KELP FOREST MONITORING ANNUAL REPORT 2001

CHANNEL ISLANDS NATIONAL PARK

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2001 ANNUAL REPORT

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ABSTRACT

Observations and results of the 2001 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, $5m^2$-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 2001, four sites had *Macrocystis pyrifera* (giant kelp) forests, and 12 sites were dominated by echinoderms. Of these 12 sites dominated by echinoderms, two were dominated by *Strongylocentrotus purpuratus* (purple sea urchins), one by *Strongylocentrotus franciscanus* (red sea urchins), five by both *S. purpuratus* and *S. franciscanus*, one by *S. purpuratus* and *Lytechinus anamesus* (white sea urchins), one by *S. purpuratus*, *S. franciscanus* and *Ophiothrix spiculata* (brittle stars), one by *S. purpuratus* and *O. spiculata*, and one by *Pachythyone rubra* (aggregated red sea cucumbers), *S. purpuratus*, *S. franciscanus*, *O. spiculata* 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 2001, sites were monitored during seven five-day cruises between June and September. The 2001 kelp forest monitoring was completed at all 16 monitoring sites by 29 National Park Service (NPS) and volunteer divers completing a total of 638 dives with over 515 hours of bottom time. This annual report contains a summary of the methods used to conduct the monitoring in 2001 and a brief description of the sites along with the results. All of the data collected during 2001 can be found summarized in the Appendices. In this report general trends are described within the site results and discussion sections, but a complete analysis of trends of each of the indicator species are beyond the scope of this report.

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

In 2001, *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 North 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 were dominated by *Strongylocentrotus purpuratus*. Rodes Reef at Santa Rosa Island was dominated by *Strongylocentrotus franciscanus*. Hare Rock at San Miguel Island, Johnson's Lee South 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* (brittle stars). 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*.

2001 marked the reversal of increasing sea urchin densities during the last several years with noticeable decreases at several of the monitoring sites. In 2001 we observed increased algae cover at these sites, and expect to see this trend to continue and expand to other sites this year and next.

All three monitoring sites on Santa Barbara Island continued to be dominated by sea urchins, and these appear to 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 continue to be present in only small areas around Sutil Island and the West Side of the island close to shore in shallow areas. With the exception of *S. purpuratus* at Cat Canyon, densities of *Strongylocentrotus spp.* decreased at all three Santa Barbara Islands sites in 2001. However, densities of *Strongylocentrotus spp*. remained relatively high with respect to other monitored sites and islands. Recruitment of *Strongylocentrotus spp.* was low at all of the Santa Barbara Island sites.

The three Anacapa Island monitoring sites appear to well represent the status of marine resources around this Island. Though the two sites within the ecological reserve continued to have kelp forests, both sites appear to be succumbing to some of the stresses of moderate densities of *Strongylocentrotus spp.* Adult *Macrocystis pyrifera* densities notably decreased and *Strongylocentrotus spp* were observed actively feeding on holdfasts and not confined to crevices as they usually are at these sites. The kelp forests within the reserve decreased this year and the remainder of the island continues to be almost completely devoid of kelp forests. With the exception of the small ecological reserve, most of Anacapa Island is similar to Santa Barbara Island as it is dominated by echinoderms with high densities of *Strongylocentrotus purpuratus* and *Ophiothrix spiculata*. *Ophiothrix spiculata* continues to increase at Admiral's reef and diversity and recruitment of monitored invertebrates and fish remains relatively low for this site.

All five sites on Santa Cruz Island continued to be dominated by echinoderms with *Strongylocentrotus purpuratus* the most dominant. There was some increase in algae cover observed at both sites on the south side of the Island along with decreases in *Strongylocentrotus spp.* densities. Young 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 appears to be well represented by the monitoring sites.

Kelp forests continue to be relatively abundant around Santa Rosa and San Miguel Islands. However, there have been some dramatic changes at the sites that have occurred in the past year. Sea urchin densities varied in trend and magnitude at all five monitoring sites at these two Islands with no clear pattern observed. Densities of *Strongylocentrotus purpuratus* were high enough this year at Johnson's Lee South to almost completely exclude kelp, and were greatly reduced just inshore at Johnson's Lee North from apparent *Pycnopodia helianthoides* predation. Both Johnson's Lee sites have been lush kelp forests for most of the past decade. Overall, a trend of increased macroalgae was observed in the latter part of the sampling year.

The most distinct pattern at the 16 monitoring sites this year was a dramatic decrease or stabilization of *Strongylocentrotus purpuratus* densities and a corresponding increase in algae cover. *Strongylocentrotus purpuratus* densities decreased at 11 of the 16 sites this year compared to increases at all 16 sites in 2000. Northern/western Island monitoring sites sustained the most rapid change from urchin dominated area to kelp forests and these sites appear to retain a diversity of invertebrates and fish more effectively than long lasting urchin dominated sites in the southern islands. *Strongylocentrotus franciscanus* densities increased at five sites decreased at eight and changed little or remained the same at three sites. Sea urchin recruitment was noticeably lower than in 2000.

Similar to last year, sea urchin wasting disease (Lafferty and Kushner, 1999, and Richards and Kushner, 1992) was observed at 11 of the sites in 2001. Sea star wasting disease was observed at only Admiral's Reef, Anacapa Island in 2001.

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. (1998), Kushner et al. (2000), Kushner et al. (2001)and Kushner et al. (2001) describe the 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999 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 2001, our 20th 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 general trends, and tried to provide a characterization for each site. However, it is beyond the scope of this report to provide an in depth analysis of trends for each of the indicator species. 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 11th and September 21st 2001.

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, 1997.

STOWAWAY™ 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™ temperature loggers were also deployed at each site as a backup in case of STOWAWAY™ failure. The HOBOTEMP™ loggers were programmed to record temperature every 4.8 hours, and the STOWAWAY™ loggers programmed to record temperature every hour. New O-rings were installed in each underwater housing in 2001. We began installing Tidbit temperature logger this year to replace aging temperature loggers. These were installed at all sites All STOWAWAY™ and HOBOTEMP™ 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. We did not receive these loggers until mid summer so they were not installed at all stations this year. Tidbits and STOWAWAY™ (backup loggers) were installed at all San Miguel and Santa Rosa sites, all sites on Santa Cruz Island except Yellowbanks, and at Cathedral Cove at Anacapa Island. The remaining sites have STOWAWAY™ loggers and HOBOTEMP™ loggers as backups.

When both the STOWAWAY™ and HOBOTEMP™ 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™ loggers was used whenever possible, since 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.

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 two times at each site at least two weeks apart. During our first visit we attempt to conduct all of the abundance estimate techniques (quadrats, $5m^2$-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 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 Station Results section below.

STATION RESULTS

Sampling was completed at all 16 monitoring sites and a summary of the 2001 status of each site is presented in Table 4. Twenty-nine divers (Table 5) collected data on seven five-day cruises between June and September. A total of 638 dives with 515 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 $5m^2$-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 $5m^2$-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 TidBit™ and STOWAWAY™ temperature loggers. Temperature data are collected from the loggers during the sampling season June – September. To expedite report writing we will present 12 months of temperature data from June 1, 2000 to May 31, 2001 (Appendix L). Temperature data was collected from all 16 sites. However, there was one month of missing data from Arch Point, Santa Barbara Island due to logger failure. For explanations of the missing data, please see the site results below or Appendix L.

Location: Wyckoff Ledge, San Miguel Island

2001 sampling dates: 7/17, 9/18.
2001 status: Kelp forest.

Overall, this site appeared similar to previous years. However, there was noticeably more mature *Macrocystis pyrifera* plants, and surface canopy cover over the transect was estimated at 25% on July 17th, an increase from last year. Overall, the *M. pyrifera* plants appeared healthy. Adult, subadult, and juvenile *M. pyrifera* densities were $0.08/m^2$, $0.12/m^2$, and $0.25/m^2$ respectively and coverage was recorded

at 8.8%. The latter was the lowest coverage recorded since 1985. *Cystoseira spp.* was less abundant than last year with coverage of 1.0%. Adult and juvenile *Pterygophora californica* densities declined considerably since last year. Their densities were 0.38/m^2 and 0.25/m^2 respectively and coverage also declined to 8.7%. Several juvenile *Eisenia arborea* plants were observed and adults were rare. No *E. arborea* were observed on quadrats this year, and their coverage was recorded at 0.33%. No adult or juvenile *Laminaria farlowii* were observed. *Desmarestia sp*. coverage was lower than last year and recorded at 29.7%, though it was the most abundant brown algae covering almost the entire East half of the transect. Miscellaneous brown algae covered 2.7% of the bottom. Understory red algae cover was 62.5%, similar to previous years. *Gigartina sp*. cover was 1.3%, a noticeable decrease from last year. Articulated and encrusting coralline algae both decreased and were recorded at 6.7% and 30.2% respectively. Bare substrate covered 26.0% of the bottom, an increase from last year.

The most common miscellaneous invertebrates on random point contacts (RPCs) were hydroids. This category covered 10.8% of the bottom. *Diopatra ornata* were abundant with a cover of 14.3%, similar to last year. *Phragmatopoma californica* cover continued to decrease and was recorded at 0.83%. Miscellaneous bryozoans covered 3.67%, similar to last year. Tunicates and sponges covered 0.83% and 0.5% of the bottom respectively. *Styela montereyensis* density was 0.38/m^2. *Tethya aurantia* were abundant with a density of 0.11/m^2, similar to last year. *Urticina lofotensis* were abundant on the tops and sides of rocks, with a density of 0.27/m^2, similar to previous years.

Asterina (Patiria) miniata density was 2.04/m^2. 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 in quadrats. Their densities on quadrats and 5-meter quadrats were 0.0/m^2 and 0.07/m^2 respectively. Both small and large *Pycnopodia helianthoides* were common, and their density remained high at 0.028/m^2, the highest recorded since 1991, but similar to last year. *Parastichopus parvimensis* were common with a density of 0.13/m^2. Several *P. californica* were observed.

Strongylocentrotus franciscanus density continued to increase and was 5.42/m^2, the highest density recorded at this site since monitoring began in 1982. *Strongylocentrotus purpuratus* density remained relatively high for this site at 5.04/m^2, a small decrease from last year. Different from previous years, but similar to last year, both *S. franciscanus* and *S. purpuratus* were observed out in the open and not confined to crevices. Also similar to last year, there were high-density patches of *Strongylocentrotus spp.* Similar to what we have observed in past years, *S. franciscanus* were often abundant near *Haliotis rufescens*. It appears that the two species may be competing for space and food. One *Lytechinus anamesus* was observed on band transects, with a density of 0.0014/m^2. Similar to last year, there were several extremely light-colored *S. purpuratus* present along the transect that could have been confused with *L. anamesus* if they were not carefully looked at. No sea urchin or sea star wasting disease was observed.

Kelletia kelletii were abundant, and both small and large individuals were present as usual for this site. They were counted on both band transects and quadrats, with densities of 0.21/m^2 and 0.15/m^2 respectively, similar to previous years. *Kelletia kelletii* eggs were observed, but were not particularly abundant as we have observed in past years. *Lithopoma gibberosum* density was 0.50/m^2, an increase from last year and the highest density recorded at this site. Many small *L. gibberosum* were observed in 2000 and the increase in density this year may be a result of that recruitment event. However, they are not distributed evenly over the site and it may be a sampling artifact. *Haliotis rufescens* were patchy and out in the open, on tops of rocks and in crevices. Their density was 0.051/m^2, the highest density recorded since monitoring began for *H. rufescens* at this site in 1983. Juvenile *H. rufescens* were rare. *H. rufescens* shells were uncommon. Rock crabs (*Cancer antenarius* and *C. productus*) appeared more abundant than the last several years. This is the first time in many years that we did not observe crab traps in this area. The kelp crab, *Pugettia richii*, were common. Mysids were common on the bottom, but were less abundant than last year. Gumboot chitons, *Cryptochiton stelleri*, were noticeably more common than in previous years with at least four observed along the transect.

As usual, fish were more abundant on the western end of the transect, and there appeared to be a higher abundance and diversity than last year. Juvenile *Sebastes spp*. were more common than last year.

Although only one large *Sebastes miniatus* was observed during the roving diver fish count on July 17th, several others were observed along the transect, more than last year. No juvenile *S. miniatus* were observed this year. Juvenile *S. mystinus* were common, and large and small adults were common along the western end of the transect. Several juvenile *S. serranoides/flavidus* were observed, but no adults were observed. Gopher rockfish, *Sebastes carnatus*, were common, and several copper rockfish, *S. caurinus*, and black and yellow rockfish, *S. chrysomelas*, were observed. A large school of juvenile rockfish that we believe were half banded, *S. semicinctus*, was observed. Several adult, but no juvenile, *Embiotoca lateralis* were observed. Several adult E*. jacksoni* were observed and juveniles were common. Juvenile *Damalichthys vacca* were common and several adults were observed. Several female *Semicossyphus pulcher* were observed during the roving diver fish counts. One male *S. pulcher* was observed on 17th and two on September 18th, one of which was very large. Adult *Oxyjulis californica* were common, and no juveniles were observed. Painted greenlings, *Oxylebius pictus*, were common. *Coryphopterus nicholsii* were relatively common for this site with a density of 0.25/m^2, the highest recorded for this site since monitoring began. A diver, who knows the fish well and was sure of their identification, observed one female *Halichoeres semicinctus*. This is an unusual sighting for this site. Adult tubesnouts, *Aulorhynchus flavidus*, were abundant as usual for this site. Roving diver fish count was conducted on July 17th with five divers observing 27 species of fish, and on September 18th with five divers observing 24 species of fish.

The temperature loggers were retrieved and deployed and data were successfully downloaded. However, the StowAway temperature logger was reading about 0.7 C higher than the Hobotemp logger was. After comparing data from several units we decided to use the StowAway logger data as it appeared to be the most accurate.

The temperature loggers were working properly and all temperature data was successfully downloaded.

Location: Hare Rock, San Miguel Island

2001 sampling dates: 7/18, 9/19.
2001 status: Dominated by *Strongylocentrotus franciscanus* and *S. purpuratus*.

Though this site continues to be dominated by *Strongylocentrotus franciscanus* and *S. purpuratus*, it has changed considerably since last year. The most noticeable changes were a decrease in *Strongylocentrotus purpuratus* density, an increase in *Pycnopodia helianthoides* and an increase in algae coverage.

Except for patches of *Desmarestia sp*. on the tops of many of the large rock outcrops, this site continues to be devoid of large macro brown algae. *Desmarestia sp*. covered 4.5% of the bottom, the highest coverage recorded since 1990. No algae were observed on quadrats. Green algae covered 1.17% of the bottom, the highest coverage since 1993. This category consisted entirely of *Ulva sp*. Miscellaneous red algae, consisting mostly of *Laurencia pacifica* and filamentous red algae, covered 16.7% of the bottom, the highest coverage since 1990. There were several *Gigartina corymbifera* on the tops of large rocks, but none were counted on RPCs. Encrusting coralline algae covered 52.5% of the bottom, similar to previous years. Miscellaneous plants, consisting entirely of filamentous diatoms, covered 8.0% of the bottom, similar to the last two years. Bare substrate covered 15.0% of the bottom, a decrease from last year.

Similar to previous years, the most common miscellaneous invertebrates on RPCs were the worms, *Dodecaceria fewkesi*, and terebellid. This category covered 11.8% of the bottom, a decline since 1999. Similar to past years, terebellid worms were mostly present areas with cobble along the transect. *Corynactis californica* cover increased to 23.8%, the highest coverage since monitoring began at this site in 1982. This increase is similar to what we have observed at other sites this year. *Balanophyllia elegans* and *Astrangia lajollaensis* covered 1.17% and 2.17% of the bottom respectively, similar to last year. *Tethya aurantia* density was 0.019/m^2. The worm, *Salmacina tribranchiata* and *Diaperoecia californica* were common on the steep walls of large rock outcrops.

Strongylocentrotus purpuratus were noticeably less abundant than last year. Their density was 10.1/m^2, a decline from 30.3/m^2 in 2000. We presume this decline is mainly the result of predation by *Pycnopodia helianthoides*. Similar to last year, many of the *S. purpuratus* were completely covered with the red alga, *Laurencia pacifica*. *Strongylocentrotus franciscanus* density remained similar to last year at 13.2/m^2. All of the *Strongylocentrotus spp*. were out in the open and not confined to crevices, typical for this site and other sea urchin dominated areas. Juvenile *Strongylocentrotus spp*. were rare, similar to other sites this year. Whole *S. purpuratus* tests were common and were probably a result of predation from *P. helianthoides*. No sea urchin wasting disease was observed at this site.

Similar to last year *Ophiothrix spiculata* were present, but rare. *Asterina miniata* continued to increase in density for the third consecutive year and was recorded at 1.71/m^2. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats with densities of 0.92/m^2 and 0.54/m^2 respectively. *Pycnopodia helianthoides* were abundant with a density of 0.126/m^2, the highest density recorded since monitoring for this species began at this site in 1983. It appears from the decline in *S. purpuratus* density and the presence of their whole tests on the bottom, that *P. helianthoides* prefers to predate on *S. purpuratus* instead of *S. franciscanus*. This has been observed at other sites as well. *Parastichopus parvimensis* were uncommon (0.083/m^2) and very large, similar to previous years. No sea star wasting disease was observed.

Small fresh *Haliotis rufescens* shells were less abundant than last year, indicating either lower recruitment or lower mortality. No effort turning over rocks to look for live juveniles was made this year. One small *H. rufescens* was observed within the transect area. Unfortunately, we did not measure shells that were collected on July 18th, but several shells with the approximate size of 15-35mm were found. No *H. rufescens* were observed on band transects. *Kelletia kelletii* were present in low numbers (density 0.019/m^2), continuing a gradual increase over the past five consecutive years. *Crassedoma giganteus* were relatively uncommon with a density of 0.0069/m^2. *Aplysia californica* density continued to decline for the third consecutive year. None were observed on band transects this year. *Cypraea spadicea* density was higher than last year, but similar to previous years at 0.63/m^2. The *C. spadicea* were noticeably out in the open and congregated at the base of the *Desmarestia sp*. plants. We observed this behavior at several other sites this year.

Similar to last year, the nudibranch, *Navanax inermis*, was rare, with only a few observed. The nudibranch, *Hermissenda crassicornis*, was common. Only a few eggs of the bubble snail, *Haminoea vesicula*, were observed. Both of these species were noticeably less abundant than last year. There was also noticeably fewer barnacles than last year, and old barnacle shells were common on the bottom.

Fish were not as abundant as last year, but remained diverse. Several adult and about 15 juvenile *Sebastes mystinus* were observed. Young of year (juvenile) copper/gopher rockfish, *S. caurinus/carnatus*, were common around the *Desmarestia sp*. plants. Several adult *S. caurinus* and *S. carnatus* were observed. No adult *S. serranoides*, but two juveniles were observed. Adult *S. atrovirens* were common, but no juveniles were observed. Adult *S. chrysomelas* were common. One adult *S. serriceps* was observed, but no juveniles. Several adult and juvenile *Embiotoca jacksoni* and *Damalichthys vacca* were observed. Adult and juvenile *E. lateralis* were common. Adult *Chromis punctipinnis* were relatively rare. A school of about 150 adult *Oxyjulis californica* was observed on July 18th. One male and several female *Semicossyphus pulcher* were observed. Small ronquils, we believe are northern ronquils (*Ronquilus jordani*), were common at the western end of the transect. Several cabezon, *Scorpaenichthys marmoratus*, were observed. *Coryphopterus nicholsii* were common with a density of 0.33/m^2. Roving diver fish counts were conducted on July 18th with seven divers observing 25 species of fish and on September 19th with six divers observing 24 species of fish.

The temperature loggers were working properly and all temperature data was successfully downloaded.

Location: Range Poles at Wyckoff Ledge, San Miguel Island

2001 sampling dates: 7/17/01
2001 status: Kelp forest

A brief survey dive was conducted directly off the range poles, several hundred meters away from the Wyckoff Ledge monitoring site. The purpose of this dive was to look for an area with a large aggregation of *Haliotis rufescens* that Jim Marshall, a commercial fisherman, had told us about. We dropped in an area that had low lying rocks and a thick understory of algae. In this area we were only able to find an occasional abalone. Swimming inshore, to a depth of about 7 meters, we came across a high relief area with lots of crevices. This area had an abundance of *H. rufescens* of all sizes similar to what Jim had described. The large number of both juveniles and adults was impressive. Limited time was available and we only looked around for about 15 minutes.

Location: Miracle Mile, San Miguel Island

2001 sampling dates: 9/20
2001 status: Mature kelp forest.
Lat: 34 01.43
Lon: 120 23.62
Transect Direction: East-West.

This new site that was established in 2001 by Jim Marshall (a commercial abalone and sea urchin diver) with the help of David Kushner and was funded by the County of Santa Barbara. The site was established to acquire base line data at an area that contains a high density of *Haliotis rufescens*. This site was not selected randomly, but instead was selected for its high density of *H. rufescens*. Originally, Jim had planned to install at least three 100 meter long transects each with a set of ARMs, however he only received enough funding for one. David Kushner helped Jim locate and begin setting up the site. Jim later completed the site and installed seven ARMs using bolts to attach them to rock. As of September 20th, the transect was in excellent condition, but was missing lead line on the last 30 meters of the transect (this was never installed due to a shortage of lead line). This 30 meters of lead line was later installed. The ARMs that Jim Marshall installed look good and are well attached. The ARMs were installed on August 10th and 23rd, 2001.

We were originally planning to conduct Quadrats, 5-meter quadrats, Band transects and size frequencies for *Haliotis rufescens*. However, due to problems with the Pacific Ranger we needed to return to Ventura and could not finish all of the monitoring we had hoped. Band transects were conducted by David Kushner and Derek Lerma and all were completed. The 5-meter quadrats were completed, but only six of the Quadrats were completed. The quadrat data below is based on the six quadrats.

The transect is laid on top of a reef and ranges in depth from about 5-12 meters. On either side of the line there are several small patches of sand, but large boulders or bedrock composes most of the reef. Though *Macrocystis pyrifera* was common around the reef, there was little directly along the transect line this year. Adult, subadult and juvenile *M. pyrifera* densities were 0.0/m^2, 0.095/m^2, and 0.91/m^2 respectively. Adult and juvenile *Eisenia arborea* were common with densities of 0.67/m^2 and 0.67/m^2 respectively. No adult *Pterygophora californica* was present on quadrats, but plants were present within the transect area. One *P. californica* was observed on quadrats, 0.083/m^2. There was a moderate amount of other understory algae, but RPCs were not conducted this year. *Desmarestia sp*. was common.

Styela montereyensis density was 0.17/m^2. *Tethya aurantia* were common at 0.13/m^2. *Telia lofotensis* were moderately abundant with a density of 0.17/m^2.

Pycnopodia helianthoides were common with a density of 0.054/m^2. *Asterina miniata* were common with a density of 1.33/m^2. *Pisaster giganteus* were counted on both quadrats and 5-m quadrats with densities of 1.08/m^2 and 0.35/m^2 respectively. *Strongylocentrotus franciscanus* were moderately abundant at 8.67/m2 and *S. purpuratus* density was similar at 8.17/m^2. No sea urchin or sea star wasting disease was observed.

Lithopoma undosum and *L. gibberosum* were uncommon with densities of 0.25/m^2 and 0.25/m^2 respectively. *Megathura crenulata* were common at 0.089/m^2. Several *Crassedoma giganteum* were observed and they had a density of 0.0083/m^2.

The density of *Haliotis rufescens* along the transect was 0.994/m^2. The population consisted of large adults, smaller adults and juvenile abalone. Several fresh adult and juvenile *H. rufescens* shells were found, but they were not unusually abundant for a population of this size. Several juvenile *H. rufescens* were observed underneath one large boulder that was turned over by the anchor.

Jim Marshall wrote a final report ("Installation of a monitoring transect and artificial recruitment modules, and collection of data for red abalone (*Haliotis rufescens*) at Tyler bight, San Miguel Island") to the Santa Barbara County Energy Division Fishery Enhancement Fund:
http://www.cisanctuary.org/cmrp/pdf/marshall2.pdf

Location: Johnson's Lee North, Santa Rosa Island

2001 sampling dates: 7/31, 8/1, 8/29.
2001 status: Developing kelp forest.

There were some notably large changes at this site since last summer. Sooner than expected, *Pycnopodia helianthoides* density greatly increased and they appear to have consumed most of the *Strongylocentrotus purpuratus*. This drastic decline in *S. purpuratus* is rapidly allowing macroalgae to return to this site.

During our first visit on July 31st, no *Macrocystis pyrifera* canopy cover was observed over the transect. However, about a month later on August 29th, there had been *considerable M. pyrifera* growth and many of the plants were near or at the surface forming a thin canopy. The northern half of the transect had relatively dense populations of *M. pyrifera*, *Eisenia arborea*, and *Pterygophora californica*. In contrast, the southern 45 meters had an abundance of miscellaneous brown and red algae, but very little other large macroalgae. In 2000, there was virtually no macroalgae along the transect.

Macrocystis pyrifera adult, subadult, and juvenile densities were 0.01/m^2, 1.63/m^2, and 5.63/m^2 respectively, and coverage of *M. pyrifera* was 54.8%. Almost all of the *M. pyrifera* was along the Northern/first 55 meters of the transect. *Macrocystis pyrifera* was so dense along this part of the transect it was difficult to swim. Adult and juvenile *Eisenia arborea* densities increased and were recorded at 0.042/m^2 and 0.25/m^2 respectively, but none were observed on RPCs (0.0%). Adult and juvenile *Pterygophora californica* densities also increased and were recorded at 0.33/m^2 and 0.92/m^2 respectively, and covered of 5.67% of the bottom. Juvenile and adult *Laminaria farlowii* were present, at relatively low densities of 0.0/m^2 and 0.13/m^2 respectively. Small *Cystoseira sp*. were common, but none were present on RPCs. *Desmarestia sp.* was common along the northern half of the transect, covering 6.5% of the bottom, its highest coverage since 1991. Green algae, consisting entirely of *Ulva sp*., was common over the entire transect, covering 16.5% of the bottom. This is the highest coverage of green algae since monitoring began for this category in 1985. Miscellaneous brown algae was abundant over the entire transect, covering 29.5% of the bottom, and consisted mostly of the alga we believe is, *Taonia lennebackeriae*. However, this identification has not been confirmed. This is the highest coverage recorded for this category since 1983. *Gigartina sp*. covered 1.17% of the bottom. Miscellaneous red algae coverage was 36.8%. This was an increase from the past two years, but similar to previous years. Miscellaneous plants, consisting entirely of filamentous brown diatoms, covered 40.7% of the bottom, the highest coverage recorded since we began counting this category in 1985. The filamentous diatoms were noticeably more abundant along the southern half of the transect. Articulated coralline algae coverage remained relatively low at 2.67%. Encrusting coralline algae covered 43.3% of the bottom. This was the highest coverage recorded at this site, but only a small increase from last year. Bare substrate significantly decreased from last year and was recorded at 0.5%, the lowest coverage recorded at this site since we began monitoring this category in 1985.

Miscellaneous invertebrates were noticeably less abundant than usual for this site. The most common in this category on RPCs were barnacles and the small anemone *Sagartia/Cactosoma*. This category covered 5.17% of the bottom, a large decrease from last year and the lowest coverage recorded for this site. Tunicates and sponges covered 1.0% and 1.5% of the bottom, similar to last year. *Phragmatopoma californica* continued to decline for the third consecutive year with none observed during RPCs (0.0%). This is their lowest coverage recorded for *Phragmatopoma* since 1988. Bryozoans continued to be rare with none observed on RPCs this year, this is the first year of a 0.0% cover since monitoring began at the site. *Tethya aurantia* declined from last year and were recorded at 0.068/m^2. *Tethya aurantia* were very difficult to see with the thick understory algae on more than half of the transect and many were covered with brown diatoms making them difficult to observe. *Styela montereyensis* density was 0.21/m^2 and remained relatively low for this site, but increased from last year. Similar to other sites, *Corynactis californica* continued to increase for the third consecutive year, covering 8.67% of the bottom. This is the highest coverage recorded at this site. *Balanophyllia elegans* and *Astrangia lajollaensis* covered 2.5% and 0.67% of the bottom respectively.

One of the most noticeable changes at this site was the decrease in *Strongylocentrotus purpuratus* density. Their density was recorded at 3.46/m^2, a decline from 82.96/m^2 in 2000. In the low-lying areas around the transect, whole *S. purpuratus* tests were abundant and we presume this mortality is mostly a result of predation by *Pycnopodia helianthoides* which were abundant. We observed several *P. helianthoides* actively predating upon *S. purpuratus*. Several small patches of high-density *S. purpuratus* were present along the southern half of the transect, creating localized areas dominated by sea urchins. *Strongylocentrotus franciscanus* density remained relatively high for this site at 4.08/m^2. This was a small decrease from last year, and it appears from our observations that *P. helianthoides* predate more heavily up on *S. purpuratus* than *S. franciscanus*. We never observed a *P. helianthoides* eating a *S. franciscanus* and whole *S. franciscanus* tests were rare. Similar to what we have observed at other sites this year, juvenile *Strongylocentrotus spp*. were rare. This post El Niño (1997/8 El Niño) increase in *Strongylocentrotus spp*. and subsequent decrease, with an increase in *P. helianthoides*, is identical to what was observed post the 1982/3 El Niño. Last year, all of the *Strongylocentrotus spp*. were out in the open and not confined to crevices, however this has changed this year. Most of the *Strongylocentrotus spp*. were in or near crevices along the northern half of the transect, where macroalgae was abundant, while along the southern half of the transect most of the most *Strongylocentrotus spp* were out in the open. No sea urchin wasting disease was observed.

Pycnopodia helianthoides were relatively abundant, with their highest density recorded at this site, 0.28/m^2. This density was similar to 1990. All sizes of *P. helianthoides* were present. *Asterina miniata* density was 0.083/m^2, similar to the last two years. *Pisaster giganteus* densities continued to increase for the third consecutive year, and were counted on both quadrats and 5-meter quadrats with densities of 0.54/m^2 and 0.66/m^2 respectively. *Parastichopus parvimensis* density was 0.13/m^2.

Cypraea spadicea density decreased from last year but was similar to previous years at 0.42/m^2. *Cypraea spadicea* were noticeably less out in the open than they were in 2000 and this could have had an effect on their density in the quadrats. Several *Lithopoma undosum* were observed, but were rare with none observed on quadrats this year. *Kelletia kelletii* were relatively rare with a density of 0.0014/m^2. *Megathura crenulata* were common on the rocky outcrops with a density of 0.022/m^2. *Haliotis rufescens* were absent from the transect with none found on band transects or size frequencies. This is the third time since monitoring began that *H. rufescens* were recorded at a density of 0.0/m^2. One H. rufescens was found in ARM (see below).

Fish were noticeably more abundant and diverse than last year. Adult *Oxyjulis californica* were common and several juveniles were observed on July 31st. Three adult *Hypsypops rubicundus* were observed, including one with a nest at meter 72 that has been there since about 1990. One male and one female *Halichoeres semicinctus* were observed. Several small male *Semicossyphus pulcher* were observed and females were common. Several small adult *Sebastes serranoides* were observed. From the size of these, we presume that they are 2-3 years old and a result of the 1999 recruitment event. Several adult *Sebastes mystinus* were observed and small groups of juveniles were scattered around the transect. Several black and yellow rockfish, *S. chrysomelas*, were observed. Several adult *S. serriceps* were

observed, but no juveniles. Several adult *S. atrovirens* were observed. In general surfperch were abundant and diverse. Adult and juvenile *Embiotoca jacksoni* and *E. lateralis* were relatively abundant. Adult and juvenile *Damalichthys vacca* were common. Several adult rubberlip surfperch, *Rhacochilus toxotes*, were observed. Kelp surf perch, *Brachyistius frenatus*, and rainbow surfperch, *Hypsurus caryi*, were observed. Several large schools of Jack mackerel, *Trachurus symmetricus*, and sardines, *Sardinops sagax*, were observed. Several ocean whitefish, *Caulolatilus princeps*, were observed. *Coryphopterus nicholsii* were common in the low-lying areas of the transect, their density on quadrats was 0.21/m^2. Overall, there was little change in the fish counts during the summer. Most notable was the presence of juvenile *Chromis punctipinnis* on August 29th for the first time at this site this year, however they were rare. Roving diver fish count was conducted on July 31st with five observers observing 30 species of fish, and on August 29th with five divers observing 29 species of fish.

All nine ARMs were intact, and monitored for all indicator species. Four ARMs were present in the south group, three in the middle group and two in the north group. Four of these ARMs were deployed last year and this was the first year they were sampled. This may bias the data because it appears that it takes several years before the ARMs "colonize" after they are deployed.

Similar to last year, one *Haliotis rufescens* was found in the nine ARMs. This H. rufescens measured 155mm and was found in ARM #2411. This is probably a different abalone than was found last year in ARM#2394. In past years, when we have observed relatively "large" (> 150mm) in the same ARM in consecutive years. This had led us to believe that abalone of this size were not able to get in or out of the ARMs. However, since no abalone were found in #2411 last year and the abalone or its shell was not found in #2394 this year, this is obviously not true, and abalone of this size can move in and out of the ARMs. The odd thing about this is that the abalone found this year is a abalone that has probably been found in the ARMs in the past. We believe this because the abrasion on the *H. rufescens* shell is such that the abalone appears to have been living in the ARMs for awhile and David Kushner recognizes the animal from these abrasion marks. There is a limited amount of vertical and horizontal space between the bricks in the ARMs and this animal had abrasion marks that were associated with this space.

Cypraea spadicea density was 2.0/ARM, similar to last year. No *Megathura crenulata* were found in the ARMs this year. Only one *Crassedoma giganteum* was found, 0.11/ARM, the lowest density recorded for this site. *Asterina miniata* density was 1.33/ARM, an increase for the second consecutive year. *Pisaster giganteus* density was 5.56/ARM, a decline from last year, but still relatively high for this site. *Pycnopodia helianthoides* were abundant with a density of 2.44/ARM, the highest recorded at this site. *Strongylocentrotus franciscanus* density was similar to last year at 8.56/ARM. *Strongylocentrotus franciscanus* recruitment was higher than past years in the ARMs with 45.5% of the *S. franciscanus* less than 15mm. This is the largest percentage of recruits at this site since monitoring for this species began in 1992. *Strongylocentrotus purpuratus* were relatively abundant in the ARMs with a density of 152.4/ARM, similar to last year. Their mean size increased to 37.91mm, and there were few recruits less than 15mm. Four small *Styela montereyensis* were found two in each of two ARMs, indicating recent recruitment, these are rare in the ARMs.

The temperature loggers were working properly and all temperature data was successfully downloaded.

Location: Johnson's Lee South, Santa Rosa Island

2001 sampling dates: 7/30, 7/31, 8/1, 8/29.
2001 status: Dominated by *Strongylocentrotus franciscanus* and *S. purpuratus*.

As we predicted last year, this site has changed and is now dominated by sea urchins with moderately high densities of *Strongylocentrotus purpuratus* and *S. franciscanus*. No canopy forming *Macrocystis pyrifera* plants were within the transect, however, west of the transect several large *M. pyrifera* plants remained forming a thin canopy. This is the most barren this transect has been since I began working for the Park in 1990, and from the data, the sites is probably similar to what it looked like in 1986. Many of the changes that have occurred at this site are similar to changes that occurred several years post the 1982/3 El Niño.

During our August 29th visit, about four weeks after our first visit, more algae was present at the site. Most noticeable were an increase of juvenile *Macrocystis pyrifera* and an increase in the size of the *Gigartina corymbifera* plants. It appears that this site may also rapidly return to a kelp forest, similar to the Johnson's Lee North site.

No adult or subadult *Macrocystis pyrifera*, *Eisenia arborea*, *Pterygophora californica*, *Laminaria farlowii* or *Cystoseira sp*. were present along the transect. There were several juvenile *M. pyrifera* plants present on rocky outcrops or growing epiphytically on *Lophogorgia chilensis*. Juvenile M. pyrifera density was 0.083/m^2. There were several old stalks of *P. californica*, but these plants were dead. This was the first time since 1987 that *L. farlowii* was absent from quadrats. No *M. pyrifera*, *E. arborea*, or *P. californica* were observed on RPCs, this is the lowest coverage recorded for these algae since 1986. Green algae, consisting of *Ulva sp*., covered 1.0% of the bottom. Miscellaneous brown algae were rare covering 0.17% of the bottom. Miscellaneous red algae were the most abundant algae, and consisted mostly of *Laurencia pacifica* and red algae growing on *Diopatra ornata*. This category covered 21.2% of the bottom, the lowest coverage recorded since 1990. *Gigartina sp*. covered 0.33% of the bottom, the lowest cover since 1988. This entire category consisted of the alga *Gigartina corymbifera*. Articulated coralline algae covered 2.0% of the bottom, the lowest coverage since 1987. Encrusting coralline algae covered 31.3% of the bottom, similar to last year, but the highest coverage recorded since 1988. Bare substrate covered 25.3% of the bottom, a large increase from last year.

Miscellaneous invertebrates on RPCs covered 8.17% of the bottom, a large decrease from the last two years. The most common miscellaneous invertebrates were sea cucumbers, *Cucumaria spp*. and the tube anemone, *Pachycerianthus fimbriatus*. For the previous four years, hydroids (mostly *Aglaophenia latirostris*) were the most common miscellaneous invertebrate. This year, hydroids were relatively rare for this site. Bryozoans combined covered 1.67% of the bottom, their lowest coverage since 1987. Tunicates were also relatively rare for this site with a coverage of 0.0%, also the lowest coverage since 1987. Sponges covered 0.17% of the bottom. *Balanophyllia elegans* covered 5.0% of the bottom, an increase from the last several years. *Astrangia lajollaensis* covered 2.6% of the bottom, also an increase. *Corynactis californica* coverage continued to increase for the fourth consecutive year, similar to observations at other sites. This year coverage was 4.17%. *Diopatra ornata* covered 16.2% of the bottom, similar to last year. The *D. ornata* tubes appeared to act as one of the few refuges for red algae to grow on at the site. *Styela montereyensis* were rare and none (0.0/m^2) were observed on quadrats, the lowest density recorded since 1987. *Tethya aurantia* density was 0.21/m^2, similar to last year. *Lophogorgia chilensis* density was 0.099/m^2, similar to previous years. *Urticina lofotensis* density was 0.064/m^2.

Strongylocentrotus purpuratus density was 13.9/m^2, similar to last year. Whole *S. purpuratus* tests were common and most likely from predation by *Pycnopodia helianthoides*. We observed several *P. helianthoides* feeding on *S. purpuratus*. From the current condition of the site, the number of *P. helianthoides*, and the abundance of tests on the bottom, I get the feeling that the density of *S. purpuratus* was probably higher than what was recorded during our last visit in 2000, and has since decreased. *Strongylocentrotus franciscanus* density increased to 6.33/m^2, the highest density recorded since 1986. Juvenile *Strongylocentrotus spp*. were rare, similar to what we have observed at other sites this year. Not all of the *Strongylocentrotus spp*. were confined to crevices and many were out in the open, making size frequency measurements relatively easy to conduct at this site this year. Several *S. purpuratus* (less than 5%) were observed with sea urchin wasting disease.

Pycnopodia helianthoides were abundant and their density continued to increase for the third consecutive year. Their density was 0.31/m^2, the highest density recorded at this site since monitoring began in 1983. *Pycnopodia. helianthoides* were measured to the nearest cm for size frequencies this year, typically they are measured to the nearest mm. This should have little to no impact on the data due to the variation in P. helianthoides arm sizes. *Asterina miniata* density was 1.92/m^2, higher than the past several years, but typical for this site. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats. Their densities have increased for the third consecutive year and were recorded at 0.83/m^2 and 0.33/m^2 respectively. *Parastichopus parvimensis* density was 0.042/m^2.

Haliotis rufescens continue to be increasingly rare at this site, with only two observed on band transects, 0.0028/m^2. We were only able to locate three large *H. rufescens* for size frequencies, but there was one more I know of at this site that I could not relocate for a measurement. One small *H. rufescens* was found in an ARM (see ARMs section below), and one fresh shell measuring 72mm was found along the transect. *Kelletia kelletii* density has declined over the last two years to a density of 0.011/m^2, but this density is similar to previous years. *Crassedoma giganteum* density was 0.026/m^2.

Fish were abundant, but had a lower diversity than the inshore site, Johnson's Lee North during the July roving diver fish counts. Most noticeable on July 30th was the abundance of small female *Semicossyphus pulcher*. I counted over 35 during the roving diver fish count. Several small male *S. pulcher* were also observed. Juvenile *Sebastes mystinus* were common and approximately 60 were counted at the site on July 30th. Adult *S. mystinus* were also present with about eight observed. Adult *S. atrovirens* were common under rocks. Several black and yellow rockfish, *S. chrysomelas*, copper rockfish, *S. caurinus*, and gopher rockfish, *S. carnatus*, were observed. Three adult *S. serriceps* were observed, but no juveniles. Adult *Chromis punctipinnis* were present, but not very abundant. No *Oxyjulis californica* or *Halichoeres semicinctus* were observed on July 30th, but *O. californica* were common on July 31st and they were observed during the fish count on August 29th. Adult *Embiotoca jacksoni*, *E. lateralis*, *Damalichthys vacca* and *Rhacochilus toxotes* were all common, but no juveniles were observed on July 30th. On August 29th, juvenile *E. lateralis* and *E. jacksoni* were observed. Several adult *Paralabrax clathratus* were observed, but were rare. *Oxylebius pictus* were common. Several cabezon, *Scorpaenichthys marmoratus*, were observed. On August 1st, a large aggregation of approximately 100 relatively large ocean whitefish, *Caulolatilus princeps*, was observed. Aggregations of this size have not been observed at this site before. *Coryphopterus nicholsii* were common with a density of 0.71/m^2. The roving diver fish count was conducted on July 30th with five observers observing 21 species of fish, and on August 29th with six divers observing 28 species of fish.

Six ARMs were monitored for all indicator species. The seventh ARM, #2421, was not monitored because it could not be located until our last dive. The ARMs were in good condition and did not move since last year. In previous years we have had problems with the ARMs moving, but they have since been moved to areas where they seem to be less likely to move around.

One *Haliotis rufescens* was found in the ARMs this year, similar to previous years. This *H. rufescens* measured 49mm. *Cypraea spadicea* density was similar to last year at 2.67/ARM. Small *Megathura crenulata* were less abundant than last year with a density of 0.33/ARM. *Crassedoma giganteus* density was 0.33/ARM, the lowest recorded in the ARMs for this site and similar to the Johnson's Lee North site. *Asterina miniata* density was 6.0/ARM, similar to the last two years. *Pisaster giganteus* density continued to increase for the third consecutive year and was recorded at 7.17/ARM. Most *P. giganteus* were small, with a mean size of 34.8mm. *Pycnopodia helianthoides* density was 1.33/ARM, higher than the last two years. *Strongylocentrotus franciscanus* density decreased for the second consecutive year and was recorded at 13.8/ARM. Mean size also decreased for the fourth consecutive year to 33.2mm, the lowest mean size since moderate numbers of *S. franciscanus* have been found in the ARMs. *Strongylocentrotus purpuratus* density was 12.3/ARM, with a mean size of 39.6 mm, similar to last year.

The temperature loggers were working properly and all temperature data was successfully downloaded.

Location: Rodes Reef, Santa Rosa Island

2001 sampling dates: 7/18, 7/19, 9/19.
2001 status: Dominated by *Strongylocentrotus franciscanus*.

This site has noticeably changed since last year. Most notable was the decrease in *Strongylocentrotus purpuratus* density, similar to other sites this year. However, this site continues to be dominated by *S. franciscanus* and nearly devoid of macroalgae.

Though understory brown algae continue to be absent from this site, there was a noticeable increase in red algae. No *Eisenia arborea*, *Pterygophora californica*, *Laminaria farlowii* or *Macrocystis pyrifera* were observed. Several small pieces of drift *Desmarestia sp*. were found along the transect. Miscellaneous red algae increased to cover 14.8% of the bottom. This category consisted mostly of *Laurencia pacifica*. There were several *Gigartina corymbifera* plants observed along the transect, but none were observed on RPCs. The "other plants" category on RPCs consisted of filamentous diatoms, and covered 7.0% of the bottom. Articulated coralline algae were rare and none were observed during RPCs. Encrusting coralline algae covered 61.2% of the bottom, similar to last year. Bare substrate covered 12.7% of the bottom, a decrease from last year.

The most common miscellaneous invertebrates on RPCs were *Ophiothrix spiculata*, the worm *Pista elongata*, sea cucumbers, *Cucumaria sp*., and hydroids. This category covered 13.0% of the bottom, a decrease from last year. Overall, encrusting invertebrates are much more abundant on the rocky western half of this transect. *Ophiothrix spiculata* were counted separately on RPCs and then added to the miscellaneous invertebrates. When separated out, *O. spiculata* covered 4.67% of the bottom and the remaining miscellaneous invertebrates covered 8.33%. This is a similar coverage of *O. spiculata* as was recorded in 2000.

The parchment tubeworm*, Chaetopterus variopedatus*, was relatively uncommon for this site, similar to the last several years. *Diopatra ornata* abundance remained low at 0.5%. *Astrangia lajollaensis* cover remained high at 11.8%, similar to last year. *Balanophyllia elegans* cover was 2.0%, and was more abundant on the western/rocky end of the transect. Bryozoan cover remained low at 1.67%. *Urticina lofotensis* were common on the tops of rocks with a density of 0.035/m^2. *Urticina coriacea* and *U.. colombiana* were also common, as usual for this site. *Lophogorgia chilensis* were rare along the transect, with a density of 0.0056/m^2. *Styela montereyensis* remained rare, and none were observed in quadrats (0.0/m^2), similar to 2000. *Tethya aurantia* density continued to be relatively low at 0.074m^2, similar to last year and about half its average density over the past 10 years. The bright orange encrusting tunicate that has been present at this site for the past several years was still abundant, but appeared to decrease this year. Tunicate cover decreased to 0.83%.

The most significant change at this site since last year was the decrease in *Strongylocentrotus purpuratus* density. *Strongylocentrotus purpuratus* density decreased to 0.25/m^2 from 29.2/m^2 in 2000. This site went from the highest recorded density of *S. purpuratus* to the lowest density recorded at this site in one year. Whole *S. purpuratus* test were common and were presumably a result of predation by *Pycnopodia helianthoides* and/or sea urchin wasting disease. Sea urchin wasting disease was very prevalent at this site by the end of the 2000 monitoring season. *Strongylocentrotus franciscanus* density changed little and remained high at 8.71/m^2. It appears from the composition of *Strongylocentrotus* tests that *P. helianthoides* prefers *S. purpuratus* to *S. franciscanus*, we have observed this at several sites this year. Juvenile *Strongylocentrotus spp*. were rare, similar to other sites. *Lytechinus anamesus* were rare with only one observed along the entire transect, none were observed during band transects. Sea urchin wasting disease was observed only in several *S. franciscanus*, but we estimated that <5% were effected by this disease.

All three species of sea stars we monitor continued to increase in abundance for the third consecutive year. *Asterina miniata* density was 2.29/m^2, and were noticeably small. Many of the *A. miniata* were small so small that we would not have expected them to be in the emergent population yet. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats, with densities of 0.88/m^2 and 0.77/m^2 respectively. *Pycnopodia helianthoides* density was 0.17/m^2, the highest density recorded since 1989. Small (<75mm) *P. helianthoides* were relatively abundant at this site. These increases in sea star densities, post the 1997/8 El Niño, are similar to what was observed several years post the 1982/3 El Niño. On several occasions we observed *P. helianthoides* "chasing/herding" *Ophiothrix spiculata*. As mentioned earlier, *O. spiculata* abundance was similar to last year. Several *Orthasterias koehleri* (rainbow stars) and *Dermasterias imbricata* (leather star) were observed along the transect. *Henricia sp.* (blood stars) were common. Similar to past years, *Pisaster brevispinus* (short spined sea star) were relatively abundant along the eastern half of the transect. Large *Parastichopus parvimensis* were present on the western/rocky half of the transect, but none were observed in quadrats this year (0.0/m^2).

Kelletia kelletii density was 0.014/m^2. Several *Lithopoma gibberosum* were observed along the transect, and one was counted on quadrats, 0.042/m^2. *Lithopoma undosum* density continued to decline, and individuals were rare with none observed on quadrats this year. All of the *L. undosum* found were very large. *Megathura crenulata* were common on the western/rocky end of the transect with a density of 0.033/m^2, similar to last year. *Aplysia californica* were rare with just one seen on band transects, 0.0014/m^2. *Cypraea spadicea* were common, but few were found in quadrats, with a density of 0.17/m^2.

No live *Haliotis rufescens* were observed. However, seven fresh small *H. rufescens* shells measuring 27-58mm were relatively common for this site in recent years. One threaded abalone, *H. assimilis*, was found about a meter off the transect at meter #16.5. This *H. assimilis* measured 82mm and was the first live *H. assimilis* found during a monitoring cruise since this program began in 1982. One fresh *H. assimilis* shell measuring 32mm was also found. During our second visit in September, we could not relocate the live *H. assimilis*.

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 several medium-sized females and one male were observed on July 18th. However, on September 19th, two very large *S. pulcher* males were observed. Prior to 2000, we consistently observed several large males and female *S. pulcher*. Adult *Chromis punctipinnis* were relatively uncommon. No vermilion rockfish, *Sebastes miniatus*, were observed this year. No adult or juvenile *S. serriceps* were observed on July 18th and only one adult was observed on September 19th. Adult *S. atrovirens* were common, but were notably more abundant just north of the transect. Several adult and juvenile *S. serranoides* were observed, but they were rare. Juvenile *S. mystinus* were common. Cabezon, Scorpaenichthys marmoratus were common on September 19th. Several adult *S. mystinus* were observed. *Damalichthys vacca* were rare with only one or two seen. Several adult and juvenile *Embiotoca jacksoni* and *E. lateralis* were observed. Several large *Paralabrax clathratus* were observed during both visits to this site. *Rathbunella hypoplecta* (stripefin ronquil) were relatively rare, similar to last year. *Oxylebius pictus* (painted greenlings) were common, as usual for this site. No *Alloclinus holderi* were observed this year. Roving diver fish count was conducted on July 18th with five divers observing 23 species of fish and on September 19th with six divers observing 27 species of fish.

The temperature loggers were retrieved, deployed, and all of the data was successfully downloaded.

Location: Gull Island South, Santa Cruz Island

2001 sampling dates: 8/2, 8/30.
2001 status: Dominated by *Strongylocentrotus purpuratus* and *S. franciscanus*.

Densities of *Strongylocentrotus spp*. declined from last year, though they still dominate this site. Macroalgae was noticeably more abundant than last year, but still relatively uncommon at the site. Most noticeable along the transect was an increase in subadult and juvenile *Macrocystis pyrifera* and adult and juvenile *Eisenia arborea*. Adult, subadult, and juvenile *M. pyrifera* densities were 0.0/m^2, 0.04/m^2, and 0.21/m^2 respectively. No *M. pyrifera* was observed on RPCs this year. Several canopy forming adult *M. pyrifera* plants were observed inshore of the transect, but overall there were few plants around Gull Island this summer. Adult and juvenile *E. arborea* were more common than last year, but remained rare with densities of 0.0/m^2 and 0.083/m^2 respectively, and a cover of 0.67%. There was a noticeable increase in miscellaneous red algae this year with a cover of 12.5%, the highest coverage since 1984. This category consisted almost entirely of the red alga *Laurencia pacifica*. Miscellaneous plants, consisting of brown filamentous diatoms, covered 5.67% of the bottom. Articulated coralline algae covered 1.67% of the bottom. Encrusting coralline algae was abundant as usual for this site with a cover of 51.7%. Bare substrate covered 13.8% of the bottom.

There was a noticeable increase in the size and number of juvenile *Macrocystis pyrifera* and *Eisenia arborea* during our second visit to the site on August 30, only four weeks after the first visit. It appears

that the southern half of this transect may rapidly return to a kelp forest, especially if *Strongylocentrotus purpuratus* densities continue to decline.

The most common miscellaneous invertebrates on RPCs were Christmas tree worms, *Spirobranchus spinosus*, hydroids, and barnacles, *Balanus sp*. This category covered 18.8% of the bottom. *Corynactis californica* covered 6.17% of the bottom, similar to the last two years. *Balanophyllia elegans* and *Astrangia lajollaensis* covered 3.17% and 2.5% of the bottom respectively, similar to past years. *Diopatra ornata* were common 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 recorded at 0.0% this year. *Diaperoecia californica* and miscellaneous bryozoans covered 1.0% and 1.17% of the bottom respectively. *Lophogorgia chilensis* density was 0.078/m^2. This density represents a decrease from the last several years and is relatively low for this site. *Tethya aurantia* density was 0.018/m^2, similar to last year. *Stylaster californica* density remained relatively high at 0.074/m^2, similar to last several years. Both large and small colonies of *S. californica* were common. Dwight Willey, our captain, who has been diving at Gull Island since the 1970's, remembers when people used to collect *S. californica* at Gull Island in large quantities. After making a dive this summer he was very impressed by how *S. californica* has recovered in recent years.

Strongylocentrotus purpuratus remain abundant and still dominate most of the site even though their density substantially decreased to 31.5/m^2. In 2000, *S. purpuratus* density was 82.0/m^2. Similar to past years, *S. purpuratus* were smaller and more abundant along the northern half of the transect. *Strongylocentrotus franciscanus* density also declined, and was recorded at 7.79/m^2. Juvenile *Strongylocentrotus spp*. were relatively rare, similar to other sites this year. *Lytechinus anamesus* density decreased and they were counted on both quadrats and band transects with densities of 0.042/m^2 and 1.15/m^2 respectively. Sea urchin wasting disease was only observed in *L. anamesus* this year. We estimated that about 5% of the *L. anamesus* had wasting disease on August 30th.

Asterina miniata density continued to increase for the third consecutive year and was recorded at 1.42/m^2 similar to densities recorded prior to the 1997/8 El Niño. *Pisaster giganteus* density also increased and was counted on both quadrats and 5-meter quadrats, with densities of 0.17/m^2 and 0.16/m^2 respectively. *Pycnopodia helianthoides* were abundant for this site with a density of 0.033/m^2, the highest density recorded at this site since monitoring began. *Pachythyone rubra* were common on the northern half of the transect and covered 0.17% of the bottom, similar to last year. This species appears to be gradually increasing around this transect. No sea star wasting disease was observed.

Cypraea spadicea density was 0.96/m^2, lower than last year, but still relatively high for this site. *Lithopoma undosum* continued to decrease for the second consecutive year and was recorded at 0.38/m^2. *Megathura crenulata* also continued to decline for the second consecutive year and was recorded at 0.078/m^2. *Kelletia kelletii* density remained low at 0.0069/m^2. *Aplysia californica* density declined to 0.0097/m^2, the lowest density since 1995. *Crassedoma giganteum* density was 0.011/m^2. *Tegula regina* were noticeably common and appear to have increased in abundance over the last several years, these are not monitored. One small fresh threaded abalone, *Haliotis assimilis*, shell was found, measuring 40mm.

Fish were common, but were not particularly abundant. The most abundant fish were *Coryphopterus nicholsii* with a density of 1.25/m^2, the highest recorded since 1990. The next most abundant fish were juvenile *Sebastes mystinus*, with over 100 seen. Several small adult *S. mystinus* were observed. Painted greenlings, *Oxylebius pictus*, were common. Small female *Semicossyphus pulcher* were common, and one small male was observed. No *Halichoeres semicinctus* and only a few *Oxyjulis californica* were observed. Adult *Chromis punctipinnis* were common. No juveniles were observed on August 2nd, but a few were observed on August 30th. Several black and yellow rockfish, *S. chrysomelas*, and gopher rockfish, *S. carnatus*, were observed. Several adult *S. atrovirens* were observed. Two adult *S. serriceps* were observed, but no juveniles. One adult *Embiotoca jacksoni*, several adult *Damalichthys vacca* and several *Girella nigricans* were observed. Only one adult *Paralabrax clathratus* was observed on each of the roving diver fish counts. Several small *Alloclinus holderi* were observed, and their density was 0.13/m^2. One Pacific angel shark, *Squatina californica*, was observed on August 30th. Roving diver fish

count was conducted on August 2nd with four divers observing 23 species of fish, and on August 30th with five divers observing 29 species of fish

All 14 ARMs were intact and in good condition. Thirteen ARMs were monitored for all indicator species, and one for all but *Strongylocentrotus franciscanus* and *S. purpuratus*. One cage was replaced (ARM #2331).

One *Haliotis rufescens* measuring 28mm was found in the 14 ARMs. One threaded abalone, *Haliotis assimilis*, measuring 54mm was found in a ARM. The *H. assimilis* had an orange band on its shell, similar to the juvenile H. sorenseni we observed at Yellowbanks in 2000. According to Abalone Specialist, Buzz Owen, about 25% of the *H. assimilis* have an orange band, similar to juvenile *H. sorenseni*.

Cypraea spadicea density ended its decline in the ARMs and increased to 4.79/ARM, similar to year's prior to 1999. *Kelletia kelletii* density was 0.43/ARM, this is only the second year this species has been observed in the ARMs and is an increase from 2000. Two *Lithopoma undosum* were found for a density of 0.14/ARM. One *L. gibberosum* measuring 30mm was present in the ARMs (0.07/ARM), this is the first time this species has been observed in the ARMs at this site. Small *Megathura crenulata* were relatively common with 0.86/ARM, their density has gradually increased for three consecutive years. *Crassedoma giganteus* density was 0.79/ARM, similar to last year. *Asterina miniata* density was 3.14/ARM and *Pisaster giganteus* density was 0.79/ARM, both similar to last year. *Pycnopodia helianthoides* were relatively common in the ARMs at 0.36/ARM, a small increase from last year. *Strongylocentrotus franciscanus* density increased to 33.08/ARM, and their mean size was similar to last year at 19.38mm. *Strongylocentrotus purpuratus* density continued to decline for the second consecutive year. Their density was recorded at 14.31/ARM; the lowest recorded in the ARMs at this site. Mean size of S. purpuratus increased to 18.83mm. *Centrostephanus coronatus* density declined to 0.15/ARM, the lowest density recorded since 1997.

The temperature loggers were working properly and all temperature data was successfully downloaded.

Location: Fry's Harbor, Santa Cruz Island

2001 sampling dates: 6/27, 6/28, 7/19, 8/16.
2001 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. No macroalgae was observed on quadrats this year, typical for this site. Several juvenile *Eisenia arborea* were observed on the tops of large rocks within the transect area. Outside of the transect, adult and juvenile *E. arborea* were common in the shallow area*s,* as usual for this site*.* The site was devoid of *Macrocystis pyrifera*, *Pterygophora californica* and *Laminaria farlowii*. Other than encrusting coralline algae, the only algae observed during RPCs were miscellaneous red algae, with a cover of 1.5%. Most of this consisted of the red algae, *Laurencia pacifica*. Articulated coralline algae were rare with a cover of 0.17%. Encrusting coralline algae covered 46.2% of the bottom, similar to last year. Bare substrate cover was 19.3%.

Miscellaneous invertebrates on RPCs were recorded at their highest cover since monitoring for this category began at this site in 1983. Cover was recorded at 37.0% and consisted mostly of the brittle star, *Ophiothrix spiculata*, barnacles (*Balanus sp.*), hydroids and the Christmas tree worm*, Spirobranchus spinosus*. *Ophiothrix spiculata* was noticeably more abundant than last year and was counted separately and then added to the miscellaneous invertebrate category for data entry. Separated, miscellaneous invertebrates covered 18.5%, and *O. spiculata* covered 18.5% of the bottom. Unfortunately, we did not count them separately in 2000. *Astrangia lajollaensis* was abundant covering 14.3% of the bottom, similar to the past several years. *Corynactis californica* and *Balanophyllia elegans* covered 0.67 and 0.17% of the bottom respectively. Miscellaneous bryozoans and *Diaperoecia californica* covered 2.8% and 1.3% of the bottom respectively. *Lophogorgia chilensis* were abundant and predominantly on the deep/offshore side of the transect. *Lophogorgia chilensis* density was 0.28/m^2, similar to the past several

years. Though all sizes of *L. chilensis* were present, fewer small individuals were observed than the previous several years.

Strongylocentrotus purpuratus density remained high at 30.1/m^2. *Strongylocentrotus franciscanus* density was 5.6/m^2, lower than last year but still relatively high for this site. *Centrostephanus coronatus* density was 0.083m^2. *Lytechinus anamesus* were counted on both quadrats and band transects with densities of 1.1/m^2 and 1.2/m^2 respectively, both decreases from last year. Similar to other sites this year, juvenile *Strongylocentrotus spp.* were rare. Sea urchin wasting disease was observed in only a few *S. franciscanus* in June, July and August, and a few *S. purpuratus* in June and August. An estimated <5% of the *S. purpuratus* were affected with wasting disease on August 16th. .

Pachythyone rubra cover was 38.7%, and has continued to increase at this site. This year's coverage was the highest recorded since monitoring began in 1982. *Pachythyone rubra* were most abundant on the northern and southern thirds of the transect, while the center had few. *Parastichopus parvimensis* density remained relatively low for this site with a density of 0.25/m². *Pisaster giganteus* were common and most were large. They were counted on both quadrats and 5-meter quadrats with densities of 0.25/m^2 and 0.28/m^2 respectively. Both were increases from last year. *Asterina miniata* density was 0.83/m^2. No sea star wasting disease was observed.

Cypraea spadicea density was 0.71/m^2, similar to the last two years. *Lithopoma undosum* density was 0.50/m^2. *Kelletia kelletii* density was 0.011/m^2. *Aplysia californica* were rare with a density of 0.0014/m^2, similar to last year. *Megathura crenulata* density was 0.079/m^2.

Adult *Chromis punctipinnis* were the most abundant fish, typical for this site. No juvenile/YOY *C. punctipinnis* were observed on June 27th, but adults were observed with nests of eggs. Egg masses/nests were common in rock crevices and several were observed in the ARMs. Several juvenile *C. punctipinnis* were observed on August 19th. As usual for this site, large adult *Paralabrax clathratus* were moderately abundant when divers first entered the water, but they quickly scattered and seemed less abundant during the fish transects and roving diver fish count. No juvenile *P. clathratus* were observed. At least one juvenile and one adult *Sebastes mystinus* were observed. Female *Semicossyphus pulcher* were common, one male and no juveniles were observed. *Damalichthys vacca* were common and several *Rhacochilus toxotes* (rubberlip surfperch) were observed. *Oxylebius pictus* were common. Stripefin ronquils, *Rathbunella hypoplecta*, continued to decline at this site and none were observed this year. Only one *Oxyjulis californica* was observed on each of the fish counts. Several *Sebastes atrovirens*, one *S. serranoides*, one adult and one juvenile *S. serriceps* were observed. Several gopher rockfish, *Sebastes carnatus*, were observed. Small swell sharks, *Cephaloscyllium ventriosum*, were relatively abundant around the transect and in the ARMs. *Coryphopterus nicholsii* density was similar to the last several years at 1.33/m^2. *Alloclinus holderi* continued to decline with none observed on June 27th and only one observed on July 19th. They were recorded at their lowest density (0.0/m^2) since 1989. No *Lythrypnus dalli* were observed on quadrats, but several were observed during the roving diver fish count. *Lythrypnus zebra* were common as usual for this site. Roving diver fish count was conducted on June 27th with three divers observing 21 species of fish and on July 19th with seven divers observing 28 species of fish.

Similar to other sites on the North side of the Islands, the ARMs here had moved around some, probably due to winter storms. Three ARMs had moved to the deeper side of the transect line and one of these was open, with most of its bricks spilled out of a "tear" in the ARM. This ARM (#2388) was repaired and moved to an area near its original location. A second ARM was also moved, but we did not have time or air to move the third ARM. One ARM (#2434) was upside down. The six intact ARMs were monitored for all indicator species.

No *Haliotis spp*. were found in the ARMs this year. *Cypraea spadicea* density sharply declined from last year and was recorded at 2.67/ARM, the lowest density since we began monitoring ARMs at this site in 1993. Several juvenile C. spadicea were observed in the ARMs this year. *Megathura crenulata* were rare in the ARMs and only two were found, for a density of 0.33/ARM, the lowest recorded at this site. *Crassedoma giganteum* density was 4.5/ARM, similar to last year. *Asterina miniata* density was

11.0/ARM, higher than the last three years. *Pisaster giganteus* were abundant in the ARMs with a mean of 13.3/ARM, the highest density recorded at this site in the ARMs. Mean size of *P. giganteus* was the lowest recorded, at 38.3mm, indicative of high recruitment. One *Pycnopodia helianthoides* was found in an ARM, measuring 46mm; this is the first *P. helianthoides* found in the ARMs since we began monitoring them at this site. The density of both *Strongylocentrotus franciscanus* and *S. purpuratus* declined in the ARMs. Their densities were 28.8/ARM and 37.3/ARM respectively. No *Centrostephanus coronatus* were in the ARMs this year, a decline from the past several years.

The temperature loggers were working properly and all temperature data was successfully downloaded.

Location: Pelican Bay, Santa Cruz Island

2001 sampling dates: 6/26, 6/27, 8/16.
2001 status: Dominated by *Strongylocentrotus purpuratus*.

This site continues to change little and continues to be dominated by *Strongylocentrotus purpuratus*. 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 the site. Similar to last year, the only foliose algae was a small amount of the red alga, *Laurencia pacifica*, and brown alga, *Colpomenia sp*., on the tops of rocks. Filamentous diatoms were rare and none were counted during RPCs. Articulated coralline algae were rare, covering 0.33% of the bottom. Encrusting coralline algae covered 19.3% of the bottom, a decline from last year. Bare substrate covered 59.7% of the bottom, higher than last year.

Miscellaneous invertebrates on RPCs covered 14.5% of the bottom, an increase from the last several years. The most common invertebrates were barnacles, *Balanus sp*. These were noticeably more abundant than last year, but similar to what we have observed in recent years. *Spirobranchus spinosus* and terebellid worms were also common. *Astrangia lajollaensis* covered 5.3% of the bottom, lower than last year, but similar to the previous two years. *Serpulorbis squamigerus* were relatively abundant on the tops of large rocks, however they are typically rare directly along the transect, covering 0.5% of the bottom on RPCs. No *Diaperoecia californica* was observed along the transect on RPCs, but were common on the steep sides of large rocks on the inshore side of the transect. Other bryozoans were also rare directly along the transect with none (0.0%) observed on RPCs. *Lophogorgia chilensis* ended its gradual increase at this site. However it remained relatively abundant with a density of 0.18/m^2, similar to last year and the highest density recorded since monitoring began at this site.

Strongylocentrotus purpuratus density continued to increase for the second consecutive year. Their density was 46.2/m^2, the highest recorded at this site, but similar to the mid 1990's. *Strongylocentrotus franciscanus* density was 4.5/m^2, similar to the last two years. Both *S. franciscanus* and *S. purpuratus* were out in the open and not confined to crevices. Juvenile *S. franciscanus* and *S. purpuratus* were rare indicating little recruitment this year, similar to other sites. *Lytechinus anamesus* were counted on both quadrats and band transects. Their densities decreased about half on both and were recorded at 4.8/m^2 and 2.5/m^2 respectively. *Centrostephanus coronatus* density was 0.083/m^2, similar to last year. Sea urchin wasting disease was observed in *S. purpuratus* and *S. franciscanus*, but was estimated to affect less than 5% of the population.

Asterina miniata density continued to increase for the third consecutive year. Their density was 0.29/m^2, the highest recorded at this site since monitoring began in 1982. *Pisaster giganteus* were more abundant than past years and were noticeably small. They were counted on both quadrats and 5-meter quadrats, with densities of 0.13/m^2 and 0.15/m^2 respectively. These densities were increases from last year and also the highest recorded at this site. The sea star, *Linckia columbiae*, were common, similar to the last several years, this is a warm water species at the northern end of its range. *Parastichopus parvimensis* density continued to decline and was recorded at 0.08/m^2, the lowest density recorded at this site since monitoring began. No sea star wasting disease was observed.

Crassedoma giganteus density was 0.082/m², similar to the past decade, but relatively low compared with the 1980's. *Aplysia californica* density was 0.0056/m². *Lithopoma undosum* density was 0.67/m², similar to last year. *Kelletia kelletii* density remained relatively low for this site at 0.0097/m². Octopus's and their dens were common around the transect. One small *Haliotis corrugata* shell, measuring 25mm, was found. One live *Lithopoma gibberosum*, measuring 32mm, was found.

No ocean whitefish, *Caulolatilus princeps*, were observed during the roving diver fish count in June, but several were observed afterwards. Only one was observed on the August 16th fish count, these have been relatively abundant during the past two years. Painted greenlings, *Oxylebius pictus*, adult *Paralabrax clathratus*, adult *Chromis punctipinnis*, female *Semicossyphus pulcher*, adult *Embiotoca jacksoni*, adult *Damalichthys vacca*, and adult *Rhacochilus toxotes* were all common. No juvenile *S. pulcher* were observed and one very large male (20lbs) was observed after the fish transects and roving diver fish count. We have observed a very large male here in previous years and wonder if it is the same fish. Several small (probably 2-year-old) and juvenile *P. clathratus* were observed. Several adult and juvenile *Sebastes serriceps* were observed. Adult *Sebastes atrovirens* were common. The most abundant fish along the transect were *Coryphopterus nicholsii*, with a density of 5.2/m^2. Both large adults and tiny juveniles, that appeared to have recently settled, were abundant. Large *Alloclinus holderi* were present around the transect, but there were noticeably fewer than in recent years. None were observed on quadrats this year. *Lythrypnus dalli* were common, but few were seen on quadrats. Their density was 0.042/m^2 and they have declined over the last two years. *Lythrypnus zebra* were common. Several divers observed two finescale triggerfish, Balistes polylepis during the roving diver fish count. These are uncommon, but not unheard of on Santa Cruz Island. Large sardines, Sardinops sagax, were abundant in Pelican Bay on August 16th. The roving diver fish count was conducted on June 26th with five divers observing 24 species of fish and on August 16th with five divers observing 25 species of fish.

