000 Natural Habitat Size Frequency Distributions

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### Santa Cruz Island - Scorpion Anchorage

#### *Strongylocentrotus purpuratus*

< 5	3.2%
5 - 9	30.6%
10 - 14	21.4%
15 - 19	22.2%
20 - 24	8.1%
25 - 29	3.2%
30 - 34	8.9%
35 - 39	2.4%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	248
mean	15
min size (mm)	3
max size (mm)	38



# 2000 Natural Habitat Size Frequency Distributions

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## Santa Cruz Island - Yellow Banks

<i>Tethya aurantia</i>		<i>Asterina miniata</i>		<i>S. franciscanus</i>	
<10	0.0%	<10	0.0%	< 5	0.0%
10 - 19	2.4%	10 - 19	0.0%	5 - 9	0.0%
20 - 29	12.2%	20 - 29	18.5%	10 - 14	5.2%
30 - 39	31.7%	30 - 39	7.4%	15 - 19	29.7%
40 - 49	31.7%	40 - 49	33.3%	20 - 24	38.7%
50 - 59	9.8%	50 - 59	11.1%	25 - 29	14.8%
60 - 69	9.8%	60 - 69	11.1%	30 - 34	0.6%
70 - 79	0.0%	70 - 79	7.4%	35 - 39	0.0%
80 - 89	0.0%	80 - 89	7.4%	40 - 44	0.0%
90 - 99	2.4%	90 - 99	3.7%	45 - 49	0.6%
> 99	0.0%	> 99	0.0%	50 - 54	1.3%
(Cases) N=	41	(Cases) N=	27	55 - 59	1.9%
mean	42	mean	50	60 - 64	0.6%
min size (mm)	14	min size (mm)	21	65 - 69	0.6%
max size (mm)	90	max size (mm)	96	70 - 74	1.9%
				75 - 79	1.9%
				80 - 84	1.9%
				85 - 89	0.0%
				90 - 94	0.0%
				95 - 99	0.0%
				100 - 104	0.0%
				105 - 109	0.0%
				> 109	0.0%
				(Cases) N=	155
				mean	26
				min size (mm)	11
				max size (mm)	83
<i>Kelletia kelletii</i>		<i>Pisaster giganteus</i>		<i>Strongylocentrotus purpuratus</i>	
< 40	0.0%	< 20	0.0%	< 5	0.0%
40 - 49	0.0%	20 - 39	0.0%	5 - 9	10.7%
50 - 59	50.0%	40 - 59	11.1%	10 - 14	33.0%
60 - 69	0.0%	60 - 79	22.2%	15 - 19	10.2%
70 - 79	0.0%	80 - 99	33.3%	20 - 24	5.3%
80 - 89	0.0%	100 - 119	0.0%	25 - 29	10.7%
90 - 99	0.0%	120 - 139	33.3%	30 - 34	10.2%
100 - 109	0.0%	140 - 159	0.0%	35 - 39	10.7%
110 - 119	50.0%	160 - 179	0.0%	40 - 44	5.3%
120 - 129	0.0%	180 - 199	0.0%	45 - 49	2.9%
130 - 139	0.0%	200 - 219	0.0%	50 - 54	0.5%
140 - 149	0.0%	220 - 239	0.0%	55 - 59	0.5%
> 149	0.0%	> 239	0.0%	60 - 64	0.0%
(Cases) N=	2	(Cases) N=	9	65 - 69	0.0%
mean	85	mean	99	70 - 74	0.0%
min size (mm)	58	min size (mm)	59	75 - 79	0.0%
max size (mm)	111	max size (mm)	139	> 79	0.0%
				(Cases) N=	206
				mean	22
				min size (mm)	5
				max size (mm)	55
<i>Lithopoma undosum</i>		<i>Lytechinus anamesus</i>			
<10	0.0%	< 5	0.0%		
10 - 19	2.6%	5 - 9	0.0%		
20 - 29	32.9%	10 - 14	1.7%		
30 - 39	14.5%	15 - 19	85.2%		
40 - 49	39.5%	20 - 24	13.1%		
50 - 59	6.6%	25 - 29	0.0%		
60 - 69	1.3%	30 - 34	0.0%		
70 - 79	0.0%	35 - 39	0.0%		
80 - 89	1.3%	40 - 44	0.0%		
90 - 99	0.0%	45 - 49	0.0%		
100 - 109	1.3%	> 49	0.0%		
110 - 119	0.0%	(Cases) N=	236		
> 119	0.0%	mean	18		
(Cases) N=	76	min size (mm)	12		
mean	38	max size (mm)	22		
min size (mm)	19				
max size (mm)	105				

# 2000 Natural Habitat Size Frequency Distributions

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## Anacapa Island - Admiral's Reef

### *Tethya aurantia*

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	33.3%
40 - 49	33.3%
50 - 59	33.3%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	3
mean	46
min size (mm)	36
max size (mm)	57

### *Haliotis corrugata*

<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	50.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	0.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	50.0%
145 - 154	0.0%
155 - 164	0.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	2
mean	106
min size (mm)	71
max size (mm)	140

### *Kelletia kelletii*

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	2.2%
80 - 89	10.9%
90 - 99	26.1%
100 - 109	34.8%
110 - 119	15.2%
120 - 129	6.5%
130 - 139	2.2%
140 - 149	2.2%
> 149	0.0%
(Cases) N=	46
mean	103
min size (mm)	79
max size (mm)	144

### *Lithopoma undosum*

<10	0.0%
10 - 19	0.0%
20 - 29	1.8%
30 - 39	3.6%
40 - 49	5.4%
50 - 59	0.0%
60 - 69	14.3%
70 - 79	35.7%
80 - 89	33.9%
90 - 99	5.4%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	56
mean	74
min size (mm)	28
max size (mm)	97

### *Asterina miniata*

<10	0.0%
10 - 19	1.7%
20 - 29	8.5%
30 - 39	1.7%
40 - 49	11.9%
50 - 59	20.3%
60 - 69	16.9%
70 - 79	15.3%
80 - 89	22.0%
90 - 99	1.7%
> 99	0.0%
(Cases) N=	59
mean	62
min size (mm)	12
max size (mm)	95

### *Pisaster giganteus*

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	13.3%
100 - 119	3.3%
120 - 139	6.7%
140 - 159	3.3%
160 - 179	3.3%
180 - 199	26.7%
200 - 219	20.0%
220 - 239	6.7%
> 239	16.7%
(Cases) N=	30
mean	191
min size (mm)	84
max size (mm)	340

### *Lytechinus anamesus*

< 5	0.0%
5 - 9	0.0%
10 - 14	13.1%
15 - 19	54.0%
20 - 24	26.8%
25 - 29	6.1%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	198
mean	18
min size (mm)	11
min size (mm)	11
max size (mm)	27

## Anacapa Island - Admiral's Reef

### *S. franciscanus*

< 5	0.4%
5 - 9	0.4%
10 - 14	3.7%
15 - 19	15.3%
20 - 24	17.9%
25 - 29	7.8%
30 - 34	3.0%
35 - 39	5.2%
40 - 44	7.5%
45 - 49	6.7%
50 - 54	2.6%
55 - 59	4.9%
60 - 64	4.1%
65 - 69	3.0%
70 - 74	7.5%
75 - 79	3.7%
80 - 84	3.7%
85 - 89	2.2%
90 - 94	0.4%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	268
mean	41
min size (mm)	2
max size (mm)	94

### *Strongylocentrotus purpuratus*

< 5	8.9%
5 - 9	13.0%
10 - 14	25.7%
15 - 19	19.1%
20 - 24	8.1%
25 - 29	7.6%
30 - 34	6.1%
35 - 39	4.6%
40 - 44	4.1%
45 - 49	2.3%
50 - 54	0.5%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	393
mean	18
min size (mm)	1
max size (mm)	54

# 2000 Natural Habitat Size Frequency Distributions

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## Anacapa Island - Cathedral Cove

<i>Haliotis corrugata</i>		<i>Crassidoma giganteum</i>		<i>Pisaster giganteus</i>	
<25	0.0%	<10	0.0%	< 20	0.0%
25 - 34	0.0%	10 - 19	0.0%	20 - 39	0.0%
35 - 44	0.0%	20 - 29	0.0%	40 - 59	16.7%
45 - 54	0.0%	30 - 39	1.5%	60 - 79	66.7%
55 - 64	0.0%	40 - 49	7.5%	80 - 99	0.0%
65 - 74	0.0%	50 - 59	16.4%	100 - 119	0.0%
75 - 84	0.0%	60 - 69	14.9%	120 - 139	0.0%
85 - 94	25.0%	70 - 79	10.4%	140 - 159	0.0%
95 - 104	0.0%	80 - 89	9.0%	160 - 179	0.0%
105 - 114	0.0%	90 - 99	14.9%	180 - 199	0.0%
115 - 124	0.0%	100 - 109	16.4%	200 - 219	16.7%
125 - 134	0.0%	110 - 119	6.0%	220 - 239	0.0%
135 - 144	0.0%	120 - 129	3.0%	> 239	0.0%
145 - 154	25.0%	130 - 139	0.0%	(Cases) N=	6
155 - 164	0.0%	> 139	0.0%	mean	96
165 - 174	0.0%	(Cases) N=	67	min size (mm)	53
175 - 184	0.0%	mean	79	min size (mm)	53
185 - 194	50.0%			max size (mm)	215
>195	0.0%	min size (mm)	33		
		max size (mm)	120		
(Cases) N=	4			<i>S. franciscanus</i>	
mean	153				
min size (mm)	85	<i>Asterina miniata</i>		< 5	0.0%
max size (mm)	190			5 - 9	0.8%
		<10	0.0%	10 - 14	0.4%
		10 - 19	13.2%	15 - 19	0.4%
		20 - 29	16.2%	20 - 24	2.0%
		30 - 39	17.6%	25 - 29	0.0%
		40 - 49	29.4%	30 - 34	0.4%
		50 - 59	16.2%	35 - 39	0.4%
		60 - 69	7.4%	40 - 44	1.2%
		70 - 79	0.0%	45 - 49	0.4%
		80 - 89	0.0%	50 - 54	3.7%
		90 - 99	0.0%	55 - 59	0.4%
		> 99	0.0%	60 - 64	2.4%
		(Cases) N=	68	65 - 69	0.8%
		mean	38	70 - 74	2.0%
				75 - 79	5.7%
		min size (mm)	10	80 - 84	2.9%
		max size (mm)	68	85 - 89	9.4%
				90 - 94	14.7%
				95 - 99	16.3%
				100 - 104	14.7%
				105 - 109	7.8%
				> 109	13.1%
				(Cases) N=	245
				mean	90
				min size (mm)	7
				max size (mm)	140
<i>Lithopoma undosum</i>					
<10	0.0%				
10 - 19	4.0%				
20 - 29	15.0%				
30 - 39	4.0%				
40 - 49	35.0%				
50 - 59	24.0%				
60 - 69	12.0%				
70 - 79	5.0%				
80 - 89	1.0%				
90 - 99	0.0%				
100 - 109	0.0%				
110 - 119	0.0%				
> 119	0.0%				
(Cases) N=	100				
mean	46				
min size (mm)	15				
max size (mm)	82				

Anacapa Island - Cathedral Cove

*Strongylocentrotus purpuratus*

< 5	0.5%
5 - 9	6.3%
10 - 14	10.2%
15 - 19	9.7%
20 - 24	9.2%
25 - 29	3.9%
30 - 34	5.3%
35 - 39	6.3%
40 - 44	4.4%
45 - 49	13.6%
50 - 54	9.7%
55 - 59	11.7%
60 - 64	4.4%
65 - 69	2.9%
70 - 74	1.9%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	206
mean	37
min size (mm)	4
max size (mm)	74

# 2000 Natural Habitat Size Frequency Distributions

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## Anacapa Island - Landing Cove

### *Haliotis corrugata*

<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	0.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	50.0%
155 - 164	50.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	2
mean	152
min size (mm)	148
max size (mm)	156

### *Lithopoma undosum*

<10	0.0%
10 - 19	1.4%
20 - 29	8.6%
30 - 39	5.7%
40 - 49	28.6%
50 - 59	22.9%
60 - 69	20.0%
70 - 79	7.1%
80 - 89	5.7%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	70
mean	53
min size (mm)	15
max size (mm)	89

### *S. franciscanus*

< 5	0.0%
5 - 9	11.0%
10 - 14	9.9%
15 - 19	9.9%
20 - 24	10.5%
25 - 29	3.5%
30 - 34	1.2%
35 - 39	0.6%
40 - 44	0.6%
45 - 49	0.0%
50 - 54	0.6%
55 - 59	0.0%
60 - 64	1.2%
65 - 69	0.0%
70 - 74	1.2%
75 - 79	0.0%
80 - 84	1.2%
85 - 89	4.7%
90 - 94	4.1%
95 - 99	4.7%
100 - 104	6.4%
105 - 109	10.5%
> 109	18.6%
(Cases) N=	172
mean	63
min size (mm)	5
max size (mm)	148

### *Strongylocentrotus purpuratus*

< 5	2.5%
5 - 9	16.8%
10 - 14	22.3%
15 - 19	15.2%
20 - 24	14.2%
25 - 29	6.1%
30 - 34	1.0%
35 - 39	3.6%
40 - 44	3.6%
45 - 49	4.1%
50 - 54	2.0%
55 - 59	4.1%
60 - 64	2.5%
65 - 69	1.0%
70 - 74	1.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	197
mean	23
min size (mm)	3
max size (mm)	74

# 2000 Natural Habitat Size Frequency Distributions

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## Santa Barbara Island - SE Sea Lion Rookery

<i>Tethya aurantia</i>		<i>Pisaster giganteus</i>		<i>S. franciscanus</i>	
<10	0.0%	< 20	0.0%	< 5	0.0%
10 - 19	4.7%	20 - 39	0.0%	5 - 9	2.0%
20 - 29	4.7%	40 - 59	11.1%	10 - 14	9.2%
30 - 39	15.1%	60 - 79	3.7%	15 - 19	36.7%
40 - 49	27.9%	80 - 99	51.9%	20 - 24	22.4%
50 - 59	24.4%	100 - 119	14.8%	25 - 29	9.5%
60 - 69	15.1%	120 - 139	11.1%	30 - 34	4.1%
70 - 79	5.8%	140 - 159	7.4%	35 - 39	4.4%
80 - 89	2.3%	160 - 179	0.0%	40 - 44	2.4%
90 - 99	0.0%	180 - 199	0.0%	45 - 49	1.0%
> 99	0.0%	200 - 219	0.0%	50 - 54	1.7%
(Cases) N=	86	220 - 239	0.0%	55 - 59	1.4%
mean	49	> 239	0.0%	60 - 64	1.4%
min size (mm)	10	(Cases) N=	27	65 - 69	1.4%
max size (mm)	84	mean	96	70 - 74	0.3%
		min size (mm)	54	75 - 79	1.0%
		max size (mm)	148	80 - 84	0.3%
				85 - 89	0.0%
				90 - 94	0.0%
				95 - 99	0.7%
				100 - 104	0.0%
				105 - 109	0.0%
				> 109	0.0%
				(Cases) N=	294
				mean	25
				min size (mm)	8
				max size (mm)	97
<i>Lithopoma undosum</i>		<i>Lytechinus anamesus</i>		<i>Strongylocentrotus purpuratus</i>	
<10	0.0%	< 5	0.0%	< 5	0.3%
10 - 19	0.0%	5 - 9	1.4%	5 - 9	60.0%
20 - 29	1.8%	10 - 14	33.8%	10 - 14	23.0%
30 - 39	78.2%	15 - 19	28.4%	15 - 19	8.1%
40 - 49	10.9%	20 - 24	28.4%	20 - 24	7.3%
50 - 59	5.5%	25 - 29	8.1%	25 - 29	1.4%
60 - 69	1.8%	30 - 34	0.0%	30 - 34	0.0%
70 - 79	0.0%	35 - 39	0.0%	35 - 39	0.0%
80 - 89	1.8%	40 - 44	0.0%	40 - 44	0.0%
90 - 99	0.0%	45 - 49	0.0%	45 - 49	0.0%
100 - 109	0.0%	> 49	0.0%	50 - 54	0.0%
110 - 119	0.0%	(Cases) N=	148	55 - 59	0.0%
> 119	0.0%	mean	17	60 - 64	0.0%
(Cases) N=	55	min size (mm)	8	65 - 69	0.0%
mean	38	max size (mm)	28	70 - 74	0.0%
min size (mm)	27			75 - 79	0.0%
max size (mm)	84			> 79	0.0%
				(Cases) N=	370
				mean	10
				min size (mm)	4
				max size (mm)	28
<i>Asterina miniata</i>					
<10	0.0%				
10 - 19	0.0%				
20 - 29	0.0%				
30 - 39	8.4%				
40 - 49	23.2%				
50 - 59	17.9%				
60 - 69	21.1%				
70 - 79	11.6%				
80 - 89	4.2%				
90 - 99	10.5%				
> 99	3.2%				
(Cases) N=	95				
mean	62				
min size (mm)	30				
max size (mm)	106				

# 2000 Natural Habitat Size Frequency Distributions

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## Santa Barbara Island - Arch Point

### *Lithopoma undosum*

<10	3.3%
10 - 19	3.3%
20 - 29	19.7%
30 - 39	18.0%
40 - 49	31.1%
50 - 59	23.0%
60 - 69	1.6%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	61
mean	39
min size (mm)	4
max size (mm)	61

### *Asterina miniata*

<10	0.0%
10 - 19	13.1%
20 - 29	29.5%
30 - 39	19.7%
40 - 49	24.6%
50 - 59	6.6%
60 - 69	6.6%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	61
mean	35
min size (mm)	10
max size (mm)	64

### *S. franciscanus*

< 5	0.0%
5 - 9	1.2%
10 - 14	6.2%
15 - 19	22.3%
20 - 24	23.1%
25 - 29	14.9%
30 - 34	12.0%
35 - 39	6.6%
40 - 44	1.2%
45 - 49	2.5%
50 - 54	2.1%
55 - 59	0.8%
60 - 64	1.7%
65 - 69	0.4%
70 - 74	0.4%
75 - 79	0.0%
80 - 84	1.7%
85 - 89	1.7%
90 - 94	0.8%
95 - 99	0.4%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	242
mean	29
min size (mm)	6
max size (mm)	96

### *Crassedoma giganteum*

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	11.1%
50 - 59	11.1%
60 - 69	11.1%
70 - 79	11.1%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	22.2%
110 - 119	33.3%
120 - 129	0.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	9
mean	90
min size (mm)	49
max size (mm)	117

