KELP FOREST MONITORING
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ABSTRACT

Observations and results of the 2002 Channel Islands National Park, Kelp Forest Monitoring Program 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 were collected using remote temperature loggers. In 2002, six sites had *Macrocystis pyrifera* (giant kelp) forests, one site was a "barren" area in transition, and nine sites were dominated by echinoderms. Of these nine sites dominated by echinoderms, two were dominated by *Strongylocentrotus purpuratus* (purple sea urchins), one by *Strongylocentrotus franciscanus* (red sea urchins), three by *S. purpuratus* and *S. franciscanus*, one by *Pachythyone rubra* (aggregated red sea cucumbers), *S. purpuratus*, *S. franciscanus*, and *Astrangia lajollaensis* (cup coral), one by *S. purpuratus*, *S. franciscanus* and *Ophiothrix spiculata* (spiny brittle star), and one by *O. spiculata*.

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. An additional transect was installed at Miracle Mile at San Miguel Island in 2001. This site was installed by a commercial fisherman with support from Santa Barbara County and was placed in an area of high *Haliotis rufescens* (red abalone) density to target that species. In 2002, sites were monitored during seven five-day cruises between June and September. 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 surveys, video transects and temperature loggers were retrieved and deployed at the 16 KFM sites. The 2002 kelp forest monitoring was completed at all 16 monitoring sites by 29 National Park Service (NPS) and volunteer divers completing a total of 635 dives with over 516 hours of bottom time. In addition to the 16 KFM sites, limited sampling was conducted at Miracle Mile, San Miguel Island.

This annual report contains a summary of the methods used to conduct the monitoring in 2002 and a brief description of the sites along with the results. All of the data collected during 2002 can be found summarized in the Appendices. In addition to our regular monitoring at five Park Islands, a survey cruise to San Clemente Island was conducted to locate four new kelp forest monitoring sites that will be established in 2003 for the U.S. Navy. During this cruise an additional six divers were utilized and completed 116 dives with over 71 hours of bottom time. The information gathered on this cruise is presented in a special report "San Clemente Island Kelp Surveys May/June 2002". We expect that the additional information gathered at San Clemente Island will greatly compliment the Park's existing monitoring program.

In 2002, *Macrocystis pyrifera* (giant kelp) forests were present at six of the 16 Kelp Forest Monitoring sites. These sites included Wyckoff Ledge at San Miguel Island, Johnson's Lee North and Johnson's Lee South at Santa Rosa Island, Gull Island at Santa Cruz Island, and Cathedral Cove and Landing Cove at Anacapa Island. Yellow banks at Santa Cruz area was a "barren" area in transition. The remaining nine 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, Arch Point and Cat Canyon at Santa Barbara Island were dominated by *S. franciscanus* and *S. purpuratus*. 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 by *O. spiculata*. Fry's Harbor at Santa Cruz Island was dominated by *Pachythyone rubra* and *S. purpuratus*, and had moderate densities of *S. franciscanus*, and *Astrangia lajollaensis*. The new site at San Miguel Island, Miracle Mile was a kelp forest this year.

All three monitoring sites on Santa Barbara Island continue to be dominated by echinoderms, but the composition of dominant species has changed some since 2001. *Strongylocentrotus purpuratus* and *Strongylocentrotus franciscanus* continued their decline at Southeast Sea Lion and no longer dominate the site. *Ophiothrix spiculata* is now the dominant echinoderm, and in some areas completely cover the bottom. *Strongylocentrotus franciscanus* and *S. purpuratus* decline ceased at Arch Point and Cat Canyon, and these species continued to dominate these sites. Similar to the past years, it appears that the three KFM sites at this Island represent the remainder of the Island well. Much of Santa Barbara Island appears to be dominated by *S. purpuratus*, *S. franciscanus* and *Ophiothrix spiculata*. Similar to 2001, some *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 side of the island.

The three KFM sites at Anacapa Island appear to represent the Island well. Though the sites at this Island have changed some, there was less change than the previous year. *Strongylocentrotus purpuratus* declined at Admiral's Reef, remained the same at Cathedral Cove and Landing Cove. *Strongylocentrotus franciscanus* declined at Cathedral Cove, remained about the same Landing Cove

and Admiral's Reef. Algal cover remained about the same at Landing Cove and Admiral's Reef, but declined at Cathedral Cove. Admirals Reef continued to be dominated by a combination of *S. purpuratus*, *S. franciscanus,* and *Ophiothrix spiculata* and had a low abundance of algae. Cathedral cove was a sparse kelp forest with high density patches of *S. franciscanus*. Landing Cove was a sparse kelp forest with high density patches of juvenile kelps. Similar to recent years, *S. purpuratus* and *O. spiculata* 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 other small patches of kelp forest scattered in shallow areas, much of Anacapa was dominated by echinoderms in 2002.

The monitoring sites at Santa Cruz Island are rapidly changing. The decline in *Strongylocentrotus spp*. appears to be a driving factor in these changes. *Strongylocentrotus purpuratus* declined at four sites and remained the same at one. *Strongylocentrotus franciscanus* declined at three sites and remained the same at two. In 2002 three of the five sites at this Island were dominated by echinoderms, compared to three in 2001. Gull Island has experienced rapid change and is now a developing kelp forest, and Yellow Banks is a barren area that seems to be in transition from being dominated by echinoderms. Though echinoderms have dramatically declined they remain relatively abundant around the eastern half of the Island on both the north and south sides of the Island. However, there was noticeably more kelp around the entire Island this year, especially towards the west end. The five monitoring sites represent most of the transitions going on at Santa Cruz Island well, with the exception of the western third of the Island where we have little representation from the monitoring sites.

Kelp forests continued to be relatively abundant; and, appear to be increasing in abundance and denseness around Santa Rosa and San Miguel Islands. In 2002, kelp forests were present at three of the five monitoring sites, compared to two in 2001. Similar to the other Islands, *Strongylocentrotus spp*. densities continued to decline or remain the same at all of the monitoring sites. *Strongylocentrotus purpuratus* densities declined at four sites and remained the same at one. *Strongylocentrotus franciscanus* declined at two sites and remained the same at three. The most noticeable change occurred at the Johnson's Lee North and South, as these sites dramatically transformed to kelp forest from recently being dominated by *Strongylocentrotus spp.* Predation by *Pycnopodia helianthoides* appears to be the driving factor in *Strongylocentrotus spp*. decline at San Miguel and Santa Rosa Islands.

In 2002, sea urchins continued their overall decline for the second year. There were no increases of any sea urchin species at all of the monitoring sites in 2002. Sea urchins either remained at similar densities or declined from 2001, this overall decline in sea urchin density is the most significant change that occurred 2002 at the KFM sites. *Strongylocentrotus purpuratus* densities decreased at ten sites and remained the same at six sites. *Strongylocentrotus franciscanus* densities decreased at seven sites and remained the same at nine sites. Kelp forests appear to be recovering at several of the sites in large part as a result in the decline in sea urchin densities and we expect this trend to continue in the near future.

There are many other interesting general biological trends that are too lengthy to present here are described in the discussion section.

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), Kushner et al. (2001), and Kushner et al. (2004) describe the 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000 and 2001 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 2002, our 21st year of monitoring. It is hoped that these reports will provide some insight into kelp forest dynamics and stimulate further research into the long-term trends and changes in this near-shore ecosystem. We have highlighted some of the most important observations, and tried to provide a characterization for each site. Organisms are referred to by genus and species, except in the abstract and executive summary where both scientific and common names are used. Common names are cross-referenced to their scientific names in Table 1. Since the design of the kelp forest monitoring project, several genera and species names have been changed. For the most part, the new and the old genus are listed together in this text. The new names are cross-referenced in Table 1.

METHODS

Abundances, 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., 1997). Sites were monitored between June 17th and September 27th, 2002.

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.

Over the past two years we have switched from using Onset Computer Corporations STOWAWAY™ and HOBOTEMP™ temperature loggers to their newer Tidbit™ temperature loggers. These newer loggers are completely encapsulated in plastic resin and are submersible without a waterproof housing. One of the biggest advantages of these new loggers is that there is no issued of them getting wet or flooded if the housings fail. This has been a problem in the past. The new Tidbit™ have a battery life of 5 years at which point the logger needs to be replaced. In 2002, a Tidbit™ and STOWAWAY™ or HOBOTEMP™ logger were installed at each monitoring site. The STOWAWAY™ or HOBOTEMP™ logger were used as a backup in case of Tidbit™ failure. Both loggers were deployed at each site encased in an underwater housing that is bolted with two nuts to stainless steel thread rods cemented to the bottom at each monitoring site. Both loggers were programmed to record temperature every hour. New 0-rings were installed in each underwater housing.

When both the Tidbit™ and STOWAWAY™ or 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 ^{o}C). In all cases where both loggers were working, the loggers recorded within their specifications. The data from the Tidbit™ loggers were entered into the database.

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 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 2002 status of each site is presented in Table 4. 29 divers (Table 5) collected data on seven five-day cruises between June and September. A total of 635 dives with 516 hours of bottom time were completed. All prescribed monitoring data were collected in 2002 except for the second set of fish transects and roving diver fish counts at Hare Rock, San Miguel Island. These were not conducted due to boat problems during our last monitoring cruise.

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 (see Davis et al., 1997).

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 years prior to 1996 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™ or HOBOTEMP™ temperature loggers. Temperature data are collected from the loggers during our regular sampling season June – September. To expedite report writing we will present 12 months of temperature data from June 1, 2001 to May 31, 2002 (Appendix L). Temperature data were collected from all 16 sites. However, there were some missing data during time period mentioned above at Arch Point, Santa Barbara Island. For explanations of the missing data, please refer to the site results section below.

Sampling at the monitoring sites typically occurred over at least two separate dates, ranging from two weeks to several months apart. Separate sampling dates enabled us to conduct fish transects and roving diver fish counts at two different dates at least two weeks apart. During our first visit we attempt to conduct all of the abundance estimate techniques (quadrats, $5m^2$-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 are conducted. Occasionally abundance techniques are not completed during our first visit, and are finished during our second visit and this is noted in the appropriate Location section below. If there appears to be large changes in abundance between visits within a sampling season, a

second sampling may be conducted to document these changes and differences are reported in the appropriate Location section below. In the text we report numbers to two significant digits.

Location: Wycoff Ledge, San Miguel Island

Site #1 SMWL
2002 sampling dates: 7/25, 9/25, 9/26
2002 status: Mature kelp forest.

Overall, this site was similar to last year. *Macrocystis pyrifera* were more abundant than last year and adult, subadult and juvenile *Macrocystis pyrifera* densities and cover all increased. Their densities were 0.17/m^2, 0.53/m^2 and 1.46/m^2 respectively and cover on the bottom was 14.3%. Canopy cover over the transect was estimated at 75% and most of the plants appeared healthy. *Cystoseira* sp. were common at this site, but few were present directly along the transect where RPCs are conducted, cover was recorded at 1.8%. Adult and juvenile *Pterygophora californica* densities were similar to last year at 0.21/m^2 and 0.21/m^2 respectively and cover was the same as last year at 8.7%. Several juvenile *Eisenia arborea* plants were observed and adults were rare, similar to last year. No *E. arborea* were observed on quadrats or random point contacts this year. No adult and only several juvenile *Laminaria farlowii* were observed. Juvenile *L. farlowii* density was 0.16/m^2 and no *L. farlowii* were observed on RPCs. *Desmarestia sp.* were common but less abundant than last year with a decrease in cover to 8.3%. Miscellaneous brown algae cover was 3.3%. *Dictyoneuropsis reticulata* were common at the site. Understory red algae cover was 58.5%, similar to previous years. *Gigartina* sp. were rare with a cover of 0.67%. Articulated coralline algae increased to 10.8% cover and encrusting coralline algae cover was similar to last year at 35.0%. Bare substrate cover was 20.8%, similar to previous years.

The most common miscellaneous invertebrates on random point contacts (RPCs) were hydroids and the worm *Dodecaceria fewkesi.* This category has gradually declined over the past three years and had a cover of 7.3% this year. *Diopatra ornata* cover decreased to 11.5%. This is a considerable decrease since 2000, but this animal is very patchy and changes such as this have been common in the past and may be a sampling artifact. *Phragmatopoma californica* were more abundant than last year with a cover of 3.0%. Miscellaneous bryozoan category cover dramatically increased to 11.7%, the highest cover since 1994. This increase in bryozoans is similar to what we have observed at other sites this year. Tunicates were relatively abundant and increased in cover to 4.2%. This is the highest cover recorded at this site, but similar to 1995. *Styela montereyensis* density was 0.50/m^2. Sponges were common with a cover of 1.2%. *Tethya aurantia* density was 0.076/m^2, a relatively low density compared to the past 10 years, but still moderately abundant. *Urticina lofotensis* were abundant on the tops and sides of rocks, with a density of 0.25/m^2, similar to previous years.

Asterina miniata density was 1.21/m^2, lower than last year but similar to previous years. As usual for this site, *Pisaster giganteus* were common on the rocky outcrops within the transect area, but there were few directly along the transect where they are counted in quadrats. Their densities on quadrats and 5-meter quadrats were 0.21/m^2 and 0.06/m^2 respectively. Both small and large *Pycnopodia helianthoides* were present but they were noticeably less abundant than in 2001 and their density declined to 0.0083/m^2, the lowest since 1999. Only 13 *P. helianthoides* were found for size frequency measurements. The leather star, *Dermasterias imbricata*, was common. No *Parastichopus parvimensis* were observed on quadrats (0.0/m^2) and this was the lowest density since monitoring began at this site. However, several *P. californica* were observed.

Strongylocentrotus franciscanus density continued to increase for the third consecutive year and was recorded at 6.13/m^2. This is the highest density recorded at this site since monitoring began in 1982, though only slightly higher than last year and there is much sampling variability due to the high degree of patchiness of this species. *Strongylocentrotus purpuratus* density declined to 1.33/m^2, the lowest density since 1998. Similar to the previous two years, large patches of *S. franciscanus* were out in the open, however it appeared that there were more that have retreated to crevices this year. No *Lytechinus*

anamesus were observed on band transects, 0.0/m^2. No sea urchin or sea star wasting disease was observed.

Kelletia kelletii were abundant with both small and large individuals present as usual for this site. They were counted on both band transects and quadrats, with densities of 0.11/m^2 and 0.25/m^2 respectively, similar to previous years. *Kelletia kelletii* eggs were abundant and several very large patches of eggs were observed. *Lithopoma gibberosum* density was 0.17/m^2, a decline from last year. *Haliotis rufescens* were mostly in crevices, while last year they were commonly observed out in the open. Their density continued to be relatively high at 0.056/m^2, the highest density recorded at this site, but close to last year. A good search for *H. rufescens* for size frequencies was conducted and 50 were found within 10m of the transect. Most were large and mean size was 173mm. Fresh *H. rufescens* shells were uncommon. One old flat abalone, *Haliotis walallensis*, shell was found. Rock crabs, *Cancer* spp. were common. One crab trap was present on the patch reef, but was about 100 meters off the transect. The kelp crab, *Pugettia productus*, was common. *Idotea resecata* were moderately abundant on the *Macrocystis pyrifera* stipes.

As usual, fish were more abundant on the western end of the transect. Overall, fish appeared to have lower abundances and had lower diversity than last year. The most abundant fish along the transect were tubesnouts, *Aulorhynchus flavidus* and juvenile *Sebastes* spp. Juvenile *Sebastes* spp. were moderately abundant in the kelp canopy and we thought that most of these were *S. caurinus* but we are unsure of our identification. This is the same species of juvenile *Sebastes* sp. that we have observed at Santa Rosa and Santa Cruz Island this year. The large *Sebastes miniatus* that we usually observe on the west end of the transect was there and we all think this may be the same fish we have observed many times over the past decade. Several small and large adult and juvenile *S. mystinus* were observed along the western end of the transect. Large adult *S. mystinus* were notably less abundant than in previous years. Several juvenile and adult *S. serranoides/flavidus* were observed. Several Gopher rockfish, *Sebastes carnatus*, copper rockfish, *S. caurinus*, and black and yellow rockfish, *S. chrysomelas*, were observed. One adult *S. serriceps* was observed. Several adult and at least one juvenile *Embiotoca lateralis* were observed. Adult and juvenile *E. jacksoni* were observed. At least one adult *Damalichthys vacca* was observed, but no juveniles. No *Chromis punctipinnis* were observed on the roving diver fish counts. Several small female and one large male *Semicossyphus pulcher* were observed on July 25th, however the male was not observed during the roving diver fish count. Several adult *Oxyjulis californica* were observed. Painted greenlings, *Oxylebius pictus*, were common. *Coryphopterus nicholsii* were less abundant than last year and none were observed on quadrats this year. Lingcod, *Ophiodon elongatus*, were common. Roving diver fish counts were conducted on July 25th with six divers and on September 26th with three divers observing 20 and 23 species of fish respectively.

The temperature loggers were retrieved and deployed. Both loggers were recording data within manufacturer specifications of each other (+-0.2C^0**).**

Location: Hare Rock, San Miguel Island

Site #2 SMHR
2002 sampling dates: 7/11.
2002 status: Dominated by *Strongylocentrotus franciscanus*.

This site has changed considerably since our last visit in 2001. Most noticeable were the decrease in *Strongylocentrotus purpuratus* and an increase in algae cover. Several *subadult Macrocystis pyrifera* plants just over one meter tall were present along the transect and one was observed on 5-meter quadrats (0.005/m^2). All of the *M. pyrifera* appeared unhealthy with pale tattered fronds. Green algae consisting entirely of *Ulva* sp. were abundant in the low-lying cobble areas of the transect with a cover of 8.0%. This is the highest cover for this algae at this site since 1992. *Desmarestia* sp. were less abundant than last year, but still common with a cover of 1.2%. Miscellaneous red algae cover was 11.7%, lower than last year. This category consisted mostly of filamentous red algae*, Laurencia pacifica*, and another algae that may be *Ceramium* sp. or something similar. A small amount of *Gigartina corymbifera* was present, but none were observed on RPCs. Encrusting coralline algae cover was

55.2%, similar to previous years. Miscellaneous plants, consisting entirely of filamentous diatoms, covered 23.3% of the bottom, higher cover than the last three years. Bare substrate covered 13.5% of the bottom, similar to last year.

The most common miscellaneous invertebrates on RPCs were terebellid worms, barnacles and hydroids. This category covered 6.3% of the bottom and has gradually decreased since 1999. *Corynactis californica* were less abundant than last year, decreasing to 12.8% cover, still relatively high for this site. *Balanophyllia elegans* and *Astrangia lajollaensis* covered 1.8% and 1.8% of the bottom respectively, similar to last year. *Tethya aurantia* density was 0.021/m^2, similar to last year. Bryozoans were noticeably more abundant than last year, similar to what we have observed at other sites this year. *Diaperoecia californica* and miscellaneous bryozoans covered 1.8% and 4.7% respectively. Both of these are the highest cover recorded at this site. Most of the miscellaneous bryozoans were probably *Membranipora* sp. Tunicate cover was 1.3%, the highest cover recorded since 1982.

Strongylocentrotus purpuratus density continued to decline and was recorded at 4.54/m^2. We presume this decline is mainly the result of predation by *Pycnopodia helianthoides*. Similar to the past several years, many of the *S. purpuratus* were completely covered with the red alga, *Laurencia pacifica* and were somewhat cryptic. *Strongylocentrotus franciscanus* density remained similar to the last two years at 13.0/m^2. All of the *Strongylocentrotus* spp. were out in the open and not confined to crevices, typical for this site and other areas dominated by sea urchins. Juvenile *Strongylocentrotus* spp. were rare, similar to other sites this year. No sea urchin wasting disease was observed at this site.

Asterina miniata were abundant and their density was similar to last year at 1.83/m^2. *Pisaster giganteus* were also abundant and were counted on both quadrats and 5-meter quadrats with densities of 0.46/m^2 and 0.76/m^2 respectively. *Pycnopodia helianthoides* remained relatively abundant, but their density decreased to 0.069/m^2, about half last year's density. *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 relatively uncommon for this site, similar to last year. We didn't have time to turn over many small rocks to look for live juveniles this year, but it appeared as there was low recruitment this year. No *H. rufescens* were observed on band transects. *Kelletia kelletii* were present in low numbers with a density of 0.0056/m^2. *Crassedoma giganteus* were relatively uncommon with a density of 0.0028/m^2. *Aplysia californica* density was 0.0056/m^2. *Cypraea spadicea* density was 0.58/m^2, similar to last year.

Similar to last year, fish did not appear as abundant as they were prior to 2001. However, diversity was relatively high with 26 species observed. The most abundant fish at this site were young of year (YOYs) *Sebastes* sp. These were probably *Sebastes caurinus/carnatus*. Several large adult *S. mystinus* were present and YOYs were common. One black rockfish, *S. melanops*, was observed under the large rock at about 50m along the transect. It is possible that this is the same fish that has been observed under this rock for several years, but in the past may have been misidentified as *S. mystinus*. This current identification was by Mark Readdie who is an expert at fish identification. Several *S. chrysomelas* were observed. One adult *S. serriceps*, one *S. caurinus* and about five very large *S. atrovirens* were observed. Several large adult *Chromis punctipinnis* were observed, but these were less abundant as in past years. About ten *Oxyjulis californica* were observed. One medium sized male and three small female *Semicossyphus pulcher* were observed on July 11th. Adult *Embiotoca jacksoni* were common and one juvenile was observed. Adult and juvenile *E. lateralis* were common. At least four lingcod, *Ophiodon elongatus*, were observed. Two cabezon, *Scorpaenichthys marmoratus* were observed. No ronquils were observed on July 11th. Mark Readdie observed one *Alloclinus holderi* during the roving dive fish count; these are rare at San Miguel Island. *Coryphopterus nicholsii* were common with a density of 0.46/m^2. Roving diver fish count was conducted on July 11th with five divers observing 26 species of fish. Only one set of fish transects and one roving diver fish count was conducted in 2002 due to mechanical problems with the Pacific Ranger during our last sampling cruise.

The temperature loggers were retrieved and deployed. Both loggers were recording data within manufacturer specifications of each other (+-0.2C^0**).**

Location: Miracle Mile, San Miguel Island

Site #21 SMMM
2002 sampling dates: 9/25, 9/26.
2002 status: Sparse kelp forest.

Please note, this is not one of the original kelp forest monitoring sites and that this site was set up by a commercial fisherman to look at *Haliotis rufescens* populations in an area of high density. This site was intentionally chosen for it high density of this species.

We were successful in completing band transects, quadrats and monitoring three of the eight ARMs for all indicator species under heavy swell conditions. Though it was difficult to work at this site because of the large surge, we managed to complete the work above. We were hoping to return to this site to monitor the remaining ARMs but never had another opportunity in 2002.

There was noticeably more *Macrocystis pyrifera* directly along the transect than in 2001. Adult and juvenile densities were 0.29/m^2 and 1.58/m^2 respectively, both higher than last year. No subadult densities are available since 5-m quadrats were not conducted in 2002. Adult and juvenile *Eisenia arborea* densities were similar to last year at 0.46/m^2 and 0.58/m^2 respectively. Adult and juvenile *Pterygophora californica* densities remained low at 0.083/m^2 and 0.042/m^2, respectively. There was a moderate amount of other understory algae, but RPCs were not conducted this year. *Desmarestia sp*. were notably more abundant than in 2001.

Styela montereyensis density was 0.13/m^2, a small decline from last year. *Tethya aurantia* density was similar to last year at 0.13/m^2. *Telia lofotensis* were moderately abundant and density was similar to last year at 0.15/m^2.

Pycnopodia helianthoides were noticeably less abundant than in 2001 and their density declined to 0.026/m^2. *Asterina miniata* density increased to 2.04/m^2. *Pisaster giganteus* were counted on quadrats with a density of 0.33/m^2, a decline from last year. *Strongylocentrotus franciscanus* density was similar to last year at 8.75/m^2. *Strongylocentrotus purpuratus* density declined to 3.75/m^2. We suspect that this decline may have been caused by *P. helianthoides* predation. No sea urchin or sea star wasting disease was observed.

Megathura crenulata density was similar to last year at 0.088/m^2. Several *Crassedoma giganteum* were observed and had a density of 0.0056/m^2. *Lithopoma undosum* density was the same as last year at 0.25/m^2.

The density of *Haliotis rufescens* along the transect was 0.81/m^2, a decline from last year. Similar to last year, the population appears healthy and 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. Jim Marshall, the commercial dive fisher who instigated the installation of this site conducted size frequency measurements for *H. rufescens* on two occasions in 2002, on February 1st (Event X and observer 11) and on September 25th (Event Z and observer 11). Jim was trained and instructed to collect these data as per the KFM protocol.

The ARMs were installed on August 10th and 23rd, 2001, and this was the first time they were sampled. Only three of the eight ARMs were sampled due to poor working conditions (large swell/surge). The three ARMs were monitored for all indicator species. Six *Haliotis rufescens* were found for a density of 2/ARM. All of these were small, less than 87mm and their mean size was 44mm. Four small *Crassedoma giganteum* were found for a density of 1.33/ARM. One small (16mm) *Megathura crenulata* was found. *Asterina miniata* and *Pisaster giganteus* were moderately abundant with means of 8.66/ARM and 5.0/ARM, respectively. One *Pycnopodia helianthoides* was observed in an ARM. *Strongylocentrotus*

franciscanus were abundant with a mean of 99.3/ARM and most were small with a mean size of 31mm. *Strongylocentrotus purpuratus* were also abundant with a mean of 176/ARM and had a mean size of 39mm.

No temperature loggers are deployed at this site.

Location: Johnson's Lee North, Santa Rosa Island

Site #3 SRJLNO
2002 sampling dates: 7/23, 7/24, 9/24.
2002 status: Dense kelp forest.

The kelp forest present at this site last year was notably more mature, but there remained a high density of small subadult *Macrocystis pyrifera* plants. Canopy cover over the transect was estimated at 75%, but was thin, which is common for this site. There were large changes in the benthic algae and invertebrate community since last year.

Adult *Macrocystis pyrifera* densities increased to 0.81/m^2, the highest since 1999. Subadult and juvenile *M. pyrifera* densities and cover were all similar to last year at 1.24/m^2, 5.75/m^2 and 67.2%, respectively. The changes in *M. pyrifera* compared to last year are somewhat deceptive because in 2001, *M. pyrifera* was abundant only along the first 55 meters of the transect.

Adult and juvenile *Eisenia arborea* were present in low numbers and their densities were 0.083/m^2 and 0.0/m^2 respectively, and cover was 0.17%, similar to last year. Adult *Pterygophora californica* density was similar to last year at 0.29/m^2 while juvenile density decreased to 0.33/m^2 and cover remained similar at 5.0%. No *Laminaria farlowii* was observed on quadrats or RPCs, but several adult plants were observed along the transect. Small *Cystoseira* sp. were notably abundant and almost completely covered areas of prime habitat along the transect. Directly along the transect it covered 5.0% of the bottom, the highest cover since 1998. *Desmarestia* sp. were less abundant than last year with a cover of 0.5%. Both green algae and miscellaneous brown algae cover dramatically declined to 0.67% and 0.67%, similar to covers recorded before 2001. *Gigartina* sp. were rare and none were observed on RPCs this year. Miscellaneous plants, consisting entirely of filamentous brown diatoms, covered 13.7% of the bottom, a dramatic decrease from last year, but still relatively high for this site. Articulated coralline algae coverage remained relatively low at 1.5%. Encrusting coralline algae dramatically decreased to 15.5%, the lowest since 1999. This was probably a result of the increase in encrusting invertebrates, (bryozoans and tunicates). Bare substrate cover increased and was recorded at 6.5% of the bottom. This increase is probably mostly a result of the decrease in weedy algae at this site that covered much of the bottom in 2001.

Miscellaneous invertebrates increased to cover 16.8% of the bottom, and mostly consisted of hydroids. Tunicate cover increased to 8.0%, the highest since 1999. There was a noticeable recruitment event for *Styela montereyensis.* The spiky head tunicate, *Boltenia villosa*, was also relatively abundant. *Styela montereyensis* density was 2.63/m^2, the highest recorded at this site since monitoring began. Most of the *S. montereyensis* were small indicating recent recruitment. No sponges were observed on RPCs this year. *Tethya aurantia* were abundant at 0.135/m^2, similar to recent years. *Phragmatopoma californica* increased with a cover of 4.8%. Bryozoans increased dramatically, similar to what we have observed at other sites this year. Their cover this year was 35.7%, the highest since 1992. The most abundant bryozoans were *Membranipora* sp., *Bugula* sp., *Thalamoporella californica*, and *Costazia robertsoniae*. *Corynactis californica* ended their increase and decreased this year to cover 4.5%. *Balanophyllia elegans* and *Astrangia lajollaensis* covered 1.8% and 2.3% of the bottom respectively.

Both *Strongylocentrotus purpuratus* and *Strongylocentrotus franciscanus* continued to decline for the second consecutive year. *Strongylocentrotus purpuratus* were rare with none (0.0/m^2) observed on quadrats, the lowest density recorded since monitoring began at this site in 1982. The few *S. purpuratus* that were present were typically in small depressions on the tops of rocky reef areas. Only 43 *S. purpuratus* could be found for size frequency measurements with two divers on one dive.

Strongylocentrotus franciscanus were more abundant and were mostly in cracks and crevices with a density of 1.54/m^2, the lowest since 1999. Overall, there were few juvenile *Strongylocentrotus* spp. Commercial urchin divers have fished Johnson's Lee intensely over the past year (Jim Marshall, personnel communication). No sea urchin wasting disease was observed.

Pycnopodia helianthoides were relatively abundant with a density of 0.16/m^2, a decline from last year's highest recorded density. Both small and large *P. helianthoides* were common. *Asterina miniata* density was 0.38/m^2, the highest density recorded since 1997. *Pisaster giganteus* densities were similar to last year and were counted on both quadrats and 5-meter quadrats with densities of 0.63/m^2 and 0.44/m^2 respectively. *Parastichopus parvimensis* density was relatively low for this site with none observed in quadrats (0.0/m^2), the lowest density recorded at this site. No sea star wasting disease was observed this year.

Cypraea spadicea density declined for the second consecutive year and was recorded at 0.083/m^2, their lowest density since monitoring for them began at this site in 1983. *Lithopoma undosum* were rare with none observed on quadrats this year. *Kelletia kelletii* were relatively rare with a density of 0.0028/m^2, similar to previous years. *Megathura crenulata* were common on the rocky outcrops with a density of 0.017/m^2. Two *Haliotis rufescens* were observed on band transects for a density of 0.0028/m^2. We were only able to find four *H. rufescens* for size frequencies at this site; these two on band transects (70mm and 160mm) and two others under the spine canopy of a single large red urchin (these measured 12mm and 14mm).

Similar to last year, fish were abundant and diverse. Adult *Chromis punctipinnis* were common and several juveniles were observed. Two observers saw the juveniles and as best as they could tell they were YOY. Two or three adult *Hypsypops rubicundus* were observed, including one with a nest at meter 72 that has been there since about 1990. There were no eggs observed in the nest this year. No *Halichoeres semicinctus* were observed. Adult *Oxyjulis californica* were rare with only several observed on July 23rd. One small male *Semicossyphus pulcher* was observed on July 23rd and small females were common with over ten observed. About five adult and five juvenile *Sebastes serranoides* were observed. Several adult *Sebastes mystinus* and about ten juveniles were observed. The juveniles were observed in small groups of two or three. Several black and yellow rockfish, *S. chrysomelas*, were observed. Two adult *S. serriceps* were observed, but no juveniles. Adult *S. atrovirens* were moderately abundant along the transect with at least 15 observed. Several of the *S. atrovirens* were small "adult" and were probably two-year-old fish. Adult *Embiotoca jacksoni* and *E. lateralis* were relatively abundant, but juveniles of both species were rare. Several adult *Damalichthys vacca* and rubberlip surfperch, *Rhacochilus toxotes*, were observed. Kelp surf perch, *Brachyistius frenatus*, were common in the kelp canopy. Several small 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. Roving diver fish count was conducted on July 23rd with six divers and on September 24th with three divers observing 29 and 25 species of fish respectively.

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. One ARM cage was replaced.

One small (28mm) *Haliotis rufescens* was found among all the nine ARMs this year. A *Haliotis rufescens* shell measuring 155mm in ARM #2411 was found and collected. This H. rufescens has been in the ARM for several years and from the shell morphology it appears as if the animal may have been one of the introduced abalone that were place in the ARMs in 1990 or before. The top of the shell was worn from abrasion on the bricks, however, the shell appeared to have the coloration and high spiral of an introduced abalone. In addition, these features end at about the size of the animals that were planted at this site.

Cypraea spadicea density increased to 3.33/ARM, but this is similar to previous years. No *Crassedoma giganteum* were found in the ARMs this year, this represents the lowest density since 1993. *Asterina miniata* continued to gradually increase in density for the third consecutive year to 1.67/ARM, the highest

since 1996. Their mean size has gradually increased over the past three years and was 37.7mm. *Pisaster giganteus* density was 5.89/ARM, similar to last year, but relatively high for this site. *Pisaster giganteus* mean size has gradually increased over the last two years and was 52.98mm. *Pycnopodia helianthoides* were less abundant in the ARMs than last year with a density of 1.22/ARM, but this remains relatively high for the site. Two octopi were observed, one in each of two ARMs.

Strongylocentrotus franciscanus density was higher than last year at 12.0/ARM. Their mean size was 46.5mm, similar to most years at this site, but a notable increase from last year (28.6mm). This increase was to be expected since there was a large recruitment event for this species in 2001. *Strongylocentrotus purpuratus* abundance dramatically declined to 2.11/ARM, in 2001 their density was 152.4/ARM. Their mean size was smaller than last year at 22.6mm, but sample size was small. The trends in abundance and mean size for 2001-2002 *S. franciscanus* and *S. purpuratus* populations in the ARMs at the Johnson's Lee North and South sites are very similar. No small (<10cm) *Parastichopus parvimensis* were observed in the ARMs and density of >10cm was 0.44/ARM, similar to previous years.

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

Location: Johnson's Lee South, Santa Rosa Island

Site #4 SRJLSO
2002 sampling dates: 7/23, 7/24, 9/23, 9/24.
2002 status: Sparse kelp forest.

This site noticeably changed since last year, but we were surprised that the entire site was not a dense kelp forest like Johnson's Lee North. *Macrocystis pyrifera* canopy cover over the transect was estimated at 25% and was only present over the north end of the transect. *Large M. pyrifera* were present along the first 20 meters of the transect and subadult plants were common in patches from 20-60 meters. Juvenile *M. pyrifera* were abundant and patchily distributed along the entire transect. Adult, subadult and juvenile densities all increased and were 0.085/m^2, 0.49/m^2 and 4.5/m^2 respectively and cover was recorded at 37.3%. This is the highest cover recorded at this site since we began counting *M. pyrifera* separately on RPCs in 1993. No adult *Eisenia arborea* were observed and juveniles were common with a density of 0.13/m^2. Adult and juvenile *Pterygophora californica* were common with densities of 0.29/m^2 and 0.33/m^2 respectively and a cover of 1.3%. All of the adult *P. californica* were notably small. Adult and *juvenile Laminaria farlowii* densities increased and were 0.17/m^2 and 0.54/m^2 respectively and cover was recorded at 0.83%. Miscellaneous brown algae cover increased to 8.5%, the highest since 1998. A small amount of *Desmarestia* sp. was present with a cover of 1.7%. Small *Cystoseira* sp. plants were patchily distributed but were not very abundant with a cover of 0.83% directly along the transect. Red algae were abundant with a cover of 47.8%, similar to previous years. Miscellaneous plants consisting entirely of filamentous diatoms, cover was 16.7%; similar to last year and relatively high cover for this site. Articulated coralline cover was 2.5%, similar to last year, but low for this site. Encrusting coralline algae cover decreased to 21.7%. Bare substrate cover decreased to 17.5%. These latter two decreases may be in part a result of the increase in red algae as well as encrusting invertebrates such as bryozoans.

Miscellaneous invertebrates on RPCs covered 7.5% of the bottom, similar to last year. The most common invertebrates in this category were hydroids and terebellid worms. Hydroids were noticeably more abundant this year. Similar to what we have observed at many sites this year, bryozoan coverage increased and was 15.0%. *Diaperoecia californica* were common on the steep parts of high relief rocks but were uncommon directly along the transect with a cover of 0.17%. Tunicate cover increased to 1.33%, but remained relatively low for this site. *Styela montereyensis* density increased from last year but was still relatively low for this site at 0.13/m^2. We did not see as much recruitment at this as at Johnson's Lee North. Sponges covered 0.67% of the bottom, also relatively low for this site. *Tethya aurantia* were abundant with a density of 0.182/m^2, similar to recent years. *Balanophyllia elegans* cover was 4.5%, similar to last year and relatively high for the past several years. *Astrangia lajollaensis* cover was the same as last year at 2.6%. *Corynactis californica* cover remained high and was similar to last

year at 4.7%. *Diopatra ornata* cover was 12.5%, similar to previous years. *Lophogorgia chilensis* remained moderately abundant with a density of 0.099/m^2, similar to previous years. *Urticina lofotensis* were moderately abundant on the rocky outcrops with a density of 0.068/m^2.

Both *Strongylocentrotus purpuratus* and *Strongylocentrotus franciscanus* dramatically declined this year. *Strongylocentrotus purpuratus* density declined to 0.83/m^2, the lowest density since 1994. The *S. purpuratus* present were mostly found in small depressions on the tops of the large rocks and in crevices with *S. franciscanus*. *Strongylocentrotus franciscanus* density decreased to 1.71/m^2, similar to 2000, but a large decrease from their density of 6.33/m^2 in 2001. Juvenile *Strongylocentrotus* spp. were rare, similar to what we have observed at other sites this year. Most of the *Strongylocentrotus* spp. were confined to crevices with few animals out in the open. No sea urchin wasting disease was observed.

Pycnopodia helianthoides density declined from its high density last year, but remained relatively abundant at 0.14/m^2. *Asterina miniata* density was 1.58/m^2, similar to last year. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats and had densities of 0.21/m^2 and 0.20/m^2 respectively. These are both decreases from last year, ending a gradual increase over the previous three years. Several blood stars, *Mediaster aequalis* were observed. *Parastichopus parvimensis* density was 0.083/m^2. No sea star wasting disease was observed.

Haliotis rufescens continue to be rare at this site, with only one observed on band transects, 0.0014/m^2. Three small *H. rufescens* were observed in the ARMs (see below). This is the lowest density recorded at this site since monitoring began. *Cypraea spadicea* density was 0.33/m^2, similar to recent years. *Kelletia kelletii* density was 0.014/m^2, similar to the past two years. *Crassedoma giganteum* density was low at 0.0028/m^2; the lowest recorded density for this site. *Aplysia californica* were noticeably large, some of the largest ones we have ever seen. Their density was recorded at 0.0056/m^2, relatively high for this site.

Overall, fish were moderately abundant and diverse as usual for this site. The most abundant fish at this site were adult *Chromis punctipinnis*, juvenile *Sebastes mystinus* and *Coryphopterus nicholsii*. One diver during the roving diver fish count observed a school of adult *Oxyjulis californica*. One small male *Semicossyphus pulcher* was observed and small females were common on July 23rd. Juvenile *Sebastes serranoides* were common and several adults were observed. Approximately 70 juvenile and 15 adult *Sebastes mystinus* were observed. One adult *S. serriceps* was observed, but no juveniles. Adult *S. atrovirens* were common. Several adult and juvenile black and yellow rockfish, *S. chrysomelas*, were observed. Several juvenile rockfish that were probably copper rockfish, *S. caurinus* were observed. Several vermillion rockfish, *S. miniatus* were observed at the north end of the transect. Adult *Chromis punctipinnis* were common. Adult *Embiotoca jacksoni*, an *E. lateralis* were common, but not as abundant as at Johnson's Lee North. Several juvenile *E. jacksoni* and *E. lateralis* were observed, but they were uncommon. Two adult *Damalichthys vacca* and several adult *Rhacochilus toxotes* were observed on July 23rd. Two adult *Paralabrax clathratus* were observed. *Oxylebius pictus* were common. Several C*aulolatilus princeps* were observed. A large school of tubesnouts, *Aulorhynchus flavidus*, were observed on the north end of the transect where most of the *Macrocystis pyrifera* were present. *Coryphopterus nicholsii* were relatively abundant with a density of 1.04/m^2, the highest recorded since 1988. The roving diver fish counts were conducted on July 23rd with seven observers and on September 24th with four dives observing 28 and 28 species of fish, respectively.

All seven ARMs were monitored for all indicator species. All of the ARMs were in good condition and none had moved. Three small (mean size 19.3mm) *Haliotis rufescens* were found in the ARMs this year, more than usual for this site, indicating some recruitment. *Cypraea spadicea* density was similar to the past two years at 2.43/ARM. Small *Megathura crenulata* density was 0.29/ARM, similar to past years. *Crassedoma giganteus* density was 1.00/ARM, higher than last year and similar to past years. *Asterina miniata* density was 6.86/ARM, similar to the past three years. *Pisaster giganteus* density was similar to the last two years at 5.43/ARM and were a little larger than the past several years with a mean size of 43.3mm. *Pycnopodia helianthoides* density was lower than last year at 0.57/ARM. No small (<10cm) *Parastichopus parvimensis* were found in the ARMs and large (>10cm) density was 1.43/ARM, higher than last year, but similar to previous years. *Strongylocentrotus franciscanus* density increased to

38.14/ARM and size also increased slightly to 39.97mm. *Strongylocentrotus purpuratus* density declined to 6.14/ARM, the lowest since 1998, and mean size also decreased to 24.8mm. The trends in abundance and mean size for 2001-2002 *S. franciscanus* and *S. purpuratus* populations in the ARMs at the Johnson's Lee North and South sites were very similar.

A pair (one male and one female) and of *Phyllolithodes papillosus*, were found in an ARM. The female was soft; having recently molted and the two crabs were probably paired for mating. Photographs of these were taken for documentation. This is a more northern species and was observed in the ARMs at this site in 1997. The finding of these at this site is a southern range extension (from San Miguel Island) for this species.

The temperature logger was missing on July 24, 2002. The two nuts that hold the logger on the thread rod were missing along with the housing. This indicates that someone actually used tools to remove the logger and did not replace it. New loggers were deployed. We were able to track down the temperature logger that was removed almost a year later. The loggers were anonymously returned (after spreading the word through the commercial diver community) on October 27th, 2003. Both loggers continued to record data and we were able to determine that the loggers were removed on July 2nd, 2002 around 1100 hours by looking at temperature anomalies. There will only be a temperature data gap of about three weeks for this site due to this logger being inappropriately removed.

Location: Rodes Reef, Santa Rosa Island

Site #5 SRRR
2002 sampling dates: 7/10.
2002 status: Dominated by *Strongylocentrotus franciscanus*.

Overall, this site was similar to last year and continued to be dominated *by Strongylocentrotus franciscanus*. However, understory algae were more abundant than last year, but consisted mostly of "weedy" species. No *Laminaria farlowii*, *Pterygophora californica* or *Eisenia arborea* were observed. Approximately six juvenile *Macrocystis pyrifera* were observed within 10 meters of the transect, but none were directly along the transect where quadrats and RPCs are conducted. *Desmarestia* sp. cover was 6.5%, the highest since 1998. Miscellaneous red algae cover increased for the second consecutive year and was 20.7%. Approximately half of this category was composed of filamentous red algae and the other half of a slimy red encrusting alga like *Ralfsia* sp. on the surface of the rocks. The red alga, *Laurencia pacifica* was less abundant than last year. Miscellaneous plants consisting entirely of filamentous brown diatoms covered 6.7% of the bottom, similar to last year. Articulated coralline algae were rare. Encrusting coralline cover was 58.3%, similar to past years. Bare substrate covered 12.5% of the bottom, similar to last year.

The most common miscellaneous invertebrates on RPCs were hydroids and *Ophiothrix spiculata*. This category covered 11.5% of the bottom, a small decrease from last year. Overall, encrusting invertebrates are much more abundant on the rocky western half of this transect. *Ophiothrix spiculata* were sampled separately on RPCs and then added to the miscellaneous invertebrates. When separated out, *O. spiculata* covered 5.7% of the bottom and the remaining miscellaneous invertebrates covered 5.83%. This is a similar coverage of *O. spiculata* as the last two years.

The parchment tubeworm*, Chaetopterus variopedatus*, was relatively uncommon for this site, similar to the last several years. *Diopatra ornata* abundance remained low at 0.0%. *Astrangia lajollaensis* cover remained high at 9.8%. This is similar to last year, but *A. lajollaensis* has gradually declined over the past two years. *Balanophyllia elegans* cover was 6.2%, an increase from last year and the highest cover since 1990. Bryozoan cover combined remained low at 2.3%. *Urticina lofotensis* density increased to 0.072/m^2, the highest cover recorded at this site. *Urticina coriacea* and *U. colombiana* were also common, as usual for this site. *Lophogorgia chilensis* were rare along the transect, with a density of 0.0028/m^2. *Styela montereyensis* remained rare, and none were observed in quadrats (0.0/m^2), similar to the last several years. *Tethya aurantia* were common but continued to be relatively low for this site.

Their density was recorded at 0.076/m^2, similar to the last two years. The bright orange encrusting tunicate that has been present at this site for the past several years remained abundant. Tunicate cover was 3.7%.

Strongylocentrotus purpuratus density continued to decrease and was recorded at 0.042/m^2, the lowest density recorded since monitoring began at this site in 1983. *Strongylocentrotus purpuratus* were difficult to find along the transect and this site has the lowest density of all 16 monitoring sites. *Strongylocentrotus franciscanus* density was 7.83/m^2, similar to last year. Juvenile *Strongylocentrotus* spp. were rare, similar to other sites. No *Lytechinus anamesus* were observed on band transects this year, 0.0/m^2. No sea urchin wasting disease was observed.

Sea stars were abundant at this site and all three species monitored continued to increase for the fourth consecutive year. *Asterina miniata* density was 3.0/m^2. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats, with densities of 0.1.29/m^2 and 0.89/m^2 respectively. Both of these were the highest densities recorded for *P. giganteus* at this site. *Pycnopodia helianthoides* density was 0.33/m^2, also the highest density recorded at this site. Both large and very small *Pycnopodia helianthoides* were present. Several *Orthasterias koehleri* (rainbow stars) and *Dermasterias imbricata* (leather star) were observed along the transect. *Henricia* sp. (blood stars) were common. Several short spined sea stars, *Pisaster brevispinus*, were observed. 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).

No *Haliotis* spp. were observed on band transects. However, two small *H. rufescens* measuring 47mm and 57mm were observed within a meter of the transect. *Kelletia kelletii* were relatively uncommon with a density was 0.0014/m^2. No *Lithopoma gibberosum* or *L. undosum* were observed on quadrats. These were noticeably less abundant than in previous years. *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, similar to last year. *Cypraea spadicea* were common with a density of 0.33/m^2.

Similar to previous years, fish were mostly at the western/rocky end of the transect. Similar to last year, adult *Chromis punctipinnis* were relatively uncommon with only about 10 observed. One juvenile and about six adult *Embiotoca jacksoni* were observed. About six adult and six juvenile *E. lateralis* were observed. Several *Damalichthys vacca* and one rubberlip, *Rhacochilus toxotes,* were observed. Young of year (YOY) and approx. two-year old *Sebastes mystinus* were common. Several 2-3 year old and about 15 YOY *S. serranoides* were observed. Four adult *S. atrovirens* were observed during the roving diver fish count and a few more were observed after the count. Two small vermilion rockfish, *S. miniatus* were observed. Two black and yellow rockfish, *S. chrysomelas*, and three copper rockfish, *S. caurinus* were observed. Two male and about six small female *Semicossyphus pulcher* were observed. Several ronquils were observed. Painted greenlings, *Oxylebius pictus*, were common and were the most abundant fish along the transect. One lingcod, *Ophiodon elongates,* and several ocean whitefish, *Caulolatilus princeps*, were observed. No *Alloclinus holderi* were observed this year. *Coryphopterus nicholsii* were relatively rare with less than 10 observed along the transect and a density of 0.042/m^2, similar to last year. Only one roving diver fish count was conducted in 2002. We were unable to visit this site due to boat problems and poor weather conditions. The fish count was conducted on July 10th with four divers observing 25 species of fish.