All six ARMs at this site were intact and sampled for all indicator species. Similar to previous years, the ARMs were relatively bare. No *Haliotis spp*. were found in the ARMs. *Cypraea spadicea* density was 3.67/ARM, lower than the last four years. *Crassedoma giganteum* density was 1.17/ARM, similar to last year. *Asterina miniata* density was 4.3/ARM, the same as last year. *Pisaster giganteus* density continued to increase in the ARMs for the second consecutive year and was recorded at 3.33/ARM. No *Lytechinus anamesus* were observed in the ARMs this year, in 2000 they were common. *Strongylocentrotus franciscanus* density continued to decrease in the ARMs for the second consecutive year. Their density was recorded at 19.83/ARM, and their mean size increased slightly to 27.3mm. *Strongylocentrotus purpuratus* density was 29.5/ARM, similar to the past four years. No *Centrostephanus coronatus* were observed in the ARMs this year, the first time since 1998. In 2000, their density was 1.7/ARM.

The temperature loggers were working properly and all temperature data was successfully downloaded.

Location: Scorpion Anchorage, Santa Cruz Island

2001 sampling dates: 8/15, 8/31.
2001 status: Dominated by *Strongylocentrotus purpuratus*.

The site appeared similar to last year and continues to be dominated by *Strongylocentrotus purpuratus*. The site is almost completely devoid of macroalgae. Similar to last year, the most common macroalgae along the transect was the red alga, *Laurencia pacifica*, but there was noticeably less than last year. Miscellaneous red algae, consisting of *L. pacifica*, covered 0.33% of the bottom. Miscellaneous brown algae covered 0.17% of the bottom and consisted of *Dictyota/Pachydictyon*. Miscellaneous plants, consisting of filamentous diatoms, covered 3.0% of the bottom, a decrease from the last several years. Other than encrusting and articulated coralline, these were the only algae counted on RPCs or quadrats this year. Articulated coralline cover was 1.83%. Encrusting coralline covered much of the bottom at 68.3%. Bare substrate cover was 25.3%, higher than the last two years.

Similar to past years the most common miscellaneous invertebrate on RPCs was the Christmas tree worm, *Spirobranchus spinosus*. This category covered 21.67% of the bottom, similar to the past two years. *Serpulorbis squamigerus* continued to decline, covering 0.33% of the bottom, the lowest coverage

recorded at this site. Bryozoans were uncommon, covering 0.0% 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. Four *Lophogorgia chilensis* were observed during band transects (0.0056/m^2), similar to last year. Although *L. chilensis* are rare they continue to be slowly increasing along this transect. *Tethya aurantia* density was 0.015/m^2.

Strongylocentrotus purpuratus continued to dominate this site with a density of 102.8/m^2, similar to last year. Most of the *S. purpuratus* were small with a mean size of 18mm. Juvenile *S. purpuratus* were common, especially under small rocks, but no invasive sampling is conducted for monitoring purposes. *Strongylocentrotus franciscanus* were relatively abundant for this site, and density continued to increase for the second year. Their density was 4.08/m^2, the highest density recorded since 1986. *Centrostephanus coronatus* were present at the site with a density of 0.042/m^2. *Lytechinus anamesus* density was 0.0056/m^2, lower than the previous two years. Sea urchin wasting disease was present and we estimated that about 10% of the *S. purpuratus* showed signs of the disease. Several *S. franciscanus* were observed with wasting disease, but were uncommon.

Asterina miniata were noticeably more abundant than past years and continued to increase for the second consecutive year. Their density was 1.25/m^2; the highest recorded at this site since monitoring began. The *A. miniata* were noticeably large. *Pisaster giganteus* also continued to increase for the second consecutive year. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats with densities of 0.083/m^2 and 0.025/m^2 respectively. Though these densities are relatively low compared to other sites, they are the highest recorded at this site. *Parastichopus parvimensis* density was 0.042/m^2.

Aplysia californica were common with a density of 0.031/m^2, similar to the last several years. With so little algae at this site, it is surprising that their density has not decreased. *Megathura crenulata* density has gradually declined over the last several years and was recorded at 0.018/m^2, the lowest density recorded at this site since monitoring began. This is different from a trend of increasing density that this species has had at other sites over the last several years. *Cypraea spadicea* density increased to 0.875/m^2, relatively high for this site and the highest recorded density since monitoring began. Juvenile *C. spadicea* were common in the ARMs this year, as we have observed at several other sites. *Lithopoma undosum* continued to be abundant, but their density decreased from their record high last year. Density this year was recorded at 7.63/m^2. *Crassedoma giganteum* has gradually increased in density over the last two years and was recorded at 0.113/m^2, the highest recorded since monitoring began at this site. Six *Panulirus interruptus* were observed on band transects this year, 0.0083/m^2.

Adult *Chromis punctipinnis*, *Oxyjulis californica*, *Paralabrax clathratus*, male and female *Halichoeres semicinctus*, *Oxylebius pictus*, adult *Embiotoca jacksoni* and adult *Hypsypops rubicundus* were all common. No juvenile *C. punctipinnis* were observed on August 15thth, but a small group was observed on August 31st. On August 15th, no male, female or juvenile *Semicossyphus pulcher* were observed, and only two females were observed on August 31st. *Semicossyphus pulcher* have been noticeably rare for the second year at this site. Adult *Hypsypops rubicundus* were common. Not more than two adult and two juvenile *Sebastes serriceps* were observed during both roving diver fish counts. *Coryphopterus nicholsii* were relatively abundant for this site with a density of 1.13/m^2, similar to last year. *Alloclinus holderi* seemed slightly more common than last year, but were relatively rare with a density of 0.083/m^2. *Lythrypnus dalli* were rare with only one observed during roving diver fish count, similar to last year. Zebra gobies, *Lythrypnus zebra*, were present, but noticeably less abundant than last year. Roving diver fish count was conducted on August 15th with five divers observing 20 species of fish, and on August 31st with six divers observing 23 species of fish.

Six of the seven ARMs were monitored for all indicator species. The seventh ARM was not sampled because the top was completely corroded and the top layer of bricks was broken and in disarray. This ARM was rebuilt with a new cage and broken bricks were replaced with new bricks.

Similar to past years, the ARMs were relatively bare with few indicator species in them. No *Haliotis spp*. were observed in the ARMs this year. *Cypraea spadicea* density was similar to the last two years at 10.8/ARM. *Lithopoma undosum* were much less abundant with a density of 1.33/ARM; their density in

2000 was 7.4/ARM. *Crassedoma giganteum* density was the lowest since 1995 at 1.5/ARM. *Asterina miniata* density was higher than the last four years at 0.83/ARM, close to their 1997 (pre El niño) density. *Pisaster giganteus* density increased to 1.67/ARM, the highest densities recorded in the ARMs at this site and the first time since 1995 that any were found in the ARMs. Both *Strongylocentrotus franciscanus* and *S. purpuratus* decreased in the ARMs. Their densities were 10.3/ARM and 43.3/ARM respectively. No *Centrostephanus coronatus* were found in the ARMs, the first time since 1997.

The Stowaway temperature logger recorded multiple readings of temperatures below 0 C. We assume that these are erroneous data and that the logger was not recording properly. The HoboTemp logger appeared to be logging data correctly and these data were used.

Location: Yellowbanks, Santa Cruz Island

2001 sampling dates: 6/25, 6/26, 8/13.
2001 status: Dominated by *Strongylocentrotus purpuratus* and *Lytechinus anamesus*.

This site continues to be dominated by sea urchins with high densities of *Strongylocentrotus purpuratus* and *Lytechinus anamesus*. However, juvenile brown macroalgae were noticeably more abundant than the past several years. Juvenile *M. pyrifera* were common, scattered around the transect on the tops of reef or rocks. Three juvenile *Macrocystis pyrifera* were observed on quadrats, 0.13/m^2. This is the first time *M. pyrifera* has been observed on quadrats since 1998. No adult *M. pyrifera* was observed, but one subadult was growing epiphytically on a *Muricea californica*. No *Pterygophora californica* was observed. One juvenile *Laminaria farlowii* and several juvenile *Eisenia arborea* were observed, but none were in the quadrats or RPCs. Miscellaneous red algae covered 2.5% of the bottom and consisted entirely of *Laurencia pacifica*. Brown filamentous diatoms were more abundant than last year, but similar to past years. They are recorded under miscellaneous plants on RPCs, and covered 20.5% of the bottom. Articulated coralline algae covered 2.3% of the bottom. Encrusting coralline covered 43% of the bottom. There was a moderate amount of silt on the bottom, noticeably more than the last several years. Bare substrate covered 42.5% of the bottom, similar to last year, but relatively high for this site.

The area inshore of the transect and other areas around Yellowbanks appear to be less dominated by sea urchins, as can be seen by a thick *M. pyrifera* canopy. Most of the areas that appear to be returning to kelp forests are in shallow water less than about 11 meters.

Miscellaneous invertebrates on RPCs have gradually increased over the past three consecutive years. This category covered 15.17% of the bottom and mostly consisted of the brittle star, *Ophiothrix spiculata*, the anemone, *Sagartia/Cactosoma*, and hydroids. We kept track of *O. spiculata* separately and then added them to the miscellaneous invertebrate category. Separated, *O. spiculata* covered 4.83% and the remaining miscellaneous invertebrates covered 10.33% of the bottom. *Ophiothrix spiculata* were more abundant on the western third of the transect, but they did not dominate anywhere along the transect. The hydroid, *Aglaophenia latirostris*, were noticeably less common than last year. Bryozoans were rare, covering 0.67% of the bottom on RPCs. *Tethya aurantia* density has gradually declined the last two years and was recorded at 0.038/m^2 this year. The *T. aurantia* were difficult to see this year because they were often covered with silt. The silt makes them appear brown and difficult to see, so it is possible that this decrease in density is a sampling artifact. *Lophogorgia chilensis* were the most abundant of the gorgonians with a density of 0.16/m^2. This is the highest density recorded since 1987. *Muricea californica* and *M. fruticosa* densities were 0.015/m^2 and 0.0056/m^2 respectively, similar to past years. Tunicates and sponges were rare covering 0.17% and 0.17% of the bottom respectively.

Lytechinus anamesus and *Strongylocentrotus purpuratus* still dominate the site. *Strongylocentrotus purpuratus* density was 20.4/m^2, a decline from last year. *Strongylocentrotus franciscanus* density was 3.0/m^2, also a decline from last year, but still relatively high for this species as this site. Similar to last year, 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* density (0.083/m^2) continued to decline for the third consecutive year. There were a few juvenile *S. purpuratus* and *Centrostephanus coronatus* observed, but overall sea urchin recruitment was low, as we have observed at

other sites this year. *Lytechinus anamesus* continued to be abundant and were counted on both quadrats and band transects. Their densities were 23.8/m^2 and 15.4/m^2 respectively. On June 26th and August 13th *S. purpuratus* and *S. franciscanus* were observed with sea urchin wasting disease. We estimated that there was less than 5% prevalence in both species.

Both *Asterina miniata* and *Pisaster giganteus* were more abundant than the last several years. *Asterina miniata* density has gradually increased over the last three consecutive years and was 0.33/m^2, the highest density recorded at this site since monitoring began in 1986. Both large and small *A. miniata* were common. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats, with densities of 0.042/m^2 and 0.04/m^2 respectively. Two small *Pycnopodia helianthoides* were observed along the transect, but none were observed in band transects. *Parastichopus parvimensis* were common with a density of 0.17/m^2. No sea star wasting disease was observed this year. Several small groups of *Pachythyone rubra* were observed on the bottom, but none were observed in RPCs. Though there are few *P. rubra* at this site, they do seem to be becoming more common, similar to the Gull Island site.

Lithopoma undosum density remained high for this site at 2.96/m^2, similar to last year. Many of the *L. undosum* were small and difficult to see, but observers on quadrats were careful not to miss them. *Kelletia kelletii* remained relatively rare for this site and were recorded at a lower density than last year 0.014/m^2, the lowest since 1989. *Megathura crenulata* and *Crassedoma giganteum* densities were 0.0018/m^2 and 0.0083/m^2 respectively. Several small *M. crenulata* were observed, indicating recent recruitment. No live *Haliotis spp*. were found along the transect this year.

One fresh *Haliotis sorenseni* shell was found about a meter from the middle of the transect. This shell appeared as if the animal had recently (within a few weeks) died, but had no notable predation marks on it. It measured 46mm; respectable growth for the past year presuming it was from the same recruitment event from which we found the live juveniles and shell in 2000. It is promising to know that at least this one juvenile survived about a year longer than the ones we found last year.

Fish abundance remained low at this site. *Coryphopterus nicholsii* continued to be the most abundant fish, though recorded at a lower density than last year, 1.2/m^2. Adult *Paralabrax clathratus* were common. Only one adult *Chromis punctipinnis* was observed during the roving diver fish count on June 25th, but they were more common on August 13th. No *Oxyjulis californica* were observed during fish transects or roving diver fish counts, but a school of about 50 were observed later on in the day on June 25th. Painted greenlings, *Oxylebius pictus* were common. One California scorpion fish, *Scorpaena guttata*, and one Cabezon, *Scorpaenichthys marmoratus*, were observed. Several ocean whitefish, *Caulolatilus princeps*, were observed. One small “adult” *Sebastes serriceps* and no juveniles were observed. Two small, probably 3-year-old, *Sebastes serranoides* were observed. Several small, also probably 3-year-old, vermillion rockfish, *Sebastes miniatus*, were observed along the transect. One juvenile *Sebastes mystinus* was observed. Several adult *Embiotoca jacksoni* and one adult *Damalichthys vacca* were observed. Two adult *Hypsypops rubicundus* were observed. *Alloclinus holderi* were rare, with a density of 0.042/m^2. Small female *Semicossyphus pulcher* were common and no juveniles or males were observed. One female and two male *Halichoeres semicinctus* were observed on June 25th. *Lythrypnus dalli* were less abundant than last year and only two were observed under the ledge that parallels the transect where they are usually found. Roving diver fish count was conducted on June 25 with four divers observing 18 species of fish and on August 13th with five divers observing 23 species of fish.

There are three groups of five ARMs at this site. One group at each end and one in the middle of the transect. All 15 ARMs were sampled for all indicator species.

Four species of *Haliotis spp*. were observed in the ARMs this year. One juvenile white abalone, *Haliotis sorenseni*, was found in ARM #2352, measuring 29mm. This is intriguing because this *H. sorenseni* is slightly smaller than the two *H. sorenseni* found in 2000, indicating that there may have been successful *H. sorenseni* recruitment for more than one year or large differences in individual growth. This *H. sorenseni* was found in an ARM in the east group, while the two *H. sorenseni* found in 2000 were in a ARM in the west group. One *H. sorenseni* shell measuring 47mm was found along the transect this year. This is about the growth expected of the two *H. sorenseni* found in 2000 that measured 32mm and 38mm.

Three threaded abalone, *Haliotis assimilis*, were found in the ARMs. The three measured 72mm (from ARM #2354), 66mm (from ARM #2355), and 54mm (from ARM #2362). All three of these were probably at least two years old, but little is known about the growth of this species. This is the first time since monitoring began that this species of abalone has been found at this site.

Three *Haliotis rufescens* were found in the 15 ARMs (0.2/ARM), this is more than the last several years. The *H. rufescens* were all small, measuring 21, 27, and 37mm. One *Haliotis corrugata* (31mm) was found in the 15 ARMs (0.07/ARM). This is the lowest density for *H. corrugata* in the ARMs since we began monitoring them in 1992. *Cypraea spadicea* density (2.8/ARM) continued to increase for the second consecutive year. However, *C. spadicea* remain less abundant than during 1992-1998. Four small *Lithopoma gibberosum* were found in the ARMs, 0.27/ARM. This is the first time this species has been observed in the ARMs at this site. All four *L. gibberosum* were small, measuring 25-36mm. *Crassedoma giganteum* density was similar to the past two years at 0.93/ARM. *Asterina miniata* density continued increasing to 7.8/ARM, the highest density recorded in the ARMs at this site. *Pisaster giganteus* density increased to 1.13/ARM. *Pycnopodia helianthoides* were rare along the transect (only one or two were observed), but common in the ARMs. Eleven of the 15 ARMs had one *P. helianthoides* in each for a density of 0.73/ARM. This is only the second year *P. helianthoides* have been observed in the ARMs and is the highest recorded density. *Lytechinus anamesus* were relatively rare at 0.47/ARM, their density has continued to decline for the second consecutive year. *Strongylocentrotus franciscanus* density was 34.47/ARM, similar to last year. *Strongylocentrotus purpuratus* continued to decline for the second year and had a density of 4.2/ARM, the lowest in the ARMs at this site. Note that the density of *S. purpuratus* outside the ARMs at this site has increased over the past two years. *Centrostephanus coronatus* density continued to decline; none were observed in the ARMs this year. Abalone shingles, *Pododesmus cepio*, were noticeably abundant in the ARMs. Octopuses were common.

The temperature loggers were working properly and all temperature data was successfully downloaded.

Location: *Pelagophycus pora* forest - Yellowbanks, Santa Cruz Island

2001 sampling dates: 7/16.
2001 status: *Pelagophycus pora* forest.
Lat: 33 59.797 N
Lon: 119 31.162 W

We conducted a brief survey dive close to the area where we have dived the "*Pelagophycus pora*" forest in previous years. There was a strong current on this dive. This reef was at a depth of about 27-36 meters and had a dense stand of elk kelp, *Pelagophycus pora*. Most of the *P. pora* were small-medium sized and there were few large plants. Most of the understory algae consisted of red algae, *Pterygophora californica*, *Cystoseira sp.* and *Laminaria farlowii*. *Dictyoneuropsis reticulata* was also common. *Lytechinus anamesus* were abundant in the low-lying sandy areas. *Strongylocentrotus purpuratus* and *S. franciscanus* were relatively rare. Fish were noticeably rare. *Coryphopterus nicholsii* were the most abundant fish. Only a few *Oxyjulis californica*, two *Paralabrax clathratus* and one *Sebastes serranoides* were seen, but we did not spend a lot of time looking for fish.

One live white abalone, *Haliotis sorenseni*, measuring 170mm was found. Two large *Haliotis rufescens* were observed. Old *Haliotis* spp. shells were common.

Location: *Pelagophycus pora* forest - Yellowbanks, Santa Cruz Island

2001 sampling dates: 8/31.
2001 status: Small *Pelagophycus pora* forest with some *Macrocystis pyrifera*.
Lat 33 59.506 N
Lon 119 31.254 W

Note: This is a different location than the dive above.

A survey dive was conducted at a depth of 21-27 meters to look for elk kelp, *Pelagophycus porra*. This was one of the shallowest reefs off the Yellowbanks area where we have found *P. porra*. *Pelagophycus porra* was observed growing at a dept of about 24 meters. Both adult and juvenile (small) *P. porra* were present at the center of this reef, but were not along the entire reef. All of the plants appeared healthy. *Macrocystis pyrifera* was common growing on the top of the ridge that made up this reef, though the plants did not reach the surface. Understory *Eisenia arborea* and *Pterygophora californica* were common. Most noticeable in this area was a high diversity and abundance of fish, though most were small. However, several large *Semicossyphus pulcher* and large ling cod, *Ophiodon elongatus*, were observed. I observed at least seven *O. elongatus*. On another dive at this site one week later (not on a kelp forest monitoring cruise) I observed at least 11 *O. elongatus* at this location. Small Vermillion, *Sebastes miniatus*, juvenile *Sebastes spp*., *Paralabrax clathratus*, *Embiotoca jacksoni*, *E. lateralis*, and *Oxyjulis californica* were all common.

Several very old *Haliotis sorenseni* shells were found, but they were not particularly abundant. Old *H. rufescens* and *H. corrugata* shells were more common. Large (over 100mm) *Strongylocentrotus franciscanus* were common in this area and were noticeably out in the open more than usual. Many of these were observed with sea urchin wasting disease, and whole large fresh tests were common, indicating recent mortality. Many of these *S. franciscanus* that appear to be dying from disease are probably several decades old.

Location: Admiral's Reef, Anacapa Island

2001 sampling dates: 6/14, 8/17, 9/17.
2001 status: Dominated by *Strongylocentrotus purpuratus*, *S. franciscanus*, and *Ophiothrix spiculata* (brittle star).

Similar to the last several years, this site continues to be dominated by *Strongylocentrotus purpuratus*, *S. franciscanus,* and *Ophiothrix spiculata*. The site was mostly devoid of macroalgae. No adult or juvenile and only one subadult *Macrocystis pyrifera* plant (on the top of a large rock) were observed within ten meters of the transect line. *Eisenia arborea* were rare along the transect and only a few adult and juvenile plants were observed around meter 80. No *M. pyrifera* or *E. arborea* were observed during quadrats, 5-meter quadrats or RPCs. *Pterygophora californica*, *Laminaria farlowii*, *Agarum fimbriatum* and *Cystoseira spp.* were all absent from the transect. Miscellaneous red algae covered 5.3% of the bottom and consisted mostly of the foliose alga, *Laurencia pacifica* and filamentous red algae. Other plants, mostly filamentous brown diatoms, covered 5.5% of the bottom. Articulated and encrusting coralline algae covered 0.67% and 33% of the bottom, respectively. Bare substrate covered 46% of the bottom, similar to last year.

The kelp forest, located just inshore of the transect on top of the reef, continued its decline in algae cover and is almost completely devoid of macroalgae. There were only a few adult and juvenile *E. arborea* and one small patch of *M. pyrifera*. Only a small amount of *Gelidium sp.* was observed. Both *S. franciscanus* and *S. purpuratus* dominate most of this area. There appeared to be a higher proportion of *S. franciscanus* with wasting disease on the top of this reef than along the transect.

Miscellaneous invertebrate cover increased for the third consecutive year. Cover was recorded at 54.7%; the highest level for this category since monitoring began in 1983. The most common miscellaneous invertebrate continues to be *Ophiothrix spiculata*. *Ophiothrix spiculata* was counted separately and then added to miscellaneous invertebrates for data entry. *Ophiothrix spiculata* covered 40.2% of the bottom, and the remaining miscellaneous invertebrates consisting mostly of gorgonians, *Spirobranchus spinosus*, and hydroids covered 14.5% of the bottom. *Since O. spiculata* was counted separately, there were several instances during RPC counts when a *O. spiculata* was on top of a *S. spinosus*, resulting in two misc. invertebrate points. Though this was infrequent, if the number of *O. spiculata* and Miscellaneous invertebrates added up to more than 10 points in any given quadrat, only 10 points were entered under the miscellaneous invertebrate category in the database. This may have resulted in an over

representation of miscellaneous invertebrates on RPCs, but this should have had not more than a 1% or 2% overrepresentation.

Lophogorgia chilensis continued to decline in density for the second consecutive year and was recorded at 0.049/m^2. *Muricea fruticosa* and *M. californica* densities were similar to last year at 0.0042/m^2 and 0.028/m^2 respectively. *Eugorgia rubens* were relatively abundant along the transect, but similar to *L. chilensis* appear to have decreased over the last couple of years. However, this species of gorgonian is not monitored. *Corynactis californica* remained relatively abundant for this site covering 4.0% of the bottom. *Astrangia lajollaensis* cover was low at 0.83%, their lowest coverage recorded at this site since monitoring began in 1982. Bryozoans continued to be relatively rare at this site and none were recorded on RPCs, their lowest coverage since monitoring began in 1982. As this site continues to be dominated by *Strongylocentrotus spp*. and *Ophiothrix spiculata*, it appears that encrusting invertebrates have gradually declined.

Echinoderms continue to dominate this site. *Strongylocentrotus purpuratus* and *Ophiothrix spiculata* dominated the eastern two thirds of the transect and *S. franciscanus* dominated the western third. As mentioned above, *O. spiculata* covered 40.2% of the bottom, an increase from its coverage of 30% in 2000. Very small *O. spiculata* were moderately abundant, indicating recent recruitment of this species. *Strongylocentrotus purpuratus* were most abundant on the eastern half of the transect and declined since last year. This year's density was recorded at 39/m^2, a decrease from its 2000 density of 78/m^2. The density of *S. franciscanus* was 7.6/m^2, similar to 2000. Juvenile *S. purpuratus* and *S. franciscanus* were rare, indicating little recruitment. *Lytechinus anamesus* were less abundant than last year and were counted on both quadrats and band transects with densities of 0.13/m^2 and 0.12/m^2 respectively. *Centrostephanus coronatus* density was 0.63/m^2, similar to last year. Sea urchin wasting disease was very prevalent at this site. On June 14th, we estimated 10% of the *S. franciscanus* and *S. purpuratus* showed signs of wasting disease, on August 17th, we estimated that 75% of the *S. franciscanus* and 30% of the *S. purpuratus* showed signs of wasting disease, and on September 17th we estimated that 50% of the *S. franciscanus* and 10% of the *S. purpuratus* showed signs of wasting disease. Few *L. anamesus* were observed with wasting disease on September 17th. Whole sea urchin tests were common and were probably a result of mortality caused by this disease.

Pisaster giganteus continue to be rare with none observed in quadrats and a density 0.025/m^2 on 5-meter quadrats, similar to last year. The *P. giganteus* that were present were large. *Asterina miniata* density was similar to previous years at 0.38/m^2. *Henricia leviuscula* and *Linckia columbiae* were common. *Parastichopus parvimensis* density was 0.38/m^2, similar to last year. Two *Asterina miniata* were observed with sea star wasting disease on September 17th.

Crassedoma giganteum density was 0.15/m^2, similar to last year. *Megathura crenulata* continued to increase with a density of 0.053/m^2, the highest density recorded at this site since 1995. *Aplysia californica* density was 0.047/m^2, similar to last year. *Kelletia kelletii* density has gradually increased over the last six years; this year's density was 0.036/m^2. No *Haliotis corrugata* were observed along the transect this year. One *Panulirus interruptus* was found during band transects, 0.0014/m^2. Several large winged pearl oysters, *Pteria sterna*, were observed on *Lophogorgia chilensis*. These appear to continue to decline in density, as there has been no new recruitment since the 1997/8 El Niño.

Fish continue to have a relatively low diversity and abundance for this site. The most abundant fish were adult *Chromis punctipinnis*. No juvenile *C. punctipinnis* were observed on June 14th, but adults were observed guarding nests of eggs in rock crevices. Small groups of juvenile *Chromis punctipinnis* were observed on August 17th, however recruitment appeared to be low at this date. Several small adult and six YOY *Sebastes mystinus* were observed on June 14th. Several adult and one juvenile *Sebastes serriceps* were observed. Only a few small female and no juvenile or male *Semicossyphus pulcher* were observed. Several *Oxyjulis californica* and several female *Halichoeres semicinctus* were observed. *Oxylebius pictus* were common. Two *Sebastes atrovirens* were observed. Several adult *Paralabrax clathratus* were observed. Several adult but no juvenile *Hypsypops rubicundus* were observed. *Embiotoca jacksoni* were rare. *Coryphopterus nicholsii* density was 1.5/m^2, similar to the last several years. *Alloclinus holderi* were uncommon with a density of 0.083/m^2, a decline from the past several

years. One large giant black sea bass, *Stereolepis gigas* was observed during the roving diver fish count on June 14th. Roving diver fish count was conducted on June 14th with five divers observing 18 species of fish and on August 17th with six divers observing 19 species of fish.

Six ARMs were monitored for all indicator species. One ARM (#2307) was vandalized with its top ripped open and several bricks removed. I was at this site four days prior on September 13th, and this ARM was intact. So, the vandalism occurred very recently (over the weekend). This ARM was monitored.

No *Haliotis spp*. were observed in the ARMs at this site, similar to past years. *Cypraea spadicea* density was 1.83/ARM, a increase from last year. Several *juvenile C. spadicea* were found in the ARMs. Small *Megathura crenulata* were common in the ARMs at 1.0/ARM, similar to previous years. *Crassedoma giganteum* abundance continued to decline and were recorded at their lowest density in the ARMs at this site, 1.17/ARM. *Asterina miniata* continued to be abundant in the ARMs at 14.0/ARM. *Pisaster giganteus* continue to be rare in the ARMs, 0.17/ARM. *Lytechinus anamesus* density was 1.83/ARM, a decline from last year. *Strongylocentrotus franciscanus* density continued to decline for the second consecutive year and was recorded at 16.33/ARM. Similarly, *S. purpuratus* also decreased for the second consecutive year, and was recorded at 31.0/ARM. Mean size of both *S. franciscanus* and *S. purpuratus* increased for the second consecutive year and few individuals less than 15mm were observed, indicating little recruitment. *Centrostephanus coronatus* density continued to decline for the third consecutive year and they were recorded at their lowest density since 1997. Their density was 1.33/ARM; this is relatively high compared to other sites this year. One *Arbacia incisa* measuring 45mm was found in ARM#2442. This is probably the same *A. incisa* that was found in this ARM in 1999 at 21mm and in 2000 at 35mm.

The temperature loggers were working properly and all temperature data was successfully downloaded.

Location: Cathedral Cove, Anacapa Island

2001 sampling dates: 6/29, 7/20, 8/14.
2001 status: Kelp forest.

Overall, there was less algae at this site than in 2000. The algae was not evenly distributed around the transect with some areas being barren while other areas supporting an abundance of algae. *Macrocystis pyrifera* canopy cover was estimated at 20% on July 20th and August 14th. The *M. pyrifera* plants were healthy, but some had large numbers of *Strongylocentrotus franciscanus* feeding on their holdfasts. Adult, subadult and juvenile densities of *M. pyrifera* were all lower than in 2000. Their densities were 0.02/m^2, 0.095/m^2, and 0.125/m^2 respectively, and cover was 6.17%. Adult and juvenile *Laminaria farlowii* densities were 0.25/m^2 and 0.042/m^2 respectively, and cover was 1.5%. *Cystoseira spp*. covered 5.83% of the bottom, similar to last year. The brown alga, *Coilodesme sp*. was observed growing epiphytically on *Cystoseira spp*., this is common at this site. Miscellaneous brown algae cover was 2.67%, and has declined over the past two years. Miscellaneous red algae cover was 6.5%, a decline from last year. Miscellaneous plants, consisting of filamentous brown diatoms, were more abundant than last year with a cover of 17.0%. Articulated coralline algae cover was 15.0%, a decreased for the second consecutive year. Encrusting coralline algae cover was 55.3%, similar to last year. Bare substrate cover was similar to last year at 22.2%.

Miscellaneous invertebrates covered 21.8% of the bottom, similar to last year. The most common miscellaneous invertebrates in this category on RPCs were barnacles (Balanus sp.), Christmas tree worms (*Spirobranchus spinosus*) and hydroids. Bryozoan cover declined from last year; bryozoans combined had a cover of 4.33%. Gorgonians are rare at this site, but more *Lophogorgia chilensis* were observed than in past years, with a density of 0.0069/m^2.

Strongylocentrotus franciscanus density increased to 7.46/m^2, the highest density recorded at this site since monitoring began. *Strongylocentrotus purpuratus* density was 3.58/m^2, slightly higher than last year. Both *S. franciscanus* and *S. purpuratus* were out in the open foraging and not confined to crevices, atypical for this site. This may have resulted in an increase in density along the transect. Similar to last

year, groups of *Strongylocentrotus spp*., but mostly *S. franciscanus*, were observed feeding on the holdfasts of *Macrocystis pyrifera* plants. *Centrostephanus coronatus* density declined to 0.0/m^2. *Asterina miniata* density was 0.38/m^2, relatively high for this site and similar to last year. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats with densities of 0.042/m^2 and 0.01/m^2 respectively. *Parastichopus parvimensis* density was 1.58/m^2, similar to the past several years.

Lithopoma undosum density was 3.67/m^2, and has continued to decline from its high in 1999. *Crassedoma giganteum* were abundant along the steep areas on the inshore side of the transect at a density of 0.21/m^2. *Aplysia californica* density was 0.0083/m^2. Several large *Aplysia vaccaria* were observed along the transect, similar to past years. No *Haliotis corrugata* (0.0/m^2) were observed during band transects this year. This is the lowest density recorded for this species since monitoring began at this site in 1983. Only two *H. corrugata* were observed along the transect for size frequencies this year. One additional *H. corrugata* measuring 19mm was found in an ARM. *Serpulorbis squamigerus* covered 0.33% of the bottom, similar to last year, but relatively low cover for this site. *Panulirus interruptus* density was 0.0139/m^2, higher than the last several years, but similar to previous years.

Fish were abundant and diverse as usual for this site and there was no notable change in the fish population during our two roving diver fish counts. Two tagged *Hypsypops rubicundus* were observed this summer, these fish were tagged in 1985. *Alloclinus holderi* density was unexpectedly high at 1.54/m^2. This is relatively high for this site as well as others for a “normal” water temperature year. *Coryphopterus nicholsii* density was 0.38/m^2, relatively high for this site. Roving diver fish count was conduced on July 20th with six divers observing 23 species of fish, and on August 14th with five divers observing 26 species of fish.

The ARMs at this site appear to have bounced around and moved some since last year, but for the most part they were in tact and good condition. All seven ARMs were monitored for all indicator species. ARM #2350 had one layer of bricks that were about 75% buried in sand.

One small *Haliotis corrugata* (measuring 19mm) was found in the seven ARMs. Similar to previous years, *Cypraea spadicea* density was high at 12.9/ARM. However, this year juvenile *C. spadicea* (often measuring as large as some of the smaller adults) were common. We have observed juvenile *C. spadicea* at other sites this year. *Crassedoma giganteum* density was similar to last year at 3.14/ARM, and juveniles were common also similar to last year. *Asterina miniata* density was 9.86/ARM, similar to past years and juveniles were moderately abundant. *Pisaster giganteus* were notably more abundant with a density of 6.86/ARM, the highest density recorded since we began monitoring ARMs at this site in 1992. Many of these were small with a mean size of 30mm. Both *Strongylocentrotus franciscanus* and *S. purpuratus* density decreased about 50% in the ARMs from 2000. *Strongylocentrotus franciscanus* density was 49.4/ARM compared to 94.7/ARM in 2000, and their mean size was similar to last year at 25.4mm. *Strongylocentrotus purpuratus* density was 99.6/ARM compared to 204.7/ARM in 2000, and their mean size was also similar at 34mm. *Centrostephanus coronatus* density was 0.43/ARM, a decline for the third consecutive year. Mean size was slightly lower at 32.6mm and none less than 17mm were observed, indicating little to no recruitment. Several octopuses were observed in the ARMs.

The temperature loggers were working properly and all temperature data was successfully downloaded.

Location: Landing Cove, Anacapa Island

2001 sampling dates: 6/15, 7/20, 8/13, 8/17.
2001 status: Open/sparse kelp forest.

Canopy cover of *Macrocystis pyrifera* was lower than last year and estimated at 5% June 15th. Low canopy cover is common at this site and is a result of high boat traffic in the Cove. However, on June 15th, there were few potential adult canopy forming *M. pyrifera* plants along the transect that could contribute to canopy cover even if there was not any boat traffic. Overall, brown adult macroalgae were less abundant than last year at this site. Adult, subadult and juvenile *M. pyrifera* densities were 0.02/m^2, 0.04/m^2, and 5.79/m^2 respectively, and covered 6.3% of the bottom. Except for juvenile density, which was

similar to last year, all other categories of *M. pyrifera* decrease from 2000 densities. The top of the reef at the east end of the transect appeared similar to past years with an abundant and diverse coverage of algae. Adult and juvenile *Eisenia arborea*, *Pterygophora californica* and *Laminaria farlowii* have all decreased since last year. Adult and juvenile *E. arborea* densities were 0.38/m^2 and 0.46/m^2 respectively. Adult and juvenile *P. californica* densities were 0.042/m^2 and 0.083/m^2 respectively. Adult and juvenile *L. farlowii* densities were 0.13/m^2 and 5.9/m^2 respectively. Juvenile *P. californica* were common near the transect, but not directly along the transect where quadrats are conducted. Cover of *E. arborea*, *P. californica*, and *L. farlowii* were 17.5%, 0.83%, and 5.3% respectively. The cover for *E. arborea* and *P. californica* were similar to last year, while *L. farlowii* was lower. Miscellaneous brown algae cover was recorded at 8.8%. *Cystoseira spp*. covered 0.33% of the bottom, a decrease from the last several years and the lowest density recorded since 1984. *Gelidium spp*. cover was 19.3%, similar to last year. All of the *Gelidium spp.* was present on top of the reef at the eastern end of the transect. There were no miscellaneous plants (usually brown filamentous diatoms) counted along the transect this year. Articulated coralline algae covered 10.3% of the bottom. Encrusting coralline algae continued to decline for the second year and was recorded at 28%. Bare substrate covered 19.0% of the bottom, similar to last year.

Miscellaneous invertebrate cover increased to 25.5%, the highest coverage recorded at this site. The most abundant invertebrates in this category were hydroids, anemones, various worms and *Spirobranchus spinosus*. Bryozoans combined covered 5.8% of the bottom, a decrease from last year. Tunicates, sponges, and *Corynactis californica* were mostly on the shallow/eastern end of the transect, and covered 4.5%, 3.5%, and 8.5% respectively. This was a large increase for *C. californica*, and the highest coverage recorded since monitoring began in 1982.

Strongylocentrotus franciscanus and *S. purpuratus* densities increased from last year and were recorded at the highest level for this site since monitoring began in 1982. Their densities were 4.42/m^2 and 5.88/m^2 respectively. *Centrostephanus coronatus* were common on the shallow reef on the eastern part of the transect. Their density was 0.042m^2, a decline from last year. *Parastichopus parvimensis* density increased to 1.17/m^2, the highest density recorded at this site. Emergent *Asterina miniata* and *Pisaster giganteus* were rare as usual for this site and none were observed on quadrats or 5-meter quadrats. No sea star wasting disease or sea urchin wasting disease were observed at this site.

Lithopoma undosum remained relatively abundant for this site with a density of 3.29/m^2, similar to the last two years. *Crassedoma giganteum* density was 0.50/m² and were abundant along the vertical walls at this site. *Aplysia californica* were rare with a density of 0.0042/m². *Haliotis corrugata* remained rare, but several were observed along the transect, more than last year. Three were observed on one band transect for a density of 0.0042/m². No fresh shells and a few old shells were observed. *Cypraea spadicea* were relatively abundant and have increased in density over the last three years. Their density was recorded at 0.42/m^2, the highest since monitoring began at this site for this species in 1983. *Megathura crenulata* were common with a density of 0.019/m^2, higher than the last several years.

Note: On October 11th, 2001, I made a dive along the transect and found one small *H. corrugata* (81mm) near the ARMs, and one large *H. fulgens* about 0.5m off the transect that measured 182mm. We have seen a *H. fulgens* several years ago, but not in recent years.

Fish were abundant and diverse at this site. The most noticeable change between the two roving diver fish counts was that juvenile *Chromis punctipinnis* were more abundant on August 17th. However, relatively few were observed, indicating either late and/or poor recruitment of this species. Adult *C. punctipinnis* were common. Adult *Embiotoca jacksoni* were common and several juveniles were observed. Several juvenile Sebastes mystinus were observed, but were rare. Adult *Sebastes atrovirens* were rare. One adult and one juvenile *Sebastes serriceps* were observed. Adult *Sebastes serranoides* were uncommon and no juveniles were observed. Several female and one male *Semicossyphus pulcher* were observed. Several male and several female Halichoeres semicinctus were observed. *Oxyjulis californica* were common and several juveniles were observed. *Oxylebius pictus* were common. Adult *Paralabrax clathratus* were common and one juvenile was observed. Several *Lythrypnus zebra* were observed. *Coryphopterus nicholsii* were common in the deeper parts of the transect. Their density was recorded at 0.25/m^2. *Alloclinus holderi* were common with a density of 0.58/m^2, similar to last year.

Roving diver fish counts were conducted on July 20th with seven divers observing 28 species of fish and on August 17th with six divers observing 29 species of fish.

We monitored all seven ARMs for all indicator species. Two of the ARM cages were replaced. Four of the ARMs were moved to an area with more sand. The ARMs were originally located in an area that was mostly cobble. This may have had an impact on what was found in the ARMs this year. Of the four ARMs that moved (#2410, #2374, #2407, and #2372), two were moved to their original location and two (#2407 and #2410) were moved between the shallow reef and the island. The ARMs at this site often move during large swell events and we hope this new location will be less affected by these events.

One *Haliotis corrugata*, measuring 52 mm, was found in the ARMs this year. *Cypraea spadicea* density was 4.71/ARM, similar to the past several years. *Crassedoma giganteum* density was 3.0/ARM, similar to previous years. *Asterina miniata* were abundant in the ARMs and their density remained high at 17.0/ARM. *Asterina miniata* were mostly small with a mean size of 19.8 mm, a small increase from last year. *Pisaster giganteus* density continued to increase for the third consecutive year and was 2.71/ARM, the highest density recorded for this site. *Strongylocentrotus franciscanus* density continued to decline for the second year, but remains high at 78.8/ARM. Mean *S. franciscanus* size continued to increase for the third consecutive year and was 32.8 mm. *Strongylocentrotus purpuratus* density declined to 138/ARM, significantly lower than the 296.7/ARM found in 2000. Mean size of *S. purpuratus* increased to 32.2 mm, the largest mean size recorded since 1998. No *Centrostephanus coronatus* were observed in the ARMs this year, the first time since 1997.

The temperature loggers were working properly and all temperature data was successfully downloaded.

Location: Southeast Sea Lion, Santa Barbara Island

2001 sampling dates: 6/12, 8/27.
2001 status: Dominated by *Strongylocentrotus purpuratus* and *Ophiothrix spiculata*.

Similar to last year, this site continues to be dominated by *Strongylocentrotus purpuratus* and *Ophiothrix spiculata*. The site continues to be almost completely devoid of macroalgae and represents the Southeast Sea Lion area well. Similar to last year, no macroalgae was observed in the quadrats. One juvenile *Macrocystis pyrifera*, one juvenile *Eisenia arborea*, and one juvenile *Laminaria farlowii* were observed along the transect. The most abundant macroalgae along the transect were several small patches of the brown algae, *Dictyota/Pachydictyon*, and the red algae, *Laurencia pacifica*. One large patch of *Gigartina corymbifera* was growing epiphytically on a *Muricea californica*. Miscellaneous brown algae and miscellaneous red algae covered 0.17% and 2.7% of the bottom respectively. Miscellaneous plants covered 7.7% of the bottom and consisted of brown filamentous diatoms. Articulated coralline algae covered 3.8% of the bottom. This is a relatively high coverage for this site and is probably a result of the decrease in *Strongylocentrotus purpuratus*, as there appears to be an inverse relationship. Encrusting coralline algae were abundant covering 45% of the bottom. Bare substrate cover was 29%, similar to last year.

Miscellaneous invertebrates on RPCs continued to increase for the fifth consecutive year, covering 32.5% of the bottom. This category consisted mostly of *Ophiothrix spiculata*, the small anemone *Sargartia/Cactosoma*, and *Balanus sp*. (barnacles). *Ophiothrix spiculata* were counted separately and then added to the miscellaneous invertebrate category. *Ophiothrix spiculata* covered 20% of the bottom, while the remaining miscellaneous invertebrate cover was 12.5%. *Ophiothrix spiculata* have increased over the last two years and this years cover is the highest recorded (in 2000, their cover was11.8%). *Ophiothrix spiculata* were mostly present on the northern half of the transect, and relatively uncommon on the southern half. *Cactosoma arenaria/Sargartia catalinensis* did not seem to be as abundant as last year on the north half of the transect. *Corynactis californica* continued to increase for the third consecutive year and were recorded at 4.5%, the highest cover recorded at this site since monitoring began in 1985. *Astrangia lajollaensis* cover declined for the third consecutive year to 0.33%, the lowest cover recorded at this site since 1982. This increase in *C. californica* and decrease in *A. lajollaensis* is similar to what we have observed at the Admiral's Reef site at Anacapa Island. No *Balanophyllia elegans* were observed in

RPCs this year, the first time since monitoring began in 1982. Tunicate cover was recorded at 1.5%, the lowest coverage since 1985. Bryozoans combined covered 1.3%. *Tethya aurantia* decreased in density to 0.092/m^2, the lowest recorded since 1992. *Lophogorgia chilensis* were relatively abundant with a density of 0.20/m^2, similar to the previous several years. As usual for this site, *Muricea californica* were common, while *M. fruticosa* were less common. Their densities were 0.021/m^2 and 0.0056/m^2 respectively.

Similar to other sites with high densities of *Strongylocentrotus purpuratus*, the density at this site decreased. *Strongylocentrotus purpuratus* density was 21.9/m^2, compared with 80.1/m^2 in 2000. *Strongylocentrotus franciscanus* density continued to decline for the second consecutive year and was recorded at 3.1/m^2. Recruitment of *S. purpuratus* was relatively high compared with other sites this year. Over 80% of the *S. purpuratus* measured during the size frequency sampling were less than 15mm. Recruitment of *S. franciscanus* was low. Both *Strongylocentrotus spp*. were out in the open and not confined to crevices. *Lytechinus anamesus* densities declined and were sampled on both quadrats and band transects this year. Their densities were similar to last year, 0.29/m^2 and 0.23/m^2 respectively. As usual, these were difficult to see because they were covered with pebbles and/or shell fragments. *Centrostephanus coronatus* were relatively abundant with a density of 1.8/m^2, similar to last year. Intact, fresh *S. purpuratus* tests were common indicating recent mortality. Several *S. purpuratus* were observed with sea urchin wasting disease.

Observers conducting quadrats were instructed to look carefully for the urchin, *Arbacia incisa*, but none were found during quadrats. David Kushner conducted a survey along the entire transect and found four within one meter of the transect line (one at meter #14, two at #21.6, and one at #23.1 along the transect). All of these were just outside of quadrats, however they give a density along the transect line and one meter out of 0.02/m^2, similar to last year. Two additional *A. incisa* were observed near, but greater than one meter from the line. These measured 34mm and 36mm.

Asterina miniata continued to increase gradually for the third consecutive year. Their density was 0.46/m^2, relatively abundant for this site and the highest density recorded since monitoring began in 1982. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats with densities of 0.083/m^2 and 0.045/m^2 respectively, similar to last year. *Pycnopodia helianthoides* were more common than last year and noticeably larger. A total of five were observed on band transects, 0.0069/m^2. *Parastichopus parvimensis* were common with a density of 0.71/m^2, similar to the past several years. No sea star wasting disease was observed on June 12th.

Lithopoma undosum continued to decline for the second consecutive year and was recorded at 0.67/m^2. This is less than 14% of the density recorded in 1999. This scenario of a large increase and subsequent rapid decrease in *L. undosum* densities following the 1997/1998 El Niño is very similar to what was observed after the 1983/1984 El Niño. *Megathura crenulata* density was 0.0069/m^2. No live *Haliotis spp.* were observed for the seventh consecutive year. Several large old *H. corrugata* shells were present, but not collected. *Aplysia californica* were less abundant than last year with a density of 0.071/m^2. *Crassedoma giganteus* density was recorded at 0.069/m^2, lower than last year but similar to previous years. The turban snail, *Tegula eiseni* was common. We did not observe any live pencil oysters, *Pteria sterna* this year.

Fish diversity was higher than last year but still relatively low, and fish abundance remained low. The most abundant fish along the transect were *Coryphopterus nicholsii* and *Chromis punctipinnis*. Adult *Chromis punctipinnis* were common. No juvenile *C. punctipinnis* were observed on June 12th, but they were common on August 27th. Overall, recruitment appeared to be relatively low for this species. Small female *Semicossyphus pulcher* were present but in relatively low numbers for this site, and no males or juveniles were observed. Painted greenlings, *Oxylebius pictus* were common. Several adult *Hypsypops rubicundus* were observed. *Paralabrax clathratus* were rare with a few observed. *Coryphopterus nicholsii* density was 0.29/m^2, and were abundant in the sandy areas around the transect. *Alloclinus holderi* density was similar to last year at 0.25/m^2. Roving diver fish counts were conducted on June 12th with four divers observing 15 species of fish and on August 27th with seven divers observing 16 species of fish.

The temperature logger was retrieved and deployed and all of the data was successfully downloaded.

Location: Arch Point, Santa Barbara Island

2001 sampling dates: 6/11, 8/28.
2001 status: Dominated by *Strongylocentrotus purpuratus* and *S. franciscanus*.

Similar to last year, this site continues to be nearly devoid of macroalgae and dominated by *Strongylocentrotus purpuratus* and *S. franciscanus*. No *Macrocystis pyrifera*, *Pterygophora californica* or *Laminaria farlowii* were observed along the transect. No macroalgae was observed on quadrats this year, however two juvenile *Eisenia arborea* were observed within the transect area. Similar to last year, the most abundant alga along the transect was the red alga, *Laurencia pacifica*. Miscellaneous red algae consisting mostly of *L. pacifica* continued to increase for third consecutive year, and had a cover of 25.5%. This is the highest cover for this category since monitoring began at this site in 1982. There was a small amount of *Gelidium sp.* and the brown algae, *Dictyota/Pachydictyon*. Miscellaneous plants, mostly filamentous diatoms, covered 5.7% of the bottom. Articulated and encrusting coralline algae cover was 2.0% and 42.8% respectively. Bare substrate cover increased to 26.3%.

The most common miscellaneous invertebrates on RPCs were *Balanus sp*. and *Spirobranchus spinosus*. This category covered 13.8% of the bottom, similar to the last three years. Barnacles, *Balanus sp*. appeared more abundant than last year. Amphipod tube mats were rare and noticeably less abundant than last year. *Phragmatopoma californica* continued to have low coverage and were recorded at 0.83%. *Corynactis californica* continued to increase for the third consecutive year, covering 6.8% of the bottom. This is the highest coverage recorded since 1990 and similar increases have been observed at other sites. No tunicates or sponges were observed on RPCs this year. Bryozoans were rare and combined had a cover of 0.33%. *Lophogorgia chilensis*, *Muricea fruticosa*, and *M. californica* were all present, but uncommon as usual for this site.

Strongylocentrotus purpuratus and *S. franciscanus* declined at this site but remained relatively abundant and undoubtedly the dominant biological features. *Strongylocentrotus purpuratus* declined to 93.4/m^2, down from 126.8/m^2 in 2000. *Strongylocentrotus franciscanus* declined to 7.9/m^2, down from 15.2/m^2 in 2000. Similar to other sites this year, there was little recruitment of *S. purpuratus* or *S. franciscanus* this year. *Lytechinus anamesus* were less abundant than last year with a density of 0.0097/m^2. *Centrostephanus coronatus* density was similar to previous years at 0.83/m^2. There was a noticeable increase in sea urchin wasting disease affecting *S. purpuratus* over the course of the summer. On June 11th about ten (<1%) *S. purpuratus* were observed with the disease, and on August 28th we estimated that 15% of the population were effected.

Asterina miniata and *Pisaster giganteus* were rare, with only a few observed along the transect. *Asterina miniata* density was 0.042/m^2, a decline from last year, but similar to previous years for this site. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats with densities of 0.0m^2 and 0.025/m^2 respectively. No sea star wasting disease was observed. P*arastichopus parvimensis* density was 0.17/m^2. *Ophiothrix spiculata* were present but not very abundant.

Aplysia californica were common, but less abundant than last year with a density of 0.061/m^2. *Lithopoma undosum* density was similar to last year at 0.63/m^2. *Crassedoma giganteum* density was similar to previous years at 0.011/m^2. No live *Haliotis spp*. were observed this year. The turban snails, *Tegula aureotincta* and *T. eiseni* were moderately abundant as usual for this site. Four *Panulirus interruptus* were observed on band transects (0.0056/m^2).

Similar to last year, fish have low abundance and diversity at this site. Adult *Chromis punctipinnis* were the most abundant fish. No juvenile *C. punctipinnis* were observed on June 11th, however large schools of juveniles were present along the transect on August 28th. This is the only site where we have observed large schools of juvenile *C. punctipinnis*, indicating good recruitment. Few *Oxyjulis californica* were observed. Several *Paralabrax clathratus* and *Girella nigricans* and were observed. Several female and

male *Semicossyphus pulcher* were observed. Several *Medialuna californiensis* were observed after the roving diver fish count was conducted in June, and several were observed in August. One male and one female *Halichoeres semicinctus* were observed on June 11th, and several were observed on August 28th. As usual for this site, adult *Hypsypops rubicundus* were relatively abundant along with their nests. Only one *H. rubicundus* was observed this summer, indicating little recruitment. One tagged *H. rubicundus* was observed, this fish was tagged in 1985. No *Sebastes mystinus* or *S. miniatus* were observed this year. No adult or juvenile *S. serriceps* was observed on June 11th, and one of each was observed on August 28th. No *Lythrypnus dalli* or *L. zebra* were observed. *Coryphopterus nicholsii* were common in the sandy areas on the offshore side of the transect, only one was observed on quadrats, 0.13/m^2. *Alloclinus holderi* continued to decline for the fourth consecutive year. Their density this year was 0.042/m^2; the lowest recorded at this site since monitoring began in 1985. One large moray eel, *Gymnothorax mordax*, was observed after the roving diver fish count. Several large California halibut, *Parlichthys californicus*, were observed near the transect in June. Roving diver fish counts were conducted on June 11th with four divers observing 13 species of fish and on August 28th with seven divers observing 19 species of fish.

The temperature loggers were retrieved and deployed on June 12th. Unfortunately, the logger housing was completely flooded with water and both loggers were ruined. This was the first time a housing has flooded since we began using them in 1993. The loggers were sent into Onset Computer Corp. for data retrieval. Onset was unable to retrieve any data from the StowAway logger, but was able to retrieve data from the HoboTemp until May 5, 2001. Data is missing from May 5th – June 12th 2001. We presume that this is the date the housing flooded.

Location: Cat Canyon, Santa Barbara Island

2001 sampling dates: 6/13, 8/28.
2001 status: Dominated by *Strongylocentrotus purpuratus* and *S. franciscanus*.

Similar to the last several years and the other sites on Santa Barbara Island, this site remains nearly devoid of macroalgae. There were several adult canopy forming *Macrocystis pyrifera* plants just outside the transect area. No *M. pyrifera*, *Eisenia arborea*, *Pterygophora californica* or *Laminaria farlowii* were observed in quadrats or RPCs this year. Several small patches of adult *Cystoseira sp*. were observed within the transect, but none were present within the RPCs. Miscellaneous red algae covered 2.3% of the bottom and consisted mostly of *Laurencia pacifica*. Miscellaneous plants consisting of filamentous diatoms covered 10.7% of the bottom, similar to last year. Several small patches of the brown algae *Dictyota/Pachydictyon* were present within the transect. Articulated and encrusting coralline algae covered 0.5% and 51% of the bottom respectively. Bare substrate covered 38.7% of the bottom.

Miscellaneous invertebrates covered 8.5% of the bottom, similar to last year. The most common invertebrates in this category were the Christmas tree worm, *Spirobranchus spinosus*, and barnacles, *Balanus sp*. Bryozoan cover remained low at 0.33%. Colonial tunicates, mostly *Pycnoclavela stanleyi* and *Aplidium sp*. were common, but had a low coverage of 0.17%.

This site continued to be dominated by sea urchins, but has a relatively low sea urchin density compared with the other two Santa Barbara Island sites. *Strongylocentrotus franciscanus* density decreased to 6.4/m^2. *Strongylocentrotus purpuratus* continued to increase for the second consecutive year and was recorded at 17.2/m^2. Similar to the other sites at Santa Barbara Island, most of the *S. franciscanus* and *S. purpuratus* were out in the open, and not confined to crevices. Juvenile *S. franciscanus* and *S. purpuratus* were rare indicating little recruitment this year. *Centrostephanus coronatus* were common with a density of 0.5/m^2. Several *S. franciscanus* and *S. purpuratus* were observed with sea urchin wasting disease.

Asterina miniata and *Pisaster giganteus* were common, but less abundant than last year. *Asterina miniata* density was recorded at 0.083/m^2. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats with densities of 0.0/m^2 and 0.035/m^2 respectively. *Parastichopus parvimensis* density was 0.42/m^2, similar to previous years. No sea star wasting disease was observed.

Lithopoma undosum density was recorded at 0.96/m^2, a decrease from last year but still relatively high for this site. No *Haliotis spp.* were observed on band transects for the fourth consecutive year. *Megathura crenulata* density was 0.0083m^2, similar to last year. *Aplysia californica* density continued to decline for the third consecutive year and was recorded at 0.035/m^2. The *A. californica* were noticeably "hunkered" down in crevices as if they were avoiding the large swell that was present. Three *Panulirus interruptus* were observed on band transects for a density of 0.0042/m^2. The turban snails, *Tegula eiseni* and *T. aureotincta* remained relatively abundant, similar to past years. One abandoned lobster trap was present along the transect.

The most abundant fish were small adult *Chromis punctipinnis*. No juvenile *C. punctipinnis* were observed on June 13th but they were observed in relatively low numbers on August 28th. Overall, recruitment for this species appeared low, similar to what we have observed at other sites this year. Adult *Girella nigricans* were common. No more than five adult *Paralabrax clathratus* were observed on June 13th, but they were more common on August 28th. About 10 female, one male and one juvenile *Semicossyphus pulcher* were observed. Adult *Hypsypops rubicundus* were moderately abundant as usual, and no juveniles were observed. However, one small "adult" was observed with a blue spot. Several male and female *Halichoeres semicinctus*, several *Medialuna californiensis*, about 10 *Alloclinus holderi*, several painted greenlings, *Oxylebius pictus*, several *Oxyjulis californica*, one *Sebastes atrovirens*, several grass rockfish, *Sebastes rastrelliger*, and one california halibut, *Paralichthys californicus*, were observed. The density of *Alloclinus holderi* was 0.083/m^2, a decline for the second consecutive year. Roving diver fish counts were conducted on June 13th with six divers observing 24 species of fish and on August 28th with six divers observing 16 species of fish.

The temperature loggers were retrieved and all data was successfully downloaded.

We recommend placing several extra eyebolts along this transect to facilitate locating it. It is difficult to maintain the leadline here due to the heavy swell this site is exposed to. The extra eyebolts will help keep the lead line in place as well as aid in locating the transect if the lead line is missing.

DISCUSSION

General trends are described within this section and the Sites Results sections of this report. However, these are only general trends, a complete trend analysis for each of the indicator species is beyond the scope of this annual report.

General Biology:

In 2001, *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 North at Santa Rosa Island, 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 were dominated by *Strongylocentrotus purpuratus*. Hare Rock at San Miguel Island, Johnson's Lee North at Santa Rosa Island 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*. Rhodes Reef at Santa Rosa Island was dominated by *Strongylocentrotus franciscanus*. Yellowbanks at Santa Cruz Islands was dominated by *S. purpuratus* and *Lytechinus anamesus*. Admiral's Reef at Anacapa Island was dominated by *S. purpuratus*, *S. franciscanus* and *Ophiothrix spiculata*. Southeast Sea Lion Rookery at Santa Barbara Island was dominated *S. purpuratus* and *Ophiothrix spiculata*. Fry's Harbor at Santa Cruz Island was dominated by *Pachythyone rubra* and *S. purpuratus*, and had moderate densities of *Ophiothrix spiculata* and *Astrangia lajollaensis*.

All three monitoring sites on Santa Barbara Island were dominated by sea urchins, though in general their densities appear to be declining. *Strongylocentrotus purpuratus* densities dramatically decreased at Southeast Sea lion, decreased slightly at Arch Point, and increased slightly at Cat Canyon. The increase and now subsequent decrease in Strongylocentrotus spp. densities after the 1997/1998 El Niño 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* but all to a lesser degree than in 2000. *Macrocystis pyrifera* recruitment was observed but substantial kelp forests were only present in a few small areas around Sutil Island and close to shore in shallow areas predominately on the west shore.

The three sites at Anacapa Island appear to represent much of the Island well. These sites have changed some since 2000. *Macrocystis pyrifera* abundance decreased at both Landing Cove and Cathedral cove and remained virtually absent from Admirals Reef. Landing Cove and Cathedral cove are within the Ecological Reserve and appear to represent this reserve well. Admiral's Reef, outside of the reserve, continues to be dominated by both *Strongylocentrotus purpuratus* and *Ophiothrix spiculata*. These two species dominate much of the south side of East Anacapa, and both the south and north sides of middle and West Anacapa Island. Similar to Santa Barbara Island, with the exception of the ecological reserve and some other small patches of kelp forest scattered in shallow areas; much of Anacapa is echinoderm dominated similar to last year. Though the two sites within the reserve have lower *S. purpuratus* densities compared to sites outside the reserve, they represented two of the four sites where *S. purpuratus* densities increased in 2001.

All five sites on Santa Cruz Island continued to be dominated by echinoderms. *Strongylocentrotus purpuratus* was the most dominant and increased in density at the three north side monitoring sites. Notable increases in algal cover were observed at both south side sites complemented by decreases in *Strongylocentrotus spp.* densities. Young 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 represented well by the monitoring sites.

Kelp forests continued to be relatively abundant around Santa Rosa and San Miguel Islands, though some of these sites have rapidly changed over the past several years. In 2001, sea urchin densities

varied greatly at the five monitoring sites at these two Islands. Overall, *S. purpuratus* densities decreased over the past year. The most dynamic of these five sites are the two sites at Johnson's Lee. Densities of *S. purpuratus* were high enough this year to almost completely exclude kelp at the Johnson's Lee South, while at Johnson's Lee North, *S. purpuratus* density was greatly reduced by *Pycnopodia helianthoides* predation, and a lush developing kelp forest was present. Both Johnson's Lee sites have had lush kelp forests for most of the past decade.

An overall decrease in the abundance of *Strongylocentrotus purpuratus* was possibly the most significant change at the monitoring sites in 2001. *Strongylocentrotus purpuratus* densities decreased at eight sites, remained the same at four sites, and increased at four sites in 2001, compared to increases at 15 sites in 2000. The four sites that had increases in *S. purpuratus* densities were all on the northeast sides of Anacapa and Santa Cruz Islands, while decreases in densities were more pronounced along the southern sides of the Islands. The two monitoring sites within the reserve at Anacapa Island incurred the greatest increases in *S. purpuratus* densities as well as the greatest reduction in macroalgae. The Johnson's Lee North site at Santa Rosa Island sustained the most rapid change from an urchin-dominated area to a developing kelp forest, and we expect other sites to change similarly in the near future.

Strongylocentrotus franciscanus density increased at five sites, remained the same at four sites and decreased at seven sites in 2001. Similar to *S. purpuratus*, densities of *S. franciscanus* increased at the two sites within the ecological reserve at Anacapa Island. Some of this increase may be attributed to movement for foraging since there are less drift algae available at these two sites than in previous years.

Lytechinus anamesus densities decreased in 2001. Densities decreased at all seven sites where they were present in moderate numbers. Lytechinus anamesus were absent or had extremely low densities at the remaining nine sites. *Centrostephanus coronatus* densities continued to decline in 2001. *Centrostephanus coronatus* densities decreased slightly at 4 sites, increased at one site, remained the same at one site and were zero or near zero at the remaining 10 sites.

Sea urchin recruitment remained low for the second consecutive year. Recruitment of *S. purpuratus* and *S. franciscanus* was low at most sites, similar to 2000. There was no noticeable recruitment of *C. coronatus* in 2001 and we expect this species to continue its decline in abundance unless there is another recruitment event. This species normally recruits at Santa Barbara, Anacapa and Santa Cruz Islands during anomalous warm water events such as El Niño's. The continuous decline of *C. coronatus* since 1998 indicates no recruitment of this species since the 1997/8 El Niño.

Sea urchin wasting disease (Lafferty and Kushner, 1999, and Richards and Kushner, 1992) was observed at 11 of the 16 monitoring sites. Wasting disease was observed at the same number of sites and at the same sites as in 2000, with one exception. It was not observed at Johnson's Lee North and was observed at Johnson's Lee South this year. Wasting disease was observed at all of the Park Islands except San Miguel Island, similar to previous years. The disease was more prevalent in *Strongylocentrotus purpuratus* than *S. franciscanus* and *Lytechinus anamesus*, similar to what we have observed in past years. Diseased *S. purpuratus* were observed at nine sites, diseased *S. franciscanus* were observed at seven sites, and diseased *L. anamesus* were observed at two sites. No sea star wasting disease was observed this year.

At the sites where densities of Strongylocentrotus spp. decreased, algae increased. At several of these sites, algae cover was recorded higher than it has been in the last decade. During our late summer visits to Gull Island and Yellowbanks on Santa Cruz Island we found several juvenile species of brown macro algae that have not been present for several years, and we expect that kelp forest may recover at these sites in the near future.

Pycnopodia helianthoides density continued to increase on San Miguel and Santa Rosa Islands. Due to the large number of intact sea urchin tests at sites where *P. helianthoides* densities were high we suspect that they are predating on the *Strongylocentrotus. Spp*. Most of the tests were *S. purpuratus* and it has been reported that *P. helianthoides* prefers this *S. purpuratus* to *S. franciscanus*. *Pycnopodia*

helianthoides appears to be the controlling factor in sea urchin populations and why kelp forests return relatively rapidly after large-scale sea urchin recruitment events at San Miguel and Santa Rosa Islands.

Asterina miniata and *Pisaster giganteus* densities continued to increase or remain the same at most sites. Most of the sites at Anacapa and Santa Barbara Islands continued to have relatively low sea star densities since their most recent decline during the 1997/1998 El Niño. *Pisaster giganteus* densities increased at most sites with larger increases at San Miguel, Santa Rosa and along the north side of Santa Cruz Islands. *Asterina miniata* densities increased or changed little at nearly all of the sites. If normal water temperatures continue, we expect these populations to continue to increase. Sea star wasting disease was only observed in several *A. miniata* at Admiral's Reef this year.

Ophiothrix spiculata is not one of our indicator species, but we have kept track of it separately and then added it to the miscellaneous invertebrate category on RPCs at several sites where it was notably abundant. *Ophiothrix spiculata* abundance remained about the same or increased at the five sites where it was abundant enough to count separately. This species continues to be an important biological feature around the Islands, covering much of the bottom at Santa Barbara, Anacapa and to a lesser extent at Santa Cruz and Santa Rosa Islands.

Overall abundance of *Corynactis californica* is notably high at the monitoring sites. *Corynactis californica* abundance increased at eight sites, decreases at one and the remaining seven sites had little to no change.

Lithopoma undosum densities continued to decline. Their densities decreased at seven sites, and changed little or remained the same at nine sites (five of these sites, typically have near zero densities) this year. This downward trend continues a pattern we observed in this species of an increasing abundance post large El Niño events (1982/1983 and 1997/1998) and then a subsequent decrease.

Juvenile *Cypraea spadicea* were unusually common in the ARMs this year and we observed them at almost every site where we have ARMs.

Similar to 2000, *Haliotis spp*. continue to be rare at most of the monitoring sites. Wyckoff Ledge at San Miguel, and Johnson's Lee South, Santa Rosa Island have the most significant abalone population of all the monitoring sites. However, Wyckoff Ledge has the only population that we may consider healthy and not declining. *Haliotis rufescens* was the only abalone present at these two sites. Similar to the last several years, *H. rufescens* recruitment in the ARMs was low. Five juvenile (<51mm) *H. rufescens* were found in the ARMs this year compared to two in 2000.

Haliotis corrugata continue to be present at just a few monitoring sites and remain in very low abundance with only a few individuals observed. Recruitment of *H. corrugata* was lower than last year with only two juveniles found in the ARMs compared with 10 juveniles found in 2000.

Haliotis fulgens sightings continue to be rare and only one large adult was observed at the monitoring sites this year. There was no indication of any recruitment of this species.

We observed a *Haliotis sorenseni* and several *H. assimilis* at the monitoring sites this year. These are described in the unusual species/non-indicator species section below. We plan to add these two species to our indicator species to aid in tracking the few individuals we observe. These will be monitored in the ARMs but also added to band transects if they are observed.

Densities of *Styela montereyensis* remained about the same and decreased at one of the four sites where they are typically present. Though their decline has subsided, this pattern of declining densities after a major El Niño event such as we experienced in 1997/8 is similar to what we observed after the 1982/1983 El Niño. In 2000, densities decreased at all four sites.

Unlike the previous two years, *Sebastes spp*. recruitment was low. However, small *Sebastes mystinus* and *S. serranoides* were common at many of the sites and we estimated these to be 2-3 years old and

from the 1999/2000 recruitment event that was observed. Similarly we observed small *S. miniatus* at the sites where we observed recruits in 1999/2000. In 2001, we began observing juvenile *Chromis punctipinnis* in mid July, about a month earlier than last year. However, relatively few were observed during the sampling season indicating little recruitment. Juvenile *Oxyjulis californica* were first observed in August, similar to last year. We only observed large numbers of *O. californica* at Santa Barbara Island. Sardines, *Sardinops sargax*, were abundant in the Channel similar to last year. We did not observe any northern anchovies, *Engraulis mordax* this year. Lingcod, *Ophiodon elongatus*, were notably more abundant than in recent years. Cabezon, *Scorpaenichthys marmoratus*, also seemed to be more abundant than in recent years.

Overall, densities of *Coryphopterus nicholsii* remained about the same as 2000. We observed increases at two sites, decreases at four sites and little to no change at the remaining 10 sites. *Lythrypnus dalli* densitied continued to decline this year. Fry's Harbor and Pelican Bay at Santa Cruz Island are the two sites which typically have the highest abundance of *L. dalli*, at both of these sites densities declined. Overall, *Alloclinus holderi* densities decreased. We observed an increase in density at one site, decreases at four sites and little to no change at the remaining 11 sites. Both *L. dalli* and *A. holderi* are warm water species that increased in abundance during the 1997/1998 El Niño. With lower recruitment associated with cooler water we would expect their populations to decline as they have.