### *Pisaster giganteus*

< 20	0.0%
20 - 39	3.1%
40 - 59	6.3%
60 - 79	18.8%
80 - 99	34.4%
100 - 119	20.3%
120 - 139	14.1%
140 - 159	3.1%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	64
mean	94
min size (mm)	29
max size (mm)	153

### *Strongylocentrotus purpuratus*

< 5	13.4%
5 - 9	43.0%
10 - 14	26.1%
15 - 19	6.8%
20 - 24	6.8%
25 - 29	3.2%
30 - 34	3.2%
35 - 39	0.4%
40 - 44	0.3%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.1%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	696
mean	10
min size (mm)	1
max size (mm)	55

### *Lytechinus anamesus*

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	66.7%
20 - 24	33.3%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	9
mean	18
min size (mm)	16
max size (mm)	23



# 2000 Natural Habitat Size Frequency Distributions

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## Santa Barbara Island - Cat Canyon

<i>Haliotis corrugata</i>		<i>Asterina miniata</i>		<i>S. franciscanus</i>	
<25	0.0%	<10	0.0%	< 5	0.0%
25 - 34	0.0%	10 - 19	0.0%	5 - 9	0.0%
35 - 44	0.0%	20 - 29	8.2%	10 - 14	0.0%
45 - 54	0.0%	30 - 39	14.3%	15 - 19	0.0%
55 - 64	0.0%	40 - 49	26.5%	20 - 24	0.0%
65 - 74	0.0%	50 - 59	28.6%	25 - 29	0.0%
75 - 84	100.0%	60 - 69	16.3%	30 - 34	0.9%
85 - 94	0.0%	70 - 79	6.1%	35 - 39	0.3%
95 - 104	0.0%	80 - 89	0.0%	40 - 44	1.9%
105 - 114	0.0%	90 - 99	0.0%	45 - 49	5.6%
115 - 124	0.0%	> 99	0.0%	50 - 54	12.9%
125 - 134	0.0%	(Cases) N=	49	55 - 59	11.3%
135 - 144	0.0%	mean	49	60 - 64	15.0%
145 - 154	0.0%			65 - 69	16.6%
155 - 164	0.0%	min size (mm)	23	70 - 74	17.6%
165 - 174	0.0%	max size (mm)	77	75 - 79	12.2%
175 - 184	0.0%			80 - 84	4.7%
185 - 194	0.0%			85 - 89	0.6%
>195	0.0%			90 - 94	0.3%
(Cases) N=	1	<i>Pisaster giganteus</i>		95 - 99	0.0%
mean	80	< 20	0.0%	100 - 104	0.0%
min size (mm)	80	20 - 39	0.0%	105 - 109	0.0%
max size (mm)	80	40 - 59	0.0%	> 109	0.0%
		60 - 79	6.0%	(Cases) N=	319
		80 - 99	50.0%	mean	64
		100 - 119	38.0%	min size (mm)	30
		120 - 139	4.0%	max size (mm)	90
		140 - 159	2.0%		
		160 - 179	0.0%		
		180 - 199	0.0%		
		200 - 219	0.0%	<i>Strongylocentrotus purpuratus</i>	
		220 - 239	0.0%	< 5	3.2%
		> 239	0.0%	5 - 9	2.8%
		(Cases) N=	50	10 - 14	15.1%
		mean	98	15 - 19	28.4%
				20 - 24	21.6%
		min size (mm)	76	25 - 29	8.3%
		max size (mm)	145	30 - 34	3.7%
				35 - 39	1.8%
				40 - 44	6.4%
				45 - 49	7.3%
				50 - 54	1.4%
				55 - 59	0.0%
				60 - 64	0.0%
				65 - 69	0.0%
				70 - 74	0.0%
				75 - 79	0.0%
				> 79	0.0%
				(Cases) N=	218
				mean	23
				min size (mm)	3
				max size (mm)	51

### *Lithopoma undosum*

<10	0.0%
10 - 19	0.0%
20 - 29	4.7%
30 - 39	0.0%
40 - 49	9.4%
50 - 59	23.4%
60 - 69	37.5%
70 - 79	12.5%
80 - 89	6.3%
90 - 99	6.3%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	64
mean	62
min size (mm)	26
max size (mm)	96

## Appendix H: *Macrocystis pyrifera* Size Frequency Distributions

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### 2000 *Macrocystis pyrifera* Size Frequency Distributions

#### San Miguel Island - Wyckoff Ledge

<i>Macrocystis pyrifera</i> Ad.(>1m) number of stipes		<i>Macrocystis pyrifera</i> Ad.(>1m) holdfast diameters	
< 3	56.0%	< 6	11.0%
3 - 5	24.0%	6 - 11	36.0%
6 - 8	15.0%	12 - 17	24.0%
9 - 11	2.0%	18 - 23	17.0%
12 - 14	3.0%	24 - 29	8.0%
15 - 17	0.0%	30 - 35	0.0%
18 - 20	0.0%	36 - 41	0.0%
21 - 23	0.0%	42 - 47	0.0%
24 - 26	0.0%	48 - 53	0.0%
27 - 29	0.0%	54 - 59	0.0%
30 - 32	0.0%	60 - 65	0.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	4.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	100	(Cases) N=	100
mean	4	mean	16
min number	1	min width (cm)	2
max number	14	max width (cm)	80

**2000 *Macrocystis pyrifera* Size Frequency Distributions**  
**Santa Rosa Island - Johnson's Lee North**

<i>Macrocystis pyrifera</i> Ad.(>1m) number of stipes		<i>Macrocystis pyrifera</i> Ad.(>1m) holdfast diameters	
< 3	35.1%	< 6	0.0%
3 - 5	14.0%	6 - 11	26.3%
6 - 8	19.3%	12 - 17	17.5%
9 - 11	17.5%	18 - 23	8.8%
12 - 14	5.3%	24 - 29	10.5%
15 - 17	8.8%	30 - 35	24.6%
18 - 20	0.0%	36 - 41	7.0%
21 - 23	0.0%	42 - 47	5.3%
24 - 26	0.0%	48 - 53	0.0%
27 - 29	0.0%	54 - 59	0.0%
30 - 32	0.0%	60 - 65	0.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	57	(Cases) N=	57
mean	6	mean	22
min number	1	min width (cm)	6
max number	17	max width (cm)	47

**Santa Rosa Island - Johnson's Lee South**

<i>Macrocystis pyrifera</i> Ad.(>1m) number of stipes		<i>Macrocystis pyrifera</i> Ad.(>1m) holdfast diameters	
< 3	21.2%	< 6	2.7%
3 - 5	15.0%	6 - 11	19.5%
6 - 8	13.3%	12 - 17	8.0%
9 - 11	19.5%	18 - 23	12.4%
12 - 14	8.8%	24 - 29	9.7%
15 - 17	5.3%	30 - 35	15.9%
18 - 20	5.3%	36 - 41	14.2%
21 - 23	4.4%	42 - 47	8.0%
24 - 26	2.7%	48 - 53	8.8%
27 - 29	2.7%	54 - 59	0.9%
30 - 32	0.0%	60 - 65	0.0%
33 - 35	0.9%	66 - 71	0.0%
36 - 38	0.0%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.9%	> 89	0.0%
(Cases) N=	113	(Cases) N=	113
mean	10	mean	27
min number	1	min width (cm)	2
max number	48	max width (cm)	58

## 2000 *Macrocystis pyrifera* Size Frequency Distributions

### Anacapa Island - Cathedral Cove

<i>Macrocystis pyrifera</i> Ad.(>1m) number of stipes		<i>Macrocystis pyrifera</i> Ad.(>1m) holdfast diameters	
< 3	24.0%	< 6	6.0%
3 - 5	12.0%	6 - 11	28.0%
6 - 8	15.0%	12 - 17	15.0%
9 - 11	8.0%	18 - 23	14.0%
12 - 14	6.0%	24 - 29	21.0%
15 - 17	8.0%	30 - 35	7.0%
18 - 20	8.0%	36 - 41	6.0%
21 - 23	4.0%	42 - 47	2.0%
24 - 26	4.0%	48 - 53	1.0%
27 - 29	6.0%	54 - 59	0.0%
30 - 32	2.0%	60 - 65	0.0%
33 - 35	1.0%	66 - 71	0.0%
36 - 38	1.0%	72 - 77	0.0%
39 - 41	1.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	100	(Cases) N=	100
mean	12	mean	19
min number	1	min width (cm)	3
max number	40	max width (cm)	49

### Anacapa Island - Landing Cove

<i>Macrocystis pyrifera</i> Ad.(>1m) number of stipes		<i>Macrocystis pyrifera</i> Ad.(>1m) holdfast diameters	
< 3	68.5%	< 6	21.3%
3 - 5	22.2%	6 - 11	58.3%
6 - 8	1.9%	12 - 17	12.0%
9 - 11	0.0%	18 - 23	4.6%
12 - 14	1.9%	24 - 29	1.9%
15 - 17	1.9%	30 - 35	0.9%
18 - 20	0.0%	36 - 41	0.9%
21 - 23	2.8%	42 - 47	0.0%
24 - 26	0.0%	48 - 53	0.0%
27 - 29	0.0%	54 - 59	0.0%
30 - 32	0.0%	60 - 65	0.0%
33 - 35	0.0%	66 - 71	0.0%
36 - 38	0.9%	72 - 77	0.0%
39 - 41	0.0%	78 - 83	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	108	(Cases) N=	108
mean	4	mean	9
min number	1	min width (cm)	2
max number	37	max width (cm)	39

# Appendix I: Gorgonian/Stylaster californica Size Frequency Distributions

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## 2000 Gorgonian/Stylaster californica Size Frequency Distributions

### Santa Cruz Island - Gull Island South

#### *Stylaster californica heights*

< 3	23.3%
3 - 4	16.7%
5 - 6	10.0%
7 - 8	8.3%
9 - 10	8.3%
11 - 12	8.3%
13 - 14	8.3%
15 - 16	6.7%
17 - 18	3.3%
19 - 20	3.3%
21 - 22	1.7%
23 - 24	1.7%
25 - 26	0.0%
27 - 28	0.0%
29 - 30	0.0%
> 30	0.0%
(Cases) N=	60
mean	8
min height (cm)	1
max height (cm)	24

#### *Stylaster californica widths*

< 3	15.0%
3 - 4	6.7%
5 - 6	11.7%
7 - 8	6.7%
9 - 10	10.0%
11 - 12	3.3%
13 - 14	3.3%
15 - 16	6.7%
17 - 18	10.0%
19 - 20	1.7%
21 - 22	1.7%
23 - 24	1.7%
25 - 26	5.0%
27 - 28	3.3%
29 - 30	1.7%
> 30	11.7%
(Cases) N=	60
mean	14
min width (cm)	2
max width (cm)	45

#### *Lophogorgia chilensis heights*

< 5	0.0%
5 - 8	0.0%
9 - 12	6.7%
13 - 16	0.0%
17 - 20	5.0%
21 - 24	11.7%
25 - 28	8.3%
29 - 32	6.7%
33 - 36	8.3%
37 - 40	6.7%
41 - 44	11.7%
45 - 48	16.7%
49 - 52	3.3%
53 - 56	5.0%
57 - 60	6.7%
61 - 64	0.0%
65 - 68	1.7%
69 - 72	1.7%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	60
mean	37
min height (cm)	10
max height (cm)	71

#### *Lophogorgia chilensis widths*

< 5	1.7%
5 - 8	3.3%
9 - 12	8.3%
13 - 16	6.7%
17 - 20	8.3%
21 - 24	6.7%
25 - 28	11.7%
29 - 32	10.0%
33 - 36	11.7%
37 - 40	10.0%
41 - 44	6.7%
45 - 48	6.7%
49 - 52	5.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	1.7%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	1.7%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	60
mean	30
min width (cm)	4
max width (cm)	82

## 2000 Gorgonian/Stylaster californica Size Frequency Distributions

### Santa Cruz Island - Pelican Bay

<i>Lophogorgia chilensis heights</i>		<i>Lophogorgia chilensis widths</i>	
< 5	0.0%	< 5	2.1%
5 - 8	1.4%	5 - 8	13.2%
9 - 12	4.2%	9 - 12	16.0%
13 - 16	9.7%	13 - 16	12.5%
17 - 20	14.6%	17 - 20	8.3%
21 - 24	13.2%	21 - 24	4.9%
25 - 28	9.7%	24 - 28	11.1%
29 - 32	11.1%	29 - 32	6.3%
33 - 36	11.8%	33 - 36	5.6%
37 - 40	13.9%	37 - 40	6.9%
41 - 44	6.3%	41 - 44	2.1%
45 - 48	2.8%	45 - 48	4.9%
49 - 52	1.4%	49 - 52	2.8%
53 - 56	0.0%	53 - 56	2.8%
57 - 60	0.0%	57 - 60	0.7%
61 - 64	0.0%	61 - 64	0.0%
65 - 68	0.0%	65 - 68	0.0%
69 - 72	0.0%	69 - 72	0.0%
73 - 76	0.0%	73 - 76	0.0%
77 - 80	0.0%	77 - 80	0.0%
81 - 84	0.0%	81 - 84	0.0%
85 - 88	0.0%	85 - 88	0.0%
89 - 92	0.0%	89 - 92	0.0%
93 - 96	0.0%	93 - 96	0.0%
97 - 100	0.0%	97 - 100	0.0%
> 100	0.0%	> 100	0.0%
(Cases) N=	144	(Cases) N=	144
mean	28	mean	23
min height (cm)	7	min width (cm)	3
max height (cm)	50	max width (cm)	59

### Anacapa Island - Admiral's Reef

<i>Lophogorgia chilensis heights</i>		<i>Lophogorgia chilensis widths</i>	
< 5	0.0%	< 5	0.0%
5 - 8	0.0%	5 - 8	0.0%
9 - 12	0.0%	9 - 12	3.3%
13 - 16	1.7%	13 - 16	6.7%
17 - 20	6.7%	17 - 20	5.0%
21 - 24	11.7%	21 - 24	5.0%
25 - 28	1.7%	24 - 28	10.0%
29 - 32	6.7%	29 - 32	6.7%
33 - 36	11.7%	33 - 36	3.3%
37 - 40	6.7%	37 - 40	6.7%
41 - 44	8.3%	41 - 44	11.7%
45 - 48	16.7%	45 - 48	18.3%
49 - 52	6.7%	49 - 52	8.3%
53 - 56	15.0%	53 - 56	1.7%
57 - 60	3.3%	57 - 60	1.7%
61 - 64	0.0%	61 - 64	1.7%
65 - 68	1.7%	65 - 68	1.7%
69 - 72	0.0%	69 - 72	3.3%
73 - 76	0.0%	73 - 76	0.0%
77 - 80	0.0%	77 - 80	3.3%
81 - 84	0.0%	81 - 84	0.0%
85 - 88	1.7%	85 - 88	1.7%
89 - 92	0.0%	89 - 92	0.0%
93 - 96	0.0%	93 - 96	0.0%
97 - 100	0.0%	97 - 100	0.0%
> 100	0.0%	> 100	0.0%
(Cases) N=	60	(Cases) N=	60
mean	41	mean	40
min height (cm)	15	min width (cm)	10
max height (cm)	85	max width (cm)	87

## 2000 Gorgonian/Stylaster californica Size Frequency Distributions

### Santa Barbara Island - SE Sea Lion Rookery

#### *Lophogorgia chilensis heights*

< 5	0.0%
5 - 8	3.6%
9 - 12	0.0%
13 - 16	3.6%
17 - 20	10.9%
21 - 24	27.3%
25 - 28	20.0%
29 - 32	20.0%
33 - 36	7.3%
37 - 40	5.5%
41 - 44	0.0%
45 - 48	1.8%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	55
mean	26
min height (cm)	7
max height (cm)	47

#### *Lophogorgia chilensis widths*

< 5	1.8%
5 - 8	5.5%
9 - 12	16.4%
13 - 16	29.1%
17 - 20	14.5%
21 - 24	10.9%
24 - 28	16.4%
29 - 32	5.5%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	55
mean	17
min width (cm)	3
max width (cm)	30

#### *Muricea fruticosa heights*

< 5	0.0%
5 - 8	25.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	25.0%
21 - 24	0.0%
25 - 28	0.0%
29 - 32	0.0%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	25.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	25.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	4
mean	31
min height (cm)	8
max height (cm)	55

#### *Muricea fruticosa widths*

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	25.0%
24 - 28	0.0%
29 - 32	0.0%
33 - 36	25.0%
37 - 40	0.0%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	25.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	25.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	4
mean	49
min width (cm)	21
max width (cm)	76

## 2000 Gorgonian/Stylaster californica Size Frequency Distributions

### *Muricea californica heights*

< 5	0.0%
5 - 8	4.7%
9 - 12	2.3%
13 - 16	14.0%
17 - 20	7.0%
21 - 24	2.3%
25 - 28	0.0%
29 - 32	9.3%
33 - 36	16.3%
37 - 40	4.7%
41 - 44	2.3%
45 - 48	7.0%
49 - 52	7.0%
53 - 56	11.6%
57 - 60	7.0%
61 - 64	2.3%
65 - 68	2.3%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	43
mean	36
min height (cm)	7
max height (cm)	66

### *Muricea californica widths*

< 5	0.0%
5 - 8	0.0%
9 - 12	4.7%
13 - 16	2.3%
17 - 20	4.7%
21 - 24	14.0%
24 - 28	4.7%
29 - 32	0.0%
33 - 36	0.0%
37 - 40	2.3%
41 - 44	0.0%
45 - 48	4.7%
49 - 52	2.3%
53 - 56	2.3%
57 - 60	2.3%
61 - 64	7.0%
65 - 68	9.3%
69 - 72	7.0%
73 - 76	7.0%
77 - 80	4.7%
81 - 84	4.7%
85 - 88	7.0%
89 - 92	2.3%
93 - 96	7.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	43
mean	56
min width (cm)	10
max width (cm)	96



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## Santa Rosa Island - Johnson's Lee North