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

Location: Gull Island South, Santa Cruz Island

Site #6 SCGI
2002 sampling dates: 7/9, 8/21, 9/11.
2002 status: Developing kelp forest.

This site has changed dramatically over the past year and is now a lush, developing kelp forest with few sea urchins. Over the course of the summer, the kelp forest noticeably matured, but there were only a few plants that reached the surface by September. *Macrocystis pyrifera* densities were by far at their highest values since monitoring began at this site in 1982. There were no adult *M. pyrifera* ,0.0/m^2, by their definition on 5-meter quadrats (greater than 1m tall and haptera at or above the primary dichotomy), however, adult plants on quadrats (all plants greater than 1m tall) were abundant at a density of 3.04/m^2. This is the highest density recorded for adult plants in 1m quadrats since monitoring began in 1982. The density of subadult *M. pyrifera* on 5-meter quadrats was 3.19/m^2 and density of juvenile plants on quadrats was 11.46/m^2. These densities were also the highest recorded at this site. *Macrocystis pyrifera* cover on RPCs was 65.2%, also the highest cover recorded at this site. Adult and juvenile *Eisenia arborea* densities were 0.42/m^2 and 1.29/m^2 respectively, and cover was recorded at 9.0%. All of these values were the highest recorded at this site since monitoring began. Juvenile *Pterygophora californica* density was 0.083/m^2, and cover was 1.7%. This was the first time since 1992 that we observed *P. californica* in quadrats at this site. No *Laminaria farlowii* were observed. *Desmarestia* sp. were common with a cover of 5.7%, the highest cover recorded since 1983. A small amount of *Cystoseira* sp. was observed and had a cover of 1.2%; this is also the highest cover since monitoring began at this site. Miscellaneous red algae cover was 20.5%, the highest cover recorded since 1982. Most of these red algae were of several unidentified foliose species that looked like *Rhodymenia*. Miscellaneous plants consisting of fillamentous brown diatoms cover decreased to 1.0%. Articulated coralline algae remained low at 1.17%, and encrusting coralline algae cover was 58.3%, similar to past years. Bare substrate cover decreased to 3.8%, the lowest cover since 1998.

The most common miscellaneous invertebrates on RPCs were Christmas tree worms, *Spirobranchus spinosus*, hydroids, and the worm, *Pista elongata*. This category covered 14.17% of the bottom, a small decrease from last year. *Corynactis californica* continued to decline for the second consecutive year and covered 4.7% of the bottom. *Balanophyllia elegans* and *Astrangia lajollaensis* covered 3.3% and 1.7% 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. None were observed on RPCs for the second consecutive year. Bryozoans were noticeably more abundant similar to what we have observed at other sites this year. *Diaperoecia californica* and miscellaneous bryozoans covered 2.3% and 9.0% of the bottom respectively. These were their highest values recorded since 1994. *Lophogorgia chilensis* density was 0.094/m^2, similar to the past two years. *Tethya aurantia* density was 0.019/m^2, similar to previous years. *Stylaster californica* density remained relatively high at 0.069/m^2, similar to the last several years. Both large and small colonies of *S. californica* were common.

Strongylocentrotus spp. densities dramatically declined. *Strongylocentrotus purpuratus* continued to decline for the second consecutive year and were recorded at their lowest density since monitoring began at this site in 1982, 1.33/m^2. Similarly, *S. franciscanus* continued to decline for the third consecutive year and were also at their lowest recorded density, 0.5/m^2. Juvenile *Strongylocentrotus* spp. were rare. No live *Lytechinus anamesus* were observed on July 9th, but several intact tests were observed. This is the lowest density (0.0/m^2) for this species since 1996. No sea urchin wasting disease was observed in 2002.

Asterina miniata density remained relatively high for this site and was similar to last year at 1.46/m^2. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats. Their densities were 0.083/m^2 and 0.12/m^2 respectively. *Pycnopodia helianthoides* density continued to increase and was recorded at 0.078/m^2, the highest recorded since monitoring began at this site in 1983. No *Pachythyone rubra* were observed on RPCs this year, and I did not notice any along the transect. No sea star wasting disease was observed.

Cypraea spadicea density was 1.0/m^2, similar to last year, and relatively high for this site. Similar to other sites, *Lithopoma undosum* continued to decrease for the third consecutive year and was recorded at 0.042/m^2. This is the lowest density at this site since 1995. *Megathura crenulata* also continued to decline for the third consecutive year and was recorded at 0.011/m^2. This is the lowest density recorded at this site since we began monitoring them in 1983. *Kelletia kelletii* density remained low at 0.0069/m^2. *Aplysia californica* were rare and none were observed on band transects, 0.0/m^2, the lowest density since

1993. *Crassedoma giganteum* density continued to decline and was recorded at 0.0014/m^2, the lowest density at this site since monitoring began. *Tegula regina* were common.

Fish were relatively diverse and appeared to be more abundant than last year. The most abundant fish were young-of-year/juvenile *Sebastes mystinus*. A little larger *S. mystinus* (about 10-12cm, and probably two-year-old fish) were also common and several larger ones (about 18cm) were also observed. Juvenile/YOY *Sebastes serranoides/flavidus* were common and several small adults (similar to size of the *S. mystinus*) were observed. Several juvenile/YOY *S. caurinus/carnatus*, copper/gopher, were also observed. About five adult *S. atrovirens* and four YOY/juveniles were observed. Two adult and one juvenile *S. serriceps* were observed. Adult *Chromis punctipinnis* were common in the canopy on the southern end of the transect. One *Hypsypops rubicundus* was observed. Kelp surfperch, *Brachyistius frenatus*, were common in the *M. pyrifera* canopy. Several *Girella nigricans* were observed. *Paralabrax clathratus* were uncommon with only 2-3 observed. Several adult and juvenile *Embiotoca jacksoni* and *E. lateralis* were observed. No *Halichoeres semicinctus* were observed. Adult *Oxyjulis californica* were common. Small female *Semicossyphus pulcher* were common and two small males and one juvenile were observed. *Oxylebius pictus* were common. At least two ling cod, *Ophiodon elongatus*, were observed. *Coryphopterus nicholsii* were common with a density of 0.79/m^2. No *Alloclinus holderi* or *Lythrypnus dalli* were observed. Roving diver fish count was conducted on August 21st with seven divers and on September 11th with four divers observing 29 and 24 species of fish respectively.

All 14 ARMs were monitored for all indicator species. All of the ARMs were in good condition. There are currently five ARMs in a North and South group and four in a middle group. There was a large amount of variability in the invertebrate content between ARMs. Most notably, there were more small *Strongylocentrotus franciscanus* in the ARMs from the North group than the other two groups.

No *Haliotis sp*. were observed in the ARMs this year. *Cypraea spadicea* mean density increased dramatically for the second consecutive year to 10.71/ARM, the highest density since 1994. Juvenile *C. spadicea* were common in the ARMs, but were a small proportion (probably less than 20%) of the animals found. *Kelletia kelletii* density was 0.29/ARM, these are typically rare in the ARMs, but this is the third consecutive year we have found them at this site. No *Lithopoma undosum* or *L. gibberosum* were found in the ARMs this year. *Megathura crenulata* density was lower than last year at 0.29/ARM. *Crassedoma giganteus* density was 0.57/ARM, similar to past years. *Asterina miniata* mean density and size were 3.36/ARM and 26.1mm respectively, similar to last year. *Pisaster giganteus* density was 0.64/ARM, similar to last year. *Pisaster giganteus* mean size has gradually risen over the last three years and was 77.1mm this year. *Pycnopodia helianthoides* mean density was 0.14/ARM. Similar to last year there were no *Parastichopus parvimensis* <10cm, however mean density of >10cm was higher at 0.43/ARM.

Strongylocentrotus franciscanus increased dramatically to its highest density in the ARMs at this site since monitoring them in the ARMs began in 1992. Their density was 97.6/ARM and their mean size increased slightly to 22.1mm. There were two noticeable size cohorts, one in the approximate range of 10-20mm and another between 24-40mm. This is very different from what we have observed at other sites. Gull Island was barren last year and is now a developing kelp forest. The *Strongylocentrotus franciscanus* and *S. purpuratus* were out in the open (emergent) when this site was a barren, but now most of the *S. purpuratus* are gone and the *S. franciscanus* have taken refuge in crevices and ARMs. *Strongylocentrotus purpuratus* mean density in the ARMs continued to decline for the third consecutive year and was 10.07/ARM the lowest recorded in the ARMs at this site. Mean size was similar to last year. No *Centrostephanus coronatus* were observed in the ARMs, the first time since they appeared in the ARMs at this site in 1998.

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

Location: Fry's Harbor, Santa Cruz Island

Site #7 SCFH

2002 sampling dates: 8/7, 8/22.

2002 status: Open area with high densities of *Pachythyone rubra*, *Ophiothrix spiculata*, *Strongylocentrotus purpuratus* and *Astrangia lajollaensis*.

This site continues to be dominated by echinoderms and is nearly devoid of macroalgae. No macroalgae were 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, and above the transect where adult and juvenile *E. arborea* are normally common in the shallow areas. 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 0.33%. Most of this consisted of the red algae, *Laurencia pacifica*. Articulated coralline algae were rare with a cover of 0.0%. Encrusting coralline algae covered 42.7% of the bottom, similar to last two years. Bare substrate cover was 18.0%, similar to last year.

Miscellaneous invertebrate cover on RPCs remained high at 28.5%. The most common miscellaneous invertebrates were *Ophiothrix spiculata*, *Hydractinia milleri*, and *Cucumaria piperata*. *Ophiothrix spiculata* were the most abundant in this category and were kept track of separately and then added to the miscellaneous invertebrate category for data entry. Separated, miscellaneous invertebrates covered 6.5% a decrease from last year and *O. spiculata* covered 22.0%, similar to last year. *Astrangia lajollaensis* were abundant covering 15.5% of the bottom, similar to the past decade. *Corynactis californica* and *Balanophyllia elegans* covered 1.7% and 0.5% of the bottom respectively. Similar to last year miscellaneous bryozoans and *Diaperoecia californica* covered 2.5% and 1.0% of the bottom respectively. *Lophogorgia chilensis* were abundant, on the deep/offshore side of the transect. *Lophogorgia chilensis* density was 0.25/m^2, a decline over the last two years, but still relatively high for this site.

Strongylocentrotus purpuratus density remained high at 28.7/m^2, similar to the past two years. *Strongylocentrotus franciscanus* density continued to decline for the second year and was recorded at 3.13/m^2. No *Centrostephanus coronatus* were observed on quadrats this year (0.0/m^2), but they were present in small numbers around the transect. *Lytechinus anamesus* densities continued to decline for the second consecutive year and were counted on both quadrats and band transects with densities of 0.083/m^2 and 0.55/m^2 respectively. Similar to other sites this year, juvenile *Strongylocentrotus spp.* were rare. Sea urchin wasting disease was observed in<5% of the *S. franciscanus*, *S. purpuratus* and *L. anamesus*.

Pachythyone rubra cover remained high at 35.0%, similar to last year. *Pachythyone rubra* were mostly abundant on the northern and southern thirds of the transect, while the center had fewer. *Parastichopus parvimensis* density remained relatively low for this site with a density of 0.5/m^2. *Pisaster giganteus* were notably small, but relatively abundant for this site and continued their increase for the second consecutive year with the highest densities recorded at this site since monitoring began in 1982. They were counted on both quadrats and 5-meter quadrats with densities of 1.33/m^2 and 0.79/m^2 respectively. *Asterina miniata* density was 1.25/m^2, similar to the last two years and relatively high for this site. No sea star wasting disease was observed.

Cypraea spadicea density was 0.54/m^2, similar to the last several years. *Lithopoma undosum* density continued to decline and they were rare at the site with a density of 0.042/m^2, the lowest since 1998. Only one *L. undosum* was found for size frequencies and a good search effort was made. *Kelletia kelletii* density was 0.056/m^2. *Aplysia californica* were rare with none observed on band transects, 0.0/m^2. *Megathura crenulata* density was 0.044/m^2, similar to the past seven years, but relatively low compared with years prior to 1996. *Crassedoma giganteum* density was 0.011/m^2, similar to the past several years, but relatively low.

Adult *Chromis punctipinnis* were common, but notably less abundant than in previous years. No juvenile/YOY *C. punctipinnis* were observed on August 7th or August 22nd and only a few small egg masses were observed in the ARMs. Both adult and juvenile painted greenlings, *Oxylebius pictus* were abundant. Similar to past years, 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. Several small adult *Sebastes mystinus* were observed and two small groups of about five juveniles were observed. One adult black rockfish, *S. melanops* was observed in about the middle of the transect. It is possible that this fish species has been here for several years and has been misidentified as a *S. mystinus* in past years. Adult *S. serriceps* were notably abundant with 11 observed along the transect on August 7th. Two juvenile *S. serriceps* were also observed. Three adult *S. atrovirens* and two adult gopher rockfish, *S. carnatus*, were observed. Several adult *Oxyjulis californica* were observed, but were rare. Several male and female *Halichoeres semicinctus* were observed. Female *Semicossyphus pulcher* appeared less abundant than previous years and only several were observed, one male and no juveniles. At least four adult *Hypsypops rubicundus* were observed and no juveniles. Several ronquils were observed, these were most likely stripefin ronquils, *Rathbunella hypoplecta*, but this identification needs to be confirmed. *Damalichthys vacca* and *Rhacochilus toxotes* (rubberlip surfperch) were common as usual for this site. Several swell sharks, *Cephaloscyllium ventriosum*, were observed. Several adult *Embiotoca jacksoni* were observed. Several *Medialuna californiensis* and *Girella nigricans* were observed. *Coryphopterus nicholsii* density increased to 2.13/m^2, the highest since 1991. This increase is similar to what we have observed at other monitoring sites on the north side of Santa Cruz Island. *Alloclinus holderi* continued to decline and were rare with only several observed and density of 0.083/m^2. No *Lythrypnus dalli* were observed on quadrats, but several were observed during the roving diver fish counts. *Lythrypnus zebra* were present but in notably fewer numbers than previous years. Roving diver fish count was conducted on August 7th with four divers and on August 22nd with seven divers observing 22 and 28 species of fish respectively.

All seven ARMs were intact and sampled for all indicator species. One *Haliotis assimilis* measuring 12.0mm was found in an ARM. No other Haliotis sp. were found in the ARMs this year. *Cypraea spadicea* density increased to 7.86/ARM, similar to most years prior to 2001. *Megathura crenulata* density was 0.71/ARM, higher than last year, but similar to previous years. *Crassedoma giganteum* density was 2.43/ARM, lower than the last two years and mean size increased to 67.7mm, indicating lower recruitment. *Asterina miniata* density continued to increase and was the highest recorded at 16.43/ARM. *Pisaster giganteus* continued to be abundant with a density of 11.29/ARM. *Strongylocentrotus franciscanus* density was similar to last year at 30.86/ARM. *Strongylocentrotus purpuratus* density continued to decline for the second consecutive year to 22.29/ARM. This is the lowest recorded density for this site. One *Centrostephanus coronatus* was found in the ARMs (0.14/ARM). *Parastichopus parvimensis* density was similar to recent years with 0.14/ARM <10cm and 0.86/ARM >10cm.

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

Location: Pelican Bay, Santa Cruz Island

Site #8 SCPB
2002 sampling dates: 7/12, 7/26, 8/22, 9/27.
2002 status: Dominated by *Strongylocentrotus purpuratus*.

Similar to the previous eight years, this site has changed little and continues to be dominated by *Strongylocentrotus purpuratus*. The site was almost completely devoid of macroalgae. *Macrocystis pyrifera*, *Pterygophora californica*, *Laminaria farlowii*, *Cystoseira* spp., *Desmarestia* spp., and *Gigartina* spp. were all absent from the site. Only one juvenile *Eisenia arborea* was observed along the transect. The most common foliose algae were a small amount of the red alga, *Laurencia pacifica*, brown algae, *Colpomenia* sp., and *Gelidium* sp. on the tops of rocks. Miscellaneous plants, consisting entirely of filamentous brown diatoms, covered 3.2% of the bottom. Articulated coralline algae were rare with none recorded (0.0%) on RPCs. Encrusting coralline algae cover was 38.8%, similar to previous years. Bare substrate cover was 47.0%, also similar to previous years.

Miscellaneous invertebrates on RPCs covered 3.3% of the bottom, a large decrease from last year. A decrease in barnacles, *Balanus* sp., was the most likely reason for the decline. This year the most common miscellaneous invertebrate was *Spirobranchus spinosus*. *Astrangia lajollaensis* covered 8.5% of the bottom, similar to the last several years. *Serpulorbis squamigerus* were relatively abundant on the tops of large rocks, however they are typically rare directly along the transect and none were observed on RPCs this year. *Diaperoecia californica* was relatively common on the steep sides of large rocks on the inshore side of the line, but similar to previous years was relatively rare directly along the transects with a cover of 0.17%. Other bryozoans were relatively rare with a cover of 0.33%. We have not noticed a increase in bryozoans at this site compared to the increase we have observed at most of the other kelp forest monitoring sites this year. *Lophogorgia chilensis* density was lower than the past two years at 0.13/m^2, but this still relatively high for this site.

Strongylocentrotus purpuratus density remained high and was only slightly lower than last year with 38/m^2. *Strongylocentrotus franciscanus* density declined and was about 50% lower than the last three years at 2.3/m^2. 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 were similar to last year at 4.3/m^2 and 2.1/m^2 respectively. *Centrostephanus coronatus* density was 0.042/m^2, similar to the last several years. Sea urchin wasting disease was observed in *S. purpuratus* and *Lytechinus anamesus* and prevalence was estimated at less than 5% of these populations.

Asterina miniata density continued to increase for the fourth consecutive year, similar to other sites. Their density was 0.63/m^2; the highest recorded at this site since monitoring began in 1982. *Pisaster giganteus* were relatively abundant for this site. They were counted on both quadrats and 5-meter quadrats, with densities of 0.17/m^2 and 0.08/m^2 respectively. This was the highest density recorded on quadrats since monitoring began, but a lower density on 5-meter quadrats. Typically we conduct quadrats and 5-meter quadrats during the same visit, but this year these were conducted about a month apart. The sea star, *Linckia columbiae*, was 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 none were observed on quadrats this year (0.0/m^2), the lowest density recorded at this site since monitoring began. No sea star wasting disease was observed.

Crassedoma giganteum density was 0.043/m^2, similar to the past decade, but low compared to the 1980's. *Aplysia californica* density was 0.0028/m^2. *Lithopoma undosum* density continued to gradually decline for the third consecutive year and was recorded at 0.46/m^2. This is a relatively low density for this species at this site. *Kelletia kelletii* density remained low for this site at 0.0042/m^2, the lowest density recorded since monitoring began.

For an area dominated by sea urchins, fish were relatively abundant with a moderate diversity as is usual for this site. *Coryphopterus nicholsii* were the most abundant fish along the transect. Their density increased for the fourth consecutive year and was 6.7/m^2, the highest since 1996. Adult *Embiotoca jacksoni* were common and only one juvenile was observed. Adult *Damalichthys vacca* were common. Both large and small adult rubberlip surfperch, *Rhacochilus toxotes*, were relatively abundant. Adult *Hypsypops rubicundus* were common. Adult *Chromis punctipinnis* were relatively uncommon in August, but were common in September. Only one juvenile *C. punctipinnis* was observed on September 27th. This is a relatively late date to observe recruitment. From other visits to the Channel Islands, it appears that most *C. punctipinnis* recruitment occurred in October, which is relatively late for this species. Small female *Semicossyphus pulcher* were relatively rare with few observed. No male or juvenile *S. pulcher* were observed. Adult *Oxyjulis californica* were rare with only several seen, and no juveniles were observed. Male and female *Halichoeres semicinctus* were rare. Adult *Paralabrax clathratus* were common with at least 12 along the transect. Many of the *P. clathratus* were noticeably large, probably in the 2.5 kg size range. *Adult Sebastes atrovirens* were common. One small adult *S. serranoides* was observed. Two adult and one juvenile *S. serriceps* were observed. Small ocean whitefish, *Caulatis princeps*, were common as usual for this site. *Lythrypnus dalli* were rare with only six observed along the transect. None (0.0/m^2) were observed on quadrats. This is only the second time a density this low has

been recorded; the first was in 1985. *Alloclinus holderi* density continued to be low and none (0.0/m^2) were observed on quadrats, similar to last year. Several large *A. holderi* were observed at the site, but were rare. Roving diver fish counts were conducted on August 22nd with seven divers and on September 27th with four divers observing 22 and 23 species of fish respectively.

All six ARMs at this site were intact and sampled for all indicator species. Two ARM cages were replaced. Similar to previous years, the ARMs were relatively bare. No *Haliotis* spp. have been found in the ARMs since 1999. *Cypraea spadicea* density was 4.5/ARM, similar to the past several years. *Crassedoma giganteum* density was 1.83/ARM, slightly higher than the last two years. *Asterina miniata* density increased to 6.0/ARM, the highest since 1997, and their size also increased with a mean of 46.3mm, the highest recorded for this site. *Pisaster giganteus* density was lower than last year, but the same as in 2000 at 1.33/ARM. No *Lytechinus anamesus* were observed in the ARMs for the past two years. *Strongylocentrotus franciscanus* density continued to decrease in the ARMs for the third consecutive year. Their density was recorded at 14.7/ARM, and their mean size also increase for the third consecutive year to 31.4mm indicating little recruitment. *Strongylocentrotus purpuratus* density decrease to 19.5/ARM, the lowest since monitoring began in the ARMs in 1994. Their size was similar to the past several years. Similar to last year, no *Centrostephanus coronatus* were observed in the ARMs. *Parastichopus parvimensis* density >10cm and <10cm was similar to last year at 1.83/ARM and 1.17/ARM respectively.

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

Location: Scorpion Anchorage, Santa Cruz Island

Site #9 SCSA
2002 sampling dates: 7/12, 8/9, 8/23
2002 status: Dominated by *Strongylocentrotus purpuratus*.

This site has changed little and continues to be dominated by *Strongylocentrotus purpuratus*. Similar to past years, the site is almost completely devoid of macroalgae. Miscellaneous red algae cover was 7.83%, relatively high for this site. The most common red algae were *Laurencia pacifica*. Some small *Colpomenia* sp. were present on the tops of large rocks. Filamentous green algae were common growing on the fine sandy/silty areas along the site. Other plants, consisting of filamentous brown diatoms were common with a cover of 3.3%, similar to last year. Articulated and encrusting coralline algae covers were recorded at 1.2% and 40.0% respectively. Bare substrate cover was 33.7%.

Similar to past years the most common miscellaneous invertebrate on RPCs was the Christmas tree worm, *Spirobranchus spinosus*. This category covered 15.3% of the bottom, a decrease from the previous three years. *Serpulorbis squamigerus* continued to decline for the fourth consecutive year and none (0.0%) were observed on RPCs for the first time since monitoring began in 1982 at this site. Bryozoans were uncommon directly along the transect with a cover of 0.17%, similar to past years. *Diaperoecia californica* cover was 0.33%. Five *Lophogorgia chilensis* were observed during band transects for a density of 0.0069/m^2. Though this is a low density compared to other sites, this species has gradually increased over the last eight years and this year's density is the highest recorded since monitoring began in 1983. *Tethya aurantia* density was 0.028/m^2.

Strongylocentrotus purpuratus continued to dominate this site with a density of 85.9/m^2, a small decrease from the last two years. Similar to last year, most of the *S. purpuratus* were small with a mean size of 20mm. *Strongylocentrotus franciscanus* density declined to 2.79/m^2, similar to the density in 2000. *Centrostephanus coronatus* were present at the site, but none were observed in quadrats this year, 0.0/m^2. *Lytechinus anamesus* density was 0.014/m^2, and they were noticeably large. Sea urchin wasting disease was observed only in *S. purpuratus* and we estimated that less than 5% showed signs of the disease.

Asterina miniata density declined from last year's highest recorded, but remained relatively high for this site at 0.63/m^2. *Pisaster giganteus* density continued to increase for the third consecutive year and was recorded at its highest density at this site on both quadrats and 5-meter quadrats. Their densities were 0.17/m^2 and 0.16/m^2 respectively. Though these densities are relatively low compared to other sites, they are high for this site. *Parastichopus parvimensis* density was 0.25/m^2.

Aplysia californica were relatively abundant with a density of 0.065/m^2. Most were average size and their egg masses were common. It is surprising that this site with so little algae can support so many of these grazers. *Strongylocentrotus purpuratus* were observed feeding on the *A. californica* eggs. *Lithopoma undosum* continued to rapidly decline and were recorded at 1.88/m^2, the lowest density since 1994. *Lithopoma undosum* densities in 2000 and 2001 were 12.3/m^2 and 7.63/m^2 respectively. *Megathura crenulata* density increased to 0.049.m^2, higher than the last four years, but still relatively low since 1983. *Cypraea spadicea* density was 0.25/m^2, lower than last year but similar to 2000 and still a relatively high density compared to the previous 20 years. *Crassedoma giganteum* ended its gradual increase and declined to 0.029/m^2, the lowest density since 1996. Their density in 2001 was the highest recorded, though there is a fair amount of sampling variability for this species probably due to spatial variability. Several *Panulirus interruptus* were observed around the transect, but none were on band transects this year, for a density of 0.0/m^2, a decline from the past several years.

Adult *Chromis punctipinnis* and *Coryphopterus nicholsii* were the most abundant fish at the site. Adult *Oxyjulis californica*, adult *Paralabrax clathratus*, adult *Embiotoca jacksoni*, adult *Hypsypops rubicundus* and *Oxylebius pictus* were all common, similar to last year. Only about 100 *adult C. punctipinnis* were present along the transect and no juveniles were observed this year at this site. Overall, recruitment of *C. punctipinnis* has been low and later than usual. *Semicossyphus pulcher* were relatively rare with only two small females observed. Several female and two male *Halichoeres semicinctus* were observed. One small adult and six juvenile *Sebastes mystinus* were observed. One small adult and seven juvenile *S. serriceps* were observed. One black and yellow rockfish, *S. chrysomelas*, several adult *S. atrovirens*, and two copper rockfish, *S. caurinus,* were observed. No zebra gobies, *Lythrypnus zebra,* were observed this year; these are often common at this site. One *Lythrypnus dalli* was observed during the roving diver fish count. *Alloclinus holderi* were rare with only two large adults observed during the roving diver fish count, and one on quadrats for a density of 0.042/m^2. *Coryphopterus nicholsii* density was 1.63/m^2, the highest density recorded since 1989. Roving diver fish count was conducted on July 12th with five divers and on August 9th with four divers observing 24 and 25 species of fish respectively.

Six of the seven ARMs were monitored for all indicator species. ARM #2426 was not sampled because the top was removed and bricks were pulled out. We presume that a curious diver did this thinking that there was some animal trapped in the ARM. This ARM was rebuilt.

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, similar to past years. *Cypraea spadicea* density was similar to past years at 13.8/ARM, and remains relatively high compared to other sites. *Lithopoma undosum* density was 2.0/ARM, similar to last year. *Crassedoma giganteum* density remained relatively low for this site at 1.8/ARM, similar to last year. Their mean size has gradually increased over the last four years, indicating lower recruitment. *Asterina miniata* density and mean size was the same as last year at 0.83/ARM and 28mm respectively. *Pisaster giganteus* density was slightly lower than last year at 1.17/ARM, and their mean size increased considerably to 78.4mm. *Strongylocentrotus franciscanus* density was similar to last year at 10.83/ARM and their mean size increased to 38.1mm. *Strongylocentrotus purpuratus* density was also similar to last year at 39.7/ARM, and their mean size increased for the third consecutive year to 24.8mm indicating low recruitment. No *Centrostephanus coronatus* were found in the ARMs, similar to last year. *Parastichopus parvimensis* >10cm increased in density for the second consecutive year to 3.50/ARM, the highest recorded since we began monitoring these in the ARMs in 1996. *Parastichopus parvimensis* density <10cm was 1.33/ARM, a decline from last year.

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 data accurately. The HoboTemp logger appeared to be logging data correctly and these data were used.

NOTE: On August 9th we conducted all of the density sampling. Unfortunately, the observer, Amy Story had some difficulties identifying *Serpulorbis squamigerus* and *Spirobranchus spinosus* while conducting RPCs. These data were not used and RPCs were conducted again on August 23rd. The August 23rd data set for RPCs was used.

Location: Yellow Banks, Santa Cruz Island

Site #10 SCYB
2002 sampling dates: 7/8, 7/22, 9/12
2002 status: Barren area possibly in transition.

Strongylocentrotus spp. density continued to decline this year and densities are low enough that we expect a kelp forest to return. However, *Lytechinus anamesus* remained abundant. Kelp forests were present several hundred meters away in shallower areas. With the exception of fewer *Strongylocentrotus* spp., this site appeared similar to last year and was mostly devoid of foliose algae. There were noticeably more algae observed during our last visit on September 12th. No adult or subadult *M. pyrifera* were observed on quadrats, juveniles were recorded at a density of 0.58/m^2, and cover was 0.67%. Most of the juvenile were small one-bladed juveniles. During our last visit on September 12th, 12 subadult M. pyrifera plants were observed. Most of these plants were 7-10 meters tall. One juvenile and one adult *Eisenia arborea* were observed, but none were in quadrats or RPCs. Two small adult and several juvenile *Pterygophora californica* were observed, but again none were observed in quadrats or RPCs. Several juvenile *Laminaria farlowii* were observed and had a density of 0.13/m^2 on quadrats. Clumps of *Dictyota/Pachydictyon* were common within the transect and noticeably more abundant on September 12th. Miscellaneous red algae cover was 4.2%, the highest recorded since 1996. Miscellaneous plants consisting of filamentous brown diatoms covered 13.5% of the bottom, a decrease from last year. Articulated coralline algae cover was 2.8% and encrusting coralline cover was 44.5%, both similar to last year. Bare substrate cover was 40.0%, similar to the last year several years, but relatively high for this site.

Miscellaneous invertebrates on RPCs covered 17.2% of the bottom, similar to last year, but the highest recorded cover since monitoring began at this site in 1986. The most abundant miscellaneous invertebrates were *Ophiothrix spiculata*, hydroids and the small clear anemone, *Sagartia/Cactosoma*. We kept track of *O. spiculata* separately and then added them to the miscellaneous invertebrate category. Separated, *O. spiculata* covered 6.3% and the remaining miscellaneous invertebrates covered 10.8% of the bottom. *Ophiothrix spiculata* were more abundant on the western third of the transect, but they did not dominate anywhere along the transect. Bryozoans were rare, covering 1.5% of the bottom on RPCs. *Tethya aurantia* density continued to decline for the third consecutive year and was recorded at 0.025/m^2, the lowest density since 1997. There was not an unusual amount of silt this year. Silt sometimes covers the *T. aurantia* making them difficult to see at this site. *Lophogorgia chilensis* were the most abundant of the gorgonians and continued to increase for the second consecutive year. Their density was 0.21/m^2, the highest recorded at this site since monitoring began in 1986. *Muricea californica* and *M. fruticosa* densities were 0.015/m^2 and 0.019/m^2 respectively, similar to past years. Tunicates and sponges were rare covering 0.67% and 0.0% of the bottom respectively.

Strongylocentrotus purpuratus density continued to decrease for the second consecutive year and was recorded at 6.04/m^2, the lowest since1994. *Strongylocentrotus franciscanus* density also continued to decline for the second consecutive year and was recorded at 0.71/m^2, the lowest density since 1996. Though *Lytechinus anamesus* has declined slowly over the last three years, they still remain abundant. *Lytechinus anamesus* were counted on both quadrats and band transects with densities of 18.6/m^2 and 14.1/m^2 respectively. These sea urchins dominated the site and were probably the reason why a kelp forest is not establishing in this area. *Centrostephanus coronatus* density remained low at 0.083/m^2, the same as last year. Juvenile sea urchins of all species were rare indicating little recruitment, similar to what we have observed at other monitoring sites this year. No sea urchin wasting disease was observed on July 8th but was observed in several *S. purpuratus* and *S. franciscanus*. Whole *S. purpuratus* and *L.*

anamesus tests were common indicating mortality from disease or predation by *Pycnopodia helianthoides*.

Both *Asterina miniata* and *Pisaster giganteus* continued to increase at this site. *Asterina miniata* density continued to increase for the fourth consecutive year and was recorded at 0.63/m^2, the highest recorded density since monitoring began at this site in 1986. *Pisaster giganteus* also continued to increase and were counted on both quadrats and 5-meter quadrats, with densities of 0.083/m^2 and 0.065/m^2 respectively. On quadrats, this was the highest recorded density since 1991 and on 5-meter quadrats, this was the highest density since this protocol was employed in 1996. At least six *Pycnopodia helianthoides* were observed along the transect on July 8th and nine were observed on September 12th. Two were found in band transects for a density of 0.0028/m^2. These were relatively common for this site. *Parastichopus parvimensis* density was 0.13/m^2, a decline for the last three years. No sea star wasting disease was observed this year. Similar to last year, several small groups of *Pachythyone rubra* were observed on the bottom, but none were observed in RPCs.

Similar to most of the other sites this year, *Lithopoma undosum* density declined. Density this year was 1.5/m^2, the lowest since 1998, but still relatively high for this site. *Kelletia kelletii* density was 0.019/m^2, similar to last year. *Megathura crenulata* density was 0.29/m^2, an increase for the second consecutive year, and the highest density since 1990. Similar to what we have observed at other sites, *Crassedoma giganteum* density declined and was recorded at 0.0028/m^2, the lowest since 1997. No live *Haliotis* spp. were found along the transect this year (note, this does not include the ones found in the ARMs). Three Panulirus interruptus were observed along the transect on September 12th.

On July 8th we found one fresh threaded abalone shell, *Haliotis assimilis*, measuring 28mm, and one live *H. assimilis* on a rock measuring 60mm.

Fish abundance remained low at this site. Similar to last year, *Coryphopterus nicholsii* continued to be the most abundant fish, and were recorded at their highest density since 1988, 2.88/m^2. Later on in the afternoon I observed hundreds of them hovering about one meter above the bottom. They did not appear to be feeding.

Adult *Paralabrax clathratus* were relatively rare with only two observed during the July 8th fish count. Adult *Chromis punctipinnis* were relatively uncommon with only about 25 observed on July 8th and 20 on September 12th, similar to last year. No juvenile *C. punctipinnis* were observed this year. No *Oxyjulis californica* were observed on the fish counts this year. Several small female *Semicossyphus pulcher* were observed, but no males or juveniles were seen. One or two male and female *Halichoeres semicinctus* were observed on July 8th and September 12th. Painted greenlings, *Oxylebius pictus,* were common. Two California scorpion fish, *Scorpaena guttata*, were observed. Several ocean whitefish, *Caulolatilus princeps*, were observed, but only one was observed during the roving diver fish count on July 8th. Three adult *Sebastes atrovirens*, two adult *S. chrysomelas* (black and yellow rockfish), two adult *S. serranoides*, five YOY *S. caurinus/carnatus* (gopher/copper rockfish), and eight vermilion rockfish, *S. miniatus* were observed. The *S. miniatus* were of two size classes and were estimated to be 3-4 years old. Two adult *Embiotoca jacksoni* and one adult *Damalichthys vacca* were observed. No *Hypsypops rubicundus* were observed on July 8th. *Alloclinus holderi* were rare, with a density of 0.042/m^2, similar to the last two years. The *A. holderi* that were present were large. No *Lythrypnus dalli* were observed this year, this is first time since 1997 this species has not been present at this site. Four swell sharks, *Cephaloscyllium ventriosum*, were observed. Roving diver fish counts were conducted on July 8th with three divers and on September 12th with four divers observing 19 and 21 species of fish respectively.

There are three groups of five ARMs at this site, one group at each end and one group in the middle of the transect. All 15 ARMs were sampled for all indicator species. Octopi were common in the ARMs with four observed, one in each of four ARMs, similar to last year.

Only two species of *Haliotis* were observed in the ARMs compared to four last year. One *Haliotis rufescens* measuring 35mm was found (0.07/ARM). Five threaded abalone, *H. assimilis*, were found; this is the second year that this species has been found in the ARMs. These measured 11, 23, 24, 35, and

36mm. The 11mm individual was very difficult to identify underwater and could have been a *H. rufescens*, but our best judgment was *H. assimilis*. No *H. sorenseni* were observed this year, we have seen these the past two years. This was the first year that no *H. corrugata* were observed in the ARMs since we began monitoring them in 1992 (possibly 1990 or 1989).

Cypraea spadicea density continued to gradually increase for the third consecutive year and was recorded at 3.4/ARM. Though these are common, their density remains low in the ARMs compared to 1992-1998. Only one small *Lithopoma gibberosum* was found in the ARMs, 0.07/ARM this year, compared to four last year. *Megathura crenulata* density was relatively high for this site at 0.47/ARM. *Crassedoma giganteum* density was 0.6/ARM, similar to the past several years. *Asterina miniata* density continued to increase for the fourth consecutive year and was 10.2/ARM, the highest density recorded at this site since we began monitoring them in the ARMs in 1992. Their mean size was 23.0mm, similar to last year.

Pisaster giganteus density continued to increase for the second year to 4.8/ARM, the highest density recorded since we began monitoring the ARMs in 1992. Their mean density decreased from last year to 34.8mm indicating recent recruitment. *Pycnopodia helianthoides* were less abundant in the ARMs than last year, but still relatively common for this site at 0.27/ARM. *Lytechinus anamesus* density was higher than last year at 6.07/ARM. This is a little surprising since their density along the transect was lower than last year. *Strongylocentrotus franciscanus* density was 43.4/ARM, up slightly from the last six years. *Strongylocentrotus purpuratus* density was 8.2/ARM, higher than last year but still relatively low for this site. No *Centrostephanus coronatus* were observed in the ARMs this year, similar to last year. *Parastichopus parvimensis* density <10cm was 0.33/ARM and >10cm was 0.4/ARM, similar to last year.

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

Location: Admirals Reef, Anacapa Island

Site #11 ANAR
2002 sampling dates: 8/6, 8/19.
2002 status: Dominated by *Ophiothrix spiculata*, *Strongylocentrotus purpuratus* and *S. franciscanus*.

Similar to the last several years, this site continues to be dominated by echinoderms with the most prominent species being the spiny brittle star *Ophiothrix spiculata*. Although *Strongylocentrotus purpuratus* and *S. franciscanus* densities have decreased, they remain at moderately high levels. Similar to recent years the site continues to be mostly devoid of macroalgae. *Macrocystis pyrifera*, *Pterygophora californica*, *Laminaria farlowii*, *Agarum fimbriatum* and *Cystoseira* spp. were all absent from the transect. Three adult and one juvenile *Eisenia arborea* were observed along the western/high relief area of the transect. No macroalgae were observed on quadrats. Miscellaneous red algae cover increased to 13.0%, relatively high since 1997. Most of this category consisted of *Laurencia pacifica* and low lying foliose red algae along the western end of the transect. Other plants, consisting of filamentous brown diatoms, covered 1.5% of the bottom. Articulated and encrusting coralline algae cover was similar to last year at 0.33% and 30%, respectively. Bare substrate covered 43.0% of the bottom, similar to last year.

Miscellaneous invertebrate cover on RPCs continued to increase for the fourth consecutive year. This category covered 64.8% of the bottom, the highest cover recorded at this site 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 47.7% of the bottom and the remaining miscellaneous invertebrates (which consisted mostly of hydroids and gorgonians) covered 17.2% of the bottom. Since *O. spiculata* was counted separately, there may have been several instances during RPC counts when *O. spiculata* were on top of another misc. invertebrate, resulting in a double scoring of this category. If this occurred this year it was infrequent and probably had little effect if any on the cover of this category.

Lophogorgia chilensis density was similar to last year at 0.058/m^2. *Muricea fruticosa* and *M. californica* densities were similar to previous years at 0.0083/m^2 and 0.029/m^2 respectively. *Eugorgia rubens* were relatively abundant along the transect, and their density appeared similar to last year, however, this species of gorgonian is not monitored. *Corynactis californica* remained relatively abundant for this site covering 5.2% of the bottom. *Astrangia lajollaensis* cover remained low at 0.67%, similar to last year and again the lowest coverage recorded at this site since monitoring began in 1982. Similar to many of the other sites this year, bryozoans were more abundant than last year. The miscellaneous bryozoan category cover was 4.7%, the highest cover recorded since 1994. *Diaperoecia californica* cover remained low at 0.33%.

Echinoderms continue to dominate this site and *Ophiothrix spiculata* were the most abundant, covering 47.7% of the bottom (as mentioned above). *Ophiothrix spiculata* were most abundant along the eastern 2/3rds of the transect, but overall they were abundant everywhere. *Strongylocentrotus purpuratus* were noticeably less abundant and their density continued to decline rapidly to 19.9/m^2, about half the density in 2001. This is the lowest density since 1994, but similar to 1997/8. *Strongylocentrotus franciscanus* density was 6.3/m^2, similar to previous years. Juvenile *S. purpuratus* and *S. franciscanus* were rare, indicating little recruitment. *Lytechinus anamesus* were relatively rare again at this site and were mostly found at the far western part of the transect. They were counted on both band transects and quadrats with densities of 0.0014/m^2 and 0.042/m^2. This is the lowest density recorded on band transects since 1984. *Centrostephanus coronatus* density was 0.92/m^2, similar to the past two years. Sea urchin wasting disease prevalence was estimated at 10% of the *S. franciscanus*, *S. purpuratus*, and *L. anamesus* populations.

Pisaster giganteus continued to be rare with none observed in quadrats and a density 0.01/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 0.58/m^2. *Linckia columbiae* were relatively abundant on the western rocky end of the transect. *Parastichopus parvimensis* density remained relatively low for this site and was recorded at 0.5/m^2, similar to the previous two years.

Crassedoma giganteum density was 0.064/m^2, lower than last year. *Megathura crenulata* continued to increase in density for the fourth consecutive year and was recorded at 0.104/m^2, the highest density recorded at this site since 1985. *Aplysia californica* density was 0.036/m^2, similar to last year. *Kelletia kelletii* density remained relatively high at 0.035/m^2, similar to last year. No *Haliotis corrugata* were observed along the transect this year. No *Panulirus interruptus* were observed on band transects this year. No pearl oysters, *Pteria sterna*, were observed this year, this is the first time since 1998 we have not observed these.

Note: I have combined observations from both fish counts (July 12th and August 19th) in this cruise report.

Fish continue to have relatively low abundance at this site. Diversity was moderately high. The most abundant fish were adult *Chromis punctipinnis* and *Coryphopterus nicholsii*. Although adult *C. punctipinnis* were the most abundant fish, their abundance has been noticeably lower since the site has become dominated by echinoderms. No juvenile *C. punctipinnis* were seen on August 6th or 19th this year. We typically observe juveniles by August at this site. Several *C. punctipinnis* were observed with white patches of tissue damage that we believe is a bacterial infection caused by *Vibrio damsela* (Love et.al. 1981) paper. This has been observed at this site frequently in recent years. Several small female and one male *Semicossyphus pulcher* were observed. Several male and female *Halichoeres semicinctus* and about eight adult *Oxyjulis californica* were observed. Painted greenlings, *Oxylebius pictus* were common with both adults and juveniles present. Four juvenile (YOY) *Sebastes mystinus* were observed on August 6th and five on August 19th. Three small adult (probably two-year-olds) S*. mystinus* were observed on August 6th and one on August 19th. Two juvenile (YOY) *S. serranoides/flavidus* were observed on August 6th. Four adult and two juvenile *S. serriceps* were observed. One adult *S. atrovirens* and one adult black and yellow rockfish, *S. chrysomelas,* were observed. Several adult *Damalichthys vacca*, adult *Embiotoca jacksoni*, and adult *Medialuna californiensis* were observed. Four adult *Hypsypops rubicundus* and two nests were observed. Nine *Girella nigricans* were observed on August 6th. One ling cod, *Ophiodon elongatus,* was observed on August 6th. One zebra goby, *Lythrypnus zebra*,

and no *L. dalli* were observed. *Coryphopterus nicholsii* density was 1.9/m^2, similar to the last several years. *Alloclinus holderi* density was 0.21/m^2, and I observed 11 large adults during the roving diver fish count on August 19th. One giant black sea bass*, Stereolepis gigas* was observed on August 19th after the roving diver fish count. Roving diver fish counts were conducted on August 6th with four divers and on August 19th with six divers observing 21 and 22 species of fish respectively.

All six ARMs at this site were monitored for all indicator species. No *Haliotis* spp. were observed in the ARMs at this site, similar to past years. *Cypraea spadicea* density was 0.67/ARM, a decrease from last year. *Megathura crenulata* continued to gradually increase in abundance for the third consecutive year. This year's density was 1.33/ARM, the highest recorded, and most were small with a mean size of 31.4mm. *Crassedoma giganteum* density remained relative low for this site at 1.33/ARM. *Asterina miniata* continued to be abundant in the ARMs at 14.33/ARM similar to last year. *Pisaster giganteus* continue to be rare with none observed in the ARMs this year. *Lytechinus anamesus* density continued to decline and was 0.17/ARM, the lowest recorded at this site since we began monitoring them in the ARMs in 1992. *Strongylocentrotus franciscanus* density continued to decline for the third consecutive year and was recorded at 11.0/ARM, the lowest since 1992. Inversely, their mean size has gradually increased for three consecutive years to 21.7mm due to low recruitment and growth. Similarly, *S. purpuratus* also decreased for the third consecutive year, and was recorded at 18.67/ARM, the lowest recorded for the ARMs at this site. Mean size has also gradually increased for the third consecutive year to 18.5mm due to low recruitment. *Centrostephanus coronatus* density continued to decline for the fourth consecutive year to 0.67/ARM, their lowest density 1997. Inversely, their mean size has gradually increased for the fourth consecutive year to 48.5mm. No *Parastichopus parvimensis* >10cm were found in the ARMs and the mean density of <10cm animals was 0.50/ARM. This is the first time since 1999 *P. parvimensis* were found in the ARMs.

One *Arbacia incisa* measuring 40.0mm was found in ARM #2442. This is probably the same *A. incisa* that was found in this ARM since 1999. However, this year's size represents a decrease of 5mm from last year. In this same ARM we have been tracking what we believe was the same *A. incisa* and it measured 21, 35, and 45mm in 1999, 2000, and 2001 respectively. It is possible that it is a different *A. incisa*, it shrunk, or we measured incorrectly or wrote down the incorrect measurement. Since there are few *A. incisa*, we believe this is the same animal and we may have measured it incorrectly.

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

Location: Cathedral Cove, Anacapa Island

Site #12 ANCC
2002 sampling dates: 6/20, 8/20, 9/13, 10/27
2002 status: Sparse kelp forest with patches dominated by *Strongylocentrotus franciscanus*.

This site continued to decline in algae coverage and appears more barren than it has in over the last decade. Similar to last year the algae were not evenly distributed along the transect. There were areas that were barrens and areas that had an abundance of algae. Most of the areas that had algae had high relief such as the tops of large rocks. *Macrocystis pyrifera* canopy cover was estimated at 15% on June 20. The *M. pyrifera* plants were healthy, but most had large numbers of *Strongylocentrotus franciscanus* around their holdfasts. Adult and subadult *M. pyrifera* densities continued to decline for the second consecutive year. Their densities were 0.0/m^2 and 0.005/m^2 respectively. Juvenile *M. pyrifera* densities were slightly higher than last year, but remained low at 0.33/m^2. Small single blade juveniles were common on the tops of rocks. *M. pyrifera* cover was 0.5%, the lowest cover recorded since *M. pyrifera* was separated out in 1993. Adult and juvenile *Laminaria farlowii* densities declined and none were observed in quadrats or during RPCs this year. This is the lowest coverage on RPCs since 1988. Some adult and juvenile *L. farlowii* were present within the transect, but like *M. pyrifera* and *Eisenia arborea,* were on the tops of high relief areas or along the shallow wall near the zero end of the transect. No *Cystoseira sp*. were observed on RPCs this year (0.0%), the lowest coverage since 1988. *Cystoseira sp*. were present in low abundance along the deeper side of the transect. Most of the larger plants appeared

as if they were grazed down and were mixed in with dense patches of the hydroid, *Aglaophenia latirostris*. Even with the low abundance of *Cystoseira sp*., several blades of the brown algae, *Coilodesme sp*. were observed growing epiphytically on *Cystoseira sp.*, this is common at this site. Miscellaneous brown algae continued to decline for the third consecutive year. This category covered 1.2% of the bottom and consisted mainly of *Dictyota/Pachydictyon*. Miscellaneous red algae continued to decline for the second consecutive year and were recorded at 3.0%, the lowest cover since 1998. Miscellaneous plants, consisting of filamentous brown diatoms covered 17.2% of the bottom, similar to last year, but relatively high for this site. Articulated coralline algae continued to decline for the third consecutive year. Its cover was 8.0% of the bottom, the lowest cover since 1988. Encrusting coralline algae cover was 51.7%, similar to last year. Bare substrate cover was similar to last year at 21.5%.