Unusual Species / Non-Indicator Species:

Similar to 2000, we continued to observe the sea urchin *Arbacia incisa* at Southeast Sea Lion, Santa Barbara Island and one in an ARM at Admiral's Reef, Anacapa Island. The number at Southeast Sea Lion appears to be declining, however it is difficult to tell since densities have always been low. The *A. incisa* we observed at Admiral's Reef is probably the same one found last year in the same ARM. All of the *A. incisa* observed this year were noticeably larger than last year, indicating that they are probably healthy and growing, but that there is now new recruitment.

We observed several large pearl oysters, *Pteria sterna* at Admirals Reef, Anacapa Island. However this was the only site where we observed these in 2001. In 2000 they were observed at Anacapa and Santa Cruz Islands and they were noticeably more abundant. The *P. sterna* settled out during the 1997/8 El Niño and have decreased in abundance since. There has been no recruitment observed sine 1997/8

Early in the summer, sheep crabs, *Loxorhynchus grandis* were abundant at Santa Barbara and Anacapa Island. Males and females were abundant at Arch Point, Santa Barbara Island, and a "pile of over 50 females was observed at a depth of 7m at Landing cove, Santa Barbara Island. There was only one male in this pile and most of the females were gravid with various stages of egg development.

Small pelagic jellyfish, ctenophores and siphonophores were common at Santa Barbara and Anacapa Islands, but were not as abundant as in 2000. No Pyrosomes were observed, a few of these were observed in 2000 and they were abundant in 1999.

At Yellowbanks, Santa Cruz Island, one small (29mm) live *Haliotis sorenseni* (white abalone) was observed in an ARM and one small fresh shell was found. This is the second year small *H. sorenseni* have been observed at this site. Two *H. sorenseni* were observed at Yellowbanks in 2000, and that was the first time this species has been observed at a kelp forest monitoring site. In addition, adult *H. sorenseni* are rare and juveniles are even rarer with no reports of the latter being observed for several decades anywhere at the Channel Islands.

Threaded abalone, *Haliotis assimilis*, were observed at three sites this year. One *H. assimilis* measuring 82mm was found at Rodes Reef, Santa Rosa Island, one measuring 40mm (this one had a bright orange band) was found at Gull Island and three measuring 54, 66, and 72mm were found at Yellow Banks, Santa Cruz Island. This is the second consecutive year live *H. assimilis* have been observed at any of the kelp forest monitoring sites. In 2000, we observed them at one site (Yellowbanks). *Haliotis assimilis* were common at the Channel Islands prior to 1980, but have rarely been observed in during the past two

decades. David Kushner and Shane Anderson from the University of California at Santa Barbara conducted three survey dives off the Goleta coast, Santa Barara County to look for *H. assimilis* on July 23, 2001. During these three dives 11 live *H. assimilis* ranging in size from 39 - 74mm were observed.

Artificial Recruitment Modules (ARMs):

ARMs were present and monitored at 10 of the monitoring sites in 2001. Haliotis spp. in the ARMs were discussed previously in the Discussion section. Similar to recent years there were no noticeable trends in *Cypraea spadicea* abundance among the 10 sites. In general *Lithopoma undosum* densities have declined in the ARMs at the sites where they were common (eastern Santa Cruz Island and Anacapa Island sites). At these sites, *L. undosum* were relatively abundant during 1999 and 2000 and have now decreased. There were no noticeable trends in *Megathura crenulata* density in the ARMs, however most are small indicating some recruitment. There were no noticeable trends in *Crassedoma giganteum* densities among the sites. *Asterina miniata* densities were higher in the ARMs this year, with increases at four sites and little or no change at six sites. Similarly, overall densities of *Pisaster giganteus* were also higher with increases at seven sites, decreases at one site and little or no change at two sites. Overall, *Pycnopodia helianthoides* density increased at the where they were present in the ARMs, increasing at four sites and having little change at one site.

In general, *Strongylocentrotus franciscanus* density in the ARMs decreased and mean size increased indicating lower recruitment compared to last year. Density of *S. franciscanus* increased at one site, decreased at seven sites and changed little at two sites while mean size increased at seven sites and decreased at three sites. Similar to what was observed in quadrats, the density of *S. purpuratus* in the ARMs decreased. *Strongylocentrotus purpuratus* density in the ARMs decreased at seven sites and changed little or remained the same at three sites. Mean size of *S. purpuratus* increased at eight sites, increased at one site and remained about the same at one site. A decreasing density and increasing mean size indicates little recruitment this year. *Centrostephanus coronatus* continued to decline at all eight sites where it has been present in the ARMs. At five of these sites their density declined to zero and the three sites where they were present their mean size increased or changed little indicating no recruitment.

Temperature:
There were no significant temperature anomalies observed in 2001.

Protocol Changes:
There were no protocol changes in 2001.

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 2001, 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 data on *Haliotis spp*. and fish. Peter Halmay, president of the Sea Urchin Harvesters Association of California was sent all of the Strongylocentrotus purpuratus and S. franciscanus data. Tom Laidig at the National Marine Fisheries Service was sent all of the fish transect data normalized for transect #1. Tom was interested in any rockfish recruitment events that were recorded. Dr. Kevin Lafferty with USGS and Michael Behrens were sent all of the KFM data. A copy of the kelp forest monitoring techniques video was sent to Eric Hessell, the assistant Diving Safety Officer at the University of California, Santa Barbara to use as training aid for their research diving course. Dr. Allan Stewart Oaten at the University of California Santa Barbara was

sent all of the kelp forest monitoring data. Dr. Kamille Hammerstrom with NOAA/NOS Center for Coastal Fisheries and Habitat research was sent all of the quadrat, 5-m quadrate and RPC summary data for population modeling that may be used for ecological forecasting. The JASON project and Project Oceanography were sent kelp forest monitoring data, handbooks and video that will be used for educational purposes. Project staff collected bacterial swabs from *Panulirus interruptus* for Kerry Davies, a graduate student at Florida State University studying bacteria fauna of lobsters.

Information Requests:

The kelp forest monitoring handbooks and annual reports are available in PDF format on the web at: http://www.nps.gov/chis/rm/Index.htm

To obtain raw data collected by this program, please write to the address below:

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

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

Table 1. Continued.

TAXA/COMMON NAME	SCIENTIFIC NAME	TECHNIQUE
INVERTEBRATES Continued:		
Green abalone	*Haliotis fulgens*	B,S
Kellet's whelk	*Kelletia kelletii*	B,S
Giant keyhole limpet	*Megathura crenulata*	B,S
California brown sea hare	*Aplysia californica*	B
Rock scallop	*Crassedoma giganteum*	B,S
California spiny lobster	*Panulirus interruptus*	B
Tunicates		R
Stalked tunicate	*Styela montereyensis*	Q
Miscellaneous invertebrates		R
FISH		
Bluebanded goby	*Lythrypnus dalli*	Q
Blackeye goby	*Coryphopterus nicholsii*	Q
Island kelpfish	*Alloclinus holderi*	Q
Blacksmith	*Chromis punctipinnis*	V
Señorita	*Oxyjulis californica*	V
Blue rockfish	*Sebastes mystinus*	V
Olive rockfish	*Sebastes serranoides*	V
Kelp rockfish	*Sebastes atrovirens*	V
Kelp bass	*Paralabrax clathratus*	V
California Sheephead	*Semicossyphus pulcher*	V
Black surfperch	*Embiotoca jacksoni*	V
Striped surfperch	*Embiotoca lateralis*	V
Pile perch	*Damalichthys vacca*	V
Garibaldi	*Hypsypops rubicundus*	V
Opaleye	*Girella nigricans*	V
Rock Wrasse	*Halichoeres semicinctus*	V
SUBSTRATE:		
Bare substrate		R
Substrate types: Rock		R
Cobble		R
Sand		R

Technique Codes:

B= Band Transect
M= 5m^2-Quadrat
Q= Quadrat
S= Size frequency Measurement
R= Random Point Contact
V= Visual Transect

CHANGES IN SCIENTIFIC NOMENCLATURE:

Patiria miniata	=	*Asterina miniata*
Astraea undosum	=	*Lithopoma undosum*
Astraea gibberosa	=	*Lithopoma gibberosum*
Hinnites iganteum	=	*Crassedoma giganteum*
Allopora californica	=	*Stylaster californica*
Telia lofotensis	=	*Urticina lofotensis*

Table 2. Station Information.

ISLAND	LOCATION	ABBREVIATION	DEPTH METERS	YEAR ESTABLISHED
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.

TECHNIQUE	SAMPLE NUMBER OF SIZE REPLICATES
Quadrat count	1 m X 1 m 24X / site
Band Transect count	3 m X 10 m 24X / site
$5m^2$-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:

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

Table 4. 2001 Kelp forest monitoring site status.

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

Table 5. 2001 Kelp Forest Monitoring Program participant and cruise list.

PARTICIPANTS	AFFILIATION	CRUISES PARTICIPATED
Behrens, Michael	University of California, Santa Barbara	1
Buckhorn, Michelle	University of California, Davis	6
Bullard, Aimee	Wrigley Institute of Environmental Science	5
Chesney, Bryant	National Marine Fisheries Service	4
Colborn, Katherine	Channel Islands National Park	1,2,3,4,5,6,7
Collier, Chantal	University of California, Santa Barbara	3
Conti, John	Volunteer, Channel Islands National Park	1,5
Conti, Serena	Volunteer, Channel Islands National Park	6
Crow, Karen	University of California, Santa Cruz	2,4
Donahue, Megan	University of California, Davis	6
Duran, Keith	Channel Islands National Park	1
Falcon, Gil	Monterey Bay Aquarium	3
Greenley, Ashley	University of California, Santa Barbara	7
Haaker, Peter	California Department of Fish and Game	1
Hessell, Eric	University of California, Santa Barbara	5
Hajduczek, Barbara	Channel Islands National Park	2
Jorgensen, Salvador	University of California, Davis	6
Kushner, David	Channel Islands National Park	1,2,3,4,5,6,7
Lerma, Derek	Channel Islands National Park	1,2,3,4,5,6,7
Lima, Jim	Minerals Management Service	2
Mace, Amber	University of California, Davis	6
Orsorio, David	California Department of Fish and Game	7
Reisenbichler, Reg	Biological Resources Division, USGS	7
Richards, Dan	Channel Islands National Park	1
Sanchez, Salvador	Volunteer, Channel Islands National Park	1,2,3,4
Taniguchi, Ian	California Department of Fish and Game	4
Willey, Dwight	Channel Islands National Park	4,
Wilson, Brent	Channel Islands National Park	3,5,6,7
Yonker, Cyd	Wrigley Marine Science Center	3,

CRUISE NUMBER	2001 CRUISE DATES	KELP FOREST MONITORING SITES VISITED
Cruise #1	June 11– 15	SBSESL, SBAP, SPCAT, ANAR, ANLC
Cruise #2	June 25– 29	ANCC, SCFH, SCPB, SCYB
Cruise #3	July 16– 20	ANCC, ANLC, SCFH, SRRR, SMHR, SMWL
Cruise #4	July 30– August 3	ANLC, SCGI, SRJLNO, SRJLSO
Cruise #5	August 13– 17	ANAR, ANCC, ANLC, SCFH, SCPB, SCSA, SCYB
Cruise #6	August 27– 31	SBSESL, SBAR, SBCAT, SCGI, SCSA, SRJLNO, SRJLSO
Cruise #7	Sep. 17-21	ANAR, SRRR, SMWL, SMHR

Table 6. 2001 Echinoderm wasting disease/syndrome observations.

ISLAND/SITE	Sea Star Wasting Syndrome		Sea Urchin Wasting Syndrome	
	SPECIES OBSERVED	**DATE(s)**	**SPECIES OBSERVED**	**DATE(s)**
San Miguel Island				
Wyckoff Ledge	none		none	
Hare Rock	none		none	
Santa Rosa Island				
Johnson's Lee North	none		none	
Johnson's Lee South	none		2	7/30, 7/31, 8/1
Rodes Reef	none		6	7/18, 7/19
Santa Cruz Island				
Gull Island South	none		3	8/30
Fry's Harbor	none		2,6	6/28, 7/19, 8/16
Pelican Bay	none		2,6	6/26, 6/27, 8/16
Scorpion Anchorage	none		2,6	8/15, 8/31
Yellowbanks	none		2,6	6/26, 8/13
Anacapa Island				
Admiral's Reef	1	9/17	2,6	6/14, 8/17, 9/17
" "	"		3	9/17
Cathedral Cove	none		none	
Landing Cove	none		none	
Santa Barbara Island				
SE Sea Lion Rookery	none		2	6/12, 8/27
Arch Point	none		2	6/11, 8/28
Cat Canyon	none		2,6	6/13
" "			6	8/28

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 2001
date = date(s) disease/syndrome was observed

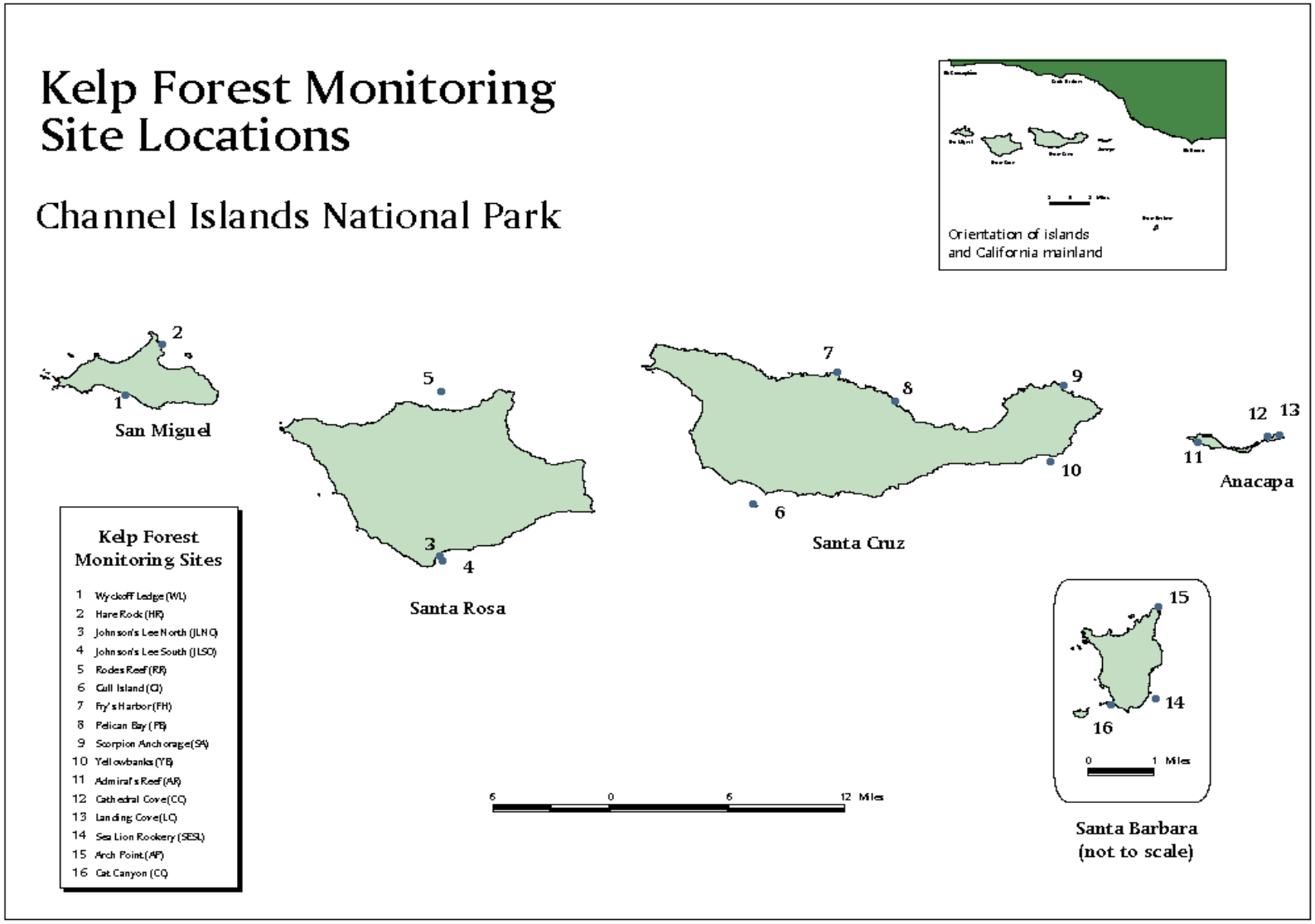


Figure 1. Kelp Forest Monitoring Locations at Channel Islands National Park.

Appendix A: Quadrat Data

2001 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
San Miguel Island - Wyckoff Ledge			
Macrocystis pyrifera Ad.(>1m)	0.2083	0.3343	12
Macrocystis pyrifera Juvenile (<1m)	0.2500	0.5000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.3750	0.7111	12
Pterygophora californica juvenile	0.2500	0.6216	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Cypraea spadicea	0.0417	0.1443	12
Kelletia kelletii	0.2083	0.3965	12
Lithopoma undosum	0.0000	0.0000	12
Lithopoma gibberosum	0.5000	0.8257	12
Asterina miniata	2.0417	1.3892	12
Pisaster giganteus	0.0000	0.0000	12
Strongylocentrotus franciscanus	5.4167	7.1853	12
Strongylocentrotus purpuratus	5.0417	5.6787	12
Parastichopus parvimensis	0.1250	0.3108	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.3750	0.7724	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.2500	0.3989	12
Alloclinus holderi	0.0000	0.0000	12
San Miguel Island - Hare Rock			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Cypraea spadicea	0.6250	1.4162	12
Lithopoma undosum	0.0000	0.0000	12
Asterina miniata	1.7083	1.2515	12
Pisaster giganteus	0.9167	0.8483	12
Strongylocentrotus franciscanus	13.2083	9.6022	12
Strongylocentrotus purpuratus	10.0833	15.3487	12
Parastichopus parvimensis	0.0833	0.1946	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.3333	0.4924	12
Alloclinus holderi	0.0000	0.0000	12

2001 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Rosa Island - Johnson's Lee North			
Macrocystis pyrifera Ad.(>1m)	2.2500	3.1873	12
Macrocystis pyrifera Juvenile (<1m)	5.6250	4.4829	12
Eisenia arborea adult	0.0417	0.1443	12
Eisenia arborea juvenile	0.2500	0.5839	12
Pterygophora californica adult	0.3333	0.7177	12
Pterygophora californica juvenile	0.9167	1.0408	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.1250	0.2261	12
Cypraea spadicea	0.4167	0.4687	12
Lithopoma undosum	0.0000	0.0000	12
Asterina miniata	0.0833	0.1946	12
Pisaster giganteus	0.5417	0.6895	12
Strongylocentrotus franciscanus	4.0833	4.4150	12
Strongylocentrotus purpuratus	3.4583	8.8098	12
Parastichopus parvimensis	0.1250	0.3108	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.2083	0.3343	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.2083	0.4981	12
Alloclinus holderi	0.0000	0.0000	12
Santa Rosa Island - Johnson's Lee South			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0833	0.1946	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Cypraea spadicea	0.5833	0.7638	12
Lithopoma undosum	0.0000	0.0000	12
Asterina miniata	1.9167	1.2939	12
Pisaster giganteus	0.8333	1.2673	12
Strongylocentrotus franciscanus	6.3333	4.5793	12
Strongylocentrotus purpuratus	13.9167	18.4216	12
Parastichopus parvimensis	0.0417	0.1443	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.7083	0.7217	12
Alloclinus holderi	0.0000	0.0000	12

2001 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Rosa Island - Rodes Reef			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Cypraea spadicea	0.1667	0.2462	12
Lithopoma undosum	0.0000	0.0000	12
Lithopoma gibberosum	0.0417	0.1443	12
Asterina miniata	2.2917	1.2873	12
Pisaster giganteus	0.8750	1.0897	12
Strongylocentrotus franciscanus	8.7083	7.1556	12
Strongylocentrotus purpuratus	0.2500	0.3989	12
Parastichopus parvimensis	0.0000	0.0000	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.0417	0.1443	12
Alloclinus holderi	0.0000	0.0000	12
Santa Cruz Island - Gull Island South			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.2083	0.3965	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0833	0.1946	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Cypraea spadicea	0.9583	0.8908	12
Lithopoma undosum	0.3750	0.5691	12
Asterina miniata	1.4167	0.9495	12
Pisaster giganteus	0.1667	0.2462	12
Lytechinus anamesus	0.0417	0.1443	12
Strongylocentrotus franciscanus	7.7917	7.4512	12
Strongylocentrotus purpuratus	31.4583	26.8924	12
Parastichopus parvimensis	0.7500	0.7538	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	1.2500	0.9170	12
Alloclinus holderi	0.1250	0.2261	12

2001 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Cruz Island - Fry's Harbor			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Cypraea spadicea	0.7083	0.8382	12
Lithopoma undosum	0.5000	0.6030	12
Asterina miniata	0.8333	0.6155	12
Pisaster giganteus	0.2500	0.2611	12
Lytechinus anamesus	1.1250	3.1632	12
Strongylocentrotus franciscanus	5.6250	2.8772	12
Strongylocentrotus purpuratus	30.0833	12.5297	12
Parastichopus parvimensis	0.2500	0.3989	12
Centrostephanus coronatus	0.0833	0.1946	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	1.3333	2.0375	12
Alloclinus holderi	0.0000	0.0000	12
Santa Cruz Island - Pelican Bay			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Cypraea spadicea	0.1250	0.2261	12
Lithopoma undosum	0.6667	0.9847	12
Asterina miniata	0.2917	0.7217	12
Pisaster giganteus	0.1250	0.3108	12
Lytechinus anamesus	4.7500	3.1730	12
Strongylocentrotus franciscanus	4.4583	2.0721	12
Strongylocentrotus purpuratus	46.2083	14.2086	12
Parastichopus parvimensis	0.0833	0.1946	12
Centrostephanus coronatus	0.0833	0.1946	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0417	0.1443	12
Coryphopterus nicholsii	5.1667	1.1934	12
Alloclinus holderi	0.0000	0.0000	12

2001 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Cruz Island - Scorpion Anchorage			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Cypraea spadicea	0.8750	1.1894	12
Lithopoma undosum	7.6250	3.4120	12
Asterina miniata	1.2500	0.9886	12
Pisaster giganteus	0.0833	0.1946	12
Strongylocentrotus franciscanus	4.0833	2.6443	12
Strongylocentrotus purpuratus	102.8333	57.1928	12
Parastichopus parvimensis	0.0417	0.1443	12
Centrostephanus coronatus	0.0417	0.1443	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	1.1250	1.0252	12
Alloclinus holderi	0.0833	0.1946	12
Santa Cruz Island - Yellow Banks			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.1250	0.3108	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Cypraea spadicea	0.0417	0.1443	12
Lithopoma undosum	2.9583	2.8481	12
Asterina miniata	0.3333	0.6155	12
Pisaster giganteus	0.0417	0.1443	12
Lytechinus anamesus	23.8333	23.3407	12
Strongylocentrotus franciscanus	3.0000	3.0674	12
Strongylocentrotus purpuratus	20.3750	17.1625	12
Parastichopus parvimensis	0.1667	0.2462	12
Centrostephanus coronatus	0.0833	0.1946	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	1.1250	0.8292	12
Alloclinus holderi	0.0417	0.1443	12

2001 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Anacapa Island - Admiral's Reef			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Cypraea spadicea	0.0000	0.0000	12
Lithopoma undosum	0.2083	0.3965	12
Asterina miniata	0.3750	0.4330	12
Pisaster giganteus	0.0000	0.0000	12
Lytechinus anamesus	0.1250	0.3108	12
Strongylocentrotus franciscanus	7.6250	6.9352	12
Strongylocentrotus purpuratus	38.5833	24.1094	12
Parastichopus parvimensis	0.3750	0.5691	12
Centrostephanus coronatus	0.6250	0.7424	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	1.5000	1.1481	12
Alloclinus holderi	0.0833	0.1946	12
Anacapa Island - Cathedral Cove			
Macrocystis pyrifera Ad.(>1m)	0.1250	0.2261	12
Macrocystis pyrifera Juvenile (<1m)	0.1250	0.2261	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.2500	0.6216	12
Laminaria farlowii juvenile	0.0417	0.1443	12
Cypraea spadicea	0.2500	0.3371	12
Lithopoma undosum	3.6667	2.1567	12
Asterina miniata	0.3750	0.7111	12
Pisaster giganteus	0.0417	0.1443	12
Strongylocentrotus franciscanus	7.4583	6.3441	12
Strongylocentrotus purpuratus	3.5833	2.9987	12
Parastichopus parvimensis	1.5833	1.0624	12
Centrostephanus coronatus	0.0000	0.0000	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.3750	0.5691	12
Alloclinus holderi	1.5417	0.4502	12

2001 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Anacapa Island - Landing Cove			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	5.7917	6.4260	12
Eisenia arborea adult	0.3750	0.7724	12
Eisenia arborea juvenile	0.4583	0.9876	12
Pterygophora californica adult	0.0417	0.1443	12
Pterygophora californica juvenile	0.0833	0.2887	12
Laminaria farlowii adult	0.1250	0.3108	12
Laminaria farlowii juvenile	5.8750	7.7405	12
Cypraea spadicea	0.4167	0.7930	12
Lithopoma undosum	3.2917	3.7626	12
Asterina miniata	0.0000	0.0000	12
Pisaster giganteus	0.0000	0.0000	12
Strongylocentrotus franciscanus	4.4167	3.1249	12
Strongylocentrotus purpuratus	5.8750	7.0618	12
Parastichopus parvimensis	1.1667	0.9374	12
Centrostephanus coronatus	0.0417	0.1443	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.2500	0.5000	12
Alloclinus holderi	0.5833	0.5967	12
Santa Barbara Island - SE Sea Lion Rookery			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Cypraea spadicea	0.0417	0.1443	12
Lithopoma undosum	0.6667	0.8348	12
Asterina miniata	0.4583	0.6201	12
Pisaster giganteus	0.0833	0.1946	12
Lytechinus anamesus	0.2917	0.5823	12
Strongylocentrotus franciscanus	3.1250	3.3853	12
Strongylocentrotus purpuratus	21.9167	26.9426	12
Parastichopus parvimensis	0.7083	0.5823	12
Centrostephanus coronatus	1.7500	1.9365	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.2917	0.2575	12
Alloclinus holderi	0.2500	0.2611	12

Species	Mean	Std. Dev.	n
Santa Barbara Island - Arch Point			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Cypraea spadicea	0.1250	0.3108	12
Lithopoma undosum	0.6250	0.8013	12
Asterina miniata	0.0417	0.1443	12
Pisaster giganteus	0.0000	0.0000	12
Strongylocentrotus franciscanus	7.8750	2.4038	12
Strongylocentrotus purpuratus	93.4167	37.7455	12
Parastichopus parvimensis	0.1667	0.2462	12
Centrostephanus coronatus	0.8333	0.7487	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.1250	0.4330	12
Alloclinus holderi	0.0417	0.1443	12
Santa Barbara Island - Cat Canyon			
Macrocystis pyrifera Ad.(>1m)	0.0000	0.0000	12
Macrocystis pyrifera Juvenile (<1m)	0.0000	0.0000	12
Eisenia arborea adult	0.0000	0.0000	12
Eisenia arborea juvenile	0.0000	0.0000	12
Pterygophora californica adult	0.0000	0.0000	12
Pterygophora californica juvenile	0.0000	0.0000	12
Laminaria farlowii adult	0.0000	0.0000	12
Laminaria farlowii juvenile	0.0000	0.0000	12
Cypraea spadicea	0.0000	0.0000	12
Lithopoma undosum	0.9583	1.0967	12
Asterina miniata	0.0833	0.1946	12
Pisaster giganteus	0.0000	0.0000	12
Strongylocentrotus franciscanus	6.3750	3.5810	12
Strongylocentrotus purpuratus	17.2083	13.9568	12
Parastichopus parvimensis	0.4167	0.4174	12
Centrostephanus coronatus	0.5000	0.3693	12
Styela montereyensis	0.0000	0.0000	12
Lythrypnus dalli	0.0000	0.0000	12
Coryphopterus nicholsii	0.0000	0.0000	12
Alloclinus holderi	0.0833	0.1946	12

Appendix B: 5-Meter Quadrat Data

2001 5-METER QUADRAT DATA: MEAN NUMBER PER M²

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

Species	Mean	Std. Dev.	n
San Miguel Island - Wyckoff Ledge			
Macrocystis pyrifera Adult	0.0800	0.1964	40
Macrocystis pyrifera Subadult	0.1150	0.2020	40
Pisaster giganteus	0.0700	0.1324	40
San Miguel Island - Hare Rock			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Pisaster giganteus	0.5350	0.5051	40
Santa Rosa Island - Johnson's Lee North			
Macrocystis pyrifera Adult	0.0100	0.0441	40
Macrocystis pyrifera Subadult	1.6300	1.9111	40
Pisaster giganteus	0.6600	0.7193	40
Santa Rosa Island - Johnson's Lee South			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Pisaster giganteus	0.3300	0.5135	40
Santa Rosa Island - Rodes Reef			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Pisaster giganteus	0.7650	0.7343	40
Santa Cruz Island - Gull Island South			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0400	0.1215	40
Pisaster giganteus	0.1550	0.2148	40
Santa Cruz Island - Fry's Harbor			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Pisaster giganteus	0.2800	0.2210	40
Santa Cruz Island - Pelican Bay			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Pisaster giganteus	0.1550	0.2195	40
Santa Cruz Island - Scorpion Anchorage			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Pisaster giganteus	0.0250	0.0670	40

2001 5-METER QUADRAT DATA: MEAN NUMBER PER M²

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

Species	Mean	Std. Dev.	n
Santa Cruz Island - Yellow Banks			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Pisaster giganteus	0.0400	0.0928	40
Anacapa Island - Admiral's Reef			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Pisaster giganteus	0.0250	0.0927	40
Anacapa Island - Cathedral Cove			
Macrocystis pyrifera Adult	0.0200	0.0608	40
Macrocystis pyrifera Subadult	0.0950	0.1753	40
Pisaster giganteus	0.0100	0.0441	40
Anacapa Island - Landing Cove			
Macrocystis pyrifera Adult	0.0200	0.0608	40
Macrocystis pyrifera Subadult	0.0400	0.0928	40
Pisaster giganteus	0.0000	0.0000	40
Santa Barbara Island - SE Sea Lion Rookery			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Pisaster giganteus	0.0450	0.0959	40
Santa Barbara Island - Arch Point			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Pisaster giganteus	0.0250	0.0670	40
Santa Barbara Island - Cat Canyon			
Macrocystis pyrifera Adult	0.0000	0.0000	40
Macrocystis pyrifera Subadult	0.0000	0.0000	40
Pisaster giganteus	0.0350	0.0893	40

Appendix C: Band Transect Data

2001 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
San Miguel Island - Wyckoff Ledge			
Tethya aurantia	0.1056	0.0701	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.2681	0.2103	12
Lophogorgia chilensis	0.0014	0.0048	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0514	0.0557	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.1556	0.0786	12
Megathura crenulata	0.0000	0.0000	12
Crassedoma giganteum	0.0056	0.0082	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0278	0.0217	12
Lytechinus anamesus	0.0014	0.0048	12
San Miguel Island - Hare Rock			
Tethya aurantia	0.0194	0.0244	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0194	0.0292	12
Lophogorgia chilensis	0.0000	0.0000	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0194	0.0471	12
Megathura crenulata	0.0028	0.0065	12
Crassedoma giganteum	0.0069	0.0194	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.1264	0.0524	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Rosa Island - Johnson's Lee North			
Tethya aurantia	0.0681	0.0458	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0042	0.0075	12
Lophogorgia chilensis	0.0000	0.0000	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0014	0.0048	12
Megathura crenulata	0.0222	0.0179	12
Crassedoma giganteum	0.0042	0.0075	12
Aplysia californica	0.0167	0.0256	12
Pycnopodia helianthoides	0.2833	0.1745	12
Lytechinus anamesus	0.0000	0.0000	12

2001 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Rosa Island - Johnson's Lee South			
Tethya aurantia	0.2125	0.0865	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0639	0.0536	12
Lophogorgia chilensis	0.0986	0.0672	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0014	0.0048	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0028	0.0065	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0111	0.0296	12
Megathura crenulata	0.0222	0.0278	12
Crassedoma giganteum	0.0264	0.0181	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.3097	0.1038	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Rosa Island - Rodes Reef			
Tethya aurantia	0.0736	0.0446	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0347	0.0321	12
Lophogorgia chilensis	0.0056	0.0082	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0139	0.0156	12
Megathura crenulata	0.0333	0.0408	12
Crassedoma giganteum	0.0042	0.0075	12
Aplysia californica	0.0014	0.0048	12
Pycnopodia helianthoides	0.1708	0.0415	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Cruz Island - Gull Island South			
Tethya aurantia	0.0181	0.0166	12
Stylaster californica	0.0736	0.0922	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0778	0.0524	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0069	0.0111	12
Megathura crenulata	0.0778	0.0473	12
Crassedoma giganteum	0.0111	0.0109	12
Aplysia californica	0.0097	0.0166	12
Pycnopodia helianthoides	0.0333	0.0266	12
Lytechinus anamesus	1.1542	1.8164	12

2001 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Cruz Island - Fry's Harbor			
Tethya aurantia	0.0028	0.0065	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.2778	0.1722	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0111	0.0130	12
Megathura crenulata	0.0792	0.0656	12
Crassedoma giganteum	0.0333	0.0471	12
Aplysia californica	0.0014	0.0048	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	1.2375	1.1814	12
Santa Cruz Island - Pelican Bay			
Tethya aurantia	0.0069	0.0111	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.1833	0.1772	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0028	0.0065	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0097	0.0150	12
Megathura crenulata	0.0000	0.0000	12
Crassedoma giganteum	0.0819	0.0484	12
Aplysia californica	0.0056	0.0109	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	2.5222	0.8909	12
Santa Cruz Island - Scorpion Anchorage			
Tethya aurantia	0.0153	0.0181	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0028	0.0065	12
Lophogorgia chilensis	0.0056	0.0109	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0083	0.0133	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0000	0.0000	12
Megathura crenulata	0.0181	0.0279	12
Crassedoma giganteum	0.1125	0.0798	12
Aplysia californica	0.0306	0.0308	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0056	0.0130	12

2001 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Cruz Island - Yellow Banks			
Tethya aurantia	0.0375	0.0349	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.1569	0.0687	12
Muricea fruticosa	0.0056	0.0109	12
Muricea californica	0.0153	0.0207	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0139	0.0156	12
Megathura crenulata	0.0181	0.0166	12
Crassedoma giganteum	0.0083	0.0087	12
Aplysia californica	0.0042	0.0075	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	15.4542	7.8954	12
Anacapa Island - Admiral's Reef			
Tethya aurantia	0.0153	0.0386	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0486	0.0261	12
Muricea fruticosa	0.0042	0.0075	12
Muricea californica	0.0278	0.0259	12
Panulirus interruptus	0.0014	0.0048	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0361	0.0502	12
Megathura crenulata	0.0528	0.0425	12
Crassedoma giganteum	0.1472	0.0778	12
Aplysia californica	0.0472	0.0300	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.1222	0.1663	12
Anacapa Island - Cathedral Cove			
Tethya aurantia	0.0028	0.0065	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0069	0.0132	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0139	0.0332	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0028	0.0065	12
Megathura crenulata	0.0056	0.0109	12
Crassedoma giganteum	0.2056	0.2965	12
Aplysia californica	0.0083	0.0151	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0000	0.0000	12

2001 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Anacapa Island - Landing Cove			
Tethya aurantia	0.0056	0.0109	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0097	0.0132	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0014	0.0048	12
Panulirus interruptus	0.0222	0.0336	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0042	0.0144	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0056	0.0109	12
Megathura crenulata	0.0194	0.0292	12
Crassedoma giganteum	0.5014	0.5066	12
Aplysia californica	0.0042	0.0075	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0014	0.0048	12
Santa Barbara Island - SE Sea Lion Rookery			
Tethya aurantia	0.0917	0.0642	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.2014	0.0617	12
Muricea fruticosa	0.0056	0.0082	12
Muricea californica	0.0208	0.0190	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0056	0.0130	12
Megathura crenulata	0.0069	0.0111	12
Crassedoma giganteum	0.0069	0.0111	12
Aplysia californica	0.0708	0.0488	12
Pycnopodia helianthoides	0.0069	0.0086	12
Lytechinus anamesus	0.2319	0.2049	12
Santa Barbara Island - Arch Point			
Tethya aurantia	0.0000	0.0000	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0042	0.0104	12
Muricea fruticosa	0.0014	0.0048	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0056	0.0109	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0000	0.0000	12
Megathura crenulata	0.0014	0.0048	12
Crassedoma giganteum	0.0111	0.0164	12
Aplysia californica	0.0611	0.0746	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0097	0.0150	12

2001 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Barbara Island - Cat Canyon			
Tethya aurantia	0.0014	0.0048	12
Stylaster californica	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0000	0.0000	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0042	0.0104	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0000	0.0000	12
Megathura crenulata	0.0083	0.0112	12
Crassedoma giganteum	0.0028	0.0065	12
Aplysia californica	0.0347	0.0181	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0000	0.0000	12

Appendix D: Random Point Contact Data

2001 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

San Miguel Island - Wyckoff Ledge

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	2.667	5.5474	15
Desmarestia Spp.	29.667	33.2854	15
Cystoseira Spp.	1.000	2.8031	15
Macrocystis pyrifera All	8.833	9.9493	15
Eisenia arborea All	0.333	0.8797	15
Pterygophora californica All	8.667	17.4199	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	62.500	21.5266	15
Articulated Coralline Algae	6.667	9.0468	15
Encrusting Coralline Algae	30.167	17.8902	15
Gelidium Spp.	0.833	2.0412	15
Gigartina Spp.	1.333	3.2550	15
Miscellaneous Plants (ie: Diatoms)	0.500	1.4015	15
Sponges	0.500	1.0351	15
Corynactis californica	0.000	0.0000	15
Balanophyllia elegans	0.833	2.0412	15
Astrangia lajollaensis	0.500	1.4015	15
Diopatra ornata	14.333	10.7099	15
Phragmatopoma californica	0.833	2.0412	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	3.667	2.4761	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	0.833	2.0412	15
Miscellaneous Invertebrates	10.833	9.6208	15
Bare Substrate	26.000	15.8902	15
Rock	66.500	26.0973	15
Cobble	6.167	10.6849	15
Sand	27.333	19.3757	15

San Miguel Island - Hare Rock

Species	Mean	Std. Dev.	n
Green Algae	1.167	2.0845	15
Miscellaneous Brown Algae	0.000	0.0000	15
Desmarestia Spp.	4.500	10.5306	15
Cystoseira Spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	16.667	12.4523	15
Articulated Coralline Algae	0.000	0.0000	15
Encrusting Coralline Algae	52.500	14.8805	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	8.000	11.6573	15
Sponges	0.000	0.0000	15
Corynactis californica	23.833	16.8466	15
Balanophyllia elegans	1.167	1.8581	15
Astrangia lajollaensis	2.167	4.2117	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	0.167	0.6455	15
Diaperoecia californica	0.500	1.4015	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	0.167	0.6455	15
Miscellaneous Invertebrates	11.833	8.2086	15
Bare Substrate	15.000	8.1832	15
Rock	84.667	24.3279	15
Cobble	13.000	22.2446	15
Sand	2.333	4.4788	15

Santa Rosa Island - Johnson's Lee North

Species	Mean	Std. Dev.	n
Green Algae	16.500	10.0357	15
Miscellaneous Brown Algae	29.500	12.3274	15
Desmarestia Spp.	6.500	10.9707	15
Cystoseira Spp.	0.000	0.0000	15
Macrocystis pyrifera All	56.333	42.6977	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	5.667	6.7788	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	36.833	17.1773	15
Articulated Coralline Algae	2.667	3.5940	15
Encrusting Coralline Algae	43.333	13.3853	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	1.167	2.2887	15
Miscellaneous Plants (ie: Diatoms)	40.667	18.5998	15
Sponges	1.500	1.5811	15
Corynactis californica	8.667	10.4739	15
Balanophyllia elegans	2.500	1.6366	15
Astrangia lajollaensis	0.667	1.1443	15
Diopatra ornata	0.667	1.4840	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	0.000	0.0000	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	1.000	1.2677	15
Miscellaneous Invertebrates	5.167	3.7161	15
Bare Substrate	0.500	1.4015	15
Rock	97.333	6.0847	15
Cobble	1.167	4.5185	15
Sand	1.500	4.5119	15

Santa Rosa Island - Johnson's Lee South

Species	Mean	Std. Dev.	n
Green Algae	1.000	1.8420	15
Miscellaneous Brown Algae	0.167	0.6455	15
Desmarestia Spp.	0.500	1.0351	15
Cystoseira Spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	22.167	13.2916	15
Articulated Coralline Algae	2.000	2.8661	15
Encrusting Coralline Algae	31.333	16.4986	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.333	1.2910	15
Miscellaneous Plants (ie: Diatoms)	22.333	12.5167	15
Sponges	0.167	0.6455	15
Corynactis californica	4.167	8.6946	15
Balanophyllia elegans	5.000	3.7796	15
Astrangia lajollaensis	2.667	3.1997	15
Diopatra ornata	16.167	15.0851	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	1.500	2.2756	15
Diaperoecia californica	0.167	0.6455	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	0.000	0.0000	15
Miscellaneous Invertebrates	8.167	4.2748	15
Bare Substrate	25.333	13.2916	15
Rock	67.167	28.1397	15
Cobble	2.667	3.9491	15
Sand	30.167	27.8783	15

Santa Rosa Island - Rodes Reef

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.000	0.0000	15
Desmarestia Spp.	0.000	0.0000	15
Cystoseira Spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	14.833	7.1005	15
Articulated Coralline Algae	0.000	0.0000	15
Encrusting Coralline Algae	61.167	14.0429	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	7.000	5.7632	15
Sponges	0.333	0.8797	15
Corynactis californica	1.000	2.2756	15
Balanophyllia elegans	2.000	1.9365	15
Astrangia lajollaensis	11.833	10.8342	15
Diopatra ornata	0.500	1.0351	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	1.333	1.8581	15
Diaperoecia californica	0.333	0.8797	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	0.833	2.0412	15
Miscellaneous Invertebrates	13.000	8.1394	15
Bare Substrate	12.667	9.5649	15
Rock	81.833	20.8624	15
Cobble	17.667	19.8536	15
Sand	0.500	1.4015	15

Santa Cruz Island - Gull Island South

Species	Mean	Std. Dev.	n
Green Algae	0.167	0.6455	15
Miscellaneous Brown Algae	0.333	0.8797	15
Desmarestia Spp.	0.000	0.0000	15
Cystoseira Spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.667	1.4840	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	12.500	4.7246	15
Articulated Coralline Algae	1.667	2.2493	15
Encrusting Coralline Algae	51.667	8.9476	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	5.667	6.9736	15
Sponges	0.000	0.0000	15
Corynactis californica	6.167	5.0768	15
Balanophyllia elegans	3.167	2.7495	15
Astrangia lajollaensis	2.500	1.8898	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	1.167	2.0845	15
Diaperoecia californica	1.000	1.5811	15
Pachythyone rubra	0.167	0.6455	15
Tunicates	0.333	0.8797	15
Miscellaneous Invertebrates	18.833	7.7267	15
Bare Substrate	13.833	8.7048	15
Rock	97.167	3.6433	15
Cobble	1.667	2.4398	15
Sand	1.167	2.0845	15

Santa Cruz Island - Fry's Harbor

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.000	0.0000	15
Desmarestia Spp.	0.000	0.0000	15
Cystoseira Spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	1.500	2.4640	15
Articulated Coralline Algae	0.167	0.6455	15
Encrusting Coralline Algae	46.167	11.8723	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	0.000	0.0000	15
Sponges	0.000	0.0000	15
Corynactis californica	0.667	1.1443	15
Balanophyllia elegans	0.167	0.6455	15
Astrangia lajollaensis	14.333	5.8605	15
Diopatra ornata	0.167	0.6455	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	2.833	2.0845	15
Diaperoecia californica	1.333	1.8581	15
Pachythyone rubra	38.667	28.9067	15
Tunicates	0.333	1.2910	15
Miscellaneous Invertebrates	37.000	12.1817	15
Bare Substrate	19.333	11.4746	15
Rock	81.000	15.2010	15
Cobble	15.500	11.6190	15
Sand	3.500	5.4116	15

Santa Cruz Island - Pelican Bay

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.167	0.6455	15
Desmarestia Spp.	0.000	0.0000	15
Cystoseira Spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	0.000	0.0000	15
Articulated Coralline Algae	0.333	0.8797	15
Encrusting Coralline Algae	19.333	10.7515	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	0.000	0.0000	15
Sponges	0.000	0.0000	15
Corynactis californica	0.167	0.6455	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	5.333	3.9940	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.500	1.4015	15
Miscellaneous Bryozoans	0.000	0.0000	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	0.000	0.0000	15
Miscellaneous Invertebrates	14.667	7.1256	15
Bare Substrate	59.667	16.0320	15
Rock	58.333	21.0371	15
Cobble	13.333	14.9005	15
Sand	28.333	20.0594	15

Santa Cruz Island - Scorpion Anchorage

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.167	0.6455	15
Desmarestia Spp.	0.000	0.0000	15
Cystoseira Spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	0.333	0.8797	15
Articulated Coralline Algae	1.833	2.4029	15
Encrusting Coralline Algae	68.333	12.8058	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	3.000	3.9188	15
Sponges	0.000	0.0000	15
Corynactis californica	1.167	2.2887	15
Balanophyllia elegans	0.833	1.8094	15
Astrangia lajollaensis	0.000	0.0000	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	1.167	2.0845	15
Serpulorbis squamigerus	0.333	0.8797	15
Miscellaneous Bryozoans	0.000	0.0000	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	0.000	0.0000	15
Miscellaneous Invertebrates	21.667	10.5079	15
Bare Substrate	25.333	11.1750	15
Rock	80.000	11.6113	15
Cobble	9.833	7.9881	15
Sand	10.167	8.8372	15

Santa Cruz Island - Yellow Banks

Species	Mean	Std. Dev.	n
Green Algae	0.167	0.6455	15
Miscellaneous Brown Algae	0.167	0.6455	15
Desmarestia Spp.	0.000	0.0000	15
Cystoseira Spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.500	1.4015	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	2.500	3.1339	15
Articulated Coralline Algae	2.333	2.5820	15
Encrusting Coralline Algae	43.000	13.3363	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	20.500	15.0949	15
Sponges	0.167	0.6455	15
Corynactis californica	0.500	1.4015	15
Balanophyllia elegans	0.167	0.6455	15
Astrangia lajollaensis	1.333	1.8581	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	0.667	1.9970	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	0.167	0.6455	15
Miscellaneous Invertebrates	15.167	11.8573	15
Bare Substrate	42.500	17.7784	15
Rock	71.333	26.0985	15
Cobble	17.667	17.0992	15
Sand	11.000	12.5996	15

2001 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Anacapa Island - Admiral's Reef

Species	Mean	Std. Dev.	n
Green Algae	0.500	1.0351	15
Miscellaneous Brown Algae	0.500	1.0351	15
Desmarestia Spp.	0.000	0.0000	15
Cystoseira Spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	5.333	5.3341	15
Articulated Coralline Algae	0.667	1.4840	15
Encrusting Coralline Algae	33.000	8.4092	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	5.500	6.6949	15
Sponges	0.167	0.6455	15
Corynactis californica	4.000	6.8661	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	0.833	1.5430	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.333	0.8797	15
Miscellaneous Bryozoans	0.000	0.0000	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	0.000	0.0000	15
Miscellaneous Invertebrates	54.667	25.3699	15
Bare Substrate	46.000	18.3420	15
Rock	84.500	16.8024	15
Cobble	6.000	6.4642	15
Sand	9.500	14.0535	15

Anacapa Island - Cathedral Cove

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	2.667	3.5940	15
Desmarestia Spp.	0.000	0.0000	15
Cystoseira Spp.	5.833	14.0683	15
Macrocystis pyrifera All	6.167	16.6064	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	1.500	4.2046	15
Miscellaneous Red Algae	6.500	10.3854	15
Articulated Coralline Algae	15.000	10.6904	15
Encrusting Coralline Algae	55.333	14.1379	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	17.000	11.8472	15
Sponges	0.167	0.6455	15
Corynactis californica	0.000	0.0000	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	1.667	2.0412	15
Diopatra ornata	0.500	1.9365	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.333	0.8797	15
Miscellaneous Bryozoans	3.833	4.1043	15
Diaperoecia californica	0.500	1.4015	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	1.000	2.0702	15
Miscellaneous Invertebrates	21.833	10.2846	15
Bare Substrate	22.167	18.1233	15
Rock	61.333	31.7758	15
Cobble	27.167	24.2911	15
Sand	11.500	12.9146	15

Anacapa Island - Landing Cove

Species	Mean	Std. Dev.	n
Green Algae	0.833	1.2199	15
Miscellaneous Brown Algae	8.833	9.3478	15
Desmarestia Spp.	0.167	0.6455	15
Cystoseira Spp.	0.333	0.8797	15
Macrocystis pyrifera All	6.333	7.9545	15
Eisenia arborea All	17.500	25.9979	15
Pterygophora californica All	0.833	3.2275	15
Laminaria farlowii All	5.333	16.6601	15
Miscellaneous Red Algae	26.000	28.1704	15
Articulated Coralline Algae	10.333	11.6445	15
Encrusting Coralline Algae	28.000	18.9265	15
Gelidium Spp.	19.333	28.6990	15
Gigartina Spp.	1.500	3.8730	15
Miscellaneous Plants (ie: Diatoms)	0.000	0.0000	15
Sponges	3.500	6.1818	15
Corynactis californica	8.500	11.3311	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	3.667	4.3164	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.500	1.0351	15
Miscellaneous Bryozoans	5.167	6.7126	15
Diaperoecia californica	0.667	1.4840	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	4.500	4.8366	15
Miscellaneous Invertebrates	25.500	23.6077	15
Bare Substrate	19.000	21.8926	15
Rock	57.333	43.0165	15
Cobble	29.500	30.8394	15
Sand	13.167	19.6729	15

Santa Barbara Island - SE Sea Lion Rookery

Green Algae	1.167	1.8581	15
Miscellaneous Brown Algae	0.167	0.6455	15
Desmarestia Spp.	0.000	0.0000	15
Cystoseira Spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	2.667	2.4029	15
Articulated Coralline Algae	3.833	13.4916	15
Encrusting Coralline Algae	45.167	19.3757	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	7.667	8.7865	15
Sponges	0.333	0.8797	15
Corynactis californica	4.500	3.3004	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	0.333	0.8797	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	1.333	1.8581	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	1.500	1.8420	15
Miscellaneous Invertebrates	32.500	20.1999	15
Bare Substrate	28.500	18.7274	15
Rock	83.500	21.1458	15
Cobble	3.667	2.9681	15
Sand	12.833	21.6273	15

Santa Barbara Island - Arch Point

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.167	0.6455	15
Desmarestia Spp.	0.000	0.0000	15
Cystoseira Spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	25.500	10.1858	15
Articulated Coralline Algae	2.000	2.3528	15
Encrusting Coralline Algae	42.833	10.3020	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	5.667	8.5287	15
Sponges	0.000	0.0000	15
Corynactis californica	6.833	10.0208	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	1.667	2.0412	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.833	2.0412	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	0.167	0.6455	15
Diaperoecia californica	0.167	0.6455	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	0.000	0.0000	15
Miscellaneous Invertebrates	13.833	9.3478	15
Bare Substrate	26.333	11.9846	15
Rock	78.500	14.1358	15
Cobble	19.667	13.5576	15
Sand	1.833	2.9073	15

Santa Barbara Island - Cat Canyon

Species	Mean	Std. Dev.	n
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.000	0.0000	15
Desmarestia Spp.	0.000	0.0000	15
Cystoseira Spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.000	0.0000	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	2.333	1.9970	15
Articulated Coralline Algae	0.500	1.0351	15
Encrusting Coralline Algae	51.000	9.1515	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	10.667	6.0109	15
Sponges	0.000	0.0000	15
Corynactis californica	0.000	0.0000	15
Balanophyllia elegans	0.667	1.4840	15
Astrangia lajollaensis	0.667	1.4840	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.167	0.6455	15
Miscellaneous Bryozoans	0.333	0.8797	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	0.167	0.6455	15
Miscellaneous Invertebrates	8.500	5.0709	15
Bare Substrate	38.667	8.7048	15
Rock	90.167	12.1914	15
Cobble	1.833	3.5940	15
Sand	8.000	11.8849	15

Appendix E: Fish Transect Data

2001 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

San Miguel Island - Wyckoff Ledge

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	**7/17/01**	0.0000	0.0000	4
Chromis punctipinnis Adult	**9/18/01**	0.0000	0.0000	4
Chromis punctipinnis Juvenile	**7/17/01**	0.0000	0.0000	4
Chromis punctipinnis Juvenile	**9/18/01**	0.0000	0.0000	4
Oxyjulis californica Adult	**7/17/01**	9.5000	11.3871	4
Oxyjulis californica Adult	**9/18/01**	3.7500	5.1881	4
Oxyjulis californica Juvenile	**7/17/01**	0.0000	0.0000	4
Oxyjulis californica Juvenile	**9/18/01**	0.0000	0.0000	4
Sebastes mystinus Adult	**7/17/01**	3.7500	5.1881	4
Sebastes mystinus Adult	**9/18/01**	1.5000	1.7321	4
Sebastes mystinus Juvenile	**7/17/01**	0.0000	0.0000	4
Sebastes mystinus Juvenile	**9/18/01**	0.5000	0.5774	4
Sebastes serranoides Adult	**7/17/01**	0.0000	0.0000	4
Sebastes serranoides Adult	**9/18/01**	0.5000	0.5774	4
Sebastes serranoides Juvenile	**7/17/01**	0.0000	0.0000	4
Sebastes serranoides Juvenile	**9/18/01**	0.0000	0.0000	4
Sebastes atrovirens Adult	**7/17/01**	1.7500	1.7078	4
Sebastes atrovirens Adult	**9/18/01**	1.2500	0.9574	4
Sebastes atrovirens Juvenile	**7/17/01**	0.0000	0.0000	4
Sebastes atrovirens Juvenile	**9/18/01**	0.0000	0.0000	4
Paralabrax clathratus Adult	**7/17/01**	0.0000	0.0000	4
Paralabrax clathratus Adult	**9/18/01**	0.0000	0.0000	4
Paralabrax clathratus Juvenile	**7/17/01**	0.0000	0.0000	4
Paralabrax clathratus Juvenile	**9/18/01**	0.0000	0.0000	4
Semicossyphus pulcher Male	**7/17/01**	0.5000	1.0000	4
Semicossyphus pulcher Male	**9/18/01**	0.0000	0.0000	4
Semicossyphus pulcher Female	**7/17/01**	0.2500	0.5000	4
Semicossyphus pulcher Female	**9/18/01**	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	**7/17/01**	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	**9/18/01**	0.0000	0.0000	4
Embiotoca jacksoni Adult	**7/17/01**	0.0000	0.0000	4
Embiotoca jacksoni Adult	**9/18/01**	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	**7/17/01**	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	**9/18/01**	0.0000	0.0000	4
Embiotoca lateralis Adult	**7/17/01**	0.5000	1.0000	4
Embiotoca lateralis Adult	**9/18/01**	0.2500	0.5000	4
Embiotoca lateralis Juvenile	**7/17/01**	0.0000	0.0000	4
Embiotoca lateralis Juvenile	**9/18/01**	0.0000	0.0000	4
Damalichthys vacca Adult	**7/17/01**	0.0000	0.0000	4
Damalichthys vacca Adult	**9/18/01**	0.0000	0.0000	4
Damalichthys vacca Juvenile	**7/17/01**	0.0000	0.0000	4
Damalichthys vacca Juvenile	**9/18/01**	1.7500	3.5000	4
Hypsypops rubicundus Adult	**7/17/01**	0.0000	0.0000	4
Hypsypops rubicundus Adult	**9/18/01**	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	**7/17/01**	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	**9/18/01**	0.0000	0.0000	4
Girella nigricans Adult	**7/17/01**	0.0000	0.0000	4
Girella nigricans Adult	**9/18/01**	0.0000	0.0000	4
Girella nigricans Juvenile	**7/17/01**	0.0000	0.0000	4
Girella nigricans Juvenile	**9/18/01**	0.0000	0.0000	4
Halichoeres semicinctus Male	**7/17/01**	0.0000	0.0000	4
Halichoeres semicinctus Male	**9/18/01**	0.0000	0.0000	4
Halichoeres semicinctus Female	**7/17/01**	0.0000	0.0000	4
Halichoeres semicinctus Female	**9/18/01**	0.0000	0.0000	4

2001 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

San Miguel Island - Hare Rock

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	7/18/01	0.0000	0.0000	4
Chromis punctipinnis Adult	9/19/01	0.0000	0.0000	4
Chromis punctipinnis Juvenile	7/18/01	0.0000	0.0000	4
Chromis punctipinnis Juvenile	9/19/01	1.2500	2.5000	4
Oxyjulis californica Adult	7/18/01	17.5000	35.0000	4
Oxyjulis californica Adult	9/19/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	7/18/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	9/19/01	0.0000	0.0000	4
Sebastes mystinus Adult	7/18/01	0.2500	0.5000	4
Sebastes mystinus Adult	9/19/01	0.0000	0.0000	4
Sebastes mystinus Juvenile	7/18/01	0.0000	0.0000	4
Sebastes mystinus Juvenile	9/19/01	0.0000	0.0000	4
Sebastes serranoides Adult	7/18/01	0.0000	0.0000	4
Sebastes serranoides Adult	9/19/01	0.2500	0.5000	4
Sebastes serranoides Juvenile	7/18/01	0.0000	0.0000	4
Sebastes serranoides Juvenile	9/19/01	0.0000	0.0000	4
Sebastes atrovirens Adult	7/18/01	0.0000	0.0000	4
Sebastes atrovirens Adult	9/19/01	0.0000	0.0000	4
Sebastes atrovirens Juvenile	7/18/01	0.0000	0.0000	4
Sebastes atrovirens Juvenile	9/19/01	0.0000	0.0000	4
Paralabrax clathratus Adult	7/18/01	0.0000	0.0000	4
Paralabrax clathratus Adult	9/19/01	0.0000	0.0000	4
Paralabrax clathratus Juvenile	7/18/01	0.0000	0.0000	4
Paralabrax clathratus Juvenile	9/19/01	0.0000	0.0000	4
Semicossyphus pulcher Male	7/18/01	0.0000	0.0000	4
Semicossyphus pulcher Male	9/19/01	0.0000	0.0000	4
Semicossyphus pulcher Female	7/18/01	0.2500	0.5000	4
Semicossyphus pulcher Female	9/19/01	0.5000	0.5774	4
Semicossyphus pulcher Juvenile	7/18/01	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	9/19/01	0.0000	0.0000	4
Embiotoca jacksoni Adult	7/18/01	0.2500	0.5000	4
Embiotoca jacksoni Adult	9/19/01	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	7/18/01	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	9/19/01	0.2500	0.5000	4
Embiotoca lateralis Adult	7/18/01	0.2500	0.5000	4
Embiotoca lateralis Adult	9/19/01	0.2500	0.5000	4
Embiotoca lateralis Juvenile	7/18/01	0.2500	0.5000	4
Embiotoca lateralis Juvenile	9/19/01	0.5000	0.5774	4
Damalichthys vacca Adult	7/18/01	0.0000	0.0000	4
Damalichthys vacca Adult	9/19/01	0.0000	0.0000	4
Damalichthys vacca Juvenile	7/18/01	0.0000	0.0000	4
Damalichthys vacca Juvenile	9/19/01	0.0000	0.0000	4
Hypsypops rubicundus Adult	7/18/01	0.0000	0.0000	4
Hypsypops rubicundus Adult	9/19/01	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	7/18/01	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	9/19/01	0.0000	0.0000	4
Girella nigricans Adult	7/18/01	0.0000	0.0000	4
Girella nigricans Adult	9/19/01	0.0000	0.0000	4
Girella nigricans Juvenile	7/18/01	0.0000	0.0000	4
Girella nigricans Juvenile	9/19/01	0.0000	0.0000	4
Halichoeres semicinctus Male	7/18/01	0.0000	0.0000	4
Halichoeres semicinctus Male	9/19/01	0.0000	0.0000	4
Halichoeres semicinctus Female	7/18/01	0.0000	0.0000	4
Halichoeres semicinctus Female	9/19/01	0.0000	0.0000	4

2001 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

Santa Rosa Island - Johnson's Lee North

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	7/31/01	7.2500	11.8708	4
Chromis punctipinnis Adult	8/29/01	1.5000	1.6036	8
Chromis punctipinnis Juvenile	7/31/01	0.0000	0.0000	4
Chromis punctipinnis Juvenile	8/29/01	0.0000	0.0000	8
Oxyjulis californica Adult	7/31/01	33.7500	20.4512	4
Oxyjulis californica Adult	8/29/01	2.6250	1.7678	8
Oxyjulis californica Juvenile	7/31/01	0.2500	0.5000	4
Oxyjulis californica Juvenile	8/29/01	0.3750	1.0607	8
Sebastes mystinus Adult	7/31/01	0.5000	1.0000	4
Sebastes mystinus Adult	8/29/01	1.1250	2.1002	8
Sebastes mystinus Juvenile	7/31/01	0.5000	1.0000	4
Sebastes mystinus Juvenile	8/29/01	0.2500	0.7071	8
Sebastes serranoides Adult	7/31/01	1.7500	1.7078	4
Sebastes serranoides Adult	8/29/01	1.8750	2.2321	8
Sebastes serranoides Juvenile	7/31/01	0.0000	0.0000	4
Sebastes serranoides Juvenile	8/29/01	0.0000	0.0000	8
Sebastes atrovirens Adult	7/31/01	0.7500	0.5000	4
Sebastes atrovirens Adult	8/29/01	0.2500	0.7071	8
Sebastes atrovirens Juvenile	7/31/01	0.0000	0.0000	4
Sebastes atrovirens Juvenile	8/29/01	0.0000	0.0000	8
Paralabrax clathratus Adult	7/31/01	0.0000	0.0000	4
Paralabrax clathratus Adult	8/29/01	0.0000	0.0000	8
Paralabrax clathratus Juvenile	7/31/01	0.0000	0.0000	4
Paralabrax clathratus Juvenile	8/29/01	0.0000	0.0000	8
Semicossyphus pulcher Male	7/31/01	0.0000	0.0000	4
Semicossyphus pulcher Male	8/29/01	0.0000	0.0000	8
Semicossyphus pulcher Female	7/31/01	2.2500	2.0616	4
Semicossyphus pulcher Female	8/29/01	1.3750	1.3025	8
Semicossyphus pulcher Juvenile	7/31/01	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	8/29/01	0.0000	0.0000	8
Embiotoca jacksoni Adult	7/31/01	1.7500	0.5000	4
Embiotoca jacksoni Adult	8/29/01	0.6250	1.0607	8
Embiotoca jacksoni Juvenile	7/31/01	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	8/29/01	1.2500	1.1650	8
Embiotoca lateralis Adult	7/31/01	0.2500	0.5000	4
Embiotoca lateralis Adult	8/29/01	1.3750	1.5980	8
Embiotoca lateralis Juvenile	7/31/01	0.0000	0.0000	4
Embiotoca lateralis Juvenile	8/29/01	0.1250	0.3536	8
Damalichthys vacca Adult	7/31/01	0.2500	0.5000	4
Damalichthys vacca Adult	8/29/01	0.1250	0.3536	8
Damalichthys vacca Juvenile	7/31/01	0.0000	0.0000	4
Damalichthys vacca Juvenile	8/29/01	0.5000	0.7559	8
Hypsypops rubicundus Adult	7/31/01	0.5000	0.5774	4
Hypsypops rubicundus Adult	8/29/01	0.6250	0.7440	8
Hypsypops rubicundus Juvenile	7/31/01	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	8/29/01	0.0000	0.0000	8
Girella nigricans Adult	7/31/01	0.0000	0.0000	4
Girella nigricans Adult	8/29/01	0.0000	0.0000	8
Girella nigricans Juvenile	7/31/01	0.0000	0.0000	4
Girella nigricans Juvenile	8/29/01	0.0000	0.0000	8
Halichoeres semicinctus Male	7/31/01	0.0000	0.0000	4
Halichoeres semicinctus Male	8/29/01	0.0000	0.0000	8
Halichoeres semicinctus Female	7/31/01	0.0000	0.0000	4
Halichoeres semicinctus Female	8/29/01	0.0000	0.0000	8

2001 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

Santa Rosa Island - Johnson's Lee South

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	7/30/01	1.7500	2.3629	4
Chromis punctipinnis Adult	8/29/01	3.5000	3.8730	4
Chromis punctipinnis Juvenile	7/30/01	0.0000	0.0000	4
Chromis punctipinnis Juvenile	8/29/01	0.0000	0.0000	4
Oxyjulis californica Adult	7/30/01	0.0000	0.0000	4
Oxyjulis californica Adult	8/29/01	3.5000	4.4347	4
Oxyjulis californica Juvenile	7/30/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	8/29/01	0.0000	0.0000	4
Sebastes mystinus Adult	7/30/01	0.7500	0.9574	4
Sebastes mystinus Adult	8/29/01	0.0000	0.0000	4
Sebastes mystinus Juvenile	7/30/01	2.7500	3.4034	4
Sebastes mystinus Juvenile	8/29/01	3.2500	3.7749	4
Sebastes serranoides Adult	7/30/01	0.0000	0.0000	4
Sebastes serranoides Adult	8/29/01	0.2500	0.5000	4
Sebastes serranoides Juvenile	7/30/01	0.0000	0.0000	4
Sebastes serranoides Juvenile	8/29/01	0.0000	0.0000	4
Sebastes atrovirens Adult	7/30/01	0.2500	0.5000	4
Sebastes atrovirens Adult	8/29/01	0.2500	0.5000	4
Sebastes atrovirens Juvenile	7/30/01	0.0000	0.0000	4
Sebastes atrovirens Juvenile	8/29/01	0.0000	0.0000	4
Paralabrax clathratus Adult	7/30/01	0.0000	0.0000	4
Paralabrax clathratus Adult	8/29/01	0.0000	0.0000	4
Paralabrax clathratus Juvenile	7/30/01	0.0000	0.0000	4
Paralabrax clathratus Juvenile	8/29/01	0.0000	0.0000	4
Semicossyphus pulcher Male	7/30/01	0.0000	0.0000	4
Semicossyphus pulcher Male	8/29/01	0.2500	0.5000	4
Semicossyphus pulcher Female	7/30/01	3.2500	2.8723	4
Semicossyphus pulcher Female	8/29/01	1.0000	0.8165	4
Semicossyphus pulcher Juvenile	7/30/01	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	8/29/01	0.0000	0.0000	4
Embiotoca jacksoni Adult	7/30/01	0.0000	0.0000	4
Embiotoca jacksoni Adult	8/29/01	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	7/30/01	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	8/29/01	0.2500	0.5000	4
Embiotoca lateralis Adult	7/30/01	1.0000	1.4142	4
Embiotoca lateralis Adult	8/29/01	1.0000	0.8165	4
Embiotoca lateralis Juvenile	7/30/01	0.0000	0.0000	4
Embiotoca lateralis Juvenile	8/29/01	0.0000	0.0000	4
Damalichthys vacca Adult	7/30/01	1.5000	1.9149	4
Damalichthys vacca Adult	8/29/01	1.2500	0.5000	4
Damalichthys vacca Juvenile	7/30/01	0.0000	0.0000	4
Damalichthys vacca Juvenile	8/29/01	0.0000	0.0000	4
Hypsypops rubicundus Adult	7/30/01	0.0000	0.0000	4
Hypsypops rubicundus Adult	8/29/01	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	7/30/01	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	8/29/01	0.0000	0.0000	4
Girella nigricans Adult	7/30/01	0.0000	0.0000	4
Girella nigricans Adult	8/29/01	0.0000	0.0000	4
Girella nigricans Juvenile	7/30/01	0.0000	0.0000	4
Girella nigricans Juvenile	8/29/01	0.0000	0.0000	4
Halichoeres semicinctus Male	7/30/01	0.0000	0.0000	4
Halichoeres semicinctus Male	8/29/01	0.0000	0.0000	4
Halichoeres semicinctus Female	7/30/01	0.0000	0.0000	4
Halichoeres semicinctus Female	8/29/01	0.0000	0.0000	4