<i>Haliotis rufescens</i>		<i>Megathura crenulata</i>		<i>Asterina miniata</i>	
Number of ARMs sampled:	5	Number of ARMs sampled:	5	Number of ARMs sampled:	5
<25	0.0%	<10	0.0%	<10	20.0%
25 - 34	0.0%	10 - 19	0.0%	10 - 19	0.0%
35 - 44	0.0%	20 - 29	33.3%	20 - 29	20.0%
45 - 54	0.0%	30 - 39	33.3%	30 - 39	20.0%
55 - 64	0.0%	40 - 49	33.3%	40 - 49	20.0%
65 - 74	0.0%	50 - 59	0.0%	50 - 59	20.0%
75 - 84	0.0%	60 - 69	0.0%	60 - 69	0.0%
85 - 94	0.0%	70 - 79	0.0%	70 - 79	0.0%
95 - 104	0.0%	80 - 89	0.0%	80 - 89	0.0%
105 - 114	0.0%	90 - 99	0.0%	90 - 99	0.0%
115 - 124	0.0%	100 - 109	0.0%	> 99	0.0%
125 - 134	0.0%	110 - 119	0.0%	(Cases) N=	5
135 - 144	0.0%	> 119	0.0%	mean	34
145 - 154	0.0%	(Cases) N=	3	min size (mm)	8
155 - 164	0.0%	mean	35	min size (mm)	8
165 - 174	100.0%			max size (mm)	58
175 - 184	0.0%	min size (mm)	27		
185 - 194	0.0%	max size (mm)	48		
>195	0.0%				
				<i>Pisaster giganteus</i>	
(Cases) N=	1	<i>Crassedoma giganteum</i>		Number of ARMs sampled:	5
mean	171			< 20	33.3%
min size (mm)	171	Number of ARMs sampled:	5	20 - 39	38.5%
max size (mm)	171	<10	0.0%	40 - 59	12.8%
		10 - 19	0.0%	60 - 79	15.4%
		20 - 29	0.0%	80 - 99	0.0%
		30 - 39	0.0%	100 - 119	0.0%
		40 - 49	33.3%	120 - 139	0.0%
Number of ARMs sampled:	5	50 - 59	66.7%	140 - 159	0.0%
<30	0.0%	60 - 69	0.0%	160 - 179	0.0%
30 - 32	0.0%	70 - 79	0.0%	180 - 199	0.0%
33 - 35	0.0%	80 - 89	0.0%	200 - 219	0.0%
36 - 38	0.0%	90 - 99	0.0%	220 - 239	0.0%
39 - 41	15.4%	100 - 109	0.0%	> 239	0.0%
42 - 44	15.4%	110 - 119	0.0%	(Cases) N=	39
45 - 47	23.1%	120 - 129	0.0%	mean	31
48 - 50	23.1%	130 - 139	0.0%		
51 - 53	15.4%	> 139	0.0%	min size (mm)	10
54 - 56	7.7%	(Cases) N=	3	max size (mm)	75
>56	0.0%	mean	50		
(Cases) N=	13	min size (mm)	47		
mean	47	max size (mm)	54		
min size (mm)	40				
max size (mm)	55				

## 2000 Artificial Recruitment Modules Size Frequency Distributions Santa Rosa Island - Johnson's Lee North

<i>Pycnopodia helianthoides</i>		<i>Strongylocentrotus purpuratus</i>	
Number of ARMs sampled: 5		Number of ARMs sampled: 5	
< 20	0.0%	< 5	26.6%
20 - 39	100.0%	5 - 9	1.7%
40 - 59	0.0%	10 - 14	3.2%
60 - 79	0.0%	15 - 19	8.3%
80 - 99	0.0%	20 - 24	10.6%
100 - 119	0.0%	25 - 29	12.9%
120 - 139	0.0%	30 - 34	7.7%
140 - 159	0.0%	35 - 39	8.4%
160 - 179	0.0%	40 - 44	8.7%
180 - 199	0.0%	45 - 49	5.0%
200 - 219	0.0%	50 - 54	3.8%
220 - 239	0.0%	55 - 59	2.1%
240 - 259	0.0%	60 - 64	1.1%
260 - 279	0.0%	65 - 69	0.1%
280 - 299	0.0%	70 - 74	0.0%
> 299	0.0%	75 - 79	0.0%
(Cases) N=	3	> 79	0.0%
mean	28	(Cases) N=	823
min size (mm)	24	mean	24
max size (mm)	30	min size (mm)	1
		max size (mm)	66

<i>S. franciscanus</i>	
Number of ARMs sampled: 5	
< 5	2.3%
5 - 9	2.3%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	4.7%
25 - 29	4.7%
30 - 34	11.6%
35 - 39	11.6%
40 - 44	11.6%
45 - 49	7.0%
50 - 54	7.0%
55 - 59	9.3%
60 - 64	7.0%
65 - 69	2.3%
70 - 74	4.7%
75 - 79	4.7%
80 - 84	4.7%
85 - 89	2.3%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	2.3%
> 109	0.0%
(Cases) N=	43
mean	49
min size (mm)	4
max size (mm)	106

*Crassedoma giganteum*

**Number of ARMs sampled: 4**

<10	0.0%
10 - 19	25.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	50.0%
70 - 79	25.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	4
(Cases) N=	4
mean	53
min size (mm)	10
max size (mm)	76

*Asterina miniata*

**Number of ARMs sampled: 4**

## 4.3%

<10	4.3%
10 - 19	13.0%
20 - 29	21.7%
30 - 39	4.3%
40 - 49	26.1%
50 - 59	21.7%
60 - 69	8.7%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	23
mean	38
min size (mm)	5
max size (mm)	61

(Cases) N=	10
mean	45
min size (mm)	41
max size (mm)	49

## 2000 Artificial Recruitment Modules Size Frequency Distributions Santa Rosa Island - Johnson's Lee South

### *Pisaster giganteus*

Number of ARMs sampled: 4

< 20	4.8%
20 - 39	47.6%
40 - 59	38.1%
60 - 79	0.0%
80 - 99	9.5%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	21
mean	39
min size (mm)	17
max size (mm)	91

### *Pycnopodia helianthoides*

Number of ARMs sampled: 4

< 20	0.0%
20 - 39	0.0%
40 - 59	100.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	1
mean	44
min size (mm)	44
max size (mm)	44

### *S. franciscanus*

Number of ARMs sampled: 4

< 5	0.0%
5 - 9	0.9%
10 - 14	0.9%
15 - 19	1.7%
20 - 24	10.4%
25 - 29	14.8%
30 - 34	14.8%
35 - 39	18.3%
40 - 44	7.0%
45 - 49	5.2%
50 - 54	4.3%
55 - 59	2.6%
60 - 64	5.2%
65 - 69	5.2%
70 - 74	1.7%
75 - 79	1.7%
80 - 84	1.7%
85 - 89	1.7%
90 - 94	1.7%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%

(Cases) N=	115
mean	41
min size (mm)	6
max size (mm)	92

### *Strongylocentrotus purpuratus*

Number of ARMs sampled: 4

< 5	0.0%
5 - 9	0.0%
10 - 14	6.5%
15 - 19	6.5%
20 - 24	6.5%
25 - 29	19.6%
30 - 34	23.9%
35 - 39	4.3%
40 - 44	4.3%
45 - 49	4.3%
50 - 54	6.5%
55 - 59	4.3%
60 - 64	6.5%
65 - 69	4.3%
70 - 74	2.2%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	46
mean	36
min size (mm)	11
max size (mm)	70

## 2000 Artificial Recruitment Modules Size Frequency Distributions

### Santa Cruz Island - Gull Island South

<i>Haliotis corrugata</i>		<i>Kelletia kelletii</i>		<i>Crassidoma giganteum</i>	
Number of ARMs sampled:	14	Number of ARMs sampled:	14	Number of ARMs sampled:	14
<25	50.0%	< 40	0.0%	<10	0.0%
25 - 34	0.0%	40 - 49	0.0%	10 - 19	0.0%
35 - 44	0.0%	50 - 59	0.0%	20 - 29	16.7%
45 - 54	50.0%	60 - 69	0.0%	30 - 39	25.0%
55 - 64	0.0%	70 - 79	0.0%	40 - 49	8.3%
65 - 74	0.0%	80 - 89	0.0%	50 - 59	25.0%
75 - 84	0.0%	90 - 99	100.0%	60 - 69	0.0%
85 - 94	0.0%	100 - 109	0.0%	70 - 79	0.0%
95 - 104	0.0%	110 - 119	0.0%	80 - 89	0.0%
105 - 114	0.0%	120 - 129	0.0%	90 - 99	0.0%
115 - 124	0.0%	130 - 139	0.0%	100 - 109	8.3%
125 - 134	0.0%	140 - 149	0.0%	110 - 119	8.3%
135 - 144	0.0%	> 149	0.0%	120 - 129	8.3%
145 - 154	0.0%	(Cases) N=	1	130 - 139	0.0%
155 - 164	0.0%	mean	92	> 139	0.0%
165 - 174	0.0%			(Cases) N=	12
175 - 184	0.0%	min size (mm)	92	(Cases) N=	12
185 - 194	0.0%	max size (mm)	92	mean	60
>195	0.0%			min size (mm)	27
				max size (mm)	127
(Cases) N=	2	<i>Megathura crenulata</i>			
mean	29				
min size (mm)	12	Number of ARMs sampled:	14	<i>Asterina miniata</i>	
max size (mm)	46				
		<10	11.1%	Number of ARMs sampled:	14
		10 - 19	0.0%		
		20 - 29	66.7%	<10	6.1%
		30 - 39	22.2%	10 - 19	24.5%
		40 - 49	0.0%	20 - 29	26.5%
		50 - 59	0.0%	30 - 39	22.4%
		60 - 69	0.0%	40 - 49	8.2%
		70 - 79	0.0%	50 - 59	8.2%
		80 - 89	0.0%	60 - 69	4.1%
		90 - 99	0.0%	70 - 79	0.0%
		100 - 109	0.0%	80 - 89	0.0%
		110 - 119	0.0%	90 - 99	0.0%
		> 119	0.0%	> 99	0.0%
		(Cases) N=	9	(Cases) N=	49
		mean	25	mean	30
		min size (mm)	8	min size (mm)	7
		max size (mm)	31	max size (mm)	67
(Cases) N=	27				
mean	40				
min size (mm)	32				
max size (mm)	48				

## 2000 Artificial Recruitment Modules Size Frequency Distributions Santa Cruz Island - Gull Island South

<i>Pisaster giganteus</i>		<i>Lytechinus anamesus</i>		<i>Strongylocentrotus purpuratus</i>	
Number of ARMs sampled: 14		Number of ARMs sampled: 6		Number of ARMs sampled: 6	
< 20	0.0%	< 5	0.0%	< 5	9.5%
20 - 39	54.5%	5 - 9	0.0%	5 - 9	20.9%
40 - 59	36.4%	10 - 14	0.0%	10 - 14	56.2%
60 - 79	0.0%	15 - 19	0.0%	15 - 19	7.3%
80 - 99	9.1%	20 - 24	100.0%	20 - 24	2.8%
100 - 119	0.0%	25 - 29	0.0%	25 - 29	1.4%
120 - 139	0.0%	30 - 34	0.0%	30 - 34	1.4%
140 - 159	0.0%	35 - 39	0.0%	35 - 39	0.4%
160 - 179	0.0%	40 - 44	0.0%	40 - 44	0.0%
180 - 199	0.0%	45 - 49	0.0%	45 - 49	0.0%
200 - 219	0.0%	> 49	0.0%	50 - 54	0.0%
220 - 239	0.0%	(Cases) N=	5	55 - 59	0.0%
> 239	0.0%	mean	22	60 - 64	0.0%
(Cases) N=	11	min size (mm)	20	65 - 69	0.0%
mean	40	max size (mm)	24	70 - 74	0.0%
				75 - 79	0.0%
min size (mm)	24			> 79	0.0%
max size (mm)	86				
		<i>S. franciscanus</i>		(Cases) N= 493	
<i>Pycnopodia helianthoides</i>		Number of ARMs sampled: 6		mean 11	
Number of ARMs sampled: 14		< 5	0.0%	min size (mm) 2	
< 20	0.0%	5 - 9	4.7%	max size (mm) 36	
20 - 39	25.0%	10 - 14	32.9%	max size (mm) 36	
40 - 59	75.0%	15 - 19	26.2%		
60 - 79	0.0%	20 - 24	14.1%	<i>Centrostephanus coronatus</i>	
80 - 99	0.0%	25 - 29	12.1%	Number of ARMs sampled: 6	
100 - 119	0.0%	30 - 34	7.4%	< 5	0.0%
120 - 139	0.0%	35 - 39	2.7%	5 - 9	0.0%
140 - 159	0.0%	40 - 44	0.0%	10 - 14	0.0%
160 - 179	0.0%	45 - 49	0.0%	15 - 19	0.0%
180 - 199	0.0%	50 - 54	0.0%	20 - 24	25.0%
200 - 219	0.0%	55 - 59	0.0%	25 - 29	50.0%
220 - 239	0.0%	60 - 64	0.0%	30 - 34	25.0%
240 - 259	0.0%	65 - 69	0.0%	35 - 39	0.0%
260 - 279	0.0%	70 - 74	0.0%	40 - 44	0.0%
280 - 299	0.0%	75 - 79	0.0%	45 - 49	0.0%
> 299	0.0%	80 - 84	0.0%	50 - 54	0.0%
(Cases) N=	4	85 - 89	0.0%	55 - 59	0.0%
mean	48	90 - 94	0.0%	60 - 64	0.0%
		95 - 99	0.0%	65 - 69	0.0%
min size (mm)	38	100 - 104	0.0%	70 - 74	0.0%
max size (mm)	58	105 - 109	0.0%	75 - 79	0.0%
		> 109	0.0%	> 79	0.0%
		(Cases) N=	149	(Cases) N=	4
		mean	18	mean	28
		min size (mm)	5	min size (mm)	24
		max size (mm)	38	max size (mm)	30

## 2000 Artificial Recruitment Modules Size Frequency Distributions Santa Cruz Island - Fry's Harbor

<i>Cypraea spadicea</i>		<i>Megathura crenulata</i>		<i>Asterina miniata</i>	
Number of ARMs sampled: 7		Number of ARMs sampled: 7		Number of ARMs sampled: 7	
<30	0.0%	<10	0.0%	<10	0.0%
30 - 32	0.0%	10 - 19	0.0%	10 - 19	1.7%
33 - 35	7.5%	20 - 29	14.3%	20 - 29	31.7%
36 - 38	29.9%	30 - 39	57.1%	30 - 39	21.7%
39 - 41	29.9%	40 - 49	14.3%	40 - 49	33.3%
42 - 44	20.9%	50 - 59	14.3%	50 - 59	10.0%
45 - 47	7.5%	60 - 69	0.0%	60 - 69	1.7%
48 - 50	1.5%	70 - 79	0.0%	70 - 79	0.0%
51 - 53	3.0%	80 - 89	0.0%	80 - 89	0.0%
54 - 56	0.0%	90 - 99	0.0%	90 - 99	0.0%
>56	0.0%	100 - 109	0.0%	> 99	0.0%
(Cases) N=	67	110 - 119	0.0%	(Cases) N=	60
mean	40	> 119	0.0%	mean	37
min size (mm)	33	(Cases) N=	7	min size (mm)	13
max size (mm)	53	mean	35	max size (mm)	67
		min size (mm)	22		
		max size (mm)	53		
<i>Lithopoma undosum</i>		<i>Crassidoma giganteum</i>		<i>Pisaster giganteus</i>	
Number of ARMs sampled: 7		Number of ARMs sampled: 7		Number of ARMs sampled: 7	
<10	0.0%	<10	0.0%	< 20	9.1%
10 - 19	100.0%	10 - 19	5.4%	20 - 39	0.0%
20 - 29	0.0%	20 - 29	24.3%	40 - 59	72.7%
30 - 39	0.0%	30 - 39	29.7%	60 - 79	0.0%
40 - 49	0.0%	40 - 49	16.2%	80 - 99	9.1%
50 - 59	0.0%	50 - 59	5.4%	100 - 119	9.1%
60 - 69	0.0%	60 - 69	2.7%	120 - 139	0.0%
70 - 79	0.0%	70 - 79	0.0%	140 - 159	0.0%
80 - 89	0.0%	80 - 89	8.1%	160 - 179	0.0%
90 - 99	0.0%	90 - 99	2.7%	180 - 199	0.0%
100 - 109	0.0%	100 - 109	0.0%	200 - 219	0.0%
110 - 119	0.0%	110 - 119	0.0%	220 - 239	0.0%
> 119	0.0%	120 - 129	0.0%	> 239	0.0%
(Cases) N=	1	130 - 139	0.0%	(Cases) N=	11
mean	16	> 139	5.4%	mean	54
min size (mm)	16	(Cases) N=	37	min size (mm)	10
max size (mm)	16	mean	46	max size (mm)	105
		min size (mm)	16		
		max size (mm)	158		

## 2000 Artificial Recruitment Modules Size Frequency Distributions Santa Cruz Island - Fry's Harbor

### *S. franciscanus*

Number of ARMs sampled: 4

< 5	0.0%
5 - 9	1.2%
10 - 14	31.4%
15 - 19	27.8%
20 - 24	24.3%
25 - 29	8.9%
30 - 34	4.7%
35 - 39	1.2%
40 - 44	0.6%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	169
mean	19
min size (mm)	9
max size (mm)	40

### *Centrostephanus coronatus*

Number of ARMs sampled: 4

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	66.7%
25 - 29	33.3%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	3
mean	25
min size (mm)	22
max size (mm)	28

### *Strongylocentrotus purpuratus*

Number of ARMs sampled: 4

< 5	3.4%
5 - 9	7.3%
10 - 14	36.0%
15 - 19	31.9%
20 - 24	15.4%
25 - 29	4.3%
30 - 34	1.5%
35 - 39	0.0%
40 - 44	0.2%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	467
mean	15
min size (mm)	3
max size (mm)	43