Miscellaneous invertebrates covered 15.3% of the bottom, a small decline from last year. The most common miscellaneous invertebrates were Christmas tree worms, *Spirobranchus spinosus*, and the Ostrich-Plume hydroid, *Aglaophenia latirostris*. Bryozoan cover was similar to last year; combined their cover was 6.0%. Gorgonians were rare at this site, with only one *Lophogorgia chilensis* observed on band transects, 0.0014/m^2. Sponges and tunicates covered 1.3% and 3.2% of the bottom respectively.

Strongylocentrotus franciscanus density declined to 3.71/m^2, about half the density as last year, but similar to previous years. *Strongylocentrotus purpuratus* also declined to 1.54/m^2, also about half of last year's density. We think that this may not be a true decline of *Strongylocentrotus spp*. at this site, but an artifact of sampling due to the high degree of patchiness of these species currently found at this site. In previous years, *Strongylocentrotus spp*. were more evenly dispersed when there were more algae present. Similar to the last two years, groups of *Strongylocentrotus spp*., but mostly *S. franciscanus*, were observed feeding on the holdfasts of *Macrocystis pyrifera* plants. Similar to last year, both *S. franciscanus* and *S. purpuratus* were out in the open foraging and not confined to crevices like they usually are at this site. *Centrostephanus coronatus* density was 0.083/m^2. Sea urchin wasting disease was observed in several *S. purpuratus* on September 13th and October 27th.

Asterina miniata density was 0.21/m^2. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats with densities of 0.083/m^2 and 0.01/m^2 respectively. These densities mean the two *P. giganteus* were observed on both quadrats and 5-meter quadrats. *Parastichopus parvimensis* density was 1.50/m^2, similar to the past several years.

No *Haliotis corrugata* (0.0/m^2) were observed during band transects for the second consecutive year. No *H. corrugata* were observed along the transect this year. This is the first time that no H. corrugata have been observed at the site. *Lithopoma undosum* ended its decline with a density of 3.71/m^2, similar to last year. *Crassedoma giganteum* were abundant along the steep areas on the inshore side of the transect with a density of 0.14/m^2. *Aplysia californica* were more abundant than last year with a density of 0.031/m^2. No *A. vaccaria* were observed this year, the first time in several years we have not observed these. *Serpulorbis squamigerus* covered 0.33% of the bottom, similar to the last several years. *Panulirus interruptus* density continued to increase for the second consecutive year and was recorded at 0.021/m^2, the highest density since 1995. Two very large (estimated to be 5kg) lobster molts were observed on August 20th. *Kelletia kelletii* was recorded at its highest density at the site since monitoring began in 1983, 0.63/m^2. Twenty eight of the 45 *K. kelletii* observed on band transects were in one band transect and 22 of these were in one group that was observed mating and laying eggs.

Fish were abundant and diverse as usual for this site. One tagged *Hypsypops rubicundus* was observed on June 20th with a nest at meter #55 along the shore side of the transect. We believe that this is one of the *H. rubicundus* that was tagged in 1985. Adult *H. rubicundus* were common and at least one juvenile was observed. Adult *Chromis punctipinnis* were common and no juveniles were observed on June 20th, but two were observed on August 20th. This is the first observation of juveniles *C. punctipinnis* this year. Adult and juvenile *Embiotoca jacksoni* were common. One adult *Embiotoca lateralis* was observed, these are rare this far south/east. One *Damalichthys vacca* was observed. *Brachyistius frenatus* were moderately abundant in the kelp canopy. Several female *Semicossyphus pulcher*, one male and one juvenile were observed. This is the first time in several years that a juvenile has been observed at this site. Male and female *Halichoeres semicinctus* were common and one juvenile was observed on August

20th. *Oxyjulis californica* were common. Juvenile (YOY) giant kelpfish, *Heterostichus rostratus* were common in the kelp canopy. Adult *Paralabrax clathratus* were common, several large individuals and small (probably 2-3 years old) were observed. The juvenile *P. clathratus* observed during the roving diver fish count on June 20th was probably more than a year old, but under the 10cm size cutoff for juveniles. Several adult *Sebastes atrovirens* were observed. At least three juvenile (YOY) *S. mystinus* were observed. Several small *adult S. serranoides* and juvenile (YOY) *S. serranoides/flavidus* were common. At least four *S. serriceps* were present along the transect, no juveniles were observed. Adult *Girella nigricans* were common. *Oxylebius pictus* were common. Small Swell sharks, *Cephaloscyllium ventriosum*, were common. No *Lythrypnus dalli* or *L. zebra* were observed on June 20th. *Alloclinus holderi* density was 1.0/m^2, similar to previous years at this site. *Coryphopterus nicholsii* density was 0.29/m^2, similar to last year and relatively high for this site. Two California halibut, *Paralichthys californicus*, were observed on august 20th. Roving diver fish counts were conducted on June 20th with five divers and on August 20th with seven divers observing 24 and 25 species of fish respectively.

Three tagged Semicossyphus pulcher were observed along the transect. These fish were tagged by Jen Caselle with the PISCO project through UCSB.

All seven ARMs were monitored for all indicator species. The ARMs appeared to have moved little since last year. The cage was replaced on ARM #2348. Two of the ARMs had one octopus in them and another had two octopi. No *Haliotis* spp. were observed in the ARMs this year, the first time since 1994 and only the second time none have been found at this site. *Cypraea spadicea* density was 9.57/ARM, slightly lower than last year and for this site, but still relatively abundant compared to other sites. *Lithopoma undosum* density was 1.4/ARM, slightly higher than last year, but relatively low for this site. *Crassedoma giganteum* density was similar to the last several years at 2.7/ARM. *Asterina miniata* density was higher than last year at 12.7/ARM, the highest recorded at this site. Mean size of *A. miniata* has gradually increased since 1997, but they remain relatively small at 27.4mm. *Pisaster giganteus* density was lower than last year at 4.86/ARM, but still relatively high for this site. Mean size of *P. giganteus* has increased for the second year to 37.2mm, the largest since 1994. Both *Strongylocentrotus franciscanus* and *S. purpuratus* density remained about the same and were 47.14/ARM and 110.7/ARM, respectively. Both of their mean sizes increased to 32.6mm and 37.71mm respectively and were the largest since 1998. *Centrostephanus coronatus* density continued to decline for the fourth year and was 0.29/ARM, the lowest since 1993. Both *C. coronatus* were relatively large at 42mm and 43mm, for a mean size of 42.5mm, the highest recorded at this site. *Parastichopus parvimensis* were abundant in the ARMs with densities of 5.1/ARM for animals <10cm and 9.29/ARM for >10cm. This is higher than last year, but similar to 2000.

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

Location: Landing Cove, Anacapa Island

Site #13 ANLC
2002 sampling dates: 8/5
2002 status:

Canopy cover of *Macrocystis pyrifera* was estimated at 5% in June and 20% during the August visits to this site. Low canopy cover is common at this site and is probably a result of high boat traffic in the Cove. However, in June, there were few potential adult canopy forming *M. pyrifera* plants over most of the transect which contributed to the low canopy cover. Overall, large brown adult macroalgae were more abundant than last year at this site. Adult, subadult and juvenile *M. pyrifera* densities were 0.02/m^2, 0.50/m^2, and 2.79/m^2 respectively, and covered 18.8% of the bottom. Overall, this represents an increase in *M. pyrifera* from last year. 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, while the deeper areas of the transect had noticeably more brown macroalgae. Adult and juvenile *Eisenia arborea* abundances were similar to last year with densities of 0.35/m^2 and 0.29/m^2 respectively and a cover of 26.2%. Adult and juvenile *Pterygophora californica* densities declined to 0.0/m^2 and cover was 0.17%. However, there were juvenile and several small adult *P. californica* observed several meters from the transect in the deeper areas. Adult and juvenile *Laminaria farlowii* densities

declined and were 0.042/m^2 and 0.65/m^2 respectively. Cover of *L. farlowii* was 8.8%, a slight increase from last year. *Laminaria farlowii* were patchy at this site and there were several rocks that were completely covered, but most of the site had few plants present. Miscellaneous brown algae cover was recorded at 11.3%. The brown algae *Colpomenia* sp. were moderately abundant and was counted as a miscellaneous brown algae. *Cystoseira* spp. covered 0.5% of the bottom, similar to last year. However, small *Cystoseira* spp. plants were common several meters off the transect in the deeper areas. *Gelidium* spp. cover was 18.0%, similar to last year. Similar to previous years, all of the *Gelidium* spp. were present on top of the reef at the eastern end of the transect. Miscellaneous plant cover increased to 6.3% and consisted of brown filamentous diatoms. Articulated and encrusting coralline algae covered 10.8% and 26.2% of the bottom respectively, similar to last year. Bare substrate covered 16.8% of the bottom, similar to last year.

Miscellaneous invertebrate cover decreased to 15.3%, which is similar to the densities prior to 2001. The most abundant invertebrates in this category were hydroids (mostly *Obelia* sp. and *Aglaophenia* sp.). Miscellaneous bryozoans and *Diaperoecia californica* covers were 18.3% and 2.7% respectively, and were both increases from last year. This is the highest cover recorded for miscellaneous bryozoans since we began monitoring them in 1985 at this site, and they consisted mostly of *Membranipora* spp. Tunicate cover continued to increase at this site for the third consecutive year and was recorded at 7.2%, the highest cover recorded since monitoring began. Sponges were relatively abundant as usual for this site with a cover of 3.7%. *Corynactis californica* cover declined to 2.5%. They were recorded at their highest density in 2001 (8.5%). Lophogorgia chilensis density continued to increase for the third consecutive year and was recorded at its highest density for this site, 0.011/m^2.

Both *Strongylocentrotus franciscanus* and *Strongylocentrotus purpuratus* densities decreased from last year's, which were the highest densities recorded at this site. *Strongylocentrotus franciscanus* density declined to 1.71/m^2, the lowest since 1992. *Strongylocentrotus purpuratus* density declined to 2.19/m^2, the lowest since 1998. *Centrostephanus coronatus* were common on the shallow reef on the eastern part of the transect. Their density was 0.063/m^2, similar to last year. *Parastichopus parvimensis* density was 0.71/m^2, similar to recent years. Emergent *Asterina miniata* and *Pisaster giganteus* were rare as usual for this site and none were observed on quadrats. Three P. giganteus were observed on 5-meter quadrats for a density of 0.015/m^2. No sea star wasting disease or sea urchin wasting disease was observed at this site.

Lithopoma undosum density declined to 1.02/m^2, the lowest since 1998. *Crassedoma giganteum* density was 0.63/m^2 and they were abundant along the vertical walls at this site. *Aplysia californica* density was 0.0069/m^2. *Haliotis corrugata* remained rare with two observed on band transects (0.0028/m^2) and only five were found along the entire transect for size frequencies. All were large, between 146-165mm. No fresh shells and a few old shells were observed. *Cypraea spadicea* density was 0.13/m^2, lower than last year. *Megathura crenulata* were common with a density of 0.029/m^2, the highest density recorded since 1989.

Similar to past years and our first visit in June, fish were abundant and diverse at this site. Overall, there was no notable difference between the two roving diver fish counts and one should refer to the first Cruise report for complete description.

Adult *Chromis punctipinnis* were common and no juveniles were observed on June 21st. Adult *Hypsypops rubicundus* were moderately abundant along the shallow parts of the transect and at least one juvenile was observed. Adult *Embiotoca jacksoni* were common and several juveniles were observed. Kelp surfperch, *Brachyistius frenatus*, were common in the kelp canopy. *Girella nigricans* were common. One *Damalichthys vacca* was observed. Several female, one male and one juvenile (YOY) *Semicossyphus pulcher* were observed. Similar to other sites, this is the first time we have observed juvenile *S. pulcher* in several years. Male and female *Halichoeres semicinctus* were common. Adult *Oxyjulis californica* were common. Adult *Paralabrax clathratus* were common and one observed a juvenile. This "juvenile" was relatively large and probably more than a year old, but under the 10cm size cut off for this category. One adult and one juvenile (YOY) *Sebastes mystinus* were observed. Two adult *S. atrovirens* were observed. Juvenile *Sebastes sp.* were common in the kelp canopy, these were possibly *S. atrovirens*. Several small adult *S. serranoides* were observed. Several juvenile *S. serranoides/flavidus* were observed. Several adult *S. serriceps* were observed. One black and yellow

rockfish, *S. chrysomelas*, was observed. Small Swell sharks, *Cephaloscyllium ventriosum*, were abundant along the transect utilizing almost all possible crevices as resting places. At least 31 were present along the transect. One medium sized (about 75cm) California Halibut, *Paralichthys californicus*, was observed. No *Lythrypnus dalli* were observed on quadrats, but they were common along the wall along with *L. zebra*. *Alloclinus holderi* were common but their density was 0.19/m^2; the lowest recorded since 1994. Most of the A. holderi were present just below the wall and on top of the reef and the low density may be a sampling artifact. *Coryphopterus nicholsii* were common with a density of 0.31/m^2, similar to the past several years. Roving diver fish counts were conducted on June 21st with five divers and on August 5th with four divers observing 28 and 27 species of fish respectively.

Dr. Jen Caselle, a researcher at UCSB, in cooperation with a Commercial fisherman tagged a large quantity of fish (many different species) in the reserve to look at reserve effects. Many tagged *Semicossyphus pulcher* were observed at both Landing Cove and Cathedral Cove.

All seven ARMs were monitored for all indicator species. The two newer ARMs (#2407 and #2410) that were moved to the inshore side of the transect had notably fewer sea urchins in them. This may be due to their new location or the fact that these ARMs were newer and still acclimating.

Similar to last year, one *Haliotis corrugata*, measuring 40.0mm, was found in the ARMs this year (0.14/ARM). *Cypraea spadicea* density was 3.57/ARM, similar to the past several years. Lithopoma undosum density declined to 0.29/ARM, the lowest density recorded since 1995. *Crassedoma giganteum* density was 2.1/ARM, similar to previous years. *Asterina miniata* remained abundant in the ARMs but their density declined from the last two years to 12.4/ARM. The mean size of *A. miniata* has increased gradually over the four years and was 23.7mm, the largest since 1997. *Pisaster giganteus* density was 1.86/ARM, lower than last year, but similar to the previous two years. *Strongylocentrotus franciscanus* density was 42.6/ARM, a decline for the third consecutive year. Mean size was similar to last year at 31.4mm, ending its gradual increase. *Strongylocentrotus purpuratus* density declined for the second consecutive year to 75.3/ARM. Mean size of *S. purpuratus* continued to increase for the second year to 39.5mm, the largest mean size for this species since we began monitoring in 1992. Similar to last year, no *Centrostephanus coronatus* were observed in the ARMs this year. *Parastichopus parvimensis* >10cm were abundant and mean density increased to 5.0/ARM. However *P. parvimensis* <10cm decreased to 1.57/ARM. This is the inverse of these two densities last year.

The temperature loggers were retrieved and deployed and all data were successfully downloaded. The loggers retrieved were recording data within specifications.

Location: Southeast Sea Lion Rookery, Santa Barbara Island

Site #14 SBSESL
2002 sampling dates: 6/18, 9/10
2002 status: Dominated by *Ophiothrix spiculata*.

This site has changed considerably since last summer. *Strongylocentrotus purpuratus* densities continued to decline to their lowest level in 20 years and the site is now dominated *by Ophiothrix spiculata*. Algae were notably more abundant than they have been since about 1994, but the site continues to be mostly devoid of algae. Most of the macroalgae were present along the southern end of the transect. There were more algae present during our September visit to the site. Most of the algae were present on the sourthern rocky end of the transects. Three juvenile *Macrocystis pyrifera* plants were observed in quadrats, 0.17/m^2. This is the first time any algae have been observed in quadrats since 1994. *Macrocystis pyrifera* cover was 0.17%, the first time this species has been observed on RPCs since 1994. At the southern end of the transect juvenile *M. pyrifera* and small *Cystoseira sp*. plants were common. Several small subadult (just over a meter tall) *M. pyrifera* plants were also present on this end of the transect in June and about 20 subadult plants 7-9 meters tall were present in September. No *Cystoseira spp*. were observed on RPCs, though they were present several meters away from the transect along the southern end. One adult and several juvenile *Eisenia arborea* were observed along the transect. None were observed on quadrats and cover was recorded at 0.17%. Green algae cover

was 2.7%, its highest cover recorded since 1991. Most of the green algae consisted of *Codium setchellii*, which was noticeably abundant along the transect. Miscellaneous brown algae consisting mostly of *Dictyota/Pachydictyon* covered 3.3%, its highest cover since 1993. Miscellaneous red algae cover was 3.8% and consisted of *Laurencia pacifica*. Miscellaneous plants cover, consisting of filamentous brown diatoms, was 13.7%, the highest since 1998. Articulated coralline cover was 0.17%, lower than last year but similar to previous years. Encrusting coralline algae covered 52.2%, similar to previous years. Bare substrate cover was 25%, similar to last year.

Miscellaneous invertebrates on RPCs continued to increase for the sixth consecutive year, covering 45.5% of the bottom, the highest cover since monitoring began for this category in 1983. This category consisted mostly of *Ophiothrix spiculata*, gorgonians and barnacles (*Balanus sp*.). *O. spiculata* were counted separately and then added to the miscellaneous invertebrate category. *O. spiculata* covered 35.7% of the bottom, while the remaining miscellaneous invertebrate cover was 8.8%. *Ophiothrix spiculata* have greatly increased over the last three years and this year's cover is the highest recorded. In 2000 and 2001, they covered 11.8% and 20.0% of the bottom respectively. *Ophiothrix spiculata* were mostly present on the northern half of the transect, and relatively uncommon on the southern half. The small anemone, *Cactosoma arenaria/Sagartia catalinensis*, continued to appear to be less abundant than in previous years. *Corynactis californica* ended its increase and appeared to decrease with a cover of 2.3%. *Astrangia lajollaensis* cover continued to be relatively low at this site at 1.3%. *Balanophyllia elegans* remained at 0.0% cover. Last year and this year are the only years that none have been observed on RPCs. Tunicate cover was recorded at 4.0%, higher than last year. The most common tunicates were *Pycnoclavella stanleyi*; these were noticeably more abundant than last year. Bryozoans covered 4.5, the highest cover since 1994. *Tethya aurantia* density was 0.10/m^2, similar to last year, but relatively low for the mid to late 1990's. *Lophogorgia chilensis* were relatively abundant with a density of 0.186/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 0.0/m^2 respectively.

Strongylocentrotus purpuratus density continued its rapid decline and was recorded at 2.88/m^2, the lowest density recorded at this site since monitoring began in 1982. *Strongylocentrotus franciscanus* density continued to decline for the third consecutive year and was recorded at 1.6/m^2. There was low recruitment of *S. franciscanus* and *S. purpuratus* this year. *Lytechinus anamesus* density remained low at 0.17/m^2, and were only counted on band transects this year. The three species of sea urchins mentioned above were mostly out in the open and not confined to crevices. *Centrostephanus coronatus* density remained relatively high at 1.25/m^2, a small decrease from the last two years. All of the *C. coronatus* were large adults with no small individuals observed indicating little recruitment. No sea urchin wasting disease was observed on June 18th. No *Arbacia incisa* were observed in quadrats or directly along the transect this year.

Asterina miniata density was similar to last year at 0.38/m^2 and remained relatively high for this site. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats with densities of 0.17/m^2 and 0.08/m^2 respectively, both higher than last year. *Pycnopodia helianthoides* density was similar to last year at 0.0042/m^2, though low, this is a relatively high density for this site. On September 10th, three *P. helianthoides* were observed. The rainbow star, *Orthasterias koehleri*, was common. *Parastichopus parvimensis* density notably declined to 0.21/m^2, the lowest density since monitoring began in 1982. See notes on *Ophiothrix spiculata* above; these were written above because they are enumerated with miscellaneous invertebrates. No sea star wasting disease was observed on June 18th.

I spoke with the Santa Barbara Island Ranger, Randy Nelson, to see if he has observed any sea cucumber fishers around the Island. He said that over the last few years there have been people sea cucumber fishing on occasion, but sporadically. He also mentioned that he has observed them fish off the Southeast Sea Lion Rookery. It is impossible for us to tell why the *Parastichopus parvimensis* density has decreased and the decrease may be a result of the increase in *Ophiothrix spiculata*, cucumber fishing or some other cause or natural cycle. However, I thought it was worth noting that cucumber fishers have been observed in recent years fishing in the vicinity of this site.

Lithopoma undosum density declined slightly from last year and was recorded at 0.5/m^2, juveniles were moderately abundant. *Megathura crenulata* density was relatively low and they were rare at a density of 0.0028/m^2. No live *Haliotis spp.* were observed this year. This is the eighth consecutive year no live *Haliotis spp.* were found along the transect. Several very old, large *H. corrugata* shells were present, but not collected. *Aplysia californica* density was similar to last year at 0.082/m^2. *Crassedoma giganteus* density was low at 0.0028/m^2, the lowest density recorded since 1994. Several very large pencil oysters, *Pteria sterna* were observed growing on gorgonians.

Fish abundance and diversity were low at this site, similar to the past several years. The most abundant fish along the transect were *Coryphopterus nicholsii* and *Chromis punctipinnis*. Adult *C. punctipinnis* were moderately abundant on the southern end of the transect and no juveniles were observed on June 18th and several were observed on September 10th. Only one small female *Semicossyphus pulcher* was observed on the June 18th roving diver fish count, but several others appeared later on in the day. No male or *juvenile S. pulcher* were observed. One male and one female *Halichoeres semicinctus* were observed. Painted greenlings, *Oxylebius pictus* were common. Several adult *Hypsypops rubicundus* were observed. *Paralabrax clathratus* were rare with only two small ones observed on June 18th. Two juvenile/YOY *Sebastes serranoides/flavidus* were observed on September 10th. *Girella nigricans* were common and a large school was observed on September 10th. *Coryphopterus nicholsii* density increased to 1.25/m^2, the highest density recorded since 1988. *Alloclinus holderi* density was higher than last year at 0.46/m^2 and they were more abundant along the southern end of the transect. Roving diver fish counts were conducted on June 18th with two divers and on September 10th with six divers observing 11 and 16 species of fish respectively.

The temperature loggers were retrieved and deployed and all temperature data were successfully downloaded. The temperature loggers were recording data within specifications. No TIDBITS^{tm} were installed in 2001, so 2002 was the first year these loggers were installed at Santa Barbara Island.

Location: Arch Point, Santa Barbara Island

Site #15 SBAP
2002 sampling dates: 6/17, 6/18, 6/19
2002 status: Dominated by *Strongylocentrotus purpuratus* and *S. franciscanus*.

Overall, there was little change at this site since last year. Similar to the last three years, 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 were observed on quadrats this year. Similar to the last several years, the most abundant algae along the transect was the red alga, Laurencia pacifica. Miscellaneous red algae consisting mostly of *L. pacifica* covered 21.7% of the bottom, similar to the last two years. There was a small amount of *Gelidium sp.* and the brown algae, *Dictyota/Pachydictyon* on the tops of rocks. The green alga, *Codium setchellii* was common. Miscellaneous plants, consisting of brown filamentous diatoms, covered 2.2% of the bottom. Articulated coralline algae covered 0.67% of the bottom. Encrusting coralline algae covered 39.7% of the bottom, similar to the last two years. Bare substrate increased covered 24.3% of the bottom, similar to last year.

The most common miscellaneous invertebrates on RPCs were Christmas tree worm, *Spirobranchus spinosus*. This category covered 8.2% of the bottom, a decrease from the past four years. Barnacles, *Balanus sp*., were common last year within this category and were noticeably less abundant this year. *Phragmatopoma californica* continued to be rare and none were observed on RPCs this year. *Corynactis californica* cover remained high and was similar to last year at 7.8%. Tunicates were more common than last year with a cover of 0.83%. The most common tunicates were *Pycnoclavella stanleyi* and *Aplidium sp*. Bryozoans were rare, covering 0.67% of the bottom. *Lophogorgia chilensis*, *Muricea fruticosa*, and *M. californica* were all present, but uncommon as usual for this site.

Surprisingly, both *Strongylocentrotus purpuratus* and *S. franciscanus* densities remained high and similar to last year. Their densities were 103/m^2 and 6.2/m^2 respectively. We had expected these densities to continue to decline as they have at Southeast Sea Lion. Overall, juvenile *S. purpuratus* were rare, but there were some places where they were common under small cobble. Juvenile *S. franciscanus* were rare. *Lytechinus anamesus* continue to have low densities and were counted on band transects with a density of 0.097/m^2, similar to last year. *Centrostephanus coronatus* density has gradually declined over the last two years and was recorded at 0.42/m^2, the lowest density since 1997. We began monitoring this species in 1996. Wasting disease was observed in an estimated less than 2% of the *S. purpuratus*, and there was a report of one observer seeing two *S. franciscanus* with the disease on June17th. One *Arbacia incisa* was observed and was estimated measuring 35mm.

Both *Asterina miniata* and *Pisaster giganteus* were noticeably more abundant than last year. *Asterina miniata* density was 0.29/m^2, an increase from last year and relatively abundant for this site. *Pisaster giganteus* were counted on both quadrats and 5-meter quadrats with densities of 0.13/m^2 and 0.14/m^2 respectively, both increases from last year. Two *Pycnopodia helianthoides* were observed along the transect. No sea star wasting disease was observed. P*arastichopus parvimensis* density was 0.21/m^2, similar to last year. *Ophiothrix spiculata* were present but not very abundant.

Aplysia californica were common with a higher density than last year, 0.13/m^2. *Lithopoma undosum* density has declined slightly over the last two years and was 0.53/m^2. *Crassedoma giganteum* density was similar to previous years at 0.11/m^2. No live *Haliotis spp*. were observed this year. The turban snails, *Tegula aureotincta* and *T. eiseni* were present as usual, but did not appear to be as abundant as in past years. Several *Panulirus interruptus* were observed along the transect, and one was observed on band transects (0.0014/m^2).

Overall, fish continue to have relatively low diversity and abundance at this site. Adult *Chromis punctipinnis* were common and were the most abundant fish at this site. No juvenile *C. punctipinnis* were observed on June 18th but large schools (so many they appeared like clouds of fish) were present over much of the transect on September 9th. As usual for this site, adult *Hypsypops rubicundus* were relatively abundant along the transect as were their nests. Similar to the last several years, no juvenile *H. rubicundus* were observed. One tagged *H. rubicundus* was observed with a nest at about meter #25 along the inshore side of the transect. Several small female *Semicossyphus pulcher* were observed, but they were relatively uncommon and no males or juveniles were seen on June 18th. No *Oxyjulis californica* were observed on June 18th, but juveniles were moderately abundant mixed in the schools of juvenile *C. punctipinnis* on September 9th. Also on September 9th we observed about ten adult *O. californica*. No *Halichoeres semicinctus* were observed on June 18th but several were observed on September 9th. Several adult *Paralabrax clathratus* and *Girella nigricans* were observed. Several *Medialuna californiensis* were observed. Painted greenlings, *Oxylebius pictus*, were common. No *Lythrypnus dalli* or *L. zebra* were observed on June 18th. *Coryphopterus nicholsii* were common in the sandy areas on the offshore side of the transect, however, only one was observed on quadrats 0.042/m^2. Most of the good *C. nicholsii* habitat is more than a meter offshore of the transect line. *Alloclinus holderi* were common and more abundant than last year at 0.54/m^2. One moray eel, *Gymnothorax mordax*, was observed during the roving diver fish count. One Cabezon, *Scorpaenichthys marmoratus* was observed. Snubnose sculpins, *Orthonopias triacis,* were common. One Grass rockfish, *Sebastes rastrelliger,* was observed at the 100m end of the transect on June 18th and September 9th and this fish appears to be the same one we observed last year in the same location. Several yellowtail, *Seriola lalandi* were observed on September 9th. Roving diver fish counts were conducted on June 18th with five divers and on September 9th with six divers observing 15 and 18 species of fish respectively.

The temperature loggers were retrieved and deployed. The StowAway logger stopped recording data on May 14th at 2233 from what appeared to be a battery failure. The Data from the backup HoboTemp were used from May 14th – June 18th, 2002. Both temperature loggers were recording within specifications and data were successfully downloaded. In 2001 the temperature logger housing flooded and date is not available from May 5th – June 12th 2001.

Location: Cat Canyon, Santa Barbara Island

Site #16 SBCAT
2002 sampling dates: 6/19, 9/10
2002 status: Dominated by *Strongylocentrotus franciscanus* and *S. purpuratus*.

Similar to Arch Point, this site has not changed as much as Southeast Sea Lion. The site remains nearly devoid of macroalgae. There were canopy forming *Macrocystis pyrifera* plants in the vicinity, but all were over ten meters from the transect. No macroalgae were observed on quadrats this year, but several juvenile *M. pyrifera* plants were observed along the transect. No *Cystoseira sp*. were observed this year. Miscellaneous red algae covered 3.2% of the bottom and consisted mostly of *Laurencia pacifica*. Miscellaneous plants consisting of filamentous brown diatoms covered 19.3% of the bottom, an increase from last year. Miscellaneous brown algae and green algae cover was 1.5% and 1.5% respectively. Articulated and encrusting coralline algae covered 0.67% and 55.5% of the bottom respectively, similar to last year. Bare substrate cover declined to 23.2%.

Miscellaneous invertebrates covered 4.2% of the bottom, a decline from last year. The most common invertebrates in this category were the Christmas tree worm, *Spirobranchus spinosus*, and hydroids. Bryozoans were noticeably more abundant than last year and increased to 2.5%. Most were *Membranipora sp*. type bryozoans. Colonial tunicates, mostly *Pycnoclavella stanleyi* and *Aplidium sp*. were common with a cover of 2.0%.

This site continued to be dominated by *Strongylocentrotus purpuratus*. *Strongylocentrotus purpuratus* density was similar to last year at 20.0/m^2. *Strongylocentrotus franciscanus* density continued to decrease for the second consecutive year and was recorded at 4.0/m^2, the lowest density recorded for this species since 1994. 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. The *S. franciscanus* and *S. purpuratus* were noticeably larger at this site than at the other two Santa Barbara Island sites. *Centrostephanus coronatus* were common with a density of 0.29/m^2. One *Arbacia incisa* was observed; this is the first time this sea urchin species has been observed at this site. No sea urchin wasting disease was observed in *S. purpuratus*, and one diver reported observing two *S. franciscanus* with shortened spines on June 19th. However on September 10th sea urchin wasting disease was common in both *Strongylocentrotus franciscanus and S. purpuratus*. We estimated that about 5% showed signs of disease. Twelve of 214 *S. franciscanus* and two of 196 *S. purpuratus* measured for size frequencies showed advanced signs of wasting disease.

Asterina miniata were uncommon with a density of 0.083/m^2, similar to last year. *Pisaster giganteus* were common and were counted on both quadrats and 5-meter quadrats with densities of 0.13/m^2 and 0.085/m^2, respectively. These densities are both increases from last year. *Parastichopus parvimensis* density was 0.46/m^2, similar to previous years. No sea star wasting disease was observed on June 19th.

Lithopoma undosum density continued to decrease for the second consecutive year and was recorded at 0.50/m^2. One *Haliotis corrugata* was observed on band transects (0.0014/m^2), this abalone was approximately 100 mm. This is the first time a *Haliotis spp*. was observed on band transects since 1997. *Megathura crenulata* density was 0.0056m^2. *Aplysia californica* were more abundant than last year, similar to what we have observed at the other Santa Barbara Island sites. Their density this year was 0.13/m^2. One *Panulirus interruptus* was observed on band transects for a density of 0.0014/m^2. The turban snails, *Tegula eiseni* and *Tegula aureotincta* were common, but appeared less abundant than the last several years, similar to Arch Point.

This site continues to have the most diverse and abundant fish population of the three sites at Santa Barbara Island. Similar to past years, the most abundant fish were small adult *Chromis punctipinnis*. No juvenile *C. punctipinnis* were observed on June 19th, but similar to the other sites at this Island, juveniles were present on September 10th. Adult *Hypsypops rubicundus* were moderately abundant as usual, and no juveniles were observed. Small female *Semicossyphus pulcher* were common and two juveniles and two males were observed during the roving diver fish count on June 19th. Adult *Oxyjulis californica* were

common. Adult *Girella nigricans* were common. Several adult *Paralabrax clathratus* were observed. Several male and female *Halichoeres semicinctus*, several *Medialuna californiensis*, and several painted greenlings, *Oxylebius pictus* were observed. *Girella nigricans* and *M. californiensis* were more abundant during our September 10th visit. We think that since these species are often very close to shore, they may have been a little deeper along the transect due to the large swell that was present during this visit. One *Sebastes atrovirens*, and one grass rockfish, *Sebastes rastrelliger*, were observed. Several bat rays, *Myliobatis californica*, were observed. One Pacific angel shark, *Squatina californica*, was observed and measured approximately 100cm. *Coryphopterus nicholsii* were common in the sandy areas of the transect, but uncommon directly along the transect which is mostly rock. *Alloclinus holderi* were more abundant than last year with a density of 0.58/m^2. Roving diver fish counts were conducted on June 19th with four divers and on September 10th with six divers observing 19 and 15 species of fish respectively.

The temperature loggers were retrieved and deployed and all temperature data were successfully downloaded. No Tidbit's [tm] were installed in 2001, so 2002 was the first year these loggers were installed at Santa Barbara Island.

I still think we should place several extra eyebolts along the transect to facilitate its location and decrease lead line maintenance as a result of abrasion. In addition, a new eyebolt needs to be installed for the temperature logger. The current temperature logger eyebolt is unstable, but was temporarily repaired this trip.

Survey Dives:
Location: Potential Pelagophycus pora forest - Yellowbanks, Santa Cruz Island
2002 sampling dates: 8/6.
2002 status: Barren area with a moderate abundance of *Ophiothrix spiculata*.
Lat 33 59.527 N
Lon 119 31.294 W

We conducted a survey dive at a depth of about 20-28 meters in an area very close to where we made a survey dive last year. Some of the areas had similar features that made me think we were in the same area as last year, however, the area had changed drastically. Last year there was a large *Pelagophycus pora* forest with a lush understory of algae, including *Pterygophora californica* and *Eisenia arborea*. This year the area was nearly completely devoid of macroalgae. There was a large low relief area at a depth of 28 meters that had about fifty *P. californica* stipes on it, but none of the plants appeared to be alive.

The brittle star, *Ophiothrix spiculata*, was the most abundant organism on the relief and some areas were completely covered by them. *Strongylocentrotus franciscanus* and *S. purpuratus* were also moderately abundant and were notably small. In previous years, it was common to observe very large *S. franciscanus*, but these were absent this year. A commercial diver's sea urchin harvesting "bag" was found on the bottom. *Asterina miniata* were abundant and *Pisaster giganteus* were common. Very large *Pycnopodia helianthoides* were also common as well as whole *S. purpuratus* tests. The later were probably predated upon by *P. helianthoides*.

Large *Crassedoma giganteum* were common. Large, old, *Haliotis rufescens* shells were common and one large fresh shell measuring 210mm was found. Only one live *H. rufescens* was observed and it was of similar size as the shell mentioned (>200mm). This live *H. rufescens* appeared hungry and was actively moving around on the top of the reef.

Fish were common, but not as abundant as they were last year and they were noticeably small. Typically, when there is an abundance of algae on these deep reefs, fish are relatively abundant, though small in recent years. *Chromis punctipinnis* were the most abundant fish. *Adult Sebastes atrovirens* were next in abundance and were common. Several small female *Semicossyphus pulcher*, *Sebastes chrysomelas*, *S. serriceps* and several juvenile *S. miniatus* were observed.

Location: Kid Rock – Prince Island, San Miguel Island
2002 sampling dates: 7/11.

2002 status: Open area with a high diversity and abundance of encrusting invertebrates.

A brief survey dive was conducted at Kid Rock where we made a dive on August 30th 2000. There was no noticeable change since our last visit to this area. Similar to before, there were patches of high densities of *Strongylocentrotus franciscanus* in some areas, though most of the rocky substrate to a depth of about 10 meters was completely covered by a high diversity of encrusting invertebrates. Most noticeable were a variety of sponges, *Corynactis californica*, bryozoans, and various other invertebrates. Male and female *Semicossyphus pulcher*, large ling cod, *Ophiodon elongatus*, and *Sebastes mystinus* were relatively abundant.

DISCUSSION

In this section we attempt to summarize some general trends or describe the status of some species encompassing more than one site. 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 2002, *Macrocystis pyrifera* (giant kelp) forests were present at six of the 16 Kelp Forest Monitoring (KFM) sites compared to four in 2001. These sites included Wyckoff Ledge at San Miguel Island, Johnson's Lee North and Johnson's Lee South at Santa Rosa Island, Gull Island at Santa Cruz Island, Cathedral Cove and Landing Cove at Anacapa Island. The remaining 10 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, Arch Point and Cat Canyon at Santa Barbara Island were dominated by both *S. purpuratus* and *Strongylocentrotus franciscanus*. Rodes Reef at Santa Rosa Island was dominated by *Strongylocentrotus franciscanus*. Yellowbanks at Santa Cruz Islands was dominated by *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 by *Ophiothrix spiculata*. Fry's Harbor at Santa Cruz Island was dominated by *Pachythyone rubra*, and *S. purpuratus, S franciscanus*, and moderate densities of *Astrangia lajollaensis*. The new site at San Miguel Island, Miracle Mile was a kelp forest this year.

All three monitoring sites on Santa Barbara Island continue to be dominated by echinoderms, but the composition of dominant species has changed some since 2001. *Strongylocentrotus purpuratus* and *Strongylocentrotus franciscanus* continued their decline at Southeast Sea Lion and no longer dominate the site. *Ophiothrix spiculata* is the dominant echinoderm now and in some areas completely cover the bottom. *Strongylocentrotus franciscanus* and *S. purpuratus* decline ceased at Arch Point and Cat Canyon, and these species continued to dominate these sites. Similar to the past years, it appears that the three KFM sites at this Island well represent the remainder of the Island. Much of Santa Barbara Island appears to be dominated by *S. purpuratus*, *S. franciscanus* and *Ophiothrix spiculata*. Similar to 2001, some *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 side of the Island.

The three KFM sites at Anacapa Island appear to represent the Island well. Although the sites at this Island have changed some, the change appears to be less than the previous year. *Strongylocentrotus purpuratus* declined at Admiral's Reef and remained the same at Cathedral Cove and Landing Cove. *Strongylocentrotus franciscanus* densities declined at Cathedral Cove and remained about the same Landing Cove and Admiral's Reef. Algal cover remained about the same at Landing Cove and Admiral's Reef, but declined at Cathedral Cove. Admirals Reef continued to be dominated by a combination of *S. purpuratus*, *S. franciscanus* and *Ophiothrix spiculata* and had a low abundance of algae. Cathedral cove was a sparse kelp forest with high density patches of *S. franciscanus*. Landing cove was a sparse kelp forest with high density patches of juvenile kelps. Similar to recent years, *S. purpuratus* and *O. spiculata* 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 other small patches of kelp forest scattered in shallow areas, much of Anacapa is dominated by echinoderms.

The monitoring sites at Santa Cruz Island are rapidly changing. The decline in *Strongylocentrotus spp*. appears to be a driving factor in these changes. *Strongylocentrotus purpuratus* declined at four sites and remained the same at one. *Strongylocentrotus franciscanus* declined at three sites and remained the same at two. In 2002 three of the five sites at this Island were dominated by echinoderms, compared to three in 2001. Gull Island has experienced rapid change and is now a developing kelp forest, and Yellow Banks is a barren area that seems to be in transition from being dominated by echinoderms. Though echinoderms have dramatically declined they remain relatively abundant around the eastern half of the Island on both the north and south sides of the Island. However, there was noticeably more kelp around

the entire Island this year, especially towards the west end. The five monitoring sites well represent most of the transitions going on at Santa Cruz Island with the exception of the western third of the Island where we have little representation from the monitoring sites.

Kelp forests continued to be relatively abundant and appear to be increasing in abundance and denseness around Santa Rosa and San Miguel Islands. In 2002, kelp forests were present at three of the five monitoring sites, compared to two in 2001. Similar to the other Islands, *Strongylocentrotus spp*. densities continued to decline or remain the same at all of the monitoring sites. *Strongylocentrotus purpuratus* densities declined at four sites and remained the same at one. *Strongylocentrotus franciscanus* declined at two sites and remained the same at three. The most noticeable changes occurred at the Johnson's Lee North and South, as these sites dramatically transformed to kelp forest from recently being dominated by *Strongylocentrotus spp.* Predation by *Pycnopodia helianthoides* appears to be the driving factor in *Strongylocentrotus spp*. decline at San Miguel and Santa Rosa Islands.

In 2002 sea urchins continued their overall decline for the second year. There were no increases of any of the sea urchin species at all of the monitoring sites in 2003. Sea urchins either remained at similar densities or declined from 2001, and the overall decline in sea urchin densities is the most significant change that occurred 2002 at the KFM sites. *Strongylocentrotus purpuratus* densities decreased at ten sites and remained the same at six sites. *Strongylocentrotus franciscanus* densities decreased at seven sites and remained the same at nine sites. *Lytechinus anamesus* densities remained about the same in 2002, with small decreases at two sites and similar densities at the remaining 14 sites. *Centrostephanus coronatus* are mostly present at Santa Barbara, Anacapa and the east end of Santa Cruz Island. At the sites where *C. coronatus* were present they remained in low densities or declined slightly. Two sites where *C. coronatus* noticeably declined were at Santa Barbara Island where this species is currently most abundant.

In 2002 *Strongylocentrotus purpuratus* recruitment remained low for the second consecutive year, while *S. franciscanus recruitment* was higher than last year in the ARMs (see below). However, overall recruitment of *S. purpuratus* and *S. franciscanus* was low at most sites, similar to 2001. There was no noticeable recruitment of *Centrostephanus coronatus* in 2002 and we expect this warm water species to continue to gradually decline in abundance unless there is another warm water 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 most recent recruitment event we observed for this warm water species was during the 1997/1998 El Niño, and in the years following, this species has been in gradual decline.

Sea urchin wasting disease (Lafferty and Kushner, 1999, and Richards and Kushner, 1992) was observed at eight of the 16 monitoring sites, a decline from 11 sites in 2001. Similar to past years, wasting disease was observed at Santa Barbara, Anacapa, and Santa Cruz Islands this year. No wasting disease was observed on Santa Rosa and San Miguel Islands. The disease was more prevalent in *Strongylocentrotus purpuratus* than *S. franciscanus* and *Lytechinus anamesus*, similar to past years. Diseased *S. purpuratus* were observed at eight sites, *S. franciscanus* at five sites, and *L. anamesus* at three sites. There were more observed incidences of wasting disease towards the latter part of summer on October 27th, after our regular sampling occurs.

Pycnopodia helianthoides density appears to have peaked at San Miguel and Santa Rosa Island in 2001. Similar to past years, *P. helianthoides* were relatively abundant at six sites. Of these sites their densities decreased at four, and increased at two sites. Densities at the remaining ten sites remained about the same. Even though densities declined they remain relatively high at all sites. In addition, the density at Gull Island at Santa Cruz Island also increased. We continued to observe whole intact sea urchin tests at these sites and presume that these are from *P. helianthoides* predation. *Pycnopodia helianthoides* continues to appear as a controlling factor in sea urchin populations at the northern Channel Islands. The densities at all of the other monitoring sites were zero or low and were similar to 2001.

Asterina miniata and *Pisaster giganteus* densities continued to increase overall, though the rate of increase has slowed compared to the previous two years. During the past two years, these species have

experienced a rapid recovery from their dramatic decline, which was caused by a wide spread sea star wasting disease event during the 1997/1998 El Niño. *Asterina miniata* density increased at five sites, decreased at three sites and remained about the same at eight sites. *Pisaster giganteus* density increased at 6 sites and remained about the same at 10 sites. There were no obvious patterns to the sporadic fluctuation of densities this year. No sea star wasting disease was observed in 2002.

Over the past decade, *Ophiothrix spiculata* has increased in abundance and consequently has become a significant biological feature at the Channel Islands. *Ophiothrix spiculata* is not one of our indicator species, but at the sites where it was noticeably abundant since 2000, we kept track of it separately during random point contacts and then added it to the miscellaneous invertebrate category on RPCs. This cover was mentioned in the site descriptions in the results section of this report. Similar to 2001, *O. spiculata* abundance remained about the same or increased slightly at the five sites where we thought it was abundant enough to warrant counting separately. At all of the remaining 11 sites, *O. spiculata* was either not present or had low (probably less than 1%) cover. This species continues to be an important biological feature around the Islands, covering much of the bottom at Santa Barbara, and Anacapa Islands, to a lesser extent at Santa Cruz and Santa Rosa Islands, and has yet to be observed dominating any areas around San Miguel Island. Similar to last year, they were a significant biological feature at five monitoring sites (Rodes Reef, Fry's Harbor, Yellow Banks, Admiral's Reef and Southeast Sea Lion. Their cover ranged from 5.7% to 47.7% at these sites.

Abundance of *Corynactis californica* remained relatively high overall, but declined from 2001 when it was at its highest abundance in over a decade at many of the monitoring sites. This pattern we have observed post the 1997/1998 El Niño is similar to what we observed several years after the 1982/3 El Niño event.

Miscellaneous bryozoans notably increased at most of the sites this year, different than the past several years. They increased at 12 sites, decreased at none and remained the same at four sites (most of these sites, bryozoans are relatively rare). Overall, *Diaperoecia californica* increased at four sites, and remained about the same at 12 sites.

Lithopoma undosum densities continued their dramatic decline for the second consecutive year. Their densities declined at eight sites and changed little or remained about the same at eight sites. This downward trend continues a pattern we have been observing in this species of increasing abundance post large El Niño events (1982/1983 and 1997/1998) and then a subsequent decrease.

Similar to recent years, *Haliotis spp*. continues to be rare at most of the monitoring sites. Wyckoff Ledge at San Miguel Island is the only original kelp forest monitoring site that has a significant abalone population. The Miracle Mile site near Wyckoff Ledge that was installed to monitor *H. rufescens* in 2001 also has a large population; however this site was specifically set up in an area of high density *H. rufescens. Haliotis rufescens* was the only abalone species present at these two sites. Wyckoff Ledge and Miracle Mile are the only two sites that have a *Haliotis spp.* population that we consider healthy and not extremely low or in decline. At Wyckoff Ledge, the density of *H. rufescens* has recently increased and their density is the highest that has been recorded since monitoring began at this site in 1983. *Haliotis rufescens* recruitment remained low, five juveniles (<51mm) were observed in the ARMs compared to five in 2001. An additional three were found in the ARMs at Miracle Mile, this was the first year we sampled these ARMs.

Similar to recent years, *Haliotis corrugata* continue to be extremely rare at all of five of the Park Islands and there was little indication of recruitment in 2002. The only *H. corrugata* adults observed at the monitoring sites observed this year were five at Landing Cove, Anacapa Island and one at Cat Canyon, Santa Barbara Island. Only one juvenile (<51mm) *H. corrugata* was observed in the ARMs this year, compared to two in 2001.

Haliotis fulgens sightings continue to be rare and none were observed at the monitoring sites this year.

No *Haliotis sorenseni* were observed this year. *Haliotis assimilis* continued to be relatively common in the ARMs with six observed this year, two more than in 2001.

Overall *Styela montereyensis* increased this year ending their decline over recent years. Densities of *S. montereyensis* increased at two sites, and remained about the same at two of the four sites where they are typically present.