2001 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

Santa Rosa Island - Rodes Reef

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	7/18/01	0.0000	0.0000	4
Chromis punctipinnis Adult	9/19/01	0.0000	0.0000	4
Chromis punctipinnis Juvenile	7/18/01	0.0000	0.0000	4
Chromis punctipinnis Juvenile	9/19/01	0.0000	0.0000	4
Oxyjulis californica Adult	7/18/01	0.0000	0.0000	4
Oxyjulis californica Adult	9/19/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	7/18/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	9/19/01	0.0000	0.0000	4
Sebastes mystinus Adult	7/18/01	0.0000	0.0000	4
Sebastes mystinus Adult	9/19/01	0.2500	0.5000	4
Sebastes mystinus Juvenile	7/18/01	0.5000	1.0000	4
Sebastes mystinus Juvenile	9/19/01	0.2500	0.5000	4
Sebastes serranoides Adult	7/18/01	0.2500	0.5000	4
Sebastes serranoides Adult	9/19/01	0.0000	0.0000	4
Sebastes serranoides Juvenile	7/18/01	0.0000	0.0000	4
Sebastes serranoides Juvenile	9/19/01	0.0000	0.0000	4
Sebastes atrovirens Adult	7/18/01	0.0000	0.0000	4
Sebastes atrovirens Adult	9/19/01	0.0000	0.0000	4
Sebastes atrovirens Juvenile	7/18/01	0.0000	0.0000	4
Sebastes atrovirens Juvenile	9/19/01	0.0000	0.0000	4
Paralabrax clathratus Adult	7/18/01	0.0000	0.0000	4
Paralabrax clathratus Adult	9/19/01	0.2500	0.5000	4
Paralabrax clathratus Juvenile	7/18/01	0.0000	0.0000	4
Paralabrax clathratus Juvenile	9/19/01	0.0000	0.0000	4
Semicossyphus pulcher Male	7/18/01	0.0000	0.0000	4
Semicossyphus pulcher Male	9/19/01	0.0000	0.0000	4
Semicossyphus pulcher Female	7/18/01	0.0000	0.0000	4
Semicossyphus pulcher Female	9/19/01	0.2500	0.5000	4
Semicossyphus pulcher Juvenile	7/18/01	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	9/19/01	0.0000	0.0000	4
Embiotoca jacksoni Adult	7/18/01	0.2500	0.5000	4
Embiotoca jacksoni Adult	9/19/01	0.5000	1.0000	4
Embiotoca jacksoni Juvenile	7/18/01	1.0000	1.1547	4
Embiotoca jacksoni Juvenile	9/19/01	0.2500	0.5000	4
Embiotoca lateralis Adult	7/18/01	0.0000	0.0000	4
Embiotoca lateralis Adult	9/19/01	0.2500	0.5000	4
Embiotoca lateralis Juvenile	7/18/01	0.0000	0.0000	4
Embiotoca lateralis Juvenile	9/19/01	0.0000	0.0000	4
Damalichthys vacca Adult	7/18/01	0.0000	0.0000	4
Damalichthys vacca Adult	9/19/01	0.2500	0.5000	4
Damalichthys vacca Juvenile	7/18/01	0.0000	0.0000	4
Damalichthys vacca Juvenile	9/19/01	0.0000	0.0000	4
Hypsypops rubicundus Adult	7/18/01	0.0000	0.0000	4
Hypsypops rubicundus Adult	9/19/01	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	7/18/01	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	9/19/01	0.0000	0.0000	4
Girella nigricans Adult	7/18/01	0.0000	0.0000	4
Girella nigricans Adult	9/19/01	0.0000	0.0000	4
Girella nigricans Juvenile	7/18/01	0.0000	0.0000	4
Girella nigricans Juvenile	9/19/01	0.0000	0.0000	4
Halichoeres semicinctus Male	7/18/01	0.0000	0.0000	4
Halichoeres semicinctus Male	9/19/01	0.0000	0.0000	4
Halichoeres semicinctus Female	7/18/01	0.0000	0.0000	4
Halichoeres semicinctus Female	9/19/01	0.0000	0.0000	4

2001 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

Santa Cruz Island - Gull Island South

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	8/2/01	4.7500	6.1847	4
Chromis punctipinnis Adult	8/30/01	10.0000	14.0238	4
Chromis punctipinnis Juvenile	8/2/01	0.0000	0.0000	4
Chromis punctipinnis Juvenile	8/30/01	0.0000	0.0000	4
Oxyjulis californica Adult	8/2/01	0.7500	1.5000	4
Oxyjulis californica Adult	8/30/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	8/2/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	8/30/01	0.0000	0.0000	4
Sebastes mystinus Adult	8/2/01	0.2500	0.5000	4
Sebastes mystinus Adult	8/30/01	0.0000	0.0000	4
Sebastes mystinus Juvenile	8/2/01	6.0000	6.9761	4
Sebastes mystinus Juvenile	8/30/01	16.2500	8.4212	4
Sebastes serranoides Adult	8/2/01	0.0000	0.0000	4
Sebastes serranoides Adult	8/30/01	0.0000	0.0000	4
Sebastes serranoides Juvenile	8/2/01	0.0000	0.0000	4
Sebastes serranoides Juvenile	8/30/01	0.2500	0.5000	4
Sebastes atrovirens Adult	8/2/01	0.2500	0.5000	4
Sebastes atrovirens Adult	8/30/01	0.2500	0.5000	4
Sebastes atrovirens Juvenile	8/2/01	0.0000	0.0000	4
Sebastes atrovirens Juvenile	8/30/01	0.0000	0.0000	4
Paralabrax clathratus Adult	8/2/01	0.0000	0.0000	4
Paralabrax clathratus Adult	8/30/01	0.0000	0.0000	4
Paralabrax clathratus Juvenile	8/2/01	0.0000	0.0000	4
Paralabrax clathratus Juvenile	8/30/01	0.0000	0.0000	4
Semicossyphus pulcher Male	8/2/01	0.0000	0.0000	4
Semicossyphus pulcher Male	8/30/01	0.2500	0.5000	4
Semicossyphus pulcher Female	8/2/01	2.2500	2.6300	4
Semicossyphus pulcher Female	8/30/01	2.7500	0.9574	4
Semicossyphus pulcher Juvenile	8/2/01	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	8/30/01	0.0000	0.0000	4
Embiotoca jacksoni Adult	8/2/01	0.2500	0.5000	4
Embiotoca jacksoni Adult	8/30/01	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	8/2/01	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	8/30/01	0.0000	0.0000	4
Embiotoca lateralis Adult	8/2/01	0.0000	0.0000	4
Embiotoca lateralis Adult	8/30/01	0.0000	0.0000	4
Embiotoca lateralis Juvenile	8/2/01	0.0000	0.0000	4
Embiotoca lateralis Juvenile	8/30/01	0.0000	0.0000	4
Damalichthys vacca Adult	8/2/01	0.7500	0.9574	4
Damalichthys vacca Adult	8/30/01	0.2500	0.5000	4
Damalichthys vacca Juvenile	8/2/01	0.0000	0.0000	4
Damalichthys vacca Juvenile	8/30/01	0.0000	0.0000	4
Hypsypops rubicundus Adult	8/2/01	0.0000	0.0000	4
Hypsypops rubicundus Adult	8/30/01	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	8/2/01	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	8/30/01	0.0000	0.0000	4
Girella nigricans Adult	8/2/01	0.0000	0.0000	4
Girella nigricans Adult	8/30/01	0.2500	0.5000	4
Girella nigricans Juvenile	8/2/01	0.0000	0.0000	4
Girella nigricans Juvenile	8/30/01	0.0000	0.0000	4
Halichoeres semicinctus Male	8/2/01	0.0000	0.0000	4
Halichoeres semicinctus Male	8/30/01	0.0000	0.0000	4
Halichoeres semicinctus Female	8/2/01	0.0000	0.0000	4
Halichoeres semicinctus Female	8/30/01	0.0000	0.0000	4

2001 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

Santa Cruz Island - Fry's Harbor

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	6/27/01	146.7500	96.6208	4
Chromis punctipinnis Adult	7/19/01	32.8750	14.3371	8
Chromis punctipinnis Juvenile	6/27/01	0.0000	0.0000	4
Chromis punctipinnis Juvenile	7/19/01	0.1250	0.3536	8
Oxyjulis californica Adult	6/27/01	0.2500	0.5000	4
Oxyjulis californica Adult	7/19/01	0.0000	0.0000	8
Oxyjulis californica Juvenile	6/27/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	7/19/01	0.0000	0.0000	8
Sebastes mystinus Adult	6/27/01	0.0000	0.0000	4
Sebastes mystinus Adult	7/19/01	0.0000	0.0000	8
Sebastes mystinus Juvenile	6/27/01	0.0000	0.0000	4
Sebastes mystinus Juvenile	7/19/01	0.0000	0.0000	8
Sebastes serranoides Adult	6/27/01	0.0000	0.0000	4
Sebastes serranoides Adult	7/19/01	0.0000	0.0000	8
Sebastes serranoides Juvenile	6/27/01	0.0000	0.0000	4
Sebastes serranoides Juvenile	7/19/01	0.0000	0.0000	8
Sebastes atrovirens Adult	6/27/01	0.0000	0.0000	4
Sebastes atrovirens Adult	7/19/01	0.0000	0.0000	8
Sebastes atrovirens Juvenile	6/27/01	0.0000	0.0000	4
Sebastes atrovirens Juvenile	7/19/01	0.0000	0.0000	8
Paralabrax clathratus Adult	6/27/01	0.2500	0.5000	4
Paralabrax clathratus Adult	7/19/01	0.3750	0.7440	8
Paralabrax clathratus Juvenile	6/27/01	0.0000	0.0000	4
Paralabrax clathratus Juvenile	7/19/01	0.0000	0.0000	8
Semicossyphus pulcher Male	6/27/01	0.0000	0.0000	4
Semicossyphus pulcher Male	7/19/01	0.0000	0.0000	8
Semicossyphus pulcher Female	6/27/01	0.0000	0.0000	4
Semicossyphus pulcher Female	7/19/01	0.5000	0.5345	8
Semicossyphus pulcher Juvenile	6/27/01	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	7/19/01	0.0000	0.0000	8
Embiotoca jacksoni Adult	6/27/01	0.7500	0.9574	4
Embiotoca jacksoni Adult	7/19/01	0.1250	0.3536	8
Embiotoca jacksoni Juvenile	6/27/01	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	7/19/01	0.0000	0.0000	8
Embiotoca lateralis Adult	6/27/01	0.0000	0.0000	4
Embiotoca lateralis Adult	7/19/01	0.0000	0.0000	8
Embiotoca lateralis Juvenile	6/27/01	0.0000	0.0000	4
Embiotoca lateralis Juvenile	7/19/01	0.0000	0.0000	8
Damalichthys vacca Adult	6/27/01	1.0000	0.0000	4
Damalichthys vacca Adult	7/19/01	1.1250	1.3562	8
Damalichthys vacca Juvenile	6/27/01	0.0000	0.0000	4
Damalichthys vacca Juvenile	7/19/01	0.0000	0.0000	8
Hypsypops rubicundus Adult	6/27/01	0.2500	0.5000	4
Hypsypops rubicundus Adult	7/19/01	0.5000	0.7559	8
Hypsypops rubicundus Juvenile	6/27/01	0.2500	0.5000	4
Hypsypops rubicundus Juvenile	7/19/01	0.0000	0.0000	8
Girella nigricans Adult	6/27/01	0.0000	0.0000	4
Girella nigricans Adult	7/19/01	0.0000	0.0000	8
Girella nigricans Juvenile	6/27/01	0.0000	0.0000	4
Girella nigricans Juvenile	7/19/01	0.0000	0.0000	8
Halichoeres semicinctus Male	6/27/01	0.0000	0.0000	4
Halichoeres semicinctus Male	7/19/01	0.0000	0.0000	8
Halichoeres semicinctus Female	6/27/01	0.2500	0.5000	4
Halichoeres semicinctus Female	7/19/01	0.0000	0.0000	8

2001 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

Santa Cruz Island - Pelican Bay

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	6/26/01	0.5000	0.7559	8
Chromis punctipinnis Adult	8/16/01	0.0000	0.0000	4
Chromis punctipinnis Juvenile	6/26/01	0.0000	0.0000	8
Chromis punctipinnis Juvenile	8/16/01	0.0000	0.0000	4
Oxyjulis californica Adult	6/26/01	0.8750	0.6409	8
Oxyjulis californica Adult	8/16/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	6/26/01	0.0000	0.0000	8
Oxyjulis californica Juvenile	8/16/01	0.0000	0.0000	4
Sebastes mystinus Adult	6/26/01	0.0000	0.0000	8
Sebastes mystinus Adult	8/16/01	0.0000	0.0000	4
Sebastes mystinus Juvenile	6/26/01	0.0000	0.0000	8
Sebastes mystinus Juvenile	8/16/01	0.0000	0.0000	4
Sebastes serranoides Adult	6/26/01	0.0000	0.0000	8
Sebastes serranoides Adult	8/16/01	0.0000	0.0000	4
Sebastes serranoides Juvenile	6/26/01	0.0000	0.0000	8
Sebastes serranoides Juvenile	8/16/01	0.0000	0.0000	4
Sebastes atrovirens Adult	6/26/01	0.0000	0.0000	8
Sebastes atrovirens Adult	8/16/01	0.2500	0.5000	4
Sebastes atrovirens Juvenile	6/26/01	0.0000	0.0000	8
Sebastes atrovirens Juvenile	8/16/01	0.0000	0.0000	4
Paralabrax clathratus Adult	6/26/01	2.6250	1.1877	8
Paralabrax clathratus Adult	8/16/01	1.2500	1.5000	4
Paralabrax clathratus Juvenile	6/26/01	0.0000	0.0000	8
Paralabrax clathratus Juvenile	8/16/01	0.0000	0.0000	4
Semicossyphus pulcher Male	6/26/01	0.1250	0.3536	8
Semicossyphus pulcher Male	8/16/01	0.0000	0.0000	4
Semicossyphus pulcher Female	6/26/01	0.3750	0.5175	8
Semicossyphus pulcher Female	8/16/01	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	6/26/01	0.0000	0.0000	8
Semicossyphus pulcher Juvenile	8/16/01	0.0000	0.0000	4
Embiotoca jacksoni Adult	6/26/01	1.8750	1.5526	8
Embiotoca jacksoni Adult	8/16/01	2.5000	1.9149	4
Embiotoca jacksoni Juvenile	6/26/01	0.0000	0.0000	8
Embiotoca jacksoni Juvenile	8/16/01	0.0000	0.0000	4
Embiotoca lateralis Adult	6/26/01	0.0000	0.0000	8
Embiotoca lateralis Adult	8/16/01	0.0000	0.0000	4
Embiotoca lateralis Juvenile	6/26/01	0.0000	0.0000	8
Embiotoca lateralis Juvenile	8/16/01	0.0000	0.0000	4
Damalichthys vacca Adult	6/26/01	0.1250	0.3536	8
Damalichthys vacca Adult	8/16/01	1.0000	1.4142	4
Damalichthys vacca Juvenile	6/26/01	0.0000	0.0000	8
Damalichthys vacca Juvenile	8/16/01	0.0000	0.0000	4
Hypsypops rubicundus Adult	6/26/01	0.7500	0.8864	8
Hypsypops rubicundus Adult	8/16/01	1.7500	0.9574	4
Hypsypops rubicundus Juvenile	6/26/01	0.0000	0.0000	8
Hypsypops rubicundus Juvenile	8/16/01	0.0000	0.0000	4
Girella nigricans Adult	6/26/01	0.0000	0.0000	8
Girella nigricans Adult	8/16/01	0.0000	0.0000	4
Girella nigricans Juvenile	6/26/01	0.0000	0.0000	8
Girella nigricans Juvenile	8/16/01	0.0000	0.0000	4
Halichoeres semicinctus Male	6/26/01	0.2500	0.4629	8
Halichoeres semicinctus Male	8/16/01	0.0000	0.0000	4
Halichoeres semicinctus Female	6/26/01	0.0000	0.0000	8
Halichoeres semicinctus Female	8/16/01	0.0000	0.0000	4

2001 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

Santa Cruz Island - Scorpion Anchorage

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	8/15/01	3.7500	3.5000	4
Chromis punctipinnis Adult	8/31/01	23.3750	8.3655	8
Chromis punctipinnis Juvenile	8/15/01	0.0000	0.0000	4
Chromis punctipinnis Juvenile	8/31/01	0.0000	0.0000	8
Oxyjulis californica Adult	8/15/01	1.2500	0.9574	4
Oxyjulis californica Adult	8/31/01	3.8750	3.0443	8
Oxyjulis californica Juvenile	8/15/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	8/31/01	0.0000	0.0000	8
Sebastes mystinus Adult	8/15/01	0.0000	0.0000	4
Sebastes mystinus Adult	8/31/01	0.0000	0.0000	8
Sebastes mystinus Juvenile	8/15/01	0.0000	0.0000	4
Sebastes mystinus Juvenile	8/31/01	0.0000	0.0000	8
Sebastes serranoides Adult	8/15/01	0.0000	0.0000	4
Sebastes serranoides Adult	8/31/01	0.0000	0.0000	8
Sebastes serranoides Juvenile	8/15/01	0.0000	0.0000	4
Sebastes serranoides Juvenile	8/31/01	0.0000	0.0000	8
Sebastes atrovirens Adult	8/15/01	0.0000	0.0000	4
Sebastes atrovirens Adult	8/31/01	0.0000	0.0000	8
Sebastes atrovirens Juvenile	8/15/01	0.0000	0.0000	4
Sebastes atrovirens Juvenile	8/31/01	0.0000	0.0000	8
Paralabrax clathratus Adult	8/15/01	0.2500	0.5000	4
Paralabrax clathratus Adult	8/31/01	0.8750	0.8345	8
Paralabrax clathratus Juvenile	8/15/01	0.0000	0.0000	4
Paralabrax clathratus Juvenile	8/31/01	0.0000	0.0000	8
Semicossyphus pulcher Male	8/15/01	0.0000	0.0000	4
Semicossyphus pulcher Male	8/31/01	0.0000	0.0000	8
Semicossyphus pulcher Female	8/15/01	0.0000	0.0000	4
Semicossyphus pulcher Female	8/31/01	0.0000	0.0000	8
Semicossyphus pulcher Juvenile	8/15/01	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	8/31/01	0.0000	0.0000	8
Embiotoca jacksoni Adult	8/15/01	0.5000	0.5774	4
Embiotoca jacksoni Adult	8/31/01	0.7500	0.4629	8
Embiotoca jacksoni Juvenile	8/15/01	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	8/31/01	0.0000	0.0000	8
Embiotoca lateralis Adult	8/15/01	0.0000	0.0000	4
Embiotoca lateralis Adult	8/31/01	0.0000	0.0000	8
Embiotoca lateralis Juvenile	8/15/01	0.0000	0.0000	4
Embiotoca lateralis Juvenile	8/31/01	0.0000	0.0000	8
Damalichthys vacca Adult	8/15/01	0.0000	0.0000	4
Damalichthys vacca Adult	8/31/01	0.1250	0.3536	8
Damalichthys vacca Juvenile	8/15/01	0.0000	0.0000	4
Damalichthys vacca Juvenile	8/31/01	0.0000	0.0000	8
Hypsypops rubicundus Adult	8/15/01	0.7500	0.9574	4
Hypsypops rubicundus Adult	8/31/01	0.3750	0.5175	8
Hypsypops rubicundus Juvenile	8/15/01	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	8/31/01	0.0000	0.0000	8
Girella nigricans Adult	8/15/01	0.0000	0.0000	4
Girella nigricans Adult	8/31/01	0.1250	0.3536	8
Girella nigricans Juvenile	8/15/01	0.0000	0.0000	4
Girella nigricans Juvenile	8/31/01	0.0000	0.0000	8
Halichoeres semicinctus Male	8/15/01	0.2500	0.5000	4
Halichoeres semicinctus Male	8/31/01	0.2500	0.4629	8
Halichoeres semicinctus Female	8/15/01	0.0000	0.0000	4
Halichoeres semicinctus Female	8/31/01	0.7500	0.8864	8

2001 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

Santa Cruz Island - Yellow Banks

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	6/25/01	2.0000	2.8284	4
Chromis punctipinnis Adult	8/13/01	7.5000	5.9161	4
Chromis punctipinnis Juvenile	6/25/01	0.0000	0.0000	4
Chromis punctipinnis Juvenile	8/13/01	0.0000	0.0000	4
Oxyjulis californica Adult	6/25/01	0.0000	0.0000	4
Oxyjulis californica Adult	8/13/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	6/25/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	8/13/01	0.0000	0.0000	4
Sebastes mystinus Adult	6/25/01	0.0000	0.0000	4
Sebastes mystinus Adult	8/13/01	0.0000	0.0000	4
Sebastes mystinus Juvenile	6/25/01	0.2500	0.5000	4
Sebastes mystinus Juvenile	8/13/01	0.2500	0.5000	4
Sebastes serranoides Adult	6/25/01	0.2500	0.5000	4
Sebastes serranoides Adult	8/13/01	0.2500	0.5000	4
Sebastes serranoides Juvenile	6/25/01	0.0000	0.0000	4
Sebastes serranoides Juvenile	8/13/01	0.0000	0.0000	4
Sebastes atrovirens Adult	6/25/01	0.0000	0.0000	4
Sebastes atrovirens Adult	8/13/01	0.2500	0.5000	4
Sebastes atrovirens Juvenile	6/25/01	0.0000	0.0000	4
Sebastes atrovirens Juvenile	8/13/01	0.0000	0.0000	4
Paralabrax clathratus Adult	6/25/01	1.0000	0.8165	4
Paralabrax clathratus Adult	8/13/01	0.5000	0.5774	4
Paralabrax clathratus Juvenile	6/25/01	0.0000	0.0000	4
Paralabrax clathratus Juvenile	8/13/01	0.0000	0.0000	4
Semicossyphus pulcher Male	6/25/01	0.0000	0.0000	4
Semicossyphus pulcher Male	8/13/01	0.0000	0.0000	4
Semicossyphus pulcher Female	6/25/01	1.0000	0.8165	4
Semicossyphus pulcher Female	8/13/01	1.2500	0.9574	4
Semicossyphus pulcher Juvenile	6/25/01	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	8/13/01	0.0000	0.0000	4
Embiotoca jacksoni Adult	6/25/01	0.2500	0.5000	4
Embiotoca jacksoni Adult	8/13/01	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	6/25/01	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	8/13/01	0.0000	0.0000	4
Embiotoca lateralis Adult	6/25/01	0.0000	0.0000	4
Embiotoca lateralis Adult	8/13/01	0.0000	0.0000	4
Embiotoca lateralis Juvenile	6/25/01	0.0000	0.0000	4
Embiotoca lateralis Juvenile	8/13/01	0.0000	0.0000	4
Damalichthys vacca Adult	6/25/01	0.0000	0.0000	4
Damalichthys vacca Adult	8/13/01	0.0000	0.0000	4
Damalichthys vacca Juvenile	6/25/01	0.0000	0.0000	4
Damalichthys vacca Juvenile	8/13/01	0.0000	0.0000	4
Hypsypops rubicundus Adult	6/25/01	0.0000	0.0000	4
Hypsypops rubicundus Adult	8/13/01	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	6/25/01	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	8/13/01	0.0000	0.0000	4
Girella nigricans Adult	6/25/01	0.0000	0.0000	4
Girella nigricans Adult	8/13/01	0.0000	0.0000	4
Girella nigricans Juvenile	6/25/01	0.0000	0.0000	4
Girella nigricans Juvenile	8/13/01	0.0000	0.0000	4
Halichoeres semicinctus Male	6/25/01	0.5000	1.0000	4
Halichoeres semicinctus Male	8/13/01	0.5000	0.5774	4
Halichoeres semicinctus Female	6/25/01	0.0000	0.0000	4
Halichoeres semicinctus Female	8/13/01	0.0000	0.0000	4

2001 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

Anacapa Island - Admiral's Reef

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	6/14/01	162.5000	75.1110	4
Chromis punctipinnis Adult	8/17/01	49.6250	14.3521	8
Chromis punctipinnis Juvenile	6/14/01	0.0000	0.0000	4
Chromis punctipinnis Juvenile	8/17/01	0.0000	0.0000	8
Oxyjulis californica Adult	6/14/01	0.0000	0.0000	4
Oxyjulis californica Adult	8/17/01	0.3750	0.7440	8
Oxyjulis californica Juvenile	6/14/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	8/17/01	0.0000	0.0000	8
Sebastes mystinus Adult	6/14/01	0.0000	0.0000	4
Sebastes mystinus Adult	8/17/01	0.0000	0.0000	8
Sebastes mystinus Juvenile	6/14/01	0.0000	0.0000	4
Sebastes mystinus Juvenile	8/17/01	5.2500	4.2003	8
Sebastes serranoides Adult	6/14/01	0.0000	0.0000	4
Sebastes serranoides Adult	8/17/01	0.0000	0.0000	8
Sebastes serranoides Juvenile	6/14/01	0.0000	0.0000	4
Sebastes serranoides Juvenile	8/17/01	0.0000	0.0000	8
Sebastes atrovirens Adult	6/14/01	0.2500	0.5000	4
Sebastes atrovirens Adult	8/17/01	0.0000	0.0000	8
Sebastes atrovirens Juvenile	6/14/01	0.0000	0.0000	4
Sebastes atrovirens Juvenile	8/17/01	0.0000	0.0000	8
Paralabrax clathratus Adult	6/14/01	0.7500	0.9574	4
Paralabrax clathratus Adult	8/17/01	0.0000	0.0000	8
Paralabrax clathratus Juvenile	6/14/01	0.0000	0.0000	4
Paralabrax clathratus Juvenile	8/17/01	0.0000	0.0000	8
Semicossyphus pulcher Male	6/14/01	0.2500	0.5000	4
Semicossyphus pulcher Male	8/17/01	0.0000	0.0000	8
Semicossyphus pulcher Female	6/14/01	1.0000	0.0000	4
Semicossyphus pulcher Female	8/17/01	0.8750	0.6409	8
Semicossyphus pulcher Juvenile	6/14/01	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	8/17/01	0.0000	0.0000	8
Embiotoca jacksoni Adult	6/14/01	0.2500	0.5000	4
Embiotoca jacksoni Adult	8/17/01	0.5000	0.9258	8
Embiotoca jacksoni Juvenile	6/14/01	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	8/17/01	0.0000	0.0000	8
Embiotoca lateralis Adult	6/14/01	0.0000	0.0000	4
Embiotoca lateralis Adult	8/17/01	0.0000	0.0000	8
Embiotoca lateralis Juvenile	6/14/01	0.0000	0.0000	4
Embiotoca lateralis Juvenile	8/17/01	0.0000	0.0000	8
Damalichthys vacca Adult	6/14/01	0.0000	0.0000	4
Damalichthys vacca Adult	8/17/01	0.0000	0.0000	8
Damalichthys vacca Juvenile	6/14/01	0.0000	0.0000	4
Damalichthys vacca Juvenile	8/17/01	0.0000	0.0000	8
Hypsypops rubicundus Adult	6/14/01	0.5000	0.5774	4
Hypsypops rubicundus Adult	8/17/01	0.6250	0.7440	8
Hypsypops rubicundus Juvenile	6/14/01	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	8/17/01	0.0000	0.0000	8
Girella nigricans Adult	6/14/01	1.2500	1.8930	4
Girella nigricans Adult	8/17/01	0.0000	0.0000	8
Girella nigricans Juvenile	6/14/01	0.0000	0.0000	4
Girella nigricans Juvenile	8/17/01	0.0000	0.0000	8
Halichoeres semicinctus Male	6/14/01	0.0000	0.0000	4
Halichoeres semicinctus Male	8/17/01	0.0000	0.0000	8
Halichoeres semicinctus Female	6/14/01	0.0000	0.0000	4
Halichoeres semicinctus Female	8/17/01	0.3750	0.5175	8

2001 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

Anacapa Island - Cathedral Cove

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	7/20/01	3.6250	5.9746	8
Chromis punctipinnis Adult	8/14/01	65.0000	31.5066	4
Chromis punctipinnis Juvenile	7/20/01	0.0000	0.0000	8
Chromis punctipinnis Juvenile	8/14/01	0.0000	0.0000	4
Oxyjulis californica Adult	7/20/01	0.0000	0.0000	8
Oxyjulis californica Adult	8/14/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	7/20/01	0.0000	0.0000	8
Oxyjulis californica Juvenile	8/14/01	0.0000	0.0000	4
Sebastes mystinus Adult	7/20/01	0.0000	0.0000	8
Sebastes mystinus Adult	8/14/01	0.0000	0.0000	4
Sebastes mystinus Juvenile	7/20/01	0.0000	0.0000	8
Sebastes mystinus Juvenile	8/14/01	0.0000	0.0000	4
Sebastes serranoides Adult	7/20/01	0.0000	0.0000	8
Sebastes serranoides Adult	8/14/01	0.0000	0.0000	4
Sebastes serranoides Juvenile	7/20/01	0.0000	0.0000	8
Sebastes serranoides Juvenile	8/14/01	0.0000	0.0000	4
Sebastes atrovirens Adult	7/20/01	0.2500	0.7071	8
Sebastes atrovirens Adult	8/14/01	0.2500	0.5000	4
Sebastes atrovirens Juvenile	7/20/01	0.0000	0.0000	8
Sebastes atrovirens Juvenile	8/14/01	0.0000	0.0000	4
Paralabrax clathratus Adult	7/20/01	0.1250	0.3536	8
Paralabrax clathratus Adult	8/14/01	0.5000	1.0000	4
Paralabrax clathratus Juvenile	7/20/01	0.1250	0.3536	8
Paralabrax clathratus Juvenile	8/14/01	0.0000	0.0000	4
Semicossyphus pulcher Male	7/20/01	0.0000	0.0000	8
Semicossyphus pulcher Male	8/14/01	0.0000	0.0000	4
Semicossyphus pulcher Female	7/20/01	0.1250	0.3536	8
Semicossyphus pulcher Female	8/14/01	0.2500	0.5000	4
Semicossyphus pulcher Juvenile	7/20/01	0.0000	0.0000	8
Semicossyphus pulcher Juvenile	8/14/01	0.0000	0.0000	4
Embiotoca jacksoni Adult	7/20/01	0.1250	0.3536	8
Embiotoca jacksoni Adult	8/14/01	0.7500	0.9574	4
Embiotoca jacksoni Juvenile	7/20/01	0.0000	0.0000	8
Embiotoca jacksoni Juvenile	8/14/01	0.0000	0.0000	4
Embiotoca lateralis Adult	7/20/01	0.0000	0.0000	8
Embiotoca lateralis Adult	8/14/01	0.0000	0.0000	4
Embiotoca lateralis Juvenile	7/20/01	0.0000	0.0000	8
Embiotoca lateralis Juvenile	8/14/01	0.0000	0.0000	4
Damalichthys vacca Adult	7/20/01	0.0000	0.0000	8
Damalichthys vacca Adult	8/14/01	0.0000	0.0000	4
Damalichthys vacca Juvenile	7/20/01	0.0000	0.0000	8
Damalichthys vacca Juvenile	8/14/01	0.0000	0.0000	4
Hypsypops rubicundus Adult	7/20/01	0.8750	1.3562	8
Hypsypops rubicundus Adult	8/14/01	1.2500	0.5000	4
Hypsypops rubicundus Juvenile	7/20/01	0.1250	0.3536	8
Hypsypops rubicundus Juvenile	8/14/01	0.2500	0.5000	4
Girella nigricans Adult	7/20/01	0.0000	0.0000	8
Girella nigricans Adult	8/14/01	0.2500	0.5000	4
Girella nigricans Juvenile	7/20/01	0.0000	0.0000	8
Girella nigricans Juvenile	8/14/01	0.0000	0.0000	4
Halichoeres semicinctus Male	7/20/01	0.3750	0.7440	8
Halichoeres semicinctus Male	8/14/01	0.0000	0.0000	4
Halichoeres semicinctus Female	7/20/01	0.7500	1.0351	8
Halichoeres semicinctus Female	8/14/01	1.7500	0.5000	4

2001 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

Anacapa Island - Landing Cove

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	7/20/01	2.3750	3.2043	8
Chromis punctipinnis Adult	8/17/01	23.2500	12.5670	8
Chromis punctipinnis Juvenile	7/20/01	0.0000	0.0000	8
Chromis punctipinnis Juvenile	8/17/01	0.0000	0.0000	8
Oxyjulis californica Adult	7/20/01	1.8750	2.1002	8
Oxyjulis californica Adult	8/17/01	8.1250	11.0381	8
Oxyjulis californica Juvenile	7/20/01	0.0000	0.0000	8
Oxyjulis californica Juvenile	8/17/01	1.5000	4.2426	8
Sebastes mystinus Adult	7/20/01	0.0000	0.0000	8
Sebastes mystinus Adult	8/17/01	0.0000	0.0000	8
Sebastes mystinus Juvenile	7/20/01	0.0000	0.0000	8
Sebastes mystinus Juvenile	8/17/01	0.3750	0.5175	8
Sebastes serranoides Adult	7/20/01	0.0000	0.0000	8
Sebastes serranoides Adult	8/17/01	0.0000	0.0000	8
Sebastes serranoides Juvenile	7/20/01	0.0000	0.0000	8
Sebastes serranoides Juvenile	8/17/01	0.0000	0.0000	8
Sebastes atrovirens Adult	7/20/01	0.0000	0.0000	8
Sebastes atrovirens Adult	8/17/01	0.0000	0.0000	8
Sebastes atrovirens Juvenile	7/20/01	0.0000	0.0000	8
Sebastes atrovirens Juvenile	8/17/01	0.0000	0.0000	8
Paralabrax clathratus Adult	7/20/01	1.6250	0.9161	8
Paralabrax clathratus Adult	8/17/01	0.3750	0.7440	8
Paralabrax clathratus Juvenile	7/20/01	0.0000	0.0000	8
Paralabrax clathratus Juvenile	8/17/01	0.0000	0.0000	8
Semicossyphus pulcher Male	7/20/01	1.0000	0.7559	8
Semicossyphus pulcher Male	8/17/01	0.0000	0.0000	8
Semicossyphus pulcher Female	7/20/01	0.6250	0.9161	8
Semicossyphus pulcher Female	8/17/01	0.3750	0.5175	8
Semicossyphus pulcher Juvenile	7/20/01	0.0000	0.0000	8
Semicossyphus pulcher Juvenile	8/17/01	0.0000	0.0000	8
Embiotoca jacksoni Adult	7/20/01	0.3750	0.5175	8
Embiotoca jacksoni Adult	8/17/01	1.6250	2.4458	8
Embiotoca jacksoni Juvenile	7/20/01	1.2500	1.8323	8
Embiotoca jacksoni Juvenile	8/17/01	0.6250	0.9161	8
Embiotoca lateralis Adult	7/20/01	0.0000	0.0000	8
Embiotoca lateralis Adult	8/17/01	0.0000	0.0000	8
Embiotoca lateralis Juvenile	7/20/01	0.0000	0.0000	8
Embiotoca lateralis Juvenile	8/17/01	0.0000	0.0000	8
Damalichthys vacca Adult	7/20/01	0.0000	0.0000	8
Damalichthys vacca Adult	8/17/01	0.0000	0.0000	8
Damalichthys vacca Juvenile	7/20/01	0.0000	0.0000	8
Damalichthys vacca Juvenile	8/17/01	0.0000	0.0000	8
Hypsypops rubicundus Adult	7/20/01	1.6250	0.7440	8
Hypsypops rubicundus Adult	8/17/01	1.2500	0.4629	8
Hypsypops rubicundus Juvenile	7/20/01	0.0000	0.0000	8
Hypsypops rubicundus Juvenile	8/17/01	0.1250	0.3536	8
Girella nigricans Adult	7/20/01	2.1250	2.2952	8
Girella nigricans Adult	8/17/01	0.8750	1.1260	8
Girella nigricans Juvenile	7/20/01	0.0000	0.0000	8
Girella nigricans Juvenile	8/17/01	0.0000	0.0000	8
Halichoeres semicinctus Male	7/20/01	0.3750	0.7440	8
Halichoeres semicinctus Male	8/17/01	0.3750	0.7440	8
Halichoeres semicinctus Female	7/20/01	0.0000	0.0000	8
Halichoeres semicinctus Female	8/17/01	0.1250	0.3536	8

2001 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

Santa Barbara Island - SE Sea Lion Rookery

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	6/12/01	4.2500	4.9244	4
Chromis punctipinnis Adult	8/27/01	22.0000	27.5318	4
Chromis punctipinnis Juvenile	6/12/01	0.0000	0.0000	4
Chromis punctipinnis Juvenile	8/27/01	3.2500	6.5000	4
Oxyjulis californica Adult	6/12/01	0.0000	0.0000	4
Oxyjulis californica Adult	8/27/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	6/12/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	8/27/01	0.0000	0.0000	4
Sebastes mystinus Adult	6/12/01	0.0000	0.0000	4
Sebastes mystinus Adult	8/27/01	0.0000	0.0000	4
Sebastes mystinus Juvenile	6/12/01	0.0000	0.0000	4
Sebastes mystinus Juvenile	8/27/01	0.0000	0.0000	4
Sebastes serranoides Adult	6/12/01	0.0000	0.0000	4
Sebastes serranoides Adult	8/27/01	0.0000	0.0000	4
Sebastes serranoides Juvenile	6/12/01	0.0000	0.0000	4
Sebastes serranoides Juvenile	8/27/01	0.0000	0.0000	4
Sebastes atrovirens Adult	6/12/01	0.0000	0.0000	4
Sebastes atrovirens Adult	8/27/01	0.0000	0.0000	4
Sebastes atrovirens Juvenile	6/12/01	0.0000	0.0000	4
Sebastes atrovirens Juvenile	8/27/01	0.0000	0.0000	4
Paralabrax clathratus Adult	6/12/01	0.0000	0.0000	4
Paralabrax clathratus Adult	8/27/01	0.0000	0.0000	4
Paralabrax clathratus Juvenile	6/12/01	0.0000	0.0000	4
Paralabrax clathratus Juvenile	8/27/01	0.0000	0.0000	4
Semicossyphus pulcher Male	6/12/01	0.0000	0.0000	4
Semicossyphus pulcher Male	8/27/01	0.0000	0.0000	4
Semicossyphus pulcher Female	6/12/01	0.0000	0.0000	4
Semicossyphus pulcher Female	8/27/01	0.2500	0.5000	4
Semicossyphus pulcher Juvenile	6/12/01	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	8/27/01	0.0000	0.0000	4
Embiotoca jacksoni Adult	6/12/01	0.0000	0.0000	4
Embiotoca jacksoni Adult	8/27/01	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	6/12/01	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	8/27/01	0.0000	0.0000	4
Embiotoca lateralis Adult	6/12/01	0.0000	0.0000	4
Embiotoca lateralis Adult	8/27/01	0.0000	0.0000	4
Embiotoca lateralis Juvenile	6/12/01	0.0000	0.0000	4
Embiotoca lateralis Juvenile	8/27/01	0.0000	0.0000	4
Damalichthys vacca Adult	6/12/01	0.0000	0.0000	4
Damalichthys vacca Adult	8/27/01	0.0000	0.0000	4
Damalichthys vacca Juvenile	6/12/01	0.0000	0.0000	4
Damalichthys vacca Juvenile	8/27/01	0.0000	0.0000	4
Hypsypops rubicundus Adult	6/12/01	0.5000	0.5774	4
Hypsypops rubicundus Adult	8/27/01	0.2500	0.5000	4
Hypsypops rubicundus Juvenile	6/12/01	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	8/27/01	0.0000	0.0000	4
Girella nigricans Adult	6/12/01	0.0000	0.0000	4
Girella nigricans Adult	8/27/01	0.5000	0.5774	4
Girella nigricans Juvenile	6/12/01	0.0000	0.0000	4
Girella nigricans Juvenile	8/27/01	0.0000	0.0000	4
Halichoeres semicinctus Male	6/12/01	0.0000	0.0000	4
Halichoeres semicinctus Male	8/27/01	0.0000	0.0000	4
Halichoeres semicinctus Female	6/12/01	0.0000	0.0000	4
Halichoeres semicinctus Female	8/27/01	0.2500	0.5000	4

2001 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

Santa Barbara Island - Arch Point

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	6/11/01	52.2500	20.4349	4
Chromis punctipinnis Adult	8/28/01	152.2500	143.4491	8
Chromis punctipinnis Juvenile	6/11/01	0.0000	0.0000	4
Chromis punctipinnis Juvenile	8/28/01	36.5000	49.3153	8
Oxyjulis californica Adult	6/11/01	0.5000	0.5774	4
Oxyjulis californica Adult	8/28/01	0.2500	0.4629	8
Oxyjulis californica Juvenile	6/11/01	0.0000	0.0000	4
Oxyjulis californica Juvenile	8/28/01	0.1250	0.3536	8
Sebastes mystinus Adult	6/11/01	0.0000	0.0000	4
Sebastes mystinus Adult	8/28/01	0.0000	0.0000	8
Sebastes mystinus Juvenile	6/11/01	0.0000	0.0000	4
Sebastes mystinus Juvenile	8/28/01	0.0000	0.0000	8
Sebastes serranoides Adult	6/11/01	0.0000	0.0000	4
Sebastes serranoides Adult	8/28/01	0.0000	0.0000	8
Sebastes serranoides Juvenile	6/11/01	0.0000	0.0000	4
Sebastes serranoides Juvenile	8/28/01	0.0000	0.0000	8
Sebastes atrovirens Adult	6/11/01	0.0000	0.0000	4
Sebastes atrovirens Adult	8/28/01	0.0000	0.0000	8
Sebastes atrovirens Juvenile	6/11/01	0.0000	0.0000	4
Sebastes atrovirens Juvenile	8/28/01	0.0000	0.0000	8
Paralabrax clathratus Adult	6/11/01	0.2500	0.5000	4
Paralabrax clathratus Adult	8/28/01	0.0000	0.0000	8
Paralabrax clathratus Juvenile	6/11/01	0.0000	0.0000	4
Paralabrax clathratus Juvenile	8/28/01	0.0000	0.0000	8
Semicossyphus pulcher Male	6/11/01	0.0000	0.0000	4
Semicossyphus pulcher Male	8/28/01	0.0000	0.0000	8
Semicossyphus pulcher Female	6/11/01	1.0000	0.8165	4
Semicossyphus pulcher Female	8/28/01	0.2500	0.4629	8
Semicossyphus pulcher Juvenile	6/11/01	0.0000	0.0000	4
Semicossyphus pulcher Juvenile	8/28/01	0.0000	0.0000	8
Embiotoca jacksoni Adult	6/11/01	0.0000	0.0000	4
Embiotoca jacksoni Adult	8/28/01	0.0000	0.0000	8
Embiotoca jacksoni Juvenile	6/11/01	0.0000	0.0000	4
Embiotoca jacksoni Juvenile	8/28/01	0.0000	0.0000	8
Embiotoca lateralis Adult	6/11/01	0.0000	0.0000	4
Embiotoca lateralis Adult	8/28/01	0.0000	0.0000	8
Embiotoca lateralis Juvenile	6/11/01	0.0000	0.0000	4
Embiotoca lateralis Juvenile	8/28/01	0.0000	0.0000	8
Damalichthys vacca Adult	6/11/01	0.0000	0.0000	4
Damalichthys vacca Adult	8/28/01	0.0000	0.0000	8
Damalichthys vacca Juvenile	6/11/01	0.0000	0.0000	4
Damalichthys vacca Juvenile	8/28/01	0.0000	0.0000	8
Hypsypops rubicundus Adult	6/11/01	5.2500	2.8723	4
Hypsypops rubicundus Adult	8/28/01	5.3750	1.1877	8
Hypsypops rubicundus Juvenile	6/11/01	0.0000	0.0000	4
Hypsypops rubicundus Juvenile	8/28/01	0.0000	0.0000	8
Girella nigricans Adult	6/11/01	0.5000	0.5774	4
Girella nigricans Adult	8/28/01	0.5000	0.7559	8
Girella nigricans Juvenile	6/11/01	0.0000	0.0000	4
Girella nigricans Juvenile	8/28/01	0.0000	0.0000	8
Halichoeres semicinctus Male	6/11/01	0.0000	0.0000	4
Halichoeres semicinctus Male	8/28/01	0.2500	0.4629	8
Halichoeres semicinctus Female	6/11/01	0.2500	0.5000	4
Halichoeres semicinctus Female	8/28/01	0.5000	0.5345	8

2001 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

Santa Barbara Island - Cat Canyon

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	6/13/01	0.7500	0.8864	8
Chromis punctipinnis Adult	8/28/01	155.5000	153.6657	8
Chromis punctipinnis Juvenile	6/13/01	0.0000	0.0000	8
Chromis punctipinnis Juvenile	8/28/01	0.1250	0.3536	8
Oxyjulis californica Adult	6/13/01	3.8750	7.1801	8
Oxyjulis californica Adult	8/28/01	5.5000	3.4226	8
Oxyjulis californica Juvenile	6/13/01	0.0000	0.0000	8
Oxyjulis californica Juvenile	8/28/01	10.2500	21.5257	8
Sebastes mystinus Adult	6/13/01	0.0000	0.0000	8
Sebastes mystinus Adult	8/28/01	0.0000	0.0000	8
Sebastes mystinus Juvenile	6/13/01	0.0000	0.0000	8
Sebastes mystinus Juvenile	8/28/01	0.0000	0.0000	8
Sebastes serranoides Adult	6/13/01	0.0000	0.0000	8
Sebastes serranoides Adult	8/28/01	0.0000	0.0000	8
Sebastes serranoides Juvenile	6/13/01	0.0000	0.0000	8
Sebastes serranoides Juvenile	8/28/01	0.0000	0.0000	8
Sebastes atrovirens Adult	6/13/01	0.0000	0.0000	8
Sebastes atrovirens Adult	8/28/01	0.0000	0.0000	8
Sebastes atrovirens Juvenile	6/13/01	0.0000	0.0000	8
Sebastes atrovirens Juvenile	8/28/01	0.0000	0.0000	8
Paralabrax clathratus Adult	6/13/01	0.0000	0.0000	8
Paralabrax clathratus Adult	8/28/01	0.2500	0.4629	8
Paralabrax clathratus Juvenile	6/13/01	0.0000	0.0000	8
Paralabrax clathratus Juvenile	8/28/01	0.0000	0.0000	8
Semicossyphus pulcher Male	6/13/01	0.0000	0.0000	8
Semicossyphus pulcher Male	8/28/01	0.0000	0.0000	8
Semicossyphus pulcher Female	6/13/01	0.2500	0.4629	8
Semicossyphus pulcher Female	8/28/01	0.8750	0.6409	8
Semicossyphus pulcher Juvenile	6/13/01	0.0000	0.0000	8
Semicossyphus pulcher Juvenile	8/28/01	0.0000	0.0000	8
Embiotoca jacksoni Adult	6/13/01	0.0000	0.0000	8
Embiotoca jacksoni Adult	8/28/01	0.0000	0.0000	8
Embiotoca jacksoni Juvenile	6/13/01	0.0000	0.0000	8
Embiotoca jacksoni Juvenile	8/28/01	0.0000	0.0000	8
Embiotoca lateralis Adult	6/13/01	0.0000	0.0000	8
Embiotoca lateralis Adult	8/28/01	0.0000	0.0000	8
Embiotoca lateralis Juvenile	6/13/01	0.0000	0.0000	8
Embiotoca lateralis Juvenile	8/28/01	0.0000	0.0000	8
Damalichthys vacca Adult	6/13/01	0.0000	0.0000	8
Damalichthys vacca Adult	8/28/01	0.0000	0.0000	8
Damalichthys vacca Juvenile	6/13/01	0.0000	0.0000	8
Damalichthys vacca Juvenile	8/28/01	0.0000	0.0000	8
Hypsypops rubicundus Adult	6/13/01	1.2500	1.7525	8
Hypsypops rubicundus Adult	8/28/01	2.0000	1.9272	8
Hypsypops rubicundus Juvenile	6/13/01	0.0000	0.0000	8
Hypsypops rubicundus Juvenile	8/28/01	0.0000	0.0000	8
Girella nigricans Adult	6/13/01	0.7500	0.7071	8
Girella nigricans Adult	8/28/01	1.1250	1.1260	8
Girella nigricans Juvenile	6/13/01	0.0000	0.0000	8
Girella nigricans Juvenile	8/28/01	0.0000	0.0000	8
Halichoeres semicinctus Male	6/13/01	0.0000	0.0000	8
Halichoeres semicinctus Male	8/28/01	0.0000	0.0000	8
Halichoeres semicinctus Female	6/13/01	0.5000	0.5345	8
Halichoeres semicinctus Female	8/28/01	0.2500	0.7071	8

Appendix F: Roving Diver Fish Count

2001 ROVING DIVER FISH COUNT:

Island:	Site Name:	Date:	Number of Observers:	Number of species observed:
San Miguel	Wyckoff Ledge	7/17/01	5	27
San Miguel	Wyckoff Ledge	9/18/01	5	24
San Miguel	Hare Rock	7/18/01	7	25
San Miguel	Hare Rock	9/19/01	6	24
Santa Rosa	Johnson's Lee North	7/31/01	5	30
Santa Rosa	Johnson's Lee North	8/29/01	5	29
Santa Rosa	Johnson's Lee South	7/30/01	5	21
Santa Rosa	Johnson's Lee South	8/29/01	6	28
Santa Rosa	Rodes Reef	7/18/01	5	23
Santa Rosa	Rodes Reef	9/19/01	6	27
Santa Cruz	Gull Island South	8/2/01	4	23
Santa Cruz	Gull Island South	8/30/01	5	29
Santa Cruz	Fry's Harbor	6/27/01	3	21
Santa Cruz	Fry's Harbor	7/19/01	7	28
Santa Cruz	Pelican Bay	6/26/01	5	24
Santa Cruz	Pelican Bay	8/16/01	5	25
Santa Cruz	Scorpion Anchorage	8/15/01	5	20
Santa Cruz	Scorpion Anchorage	8/31/01	6	23
Santa Cruz	Yellow Banks	6/25/01	4	18
Santa Cruz	Yellow Banks	8/13/01	5	23
Anacapa	Admiral's Reef	6/14/01	5	18
Anacapa	Admiral's Reef	8/17/01	6	19
Anacapa	Cathedral Cove	7/20/01	6	23
Anacapa	Cathedral Cove	8/14/01	5	26
Anacapa	Landing Cove	7/20/01	7	28
Anacapa	Landing Cove	8/17/01	6	29
Santa Barbara	SE Sea Lion Rookery	6/12/01	4	15
Santa Barbara	SE Sea Lion Rookery	8/27/01	7	16
Santa Barbara	Arch Point	6/11/01	4	13
Santa Barbara	Arch Point	8/28/01	7	19
Santa Barbara	Cat Canyon	6/13/01	6	24
Santa Barbara	Cat Canyon	8/28/01	6	16

2001 ROVING DIVER FISH COUNT:

San Miguel Island - Wyckoff Ledge

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black and yellow rockfish	7/17/01	5	2	6.50	2.12	1.00	0.00
black and yellow rockfish	9/18/01	5	5	8.20	1.92	1.40	0.55
black surfperch, adult	7/17/01	5	2	3.50	4.95	1.00	1.41
black surfperch, adult	9/18/01	5	5	5.80	5.31	1.20	1.10
black surfperch, all	7/17/01	5	5	8.40	1.52	2.20	0.45
black surfperch, all	9/18/01	5	5	9.40	0.55	2.00	0.00
black surfperch, juvenile	7/17/01	5	2	8.00	2.83	2.50	0.71
black surfperch, juvenile	9/18/01	5	5	7.60	4.28	1.60	0.89
blackeye goby	7/17/01	5	5	8.60	1.14	2.60	0.55
blackeye goby	9/18/01	5	5	6.20	3.96	1.40	0.89
blacksmith, adult	7/17/01	5	5	0.00	0.00	0.00	0.00
blacksmith, adult	9/18/01	5	5	0.00	0.00	0.00	0.00
blacksmith, all	7/17/01	5	5	0.00	0.00	0.00	0.00
blacksmith, all	9/18/01	5	5	0.00	0.00	0.00	0.00
blacksmith, juvenile	7/17/01	5	5	0.00	0.00	0.00	0.00
blacksmith, juvenile	9/18/01	5	5	0.00	0.00	0.00	0.00
blue rockfish, adult	7/17/01	5	4	8.50	0.58	2.25	0.50
blue rockfish, adult	9/18/01	5	5	8.20	1.64	2.80	0.45
blue rockfish, all	7/17/01	5	5	8.80	0.45	2.60	0.55
blue rockfish, all	9/18/01	5	5	8.20	1.64	2.80	0.45
blue rockfish, juvenile	7/17/01	5	4	4.50	5.20	1.25	1.50
blue rockfish, juvenile	9/18/01	5	5	5.00	4.58	1.20	1.10
blue-banded goby	7/17/01	5	5	0.00	0.00	0.00	0.00
blue-banded goby	9/18/01	5	5	0.00	0.00	0.00	0.00
cabezon	7/17/01	5	2	6.50	2.12	1.00	0.00
cabezon	9/18/01	5	2	9.00	0.00	1.00	0.00
California sheephead,	7/17/01	5	5	3.40	4.67	0.60	0.89
California sheephead,	9/18/01	5	5	2.80	3.90	0.80	1.10
California sheephead,	7/17/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	9/18/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	7/17/01	5	5	1.60	3.58	0.20	0.45
California sheephead,	9/18/01	5	5	3.60	3.29	0.80	0.84
copper rockfish	7/17/01	5	2	9.00	1.41	1.00	0.00
copper rockfish	9/18/01	5	5	9.40	0.89	1.80	0.45
coralline sculpin	7/17/01	5	1	10.00		2.00	
garibaldi, adult	7/17/01	5	5	0.00	0.00	0.00	0.00
garibaldi, adult	9/18/01	5	5	0.00	0.00	0.00	0.00
garibaldi, juvenile	7/17/01	5	5	0.00	0.00	0.00	0.00
garibaldi, juvenile	9/18/01	5	5	0.00	0.00	0.00	0.00
gopher rockfish	7/17/01	5	2	9.50	0.71	2.00	0.00
gopher rockfish	9/18/01	5	1	8.00		2.00	
island kelpfish	7/17/01	5	5	0.00	0.00	0.00	0.00
island kelpfish	9/18/01	5	5	0.00	0.00	0.00	0.00
kelp bass, adult	7/17/01	5	3	0.00	0.00	0.00	0.00
kelp bass, adult	9/18/01	5	5	0.00	0.00	0.00	0.00
kelp bass, calico bass, all	7/17/01	5	5	0.00	0.00	0.00	0.00
kelp bass, calico bass, all	9/18/01	5	5	1.60	3.58	0.40	0.89
kelp bass, juvenile	7/17/01	5	3	0.00	0.00	0.00	0.00
kelp bass, juvenile	9/18/01	5	5	1.60	3.58	0.40	0.89
kelp rockfish, adult	7/17/01	5	2	9.00	0.00	2.00	0.00
kelp rockfish, adult	9/18/01	5	5	9.60	0.89	2.20	0.45
kelp rockfish, all	7/17/01	5	5	9.20	0.45	2.00	0.00
kelp rockfish, all	9/18/01	5	5	9.60	0.89	2.20	0.45
kelp rockfish, juvenile	7/17/01	5	2	0.00	0.00	0.00	0.00

2001 ROVING DIVER FISH COUNT:

kelp rockfish, juvenile	**9/18/01**	5	5	0.00	0.00	0.00	0.00
kelp surfperch	**9/18/01**	5	5	6.80	2.17	2.40	0.55
kelpfish spp.	**7/17/01**	5	1	7.00		1.00	
lingcod	**7/17/01**	5	2	8.50	2.12	1.00	0.00
olive rockfish, adult	**7/17/01**	5	2	0.00	0.00	0.00	0.00
olive rockfish, adult	**9/18/01**	5	5	5.40	4.98	1.20	1.10
olive rockfish, all	**7/17/01**	5	5	2.00	4.47	0.60	1.34
olive rockfish, all	**9/18/01**	5	5	6.80	3.96	1.40	0.89
olive/yellowtail rockfish,	**7/17/01**	5	2	5.00	7.07	1.50	2.12
olive/yellowtail rockfish,	**9/18/01**	5	5	4.80	4.55	0.80	0.84
opaleye, adult	**7/17/01**	5	3	0.00	0.00	0.00	0.00
opaleye, adult	**9/18/01**	5	5	0.00	0.00	0.00	0.00
opaleye, all	**7/17/01**	5	5	0.00	0.00	0.00	0.00
opaleye, all	**9/18/01**	5	5	0.00	0.00	0.00	0.00
opaleye, juvenile	**7/17/01**	5	3	0.00	0.00	0.00	0.00
opaleye, juvenile	**9/18/01**	5	5	0.00	0.00	0.00	0.00
painted greenling	**7/17/01**	5	5	9.80	0.45	2.40	0.55
painted greenling	**9/18/01**	5	5	7.80	4.38	1.80	1.30
pile surfperch, adult	**7/17/01**	5	2	4.50	6.36	0.50	0.71
pile surfperch, adult	**9/18/01**	5	5	1.40	3.13	0.20	0.45
pile surfperch, all	**7/17/01**	5	5	4.60	4.56	1.00	1.22
pile surfperch, all	**9/18/01**	5	5	5.40	4.98	1.40	1.34
pile surfperch, juvenile	**7/17/01**	5	2	7.50	3.54	2.00	1.41
pile surfperch, juvenile	**9/18/01**	5	5	5.40	4.98	1.40	1.34
rainbow surfperch	**9/18/01**	5	2	8.50	0.71	2.00	0.00
rock wrasse, female	**7/17/01**	5	5	2.00	4.47	0.40	0.89
rock wrasse, female	**9/18/01**	5	5	0.00	0.00	0.00	0.00
rock wrasse, male	**7/17/01**	5	5	0.00	0.00	0.00	0.00
rock wrasse, male	**9/18/01**	5	5	0.00	0.00	0.00	0.00
rockfish spp., juvenile	**7/17/01**	5	4	9.50	0.58	3.25	0.50
rockfish spp., juvenile	**9/18/01**	5	1	5.00		1.00	
sculpin spp.	**7/17/01**	5	1	8.00		1.00	
senorita, adult	**7/17/01**	5	3	9.67	0.58	4.00	0.00
senorita, adult	**9/18/01**	5	5	9.60	0.55	3.40	0.55
senorita, all	**7/17/01**	5	5	9.80	0.45	3.80	0.45
senorita, all	**9/18/01**	5	5	9.60	0.55	3.60	0.55
senorita, juvenile	**7/17/01**	5	3	0.00	0.00	0.00	0.00
senorita, juvenile	**9/18/01**	5	5	2.40	3.36	1.60	2.19
snubnose sculpin	**7/17/01**	5	2	8.50	0.71	2.00	0.00
speckled sanddab	**7/17/01**	5	1	9.00		1.00	
speckled sanddab	**9/18/01**	5	1	6.00		2.00	
striped surfperch, adult	**7/17/01**	5	2	8.50	0.71	1.50	0.71
striped surfperch, adult	**9/18/01**	5	5	5.60	5.18	1.40	1.34
striped surfperch, all	**7/17/01**	5	5	5.00	4.58	1.00	1.00
striped surfperch, all	**9/18/01**	5	5	7.20	4.15	2.00	1.22
striped surfperch, juvenile	**7/17/01**	5	2	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**9/18/01**	5	5	5.00	4.58	1.20	1.10
surfperch, juv	**7/17/01**	5	2	8.00	2.83	3.00	0.00
surfperch, juv	**9/18/01**	5	4	8.50	1.29	2.75	0.50
treefish, adult	**7/17/01**	5	5	6.20	3.49	0.80	0.45
treefish, adult	**9/18/01**	5	5	2.00	4.47	0.40	0.89
treefish, juvenile	**7/17/01**	5	5	0.00	0.00	0.00	0.00
treefish, juvenile	**9/18/01**	5	5	0.00	0.00	0.00	0.00
tubesnout	**7/17/01**	5	5	10.00	0.00	4.00	0.00
tubesnout	**9/18/01**	5	5	9.20	0.45	3.60	0.55
vermillion rockfish	**7/17/01**	5	5	8.40	0.55	1.00	0.00
vermillion rockfish	**9/18/01**	5	1	10.00		2.00	

2001 ROVING DIVER FISH COUNT:

San Miguel Island - Hare Rock

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black and yellow rockfish	7/18/01	7	3	8.00	1.73	2.00	0.00
black and yellow rockfish	9/19/01	6	4	8.00	2.00	2.00	0.00
black surfperch, adult	7/18/01	7	4	5.75	4.03	1.00	0.82
black surfperch, adult	9/19/01	6	6	9.33	0.82	1.83	0.41
black surfperch, all	7/18/01	7	7	4.86	4.74	1.14	1.21
black surfperch, all	9/19/01	6	6	9.33	0.82	2.00	0.00
black surfperch, juvenile	7/18/01	7	4	7.00	4.76	1.50	1.00
black surfperch, juvenile	9/19/01	6	6	7.00	3.52	1.17	0.75
blackeye goby	7/18/01	7	7	9.57	0.53	3.29	0.49
blackeye goby	9/19/01	6	6	9.67	0.82	2.83	0.75
blacksmith, adult	7/18/01	7	4	3.50	4.12	0.75	0.96
blacksmith, adult	9/19/01	6	6	7.17	3.54	2.50	1.22
blacksmith, all	7/18/01	7	7	2.71	3.50	0.57	0.79
blacksmith, all	9/19/01	6	6	7.67	3.78	2.50	1.22
blacksmith, juvenile	7/18/01	7	4	0.00	0.00	0.00	0.00
blacksmith, juvenile	9/19/01	6	6	4.67	5.13	1.17	1.47
blue rockfish, adult	7/18/01	7	4	3.75	4.35	1.00	1.15
blue rockfish, adult	9/19/01	6	6	9.33	1.21	2.67	0.52
blue rockfish, all	7/18/01	7	7	4.71	4.46	1.14	1.21
blue rockfish, all	9/19/01	6	6	9.33	1.21	2.67	0.52
blue rockfish, juvenile	7/18/01	7	4	4.00	4.69	1.00	1.15
blue rockfish, juvenile	9/19/01	6	6	4.33	4.76	1.00	1.10
blue-banded goby	7/18/01	7	7	0.00	0.00	0.00	0.00
blue-banded goby	9/19/01	6	6	0.00	0.00	0.00	0.00
cabezon	7/18/01	7	2	9.00	0.00	1.50	0.71
cabezon	9/19/01	6	2	9.50	0.71	2.00	0.00
California sheephead,	7/18/01	7	7	5.71	4.27	1.00	0.82
California sheephead,	9/19/01	6	6	8.50	1.76	2.17	0.41
California sheephead,	7/18/01	7	7	0.00	0.00	0.00	0.00
California sheephead,	9/19/01	6	6	0.00	0.00	0.00	0.00
California sheephead,	7/18/01	7	7	4.57	4.31	0.57	0.53
California sheephead,	9/19/01	6	6	1.00	2.45	0.17	0.41
copper rockfish	7/18/01	7	5	7.60	1.67	1.40	0.55
coralline sculpin	7/18/01	7	1	6.00		1.00	
coralline sculpin	9/19/01	6	2	7.50	3.54	1.00	0.00
garibaldi, adult	7/18/01	7	7	0.00	0.00	0.00	0.00
garibaldi, adult	9/19/01	6	6	0.00	0.00	0.00	0.00
garibaldi, juvenile	7/18/01	7	7	0.00	0.00	0.00	0.00
garibaldi, juvenile	9/19/01	6	6	0.00	0.00	0.00	0.00
gopher rockfish	7/18/01	7	2	9.00	1.41	1.50	0.71
island kelpfish	7/18/01	7	7	0.00	0.00	0.00	0.00
island kelpfish	9/19/01	6	6	0.00	0.00	0.00	0.00
kelp bass, adult	7/18/01	7	4	0.00	0.00	0.00	0.00
kelp bass, adult	9/19/01	6	6	0.00	0.00	0.00	0.00
kelp bass, calico bass, all	7/18/01	7	7	0.00	0.00	0.00	0.00
kelp bass, calico bass, all	9/19/01	6	6	0.00	0.00	0.00	0.00
kelp bass, juvenile	7/18/01	7	4	0.00	0.00	0.00	0.00
kelp bass, juvenile	9/19/01	6	6	0.00	0.00	0.00	0.00
kelp rockfish, adult	7/18/01	7	4	8.00	1.15	1.75	0.50
kelp rockfish, adult	9/19/01	6	6	10.00	0.00	2.00	0.63
kelp rockfish, all	7/18/01	7	7	5.43	3.87	1.14	0.90
kelp rockfish, all	9/19/01	6	6	10.00	0.00	2.00	0.63
kelp rockfish, juvenile	7/18/01	7	4	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	9/19/01	6	6	0.00	0.00	0.00	0.00

2001 ROVING DIVER FISH COUNT:

kelpfish spp.	**7/18/01**	7	1	5.00		1.00	
kelpfish spp.	**9/19/01**	6	2	9.00	1.41	1.50	0.71
lingcod	**7/18/01**	7	5	8.00	2.35	1.80	0.45
lingcod	**9/19/01**	6	4	7.75	1.26	1.00	0.00
ocean whitefish	**9/19/01**	6	2	5.50	0.71	1.00	0.00
olive rockfish, adult	**7/18/01**	7	4	0.00	0.00	0.00	0.00
olive rockfish, adult	**9/19/01**	6	6	6.00	4.77	1.00	0.89
olive rockfish, all	**7/18/01**	7	7	4.29	5.35	0.71	0.95
olive rockfish, all	**9/19/01**	6	6	9.00	1.10	1.83	0.41
olive/yellowtail rockfish,	**7/18/01**	7	4	5.00	5.77	1.00	1.15
olive/yellowtail rockfish,	**9/19/01**	6	6	7.17	3.60	1.33	0.82
opaleye, adult	**7/18/01**	7	4	0.00	0.00	0.00	0.00
opaleye, adult	**9/19/01**	6	6	0.00	0.00	0.00	0.00
opaleye, all	**7/18/01**	7	7	0.00	0.00	0.00	0.00
opaleye, all	**9/19/01**	6	6	0.00	0.00	0.00	0.00
opaleye, juvenile	**7/18/01**	7	4	0.00	0.00	0.00	0.00
opaleye, juvenile	**9/19/01**	6	6	0.00	0.00	0.00	0.00
painted greenling	**7/18/01**	7	7	9.71	0.49	2.71	0.76
painted greenling	**9/19/01**	6	6	9.50	0.84	2.67	0.52
pile surfperch, adult	**7/18/01**	7	4	1.50	3.00	0.50	1.00
pile surfperch, adult	**9/19/01**	6	6	4.33	4.97	1.00	1.26
pile surfperch, all	**7/18/01**	7	7	2.00	3.46	0.43	0.79
pile surfperch, all	**9/19/01**	6	6	4.33	4.97	1.00	1.26
pile surfperch, juvenile	**7/18/01**	7	4	2.00	4.00	0.25	0.50
pile surfperch, juvenile	**9/19/01**	6	6	0.00	0.00	0.00	0.00
rock wrasse, female	**7/18/01**	7	7	0.00	0.00	0.00	0.00
rock wrasse, female	**9/19/01**	6	6	0.00	0.00	0.00	0.00
rock wrasse, male	**7/18/01**	7	7	0.00	0.00	0.00	0.00
rock wrasse, male	**9/19/01**	6	6	0.00	0.00	0.00	0.00
rockfish spp., juvenile	**7/18/01**	7	7	9.43	1.13	3.00	0.58
rockfish spp., juvenile	**9/19/01**	6	4	7.50	2.08	2.25	0.50
sculpin spp.	**7/18/01**	7	3	7.00	0.00	1.67	1.15
senorita, adult	**7/18/01**	7	4	4.50	5.26	2.00	2.31
senorita, adult	**9/19/01**	6	6	3.17	3.76	0.67	0.82
senorita, all	**7/18/01**	7	7	5.29	4.99	2.29	2.14
senorita, all	**9/19/01**	6	6	3.33	3.88	0.83	0.98
senorita, juvenile	**7/18/01**	7	4	0.00	0.00	0.00	0.00
senorita, juvenile	**9/19/01**	6	6	1.00	2.45	0.17	0.41
snubnose sculpin	**7/18/01**	7	3	10.00	0.00	2.33	0.58
snubnose sculpin	**9/19/01**	6	3	7.00	1.73	1.67	0.58
striped surfperch, adult	**7/18/01**	7	4	8.25	0.96	1.75	0.50
striped surfperch, adult	**9/19/01**	6	6	9.17	0.98	2.67	0.52
striped surfperch, all	**7/18/01**	7	7	7.43	3.55	1.86	1.07
striped surfperch, all	**9/19/01**	6	6	9.50	0.84	2.83	0.41
striped surfperch, juvenile	**7/18/01**	7	4	9.25	0.96	2.00	0.82
striped surfperch, juvenile	**9/19/01**	6	6	7.50	3.78	1.83	0.98
stripedfin ronquil	**7/18/01**	7	2	9.50	0.71	2.00	1.41
stripedfin ronquil	**9/19/01**	6	3	6.67	1.53	1.33	0.58
surfperch, juv	**7/18/01**	7	3	9.67	0.58	1.67	0.58
surfperch, juv	**9/19/01**	6	1	9.00		2.00	
treefish, adult	**7/18/01**	7	7	2.71	3.40	0.43	0.53
treefish, adult	**9/19/01**	6	6	2.00	3.10	0.33	0.52
treefish, juvenile	**7/18/01**	7	7	0.00	0.00	0.00	0.00
treefish, juvenile	**9/19/01**	6	6	0.00	0.00	0.00	0.00
tubesnout	**9/19/01**	6	2	5.00	0.00	4.00	0.00