## 2000 Artificial Recruitment Modules Size Frequency Distributions Santa Cruz Island - Pelican Bay

<i>Cypraea spadicea</i>		<i>Megathura crenulata</i>		<i>Asterina miniata</i>	
Number of ARMs sampled: 6		Number of ARMs sampled: 6		Number of ARMs sampled: 6	
<30	0.0%	<10	0.0%	<10	0.0%
30 - 32	0.0%	10 - 19	100.0%	10 - 19	11.5%
33 - 35	0.0%	20 - 29	0.0%	20 - 29	7.7%
36 - 38	12.5%	30 - 39	0.0%	30 - 39	30.8%
39 - 41	18.8%	40 - 49	0.0%	40 - 49	19.2%
42 - 44	34.4%	50 - 59	0.0%	50 - 59	15.4%
45 - 47	18.8%	60 - 69	0.0%	60 - 69	3.8%
48 - 50	6.3%	70 - 79	0.0%	70 - 79	3.8%
51 - 53	6.3%	80 - 89	0.0%	80 - 89	7.7%
54 - 56	0.0%	90 - 99	0.0%	90 - 99	0.0%
>56	0.0%	100 - 109	0.0%	> 99	0.0%
(Cases) N=	32	110 - 119	0.0%	(Cases) N=	26
mean	44	> 119	0.0%	mean	43
min size (mm)	37	(Cases) N=	1	min size (mm)	12
max size (mm)	56	mean	17	max size (mm)	85
		min size (mm)	17		
		max size (mm)	17		
<i>Lithopoma undosum</i>		<i>Crassidoma giganteum</i>		<i>Pisaster giganteus</i>	
Number of ARMs sampled: 6		Number of ARMs sampled: 6		Number of ARMs sampled: 6	
<10	0.0%	<10	0.0%	< 20	0.0%
10 - 19	20.0%	10 - 19	0.0%	20 - 39	75.0%
20 - 29	40.0%	20 - 29	0.0%	40 - 59	25.0%
30 - 39	20.0%	30 - 39	20.0%	60 - 79	0.0%
40 - 49	0.0%	40 - 49	20.0%	80 - 99	0.0%
50 - 59	0.0%	50 - 59	0.0%	100 - 119	0.0%
60 - 69	0.0%	60 - 69	0.0%	120 - 139	0.0%
70 - 79	20.0%	70 - 79	0.0%	140 - 159	0.0%
80 - 89	0.0%	80 - 89	20.0%	160 - 179	0.0%
90 - 99	0.0%	90 - 99	0.0%	180 - 199	0.0%
100 - 109	0.0%	100 - 109	20.0%	200 - 219	0.0%
110 - 119	0.0%	110 - 119	20.0%	220 - 239	0.0%
> 119	0.0%	120 - 129	0.0%	> 239	0.0%
(Cases) N=	5	130 - 139	0.0%	(Cases) N=	8
mean	35	> 139	0.0%	mean	35
min size (mm)	17	(Cases) N=	5	min size (mm)	23
max size (mm)	78	mean	75	max size (mm)	43
		min size (mm)	32		
		max size (mm)	112		

## 2000 Artificial Recruitment Modules Size Frequency Distributions Santa Cruz Island - Pelican Bay

### *Lytechinus anamesus*

Number of ARMs sampled: 6

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	9.5%
20 - 24	66.7%
25 - 29	19.0%
30 - 34	4.8%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	21
mean	23
min size (mm)	18
max size (mm)	31

### *S. franciscanus*

Number of ARMs sampled: 6

< 5	0.0%
5 - 9	2.0%
10 - 14	4.0%
15 - 19	17.6%
20 - 24	26.1%
25 - 29	28.1%
30 - 34	13.6%
35 - 39	3.5%
40 - 44	3.5%
45 - 49	0.0%
50 - 54	1.5%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	199
mean	25
min size (mm)	5
max size (mm)	53

### *Strongylocentrotus purpuratus*

Number of ARMs sampled: 6

< 5	0.6%
5 - 9	2.3%
10 - 14	10.9%
15 - 19	25.9%
20 - 24	21.8%
25 - 29	14.4%
30 - 34	10.9%
35 - 39	8.0%
40 - 44	5.2%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	174
mean	23
min size (mm)	4
max size (mm)	44

### *Centrostephanus coronatus*

Number of ARMs sampled: 6

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	10.0%
30 - 34	50.0%
35 - 39	20.0%
40 - 44	0.0%
45 - 49	10.0%
50 - 54	10.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	10
mean	36
min size (mm)	28
max size (mm)	51

## 2000 Artificial Recruitment Modules Size Frequency Distributions Santa Cruz Island - Scorpion Anchorage

<i>Cypraea spadicea</i>		<i>Crassedoma giganteum</i>		<i>S. franciscanus</i>	
Number of ARMs sampled: 7		Number of ARMs sampled: 7		Number of ARMs sampled: 7	
<30	2.7%	<10	4.5%	< 5	0.0%
30 - 32	8.0%	10 - 19	4.5%	5 - 9	2.9%
33 - 35	18.7%	20 - 29	0.0%	10 - 14	1.0%
36 - 38	30.7%	30 - 39	9.1%	15 - 19	4.8%
39 - 41	17.3%	40 - 49	13.6%	20 - 24	14.4%
42 - 44	17.3%	50 - 59	18.2%	25 - 29	19.2%
45 - 47	4.0%	60 - 69	4.5%	30 - 34	20.2%
48 - 50	1.3%	70 - 79	0.0%	35 - 39	16.3%
51 - 53	0.0%	80 - 89	4.5%	40 - 44	7.7%
54 - 56	0.0%	90 - 99	4.5%	45 - 49	8.7%
>56	0.0%	100 - 109	9.1%	50 - 54	3.8%
(Cases) N=	75	110 - 119	18.2%	55 - 59	1.0%
mean	38	120 - 129	9.1%	60 - 64	0.0%
		130 - 139	0.0%	65 - 69	0.0%
min size (mm)	28	> 139	0.0%	70 - 74	0.0%
max size (mm)	49			75 - 79	0.0%
		(Cases) N=	22	75 - 79	0.0%
		mean	73	80 - 84	0.0%
				85 - 89	0.0%
		min size (mm)	7	90 - 94	0.0%
		max size (mm)	124	95 - 99	0.0%
				100 - 104	0.0%
				105 - 109	0.0%
				> 109	0.0%
				(Cases) N=	104
				mean	32
				min size (mm)	7
				max size (mm)	58
<i>Lithopoma undosum</i>		<i>Asterina miniata</i>		<i>Strongylocentrotus purpuratus</i>	
Number of ARMs sampled: 7		Number of ARMs sampled: 7		Number of ARMs sampled: 7	
<10	0.0%	<10	0.0%	< 5	2.6%
10 - 19	9.6%	10 - 19	0.0%	5 - 9	12.9%
20 - 29	67.3%	20 - 29	100.0%	10 - 14	9.7%
30 - 39	11.5%	30 - 39	0.0%	15 - 19	29.4%
40 - 49	0.0%	40 - 49	0.0%	20 - 24	18.9%
50 - 59	0.0%	50 - 59	0.0%	25 - 29	12.0%
60 - 69	0.0%	60 - 69	0.0%	30 - 34	11.4%
70 - 79	9.6%	70 - 79	0.0%	35 - 39	2.9%
80 - 89	1.9%	80 - 89	0.0%	40 - 44	0.3%
90 - 99	0.0%	90 - 99	0.0%	45 - 49	0.0%
100 - 109	0.0%	> 99	0.0%	50 - 54	0.0%
110 - 119	0.0%	(Cases) N=	1	55 - 59	0.0%
> 119	0.0%	mean	27	60 - 64	0.0%
(Cases) N=	52			65 - 69	0.0%
mean	31	min size (mm)	27	70 - 74	0.0%
min size (mm)	16	max size (mm)	27	75 - 79	0.0%
max size (mm)	80			> 79	0.0%
				(Cases) N=	350
				mean	19
				min size (mm)	4
				max size (mm)	41

## 2000 Artificial Recruitment Modules Size Frequency Distributions Santa Cruz Island - Scorpion Anchorage

### *Centrostephanus coronatus*

Number of ARMs sampled: 7

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	100.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	1
mean	31
min size (mm)	31
max size (mm)	31

## 2000 Artificial Recruitment Modules Size Frequency Distributions Santa Cruz Island - Yellow Banks

### *Haliotis rufescens*

Number of ARMs sampled: 18

<25	100.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	0.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	0.0%
155 - 164	0.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	1
mean	15
min size (mm)	15
max size (mm)	15

### *Haliotis corrugata*

Number of ARMs sampled: 18

<25	33.3%
25 - 34	33.3%
35 - 44	33.3%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	0.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	0.0%
155 - 164	0.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	6
mean	30
min size (mm)	24
max size (mm)	36

### *Haliotis fulgens*

Number of ARMs sampled: 18

<25	100.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	0.0%
95 - 104	0.0%
105 - 114	0.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	0.0%
155 - 164	0.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	1
mean	23
min size (mm)	23
max size (mm)	23

### *Cypraea spadicea*

Number of ARMs sampled: 15

<30	0.0%
30 - 32	0.0%
33 - 35	8.7%
36 - 38	39.1%
39 - 41	21.7%
42 - 44	8.7%
45 - 47	8.7%
48 - 50	8.7%
51 - 53	4.3%
54 - 56	0.0%
>56	0.0%
(Cases) N=	23
mean	41
min size (mm)	35
max size (mm)	52

### *Lithopoma undosum*

Number of ARMs sampled: 15

<10	2.6%
10 - 19	23.7%
20 - 29	52.6%
30 - 39	7.9%
40 - 49	5.3%
50 - 59	2.6%
60 - 69	0.0%
70 - 79	2.6%
80 - 89	0.0%
90 - 99	2.6%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	38
mean	28
min size (mm)	9
max size (mm)	98

### *Megathura crenulata*

Number of ARMs sampled: 15

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	100.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	1
mean	43
min size (mm)	43
max size (mm)	43

## 2000 Artificial Recruitment Modules Size Frequency Distributions Santa Cruz Island - Yellow Banks

### *Crassedoma giganteum*

Number of ARMs sampled: 15

<10	6.3%
10 - 19	31.3%
20 - 29	12.5%
30 - 39	18.8%
40 - 49	6.3%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	18.8%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	6.3%
130 - 139	0.0%
> 139	0.0%

(Cases) N=	16
mean	42
min size (mm)	9
max size (mm)	129

### *Pisaster giganteus*

Number of ARMs sampled: 15

< 20	0.0%
20 - 39	50.0%
40 - 59	0.0%
60 - 79	50.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	2
mean	51

min size (mm)	37
max size (mm)	65

### *Lytechinus anamesus*

Number of ARMs sampled: 15

< 5	0.0%
5 - 9	0.0%
10 - 14	9.0%
15 - 19	77.4%
20 - 24	13.6%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	221
mean	17
min size (mm)	11
min size (mm)	11
max size (mm)	24

### *S. franciscanus*

Number of ARMs sampled: 15

Number of ARMs sampled: 15

< 5	0.2%
5 - 9	6.8%
10 - 14	10.2%
15 - 19	38.6%
20 - 24	31.7%
25 - 29	9.2%
30 - 34	2.4%
35 - 39	0.4%
40 - 44	0.4%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	498
mean	19
min size (mm)	3
max size (mm)	42

### *Asterina miniata*

Number of ARMs sampled: 15

<10	4.9%
10 - 19	35.4%
20 - 29	32.9%
30 - 39	19.5%
40 - 49	3.7%
50 - 59	2.4%
60 - 69	1.2%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%

(Cases) N=	82
mean	24

min size (mm)	5
max size (mm)	69

### *Pycnopodia helianthoides*

Number of ARMs sampled: 15

< 20	0.0%
20 - 39	50.0%
40 - 59	25.0%
60 - 79	25.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%

(Cases) N=	4
mean	42

min size (mm)	24
max size (mm)	64

## 2000 Artificial Recruitment Modules Size Frequency Distributions Santa Cruz Island - Yellow Banks

### *Strongylocentrotus purpuratus*

Number of ARMs sampled: 15

< 5	10.5%
5 - 9	19.0%
10 - 14	21.0%
15 - 19	15.7%
20 - 24	11.4%
25 - 29	7.6%
30 - 34	8.8%
35 - 39	2.4%
40 - 44	1.9%
45 - 49	0.7%
50 - 54	1.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	420
mean	17
min size (mm)	2
max size (mm)	53

### *Centrostephanus coronatus*

Number of ARMs sampled: 15

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	50.0%
25 - 29	25.0%
30 - 34	0.0%
35 - 39	25.0%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	4
mean	27
min size (mm)	23
max size (mm)	37

## 2000 Artificial Recruitment Modules Size Frequency Distributions

### Anacapa Island - Admiral's Reef

<i>Cypraea spadicea</i>		<i>Crassidoma giganteum</i>		<i>Pisaster giganteus</i>	
Number of ARMs sampled: 6		Number of ARMs sampled: 6		Number of ARMs sampled: 6	
<30	0.0%	<10	0.0%	< 20	0.0%
30 - 32	0.0%	10 - 19	0.0%	20 - 39	0.0%
33 - 35	0.0%	20 - 29	10.0%	40 - 59	0.0%
36 - 38	0.0%	30 - 39	0.0%	60 - 79	0.0%
39 - 41	20.0%	40 - 49	20.0%	80 - 99	0.0%
42 - 44	20.0%	50 - 59	10.0%	100 - 119	0.0%
45 - 47	20.0%	60 - 69	0.0%	120 - 139	0.0%
48 - 50	40.0%	70 - 79	0.0%	140 - 159	0.0%
51 - 53	0.0%	80 - 89	20.0%	160 - 179	0.0%
54 - 56	0.0%	90 - 99	10.0%	180 - 199	0.0%
>56	0.0%	100 - 109	0.0%	200 - 219	100.0%
(Cases) N=	5	110 - 119	0.0%	220 - 239	0.0%
mean	45	120 - 129	20.0%	> 239	0.0%
min size (mm)	40	130 - 139	10.0%	(Cases) N=	1
210	1	> 139	0.0%	mean	(Cases) N=
max size (mm)	49				
		(Cases) N=	10	mean	210
		mean	82	min size (mm)	210
		min size (mm)	23	max size (mm)	210
		max size (mm)	130		
<i>Megathura crenulata</i>		<i>Asterina miniata</i>		<i>Lytechinus anamesus</i>	
Number of ARMs sampled: 6		Number of ARMs sampled: 6		Number of ARMs sampled: 5	
<10	0.0%	<10	13.3%	< 5	0.0%
10 - 19	50.0%	10 - 19	24.4%	5 - 9	0.0%
20 - 29	25.0%	20 - 29	28.9%	10 - 14	8.5%
30 - 39	0.0%	30 - 39	12.2%	15 - 19	48.9%
40 - 49	25.0%	40 - 49	14.4%	20 - 24	36.2%
50 - 59	0.0%	50 - 59	4.4%	25 - 29	4.3%
60 - 69	0.0%	60 - 69	2.2%	30 - 34	2.1%
70 - 79	0.0%	70 - 79	0.0%	35 - 39	0.0%
80 - 89	0.0%	80 - 89	0.0%	40 - 44	0.0%
90 - 99	0.0%	90 - 99	0.0%	45 - 49	0.0%
100 - 109	0.0%	> 99	0.0%	> 49	0.0%
110 - 119	0.0%	(Cases) N=	90	(Cases) N=	47
> 119	0.0%	mean	26	mean	19
(Cases) N=	4	min size (mm)	4	min size (mm)	11
mean	24	max size (mm)	69	max size (mm)	30
min size (mm)	14				
max size (mm)	42				



## 2000 Artificial Recruitment Modules Size Frequency Distributions Anacapa Island - Admiral's Reef

### *S. franciscanus*

Number of ARMs sampled: 5

< 5	0.0%
5 - 9	5.0%
10 - 14	38.7%
15 - 19	29.4%
20 - 24	16.8%
25 - 29	9.2%
30 - 34	0.0%
35 - 39	0.8%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	119
mean	16
min size (mm)	5
max size (mm)	39

### *Centrostephanus coronatus*

Number of ARMs sampled: 5

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	37.5%
30 - 34	43.8%
35 - 39	6.3%
40 - 44	0.0%
45 - 49	12.5%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	16
mean	32
min size (mm)	26
max size (mm)	47

### *Strongylocentrotus purpuratus*

Number of ARMs sampled: 5

< 5	18.2%
5 - 9	28.4%
10 - 14	40.1%
15 - 19	8.2%
20 - 24	1.6%
25 - 29	2.4%
30 - 34	0.7%
35 - 39	0.3%
40 - 44	0.0%
45 - 49	0.0%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	669
mean	10
min size (mm)	2
max size (mm)	39

*Asterina miniata*

<b>Number of ARMs sampled: 7</b>	
<10	9.1%
10 - 19	25.8%
20 - 29	28.8%
30 - 39	18.2%
40 - 49	16.7%
50 - 59	1.5%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	66
mean	26
min size (mm)	4
min size (mm)	4
max size (mm)	56

<b>Number of ARMs sampled: 7</b>	
< 20	36.4%
20 - 39	36.4%
40 - 59	27.3%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	11
mean	24
min size (mm)	5
max size (mm)	58

<b>Number of ARMs sampled: 7</b>	
<30	2.5%
30 - 32	6.3%
33 - 35	16.5%
36 - 38	24.1%
39 - 41	20.3%
42 - 44	20.3%
45 - 47	6.3%
48 - 50	3.8%
51 - 53	0.0%
54 - 56	0.0%
>56	0.0%
(Cases) N=	79
mean	39
min size (mm)	29
max size (mm)	49

## 2000 Artificial Recruitment Modules Size Frequency Distributions Anacapa Island - Cathedral Cove

### *S. franciscanus*

Number of ARMs sampled: 3

< 5	0.0%
5 - 9	29.6%
10 - 14	25.7%
15 - 19	4.2%
20 - 24	2.8%
25 - 29	7.4%
30 - 34	6.7%
35 - 39	2.5%
40 - 44	4.2%
45 - 49	3.5%
50 - 54	1.1%
55 - 59	2.5%
60 - 64	0.4%
65 - 69	0.7%
70 - 74	3.5%
75 - 79	3.2%
80 - 84	0.7%
85 - 89	1.1%
90 - 94	0.4%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	284
mean	24
min size (mm)	6
max size (mm)	94

### *Centrostephanus coronatus*

Number of ARMs sampled: 7

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	66.7%
40 - 44	16.7%
45 - 49	16.7%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	6
mean	39
min size (mm)	35
max size (mm)	48

### *Strongylocentrotus purpuratus*

Number of ARMs sampled: 3

< 5	0.3%
5 - 9	16.1%
10 - 14	23.1%
15 - 19	20.2%
20 - 24	11.9%
25 - 29	3.9%
30 - 34	1.3%
35 - 39	2.6%
40 - 44	3.4%
45 - 49	3.7%
50 - 54	3.9%
55 - 59	4.1%
60 - 64	4.4%
65 - 69	1.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	614
mean	23
min size (mm)	3
max size (mm)	69