There were no noticeable changes in adult fish populations at the monitoring sites since last year and as a result most of the comments in this discussion are with regards to juvenile fish. Most of the information below has been garnered from the roving diver fish counts. Juvenile *Sebastes spp*. were common and appeared more abundant than last year. Juvenile *Sebastes mystinus* were observed at 11 sites this year similar to 2001. *Sebastes serranoides/flavidus juveniles* were common and were observed at 11 sites compared to seven in 2001. Juvenile vermillion rockfish, *Sebastes miniatus,* were rare and only observed at one site during the roving diver fish counts, similar to the past two years. Juvenile *Sebastes atrovirens* were observed at four sites compared to only one in 2001. No juvenile bocaccio, *Sebastes paucispinis* were observed, similar to last year. Juvenile *Sebastes serriceps* were less abundant than in recent years and were observed at only five sites this year compared to 11 in 2001. The number of observations and abundance of juvenile *Chromis punctipinnis* were low this year. We observed juveniles at six sites this year compared to 11 in 2001 and most sites had few. Juvenile *C. punctipinnis* were observed to be moderately abundant around Anacapa Island in October after our sampling was completed. Juvenile *Hypsypops rubicundus* were rare and only observed at two sites compared to six in 2001. Most of these were large juveniles and were probably two years old. No young of year *Paralabrax clathratus* were observed this year. However, at two sites juveniles were recorded, at both these sites the juvenile were approaching 10cm, their upper limit of our definition for juveniles and were probably from recruitment in 2001. Juvenile *Semicossyphus pulcher* were more common than last year and were observed at six sites. Juvenile *Oxyjulis californica* were observed at four sites compared to seven in 2001. Three of these sites were at Santa Barbara Island and the other at San Miguel Island. Ling Cod, *Ophiodon elongatus* were observed at seven sites, similar to 2001. Cabezon, *Scorpaenichthys marmoratus*, were relatively common and observed at eight of the monitoring sites, similar to last year. One giant black sea bass, *Stereolepis gigas* was observed during the monitoring season this year, but it was not observed during the roving diver fish count and is only included in the species list and site description above.

Overall, densities of *Coryphopterus nicholsii* increased from 2001. There were increases at six sites, decreases at one site, and little or no change at the remaining 11 sites. *Lythrypnus dalli* continued to be rare at all 16 monitoring sites and are at their lowest densities since monitoring began for this species in 1985. Fry's Harbor and Pelican Bay at Santa Cruz Island are the two sites which typically have the highest abundance of *L. dalli* and at both these sites densities were 0.0/m^2, though several individuals were observed at these sites. *Lythrypnus zebra* also appeared less abundant than recent years. Overall, *Alloclinus holderi* densities were similar to 2001. We observed an increase at two sites, decrease at one site and little or no change at the remaining 13 sites. Both *L. dalli* and *A. holderi* are warm water species that increase in abundance during years of anomalously warm water such as during El Niño events.

Artificial Recruitment Modules (ARMs):
ARMs were present and monitored at 10 of the monitoring sites in 2002. *Haliotis spp*. in the ARMs were discussed above in the discussion section along with the *Haliotis spp*. information from our other sampling protocol. Similar to recent years there were no noticeable trends in *Cypraea spadicea* abundance among the 10 sites. *Lithopoma undosum* densities in the ARMs at the sites where they have been common in the past (eastern Santa Cruz Island and Anacapa Island sites) continue to remain low. 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 continued to increase ARMs this year, with increases at five sites, decreases at one site and little or no change at four sites. Overall, densities of *Pisaster giganteus* decreased in the ARMs, with decreases at six sites, increases at one and little or no change at three sites. Overall, *Pycnopodia helianthoides* density decreased at the sites where they were present in the ARMs, decreasing at four sites and increasing at one site.

In general, *Strongylocentrotus franciscanus* density in the ARMs remained about the same as last year and mean size increased. Density of *S. franciscanus* increased at four sites, decreased at three sites and changed little at three sites while mean size increased at eight sites and decreased at two sites. The average number of *S. franciscanus* recruits (<16mm) was 11.6/ARM, higher than 2001. *Strongylocentrotus purpuratus* density in the ARMs continued to decline and mean size continued to increase. Density of *S. purpuratus* declined at eight sites, increased at one site and changed little at one site, while mean size increased at six sites, decreased at two sites and changed little at two sites. The average number of *S. purpuratus* recruits (<16mm) was 5.9/ARM, lower than in than 2001. *Centrostephanus coronatus* continued to decline and were present at only three sites with low densities and continued increases in mean sizes indicating no recruitment.

Temperature:
The latter half of the 2002 calendar year was anomalously warm according to sea surface temperatures.

Unusual Species / Non-Indicator Species:
We continue to observe the warm water species of sea urchin, *Arbacia incisa*. However, since we first observed these at the kelp forest monitoring sites in 1998, their abundance has declined and the individuals we observe have increased in size. This suggests that they are all from one recruitment event that probably occurred during the 1997/1998 El Niño. This year we observed two *A. incisa*. One at Admiral's Reef in an ARM that measured 40mm and another at Arch Point that measured 35mm. Unless another recruitment event occurs for this species, we expect them to be absent from our sites in the near future.

Similarly, the warm water pearl oyster, *Pteria sterna* also continue to decrease in abundance. This species also appeared to have recruited during the 1997/1998 El Niño and were common growing on gorgonians at several of the sites beginning in 1998. Since then, their abundance has decreased and they are rarely observed now. We only observed several *P. sterna* at one site this year, Southeast Sea Lion Rookery. At this site, they were notably larger than we have observed in the past several years. In addition, *P. sterna* shells were found at several other sites where we previously observed them, indicating recent mortality.

Live threaded abalone, *Haliotis assimilis*, were observed for the second consecutive year at the monitoring sites. This year we observed *H. assimilis* at two sites as opposed to three in 2001. One was observed at Fry's Harbor and a total of six at Yellow Banks. They ranged in size from 11-36mm indicating more than one year of recruitment.

The tuna crab, *Pleuroncodes planipes*, was observed at the Channel Islands earlier this year. There were reports of observations at Catalina Island. Large numbers washed ashore on March 25th along the north side of San Miguel Island before Otter Harbor. We observed sea gull fecal/regurgitation pellets containing 100% *P. planipes* parts at Anacapa Island on March 8th, but these pellets appeared to be possibly several weeks old. On April 27th, we observed many *P. planipes* around the Yellow Banks area at Santa Cruz Island. Around the same time we observed a scattered one or two *P. planipes* off the north east end of San Miguel Island.

In March, large numbers of the by-the-wind-sailor, *Vellela vellela* washed onshore along the north side of San Miguel Island from Lover's Cove to Otter Harbor. According to the San Miguel Island Ranger,Ian Williams, along Simonton and Lovers Cove they were several inches thick. We believe this is possibly the first time since the mid 1980's that this species has been observed in these areas. In late April, larger numbers of *V. vellela* were observed all over the Santa Barbara Channel, but were notably abundant off San Miguel Island.

Other Notes:
On March 11th, Dan Richards and Derek Lerma observed a Harbor seal pup (possibly 1-3 weeks old) inside of a lobster pot at a depth of about 6 meters just west of Cat Rock on Anacapa Island. The pup

was dead and appeared to have swum into the trap and drowned. This could be prevented by having lobster fisherman remove their traps before harbor seals begin to pup.

This monitoring began in 1982 and we have rarely incurred diving related incidents with perhaps less than three incidents in the past 20 years. This year, there were several incidents worth mentioning, though none caused any long-term bodily harm. Two were out of air situations, one due to equipment failure and the other due to diver error. One diver went over their time limits on their diver computer two times. The above incidents were all non-staff divers. In addition, one of the KFM staff was placed in a decompression chamber after incurring decompression sickness symptoms. This diver was diagnosed as having a mild case of decompression sickness, and this was the first case on record of this type since the monitoring program began in 1982.

Protocol Changes:

There were no protocol changes in 2002.

We recommend adding *Ophiothrix spiculata* as an indicator species to the random point contact protocol in 2003.

Two additional species of abalone were given species codes this year so that we can keep track of them in the ARMs, natural habitat size frequencies and potentially band transect densities. These species are *Haliotis assimilis* (9012) and *Haliotis sorenseni* (9013). Since we collected data on these species in the ARMs in 2000 and 2001, we were able to go back to the raw data sheets and enter these data.

Sampling Difficulties:
All proposed data collection was completed this year except for ten days of temperature data as a result of a temperature logger failure at Arch Point at Santa Barbara Island.

In addition, the temperature logger at Johnson's Lee South was missing on July 24, 2002. The two nuts that hold the logger on the thread rod were missing along with the housing. This indicates that someone actually used tools to remove the logger and did not replace it. The loggers were anonymously returned (after spreading the word through the commercial diver community) on October 27th, 2003. Both loggers continued to record data and we were able to determine that the loggers were removed on July 2nd, 2002 around 1100 hours by looking at temperature anomalies (when the logger were brought to the surface). There will only be a temperature data gap of about three weeks for this site due to these loggers being inappropriately removed.

Kelp Forest Monitoring Staff:
In 2002, the core KFM staff was David Kushner, Derek Lerma, Paula Rich, and Amy Story. This was Derek Lerma's last year working on the Marine monitoring programs at Channel Islands National Park. Derek has moved on and we will miss his hard work and expertise dearly. Derek has been an important asset to this program from 1993-2002.

Data Requests:
In 2002, we had three formal requests for data from the Park's kelp forest monitoring program. Steve Fancy and Paul Geissler were sent size frequency, band transect, quadrat and random point contact data that they will use for a workshop that will provide some recommendations on trend analysis for monitoring data sets. The intent is to provide some guidance on the various approaches that have been used, such as regression, repeated measures ANOVA, comparison of period means, rank-based statistics, and permutation methods. Harry Liquornik, a commercial dive fisher at the Channel Islands requested the summary data for *Strongylocentrotus purpuratus* and *Strongylocentrotus franciscanus*. All of the raw and summary density and size frequency data for *S. franciscanus* and *S. purpuratus* was sent to Craig Barilotti. Craig used this data in a report to the California Department of Fish and Game that addresses the assessment of *S. franciscanus* stocks off San Miguel and Santa Rosa Islands. In addition we assisted Dr. Jack Engle at the Marine Science Institute at the University of California, Santa Barbara with their roving diver fish count database.

Publications:

The following publications using KFM data have recently been published:

Rogers-Bennett, L., P. L. Haaker, K. A. Karpov, D. J. Kushner. 2002. Using Spatially Explicit Data to Evaluate Marine Protected Areas for Abalone in Southern California. Conservation Biology, Volume 16, No 5, pp 1308-1317.

Schroeter, S. C., D. C. Reed, D. J. Kushner, J. A. Estes, and D. S. Ono. 2001. The use of marine reserves in evaluating the dive fishery for the warty sea cucumber (*Parastichopus parvimensis*) in California, U.S.A. Canadian Journal of Fisheries and Aquatic Science. 58 1773-1781.

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

ACKNOWLEDGEMENTS

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We are deeply indebted to the many divers who have participated in this project in 2002 (Table 5). All of our volunteer divers are associated with other agencies such as NOAA, California Dept. of Fish and Game, and Universities. Without this volunteer base of well-trained and qualified divers it would be impossible to conduct this program at its current funding level. We also greatly appreciate the efforts of Diane Brooks, Keith Duran, Dave Stoltz, and Dwight Willey for supporting us on the boats, keeping us afloat and underwater. Gordon Bailey drew the cover illustration.

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

TAXA/COMMON NAME	SCIENTIFIC NAME	TECHNIQUE
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
Q= Quadrat
R= Random Point Contact
M= 5m^2-Quadrat
S= Size frequency Measurement
V= Visual Transect

CHANGES IN SCIENTIFIC NOMENCLATURE:

Patiria miniata	=	*Asterina miniata*
Astraea undosum	=	*Lithopoma undosum*
Astraea gibberosa	=	*Lithopoma gibberosum*
Hinnites giganteum	=	*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
San Miguel	Miracle Mile	SMMM		2001
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 REPLECATES
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. 2002 Kelp forest monitoring site status.

ISLAND/SITE	STATUS
San Miguel Island:	
Wyckoff Ledge	Mature kelp forest.
Hare Rock	Dominated by S*trongylocentrotus franciscanus* and *S. purpuratus*.
Miracle Mile	Mature kelp forest
Santa Rosa Island:	
Johnson's Lee North	Dense kelp forest
Johnson's Lee South	Mature kelp forest.
Rodes Reef	Dominated by *Strongylocentrotus franciscanus*.
Santa Cruz Island:	
Gull Island South	Developing kelp forest.
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	Barren area in transition
Anacapa Island:	
Admiral's Reef	Dominated by *Strongylocentrotus purpuratus*, *S. franciscanus,* and *Ophiothrix spiculata*.
Cathedral Cove	Sparse kelp forest with patches dominated by Strongylocentrotus franciscanus.
Landing Cove	Sparse kelp forest with high density patches of juvenile kelps.
Santa Barbara Island:	
Southeast Sea Lion Rookery	Dominated by *Ophiothrix spiculata*.
Arch Point	Dominated by *Strongylocentrotus purpuratus* and *S. franciscanus*.
Cat Canyon	Dominated by *Strongylocentrotus purpuratus* and *S. franciscanus*.

Table 5. 2002 Kelp Forest Monitoring Program participant and cruise list.

PARTICIPANTS	AFFILIATION	CRUISES PARTICIPATED
Ammann, Arnold	University of California, Santa Cruz	SC1
Behrens, Michael	University of California, Santa Barbara	SC1
Benson, Jeremy	University of California, Santa Barbara	SC1
Bullard, Aimee	California State University, Fullerton	3, SC1
Bursek, Julie	Channel Islands National Marine Sanctuary	7
Collier, Chantal	University of California, Santa Barbara	5
Conti, John	Volunteer, Channel Islands National Park	3
Demetropolis, Carl	Volunteer, Channel Islands National Park	2
Donahue, Megan	Channel Islands National Park	5
Falcone, Gil	Monterey Bay Aquarium	4
Fangman, Sarah	Channel Islands National Marine Sanctuary	1
Guardino, Michael	Monterey Bay Aquarium Volunteer	3
Haaker, Peter	California Department of Fish and Game	6
Kellog, Jim	US Navy	SC1
Kushner, David	Channel Islands National Park	1,2,3,4,5,6,7,SC1
Kusic, Kristin	University of California, Santa Cruz	6
Lerma, Derek	Channel Islands National Park	1,2,3,4,6,7,SC1
Maloney, Erin	University of California, Santa Cruz	6
Martin, Dan	University of California, Santa Barbara	5
Murray, Trevor	Monterey Bay Aquarium	5
O'Leary, Jennifer	California Department of Fish and Game	3
Perdue, Mitch	US Navy	SC1
Provo, John	Channel Islands National Park	1,2,4,5,6,7
Readie, Mark	University of California, Santa Cruz	2
Rich, Paula	Channel Islands National Park	1,2,3,4,5,6,7
Richards, Dan	Channel Islands National Park	1,SC1
Springer, Yuri	University of California, Santa Cruz	2
Story, Amy	Channel Islands National Park	1,2,3,4,5
Taniguchi, Ian	California Department of Fish and Game	3
Ugoretz, John	California Department of Fish and Game	5
Volaski, Tony	Channel Islands National Park	1,3
Williams, Ian	Channel Islands National Park	2
Wilson, Brent	Channel Islands National Park	SC1
Yaciuk, Richard	Volunteer, Channel Islands National Park	5
Yonker, Cyd	University of Southern California/Wrigley MSC	4

CRUISE NUMBER	2002 CRUISE DATES	KELP FOREST MONITORING SITES VISITED
1	June 17 - 21	SBAP, SBLC, SBSESL, SBCC, ANCC, ANLC
2	June 8 - 12	SCYB, SCGI, SRRR, SMHR, SCPB, SCSA
3	July 22 - 26	SCYB, SRJLN, SRJLS, SMWL, SCPB
4	August 5 - 9	ANLC, SCYB, ANAR, SCFH, SCFH, SCSA,
5	August 19 - 23	ANAR, ANLC, ANCC, SCGI, SCFH, SCPB, SCSA
6	Sept. 9 - 13	SBAP, SBSESL, SBCC, SCGI, SCYB, ANCC
7	September 23 - 27	SMWL, SMMM, SRJLN, SRJLS, SCPB
San Clemente 1	May 28 – June 4	SCI new sites

Table 6. 2002 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	
Miracle Mile				
Santa Rosa Island				
Johnson's Lee North	none		none	
Johnson's Lee South	none		none	
Rodes Reef	none		none	
Santa Cruz Island				
Gull Island South	none		none	
Fry's Harbor	none		2,6,3	8/7, 8/22
Pelican Bay	none		2,3	7/26, 9/27
Scorpion Anchorage	none		2	7/12, 8/8
Yellowbanks	none		2,6	9/12
Anacapa Island				
Admiral's Reef	none		2,3,6	8/6, 8/19
Cathedral Cove	none		2	9/13
Landing Cove	none		none	
Santa Barbara Island				
SE Sea Lion Rookery	none		none	
Arch Point	none		2,6	6/17
Cat Canyon	none		2,6	9/10

SPECIES LEGEND:

1 = *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 2002
date = date(s) disease/syndrome was observed

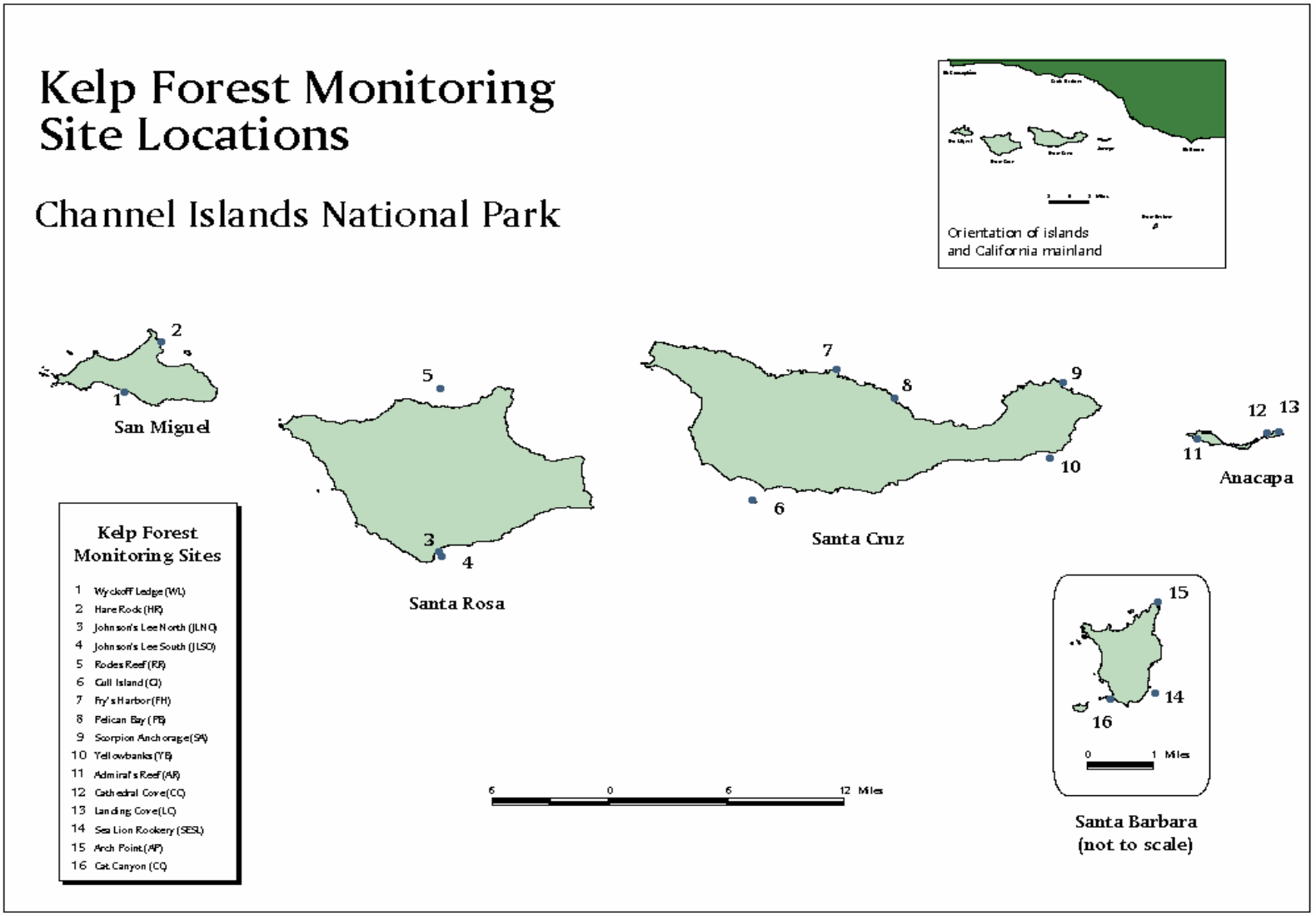


Figure 1. Kelp Forest Monitoring Locations at Channel Islands National Park.

Appendix A: Quadrat Data

2002 QUADRAT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
San Miguel Island - Wyckoff Ledge			
Macrocystis pyrifera Ad.(>1m)	**0.6250**	**1.0687**	**12**
Macrocystis pyrifera Juvenile (<1m)	**1.4583**	**2.2203**	**12**
Eisenia arborea adult	**0.0000**	**0.0000**	**12**
Eisenia arborea juvenile	**0.0000**	**0.0000**	**12**
Pterygophora californica adult	**0.2083**	**0.3343**	**12**
Pterygophora californica juvenile	**0.2083**	**0.5823**	**12**
Laminaria farlowii adult	**0.0000**	**0.0000**	**12**
Laminaria farlowii juvenile	**0.1667**	**0.5774**	**12**
Cypraea spadicea	**0.0000**	**0.0000**	**12**
Kelletia kelletii	**0.2500**	**0.3371**	**12**
Lithopoma undosum	**0.0000**	**0.0000**	**12**
Lithopoma gibberosum	**0.1667**	**0.3257**	**12**
Asterina miniata	**1.2083**	**0.9876**	**12**
Pisaster giganteus	**0.2083**	**0.3343**	**12**
Strongylocentrotus franciscanus	**6.1250**	**10.6880**	**12**
Strongylocentrotus purpuratus	**1.3333**	**2.2191**	**12**
Parastichopus parvimensis	**0.0000**	**0.0000**	**12**
Centrostephanus coronatus	**0.0000**	**0.0000**	**12**
Styela montereyensis	**0.5000**	**1.1078**	**12**
Lythrypnus dalli	**0.0000**	**0.0000**	**12**
Coryphopterus nicholsii	**0.0000**	**0.0000**	**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	**0.5833**	**0.7638**	**12**
Lithopoma undosum	**0.0000**	**0.0000**	**12**
Asterina miniata	**1.8333**	**1.3540**	**12**
Pisaster giganteus	**0.4583**	**0.5418**	**12**
Strongylocentrotus franciscanus	**13.0417**	**6.3656**	**12**
Strongylocentrotus purpuratus	**4.5417**	**7.4237**	**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	**0.4583**	**0.7821**	**12**
Alloclinus holderi	**0.0000**	**0.0000**	**12**

Species	Mean	Std. Dev.	n
Santa Rosa Island - Johnson's Lee North			
Macrocystis pyrifera Ad.(>1m)	**1.6250**	**1.6669**	**12**
Macrocystis pyrifera Juvenile (<1m)	**5.7500**	**9.6566**	**12**
Eisenia arborea adult	**0.0833**	**0.1946**	**12**
Eisenia arborea juvenile	**0.0000**	**0.0000**	**12**
Pterygophora californica adult	**0.2917**	**0.3343**	**12**
Pterygophora californica juvenile	**0.3333**	**0.6513**	**12**
Laminaria farlowii adult	**0.0000**	**0.0000**	**12**
Laminaria farlowii juvenile	**0.0000**	**0.0000**	**12**
Cypraea spadicea	**0.0833**	**0.1946**	**12**
Lithopoma undosum	**0.0000**	**0.0000**	**12**
Asterina miniata	**0.3750**	**0.5691**	**12**
Pisaster giganteus	**0.6250**	**0.7424**	**12**
Strongylocentrotus franciscanus	**1.5417**	**3.8462**	**12**
Strongylocentrotus purpuratus	**0.0000**	**0.0000**	**12**
Parastichopus parvimensis	**0.0000**	**0.0000**	**12**
Centrostephanus coronatus	**0.0000**	**0.0000**	**12**
Styela montereyensis	**2.6250**	**3.0684**	**12**
Lythrypnus dalli	**0.0000**	**0.0000**	**12**
Coryphopterus nicholsii	**0.2083**	**0.2575**	**12**
Alloclinus holderi	**0.0000**	**0.0000**	**12**
Santa Rosa Island - Johnson's Lee South			
Macrocystis pyrifera Ad.(>1m)	**0.5000**	**1.3314**	**12**
Macrocystis pyrifera Juvenile (<1m)	**4.5000**	**4.3745**	**12**
Eisenia arborea adult	**0.0000**	**0.0000**	**12**
Eisenia arborea juvenile	**0.1250**	**0.3108**	**12**
Pterygophora californica adult	**0.2917**	**0.6895**	**12**
Pterygophora californica juvenile	**0.3333**	**0.4924**	**12**
Laminaria farlowii adult	**0.1667**	**0.2462**	**12**
Laminaria farlowii juvenile	**0.5417**	**0.7821**	**12**
Cypraea spadicea	**0.3333**	**0.8876**	**12**
Lithopoma undosum	**0.0000**	**0.0000**	**12**
Asterina miniata	**1.5833**	**1.3456**	**12**
Pisaster giganteus	**0.2083**	**0.3343**	**12**
Strongylocentrotus franciscanus	**1.7083**	**2.3496**	**12**
Strongylocentrotus purpuratus	**0.8333**	**1.4512**	**12**
Parastichopus parvimensis	**0.0833**	**0.1946**	**12**
Centrostephanus coronatus	**0.0000**	**0.0000**	**12**
Styela montereyensis	**0.1250**	**0.3108**	**12**
Lythrypnus dalli	**0.0000**	**0.0000**	**12**
Coryphopterus nicholsii	**1.0417**	**1.1958**	**12**
Alloclinus holderi	**0.0000**	**0.0000**	**12**

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	**0.3333**	**0.5365**	**12**
Lithopoma undosum	**0.0000**	**0.0000**	**12**
Lithopoma gibberosum	**0.0000**	**0.0000**	**12**
Asterina miniata	**3.0000**	**2.0671**	**12**
Pisaster giganteus	**1.2917**	**0.9405**	**12**
Strongylocentrotus franciscanus	**7.8333**	**4.4432**	**12**
Strongylocentrotus purpuratus	**0.0417**	**0.1443**	**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)	**3.0417**	**1.4216**	**12**
Macrocystis pyrifera Juvenile (<1m)	**11.4583**	**5.1011**	**12**
Eisenia arborea adult	**0.4167**	**0.5967**	**12**
Eisenia arborea juvenile	**1.2917**	**0.8649**	**12**
Pterygophora californica adult	**0.0000**	**0.0000**	**12**
Pterygophora californica juvenile	**0.0833**	**0.1946**	**12**
Laminaria farlowii adult	**0.0000**	**0.0000**	**12**
Laminaria farlowii juvenile	**0.0000**	**0.0000**	**12**
Cypraea spadicea	**1.0000**	**1.2060**	**12**
Lithopoma undosum	**0.0417**	**0.1443**	**12**
Lithopoma gibberosum	**0.3333**	**0.8616**	**12**
Asterina miniata	**1.4583**	**0.9160**	**12**
Pisaster giganteus	**0.0833**	**0.1946**	**12**
Strongylocentrotus franciscanus	**0.5000**	**1.7321**	**12**
Strongylocentrotus purpuratus	**1.3333**	**1.9109**	**12**
Parastichopus parvimensis	**0.4167**	**0.4687**	**12**
Centrostephanus coronatus	**0.1667**	**0.4438**	**12**
Styela montereyensis	**0.0000**	**0.0000**	**12**
Lythrypnus dalli	**0.0000**	**0.0000**	**12**
Coryphopterus nicholsii	**0.7917**	**0.5418**	**12**
Alloclinus holderi	**0.0000**	**0.0000**	**12**

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	**0.5417**	**0.8382**	**12**
Lithopoma undosum	**0.0417**	**0.1443**	**12**
Asterina miniata	**1.2500**	**0.8394**	**12**
Pisaster giganteus	**1.3333**	**0.9129**	**12**
Lytechinus anamesus	**0.0833**	**0.1946**	**12**
Strongylocentrotus franciscanus	**3.1250**	**2.2776**	**12**
Strongylocentrotus purpuratus	**28.6667**	**14.8099**	**12**
Parastichopus parvimensis	**0.5000**	**0.4264**	**12**
Centrostephanus coronatus	**0.0000**	**0.0000**	**12**
Styela montereyensis	**0.0000**	**0.0000**	**12**
Lythrypnus dalli	**0.0000**	**0.0000**	**12**
Coryphopterus nicholsii	**2.1250**	**1.6669**	**12**
Alloclinus holderi	**0.0833**	**0.1946**	**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	**0.0000**	**0.0000**	**12**
Lithopoma undosum	**0.4583**	**0.4981**	**12**
Asterina miniata	**0.6250**	**0.7424**	**12**
Pisaster giganteus	**0.1667**	**0.3257**	**12**
Lytechinus anamesus	**4.2500**	**5.5124**	**12**
Strongylocentrotus franciscanus	**2.2917**	**2.0165**	**12**
Strongylocentrotus purpuratus	**38.1667**	**14.3627**	**12**
Parastichopus parvimensis	**0.0000**	**0.0000**	**12**
Centrostephanus coronatus	**0.0417**	**0.1443**	**12**
Styela montereyensis	**0.0000**	**0.0000**	**12**
Lythrypnus dalli	**0.0000**	**0.0000**	**12**
Coryphopterus nicholsii	**6.6667**	**1.9345**	**12**
Alloclinus holderi	**0.0000**	**0.0000**	**12**

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	**0.2500**	**0.3989**	**12**
Lithopoma undosum	**1.8750**	**2.3848**	**12**
Asterina miniata	**0.6250**	**0.7111**	**12**
Pisaster giganteus	**0.1667**	**0.3257**	**12**
Lytechinus anamesus	**0.0833**	**0.2887**	**12**
Strongylocentrotus franciscanus	**2.7917**	**2.0052**	**12**
Strongylocentrotus purpuratus	**85.8750**	**45.7687**	**12**
Parastichopus parvimensis	**0.2500**	**0.2611**	**12**
Centrostephanus coronatus	**0.0000**	**0.0000**	**12**
Styela montereyensis	**0.0000**	**0.0000**	**12**
Lythrypnus dalli	**0.0000**	**0.0000**	**12**
Coryphopterus nicholsii	**1.6250**	**0.8823**	**12**
Alloclinus holderi	**0.0417**	**0.1443**	**12**
Santa Cruz Island - Yellow Banks			
Macrocystis pyrifera Ad.(>1m)	**0.0000**	**0.0000**	**12**
Macrocystis pyrifera Juvenile (<1m)	**0.5833**	**1.1645**	**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	**0.1250**	**0.2261**	**12**
Cypraea spadicea	**0.0000**	**0.0000**	**12**
Lithopoma undosum	**1.5000**	**2.5495**	**12**
Lithopoma gibberosum	**0.0417**	**0.1443**	**12**
Asterina miniata	**0.6250**	**0.6440**	**12**
Pisaster giganteus	**0.0833**	**0.2887**	**12**
Lytechinus anamesus	**18.6250**	**11.9128**	**12**
Strongylocentrotus franciscanus	**0.7083**	**1.2873**	**12**
Strongylocentrotus purpuratus	**6.0417**	**9.0590**	**12**
Parastichopus parvimensis	**0.1250**	**0.2261**	**12**
Centrostephanus coronatus	**0.0833**	**0.1946**	**12**
Styela montereyensis	**0.0000**	**0.0000**	**12**
Lythrypnus dalli	**0.0000**	**0.0000**	**12**
Coryphopterus nicholsii	**2.8750**	**1.4943**	**12**
Alloclinus holderi	**0.0417**	**0.1443**	**12**

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	**0.2917**	**0.3343**	**12**
Lithopoma undosum	**0.1667**	**0.3257**	**12**
Asterina miniata	**0.5833**	**0.6337**	**12**
Pisaster giganteus	**0.0000**	**0.0000**	**12**
Lytechinus anamesus	**0.0417**	**0.1443**	**12**
Strongylocentrotus franciscanus	**6.2917**	**5.1631**	**12**
Strongylocentrotus purpuratus	**19.8750**	**12.2142**	**12**
Parastichopus parvimensis	**0.5000**	**0.6742**	**12**
Centrostephanus coronatus	**0.9167**	**0.9731**	**12**
Styela montereyensis	**0.0000**	**0.0000**	**12**
Lythrypnus dalli	**0.0000**	**0.0000**	**12**
Coryphopterus nicholsii	**1.8750**	**1.3505**	**12**
Alloclinus holderi	**0.2083**	**0.2575**	**12**
Anacapa Island - Cathedral Cove			
Macrocystis pyrifera Ad.(>1m)	**0.0000**	**0.0000**	**12**
Macrocystis pyrifera Juvenile (<1m)	**0.3333**	**1.0075**	**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**	**0.3892**	**12**
Lithopoma undosum	**3.7083**	**2.0939**	**12**
Asterina miniata	**0.2083**	**0.3343**	**12**
Pisaster giganteus	**0.0833**	**0.2887**	**12**
Strongylocentrotus franciscanus	**3.7083**	**2.8401**	**12**
Strongylocentrotus purpuratus	**1.5417**	**1.9593**	**12**
Parastichopus parvimensis	**1.5000**	**0.9770**	**12**
Centrostephanus coronatus	**0.0833**	**0.2887**	**12**
Styela montereyensis	**0.0000**	**0.0000**	**12**
Lythrypnus dalli	**0.0000**	**0.0000**	**12**
Coryphopterus nicholsii	**0.2917**	**0.2575**	**12**
Alloclinus holderi	**1.0000**	**0.7071**	**12**

Species	Mean	Std. Dev.	n
Anacapa Island - Landing Cove			
Macrocystis pyrifera Ad.(>1m)	**0.4444**	**0.8205**	**18**
Macrocystis pyrifera Juvenile (<1m)	**2.7917**	**7.2245**	**24**
Eisenia arborea adult	**0.3542**	**0.8272**	**24**
Eisenia arborea juvenile	**0.2917**	**0.7360**	**24**
Pterygophora californica adult	**0.0000**	**0.0000**	**24**
Pterygophora californica juvenile	**0.0000**	**0.0000**	**24**
Laminaria farlowii adult	**0.0417**	**0.1412**	**24**
Laminaria farlowii juvenile	**0.6458**	**1.2201**	**24**
Cypraea spadicea	**0.1250**	**0.4484**	**24**
Lithopoma undosum	**1.0208**	**1.4407**	**24**
Asterina miniata	**0.0000**	**0.0000**	**24**
Pisaster giganteus	**0.0000**	**0.0000**	**24**
Strongylocentrotus franciscanus	**1.7083**	**2.4134**	**24**
Strongylocentrotus purpuratus	**2.1875**	**3.3841**	**24**
Parastichopus parvimensis	**0.7083**	**1.0926**	**24**
Centrostephanus coronatus	**0.0625**	**0.3062**	**24**
Styela montereyensis	**0.0000**	**0.0000**	**24**
Lythrypnus dalli	**0.0000**	**0.0000**	**24**
Coryphopterus nicholsii	**0.3125**	**0.7195**	**24**
Alloclinus holderi	**0.1875**	**0.3234**	**24**
Santa Barbara Island - SE Sea Lion Rookery			
Macrocystis pyrifera Ad.(>1m)	**0.0000**	**0.0000**	**12**
Macrocystis pyrifera Juvenile (<1m)	**0.1667**	**0.2462**	**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	**0.5000**	**0.5641**	**12**
Asterina miniata	**0.3750**	**0.5276**	**12**
Pisaster giganteus	**0.1667**	**0.3257**	**12**
Strongylocentrotus franciscanus	**1.6250**	**2.0794**	**12**
Strongylocentrotus purpuratus	**2.8750**	**6.1093**	**12**
Parastichopus parvimensis	**0.2083**	**0.3343**	**12**
Centrostephanus coronatus	**1.2500**	**1.3229**	**12**
Styela montereyensis	**0.0000**	**0.0000**	**12**
Lythrypnus dalli	**0.0000**	**0.0000**	**12**
Coryphopterus nicholsii	**1.2500**	**0.9653**	**12**
Alloclinus holderi	**0.4583**	**0.3965**	**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	**0.0000**	**0.0000**	**12**
Lithopoma undosum	**0.5833**	**0.7017**	**12**
Asterina miniata	**0.2917**	**0.4502**	**12**
Pisaster giganteus	**0.1250**	**0.3108**	**12**
Strongylocentrotus franciscanus	**6.2083**	**4.5799**	**12**
Strongylocentrotus purpuratus	**103.0417**	**54.5787**	**12**
Parastichopus parvimensis	**0.2083**	**0.4502**	**12**
Centrostephanus coronatus	**0.4167**	**0.5573**	**12**
Styela montereyensis	**0.0000**	**0.0000**	**12**
Lythrypnus dalli	**0.0000**	**0.0000**	**12**
Coryphopterus nicholsii	**0.0417**	**0.1443**	**12**
Alloclinus holderi	**0.5417**	**0.4981**	**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	**0.5000**	**0.7071**	**12**
Asterina miniata	**0.0833**	**0.1946**	**12**
Pisaster giganteus	**0.1250**	**0.2261**	**12**
Strongylocentrotus franciscanus	**4.0417**	**2.2508**	**12**
Strongylocentrotus purpuratus	**19.9583**	**12.4835**	**12**
Parastichopus parvimensis	**0.4583**	**0.4502**	**12**
Centrostephanus coronatus	**0.2917**	**0.3965**	**12**
Styela montereyensis	**0.0000**	**0.0000**	**12**
Lythrypnus dalli	**0.0000**	**0.0000**	**12**
Coryphopterus nicholsii	**0.0833**	**0.1946**	**12**
Alloclinus holderi	**0.5833**	**0.4174**	**12**

2002 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	**0.1650**	**0.2597**	**40**
Macrocystis pyrifera Subadult	**0.5250**	**0.4892**	**40**
Pisaster giganteus	**0.0600**	**0.1215**	**40**
San Miguel Island - Hare Rock			
Macrocystis pyrifera Adult	**0.0000**	**0.0000**	**40**
Macrocystis pyrifera Subadult	**0.0050**	**0.0316**	**40**
Pisaster giganteus	**0.7600**	**0.8218**	**40**
Santa Rosa Island - Johnson's Lee North			
Macrocystis pyrifera Adult	**0.8100**	**0.6308**	**40**
Macrocystis pyrifera Subadult	**1.2400**	**1.0585**	**40**
Pisaster giganteus	**0.4400**	**0.4511**	**40**
Santa Rosa Island - Johnson's Lee South			
Macrocystis pyrifera Adult	**0.0850**	**0.1688**	**40**
Macrocystis pyrifera Subadult	**0.4950**	**0.5835**	**40**
Pisaster giganteus	**0.2000**	**0.2717**	**40**
Santa Rosa Island - Rodes Reef			
Macrocystis pyrifera Adult	**0.0000**	**0.0000**	**40**
Macrocystis pyrifera Subadult	**0.0000**	**0.0000**	**40**
Pisaster giganteus	**0.8900**	**0.8326**	**40**
Santa Cruz Island - Gull Island South			
Macrocystis pyrifera Adult	**0.0000**	**0.0000**	**40**
Macrocystis pyrifera Subadult	**3.1900**	**1.2144**	**40**
Pisaster giganteus	**0.1200**	**0.2255**	**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	**0.7850**	**0.5152**	**40**
Santa Cruz Island - Pelican Bay			
Macrocystis pyrifera Adult	**0.0000**	**0.0000**	**40**
Macrocystis pyrifera Subadult	**0.0000**	**0.0000**	**40**
Pisaster giganteus	**0.0800**	**0.1265**	**40**
Santa Cruz Island - Scorpion Anchorage			
Macrocystis pyrifera Adult	**0.0000**	**0.0000**	**40**
Macrocystis pyrifera Subadult	**0.0000**	**0.0000**	**40**
Pisaster giganteus	**0.1550**	**0.1894**	**40**

2002 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	**0.0650**	**0.1231**	**40**
Anacapa Island - Admiral's Reef			
Macrocystis pyrifera Adult	**0.0000**	**0.0000**	**40**
Macrocystis pyrifera Subadult	**0.0000**	**0.0000**	**40**
Pisaster giganteus	**0.0100**	**0.0441**	**40**
Anacapa Island - Cathedral Cove			
Macrocystis pyrifera Adult	**0.0050**	**0.0316**	**40**
Macrocystis pyrifera Subadult	**0.0000**	**0.0000**	**40**
Pisaster giganteus	**0.0100**	**0.0632**	**40**
Anacapa Island - Landing Cove			
Macrocystis pyrifera Adult	**0.0200**	**0.0758**	**40**
Macrocystis pyrifera Subadult	**0.5000**	**1.1520**	**40**
Pisaster giganteus	**0.0150**	**0.0533**	**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	**0.0800**	**0.1265**	**40**
Santa Barbara Island - Arch Point			
Macrocystis pyrifera Adult	**0.0000**	**0.0000**	**40**
Macrocystis pyrifera Subadult	**0.0000**	**0.0000**	**40**
Pisaster giganteus	**0.1350**	**0.1777**	**40**
Santa Barbara Island - Cat Canyon			
Macrocystis pyrifera Adult	**0.0000**	**0.0000**	**40**
Macrocystis pyrifera Subadult	**0.0000**	**0.0000**	**40**
Pisaster giganteus	**0.0850**	**0.1494**	**40**

Appendix C: Band Transect Data

2002 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
San Miguel Island - Wyckoff Ledge			
Tethya aurantia	**0.0764**	**0.0479**	**12**
Stylaster californica	**0.0000**	**0.0000**	**12**
Urticina lofotensis	**0.2486**	**0.2026**	**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	**0.0556**	**0.0529**	**12**
Haliotis corrugata	**0.0000**	**0.0000**	**12**
Haliotis fulgens	**0.0000**	**0.0000**	**12**
Kelletia kelletii	**0.1139**	**0.1627**	**12**
Megathura crenulata	**0.0014**	**0.0048**	**12**
Crassedoma giganteum	**0.0111**	**0.0148**	**12**
Aplysia californica	**0.0000**	**0.0000**	**12**
Pycnopodia helianthoides	**0.0083**	**0.0133**	**12**
Lytechinus anamesus	**0.0000**	**0.0000**	**12**
San Miguel Island - Hare Rock			
Tethya aurantia	**0.0208**	**0.0237**	**12**
Stylaster californica	**0.0000**	**0.0000**	**12**
Urticina lofotensis	**0.0083**	**0.0151**	**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	**0.0056**	**0.0082**	**12**
Megathura crenulata	**0.0014**	**0.0048**	**12**
Crassedoma giganteum	**0.0028**	**0.0065**	**12**
Aplysia californica	**0.0056**	**0.0109**	**12**
Pycnopodia helianthoides	**0.0694**	**0.0471**	**12**
Lytechinus anamesus	**0.0000**	**0.0000**	**12**
Santa Rosa Island - Johnson's Lee North			
Tethya aurantia	**0.1347**	**0.0680**	**12**
Stylaster californica	**0.0000**	**0.0000**	**12**
Urticina lofotensis	**0.0125**	**0.0144**	**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	**0.0028**	**0.0065**	**12**
Haliotis corrugata	**0.0000**	**0.0000**	**12**
Haliotis fulgens	**0.0000**	**0.0000**	**12**
Kelletia kelletii	**0.0028**	**0.0096**	**12**
Megathura crenulata	**0.0167**	**0.0159**	**12**
Crassedoma giganteum	**0.0069**	**0.0111**	**12**
Aplysia californica	**0.0000**	**0.0000**	**12**
Pycnopodia helianthoides	**0.1556**	**0.0583**	**12**
Lytechinus anamesus	**0.0000**	**0.0000**	**12**

2002 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Rosa Island - Johnson's Lee South			
Tethya aurantia	**0.1819**	**0.0613**	**12**
Stylaster californica	**0.0000**	**0.0000**	**12**
Urticina lofotensis	**0.0681**	**0.0672**	**12**
Lophogorgia chilensis	**0.0986**	**0.0468**	**12**
Muricea fruticosa	**0.0000**	**0.0000**	**12**
Muricea californica	**0.0000**	**0.0000**	**12**
Panulirus interruptus	**0.0000**	**0.0000**	**12**
Haliotis rufescens	**0.0014**	**0.0048**	**12**
Haliotis corrugata	**0.0000**	**0.0000**	**12**
Haliotis fulgens	**0.0000**	**0.0000**	**12**
Kelletia kelletii	**0.0139**	**0.0211**	**12**
Megathura crenulata	**0.0139**	**0.0264**	**12**
Crassedoma giganteum	**0.0028**	**0.0065**	**12**
Aplysia californica	**0.0056**	**0.0109**	**12**
Pycnopodia helianthoides	**0.1403**	**0.0645**	**12**
Lytechinus anamesus	**0.0000**	**0.0000**	**12**
Santa Rosa Island - Rodes Reef			
Tethya aurantia	**0.0764**	**0.0458**	**12**
Stylaster californica	**0.0000**	**0.0000**	**12**
Urticina lofotensis	**0.0722**	**0.0358**	**12**
Lophogorgia chilensis	**0.0028**	**0.0065**	**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	**0.0333**	**0.0402**	**12**
Crassedoma giganteum	**0.0056**	**0.0082**	**12**
Aplysia californica	**0.0014**	**0.0048**	**12**
Pycnopodia helianthoides	**0.3333**	**0.1322**	**12**
Lytechinus anamesus	**0.0000**	**0.0000**	**12**
Santa Cruz Island - Gull Island South			
Tethya aurantia	**0.0194**	**0.0199**	**12**
Stylaster californica	**0.0694**	**0.0961**	**12**
Urticina lofotensis	**0.0000**	**0.0000**	**12**
Lophogorgia chilensis	**0.0944**	**0.1422**	**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**	**0.0194**	**12**
Megathura crenulata	**0.0111**	**0.0148**	**12**
Crassedoma giganteum	**0.0014**	**0.0048**	**12**
Aplysia californica	**0.0000**	**0.0000**	**12**
Pycnopodia helianthoides	**0.0778**	**0.0378**	**12**
Lytechinus anamesus	**0.0000**	**0.0000**	**12**

2002 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Cruz Island - Fry's Harbor			
Tethya aurantia	**0.0014**	**0.0048**	**12**
Stylaster californica	**0.0000**	**0.0000**	**12**
Urticina lofotensis	**0.0000**	**0.0000**	**12**
Lophogorgia chilensis	**0.2486**	**0.1942**	**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	**0.0056**	**0.0192**	**12**
Megathura crenulata	**0.0444**	**0.0561**	**12**
Crassedoma giganteum	**0.0111**	**0.0192**	**12**
Aplysia californica	**0.0000**	**0.0000**	**12**
Pycnopodia helianthoides	**0.0000**	**0.0000**	**12**
Lytechinus anamesus	**0.5556**	**0.7105**	**12**
Santa Cruz Island - Pelican Bay			
Tethya aurantia	**0.0014**	**0.0048**	**12**
Stylaster californica	**0.0000**	**0.0000**	**12**
Urticina lofotensis	**0.0000**	**0.0000**	**12**
Lophogorgia chilensis	**0.1319**	**0.1402**	**12**
Muricea fruticosa	**0.0014**	**0.0048**	**12**
Muricea californica	**0.0014**	**0.0048**	**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	**0.0042**	**0.0104**	**12**
Megathura crenulata	**0.0014**	**0.0048**	**12**
Crassedoma giganteum	**0.0431**	**0.0405**	**12**
Aplysia californica	**0.0028**	**0.0065**	**12**
Pycnopodia helianthoides	**0.0000**	**0.0000**	**12**
Lytechinus anamesus	**2.0903**	**1.0412**	**12**
Santa Cruz Island - Scorpion Anchorage			
Tethya aurantia	**0.0278**	**0.0385**	**12**
Stylaster californica	**0.0000**	**0.0000**	**12**
Urticina lofotensis	**0.0000**	**0.0000**	**12**
Lophogorgia chilensis	**0.0069**	**0.0111**	**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	**0.0000**	**0.0000**	**12**
Megathura crenulata	**0.0486**	**0.0288**	**12**
Crassedoma giganteum	**0.0292**	**0.0303**	**12**
Aplysia californica	**0.0653**	**0.0691**	**12**
Pycnopodia helianthoides	**0.0000**	**0.0000**	**12**
Lytechinus anamesus	**0.0139**	**0.0186**	**12**