2001 ROVING DIVER FISH COUNT:

Santa Rosa Island - Johnson's Lee North

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	8/29/01	5	1	8.00		1.00	
black and yellow rockfish	7/31/01	5	3	9.33	0.58	2.00	0.00
black and yellow rockfish	8/29/01	5	3	9.00	1.00	1.67	0.58
black surfperch, adult	7/31/01	5	4	9.75	0.50	2.75	0.50
black surfperch, adult	8/29/01	5	4	10.00	0.00	2.25	0.50
black surfperch, all	7/31/01	5	5	10.00	0.00	2.80	0.45
black surfperch, all	8/29/01	5	5	10.00	0.00	3.00	0.00
black surfperch, juvenile	7/31/01	5	4	9.50	1.00	2.00	0.82
black surfperch, juvenile	8/29/01	5	4	9.75	0.50	2.00	0.00
blackeye goby	7/31/01	5	5	8.60	0.55	3.00	0.00
blackeye goby	8/29/01	5	5	8.40	1.67	3.20	0.84
blacksmith, adult	7/31/01	5	4	9.50	0.58	3.00	0.00
blacksmith, adult	8/29/01	5	5	9.60	0.89	3.00	0.00
blacksmith, all	7/31/01	5	5	9.60	0.55	3.20	0.45
blacksmith, all	8/29/01	5	5	9.60	0.89	3.00	0.00
blacksmith, juvenile	7/31/01	5	4	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/29/01	5	5	2.00	4.47	0.20	0.45
blue rockfish, adult	7/31/01	5	4	8.50	1.29	1.75	0.50
blue rockfish, adult	8/29/01	5	5	6.80	4.09	1.80	1.10
blue rockfish, all	7/31/01	5	5	9.20	1.10	2.40	0.89
blue rockfish, all	8/29/01	5	5	8.80	1.64	2.40	0.55
blue rockfish, juvenile	7/31/01	5	4	6.50	4.43	2.00	1.41
blue rockfish, juvenile	8/29/01	5	5	7.00	4.47	1.80	1.10
blue-banded goby	7/31/01	5	5	0.00	0.00	0.00	0.00
blue-banded goby	8/29/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	7/31/01	5	5	9.80	0.45	2.60	0.55
California sheephead,	8/29/01	5	5	9.40	0.89	2.40	0.55
California sheephead,	7/31/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	8/29/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	7/31/01	5	5	5.20	4.87	1.20	1.10
California sheephead,	8/29/01	5	5	1.00	2.24	0.20	0.45
garibaldi, adult	7/31/01	5	5	9.00	1.41	2.00	0.00
garibaldi, adult	8/29/01	5	5	9.40	0.89	1.80	0.45
garibaldi, juvenile	7/31/01	5	5	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/29/01	5	5	0.00	0.00	0.00	0.00
giant kelpfish	7/31/01	5	1	8.00		1.00	
giant kelpfish	8/29/01	5	2	8.00	2.83	1.00	0.00
grass rockfish	7/31/01	5	1	6.00		1.00	
halfmoon	7/31/01	5	1	9.00		1.00	
island kelpfish	7/31/01	5	5	0.00	0.00	0.00	0.00
island kelpfish	8/29/01	5	5	0.00	0.00	0.00	0.00
jack mackerel	7/31/01	5	3	7.67	2.52	3.67	0.58
kelp bass, adult	7/31/01	5	4	9.25	0.50	2.00	0.00
kelp bass, adult	8/29/01	5	5	6.20	3.77	1.40	0.89
kelp bass, calico bass, all	7/31/01	5	5	9.40	0.55	2.20	0.45
kelp bass, calico bass, all	8/29/01	5	5	6.20	3.77	1.40	0.89
kelp bass, juvenile	7/31/01	5	4	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/29/01	5	5	0.00	0.00	0.00	0.00
kelp rockfish, adult	7/31/01	5	4	10.00	0.00	2.75	0.50
kelp rockfish, adult	8/29/01	5	5	8.80	1.30	2.60	0.55
kelp rockfish, all	7/31/01	5	5	10.00	0.00	2.80	0.45
kelp rockfish, all	8/29/01	5	5	8.80	1.30	2.60	0.55
kelp rockfish, juvenile	7/31/01	5	4	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/29/01	5	5	0.00	0.00	0.00	0.00

2001 ROVING DIVER FISH COUNT:

kelp surfperch	**7/31/01**	5	3	8.33	2.89	1.33	0.58
lingcod	**8/29/01**	5	2	6.50	2.12	1.00	0.00
ocean whitefish	**7/31/01**	5	4	7.75	1.89	1.25	0.50
ocean whitefish	**8/29/01**	5	2	8.50	0.71	1.50	0.71
olive rockfish, adult	**7/31/01**	5	4	9.25	0.96	2.25	0.50
olive rockfish, adult	**8/29/01**	5	5	9.00	0.71	2.20	0.45
olive rockfish, all	**7/31/01**	5	5	9.20	0.84	2.40	0.55
olive rockfish, all	**8/29/01**	5	5	9.60	0.55	2.20	0.45
olive/yellowtail rockfish,	**7/31/01**	5	4	2.50	5.00	0.75	1.50
olive/yellowtail rockfish,	**8/29/01**	5	5	7.60	4.28	1.40	0.89
opaleye, adult	**7/31/01**	5	5	4.20	4.02	1.00	1.00
opaleye, adult	**8/29/01**	5	5	7.40	2.07	2.20	0.45
opaleye, all	**7/31/01**	5	5	4.20	4.02	1.00	1.00
opaleye, all	**8/29/01**	5	5	7.40	2.07	2.20	0.45
opaleye, juvenile	**7/31/01**	5	5	0.00	0.00	0.00	0.00
opaleye, juvenile	**8/29/01**	5	5	0.00	0.00	0.00	0.00
Pacific sardine	**8/29/01**	5	1	5.00		4.00	
painted greenling	**7/31/01**	5	5	9.60	0.55	3.00	0.00
painted greenling	**8/29/01**	5	5	9.40	1.34	3.20	0.45
pile surfperch, adult	**7/31/01**	5	4	4.50	5.26	0.75	0.96
pile surfperch, adult	**8/29/01**	5	4	8.75	0.96	2.00	0.00
pile surfperch, all	**7/31/01**	5	5	9.80	0.45	2.20	0.45
pile surfperch, all	**8/29/01**	5	5	9.40	0.89	2.20	0.45
pile surfperch, juvenile	**7/31/01**	5	4	9.50	1.00	2.00	0.00
pile surfperch, juvenile	**8/29/01**	5	4	7.25	4.86	1.50	1.00
rainbow surfperch	**7/31/01**	5	3	5.67	0.58	1.33	0.58
rock wrasse, female	**7/31/01**	5	5	3.20	4.60	0.60	0.89
rock wrasse, female	**8/29/01**	5	5	5.00	4.69	0.60	0.55
rock wrasse, male	**7/31/01**	5	5	2.60	3.58	0.40	0.55
rock wrasse, male	**8/29/01**	5	5	1.20	2.68	0.20	0.45
rockfish spp., juvenile	**7/31/01**	5	1	10.00		3.00	
rockfish spp., juvenile	**8/29/01**	5	1	7.00		2.00	
rubberlip surfperch	**7/31/01**	5	1	7.00		2.00	
rubberlip surfperch	**8/29/01**	5	1	6.00		1.00	
senorita, adult	**7/31/01**	5	4	10.00	0.00	3.25	0.50
senorita, adult	**8/29/01**	5	5	9.80	0.45	3.00	0.00
senorita, all	**7/31/01**	5	5	10.00	0.00	3.40	0.55
senorita, all	**8/29/01**	5	5	9.80	0.45	3.20	0.45
senorita, juvenile	**7/31/01**	5	4	4.00	4.90	1.25	1.50
senorita, juvenile	**8/29/01**	5	5	7.80	2.05	2.60	0.55
snubnose sculpin	**7/31/01**	5	1	9.00		1.00	
snubnose sculpin	**8/29/01**	5	1	10.00		2.00	
speckled sanddab	**7/31/01**	5	1	7.00		2.00	
speckled sanddab	**8/29/01**	5	2	6.00	0.00	1.00	0.00
striped surfperch, adult	**7/31/01**	5	4	9.50	0.58	2.25	0.50
striped surfperch, adult	**8/29/01**	5	4	9.75	0.50	2.25	0.50
striped surfperch, all	**7/31/01**	5	5	9.00	1.22	2.40	0.55
striped surfperch, all	**8/29/01**	5	5	9.80	0.45	2.20	0.45
striped surfperch, juvenile	**7/31/01**	5	4	2.50	5.00	0.50	1.00
striped surfperch, juvenile	**8/29/01**	5	4	1.75	3.50	0.25	0.50
swell shark	**8/29/01**	5	2	6.00	1.41	2.00	0.00
top smelt	**7/31/01**	5	1	5.00		2.00	
top smelt	**8/29/01**	5	4	10.00	0.00	3.50	0.58
treefish, adult	**7/31/01**	5	5	6.80	4.09	1.20	0.84
treefish, adult	**8/29/01**	5	5	2.00	2.74	0.40	0.55
treefish, juvenile	**7/31/01**	5	5	0.00	0.00	0.00	0.00
treefish, juvenile	**8/29/01**	5	5	1.40	3.13	0.20	0.45

2001 ROVING DIVER FISH COUNT:

Santa Rosa Island - Johnson's Lee South

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black and yellow rockfish	7/30/01	5	5	8.40	1.82	1.80	0.84
black and yellow rockfish	8/29/01	6	4	9.00	0.00	2.00	0.00
black surfperch, adult	7/30/01	5	5	9.40	0.89	2.20	0.45
black surfperch, adult	8/29/01	6	5	9.60	0.55	2.20	0.45
black surfperch, all	7/30/01	5	5	9.40	0.89	2.20	0.45
black surfperch, all	8/29/01	6	6	9.67	0.52	2.50	0.55
black surfperch, juvenile	7/30/01	5	5	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/29/01	6	5	3.40	4.77	0.80	1.10
blackeye goby	7/30/01	5	5	10.00	0.00	3.00	0.00
blackeye goby	8/29/01	6	6	10.00	0.00	3.33	0.52
blacksmith, adult	7/30/01	5	5	8.80	0.84	3.00	0.00
blacksmith, adult	8/29/01	6	5	9.00	1.00	2.80	0.45
blacksmith, all	7/30/01	5	5	8.80	0.84	3.00	0.00
blacksmith, all	8/29/01	6	6	9.17	0.98	2.83	0.41
blacksmith, juvenile	7/30/01	5	5	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/29/01	6	5	0.00	0.00	0.00	0.00
blue rockfish, adult	7/30/01	5	5	8.40	1.52	2.20	0.45
blue rockfish, adult	8/29/01	6	5	9.00	1.73	2.80	0.45
blue rockfish, all	7/30/01	5	5	10.00	0.00	3.00	0.00
blue rockfish, all	8/29/01	6	6	9.83	0.41	3.50	0.55
blue rockfish, juvenile	7/30/01	5	5	10.00	0.00	2.80	0.45
blue rockfish, juvenile	8/29/01	6	5	9.80	0.45	3.00	0.71
blue-banded goby	7/30/01	5	5	0.00	0.00	0.00	0.00
blue-banded goby	8/29/01	6	6	0.00	0.00	0.00	0.00
cabezon	7/30/01	5	3	8.33	1.53	1.33	0.58
cabezon	8/29/01	6	3	6.00	1.00	1.00	0.00
California scorpionfish	8/29/01	6	1	7.00		1.00	
California sheephead,	7/30/01	5	5	10.00	0.00	3.00	0.00
California sheephead,	8/29/01	6	6	10.00	0.00	2.67	0.52
California sheephead,	7/30/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	8/29/01	6	6	0.00	0.00	0.00	0.00
California sheephead,	7/30/01	5	5	6.60	3.91	1.60	0.89
California sheephead,	8/29/01	6	6	5.83	4.67	0.83	0.75
copper rockfish	7/30/01	5	1	8.00		1.00	
copper rockfish	8/29/01	6	1	8.00		1.00	
fringehead spp.	7/30/01	5	1	9.00		1.00	
garibaldi, adult	7/30/01	5	5	0.00	0.00	0.00	0.00
garibaldi, adult	8/29/01	6	6	0.00	0.00	0.00	0.00
garibaldi, juvenile	7/30/01	5	5	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/29/01	6	6	0.00	0.00	0.00	0.00
gopher rockfish	7/30/01	5	2	8.00	0.00	1.50	0.71
gopher rockfish	8/29/01	6	4	8.75	1.26	2.25	0.50
halfmoon	8/29/01	6	1	9.00		2.00	
horn shark	8/29/01	6	1	8.00		1.00	
island kelpfish	7/30/01	5	5	0.00	0.00	0.00	0.00
island kelpfish	8/29/01	6	6	0.00	0.00	0.00	0.00
kelp bass, adult	7/30/01	5	5	8.40	1.82	1.60	0.55
kelp bass, adult	8/29/01	6	5	8.20	1.30	1.80	0.45
kelp bass, calico bass, all	7/30/01	5	5	8.40	1.82	1.60	0.55
kelp bass, calico bass, all	8/29/01	6	6	8.50	1.38	1.83	0.41
kelp bass, juvenile	7/30/01	5	5	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/29/01	6	5	0.00	0.00	0.00	0.00
kelp rockfish, adult	7/30/01	5	5	9.80	0.45	2.20	0.45
kelp rockfish, adult	8/29/01	6	5	9.40	0.89	2.20	0.45

2001 ROVING DIVER FISH COUNT:

kelp rockfish, all	**7/30/01**	5	5	9.80	0.45	2.20	0.45
kelp rockfish, all	**8/29/01**	6	6	9.50	0.84	2.17	0.41
kelp rockfish, juvenile	**7/30/01**	5	5	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	**8/29/01**	6	5	0.00	0.00	0.00	0.00
lingcod	**8/29/01**	6	2	7.50	2.12	1.50	0.71
ocean whitefish	**7/30/01**	5	5	8.60	0.55	1.00	0.00
ocean whitefish	**8/29/01**	6	5	8.80	1.30	2.00	1.00
olive rockfish, adult	**7/30/01**	5	5	9.60	0.89	2.00	0.00
olive rockfish, adult	**8/29/01**	6	5	6.60	3.97	1.60	1.14
olive rockfish, all	**7/30/01**	5	5	9.60	0.89	2.00	0.00
olive rockfish, all	**8/29/01**	6	6	7.17	3.82	1.67	1.03
olive/yellowtail rockfish,	**7/30/01**	5	5	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	**8/29/01**	6	5	1.60	3.58	0.40	0.89
opaleye, adult	**7/30/01**	5	5	1.40	3.13	0.40	0.89
opaleye, adult	**8/29/01**	6	5	2.60	3.71	0.60	0.89
opaleye, all	**7/30/01**	5	5	1.40	3.13	0.40	0.89
opaleye, all	**8/29/01**	6	6	2.17	3.49	0.50	0.84
opaleye, juvenile	**7/30/01**	5	5	0.00	0.00	0.00	0.00
opaleye, juvenile	**8/29/01**	6	5	0.00	0.00	0.00	0.00
painted greenling	**7/30/01**	5	5	9.80	0.45	3.00	0.00
painted greenling	**8/29/01**	6	6	10.00	0.00	3.17	0.41
pile surfperch, adult	**7/30/01**	5	5	10.00	0.00	2.80	0.45
pile surfperch, adult	**8/29/01**	6	5	9.80	0.45	2.20	0.45
pile surfperch, all	**7/30/01**	5	5	10.00	0.00	2.80	0.45
pile surfperch, all	**8/29/01**	6	6	9.50	0.84	2.33	0.52
pile surfperch, juvenile	**7/30/01**	5	5	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**8/29/01**	6	5	0.00	0.00	0.00	0.00
rock wrasse, female	**7/30/01**	5	5	0.00	0.00	0.00	0.00
rock wrasse, female	**8/29/01**	6	6	0.00	0.00	0.00	0.00
rock wrasse, male	**7/30/01**	5	5	0.00	0.00	0.00	0.00
rock wrasse, male	**8/29/01**	6	6	0.00	0.00	0.00	0.00
rubberlip surfperch	**7/30/01**	5	5	10.00	0.00	2.60	0.55
rubberlip surfperch	**8/29/01**	6	6	10.00	0.00	2.33	0.52
sculpin spp.	**8/29/01**	6	1	9.00		1.00	
senorita, adult	**7/30/01**	5	5	0.00	0.00	0.00	0.00
senorita, adult	**8/29/01**	6	5	10.00	0.00	3.00	0.00
senorita, all	**7/30/01**	5	5	0.00	0.00	0.00	0.00
senorita, all	**8/29/01**	6	6	10.00	0.00	3.00	0.00
senorita, juvenile	**7/30/01**	5	5	0.00	0.00	0.00	0.00
senorita, juvenile	**8/29/01**	6	5	0.00	0.00	0.00	0.00
speckled sanddab	**8/29/01**	6	1	5.00		2.00	
striped surfperch, adult	**7/30/01**	5	5	7.20	4.21	1.40	0.89
striped surfperch, adult	**8/29/01**	6	5	9.80	0.45	2.00	0.00
striped surfperch, all	**7/30/01**	5	5	7.20	4.21	1.40	0.89
striped surfperch, all	**8/29/01**	6	6	9.33	1.21	2.00	0.00
striped surfperch, juvenile	**7/30/01**	5	5	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**8/29/01**	6	5	1.40	3.13	0.40	0.89
stripedfin ronquil	**7/30/01**	5	1	8.00		1.00	
swell shark	**8/29/01**	6	3	7.67	2.31	1.33	0.58
treefish, adult	**7/30/01**	5	5	5.00	2.92	1.20	0.84
treefish, adult	**8/29/01**	6	6	0.83	2.04	0.17	0.41
treefish, juvenile	**7/30/01**	5	5	0.00	0.00	0.00	0.00
treefish, juvenile	**8/29/01**	6	6	4.67	5.13	1.00	1.10

2001 ROVING DIVER FISH COUNT:

Santa Rosa Island - Rodes Reef

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black surfperch, adult	7/18/01	5	2	8.50	2.12	1.50	0.71
black surfperch, adult	9/19/01	6	6	8.83	0.98	2.33	0.52
black surfperch, all	7/18/01	5	5	7.00	4.00	1.60	0.89
black surfperch, all	9/19/01	6	6	9.00	0.63	2.33	0.52
black surfperch, juvenile	7/18/01	5	2	4.00	5.66	1.00	1.41
black surfperch, juvenile	9/19/01	6	6	7.83	1.17	1.67	0.52
blackeye goby	7/18/01	5	5	9.80	0.45	2.00	0.00
blackeye goby	9/19/01	6	6	7.50	3.99	1.50	1.05
blacksmith, adult	7/18/01	5	2	8.50	0.71	2.00	0.00
blacksmith, adult	9/19/01	6	6	7.33	4.08	2.50	1.22
blacksmith, all	7/18/01	5	5	8.40	0.55	2.00	0.00
blacksmith, all	9/19/01	6	6	7.33	4.08	2.50	1.22
blacksmith, juvenile	7/18/01	5	2	0.00	0.00	0.00	0.00
blacksmith, juvenile	9/19/01	6	6	0.00	0.00	0.00	0.00
blue rockfish, adult	7/18/01	5	2	8.50	0.71	2.00	0.00
blue rockfish, adult	9/19/01	6	6	9.67	0.82	3.00	0.00
blue rockfish, all	7/18/01	5	5	8.60	0.55	2.40	0.55
blue rockfish, all	9/19/01	6	6	9.67	0.82	3.00	0.00
blue rockfish, juvenile	7/18/01	5	2	8.50	0.71	2.00	0.00
blue rockfish, juvenile	9/19/01	6	6	5.50	4.28	1.33	1.03
blue-banded goby	7/18/01	5	5	0.00	0.00	0.00	0.00
blue-banded goby	9/19/01	6	6	0.00	0.00	0.00	0.00
cabezon	7/18/01	5	1	8.00		1.00	
cabezon	9/19/01	6	3	8.67	1.53	1.33	0.58
California scorpionfish	7/18/01	5	1	9.00		1.00	
California sheephead,	7/18/01	5	5	6.60	4.10	1.40	0.89
California sheephead,	9/19/01	6	6	9.83	0.41	2.33	0.52
California sheephead,	7/18/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	9/19/01	6	6	0.00	0.00	0.00	0.00
California sheephead,	7/18/01	5	5	3.80	5.22	0.60	0.89
California sheephead,	9/19/01	6	6	9.33	1.21	1.33	0.52
copper rockfish	7/18/01	5	2	7.50	2.12	1.50	0.71
copper rockfish	9/19/01	6	2	7.50	3.54	1.00	0.00
coralline sculpin	7/18/01	5	1	5.00		1.00	
coralline sculpin	9/19/01	6	3	7.00	2.00	1.33	0.58
garibaldi, adult	7/18/01	5	5	0.00	0.00	0.00	0.00
garibaldi, adult	9/19/01	6	6	0.00	0.00	0.00	0.00
garibaldi, juvenile	7/18/01	5	5	0.00	0.00	0.00	0.00
garibaldi, juvenile	9/19/01	6	6	0.00	0.00	0.00	0.00
halfmoon	9/19/01	6	2	9.50	0.71	1.00	0.00
island kelpfish	7/18/01	5	5	0.00	0.00	0.00	0.00
island kelpfish	9/19/01	6	6	0.00	0.00	0.00	0.00
kelp bass, adult	7/18/01	5	2	6.50	0.71	1.50	0.71
kelp bass, adult	9/19/01	6	6	6.50	5.05	1.33	1.03
kelp bass, calico bass, all	7/18/01	5	5	6.00	3.54	1.40	0.89
kelp bass, calico bass, all	9/19/01	6	6	6.50	5.05	1.33	1.03
kelp bass, juvenile	7/18/01	5	2	0.00	0.00	0.00	0.00
kelp bass, juvenile	9/19/01	6	6	0.00	0.00	0.00	0.00
kelp rockfish, adult	7/18/01	5	2	4.50	6.36	1.00	1.41
kelp rockfish, adult	9/19/01	6	6	5.17	4.31	1.17	0.98
kelp rockfish, all	7/18/01	5	5	6.20	3.63	1.40	0.89
kelp rockfish, all	9/19/01	6	6	5.17	4.31	1.17	0.98
kelp rockfish, juvenile	7/18/01	5	2	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	9/19/01	6	6	0.83	2.04	0.17	0.41

2001 ROVING DIVER FISH COUNT:

lingcod	**7/18/01**	5	1	6.00		1.00	
ocean whitefish	**7/18/01**	5	1	9.00		1.00	
ocean whitefish	**9/19/01**	6	2	9.50	0.71	1.00	0.00
olive rockfish, adult	**7/18/01**	5	2	4.00	5.66	0.50	0.71
olive rockfish, adult	**9/19/01**	6	6	9.17	1.17	2.17	0.41
olive rockfish, all	**7/18/01**	5	5	6.40	3.78	1.20	0.84
olive rockfish, all	**9/19/01**	6	6	9.17	1.17	2.17	0.41
olive/yellowtail rockfish,	**7/18/01**	5	2	4.50	6.36	1.00	1.41
olive/yellowtail rockfish,	**9/19/01**	6	6	4.33	3.50	1.17	0.98
opaleye, adult	**7/18/01**	5	2	4.50	6.36	0.50	0.71
opaleye, adult	**9/19/01**	6	6	1.17	2.86	0.17	0.41
opaleye, all	**7/18/01**	5	5	1.80	4.02	0.20	0.45
opaleye, all	**9/19/01**	6	6	1.17	2.86	0.17	0.41
opaleye, juvenile	**7/18/01**	5	2	0.00	0.00	0.00	0.00
opaleye, juvenile	**9/19/01**	6	6	0.00	0.00	0.00	0.00
painted greenling	**7/18/01**	5	5	10.00	0.00	3.00	0.00
painted greenling	**9/19/01**	6	6	10.00	0.00	3.00	0.00
pile surfperch, adult	**7/18/01**	5	2	3.50	4.95	0.50	0.71
pile surfperch, adult	**9/19/01**	6	6	4.17	4.75	0.83	0.98
pile surfperch, all	**7/18/01**	5	5	4.60	4.22	0.80	0.84
pile surfperch, all	**9/19/01**	6	6	4.17	4.75	0.83	0.98
pile surfperch, juvenile	**7/18/01**	5	2	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**9/19/01**	6	6	0.00	0.00	0.00	0.00
rainbow surfperch	**9/19/01**	6	3	8.33	0.58	2.00	0.00
rock wrasse, female	**7/18/01**	5	5	0.00	0.00	0.00	0.00
rock wrasse, female	**9/19/01**	6	6	0.00	0.00	0.00	0.00
rock wrasse, male	**7/18/01**	5	5	0.00	0.00	0.00	0.00
rock wrasse, male	**9/19/01**	6	6	0.00	0.00	0.00	0.00
rockfish spp., juvenile	**9/19/01**	6	4	8.50	1.00	2.00	0.00
rubberlip surfperch	**9/19/01**	6	2	9.00	1.41	2.00	0.00
sculpin spp.	**9/19/01**	6	1	7.00		2.00	
senorita, adult	**7/18/01**	5	2	3.00	4.24	0.50	0.71
senorita, adult	**9/19/01**	6	6	2.83	4.49	0.33	0.52
senorita, all	**7/18/01**	5	5	1.20	2.68	0.20	0.45
senorita, all	**9/19/01**	6	6	2.83	4.49	0.33	0.52
senorita, juvenile	**7/18/01**	5	2	0.00	0.00	0.00	0.00
senorita, juvenile	**9/19/01**	6	6	0.00	0.00	0.00	0.00
snubnose sculpin	**7/18/01**	5	3	8.00	1.73	2.00	0.00
snubnose sculpin	**9/19/01**	6	4	8.00	1.15	1.50	0.58
striped surfperch, adult	**7/18/01**	5	2	4.50	6.36	1.00	1.41
striped surfperch, adult	**9/19/01**	6	6	8.67	1.97	2.00	0.63
striped surfperch, all	**7/18/01**	5	5	1.80	4.02	0.60	1.34
striped surfperch, all	**9/19/01**	6	6	9.33	1.21	2.50	0.55
striped surfperch, juvenile	**7/18/01**	5	2	4.50	6.36	1.00	1.41
striped surfperch, juvenile	**9/19/01**	6	6	5.50	4.37	1.17	1.17
stripedfin ronquil	**7/18/01**	5	2	9.00	0.00	1.00	0.00
stripedfin ronquil	**9/19/01**	6	1	7.00		1.00	
surfperch, juv	**7/18/01**	5	2	8.50	0.71	2.50	0.71
swell shark	**9/19/01**	6	1	10.00		1.00	
treefish, adult	**7/18/01**	5	5	0.00	0.00	0.00	0.00
treefish, adult	**9/19/01**	6	6	1.33	3.27	0.17	0.41
treefish, juvenile	**7/18/01**	5	5	0.00	0.00	0.00	0.00
treefish, juvenile	**9/19/01**	6	6	0.00	0.00	0.00	0.00

2001 ROVING DIVER FISH COUNT:

Santa Cruz Island - Gull Island South

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	8/2/01	4	2	9.00	0.00	1.50	0.71
bat ray	8/30/01	5	2	10.00	0.00	1.00	0.00
black and yellow rockfish	8/2/01	4	2	9.00	0.00	2.00	0.00
black and yellow rockfish	8/30/01	5	3	7.67	0.58	1.67	0.58
black surfperch, adult	8/2/01	4	4	4.50	5.26	0.50	0.58
black surfperch, adult	8/30/01	5	5	3.60	4.98	0.40	0.55
black surfperch, all	8/2/01	4	4	4.50	5.26	0.50	0.58
black surfperch, all	8/30/01	5	5	3.60	4.98	0.40	0.55
black surfperch, juvenile	8/2/01	4	4	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/30/01	5	5	0.00	0.00	0.00	0.00
blackeye goby	8/2/01	4	4	10.00	0.00	4.00	0.00
blackeye goby	8/30/01	5	5	9.80	0.45	3.20	0.45
blacksmith, adult	8/2/01	4	4	9.25	0.96	3.00	0.00
blacksmith, adult	8/30/01	5	5	10.00	0.00	3.20	0.45
blacksmith, all	8/2/01	4	4	9.25	0.96	3.00	0.00
blacksmith, all	8/30/01	5	5	10.00	0.00	3.20	0.45
blacksmith, juvenile	8/2/01	4	4	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/30/01	5	5	1.80	4.02	0.40	0.89
blue rockfish, adult	8/2/01	4	4	9.25	0.96	2.00	0.00
blue rockfish, adult	8/30/01	5	5	9.80	0.45	2.40	0.55
blue rockfish, all	8/2/01	4	4	10.00	0.00	3.50	0.58
blue rockfish, all	8/30/01	5	5	10.00	0.00	4.00	0.00
blue rockfish, juvenile	8/2/01	4	4	10.00	0.00	3.50	0.58
blue rockfish, juvenile	8/30/01	5	5	10.00	0.00	4.00	0.00
blue-banded goby	8/2/01	4	4	0.00	0.00	0.00	0.00
blue-banded goby	8/30/01	5	5	0.00	0.00	0.00	0.00
cabezon	8/2/01	4	1	10.00		1.00	
California scorpionfish	8/30/01	5	1	7.00		1.00	
California sheephead,	8/2/01	4	4	10.00	0.00	2.75	0.50
California sheephead,	8/30/01	5	5	10.00	0.00	3.00	0.00
California sheephead,	8/2/01	4	4	0.00	0.00	0.00	0.00
California sheephead,	8/30/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	8/2/01	4	4	2.25	4.50	0.25	0.50
California sheephead,	8/30/01	5	5	5.40	5.08	0.80	0.84
coralline sculpin	8/30/01	5	2	7.00	0.00	1.00	0.00
garibaldi, adult	8/2/01	4	4	9.00	0.82	1.50	0.58
garibaldi, adult	8/30/01	5	5	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/2/01	4	4	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/30/01	5	5	0.00	0.00	0.00	0.00
gopher rockfish	8/2/01	4	1	8.00		1.00	
gopher rockfish	8/30/01	5	4	7.00	1.41	1.00	0.00
horn shark	8/30/01	5	1	8.00		1.00	
island kelpfish	8/2/01	4	4	1.75	3.50	0.50	1.00
island kelpfish	8/30/01	5	5	1.20	2.68	0.20	0.45
kelp bass, adult	8/2/01	4	4	3.50	4.36	0.50	0.58
kelp bass, adult	8/30/01	5	5	1.80	4.02	0.40	0.89
kelp bass, calico bass, all	8/2/01	4	4	3.50	4.36	0.50	0.58
kelp bass, calico bass, all	8/30/01	5	5	1.80	4.02	0.40	0.89
kelp bass, juvenile	8/2/01	4	4	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/30/01	5	5	0.00	0.00	0.00	0.00
kelp rockfish, adult	8/2/01	4	4	9.25	0.96	2.25	0.50
kelp rockfish, adult	8/30/01	5	5	8.80	1.30	1.80	0.45
kelp rockfish, all	8/2/01	4	4	9.25	0.96	2.25	0.50
kelp rockfish, all	8/30/01	5	5	8.80	1.30	1.80	0.45

2001 ROVING DIVER FISH COUNT:

kelp rockfish, juvenile	**8/2/01**	4	4	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	**8/30/01**	5	5	0.00	0.00	0.00	0.00
lingcod	**8/30/01**	5	1	6.00		1.00	
ocean whitefish	**8/30/01**	5	1	6.00		1.00	
olive rockfish, adult	**8/2/01**	4	4	6.25	4.35	0.75	0.50
olive rockfish, adult	**8/30/01**	5	5	3.00	4.47	0.40	0.55
olive rockfish, all	**8/2/01**	4	4	8.75	1.26	2.00	0.00
olive rockfish, all	**8/30/01**	5	5	8.80	1.30	2.40	0.55
olive/yellowtail rockfish,	**8/2/01**	4	4	8.75	1.26	2.00	0.00
olive/yellowtail rockfish,	**8/30/01**	5	5	8.80	1.30	2.40	0.55
opaleye, adult	**8/2/01**	4	4	2.25	4.50	0.25	0.50
opaleye, adult	**8/30/01**	5	5	5.60	5.18	1.00	1.00
opaleye, all	**8/2/01**	4	4	2.25	4.50	0.25	0.50
opaleye, all	**8/30/01**	5	5	5.60	5.18	1.00	1.00
opaleye, juvenile	**8/2/01**	4	4	0.00	0.00	0.00	0.00
opaleye, juvenile	**8/30/01**	5	5	0.00	0.00	0.00	0.00
pacific angel shark	**8/30/01**	5	1	6.00		1.00	
painted greenling	**8/2/01**	4	4	10.00	0.00	3.00	0.00
painted greenling	**8/30/01**	5	5	10.00	0.00	2.80	0.45
pile surfperch, adult	**8/2/01**	4	4	8.50	1.73	2.00	0.00
pile surfperch, adult	**8/30/01**	5	5	8.40	1.34	1.40	0.55
pile surfperch, all	**8/2/01**	4	4	8.50	1.73	2.00	0.00
pile surfperch, all	**8/30/01**	5	5	8.40	1.34	1.40	0.55
pile surfperch, juvenile	**8/2/01**	4	4	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**8/30/01**	5	5	0.00	0.00	0.00	0.00
rock wrasse, female	**8/2/01**	4	4	0.00	0.00	0.00	0.00
rock wrasse, female	**8/30/01**	5	5	0.00	0.00	0.00	0.00
rock wrasse, male	**8/2/01**	4	4	0.00	0.00	0.00	0.00
rock wrasse, male	**8/30/01**	5	5	0.00	0.00	0.00	0.00
rubberlip surfperch	**8/30/01**	5	1	6.00		1.00	
senorita, adult	**8/2/01**	4	4	10.00	0.00	2.75	0.96
senorita, adult	**8/30/01**	5	5	4.00	5.48	1.00	1.41
senorita, all	**8/2/01**	4	4	10.00	0.00	2.75	0.96
senorita, all	**8/30/01**	5	5	4.00	5.48	1.00	1.41
senorita, juvenile	**8/2/01**	4	4	0.00	0.00	0.00	0.00
senorita, juvenile	**8/30/01**	5	5	0.00	0.00	0.00	0.00
snubnose sculpin	**8/2/01**	4	1	9.00		2.00	
snubnose sculpin	**8/30/01**	5	1	6.00		2.00	
striped surfperch, adult	**8/2/01**	4	4	0.00	0.00	0.00	0.00
striped surfperch, adult	**8/30/01**	5	5	0.00	0.00	0.00	0.00
striped surfperch, all	**8/2/01**	4	4	0.00	0.00	0.00	0.00
striped surfperch, all	**8/30/01**	5	5	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**8/2/01**	4	4	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**8/30/01**	5	5	0.00	0.00	0.00	0.00
swell shark	**8/2/01**	4	1	9.00		1.00	
swell shark	**8/30/01**	5	4	8.00	0.82	1.75	0.50
top smelt	**8/2/01**	4	2	7.50	3.54	4.00	0.00
top smelt	**8/30/01**	5	1	8.00		4.00	
treefish, adult	**8/2/01**	4	4	6.00	4.55	1.00	0.82
treefish, adult	**8/30/01**	5	5	2.40	3.36	0.40	0.55
treefish, juvenile	**8/2/01**	4	4	0.00	0.00	0.00	0.00
treefish, juvenile	**8/30/01**	5	5	0.00	0.00	0.00	0.00
vermillion rockfish	**8/30/01**	5	2	9.00	0.00	1.00	0.00

2001 ROVING DIVER FISH COUNT:

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	7/19/01	7	1	10.00		1.00	
black surfperch, adult	6/27/01	3	3	3.33	5.77	0.67	1.15
black surfperch, adult	7/19/01	7	7	3.86	4.85	0.71	0.95
black surfperch, all	6/27/01	3	3	3.33	5.77	0.67	1.15
black surfperch, all	7/19/01	7	7	3.86	4.85	0.71	0.95
black surfperch, juvenile	6/27/01	3	3	0.00	0.00	0.00	0.00
black surfperch, juvenile	7/19/01	7	7	0.00	0.00	0.00	0.00
blackeye goby	6/27/01	3	3	10.00	0.00	3.67	0.58
blackeye goby	7/19/01	7	7	10.00	0.00	3.29	0.49
blacksmith, adult	6/27/01	3	3	10.00	0.00	4.00	0.00
blacksmith, adult	7/19/01	7	7	10.00	0.00	4.00	0.00
blacksmith, all	6/27/01	3	3	10.00	0.00	4.00	0.00
blacksmith, all	7/19/01	7	7	10.00	0.00	4.00	0.00
blacksmith, juvenile	6/27/01	3	3	0.00	0.00	0.00	0.00
blacksmith, juvenile	7/19/01	7	7	2.43	4.16	0.43	0.79
blue rockfish, adult	6/27/01	3	3	0.00	0.00	0.00	0.00
blue rockfish, adult	7/19/01	7	7	2.29	3.90	0.29	0.49
blue rockfish, all	6/27/01	3	3	3.00	5.20	0.33	0.58
blue rockfish, all	7/19/01	7	7	2.29	3.90	0.29	0.49
blue rockfish, juvenile	6/27/01	3	3	3.00	5.20	0.33	0.58
blue rockfish, juvenile	7/19/01	7	7	0.00	0.00	0.00	0.00
blue-banded goby	6/27/01	3	3	6.67	5.77	1.33	1.53
blue-banded goby	7/19/01	7	7	2.14	3.76	0.57	0.98
California scorpionfish	6/27/01	3	1	8.00		1.00	
California sheephead,	6/27/01	3	3	10.00	0.00	2.67	0.58
California sheephead,	7/19/01	7	7	9.29	0.76	2.14	0.38
California sheephead,	6/27/01	3	3	0.00	0.00	0.00	0.00
California sheephead,	7/19/01	7	7	0.00	0.00	0.00	0.00
California sheephead,	6/27/01	3	3	1.67	2.89	0.33	0.58
California sheephead,	7/19/01	7	7	3.43	4.54	0.57	0.79
copper rockfish	7/19/01	7	1	8.00		2.00	
garibaldi, adult	6/27/01	3	3	10.00	0.00	2.00	0.00
garibaldi, adult	7/19/01	7	7	9.29	1.50	1.86	0.38
garibaldi, juvenile	6/27/01	3	3	2.33	4.04	0.33	0.58
garibaldi, juvenile	7/19/01	7	7	0.00	0.00	0.00	0.00
gopher rockfish	6/27/01	3	3	7.67	2.08	1.67	0.58
gopher rockfish	7/19/01	7	5	7.80	1.30	1.40	0.55
island kelpfish	6/27/01	3	3	0.00	0.00	0.00	0.00
island kelpfish	7/19/01	7	7	2.00	3.42	0.29	0.49
kelp bass, adult	6/27/01	3	3	10.00	0.00	2.67	0.58
kelp bass, adult	7/19/01	7	7	5.86	4.14	1.29	0.95
kelp bass, calico bass, all	6/27/01	3	3	10.00	0.00	2.67	0.58
kelp bass, calico bass, all	7/19/01	7	7	5.86	4.14	1.29	0.95
kelp bass, juvenile	6/27/01	3	3	0.00	0.00	0.00	0.00
kelp bass, juvenile	7/19/01	7	7	0.00	0.00	0.00	0.00
kelp rockfish, adult	6/27/01	3	3	5.00	4.58	1.33	1.15
kelp rockfish, adult	7/19/01	7	7	8.29	1.98	1.57	0.53
kelp rockfish, all	6/27/01	3	3	5.00	4.58	1.33	1.15
kelp rockfish, all	7/19/01	7	7	8.29	1.98	1.57	0.53
kelp rockfish, juvenile	6/27/01	3	3	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	7/19/01	7	7	0.00	0.00	0.00	0.00
leopard shark	7/19/01	7	1	9.00		1.00	
lingcod	7/19/01	7	3	8.00	1.73	1.33	0.58
ocean whitefish	6/27/01	3	1	7.00		2.00	

2001 ROVING DIVER FISH COUNT:

ocean whitefish	**7/19/01**	7	1	10.00		1.00	
olive rockfish, adult	**6/27/01**	3	3	0.00	0.00	0.00	0.00
olive rockfish, adult	**7/19/01**	7	7	0.86	2.27	0.14	0.38
olive rockfish, all	**6/27/01**	3	3	0.00	0.00	0.00	0.00
olive rockfish, all	**7/19/01**	7	7	0.86	2.27	0.14	0.38
olive/yellowtail rockfish,	**6/27/01**	3	3	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	**7/19/01**	7	7	0.00	0.00	0.00	0.00
opaleye, adult	**6/27/01**	3	3	8.33	2.89	1.00	0.00
opaleye, adult	**7/19/01**	7	7	2.43	3.05	0.43	0.53
opaleye, all	**6/27/01**	3	3	8.33	2.89	1.00	0.00
opaleye, all	**7/19/01**	7	7	2.43	3.05	0.43	0.53
opaleye, juvenile	**6/27/01**	3	3	0.00	0.00	0.00	0.00
opaleye, juvenile	**7/19/01**	7	7	0.00	0.00	0.00	0.00
painted greenling	**6/27/01**	3	3	10.00	0.00	3.00	0.00
painted greenling	**7/19/01**	7	7	9.71	0.49	2.86	0.38
pile surfperch, adult	**6/27/01**	3	3	10.00	0.00	2.33	0.58
pile surfperch, adult	**7/19/01**	7	7	9.71	0.49	2.14	0.38
pile surfperch, all	**6/27/01**	3	3	10.00	0.00	2.33	0.58
pile surfperch, all	**7/19/01**	7	7	9.71	0.49	2.14	0.38
pile surfperch, juvenile	**6/27/01**	3	3	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**7/19/01**	7	7	0.00	0.00	0.00	0.00
rock wrasse, female	**6/27/01**	3	3	9.33	0.58	1.67	0.58
rock wrasse, female	**7/19/01**	7	7	7.00	3.32	1.57	0.79
rock wrasse, male	**6/27/01**	3	3	5.33	4.73	1.00	1.00
rock wrasse, male	**7/19/01**	7	7	3.43	4.43	0.57	0.79
rubberlip surfperch	**6/27/01**	3	2	9.00	1.41	2.00	0.00
rubberlip surfperch	**7/19/01**	7	5	7.80	2.17	1.40	0.55
senorita, adult	**6/27/01**	3	3	6.67	0.58	1.00	0.00
senorita, adult	**7/19/01**	7	7	2.29	4.07	0.29	0.49
senorita, all	**6/27/01**	3	3	6.67	0.58	1.00	0.00
senorita, all	**7/19/01**	7	7	2.29	4.07	0.29	0.49
senorita, juvenile	**6/27/01**	3	3	0.00	0.00	0.00	0.00
senorita, juvenile	**7/19/01**	7	7	0.00	0.00	0.00	0.00
snubnose sculpin	**7/19/01**	7	1	7.00		1.00	
striped surfperch, adult	**6/27/01**	3	3	0.00	0.00	0.00	0.00
striped surfperch, adult	**7/19/01**	7	7	0.00	0.00	0.00	0.00
striped surfperch, all	**6/27/01**	3	3	0.00	0.00	0.00	0.00
striped surfperch, all	**7/19/01**	7	7	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**6/27/01**	3	3	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**7/19/01**	7	7	0.00	0.00	0.00	0.00
stripedfin ronquil	**7/19/01**	7	2	7.50	0.71	2.00	0.00
swell shark	**6/27/01**	3	2	9.50	0.71	2.00	0.00
swell shark	**7/19/01**	7	1	8.00		2.00	
treefish, adult	**6/27/01**	3	3	6.00	5.29	1.00	1.00
treefish, adult	**7/19/01**	7	7	1.71	2.98	0.57	0.98
treefish, juvenile	**6/27/01**	3	3	3.33	5.77	0.33	0.58
treefish, juvenile	**7/19/01**	7	7	0.00	0.00	0.00	0.00
zebra goby	**6/27/01**	3	2	8.50	2.12	2.00	1.41
zebra goby	**7/19/01**	7	2	8.00	2.83	2.00	1.41

2001 ROVING DIVER FISH COUNT:

Santa Cruz Island - Pelican Bay

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black surfperch, adult	6/26/01	5	5	10.00	0.00	2.80	0.45
black surfperch, adult	8/16/01	5	4	10.00	0.00	2.75	0.50
black surfperch, all	6/26/01	5	5	10.00	0.00	2.80	0.45
black surfperch, all	8/16/01	5	5	10.00	0.00	2.80	0.45
black surfperch, juvenile	6/26/01	5	5	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/16/01	5	4	0.00	0.00	0.00	0.00
blackeye goby	6/26/01	5	5	10.00	0.00	4.00	0.00
blackeye goby	8/16/01	5	5	10.00	0.00	4.00	0.00
blacksmith, adult	6/26/01	5	5	10.00	0.00	3.00	0.00
blacksmith, adult	8/16/01	5	4	4.00	4.69	1.25	1.50
blacksmith, all	6/26/01	5	5	10.00	0.00	3.00	0.00
blacksmith, all	8/16/01	5	5	4.40	4.16	1.60	1.52
blacksmith, juvenile	6/26/01	5	5	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/16/01	5	4	0.00	0.00	0.00	0.00
blue rockfish, adult	6/26/01	5	5	1.60	3.58	0.20	0.45
blue rockfish, adult	8/16/01	5	4	0.00	0.00	0.00	0.00
blue rockfish, all	6/26/01	5	5	1.60	3.58	0.20	0.45
blue rockfish, all	8/16/01	5	5	0.00	0.00	0.00	0.00
blue rockfish, juvenile	6/26/01	5	5	0.00	0.00	0.00	0.00
blue rockfish, juvenile	8/16/01	5	4	0.00	0.00	0.00	0.00
blue-banded goby	6/26/01	5	5	9.20	0.45	2.60	0.55
blue-banded goby	8/16/01	5	5	8.20	1.30	2.00	0.00
c-o turbot	6/26/01	5	2	7.50	0.71	1.00	0.00
c-o turbot	8/16/01	5	1	6.00		1.00	
California scorpionfish	8/16/01	5	1	10.00		1.00	
California sheephead,	6/26/01	5	5	9.40	0.55	2.00	0.00
California sheephead,	8/16/01	5	5	8.40	1.34	1.80	0.45
California sheephead,	6/26/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	8/16/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	6/26/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	8/16/01	5	5	0.00	0.00	0.00	0.00
finescale triggerfish	6/26/01	5	2	7.00	1.41	2.00	0.00
fringehead spp	8/16/01	5	1	9.00		2.00	
fringehead spp.	6/26/01	5	3	10.00	0.00	2.00	0.00
fringehead spp.	8/16/01	5	4	8.50	1.73	2.00	0.00
garibaldi, adult	6/26/01	5	5	10.00	0.00	2.60	0.55
garibaldi, adult	8/16/01	5	5	9.60	0.55	2.00	0.00
garibaldi, juvenile	6/26/01	5	5	7.80	1.10	1.20	0.45
garibaldi, juvenile	8/16/01	5	5	0.00	0.00	0.00	0.00
horn shark	6/26/01	5	3	9.00	1.73	1.67	0.58
horn shark	8/16/01	5	2	7.00	1.41	1.00	0.00
island kelpfish	6/26/01	5	5	6.40	4.04	1.60	0.89
island kelpfish	8/16/01	5	5	0.00	0.00	0.00	0.00
kelp bass, adult	6/26/01	5	5	9.60	0.55	2.60	0.55
kelp bass, adult	8/16/01	5	4	9.75	0.50	2.75	0.50
kelp bass, calico bass, all	6/26/01	5	5	9.80	0.45	2.80	0.45
kelp bass, calico bass, all	8/16/01	5	5	9.80	0.45	2.80	0.45
kelp bass, juvenile	6/26/01	5	5	7.60	1.95	1.60	0.55
kelp bass, juvenile	8/16/01	5	4	4.50	5.26	0.50	0.58
kelp rockfish, adult	6/26/01	5	5	9.40	0.89	1.80	0.45
kelp rockfish, adult	8/16/01	5	4	9.25	0.50	1.75	0.50
kelp rockfish, all	6/26/01	5	5	9.40	0.89	1.80	0.45
kelp rockfish, all	8/16/01	5	5	9.40	0.55	1.80	0.45
kelp rockfish, juvenile	6/26/01	5	5	0.00	0.00	0.00	0.00

kelp rockfish, juvenile	**8/16/01**	5	4	0.00	0.00	0.00	0.00
ocean whitefish	**8/16/01**	5	1	6.00		1.00	
olive rockfish, adult	**6/26/01**	5	5	1.80	4.02	0.40	0.89
olive rockfish, adult	**8/16/01**	5	4	1.50	3.00	0.25	0.50
olive rockfish, all	**6/26/01**	5	5	1.80	4.02	0.40	0.89
olive rockfish, all	**8/16/01**	5	5	2.60	3.58	0.40	0.55
olive/yellowtail rockfish,	**6/26/01**	5	5	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	**8/16/01**	5	4	0.00	0.00	0.00	0.00
opaleye, adult	**6/26/01**	5	5	5.40	4.93	0.80	0.84
opaleye, adult	**8/16/01**	5	4	0.00	0.00	0.00	0.00
opaleye, all	**6/26/01**	5	5	5.40	4.93	0.80	0.84
opaleye, all	**8/16/01**	5	5	1.60	3.58	0.20	0.45
opaleye, juvenile	**6/26/01**	5	5	0.00	0.00	0.00	0.00
opaleye, juvenile	**8/16/01**	5	4	0.00	0.00	0.00	0.00
Pacific sardine	**8/16/01**	5	2	6.50	0.71	1.00	0.00
painted greenling	**6/26/01**	5	5	8.80	2.17	1.80	0.45
painted greenling	**8/16/01**	5	5	9.20	1.30	2.00	0.00
pile surfperch, adult	**6/26/01**	5	5	8.20	1.30	2.00	0.71
pile surfperch, adult	**8/16/01**	5	4	8.50	1.29	2.00	0.00
pile surfperch, all	**6/26/01**	5	5	8.20	1.30	2.00	0.71
pile surfperch, all	**8/16/01**	5	5	8.80	1.30	2.20	0.45
pile surfperch, juvenile	**6/26/01**	5	5	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**8/16/01**	5	4	0.00	0.00	0.00	0.00
rock wrasse, female	**6/26/01**	5	5	3.40	4.67	0.40	0.55
rock wrasse, female	**8/16/01**	5	5	0.00	0.00	0.00	0.00
rock wrasse, male	**6/26/01**	5	5	5.80	5.31	0.60	0.55
rock wrasse, male	**8/16/01**	5	5	0.00	0.00	0.00	0.00
rubberlip surfperch	**6/26/01**	5	5	7.60	0.89	2.20	0.84
rubberlip surfperch	**8/16/01**	5	3	8.00	2.65	2.67	0.58
sculpin spp.	**8/16/01**	5	1	7.00		1.00	
senorita, adult	**6/26/01**	5	5	9.20	1.30	2.20	0.45
senorita, adult	**8/16/01**	5	4	7.25	4.86	1.75	1.26
senorita, all	**6/26/01**	5	5	9.20	1.30	2.20	0.45
senorita, all	**8/16/01**	5	5	7.00	4.24	1.60	1.14
senorita, juvenile	**6/26/01**	5	5	0.00	0.00	0.00	0.00
senorita, juvenile	**8/16/01**	5	4	0.00	0.00	0.00	0.00
striped surfperch, adult	**6/26/01**	5	5	0.00	0.00	0.00	0.00
striped surfperch, adult	**8/16/01**	5	4	0.00	0.00	0.00	0.00
striped surfperch, all	**6/26/01**	5	5	0.00	0.00	0.00	0.00
striped surfperch, all	**8/16/01**	5	5	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**6/26/01**	5	5	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**8/16/01**	5	4	0.00	0.00	0.00	0.00
stripedfin ronquil	**8/16/01**	5	1	6.00		1.00	
swell shark	**6/26/01**	5	1	7.00		1.00	
treefish, adult	**6/26/01**	5	5	5.40	5.08	1.00	1.00
treefish, adult	**8/16/01**	5	5	6.40	3.97	1.20	0.84
treefish, juvenile	**6/26/01**	5	5	3.40	4.77	0.60	0.89
treefish, juvenile	**8/16/01**	5	5	1.20	2.68	0.20	0.45
zebra goby	**6/26/01**	5	1	6.00		2.00	
zebra goby	**8/16/01**	5	3	7.33	1.15	1.33	0.58

2001 ROVING DIVER FISH COUNT:

Santa Cruz Island - Scorpion Anchorage

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
barred sand bass	8/15/01	5	1	6.00		1.00	
bat ray	8/31/01	6	1	10.00		1.00	
black and yellow rockfish	8/15/01	5	4	7.25	1.26	1.50	0.58
black and yellow rockfish	8/31/01	6	3	6.33	2.31	1.33	0.58
black surfperch, adult	8/15/01	5	4	10.00	0.00	2.75	0.50
black surfperch, adult	8/31/01	6	5	9.80	0.45	3.00	0.00
black surfperch, all	8/15/01	5	5	10.00	0.00	2.80	0.45
black surfperch, all	8/31/01	6	6	9.83	0.41	3.00	0.00
black surfperch, juvenile	8/15/01	5	4	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/31/01	6	5	0.00	0.00	0.00	0.00
blackeye goby	8/15/01	5	5	10.00	0.00	4.00	0.00
blackeye goby	8/31/01	6	6	10.00	0.00	3.67	0.52
blacksmith, adult	8/15/01	5	4	10.00	0.00	3.00	0.00
blacksmith, adult	8/31/01	6	5	10.00	0.00	3.80	0.45
blacksmith, all	8/15/01	5	5	10.00	0.00	3.20	0.45
blacksmith, all	8/31/01	6	6	10.00	0.00	3.83	0.41
blacksmith, juvenile	8/15/01	5	4	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/31/01	6	5	8.40	2.19	2.20	0.45
blue rockfish, adult	8/15/01	5	4	0.00	0.00	0.00	0.00
blue rockfish, adult	8/31/01	6	5	1.20	2.68	0.20	0.45
blue rockfish, all	8/15/01	5	5	0.00	0.00	0.00	0.00
blue rockfish, all	8/31/01	6	6	1.00	2.45	0.17	0.41
blue rockfish, juvenile	8/15/01	5	4	0.00	0.00	0.00	0.00
blue rockfish, juvenile	8/31/01	6	5	0.00	0.00	0.00	0.00
blue-banded goby	8/15/01	5	5	5.40	4.93	1.00	1.00
blue-banded goby	8/31/01	6	6	0.00	0.00	0.00	0.00
California scorpionfish	8/31/01	6	4	7.75	1.89	1.50	0.58
California sheephead,	8/15/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	8/31/01	6	6	5.50	4.42	1.33	1.03
California sheephead,	8/15/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	8/31/01	6	6	0.00	0.00	0.00	0.00
California sheephead,	8/15/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	8/31/01	6	6	0.00	0.00	0.00	0.00
copper rockfish	8/31/01	6	1	6.00		1.00	
coralline sculpin	8/15/01	5	2	6.50	0.71	1.50	0.71
fringehead spp.	8/15/01	5	2	6.00	1.41	1.00	0.00
fringehead spp.	8/31/01	6	1	10.00		2.00	
garibaldi, adult	8/15/01	5	5	9.60	0.55	2.20	0.45
garibaldi, adult	8/31/01	6	6	9.50	0.84	2.83	0.41
garibaldi, juvenile	8/15/01	5	5	1.00	2.24	0.20	0.45
garibaldi, juvenile	8/31/01	6	6	0.00	0.00	0.00	0.00
gopher rockfish	8/31/01	6	3	5.67	0.58	1.00	0.00
horn shark	8/15/01	5	1	8.00		1.00	
horn shark	8/31/01	6	1	9.00		1.00	
island kelpfish	8/15/01	5	5	6.40	3.91	1.60	1.14
island kelpfish	8/31/01	6	6	8.83	1.94	1.83	0.41
kelp bass, adult	8/15/01	5	4	8.50	1.29	2.00	0.00
kelp bass, adult	8/31/01	6	5	10.00	0.00	2.60	0.55
kelp bass, calico bass, all	8/15/01	5	5	8.40	1.14	2.00	0.00
kelp bass, calico bass, all	8/31/01	6	6	9.83	0.41	2.50	0.55
kelp bass, juvenile	8/15/01	5	4	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/31/01	6	5	1.80	4.02	0.40	0.89
kelp rockfish, adult	8/15/01	5	4	4.50	5.20	0.75	0.96
kelp rockfish, adult	8/31/01	6	5	9.00	1.00	1.80	0.45

2001 ROVING DIVER FISH COUNT:

kelp rockfish, all	**8/15/01**	5	5	3.60	4.93	0.60	0.89
kelp rockfish, all	**8/31/01**	6	6	7.50	3.78	1.50	0.84
kelp rockfish, juvenile	**8/15/01**	5	4	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	**8/31/01**	6	5	0.00	0.00	0.00	0.00
olive rockfish, adult	**8/15/01**	5	4	0.00	0.00	0.00	0.00
olive rockfish, adult	**8/31/01**	6	5	0.00	0.00	0.00	0.00
olive rockfish, all	**8/15/01**	5	5	0.00	0.00	0.00	0.00
olive rockfish, all	**8/31/01**	6	6	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	**8/15/01**	5	4	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	**8/31/01**	6	5	0.00	0.00	0.00	0.00
opaleye, adult	**8/15/01**	5	4	6.50	4.43	1.50	1.00
opaleye, adult	**8/31/01**	6	5	6.00	3.54	1.00	0.71
opaleye, all	**8/15/01**	5	5	6.60	3.85	1.40	0.89
opaleye, all	**8/31/01**	6	6	6.50	3.39	1.17	0.75
opaleye, juvenile	**8/15/01**	5	4	1.75	3.50	0.25	0.50
opaleye, juvenile	**8/31/01**	6	5	0.00	0.00	0.00	0.00
painted greenling	**8/15/01**	5	5	9.80	0.45	2.60	0.55
painted greenling	**8/31/01**	6	6	9.17	0.75	2.83	0.41
pile surfperch, adult	**8/15/01**	5	4	4.75	5.50	1.00	1.15
pile surfperch, adult	**8/31/01**	6	5	7.80	2.59	1.80	0.45
pile surfperch, all	**8/15/01**	5	5	5.60	5.13	1.00	1.00
pile surfperch, all	**8/31/01**	6	6	8.17	2.48	1.83	0.41
pile surfperch, juvenile	**8/15/01**	5	4	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**8/31/01**	6	5	0.00	0.00	0.00	0.00
rock wrasse, female	**8/15/01**	5	5	8.80	1.64	1.80	0.45
rock wrasse, female	**8/31/01**	6	6	9.00	0.89	2.33	0.52
rock wrasse, male	**8/15/01**	5	5	7.40	4.16	1.20	0.84
rock wrasse, male	**8/31/01**	6	6	8.33	0.52	2.17	0.75
senorita, adult	**8/15/01**	5	4	10.00	0.00	3.00	0.00
senorita, adult	**8/31/01**	6	5	10.00	0.00	3.00	0.00
senorita, all	**8/15/01**	5	5	10.00	0.00	3.00	0.00
senorita, all	**8/31/01**	6	6	10.00	0.00	3.00	0.00
senorita, juvenile	**8/15/01**	5	4	0.00	0.00	0.00	0.00
senorita, juvenile	**8/31/01**	6	5	0.00	0.00	0.00	0.00
striped surfperch, adult	**8/15/01**	5	4	0.00	0.00	0.00	0.00
striped surfperch, adult	**8/31/01**	6	5	0.00	0.00	0.00	0.00
striped surfperch, all	**8/15/01**	5	5	0.00	0.00	0.00	0.00
striped surfperch, all	**8/31/01**	6	6	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**8/15/01**	5	4	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**8/31/01**	6	5	0.00	0.00	0.00	0.00
treefish, adult	**8/15/01**	5	5	5.00	4.80	0.80	0.84
treefish, adult	**8/31/01**	6	6	2.17	3.37	0.33	0.52
treefish, juvenile	**8/15/01**	5	5	3.40	4.67	0.60	0.89
treefish, juvenile	**8/31/01**	6	6	5.33	4.18	0.83	0.75
zebra goby	**8/15/01**	5	2	5.50	0.71	1.50	0.71
zebra goby	**8/31/01**	6	3	6.33	1.15	1.00	0.00

2001 ROVING DIVER FISH COUNT:

Santa Cruz Island - Yellow Banks

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black and yellow rockfish	8/13/01	5	3	8.67	0.58	1.00	0.00
black surfperch, adult	6/25/01	4	4	8.50	0.58	1.75	0.50
black surfperch, adult	8/13/01	5	4	7.50	5.00	1.75	1.26
black surfperch, all	6/25/01	4	4	8.50	0.58	1.75	0.50
black surfperch, all	8/13/01	5	5	8.00	4.47	1.60	1.14
black surfperch, juvenile	6/25/01	4	4	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/13/01	5	4	0.00	0.00	0.00	0.00
blackeye goby	6/25/01	4	4	10.00	0.00	3.25	0.50
blackeye goby	8/13/01	5	5	10.00	0.00	3.80	0.45
blacksmith, adult	6/25/01	4	4	6.25	4.50	1.00	0.82
blacksmith, adult	8/13/01	5	4	10.00	0.00	3.00	0.00
blacksmith, all	6/25/01	4	4	6.25	4.50	1.00	0.82
blacksmith, all	8/13/01	5	5	10.00	0.00	3.00	0.00
blacksmith, juvenile	6/25/01	4	4	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/13/01	5	4	0.00	0.00	0.00	0.00
blue rockfish, adult	6/25/01	4	4	0.00	0.00	0.00	0.00
blue rockfish, adult	8/13/01	5	4	0.00	0.00	0.00	0.00
blue rockfish, all	6/25/01	4	4	2.25	4.50	0.25	0.50
blue rockfish, all	8/13/01	5	5	3.40	4.77	0.40	0.55
blue rockfish, juvenile	6/25/01	4	4	2.25	4.50	0.25	0.50
blue rockfish, juvenile	8/13/01	5	4	4.25	5.06	0.50	0.58
blue-banded goby	6/25/01	4	4	3.50	4.36	0.75	0.96
blue-banded goby	8/13/01	5	5	0.00	0.00	0.00	0.00
cabezon	6/25/01	4	1	7.00		1.00	
California scorpionfish	8/13/01	5	1	8.00		1.00	
California sheephead,	6/25/01	4	4	8.50	1.29	2.50	0.58
California sheephead,	8/13/01	5	5	10.00	0.00	2.60	0.55
California sheephead,	6/25/01	4	4	0.00	0.00	0.00	0.00
California sheephead,	8/13/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	6/25/01	4	4	0.00	0.00	0.00	0.00
California sheephead,	8/13/01	5	5	0.00	0.00	0.00	0.00
fringehead spp.	8/13/01	5	1	9.00		1.00	
garibaldi, adult	6/25/01	4	4	3.75	4.35	0.50	0.58
garibaldi, adult	8/13/01	5	5	0.00	0.00	0.00	0.00
garibaldi, juvenile	6/25/01	4	4	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/13/01	5	5	0.00	0.00	0.00	0.00
gopher rockfish	6/25/01	4	1	5.00		1.00	
gopher rockfish	8/13/01	5	1	9.00		2.00	
gopher/copper rockfish,	8/13/01	5	1	10.00		1.00	
island kelpfish	6/25/01	4	4	4.00	4.90	1.00	1.15
island kelpfish	8/13/01	5	5	8.20	1.10	1.60	0.55
kelp bass, adult	6/25/01	4	4	10.00	0.00	2.75	0.50
kelp bass, adult	8/13/01	5	4	10.00	0.00	2.50	0.58
kelp bass, calico bass, all	6/25/01	4	4	10.00	0.00	2.75	0.50
kelp bass, calico bass, all	8/13/01	5	5	10.00	0.00	2.60	0.55
kelp bass, juvenile	6/25/01	4	4	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/13/01	5	4	0.00	0.00	0.00	0.00
kelp rockfish, adult	6/25/01	4	4	6.00	4.24	1.25	0.96
kelp rockfish, adult	8/13/01	5	4	5.25	3.86	1.50	1.00
kelp rockfish, all	6/25/01	4	4	6.00	4.24	1.25	0.96
kelp rockfish, all	8/13/01	5	5	4.20	4.09	1.20	1.10
kelp rockfish, juvenile	6/25/01	4	4	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/13/01	5	4	0.00	0.00	0.00	0.00
ocean whitefish	6/25/01	4	3	6.67	0.58	1.67	0.58

ocean whitefish	**8/13/01**	5	5	9.40	1.34	1.60	0.55
olive rockfish, adult	**6/25/01**	4	4	8.75	0.50	1.50	0.58
olive rockfish, adult	**8/13/01**	5	4	0.00	0.00	0.00	0.00
olive rockfish, all	**6/25/01**	4	4	8.75	0.50	1.50	0.58
olive rockfish, all	**8/13/01**	5	5	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	**6/25/01**	4	4	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	**8/13/01**	5	4	0.00	0.00	0.00	0.00
opaleye, adult	**6/25/01**	4	4	0.00	0.00	0.00	0.00
opaleye, adult	**8/13/01**	5	4	4.50	5.26	0.50	0.58
opaleye, all	**6/25/01**	4	4	0.00	0.00	0.00	0.00
opaleye, all	**8/13/01**	5	5	5.60	5.18	0.80	0.84
opaleye, juvenile	**6/25/01**	4	4	0.00	0.00	0.00	0.00
opaleye, juvenile	**8/13/01**	5	4	0.00	0.00	0.00	0.00
painted greenling	**6/25/01**	4	4	9.75	0.50	2.50	0.58
painted greenling	**8/13/01**	5	5	9.80	0.45	2.60	0.55
pile surfperch, adult	**6/25/01**	4	4	2.50	5.00	0.25	0.50
pile surfperch, adult	**8/13/01**	5	4	7.50	1.29	1.50	0.58
pile surfperch, all	**6/25/01**	4	4	2.50	5.00	0.25	0.50
pile surfperch, all	**8/13/01**	5	5	7.80	1.30	1.40	0.55
pile surfperch, juvenile	**6/25/01**	4	4	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**8/13/01**	5	4	0.00	0.00	0.00	0.00
rock wrasse, female	**6/25/01**	4	4	1.75	3.50	0.25	0.50
rock wrasse, female	**8/13/01**	5	5	4.40	4.16	0.60	0.55
rock wrasse, male	**6/25/01**	4	4	8.25	1.26	1.25	0.50
rock wrasse, male	**8/13/01**	5	5	9.20	0.45	2.00	0.00
rockfish spp., juvenile	**8/13/01**	5	2	6.50	2.12	1.00	0.00
senorita, adult	**6/25/01**	4	4	0.00	0.00	0.00	0.00
senorita, adult	**8/13/01**	5	4	0.00	0.00	0.00	0.00
senorita, all	**6/25/01**	4	4	0.00	0.00	0.00	0.00
senorita, all	**8/13/01**	5	5	0.00	0.00	0.00	0.00
senorita, juvenile	**6/25/01**	4	4	0.00	0.00	0.00	0.00
senorita, juvenile	**8/13/01**	5	4	0.00	0.00	0.00	0.00
striped surfperch, adult	**6/25/01**	4	4	0.00	0.00	0.00	0.00
striped surfperch, adult	**8/13/01**	5	4	0.00	0.00	0.00	0.00
striped surfperch, all	**6/25/01**	4	4	0.00	0.00	0.00	0.00
striped surfperch, all	**8/13/01**	5	5	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**6/25/01**	4	4	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**8/13/01**	5	4	0.00	0.00	0.00	0.00
swell shark	**8/13/01**	5	2	6.00	1.41	1.00	0.00
treefish, adult	**6/25/01**	4	4	2.25	4.50	0.25	0.50
treefish, adult	**8/13/01**	5	5	6.20	3.77	1.00	0.71
treefish, juvenile	**6/25/01**	4	4	0.00	0.00	0.00	0.00
treefish, juvenile	**8/13/01**	5	5	5.40	5.08	1.20	1.10
vermillion rockfish	**8/13/01**	5	2	7.50	3.54	1.50	0.71
zebra perch	**8/13/01**	5	1	6.00		1.00	