## 2000 Artificial Recruitment Modules Size Frequency Distributions Anacapa Island - Landing Cove

<i>Cypraea spadicea</i>		<i>Crassedoma giganteum</i>		<i>Pisaster giganteus</i>	
Number of ARMs sampled: 7		Number of ARMs sampled: 7		Number of ARMs sampled: 7	
<30	0.0%	<10	7.1%	< 20	16.7%
30 - 32	0.0%	10 - 19	0.0%	20 - 39	33.3%
33 - 35	8.8%	20 - 29	0.0%	40 - 59	50.0%
36 - 38	8.8%	30 - 39	21.4%	60 - 79	0.0%
39 - 41	14.7%	40 - 49	7.1%	80 - 99	0.0%
42 - 44	23.5%	50 - 59	14.3%	100 - 119	0.0%
45 - 47	23.5%	60 - 69	7.1%	120 - 139	0.0%
48 - 50	17.6%	70 - 79	0.0%	140 - 159	0.0%
51 - 53	2.9%	80 - 89	14.3%	160 - 179	0.0%
54 - 56	0.0%	90 - 99	21.4%	180 - 199	0.0%
>56	0.0%	100 - 109	7.1%	200 - 219	0.0%
(Cases) N=	34	110 - 119	0.0%	220 - 239	0.0%
mean	43	120 - 129	0.0%	> 239	0.0%
min size (mm)	34	130 - 139	0.0%	(Cases) N=	12
35	12	> 139	0.0%	mean	(Cases) N=
max size (mm)	52				
		(Cases) N=	14	mean	35
		mean	63	min size (mm)	14
		min size (mm)	9	max size (mm)	55
		max size (mm)	102		
<i>Lithopoma undosum</i>		<i>Asterina miniata</i>		<i>S. franciscanus</i>	
Number of ARMs sampled: 7		Number of ARMs sampled: 7		Number of ARMs sampled: 3	
<10	0.0%	<10	30.4%	< 5	0.0%
10 - 19	0.0%	10 - 19	40.8%	5 - 9	23.0%
20 - 29	0.0%	20 - 29	14.4%	10 - 14	5.3%
30 - 39	0.0%	30 - 39	3.2%	15 - 19	6.9%
40 - 49	42.9%	40 - 49	5.6%	20 - 24	15.1%
50 - 59	28.6%	50 - 59	4.8%	25 - 29	12.5%
60 - 69	28.6%	60 - 69	0.8%	30 - 34	9.2%
70 - 79	0.0%	70 - 79	0.0%	35 - 39	4.9%
80 - 89	0.0%	80 - 89	0.0%	40 - 44	4.3%
90 - 99	0.0%	90 - 99	0.0%	45 - 49	3.6%
100 - 109	0.0%	> 99	0.0%	50 - 54	1.0%
110 - 119	0.0%	(Cases) N=	125	55 - 59	1.3%
> 119	0.0%	mean	18	60 - 64	3.3%
(Cases) N=	7	min size (mm)	5	65 - 69	2.6%
mean	54	max size (mm)	66	70 - 74	2.6%
min size (mm)	46			75 - 79	1.6%
max size (mm)	68			80 - 84	1.6%
				85 - 89	1.0%
				90 - 94	0.0%
				95 - 99	0.0%
				100 - 104	0.0%
				105 - 109	0.0%
				> 109	0.0%
				(Cases) N=	304
				mean	29
				min size (mm)	5
				max size (mm)	89

## 2000 Artificial Recruitment Modules Size Frequency Distributions

### Anacapa Island - Landing Cove

#### *Strongylocentrotus purpuratus*

Number of ARMs sampled: 3

< 5	1.0%
5 - 9	21.6%
10 - 14	27.8%
15 - 19	16.3%
20 - 24	8.2%
25 - 29	4.7%
30 - 34	3.4%
35 - 39	1.7%
40 - 44	1.5%
45 - 49	3.8%
50 - 54	2.9%
55 - 59	4.3%
60 - 64	2.0%
65 - 69	0.7%
70 - 74	0.1%
75 - 79	0.1%
> 79	0.0%
(Cases) N=	890
mean	21
min size (mm)	3
max size (mm)	75

#### *Centrostephanus coronatus*

Number of ARMs sampled: 7

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	28.6%
25 - 29	42.9%
30 - 34	14.3%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	14.3%
50 - 54	0.0%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	7
mean	29
min size (mm)	22
max size (mm)	48

## **Appendix K. 2000 Species List for all Channel Islands National Park Kelp Forest Monitoring Stations.**

### Introduction:

The species list contains presence/absence and relative abundance data for all species that could be found and identified during the site visits between June and September. Generally at least one dive is made by an experienced biologist strictly for species list observations. The overall effort varies from station to station with the water conditions and available time. Relative abundance values are subjective, and generally based on opinions of several divers viewing the overall site. Some species assemblages are more difficult to identify than others and may be lumped into general categories. Organisms were generally not collected for additional taxonomic work. When identification is tentative we either do not mark it or place a question mark on the list. Some categories, (e.g. Sponges or tunicates) may be much more diverse than it would appear from the list.

### Abundance Ratings:

- X - present, no relative abundance rating given
- 4 - abundant, organism present in higher than normal densities
- 3 - common, organism found over most of site or in high density patches
- 2 - present, organism found in moderate numbers
- 1 - rare, few organisms found
- 0 - noticeably absent, an effort was made to look for an organism that was not found.

### Notes:

- |             |  |
|-------------|--|
| e           | - eggs   |
| j or jvs    | - juvenile   |
| s           | - shell only   |
| int         | - intertidal   |
| d           | - drift  |
| PM or night | - seen only on night dive                              |
| JX          | - juveniles present and adults present                 |
| ##/J        | - (e.g. 2/J3 -adult abundance 2, juvenile abundance 3) |
| nests       | - <i>Hypsypops</i> nest turf                           |
| dis         | - diseased   |

Station names are listed in Table 2 of the text.

Species	Location: Site #:	SMWL 1	SMHR 2	SRJLNO 3	SRJLSO 4	SRRR 5	SCGI 6	SCFH 7	SCPB 8	SCSA 9	SCYB 10	ANAR 11	ANCC 12	ANLC 13	SBSESL 14	SBAP 15	SBCAT 16
CHLOROPHYTA																	
BRYOPSIS SP.												X	X		X		1
CLADOPHORA SP.															1		
CODIUM CUNEATUM												1					
CODIUM FRAGILE			X				1	1									
CODIUM HUBBSII/SETCHELLII															1	X	1
DERBESIA MARINA												2	X				
FILAMENTOUS GREEN ALGAE								X									
HALICYSTIS OVALIS							1						X				
ULVA SP.					X								X				
PHAEOPHYTA																	
COILODESME SP.	X													X			
COILODESME CORRUGATA													2				
COLPOMENIA SP.	X	X			X		X	X	1	X	0	1		X			X
COLPOMENIA PEREGRINA													2				
CYSTOSEIRA SP.	2	0	0	1	0	0	0	0	0	0	0	0	3	2/J2	0	0	1
CYSTOSEIRA NEGLECTA																	1
CYSTOSEIRA OSMUNDACEA													3				
DESMARESTIA SP.	4	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
DESMARESTIA LATIFRONS																	
DESMARESTIA LIGULATA												1					1
DICTYONEUROPSIS RETICULATA	2																
DICTYOPTERIS NEW SP.													X				
DICTYOPTERIS UNDULATA													3				
DICTYOTA FLABELLATA												1	3		2		1
DICTYOTA/PACHYDICTYON					X		X		0	0	1	1	3	2	2		
ECTOCARPOID FUZZ													2				X
EISENIA ARBOREA	2/J2	0/J1	1	2/J2	0	1/J2	1/J0	0	0	0	0/J1	1/J1	2	3/J3	0	0	0
LAMINARIA FARLOWII	0	0	X	2	0	0	0	0	0	0	0	0	2	2/J2	0	0	0
MACROCYSTIS PYRIFERA	2/J3	1/J0	1/J0	2/J2	0	1/J1	0	0	0	0	0/J1	2/J1	3	3/J2	0	0	1
PTERYGOPHORA CALIFORNICA	3/J4	0	X	2/J2	0	0	0	0	0	0	0	0	0	2/J2	0	0	0
SARGASSUM MUTICUM													X				
TAONIA LENNEBACKERIAE																	2
ZONARIA FARLOWII													X				
RHODOPHYTA	2	1		3	2												
ACROSORIUM UNCINATUM													2				
AMPHIROA ZONATA													2				2
BOSSIELLA/CALLIARTHRON												1	2				
CALLIARTHRON SP.															1	X	2
CALLIARTHRON TUBERCULOSUM													X				
CALLOPHYLLIS SP.	X				X												
CARPOPELTIS BUSHIAE												X					
CERAMIIUM SP.													X				
CHONDRIA CALIFORNICA																	1
COELOSEIRA COMPRESSA													X				
CORALLINA OFFICINALIS												X	2				
CORALLINES - ENCRUSTING	2	3	2	2	3	4	2	3	3	3	4	3	3	2	3	3	3
CORALLINES - ERECT	2	1	1	2	1	2	1	1	1	1	1	2	4	3	1	1	1
GELIDIUM SP.	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0

Location: Species Site #:	SMWL 1	SMHR 2	SRJLNO 3	SRJLSO 4	SRRR 5	SCGI 6	SCFH 7	SCPB 8	SCSA 9	SCYB 10	ANAR 11	ANCC 12	ANLC 13	SBSESL 14	SBAP 15	SBCAT 16
GELIDIUM PURPURASCENS						1	1					2	3			1
GELIDIUM ROBUSTUM											1					
GIGARTINA SP.	2	1	1	2	0	1	1	0	0	0	0	0	2	0	0	0
GIGARTINA CORYMBIFERA			1	X		1										
LAURENCIA PACIFICA	X	3	2	X	3	2	X	2	2	2	2	2	2	2	2	2
LITHOTHAMNIUM SP.												X		X	X	X
LITHOTHRIX ASPERGILLUM																2
PLOCAMIUM VIOLACEUM												X	3			
PTEROSIPHONIA SP.														X		
RHODYMENIA SP.	X			X									X			
RHODYMENIA CALIFORNICA											X	X				
SCIADOPHYCUS STELLATUS												X				
FILAMENTOUS RED ALGAE		X		X		X	X	1	X	X	X	X	X			X
NON - FILA. REDS microscopic											X					
HYPHYPOPS TURF NEST	0	0	0	0	0	0	X	X	X	0	X	X	X	X	X	X
ANGIOSPERMA																
ZOSTERA MARINA																X
DIATOMS																
DIATOM FILM	X	X		X	X		X	X	X				X	X	X	X
PROTOZOA																
HOMOTREMA RUBRUM						X			X		X			X		
PORIFERA								2								
YELLOW SPONGE W/TALL PORES				X												
APLYSILLA GLACIALIS														X		
CLIONA SP.	X	X		X							X					
HALICLONA SP.											X			X		
HALICLONA PERMOLLIS				X												
HYMENAMPHIASTRA CYANOCRYPTA			1	X		X						1		1		
LISSODENDORYX TOPSENTI											2	2				
OPHALITASPONGIA PENNATA											2	2		2		
PENARES CORTIUS											2					
POLYMASTIA PACHYMASTIA				X												
RED SPONGES - ENCRUSTING		X	2	X		X	X	X	X	2			X			
SPHECIOSPONGIA CONFOEDERATA	X			X							1					
TETHYA AURANTIA	2	1	2	3	2	2	1	1	2	2	2	1	0	3	0	0
TETILLA ARB	X			X												
VERONGIA AUREA												X	X			
XESTOSPONGIA TRINDINAEA	X		2	X	X											
XESTOSPONGIA VANILLA	X															
CNIDARIA																
HYDROZOA																
AGLAOPHENIA SP.					X						1	3	2			X
AGLAOPHENIA LATIROSTRIS	X	1		3		X				X						
ALLOPORA CALIFORNICA	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
ANTENELLA AVALONIA											X	X				X
CORYMORPHA SP.											X	X				
GARVEIA ANNULATA						1										
HYDRACTINIA SP.							X				2	2		2	2	2
OBELIA SP.	X			X			X		X		X	X	X	2	2	2



Species	Location: Site #:	SMWL	SMHR	SRJLNO	SRJLSO	SRRR	SCGI	SCFH	SCPB	SCSA	SCYB	ANAR	ANCC	ANLC	SBSESL	SBAP	SBCAT
PLUMULARIA SP.		X				X		X		X		X	X				X
SERTULARIA SP.					X								X				
CLAVULARIA SP.								3	X	X		X	2	X		2	2
PACHYCERIANTHUS FIMBRIATUS		2	2	X	X	X	X	2	3	2	2	2	2	X	1		1
ANTHOZOA																	
EUGORGIA RUBENS												X					
LOPHOGORGIA CHILENSIS		1	1	1	2	1	3/J3	3/J2	3/J2	1/J1	3	3	1	1	3	0	0
MURICEA CALIFORNICA		0	0	0	1	0	1	0	1	0	2	3	1	X	3	0	0
MURICEA FRUTICOSA		0	0	0	0	0	0	1	0	1	2	X	0	X	1	1	0
PARAZOANTHUS LUCIFICUM												2					
CORYNACTIS CALIFORNICA		3	3	2	3	2	3	2	2	1	2	3	2	2	2	3	2
ANTHOPLEURA ARTEMISIA												X			1	X	X
ANTHOPLEURA ELEGANTISSIMA			X	X								X			2	X	X
CACTOSOMA/SAGARTIA							X				X	X	X				
EPIACTIS PROLIFERA		X	X	X	X	2			X								
HALCAMPA DECEMENTENTACULATA																	X
HARENACTIS ATTENUATA													X				
METRIDIUM EXILIS																X	
METRIDIUM SENILE			1														
PHYLACTIS SP.					X				X								
PHYLLACTIS BRADLEYI													X				
SAGARTIA CATALINENSIS															2		X
TEALIA SP. (=URTICINA SP.)															X		
TEALIA COLUMBIANA		X				X											
TEALIA CORIACEA				X	X	X	X	X	1	1	3	3					
TEALIA LOFOTENSIS		3	1	1	2	2	X	0	0	0	0	0	0	0	0	0	0
ZAOLUTUS ACTIUS												2	2		3	X	X
ORDER MADREPORARIA																	
ASTRANGIA LAJOLLENSIS (=A. HAIMEI)		2	3	2	2	2	2	4	3	2	3	2	2	2	3	2	1
BALANOPHYLLIA ELEGANS		1	3	2	2	2	4	1	1	1	1	2	2	1	2	2	1
COENOCYATHUS BOWERSI							X	2				2	X				
PARACYATHUS STEARNSI (=P. STEARNSII)		X	X		X	X	3	2			2	2		X	2	2	2
CTENOPHORA																	
LEUCOTHEA SP.												X			X		
PLATYHELMINTHES			X				X		2	2			X	3			
PSEUDOCEROS PERVIOLACEUS												X					
NEMERTEA			X						X								
TUBULANUS SEXLINEATUS			X														
SIPUNCULA																	
THEMISTE PYROIDES																X	
ANNELIDA																	
POLYCHAETEA																	
APHRODITE												X					
ARCTONOE SP.				X					X		X						
ARCTONOE PULCHRA												X	X				X
ARCTONOE VITTATA							X										
BISPIRA TURNERI												X					

Location:	SMWL	SMHR	SRJLNO	SRJLSO	SRRR	SCGI	SCFH	SCPB	SCSA	SCYB	ANAR	ANCC	ANLC	SBSESL	SBAP	SBCAT
Species Site #:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CHAETOPTERUS VARIOPEDATUS	X	X	X	X		X	2	2	X	X	X	X	X	2	X	X
DIOPATRA ORNATA	3	1	2	X	X	X	X	0	0	0	0	1	0	0	0	X
DODECACERIA FEWKESI	X	4			X	2	X	2	X		2	1	X	2	X	X
EUDISTYLIA POLYMORPHA	2	3	2	X	X	X		X					X			
MESOCHAETOPTERUS SP.								X								X
MYXICOLA INFUNDIBULUM		2					X	2	X	X		X	X			
OPHIODROMUS PUGETTENSIS			X	X			X									
PHRAGMATOPOMA CALIFORNICA	2	0	2	1	0	0	0	0	2	0	1	2	X	0	X	X
PISTA ELONGATA	2	2	X	X	X	X	2	2	1	1	1	1		1	1	1
SABELLID												X		X	X	X
SALMACINA TRIBRANCHIATA		2	X	2			X	X	1			X	X			
SERPULA VERMICULARIS														X		
SPIROBRANCHUS SPINOSUS		X	X	X	X	2	2	2	4		2	3		2	4	3
SPIRORBID				X												
TEREBELLID		3				X	X	2	2		X	X				
POLYCHAETE "BALLOONS"		X						X	X	X			X			
ARTHROPODA																
PYCNOGONIDA																
CRUSTACEA																
CIRRIPIEDIA/THORACIA																
BALANUS SP.		2	X	X		X	3	2	2	2			X		X	X
BALANUS AQUILA/NUBILUS											X	X				
BALANUS NUBILUS	X	X				X										
CONOPEA GALEATA						X								X		
MALACOSTRACA																
MYSIDS (clear bottom dwellers)	3	4		X	3	X						X	X	2		
AMPHIPODA																
AMPHIPOD TUBE MASSES				X	X	X	X		X		2	X	X	X	X	X
COROPHIUM SP.											X					
GAMMARIDEA																
CAPRELLIDEA											X					
EUPHSUSIACEA																
COPEPODS						X						X				
COPEPODS ON MEGATHURA CRENUATA						X						X				
COPEPODS ON FISH		X		X		X		2								
DECAPODA																
ALPHEUS CLAMATOR				X			X	2	X				X			
BETAEUS MACGINITIEAE				X	X				X			X	X			
HEPTACARPUS SP.		X														
LYSMATA CALIFORNICA												X	X			
PANDALUS DANAEE	X	4	X	X	X	X	X		X	X	X	X	X			
SPIRONTOCARIS PRIONATA		X		X	X	X		X	X							
PANULIRUS INTERRUPTUS	0	0	0	0	0	0	S	S	1	1	0	2	3	0	2	3
HAPALOGASTER CAVICAUDA			X	X												
PACHYCHELES RUDIS								X								
PAGURISTES SP.														X		
PAGURUS SP.	X	X		X		X	X	X	X	X	X		X			X
PETROLISTHES SP.									X							
PIMOCHIRUS CALIFORNIENSIS												X				X