2002 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Cruz Island - Yellow Banks			
Tethya aurantia	**0.0250**	**0.0195**	**12**
Stylaster californica	**0.0000**	**0.0000**	**12**
Urticina lofotensis	**0.0000**	**0.0000**	**12**
Lophogorgia chilensis	**0.2083**	**0.0880**	**12**
Muricea fruticosa	**0.0056**	**0.0109**	**12**
Muricea californica	**0.0194**	**0.0172**	**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**	**0.0211**	**12**
Megathura crenulata	**0.0292**	**0.0144**	**12**
Crassedoma giganteum	**0.0028**	**0.0065**	**12**
Aplysia californica	**0.0000**	**0.0000**	**12**
Pycnopodia helianthoides	**0.0028**	**0.0065**	**12**
Lytechinus anamesus	**14.0778**	**8.2687**	**12**
Anacapa Island - Admiral's Reef			
Tethya aurantia	**0.0083**	**0.0112**	**12**
Stylaster californica	**0.0000**	**0.0000**	**12**
Urticina lofotensis	**0.0000**	**0.0000**	**12**
Lophogorgia chilensis	**0.0583**	**0.0261**	**12**
Muricea fruticosa	**0.0083**	**0.0112**	**12**
Muricea californica	**0.0292**	**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	**0.0347**	**0.0297**	**12**
Megathura crenulata	**0.1042**	**0.0461**	**12**
Crassedoma giganteum	**0.0639**	**0.0454**	**12**
Aplysia californica	**0.0361**	**0.0572**	**12**
Pycnopodia helianthoides	**0.0000**	**0.0000**	**12**
Lytechinus anamesus	**0.0014**	**0.0048**	**12**
Anacapa Island - Cathedral Cove			
Tethya aurantia	**0.0000**	**0.0000**	**12**
Stylaster californica	**0.0000**	**0.0000**	**12**
Urticina lofotensis	**0.0000**	**0.0000**	**12**
Lophogorgia chilensis	**0.0014**	**0.0048**	**12**
Muricea fruticosa	**0.0000**	**0.0000**	**12**
Muricea californica	**0.0000**	**0.0000**	**12**
Panulirus interruptus	**0.0208**	**0.0384**	**12**
Haliotis rufescens	**0.0000**	**0.0000**	**12**
Haliotis corrugata	**0.0000**	**0.0000**	**12**
Haliotis fulgens	**0.0000**	**0.0000**	**12**
Kelletia kelletii	**0.0625**	**0.1328**	**12**
Megathura crenulata	**0.0014**	**0.0048**	**12**
Crassedoma giganteum	**0.1375**	**0.1908**	**12**
Aplysia californica	**0.0306**	**0.0492**	**12**
Pycnopodia helianthoides	**0.0000**	**0.0000**	**12**
Lytechinus anamesus	**0.0000**	**0.0000**	**12**

2002 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Anacapa Island - Landing Cove			
Tethya aurantia	**0.0042**	**0.0075**	**12**
Stylaster californica	**0.0000**	**0.0000**	**12**
Urticina lofotensis	**0.0000**	**0.0000**	**12**
Lophogorgia chilensis	**0.0111**	**0.0179**	**12**
Muricea fruticosa	**0.0014**	**0.0048**	**12**
Muricea californica	**0.0014**	**0.0048**	**12**
Panulirus interruptus	**0.0347**	**0.0359**	**12**
Haliotis rufescens	**0.0000**	**0.0000**	**12**
Haliotis corrugata	**0.0028**	**0.0065**	**12**
Haliotis fulgens	**0.0000**	**0.0000**	**12**
Kelletia kelletii	**0.0056**	**0.0148**	**12**
Megathura crenulata	**0.0292**	**0.0303**	**12**
Crassedoma giganteum	**0.6250**	**0.4352**	**12**
Aplysia californica	**0.0069**	**0.0150**	**12**
Pycnopodia helianthoides	**0.0000**	**0.0000**	**12**
Lytechinus anamesus	**0.0000**	**0.0000**	**12**
Santa Barbara Island - SE Sea Lion Rookery			
Tethya aurantia	**0.1042**	**0.0624**	**12**
Stylaster californica	**0.0000**	**0.0000**	**12**
Urticina lofotensis	**0.0000**	**0.0000**	**12**
Lophogorgia chilensis	**0.1861**	**0.1073**	**12**
Muricea fruticosa	**0.0000**	**0.0000**	**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	**0.0000**	**0.0000**	**12**
Megathura crenulata	**0.0028**	**0.0065**	**12**
Crassedoma giganteum	**0.0028**	**0.0065**	**12**
Aplysia californica	**0.0819**	**0.0490**	**12**
Pycnopodia helianthoides	**0.0042**	**0.0104**	**12**
Lytechinus anamesus	**0.1736**	**0.2700**	**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**	**0.0075**	**12**
Muricea fruticosa	**0.0000**	**0.0000**	**12**
Muricea californica	**0.0014**	**0.0048**	**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	**0.0014**	**0.0048**	**12**
Megathura crenulata	**0.0014**	**0.0048**	**12**
Crassedoma giganteum	**0.0111**	**0.0148**	**12**
Aplysia californica	**0.1292**	**0.0285**	**12**
Pycnopodia helianthoides	**0.0000**	**0.0000**	**12**
Lytechinus anamesus	**0.0917**	**0.1060**	**12**

2002 BAND TRANSECT DATA: MEAN NUMBER PER M²

Species	Mean	Std. Dev.	n
Santa Barbara Island - Cat Canyon			
Tethya aurantia	**0.0000**	**0.0000**	**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	**0.0014**	**0.0048**	**12**
Haliotis rufescens	**0.0000**	**0.0000**	**12**
Haliotis corrugata	**0.0014**	**0.0048**	**12**
Haliotis fulgens	**0.0000**	**0.0000**	**12**
Kelletia kelletii	**0.0014**	**0.0048**	**12**
Megathura crenulata	**0.0056**	**0.0109**	**12**
Crassedoma giganteum	**0.0069**	**0.0111**	**12**
Aplysia californica	**0.1028**	**0.0714**	**12**
Pycnopodia helianthoides	**0.0000**	**0.0000**	**12**
Lytechinus anamesus	**0.0028**	**0.0065**	**12**

Appendix D: Random Point Contact Data

2002 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

San Miguel Island - Wyckoff Ledge

Species	Mean	Std. Dev.	n
Green Algae	0.333	0.8797	15
Miscellaneous Brown Algae	3.333	5.1467	15
Desmarestia Spp.	8.333	11.7893	15
Cystoseira Spp.	1.833	5.2156	15
Macrocystis pyrifera All	14.333	18.0393	15
Eisenia arborea All	0.000	0.0000	15
Pterygophora californica All	8.667	23.9208	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	58.500	18.2932	15
Articulated Coralline Algae	10.833	16.9207	15
Encrusting Coralline Algae	35.000	21.0866	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.667	1.4840	15
Miscellaneous Plants (ie: Diatoms)	1.500	4.6098	15
Sponges	1.167	1.5999	15
Corynactis californica	0.333	1.2910	15
Balanophyllia elegans	0.833	1.5430	15
Astrangia lajollaensis	0.333	0.8797	15
Diopatra ornata	11.500	8.8540	15
Phragmatopoma californica	3.000	7.0837	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	11.667	6.5238	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	4.167	5.7217	15
Miscellaneous Invertebrates	7.333	6.0109	15
Bare Substrate	20.833	20.6083	15
Rock	73.500	26.1657	15
Cobble	7.833	13.5576	15
Sand	18.667	15.3491	15

San Miguel Island - Hare Rock

Green Algae	8.000	16.1798	15
Miscellaneous Brown Algae	0.000	0.0000	15
Desmarestia Spp.	1.167	3.3894	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	11.667	10.1624	15
Articulated Coralline Algae	0.333	0.8797	15
Encrusting Coralline Algae	55.167	11.5907	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	23.333	11.1270	15
Sponges	0.000	0.0000	15
Corynactis californica	12.833	10.2150	15
Balanophyllia elegans	1.833	2.2093	15
Astrangia lajollaensis	1.833	3.7161	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.167	0.6455	15
Miscellaneous Bryozoans	4.667	7.4322	15
Diaperoecia californica	1.833	3.9491	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	1.333	2.4761	15
Miscellaneous Invertebrates	6.333	5.6590	15
Bare Substrate	13.500	14.6324	15
Rock	82.000	22.8583	15
Cobble	14.833	19.1905	15
Sand	3.167	5.6273	15

Appendix D: Random Point Contact Data

2002 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Species	Mean	Std. Dev.	n
Santa Rosa Island - Johnson's Lee North			
Green Algae	0.667	1.4840	15
Miscellaneous Brown Algae	0.667	2.5820	15
Desmarestia Spp.	0.500	1.4015	15
Cystoseira Spp.	5.000	8.5565	15
Macrocystis pyrifera All	67.167	28.0921	15
Eisenia arborea All	0.167	0.6455	15
Pterygophora californica All	5.000	8.5042	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	24.000	20.8267	15
Articulated Coralline Algae	1.500	2.6390	15
Encrusting Coralline Algae	15.500	7.5119	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	13.667	12.1327	15
Sponges	0.000	0.0000	15
Corynactis californica	4.500	5.6852	15
Balanophyllia elegans	1.833	1.9970	15
Astrangia lajollaensis	2.333	3.0570	15
Diopatra ornata	0.833	2.0412	15
Phragmatopoma californica	4.833	4.7684	15
Serpulorbis squamigerus	0.167	0.6455	15
Miscellaneous Bryozoans	35.667	10.4568	15
Diaperoecia californica	0.500	1.4015	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	8.000	5.6061	15
Miscellaneous Invertebrates	16.833	8.4233	15
Bare Substrate	6.500	5.9612	15
Rock	94.667	8.9576	15
Cobble	4.333	6.5101	15
Sand	1.000	2.8031	15
Santa Rosa Island - Johnson's Lee South			
Green Algae	0.333	0.8797	15
Miscellaneous Brown Algae	8.500	8.5982	15
Desmarestia Spp.	1.667	2.9378	15
Cystoseira Spp.	0.833	3.2275	15
Macrocystis pyrifera All	37.333	24.9010	15
Eisenia arborea All	0.833	3.2275	15
Pterygophora californica All	1.333	3.8807	15
Laminaria farlowii All	0.833	2.0412	15
Miscellaneous Red Algae	47.833	19.8401	15
Articulated Coralline Algae	2.500	2.9881	15
Encrusting Coralline Algae	21.667	14.8404	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	16.667	13.3519	15
Sponges	0.667	1.1443	15
Corynactis californica	4.667	9.4900	15
Balanophyllia elegans	4.500	4.1404	15
Astrangia lajollaensis	2.667	2.4029	15
Diopatra ornata	12.500	14.4852	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	15.000	10.6066	15
Diaperoecia californica	0.167	0.6455	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	1.333	2.8137	15
Miscellaneous Invertebrates	7.500	6.5465	15
Bare Substrate	17.500	15.2947	15
Rock	70.333	32.5805	15
Cobble	4.500	8.1394	15
Sand	25.000	30.8655	15

2002 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Species	Mean	Std. Dev.	n
Santa Rosa Island - Rodes Reef			
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.167	0.6455	15
Desmarestia Spp.	6.500	14.9940	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	20.667	7.5277	15
Articulated Coralline Algae	0.667	1.9970	15
Encrusting Coralline Algae	58.333	12.2717	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	6.667	6.7259	15
Sponges	0.500	1.0351	15
Corynactis californica	0.667	1.1443	15
Balanophyllia elegans	6.167	4.4186	15
Astrangia lajollaensis	9.833	11.0384	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	2.167	2.4761	15
Diaperoecia californica	0.167	0.6455	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	3.667	4.1043	15
Miscellaneous Invertebrates	11.500	12.2402	15
Bare Substrate	12.500	10.0445	15
Rock	74.500	24.4255	15
Cobble	24.333	23.8946	15
Sand	1.167	3.2550	15
Santa Cruz Island - Gull Island South			
Green Algae	0.333	0.8797	15
Miscellaneous Brown Algae	5.667	4.3780	15
Desmarestia Spp.	0.000	0.0000	15
Cystoseira Spp.	1.167	2.2887	15
Macrocystis pyrifera All	65.167	26.4991	15
Eisenia arborea All	9.000	9.2002	15
Pterygophora californica All	1.667	2.6163	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	20.500	10.9463	15
Articulated Coralline Algae	1.167	2.6502	15
Encrusting Coralline Algae	58.333	11.8271	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	1.000	1.8420	15
Sponges	0.167	0.6455	15
Corynactis californica	4.667	4.3164	15
Balanophyllia elegans	3.333	2.7817	15
Astrangia lajollaensis	1.667	2.4398	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	9.000	4.6098	15
Diaperoecia californica	2.333	2.7495	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	1.333	1.5999	15
Miscellaneous Invertebrates	14.167	6.3151	15
Bare Substrate	3.833	4.1043	15
Rock	96.667	4.7871	15
Cobble	2.167	4.1043	15
Sand	1.167	2.0845	15

2002 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Species	Mean	Std. Dev.	n
Santa Cruz Island - Fry's Harbor			
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	0.333	1.2910	15
Articulated Coralline Algae	0.000	0.0000	15
Encrusting Coralline Algae	42.667	7.9881	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	0.667	1.1443	15
Sponges	0.000	0.0000	15
Corynactis californica	1.667	3.6187	15
Balanophyllia elegans	0.500	1.9365	15
Astrangia lajollaensis	15.500	8.7729	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	2.500	6.1962	15
Diaperoecia californica	1.000	2.0702	15
Pachythyone rubra	35.000	15.9519	15
Tunicates	0.333	0.8797	15
Miscellaneous Invertebrates	28.500	28.5169	15
Bare Substrate	18.000	14.6141	15
Rock	87.000	12.2547	15
Cobble	12.000	12.4714	15
Sand	1.000	2.8031	15
Santa Cruz Island - Pelican Bay			
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	0.000	0.0000	15
Articulated Coralline Algae	0.000	0.0000	15
Encrusting Coralline Algae	38.833	11.7590	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	3.167	4.0606	15
Sponges	0.000	0.0000	15
Corynactis californica	0.167	0.6455	15
Balanophyllia elegans	0.167	0.6455	15
Astrangia lajollaensis	8.500	5.4116	15
Diopatra ornata	0.167	0.6455	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	0.333	1.2910	15
Diaperoecia californica	0.167	0.6455	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	0.000	0.0000	15
Miscellaneous Invertebrates	3.333	4.4987	15
Bare Substrate	47.000	15.5322	15
Rock	57.833	21.6891	15
Cobble	23.500	14.5406	15
Sand	18.667	14.6649	15

Appendix D: Random Point Contact Data

2002 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Species	Mean	Std. Dev.	n
Santa Cruz Island - Scorpion Anchorage			
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	7.833	5.0768	15
Articulated Coralline Algae	1.167	1.8581	15
Encrusting Coralline Algae	40.000	12.8522	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	3.333	2.6163	15
Sponges	0.000	0.0000	15
Corynactis californica	0.333	0.8797	15
Balanophyllia elegans	1.000	1.5811	15
Astrangia lajollaensis	2.500	2.3146	15
Diopatra ornata	0.167	0.6455	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	0.167	0.6455	15
Diaperoecia californica	0.333	1.2910	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	0.167	0.6455	15
Miscellaneous Invertebrates	15.333	6.1866	15
Bare Substrate	33.667	12.2061	15
Rock	86.000	7.7229	15
Cobble	5.167	5.8605	15
Sand	8.833	7.3111	15
Santa Cruz Island - Yellow Banks			
Green Algae	0.000	0.0000	15
Miscellaneous Brown Algae	0.333	1.2910	15
Desmarestia Spp.	0.000	0.0000	15
Cystoseira Spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.667	1.9970	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	4.167	3.4932	15
Articulated Coralline Algae	2.833	2.9681	15
Encrusting Coralline Algae	44.500	12.0342	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	13.500	13.4563	15
Sponges	0.000	0.0000	15
Corynactis californica	0.667	1.4840	15
Balanophyllia elegans	0.167	0.6455	15
Astrangia lajollaensis	2.167	2.4761	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	0.333	0.8797	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	0.667	1.7593	15
Miscellaneous Invertebrates	17.167	7.8414	15
Bare Substrate	40.000	18.1757	15
Rock	72.833	28.8293	15
Cobble	15.000	14.6994	15
Sand	12.167	15.1441	15

2002 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Anacapa Island - Admiral's Reef

Species	Mean	Std. Dev.	n
Green Algae	0.167	0.6455	15
Miscellaneous Brown Algae	1.000	1.8420	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	13.000	13.6015	15
Articulated Coralline Algae	0.333	0.8797	15
Encrusting Coralline Algae	30.000	13.7581	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	1.500	3.1053	15
Sponges	0.167	0.6455	15
Corynactis californica	5.167	11.3179	15
Balanophyllia elegans	0.000	0.0000	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	4.667	4.9881	15
Diaperoecia californica	0.333	1.2910	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	0.500	1.4015	15
Miscellaneous Invertebrates	64.833	30.6400	15
Bare Substrate	43.000	18.4246	15
Rock	81.333	19.6138	15
Cobble	8.833	10.9327	15
Sand	9.833	12.6937	15

Anacapa Island - Cathedral Cove

Species	Mean	Std. Dev.	n
Green Algae	0.167	0.6455	15
Miscellaneous Brown Algae	1.167	2.2887	15
Desmarestia Spp.	0.000	0.0000	15
Cystoseira Spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.500	1.0351	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	3.000	3.0178	15
Articulated Coralline Algae	8.500	6.1091	15
Encrusting Coralline Algae	51.667	14.7196	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	17.167	14.0746	15
Sponges	0.167	0.6455	15
Corynactis californica	0.000	0.0000	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	1.333	1.8581	15
Diopatra ornata	0.833	2.6163	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.333	0.8797	15
Miscellaneous Bryozoans	5.667	5.0415	15
Diaperoecia californica	0.333	0.8797	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	3.167	2.9073	15
Miscellaneous Invertebrates	15.333	9.9493	15
Bare Substrate	21.500	15.6639	15
Rock	54.500	24.4803	15
Cobble	33.667	15.0851	15
Sand	11.833	12.9376	15

Appendix D: Random Point Contact Data

2002 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Species	Mean	Std. Dev.	n
Anacapa Island - Landing Cove			
Green Algae	0.833	1.5430	15
Miscellaneous Brown Algae	11.333	13.5905	15
Desmarestia Spp.	0.000	0.0000	15
Cystoseira Spp.	0.500	1.4015	15
Macrocystis pyrifera All	18.833	31.0079	15
Eisenia arborea All	26.167	29.6538	15
Pterygophora californica All	0.167	0.6455	15
Laminaria farlowii All	8.833	22.5172	15
Miscellaneous Red Algae	19.333	17.5119	15
Articulated Coralline Algae	10.833	8.1650	15
Encrusting Coralline Algae	26.167	20.9776	15
Gelidium Spp.	18.000	26.1725	15
Gigartina Spp.	0.167	0.6455	15
Miscellaneous Plants (ie: Diatoms)	6.333	8.0659	15
Sponges	3.667	4.2117	15
Corynactis californica	2.500	3.4069	15
Balanophyllia elegans	0.167	0.6455	15
Astrangia lajollaensis	0.833	1.5430	15
Diopatra ornata	0.167	0.6455	15
Phragmatopoma californica	0.333	0.8797	15
Serpulorbis squamigerus	0.333	0.8797	15
Miscellaneous Bryozoans	18.333	20.1704	15
Diaperoecia californica	2.667	3.8344	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	7.167	8.3381	15
Miscellaneous Invertebrates	15.333	14.2009	15
Bare Substrate	16.833	24.8292	15
Rock	72.667	32.9023	15
Cobble	15.000	17.2947	15
Sand	12.333	18.8383	15
Santa Barbara Island - SE Sea Lion Rookery			
Green Algae	2.667	4.3780	15
Miscellaneous Brown Algae	3.333	6.7259	15
Desmarestia Spp.	0.000	0.0000	15
Cystoseira Spp.	0.000	0.0000	15
Macrocystis pyrifera All	0.167	0.6455	15
Eisenia arborea All	0.167	0.6455	15
Pterygophora californica All	0.000	0.0000	15
Laminaria farlowii All	0.000	0.0000	15
Miscellaneous Red Algae	3.833	4.6162	15
Articulated Coralline Algae	0.167	0.6455	15
Encrusting Coralline Algae	52.167	18.7528	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	13.667	11.7590	15
Sponges	0.333	0.8797	15
Corynactis californica	2.333	3.4675	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	1.333	2.4761	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.000	0.0000	15
Miscellaneous Bryozoans	4.500	4.6483	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	4.000	5.1582	15
Miscellaneous Invertebrates	45.500	30.1662	15
Bare Substrate	25.000	22.0794	15
Rock	78.500	21.3976	15
Cobble	6.500	6.3246	15
Sand	15.000	21.2132	15

2002 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

Species	Mean	Std. Dev.	n
Santa Barbara Island - Arch Point			
Green Algae	0.500	1.0351	15
Miscellaneous Brown Algae	0.667	1.1443	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	21.667	12.6303	15
Articulated Coralline Algae	0.667	1.4840	15
Encrusting Coralline Algae	39.667	10.2150	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	2.167	2.9681	15
Sponges	0.000	0.0000	15
Corynactis californica	7.833	7.5514	15
Balanophyllia elegans	0.167	0.6455	15
Astrangia lajollaensis	1.167	2.8137	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.000	0.0000	15
Serpulorbis squamigerus	0.167	0.6455	15
Miscellaneous Bryozoans	0.667	1.4840	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	0.833	2.0412	15
Miscellaneous Invertebrates	8.167	6.0847	15
Bare Substrate	24.333	11.2388	15
Rock	80.000	14.6385	15
Cobble	17.167	14.9960	15
Sand	2.833	3.2550	15
Santa Barbara Island - Cat Canyon			
Green Algae	1.500	2.4640	15
Miscellaneous Brown Algae	1.500	3.2459	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	3.167	2.7495	15
Articulated Coralline Algae	0.667	1.1443	15
Encrusting Coralline Algae	55.500	11.1484	15
Gelidium Spp.	0.000	0.0000	15
Gigartina Spp.	0.000	0.0000	15
Miscellaneous Plants (ie: Diatoms)	19.333	15.1324	15
Sponges	0.167	0.6455	15
Corynactis californica	0.000	0.0000	15
Balanophyllia elegans	0.000	0.0000	15
Astrangia lajollaensis	2.167	3.2550	15
Diopatra ornata	0.000	0.0000	15
Phragmatopoma californica	0.167	0.6455	15
Serpulorbis squamigerus	0.833	1.5430	15
Miscellaneous Bryozoans	2.500	3.2733	15
Diaperoecia californica	0.000	0.0000	15
Pachythyone rubra	0.000	0.0000	15
Tunicates	2.000	2.5355	15
Miscellaneous Invertebrates	4.167	3.3630	15
Bare Substrate	23.167	12.4451	15
Rock	87.833	16.1430	15
Cobble	5.167	7.5868	15
Sand	7.000	12.7195	15

2002 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M³)

San Miguel Island - Wyckoff Ledge

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	7/25/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Adult	9/26/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	7/25/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	9/26/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Adult	7/25/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Adult	9/26/02	**0.2500**	**0.5000**	**4**
Oxyjulis californica Juvenile	7/25/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	9/26/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	7/25/02	**0.5000**	**1.0000**	**4**
Sebastes mystinus Adult	9/26/02	**2.5000**	**3.7859**	**4**
Sebastes mystinus Juvenile	7/25/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Juvenile	9/26/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	7/25/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	9/26/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	7/25/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	9/26/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Adult	7/25/02	**0.7500**	**1.5000**	**4**
Sebastes atrovirens Adult	9/26/02	**0.5000**	**0.5774**	**4**
Sebastes atrovirens Juvenile	7/25/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	9/26/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	7/25/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	9/26/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	7/25/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	9/26/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	7/25/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	9/26/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Female	7/25/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Female	9/26/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	7/25/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	9/26/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	7/25/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	9/26/02	**0.5000**	**0.5774**	**4**
Embiotoca jacksoni Juvenile	7/25/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	9/26/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	7/25/02	**0.5000**	**0.5774**	**4**
Embiotoca lateralis Adult	9/26/02	**0.5000**	**0.5774**	**4**
Embiotoca lateralis Juvenile	7/25/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	9/26/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Adult	7/25/02	**0.2500**	**0.5000**	**4**
Damalichthys vacca Adult	9/26/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	7/25/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	9/26/02	**0.5000**	**1.0000**	**4**
Hypsypops rubicundus Adult	7/25/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Adult	9/26/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	7/25/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	9/26/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	7/25/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	9/26/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	7/25/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	9/26/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	7/25/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	9/26/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	7/25/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	9/26/02	**0.0000**	**0.0000**	**4**

2002 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M^3)

San Miguel Island - Hare Rock

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	7/11/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	7/11/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Adult	7/11/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	7/11/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	7/11/02	**0.2500**	**0.5000**	**4**
Sebastes mystinus Juvenile	7/11/02	**0.2500**	**0.5000**	**4**
Sebastes serranoides Adult	7/11/02	**0.2500**	**0.5000**	**4**
Sebastes serranoides Juvenile	7/11/02	**3.0000**	**6.0000**	**4**
Sebastes atrovirens Adult	7/11/02	**0.5000**	**1.0000**	**4**
Sebastes atrovirens Juvenile	7/11/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	7/11/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	7/11/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	7/11/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Female	7/11/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	7/11/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	7/11/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	7/11/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	7/11/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	7/11/02	**0.5000**	**1.0000**	**4**
Damalichthys vacca Adult	7/11/02	**0.2500**	**0.5000**	**4**
Damalichthys vacca Juvenile	7/11/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Adult	7/11/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	7/11/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	7/11/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	7/11/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	7/11/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	7/11/02	**0.0000**	**0.0000**	**4**

2002 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M^3)

Santa Rosa Island - Johnson's Lee North

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	7/23/02	**0.5000**	**1.0000**	**4**
Chromis punctipinnis Adult	9/24/02	**1.7500**	**1.5000**	**4**
Chromis punctipinnis Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	9/24/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Adult	7/23/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Adult	9/24/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	9/24/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	7/23/02	**1.2500**	**1.2583**	**4**
Sebastes mystinus Adult	9/24/02	**0.2500**	**0.5000**	**4**
Sebastes mystinus Juvenile	7/23/02	**0.7500**	**1.5000**	**4**
Sebastes mystinus Juvenile	9/24/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	7/23/02	**0.2500**	**0.5000**	**4**
Sebastes serranoides Adult	9/24/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	9/24/02	**1.5000**	**3.0000**	**4**
Sebastes atrovirens Adult	7/23/02	**1.0000**	**0.8165**	**4**
Sebastes atrovirens Adult	9/24/02	**0.2500**	**0.5000**	**4**
Sebastes atrovirens Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	9/24/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	7/23/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	9/24/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	9/24/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	7/23/02	**0.2500**	**0.5000**	**4**
Semicossyphus pulcher Male	9/24/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Female	7/23/02	**1.2500**	**0.5000**	**4**
Semicossyphus pulcher Female	9/24/02	**2.2500**	**0.5000**	**4**
Semicossyphus pulcher Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	9/24/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	7/23/02	**1.0000**	**1.1547**	**4**
Embiotoca jacksoni Adult	9/24/02	**3.7500**	**4.2720**	**4**
Embiotoca jacksoni Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	9/24/02	**0.2500**	**0.5000**	**4**
Embiotoca lateralis Adult	7/23/02	**0.2500**	**0.5000**	**4**
Embiotoca lateralis Adult	9/24/02	**9.7500**	**8.5391**	**4**
Embiotoca lateralis Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	9/24/02	**0.5000**	**1.0000**	**4**
Damalichthys vacca Adult	7/23/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Adult	9/24/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	9/24/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Adult	7/23/02	**0.2500**	**0.5000**	**4**
Hypsypops rubicundus Adult	9/24/02	**0.5000**	**1.0000**	**4**
Hypsypops rubicundus Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	9/24/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	7/23/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	9/24/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	9/24/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	7/23/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	9/24/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	7/23/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	9/24/02	**0.0000**	**0.0000**	**4**

2002 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M^3)

Santa Rosa Island - Johnson's Lee South

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	7/23/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Adult	7/23/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	7/23/02	**0.5000**	**1.0000**	**4**
Sebastes mystinus Juvenile	7/23/02	**3.2500**	**5.8523**	**4**
Sebastes serranoides Adult	7/23/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Adult	7/23/02	**0.5000**	**0.5774**	**4**
Sebastes atrovirens Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	7/23/02	**0.2500**	**0.5000**	**4**
Paralabrax clathratus Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	7/23/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Female	7/23/02	**0.7500**	**0.9574**	**4**
Semicossyphus pulcher Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	7/23/02	**0.2500**	**0.5000**	**4**
Embiotoca jacksoni Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	7/23/02	**1.0000**	**1.1547**	**4**
Embiotoca lateralis Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Adult	7/23/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Adult	7/23/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	7/23/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	7/23/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	7/23/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	7/23/02	**0.0000**	**0.0000**	**4**

2002 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M^3)

Santa Rosa Island - Rodes Reef

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	7/10/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	7/10/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Adult	7/10/02	**3.0000**	**6.0000**	**4**
Oxyjulis californica Juvenile	7/10/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	7/10/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Juvenile	7/10/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	7/10/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	7/10/02	**0.2500**	**0.5000**	**4**
Sebastes atrovirens Adult	7/10/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	7/10/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	7/10/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	7/10/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	7/10/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Female	7/10/02	**0.2500**	**0.5000**	**4**
Semicossyphus pulcher Juvenile	7/10/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	7/10/02	**0.2500**	**0.5000**	**4**
Embiotoca jacksoni Juvenile	7/10/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	7/10/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	7/10/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Adult	7/10/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	7/10/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Adult	7/10/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	7/10/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	7/10/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	7/10/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	7/10/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	7/10/02	**0.0000**	**0.0000**	**4**

2002 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M^3)

Santa Cruz Island - Gull Island South

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	8/21/02	**1.0000**	**2.0000**	**4**
Chromis punctipinnis Adult	9/11/02	**16.0000**	**23.6079**	**4**
Chromis punctipinnis Juvenile	8/21/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	9/11/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Adult	8/21/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Adult	9/11/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	8/21/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	9/11/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	8/21/02	**0.5000**	**1.0000**	**4**
Sebastes mystinus Adult	9/11/02	**0.7500**	**0.9574**	**4**
Sebastes mystinus Juvenile	8/21/02	**16.7500**	**19.8053**	**4**
Sebastes mystinus Juvenile	9/11/02	**5.0000**	**8.1240**	**4**
Sebastes serranoides Adult	8/21/02	**0.5000**	**0.5774**	**4**
Sebastes serranoides Adult	9/11/02	**0.2500**	**0.5000**	**4**
Sebastes serranoides Juvenile	8/21/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	9/11/02	**0.7500**	**0.9574**	**4**
Sebastes atrovirens Adult	8/21/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Adult	9/11/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	8/21/02	**0.5000**	**1.0000**	**4**
Sebastes atrovirens Juvenile	9/11/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	8/21/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	9/11/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	8/21/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	9/11/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	8/21/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	9/11/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Female	8/21/02	**1.0000**	**0.8165**	**4**
Semicossyphus pulcher Female	9/11/02	**1.0000**	**0.8165**	**4**
Semicossyphus pulcher Juvenile	8/21/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	9/11/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	8/21/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	9/11/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	8/21/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	9/11/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	8/21/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	9/11/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	8/21/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	9/11/02	**0.5000**	**0.5774**	**4**
Damalichthys vacca Adult	8/21/02	**0.2500**	**0.5000**	**4**
Damalichthys vacca Adult	9/11/02	**0.5000**	**1.0000**	**4**
Damalichthys vacca Juvenile	8/21/02	**0.5000**	**1.0000**	**4**
Damalichthys vacca Juvenile	9/11/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Adult	8/21/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Adult	9/11/02	**0.2500**	**0.5000**	**4**
Hypsypops rubicundus Juvenile	8/21/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	9/11/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	8/21/02	**0.5000**	**0.5774**	**4**
Girella nigricans Adult	9/11/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	8/21/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	9/11/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	8/21/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	9/11/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	8/21/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	9/11/02	**0.0000**	**0.0000**	**4**

2002 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M^3)

Santa Cruz Island - Fry's Harbor

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	8/7/02	**27.7500**	**20.1225**	**4**
Chromis punctipinnis Adult	8/22/02	**12.8750**	**17.8601**	**8**
Chromis punctipinnis Juvenile	8/7/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	8/22/02	**0.0000**	**0.0000**	**8**
Oxyjulis californica Adult	8/7/02	**0.5000**	**1.0000**	**4**
Oxyjulis californica Adult	8/22/02	**0.0000**	**0.0000**	**8**
Oxyjulis californica Juvenile	8/7/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	8/22/02	**0.0000**	**0.0000**	**8**
Sebastes mystinus Adult	8/7/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	8/22/02	**0.0000**	**0.0000**	**8**
Sebastes mystinus Juvenile	8/7/02	**2.0000**	**4.0000**	**4**
Sebastes mystinus Juvenile	8/22/02	**1.0000**	**1.9272**	**8**
Sebastes serranoides Adult	8/7/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	8/22/02	**0.0000**	**0.0000**	**8**
Sebastes serranoides Juvenile	8/7/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	8/22/02	**0.0000**	**0.0000**	**8**
Sebastes atrovirens Adult	8/7/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Adult	8/22/02	**0.0000**	**0.0000**	**8**
Sebastes atrovirens Juvenile	8/7/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	8/22/02	**0.0000**	**0.0000**	**8**
Paralabrax clathratus Adult	8/7/02	**0.2500**	**0.5000**	**4**
Paralabrax clathratus Adult	8/22/02	**0.0000**	**0.0000**	**8**
Paralabrax clathratus Juvenile	8/7/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	8/22/02	**0.0000**	**0.0000**	**8**
Semicossyphus pulcher Male	8/7/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	8/22/02	**0.0000**	**0.0000**	**8**
Semicossyphus pulcher Female	8/7/02	**0.7500**	**0.5000**	**4**
Semicossyphus pulcher Female	8/22/02	**0.5000**	**0.9258**	**8**
Semicossyphus pulcher Juvenile	8/7/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	8/22/02	**0.0000**	**0.0000**	**8**
Embiotoca jacksoni Adult	8/7/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	8/22/02	**0.0000**	**0.0000**	**8**
Embiotoca jacksoni Juvenile	8/7/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	8/22/02	**0.0000**	**0.0000**	**8**
Embiotoca lateralis Adult	8/7/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	8/22/02	**0.0000**	**0.0000**	**8**
Embiotoca lateralis Juvenile	8/7/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	8/22/02	**0.0000**	**0.0000**	**8**
Damalichthys vacca Adult	8/7/02	**1.2500**	**0.9574**	**4**
Damalichthys vacca Adult	8/22/02	**1.7500**	**0.8864**	**8**
Damalichthys vacca Juvenile	8/7/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	8/22/02	**0.0000**	**0.0000**	**8**
Hypsypops rubicundus Adult	8/7/02	**0.5000**	**1.0000**	**4**
Hypsypops rubicundus Adult	8/22/02	**0.5000**	**0.5345**	**8**
Hypsypops rubicundus Juvenile	8/7/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	8/22/02	**0.0000**	**0.0000**	**8**
Girella nigricans Adult	8/7/02	**0.5000**	**0.5774**	**4**
Girella nigricans Adult	8/22/02	**0.0000**	**0.0000**	**8**
Girella nigricans Juvenile	8/7/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	8/22/02	**0.0000**	**0.0000**	**8**
Halichoeres semicinctus Male	8/7/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	8/22/02	**0.0000**	**0.0000**	**8**
Halichoeres semicinctus Female	8/7/02	**0.2500**	**0.5000**	**4**
Halichoeres semicinctus Female	8/22/02	**0.2500**	**0.4629**	**8**

2002 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M^3)

Santa Cruz Island - Pelican Bay

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	8/22/02	**0.5000**	**1.0000**	**4**
Chromis punctipinnis Adult	9/27/02	**17.2500**	**7.9237**	**8**
Chromis punctipinnis Juvenile	8/22/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	9/27/02	**0.0000**	**0.0000**	**8**
Oxyjulis californica Adult	8/22/02	**0.2500**	**0.5000**	**4**
Oxyjulis californica Adult	9/27/02	**0.0000**	**0.0000**	**8**
Oxyjulis californica Juvenile	8/22/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	9/27/02	**0.0000**	**0.0000**	**8**
Sebastes mystinus Adult	8/22/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	9/27/02	**0.0000**	**0.0000**	**8**
Sebastes mystinus Juvenile	8/22/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Juvenile	9/27/02	**0.0000**	**0.0000**	**8**
Sebastes serranoides Adult	8/22/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	9/27/02	**0.0000**	**0.0000**	**8**
Sebastes serranoides Juvenile	8/22/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	9/27/02	**0.0000**	**0.0000**	**8**
Sebastes atrovirens Adult	8/22/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Adult	9/27/02	**0.0000**	**0.0000**	**8**
Sebastes atrovirens Juvenile	8/22/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	9/27/02	**0.0000**	**0.0000**	**8**
Paralabrax clathratus Adult	8/22/02	**1.0000**	**1.4142**	**4**
Paralabrax clathratus Adult	9/27/02	**1.2500**	**0.7071**	**8**
Paralabrax clathratus Juvenile	8/22/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	9/27/02	**0.0000**	**0.0000**	**8**
Semicossyphus pulcher Male	8/22/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	9/27/02	**0.0000**	**0.0000**	**8**
Semicossyphus pulcher Female	8/22/02	**0.2500**	**0.5000**	**4**
Semicossyphus pulcher Female	9/27/02	**0.7500**	**0.7071**	**8**
Semicossyphus pulcher Juvenile	8/22/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	9/27/02	**0.0000**	**0.0000**	**8**
Embiotoca jacksoni Adult	8/22/02	**2.5000**	**1.2910**	**4**
Embiotoca jacksoni Adult	9/27/02	**4.6250**	**1.4079**	**8**
Embiotoca jacksoni Juvenile	8/22/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	9/27/02	**0.0000**	**0.0000**	**8**
Embiotoca lateralis Adult	8/22/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	9/27/02	**0.0000**	**0.0000**	**8**
Embiotoca lateralis Juvenile	8/22/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	9/27/02	**0.0000**	**0.0000**	**8**
Damalichthys vacca Adult	8/22/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Adult	9/27/02	**0.1250**	**0.3536**	**8**
Damalichthys vacca Juvenile	8/22/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	9/27/02	**0.0000**	**0.0000**	**8**
Hypsypops rubicundus Adult	8/22/02	**0.2500**	**0.5000**	**4**
Hypsypops rubicundus Adult	9/27/02	**1.2500**	**1.5811**	**8**
Hypsypops rubicundus Juvenile	8/22/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	9/27/02	**0.0000**	**0.0000**	**8**
Girella nigricans Adult	8/22/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	9/27/02	**0.0000**	**0.0000**	**8**
Girella nigricans Juvenile	8/22/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	9/27/02	**0.0000**	**0.0000**	**8**
Halichoeres semicinctus Male	8/22/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	9/27/02	**0.0000**	**0.0000**	**8**
Halichoeres semicinctus Female	8/22/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	9/27/02	**0.0000**	**0.0000**	**8**

2002 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M^3)

Santa Cruz Island - Scorpion Anchorage

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	7/12/02	**17.7500**	**20.8706**	**4**
Chromis punctipinnis Adult	8/9/02	**7.6250**	**4.3074**	**8**
Chromis punctipinnis Juvenile	7/12/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	8/9/02	**0.0000**	**0.0000**	**8**
Oxyjulis californica Adult	7/12/02	**2.7500**	**2.0616**	**4**
Oxyjulis californica Adult	8/9/02	**1.7500**	**1.0351**	**8**
Oxyjulis californica Juvenile	7/12/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	8/9/02	**0.0000**	**0.0000**	**8**
Sebastes mystinus Adult	7/12/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	8/9/02	**0.0000**	**0.0000**	**8**
Sebastes mystinus Juvenile	7/12/02	**0.5000**	**1.0000**	**4**
Sebastes mystinus Juvenile	8/9/02	**0.0000**	**0.0000**	**8**
Sebastes serranoides Adult	7/12/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	8/9/02	**0.0000**	**0.0000**	**8**
Sebastes serranoides Juvenile	7/12/02	**0.2500**	**0.5000**	**4**
Sebastes serranoides Juvenile	8/9/02	**0.0000**	**0.0000**	**8**
Sebastes atrovirens Adult	7/12/02	**0.2500**	**0.5000**	**4**
Sebastes atrovirens Adult	8/9/02	**0.1250**	**0.3536**	**8**
Sebastes atrovirens Juvenile	7/12/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	8/9/02	**0.0000**	**0.0000**	**8**
Paralabrax clathratus Adult	7/12/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	8/9/02	**0.2500**	**0.4629**	**8**
Paralabrax clathratus Juvenile	7/12/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	8/9/02	**0.0000**	**0.0000**	**8**
Semicossyphus pulcher Male	7/12/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	8/9/02	**0.0000**	**0.0000**	**8**
Semicossyphus pulcher Female	7/12/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Female	8/9/02	**0.0000**	**0.0000**	**8**
Semicossyphus pulcher Juvenile	7/12/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	8/9/02	**0.0000**	**0.0000**	**8**
Embiotoca jacksoni Adult	7/12/02	**1.0000**	**0.8165**	**4**
Embiotoca jacksoni Adult	8/9/02	**1.0000**	**0.9258**	**8**
Embiotoca jacksoni Juvenile	7/12/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	8/9/02	**0.0000**	**0.0000**	**8**
Embiotoca lateralis Adult	7/12/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	8/9/02	**0.0000**	**0.0000**	**8**
Embiotoca lateralis Juvenile	7/12/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	8/9/02	**0.0000**	**0.0000**	**8**
Damalichthys vacca Adult	7/12/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Adult	8/9/02	**0.0000**	**0.0000**	**8**
Damalichthys vacca Juvenile	7/12/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	8/9/02	**0.0000**	**0.0000**	**8**
Hypsypops rubicundus Adult	7/12/02	**1.0000**	**0.8165**	**4**
Hypsypops rubicundus Adult	8/9/02	**0.2500**	**0.4629**	**8**
Hypsypops rubicundus Juvenile	7/12/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	8/9/02	**0.0000**	**0.0000**	**8**
Girella nigricans Adult	7/12/02	**0.2500**	**0.5000**	**4**
Girella nigricans Adult	8/9/02	**0.0000**	**0.0000**	**8**
Girella nigricans Juvenile	7/12/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	8/9/02	**0.0000**	**0.0000**	**8**
Halichoeres semicinctus Male	7/12/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	8/9/02	**0.0000**	**0.0000**	**8**
Halichoeres semicinctus Female	7/12/02	**0.5000**	**0.5774**	**4**
Halichoeres semicinctus Female	8/9/02	**0.0000**	**0.0000**	**8**

2002 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M^3)

Santa Cruz Island - Yellow Banks

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	7/8/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Adult	9/12/02	**0.2500**	**0.5000**	**4**
Chromis punctipinnis Juvenile	7/8/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	9/12/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Adult	7/8/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Adult	9/12/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	7/8/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	9/12/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	7/8/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	9/12/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Juvenile	7/8/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Juvenile	9/12/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	7/8/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	9/12/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	7/8/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	9/12/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Adult	7/8/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Adult	9/12/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	7/8/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	9/12/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	7/8/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	9/12/02	**0.7500**	**0.5000**	**4**
Paralabrax clathratus Juvenile	7/8/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	9/12/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	7/8/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	9/12/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Female	7/8/02	**0.5000**	**0.5774**	**4**
Semicossyphus pulcher Female	9/12/02	**0.7500**	**0.5000**	**4**
Semicossyphus pulcher Juvenile	7/8/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	9/12/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	7/8/02	**0.2500**	**0.5000**	**4**
Embiotoca jacksoni Adult	9/12/02	**0.5000**	**0.5774**	**4**
Embiotoca jacksoni Juvenile	7/8/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	9/12/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	7/8/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	9/12/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	7/8/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	9/12/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Adult	7/8/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Adult	9/12/02	**0.2500**	**0.5000**	**4**
Damalichthys vacca Juvenile	7/8/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	9/12/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Adult	7/8/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Adult	9/12/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	7/8/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	9/12/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	7/8/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	9/12/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	7/8/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	9/12/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	7/8/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	9/12/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	7/8/02	**0.2500**	**0.5000**	**4**
Halichoeres semicinctus Female	9/12/02	**0.0000**	**0.0000**	**4**

2002 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M^3)

Anacapa Island - Admiral's Reef

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	8/6/02	**22.7500**	**24.5272**	**4**
Chromis punctipinnis Adult	8/19/02	**46.7500**	**34.2460**	**8**
Chromis punctipinnis Juvenile	8/6/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	8/19/02	**0.0000**	**0.0000**	**8**
Oxyjulis californica Adult	8/6/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Adult	8/19/02	**0.6250**	**0.5175**	**8**
Oxyjulis californica Juvenile	8/6/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	8/19/02	**0.0000**	**0.0000**	**8**
Sebastes mystinus Adult	8/6/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	8/19/02	**0.0000**	**0.0000**	**8**
Sebastes mystinus Juvenile	8/6/02	**0.5000**	**1.0000**	**4**
Sebastes mystinus Juvenile	8/19/02	**0.7500**	**0.7071**	**8**
Sebastes serranoides Adult	8/6/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	8/19/02	**0.0000**	**0.0000**	**8**
Sebastes serranoides Juvenile	8/6/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	8/19/02	**0.0000**	**0.0000**	**8**
Sebastes atrovirens Adult	8/6/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Adult	8/19/02	**0.0000**	**0.0000**	**8**
Sebastes atrovirens Juvenile	8/6/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	8/19/02	**0.0000**	**0.0000**	**8**
Paralabrax clathratus Adult	8/6/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	8/19/02	**0.0000**	**0.0000**	**8**
Paralabrax clathratus Juvenile	8/6/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	8/19/02	**0.0000**	**0.0000**	**8**
Semicossyphus pulcher Male	8/6/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	8/19/02	**0.0000**	**0.0000**	**8**
Semicossyphus pulcher Female	8/6/02	**0.2500**	**0.5000**	**4**
Semicossyphus pulcher Female	8/19/02	**0.2500**	**0.4629**	**8**
Semicossyphus pulcher Juvenile	8/6/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	8/19/02	**0.0000**	**0.0000**	**8**
Embiotoca jacksoni Adult	8/6/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	8/19/02	**0.8750**	**1.2464**	**8**
Embiotoca jacksoni Juvenile	8/6/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	8/19/02	**0.0000**	**0.0000**	**8**
Embiotoca lateralis Adult	8/6/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	8/19/02	**0.0000**	**0.0000**	**8**
Embiotoca lateralis Juvenile	8/6/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	8/19/02	**0.0000**	**0.0000**	**8**
Damalichthys vacca Adult	8/6/02	**0.2500**	**0.5000**	**4**
Damalichthys vacca Adult	8/19/02	**0.2500**	**0.4629**	**8**
Damalichthys vacca Juvenile	8/6/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	8/19/02	**0.0000**	**0.0000**	**8**
Hypsypops rubicundus Adult	8/6/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Adult	8/19/02	**0.5000**	**0.5345**	**8**
Hypsypops rubicundus Juvenile	8/6/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	8/19/02	**0.0000**	**0.0000**	**8**
Girella nigricans Adult	8/6/02	**0.2500**	**0.5000**	**4**
Girella nigricans Adult	8/19/02	**0.6250**	**1.0607**	**8**
Girella nigricans Juvenile	8/6/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	8/19/02	**0.0000**	**0.0000**	**8**
Halichoeres semicinctus Male	8/6/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	8/19/02	**0.3750**	**0.5175**	**8**
Halichoeres semicinctus Female	8/6/02	**0.2500**	**0.5000**	**4**
Halichoeres semicinctus Female	8/19/02	**1.0000**	**1.0690**	**8**