2001 ROVING DIVER FISH COUNT:

Anacapa Island - Admiral's Reef

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black and yellow rockfish	8/17/01	6	3	7.67	2.08	1.33	0.58
black surfperch, adult	6/14/01	5	4	4.25	4.92	0.50	0.58
black surfperch, adult	8/17/01	6	5	9.00	1.00	2.00	0.00
black surfperch, all	6/14/01	5	5	3.40	4.67	0.40	0.55
black surfperch, all	8/17/01	6	6	8.83	0.98	2.00	0.00
black surfperch, juvenile	6/14/01	5	4	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/17/01	6	5	0.00	0.00	0.00	0.00
blackeye goby	6/14/01	5	5	9.80	0.45	3.60	0.89
blackeye goby	8/17/01	6	6	10.00	0.00	3.83	0.41
blacksmith, adult	6/14/01	5	4	10.00	0.00	4.00	0.00
blacksmith, adult	8/17/01	6	5	10.00	0.00	4.00	0.00
blacksmith, all	6/14/01	5	5	10.00	0.00	4.00	0.00
blacksmith, all	8/17/01	6	6	10.00	0.00	4.00	0.00
blacksmith, juvenile	6/14/01	5	4	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/17/01	6	5	8.00	1.58	2.40	0.89
blue rockfish, adult	6/14/01	5	4	4.25	5.06	0.75	0.96
blue rockfish, adult	8/17/01	6	5	5.00	4.69	0.80	0.84
blue rockfish, all	6/14/01	5	5	8.80	1.30	2.00	0.71
blue rockfish, all	8/17/01	6	6	7.33	3.78	2.33	1.21
blue rockfish, juvenile	6/14/01	5	4	8.25	1.26	1.75	0.50
blue rockfish, juvenile	8/17/01	6	5	8.20	1.30	2.80	0.45
blue-banded goby	6/14/01	5	5	0.00	0.00	0.00	0.00
blue-banded goby	8/17/01	6	6	0.00	0.00	0.00	0.00
California scorpionfish	6/14/01	5	1	9.00		1.00	
California sheephead,	6/14/01	5	5	10.00	0.00	2.80	0.45
California sheephead,	8/17/01	6	6	9.83	0.41	2.33	0.52
California sheephead,	6/14/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	8/17/01	6	6	0.00	0.00	0.00	0.00
California sheephead,	6/14/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	8/17/01	6	6	0.00	0.00	0.00	0.00
garibaldi, adult	6/14/01	5	5	10.00	0.00	2.60	0.55
garibaldi, adult	8/17/01	6	6	10.00	0.00	2.00	0.00
garibaldi, juvenile	6/14/01	5	5	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/17/01	6	6	0.00	0.00	0.00	0.00
giant black sea bass	6/14/01	5	2	5.00	0.00	1.00	0.00
gopher rockfish	8/17/01	6	1	9.00		1.00	
halfmoon	6/14/01	5	1	9.00		2.00	
halfmoon	8/17/01	6	1	7.00		1.00	
island kelpfish	6/14/01	5	5	6.40	3.91	1.60	0.89
island kelpfish	8/17/01	6	6	8.50	1.64	1.83	0.75
kelp bass, adult	6/14/01	5	4	10.00	0.00	2.75	0.50
kelp bass, adult	8/17/01	6	5	3.80	5.22	0.60	0.89
kelp bass, calico bass, all	6/14/01	5	5	10.00	0.00	2.80	0.45
kelp bass, calico bass, all	8/17/01	6	6	4.67	5.13	0.83	0.98
kelp bass, juvenile	6/14/01	5	4	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/17/01	6	5	0.00	0.00	0.00	0.00
kelp rockfish, adult	6/14/01	5	4	1.50	3.00	0.50	1.00
kelp rockfish, adult	8/17/01	6	5	6.40	1.67	1.20	0.45
kelp rockfish, all	6/14/01	5	5	1.20	2.68	0.40	0.89
kelp rockfish, all	8/17/01	6	6	5.33	3.01	1.00	0.63
kelp rockfish, juvenile	6/14/01	5	4	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/17/01	6	5	0.00	0.00	0.00	0.00
olive rockfish, adult	6/14/01	5	4	0.00	0.00	0.00	0.00
olive rockfish, adult	8/17/01	6	5	0.00	0.00	0.00	0.00

olive rockfish, all	**6/14/01**	5	5	0.00	0.00	0.00	0.00
olive rockfish, all	**8/17/01**	6	6	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	**6/14/01**	5	4	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	**8/17/01**	6	5	0.00	0.00	0.00	0.00
opaleye, adult	**6/14/01**	5	4	10.00	0.00	2.75	0.50
opaleye, adult	**8/17/01**	6	5	5.00	4.80	1.00	1.00
opaleye, all	**6/14/01**	5	5	10.00	0.00	2.80	0.45
opaleye, all	**8/17/01**	6	6	4.17	4.75	0.83	0.98
opaleye, juvenile	**6/14/01**	5	4	0.00	0.00	0.00	0.00
opaleye, juvenile	**8/17/01**	6	5	0.00	0.00	0.00	0.00
painted greenling	**6/14/01**	5	5	9.80	0.45	2.80	0.45
painted greenling	**8/17/01**	6	6	9.67	0.52	3.00	0.00
pile surfperch, adult	**6/14/01**	5	4	1.25	2.50	0.25	0.50
pile surfperch, adult	**8/17/01**	6	5	3.80	5.22	0.60	0.89
pile surfperch, all	**6/14/01**	5	5	1.00	2.24	0.20	0.45
pile surfperch, all	**8/17/01**	6	6	3.17	4.92	0.50	0.84
pile surfperch, juvenile	**6/14/01**	5	4	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**8/17/01**	6	5	0.00	0.00	0.00	0.00
rock wrasse, female	**6/14/01**	5	5	1.60	3.58	0.20	0.45
rock wrasse, female	**8/17/01**	6	6	8.50	1.05	2.17	0.41
rock wrasse, male	**6/14/01**	5	5	0.00	0.00	0.00	0.00
rock wrasse, male	**8/17/01**	6	6	8.67	1.37	1.67	0.82
sculpin spp.	**8/17/01**	6	1	5.00		1.00	
senorita, adult	**6/14/01**	5	4	2.75	3.20	0.50	0.58
senorita, adult	**8/17/01**	6	5	9.60	0.89	2.20	0.45
senorita, all	**6/14/01**	5	5	2.20	3.03	0.40	0.55
senorita, all	**8/17/01**	6	6	9.17	1.33	2.17	0.41
senorita, juvenile	**6/14/01**	5	4	0.00	0.00	0.00	0.00
senorita, juvenile	**8/17/01**	6	5	0.00	0.00	0.00	0.00
striped surfperch, adult	**6/14/01**	5	4	0.00	0.00	0.00	0.00
striped surfperch, adult	**8/17/01**	6	5	0.00	0.00	0.00	0.00
striped surfperch, all	**6/14/01**	5	5	0.00	0.00	0.00	0.00
striped surfperch, all	**8/17/01**	6	6	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**6/14/01**	5	4	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**8/17/01**	6	5	0.00	0.00	0.00	0.00
treefish, adult	**6/14/01**	5	5	8.00	1.58	1.80	0.45
treefish, adult	**8/17/01**	6	6	7.00	3.69	1.50	1.05
treefish, juvenile	**6/14/01**	5	5	0.00	0.00	0.00	0.00
treefish, juvenile	**8/17/01**	6	6	3.67	4.23	0.67	0.82

2001 ROVING DIVER FISH COUNT:

Anacapa Island - Cathedral Cove

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	7/20/01	6	1	5.00		1.00	
black surfperch, adult	7/20/01	6	6	9.50	0.84	2.83	0.41
black surfperch, adult	8/14/01	5	4	9.25	0.50	2.00	0.00
black surfperch, all	7/20/01	6	6	9.50	0.84	2.83	0.41
black surfperch, all	8/14/01	5	5	9.40	0.55	2.20	0.45
black surfperch, juvenile	7/20/01	6	6	4.33	4.76	0.67	0.82
black surfperch, juvenile	8/14/01	5	4	0.00	0.00	0.00	0.00
blackeye goby	7/20/01	6	6	9.00	1.26	3.00	0.00
blackeye goby	8/14/01	5	5	10.00	0.00	3.20	0.45
blacksmith, adult	7/20/01	6	6	10.00	0.00	4.00	0.00
blacksmith, adult	8/14/01	5	4	9.50	0.58	4.00	0.00
blacksmith, all	7/20/01	6	6	10.00	0.00	4.00	0.00
blacksmith, all	8/14/01	5	5	9.60	0.55	3.80	0.45
blacksmith, juvenile	7/20/01	6	6	2.83	4.49	0.50	0.84
blacksmith, juvenile	8/14/01	5	4	2.50	5.00	0.25	0.50
blue rockfish, adult	7/20/01	6	6	0.00	0.00	0.00	0.00
blue rockfish, adult	8/14/01	5	4	0.00	0.00	0.00	0.00
blue rockfish, all	7/20/01	6	6	0.00	0.00	0.00	0.00
blue rockfish, all	8/14/01	5	5	0.00	0.00	0.00	0.00
blue rockfish, juvenile	7/20/01	6	6	0.00	0.00	0.00	0.00
blue rockfish, juvenile	8/14/01	5	4	0.00	0.00	0.00	0.00
blue-banded goby	7/20/01	6	6	0.00	0.00	0.00	0.00
blue-banded goby	8/14/01	5	5	0.00	0.00	0.00	0.00
California halibut	8/14/01	5	1	6.00		1.00	
California sheephead,	7/20/01	6	6	8.67	1.63	2.17	0.41
California sheephead,	8/14/01	5	5	9.40	0.55	1.80	0.45
California sheephead,	7/20/01	6	6	0.00	0.00	0.00	0.00
California sheephead,	8/14/01	5	5	0.00	0.00	0.00	0.00
California sheephead,	7/20/01	6	6	4.00	3.29	0.67	0.52
California sheephead,	8/14/01	5	5	0.00	0.00	0.00	0.00
copper rockfish	8/14/01	5	2	6.50	2.12	1.00	0.00
fringehead spp.	7/20/01	6	1	7.00		1.00	
fringehead spp.	8/14/01	5	1	6.00		1.00	
garibaldi, adult	7/20/01	6	6	9.83	0.41	3.00	0.00
garibaldi, adult	8/14/01	5	5	10.00	0.00	2.80	0.45
garibaldi, juvenile	7/20/01	6	6	4.83	3.82	1.33	1.03
garibaldi, juvenile	8/14/01	5	5	3.60	4.98	0.40	0.55
giant kelpfish	7/20/01	6	1	10.00		2.00	
giant kelpfish	8/14/01	5	5	7.80	1.79	2.40	0.89
halfmoon	7/20/01	6	4	7.00	0.82	1.75	0.50
island kelpfish	7/20/01	6	6	9.50	1.22	3.00	0.00
island kelpfish	8/14/01	5	5	10.00	0.00	3.20	0.45
kelp bass, adult	7/20/01	6	6	10.00	0.00	2.67	0.52
kelp bass, adult	8/14/01	5	4	9.25	0.96	2.25	0.50
kelp bass, calico bass, all	7/20/01	6	6	10.00	0.00	3.00	0.00
kelp bass, calico bass, all	8/14/01	5	5	9.40	0.89	2.80	0.45
kelp bass, juvenile	7/20/01	6	6	5.50	4.46	1.17	0.98
kelp bass, juvenile	8/14/01	5	4	4.25	4.92	1.00	1.15
kelp rockfish, adult	7/20/01	6	6	4.33	4.97	0.83	0.98
kelp rockfish, adult	8/14/01	5	4	8.25	1.26	1.75	0.50
kelp rockfish, all	7/20/01	6	6	4.33	4.97	0.83	0.98
kelp rockfish, all	8/14/01	5	5	6.60	3.85	1.40	0.89
kelp rockfish, juvenile	7/20/01	6	6	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/14/01	5	4	0.00	0.00	0.00	0.00

2001 ROVING DIVER FISH COUNT:

kelp surfperch	**7/20/01**	6	1	9.00		3.00	
kelp surfperch	**8/14/01**	5	4	9.00	1.41	1.75	0.50
kelpfish spp.	**8/14/01**	5	1	6.00		1.00	
northern anchovy	**8/14/01**	5	1	7.00		4.00	
ocean whitefish	**8/14/01**	5	1	9.00		2.00	
olive rockfish, adult	**7/20/01**	6	6	0.00	0.00	0.00	0.00
olive rockfish, adult	**8/14/01**	5	4	4.25	4.92	0.75	0.96
olive rockfish, all	**7/20/01**	6	6	1.00	2.45	0.17	0.41
olive rockfish, all	**8/14/01**	5	5	3.40	4.67	0.60	0.89
olive/yellowtail rockfish,	**7/20/01**	6	6	1.00	2.45	0.17	0.41
olive/yellowtail rockfish,	**8/14/01**	5	4	0.00	0.00	0.00	0.00
opaleye, adult	**7/20/01**	6	6	6.17	4.83	1.50	1.22
opaleye, adult	**8/14/01**	5	4	9.00	1.41	2.00	0.00
opaleye, all	**7/20/01**	6	6	7.83	3.92	1.83	0.98
opaleye, all	**8/14/01**	5	5	9.20	1.30	2.20	0.45
opaleye, juvenile	**7/20/01**	6	6	1.67	4.08	0.33	0.82
opaleye, juvenile	**8/14/01**	5	4	0.00	0.00	0.00	0.00
painted greenling	**7/20/01**	6	6	9.33	0.82	2.17	0.41
painted greenling	**8/14/01**	5	5	9.40	0.89	2.40	0.55
pile surfperch, adult	**7/20/01**	6	6	5.00	5.48	0.67	0.82
pile surfperch, adult	**8/14/01**	5	4	0.00	0.00	0.00	0.00
pile surfperch, all	**7/20/01**	6	6	5.00	5.48	0.67	0.82
pile surfperch, all	**8/14/01**	5	5	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**7/20/01**	6	6	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**8/14/01**	5	4	0.00	0.00	0.00	0.00
rock wrasse, female	**7/20/01**	6	6	9.33	0.82	2.17	0.41
rock wrasse, female	**8/14/01**	5	5	10.00	0.00	2.40	0.55
rock wrasse, male	**7/20/01**	6	6	9.17	1.60	2.17	0.75
rock wrasse, male	**8/14/01**	5	5	5.00	4.69	0.80	0.84
rockfish spp., juvenile	**8/14/01**	5	1	5.00		3.00	
senorita, adult	**7/20/01**	6	6	8.83	2.04	2.33	0.52
senorita, adult	**8/14/01**	5	4	9.50	1.00	1.75	0.50
senorita, all	**7/20/01**	6	6	8.83	2.04	2.33	0.52
senorita, all	**8/14/01**	5	5	9.60	0.89	1.60	0.55
senorita, juvenile	**7/20/01**	6	6	0.00	0.00	0.00	0.00
senorita, juvenile	**8/14/01**	5	4	0.00	0.00	0.00	0.00
snubnose sculpin	**7/20/01**	6	1	8.00		1.00	
speckled sanddab	**8/14/01**	5	1	7.00		1.00	
striped surfperch, adult	**7/20/01**	6	6	0.00	0.00	0.00	0.00
striped surfperch, adult	**8/14/01**	5	4	0.00	0.00	0.00	0.00
striped surfperch, all	**7/20/01**	6	6	0.00	0.00	0.00	0.00
striped surfperch, all	**8/14/01**	5	5	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**7/20/01**	6	6	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**8/14/01**	5	4	0.00	0.00	0.00	0.00
top smelt	**8/14/01**	5	1	10.00		3.00	
treefish, adult	**7/20/01**	6	6	0.83	2.04	0.17	0.41
treefish, adult	**8/14/01**	5	5	0.00	0.00	0.00	0.00
treefish, juvenile	**7/20/01**	6	6	1.67	4.08	0.33	0.82
treefish, juvenile	**8/14/01**	5	5	5.80	3.63	1.20	0.84
zebra goby	**7/20/01**	6	3	6.33	2.31	1.00	0.00
zebra goby	**8/14/01**	5	2	10.00	0.00	2.50	0.71

2001 ROVING DIVER FISH COUNT:

Anacapa Island - Landing Cove

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	8/17/01	6	3	7.00	2.65	1.33	0.58
black and yellow rockfish	7/20/01	7	1	9.00		1.00	
black and yellow rockfish	8/17/01	6	1	10.00		1.00	
black surfperch, adult	7/20/01	7	7	9.14	1.07	2.43	0.53
black surfperch, adult	8/17/01	6	5	9.80	0.45	2.60	0.55
black surfperch, all	7/20/01	7	7	9.29	0.76	2.86	0.38
black surfperch, all	8/17/01	6	6	9.83	0.41	2.83	0.41
black surfperch, juvenile	7/20/01	7	7	7.29	3.35	1.71	0.76
black surfperch, juvenile	8/17/01	6	5	8.00	4.47	2.00	1.22
blackeye goby	7/20/01	7	7	9.71	0.49	3.14	0.38
blackeye goby	8/17/01	6	6	9.17	0.41	3.50	0.55
blacksmith, adult	7/20/01	7	7	9.86	0.38	3.71	0.49
blacksmith, adult	8/17/01	6	5	10.00	0.00	3.80	0.45
blacksmith, all	7/20/01	7	7	9.86	0.38	3.71	0.49
blacksmith, all	8/17/01	6	6	10.00	0.00	3.83	0.41
blacksmith, juvenile	7/20/01	7	7	1.00	2.65	0.14	0.38
blacksmith, juvenile	8/17/01	6	5	5.40	4.98	1.60	1.52
blue rockfish, adult	7/20/01	7	7	0.00	0.00	0.00	0.00
blue rockfish, adult	8/17/01	6	5	0.00	0.00	0.00	0.00
blue rockfish, all	7/20/01	7	7	2.86	3.58	0.86	1.07
blue rockfish, all	8/17/01	6	6	4.33	4.84	1.00	1.10
blue rockfish, juvenile	7/20/01	7	7	2.86	3.58	0.86	1.07
blue rockfish, juvenile	8/17/01	6	5	5.20	4.87	1.20	1.10
blue-banded goby	7/20/01	7	7	4.29	4.35	0.86	0.90
blue-banded goby	8/17/01	6	6	5.67	4.59	1.50	1.22
c-o turbot	7/20/01	7	1	10.00		1.00	
California scorpionfish	8/17/01	6	1	10.00		2.00	
California sheephead,	7/20/01	7	7	9.14	0.90	2.14	0.38
California sheephead,	8/17/01	6	6	9.50	0.84	2.17	0.41
California sheephead,	7/20/01	7	7	2.00	3.46	0.29	0.49
California sheephead,	8/17/01	6	6	0.00	0.00	0.00	0.00
California sheephead,	7/20/01	7	7	5.00	4.80	0.71	0.76
California sheephead,	8/17/01	6	6	0.00	0.00	0.00	0.00
garibaldi, adult	7/20/01	7	7	9.57	0.53	2.71	0.49
garibaldi, adult	8/17/01	6	6	10.00	0.00	2.67	0.52
garibaldi, juvenile	7/20/01	7	7	2.43	4.24	0.43	0.79
garibaldi, juvenile	8/17/01	6	6	2.83	4.49	0.50	0.84
giant kelpfish	7/20/01	7	3	7.00	2.65	1.67	1.15
giant kelpfish	8/17/01	6	5	7.00	2.35	2.00	0.71
halfmoon	7/20/01	7	7	9.43	0.79	2.86	0.38
halfmoon	8/17/01	6	6	9.00	1.26	2.50	0.84
island kelpfish	7/20/01	7	7	9.14	1.07	2.57	0.79
island kelpfish	8/17/01	6	6	9.50	0.84	3.17	0.41
kelp bass, adult	7/20/01	7	7	10.00	0.00	3.00	0.00
kelp bass, adult	8/17/01	6	5	9.40	0.55	2.40	0.55
kelp bass, calico bass, all	7/20/01	7	7	10.00	0.00	3.00	0.00
kelp bass, calico bass, all	8/17/01	6	6	9.67	0.52	2.50	0.55
kelp bass, juvenile	7/20/01	7	7	3.86	3.89	0.71	0.76
kelp bass, juvenile	8/17/01	6	5	3.20	4.60	0.40	0.55
kelp rockfish, adult	7/20/01	7	7	3.14	4.02	0.86	1.07
kelp rockfish, adult	8/17/01	6	5	0.00	0.00	0.00	0.00
kelp rockfish, all	7/20/01	7	7	3.14	4.02	0.86	1.07
kelp rockfish, all	8/17/01	6	6	0.83	2.04	0.33	0.82
kelp rockfish, juvenile	7/20/01	7	7	0.00	0.00	0.00	0.00

2001 ROVING DIVER FISH COUNT:

kelp rockfish, juvenile	**8/17/01**	6	5	0.00	0.00	0.00	0.00
kelp surfperch	**7/20/01**	7	6	7.50	2.07	1.83	0.41
kelp surfperch	**8/17/01**	6	6	8.50	1.52	3.00	0.63
kelpfish spp.	**7/20/01**	7	1	10.00		1.00	
kelpfish spp.	**8/17/01**	6	4	7.00	2.45	1.25	0.50
lavender sculpin	**7/20/01**	7	1	6.00		1.00	
olive rockfish, adult	**7/20/01**	7	7	0.00	0.00	0.00	0.00
olive rockfish, adult	**8/17/01**	6	5	1.40	3.13	0.60	1.34
olive rockfish, all	**7/20/01**	7	7	0.00	0.00	0.00	0.00
olive rockfish, all	**8/17/01**	6	6	1.17	2.86	0.50	1.22
olive/yellowtail rockfish,	**7/20/01**	7	7	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	**8/17/01**	6	5	0.00	0.00	0.00	0.00
opaleye, adult	**7/20/01**	7	7	9.71	0.49	3.00	0.00
opaleye, adult	**8/17/01**	6	5	9.60	0.55	3.00	0.00
opaleye, all	**7/20/01**	7	7	9.71	0.49	3.00	0.00
opaleye, all	**8/17/01**	6	6	9.50	0.55	3.00	0.00
opaleye, juvenile	**7/20/01**	7	7	0.00	0.00	0.00	0.00
opaleye, juvenile	**8/17/01**	6	5	0.00	0.00	0.00	0.00
painted greenling	**7/20/01**	7	7	9.14	0.90	2.29	0.49
painted greenling	**8/17/01**	6	6	8.50	1.38	2.33	0.52
pile surfperch, adult	**7/20/01**	7	7	0.00	0.00	0.00	0.00
pile surfperch, adult	**8/17/01**	6	5	0.00	0.00	0.00	0.00
pile surfperch, all	**7/20/01**	7	7	0.00	0.00	0.00	0.00
pile surfperch, all	**8/17/01**	6	6	0.83	2.04	0.33	0.82
pile surfperch, juvenile	**7/20/01**	7	7	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**8/17/01**	6	5	0.00	0.00	0.00	0.00
rock wrasse, female	**7/20/01**	7	7	8.71	1.25	2.14	0.38
rock wrasse, female	**8/17/01**	6	6	8.17	1.60	2.00	0.00
rock wrasse, male	**7/20/01**	7	7	7.57	2.15	1.86	0.38
rock wrasse, male	**8/17/01**	6	6	7.83	1.60	1.67	0.52
rubberlip surfperch	**7/20/01**	7	1	5.00		1.00	
sargo	**7/20/01**	7	1	10.00		1.00	
sculpin spp.	**7/20/01**	7	1	8.00		1.00	
senorita, adult	**7/20/01**	7	7	9.57	1.13	3.00	0.00
senorita, adult	**8/17/01**	6	5	9.80	0.45	2.80	0.45
senorita, all	**7/20/01**	7	7	9.57	1.13	3.00	0.00
senorita, all	**8/17/01**	6	6	9.67	0.52	2.83	0.41
senorita, juvenile	**7/20/01**	7	7	0.00	0.00	0.00	0.00
senorita, juvenile	**8/17/01**	6	5	4.00	4.18	1.20	1.30
snubnose sculpin	**8/17/01**	6	1	6.00		1.00	
speckled sanddab	**7/20/01**	7	1	8.00		2.00	
speckled sanddab	**8/17/01**	6	1	9.00		2.00	
striped surfperch, adult	**7/20/01**	7	7	0.00	0.00	0.00	0.00
striped surfperch, adult	**8/17/01**	6	5	0.00	0.00	0.00	0.00
striped surfperch, all	**7/20/01**	7	7	0.00	0.00	0.00	0.00
striped surfperch, all	**8/17/01**	6	6	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**7/20/01**	7	7	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**8/17/01**	6	5	0.00	0.00	0.00	0.00
swell shark	**8/17/01**	6	2	8.50	2.12	1.00	0.00
top smelt	**7/20/01**	7	4	9.50	0.58	2.50	0.58
top smelt	**8/17/01**	6	2	7.50	3.54	1.00	0.00
treefish, adult	**7/20/01**	7	7	2.14	3.93	0.29	0.49
treefish, adult	**8/17/01**	6	6	4.33	3.44	0.83	0.75
treefish, juvenile	**7/20/01**	7	7	2.29	3.90	0.43	0.79
treefish, juvenile	**8/17/01**	6	6	2.00	3.16	0.33	0.52
zebra goby	**7/20/01**	7	2	8.00	2.83	2.00	0.00
zebra goby	**8/17/01**	6	3	8.00	1.73	1.67	0.58

2001 ROVING DIVER FISH COUNT:

Santa Barbara Island - SE Sea Lion Rookery

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	6/12/01	4	2	8.50	0.71	1.50	0.71
bat ray	8/27/01	7	1	8.00		1.00	
black surfperch, adult	6/12/01	4	3	0.00	0.00	0.00	0.00
black surfperch, adult	8/27/01	7	6	0.00	0.00	0.00	0.00
black surfperch, all	6/12/01	4	4	0.00	0.00	0.00	0.00
black surfperch, all	8/27/01	7	7	0.00	0.00	0.00	0.00
black surfperch, juvenile	6/12/01	4	3	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/27/01	7	6	0.00	0.00	0.00	0.00
blackeye goby	6/12/01	4	4	10.00	0.00	3.50	0.58
blackeye goby	8/27/01	7	7	9.71	0.49	3.57	0.53
blacksmith, adult	6/12/01	4	3	9.33	1.15	4.00	0.00
blacksmith, adult	8/27/01	7	6	9.50	0.55	3.67	0.52
blacksmith, all	6/12/01	4	4	9.50	1.00	3.75	0.50
blacksmith, all	8/27/01	7	7	9.43	0.53	3.57	0.53
blacksmith, juvenile	6/12/01	4	3	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/27/01	7	6	7.67	3.78	1.83	0.98
blue rockfish, adult	6/12/01	4	3	0.00	0.00	0.00	0.00
blue rockfish, adult	8/27/01	7	6	0.00	0.00	0.00	0.00
blue rockfish, all	6/12/01	4	4	0.00	0.00	0.00	0.00
blue rockfish, all	8/27/01	7	7	0.00	0.00	0.00	0.00
blue rockfish, juvenile	6/12/01	4	3	0.00	0.00	0.00	0.00
blue rockfish, juvenile	8/27/01	7	6	0.00	0.00	0.00	0.00
blue-banded goby	6/12/01	4	4	0.00	0.00	0.00	0.00
blue-banded goby	8/27/01	7	7	0.00	0.00	0.00	0.00
cabezon	8/27/01	7	1	9.00		1.00	
California halibut	6/12/01	4	1	9.00		1.00	
California sheephead,	6/12/01	4	4	9.25	0.50	2.00	0.00
California sheephead,	8/27/01	7	7	4.71	4.57	1.14	1.07
California sheephead,	6/12/01	4	4	0.00	0.00	0.00	0.00
California sheephead,	8/27/01	7	7	0.00	0.00	0.00	0.00
California sheephead,	6/12/01	4	4	0.00	0.00	0.00	0.00
California sheephead,	8/27/01	7	7	0.00	0.00	0.00	0.00
coralline sculpin	8/27/01	7	3	6.33	0.58	1.00	0.00
garibaldi, adult	6/12/01	4	4	8.75	1.89	2.00	0.00
garibaldi, adult	8/27/01	7	7	9.57	0.53	2.00	0.00
garibaldi, juvenile	6/12/01	4	4	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/27/01	7	7	0.00	0.00	0.00	0.00
island kelpfish	6/12/01	4	4	8.50	1.00	2.50	0.58
island kelpfish	8/27/01	7	7	8.86	1.07	2.29	0.49
kelp bass, adult	6/12/01	4	3	5.00	4.58	1.00	1.00
kelp bass, adult	8/27/01	7	6	6.67	3.33	1.50	0.84
kelp bass, calico bass, all	6/12/01	4	4	6.25	4.50	1.25	0.96
kelp bass, calico bass, all	8/27/01	7	7	6.86	3.08	1.57	0.79
kelp bass, juvenile	6/12/01	4	3	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/27/01	7	6	0.00	0.00	0.00	0.00
kelp rockfish, adult	6/12/01	4	3	0.00	0.00	0.00	0.00
kelp rockfish, adult	8/27/01	7	6	0.00	0.00	0.00	0.00
kelp rockfish, all	6/12/01	4	4	0.00	0.00	0.00	0.00
kelp rockfish, all	8/27/01	7	7	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	6/12/01	4	3	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/27/01	7	6	0.00	0.00	0.00	0.00
ocean whitefish	6/12/01	4	3	8.00	1.00	1.33	0.58
ocean whitefish	8/27/01	7	1	8.00		1.00	
olive rockfish, adult	6/12/01	4	3	0.00	0.00	0.00	0.00

olive rockfish, adult	**8/27/01**	7	6	0.00	0.00	0.00	0.00
olive rockfish, all	**6/12/01**	4	4	0.00	0.00	0.00	0.00
olive rockfish, all	**8/27/01**	7	7	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	**6/12/01**	4	3	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	**8/27/01**	7	6	0.00	0.00	0.00	0.00
opaleye, adult	**6/12/01**	4	3	8.67	2.31	2.00	0.00
opaleye, adult	**8/27/01**	7	6	5.50	4.28	1.17	0.98
opaleye, all	**6/12/01**	4	4	8.50	1.91	2.00	0.00
opaleye, all	**8/27/01**	7	7	5.86	4.02	1.43	1.13
opaleye, juvenile	**6/12/01**	4	3	0.00	0.00	0.00	0.00
opaleye, juvenile	**8/27/01**	7	6	0.00	0.00	0.00	0.00
painted greenling	**6/12/01**	4	4	9.50	0.58	2.00	0.00
painted greenling	**8/27/01**	7	7	9.29	0.76	2.00	0.00
pile surfperch, adult	**6/12/01**	4	3	0.00	0.00	0.00	0.00
pile surfperch, adult	**8/27/01**	7	6	0.00	0.00	0.00	0.00
pile surfperch, all	**6/12/01**	4	4	0.00	0.00	0.00	0.00
pile surfperch, all	**8/27/01**	7	7	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**6/12/01**	4	3	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**8/27/01**	7	6	0.00	0.00	0.00	0.00
rock wrasse, female	**6/12/01**	4	4	4.50	5.26	1.00	1.15
rock wrasse, female	**8/27/01**	7	7	6.57	3.21	1.14	0.69
rock wrasse, male	**6/12/01**	4	4	8.50	0.58	1.50	0.58
rock wrasse, male	**8/27/01**	7	7	2.29	3.90	0.29	0.49
roughcheek sculpin	**6/12/01**	4	1	8.00		2.00	
sculpin spp.	**8/27/01**	7	1	9.00		2.00	
senorita, adult	**6/12/01**	4	3	8.33	1.53	3.33	0.58
senorita, adult	**8/27/01**	7	6	3.00	4.69	1.17	1.83
senorita, all	**6/12/01**	4	4	8.25	1.26	3.50	0.58
senorita, all	**8/27/01**	7	7	9.29	0.95	3.43	0.79
senorita, juvenile	**6/12/01**	4	3	0.00	0.00	0.00	0.00
senorita, juvenile	**8/27/01**	7	6	9.33	1.03	3.33	0.82
snubnose sculpin	**6/12/01**	4	2	6.50	2.12	1.50	0.71
snubnose sculpin	**8/27/01**	7	4	7.50	1.29	1.25	0.50
striped surfperch, adult	**6/12/01**	4	3	0.00	0.00	0.00	0.00
striped surfperch, adult	**8/27/01**	7	6	0.00	0.00	0.00	0.00
striped surfperch, all	**6/12/01**	4	4	0.00	0.00	0.00	0.00
striped surfperch, all	**8/27/01**	7	7	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**6/12/01**	4	3	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**8/27/01**	7	6	0.00	0.00	0.00	0.00
treefish, adult	**6/12/01**	4	4	0.00	0.00	0.00	0.00
treefish, adult	**8/27/01**	7	7	0.00	0.00	0.00	0.00
treefish, juvenile	**6/12/01**	4	4	0.00	0.00	0.00	0.00
treefish, juvenile	**8/27/01**	7	7	0.00	0.00	0.00	0.00

2001 ROVING DIVER FISH COUNT:

Santa Barbara Island - Arch Point

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	6/11/01	4	2	9.50	0.71	1.50	0.71
black surfperch, adult	6/11/01	4	3	0.00	0.00	0.00	0.00
black surfperch, adult	8/28/01	7	6	1.33	3.27	0.33	0.82
black surfperch, all	6/11/01	4	4	0.00	0.00	0.00	0.00
black surfperch, all	8/28/01	7	7	1.14	3.02	0.29	0.76
black surfperch, juvenile	6/11/01	4	3	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/28/01	7	6	0.00	0.00	0.00	0.00
blackeye goby	6/11/01	4	4	8.75	0.50	2.50	1.00
blackeye goby	8/28/01	7	7	7.14	3.44	3.00	1.53
blacksmith, adult	6/11/01	4	3	10.00	0.00	4.00	0.00
blacksmith, adult	8/28/01	7	6	10.00	0.00	4.00	0.00
blacksmith, all	6/11/01	4	4	10.00	0.00	4.00	0.00
blacksmith, all	8/28/01	7	7	10.00	0.00	4.00	0.00
blacksmith, juvenile	6/11/01	4	3	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/28/01	7	6	9.83	0.41	4.00	0.00
blue rockfish, adult	6/11/01	4	3	0.00	0.00	0.00	0.00
blue rockfish, adult	8/28/01	7	6	0.00	0.00	0.00	0.00
blue rockfish, all	6/11/01	4	4	0.00	0.00	0.00	0.00
blue rockfish, all	8/28/01	7	7	0.00	0.00	0.00	0.00
blue rockfish, juvenile	6/11/01	4	3	0.00	0.00	0.00	0.00
blue rockfish, juvenile	8/28/01	7	6	0.00	0.00	0.00	0.00
blue-banded goby	6/11/01	4	4	0.00	0.00	0.00	0.00
blue-banded goby	8/28/01	7	7	0.00	0.00	0.00	0.00
cabezon	8/28/01	7	1	10.00		1.00	
California moray	8/28/01	7	1	5.00		1.00	
California sheephead,	6/11/01	4	4	10.00	0.00	2.25	0.50
California sheephead,	8/28/01	7	7	10.00	0.00	2.00	0.00
California sheephead,	6/11/01	4	4	0.00	0.00	0.00	0.00
California sheephead,	8/28/01	7	7	0.00	0.00	0.00	0.00
California sheephead,	6/11/01	4	4	4.50	5.20	0.50	0.58
California sheephead,	8/28/01	7	7	5.14	4.10	1.14	0.90
coralline sculpin	6/11/01	4	1	5.00		1.00	
coralline sculpin	8/28/01	7	1	7.00		1.00	
garibaldi, adult	6/11/01	4	4	10.00	0.00	3.00	0.00
garibaldi, adult	8/28/01	7	7	10.00	0.00	3.00	0.00
garibaldi, juvenile	6/11/01	4	4	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/28/01	7	7	1.29	3.40	0.14	0.38
grass rockfish	8/28/01	7	2	6.50	0.71	1.00	0.00
halfmoon	8/28/01	7	7	8.86	0.69	1.86	0.38
island kelpfish	6/11/01	4	4	6.75	4.72	2.25	1.50
island kelpfish	8/28/01	7	7	8.00	1.83	2.14	0.38
kelp bass, adult	6/11/01	4	3	9.67	0.58	2.00	0.00
kelp bass, adult	8/28/01	7	6	8.00	4.00	1.67	1.03
kelp bass, calico bass, all	6/11/01	4	4	9.75	0.50	2.25	0.50
kelp bass, calico bass, all	8/28/01	7	7	8.29	3.73	1.71	0.95
kelp bass, juvenile	6/11/01	4	3	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/28/01	7	6	0.00	0.00	0.00	0.00
kelp rockfish, adult	6/11/01	4	3	0.00	0.00	0.00	0.00
kelp rockfish, adult	8/28/01	7	6	0.00	0.00	0.00	0.00
kelp rockfish, all	6/11/01	4	4	0.00	0.00	0.00	0.00
kelp rockfish, all	8/28/01	7	7	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	6/11/01	4	3	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	8/28/01	7	6	0.00	0.00	0.00	0.00
olive rockfish, adult	6/11/01	4	3	0.00	0.00	0.00	0.00

2001 ROVING DIVER FISH COUNT:

olive rockfish, adult	**8/28/01**	7	6	0.00	0.00	0.00	0.00
olive rockfish, all	**6/11/01**	4	4	0.00	0.00	0.00	0.00
olive rockfish, all	**8/28/01**	7	7	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	**6/11/01**	4	3	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	**8/28/01**	7	6	0.00	0.00	0.00	0.00
opaleye, adult	**6/11/01**	4	3	9.33	0.58	2.00	0.00
opaleye, adult	**8/28/01**	7	6	9.33	0.82	2.50	0.55
opaleye, all	**6/11/01**	4	4	9.25	0.50	2.00	0.00
opaleye, all	**8/28/01**	7	7	9.29	0.76	2.43	0.53
opaleye, juvenile	**6/11/01**	4	3	0.00	0.00	0.00	0.00
opaleye, juvenile	**8/28/01**	7	6	0.00	0.00	0.00	0.00
painted greenling	**6/11/01**	4	4	10.00	0.00	2.50	0.58
painted greenling	**8/28/01**	7	7	9.43	0.53	2.43	0.53
pile surfperch, adult	**6/11/01**	4	3	3.33	5.77	1.00	1.73
pile surfperch, adult	**8/28/01**	7	6	0.00	0.00	0.00	0.00
pile surfperch, all	**6/11/01**	4	4	2.50	5.00	0.75	1.50
pile surfperch, all	**8/28/01**	7	7	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**6/11/01**	4	3	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**8/28/01**	7	6	0.00	0.00	0.00	0.00
rock wrasse, female	**6/11/01**	4	4	4.00	4.90	1.00	1.15
rock wrasse, female	**8/28/01**	7	7	9.00	0.58	2.00	0.00
rock wrasse, male	**6/11/01**	4	4	4.75	5.50	0.50	0.58
rock wrasse, male	**8/28/01**	7	7	9.43	0.79	1.86	0.38
senorita, adult	**6/11/01**	4	3	10.00	0.00	2.33	0.58
senorita, adult	**8/28/01**	7	6	9.67	0.52	2.67	1.21
senorita, all	**6/11/01**	4	4	10.00	0.00	2.25	0.50
senorita, all	**8/28/01**	7	7	9.86	0.38	3.86	0.38
senorita, juvenile	**6/11/01**	4	3	0.00	0.00	0.00	0.00
senorita, juvenile	**8/28/01**	7	6	9.00	0.89	3.83	0.41
snubnose sculpin	**8/28/01**	7	4	7.50	1.29	1.25	0.50
striped surfperch, adult	**6/11/01**	4	3	0.00	0.00	0.00	0.00
striped surfperch, adult	**8/28/01**	7	6	0.00	0.00	0.00	0.00
striped surfperch, all	**6/11/01**	4	4	0.00	0.00	0.00	0.00
striped surfperch, all	**8/28/01**	7	7	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**6/11/01**	4	3	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**8/28/01**	7	6	0.00	0.00	0.00	0.00
top smelt	**8/28/01**	7	1	10.00		4.00	
treefish, adult	**6/11/01**	4	4	0.00	0.00	0.00	0.00
treefish, adult	**8/28/01**	7	7	1.00	2.65	0.14	0.38
treefish, juvenile	**6/11/01**	4	4	0.00	0.00	0.00	0.00
treefish, juvenile	**8/28/01**	7	7	0.71	1.89	0.14	0.38

2001 ROVING DIVER FISH COUNT:

Santa Barbara Island - Cat Canyon

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	8/28/01	6	3	8.67	2.31	1.00	0.00
black surfperch, adult	6/13/01	6	5	3.00	4.12	0.60	0.89
black surfperch, adult	8/28/01	6	5	8.60	1.52	2.00	0.00
black surfperch, all	6/13/01	6	6	2.50	3.89	0.50	0.84
black surfperch, all	8/28/01	6	6	8.33	1.51	1.83	0.41
black surfperch, juvenile	6/13/01	6	5	0.00	0.00	0.00	0.00
black surfperch, juvenile	8/28/01	6	5	0.00	0.00	0.00	0.00
blackeye goby	6/13/01	6	6	9.33	1.21	2.67	0.52
blackeye goby	8/28/01	6	6	8.67	1.37	2.17	0.41
blacksmith, adult	6/13/01	6	5	9.80	0.45	4.00	0.00
blacksmith, adult	8/28/01	6	5	10.00	0.00	4.00	0.00
blacksmith, all	6/13/01	6	6	9.67	0.52	4.00	0.00
blacksmith, all	8/28/01	6	6	10.00	0.00	4.00	0.00
blacksmith, juvenile	6/13/01	6	5	0.00	0.00	0.00	0.00
blacksmith, juvenile	8/28/01	6	5	3.80	5.22	1.20	1.79
blue rockfish, adult	6/13/01	6	5	1.60	3.58	0.20	0.45
blue rockfish, adult	8/28/01	6	5	0.00	0.00	0.00	0.00
blue rockfish, all	6/13/01	6	6	3.67	4.03	0.50	0.55
blue rockfish, all	8/28/01	6	6	0.00	0.00	0.00	0.00
blue rockfish, juvenile	6/13/01	6	5	2.80	3.83	0.40	0.55
blue rockfish, juvenile	8/28/01	6	5	0.00	0.00	0.00	0.00
blue-banded goby	6/13/01	6	6	0.00	0.00	0.00	0.00
blue-banded goby	8/28/01	6	6	0.00	0.00	0.00	0.00
c-o turbot	8/28/01	6	2	8.50	0.71	1.00	0.00
California halibut	6/13/01	6	2	6.00	1.41	1.00	0.00
California sheephead,	6/13/01	6	6	9.33	0.82	2.00	0.00
California sheephead,	8/28/01	6	6	9.83	0.41	2.17	0.41
California sheephead,	6/13/01	6	6	0.00	0.00	0.00	0.00
California sheephead,	8/28/01	6	6	1.67	4.08	0.33	0.82
California sheephead,	6/13/01	6	6	1.67	4.08	0.17	0.41
California sheephead,	8/28/01	6	6	0.00	0.00	0.00	0.00
clingfish spp.	6/13/01	6	1	8.00		1.00	
coralline sculpin	6/13/01	6	1	7.00		1.00	
fringehead spp.	6/13/01	6	1	5.00		1.00	
garibaldi, adult	6/13/01	6	6	10.00	0.00	3.00	0.00
garibaldi, adult	8/28/01	6	6	10.00	0.00	3.00	0.00
garibaldi, juvenile	6/13/01	6	6	0.00	0.00	0.00	0.00
garibaldi, juvenile	8/28/01	6	6	0.00	0.00	0.00	0.00
giant kelpfish	6/13/01	6	1	6.00		1.00	
grass rockfish	6/13/01	6	2	7.00	1.41	1.00	0.00
grass rockfish	8/28/01	6	3	8.00	1.00	1.67	0.58
halfmoon	6/13/01	6	6	8.67	1.97	2.17	0.41
halfmoon	8/28/01	6	6	9.67	0.52	2.50	0.55
island kelpfish	6/13/01	6	6	9.17	0.75	2.17	0.41
island kelpfish	8/28/01	6	6	8.83	1.17	2.50	0.55
kelp bass, adult	6/13/01	6	5	9.00	1.73	1.60	0.55
kelp bass, adult	8/28/01	6	5	9.20	0.84	2.40	0.55
kelp bass, calico bass, all	6/13/01	6	6	8.67	1.75	1.67	0.52
kelp bass, calico bass, all	8/28/01	6	6	9.33	0.82	2.33	0.52
kelp bass, juvenile	6/13/01	6	5	0.00	0.00	0.00	0.00
kelp bass, juvenile	8/28/01	6	5	0.00	0.00	0.00	0.00
kelp rockfish, adult	6/13/01	6	5	5.00	4.64	0.80	0.84
kelp rockfish, adult	8/28/01	6	5	3.00	4.12	0.80	1.10
kelp rockfish, all	6/13/01	6	6	4.17	4.62	0.67	0.82

kelp rockfish, all	**8/28/01**	6	6	3.67	4.03	1.00	1.10
kelp rockfish, juvenile	**6/13/01**	6	5	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	**8/28/01**	6	5	0.00	0.00	0.00	0.00
kelpfish spp.	**6/13/01**	6	1	6.00		1.00	
olive rockfish, adult	**6/13/01**	6	5	0.00	0.00	0.00	0.00
olive rockfish, adult	**8/28/01**	6	5	0.00	0.00	0.00	0.00
olive rockfish, all	**6/13/01**	6	6	0.00	0.00	0.00	0.00
olive rockfish, all	**8/28/01**	6	6	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	**6/13/01**	6	5	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	**8/28/01**	6	5	0.00	0.00	0.00	0.00
opaleye, adult	**6/13/01**	6	5	10.00	0.00	3.00	0.00
opaleye, adult	**8/28/01**	6	5	10.00	0.00	3.00	0.00
opaleye, all	**6/13/01**	6	6	10.00	0.00	3.00	0.00
opaleye, all	**8/28/01**	6	6	10.00	0.00	3.00	0.00
opaleye, juvenile	**6/13/01**	6	5	0.00	0.00	0.00	0.00
opaleye, juvenile	**8/28/01**	6	5	0.00	0.00	0.00	0.00
painted greenling	**6/13/01**	6	6	9.50	0.84	2.00	0.63
painted greenling	**8/28/01**	6	6	7.50	2.17	1.83	0.41
pile surfperch, adult	**6/13/01**	6	5	1.20	2.68	0.20	0.45
pile surfperch, adult	**8/28/01**	6	5	0.00	0.00	0.00	0.00
pile surfperch, all	**6/13/01**	6	6	1.00	2.45	0.17	0.41
pile surfperch, all	**8/28/01**	6	6	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**6/13/01**	6	5	0.00	0.00	0.00	0.00
pile surfperch, juvenile	**8/28/01**	6	5	0.00	0.00	0.00	0.00
rock wrasse, female	**6/13/01**	6	6	8.83	1.60	2.17	0.41
rock wrasse, female	**8/28/01**	6	6	7.67	3.83	1.67	1.03
rock wrasse, male	**6/13/01**	6	6	7.67	3.93	1.67	0.82
rock wrasse, male	**8/28/01**	6	6	3.83	4.22	0.67	0.82
senorita, adult	**6/13/01**	6	5	10.00	0.00	3.00	0.00
senorita, adult	**8/28/01**	6	5	10.00	0.00	3.40	0.55
senorita, all	**6/13/01**	6	6	10.00	0.00	3.00	0.00
senorita, all	**8/28/01**	6	6	10.00	0.00	3.67	0.52
senorita, juvenile	**6/13/01**	6	5	0.00	0.00	0.00	0.00
senorita, juvenile	**8/28/01**	6	5	8.40	2.07	3.80	0.45
snubnose sculpin	**6/13/01**	6	3	7.00	1.00	1.33	0.58
striped surfperch, adult	**6/13/01**	6	5	0.00	0.00	0.00	0.00
striped surfperch, adult	**8/28/01**	6	5	0.00	0.00	0.00	0.00
striped surfperch, all	**6/13/01**	6	6	0.00	0.00	0.00	0.00
striped surfperch, all	**8/28/01**	6	6	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**6/13/01**	6	5	0.00	0.00	0.00	0.00
striped surfperch, juvenile	**8/28/01**	6	5	0.00	0.00	0.00	0.00
treefish, adult	**6/13/01**	6	6	1.33	3.27	0.17	0.41
treefish, adult	**8/28/01**	6	6	0.00	0.00	0.00	0.00
treefish, juvenile	**6/13/01**	6	6	1.67	4.08	0.17	0.41
treefish, juvenile	**8/28/01**	6	6	0.00	0.00	0.00	0.00

Appendix G: Natural Habitat Size Frequencies Distributions

2001 Natural Habitat Size Frequency Distributions

San Miguel Island - Wyckoff Ledge

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	8.7%
40 - 49	6.5%
50 - 59	15.2%
60 - 69	17.4%
70 - 79	23.9%
80 - 89	19.6%
90 - 99	4.3%
> 99	4.3%
(Cases) N=	46
mean	68
min size (mm)	31
max size (mm)	106

Haliotis rufescens

<25	0.0%
25 - 34	0.0%
35 - 44	1.6%
45 - 54	3.1%
55 - 64	3.1%
65 - 74	0.0%
75 - 84	0.0%
85 - 94	1.6%
95 - 104	1.6%
105 - 114	1.6%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	6.3%
145 - 154	6.3%
155 - 164	14.1%
165 - 174	18.8%
175 - 184	18.8%
185 - 194	12.5%
>195	10.9%
(Cases) N=	64
mean	161
min size (mm)	43
max size (mm)	216

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	1.9%
60 - 69	9.6%
70 - 79	7.7%
80 - 89	19.2%
90 - 99	50.0%
100 - 109	9.6%
110 - 119	1.9%
120 - 129	0.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	52
mean	89
min size (mm)	59
max size (mm)	114

Lithopoma gibberosum

<10	0.0%
10 - 19	0.0%
20 - 29	15.7%
30 - 39	28.6%
40 - 49	14.3%
50 - 59	28.6%
60 - 69	12.9%
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=	70
mean	44
min size (mm)	25
max size (mm)	65

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	7.7%
40 - 49	7.7%
50 - 59	7.7%
60 - 69	15.4%
70 - 79	0.0%
80 - 89	23.1%
90 - 99	7.7%
100 - 109	7.7%
110 - 119	0.0%
120 - 129	15.4%
130 - 139	7.7%
> 139	0.0%
(Cases) N=	13
mean	84
min size (mm)	37
max size (mm)	132

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	5.4%
40 - 49	0.0%
50 - 59	18.9%
60 - 69	27.0%
70 - 79	27.0%
80 - 89	21.6%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	37
mean	68
min size (mm)	32
max size (mm)	87

2001 Natural Habitat Size Frequency Distributions

San Miguel Island - Wyckoff Ledge

Pisaster giganteus

< 20	0.0%
20 - 39	12.5%
40 - 59	50.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	12.5%
120 - 139	0.0%
140 - 159	12.5%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	12.5%
(Cases) N=	8
mean	98
min size (mm)	38
max size (mm)	266

Pycnopodia helianthoides

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	20.0%
80 - 99	20.0%
100 - 119	20.0%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	20.0%
200 - 219	0.0%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	20.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	5
mean	146
min size (mm)	74
max size (mm)	272

S. franciscanus

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	1.5%
20 - 24	5.0%
25 - 29	5.9%
30 - 34	5.0%
35 - 39	2.5%
40 - 44	2.5%
45 - 49	4.5%
50 - 54	5.9%
55 - 59	4.5%
60 - 64	5.4%
65 - 69	6.9%
70 - 74	7.4%
75 - 79	11.4%
80 - 84	16.8%
85 - 89	7.9%
90 - 94	5.0%
95 - 99	0.5%
100 - 104	1.0%
105 - 109	0.5%
> 109	0.0%
(Cases) N=	202
mean	64
min size (mm)	15
max size (mm)	105

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	0.0%
10 - 14	1.0%
15 - 19	5.4%
20 - 24	9.4%
25 - 29	5.9%
30 - 34	7.9%
35 - 39	13.4%
40 - 44	18.8%
45 - 49	10.4%
50 - 54	15.3%
55 - 59	6.9%
60 - 64	4.5%
65 - 69	0.5%
70 - 74	0.5%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	202
mean	40
min size (mm)	12
max size (mm)	71

2001 Natural Habitat Size Frequency Distributions

San Miguel Island - Hare Rock

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	100.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	1
mean	108
min size (mm)	108
max size (mm)	108

Crassedoma giganteum

<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	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	50.0%
120 - 129	50.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	2
mean	120
min size (mm)	115
max size (mm)	124

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	3.1%
30 - 39	15.6%
40 - 49	25.0%
50 - 59	14.1%
60 - 69	28.1%
70 - 79	9.4%
80 - 89	3.1%
90 - 99	0.0%
> 99	1.6%
(Cases) N=	64
mean	54
min size (mm)	28
max size (mm)	137

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	10.6%
60 - 79	39.4%
80 - 99	19.7%
100 - 119	15.2%
120 - 139	10.6%
140 - 159	1.5%
160 - 179	3.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	66
mean	88
min size (mm)	43
max size (mm)	177

Pycnopodia helianthoides

< 20	0.0%
20 - 39	0.0%
40 - 59	1.6%
60 - 79	3.1%
80 - 99	6.3%
100 - 119	25.0%
120 - 139	21.9%
140 - 159	7.8%
160 - 179	4.7%
180 - 199	1.6%
200 - 219	6.3%
220 - 239	4.7%
240 - 259	7.8%
260 - 279	4.7%
280 - 299	3.1%
> 299	1.6%
(Cases) N=	64
mean	154
min size (mm)	54
max size (mm)	315

S. franciscanus

< 5	0.0%
5 - 9	0.9%
10 - 14	1.9%
15 - 19	4.6%
20 - 24	9.3%
25 - 29	10.2%
30 - 34	7.9%
35 - 39	8.3%
40 - 44	12.0%
45 - 49	2.8%
50 - 54	5.6%
55 - 59	5.1%
60 - 64	7.9%
60 - 64	7.9%
65 - 69	6.5%
70 - 74	8.3%
75 - 79	4.6%
80 - 84	2.8%
85 - 89	1.4%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	216
mean	46
min size (mm)	9
max size (mm)	88

2001 Natural Habitat Size Frequency Distributions

San Miguel Island - Hare Rock

Strongylocentrotus purpuratus

< 5	0.3%
5 - 9	0.3%
10 - 14	7.9%
15 - 19	25.2%
20 - 24	20.7%
25 - 29	13.4%
30 - 34	14.1%
35 - 39	10.3%
40 - 44	3.8%
45 - 49	3.1%
50 - 54	0.7%
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=	290
mean	25
min size (mm)	4
max size (mm)	52

2001 Natural Habitat Size Frequency Distributions

Santa Rosa Island - Johnson's Lee North

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	2.3%
30 - 39	0.0%
40 - 49	4.7%
50 - 59	34.9%
60 - 69	14.0%
70 - 79	23.3%
80 - 89	11.6%
90 - 99	7.0%
> 99	2.3%
(Cases) N=	43
mean	67
min size (mm)	26
max size (mm)	104

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	3.6%
30 - 39	7.1%
40 - 49	17.9%
50 - 59	21.4%
60 - 69	25.0%
70 - 79	17.9%
80 - 89	3.6%
90 - 99	3.6%
> 99	0.0%
(Cases) N=	28
mean	59
min size (mm)	29
max size (mm)	90

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	30.0%
60 - 79	25.0%
80 - 99	26.7%
100 - 119	15.0%
120 - 139	3.3%
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=	60
mean	77
min size (mm)	43
max size (mm)	122

Pycnopodia helianthoides

< 20	0.0%
20 - 39	0.0%
40 - 59	6.7%
60 - 79	11.8%
80 - 99	29.4%
100 - 119	23.5%
120 - 139	18.5%
140 - 159	7.6%
160 - 179	0.8%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
240 - 259	0.8%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.8%
(Cases) N=	119
mean	106
min size (mm)	42
max size (mm)	333

S. franciscanus

< 5	0.0%
5 - 9	0.5%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.5%
40 - 44	4.0%
45 - 49	7.5%
50 - 54	13.6%
55 - 59	12.1%
60 - 64	15.6%
65 - 69	6.0%
70 - 74	12.6%
75 - 79	7.5%
80 - 84	12.1%
85 - 89	4.5%
90 - 94	2.0%
95 - 99	1.0%
100 - 104	0.0%
105 - 109	0.5%
> 109	0.0%
(Cases) N=	199
mean	65
min size (mm)	7
max size (mm)	108

Strongylocentrotus purpuratus

< 5	0.4%
5 - 9	1.3%
10 - 14	0.0%
15 - 19	0.4%
20 - 24	2.1%
25 - 29	9.6%
30 - 34	17.9%
35 - 39	22.9%
40 - 44	25.0%
45 - 49	11.7%
50 - 54	5.4%
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=	240
mean	38
min size (mm)	4
max size (mm)	61

2001 Natural Habitat Size Frequency Distributions

Santa Rosa Island - Johnson's Lee South

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	0.9%
30 - 39	8.7%
40 - 49	17.4%
50 - 59	20.0%
60 - 69	20.0%
70 - 79	17.4%
80 - 89	11.3%
90 - 99	3.5%
> 99	0.9%
(Cases) N=	115
mean	62
min size (mm)	28
max size (mm)	110

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	10.0%
70 - 79	10.0%
80 - 89	20.0%
90 - 99	30.0%
100 - 109	30.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	10
mean	89
min size (mm)	66
max size (mm)	105

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	3.7%
40 - 49	3.7%
50 - 59	29.6%
60 - 69	38.9%
70 - 79	16.7%
80 - 89	5.6%
90 - 99	1.9%
> 99	0.0%
(Cases) N=	54
mean	63
min size (mm)	38
max size (mm)	90

Haliotis rufescens

<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	0.0%
155 - 164	0.0%
165 - 174	33.3%
175 - 184	33.3%
185 - 194	0.0%
>195	33.3%
(Cases) N=	3
mean	182
min size (mm)	169
max size (mm)	199

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	14.3%
60 - 69	28.6%
70 - 79	14.3%
80 - 89	14.3%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	14.3%
120 - 129	0.0%
130 - 139	0.0%
> 139	14.3%
(Cases) N=	7
mean	89
min size (mm)	59
max size (mm)	145

Pisaster giganteus

< 20	0.0%
20 - 39	3.7%
40 - 59	16.0%
60 - 79	42.0%
80 - 99	22.2%
100 - 119	4.9%
120 - 139	4.9%
140 - 159	4.9%
160 - 179	0.0%
180 - 199	1.2%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	81
mean	79
min size (mm)	32
max size (mm)	184

2001 Natural Habitat Size Frequency Distributions

Santa Rosa Island - Johnson's Lee South

Pycnopodia helianthoides

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	1.2%
100 - 119	6.2%
120 - 139	25.9%
140 - 159	28.4%
160 - 179	16.0%
180 - 199	2.5%
200 - 219	8.6%
220 - 239	2.5%
240 - 259	1.2%
260 - 279	2.5%
280 - 299	2.5%
> 299	2.5%
(Cases) N=	81
mean	159
min size (mm)	90
max size (mm)	300

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.5%
20 - 24	2.5%
25 - 29	11.1%
30 - 34	15.1%
35 - 39	20.6%
40 - 44	17.6%
45 - 49	18.1%
50 - 54	6.0%
55 - 59	3.0%
60 - 64	3.0%
65 - 69	2.0%
70 - 74	0.5%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	199
mean	40
min size (mm)	17
max size (mm)	71

S. franciscanus

< 5	0.0%
5 - 9	0.5%
10 - 14	0.5%
15 - 19	6.8%
20 - 24	7.7%
25 - 29	3.9%
30 - 34	3.4%
35 - 39	4.3%
40 - 44	3.9%
45 - 49	7.7%
50 - 54	8.2%
55 - 59	7.7%
60 - 64	9.7%
65 - 69	4.3%
70 - 74	7.7%
75 - 79	5.8%
80 - 84	4.8%
85 - 89	5.3%
90 - 94	4.8%
95 - 99	1.0%
100 - 104	1.4%
105 - 109	0.0%
> 109	0.5%
(Cases) N=	207
mean	56
min size (mm)	9
max size (mm)	112

2001 Natural Habitat Size Frequency Distributions

Santa Rosa Island - Rodes Reef

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	7.1%
30 - 39	14.3%
40 - 49	7.1%
50 - 59	14.3%
60 - 69	14.3%
70 - 79	0.0%
80 - 89	14.3%
90 - 99	28.6%
> 99	0.0%
(Cases) N=	14
mean	64
min size (mm)	26
max size (mm)	95

Kelletia kelletii

< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	50.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	50.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	2
mean	105
min size (mm)	84
max size (mm)	126

Lithopoma undosum

<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	40.0%
70 - 79	40.0%
80 - 89	20.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	5
mean	73
min size (mm)	67
max size (mm)	83

Lithopoma gibberosum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	100.0%
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=	2
mean	53
min size (mm)	52
max size (mm)	53

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	5.3%
70 - 79	47.4%
80 - 89	31.6%
90 - 99	5.3%
100 - 109	5.3%
110 - 119	5.3%
> 119	0.0%
(Cases) N=	19
mean	83
min size (mm)	67
max size (mm)	119

Asterina miniata

<10	0.0%
10 - 19	6.8%
20 - 29	21.9%
30 - 39	23.3%
40 - 49	21.9%
50 - 59	15.1%
60 - 69	5.5%
70 - 79	2.7%
80 - 89	2.7%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	73
mean	41
min size (mm)	12
max size (mm)	82

Pisaster giganteus

< 20	0.0%
20 - 39	3.4%
40 - 59	50.8%
60 - 79	32.2%
80 - 99	10.2%
100 - 119	3.4%
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=	59
mean	59
min size (mm)	31
max size (mm)	102

Pycnopodia helianthoides

< 20	0.0%
20 - 39	4.5%
40 - 59	4.5%
60 - 79	9.1%
80 - 99	15.9%
100 - 119	20.5%
120 - 139	25.0%
140 - 159	9.1%
160 - 179	9.1%
180 - 199	2.3%
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=	44
mean	113
min size (mm)	26
max size (mm)	180

2001 Natural Habitat Size Frequency Distributions

Santa Rosa Island - Rodes Reef

S. franciscanus

< 5	0.0%
5 - 9	0.0%
10 - 14	0.4%
15 - 19	3.0%
20 - 24	4.3%
25 - 29	6.8%
30 - 34	17.1%
35 - 39	15.0%
40 - 44	9.8%
45 - 49	5.6%
50 - 54	8.5%
55 - 59	7.3%
60 - 64	3.0%
65 - 69	4.3%
70 - 74	7.3%
75 - 79	3.0%
80 - 84	2.1%
85 - 89	2.6%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	234
mean	46
min size (mm)	14
max size (mm)	89

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	0.0%
10 - 14	3.7%
15 - 19	11.1%
20 - 24	22.2%
25 - 29	27.8%
30 - 34	17.9%
35 - 39	14.2%
40 - 44	1.9%
45 - 49	1.2%
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=	162
mean	27
min size (mm)	10
max size (mm)	45

2001 Natural Habitat Size Frequency Distributions

Santa Cruz Island - Gull Island South

Lithopoma undosum

<10	0.0%
10 - 19	0.0%
20 - 29	3.3%
30 - 39	13.3%
40 - 49	10.0%
50 - 59	53.3%
60 - 69	16.7%
70 - 79	3.3%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	30
mean	53
min size (mm)	29
max size (mm)	79

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	8.1%
80 - 99	27.4%
100 - 119	37.1%
120 - 139	12.9%
140 - 159	3.2%
160 - 179	4.8%
180 - 199	4.8%
200 - 219	1.6%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	62
mean	114
min size (mm)	67
max size (mm)	211

Lytechinus anamesus

< 5	0.0%
5 - 9	0.5%
10 - 14	0.9%
15 - 19	49.5%
20 - 24	42.0%
25 - 29	5.7%
30 - 34	1.4%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	212
mean	20
min size (mm)	9
max size (mm)	32

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	6.5%
50 - 59	16.1%
60 - 69	35.5%
70 - 79	32.3%
80 - 89	6.5%
90 - 99	3.2%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	62
mean	67
min size (mm)	46
max size (mm)	95

Pycnopodia helianthoides

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	4.2%
120 - 139	0.0%
140 - 159	33.3%
160 - 179	33.3%
180 - 199	20.8%
200 - 219	4.2%
220 - 239	4.2%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	24
mean	169
min size (mm)	116
max size (mm)	225

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	1.6%
30 - 39	9.7%
40 - 49	6.5%
50 - 59	19.4%
60 - 69	25.8%
70 - 79	29.0%
80 - 89	4.8%
90 - 99	3.2%
> 99	0.0%
(Cases) N=	62
mean	62
min size (mm)	27
max size (mm)	91

S. franciscanus

< 5	0.0%
5 - 9	0.0%
10 - 14	0.4%
15 - 19	1.3%
20 - 24	13.2%
25 - 29	42.7%
30 - 34	30.8%
35 - 39	5.7%
40 - 44	2.6%
45 - 49	1.3%
50 - 54	1.3%
55 - 59	0.4%
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=	227
mean	29
min size (mm)	12
max size (mm)	55

2001 Natural Habitat Size Frequency Distributions

Santa Cruz Island - Gull Island South

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	0.0%
10 - 14	23.4%
15 - 19	44.3%
20 - 24	18.4%
25 - 29	8.2%
30 - 34	4.1%
35 - 39	1.6%
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=	244
mean	18
min size (mm)	10
max size (mm)	38

2001 Natural Habitat Size Frequency Distributions

Santa Cruz Island - Fry's Harbor

Lithopoma undosum

<10	0.0%
10 - 19	0.0%
20 - 29	26.9%
30 - 39	53.8%
40 - 49	11.5%
50 - 59	7.7%
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=	26
mean	34
min size (mm)	24
max size (mm)	52

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	7.9%
60 - 69	13.2%
70 - 79	39.5%
80 - 89	26.3%
90 - 99	10.5%
100 - 109	2.6%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	38
mean	77
min size (mm)	55
max size (mm)	100

Lytechinus anamesus

< 5	0.0%
5 - 9	0.0%
10 - 14	1.5%
15 - 19	40.5%
20 - 24	50.8%
25 - 29	7.2%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	195
mean	20
min size (mm)	10
max size (mm)	29

Lithopoma gibberosum

<10	0.0%
10 - 19	0.0%
20 - 29	100.0%
30 - 39	0.0%
40 - 49	0.0%
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	23
min size (mm)	23
max size (mm)	23

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	9.5%
50 - 59	19.0%
60 - 69	38.1%
70 - 79	20.6%
80 - 89	11.1%
90 - 99	1.6%
> 99	0.0%
(Cases) N=	63
mean	65
min size (mm)	42
max size (mm)	95

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	3.2%
80 - 99	30.6%
100 - 119	17.7%
120 - 139	11.3%
140 - 159	4.8%
160 - 179	9.7%
180 - 199	12.9%
200 - 219	8.1%
220 - 239	1.6%
> 239	0.0%
(Cases) N=	62
mean	132
min size (mm)	75
max size (mm)	225

S. franciscanus

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	2.0%
20 - 24	17.2%
25 - 29	30.0%
30 - 34	19.7%
35 - 39	7.9%
40 - 44	7.4%
45 - 49	3.9%
50 - 54	3.4%
55 - 59	2.0%
60 - 64	1.5%
65 - 69	1.0%
70 - 74	0.5%
75 - 79	1.5%
80 - 84	0.5%
85 - 89	0.5%
90 - 94	0.0%
95 - 99	1.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	203
mean	34
min size (mm)	19
max size (mm)	98

2001 Natural Habitat Size Frequency Distributions

Santa Cruz Island - Fry's Harbor

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	2.5%
10 - 14	18.7%
15 - 19	22.2%
20 - 24	14.8%
25 - 29	12.3%
30 - 34	7.9%
35 - 39	10.8%
40 - 44	5.9%
45 - 49	4.9%
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=	203
mean	24
min size (mm)	8
max size (mm)	48

2001 Natural Habitat Size Frequency Distributions

Santa Cruz Island - Pelican Bay

Lithopoma undosum

<10	0.0%
10 - 19	2.0%
20 - 29	7.8%
30 - 39	21.6%
40 - 49	15.7%
50 - 59	19.6%
60 - 69	15.7%
70 - 79	15.7%
80 - 89	2.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	51
mean	50
min size (mm)	15
max size (mm)	82

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	2.0%
30 - 39	0.0%
40 - 49	10.2%
50 - 59	14.3%
60 - 69	16.3%
70 - 79	6.1%
80 - 89	6.1%
90 - 99	8.2%
100 - 109	20.4%
110 - 119	8.2%
120 - 129	6.1%
130 - 139	0.0%
> 139	2.0%
(Cases) N=	49
mean	83
min size (mm)	26
max size (mm)	164

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	4.9%
60 - 79	9.8%
80 - 99	45.1%
100 - 119	35.4%
120 - 139	1.2%
140 - 159	1.2%
160 - 179	0.0%
180 - 199	1.2%
200 - 219	1.2%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	82
mean	96
min size (mm)	46
max size (mm)	219

Lithopoma gibberosum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	100.0%
40 - 49	0.0%
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	33
min size (mm)	33
max size (mm)	33

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	4.2%
30 - 39	6.3%
40 - 49	9.4%
50 - 59	16.7%
60 - 69	21.9%
70 - 79	15.6%
80 - 89	12.5%
90 - 99	12.5%
> 99	1.0%
(Cases) N=	96
mean	66
min size (mm)	21
max size (mm)	104

Lytechinus anamesus

< 5	0.0%
5 - 9	0.0%
10 - 14	1.7%
15 - 19	10.0%
20 - 24	60.4%
25 - 29	26.7%
30 - 34	1.3%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	240
mean	23
min size (mm)	13
max size (mm)	34

2001 Natural Habitat Size Frequency Distributions

Santa Cruz Island - Pelican Bay

S. franciscanus

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	2.2%
20 - 24	10.8%
25 - 29	21.6%
30 - 34	29.7%
35 - 39	11.6%
40 - 44	8.6%
45 - 49	6.5%
50 - 54	3.0%
55 - 59	2.6%
60 - 64	2.2%
65 - 69	0.9%
70 - 74	0.4%
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=	232
mean	34
min size (mm)	16
max size (mm)	70

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	0.3%
10 - 14	0.3%
15 - 19	20.7%
20 - 24	40.8%
25 - 29	21.3%
30 - 34	11.9%
35 - 39	2.8%
40 - 44	0.9%
45 - 49	0.9%
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=	319
mean	24
min size (mm)	7
max size (mm)	49

2001 Natural Habitat Size Frequency Distributions

Santa Cruz Island - Scorpion Anchorage

Lithopoma undosum

<10	0.0%
10 - 19	2.0%
20 - 29	8.9%
30 - 39	69.3%
40 - 49	15.8%
50 - 59	3.0%
60 - 69	1.0%
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=	101
mean	36
min size (mm)	18
max size (mm)	62

Lithopoma gibberosum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	100.0%
40 - 49	0.0%
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	34
min size (mm)	34
max size (mm)	34

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	1.1%
30 - 39	4.5%
40 - 49	14.6%
50 - 59	15.7%
60 - 69	22.5%
70 - 79	22.5%
80 - 89	16.9%
90 - 99	2.2%
> 99	0.0%
(Cases) N=	89
mean	64
min size (mm)	22
max size (mm)	94

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	40.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	30.0%
120 - 139	10.0%
140 - 159	20.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	10
mean	97
min size (mm)	46
max size (mm)	155

S. franciscanus

< 5	0.0%
5 - 9	0.0%
10 - 14	0.5%
15 - 19	3.7%
20 - 24	3.7%
25 - 29	16.9%
30 - 34	21.5%
35 - 39	16.4%
40 - 44	13.7%
45 - 49	12.8%
50 - 54	4.6%
55 - 59	3.7%
60 - 64	1.8%
65 - 69	0.0%
70 - 74	0.5%
75 - 79	0.5%
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=	219
mean	37
min size (mm)	14
max size (mm)	77

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	1.4%
10 - 14	21.2%
15 - 19	49.8%
20 - 24	16.7%
25 - 29	5.5%
30 - 34	3.4%
35 - 39	1.4%
40 - 44	0.7%
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=	293
mean	18
min size (mm)	7
max size (mm)	42