Location: Species Site #:	SMWL 1	SMHR 2	SRJLNO 3	SRJLSO 4	SRRR 5	SCGI 6	SCFH 7	SCPB 8	SCSA 9	SCYB 10	ANAR 11	ANCC 12	ANLC 13	SBSESL 14	SBAP 15	SBCAT 16
CANCER SP.															J	
CANCER ANTENNARIUS	X			X												
HERBSTIA PARVIFRONS		X		X			X	2	X	X	3	3	X	X	X	X
LOXORHYNCHUS CRISPATUS	X															
LOXORHYNCHUS GRANDIS								X	X						X	X
PARAXANTHIAS TAYLORI	X	X			X			X	X	X	2	X	X			X
PELIA TUMIDA									X	X	X		X			
PUGETTIA PRODUCTA				X												
PUGETTIA RICHII	3	3														
MOLLUSCA																
GASTROPODA																
ACMAEA MITRA	2	2		X												
AMPHISSA VERSICOLOR						X	2	X	2		X	2		S		
LITHOPOMA GIBBEROSUM (=Astraea gibberosa)	3/J2	0	0	1	X	0	0	0	0	0	0	0	0	0	0	0
LITHOPOMA UNDOSUM (=Astraea undosa)	0	0	1	1	2/J0	2/J1	2/J2	2/J1	4/J4	3/J4	2	3	X	3	4	3
BITTIUM SP.																X
BURSA CALIFORNICA (=Crossata californica)														3		
CALLIOSTOMA SP.				X				X	X	X						
CALLIOSTOMA ANNULATUM	X	X									X					
CALLIOSTOMA SUPRAGRANOSUM											3			3		
CERATOSTOMA FOLIATUM	X	2		X	X											
CERATOSTOMA NUTTALLI								X	X		2	X			2	X
CONUS CALIFORNICUS				X	X	1	2	2	X	X	2	X		3	2	2
CREPIDULA SP.	X	X		X	X	X	X	X	X	X	X	X	X	X		
CYPRAEA SPADICEA	2	2	2	3	2	3	2	2	2	2	2	2	2	2	X	X
DIODORA SP.				X		X										
EPITONIUM SP.															S	
ERATO SP.									X							
FUSINUS KOBELTI		X	X	X												
FUSINUS LUTEOPICTUS											X					X
HALIOTIS CORRUGATA	0	0	0	0	0	0/J1	0	S	0	0/J1	1	1	1	0	0	1
HALIOTIS CRACHERODII	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HALIOTIS FULGENS	0	0	0	0	0	0	0	S	0	0/J1	0	0	0	0	0	0
HALIOTIS RUFESCENS	2	1/J3	2	2/J1	0/JS	S	0	0	0	0	0	0	0	0	0	0
HALIOTIS SORENSENI	0	0	0	0	0	S	0	0	0	0/J1	0	0	0	0	0	0
HALIOTIS WALALLENSIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HALIOTIS ASSIMILIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HIPPONIX SP.														S		
HOMALOPOMA SP.					X	X										
HOMALOPOMA LURIDUM												2				
KELLETIA KELLETII	4/J2	2	1	2	1	2	1	1	1	2	X	3/E4	1	2	0	0
LATIAxis OLDROYDI															2	
MAXWELLIA GEMMA								X			X	X		2		2
MEGATHURA CRENU-LATA	2	2	1	2	2	3	2	1	2	2	1	1	2	2	0	1
MITRA IDAE	X	X	X	X		X										
NORRISIA NORRISI	X			2			1				X	X	X	2	X	X
SERPULORBIS SQUAMIGERUS	1	2	2	1	0	0	2	2	3	1	2	2	2	X	2	2

Species	Location: Site #:	SMWL 1	SMHR 2	SRJLNO 3	SRJLSO 4	SRRR 5	SCGI 6	SCFH 7	SCPB 8	SCSA 9	SCYB 10	ANAR 11	ANCC 12	ANLC 13	SBSESL 14	SBAP 15	SBCAT 16
SIMNIA VIDLERI (=Neosimnia)								X	1			4			3		
TEGULA AUREOTINCTA									X	X			2	X	3	2	
TEGULA EISENI												2	3	X	3	4	4
TEGULA REGINA							X				X				3	2	2
TRIVIA SP.																	X
TRIVIA CALIFORNIANA			2												X		X
TRIVIA SOLANDRI																S	
VOLVARINA TAENIOLATA						X			X	X				X			
<b>OPISTHOBANCHIA</b>											X						
APLYSIA CALIFORNICA		2	2	0	1	1	1	1	1	2	1	2	2	2	3	3	3
APLYSIA VACCARIA													1				
BERTHELLA CALIFORNICA												X					
BERTHELLINA ENGELI							X	X	X			2					
BULLA/HAMINOEA									S					S			
NAVANAX INERMIS		X	1		2	X		1	1				X/E	X	X		
HAMINOEA SP.			3														
HAMINOEA VIRESCENS															X		X
<b>NUDIBRANCHIA</b>																	
ANISODORIS NOBILIS	X			X	X							X			X		
CADLINA LUTEOMARGINATA	X																
CORYPHELLA TRILINEATA																X	
DENDRODORIS N.SP.					X												
DENDRONOTUS IRIS												X					
DIAULULA SANDIEGENSIS			X	X	X							X					
DORIOPSIS ALBOPUNCTATA		X										X	X		X		
FLABELLINOPSIS IODINEA (=Coryphella iodinea)						X		1	1			X	X	X		X	
HERMISSENDA CRASSICORNIS		4		X	2	X			1			X	X	X	X		
LAILA COCKERELLI					X												
MEXICHRONIS PORTERAE							X				X	X	X			X	
PHIDIANA HILTONI (formerly P.pugnax)	X	X			X												
POLYCERA ATRA													X		X	X	
ROSTANGA PULCHRA																	X
TRIOPHA CATALINAE													X				
TRITONIA FESTIVA					3							X					
<b>POLYPLACOPHORA</b>					X				X								
CRYPTOCHITON STELLERI	1				1												
STENOPLAX SP.															X		
TONICELLA LINEATA	X	X			X	X											
<b>BIVALVIA</b>																	
AMERICARDIA BIANGULATA							S		S	S				S			
CHAMA ARCANIA				X				3	X	X		X		X	X		
GARI CALIFORNICA						S	S		S	S	S	S			S		
CRASSEDOMA GIGANTEUM (=Hinnites giganteus)		2	2	2	2	2	2	2	3	2	1/J1	2	4	4	2	X	X
LIMA HEMPHILLI								X	3	X			X	S			
MYTILUS CALIFORNIANUS			S														
PECTEN DIEGENSIS									S								
PHOLAD		X	X		X		X	X	X		X						
PODODESMUS CEPIO		X	X		3	2		X	2	X	3	X		2	X		

Species	Location: Site #:	SMWL 1	SMHR 2	SRJLNO 3	SRJLSO 4	SRRR 5	SCGI 6	SCFH 7	SCPB 8	SCSA 9	SCYB 10	ANAR 11	ANCC 12	ANLC 13	SBSESL 14	SBAP 15	SBCAT 16
PTERIA STERNA (red oyster on Gorgonians)					S				S			2			3		
SEMELE SP.									X								
TRACHYCARDIUM QUADRAGENARIUM									S	S							
TRESUS NUTTALLII														S	S		
VENTRICOLARIA FORDII						S	S	S	S	S	S			S	S		
CEPHALAPODA																	
OCTOPUS	X	X		1	1	2	2	3	3	2	X	2	2	2	X	4	X
BIMACULATUS/BIMACULOIDES																	
OCTOPUS RUBESCENS													X				
ECTOPROCTA																	
AETEA SP.												X	X		X	X	X
ANTROPORA TINCTA															X		
BUGULA SP.	X	X		X							1						
BUGULA CALIFORNICA													2				
BUGULA NERITINA							X		X			2	2	2	2	2	
COSTAZIA ROBERTSONIAE	X			X			X										
DIAPEROECIA CALIFORNICA	1	1	1	2	1	2	2	2	2	1	1	1	3	3	0	X	X
HETEROPORA MAGNA				X													
HIPPIDIPOSLA INSCULPTA				X									X				
LICHENOPORA NOVAE-ZELANDIAE												1	1		2	X	X
MEMBRANIPORA SP.			X														
MEMBRANIPORA TUBERCULATA												X	X				
PARASMITTINA/RHYNCHOZOOON													X				X
PHIDOLOPORA LABIATA													X				
PHIDOLOPORA PACIFICA	X	X		X			X	X						X			
THALAMOPORELLA CALIFORNICA								X	X				2	X	1		
PHORONIDA																	
PHORONIS VANCOUVERENSIS									X		1		2	X	2	2	X
ECHINODERMATA																	
ASTEROIDEA																	
ASTROMETIS SERTULIFERA															3	2	
DERMASTERIAS IMBRICATA	X			2	1						1						
HENRICIA SP.			X														
HENRICIA LEVIUSCULA	X			X	2	X		1			X	3			2	X	
LINCKIA COLUMBIAE							1	2	2			2		X			
MEDIASTER AEQUALIS				2	1	1					1						
ORTHASTERIAS KOEHLERI	X	2		X	X	1											
ASTERINA MINIATA (=Patiria miniata)	3	3	1	3	3/J2	2	2	2	1/J1	1	2	2	2	2/J3	2	2	2
PISASTER BREVISPINUS				1	2												
PISASTER GIGANTEUS	2/J2	3	2	3	3/J2	2	2	2	1/J1	1	2	2	1	1	2	2	2
PISASTER OCHRACEUS																1	1
PYCNOPODIA HELIANTHOIDES	2/J2	2/J2	3/J3	2/J1	2/J3	1/J1	0	0	0	0	1	0	0	0	2	0/J1	0
diseased seastars			0	0			0										
ECHINOIDEA																	
ARBACIA INCISA												1			1	S	
CENTROSTEPHANUS CORONATUS	0	0	0	0	1	1	1	2/J0	2	2	3	2	2/J0	4	3	2	
DENDRASTER EXCENTRICUS															S		
LYTECHINUS ANAMESUS	1	X	1	0	2	2	3	3	1	3	3	3	0	1	3	3	X

Location:	SMWL	SMHR	SRJLNO	SRJLSO	SRRR	SCGI	SCFH	SCPB	SCSA	SCYB	ANAR	ANCC	ANLC	SBSESL	SBAP	SBCAT
Species Site #:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LYTECHINUS ANAMESUS JUVENILES	0	0	0	0	0	0	0	0	0	0			0			
STRONGYLOCENTROTUS FRANCISCANUS	3	4	2	3	3	3	3	3	3	2	3	3	3	3	4	3
STRONGLYOCENTROTUS FRANCISCANUS JUV.	2	1	1	1	1	2	1	1	1	2	2		3	2	2	2
STRONGYLOCENTROTUS PURPURATUS	3	3	4	3	3	4	3	4	4	3	4	3	2	4	4	4
STRONGLYOCENTROTUS PURPURATUS JUV.	2	3	2	1	1	2	1	1	2	2	3	2	3	3	4	2
diseased urchins	0	0	1	0	3	1	1	1	1	3	3	X	0		2	2
OPHIUROIDEA																
OPHIACTIS SIMPLEX						X		X				X				
OPHODERMA PANAMENSE	X	X		X	X	X			X		3	3	X	3	4	3
OPHIONEREIS ANNULATA											2			3		
OPHIOPLOCUS ESMARKI								X				1	X			
OPHIOPTERIS PAPILLOSA			X	X	X	X		X		3	3	3	3	2	2	2
OPHIOTHRIX SPICULATA		2			2	2	2	1		2	4	1	1	4		
HOLOTHUROIDEA																
CUCUMARIA SP.			X	2	2			3					3			
CUCUMARIA MINIATA							X	X					X			
CUCUMARIA PIPERATA	X	X			X	X	X	X	X	X			X		1	
CUCUMARIA SALMA								X			3	X	X	2	2	2
EUPENTACTA QUINQUESEMITA						X					2					X
LEPTOSYNAPTA ALBICANS											X					
LISSOTHURIA NUTRIENS														X		
PACHYTHYONE RUBRA	0	0	1	1	1	2	4	0	0	1	0	0	0	0	0	0
PARASTICHOPUS CALIFORNICUS	1	0	0		0	0										
PARASTICHOPUS PARVIMENSIS	2	2	1	2	2	2	2	1	1	2	3	3	2	3	3	3
CHORDATA																
UROCHORDATA (TUNICATA)																
APLIDIUM SP.												X				
BOLTENIA VILLOSA				X		X										
BOTRYLLUS/BOTRYLLOIDES											X			3	X	X
CLAVELINA HUNTSMANI																1
DIDEMNUM CARNULENTUM				X				X								
EUHERDMANIA CLAVIFORMIS												X				
METANDROCARPA TAYLORI											X	X		1		
PYCNOCLAVELLA STANLEYI						X			X			X		3	2	2
PYURA HAUSTOR					X			X								
SALPS								3			X	X				X
STYELA MONTEREYENSIS	1	0	X	1	1	0	0	0	0	0	0	0	0	0	0	0
VERTEBRATA																
CHONDRICHTYES																
CEPHALOSCYLLIUM VENTRIOSUM				X		X	X					X	X			
HETERODONTUS FRANCISCI								2	X				X			
MYLIOBATIS CALIFORNICA								X	X			X	X	X		4
OSTEICHTHYES																
GYMNOTHORAX MORDAX													1		1	
GOBIESOX SP.	X	X		X		X				X		X				

Location:		SMWL	SMHR	SRJLNO	SRJLSO	SRRR	SCGI	SCFH	SCPB	SCSA	SCYB	ANAR	ANCC	ANLC	SBSESL	SBAP	SBCAT
Species	Site #:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SARDINOPS SAGAX								X	X								
ATHERINOPS AFFINIS					X								X	X	X		
AULORHYNCHUS FLAVIDUS	4	X															
RATHBUNELLA HYOPLECTA		X				X		X									
ANARRHICHTHYS OCELLATUS					X												
ALLOCLINUS HOLDERI	0	0	0	1	1	1	1	1/J0	2/J1	2/J0	2	X	3	2	X	X	X
GIBBONSIA SP.	1	2		X	X							X	X	X			
HETEROSTICHUS ROSTRATUS			X										X	2			X
HETEROSTICHUS ROSTRATUS (JUVENILES)														2			X
NEOCLINUS SP.	0	X		X	X		X	X	X	X				X			X
NEOCLINUS STEPHANSAE			X					X	2					X		1	1
NEOCLINUS UNINOTATUS									X						X		
ARTEDIUS CORALLINUS	X	X		X	X	X	X	X	X		X		X		X	2	2
ARTEDIUS CREASERI												X					
ORTHONOIPIUS TRIACIS	X	3	X	X	X	X	X	X	1	X	X		X		X	2	2
SCORPAENICHTHYS MARMORATUS			X	X	1		X	X				X	X	X	X	X	X
BRACHYISTIUS FRENATUS													X				1
CYMATOGASTER AGGREGATA													X				
RHACOCHILUS VACCA	1/J2	2	3	3/J0	2/J0	2	2	2/J0	1	2	2	2	2	2	0	0	0
EMBIOTOCA JACKSONI	2/J2	2/J1	3/J1	3/J0	2/J2	1	2/J0	3/J0	1/J0	2	2	2	2	3	0	0	2
EMBIOTOCA LATERALIS	2/J2	2/J1	2/J0	3/J0	2/J2	0	0	0	0	0	0	0	0	0	0	0	0
HYPURUS CARYI	X	1		X	X												
RHACOCHILUS TOXOTES	X		2	3	1	X	2	2	X	1							
CORYPHOPTERUS NICHOLSI	1	3	2	4	1	3	3	4	2	2	2	2	2	2	X	X	X
LYTHRYPNUS DALLI	0	0	0	0	0	0	3	3	1	2	0	1	2	0	0	0	0
LYTHRYPNUS ZEBRA		1				1	3	3	2		X	1	2	X	X		
OPHIODON ELONGATUS	1				1		1										
OXYLEBIUS PICTUS	3	3	2	4	3	3	2	2	2	2	2	X	2	2	X	X	X
GIRELLA NIGRICANS	0	0	1	1	1	2	2	1	2	1	X	2	2	2	2	2	2
HERMOSILLA AZUREA																	1
MEDIALUNA CALIFORNIENSIS	0	0	1	X	0	0	X	1	X	0	X	X	2	0	X	X	
MEDIALUNA (JUVENILES)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HALICHOERES SEMICINCTUS	0			0	0	0	2	1	2		X	2	2	X	X	X	
H. SEMICINCTUS (FEMALES)	0	1	1	0	0	0	2	1	2	2	X	2	2	X	X	X	
H. SEMICINCTUS (MALES)	0	0	1	0	0	0	2	0	2	2	X	2	2	X	X	X	
H. SEMICINCTUS (JUVENILES)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OXYJULIS CALIFORNICA	2	2	1	3	1	2	1	1	1	2	1		2	2	3	3	
O. CALIFORNICA (JUVENILES)	0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	3	
S. PULCHER (FEMALES)	2	3	4	3	2	2	2	2	1	4	2	2	2	1	2	2	
S. PULCHER (MALES)	1	2	1	2	1	1	1	1	0	1	0	1	2	0	1	1	
S. PULCHER (JUVENILES)	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
BROSMOPHYCIS MARGINATA				1													
CAULOLATILUS PRINCEPS		1	1	1	1	1	1	4	0	2	1				1	1	1
STEREOLEPIS GIGAS													1				
CHROMIS PUNCTIPINNIS	2	2	2	2	2	2	2	2	2	2	4	3	2	X	X	X	
CHROMIS PUNCTIPINNIS (JUVENILES)	0	0	1	1	0	1	1	1	1	0	1	2	1	1	3	1	
HYPSPOPS RUBICUNDUS	0	0	2	0	0	0	2	2	2	0	X	3	2	1	2	2	
HYPSPOPS RUBICUNDUS (JUVENILES)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ATRACIOSION NOBILIS	X																

[illegible]



**Appendix L.** 2000 Temperature data collected at Channel Islands National Park Kelp Forest Monitoring Stations by remote temperature loggers.