2002 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M^3)

Anacapa Island - Cathedral Cove

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	6/20/02	**2.5000**	**1.7321**	**4**
Chromis punctipinnis Adult	8/20/02	**5.5000**	**2.8284**	**8**
Chromis punctipinnis Juvenile	6/20/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	8/20/02	**0.0000**	**0.0000**	**8**
Oxyjulis californica Adult	6/20/02	**1.7500**	**2.0616**	**4**
Oxyjulis californica Adult	8/20/02	**0.7500**	**1.1650**	**8**
Oxyjulis californica Juvenile	6/20/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	8/20/02	**0.0000**	**0.0000**	**8**
Sebastes mystinus Adult	6/20/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	8/20/02	**0.0000**	**0.0000**	**8**
Sebastes mystinus Juvenile	6/20/02	**0.7500**	**1.5000**	**4**
Sebastes mystinus Juvenile	8/20/02	**0.1250**	**0.3536**	**8**
Sebastes serranoides Adult	6/20/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	8/20/02	**0.0000**	**0.0000**	**8**
Sebastes serranoides Juvenile	6/20/02	**0.2500**	**0.5000**	**4**
Sebastes serranoides Juvenile	8/20/02	**0.0000**	**0.0000**	**8**
Sebastes atrovirens Adult	6/20/02	**0.5000**	**1.0000**	**4**
Sebastes atrovirens Adult	8/20/02	**0.2500**	**0.4629**	**8**
Sebastes atrovirens Juvenile	6/20/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	8/20/02	**0.0000**	**0.0000**	**8**
Paralabrax clathratus Adult	6/20/02	**0.5000**	**0.5774**	**4**
Paralabrax clathratus Adult	8/20/02	**0.1250**	**0.3536**	**8**
Paralabrax clathratus Juvenile	6/20/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	8/20/02	**0.0000**	**0.0000**	**8**
Semicossyphus pulcher Male	6/20/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	8/20/02	**0.0000**	**0.0000**	**8**
Semicossyphus pulcher Female	6/20/02	**0.7500**	**0.9574**	**4**
Semicossyphus pulcher Female	8/20/02	**0.7500**	**0.7071**	**8**
Semicossyphus pulcher Juvenile	6/20/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	8/20/02	**0.0000**	**0.0000**	**8**
Embiotoca jacksoni Adult	6/20/02	**1.5000**	**1.7321**	**4**
Embiotoca jacksoni Adult	8/20/02	**0.8750**	**0.6409**	**8**
Embiotoca jacksoni Juvenile	6/20/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	8/20/02	**0.0000**	**0.0000**	**8**
Embiotoca lateralis Adult	6/20/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	8/20/02	**0.0000**	**0.0000**	**8**
Embiotoca lateralis Juvenile	6/20/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	8/20/02	**0.0000**	**0.0000**	**8**
Damalichthys vacca Adult	6/20/02	**0.2500**	**0.5000**	**4**
Damalichthys vacca Adult	8/20/02	**0.0000**	**0.0000**	**8**
Damalichthys vacca Juvenile	6/20/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	8/20/02	**0.0000**	**0.0000**	**8**
Hypsypops rubicundus Adult	6/20/02	**1.2500**	**1.8930**	**4**
Hypsypops rubicundus Adult	8/20/02	**2.6250**	**0.9161**	**8**
Hypsypops rubicundus Juvenile	6/20/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	8/20/02	**0.1250**	**0.3536**	**8**
Girella nigricans Adult	6/20/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	8/20/02	**0.2500**	**0.4629**	**8**
Girella nigricans Juvenile	6/20/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	8/20/02	**0.0000**	**0.0000**	**8**
Halichoeres semicinctus Male	6/20/02	**0.2500**	**0.5000**	**4**
Halichoeres semicinctus Male	8/20/02	**0.0000**	**0.0000**	**8**
Halichoeres semicinctus Female	6/20/02	**0.7500**	**0.9574**	**4**
Halichoeres semicinctus Female	8/20/02	**0.2500**	**0.4629**	**8**

2002 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M^3)

Anacapa Island - Landing Cove

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	6/21/02	**26.5000**	**18.2665**	**4**
Chromis punctipinnis Adult	8/5/02	**8.7500**	**11.4127**	**4**
Chromis punctipinnis Juvenile	6/21/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	8/5/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Adult	6/21/02	**5.5000**	**7.0475**	**4**
Oxyjulis californica Adult	8/5/02	**1.0000**	**1.4142**	**4**
Oxyjulis californica Juvenile	6/21/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	8/5/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	6/21/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	8/5/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Juvenile	6/21/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Juvenile	8/5/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	6/21/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	8/5/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	6/21/02	**0.7500**	**1.5000**	**4**
Sebastes serranoides Juvenile	8/5/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Adult	6/21/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Adult	8/5/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	6/21/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	8/5/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	6/21/02	**0.5000**	**1.0000**	**4**
Paralabrax clathratus Adult	8/5/02	**2.0000**	**0.8165**	**4**
Paralabrax clathratus Juvenile	6/21/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	8/5/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	6/21/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	8/5/02	**0.5000**	**0.5774**	**4**
Semicossyphus pulcher Female	6/21/02	**1.0000**	**0.8165**	**4**
Semicossyphus pulcher Female	8/5/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	6/21/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	8/5/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	6/21/02	**1.2500**	**0.5000**	**4**
Embiotoca jacksoni Adult	8/5/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	6/21/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	8/5/02	**0.5000**	**0.5774**	**4**
Embiotoca lateralis Adult	6/21/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	8/5/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	6/21/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	8/5/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Adult	6/21/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Adult	8/5/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	6/21/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	8/5/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Adult	6/21/02	**2.0000**	**1.8257**	**4**
Hypsypops rubicundus Adult	8/5/02	**2.7500**	**1.7078**	**4**
Hypsypops rubicundus Juvenile	6/21/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	8/5/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	6/21/02	**1.5000**	**1.7321**	**4**
Girella nigricans Adult	8/5/02	**1.2500**	**2.5000**	**4**
Girella nigricans Juvenile	6/21/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	8/5/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	6/21/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	8/5/02	**0.7500**	**0.9574**	**4**
Halichoeres semicinctus Female	6/21/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	8/5/02	**0.2500**	**0.5000**	**4**

2002 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M^3)

Santa Barbara Island - SE Sea Lion Rookery

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	6/18/02	**10.7500**	**12.4197**	**4**
Chromis punctipinnis Adult	9/10/02	**2.2500**	**3.8622**	**4**
Chromis punctipinnis Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Adult	6/18/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Adult	9/10/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	9/10/02	**5.0000**	**10.0000**	**4**
Sebastes mystinus Adult	6/18/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	9/10/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	6/18/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	9/10/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Adult	6/18/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Adult	9/10/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	6/18/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	9/10/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	6/18/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	9/10/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Female	6/18/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Female	9/10/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	6/18/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	9/10/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	6/18/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	9/10/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Adult	6/18/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Adult	9/10/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Adult	6/18/02	**0.5000**	**0.5774**	**4**
Hypsypops rubicundus Adult	9/10/02	**0.2500**	**0.5000**	**4**
Hypsypops rubicundus Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	6/18/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	9/10/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	6/18/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	9/10/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	6/18/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	9/10/02	**0.0000**	**0.0000**	**4**

2002 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M^3)

Santa Barbara Island - Arch Point

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	6/18/02	**15.7500**	**18.3007**	**4**
Chromis punctipinnis Adult	9/9/02	**179.5000**	**160.4379**	**4**
Chromis punctipinnis Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	9/9/02	**68.0000**	**54.1603**	**4**
Oxyjulis californica Adult	6/18/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Adult	9/9/02	**1.0000**	**1.4142**	**4**
Oxyjulis californica Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	9/9/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	6/18/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	9/9/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Juvenile	9/9/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	6/18/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	9/9/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	9/9/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Adult	6/18/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Adult	9/9/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	9/9/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	6/18/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	9/9/02	**0.7500**	**0.9574**	**4**
Paralabrax clathratus Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	9/9/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	6/18/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	9/9/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Female	6/18/02	**0.2500**	**0.5000**	**4**
Semicossyphus pulcher Female	9/9/02	**0.7500**	**0.9574**	**4**
Semicossyphus pulcher Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	9/9/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	6/18/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	9/9/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	9/9/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	6/18/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	9/9/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	9/9/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Adult	6/18/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Adult	9/9/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	9/9/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Adult	6/18/02	**3.7500**	**2.0616**	**4**
Hypsypops rubicundus Adult	9/9/02	**3.0000**	**0.8165**	**4**
Hypsypops rubicundus Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	9/9/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	6/18/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	9/9/02	**1.7500**	**1.2583**	**4**
Girella nigricans Juvenile	6/18/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	9/9/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	6/18/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	9/9/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	6/18/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	9/9/02	**0.0000**	**0.0000**	**4**

2002 FISH TRANSECT DATA: MEAN NUMBER PER TRANSECT (300 M^3)

Santa Barbara Island - Cat Canyon

	Date	Mean	Std. Dev.	n
Chromis punctipinnis Adult	6/19/02	**34.0000**	**39.3362**	**4**
Chromis punctipinnis Adult	9/10/02	**11.0000**	**22.0000**	**4**
Chromis punctipinnis Juvenile	6/19/02	**0.0000**	**0.0000**	**4**
Chromis punctipinnis Juvenile	9/10/02	**56.2500**	**80.1431**	**4**
Oxyjulis californica Adult	6/19/02	**3.5000**	**3.8730**	**4**
Oxyjulis californica Adult	9/10/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	6/19/02	**0.0000**	**0.0000**	**4**
Oxyjulis californica Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	6/19/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Adult	9/10/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Juvenile	6/19/02	**0.0000**	**0.0000**	**4**
Sebastes mystinus Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	6/19/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Adult	9/10/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	6/19/02	**0.0000**	**0.0000**	**4**
Sebastes serranoides Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Adult	6/19/02	**0.2500**	**0.5000**	**4**
Sebastes atrovirens Adult	9/10/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	6/19/02	**0.0000**	**0.0000**	**4**
Sebastes atrovirens Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	6/19/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Adult	9/10/02	**0.2500**	**0.5000**	**4**
Paralabrax clathratus Juvenile	6/19/02	**0.0000**	**0.0000**	**4**
Paralabrax clathratus Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Male	6/19/02	**0.5000**	**0.5774**	**4**
Semicossyphus pulcher Male	9/10/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Female	6/19/02	**0.2500**	**0.5000**	**4**
Semicossyphus pulcher Female	9/10/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	6/19/02	**0.0000**	**0.0000**	**4**
Semicossyphus pulcher Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Adult	6/19/02	**0.2500**	**0.5000**	**4**
Embiotoca jacksoni Adult	9/10/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	6/19/02	**0.0000**	**0.0000**	**4**
Embiotoca jacksoni Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	6/19/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Adult	9/10/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	6/19/02	**0.0000**	**0.0000**	**4**
Embiotoca lateralis Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Adult	6/19/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Adult	9/10/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	6/19/02	**0.0000**	**0.0000**	**4**
Damalichthys vacca Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Adult	6/19/02	**1.7500**	**2.0616**	**4**
Hypsypops rubicundus Adult	9/10/02	**1.7500**	**0.9574**	**4**
Hypsypops rubicundus Juvenile	6/19/02	**0.0000**	**0.0000**	**4**
Hypsypops rubicundus Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Girella nigricans Adult	6/19/02	**0.2500**	**0.5000**	**4**
Girella nigricans Adult	9/10/02	**1.2500**	**0.9574**	**4**
Girella nigricans Juvenile	6/19/02	**0.0000**	**0.0000**	**4**
Girella nigricans Juvenile	9/10/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	6/19/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Male	9/10/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	6/19/02	**0.0000**	**0.0000**	**4**
Halichoeres semicinctus Female	9/10/02	**0.0000**	**0.0000**	**4**

2002 ROVING DIVER FISH COUNT:

Island:	Site Name:	Date:	Number of Observers	Number of Species Observed
San Miguel	**Wyckoff Ledge**	**7/25/02**	**6**	**20**
San Miguel	**Wyckoff Ledge**	**9/26/02**	**3**	**23**
San Miguel	**Hare Rock**	**7/11/02**	**5**	**26**
Santa Rosa	**Johnson's Lee North**	**7/23/02**	**6**	**29**
Santa Rosa	**Johnson's Lee North**	**9/24/02**	**3**	**25**
Santa Rosa	**Johnson's Lee South**	**7/23/02**	**7**	**28**
Santa Rosa	**Johnson's Lee South**	**9/24/02**	**4**	**27**
Santa Rosa	**Rodes Reef**	**7/10/02**	**4**	**25**
Santa Cruz	**Gull Island South**	**8/21/02**	**7**	**29**
Santa Cruz	**Gull Island South**	**9/11/02**	**4**	**24**
Santa Cruz	**Fry's Harbor**	**8/7/02**	**4**	**22**
Santa Cruz	**Fry's Harbor**	**8/22/02**	**7**	**28**
Santa Cruz	**Pelican Bay**	**8/22/02**	**7**	**22**
Santa Cruz	**Pelican Bay**	**9/27/02**	**4**	**23**
Santa Cruz	**Scorpion Anchorage**	**7/12/02**	**5**	**24**
Santa Cruz	**Scorpion Anchorage**	**8/9/02**	**4**	**25**
Santa Cruz	**Yellow Banks**	**7/8/02**	**3**	**18**
Santa Cruz	**Yellow Banks**	**9/12/02**	**4**	**21**
Anacapa	**Admiral's Reef**	**8/6/02**	**4**	**21**
Anacapa	**Admiral's Reef**	**8/19/02**	**6**	**22**
Anacapa	**Cathedral Cove**	**6/20/02**	**5**	**24**
Anacapa	**Cathedral Cove**	**8/20/02**	**7**	**25**
Anacapa	**Landing Cove**	**6/21/02**	**5**	**28**
Anacapa	**Landing Cove**	**8/5/02**	**4**	**27**
Santa Barbara	**SE Sea Lion Rookery**	**6/18/02**	**2**	**11**
Santa Barbara	**SE Sea Lion Rookery**	**9/10/02**	**6**	**16**
Santa Barbara	**Arch Point**	**6/18/02**	**5**	**15**
Santa Barbara	**Arch Point**	**9/9/02**	**6**	**18**
Santa Barbara	**Cat Canyon**	**6/19/02**	**4**	**19**
Santa Barbara	**Cat Canyon**	**9/10/02**	**6**	**15**

2002 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	7/25/02	6	5	9.00	0.71	1.80	0.45
black and yellow rockfish	9/26/02	3	2	6.50	2.12	1.50	0.71
black surfperch, adult	7/25/02	6	5	0.00	0.00	0.00	0.00
black surfperch, adult	9/26/02	3	3	9.00	0.00	1.00	0.00
black surfperch, all	7/25/02	6	6	0.00	0.00	0.00	0.00
black surfperch, all	9/26/02	3	3	9.00	0.00	1.67	0.58
black surfperch, juvenile	7/25/02	6	5	0.00	0.00	0.00	0.00
black surfperch, juvenile	9/26/02	3	3	5.33	4.73	1.00	1.00
blackeye goby	7/25/02	6	6	7.33	1.86	1.33	0.52
blackeye goby	9/26/02	3	3	8.33	1.53	1.67	0.58
blacksmith, adult	7/25/02	6	5	0.00	0.00	0.00	0.00
blacksmith, adult	9/26/02	3	3	0.00	0.00	0.00	0.00
blacksmith, all	7/25/02	6	6	0.00	0.00	0.00	0.00
blacksmith, all	9/26/02	3	3	0.00	0.00	0.00	0.00
blacksmith, juvenile	7/25/02	6	5	0.00	0.00	0.00	0.00
blacksmith, juvenile	9/26/02	3	3	0.00	0.00	0.00	0.00
blue rockfish, adult	7/25/02	6	5	7.20	4.38	1.80	1.10
blue rockfish, adult	9/26/02	3	3	9.33	0.58	2.33	0.58
blue rockfish, all	7/25/02	6	6	7.67	4.08	2.00	1.10
blue rockfish, all	9/26/02	3	3	9.33	0.58	2.67	0.58
blue rockfish, juvenile	7/25/02	6	5	1.80	4.02	0.40	0.89
blue rockfish, juvenile	9/26/02	3	3	7.00	1.73	1.67	0.58
blue-banded goby	7/25/02	6	6	0.00	0.00	0.00	0.00
blue-banded goby	9/26/02	3	3	0.00	0.00	0.00	0.00
cabezon	9/26/02	3	1	5.00		1.00	
California sheephead,	7/25/02	6	6	4.17	4.75	0.83	0.98
California sheephead,	9/26/02	3	3	9.00	1.00	1.67	0.58
California sheephead,	7/25/02	6	6	0.00	0.00	0.00	0.00
California sheephead,	9/26/02	3	3	0.00	0.00	0.00	0.00
California sheephead,	7/25/02	6	6	0.00	0.00	0.00	0.00
California sheephead,	9/26/02	3	3	0.00	0.00	0.00	0.00
copper rockfish	7/25/02	6	6	8.17	1.47	1.67	0.52
copper rockfish	9/26/02	3	3	9.33	1.15	1.67	0.58
garibaldi, adult	7/25/02	6	6	0.00	0.00	0.00	0.00
garibaldi, adult	9/26/02	3	3	0.00	0.00	0.00	0.00
garibaldi, juvenile	7/25/02	6	6	0.00	0.00	0.00	0.00
garibaldi, juvenile	9/26/02	3	3	0.00	0.00	0.00	0.00
gopher rockfish	7/25/02	6	4	8.00	1.15	1.50	0.58
gopher rockfish	9/26/02	3	1	10.00		2.00	
island kelpfish	7/25/02	6	6	0.00	0.00	0.00	0.00
island kelpfish	9/26/02	3	3	0.00	0.00	0.00	0.00
kelp bass, adult	7/25/02	6	5	0.00	0.00	0.00	0.00
kelp bass, adult	9/26/02	3	3	0.00	0.00	0.00	0.00
kelp bass, calico bass, all	7/25/02	6	6	0.00	0.00	0.00	0.00
kelp bass, calico bass, all	9/26/02	3	3	0.00	0.00	0.00	0.00
kelp bass, juvenile	7/25/02	6	5	0.00	0.00	0.00	0.00
kelp bass, juvenile	9/26/02	3	3	0.00	0.00	0.00	0.00
kelp rockfish, adult	7/25/02	6	5	8.20	1.64	2.00	0.00
kelp rockfish, adult	9/26/02	3	3	9.33	0.58	2.00	0.00
kelp rockfish, all	7/25/02	6	6	8.33	1.51	2.17	0.41
kelp rockfish, all	9/26/02	3	3	9.67	0.58	2.33	0.58
kelp rockfish, juvenile	7/25/02	6	5	0.00	0.00	0.00	0.00
kelp rockfish, juvenile	9/26/02	3	3	3.33	5.77	0.67	1.15
kelp surfperch	9/26/02	3	2	8.00	2.83	2.50	0.71

kelpfish spp.	7/25/02	**6**	**1**	**10.00**		**1.00**	
lingcod	7/25/02	**6**	**5**	**7.20**	**1.48**	**1.60**	**0.55**
lingcod	9/26/02	**3**	**2**	**8.50**	**2.12**	**1.00**	**0.00**
olive rockfish, adult	7/25/02	**6**	**5**	**1.80**	**4.02**	**0.40**	**0.89**
olive rockfish, adult	9/26/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
olive rockfish, all	7/25/02	**6**	**6**	**3.17**	**4.92**	**0.50**	**0.84**
olive rockfish, all	9/26/02	**3**	**3**	**3.33**	**2.89**	**0.67**	**0.58**
olive/yellowtail rockfish,	7/25/02	**6**	**5**	**2.00**	**4.47**	**0.20**	**0.45**
olive/yellowtail rockfish,	9/26/02	**3**	**3**	**3.33**	**2.89**	**0.67**	**0.58**
opaleye, adult	7/25/02	**6**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, adult	9/26/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, all	7/25/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, all	9/26/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, juvenile	7/25/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, juvenile	9/26/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
painted greenling	7/25/02	**6**	**6**	**9.17**	**1.33**	**1.83**	**0.41**
painted greenling	9/26/02	**3**	**3**	**9.00**	**1.00**	**2.00**	**0.00**
pile surfperch, adult	7/25/02	**6**	**5**	**1.20**	**2.68**	**0.20**	**0.45**
pile surfperch, adult	9/26/02	**3**	**3**	**5.67**	**4.93**	**1.00**	**1.00**
pile surfperch, all	7/25/02	**6**	**6**	**1.00**	**2.45**	**0.17**	**0.41**
pile surfperch, all	9/26/02	**3**	**3**	**9.00**	**1.00**	**2.00**	**0.00**
pile surfperch, juvenile	7/25/02	**6**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
pile surfperch, juvenile	9/26/02	**3**	**3**	**8.33**	**1.53**	**1.67**	**0.58**
rainbow surfperch	7/25/02	**6**	**1**	**10.00**		**1.00**	
rainbow surfperch	9/26/02	**3**	**2**	**6.50**	**0.71**	**2.00**	**0.00**
rock wrasse, female	7/25/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
rock wrasse, female	9/26/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
rock wrasse, male	7/25/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
rock wrasse, male	9/26/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
rockfish spp., juvenile	7/25/02	**6**	**5**	**9.40**	**0.55**	**3.00**	**0.71**
rockfish spp., juvenile	9/26/02	**3**	**3**	**7.33**	**2.52**	**2.67**	**0.58**
senorita, adult	7/25/02	**6**	**5**	**1.60**	**3.58**	**0.40**	**0.89**
senorita, adult	9/26/02	**3**	**3**	**7.33**	**2.31**	**3.00**	**0.00**
senorita, all	7/25/02	**6**	**6**	**1.33**	**3.27**	**0.33**	**0.82**
senorita, all	9/26/02	**3**	**3**	**7.33**	**2.31**	**3.00**	**0.00**
senorita, juvenile	7/25/02	**6**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, juvenile	9/26/02	**3**	**3**	**1.67**	**2.89**	**0.67**	**1.15**
speckled sanddab	9/26/02	**3**	**1**	**9.00**		**3.00**	
striped surfperch, adult	7/25/02	**6**	**5**	**8.60**	**1.67**	**1.80**	**0.45**
striped surfperch, adult	9/26/02	**3**	**3**	**9.33**	**0.58**	**2.00**	**0.00**
striped surfperch, all	7/25/02	**6**	**6**	**8.83**	**1.60**	**1.83**	**0.41**
striped surfperch, all	9/26/02	**3**	**3**	**10.00**	**0.00**	**2.00**	**0.00**
striped surfperch, juvenile	7/25/02	**6**	**5**	**1.60**	**3.58**	**0.20**	**0.45**
striped surfperch, juvenile	9/26/02	**3**	**3**	**6.67**	**5.77**	**1.33**	**1.15**
treefish, adult	7/25/02	**6**	**6**	**1.00**	**2.45**	**0.17**	**0.41**
treefish, adult	9/26/02	**3**	**3**	**3.00**	**5.20**	**0.33**	**0.58**
treefish, juvenile	7/25/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
treefish, juvenile	9/26/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
tubesnout	7/25/02	**6**	**6**	**9.67**	**0.82**	**4.00**	**0.00**
tubesnout	9/26/02	**3**	**3**	**10.00**	**0.00**	**4.00**	**0.00**
vermillion rockfish	7/25/02	**6**	**4**	**9.50**	**0.58**	**1.00**	**0.00**
vermillion rockfish	9/26/02	**3**	**2**	**9.00**	**0.00**	**1.00**	**0.00**

2002 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	7/11/02	5	5	7.00	2.35	2.00	0.00
black rockfish	7/11/02	5	1	10.00		1.00	
black surfperch, adult	7/11/02	5	5	5.20	5.02	1.00	1.00
black surfperch, all	7/11/02	5	5	5.20	5.02	1.00	1.00
black surfperch, juvenile	7/11/02	5	5	0.00	0.00	0.00	0.00
blackeye goby	7/11/02	5	5	9.80	0.45	3.40	0.55
blacksmith, adult	7/11/02	5	5	3.80	5.22	0.80	1.10
blacksmith, all	7/11/02	5	5	3.80	5.22	0.80	1.10
blacksmith, juvenile	7/11/02	5	5	0.00	0.00	0.00	0.00
blue rockfish, adult	7/11/02	5	5	8.00	4.47	1.80	1.10
blue rockfish, all	7/11/02	5	5	9.80	0.45	2.40	0.55
blue rockfish, juvenile	7/11/02	5	5	8.80	0.45	2.40	0.55
blue-banded goby	7/11/02	5	5	0.00	0.00	0.00	0.00
cabezon	7/11/02	5	2	6.50	2.12	1.50	0.71
California sheephead,	7/11/02	5	5	6.80	4.32	1.20	0.84
California sheephead,	7/11/02	5	5	0.00	0.00	0.00	0.00
California sheephead,	7/11/02	5	5	2.00	4.47	0.20	0.45
copper rockfish	7/11/02	5	5	7.60	2.51	1.20	0.45
coralline sculpin	7/11/02	5	2	8.50	2.12	2.00	0.00
garibaldi, adult	7/11/02	5	5	0.00	0.00	0.00	0.00
garibaldi, juvenile	7/11/02	5	5	0.00	0.00	0.00	0.00
island kelpfish	7/11/02	5	5	1.20	2.68	0.20	0.45
kelp bass, adult	7/11/02	5	5	0.00	0.00	0.00	0.00
kelp bass, calico bass, all	7/11/02	5	5	0.00	0.00	0.00	0.00
kelp bass, juvenile	7/11/02	5	5	0.00	0.00	0.00	0.00
kelp rockfish, adult	7/11/02	5	5	9.20	0.45	2.00	0.00
kelp rockfish, all	7/11/02	5	5	9.20	0.45	2.00	0.00
kelp rockfish, juvenile	7/11/02	5	5	0.00	0.00	0.00	0.00
kelpfish spp.	7/11/02	5	2	8.00	2.83	2.00	0.00
lingcod	7/11/02	5	5	8.00	1.87	2.00	0.00
olive rockfish, adult	7/11/02	5	5	1.00	2.24	0.20	0.45
olive rockfish, all	7/11/02	5	5	5.80	3.27	2.20	1.30
olive/yellowtail rockfish,	7/11/02	5	5	5.80	3.27	2.20	1.30
opaleye, adult	7/11/02	5	5	0.00	0.00	0.00	0.00
opaleye, all	7/11/02	5	5	0.00	0.00	0.00	0.00
opaleye, juvenile	7/11/02	5	5	0.00	0.00	0.00	0.00
painted greenling	7/11/02	5	5	9.40	0.55	2.00	0.00
pile surfperch, adult	7/11/02	5	5	3.20	4.44	0.80	1.10
pile surfperch, all	7/11/02	5	5	3.20	4.44	0.80	1.10
pile surfperch, juvenile	7/11/02	5	5	0.00	0.00	0.00	0.00
rock wrasse, female	7/11/02	5	5	0.00	0.00	0.00	0.00
rock wrasse, male	7/11/02	5	5	0.00	0.00	0.00	0.00
rockfish spp., juvenile	7/11/02	5	4	9.00	1.41	3.75	0.50
senorita, adult	7/11/02	5	5	7.60	0.55	2.20	0.45
senorita, all	7/11/02	5	5	7.60	0.55	2.20	0.45
senorita, juvenile	7/11/02	5	5	0.00	0.00	0.00	0.00
snubnose sculpin	7/11/02	5	4	8.75	1.89	2.25	0.50
striped surfperch, adult	7/11/02	5	5	7.00	4.06	1.60	0.89
striped surfperch, all	7/11/02	5	5	9.80	0.45	2.80	0.45
striped surfperch, juvenile	7/11/02	5	5	9.80	0.45	2.20	0.45
stripedfin ronquil	7/11/02	5	1	9.00		2.00	
swell shark	7/11/02	5	2	8.00	1.41	1.00	0.00
treefish, adult	7/11/02	5	5	3.00	4.12	0.40	0.55
treefish, juvenile	7/11/02	5	5	0.00	0.00	0.00	0.00
tubesnout	7/11/02	5	1	8.00		2.00	

Santa Rosa Island - Johnson's Lee North

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black and yellow rockfish	7/23/02	**6**	**5**	**8.80**	**1.10**	**2.00**	**0.00**
black and yellow rockfish	9/24/02	**3**	**2**	**7.50**	**2.12**	**2.00**	**0.00**
black surfperch, adult	7/23/02	**6**	**5**	**10.00**	**0.00**	**3.00**	**0.00**
black surfperch, adult	9/24/02	**3**	**3**	**10.00**	**0.00**	**3.00**	**0.00**
black surfperch, all	7/23/02	**6**	**6**	**10.00**	**0.00**	**3.00**	**0.00**
black surfperch, all	9/24/02	**3**	**3**	**10.00**	**0.00**	**3.00**	**0.00**
black surfperch, juvenile	7/23/02	**6**	**5**	**2.00**	**4.47**	**0.40**	**0.89**
black surfperch, juvenile	9/24/02	**3**	**3**	**6.33**	**5.51**	**1.33**	**1.15**
blackeye goby	7/23/02	**6**	**6**	**8.67**	**1.37**	**2.33**	**0.52**
blackeye goby	9/24/02	**3**	**3**	**5.67**	**4.93**	**1.67**	**1.53**
blacksmith, adult	7/23/02	**6**	**5**	**10.00**	**0.00**	**3.20**	**0.45**
blacksmith, adult	9/24/02	**3**	**3**	**9.00**	**1.00**	**3.00**	**1.00**
blacksmith, all	7/23/02	**6**	**6**	**10.00**	**0.00**	**3.17**	**0.41**
blacksmith, all	9/24/02	**3**	**3**	**9.00**	**1.00**	**3.00**	**1.00**
blacksmith, juvenile	7/23/02	**6**	**5**	**3.20**	**4.60**	**0.60**	**0.89**
blacksmith, juvenile	9/24/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, adult	7/23/02	**6**	**5**	**7.00**	**4.24**	**1.80**	**1.10**
blue rockfish, adult	9/24/02	**3**	**3**	**6.33**	**5.51**	**1.00**	**1.00**
blue rockfish, all	7/23/02	**6**	**6**	**7.67**	**3.83**	**1.83**	**0.98**
blue rockfish, all	9/24/02	**3**	**3**	**8.67**	**1.53**	**2.67**	**0.58**
blue rockfish, juvenile	7/23/02	**6**	**5**	**7.40**	**1.82**	**1.80**	**0.84**
blue rockfish, juvenile	9/24/02	**3**	**3**	**8.00**	**1.00**	**2.67**	**0.58**
blue-banded goby	7/23/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
blue-banded goby	9/24/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
cabezon	9/24/02	**3**	**1**	**10.00**		**1.00**	
California sheephead,	7/23/02	**6**	**6**	**10.00**	**0.00**	**3.00**	**0.00**
California sheephead,	9/24/02	**3**	**3**	**10.00**	**0.00**	**2.33**	**0.58**
California sheephead,	7/23/02	**6**	**6**	**1.50**	**3.67**	**0.33**	**0.82**
California sheephead,	9/24/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	7/23/02	**6**	**6**	**5.00**	**2.90**	**1.00**	**0.63**
California sheephead,	9/24/02	**3**	**3**	**2.33**	**4.04**	**0.33**	**0.58**
garibaldi, adult	7/23/02	**6**	**6**	**8.50**	**1.05**	**2.17**	**0.41**
garibaldi, adult	9/24/02	**3**	**3**	**8.67**	**0.58**	**2.00**	**0.00**
garibaldi, juvenile	7/23/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
garibaldi, juvenile	9/24/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
giant kelpfish	7/23/02	**6**	**1**	**7.00**		**2.00**	
island kelpfish	7/23/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
island kelpfish	9/24/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
jack mackerel	7/23/02	**6**	**4**	**5.50**	**1.00**	**3.25**	**0.50**
kelp bass, adult	7/23/02	**6**	**5**	**2.00**	**2.74**	**0.40**	**0.55**
kelp bass, adult	9/24/02	**3**	**3**	**2.67**	**4.62**	**0.67**	**1.15**
kelp bass, calico bass, all	7/23/02	**6**	**6**	**1.67**	**2.58**	**0.33**	**0.52**
kelp bass, calico bass, all	9/24/02	**3**	**3**	**2.67**	**4.62**	**0.67**	**1.15**
kelp bass, juvenile	7/23/02	**6**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
kelp bass, juvenile	9/24/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, adult	7/23/02	**6**	**5**	**9.80**	**0.45**	**3.00**	**0.00**
kelp rockfish, adult	9/24/02	**3**	**3**	**8.33**	**1.53**	**2.33**	**1.15**
kelp rockfish, all	7/23/02	**6**	**6**	**9.83**	**0.41**	**3.00**	**0.00**
kelp rockfish, all	9/24/02	**3**	**3**	**8.33**	**1.53**	**2.33**	**1.15**
kelp rockfish, juvenile	7/23/02	**6**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, juvenile	9/24/02	**3**	**3**	**2.67**	**4.62**	**0.67**	**1.15**
kelp surfperch	7/23/02	**6**	**1**	**10.00**		**2.00**	
kelp surfperch	9/24/02	**3**	**3**	**7.00**	**0.00**	**2.33**	**0.58**
kelpfish spp.	7/23/02	**6**	**1**	**8.00**		**1.00**	

lingcod	7/23/02	6	2	6.50	0.71	1.00	0.00
lingcod	9/24/02	3	1	10.00		1.00	
ocean whitefish	7/23/02	6	1	5.00		2.00	
olive rockfish, adult	7/23/02	6	5	10.00	0.00	2.60	0.55
olive rockfish, adult	9/24/02	3	3	8.33	1.53	2.33	1.15
olive rockfish, all	7/23/02	6	6	10.00	0.00	2.83	0.41
olive rockfish, all	9/24/02	3	3	8.67	1.53	3.00	1.00
olive/yellowtail rockfish,	7/23/02	6	5	5.40	5.08	1.20	1.10
olive/yellowtail rockfish,	9/24/02	3	3	7.67	1.15	2.67	1.53
opaleye, adult	7/23/02	6	5	2.20	3.03	0.40	0.55
opaleye, adult	9/24/02	3	3	8.67	1.53	3.00	1.00
opaleye, all	7/23/02	6	6	3.33	3.88	0.83	1.17
opaleye, all	9/24/02	3	3	8.67	1.53	3.00	1.00
opaleye, juvenile	7/23/02	6	5	0.00	0.00	0.00	0.00
opaleye, juvenile	9/24/02	3	3	0.00	0.00	0.00	0.00
Pacific sardine	7/23/02	6	1	6.00		4.00	
Pacific sardine	9/24/02	3	2	6.00	1.41	3.00	0.00
painted greenling	7/23/02	6	6	9.17	0.41	2.50	0.55
painted greenling	9/24/02	3	3	8.33	1.15	2.33	0.58
pile surfperch, adult	7/23/02	6	5	7.60	1.14	1.80	0.45
pile surfperch, adult	9/24/02	3	3	8.67	1.15	2.00	0.00
pile surfperch, all	7/23/02	6	6	6.33	3.27	1.50	0.84
pile surfperch, all	9/24/02	3	3	8.67	1.15	2.00	0.00
pile surfperch, juvenile	7/23/02	6	5	0.00	0.00	0.00	0.00
pile surfperch, juvenile	9/24/02	3	3	2.67	4.62	0.67	1.15
rainbow surfperch	9/24/02	3	2	9.50	0.71	2.50	0.71
rock wrasse, female	7/23/02	6	6	0.00	0.00	0.00	0.00
rock wrasse, female	9/24/02	3	3	0.00	0.00	0.00	0.00
rock wrasse, male	7/23/02	6	6	0.00	0.00	0.00	0.00
rock wrasse, male	9/24/02	3	3	0.00	0.00	0.00	0.00
rockfish spp., juvenile	7/23/02	6	1	9.00		2.00	
rockfish spp., juvenile	9/24/02	3	1	6.00		1.00	
rubberlip surfperch	7/23/02	6	3	7.00	1.00	2.00	0.00
rubberlip surfperch	9/24/02	3	2	8.00	0.00	2.00	0.00
sculpin spp.	7/23/02	6	1	8.00		2.00	
senorita, adult	7/23/02	6	5	2.00	2.74	0.80	1.10
senorita, adult	9/24/02	3	3	6.00	1.00	1.67	0.58
senorita, all	7/23/02	6	6	1.67	2.58	0.67	1.03
senorita, all	9/24/02	3	3	6.00	1.00	1.67	0.58
senorita, juvenile	7/23/02	6	5	0.00	0.00	0.00	0.00
senorita, juvenile	9/24/02	3	3	0.00	0.00	0.00	0.00
snubnose sculpin	7/23/02	6	2	8.50	0.71	1.50	0.71
striped surfperch, adult	7/23/02	6	5	9.60	0.89	2.80	0.45
striped surfperch, adult	9/24/02	3	3	9.67	0.58	3.00	0.00
striped surfperch, all	7/23/02	6	6	9.67	0.82	2.83	0.41
striped surfperch, all	9/24/02	3	3	9.67	0.58	3.00	0.00
striped surfperch, juvenile	7/23/02	6	5	1.80	4.02	0.40	0.89
striped surfperch, juvenile	9/24/02	3	3	3.33	5.77	0.67	1.15
top smelt	7/23/02	6	2	6.00	1.41	2.00	0.00
top smelt	9/24/02	3	2	9.50	0.71	3.50	0.71
treefish, adult	7/23/02	6	6	4.17	4.58	0.83	0.98
treefish, adult	9/24/02	3	3	2.00	3.46	0.33	0.58
treefish, juvenile	7/23/02	6	6	0.00	0.00	0.00	0.00
treefish, juvenile	9/24/02	3	3	0.00	0.00	0.00	0.00

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	7/23/02	7	2	7.00	2.83	1.50	0.71
black and yellow rockfish	9/24/02	4	2	8.00	2.83	1.50	0.71
black surfperch, adult	7/23/02	7	6	9.50	0.55	2.17	0.41
black surfperch, adult	9/24/02	4	4	10.00	0.00	2.75	0.50
black surfperch, all	7/23/02	7	7	9.57	0.53	2.29	0.49
black surfperch, all	9/24/02	4	4	10.00	0.00	2.75	0.50
black surfperch, juvenile	7/23/02	7	6	1.17	2.86	0.33	0.82
black surfperch, juvenile	9/24/02	4	4	8.75	1.89	1.75	0.50
blackeye goby	7/23/02	7	7	10.00	0.00	2.86	0.38
blackeye goby	9/24/02	4	4	9.25	0.96	2.25	0.50
blacksmith, adult	7/23/02	7	6	8.83	0.98	3.00	0.00
blacksmith, adult	9/24/02	4	4	7.75	0.50	1.50	0.58
blacksmith, all	7/23/02	7	7	8.57	1.13	3.00	0.00
blacksmith, all	9/24/02	4	4	7.75	0.50	1.50	0.58
blacksmith, juvenile	7/23/02	7	6	0.00	0.00	0.00	0.00
blacksmith, juvenile	9/24/02	4	4	0.00	0.00	0.00	0.00
blue rockfish, adult	7/23/02	7	6	8.83	0.41	2.33	0.52
blue rockfish, adult	9/24/02	4	4	8.00	1.15	3.00	0.00
blue rockfish, all	7/23/02	7	7	9.43	0.53	3.00	0.00
blue rockfish, all	9/24/02	4	4	8.50	1.00	3.00	0.00
blue rockfish, juvenile	7/23/02	7	6	7.83	3.87	2.50	1.22
blue rockfish, juvenile	9/24/02	4	4	6.00	4.08	1.75	1.26
blue-banded goby	7/23/02	7	7	0.00	0.00	0.00	0.00
blue-banded goby	9/24/02	4	4	0.00	0.00	0.00	0.00
cabezon	9/24/02	4	1	7.00		1.00	
California sheephead,	7/23/02	7	7	9.00	1.41	2.43	0.53
California sheephead,	9/24/02	4	4	7.50	5.00	1.50	1.00
California sheephead,	7/23/02	7	7	0.00	0.00	0.00	0.00
California sheephead,	9/24/02	4	4	0.00	0.00	0.00	0.00
California sheephead,	7/23/02	7	7	1.14	3.02	0.14	0.38
California sheephead,	9/24/02	4	4	0.00	0.00	0.00	0.00
copper rockfish	7/23/02	7	1	7.00		2.00	
coralline sculpin	9/24/02	4	1	10.00		2.00	
garibaldi, adult	7/23/02	7	7	0.00	0.00	0.00	0.00
garibaldi, adult	9/24/02	4	4	0.00	0.00	0.00	0.00
garibaldi, juvenile	7/23/02	7	7	0.00	0.00	0.00	0.00
garibaldi, juvenile	9/24/02	4	4	0.00	0.00	0.00	0.00
gopher rockfish	7/23/02	7	5	7.60	0.89	1.00	0.00
halfmoon	9/24/02	4	1	6.00		1.00	
island kelpfish	7/23/02	7	6	0.00	0.00	0.00	0.00
island kelpfish	9/24/02	4	4	0.00	0.00	0.00	0.00
jack mackerel	7/23/02	7	2	9.50	0.71	3.50	0.71
jack mackerel	9/24/02	4	3	5.00	0.00	3.67	0.58
kelp bass, adult	7/23/02	7	6	5.00	4.15	0.83	0.75
kelp bass, adult	9/24/02	4	4	2.00	4.00	0.50	1.00
kelp bass, calico bass, all	7/23/02	7	7	4.29	4.23	0.71	0.76
kelp bass, calico bass, all	9/24/02	4	4	2.00	4.00	0.50	1.00
kelp bass, juvenile	7/23/02	7	6	0.00	0.00	0.00	0.00
kelp bass, juvenile	9/24/02	4	4	0.00	0.00	0.00	0.00
kelp rockfish, adult	7/23/02	7	6	9.33	0.52	2.50	0.55
kelp rockfish, adult	9/24/02	4	4	9.00	0.82	2.00	0.82
kelp rockfish, all	7/23/02	7	7	9.43	0.53	2.57	0.53
kelp rockfish, all	9/24/02	4	4	9.00	0.82	2.00	0.82
kelp rockfish, juvenile	7/23/02	7	6	0.00	0.00	0.00	0.00

kelp rockfish, juvenile	9/24/02	4	4	0.00	0.00	0.00	0.00
kelp surfperch	9/24/02	4	3	5.00	0.00	2.33	0.58
ocean whitefish	7/23/02	7	4	6.50	1.29	1.50	0.58
ocean whitefish	9/24/02	4	2	7.00	2.83	1.00	0.00
olive rockfish, adult	7/23/02	7	6	6.67	3.39	1.33	0.82
olive rockfish, adult	9/24/02	4	4	7.00	4.76	1.00	0.82
olive rockfish, all	7/23/02	7	7	9.00	0.82	2.29	0.49
olive rockfish, all	9/24/02	4	4	9.75	0.50	2.50	0.58
olive/yellowtail rockfish,	7/23/02	7	6	7.00	3.58	1.83	1.17
olive/yellowtail rockfish,	9/24/02	4	4	9.00	1.41	2.25	0.50
opaleye, adult	7/23/02	7	6	0.00	0.00	0.00	0.00
opaleye, adult	9/24/02	4	4	3.50	4.04	1.00	1.15
opaleye, all	7/23/02	7	7	1.43	3.78	0.29	0.76
opaleye, all	9/24/02	4	4	3.50	4.04	1.00	1.15
opaleye, juvenile	7/23/02	7	6	0.00	0.00	0.00	0.00
opaleye, juvenile	9/24/02	4	4	0.00	0.00	0.00	0.00
Pacific sardine	9/24/02	4	3	6.00	1.73	3.67	0.58
painted greenling	7/23/02	7	7	9.29	1.50	2.29	0.49
painted greenling	9/24/02	4	4	9.00	1.41	2.25	0.50
pile surfperch, adult	7/23/02	7	6	7.33	3.72	1.50	0.84
pile surfperch, adult	9/24/02	4	4	8.75	0.96	2.00	0.00
pile surfperch, all	7/23/02	7	7	6.29	4.39	1.29	0.95
pile surfperch, all	9/24/02	4	4	9.50	1.00	2.00	0.00
pile surfperch, juvenile	7/23/02	7	6	0.00	0.00	0.00	0.00
pile surfperch, juvenile	9/24/02	4	4	8.00	2.31	1.75	0.50
rainbow surfperch	9/24/02	4	4	10.00	0.00	2.75	0.50
rock wrasse, female	7/23/02	7	7	0.00	0.00	0.00	0.00
rock wrasse, female	9/24/02	4	4	0.00	0.00	0.00	0.00
rock wrasse, male	7/23/02	7	7	0.00	0.00	0.00	0.00
rock wrasse, male	9/24/02	4	4	0.00	0.00	0.00	0.00
rockfish spp., juvenile	7/23/02	7	6	8.00	0.63	2.17	0.41
rubberlip surfperch	7/23/02	7	5	7.80	2.59	2.40	0.55
rubberlip surfperch	9/24/02	4	3	8.33	0.58	2.67	0.58
sculpin spp.	7/23/02	7	1	7.00		1.00	
senorita, adult	7/23/02	7	6	0.00	0.00	0.00	0.00
senorita, adult	9/24/02	4	4	9.75	0.50	3.50	0.58
senorita, all	7/23/02	7	7	1.14	3.02	0.43	1.13
senorita, all	9/24/02	4	4	9.75	0.50	3.50	0.58
senorita, juvenile	7/23/02	7	6	0.00	0.00	0.00	0.00
senorita, juvenile	9/24/02	4	4	0.00	0.00	0.00	0.00
snubnose sculpin	7/23/02	7	1	7.00		1.00	
striped surfperch, adult	7/23/02	7	6	9.83	0.41	2.17	0.41
striped surfperch, adult	9/24/02	4	4	9.50	1.00	2.75	0.50
striped surfperch, all	7/23/02	7	7	9.86	0.38	2.29	0.49
striped surfperch, all	9/24/02	4	4	9.50	1.00	3.00	0.00
striped surfperch, juvenile	7/23/02	7	6	1.33	3.27	0.33	0.82
striped surfperch, juvenile	9/24/02	4	4	6.75	4.57	1.50	1.00
swell shark	7/23/02	7	6	7.67	0.82	1.50	0.55
top smelt	7/23/02	7	1	10.00		2.00	
top smelt	9/24/02	4	2	6.00	1.41	3.50	0.71
treefish, adult	7/23/02	7	7	2.00	3.42	0.29	0.49
treefish, adult	9/24/02	4	4	0.00	0.00	0.00	0.00
treefish, juvenile	7/23/02	7	7	0.00	0.00	0.00	0.00
treefish, juvenile	9/24/02	4	4	0.00	0.00	0.00	0.00
tubesnout	7/23/02	7	2	7.50	0.71	3.50	0.71
tubesnout	9/24/02	4	1	6.00		4.00	
vermillion rockfish,	7/23/02	7	4	7.50	0.58	1.25	0.50
vermillion rockfish,	9/24/02	4	2	6.50	0.71	1.00	0.00