2001 Natural Habitat Size Frequency Distributions

Santa Cruz Island - Yellow Banks

Lithopoma undosum

<10	0.0%
10 - 19	0.0%
20 - 29	7.1%
30 - 39	70.7%
40 - 49	12.1%
50 - 59	4.0%
60 - 69	2.0%
70 - 79	1.0%
80 - 89	0.0%
90 - 99	2.0%
100 - 109	0.0%
110 - 119	1.0%
> 119	0.0%
(Cases) N=	99
mean	39
min size (mm)	27
max size (mm)	116

Asterina miniata

<10	0.0%
10 - 19	3.0%
20 - 29	12.6%
30 - 39	17.0%
40 - 49	23.0%
50 - 59	16.3%
60 - 69	12.6%
70 - 79	9.6%
80 - 89	5.2%
90 - 99	0.7%
> 99	0.0%
(Cases) N=	135
mean	49
min size (mm)	16
max size (mm)	99

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	24.1%
100 - 119	37.9%
120 - 139	34.5%
140 - 159	3.4%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	29
mean	114
min size (mm)	82
max size (mm)	155

Pycnopodia helianthoides

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	0.0%
120 - 139	0.0%
140 - 159	100.0%
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	144
min size (mm)	144
max size (mm)	144

Lytechinus anamesus

< 5	0.0%
5 - 9	0.0%
10 - 14	7.6%
15 - 19	53.3%
20 - 24	38.6%
25 - 29	0.5%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	197
mean	19
min size (mm)	10
max size (mm)	25

S. franciscanus

< 5	0.0%
5 - 9	0.0%
10 - 14	1.7%
15 - 19	8.4%
20 - 24	16.3%
25 - 29	39.7%
30 - 34	10.5%
35 - 39	0.0%
40 - 44	0.8%
45 - 49	0.4%
50 - 54	1.3%
55 - 59	2.1%
60 - 64	3.3%
65 - 69	3.8%
70 - 74	3.3%
75 - 79	1.7%
80 - 84	3.3%
80 - 84	3.3%
85 - 89	2.1%
90 - 94	0.8%
95 - 99	0.4%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	239
mean	36
min size (mm)	10
max size (mm)	98

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	3.1%
10 - 14	23.6%
15 - 19	26.0%
20 - 24	5.9%
20 - 24	5.9%
25 - 29	8.7%
30 - 34	11.8%
35 - 39	8.3%
40 - 44	9.1%
45 - 49	3.1%
50 - 54	0.4%
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=	254
mean	24
min size (mm)	7
max size (mm)	52

2001 Natural Habitat Size Frequency Distributions

Anacapa Island - Admiral's Reef

Lithopoma undosum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	1.7%
40 - 49	3.4%
50 - 59	5.1%
60 - 69	22.0%
70 - 79	42.4%
80 - 89	22.0%
90 - 99	3.4%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	59
mean	73
min size (mm)	34
max size (mm)	97

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	5.5%
30 - 39	12.7%
40 - 49	12.7%
50 - 59	12.7%
60 - 69	9.1%
70 - 79	10.9%
80 - 89	5.5%
90 - 99	12.7%
100 - 109	7.3%
110 - 119	7.3%
120 - 129	1.8%
130 - 139	0.0%
> 139	1.8%
(Cases) N=	55
mean	69
min size (mm)	22
max size (mm)	142

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	6.1%
50 - 59	30.3%
60 - 69	31.8%
70 - 79	21.2%
80 - 89	6.1%
90 - 99	3.0%
> 99	1.5%
(Cases) N=	66
mean	65
min size (mm)	44
max size (mm)	108

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	4.2%
100 - 119	4.2%
120 - 139	8.3%
140 - 159	8.3%
160 - 179	8.3%
180 - 199	16.7%
200 - 219	12.5%
220 - 239	16.7%
> 239	20.8%
(Cases) N=	24
mean	198
min size (mm)	97
max size (mm)	267

Lytechinus anamesus

< 5	0.0%
5 - 9	9.6%
10 - 14	9.6%
15 - 19	23.7%
20 - 24	37.9%
25 - 29	17.8%
30 - 34	1.4%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	219
mean	19
min size (mm)	6
max size (mm)	31

S. franciscanus

< 5	0.0%
5 - 9	0.0%
10 - 14	0.9%
15 - 19	15.9%
20 - 24	28.6%
25 - 29	19.1%
30 - 34	6.8%
35 - 39	3.2%
40 - 44	7.7%
45 - 49	3.2%
50 - 54	2.3%
55 - 59	4.5%
60 - 64	0.9%
65 - 69	0.9%
70 - 74	1.8%
75 - 79	2.7%
80 - 84	1.4%
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=	220
mean	32
min size (mm)	13
max size (mm)	83

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	0.0%
10 - 14	25.8%
15 - 19	36.4%
20 - 24	16.0%
25 - 29	12.9%
25 - 29	12.9%
30 - 34	5.3%
35 - 39	2.7%
40 - 44	0.9%
45 - 49	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=	225
mean	19
min size (mm)	10
max size (mm)	40

2001 Natural Habitat Size Frequency Distributions

Anacapa Island - Cathedral 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	50.0%
135 - 144	0.0%
145 - 154	0.0%
155 - 164	0.0%
165 - 174	50.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	2
mean	151
min size (mm)	131
max size (mm)	170

Lithopoma undosum

<10	0.0%
10 - 19	3.6%
20 - 29	10.9%
30 - 39	20.0%
40 - 49	20.0%
50 - 59	32.7%
60 - 69	7.3%
70 - 79	2.7%
80 - 89	2.7%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	110
mean	46
min size (mm)	10
max size (mm)	88

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	3.3%
40 - 49	6.7%
50 - 59	20.0%
60 - 69	16.7%
70 - 79	10.0%
80 - 89	8.3%
90 - 99	13.3%
100 - 109	8.3%
110 - 119	5.0%
120 - 129	5.0%
130 - 139	3.3%
> 139	0.0%
(Cases) N=	60
mean	78
min size (mm)	39
max size (mm)	137

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	8.3%
30 - 39	16.7%
40 - 49	33.3%
50 - 59	25.0%
60 - 69	16.7%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	12
mean	49
min size (mm)	29
max size (mm)	68

S. franciscanus

< 5	0.0%
5 - 9	6.5%
10 - 14	0.5%
15 - 19	2.2%
20 - 24	0.5%
25 - 29	1.6%
30 - 34	0.5%
35 - 39	0.5%
40 - 44	1.6%
45 - 49	1.6%
50 - 54	1.1%
55 - 59	3.3%
60 - 64	0.0%
65 - 69	1.1%
70 - 74	4.9%
75 - 79	3.8%
80 - 84	6.0%
85 - 89	10.9%
90 - 94	9.8%
95 - 99	9.2%
95 - 99	9.2%
100 - 104	13.0%
105 - 109	10.9%
> 109	10.3%
(Cases) N=	184
mean	82
min size (mm)	5
max size (mm)	150

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	3.1%
10 - 14	1.6%
15 - 19	6.3%
20 - 24	12.6%
25 - 29	14.7%
30 - 34	13.6%
35 - 39	9.9%
40 - 44	4.2%
45 - 49	5.8%
50 - 54	7.9%
55 - 59	7.3%
60 - 64	4.2%
65 - 69	4.7%
70 - 74	3.1%
75 - 79	0.5%
> 79	0.5%
(Cases) N=	191
mean	38
min size (mm)	5
max size (mm)	95

2001 Natural Habitat Size Frequency Distributions

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	20.0%
115 - 124	0.0%
125 - 134	0.0%
135 - 144	0.0%
145 - 154	20.0%
155 - 164	60.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	5
mean	149
min size (mm)	111
max size (mm)	163

Strongylocentrotus purpuratus

< 5	0.5%
5 - 9	4.0%
10 - 14	7.5%
15 - 19	14.1%
20 - 24	17.1%
25 - 29	12.6%
30 - 34	10.1%
35 - 39	10.1%
40 - 44	7.5%
45 - 49	7.0%
50 - 54	2.5%
55 - 59	3.5%
60 - 64	3.5%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	199
mean	30
min size (mm)	4
max size (mm)	64

S. franciscanus

< 5	0.0%
5 - 9	0.5%
10 - 14	0.5%
15 - 19	0.0%
20 - 24	2.5%
25 - 29	3.0%
30 - 34	0.5%
35 - 39	2.0%
40 - 44	3.0%
45 - 49	0.5%
50 - 54	1.5%
55 - 59	0.5%
60 - 64	1.5%
65 - 69	1.5%
70 - 74	1.0%
75 - 79	4.0%
80 - 84	4.5%
85 - 89	8.0%
90 - 94	11.1%
95 - 99	8.5%
100 - 104	11.1%
105 - 109	15.1%
> 109	19.1%
(Cases) N=	199
mean	90
min size (mm)	9
max size (mm)	137

2001 Natural Habitat Size Frequency Distributions

Santa Barbara Island - SE Sea Lion Rookery

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	1.8%
30 - 39	12.5%
40 - 49	19.6%
50 - 59	39.3%
60 - 69	17.9%
70 - 79	5.4%
80 - 89	3.6%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	56
mean	53
min size (mm)	22
max size (mm)	89

Lithopoma undosum

<10	0.0%
10 - 19	0.0%
20 - 29	26.2%
30 - 39	33.3%
40 - 49	17.9%
50 - 59	13.1%
60 - 69	6.0%
70 - 79	1.2%
80 - 89	1.2%
90 - 99	1.2%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	84
mean	40
min size (mm)	23
max size (mm)	90

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	6.4%
40 - 49	18.1%
50 - 59	19.1%
60 - 69	20.2%
70 - 79	19.1%
80 - 89	7.4%
90 - 99	6.4%
> 99	3.2%
(Cases) N=	94
mean	64
min size (mm)	34
max size (mm)	109

Lytechinus anamesus

< 5	0.0%
5 - 9	3.5%
10 - 14	16.5%
15 - 19	37.6%
20 - 24	37.6%
25 - 29	4.7%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	85
mean	18
min size (mm)	6
max size (mm)	27

S. franciscanus

< 5	0.0%
5 - 9	1.7%
10 - 14	2.2%
15 - 19	7.2%
20 - 24	21.0%
25 - 29	41.4%
30 - 34	22.7%
35 - 39	1.7%
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	0.6%
75 - 79	0.6%
80 - 84	0.6%
85 - 89	0.6%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	181
mean	27
min size (mm)	6
max size (mm)	87

Strongylocentrotus purpuratus

< 5	0.2%
5 - 9	21.1%
10 - 14	59.0%
15 - 19	12.7%
20 - 24	4.8%
25 - 29	2.2%
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=	417
mean	12
min size (mm)	4
max size (mm)	28

2001 Natural Habitat Size Frequency Distributions

Santa Barbara Island - Arch Point

Lithopoma undosum

<10	0.0%
10 - 19	0.0%
20 - 29	5.0%
30 - 39	20.0%
40 - 49	3.3%
50 - 59	10.0%
60 - 69	40.0%
70 - 79	20.0%
80 - 89	1.7%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	60
mean	57
min size (mm)	25
max size (mm)	84

Asterina miniata

<10	0.0%
10 - 19	1.7%
20 - 29	30.0%
30 - 39	30.0%
40 - 49	18.3%
50 - 59	11.7%
60 - 69	8.3%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	60
mean	38
min size (mm)	18
max size (mm)	68

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	6.7%
80 - 99	6.7%
100 - 119	18.3%
120 - 139	31.7%
140 - 159	18.3%
160 - 179	16.7%
180 - 199	1.7%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	60
mean	130
min size (mm)	66
max size (mm)	190

S. franciscanus

< 5	0.5%
5 - 9	0.5%
10 - 14	1.0%
15 - 19	0.5%
20 - 24	8.7%
25 - 29	14.9%
30 - 34	19.7%
35 - 39	10.6%
40 - 44	10.6%
45 - 49	4.8%
50 - 54	4.3%
55 - 59	3.4%
60 - 64	2.4%
65 - 69	3.8%
70 - 74	5.3%
75 - 79	3.4%
80 - 84	2.9%
85 - 89	0.5%
90 - 94	1.4%
95 - 99	0.5%
100 - 104	0.5%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	208
mean	43
min size (mm)	3
max size (mm)	100

Strongylocentrotus purpuratus

< 5	0.4%
5 - 9	2.1%
10 - 14	34.9%
15 - 19	31.1%
20 - 24	14.7%
25 - 29	10.1%
30 - 34	2.9%
35 - 39	1.7%
40 - 44	0.8%
45 - 49	0.8%
50 - 54	0.4%
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=	238
mean	18
min size (mm)	2
max size (mm)	51

2001 Natural Habitat Size Frequency Distributions

Santa Barbara Island - Cat Canyon

Lithopoma undosum

<10	0.0%
10 - 19	1.3%
20 - 29	3.9%
30 - 39	6.6%
40 - 49	10.5%
50 - 59	1.3%
60 - 69	25.0%
70 - 79	34.2%
80 - 89	13.2%
90 - 99	3.9%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	76
mean	65
min size (mm)	16
max size (mm)	96

Asterina miniata

<10	0.0%
10 - 19	7.4%
20 - 29	14.8%
30 - 39	14.8%
40 - 49	40.7%
50 - 59	11.1%
60 - 69	11.1%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	27
mean	41
min size (mm)	17
max size (mm)	66

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	5.3%
80 - 99	42.1%
100 - 119	15.8%
120 - 139	31.6%
140 - 159	5.3%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	19
mean	106
min size (mm)	74
max size (mm)	146

S. franciscanus

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.5%
30 - 34	4.2%
35 - 39	3.2%
40 - 44	4.7%
45 - 49	5.3%
50 - 54	12.6%
55 - 59	10.0%
60 - 64	15.8%
65 - 69	20.0%
70 - 74	9.5%
75 - 79	9.5%
80 - 84	3.7%
85 - 89	1.1%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	190
mean	61
min size (mm)	29
max size (mm)	88

Strongylocentrotus purpuratus

< 5	0.4%
5 - 9	1.4%
10 - 14	0.4%
15 - 19	2.5%
20 - 24	30.1%
25 - 29	23.6%
30 - 34	14.9%
35 - 39	12.3%
40 - 44	9.4%
45 - 49	4.3%
50 - 54	0.7%
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=	276
mean	29
min size (mm)	4
max size (mm)	51

Appendix H: Macrocystis pyrifera Size Frequency Distributions

2001 Macrocystis pyrifera Size Frequency Distributions

San Miguel Island - Wyckoff Ledge

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera Ad.(>1m) holdfast diameters*	
< 3	26.0%	< 6	3.3%
3 - 5	17.3%	6 - 11	18.0%
6 - 8	14.0%	12 - 17	28.0%
9 - 11	12.7%	18 - 23	19.3%
12 - 14	7.3%	24 - 29	13.3%
15 - 17	9.3%	30 - 35	8.0%
18 - 20	4.7%	36 - 41	7.3%
21 - 23	3.3%	42 - 47	2.0%
24 - 26	2.0%	48 - 53	0.7%
27 - 29	0.0%	54 - 59	0.0%
30 - 32	1.3%	60 - 65	0.0%
33 - 35	1.3%	66 - 71	0.0%
36 - 38	0.7%	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=	150	(Cases) N=	150
mean	9	mean	20
min number	1	min width (cm)	4
max number	38	max width (cm)	48

2001 Macrocystis pyrifera Size Frequency Distributions

Santa Rosa Island - Johnson's Lee North

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera Ad.(>1m) holdfast diameters*	
< 3	73.5%	< 6	1.0%
3 - 5	21.4%	6 - 11	36.7%
6 - 8	5.1%	12 - 17	50.0%
9 - 11	0.0%	18 - 23	8.2%
12 - 14	0.0%	24 - 29	4.1%
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	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	98	(Cases) N=	98
mean	3	mean	13
min number	2	min width (cm)	5
max number	8	max width (cm)	28

Santa Cruz Island - Gull Island South

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera Ad.(>1m) holdfast diameters*	
< 3	50.0%	< 6	0.0%
3 - 5	25.0%	6 - 11	25.0%
6 - 8	0.0%	12 - 17	50.0%
9 - 11	0.0%	18 - 23	0.0%
12 - 14	25.0%	24 - 29	25.0%
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	0.0%
42 - 44	0.0%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	4	(Cases) N=	4
mean	5	mean	15
min number	2	min width (cm)	8
max number	14	max width (cm)	24

2001 Macrocystis pyrifera Size Frequency Distributions

Anacapa Island - Cathedral Cove

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera Ad.(>1m) holdfast diameters*	
< 3	29.0%	< 6	3.2%
3 - 5	22.6%	6 - 11	48.4%
6 - 8	12.9%	12 - 17	16.1%
9 - 11	3.2%	18 - 23	16.1%
12 - 14	3.2%	24 - 29	9.7%
15 - 17	9.7%	30 - 35	6.5%
18 - 20	3.2%	36 - 41	0.0%
21 - 23	3.2%	42 - 47	0.0%
24 - 26	3.2%	48 - 53	0.0%
27 - 29	3.2%	54 - 59	0.0%
30 - 32	3.2%	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	3.2%	84 - 89	0.0%
> 44	0.0%	> 89	0.0%
(Cases) N=	31	(Cases) N=	31
mean	10	mean	14
min number	1	min width (cm)	5
max number	43	max width (cm)	35

Anacapa Island - Landing Cove

Macrocystis pyrifera Ad.(>1m) number of stipes		*Macrocystis pyrifera Ad.(>1m) holdfast diameters*	
< 3	46.8%	< 6	10.4%
3 - 5	28.6%	6 - 11	37.7%
6 - 8	6.5%	12 - 17	27.3%
9 - 11	3.9%	18 - 23	15.6%
12 - 14	5.2%	24 - 29	3.9%
15 - 17	2.6%	30 - 35	1.3%
18 - 20	3.9%	36 - 41	2.6%
21 - 23	0.0%	42 - 47	0.0%
24 - 26	1.3%	48 - 53	1.3%
27 - 29	1.3%	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=	77	(Cases) N=	77
mean	5	mean	13
min number	1	min width (cm)	3
max number	28	max width (cm)	48

Appendix I: Gorgonian/Stylaster californica Size Frequency Distributions

2001 Gorgonian/Stylaster californica Size Frequency Distributions

Santa Cruz Island - Gull Island South

Stylaster californica heights		*Stylaster californica widths*	
< 3	27.3%	< 3	13.0%
3 - 4	14.3%	3 - 4	13.0%
5 - 6	10.4%	5 - 6	10.4%
7 - 8	5.2%	7 - 8	7.8%
9 - 10	10.4%	9 - 10	3.9%
11 - 12	13.0%	1 - 12	5.2%
13 - 14	2.6%	13 - 14	6.5%
15 - 16	6.5%	15 - 16	9.1%
17 - 18	1.3%	17 - 18	3.9%
19 - 20	5.2%	19 - 20	3.9%
21 - 22	1.3%	21 - 22	7.8%
23 - 24	1.3%	23 - 24	2.6%
25 - 26	1.3%	25 - 26	3.9%
27 - 28	0.0%	27 - 28	0.0%
29 - 30	0.0%	29 - 30	0.0%
> 30	0.0%	> 30	9.1%
(Cases) N=	77	(Cases) N=	77
mean	8	mean	13
min height (cm)	1	min width (cm)	1
max height (cm)	26	max width (cm)	42

Santa Cruz Island - Fry's Harbor

Lophogorgia chilensis heights		*Lophogorgia chilensis widths*	
< 5	0.0%	< 5	0.0%
5 - 8	0.0%	5 - 8	2.5%
9 - 12	1.3%	9 - 12	7.5%
13 - 16	3.7%	13 - 16	15.0%
17 - 20	13.8%	17 - 20	15.0%
21 - 24	11.3%	21 - 24	6.3%
25 - 28	15.0%	24 - 28	12.5%
29 - 32	12.5%	29 - 32	7.5%
33 - 36	11.3%	33 - 36	8.7%
37 - 40	5.0%	37 - 40	2.5%
41 - 44	1.3%	41 - 44	3.7%
45 - 48	3.7%	45 - 48	2.5%
49 - 52	6.3%	49 - 52	2.5%
53 - 56	8.7%	53 - 56	2.5%
57 - 60	2.5%	57 - 60	2.5%
61 - 64	1.3%	61 - 64	5.0%
65 - 68	1.3%	65 - 68	0.0%
69 - 72	0.0%	69 - 72	1.3%
73 - 76	1.3%	73 - 76	1.3%
77 - 80	0.0%	77 - 80	0.0%
81 - 84	0.0%	81 - 84	1.3%
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=	80	(Cases) N=	80
mean	34	mean	30
min height (cm)	12	min width (cm)	6
max height (cm)	75	max width (cm)	83

2001 Gorgonian/Stylaster californica Size Frequency Distributions

Santa Cruz Island - Pelican Bay

Lophogorgia chilensis heights		*Lophogorgia chilensis widths*	
< 5	0.0%	< 5	3.3%
5 - 8	1.7%	5 - 8	1.7%
9 - 12	1.7%	9 - 12	10.0%
13 - 16	5.0%	13 - 16	8.3%
17 - 20	5.0%	17 - 20	10.0%
21 - 24	8.3%	21 - 24	5.0%
25 - 28	18.3%	24 - 28	16.7%
29 - 32	21.7%	29 - 32	11.7%
33 - 36	8.3%	33 - 36	8.3%
37 - 40	11.7%	37 - 40	13.3%
41 - 44	6.7%	41 - 44	6.7%
45 - 48	5.0%	45 - 48	1.7%
49 - 52	6.7%	49 - 52	1.7%
53 - 56	0.0%	53 - 56	1.7%
57 - 60	0.0%	57 - 60	0.0%
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=	60	(Cases) N=	60
mean	31	mean	27
min height (cm)	8	min width (cm)	4
max height (cm)	51	max width (cm)	52

Anacapa Island - Admiral's Reef

Lophogorgia chilensis heights		*Lophogorgia chilensis widths*	
< 5	0.0%	< 5	0.0%
5 - 8	0.0%	5 - 8	6.9%
9 - 12	2.8%	9 - 12	6.9%
13 - 16	1.4%	13 - 16	8.3%
17 - 20	6.9%	17 - 20	2.8%
21 - 24	4.2%	21 - 24	4.2%
25 - 28	9.7%	24 - 28	4.2%
29 - 32	5.6%	29 - 32	13.9%
33 - 36	16.7%	33 - 36	6.9%
37 - 40	8.3%	37 - 40	8.3%
41 - 44	11.1%	41 - 44	4.2%
45 - 48	5.6%	45 - 48	8.3%
49 - 52	2.8%	49 - 52	8.3%
53 - 56	12.5%	53 - 56	4.2%
57 - 60	5.6%	57 - 60	4.2%
61 - 64	2.8%	61 - 64	0.0%
65 - 68	1.4%	65 - 68	2.8%
69 - 72	2.8%	69 - 72	1.4%
73 - 76	0.0%	73 - 76	2.8%
77 - 80	0.0%	77 - 80	0.0%
81 - 84	0.0%	81 - 84	0.0%
85 - 88	0.0%	85 - 88	1.4%
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=	72	(Cases) N=	72
mean	39	mean	36
min height (cm)	12	min width (cm)	7
max height (cm)	72	max width (cm)	85

2001 Gorgonian/Stylaster californica Size Frequency Distributions

Santa Barbara Island - SE Sea Lion Rookery

Lophogorgia chilensis heights

< 5	0.0%
5 - 8	0.0%
9 - 12	1.1%
13 - 16	12.4%
17 - 20	5.6%
21 - 24	11.2%
25 - 28	11.2%
29 - 32	18.0%
33 - 36	14.6%
37 - 40	10.1%
41 - 44	6.7%
45 - 48	6.7%
49 - 52	0.0%
53 - 56	1.1%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	1.1%
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=	89
mean	30
min height (cm)	10
max height (cm)	72

Lophogorgia chilensis widths

< 5	1.1%
5 - 8	7.9%
9 - 12	10.1%
13 - 16	13.5%
17 - 20	27.0%
21 - 24	14.6%
24 - 28	10.1%
29 - 32	4.5%
33 - 36	4.5%
37 - 40	1.1%
41 - 44	0.0%
45 - 48	2.2%
49 - 52	1.1%
53 - 56	0.0%
57 - 60	2.2%
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=	89
mean	21
min width (cm)	4
max width (cm)	60

Muricea californica heights

< 5	0.0%
5 - 8	0.0%
9 - 12	3.3%
13 - 16	6.6%
17 - 20	8.8%
21 - 24	8.8%
25 - 28	1.1%
29 - 32	9.9%
33 - 36	5.5%
37 - 40	12.1%
41 - 44	8.8%
45 - 48	5.5%
49 - 52	4.4%
53 - 56	8.8%
57 - 60	4.4%
61 - 64	6.6%
65 - 68	3.3%
69 - 72	1.1%
73 - 76	1.1%
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=	91
mean	38
min height (cm)	10
max height (cm)	75

Muricea californica widths

< 5	0.0%
5 - 8	0.0%
9 - 12	1.1%
13 - 16	0.0%
17 - 20	1.1%
21 - 24	5.5%
24 - 28	4.4%
29 - 32	6.6%
33 - 36	5.5%
37 - 40	4.4%
41 - 44	4.4%
45 - 48	2.2%
49 - 52	1.1%
53 - 56	6.6%
57 - 60	1.1%
61 - 64	2.2%
65 - 68	9.9%
69 - 72	7.7%
73 - 76	8.8%
77 - 80	12.1%
81 - 84	4.4%
85 - 88	2.2%
89 - 92	1.1%
93 - 96	2.2%
97 - 100	2.2%
> 100	3.3%
(Cases) N=	91
mean	60
min width (cm)	11
max width (cm)	136

Appendix J: Artificial Recruitment Modules Size Frequencies Distributions

2001 Artificial Recruitment Modules Size Frequency Distributions
Santa Rosa Island - Johnson's Lee North

Haliotis rufescens

Number of ARMs sampled: 9

<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	0.0%
155 - 164	100.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	1
mean	155
min size (mm)	155
max size (mm)	155
0.0%	4.5%

Cypraea spadicea

Number of ARMs sampled: 9

<30	0.0%
30 - 32	0.0%
33 - 35	0.0%
36 - 38	5.6%
39 - 41	16.7%
42 - 44	5.6%
45 - 47	44.4%
48 - 50	16.7%
51 - 53	11.1%
54 - 56	0.0%
>56	0.0%
(Cases) N=	18
mean	46
min size (mm)	38
max size (mm)	53

Crassedoma giganteum

Number of ARMs sampled: 9

<10	100.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
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%
120 - 129	0.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	1
mean	9
min size (mm)	9
max size (mm)	9

Asterina miniata

Number of ARMs sampled: 9

<10	0.0%
10 - 19	16.7%
20 - 29	16.7%
30 - 39	33.3%
40 - 49	8.3%
50 - 59	16.7%
60 - 69	8.3%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	12
mean	35
min size (mm)	10
max size (mm)	67

Pisaster giganteus

Number of ARMs sampled: 9

< 20	0.0%
20 - 39	42.0%
40 - 59	56.0%
60 - 79	2.0%
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=	50
mean	41
min size (mm)	20
min size (mm)	20
max size (mm)	62

Pycnopodia helianthoides

Number of ARMs sampled: 9

< 20	20 - 39
40 - 59	9.1%
60 - 79	13.6%
80 - 99	27.3%
100 - 119	27.3%
120 - 139	13.6%
140 - 159	4.5%
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=	22
mean	94
min size (mm)	38
max size (mm)	146

2001 Artificial Recruitment Modules Size Frequency Distributions
Santa Rosa Island - Johnson's Lee North

S. franciscanus

Number of ARMs sampled: 9

< 5	0.0%
5 - 9	27.3%
10 - 14	18.2%
15 - 19	6.5%
20 - 24	2.6%
25 - 29	5.2%
30 - 34	1.3%
35 - 39	2.6%
40 - 44	9.1%
45 - 49	10.4%
50 - 54	3.9%
55 - 59	6.5%
60 - 64	2.6%
65 - 69	0.0%
70 - 74	1.3%
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	1.3%
> 109	1.3%
(Cases) N=	77
mean	29
min size (mm)	5
max size (mm)	116

Strongylocentrotus purpuratus

Number of ARMs sampled: 9

< 5	0.2%
5 - 9	0.8%
10 - 14	0.4%
15 - 19	0.3%
20 - 24	3.1%
25 - 29	12.6%
30 - 34	17.0%
35 - 39	20.8%
40 - 44	22.4%
45 - 49	12.8%
50 - 54	6.7%
55 - 59	2.3%
60 - 64	0.7%
65 - 69	0.0%
70 - 74	0.1%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	1372
mean	38
min size (mm)	3
max size (mm)	70

2001 Artificial Recruitment Modules Size Frequency Distributions
Santa Rosa Island - Johnson's Lee South

Haliotis rufescens

Number of ARMs sampled: 6

<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	100.0%
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	49
min size (mm)	49
max size (mm)	49

Cypraea spadicea

Number of ARMs sampled: 6

<30	0.0%
30 - 32	0.0%
33 - 35	0.0%
36 - 38	0.0%
39 - 41	0.0%
42 - 44	25.0%
45 - 47	43.8%
48 - 50	31.3%
51 - 53	0.0%
54 - 56	0.0%
>56	0.0%
(Cases) N=	16
mean	46
min size (mm)	42
max size (mm)	49

Megathura crenulata

Number of ARMs sampled: 6

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	50.0%
40 - 49	50.0%
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=	2
mean	40
min size (mm)	39
max size (mm)	41

Crassedoma giganteum

Number of ARMs sampled: 6

<10	50.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	50.0%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	2
mean	50
min size (mm)	8
max size (mm)	91

Asterina miniata

Number of ARMs sampled: 6

<10	0.0%
10 - 19	19.4%
20 - 29	16.7%
30 - 39	22.2%
40 - 49	13.9%
50 - 59	16.7%
60 - 69	8.3%
70 - 79	2.8%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	36
mean	38
min size (mm)	11
min size (mm)	11
max size (mm)	72

Pisaster giganteus

Number of ARMs sampled: 6

< 20	2.3%
20 - 39	83.7%
40 - 59	4.7%
60 - 79	7.0%
80 - 99	2.3%
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=	43
mean	35
min size (mm)	15
max size (mm)	97

2001 Artificial Recruitment Modules Size Frequency Distributions
Santa Rosa Island - Johnson's Lee South

Pycnopodia helianthoides

Number of ARMs sampled: 6

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	12.5%
100 - 119	50.0%
120 - 139	25.0%
140 - 159	12.5%
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=	8
mean	118
min size (mm)	97
max size (mm)	154

Strongylocentrotus purpuratus

Number of ARMs sampled: 6

< 5	0.0%
5 - 9	0.0%
10 - 14	1.4%
15 - 19	4.1%
20 - 24	1.4%
25 - 29	12.2%
30 - 34	13.5%
35 - 39	13.5%
40 - 44	23.0%
45 - 49	12.2%
50 - 54	10.8%
55 - 59	5.4%
60 - 64	1.4%
65 - 69	1.4%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	74
mean	40
min size (mm)	12
max size (mm)	65

S. franciscanus

Number of ARMs sampled: 6

< 5	0.0%
5 - 9	0.0%
10 - 14	1.2%
15 - 19	6.0%
20 - 24	9.6%
25 - 29	14.5%
30 - 34	24.1%
35 - 39	24.1%
40 - 44	13.3%
45 - 49	3.6%
50 - 54	3.6%
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=	83
mean	33
min size (mm)	12
max size (mm)	54

2001 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Gull Island South

Haliotis rufescens

Number of ARMs sampled: 14	
<25	0.0%
25 - 34	100.0%
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	28
min size (mm)	28
max size (mm)	28

Cypraea spadicea

Number of ARMs sampled: 14	
<30	4.5%
30 - 32	0.0%
33 - 35	3.0%
36 - 38	11.9%
39 - 41	22.4%
42 - 44	25.4%
45 - 47	16.4%
48 - 50	11.9%
51 - 53	3.0%
54 - 56	0.0%
>56	1.5%
(Cases) N=	67
mean	42
min size (mm)	20
max size (mm)	58

Kelletia kelletii

Number of ARMs sampled: 14	
< 40	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	16.7%
90 - 99	50.0%
100 - 109	33.3%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	0.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	6
mean	98
min size (mm)	87
max size (mm)	109

Lithopoma undosum

Number of ARMs sampled: 14	
<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	49
min size (mm)	37
max size (mm)	60

Lithopoma gibberosum

Number of ARMs sampled: 14	
<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	100.0%
40 - 49	0.0%
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	30
min size (mm)	30
max size (mm)	30

Megathura crenulata

Number of ARMs sampled: 14	
<10	0.0%
10 - 19	16.7%
20 - 29	33.3%
30 - 39	33.3%
40 - 49	8.3%
50 - 59	8.3%
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=	12
mean	32
min size (mm)	17
max size (mm)	53

2001 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Gull Island South

Crassedoma giganteum

Number of ARMs sampled: 14

<10	0.0%
10 - 19	9.1%
20 - 29	9.1%
30 - 39	9.1%
40 - 49	18.2%
50 - 59	9.1%
60 - 69	9.1%
70 - 79	9.1%
80 - 89	0.0%
90 - 99	9.1%
100 - 109	0.0%
110 - 119	9.1%
120 - 129	9.1%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	11
mean	63
min size (mm)	12
max size (mm)	121

Asterina miniata

Number of ARMs sampled: 14

<10	0.0%
10 - 19	36.4%
20 - 29	36.4%
30 - 39	13.6%
40 - 49	4.5%
50 - 59	2.3%
60 - 69	6.8%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	44
mean	26
min size (mm)	10
max size (mm)	65

Pisaster giganteus

Number of ARMs sampled: 14

< 20	0.0%
20 - 39	45.5%
40 - 59	9.1%
60 - 79	27.3%
80 - 99	0.0%
100 - 119	18.2%
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	57
min size (mm)	24
max size (mm)	106

Pycnopodia helianthoides

Number of ARMs sampled: 14

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	0.0%
100 - 119	20.0%
120 - 139	0.0%
140 - 159	20.0%
160 - 179	40.0%
180 - 199	20.0%
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=	5
mean	158
min size (mm)	112
max size (mm)	196

S. franciscanus

Number of ARMs sampled: 13

< 5	0.2%
5 - 9	11.6%
10 - 14	16.7%
15 - 19	20.9%
20 - 24	25.1%
25 - 29	16.7%
30 - 34	6.0%
35 - 39	1.9%
40 - 44	0.7%
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=	430
mean	19
min size (mm)	4
max size (mm)	43

Strongylocentrotus purpuratus

Number of ARMs sampled: 13

< 5	2.2%
5 - 9	8.1%
10 - 14	15.6%
15 - 19	29.6%
20 - 24	26.3%
25 - 29	5.9%
30 - 34	9.7%
30 - 34	9.7%
35 - 39	2.2%
40 - 44	0.5%
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=	186
mean	19
min size (mm)	3
max size (mm)	40

2001 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Gull Island South

Centrostephanus coronatus

Number of ARMs sampled: 13

< 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	100.0%
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=	2
mean	37
min size (mm)	36
max size (mm)	38

2001 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Fry's Harbor

Cypraea spadicea

Number of ARMs sampled: 6

<30	25.0%
30 - 32	6.3%
33 - 35	12.5%
36 - 38	18.8%
39 - 41	6.3%
42 - 44	31.3%
45 - 47	0.0%
48 - 50	0.0%
51 - 53	0.0%
54 - 56	0.0%
>56	0.0%
(Cases) N=	16
mean	34
min size (mm)	16
38	80
max size (mm)	43

Megathura crenulata

Number of ARMs sampled: 6

<10	0.0%
10 - 19	50.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	50.0%
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=	2
mean	33
min size (mm)	16
max size (mm)	50

Crassedoma giganteum

Number of ARMs sampled: 6

<10	0.0%
10 - 19	18.5%
20 - 29	33.3%
30 - 39	14.8%
40 - 49	3.7%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	3.7%
80 - 89	0.0%
90 - 99	3.7%
100 - 109	7.4%
110 - 119	3.7%
120 - 129	7.4%
130 - 139	0.0%
> 139	3.7%
(Cases) N=	27
mean	51
min size (mm)	10
max size (mm)	162

Asterina miniata

Number of ARMs sampled: 6

<10	1.5%
10 - 19	13.6%
20 - 29	18.2%
30 - 39	25.8%
40 - 49	21.2%
50 - 59	16.7%
60 - 69	3.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	66
mean	36
min size (mm)	8
max size (mm)	64

Pisaster giganteus

Number of ARMs sampled: 6

< 20	1.3%
20 - 39	62.5%
40 - 59	32.5%
60 - 79	1.3%
80 - 99	2.5%
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=	80
mean	(Cases) N=
mean	38
min size (mm)	19
max size (mm)	88

Pycnopodia helianthoides

Number of ARMs sampled: 6

< 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	46
min size (mm)	46
max size (mm)	46

2001 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Fry's Harbor

Lytechinus anamesus

Number of ARMs sampled: 6

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.0%
20 - 24	50.0%
25 - 29	0.0%
30 - 34	50.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	2
mean	27
min size (mm)	21
max size (mm)	33

S. franciscanus

Number of ARMs sampled: 6

< 5	0.0%
5 - 9	4.6%
10 - 14	20.8%
15 - 19	19.7%
20 - 24	22.0%
25 - 29	20.8%
30 - 34	9.2%
35 - 39	1.7%
40 - 44	0.6%
45 - 49	0.6%
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=	173
mean	21
min size (mm)	7
max size (mm)	46

Strongylocentrotus purpuratus

Number of ARMs sampled: 6

< 5	0.0%
5 - 9	7.6%
10 - 14	40.2%
15 - 19	37.1%
20 - 24	9.4%
25 - 29	2.2%
30 - 34	3.6%
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=	224
mean	15
min size (mm)	5
max size (mm)	34

2001 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Pelican Bay

Cypraea spadicea

Number of ARMs sampled: 6

<30	0.0%
30 - 32	0.0%
33 - 35	0.0%
36 - 38	4.5%
39 - 41	22.7%
42 - 44	45.5%
45 - 47	9.1%
48 - 50	13.6%
51 - 53	4.5%
54 - 56	0.0%
>56	0.0%
(Cases) N=	22
mean	43
min size (mm)	36
52	20
max size (mm)	51

Lithopoma undosum

Number of ARMs sampled: 6

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	100.0%
40 - 49	0.0%
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=	2
mean	34
min size (mm)	31
max size (mm)	36

Crassedoma giganteum

Number of ARMs sampled: 6

<10	0.0%
10 - 19	0.0%
20 - 29	28.6%
30 - 39	0.0%
40 - 49	0.0%
50 - 59	0.0%
60 - 69	14.3%
70 - 79	0.0%
80 - 89	14.3%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	14.3%
120 - 129	14.3%
130 - 139	14.3%
> 139	0.0%
(Cases) N=	7
mean	79
min size (mm)	22
max size (mm)	130

Asterina miniata

Number of ARMs sampled: 6

<10	0.0%
10 - 19	7.7%
20 - 29	26.9%
30 - 39	26.9%
40 - 49	19.2%
50 - 59	19.2%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	26
mean	36
min size (mm)	10
max size (mm)	57

Pisaster giganteus

Number of ARMs sampled: 6

< 20	0.0%
20 - 39	20.0%
40 - 59	60.0%
60 - 79	10.0%
80 - 99	10.0%
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=	20
mean	(Cases) N=
mean	52
min size (mm)	34
max size (mm)	91

S. franciscanus

Number of ARMs sampled: 6

< 5	0.0%
5 - 9	1.7%
10 - 14	5.9%
15 - 19	12.6%
20 - 24	25.2%
25 - 29	20.2%
30 - 34	11.8%
35 - 39	8.4%
40 - 44	9.2%
45 - 49	2.5%
50 - 54	0.0%
55 - 59	2.5%
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	27
min size (mm)	6
max size (mm)	58

2001 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Pelican Bay

Strongylocentrotus purpuratus

Number of ARMs sampled: 6

< 5	0.6%
5 - 9	2.3%
10 - 14	2.3%
15 - 19	10.7%
20 - 24	50.8%
25 - 29	13.6%
30 - 34	9.0%
35 - 39	5.6%
40 - 44	2.3%
45 - 49	2.3%
50 - 54	0.0%
55 - 59	0.6%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	177
mean	24
min size (mm)	4
max size (mm)	56

2001 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Scorpion Anchorage

Cypraea spadicea

Number of ARMs sampled: 6

<30	3.1%
30 - 32	16.9%
33 - 35	18.5%
36 - 38	30.8%
39 - 41	13.8%
42 - 44	10.8%
45 - 47	1.5%
48 - 50	1.5%
51 - 53	1.5%
54 - 56	1.5%
>56	0.0%
(Cases) N=	65
mean	37
min size (mm)	28
max size (mm)	55

Megathura crenulata

Number of ARMs sampled: 6

<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	0.0%
70 - 79	100.0%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	1
mean	79
min size (mm)	79
max size (mm)	79

Asterina miniata

Number of ARMs sampled: 6

<10	0.0%
10 - 19	40.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	40.0%
50 - 59	20.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	5
mean	35
min size (mm)	15
max size (mm)	52

Lithopoma undosum

Number of ARMs sampled: 6

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	75.0%
40 - 49	12.5%
50 - 59	0.0%
60 - 69	12.5%
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=	8
mean	42
min size (mm)	34
max size (mm)	69

Crassedoma giganteum

Number of ARMs sampled: 6

<10	0.0%
10 - 19	11.1%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	22.2%
50 - 59	0.0%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	11.1%
100 - 109	11.1%
110 - 119	11.1%
120 - 129	33.3%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	9
mean	89
min size (mm)	18
max size (mm)	126

Pisaster giganteus

Number of ARMs sampled: 6

< 20	0.0%
20 - 39	10.0%
40 - 59	90.0%
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%
> 239	0.0%
(Cases) N=	10
mean	45
min size (mm)	36
max size (mm)	50

2001 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Scorpion Anchorage

S. franciscanus

Number of ARMs sampled: 6

< 5	0.0%
5 - 9	3.2%
10 - 14	4.8%
15 - 19	8.1%
20 - 24	12.9%
25 - 29	17.7%
30 - 34	30.6%
35 - 39	11.3%
40 - 44	9.7%
45 - 49	1.6%
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=	62
mean	29
min size (mm)	6
max size (mm)	48

Strongylocentrotus purpuratus

Number of ARMs sampled: 6

< 5	0.8%
5 - 9	6.9%
10 - 14	4.2%
15 - 19	31.2%
20 - 24	31.5%
25 - 29	12.7%
30 - 34	10.4%
35 - 39	1.5%
40 - 44	0.4%
45 - 49	0.4%
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=	260
mean	21
min size (mm)	3
max size (mm)	45

2001 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Yellow Banks

Haliotis rufescens

Number of ARMs sampled: 15	
<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=	3
mean	28
min size (mm)	21
max size (mm)	37

Haliotis corrugata

Number of ARMs sampled: 15	
<25	0.0%
25 - 34	100.0%
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	31
min size (mm)	31
max size (mm)	31

Cypraea spadicea

Number of ARMs sampled: 15	
<30	0.0%
30 - 32	0.0%
33 - 35	4.8%
36 - 38	26.2%
39 - 41	28.6%
42 - 44	21.4%
45 - 47	14.3%
48 - 50	4.8%
51 - 53	0.0%
54 - 56	0.0%
>56	0.0%
(Cases) N=	42
mean	41
min size (mm)	34
max size (mm)	48

Lithopoma undosum

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	41
min size (mm)	41
max size (mm)	41

Lithopoma gibberosum

Number of ARMs sampled: 15	
<10	0.0%
10 - 19	0.0%
20 - 29	25.0%
30 - 39	75.0%
40 - 49	0.0%
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=	4
(Cases) N=	4
mean	31
min size (mm)	25
max size (mm)	36

Megathura crenulata

Number of ARMs sampled: 15	
<10	0.0%
10 - 19	0.0%
20 - 29	100.0%
30 - 39	0.0%
40 - 49	0.0%
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
(Cases) N=	1
mean	21
min size (mm)	21
max size (mm)	21

2001 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Yellow Banks

Crassedoma giganteum

Number of ARMs sampled: 15	
<10	7.1%
10 - 19	21.4%
20 - 29	28.6%
30 - 39	7.1%
40 - 49	0.0%
50 - 59	14.3%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	14.3%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	0.0%
130 - 139	7.1%
> 139	0.0%
(Cases) N=	14
mean	44
min size (mm)	7
max size (mm)	134

Asterina miniata

Number of ARMs sampled: 15	
<10	10.3%
10 - 19	23.9%
20 - 29	27.4%
30 - 39	28.2%
40 - 49	5.1%
50 - 59	4.3%
60 - 69	0.9%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	117
mean	26
min size (mm)	4
max size (mm)	69

Pisaster giganteus

Number of ARMs sampled: 15	
< 20	0.0%
20 - 39	35.3%
40 - 59	47.1%
60 - 79	0.0%
80 - 99	11.8%
100 - 119	5.9%
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=	17
mean	50
min size (mm)	29
max size (mm)	110

Pycnopodia helianthoides

Number of ARMs sampled: 15	
< 20	9.1%
20 - 39	9.1%
40 - 59	9.1%
60 - 79	0.0%
80 - 99	9.1%
100 - 119	9.1%
120 - 139	0.0%
140 - 159	45.5%
160 - 179	9.1%
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=	11
mean	109
min size (mm)	17
max size (mm)	161

Lytechinus anamesus

Number of ARMs sampled: 15	
< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	57.1%
20 - 24	42.9%
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=	7
mean	19
min size (mm)	17
min size (mm)	17
max size (mm)	21

S. franciscanus

Number of ARMs sampled: 15	
Number of ARMs sampled: 15	
< 5	0.0%
5 - 9	12.4%
10 - 14	15.5%
15 - 19	2.7%
20 - 24	10.4%
25 - 29	27.1%
30 - 34	26.5%
35 - 39	4.3%
40 - 44	0.4%
45 - 49	0.2%
50 - 54	0.2%
55 - 59	0.4%
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=	517
mean	23
min size (mm)	5
max size (mm)	59

2001 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Yellow Banks

Strongylocentrotus purpuratus

Number of ARMs sampled: 15

< 5	9.5%
5 - 9	58.7%
10 - 14	7.9%
15 - 19	3.2%
20 - 24	6.3%
25 - 29	6.3%
30 - 34	1.6%
35 - 39	4.8%
40 - 44	1.6%
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%
> 79	0.0%
(Cases) N=	63
mean	12
min size (mm)	4
max size (mm)	44

2001 Artificial Recruitment Modules Size Frequency Distributions
Anacapa Island - Admiral's Reef

Cypraea spadicea

Number of ARMs sampled: 6

<30	0.0%
30 - 32	0.0%
33 - 35	18.2%
36 - 38	0.0%
39 - 41	18.2%
42 - 44	9.1%
45 - 47	18.2%
48 - 50	36.4%
51 - 53	0.0%
54 - 56	0.0%
>56	0.0%
(Cases) N=	11
mean	44
min size (mm)	34
max size (mm)	50

Megathura crenulata

Number of ARMs sampled: 6

<10	0.0%
10 - 19	0.0%
20 - 29	33.3%
30 - 39	50.0%
40 - 49	16.7%
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=	6
mean	32
min size (mm)	21
max size (mm)	42

Crassedoma giganteum

Number of ARMs sampled: 6

<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	14.3%
70 - 79	28.6%
80 - 89	14.3%
90 - 99	0.0%
100 - 109	14.3%
110 - 119	14.3%
120 - 129	0.0%
130 - 139	14.3%
> 139	0.0%
(Cases) N=	7
mean	91
min size (mm)	61
max size (mm)	132

Asterina miniata

Number of ARMs sampled: 6

<10	1.2%
10 - 19	34.5%
20 - 29	35.7%
30 - 39	16.7%
40 - 49	8.3%
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=	84
mean	25
min size (mm)	9
max size (mm)	61

Pisaster giganteus

Number of ARMs sampled: 6

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
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	100.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	1
mean	(Cases) N=
mean	217
min size (mm)	217
max size (mm)	217

Lytechinus anamesus

Number of ARMs sampled: 6

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	36.4%
20 - 24	45.5%
25 - 29	18.2%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	11
mean	21
min size (mm)	16
max size (mm)	26

2001 Artificial Recruitment Modules Size Frequency Distributions
Anacapa Island - Admiral's Reef

S. franciscanus

Number of ARMs sampled: 6

< 5	0.0%
5 - 9	2.0%
10 - 14	6.1%
15 - 19	45.9%
20 - 24	33.7%
25 - 29	9.2%
30 - 34	1.0%
35 - 39	0.0%
40 - 44	1.0%
45 - 49	1.0%
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=	98
mean	20
min size (mm)	7
max size (mm)	45

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	0.0%
30 - 34	0.0%
35 - 39	12.5%
40 - 44	50.0%
45 - 49	12.5%
50 - 54	25.0%
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=	8
mean	45
min size (mm)	38
max size (mm)	54

Strongylocentrotus purpuratus

Number of ARMs sampled: 6

< 5	0.0%
5 - 9	3.2%
10 - 14	37.1%
15 - 19	46.2%
20 - 24	10.2%
25 - 29	2.7%
30 - 34	0.5%
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=	186
mean	16
min size (mm)	7
max size (mm)	32

2001 Artificial Recruitment Modules Size Frequency Distributions
Anacapa Island - Cathedral Cove

Haliotis corrugata

Number of ARMs sampled: 7

<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	19
min size (mm)	19
max size (mm)	19

Cypraea spadicea

Number of ARMs sampled: 7

<30	5.6%
30 - 32	6.7%
33 - 35	14.4%
36 - 38	23.3%
39 - 41	13.3%
42 - 44	15.6%
45 - 47	15.6%
48 - 50	4.4%
51 - 53	1.1%
54 - 56	0.0%
>56	0.0%
(Cases) N=	90
mean	39
min size (mm)	16
max size (mm)	51

Kelletia kelletii

Number of ARMs sampled: 7

< 40	0.0%
40 - 49	0.0%
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%
120 - 129	0.0%
130 - 139	100.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	1
mean	135
min size (mm)	135
max size (mm)	135

Lithopoma undosum

Number of ARMs sampled: 7

<10	0.0%
10 - 19	0.0%
20 - 29	16.7%
30 - 39	33.3%
40 - 49	16.7%
50 - 59	16.7%
60 - 69	0.0%
70 - 79	16.7%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	6
mean	45
min size (mm)	28
max size (mm)	71

Crassedoma giganteum

Number of ARMs sampled: 7

<10	0.0%
10 - 19	18.2%
20 - 29	9.1%
30 - 39	4.5%
40 - 49	4.5%
50 - 59	4.5%
60 - 69	4.5%
70 - 79	4.5%
80 - 89	4.5%
90 - 99	9.1%
100 - 109	13.6%
110 - 119	18.2%
120 - 129	0.0%
130 - 139	4.5%
> 139	0.0%
(Cases) N=	22
(Cases) N=	22
mean	71
min size (mm)	12
max size (mm)	133

Asterina miniata

Number of ARMs sampled: 7

<10	7.2%
10 - 19	27.5%
20 - 29	29.0%
30 - 39	21.7%
40 - 49	8.7%
50 - 59	1.4%
60 - 69	4.3%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	69
mean	26
min size (mm)	6
max size (mm)	68

2001 Artificial Recruitment Modules Size Frequency Distributions
Anacapa Island - Cathedral Cove

Pisaster giganteus

Number of ARMs sampled: 7

< 20	18.8%
20 - 39	64.6%
40 - 59	10.4%
60 - 79	6.3%
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=	48
mean	30
min size (mm)	14
max size (mm)	75

S. franciscanus

Number of ARMs sampled: 7

< 5	0.0%
5 - 9	18.8%
10 - 14	11.3%
15 - 19	11.8%
20 - 24	16.2%
25 - 29	6.6%
30 - 34	7.5%
35 - 39	8.7%
40 - 44	3.2%
45 - 49	4.0%
50 - 54	3.8%
55 - 59	2.9%
60 - 64	1.4%
65 - 69	0.6%
70 - 74	0.6%
75 - 79	0.6%
80 - 84	0.9%
85 - 89	0.9%
90 - 94	0.3%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	346
mean	26
min size (mm)	5
max size (mm)	94

Strongylocentrotus purpuratus

Number of ARMs sampled: 7

< 5	0.6%
5 - 9	3.6%
10 - 14	5.5%
15 - 19	13.8%
20 - 24	14.6%
25 - 29	9.6%
30 - 34	7.6%
35 - 39	6.2%
40 - 44	6.2%
45 - 49	6.6%
50 - 54	6.9%
55 - 59	10.2%
60 - 64	5.6%
65 - 69	2.7%
70 - 74	0.4%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	697
mean	34
min size (mm)	4
max size (mm)	72

Centrostephanus coronatus

Number of ARMs sampled: 7

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	33.3%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	66.7%
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	33
min size (mm)	17
max size (mm)	41

2001 Artificial Recruitment Modules Size Frequency Distributions
Anacapa Island - Landing Cove

Haliotis corrugata

Number of ARMs sampled: 7

<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	100.0%
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	52
min size (mm)	52
max size (mm)	52

Cypraea spadicea

Number of ARMs sampled: 7

<30	12.1%
30 - 32	6.1%
33 - 35	6.1%
36 - 38	0.0%
39 - 41	21.2%
42 - 44	9.1%
45 - 47	21.2%
48 - 50	15.2%
51 - 53	9.1%
54 - 56	0.0%
>56	0.0%
(Cases) N=	33
mean	42
min size (mm)	26
max size (mm)	53

Lithopoma undosum

Number of ARMs sampled: 7

<10	7.1%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	14.3%
40 - 49	35.7%
50 - 59	28.6%
60 - 69	14.3%
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=	14
mean	47
min size (mm)	9
max size (mm)	69

Crassedoma giganteum

Number of ARMs sampled: 7

<10	0.0%
10 - 19	0.0%
20 - 29	14.3%
30 - 39	42.9%
40 - 49	4.8%
50 - 59	9.5%
60 - 69	4.8%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	9.5%
100 - 109	9.5%
110 - 119	0.0%
120 - 129	4.8%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	21
mean	52
min size (mm)	21
max size (mm)	121

Asterina miniata

Number of ARMs sampled: 7

<10	7.6%
10 - 19	52.1%
20 - 29	22.7%
30 - 39	10.1%
40 - 49	5.9%
50 - 59	1.7%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	119
mean	20
min size (mm)	7
min size (mm)	7
max size (mm)	56

Pisaster giganteus

Number of ARMs sampled: 7

< 20	21.1%
20 - 39	47.4%
40 - 59	26.3%
60 - 79	0.0%
80 - 99	5.3%
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=	19
mean	32
min size (mm)	17
max size (mm)	80

2001 Artificial Recruitment Modules Size Frequency Distributions
Anacapa Island - Landing Cove

S. franciscanus

Number of ARMs sampled: 5

< 5	0.0%
5 - 9	15.7%
10 - 14	12.7%
15 - 19	7.6%
20 - 24	8.4%
25 - 29	7.6%
30 - 34	9.1%
35 - 39	6.9%
40 - 44	5.3%
45 - 49	5.1%
50 - 54	3.0%
55 - 59	3.6%
60 - 64	2.3%
65 - 69	1.8%
70 - 74	3.6%
75 - 79	3.3%
80 - 84	1.8%
85 - 89	1.3%
90 - 94	0.8%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.3%
(Cases) N=	394
mean	33
min size (mm)	5
max size (mm)	123

Strongylocentrotus purpuratus

Number of ARMs sampled: 5

< 5	1.0%
5 - 9	11.3%
10 - 14	5.7%
15 - 19	7.8%
20 - 24	10.3%
25 - 29	11.4%
30 - 34	10.3%
35 - 39	9.6%
40 - 44	7.8%
45 - 49	5.4%
50 - 54	5.2%
55 - 59	6.8%
60 - 64	4.9%
65 - 69	1.9%
70 - 74	0.6%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	690
mean	32
min size (mm)	3
max size (mm)	73

Appendix K. 2001 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	- *Hypsypops* nest turf
dis	- diseased

Station names are listed in Table 2 of the text.

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
CHLOROPHYTA																
CODIUM CUNEATUM											X					
CODIUM FRAGILE		X				2	1				X				2	
CODIUM HUBBSII/SETCHELLII														2		
CODIUM SETCHELLII	X					X					X				2	X
HALICYSTIS OVALIS												X				
ULVA SP.		2														
PHAEOPHYTA																
COILODESME SP.												X				
COLPOMENIA PEREGRINA		X	X		X	2	1		X			2	2	1	2	1
CYSTOSEIRA SP.	X	X	2	0	0	0	0	0	0	0	0	2	1	0	0	0
DESMARESTIA SP.	4	2	2	0	0	0	0	0	0	0	0	0	1	0	0	0
DICTYOTA/PACHYDICTYON			X			X	X		1	0	1	2	3	2	2	2
EISENIA ARBOREA	X	1	1	0	0	1/J2	1	0	0	1/J1	1/J1	X	2/J2	0/J1	0/J1	0/J1
LAMINARIA FARLOWII	1	0	1/J2	0	0	0	0	0	0	0	0	2/J2	2/J1	0	0	0
MACROCYSTIS PYRIFERA	2/J2	0	3	0/J1	0	2/J2	0	0	0	J2	0	2/J3	2/J2	0	0	0/J1
PELAGOPHYCUS PORRA												D				
PTERYGOPHORA CALIFORNICA	2/J2	0	1/J2	0/J1	0	0	0	0	0	1/J0	0	2/J2	1/J1	0	0	0
TAONIA LENNEBACKERIAE			3													
RHODOPHYTA	4	2	2	2	2	2	1	1	1	2	1	2	4	1	2	1
CALLOPHYLLIS SP.	X															
CORALLINES - ENCRUSTING	4	4	2	2	2	4	2	3	4	1	2	2	2	3	2	3
CORALLINES - ERECT	2	1	1	2	1	2	1	1	1	2	2	3	2	1	2	2
GELIDIUM SP.	X	0	0	0	0	0	1	0	0	0	0	2	3	0	1	0
GELIDIUM PURPURASCENS							1					1	3		1	1
GIGARTINA SP.	1	0	1	1	1	1	1	0	0	0	0	X	X	1	0	0
GIGARTINA CORYMBIFERA	1	0	X	1	1	1	1							1		
LAURENCIA PACIFICA	X	3	2	2	3	2	2	2	2	2	2	2	X	2	2	2
FILAMENTOUS RED ALGAE		2	X		X	X	X	2	1	X	1	X		1	2	2
HYPSYPOPS TURF NEST	0	0	1	0	0	0	1	1	1	0	1	1	X	1	2	2
DIATOMS																
DIATOM FILM	1	2	2	3	2	2	2	2	1	2	1	2	X	2	2	2
GROMIA OVIFORMIS																X
PORIFERA				2		1	2	1	2	1	2	2		2	2	2
LEUCETTA LOSANGELENSIS						1										
LEUCILLA NUTTINGI						X										
CLIONA SP.	X		X													
HALICLONA SP.	X										X				X	
RED SPONGES - ENCRUSTING	X		X	X	X	X	X	X	X	X	X	X		2		
SPHECIOSPONGIA CONFOEDERATA				1												
TETHYA AURANTIA	2	1	2	3	2	1	2	1	2	2	1			2	1	0
TETILLA SP.				X												
TETILLA ARB				X	2											
XESTOSPONGIA TRINDINAEA	X															
CNIDARIA																
HYDROZOA									1	2		2				
AGLAOPHENIA LATIROSTRIS	X	X	X	2		1	1					2				
ALLOPORA CALIFORNICA	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
HYDRACTINIA 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
LYTOCARPUS NUTTINGI																
OBELIA SP.	X	X	X		X							X			X	X
SERTULARELLA SP./SERTULARIA SP.							X				X					X
CLAVULARIA SP.							X									
PACHYCERIANTHUS FIMBRIATUS		2		2	X	1	X	2	2	X	2					
ANTHOZOA																
EUGORGIA RUBENS							X				4					
LOPHOGORGIA CHILENSIS	1	0	1	2	1		3	2	1	2/J2	2	1		2	1	
MURICEA CALIFORNICA	0	0			0		1	1	0	2	2	0		2	1	1
MURICEA FRUTICOSA	0	0	0		0		0	0	0	1	1	0		1	0	0
STYLATULA ELONGATA										X						
PARAZOANTHUS LUCIFICUM											2					
CORYNACTIS CALIFORNICA	3	4	2	2	3		2	2	1	2	3	2		3	3	2
ANTHOPLEURA ELEGANTISSIMA	X	X			X		X								X	X
CACTOSOMA/SAGARTIA									1	X				3	2	1
EPIACTIS PROLIFERA	X	X	2	X	2	X				X						
METRIDIUM SENILE		1														
PHYLACTIS SP.												X				
TEALIA COLUMBIANA					1											
TEALIA CORIACEA		X		X	2		X		1	X	2	1		2		
TEALIA LOFOTENSIS	3	2	1	2	2		0		1	0	0	0				
ORDER MADREPORARIA																
ASTRANGIA LAJOLLENSIS (=A. HAIMEI)	1	3	1	2	2	3	4	2	2	2	2	2		1	1	2
BALANOPHYLLIA ELEGANS	1	2	1	2	2	3	1	1	1	1	1	0		1	0	1
COENOCYATHUS BOWERSI											X					
PARACYATHUS STEARNSI (=P. STEARNSII)			X	2	X	3	X	X	X	X	2	X		X		
PLATYHELMINTHES	X							2		X		X				
NEMERTEA		X	X													
TUBULANUS SEXLINEATUS					X											
ANNELIDA																
POLYCHAETA																
ARCTONOE SP.					X				X							
ARCTONOE PULCHRA								X								
CHAETOPTERUS VARIOPEDATUS				2		X		2		X	2	X			2	2
DIOPATRA ORNATA	4	0	1	3	2	2	1	1		1	1	2			X	2
DODECACERIA FEWKESI	2	3		X	X				X		X					
EUDISTYLIA POLYMORPHA	X	2		X	X	X	X			1						
MESOCHAETOPTERUS SP.								X								
MYXICOLA INFUNDIBULUM						X	X	X	X	2	X	X				
OPHIODROMUS PUGETTENSIS									3							
PHRAGMATOPOMA CALIFORNICA	2		2				1	0	2	0	0	1		1	1	2
PISTA ELONGATA	X		X	2	2	X	X			2		2		2	1	
SALMACINA TRIBRANCHIATA		2					X		X	X					X	X
SERPULID						X										
"SODA STRAW TUBES IN SAND"								X								
SPIROBRANCHUS SPINOSUS						2	2	2	4	2	3	4		2	2	2
TEREBELLID		3					X			X		X				
POLYCHAETE "BALLOONS"		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
ARTHROPODA																
PYCNOGONIDA																
CRUSTACEA																
CIRRIPEDIA/THORACIA																
BALANUS SP.	2	2	X	X	2	X	4	2	2	3	2	3	X	2	X	X
BALANUS NUBILUS	X			X	2	X				X						
CONOPEA GALEATA											X			X		
MEGABALANUS CALIFORNICUS					X											
MALACOSTRACA																
MYSIDS	3	3			2											
ISOPODA																
IDOTEA RESECATA	3											0				
AMPHIPODA																
AMPHIPOD TUBE MASSES	X				X	2				X						
AMPITHOE HUMERALIS	X															
GAMMARIDEA																
CAPRELLIDEA											X					
EUPHSUSIACEA																
COPEPODS ON MEGATHURA CRENULATA											X					
COPEPODS ON FISH	X	X	X	3	X	2				X	X	X				
DECAPODA																
ALPHEUS CLAMATOR								X		X	X					
BETAEUS MACGINITIEAE	X											X				
LYSMATA CALIFORNICA											X					
PANDALUS DANAE	2	3	1		2	2				X						
SPIRONTOCARIS PRIONATA	X															
PANULIRUS INTERRUPTUS	0	0	1	1	0	0	0	1	1	1	1	3	3	0	2	2
HAPALOGASTER CAVICAUDA	X															
PAGURISTES SP.	X	X			X	X	X	X	X	X	X					
PAGURUS SP.	X	X		X	X	X	X	X								
PETROLISTHES SP.	X				X		X	X	X							
CANCER ANTENNARIUS	3		X													
CANCER PRODUCTUS	3	X														
HERBSTIA PARVIFRONS						X	3	2	2	X	X	2			X	X
LOXORHYNCHUS CRISPATUS	X										1					
LOXORHYNCHUS GRANDIS					1		X	X	S	2		X		2	3	X
PARAXANTHIAS TAYLORI						X	X	X	2	X	X	X			X	X
PELIA TUMIDA										X						
PUGETTIA PRODUCTA	3											1				
SCYRA ACUTIFRONS	X															
MOLLUSCA																
GASTROPODA																
AMPHISSA VERSICOLOR						2	4	X	X	X		X				
LITHOPOMA GIBBEROSUM (=Astraea gibberosa)	3	1			1	1	1	0	1	J1	0	0		0	0	0
LITHOPOMA UNDOSUM (=Astraea undosa)	0	0	1	0	1	2	1	2	4	2	2	4/J2	3	3	2/J2	2/J1
BURSA CALIFORNICA (=Crossata californica)										1				1	1	
CALLIOSTOMA SP.	2	X	X		X	2			2		2				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
CALLIOSTOMA ANNULATUM	X															
CERATOSTOMA FOLIATUM	2	2								X						
CERATOSTOMA NUTTALLI							X	X	X		2	X			X	X
CONUS CALIFORNICUS	X	X	2	2	2	X	X	X	1	X	2	2		X	X	X
CREPIDULA SP.	X		X			X		X		X	X	X				
CYPRAEA SPADICEA	1	3	2	2	2		2	2	3	2	2	2		2	2	2
DIODORA SP.						X										
HALIOTIS CORRUGATA	0	0	0	0	0	0/J1	S	0	0	J1	0	1	1	S	0	0
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	0	0	0	0	0	0	0	0	S
HALIOTIS RUFESCENS	3/J1	1/J1	1	1	0/J1	0/J1	S	0	0	J1	0	0	0	0	0	0
HALIOTIS SORENSENI	0	0	0	0	0	0/S?	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
HALIOTIS ASSIMILIS	S	0	0	0	1/S	1	0	0	0	1	0	S	?	0	0	0
HOMALOPOMA SP.							X									
KELLETIA KELLETII	4	1	1	2	1	2	1	1	0	1	2	1	2	1	0	0
MAXWELLIA GEMMA							X	X	X			2				
MEGATHURA CRENULATA	2	2	2	2	2	2	3	2	2	2	2	1	2	1	1	1
MITRA IDAE	X				2			X	X	X						
NORRISIA NORRISI	3		1	1				0	0			2		0	1	1
SERPULORBIS SQUAMIGERUS		1	1			1	X	2	3	1	1	2		1	2	2
SIMNIA VIDLERI (=Neosimnia)							X				X					
TEGULA AUREOTINCTA								X	X			X		X	2	3
TEGULA EISENI								X	X		X	X		2	2	3
TEGULA REGINA						2				2	2	1		3	2	2
TRIVIA SP.														X		
TRIVIA SOLANDRI												X				
VOLVARINA TAENIOLATA									X		X					
OPISTOBRANCHIA																
APLYSIA CALIFORNICA	1	1	1	1	1	1	1	1	2	1	2	1		2	2	2
APLYSIA VACCARIA												1				
BERTHELLINA ENGELI						X		X	X	2		2				
BULLA/HAMINOEA										E				E		
NAVANAX INERMIS		2		1			X			1		X		0	0	0
NUDIBRANCHIA																
CADLINA LUTEOMARGINATA				X												
DIAULULA SANDIEGENSIS	X			X	X											
FLABELLINOPSIS IODINEA (=Coryphella iodinea)							X		X			X				X
HERMISSENDA CRASSICORNIS	X	3		X								X				X
LAILA COCKERELLI			X		X											
MEXICHROMIS PORTERAE												X				
PHIDIANA PUGNAX			X		X											
TRIOPHA CATALINAE	X															
TRITONIA FESTIVA				X												
POLYPLACOPHORA																
CRYPTOCHITON STELLERI	2															
TONICELLA LINEATA	X															
BIVALVIA																
AMERICARDIA BIANGULATA								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
CHAMA ARCANA		X					X	X	2		X	2				
GARI CALIFORNICA							X	X						S		
CRASSEDOMA GIGANTEUM (=Hinnites giganteus)	1	1	1	1	1	2	2	2	2	X	2	3	4	1	2	1
LIMA HEMPHILLI								2			S					
PECTEN DIEGENSIS						S				S						
PHOLAD		X		2	X		X	X	X	X	X	X				
PODODESMUS CEPIO	X	X	2	X	X	2		X		3	2	X				
SEMELE SP.										S		S				
TRACHYCARDIUM QUADRAGENARIUM							X	2								
VENTRICOLARIA FORDII							X	X	X		X					
CEPHALAPODA																
OCTOPUS SP.		X												X		
OCTOPUS BIMACULATUS/BIMACULOIDES			X		X		X	X		X	X	X			X	X
OCTOPUS RUBESCENS			X							X						
ECTOPROCTA																
BUGULA SP.										X	1					
BUGULA CALIFORNICA							X					X		1	X	X
BUGULA NERITINA												X				
COSTAZIA ROBERTSONIAE	X									X						
DIAPEROECIA CALIFORNICA	X	1		X	2	2	2	1	1	1	1	2		1	1	1
LICHENOPORA NOVAE-ZELANDIAE						2								2		X
MEMBRANIPORA SP.						X			X	X		2			X	X
THALAMOPORELLA CALIFORNICA												2			X	
PHORONIDA																
PHORONIS VANCOUVERENSIS								2								
ECHINODERMATA																
ASTEROIDEA																
DERMASTERIAS IMBRICATA	2		X	X	2											
HENRICIA SP.																
HENRICIA LEVIUSCULA	X		X	X	X	2	X	X			2	X		1		
LINCKIA COLUMBIAE							2	3	2		1	X				
LUIDIA FOLIOLATA				X												
MEDIASTER AEQUALIS				X		X		1	1	1						
ORTHASTERIAS KOEHLERI	X	X	X	X	X	X	X									
ASTERINA MINIATA (=Patiria miniata)	3	3	2	2	3	3	2	2	3	2	2/J2	1/J2	1	3	1	1
PISASTER BREVISPINUS					X											
PISASTER GIGANTEUS	2	3	2	2	2	2	1	3	1	2	1	1	X	2	2	2
PISASTER OCHRACEUS						1										
PYCNOPODIA HELIANTHOIDES	2/J2	2/J2	4/J1	4/J1	3/J3	2	0	0	0	2	1	0	0	1	1	0
diseased seastars	0	0	0	0	0	0	0	2	1	0	1	0	0	0	0	0
ECHINOIDEA																
ARBACIA INCISA											1			1		
CENTROSTEPHANUS CORONATUS	0	0	0	0	0	2	2	2	1	1	3	1	2	3	2	2
LYTECHINUS ANAMESUS	0	0	0	0	1	2	2	2	1	2	2	0		2	1	0
LYTECHINUS ANAMESUS JUVENILES	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
STRONGYLOCENTROTUS FRANCISCANUS	3	4	3	3	3	2	2	3	3	2	2	3	4	2	2	3