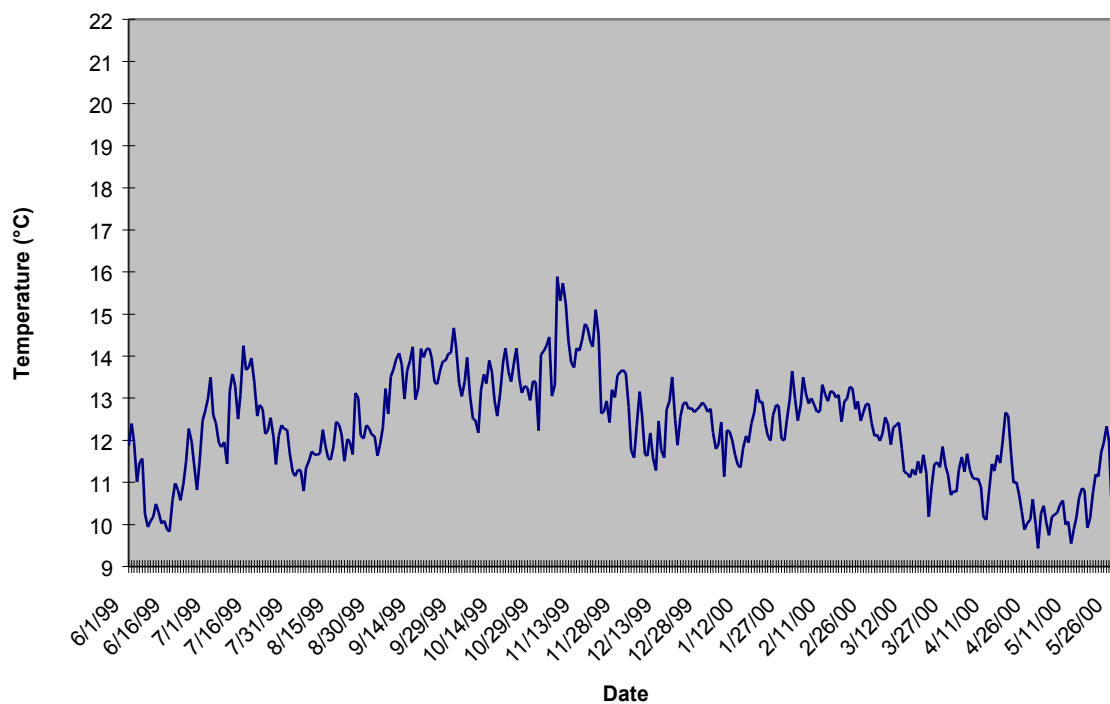
Introduction:

This appendix contains the temperature data (presented graphically) collected by STOWAWAY™ temperature loggers that were deployed at all 16 Kelp Forest Monitoring sites. Missing data at some sites is the result of technical problems or loss of temperature logger.

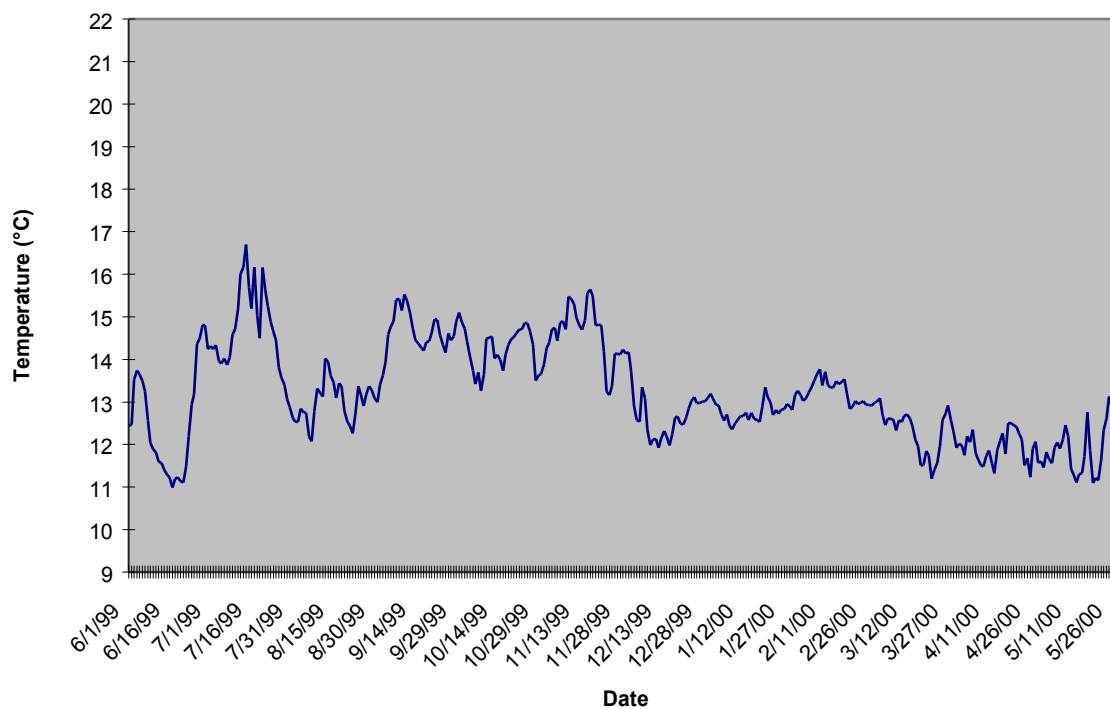


**WYCKOFF LEDGE, SAN MIGUEL ISLAND**

Depth = 13 meters

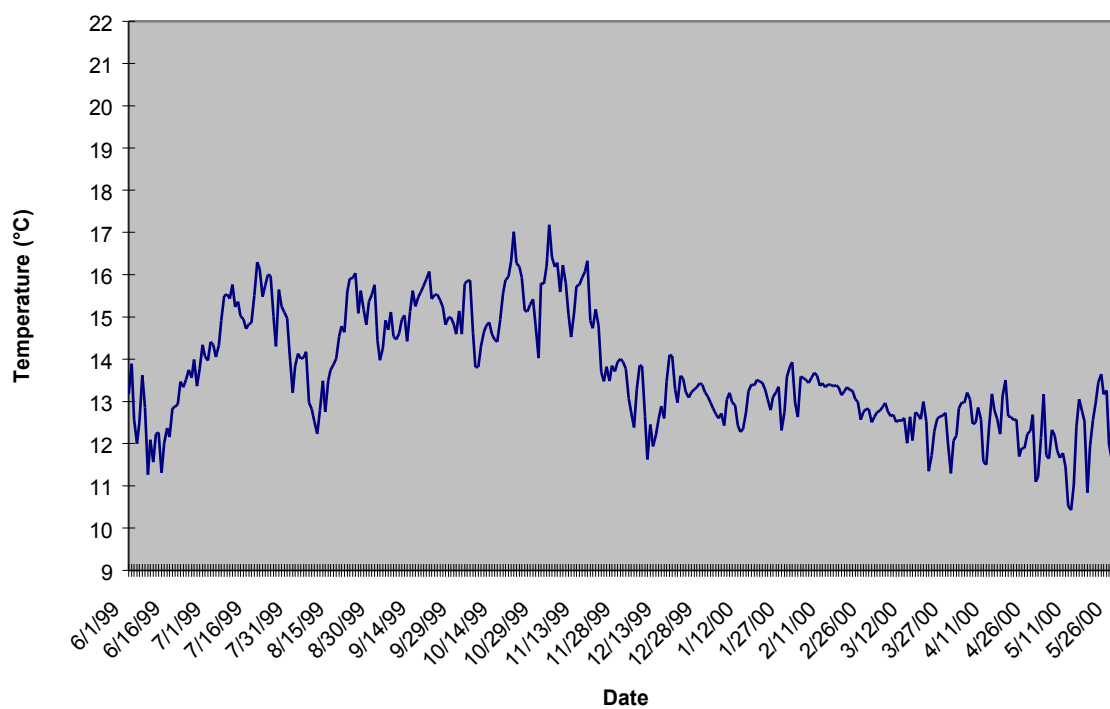
**HARE ROCK, SAN MIGUEL ISLAND**

Depth = 5 meters

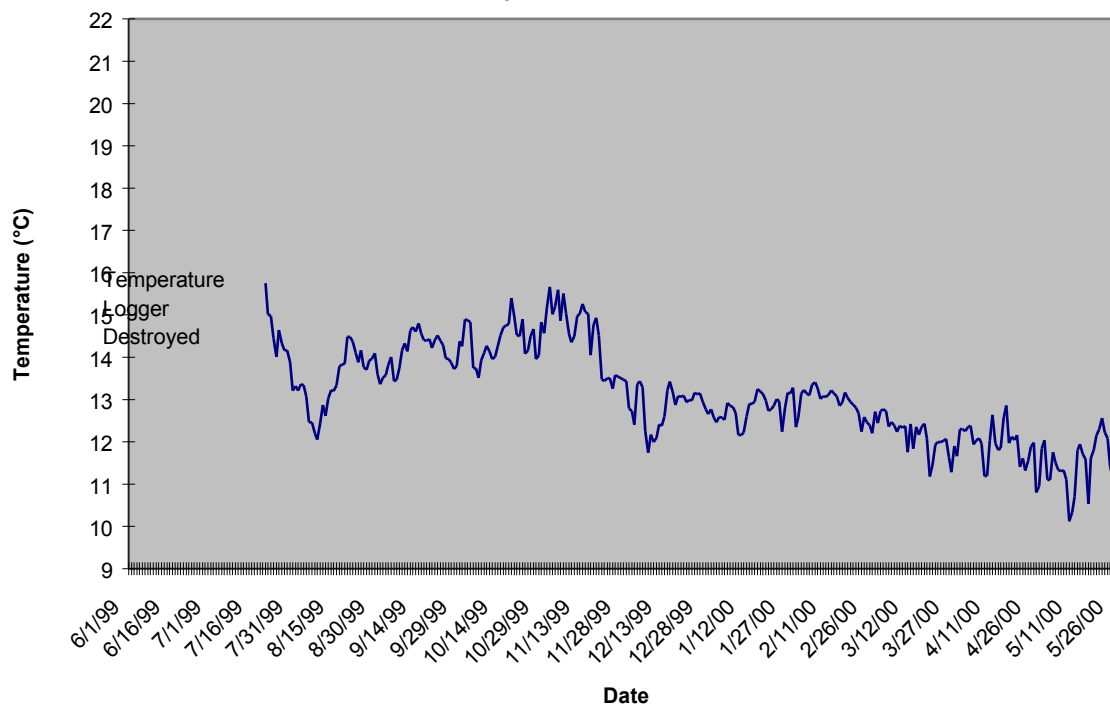


**JOHNSON'S LEE NORTH, SANTA ROSA ISLAND**

Depth = 11 meters

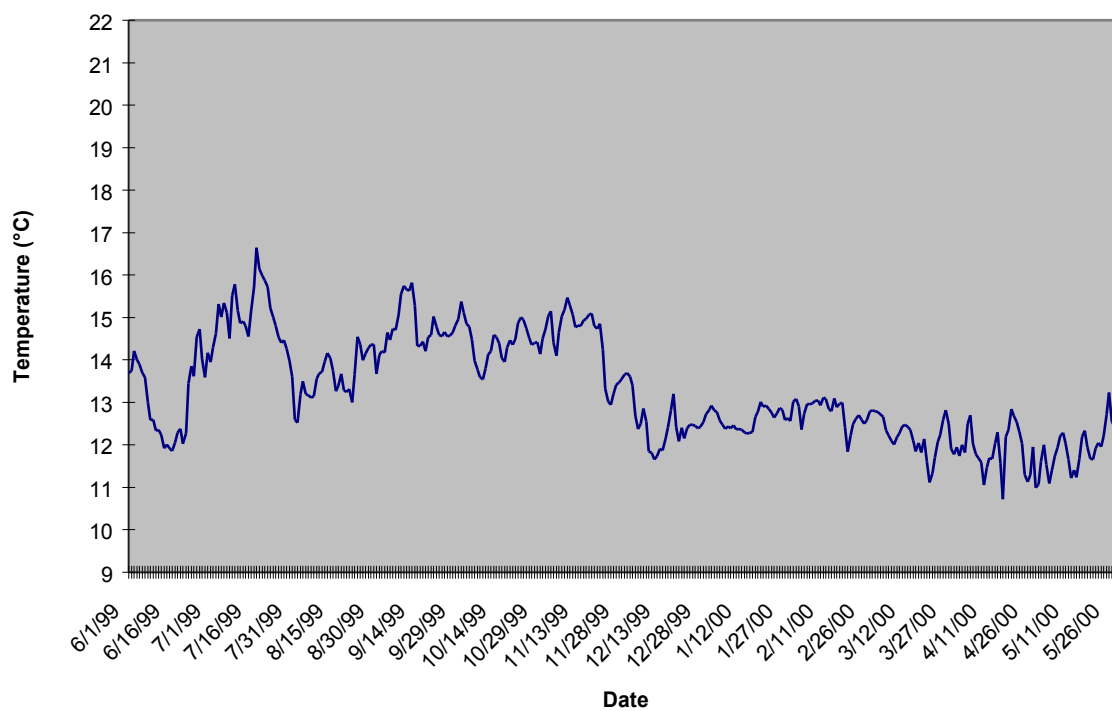
**JOHNSON'S LEE SOUTH, SANTA ROSA ISLAND**