Santa Rosa Island - Rodes Reef

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black and yellow rockfish	7/10/02	**4**	**4**	**8.00**	**0.82**	**1.75**	**0.50**
black surfperch, adult	7/10/02	**4**	**4**	**8.75**	**0.50**	**2.00**	**0.00**
black surfperch, all	7/10/02	**4**	**4**	**8.75**	**0.50**	**2.00**	**0.00**
black surfperch, juvenile	7/10/02	**4**	**4**	**1.25**	**2.50**	**0.25**	**0.50**
blackeye goby	7/10/02	**4**	**4**	**9.25**	**1.50**	**2.50**	**0.58**
blacksmith, adult	7/10/02	**4**	**4**	**6.25**	**4.27**	**1.50**	**1.00**
blacksmith, all	7/10/02	**4**	**4**	**6.25**	**4.27**	**1.50**	**1.00**
blacksmith, juvenile	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, adult	7/10/02	**4**	**4**	**8.75**	**1.26**	**2.00**	**0.00**
blue rockfish, all	7/10/02	**4**	**4**	**9.75**	**0.50**	**3.00**	**0.00**
blue rockfish, juvenile	7/10/02	**4**	**4**	**9.75**	**0.50**	**2.50**	**0.58**
blue-banded goby	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	7/10/02	**4**	**4**	**9.00**	**0.82**	**2.00**	**0.00**
California sheephead,	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	7/10/02	**4**	**4**	**9.75**	**0.50**	**1.50**	**0.58**
copper rockfish	7/10/02	**4**	**4**	**9.25**	**0.50**	**2.00**	**0.00**
coralline sculpin	7/10/02	**4**	**2**	**6.50**	**2.12**	**1.00**	**0.00**
garibaldi, adult	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
garibaldi, juvenile	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
gopher rockfish	7/10/02	**4**	**2**	**6.00**	**1.41**	**1.00**	**0.00**
gopher/copper rockfish,	7/10/02	**4**	**1**	**5.00**		**1.00**	
island kelpfish	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp bass, adult	7/10/02	**4**	**4**	**4.00**	**4.62**	**0.75**	**0.96**
kelp bass, calico bass, all	7/10/02	**4**	**4**	**4.00**	**4.62**	**1.00**	**1.15**
kelp bass, juvenile	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, adult	7/10/02	**4**	**4**	**7.75**	**0.50**	**2.00**	**0.00**
kelp rockfish, all	7/10/02	**4**	**4**	**7.75**	**0.50**	**2.00**	**0.00**
kelp rockfish, juvenile	7/10/02	**4**	**4**	**2.00**	**4.00**	**0.50**	**1.00**
lingcod	7/10/02	**4**	**1**	**7.00**		**1.00**	
olive rockfish, adult	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
olive rockfish, all	7/10/02	**4**	**4**	**6.00**	**4.55**	**1.50**	**1.29**
olive/yellowtail rockfish,	7/10/02	**4**	**4**	**7.25**	**4.86**	**2.00**	**1.41**
opaleye, adult	7/10/02	**4**	**4**	**2.50**	**5.00**	**0.75**	**1.50**
opaleye, all	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, juvenile	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
painted greenling	7/10/02	**4**	**4**	**9.75**	**0.50**	**3.00**	**0.00**
pile surfperch, adult	7/10/02	**4**	**4**	**7.25**	**0.50**	**1.50**	**0.58**
pile surfperch, all	7/10/02	**4**	**4**	**7.75**	**0.96**	**2.00**	**0.00**
pile surfperch, juvenile	7/10/02	**4**	**4**	**3.50**	**4.36**	**0.50**	**0.58**
rainbow surfperch	7/10/02	**4**	**2**	**6.00**	**0.00**	**2.00**	**0.00**
rock wrasse, female	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
rock wrasse, male	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
rockfish spp., juvenile	7/10/02	**4**	**2**	**8.00**	**1.41**	**2.00**	**0.00**
rubberlip surfperch	7/10/02	**4**	**2**	**7.50**	**0.71**	**1.00**	**0.00**
senorita, adult	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, all	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, juvenile	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
snubnose sculpin	7/10/02	**4**	**2**	**7.00**	**2.83**	**1.50**	**0.71**
striped surfperch, adult	7/10/02	**4**	**4**	**6.50**	**4.51**	**1.25**	**0.96**
striped surfperch, all	7/10/02	**4**	**4**	**6.75**	**4.57**	**1.50**	**1.00**
striped surfperch, juvenile	7/10/02	**4**	**4**	**6.25**	**4.19**	**1.50**	**1.00**
stripedfin ronquil	7/10/02	**4**	**3**	**9.33**	**0.58**	**1.67**	**0.58**
treefish, adult	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
treefish, juvenile	7/10/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
vermillion rockfish	7/10/02	**4**	**2**	**9.00**	**0.00**	**1.50**	**0.71**

Santa Cruz Island - Gull Island South

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black and yellow rockfish	8/21/02	7	2	9.00	1.41	1.50	0.71
black and yellow rockfish	9/11/02	4	3	7.00	1.00	1.33	0.58
black surfperch, adult	8/21/02	7	7	6.29	4.50	1.00	0.82
black surfperch, adult	9/11/02	4	3	8.00	1.00	1.67	0.58
black surfperch, all	8/21/02	7	7	7.57	3.60	1.29	0.76
black surfperch, all	9/11/02	4	4	8.25	0.96	2.00	0.82
black surfperch, juvenile	8/21/02	7	7	4.71	4.68	0.86	0.90
black surfperch, juvenile	9/11/02	4	3	5.33	4.62	1.00	1.00
blackeye goby	8/21/02	7	7	9.29	0.95	2.43	0.53
blackeye goby	9/11/02	4	4	9.25	0.96	2.75	0.50
blacksmith, adult	8/21/02	7	7	4.57	3.55	1.14	1.07
blacksmith, adult	9/11/02	4	2	7.00	0.00	2.50	0.71
blacksmith, all	8/21/02	7	7	4.57	3.55	1.14	1.07
blacksmith, all	9/11/02	4	4	7.75	0.96	2.50	0.58
blacksmith, juvenile	8/21/02	7	7	0.00	0.00	0.00	0.00
blacksmith, juvenile	9/11/02	4	2	0.00	0.00	0.00	0.00
blue rockfish, adult	8/21/02	7	7	9.71	0.49	2.86	0.38
blue rockfish, adult	9/11/02	4	4	10.00	0.00	2.75	0.50
blue rockfish, all	8/21/02	7	7	9.86	0.38	3.00	0.58
blue rockfish, all	9/11/02	4	4	10.00	0.00	3.00	0.00
blue rockfish, juvenile	8/21/02	7	7	8.29	3.73	2.43	1.27
blue rockfish, juvenile	9/11/02	4	4	10.00	0.00	3.00	0.00
blue-banded goby	8/21/02	7	7	0.00	0.00	0.00	0.00
blue-banded goby	9/11/02	4	4	0.00	0.00	0.00	0.00
brown rockfish	9/11/02	4	2	5.00	0.00	1.00	0.00
cabezon	8/21/02	7	2	10.00	0.00	1.00	0.00
cabezon	9/11/02	4	1	5.00		1.00	
California sheephead,	8/21/02	7	7	8.14	3.63	2.00	1.00
California sheephead,	9/11/02	4	4	9.75	0.50	2.00	0.00
California sheephead,	8/21/02	7	7	0.00	0.00	0.00	0.00
California sheephead,	9/11/02	4	4	2.25	4.50	0.25	0.50
California sheephead,	8/21/02	7	7	2.86	4.88	0.43	0.79
California sheephead,	9/11/02	4	4	6.25	4.79	1.25	0.96
copper rockfish	8/21/02	7	1	10.00		1.00	
garibaldi, adult	8/21/02	7	7	0.00	0.00	0.00	0.00
garibaldi, adult	9/11/02	4	4	3.00	3.56	0.50	0.58
garibaldi, juvenile	8/21/02	7	7	0.00	0.00	0.00	0.00
garibaldi, juvenile	9/11/02	4	4	0.00	0.00	0.00	0.00
giant kelpfish	8/21/02	7	1	5.00		1.00	
gopher rockfish	8/21/02	7	3	8.00	0.00	1.00	0.00
gopher rockfish	9/11/02	4	1	6.00		1.00	
gopher/copper rockfish,	8/21/02	7	1	7.00		2.00	
island kelpfish	8/21/02	7	7	0.00	0.00	0.00	0.00
island kelpfish	9/11/02	4	4	0.00	0.00	0.00	0.00
kelp bass, adult	8/21/02	7	7	3.43	4.43	0.43	0.53
kelp bass, adult	9/11/02	4	2	8.50	0.71	1.00	0.00
kelp bass, calico bass, all	8/21/02	7	7	3.43	4.43	0.43	0.53
kelp bass, calico bass, all	9/11/02	4	4	4.25	4.92	0.50	0.58
kelp bass, juvenile	8/21/02	7	7	0.00	0.00	0.00	0.00
kelp bass, juvenile	9/11/02	4	2	0.00	0.00	0.00	0.00
kelp rockfish, adult	8/21/02	7	7	8.86	0.90	1.71	0.49
kelp rockfish, adult	9/11/02	4	2	4.50	6.36	1.00	1.41
kelp rockfish, all	8/21/02	7	7	8.86	0.90	1.86	0.38
kelp rockfish, all	9/11/02	4	4	4.00	4.90	0.75	0.96

kelp rockfish, juvenile	8/21/02	**7**	**7**	**2.86**	**3.58**	**0.71**	**0.95**
kelp rockfish, juvenile	9/11/02	**4**	**2**	**5.00**	**7.07**	**0.50**	**0.71**
kelp surfperch	8/21/02	**7**	**3**	**8.00**	**2.00**	**2.00**	**1.00**
kelp surfperch	9/11/02	**4**	**4**	**9.50**	**1.00**	**1.75**	**0.50**
kelpfish spp.	8/21/02	**7**	**1**	**9.00**		**1.00**	
lingcod	8/21/02	**7**	**3**	**8.33**	**0.58**	**1.00**	**0.00**
olive rockfish, adult	8/21/02	**7**	**7**	**5.00**	**4.80**	**1.29**	**1.25**
olive rockfish, adult	9/11/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
olive rockfish, all	8/21/02	**7**	**7**	**7.57**	**3.55**	**1.86**	**1.07**
olive rockfish, all	9/11/02	**4**	**4**	**9.50**	**1.00**	**1.75**	**0.50**
olive/yellowtail rockfish,	8/21/02	**7**	**7**	**7.57**	**3.55**	**1.57**	**0.79**
olive/yellowtail rockfish,	9/11/02	**4**	**4**	**9.50**	**1.00**	**1.75**	**0.50**
opaleye, adult	8/21/02	**7**	**7**	**4.29**	**4.03**	**0.71**	**0.76**
opaleye, adult	9/11/02	**4**	**2**	**3.50**	**4.95**	**1.00**	**1.41**
opaleye, all	8/21/02	**7**	**7**	**4.29**	**4.03**	**0.71**	**0.76**
opaleye, all	9/11/02	**4**	**4**	**4.00**	**4.69**	**1.00**	**1.15**
opaleye, juvenile	8/21/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, juvenile	9/11/02	**4**	**2**	**0.00**	**0.00**	**0.00**	**0.00**
painted greenling	8/21/02	**7**	**7**	**9.86**	**0.38**	**2.71**	**0.49**
painted greenling	9/11/02	**4**	**4**	**9.00**	**0.82**	**3.00**	**0.00**
pile surfperch, adult	8/21/02	**7**	**7**	**7.29**	**3.68**	**1.29**	**0.76**
pile surfperch, adult	9/11/02	**4**	**2**	**8.00**	**1.41**	**2.00**	**0.00**
pile surfperch, all	8/21/02	**7**	**7**	**8.57**	**1.81**	**1.57**	**0.53**
pile surfperch, all	9/11/02	**4**	**4**	**8.75**	**1.26**	**1.75**	**0.50**
pile surfperch, juvenile	8/21/02	**7**	**7**	**3.57**	**4.50**	**0.71**	**0.95**
pile surfperch, juvenile	9/11/02	**4**	**2**	**6.00**	**1.41**	**1.50**	**0.71**
rainbow surfperch	9/11/02	**4**	**1**	**8.00**		**1.00**	
rock wrasse, female	8/21/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
rock wrasse, female	9/11/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
rock wrasse, male	8/21/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
rock wrasse, male	9/11/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
rockfish spp., juvenile	8/21/02	**7**	**4**	**8.00**	**2.31**	**1.50**	**0.58**
rockfish spp., juvenile	9/11/02	**4**	**2**	**10.00**	**0.00**	**2.00**	**0.00**
rubberlip surfperch	8/21/02	**7**	**1**	**8.00**		**1.00**	
sculpin spp.	8/21/02	**7**	**1**	**8.00**		**1.00**	
senorita, adult	8/21/02	**7**	**7**	**1.00**	**2.65**	**0.43**	**1.13**
senorita, adult	9/11/02	**4**	**2**	**10.00**	**0.00**	**2.00**	**1.41**
senorita, all	8/21/02	**7**	**7**	**1.00**	**2.65**	**0.43**	**1.13**
senorita, all	9/11/02	**4**	**4**	**7.50**	**5.00**	**1.75**	**1.50**
senorita, juvenile	8/21/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, juvenile	9/11/02	**4**	**2**	**0.00**	**0.00**	**0.00**	**0.00**
snubnose sculpin	8/21/02	**7**	**1**	**6.00**		**1.00**	
striped surfperch, adult	8/21/02	**7**	**7**	**1.43**	**3.78**	**0.14**	**0.38**
striped surfperch, adult	9/11/02	**4**	**2**	**7.00**	**0.00**	**1.50**	**0.71**
striped surfperch, all	8/21/02	**7**	**7**	**1.43**	**3.78**	**0.29**	**0.76**
striped surfperch, all	9/11/02	**4**	**4**	**3.50**	**4.04**	**0.75**	**0.96**
striped surfperch, juvenile	8/21/02	**7**	**7**	**0.86**	**2.27**	**0.29**	**0.76**
striped surfperch, juvenile	9/11/02	**4**	**2**	**0.00**	**0.00**	**0.00**	**0.00**
top smelt	8/21/02	**7**	**1**	**10.00**		**3.00**	
top smelt	9/11/02	**4**	**2**	**10.00**	**0.00**	**3.00**	**0.00**
treefish, adult	8/21/02	**7**	**7**	**6.00**	**4.32**	**1.00**	**0.82**
treefish, adult	9/11/02	**4**	**4**	**7.00**	**1.41**	**1.50**	**0.58**
treefish, juvenile	8/21/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
treefish, juvenile	9/11/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**

Santa Cruz Island - Fry's Harbor

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	8/7/02	**4**	**1**	**9.00**		**1.00**	
black rockfish	8/22/02	**7**	**2**	**5.50**	**0.71**	**1.00**	**0.00**
black surfperch, adult	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, adult	8/22/02	**7**	**7**	**5.29**	**3.82**	**1.14**	**0.90**
black surfperch, all	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, all	8/22/02	**7**	**7**	**5.29**	**3.82**	**1.14**	**0.90**
black surfperch, juvenile	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, juvenile	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
blackeye goby	8/7/02	**4**	**4**	**10.00**	**0.00**	**4.00**	**0.00**
blackeye goby	8/22/02	**7**	**7**	**10.00**	**0.00**	**3.43**	**0.79**
blacksmith, adult	8/7/02	**4**	**4**	**10.00**	**0.00**	**4.00**	**0.00**
blacksmith, adult	8/22/02	**7**	**7**	**10.00**	**0.00**	**3.14**	**0.38**
blacksmith, all	8/7/02	**4**	**4**	**10.00**	**0.00**	**4.00**	**0.00**
blacksmith, all	8/22/02	**7**	**7**	**10.00**	**0.00**	**3.14**	**0.38**
blacksmith, juvenile	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blacksmith, juvenile	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, adult	8/7/02	**4**	**4**	**9.75**	**0.50**	**2.00**	**0.00**
blue rockfish, adult	8/22/02	**7**	**7**	**2.14**	**3.67**	**0.29**	**0.49**
blue rockfish, all	8/7/02	**4**	**4**	**10.00**	**0.00**	**2.50**	**0.58**
blue rockfish, all	8/22/02	**7**	**7**	**6.00**	**4.28**	**1.57**	**1.13**
blue rockfish, juvenile	8/7/02	**4**	**4**	**5.00**	**5.77**	**1.50**	**1.73**
blue rockfish, juvenile	8/22/02	**7**	**7**	**6.00**	**4.28**	**1.57**	**1.13**
blue-banded goby	8/7/02	**4**	**4**	**4.25**	**4.92**	**0.50**	**0.58**
blue-banded goby	8/22/02	**7**	**7**	**2.14**	**3.76**	**0.43**	**0.79**
California sheephead,	8/7/02	**4**	**4**	**9.25**	**0.50**	**2.25**	**0.50**
California sheephead,	8/22/02	**7**	**7**	**8.71**	**0.95**	**1.86**	**0.38**
California sheephead,	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	8/22/02	**7**	**7**	**6.14**	**4.41**	**0.71**	**0.49**
coralline sculpin	8/22/02	**7**	**1**	**5.00**		**1.00**	
fringehead spp.	8/7/02	**4**	**1**	**5.00**		**1.00**	
garibaldi, adult	8/7/02	**4**	**4**	**9.75**	**0.50**	**2.25**	**0.50**
garibaldi, adult	8/22/02	**7**	**7**	**9.29**	**1.50**	**2.00**	**0.00**
garibaldi, juvenile	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
garibaldi, juvenile	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
gopher rockfish	8/7/02	**4**	**2**	**9.00**	**0.00**	**2.00**	**0.00**
gopher rockfish	8/22/02	**7**	**6**	**7.83**	**1.60**	**1.83**	**0.41**
halfmoon	8/7/02	**4**	**4**	**9.00**	**0.82**	**1.75**	**0.50**
halfmoon	8/22/02	**7**	**1**	**6.00**		**2.00**	
island kelpfish	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
island kelpfish	8/22/02	**7**	**7**	**3.29**	**4.27**	**0.43**	**0.53**
kelp bass, adult	8/7/02	**4**	**4**	**10.00**	**0.00**	**2.75**	**0.50**
kelp bass, adult	8/22/02	**7**	**7**	**8.00**	**3.65**	**1.71**	**0.76**
kelp bass, calico bass, all	8/7/02	**4**	**4**	**10.00**	**0.00**	**2.75**	**0.50**
kelp bass, calico bass, all	8/22/02	**7**	**7**	**8.00**	**3.65**	**1.71**	**0.76**
kelp bass, juvenile	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp bass, juvenile	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, adult	8/7/02	**4**	**4**	**9.75**	**0.50**	**1.75**	**0.50**
kelp rockfish, adult	8/22/02	**7**	**7**	**4.86**	**3.39**	**1.00**	**0.82**
kelp rockfish, all	8/7/02	**4**	**4**	**9.75**	**0.50**	**1.75**	**0.50**
kelp rockfish, all	8/22/02	**7**	**7**	**4.86**	**3.39**	**1.00**	**0.82**
kelp rockfish, juvenile	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, juvenile	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**

ocean whitefish	8/22/02	**7**	**1**	**8.00**		**1.00**	
olive rockfish, adult	8/7/02	**4**	**4**	**7.25**	**4.86**	**1.00**	**0.82**
olive rockfish, adult	8/22/02	**7**	**7**	**2.43**	**4.16**	**0.29**	**0.49**
olive rockfish, all	8/7/02	**4**	**4**	**7.25**	**4.86**	**1.00**	**0.82**
olive rockfish, all	8/22/02	**7**	**7**	**2.43**	**4.16**	**0.29**	**0.49**
olive/yellowtail rockfish,	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
olive/yellowtail rockfish,	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, adult	8/7/02	**4**	**4**	**9.75**	**0.50**	**1.75**	**0.50**
opaleye, adult	8/22/02	**7**	**7**	**4.29**	**4.11**	**0.71**	**0.76**
opaleye, all	8/7/02	**4**	**4**	**9.75**	**0.50**	**1.75**	**0.50**
opaleye, all	8/22/02	**7**	**7**	**4.29**	**4.11**	**0.71**	**0.76**
opaleye, juvenile	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, juvenile	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
painted greenling	8/7/02	**4**	**4**	**10.00**	**0.00**	**3.00**	**0.00**
painted greenling	8/22/02	**7**	**7**	**10.00**	**0.00**	**3.00**	**0.00**
pile surfperch, adult	8/7/02	**4**	**4**	**10.00**	**0.00**	**2.75**	**0.50**
pile surfperch, adult	8/22/02	**7**	**7**	**9.43**	**0.53**	**3.00**	**0.00**
pile surfperch, all	8/7/02	**4**	**4**	**10.00**	**0.00**	**2.75**	**0.50**
pile surfperch, all	8/22/02	**7**	**7**	**9.43**	**0.53**	**3.00**	**0.00**
pile surfperch, juvenile	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
pile surfperch, juvenile	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
rock wrasse, female	8/7/02	**4**	**4**	**9.00**	**0.82**	**2.00**	**0.00**
rock wrasse, female	8/22/02	**7**	**7**	**6.00**	**4.24**	**1.14**	**0.90**
rock wrasse, male	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
rock wrasse, male	8/22/02	**7**	**7**	**0.86**	**2.27**	**0.14**	**0.38**
rubberlip surfperch	8/7/02	**4**	**4**	**7.00**	**2.45**	**2.00**	**0.00**
rubberlip surfperch	8/22/02	**7**	**1**	**10.00**		**2.00**	
sculpin spp.	8/22/02	**7**	**1**	**9.00**		**1.00**	
senorita, adult	8/7/02	**4**	**4**	**10.00**	**0.00**	**2.75**	**0.50**
senorita, adult	8/22/02	**7**	**7**	**9.71**	**0.49**	**2.14**	**0.38**
senorita, all	8/7/02	**4**	**4**	**10.00**	**0.00**	**2.75**	**0.50**
senorita, all	8/22/02	**7**	**7**	**9.71**	**0.49**	**2.14**	**0.38**
senorita, juvenile	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, juvenile	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, adult	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, adult	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, all	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, all	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, juvenile	8/7/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, juvenile	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
stripedfin ronquil	8/22/02	**7**	**4**	**7.50**	**1.73**	**1.75**	**0.50**
swell shark	8/7/02	**4**	**1**	**10.00**		**1.00**	
swell shark	8/22/02	**7**	**1**	**8.00**		**1.00**	
treefish, adult	8/7/02	**4**	**4**	**9.50**	**1.00**	**2.25**	**0.50**
treefish, adult	8/22/02	**7**	**7**	**9.29**	**0.49**	**2.14**	**0.38**
treefish, juvenile	8/7/02	**4**	**4**	**5.00**	**3.74**	**0.75**	**0.50**
treefish, juvenile	8/22/02	**7**	**7**	**2.43**	**4.24**	**0.29**	**0.49**
white surfperch	8/22/02	**7**	**3**	**8.33**	**1.53**	**1.67**	**0.58**
zebra goby	8/7/02	**4**	**2**	**9.50**	**0.71**	**2.00**	**0.00**
zebra goby	8/22/02	**7**	**1**	**6.00**		**2.00**	

Santa Cruz Island - Pelican Bay

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black surfperch, adult	8/22/02	**7**	**7**	**10.00**	**0.00**	**3.00**	**0.00**
black surfperch, adult	9/27/02	**4**	**4**	**10.00**	**0.00**	**3.00**	**0.00**
black surfperch, all	8/22/02	**7**	**7**	**10.00**	**0.00**	**3.00**	**0.00**
black surfperch, all	9/27/02	**4**	**4**	**10.00**	**0.00**	**3.00**	**0.00**
black surfperch, juvenile	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, juvenile	9/27/02	**4**	**4**	**2.00**	**4.00**	**0.25**	**0.50**
blackeye goby	8/22/02	**7**	**7**	**10.00**	**0.00**	**3.71**	**0.49**
blackeye goby	9/27/02	**4**	**4**	**10.00**	**0.00**	**4.00**	**0.00**
blacksmith, adult	8/22/02	**7**	**7**	**5.00**	**4.86**	**0.86**	**0.90**
blacksmith, adult	9/27/02	**4**	**4**	**10.00**	**0.00**	**3.50**	**0.58**
blacksmith, all	8/22/02	**7**	**7**	**5.00**	**4.86**	**0.86**	**0.90**
blacksmith, all	9/27/02	**4**	**4**	**10.00**	**0.00**	**3.50**	**0.58**
blacksmith, juvenile	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
blacksmith, juvenile	9/27/02	**4**	**4**	**1.25**	**2.50**	**0.50**	**1.00**
blue rockfish, adult	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, adult	9/27/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, all	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, all	9/27/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, juvenile	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, juvenile	9/27/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue-banded goby	8/22/02	**7**	**7**	**3.71**	**3.68**	**0.86**	**0.90**
blue-banded goby	9/27/02	**4**	**4**	**4.50**	**5.20**	**1.00**	**1.15**
brown rockfish	8/22/02	**7**	**1**	**6.00**		**1.00**	
California scorpionfish	9/27/02	**4**	**1**	**9.00**		**1.00**	
California sheephead,	8/22/02	**7**	**7**	**4.43**	**4.39**	**0.71**	**0.76**
California sheephead,	9/27/02	**4**	**4**	**9.00**	**1.41**	**2.25**	**0.50**
California sheephead,	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	9/27/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	9/27/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
fringehead spp.	8/22/02	**7**	**3**	**9.33**	**1.15**	**1.67**	**0.58**
fringehead spp.	9/27/02	**4**	**2**	**9.00**	**1.41**	**2.00**	**0.00**
garibaldi, adult	8/22/02	**7**	**7**	**9.86**	**0.38**	**2.43**	**0.53**
garibaldi, adult	9/27/02	**4**	**4**	**10.00**	**0.00**	**2.75**	**0.50**
garibaldi, juvenile	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
garibaldi, juvenile	9/27/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
horn shark	9/27/02	**4**	**2**	**9.00**	**1.41**	**1.00**	**0.00**
island kelpfish	8/22/02	**7**	**7**	**1.57**	**2.70**	**0.29**	**0.49**
island kelpfish	9/27/02	**4**	**4**	**7.50**	**1.29**	**1.50**	**0.58**
kelp bass, adult	8/22/02	**7**	**7**	**9.86**	**0.38**	**2.71**	**0.49**
kelp bass, adult	9/27/02	**4**	**4**	**10.00**	**0.00**	**3.00**	**0.00**
kelp bass, calico bass, all	8/22/02	**7**	**7**	**9.86**	**0.38**	**2.71**	**0.49**
kelp bass, calico bass, all	9/27/02	**4**	**4**	**10.00**	**0.00**	**3.00**	**0.00**
kelp bass, juvenile	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
kelp bass, juvenile	9/27/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, adult	8/22/02	**7**	**7**	**7.57**	**3.41**	**1.57**	**0.98**
kelp rockfish, adult	9/27/02	**4**	**4**	**8.75**	**0.96**	**2.25**	**0.50**
kelp rockfish, all	8/22/02	**7**	**7**	**7.57**	**3.41**	**1.57**	**0.98**
kelp rockfish, all	9/27/02	**4**	**4**	**8.75**	**0.96**	**2.25**	**0.50**
kelp rockfish, juvenile	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, juvenile	9/27/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
ocean whitefish	8/22/02	**7**	**1**	**9.00**		**1.00**	
ocean whitefish	9/27/02	**4**	**4**	**9.00**	**2.00**	**2.25**	**0.50**
olive rockfish, adult	8/22/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**

olive rockfish, adult	9/27/02	4	4	2.25	4.50	0.25	0.50
olive rockfish, all	8/22/02	7	7	0.00	0.00	0.00	0.00
olive rockfish, all	9/27/02	4	4	2.25	4.50	0.25	0.50
olive/yellowtail rockfish,	8/22/02	7	7	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	9/27/02	4	4	0.00	0.00	0.00	0.00
opaleye, adult	8/22/02	7	7	2.86	4.88	0.29	0.49
opaleye, adult	9/27/02	4	4	7.25	2.06	1.50	0.58
opaleye, all	8/22/02	7	7	2.86	4.88	0.29	0.49
opaleye, all	9/27/02	4	4	7.25	2.06	1.50	0.58
opaleye, juvenile	8/22/02	7	7	0.00	0.00	0.00	0.00
opaleye, juvenile	9/27/02	4	4	0.00	0.00	0.00	0.00
painted greenling	8/22/02	7	7	9.86	0.38	2.57	0.53
painted greenling	9/27/02	4	4	9.50	0.58	3.00	0.00
pile surfperch, adult	8/22/02	7	7	9.43	0.98	2.86	0.38
pile surfperch, adult	9/27/02	4	4	9.25	0.96	2.00	0.00
pile surfperch, all	8/22/02	7	7	9.43	0.98	2.86	0.38
pile surfperch, all	9/27/02	4	4	9.25	0.96	2.00	0.00
pile surfperch, juvenile	8/22/02	7	7	0.00	0.00	0.00	0.00
pile surfperch, juvenile	9/27/02	4	4	0.00	0.00	0.00	0.00
rock wrasse, female	8/22/02	7	7	0.00	0.00	0.00	0.00
rock wrasse, female	9/27/02	4	4	3.75	4.35	0.50	0.58
rock wrasse, male	8/22/02	7	7	0.86	2.27	0.14	0.38
rock wrasse, male	9/27/02	4	4	7.50	1.73	1.00	0.00
rubberlip surfperch	8/22/02	7	5	8.60	1.95	2.00	0.71
rubberlip surfperch	9/27/02	4	4	7.75	2.06	2.75	0.50
senorita, adult	8/22/02	7	7	2.00	3.46	0.29	0.49
senorita, adult	9/27/02	4	4	9.00	1.15	1.50	0.58
senorita, all	8/22/02	7	7	2.00	3.46	0.29	0.49
senorita, all	9/27/02	4	4	9.00	1.15	1.50	0.58
senorita, juvenile	8/22/02	7	7	0.00	0.00	0.00	0.00
senorita, juvenile	9/27/02	4	4	0.00	0.00	0.00	0.00
snubnose sculpin	9/27/02	4	1	5.00		1.00	
striped surfperch, adult	8/22/02	7	7	0.00	0.00	0.00	0.00
striped surfperch, adult	9/27/02	4	4	0.00	0.00	0.00	0.00
striped surfperch, all	8/22/02	7	7	0.00	0.00	0.00	0.00
striped surfperch, all	9/27/02	4	4	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/22/02	7	7	0.00	0.00	0.00	0.00
striped surfperch, juvenile	9/27/02	4	4	0.00	0.00	0.00	0.00
swell shark	8/22/02	7	1	8.00		1.00	
swell shark	9/27/02	4	1	9.00		1.00	
treefish, adult	8/22/02	7	7	2.43	4.16	0.29	0.49
treefish, adult	9/27/02	4	4	6.50	4.36	1.50	1.00
treefish, juvenile	8/22/02	7	7	0.00	0.00	0.00	0.00
treefish, juvenile	9/27/02	4	4	1.25	2.50	0.25	0.50
white surfperch	8/22/02	7	2	10.00	0.00	2.50	0.71
zebra goby	8/22/02	7	1	9.00		2.00	

Santa Cruz Island - Scorpion Anchorage

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	7/12/02	**5**	**1**	**9.00**		**1.00**	
bat ray	8/9/02	**4**	**2**	**7.50**	**2.12**	**1.00**	**0.00**
black and yellow rockfish	7/12/02	**5**	**2**	**7.50**	**3.54**	**1.00**	**0.00**
black and yellow rockfish	8/9/02	**4**	**1**	**10.00**		**2.00**	
black surfperch, adult	7/12/02	**5**	**5**	**10.00**	**0.00**	**2.40**	**0.55**
black surfperch, adult	8/9/02	**4**	**4**	**9.50**	**0.58**	**2.75**	**0.50**
black surfperch, all	7/12/02	**5**	**5**	**10.00**	**0.00**	**2.40**	**0.55**
black surfperch, all	8/9/02	**4**	**4**	**9.50**	**0.58**	**2.75**	**0.50**
black surfperch, juvenile	7/12/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, juvenile	8/9/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blackeye goby	7/12/02	**5**	**5**	**10.00**	**0.00**	**4.00**	**0.00**
blackeye goby	8/9/02	**4**	**4**	**10.00**	**0.00**	**3.75**	**0.50**
blacksmith, adult	7/12/02	**5**	**5**	**10.00**	**0.00**	**3.40**	**0.55**
blacksmith, adult	8/9/02	**4**	**4**	**9.75**	**0.50**	**3.50**	**0.58**
blacksmith, all	7/12/02	**5**	**5**	**10.00**	**0.00**	**3.40**	**0.55**
blacksmith, all	8/9/02	**4**	**4**	**9.75**	**0.50**	**3.50**	**0.58**
blacksmith, juvenile	7/12/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blacksmith, juvenile	8/9/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, adult	7/12/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, adult	8/9/02	**4**	**4**	**2.50**	**5.00**	**0.50**	**1.00**
blue rockfish, all	7/12/02	**5**	**5**	**8.00**	**1.87**	**1.80**	**0.45**
blue rockfish, all	8/9/02	**4**	**4**	**6.75**	**4.72**	**1.75**	**1.26**
blue rockfish, juvenile	7/12/02	**5**	**5**	**8.00**	**1.87**	**1.80**	**0.45**
blue rockfish, juvenile	8/9/02	**4**	**4**	**6.75**	**4.72**	**1.50**	**1.00**
blue-banded goby	7/12/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
blue-banded goby	8/9/02	**4**	**4**	**2.00**	**4.00**	**0.25**	**0.50**
cabezon	8/9/02	**4**	**1**	**5.00**		**1.00**	
California sheephead,	7/12/02	**5**	**5**	**3.20**	**4.44**	**0.40**	**0.55**
California sheephead,	8/9/02	**4**	**4**	**3.25**	**3.95**	**0.50**	**0.58**
California sheephead,	7/12/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	8/9/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	7/12/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	8/9/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
copper rockfish	7/12/02	**5**	**2**	**8.00**	**2.83**	**1.50**	**0.71**
fringehead spp.	7/12/02	**5**	**1**	**5.00**		**2.00**	
fringehead spp.	8/9/02	**4**	**3**	**9.00**	**1.73**	**1.33**	**0.58**
garibaldi, adult	7/12/02	**5**	**5**	**10.00**	**0.00**	**2.40**	**0.55**
garibaldi, adult	8/9/02	**4**	**4**	**9.75**	**0.50**	**2.25**	**0.50**
garibaldi, juvenile	7/12/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
garibaldi, juvenile	8/9/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
grass rockfish	8/9/02	**4**	**1**	**7.00**		**1.00**	
halfmoon	7/12/02	**5**	**2**	**9.00**	**0.00**	**2.00**	**0.00**
horn shark	7/12/02	**5**	**1**	**7.00**		**2.00**	
horn shark	8/9/02	**4**	**3**	**7.00**	**2.00**	**1.33**	**0.58**
island kelpfish	7/12/02	**5**	**5**	**7.80**	**1.79**	**1.40**	**0.55**
island kelpfish	8/9/02	**4**	**4**	**4.25**	**4.92**	**0.75**	**0.96**
kelp bass, adult	7/12/02	**5**	**5**	**9.60**	**0.55**	**2.40**	**0.55**
kelp bass, adult	8/9/02	**4**	**4**	**9.50**	**0.58**	**2.00**	**0.00**
kelp bass, calico bass, all	7/12/02	**5**	**5**	**9.60**	**0.55**	**2.40**	**0.55**
kelp bass, calico bass, all	8/9/02	**4**	**4**	**9.50**	**0.58**	**2.00**	**0.00**
kelp bass, juvenile	7/12/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
kelp bass, juvenile	8/9/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, adult	7/12/02	**5**	**5**	**7.00**	**4.00**	**1.40**	**0.89**
kelp rockfish, adult	8/9/02	**4**	**4**	**1.75**	**3.50**	**0.25**	**0.50**

kelp rockfish, all	7/12/02	**5**	**5**	**7.00**	**4.00**	**1.40**	**0.89**
kelp rockfish, all	8/9/02	**4**	**4**	**1.75**	**3.50**	**0.25**	**0.50**
kelp rockfish, juvenile	7/12/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, juvenile	8/9/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
olive rockfish, adult	7/12/02	**5**	**5**	**1.40**	**3.13**	**0.20**	**0.45**
olive rockfish, adult	8/9/02	**4**	**4**	**2.50**	**5.00**	**0.25**	**0.50**
olive rockfish, all	7/12/02	**5**	**5**	**7.00**	**4.24**	**1.60**	**0.89**
olive rockfish, all	8/9/02	**4**	**4**	**10.00**	**0.00**	**1.50**	**0.58**
olive/yellowtail rockfish,	7/12/02	**5**	**5**	**7.00**	**4.24**	**1.40**	**0.89**
olive/yellowtail rockfish,	8/9/02	**4**	**4**	**10.00**	**0.00**	**1.25**	**0.50**
opaleye, adult	7/12/02	**5**	**5**	**2.80**	**3.90**	**0.60**	**0.89**
opaleye, adult	8/9/02	**4**	**4**	**9.00**	**0.82**	**2.00**	**0.00**
opaleye, all	7/12/02	**5**	**5**	**2.80**	**3.90**	**0.60**	**0.89**
opaleye, all	8/9/02	**4**	**4**	**9.00**	**0.82**	**2.00**	**0.00**
opaleye, juvenile	7/12/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, juvenile	8/9/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
painted greenling	7/12/02	**5**	**5**	**9.80**	**0.45**	**2.80**	**0.45**
painted greenling	8/9/02	**4**	**4**	**9.75**	**0.50**	**2.50**	**0.58**
pile surfperch, adult	7/12/02	**5**	**5**	**1.20**	**2.68**	**0.20**	**0.45**
pile surfperch, adult	8/9/02	**4**	**4**	**8.25**	**0.96**	**1.75**	**0.50**
pile surfperch, all	7/12/02	**5**	**5**	**1.20**	**2.68**	**0.20**	**0.45**
pile surfperch, all	8/9/02	**4**	**4**	**8.25**	**0.96**	**1.75**	**0.50**
pile surfperch, juvenile	7/12/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
pile surfperch, juvenile	8/9/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
rock wrasse, female	7/12/02	**5**	**5**	**7.80**	**4.38**	**1.40**	**0.89**
rock wrasse, female	8/9/02	**4**	**4**	**8.25**	**1.50**	**2.00**	**0.00**
rock wrasse, male	7/12/02	**5**	**5**	**7.00**	**4.12**	**1.00**	**0.71**
rock wrasse, male	8/9/02	**4**	**4**	**5.75**	**4.35**	**1.25**	**0.96**
senorita, adult	7/12/02	**5**	**5**	**10.00**	**0.00**	**3.00**	**0.00**
senorita, adult	8/9/02	**4**	**4**	**10.00**	**0.00**	**2.75**	**0.50**
senorita, all	7/12/02	**5**	**5**	**10.00**	**0.00**	**3.00**	**0.00**
senorita, all	8/9/02	**4**	**4**	**10.00**	**0.00**	**2.75**	**0.50**
senorita, juvenile	7/12/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, juvenile	8/9/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
snubnose sculpin	7/12/02	**5**	**2**	**6.00**	**0.00**	**1.50**	**0.71**
snubnose sculpin	8/9/02	**4**	**1**	**10.00**		**1.00**	
striped surfperch, adult	7/12/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, adult	8/9/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, all	7/12/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, all	8/9/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, juvenile	7/12/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, juvenile	8/9/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
treefish, adult	7/12/02	**5**	**5**	**1.20**	**2.68**	**0.20**	**0.45**
treefish, adult	8/9/02	**4**	**4**	**4.00**	**4.69**	**0.50**	**0.58**
treefish, juvenile	7/12/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
treefish, juvenile	8/9/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**

Santa Cruz Island - Yellow Banks

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black and yellow rockfish	7/8/02	**3**	**1**	**9.00**		**2.00**	
black and yellow rockfish	9/12/02	**4**	**2**	**7.00**	**1.41**	**1.00**	**0.00**
black surfperch, adult	7/8/02	**3**	**3**	**5.33**	**4.62**	**1.33**	**1.15**
black surfperch, adult	9/12/02	**4**	**3**	**9.00**	**1.00**	**2.00**	**0.00**
black surfperch, all	7/8/02	**3**	**3**	**5.33**	**4.62**	**1.33**	**1.15**
black surfperch, all	9/12/02	**4**	**4**	**9.00**	**0.82**	**2.00**	**0.00**
black surfperch, juvenile	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, juvenile	9/12/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
blackeye goby	7/8/02	**3**	**3**	**10.00**	**0.00**	**4.00**	**0.00**
blackeye goby	9/12/02	**4**	**4**	**10.00**	**0.00**	**4.00**	**0.00**
blacksmith, adult	7/8/02	**3**	**3**	**10.00**	**0.00**	**2.33**	**0.58**
blacksmith, adult	9/12/02	**4**	**3**	**9.00**	**1.00**	**3.00**	**0.00**
blacksmith, all	7/8/02	**3**	**3**	**10.00**	**0.00**	**2.33**	**0.58**
blacksmith, all	9/12/02	**4**	**4**	**9.00**	**0.82**	**3.00**	**0.00**
blacksmith, juvenile	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
blacksmith, juvenile	9/12/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, adult	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, adult	9/12/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, all	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, all	9/12/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, juvenile	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, juvenile	9/12/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
blue-banded goby	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
blue-banded goby	9/12/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
c-o turbot	7/8/02	**3**	**1**	**10.00**		**1.00**	
California barracuda	9/12/02	**4**	**1**	**7.00**		**3.00**	
California sheephead,	7/8/02	**3**	**3**	**8.00**	**1.73**	**1.33**	**0.58**
California sheephead,	9/12/02	**4**	**4**	**9.75**	**0.50**	**2.50**	**0.58**
California sheephead,	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	9/12/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	9/12/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
copper rockfish	9/12/02	**4**	**1**	**10.00**		**1.00**	
coralline sculpin	7/8/02	**3**	**1**	**9.00**		**2.00**	
garibaldi, adult	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
garibaldi, adult	9/12/02	**4**	**4**	**2.75**	**3.20**	**0.50**	**0.58**
garibaldi, juvenile	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
garibaldi, juvenile	9/12/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
horn shark	9/12/02	**4**	**1**	**6.00**		**1.00**	
island kelpfish	7/8/02	**3**	**3**	**9.33**	**1.15**	**2.00**	**0.00**
island kelpfish	9/12/02	**4**	**4**	**4.75**	**5.50**	**1.00**	**1.15**
kelp bass, adult	7/8/02	**3**	**3**	**8.00**	**1.73**	**1.67**	**0.58**
kelp bass, adult	9/12/02	**4**	**3**	**8.67**	**1.15**	**2.00**	**0.00**
kelp bass, calico bass, all	7/8/02	**3**	**3**	**8.00**	**1.73**	**1.67**	**0.58**
kelp bass, calico bass, all	9/12/02	**4**	**4**	**9.00**	**1.15**	**2.00**	**0.00**
kelp bass, juvenile	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
kelp bass, juvenile	9/12/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, adult	7/8/02	**3**	**3**	**6.00**	**5.29**	**1.33**	**1.15**
kelp rockfish, adult	9/12/02	**4**	**3**	**9.00**	**1.00**	**1.67**	**0.58**
kelp rockfish, all	7/8/02	**3**	**3**	**2.67**	**4.62**	**0.67**	**1.15**
kelp rockfish, all	9/12/02	**4**	**4**	**6.75**	**4.57**	**1.25**	**0.96**
kelp rockfish, juvenile	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, juvenile	9/12/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
lingcod	7/8/02	**3**	**2**	**6.00**	**0.00**	**1.00**	**0.00**

ocean whitefish	7/8/02	**3**	**1**	**7.00**		**1.00**	
ocean whitefish	9/12/02	**4**	**2**	**7.50**	**0.71**	**2.00**	**0.00**
olive rockfish, adult	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
olive rockfish, adult	9/12/02	**4**	**3**	**3.33**	**5.77**	**0.33**	**0.58**
olive rockfish, all	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
olive rockfish, all	9/12/02	**4**	**4**	**2.50**	**5.00**	**0.25**	**0.50**
olive/yellowtail rockfish,	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
olive/yellowtail rockfish,	9/12/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, adult	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, adult	9/12/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, all	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, all	9/12/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, juvenile	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, juvenile	9/12/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
painted greenling	7/8/02	**3**	**3**	**10.00**	**0.00**	**2.33**	**0.58**
painted greenling	9/12/02	**4**	**4**	**10.00**	**0.00**	**3.00**	**0.00**
pile surfperch, adult	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
pile surfperch, adult	9/12/02	**4**	**3**	**4.00**	**3.61**	**1.00**	**1.00**
pile surfperch, all	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
pile surfperch, all	9/12/02	**4**	**3**	**4.00**	**3.61**	**1.00**	**1.00**
pile surfperch, juvenile	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
pile surfperch, juvenile	9/12/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
rock wrasse, female	7/8/02	**3**	**3**	**6.00**	**5.29**	**1.00**	**1.00**
rock wrasse, female	9/12/02	**4**	**4**	**5.75**	**3.95**	**1.00**	**0.82**
rock wrasse, male	7/8/02	**3**	**3**	**10.00**	**0.00**	**1.67**	**0.58**
rock wrasse, male	9/12/02	**4**	**4**	**8.00**	**1.63**	**1.75**	**0.50**
rockfish spp., juvenile	7/8/02	**3**	**1**	**8.00**		**2.00**	
rockfish spp., juvenile	9/12/02	**4**	**3**	**6.67**	**1.15**	**1.33**	**0.58**
senorita, adult	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, adult	9/12/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, all	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, all	9/12/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, juvenile	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, juvenile	9/12/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, adult	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, adult	9/12/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, all	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, all	9/12/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, juvenile	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, juvenile	9/12/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
swell shark	7/8/02	**3**	**1**	**9.00**		**2.00**	
swell shark	9/12/02	**4**	**4**	**8.50**	**1.29**	**1.00**	**0.00**
treefish, adult	7/8/02	**3**	**3**	**3.00**	**5.20**	**0.33**	**0.58**
treefish, adult	9/12/02	**4**	**4**	**4.75**	**5.50**	**0.75**	**0.96**
treefish, juvenile	7/8/02	**3**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
treefish, juvenile	9/12/02	**4**	**4**	**2.25**	**4.50**	**0.50**	**1.00**
vermillion rockfish	7/8/02	**3**	**2**	**8.00**	**1.41**	**1.50**	**0.71**
vermillion rockfish	9/12/02	**4**	**4**	**9.00**	**0.82**	**1.25**	**0.50**