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
STRONGLYOCENTROTUS FRANCISCANUS JUV.	1	1	1	1	1	1	1	1	1	1	1	2	2	1	0	1
STRONGYLOCENTROTUS PURPURATUS	2	3	2	3	2	2	3	3	4	2	3	3	2	2	3	3
STRONGLYOCENTROTUS PURPURATUS JUV.	1	1	1	1	1	1	1	1	1	1	1	2	2	1	2	2
diseased urchins	0	0	0	1	1	1	1	1	2	1	2	0		2	2	1
OPHIUROIDEA																
OPHIODERMA PANAMENSE						X					X	X				
OPHIOPSILLA CALIFORNICA								X	X							
OPHIOPTERIS PAPILLOSA	X				X	X	X	X	X	2	X	2			X	X
OPHIOTHRIX SPICULATA		1			2	2	3	2	1	2	4	1		3	1	0
HOLOTHUROIDEA																
CUCUMARIA SP.	X	X	X	2	3	X	2	2	2		2	X		X	X	X
CUCUMARIA PIPERATA				X	2		2	X	X	X	X	X			X	
CUCUMARIA SALMA					X		X	X	X	X	X					
EUPENTACTA QUINQUESEMITA					X		X									
PACHYTHYONE RUBRA	0	0	0	0		2	4	1		1	0	0	0	0	0	0
PARASTICHOPUS CALIFORNICUS	2	1		1		1										
PARASTICHOPUS PARVIMENSIS	2	2	1	2	2	2	2	1	1	2	2	3	2	1	1	2
CHORDATA																
UROCHORDATA																
APLIDIUM SP.											X	X		X	X	X
BOLTENIA VILLOSA						X										
CLAVELINA HUNTSMANI					X		X				1					X
CYSTODYTES LOBATUS	X	X	X	X	X			1								
DIDEMNUM SP.											X	X			X	X
DISTAPLIA OCCIDENTALIS											X					
HALOCYNTHIA HILGENDORFI IGABOJA						X										
METANDROCARPA TAYLORI											X					
UNID. WHITE TUNICATE												2				
PYCNOCLAVELLA STANLEYI														2		
PYURA HAUSTOR					X		X								X	
SALPS														X	X	X
STYELA MONTEREYENSIS	2	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0
TRIDIDEMNUM OPACUM												X				
VERTEBRATA																
CHONDRICHTYES																
CEPHALOSCYLLIUM VENTRIOSUM			1	1	1	1	X	X	E	1			X			
HETERODONTUS FRANCISCI				X		1	X	1	1							
MYLIOBATIS CALIFORNICA			1			2	X		X			X	X	X	X	1
SQUATINA CALIFORNICA						1										
OSTEICHTHYES																
GYMNOTHORAX MORDAX											1				X	
GOBIESOX SP.																X
SARDINOPS SAGAX			X					X								
ENGRAULIS MORDAX												X				
ATHERINOPS AFFINIS			X			2					X	X	X		X	
AULORHYNCHUS FLAVIDUS	3	2														

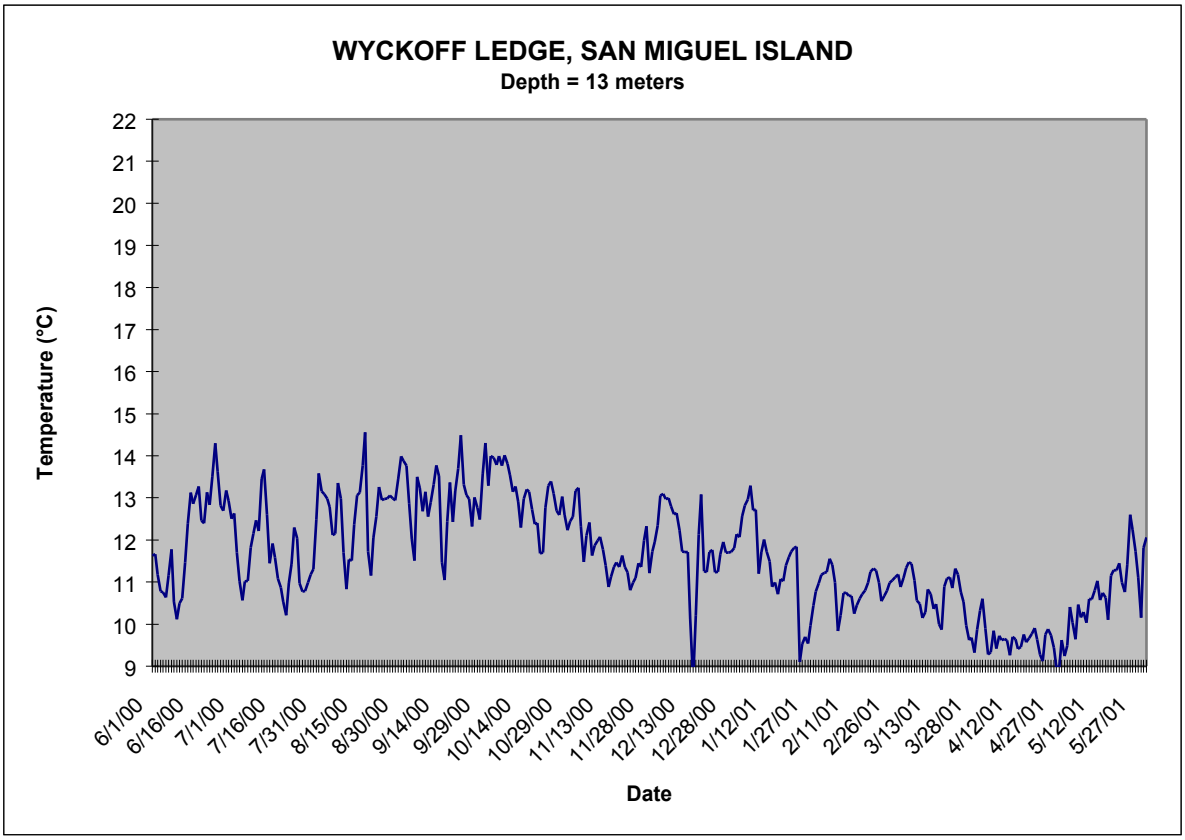
LOCATION:	SMWL	SMHR	SRJLNO	SRJLSO	SRRR	SCGI	SCFH	SCPB	SCSA	SCYB	ANAR	ANCC	ANLC	SBSESL	SBAP	SBCAT
SPECIES SITE #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
RATHBUNELLA HYPOPLECTA		X		X	X		X	X								
TRACHURUS SYMMETRICUS			X													
ALLOCLINUS HOLDERI	0	0	0	0	1	1	2	2	2	1	2	4	2	2	3	2
GIBBONSIA SP.	X	X										X	X			X
HETEROSTICHUS ROSTRATUS												2	2			X
HETEROSTICHUS ROSTRATUS (JUVENILES)			X									2	2			
NEOCLINUS SP.				X			X	3	3			X				
COTTIDAE	X	X		X	X			X			X	X	X	X		
ARTEDIUS SP.																
ARTEDIUS CORALLINUS	X	X	X	X	X	X			X					X	X	X
ARTEDIUS CREASERI														X		
LEIOCOTTUS HIRUNDO													X			
ORTHONOPIAS TRIACIS	X	X	X		X	X	X					X	X	X	X	X
SCORPAENICHTHYS MARMORATUS	X	2	X	X	2	X				X				X	X	X
BRACHYISTIUS FRENATUS	X		X									2	3			
RHACOCHILUS VACCA	1/J1	2/J1	2/J2	2/J0	1/J0	1/J0	2/J0	2/J0	1/J0	X/J0	2/J0	1/J0	0/J0	0/J0	X/J0	0/J0
EMBIOTOCA JACKSONI	2/JX	2/J1	2/J2	2/J0	3/J1	1/J0	2/J0	2/J0	2/J0	1/J0	X/J0	2/JX	2/J2	0/J0	X/J0	1/J0
EMBIOTOCA LATERALIS	2/J2	2/J1	2/J1	2/J0	2/J1	0/J0	0/J0	0/J0	0/J0	0/J0	0/J0	0/J0	0/J0	0/J0	0/J0	0/J0
HYPSURUS CARYI	X		X		X											
RHACOCHILUS TOXOTES			1	3	1	1	X	3	1		2		X	0	0	0
CORYPHOPTERUS NICHOLSI	1	2	2	2	2	2	X	X	3	3	2	3	3	3	2	2
LYTHRYPNUS DALLI	0	0	0	0	0	0	1	1	1	1	0	0	1	0	0	0
LYTHRYPNUS ZEBRA	0	0	0	0	0	0	1	2	1	0	1	2	2	0	0	0
ANISOTREMUS DAVIDSONII													1			
OPHIODON ELONGATUS	X	X	X	X	X	X	X									
OXYLEBIUS PICTUS	2	2	3	2	2	3	2	2	2	2	2	2	2	2	2	2
GIRELLA NIGRICANS	0	0	2	2	1	2	2	2	X/JX	X	2	2/JX	2	1	X	X
HERMOSILLA AZUREA										X						
MEDIALUNA CALIFORNIENSIS			X	X	1					0	2	X	3		1	2
MEDIALUNA (JUVENILES)												0				
HALICHOERES SEMICINCTUS	1	0	1	0	0	0	2	1	1	2	2	2	2	1	1	1
H. SEMICINCTUS (FEMALES)	1	0	1	0	0	0	2	1	1	2	2	2	2	1	1	1
H. SEMICINCTUS (MALES)	0	0	1	0	0	0	2	1	1	2	2	1	2	1	1	1
H. SEMICINCTUS (JUVENILES)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OXYJULIS CALIFORNICA	2	1	2	X	1	1	1	2	2	2	2	1	2	2	2	3
O. CALIFORNICA (JUVENILES)	2	1	2	0	0	0	0	0	0	0	0	0	2	2	3	3
SEMICOSSYPHUS PULCHER	2	1	2	3	1	2	2	1	1	2	2	2	2	2	2	2
S. PULCHER (FEMALES)	2	1	2	4	1	3	2	1	1	2	2	2	2	2	2	2
S. PULCHER (MALES)	1	X	1	1	1	1	1	1	0	0	0	1	1	0	1	1
S. PULCHER (JUVENILES)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAULOLATILUS PRINCEPS		1	1	3	1	1	X	2		1		1		1		
STEREOLEPIS GIGAS											X					
CHROMIS PUNCTIPINNIS	0	2	1	2	2	2	3	2	2	2	3	2	2	2	2	3
CHROMIS PUNCTIPINNIS (JUVENILES)	0	2	1	0	0	1	1	0	X	0	2	1	1	2	3	X
HYPSYPOPS RUBICUNDUS	0	0	1	0	0	1	2	2	2	1	2	3	2	2	3	3
HYPSOPOPS RUBICUNDUS (JUVENILES)	0	0	0	0	0	0	1	1	1	0	0	1	1	0	1	1

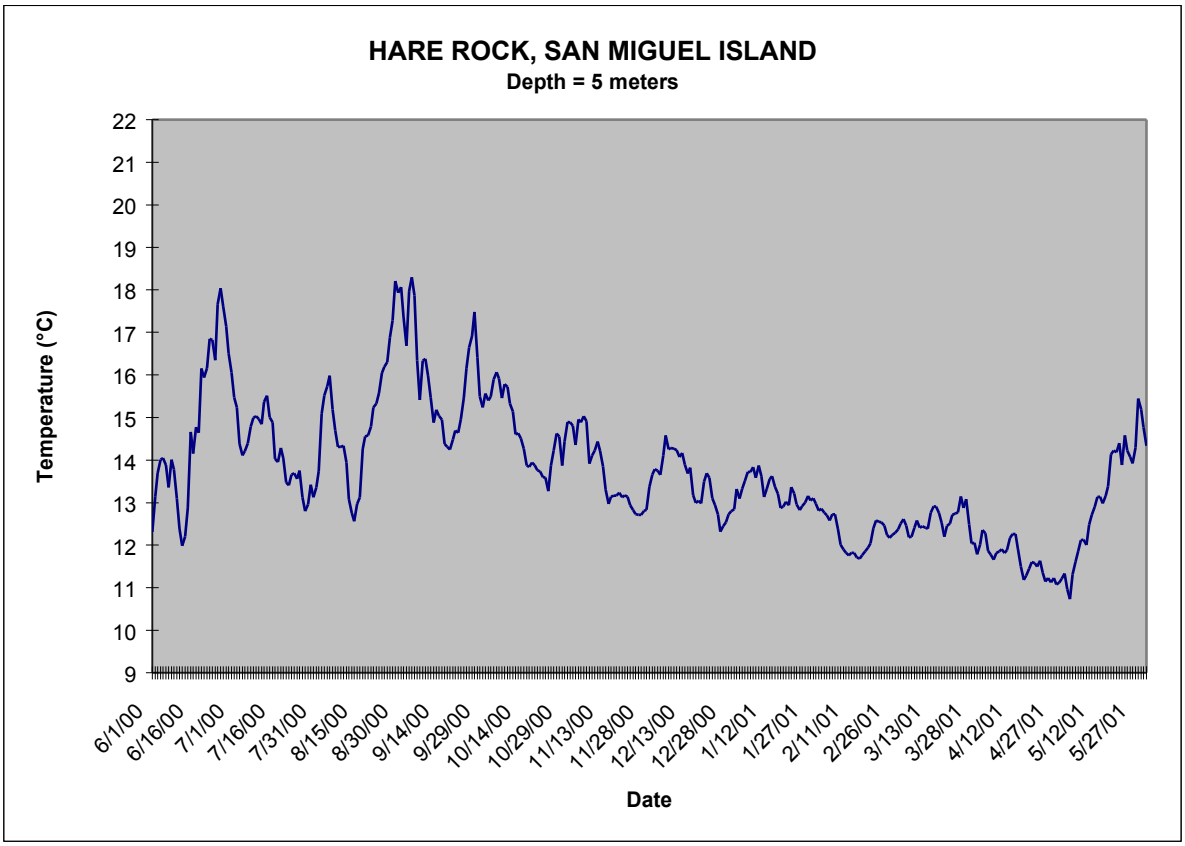
LOCATION:	SMWL	SMHR	SRJLNO	SRJLSO	SRRR	SCGI	SCFH	SCPB	SCSA	SCYB	ANAR	ANCC	ANLC	SBSESL	SBAP	SBCAT
SPECIES SITE #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SCORPAENA GUTTATA				X	X	X	X	X	X	X	X		X			
SEBASTES SP. (JUVS.)	X	X	X		X					1		X		0	0	0
SEBASTES ATROVIRENS	2	2	2	2	2	2	1	2	1	2	1	1	1	0	0	1
S. ATROVIRENS (JUVENILES)	1	X	0	0	X	0	0	0	0	0	0	1	0	0	0	0
SEBASTES CARNATUS	2	X		1		1	X		X	X	X					
SEBASTES CAURINUS	2	X		1	X		X		X			1				
S. CARNATUS/CAURINUS (JUVENILES)				0							X					
SEBASTES CHRYSOMELAS	2	2	X	2		X			1	1	X		X			
SEBASTES MINIATUS	1					1				2						
S. MINIATUS (JUVENILES)										1						
SEBASTES MYSTINUS	3	3	2	1	X	1	1	X	X	0	1	1	0	0	0	X
S. MYSTINUS (JUVENILES)	2	2	2	2	1	3	1	0	0	1	1	0	1	0	0	X
SEBASTES RASTRELLIGER			X												X	1
SEBASTES SERRANOIDES	1	1	2	1	1	1	X	1	0	1	1	1	1	0	0	0
S. SERRAN./S. FLAVIDUS (JUVENILES)	1	1	1	X	X	1	0	0	0	0	1	X	0	0	0	0
SEBASTES SERRICEPS	1	1	1	1	1	1	1	1	2	1	1	1	1	0	X	1
S. SERRICEPS (JUVENILES)	1	0	1	X	2	1	1	1	2	2	1	1	1	0	X	1
PARALABRAX CLATHRATUS	0	0	1	1	1	1	2	2	1	2	1	2	2	1	1	1
P. CLATHRATUS (JUVENILES)	1	0	0	0	0	0	0	1	X	0	0	1	1	0	0	0
CITHARICHTHYS STIGMAEUS	X		X	X								X	X			
PARALICHTHYS CALIFORNICUS												1		X		X
PLEURONICHTHYS COENOSUS	1			1				1					X			1
BALISTES POLYLEPIS								X								

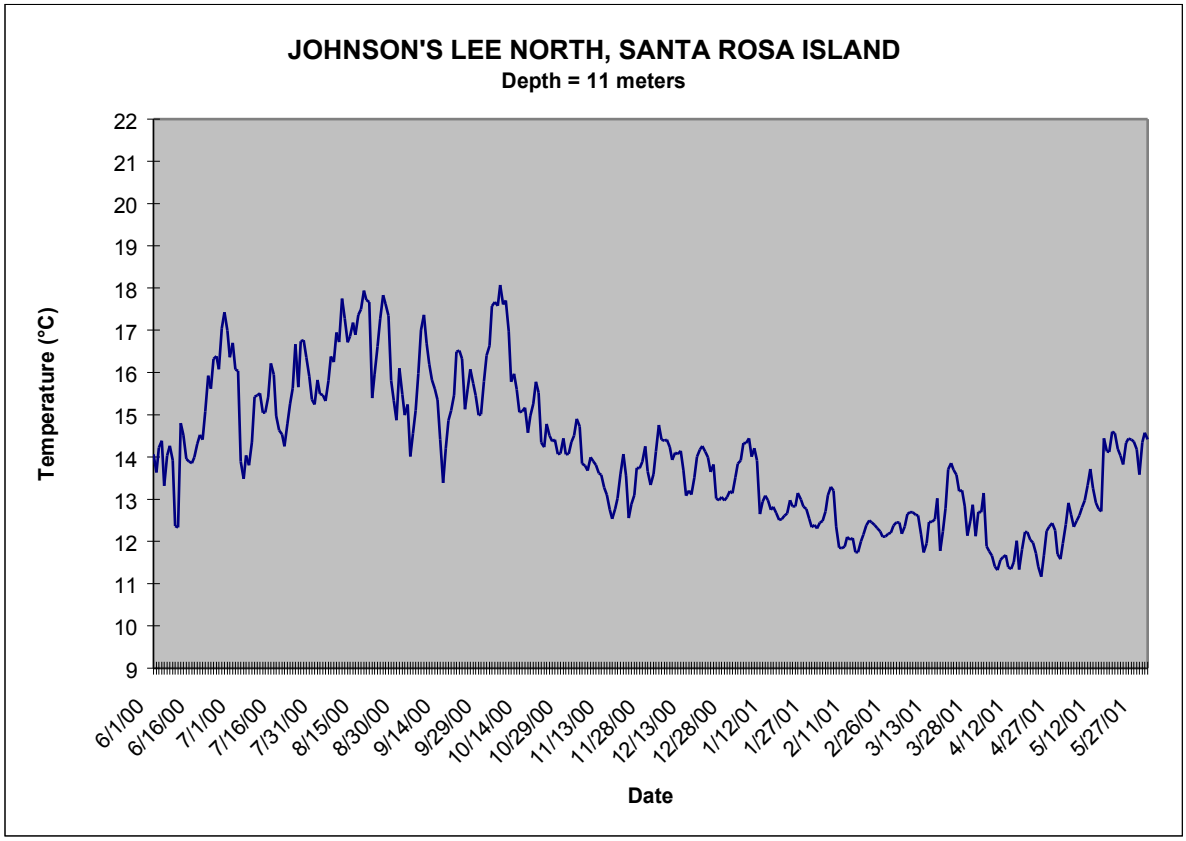
Appendix L. 2001 Temperature data collected at Channel Islands National Park Kelp Forest Monitoring Stations by remote temperature loggers.

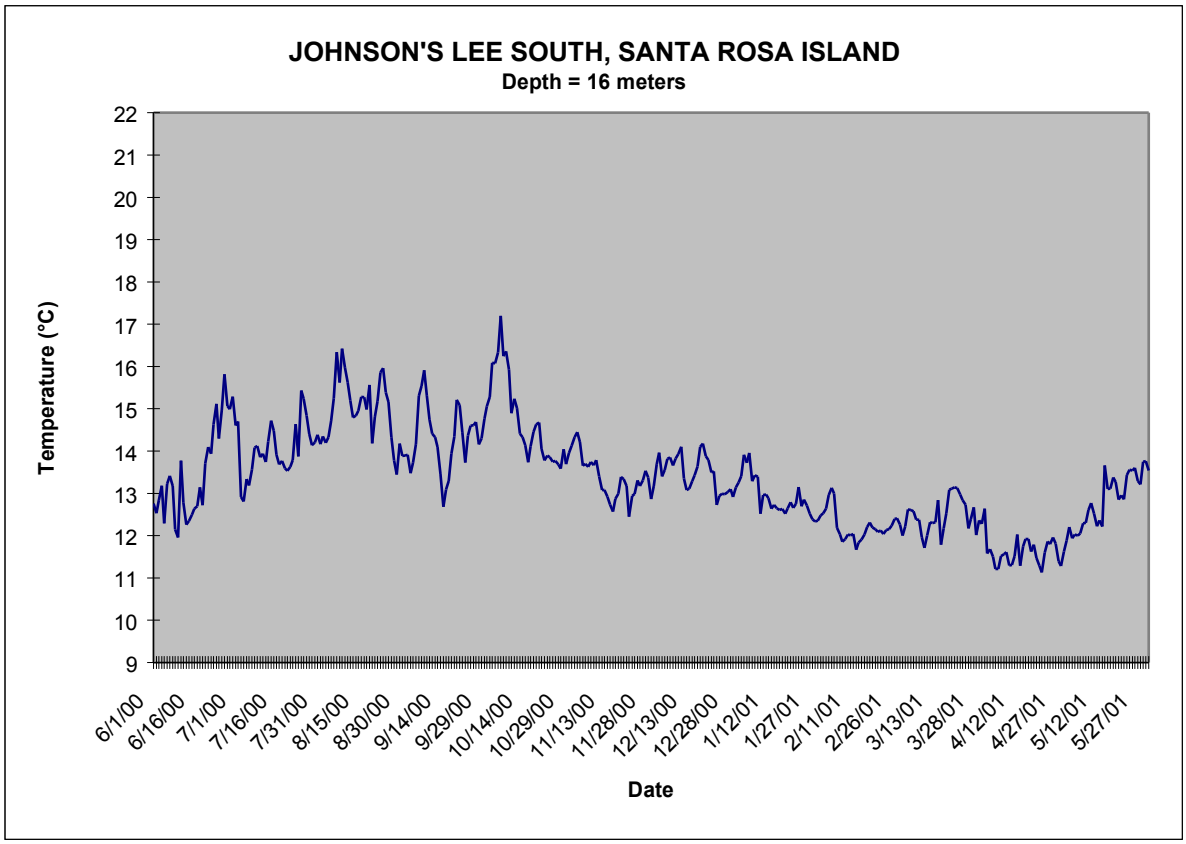
Introduction:

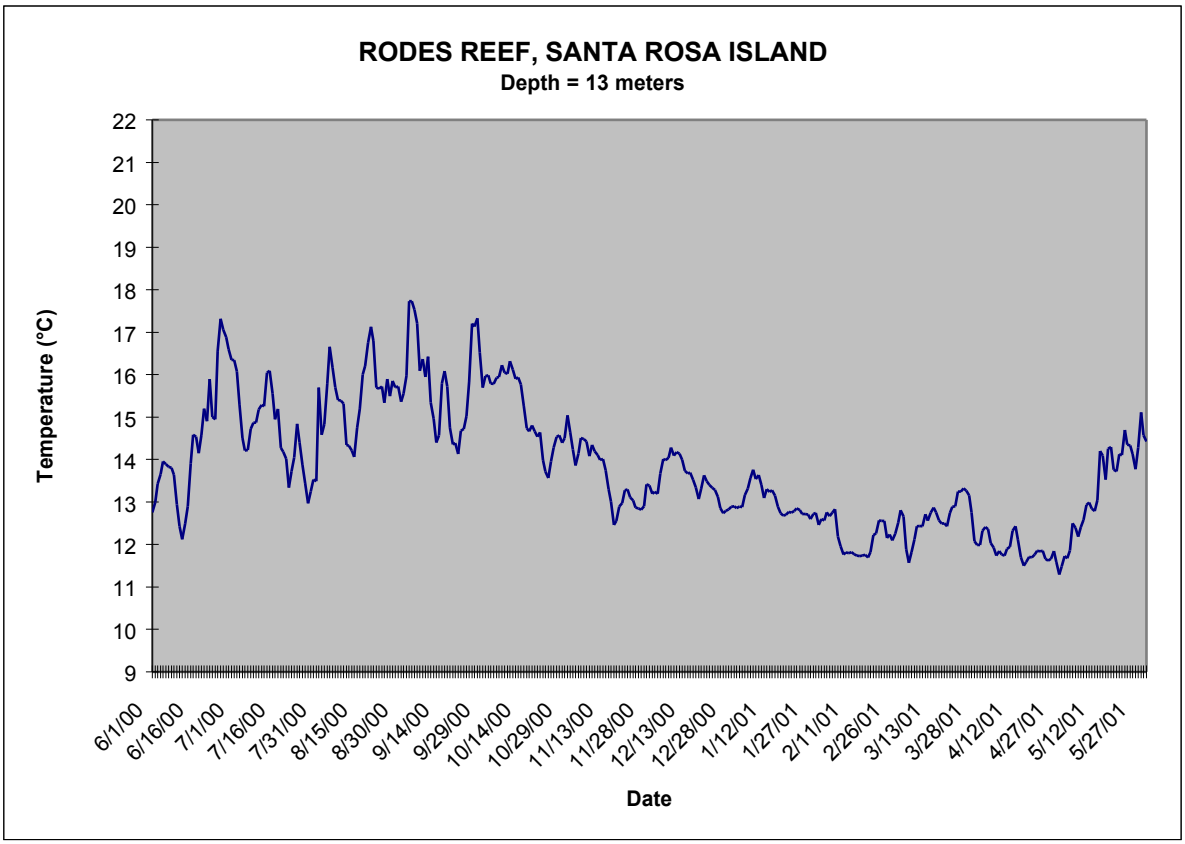
This appendix contains the temperature data (presented graphically) collected by STOWAWAY™. temperature loggers that were deployed at all 16 Kelp Forest Monitoring sites. Missing data at some sites is the result of technical problems or loss of temperature logger.

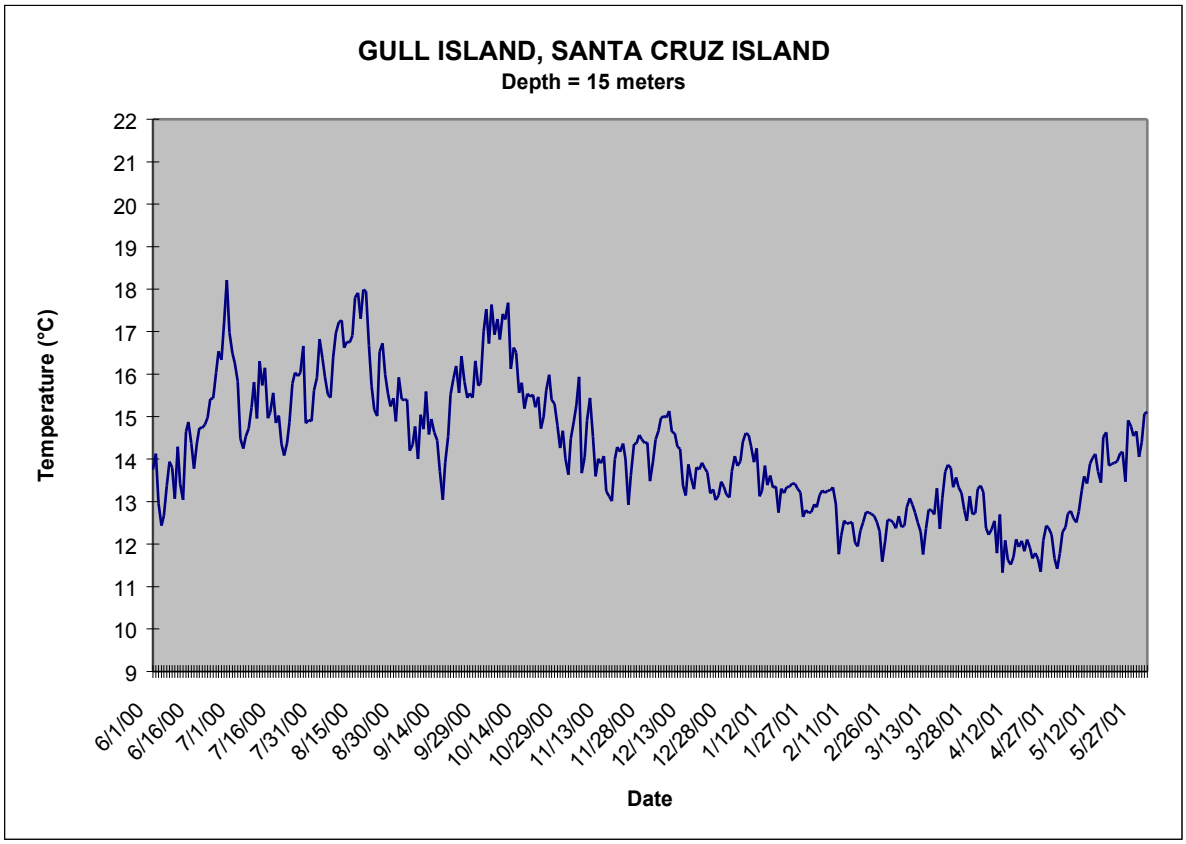

WYCKOFF LEDGE, SAN MIGUEL ISLAND
Depth = 13 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/00
6/16/00
7/1/00
7/16/00
7/31/00
8/15/00
8/30/00
9/14/00
9/29/00
10/14/00
10/29/00
11/13/00
11/28/00
12/13/00
12/28/00
1/12/01
1/27/01
2/11/01
2/26/01
3/13/01
3/28/01
4/12/01
4/27/01
5/12/01
5/27/01
Date

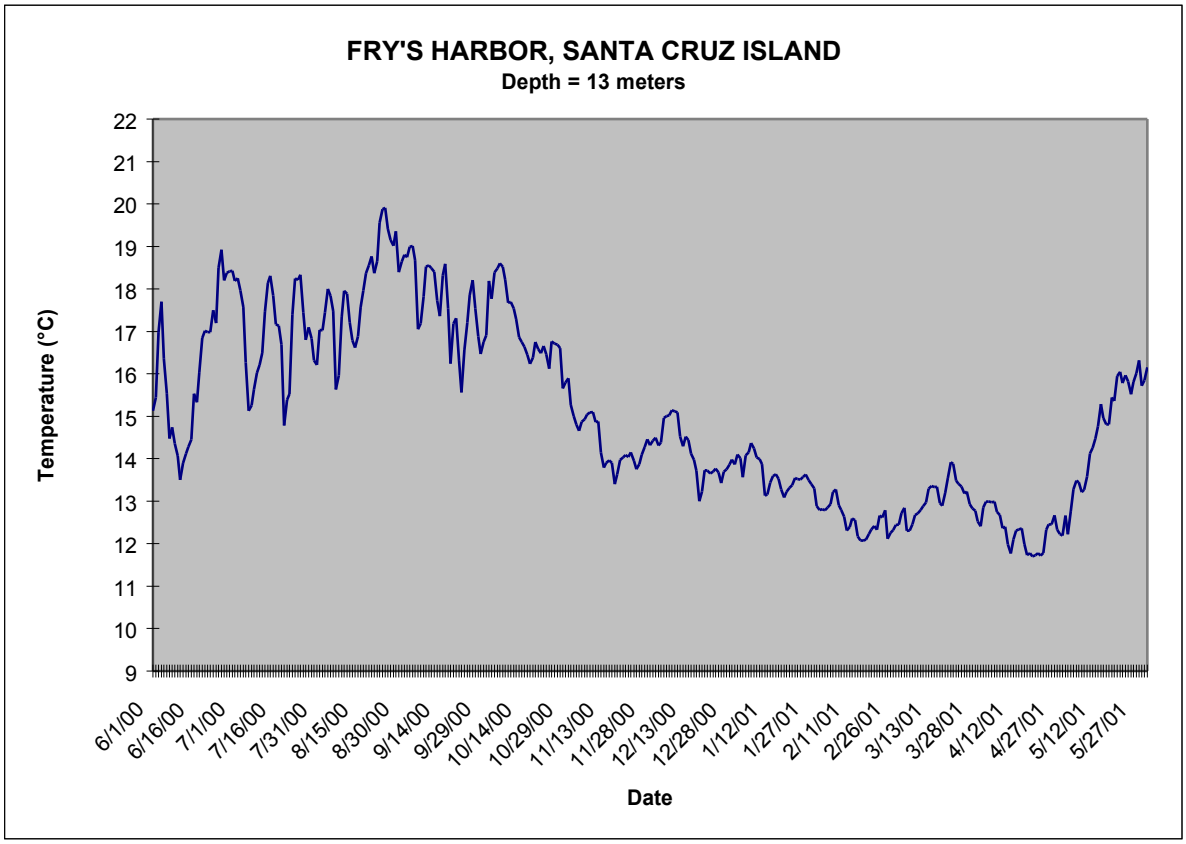

HARE ROCK, SAN MIGUEL ISLAND
Depth = 5 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/00
6/16/00
7/1/00
7/16/00
7/31/00
8/15/00
8/30/00
9/14/00
9/29/00
10/14/00
10/29/00
11/13/00
11/28/00
12/13/00
12/28/00
1/12/01
1/27/01
2/11/01
2/26/01
3/13/01
3/28/01
4/12/01
4/27/01
5/12/01
5/27/01
Date

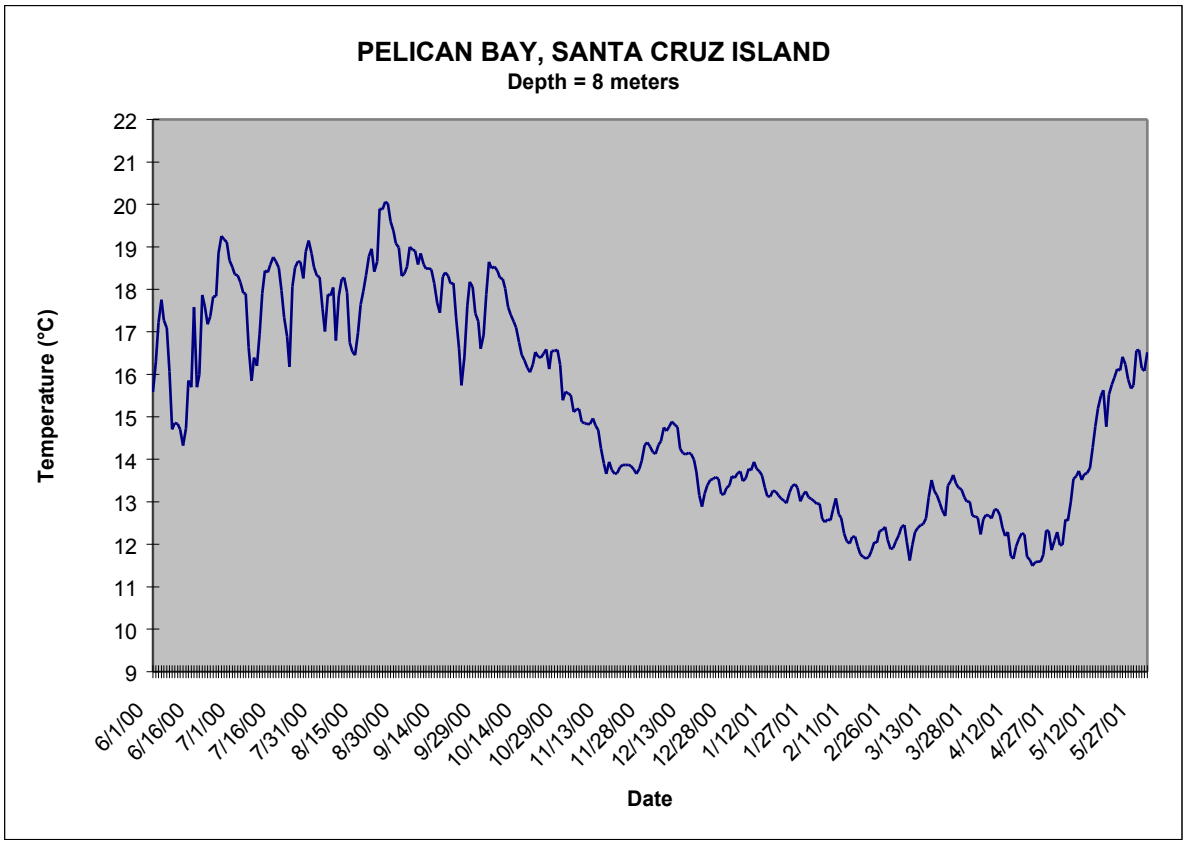

JOHNSON'S LEE NORTH, SANTA ROSA ISLAND
Depth = 11 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/00
6/16/00
7/1/00
7/16/00
7/31/00
8/15/00
8/30/00
9/14/00
9/29/00
10/14/00
10/29/00
11/13/00
11/28/00
12/13/00
12/28/00
1/12/01
1/27/01
2/11/01
2/26/01
3/13/01
3/28/01
4/12/01
4/27/01
5/12/01
5/27/01
Date

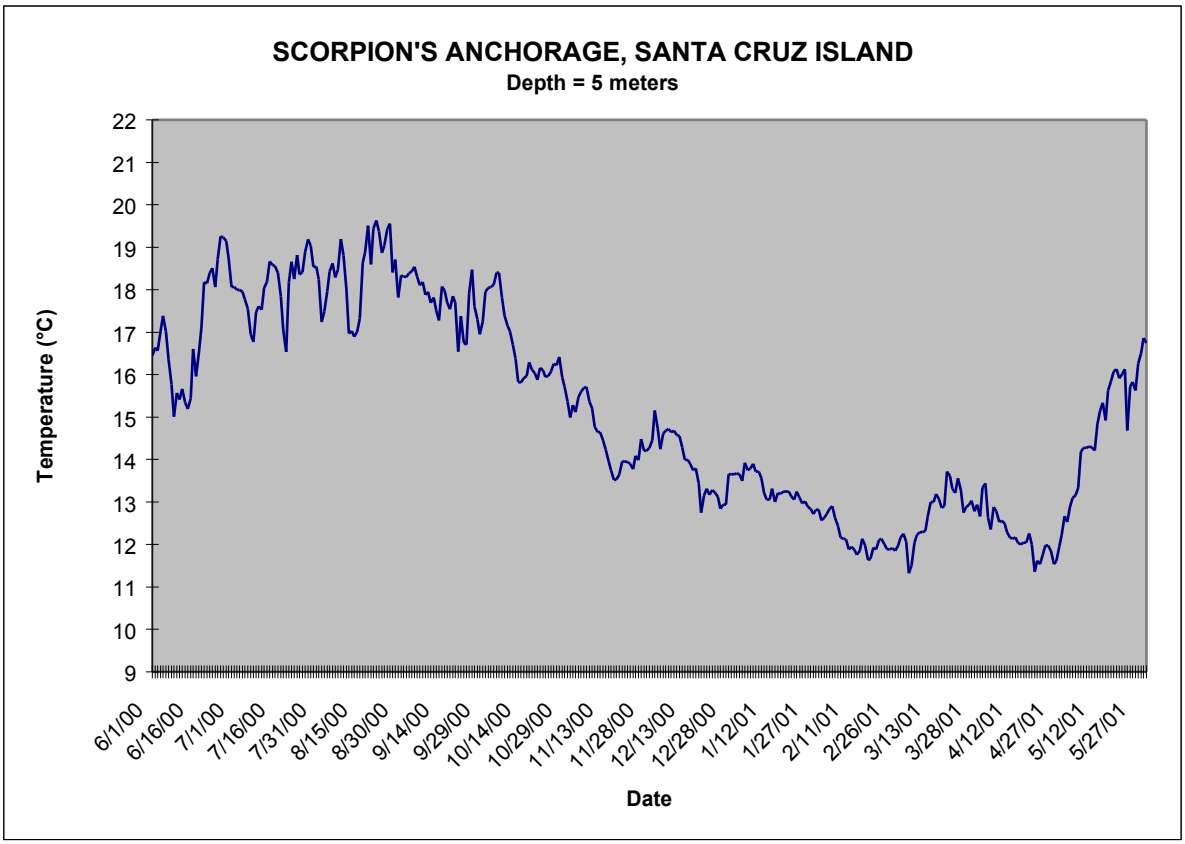

JOHNSON'S LEE SOUTH, SANTA ROSA ISLAND
Depth = 16 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/00
6/16/00
7/1/00
7/16/00
7/31/00
8/15/00
8/30/00
9/14/00
9/29/00
10/14/00
10/29/00
11/13/00
11/28/00
12/13/00
12/28/00
1/12/01
1/27/01
2/11/01
2/26/01
3/13/01
3/28/01
4/12/01
4/27/01
5/12/01
5/27/01
Date

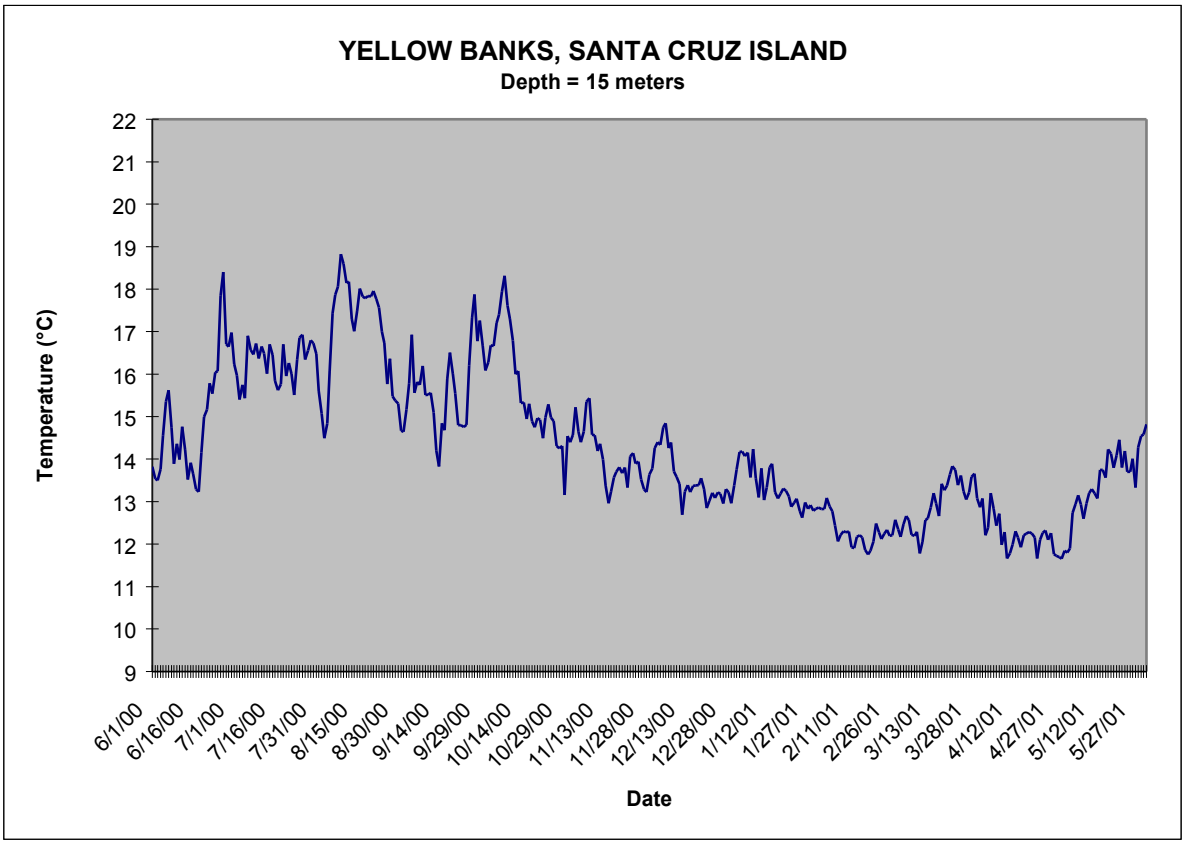

RODES REEF, SANTA ROSA ISLAND
Depth = 13 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/00
6/16/00
7/1/00
7/16/00
7/31/00
8/15/00
8/30/00
9/14/00
9/29/00
10/14/00
10/29/00
11/13/00
11/28/00
12/13/00
12/28/00
1/12/01
1/27/01
2/11/01
2/26/01
3/13/01
3/28/01
4/12/01
4/27/01
5/12/01
5/27/01
Date

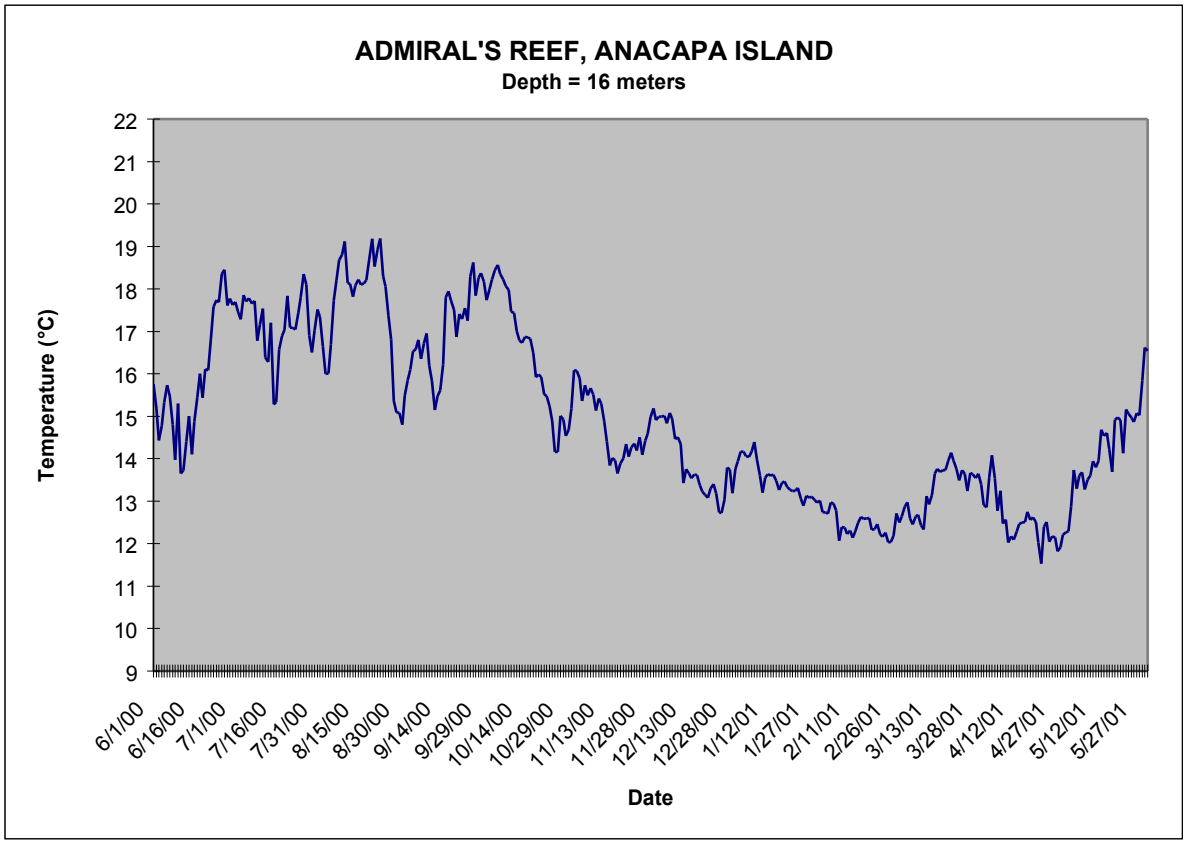

GULL ISLAND, SANTA CRUZ ISLAND
Depth = 15 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/00
6/16/00
7/1/00
7/16/00
7/31/00
8/15/00
8/30/00
9/14/00
9/29/00
10/14/00
10/29/00
11/13/00
11/28/00
12/13/00
12/28/00
1/12/01
1/27/01
2/11/01
2/26/01
3/13/01
3/28/01
4/12/01
4/27/01
5/12/01
5/27/01
Date

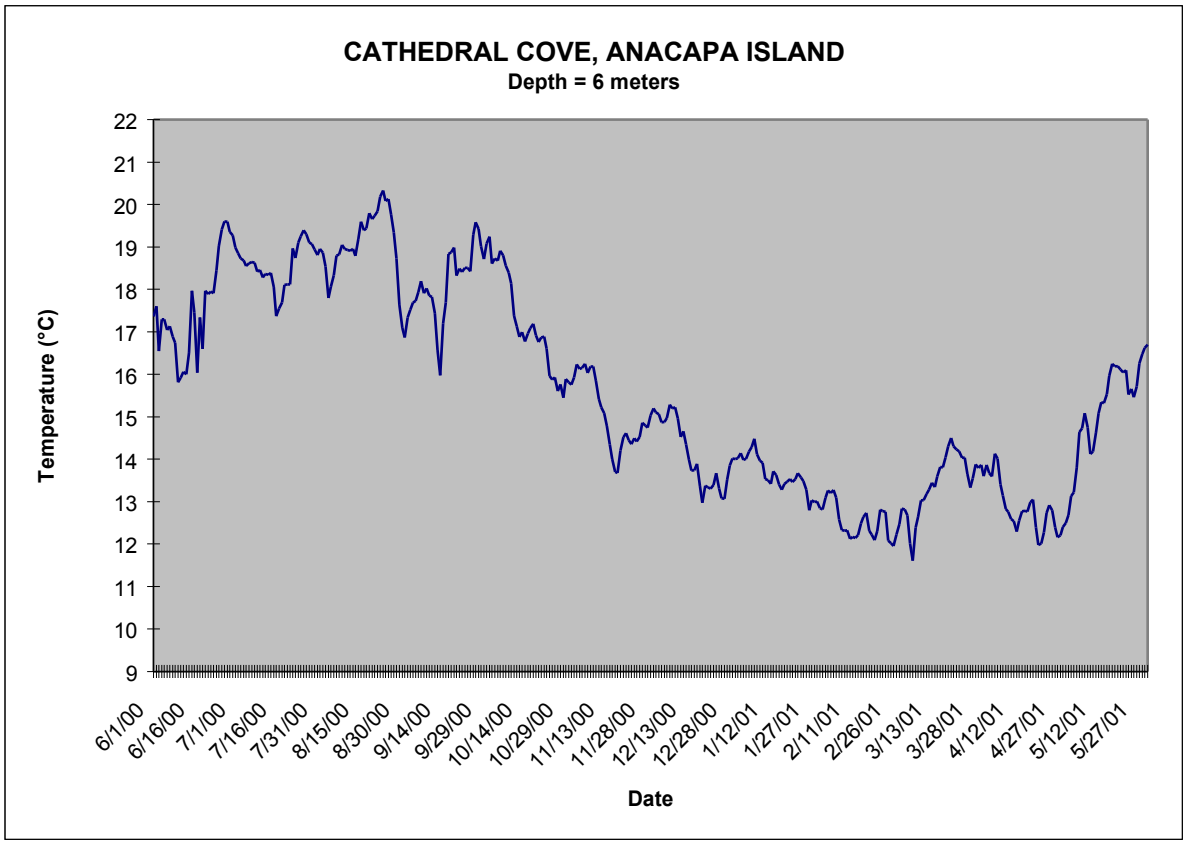

FRY'S HARBOR, SANTA CRUZ ISLAND
Depth = 13 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/00
6/16/00
7/1/00
7/16/00
7/31/00
8/15/00
8/30/00
9/14/00
9/29/00
10/14/00
10/29/00
11/13/00
11/28/00
12/13/00
12/28/00
1/12/01
1/27/01
2/11/01
2/26/01
3/13/01
3/28/01
4/12/01
4/27/01
5/12/01
5/27/01
Date

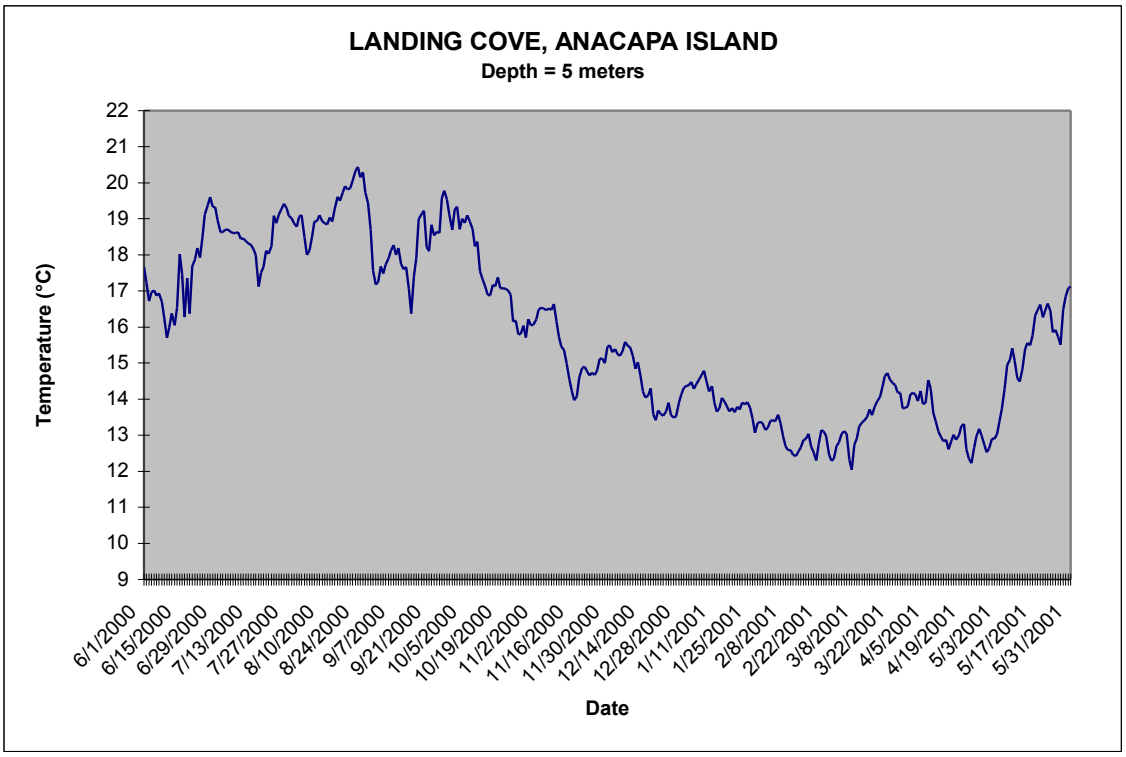

PELICAN BAY, SANTA CRUZ ISLAND
Depth = 8 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/00
6/16/00
7/1/00
7/16/00
7/31/00
8/15/00
8/30/00
9/14/00
9/29/00
10/14/00
10/29/00
11/13/00
11/28/00
12/13/00
12/28/00
1/12/01
1/27/01
2/11/01
2/26/01
3/13/01
3/28/01
4/12/01
4/27/01
5/12/01
5/27/01
Date

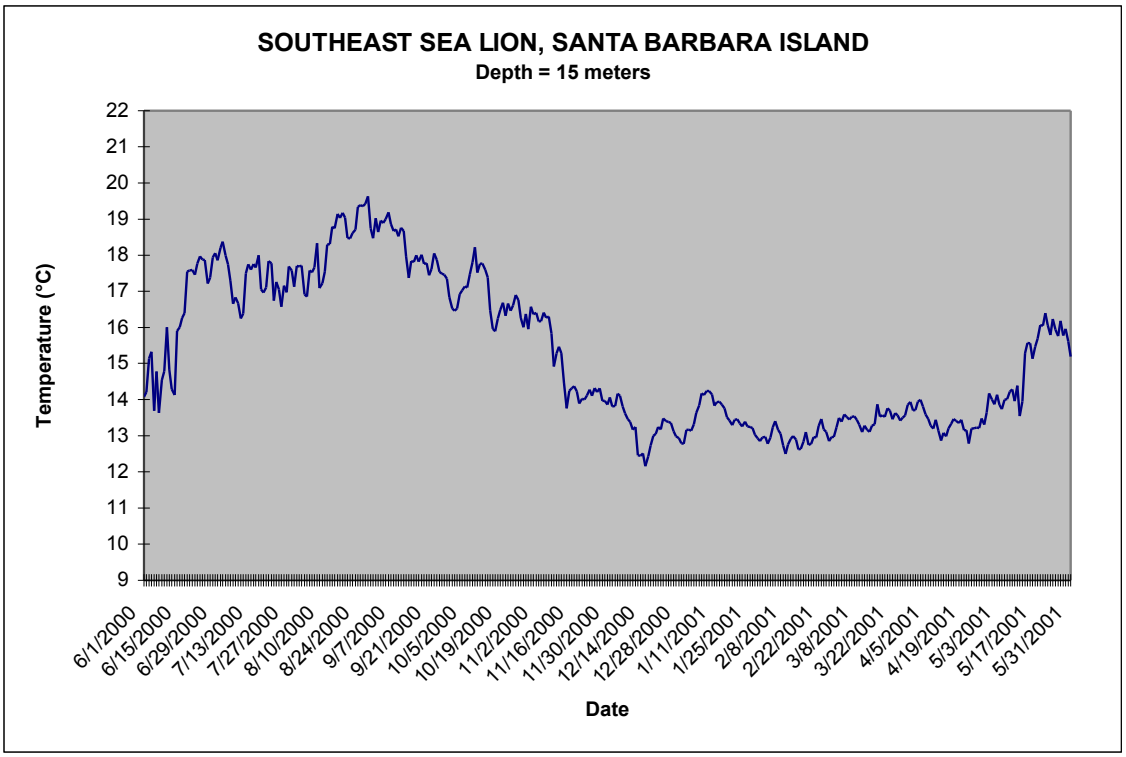

SCORPION'S ANCHORAGE, SANTA CRUZ ISLAND
Depth = 5 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/00
6/16/00
7/1/00
7/16/00
7/31/00
8/15/00
8/30/00
9/14/00
9/29/00
10/14/00
10/29/00
11/13/00
11/28/00
12/13/00
12/28/00
1/12/01
1/27/01
2/11/01
2/26/01
3/13/01
3/28/01
4/12/01
4/27/01
5/12/01
5/27/01
Date

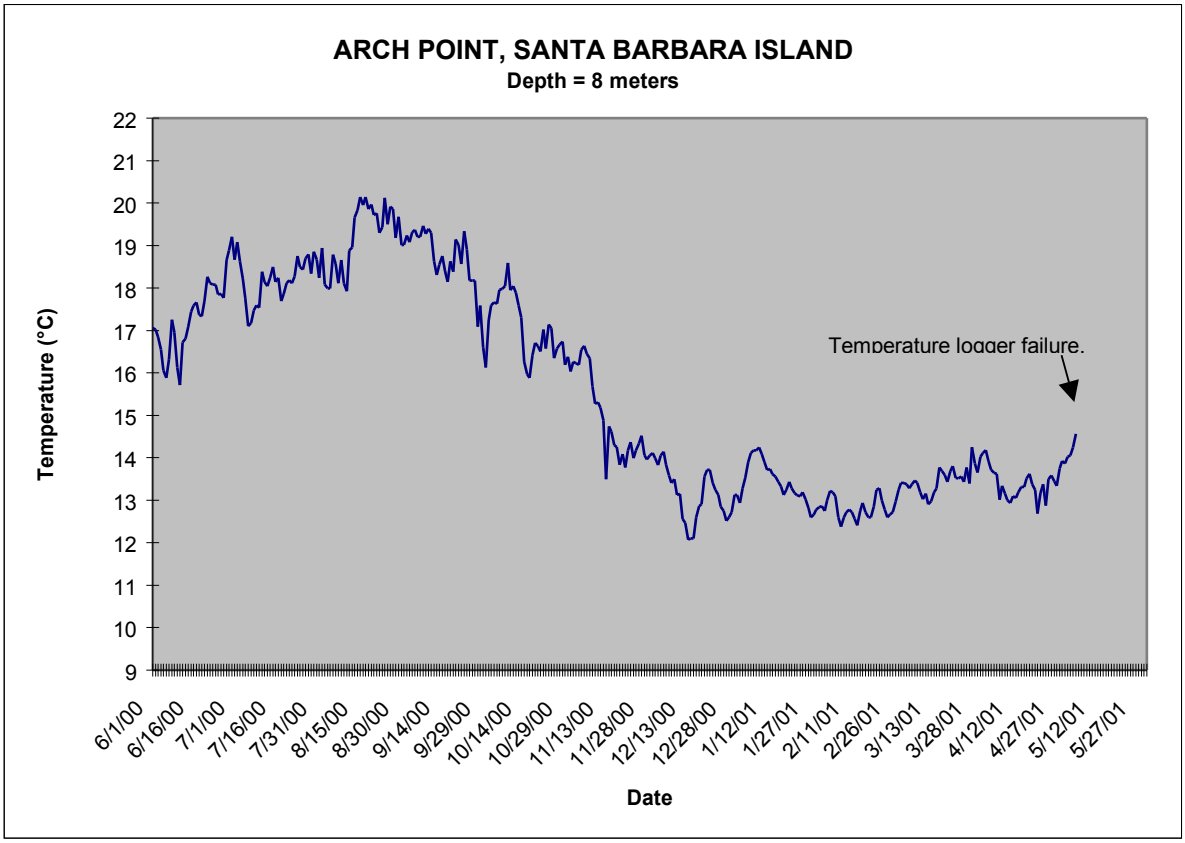

YELLOW BANKS, SANTA CRUZ ISLAND
Depth = 15 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/00
6/16/00
7/1/00
7/16/00
7/31/00
8/15/00
8/30/00
9/14/00
9/29/00
10/14/00
10/29/00
11/13/00
11/28/00
12/13/00
12/28/00
1/12/01
1/27/01
2/11/01
2/26/01
3/13/01
3/28/01
4/12/01
4/27/01
5/12/01
5/27/01
Date

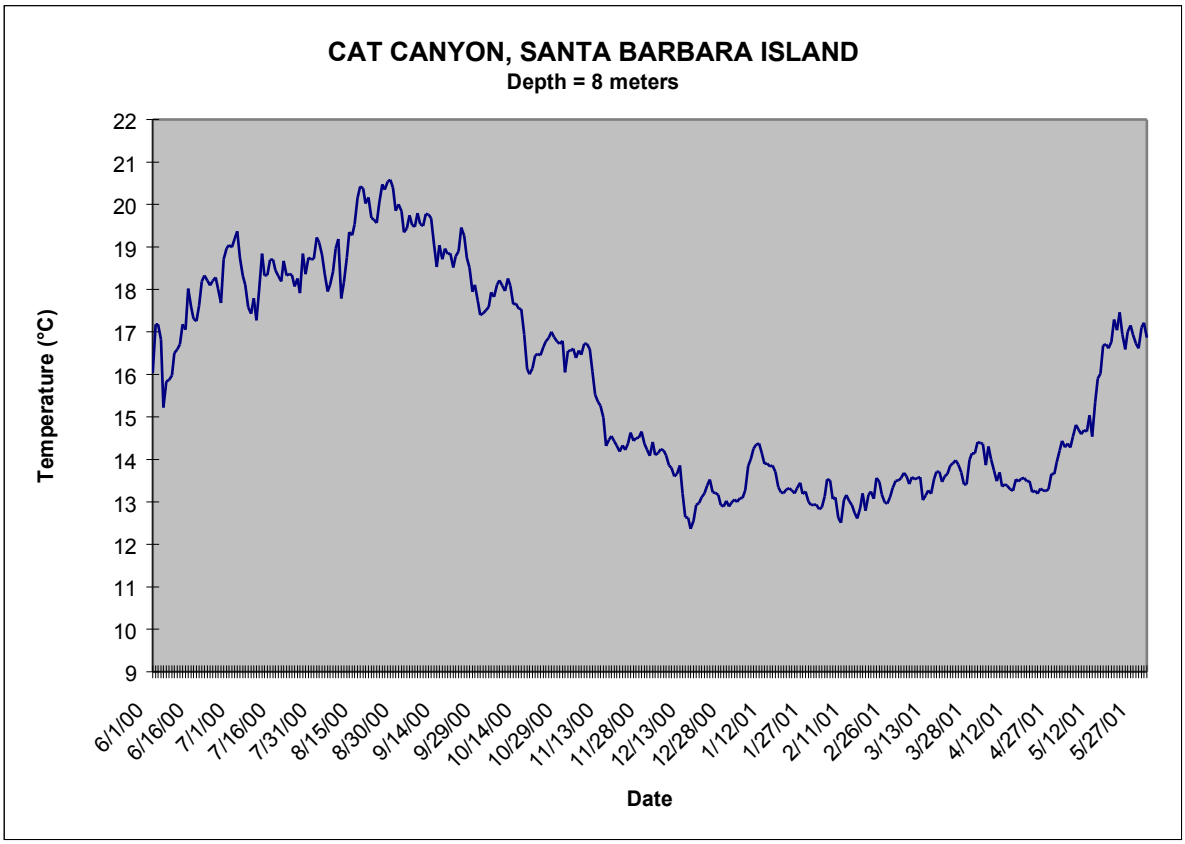

ADMIRAL'S REEF, ANACAPA ISLAND
Depth = 16 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/00
6/16/00
7/1/00
7/16/00
7/31/00
8/15/00
8/30/00
9/14/00
9/29/00
10/14/00
10/29/00
11/13/00
11/28/00
12/13/00
12/28/00
1/12/01
1/27/01
2/11/01
2/26/01
3/13/01
3/28/01
4/12/01
4/27/01
5/12/01
5/27/01
Date


CATHEDRAL COVE, ANACAPA ISLAND
Depth = 6 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/00
6/16/00
7/1/00
7/16/00
7/31/00
8/15/00
8/30/00
9/14/00
9/29/00
10/14/00
10/29/00
11/13/00
11/28/00
12/13/00
12/28/00
1/12/01
1/27/01
2/11/01
2/26/01
3/13/01
3/28/01
4/12/01
4/27/01
5/12/01
5/27/01
Date


LANDING COVE, ANACAPA ISLAND
Depth = 5 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2000
6/15/2000
6/29/2000
7/13/2000
7/27/2000
8/10/2000
8/24/2000
9/7/2000
9/21/2000
10/5/2000
10/19/2000
11/2/2000
11/16/2000
11/30/2000
12/14/2000
12/28/2000
1/11/2001
1/25/2001
2/8/2001
2/22/2001
3/8/2001
3/22/2001
4/5/2001
4/19/2001
5/3/2001
5/17/2001
5/31/2001
Date


SOUTHEAST SEA LION, SANTA BARBARA ISLAND
Depth = 15 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/2000
6/15/2000
6/29/2000
7/13/2000
7/27/2000
8/10/2000
8/24/2000
9/7/2000
9/21/2000
10/5/2000
10/19/2000
11/2/2000
11/16/2000
11/30/2000
12/14/2000
12/28/2000
1/11/2001
1/25/2001
2/8/2001
2/22/2001
3/8/2001
3/22/2001
4/5/2001
4/19/2001
5/3/2001
5/17/2001
5/31/2001
Date


ARCH POINT, SANTA BARBARA ISLAND
Depth = 8 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
Temperature logger failure.
6/1/00
6/16/00
7/1/00
7/16/00
7/31/00
8/15/00
8/30/00
9/14/00
9/29/00
10/14/00
10/29/00
11/13/00
11/28/00
12/13/00
12/28/00
1/12/01
1/27/01
2/11/01
2/26/01
3/13/01
3/28/01
4/12/01
4/27/01
5/12/01
5/27/01
Date


CAT CANYON, SANTA BARBARA ISLAND
Depth = 8 meters
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/00
6/16/00
7/1/00
7/16/00
7/31/00
8/15/00
8/30/00
9/14/00
9/29/00
10/14/00
10/29/00
11/13/00
11/28/00
12/13/00
12/28/00
1/12/01
1/27/01
2/11/01
2/26/01
3/13/01
3/28/01
4/12/01
4/27/01
5/12/01
5/27/01
Date