Depth = 16 meters

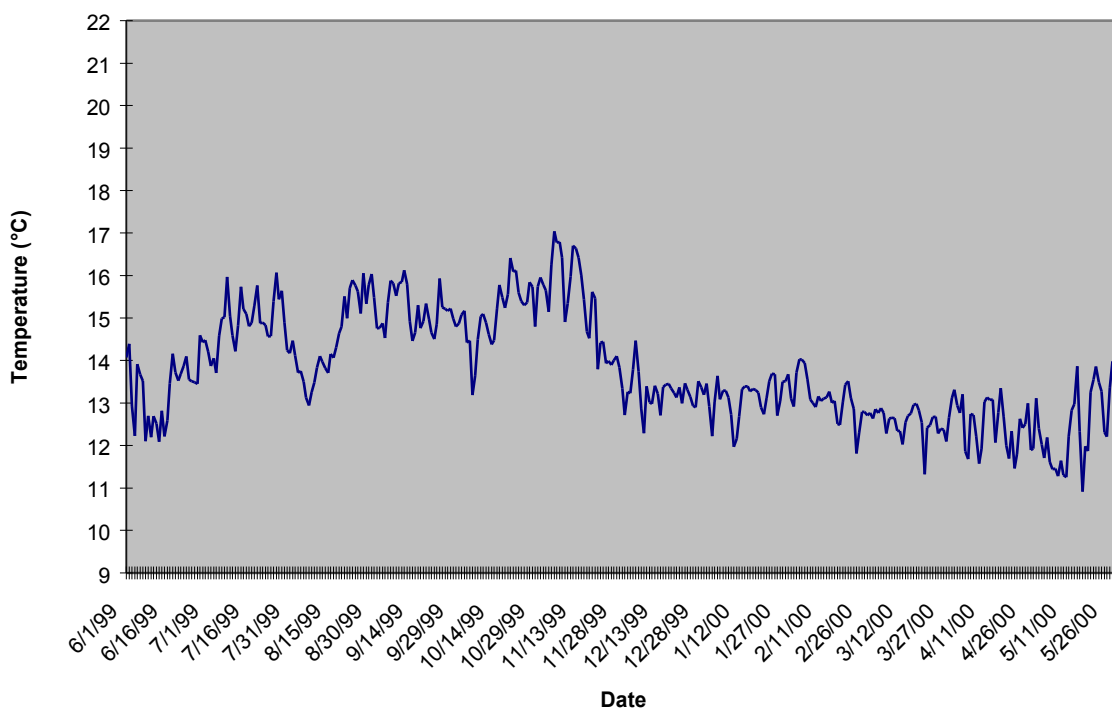


**RODES REEF, SANTA ROSA ISLAND**

Depth = 13 meters

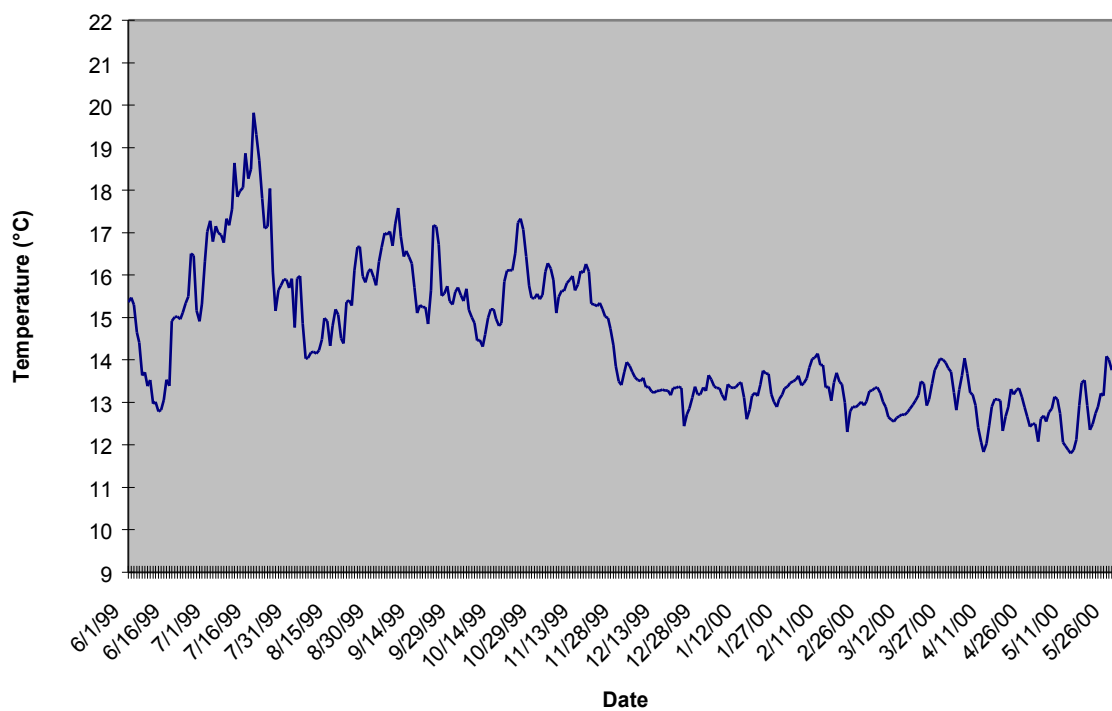
**GULL ISLAND, SANTA CRUZ ISLAND**

Depth = 15 meters

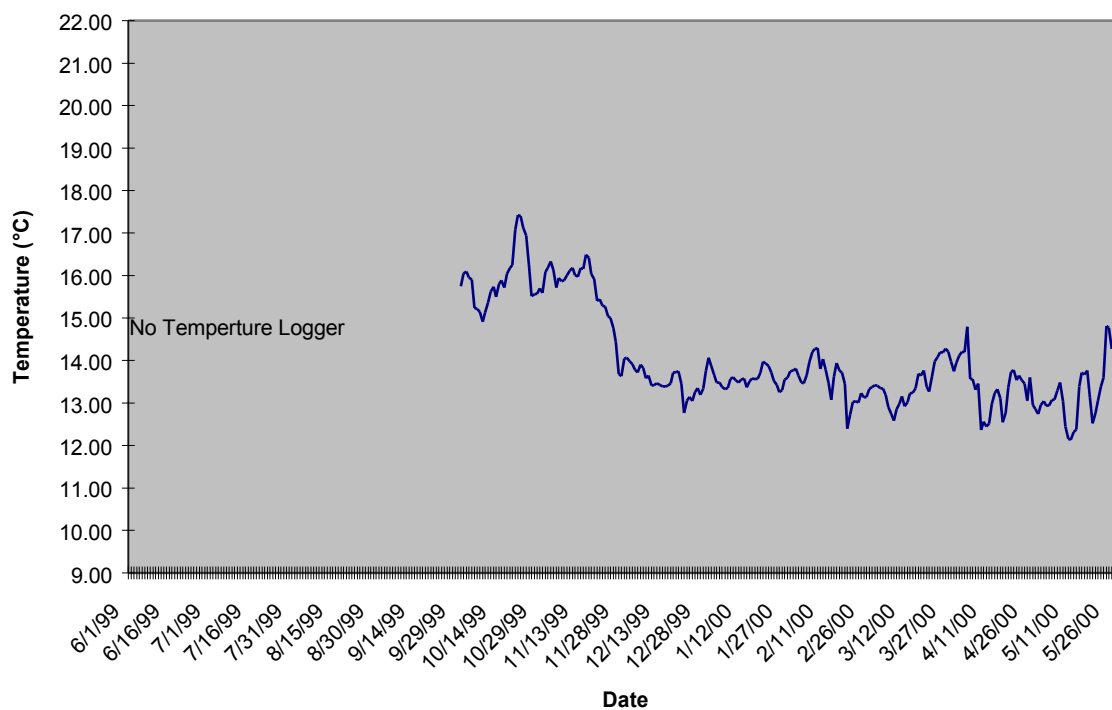


**FRY'S HARBOR, SANTA CRUZ ISLAND**

Depth = 13 meters

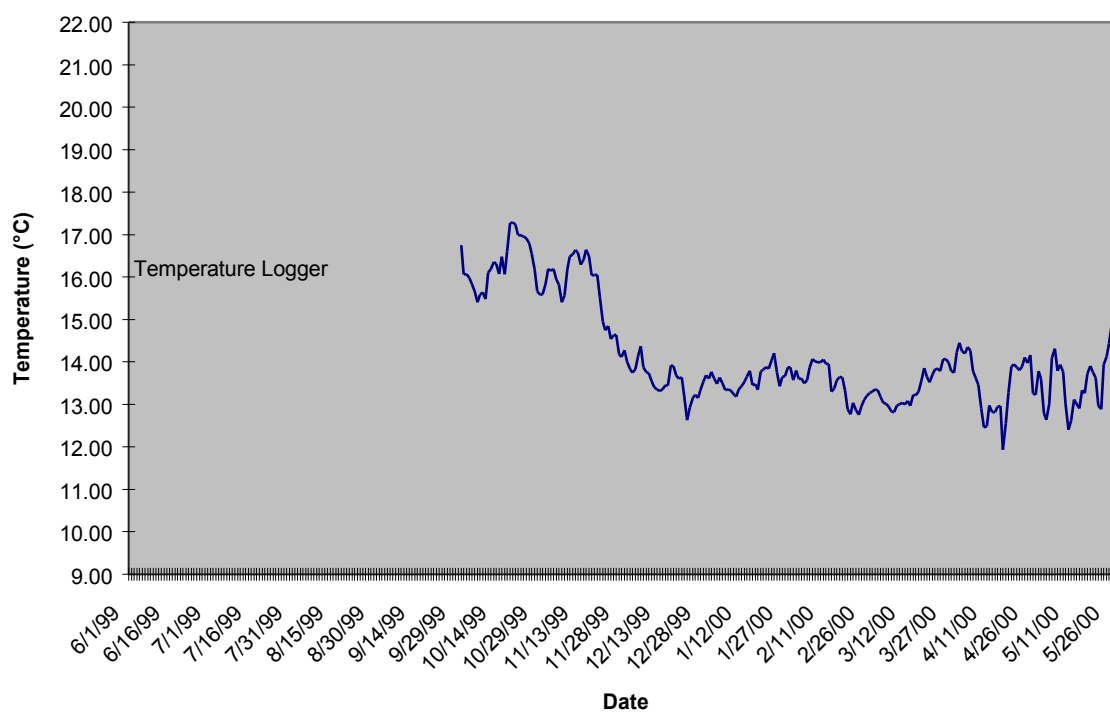
**PELICAN BAY, SANTA CRUZ ISLAND**

Depth = 8 meters

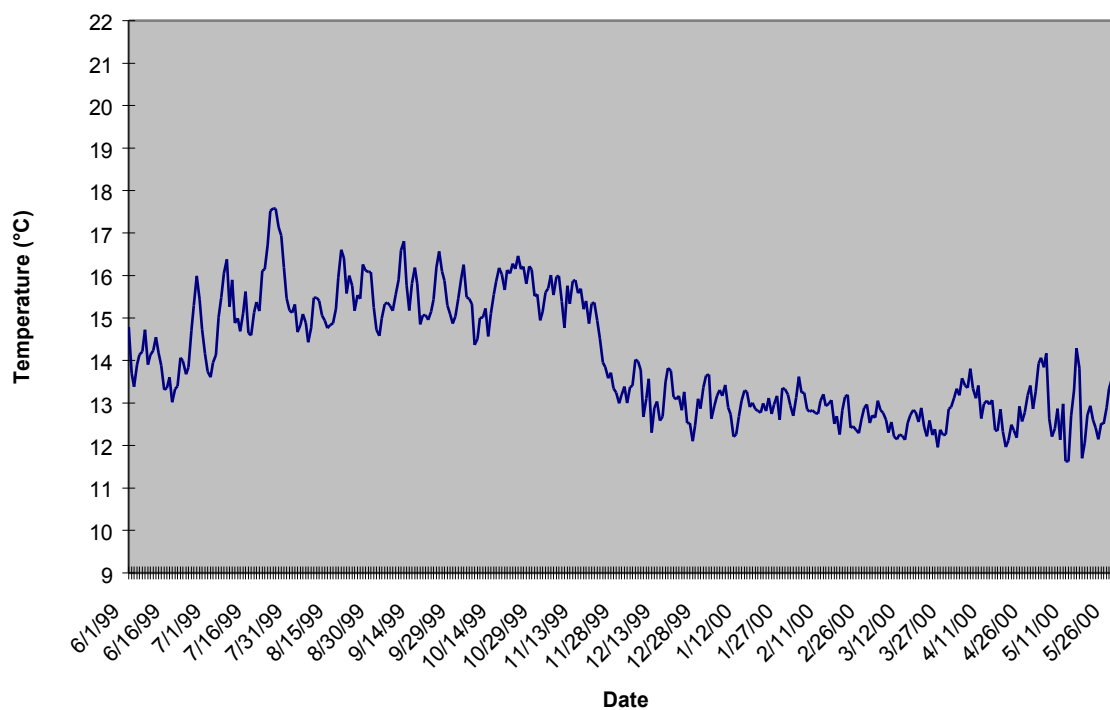


**SCORPION'S ANCHORAGE, SANTA CRUZ ISLAND**

Depth = 5 meters

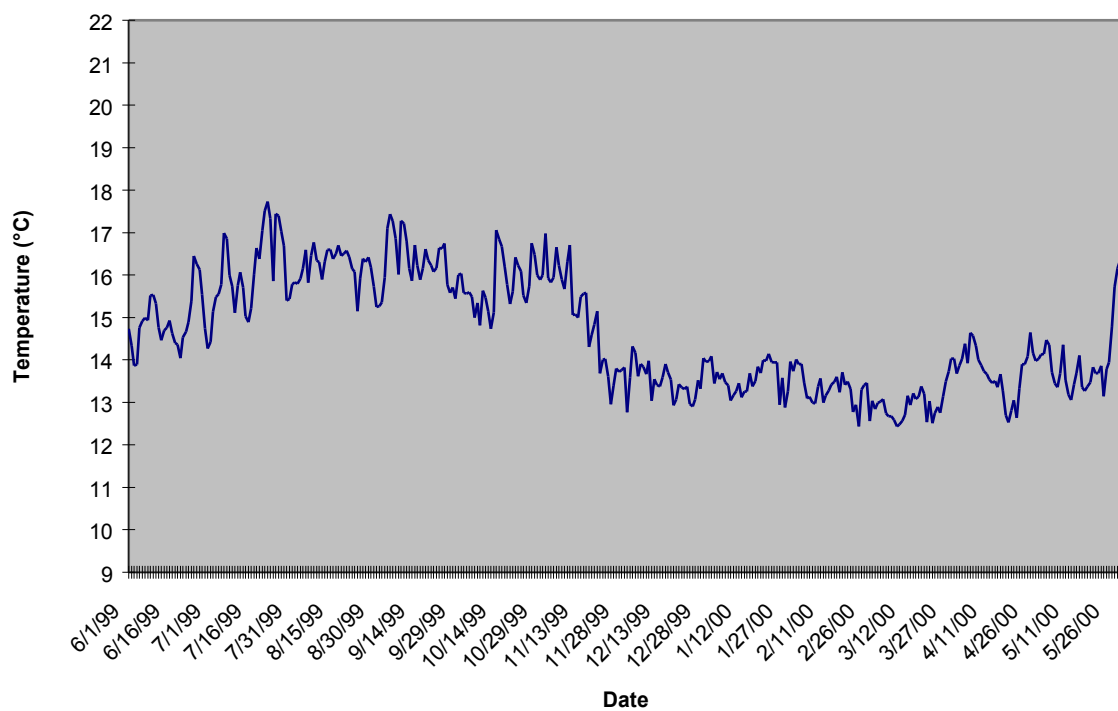
**YELLOW BANKS, SANTA CRUZ ISLAND**

Depth = 15 meters



**ADMIRAL'S REEF, ANACAPA ISLAND**

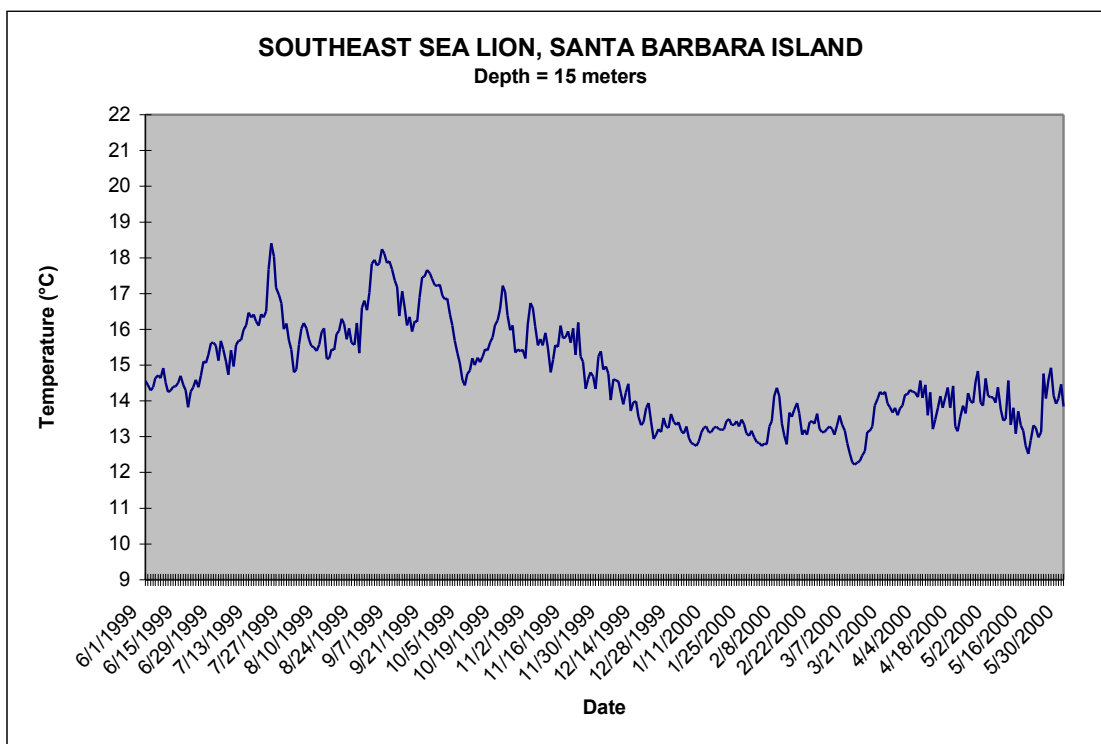
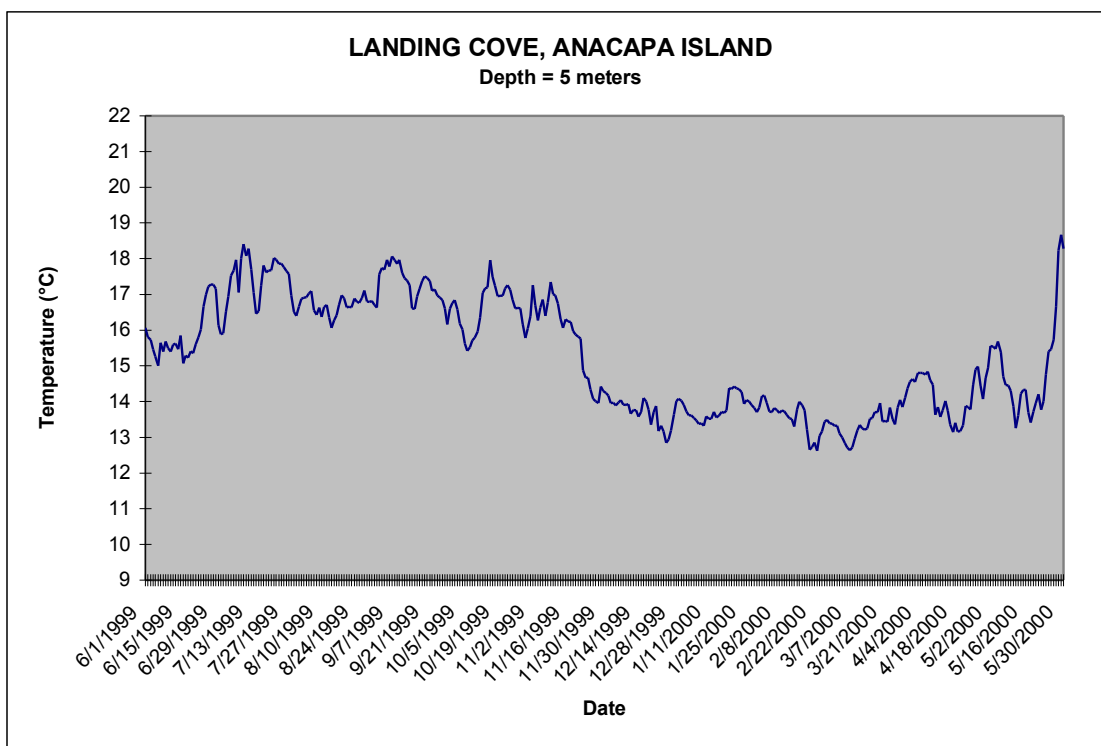
Depth = 16 meters

**CATHEDRAL COVE, ANACAPA ISLAND**

Depth = 6 meters

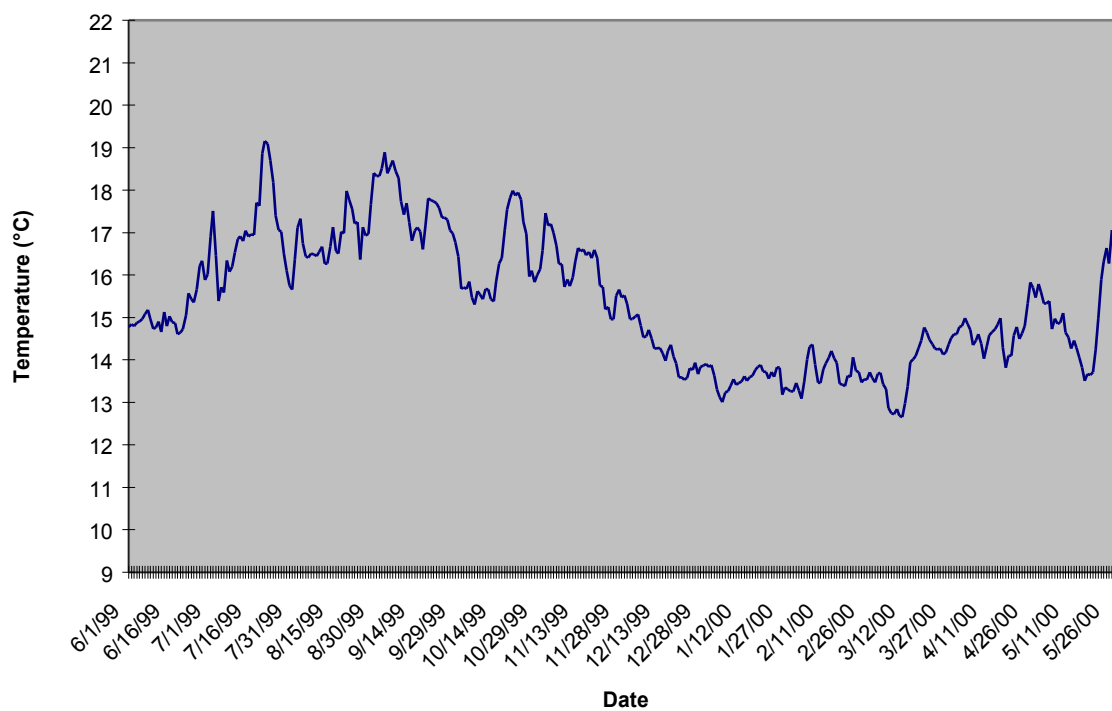






**ARCH POINT, SANTA BARBARA ISLAND**

Depth = 8 meters

**CAT CANYON, SANTA BARBARA ISLAND**

Depth = 8 meters