Anacapa Island - Admiral's Reef

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black and yellow rockfish	8/19/02	**6**	**4**	**7.25**	**0.50**	**1.00**	**0.00**
black surfperch, adult	8/6/02	**4**	**4**	**9.75**	**0.50**	**2.00**	**0.00**
black surfperch, adult	8/19/02	**6**	**6**	**9.00**	**1.26**	**2.00**	**0.00**
black surfperch, all	8/6/02	**4**	**4**	**9.75**	**0.50**	**2.00**	**0.00**
black surfperch, all	8/19/02	**6**	**6**	**9.00**	**1.26**	**2.00**	**0.00**
black surfperch, juvenile	8/6/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, juvenile	8/19/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
blackeye goby	8/6/02	**4**	**4**	**10.00**	**0.00**	**4.00**	**0.00**
blackeye goby	8/19/02	**6**	**6**	**10.00**	**0.00**	**4.00**	**0.00**
blacksmith, adult	8/6/02	**4**	**4**	**10.00**	**0.00**	**4.00**	**0.00**
blacksmith, adult	8/19/02	**6**	**6**	**9.67**	**0.52**	**4.00**	**0.00**
blacksmith, all	8/6/02	**4**	**4**	**10.00**	**0.00**	**4.00**	**0.00**
blacksmith, all	8/19/02	**6**	**6**	**9.67**	**0.52**	**4.00**	**0.00**
blacksmith, juvenile	8/6/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blacksmith, juvenile	8/19/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, adult	8/6/02	**4**	**4**	**9.00**	**0.00**	**2.00**	**0.00**
blue rockfish, adult	8/19/02	**6**	**6**	**1.33**	**3.27**	**0.17**	**0.41**
blue rockfish, all	8/6/02	**4**	**4**	**9.00**	**0.00**	**2.00**	**0.00**
blue rockfish, all	8/19/02	**6**	**6**	**5.50**	**4.32**	**1.17**	**0.98**
blue rockfish, juvenile	8/6/02	**4**	**4**	**4.25**	**4.92**	**1.00**	**1.15**
blue rockfish, juvenile	8/19/02	**6**	**6**	**5.50**	**4.32**	**1.17**	**0.98**
blue-banded goby	8/6/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue-banded goby	8/19/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	8/6/02	**4**	**4**	**9.00**	**0.82**	**2.00**	**0.00**
California sheephead,	8/19/02	**6**	**6**	**8.17**	**1.60**	**2.17**	**0.41**
California sheephead,	8/6/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	8/19/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	8/6/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	8/19/02	**6**	**6**	**3.67**	**4.08**	**0.50**	**0.55**
coralline sculpin	8/19/02	**6**	**1**	**9.00**		**1.00**	
garibaldi, adult	8/6/02	**4**	**4**	**10.00**	**0.00**	**2.25**	**0.50**
garibaldi, adult	8/19/02	**6**	**6**	**8.50**	**1.64**	**2.00**	**0.00**
garibaldi, juvenile	8/6/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
garibaldi, juvenile	8/19/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
gopher/copper rockfish,	8/19/02	**6**	**1**	**9.00**		**1.00**	
halfmoon	8/6/02	**4**	**3**	**7.33**	**2.31**	**1.33**	**0.58**
halfmoon	8/19/02	**6**	**4**	**8.00**	**0.82**	**1.50**	**0.58**
island kelpfish	8/6/02	**4**	**4**	**9.50**	**0.58**	**2.00**	**0.00**
island kelpfish	8/19/02	**6**	**6**	**7.50**	**2.17**	**2.33**	**0.52**
jack mackerel	8/19/02	**6**	**1**	**8.00**		**4.00**	
kelp bass, adult	8/6/02	**4**	**4**	**6.00**	**4.24**	**1.25**	**0.96**
kelp bass, adult	8/19/02	**6**	**6**	**5.67**	**4.50**	**1.00**	**0.89**
kelp bass, calico bass, all	8/6/02	**4**	**4**	**6.00**	**4.24**	**1.25**	**0.96**
kelp bass, calico bass, all	8/19/02	**6**	**6**	**5.67**	**4.50**	**1.00**	**0.89**
kelp bass, juvenile	8/6/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp bass, juvenile	8/19/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, adult	8/6/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, adult	8/19/02	**6**	**6**	**1.17**	**2.86**	**0.17**	**0.41**
kelp rockfish, all	8/6/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, all	8/19/02	**6**	**6**	**1.17**	**2.86**	**0.17**	**0.41**
kelp rockfish, juvenile	8/6/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, juvenile	8/19/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
lingcod	8/6/02	**4**	**2**	**8.00**	**0.00**	**1.00**	**0.00**
olive rockfish, adult	8/6/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**

olive rockfish, adult	8/19/02	6	6	0.00	0.00	0.00	0.00
olive rockfish, all	8/6/02	4	4	2.25	4.50	0.50	1.00
olive rockfish, all	8/19/02	6	6	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	8/6/02	4	4	2.25	4.50	0.50	1.00
olive/yellowtail rockfish,	8/19/02	6	6	0.00	0.00	0.00	0.00
opaleye, adult	8/6/02	4	4	10.00	0.00	2.50	0.58
opaleye, adult	8/19/02	6	6	9.17	0.75	2.33	0.52
opaleye, all	8/6/02	4	4	10.00	0.00	2.50	0.58
opaleye, all	8/19/02	6	6	9.17	0.75	2.33	0.52
opaleye, juvenile	8/6/02	4	4	0.00	0.00	0.00	0.00
opaleye, juvenile	8/19/02	6	6	0.00	0.00	0.00	0.00
painted greenling	8/6/02	4	4	9.75	0.50	3.00	0.00
painted greenling	8/19/02	6	6	9.67	0.82	3.00	0.00
pile surfperch, adult	8/6/02	4	4	6.50	0.58	1.25	0.50
pile surfperch, adult	8/19/02	6	6	6.67	1.51	1.67	0.52
pile surfperch, all	8/6/02	4	4	4.75	3.20	1.00	0.82
pile surfperch, all	8/19/02	6	6	6.67	1.51	1.67	0.52
pile surfperch, juvenile	8/6/02	4	4	0.00	0.00	0.00	0.00
pile surfperch, juvenile	8/19/02	6	6	0.00	0.00	0.00	0.00
rock wrasse, female	8/6/02	4	4	9.25	0.96	2.00	0.00
rock wrasse, female	8/19/02	6	6	9.00	1.26	2.00	0.00
rock wrasse, male	8/6/02	4	4	9.75	0.50	2.00	0.00
rock wrasse, male	8/19/02	6	6	9.67	0.82	1.50	0.55
rockfish spp., juvenile	8/19/02	6	2	9.50	0.71	1.00	0.00
senorita, adult	8/6/02	4	4	9.75	0.50	2.00	0.00
senorita, adult	8/19/02	6	6	9.00	1.26	2.50	0.55
senorita, all	8/6/02	4	4	9.75	0.50	2.00	0.00
senorita, all	8/19/02	6	6	9.00	1.26	2.50	0.55
senorita, juvenile	8/6/02	4	4	0.00	0.00	0.00	0.00
senorita, juvenile	8/19/02	6	6	0.00	0.00	0.00	0.00
snubnose sculpin	8/6/02	4	1	5.00		1.00	
speckled sanddab	8/6/02	4	1	9.00		1.00	
striped surfperch, adult	8/6/02	4	4	0.00	0.00	0.00	0.00
striped surfperch, adult	8/19/02	6	6	0.00	0.00	0.00	0.00
striped surfperch, all	8/6/02	4	4	0.00	0.00	0.00	0.00
striped surfperch, all	8/19/02	6	6	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/6/02	4	4	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/19/02	6	6	0.00	0.00	0.00	0.00
swell shark	8/19/02	6	1	10.00		1.00	
treefish, adult	8/6/02	4	4	9.25	0.50	2.00	0.00
treefish, adult	8/19/02	6	6	7.83	1.83	1.67	0.52
treefish, juvenile	8/6/02	4	4	2.50	5.00	0.25	0.50
treefish, juvenile	8/19/02	6	6	1.17	2.86	0.17	0.41
zebra goby	8/6/02	4	1	9.00		1.00	

Anacapa Island - Cathedral Cove

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	8/20/02	**7**	**2**	**6.50**	**2.12**	**1.00**	**0.00**
black surfperch, adult	6/20/02	**5**	**5**	**10.00**	**0.00**	**2.80**	**0.45**
black surfperch, adult	8/20/02	**7**	**7**	**10.00**	**0.00**	**2.86**	**0.38**
black surfperch, all	6/20/02	**5**	**5**	**10.00**	**0.00**	**2.80**	**0.45**
black surfperch, all	8/20/02	**7**	**7**	**10.00**	**0.00**	**2.86**	**0.38**
black surfperch, juvenile	6/20/02	**5**	**5**	**6.00**	**3.74**	**1.40**	**0.89**
black surfperch, juvenile	8/20/02	**7**	**7**	**2.14**	**3.76**	**0.57**	**0.98**
blackeye goby	6/20/02	**5**	**5**	**9.80**	**0.45**	**2.40**	**0.55**
blackeye goby	8/20/02	**7**	**7**	**10.00**	**0.00**	**3.14**	**0.38**
blacksmith, adult	6/20/02	**5**	**5**	**9.80**	**0.45**	**4.00**	**0.00**
blacksmith, adult	8/20/02	**7**	**7**	**9.43**	**0.79**	**3.14**	**0.69**
blacksmith, all	6/20/02	**5**	**5**	**9.80**	**0.45**	**4.00**	**0.00**
blacksmith, all	8/20/02	**7**	**7**	**9.57**	**0.53**	**3.14**	**0.69**
blacksmith, juvenile	6/20/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
blacksmith, juvenile	8/20/02	**7**	**7**	**5.43**	**3.82**	**1.43**	**0.98**
blue rockfish, adult	6/20/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, adult	8/20/02	**7**	**7**	**1.43**	**3.78**	**0.14**	**0.38**
blue rockfish, all	6/20/02	**5**	**5**	**7.80**	**0.84**	**1.80**	**0.45**
blue rockfish, all	8/20/02	**7**	**7**	**6.29**	**4.64**	**1.43**	**0.98**
blue rockfish, juvenile	6/20/02	**5**	**5**	**7.80**	**0.84**	**1.80**	**0.45**
blue rockfish, juvenile	8/20/02	**7**	**7**	**6.14**	**4.53**	**1.43**	**0.98**
blue-banded goby	6/20/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
blue-banded goby	8/20/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
California halibut	8/20/02	**7**	**2**	**6.50**	**2.12**	**2.00**	**0.00**
California sheephead,	6/20/02	**5**	**5**	**7.80**	**1.30**	**1.80**	**0.45**
California sheephead,	8/20/02	**7**	**7**	**9.43**	**0.79**	**2.00**	**0.00**
California sheephead,	6/20/02	**5**	**5**	**3.60**	**3.51**	**0.60**	**0.55**
California sheephead,	8/20/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	6/20/02	**5**	**5**	**4.60**	**4.28**	**1.00**	**1.00**
California sheephead,	8/20/02	**7**	**7**	**3.57**	**4.61**	**0.43**	**0.53**
garibaldi, adult	6/20/02	**5**	**5**	**10.00**	**0.00**	**2.80**	**0.45**
garibaldi, adult	8/20/02	**7**	**7**	**10.00**	**0.00**	**2.71**	**0.49**
garibaldi, juvenile	6/20/02	**5**	**5**	**3.40**	**4.67**	**0.40**	**0.55**
garibaldi, juvenile	8/20/02	**7**	**7**	**1.57**	**2.70**	**0.29**	**0.49**
giant kelpfish	6/20/02	**5**	**3**	**8.67**	**2.31**	**2.00**	**1.00**
giant kelpfish	8/20/02	**7**	**1**	**8.00**		**1.00**	
halfmoon	8/20/02	**7**	**3**	**7.33**	**0.58**	**1.33**	**0.58**
island kelpfish	6/20/02	**5**	**5**	**9.80**	**0.45**	**2.40**	**0.55**
island kelpfish	8/20/02	**7**	**7**	**10.00**	**0.00**	**2.86**	**0.38**
kelp bass, adult	6/20/02	**5**	**5**	**9.40**	**0.55**	**2.40**	**0.55**
kelp bass, adult	8/20/02	**7**	**7**	**9.86**	**0.38**	**2.57**	**0.79**
kelp bass, calico bass, all	6/20/02	**5**	**5**	**9.40**	**0.55**	**2.60**	**0.55**
kelp bass, calico bass, all	8/20/02	**7**	**7**	**9.86**	**0.38**	**2.57**	**0.79**
kelp bass, juvenile	6/20/02	**5**	**5**	**3.40**	**4.67**	**0.60**	**0.89**
kelp bass, juvenile	8/20/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, adult	6/20/02	**5**	**5**	**8.20**	**1.30**	**2.00**	**0.00**
kelp rockfish, adult	8/20/02	**7**	**7**	**6.00**	**4.12**	**0.86**	**0.69**
kelp rockfish, all	6/20/02	**5**	**5**	**8.20**	**1.30**	**2.00**	**0.00**
kelp rockfish, all	8/20/02	**7**	**7**	**6.00**	**4.12**	**0.86**	**0.69**
kelp rockfish, juvenile	6/20/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, juvenile	8/20/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
kelp surfperch	6/20/02	**5**	**4**	**7.25**	**2.63**	**2.75**	**1.26**
kelp surfperch	8/20/02	**7**	**2**	**9.00**	**1.41**	**3.00**	**0.00**
kelpfish spp.	8/20/02	**7**	**1**	**7.00**		**2.00**	

ocean whitefish	8/20/02	**7**	**2**	**6.50**	**2.12**	**1.00**	**0.00**
olive rockfish, adult	6/20/02	**5**	**5**	**1.60**	**3.58**	**0.40**	**0.89**
olive rockfish, adult	8/20/02	**7**	**7**	**4.14**	**5.18**	**0.86**	**1.07**
olive rockfish, all	6/20/02	**5**	**5**	**8.40**	**1.67**	**2.60**	**0.55**
olive rockfish, all	8/20/02	**7**	**7**	**7.00**	**4.80**	**1.86**	**1.35**
olive/yellowtail rockfish,	6/20/02	**5**	**5**	**8.40**	**2.19**	**2.60**	**0.55**
olive/yellowtail rockfish,	8/20/02	**7**	**7**	**7.00**	**4.80**	**1.71**	**1.25**
opaleye, adult	6/20/02	**5**	**5**	**10.00**	**0.00**	**2.20**	**0.45**
opaleye, adult	8/20/02	**7**	**7**	**4.14**	**4.02**	**0.86**	**0.90**
opaleye, all	6/20/02	**5**	**5**	**10.00**	**0.00**	**2.20**	**0.45**
opaleye, all	8/20/02	**7**	**7**	**4.14**	**4.02**	**0.86**	**0.90**
opaleye, juvenile	6/20/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, juvenile	8/20/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
painted greenling	6/20/02	**5**	**5**	**9.40**	**0.55**	**2.00**	**0.71**
painted greenling	8/20/02	**7**	**7**	**7.86**	**3.53**	**1.71**	**0.76**
pile surfperch, adult	6/20/02	**5**	**5**	**4.60**	**4.22**	**0.60**	**0.55**
pile surfperch, adult	8/20/02	**7**	**7**	**2.57**	**4.39**	**0.57**	**0.98**
pile surfperch, all	6/20/02	**5**	**5**	**4.60**	**4.22**	**0.60**	**0.55**
pile surfperch, all	8/20/02	**7**	**7**	**4.57**	**4.50**	**1.00**	**1.00**
pile surfperch, juvenile	6/20/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
pile surfperch, juvenile	8/20/02	**7**	**7**	**3.29**	**4.31**	**0.71**	**0.95**
plainfin midshipman	8/20/02	**7**	**1**	**5.00**		**1.00**	
rainbow surfperch	6/20/02	**5**	**1**	**8.00**		**1.00**	
rock wrasse, female	6/20/02	**5**	**5**	**9.20**	**0.45**	**2.40**	**0.89**
rock wrasse, female	8/20/02	**7**	**7**	**8.29**	**3.68**	**1.86**	**0.90**
rock wrasse, male	6/20/02	**5**	**5**	**8.60**	**1.52**	**2.00**	**0.00**
rock wrasse, male	8/20/02	**7**	**7**	**5.43**	**3.95**	**0.86**	**0.69**
rubberlip surfperch	6/20/02	**5**	**1**	**7.00**		**1.00**	
senorita, adult	6/20/02	**5**	**5**	**9.00**	**1.41**	**2.40**	**0.89**
senorita, adult	8/20/02	**7**	**7**	**8.86**	**1.46**	**2.29**	**0.49**
senorita, all	6/20/02	**5**	**5**	**9.00**	**1.41**	**2.40**	**0.89**
senorita, all	8/20/02	**7**	**7**	**8.86**	**1.46**	**2.29**	**0.49**
senorita, juvenile	6/20/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, juvenile	8/20/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, adult	6/20/02	**5**	**5**	**4.00**	**5.48**	**0.40**	**0.55**
striped surfperch, adult	8/20/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, all	6/20/02	**5**	**5**	**4.00**	**5.48**	**0.40**	**0.55**
striped surfperch, all	8/20/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, juvenile	6/20/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, juvenile	8/20/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**
swell shark	6/20/02	**5**	**1**	**9.00**		**2.00**	
top smelt	6/20/02	**5**	**4**	**8.25**	**2.36**	**2.00**	**0.00**
treefish, adult	6/20/02	**5**	**5**	**1.80**	**4.02**	**0.40**	**0.89**
treefish, adult	8/20/02	**7**	**7**	**4.00**	**3.96**	**0.57**	**0.53**
treefish, juvenile	6/20/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
treefish, juvenile	8/20/02	**7**	**7**	**0.00**	**0.00**	**0.00**	**0.00**

Anacapa Island - Landing Cove

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	8/5/02	**4**	**1**	**5.00**		**1.00**	
black and yellow rockfish	6/21/02	**5**	**1**	**8.00**		**1.00**	
black and yellow rockfish	8/5/02	**4**	**1**	**6.00**		**1.00**	
black surfperch, adult	6/21/02	**5**	**5**	**9.40**	**0.55**	**2.20**	**0.45**
black surfperch, adult	8/5/02	**4**	**4**	**9.50**	**0.58**	**2.75**	**0.50**
black surfperch, all	6/21/02	**5**	**5**	**9.60**	**0.55**	**2.60**	**0.55**
black surfperch, all	8/5/02	**4**	**4**	**9.75**	**0.50**	**3.00**	**0.00**
black surfperch, juvenile	6/21/02	**5**	**5**	**5.60**	**5.18**	**1.00**	**1.00**
black surfperch, juvenile	8/5/02	**4**	**4**	**4.75**	**5.50**	**1.00**	**1.15**
blackeye goby	6/21/02	**5**	**5**	**9.60**	**0.55**	**3.00**	**0.00**
blackeye goby	8/5/02	**4**	**4**	**9.75**	**0.50**	**3.00**	**0.00**
blacksmith, adult	6/21/02	**5**	**5**	**10.00**	**0.00**	**4.00**	**0.00**
blacksmith, adult	8/5/02	**4**	**4**	**9.50**	**0.58**	**3.75**	**0.50**
blacksmith, all	6/21/02	**5**	**5**	**10.00**	**0.00**	**4.00**	**0.00**
blacksmith, all	8/5/02	**4**	**4**	**9.50**	**0.58**	**3.75**	**0.50**
blacksmith, juvenile	6/21/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
blacksmith, juvenile	8/5/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, adult	6/21/02	**5**	**5**	**1.80**	**4.02**	**0.20**	**0.45**
blue rockfish, adult	8/5/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, all	6/21/02	**5**	**5**	**3.20**	**4.44**	**0.40**	**0.55**
blue rockfish, all	8/5/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, juvenile	6/21/02	**5**	**5**	**1.40**	**3.13**	**0.20**	**0.45**
blue rockfish, juvenile	8/5/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue-banded goby	6/21/02	**5**	**5**	**7.80**	**2.05**	**1.60**	**0.55**
blue-banded goby	8/5/02	**4**	**4**	**4.25**	**4.92**	**0.75**	**0.96**
cabezon	8/5/02	**4**	**1**	**6.00**		**1.00**	
California halibut	6/21/02	**5**	**3**	**8.67**	**0.58**	**1.00**	**0.00**
California sheephead,	6/21/02	**5**	**5**	**8.20**	**1.79**	**1.80**	**0.45**
California sheephead,	8/5/02	**4**	**4**	**9.25**	**1.50**	**2.00**	**0.00**
California sheephead,	6/21/02	**5**	**5**	**2.00**	**4.47**	**0.20**	**0.45**
California sheephead,	8/5/02	**4**	**4**	**5.00**	**5.77**	**0.50**	**0.58**
California sheephead,	6/21/02	**5**	**5**	**2.00**	**2.74**	**0.40**	**0.55**
California sheephead,	8/5/02	**4**	**4**	**6.75**	**4.50**	**1.50**	**1.00**
garibaldi, adult	6/21/02	**5**	**5**	**10.00**	**0.00**	**2.80**	**0.45**
garibaldi, adult	8/5/02	**4**	**4**	**9.00**	**0.82**	**3.00**	**0.00**
garibaldi, juvenile	6/21/02	**5**	**5**	**2.80**	**3.90**	**0.60**	**0.89**
garibaldi, juvenile	8/5/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
giant kelpfish	6/21/02	**5**	**2**	**10.00**	**0.00**	**2.00**	**0.00**
giant kelpfish	8/5/02	**4**	**1**	**10.00**		**2.00**	
halfmoon	6/21/02	**5**	**4**	**9.25**	**0.96**	**1.50**	**0.58**
halfmoon	8/5/02	**4**	**4**	**8.50**	**1.73**	**2.50**	**0.58**
island kelpfish	6/21/02	**5**	**5**	**9.60**	**0.89**	**2.80**	**0.45**
island kelpfish	8/5/02	**4**	**4**	**9.50**	**0.58**	**2.75**	**0.50**
kelp bass, adult	6/21/02	**5**	**5**	**10.00**	**0.00**	**2.40**	**0.55**
kelp bass, adult	8/5/02	**4**	**4**	**10.00**	**0.00**	**2.75**	**0.50**
kelp bass, calico bass, all	6/21/02	**5**	**5**	**10.00**	**0.00**	**2.40**	**0.55**
kelp bass, calico bass, all	8/5/02	**4**	**4**	**10.00**	**0.00**	**2.75**	**0.50**
kelp bass, juvenile	6/21/02	**5**	**5**	**1.00**	**2.24**	**0.20**	**0.45**
kelp bass, juvenile	8/5/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, adult	6/21/02	**5**	**5**	**7.80**	**1.64**	**1.80**	**0.45**
kelp rockfish, adult	8/5/02	**4**	**4**	**4.00**	**4.62**	**0.75**	**0.96**
kelp rockfish, all	6/21/02	**5**	**5**	**7.80**	**1.64**	**1.80**	**0.45**
kelp rockfish, all	8/5/02	**4**	**4**	**4.00**	**4.62**	**0.75**	**0.96**
kelp rockfish, juvenile	6/21/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**

kelp rockfish, juvenile	8/5/02	4	4	0.00	0.00	0.00	0.00
kelp surfperch	6/21/02	5	5	9.80	0.45	2.20	0.45
kelp surfperch	8/5/02	4	4	8.50	1.73	2.75	0.50
kelpfish spp.	6/21/02	5	1	5.00		1.00	
lavender sculpin	8/5/02	4	1	5.00		1.00	
olive rockfish, adult	6/21/02	5	5	6.20	3.56	1.20	0.84
olive rockfish, adult	8/5/02	4	4	0.00	0.00	0.00	0.00
olive rockfish, all	6/21/02	5	5	6.80	3.83	1.40	0.89
olive rockfish, all	8/5/02	4	4	4.00	4.69	1.25	1.50
olive/yellowtail rockfish,	6/21/02	5	5	5.00	4.58	1.00	1.00
olive/yellowtail rockfish,	8/5/02	4	4	4.00	4.69	1.25	1.50
opaleye, adult	6/21/02	5	5	9.80	0.45	3.00	0.00
opaleye, adult	8/5/02	4	4	9.00	1.15	3.00	0.00
opaleye, all	6/21/02	5	5	9.80	0.45	3.00	0.00
opaleye, all	8/5/02	4	4	9.00	1.15	3.00	0.00
opaleye, juvenile	6/21/02	5	5	0.00	0.00	0.00	0.00
opaleye, juvenile	8/5/02	4	4	0.00	0.00	0.00	0.00
painted greenling	6/21/02	5	5	9.80	0.45	2.00	0.00
painted greenling	8/5/02	4	4	8.75	1.26	2.50	0.58
pile surfperch, adult	6/21/02	5	5	3.00	4.47	0.40	0.55
pile surfperch, adult	8/5/02	4	4	0.00	0.00	0.00	0.00
pile surfperch, all	6/21/02	5	5	3.00	4.47	0.40	0.55
pile surfperch, all	8/5/02	4	4	0.00	0.00	0.00	0.00
pile surfperch, juvenile	6/21/02	5	5	0.00	0.00	0.00	0.00
pile surfperch, juvenile	8/5/02	4	4	0.00	0.00	0.00	0.00
rock wrasse, female	6/21/02	5	5	7.80	1.10	2.00	0.00
rock wrasse, female	8/5/02	4	4	6.75	2.22	1.50	0.58
rock wrasse, male	6/21/02	5	5	6.00	3.39	1.40	0.89
rock wrasse, male	8/5/02	4	4	5.00	4.08	1.50	1.00
rockfish spp., juvenile	6/21/02	5	1	10.00		2.00	
rockfish spp., juvenile	8/5/02	4	1	10.00		2.00	
senorita, adult	6/21/02	5	5	10.00	0.00	3.00	0.71
senorita, adult	8/5/02	4	4	9.75	0.50	3.00	0.00
senorita, all	6/21/02	5	5	10.00	0.00	3.00	0.71
senorita, all	8/5/02	4	4	9.75	0.50	3.00	0.00
senorita, juvenile	6/21/02	5	5	0.00	0.00	0.00	0.00
senorita, juvenile	8/5/02	4	4	0.00	0.00	0.00	0.00
striped surfperch, adult	6/21/02	5	5	0.00	0.00	0.00	0.00
striped surfperch, adult	8/5/02	4	4	0.00	0.00	0.00	0.00
striped surfperch, all	6/21/02	5	5	0.00	0.00	0.00	0.00
striped surfperch, all	8/5/02	4	4	0.00	0.00	0.00	0.00
striped surfperch, juvenile	6/21/02	5	5	0.00	0.00	0.00	0.00
striped surfperch, juvenile	8/5/02	4	4	0.00	0.00	0.00	0.00
swell shark	6/21/02	5	5	8.80	1.10	2.80	0.45
swell shark	8/5/02	4	1	8.00		2.00	
top smelt	6/21/02	5	4	10.00	0.00	3.00	0.00
top smelt	8/5/02	4	2	8.00	2.83	2.00	0.00
treefish, adult	6/21/02	5	5	7.80	1.79	1.60	0.55
treefish, adult	8/5/02	4	4	1.75	3.50	0.50	1.00
treefish, juvenile	6/21/02	5	5	0.00	0.00	0.00	0.00
treefish, juvenile	8/5/02	4	4	1.75	3.50	0.50	1.00
zebra goby	6/21/02	5	5	7.00	2.12	1.80	0.84
zebra goby	8/5/02	4	1	9.00		2.00	

Santa Barbara Island - SE Sea Lion Rookery

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black surfperch, adult	6/18/02	**2**	**1**	**0.00**		**0.00**	
black surfperch, adult	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, all	6/18/02	**2**	**2**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, all	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, juvenile	6/18/02	**2**	**1**	**0.00**		**0.00**	
black surfperch, juvenile	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blackeye goby	6/18/02	**2**	**2**	**10.00**	**0.00**	**3.50**	**0.71**
blackeye goby	9/10/02	**6**	**6**	**10.00**	**0.00**	**3.50**	**0.55**
blacksmith, adult	6/18/02	**2**	**1**	**10.00**		**4.00**	
blacksmith, adult	9/10/02	**6**	**4**	**10.00**	**0.00**	**3.25**	**0.50**
blacksmith, all	6/18/02	**2**	**2**	**10.00**	**0.00**	**3.50**	**0.71**
blacksmith, all	9/10/02	**6**	**6**	**10.00**	**0.00**	**3.33**	**0.52**
blacksmith, juvenile	6/18/02	**2**	**1**	**0.00**		**0.00**	
blacksmith, juvenile	9/10/02	**6**	**4**	**1.50**	**3.00**	**0.50**	**1.00**
blue rockfish, adult	6/18/02	**2**	**1**	**0.00**		**0.00**	
blue rockfish, adult	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, all	6/18/02	**2**	**2**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, all	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, juvenile	6/18/02	**2**	**1**	**0.00**		**0.00**	
blue rockfish, juvenile	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue-banded goby	6/18/02	**2**	**2**	**0.00**	**0.00**	**0.00**	**0.00**
blue-banded goby	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
California scorpionfish	9/10/02	**6**	**1**	**10.00**		**1.00**	
California sheephead,	6/18/02	**2**	**2**	**8.00**	**0.00**	**1.00**	**0.00**
California sheephead,	9/10/02	**6**	**6**	**4.17**	**3.25**	**1.33**	**1.03**
California sheephead,	6/18/02	**2**	**2**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	6/18/02	**2**	**2**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	9/10/02	**6**	**6**	**1.17**	**2.86**	**0.17**	**0.41**
garibaldi, adult	6/18/02	**2**	**2**	**10.00**	**0.00**	**2.00**	**0.00**
garibaldi, adult	9/10/02	**6**	**6**	**10.00**	**0.00**	**2.00**	**0.00**
garibaldi, juvenile	6/18/02	**2**	**2**	**0.00**	**0.00**	**0.00**	**0.00**
garibaldi, juvenile	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
giant kelpfish	9/10/02	**6**	**2**	**9.00**	**0.00**	**3.00**	**0.00**
halfmoon	9/10/02	**6**	**3**	**6.00**	**0.00**	**1.67**	**0.58**
island kelpfish	6/18/02	**2**	**2**	**9.00**	**0.00**	**2.50**	**0.71**
island kelpfish	9/10/02	**6**	**6**	**9.50**	**0.55**	**2.00**	**0.00**
kelp bass, adult	6/18/02	**2**	**1**	**6.00**		**1.00**	
kelp bass, adult	9/10/02	**6**	**4**	**7.50**	**2.08**	**1.25**	**0.50**
kelp bass, calico bass, all	6/18/02	**2**	**2**	**7.50**	**2.12**	**1.50**	**0.71**
kelp bass, calico bass, all	9/10/02	**6**	**6**	**6.67**	**3.78**	**1.17**	**0.75**
kelp bass, juvenile	6/18/02	**2**	**1**	**0.00**		**0.00**	
kelp bass, juvenile	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, adult	6/18/02	**2**	**1**	**0.00**		**0.00**	
kelp rockfish, adult	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, all	6/18/02	**2**	**2**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, all	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, juvenile	6/18/02	**2**	**1**	**0.00**		**0.00**	
kelp rockfish, juvenile	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
ocean whitefish	6/18/02	**2**	**1**	**8.00**		**2.00**	
ocean whitefish	9/10/02	**6**	**1**	**6.00**		**2.00**	
olive rockfish, adult	6/18/02	**2**	**1**	**0.00**		**0.00**	
olive rockfish, adult	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
olive rockfish, all	6/18/02	**2**	**2**	**0.00**	**0.00**	**0.00**	**0.00**

olive rockfish, all	9/10/02	**6**	**6**	**4.83**	**4.02**	**1.33**	**1.03**
olive/yellowtail rockfish,	6/18/02	**2**	**1**	**0.00**		**0.00**	
olive/yellowtail rockfish,	9/10/02	**6**	**4**	**7.25**	**1.89**	**2.00**	**0.00**
opaleye, adult	6/18/02	**2**	**1**	**10.00**		**1.00**	
opaleye, adult	9/10/02	**6**	**4**	**5.00**	**3.37**	**1.75**	**1.50**
opaleye, all	6/18/02	**2**	**2**	**9.50**	**0.71**	**1.00**	**0.00**
opaleye, all	9/10/02	**6**	**6**	**4.33**	**3.39**	**1.67**	**1.51**
opaleye, juvenile	6/18/02	**2**	**1**	**0.00**		**0.00**	
opaleye, juvenile	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
painted greenling	6/18/02	**2**	**2**	**9.50**	**0.71**	**3.00**	**0.00**
painted greenling	9/10/02	**6**	**6**	**8.83**	**1.47**	**2.00**	**0.00**
pile surfperch, adult	6/18/02	**2**	**1**	**0.00**		**0.00**	
pile surfperch, adult	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
pile surfperch, all	6/18/02	**2**	**2**	**0.00**	**0.00**	**0.00**	**0.00**
pile surfperch, all	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
pile surfperch, juvenile	6/18/02	**2**	**1**	**0.00**		**0.00**	
pile surfperch, juvenile	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
rock wrasse, female	6/18/02	**2**	**2**	**3.50**	**4.95**	**0.50**	**0.71**
rock wrasse, female	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
rock wrasse, male	6/18/02	**2**	**2**	**4.00**	**5.66**	**0.50**	**0.71**
rock wrasse, male	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, adult	6/18/02	**2**	**1**	**0.00**		**0.00**	
senorita, adult	9/10/02	**6**	**4**	**8.50**	**1.73**	**2.75**	**0.50**
senorita, all	6/18/02	**2**	**2**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, all	9/10/02	**6**	**6**	**9.00**	**1.55**	**2.67**	**0.52**
senorita, juvenile	6/18/02	**2**	**1**	**0.00**		**0.00**	
senorita, juvenile	9/10/02	**6**	**4**	**6.75**	**4.72**	**1.50**	**1.00**
snubnose sculpin	6/18/02	**2**	**2**	**9.00**	**0.00**	**2.00**	**0.00**
snubnose sculpin	9/10/02	**6**	**2**	**10.00**	**0.00**	**1.50**	**0.71**
striped surfperch, adult	6/18/02	**2**	**1**	**0.00**		**0.00**	
striped surfperch, adult	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, all	6/18/02	**2**	**2**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, all	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, juvenile	6/18/02	**2**	**1**	**0.00**		**0.00**	
striped surfperch, juvenile	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
treefish, adult	6/18/02	**2**	**2**	**0.00**	**0.00**	**0.00**	**0.00**
treefish, adult	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
treefish, juvenile	6/18/02	**2**	**2**	**0.00**	**0.00**	**0.00**	**0.00**
treefish, juvenile	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**

Santa Barbara Island - Arch Point

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
black surfperch, adult	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, adult	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, all	6/18/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, all	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, juvenile	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, juvenile	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
blackeye goby	6/18/02	**5**	**5**	**10.00**	**0.00**	**2.80**	**0.45**
blackeye goby	9/9/02	**6**	**6**	**7.83**	**3.92**	**1.83**	**1.17**
blacksmith, adult	6/18/02	**5**	**4**	**7.00**	**4.69**	**3.00**	**2.00**
blacksmith, adult	9/9/02	**6**	**6**	**10.00**	**0.00**	**4.00**	**0.00**
blacksmith, all	6/18/02	**5**	**5**	**9.00**	**0.71**	**3.80**	**0.45**
blacksmith, all	9/9/02	**6**	**6**	**10.00**	**0.00**	**4.00**	**0.00**
blacksmith, juvenile	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blacksmith, juvenile	9/9/02	**6**	**6**	**9.50**	**0.84**	**3.83**	**0.41**
blue rockfish, adult	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, adult	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, all	6/18/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, all	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, juvenile	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, juvenile	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
blue-banded goby	6/18/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
blue-banded goby	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
cabezon	6/18/02	**5**	**1**	**10.00**		**1.00**	
California moray	6/18/02	**5**	**1**	**7.00**		**2.00**	
California moray	9/9/02	**6**	**1**	**5.00**		**2.00**	
California sheephead,	6/18/02	**5**	**5**	**5.20**	**5.02**	**1.20**	**1.10**
California sheephead,	9/9/02	**6**	**6**	**9.17**	**1.17**	**2.33**	**0.52**
California sheephead,	6/18/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	9/9/02	**6**	**6**	**2.33**	**3.83**	**0.33**	**0.52**
California sheephead,	6/18/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	9/9/02	**6**	**6**	**3.17**	**3.49**	**0.83**	**0.98**
coralline sculpin	6/18/02	**5**	**1**	**9.00**		**2.00**	
garibaldi, adult	6/18/02	**5**	**5**	**10.00**	**0.00**	**3.00**	**0.00**
garibaldi, adult	9/9/02	**6**	**6**	**10.00**	**0.00**	**3.00**	**0.00**
garibaldi, juvenile	6/18/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
garibaldi, juvenile	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
grass rockfish	6/18/02	**5**	**2**	**7.50**	**2.12**	**1.00**	**0.00**
grass rockfish	9/9/02	**6**	**1**	**7.00**		**1.00**	
halfmoon	6/18/02	**5**	**3**	**8.00**	**0.00**	**1.33**	**0.58**
halfmoon	9/9/02	**6**	**6**	**10.00**	**0.00**	**3.00**	**0.00**
island kelpfish	6/18/02	**5**	**5**	**9.40**	**0.55**	**2.20**	**0.45**
island kelpfish	9/9/02	**6**	**6**	**6.67**	**3.72**	**1.50**	**0.84**
kelp bass, adult	6/18/02	**5**	**4**	**6.50**	**4.43**	**1.50**	**1.00**
kelp bass, adult	9/9/02	**6**	**6**	**9.00**	**0.89**	**2.00**	**0.63**
kelp bass, calico bass, all	6/18/02	**5**	**5**	**6.60**	**3.85**	**1.40**	**0.89**
kelp bass, calico bass, all	9/9/02	**6**	**6**	**9.00**	**0.89**	**2.00**	**0.63**
kelp bass, juvenile	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp bass, juvenile	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, adult	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, adult	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, all	6/18/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, all	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, juvenile	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, juvenile	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**

ocean whitefish	9/9/02	**6**	**3**	**9.00**	**1.73**	**2.00**	**0.00**
olive rockfish, adult	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
olive rockfish, adult	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
olive rockfish, all	6/18/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
olive rockfish, all	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
olive/yellowtail rockfish,	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
olive/yellowtail rockfish,	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, adult	6/18/02	**5**	**4**	**4.50**	**5.20**	**1.00**	**1.15**
opaleye, adult	9/9/02	**6**	**6**	**10.00**	**0.00**	**3.00**	**0.00**
opaleye, all	6/18/02	**5**	**5**	**3.60**	**4.93**	**0.80**	**1.10**
opaleye, all	9/9/02	**6**	**6**	**10.00**	**0.00**	**3.00**	**0.00**
opaleye, juvenile	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
opaleye, juvenile	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
painted greenling	6/18/02	**5**	**4**	**9.25**	**0.50**	**2.00**	**0.00**
painted greenling	9/9/02	**6**	**6**	**8.83**	**1.17**	**2.17**	**0.41**
pile surfperch, adult	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
pile surfperch, adult	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
pile surfperch, all	6/18/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
pile surfperch, all	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
pile surfperch, juvenile	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
pile surfperch, juvenile	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
rock wrasse, female	6/18/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
rock wrasse, female	9/9/02	**6**	**6**	**2.83**	**4.40**	**0.67**	**1.03**
rock wrasse, male	6/18/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
rock wrasse, male	9/9/02	**6**	**6**	**2.50**	**3.99**	**0.50**	**0.84**
senorita, adult	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, adult	9/9/02	**6**	**6**	**9.17**	**0.75**	**2.67**	**0.52**
senorita, all	6/18/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, all	9/9/02	**6**	**6**	**9.17**	**0.75**	**2.83**	**0.41**
senorita, juvenile	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
senorita, juvenile	9/9/02	**6**	**6**	**7.67**	**1.51**	**2.50**	**0.84**
snubnose sculpin	6/18/02	**5**	**4**	**8.75**	**1.50**	**1.75**	**0.50**
snubnose sculpin	9/9/02	**6**	**1**	**8.00**		**2.00**	
speckled sanddab	6/18/02	**5**	**1**	**10.00**		**2.00**	
striped surfperch, adult	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, adult	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, all	6/18/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, all	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, juvenile	6/18/02	**5**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
striped surfperch, juvenile	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
top smelt	9/9/02	**6**	**2**	**8.50**	**2.12**	**3.00**	**1.41**
treefish, adult	6/18/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
treefish, adult	9/9/02	**6**	**6**	**1.50**	**3.67**	**0.17**	**0.41**
treefish, juvenile	6/18/02	**5**	**5**	**0.00**	**0.00**	**0.00**	**0.00**
treefish, juvenile	9/9/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
yellowtail	9/9/02	**6**	**2**	**10.00**	**0.00**	**2.00**	**0.00**

Santa Barbara Island - Cat Canyon

CommonName:	Date:	Maximum# of Observers:	# of Observations:	Avg Score:	StDev Score:	Avg Abundance:	StDev Abundance:
bat ray	6/19/02	**4**	**4**	**8.00**	**1.41**	**1.50**	**0.58**
bat ray	9/10/02	**6**	**2**	**9.00**	**1.41**	**1.00**	**0.00**
black surfperch, adult	6/19/02	**4**	**3**	**7.33**	**0.58**	**1.33**	**0.58**
black surfperch, adult	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, all	6/19/02	**4**	**4**	**7.50**	**0.58**	**1.50**	**0.58**
black surfperch, all	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, juvenile	6/19/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
black surfperch, juvenile	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blackeye goby	6/19/02	**4**	**4**	**9.50**	**1.00**	**3.00**	**0.00**
blackeye goby	9/10/02	**6**	**6**	**8.83**	**1.83**	**2.67**	**0.82**
blacksmith, adult	6/19/02	**4**	**3**	**10.00**	**0.00**	**4.00**	**0.00**
blacksmith, adult	9/10/02	**6**	**6**	**9.50**	**0.55**	**4.00**	**0.00**
blacksmith, all	6/19/02	**4**	**4**	**7.50**	**5.00**	**3.00**	**2.00**
blacksmith, all	9/10/02	**6**	**6**	**9.50**	**0.55**	**4.00**	**0.00**
blacksmith, juvenile	6/19/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
blacksmith, juvenile	9/10/02	**6**	**6**	**7.67**	**3.78**	**3.17**	**1.60**
blue rockfish, adult	6/19/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, adult	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, all	6/19/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, all	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, juvenile	6/19/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
blue rockfish, juvenile	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue-banded goby	6/19/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
blue-banded goby	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
c-o turbot	6/19/02	**4**	**2**	**7.00**	**0.00**	**1.00**	**0.00**
California sheephead,	6/19/02	**4**	**4**	**9.50**	**1.00**	**2.00**	**0.00**
California sheephead,	9/10/02	**6**	**6**	**5.50**	**4.46**	**1.17**	**0.98**
California sheephead,	6/19/02	**4**	**4**	**2.50**	**2.89**	**0.75**	**0.96**
California sheephead,	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
California sheephead,	6/19/02	**4**	**4**	**3.75**	**4.35**	**0.75**	**0.96**
California sheephead,	9/10/02	**6**	**6**	**5.50**	**4.59**	**0.83**	**0.75**
coralline sculpin	6/19/02	**4**	**1**	**6.00**		**2.00**	
garibaldi, adult	6/19/02	**4**	**4**	**10.00**	**0.00**	**3.00**	**0.00**
garibaldi, adult	9/10/02	**6**	**6**	**10.00**	**0.00**	**2.33**	**0.52**
garibaldi, juvenile	6/19/02	**4**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
garibaldi, juvenile	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
grass rockfish	6/19/02	**4**	**1**	**10.00**		**1.00**	
halfmoon	6/19/02	**4**	**4**	**7.50**	**2.38**	**1.75**	**0.50**
halfmoon	9/10/02	**6**	**6**	**9.67**	**0.52**	**3.00**	**0.00**
island kelpfish	6/19/02	**4**	**4**	**9.75**	**0.50**	**3.25**	**0.50**
island kelpfish	9/10/02	**6**	**6**	**9.33**	**0.82**	**2.00**	**0.00**
kelp bass, adult	6/19/02	**4**	**3**	**7.67**	**1.15**	**2.00**	**0.00**
kelp bass, adult	9/10/02	**6**	**4**	**6.00**	**4.32**	**1.25**	**0.96**
kelp bass, calico bass, all	6/19/02	**4**	**4**	**5.75**	**3.95**	**1.50**	**1.00**
kelp bass, calico bass, all	9/10/02	**6**	**6**	**7.33**	**3.93**	**1.50**	**0.84**
kelp bass, juvenile	6/19/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
kelp bass, juvenile	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, adult	6/19/02	**4**	**3**	**3.00**	**5.20**	**0.33**	**0.58**
kelp rockfish, adult	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, all	6/19/02	**4**	**4**	**2.25**	**4.50**	**0.25**	**0.50**
kelp rockfish, all	9/10/02	**6**	**6**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, juvenile	6/19/02	**4**	**3**	**0.00**	**0.00**	**0.00**	**0.00**
kelp rockfish, juvenile	9/10/02	**6**	**4**	**0.00**	**0.00**	**0.00**	**0.00**
ocean whitefish	9/10/02	**6**	**2**	**5.00**	**0.00**	**1.00**	**0.00**

olive rockfish, adult	6/19/02	4	3	0.00	0.00	0.00	0.00
olive rockfish, adult	9/10/02	6	4	7.00	4.76	0.75	0.50
olive rockfish, all	6/19/02	4	4	0.00	0.00	0.00	0.00
olive rockfish, all	9/10/02	6	6	4.67	5.16	0.50	0.55
olive/yellowtail rockfish,	6/19/02	4	3	0.00	0.00	0.00	0.00
olive/yellowtail rockfish,	9/10/02	6	4	0.00	0.00	0.00	0.00
opaleye, adult	6/19/02	4	3	9.67	0.58	2.67	0.58
opaleye, adult	9/10/02	6	4	9.50	0.58	2.75	0.50
opaleye, all	6/19/02	4	4	9.75	0.50	2.75	0.50
opaleye, all	9/10/02	6	6	9.67	0.52	2.83	0.41
opaleye, juvenile	6/19/02	4	3	0.00	0.00	0.00	0.00
opaleye, juvenile	9/10/02	6	4	0.00	0.00	0.00	0.00
pacific angel shark	6/19/02	4	1	5.00		1.00	
painted greenling	6/19/02	4	4	9.50	0.58	2.00	0.00
painted greenling	9/10/02	6	6	7.33	3.88	1.67	0.82
pile surfperch, adult	6/19/02	4	3	0.00	0.00	0.00	0.00
pile surfperch, adult	9/10/02	6	4	0.00	0.00	0.00	0.00
pile surfperch, all	6/19/02	4	4	0.00	0.00	0.00	0.00
pile surfperch, all	9/10/02	6	6	0.00	0.00	0.00	0.00
pile surfperch, juvenile	6/19/02	4	3	0.00	0.00	0.00	0.00
pile surfperch, juvenile	9/10/02	6	4	0.00	0.00	0.00	0.00
rock wrasse, female	6/19/02	4	4	9.00	0.82	1.75	0.50
rock wrasse, female	9/10/02	6	6	1.17	2.86	0.17	0.41
rock wrasse, male	6/19/02	4	4	5.00	3.37	1.00	0.82
rock wrasse, male	9/10/02	6	6	0.00	0.00	0.00	0.00
senorita, adult	6/19/02	4	3	10.00	0.00	3.33	0.58
senorita, adult	9/10/02	6	6	9.50	0.55	2.83	0.41
senorita, all	6/19/02	4	4	10.00	0.00	3.25	0.50
senorita, all	9/10/02	6	6	9.50	0.55	3.33	0.52
senorita, juvenile	6/19/02	4	3	0.00	0.00	0.00	0.00
senorita, juvenile	9/10/02	6	6	7.17	3.76	2.83	1.47
snubnose sculpin	6/19/02	4	1	9.00		2.00	
snubnose sculpin	9/10/02	6	1	6.00		2.00	
striped surfperch, adult	6/19/02	4	3	0.00	0.00	0.00	0.00
striped surfperch, adult	9/10/02	6	4	0.00	0.00	0.00	0.00
striped surfperch, all	6/19/02	4	4	0.00	0.00	0.00	0.00
striped surfperch, all	9/10/02	6	6	0.00	0.00	0.00	0.00
striped surfperch, juvenile	6/19/02	4	3	0.00	0.00	0.00	0.00
striped surfperch, juvenile	9/10/02	6	4	0.00	0.00	0.00	0.00
treefish, adult	6/19/02	4	4	0.00	0.00	0.00	0.00
treefish, adult	9/10/02	6	6	0.00	0.00	0.00	0.00
treefish, juvenile	6/19/02	4	4	0.00	0.00	0.00	0.00
treefish, juvenile	9/10/02	6	6	0.00	0.00	0.00	0.00

Appendix G: Natural Habitat Size Frequencies Distributions

2002 Natural Habitat Size Frequency Distributions

San Miguel Island - Wyckoff Ledge

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	**2.0%**
95 - 104	**0.0%**
105 - 114	**0.0%**
115 - 124	**2.0%**
125 - 134	**6.0%**
135 - 144	**8.0%**
145 - 154	**2.0%**
155 - 164	**4.0%**
165 - 174	**22.0%**
175 - 184	**16.0%**
185 - 194	**26.0%**
>195	**10.0%**
(Cases) N=	**50**
mean	**173**
min size (mm)	**92**
max size (mm)	**227**

Asterina miniata

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**1.7%**
30 - 39	**3.4%**
40 - 49	**1.7%**
50 - 59	**11.9%**
60 - 69	**44.1%**
70 - 79	**25.4%**
80 - 89	**10.2%**
90 - 99	**1.7%**
> 99	**0.0%**
(Cases) N=	**59**
mean	**65**
min size (mm)	**28**
max size (mm)	**90**

Pisaster giganteus

< 20	**1.7%**
20 - 39	**11.7%**
40 - 59	**33.3%**
60 - 79	**33.3%**
80 - 99	**13.3%**
100 - 119	**0.0%**
120 - 139	**3.3%**
140 - 159	**0.0%**
160 - 179	**0.0%**
180 - 199	**1.7%**
200 - 219	**1.7%**
220 - 239	**0.0%**
> 239	**0.0%**
(Cases) N=	**60**
mean	**66**
min size (mm)	**11**
max size (mm)	**202**

Pycnopodia helianthoides

< 20	**0.0%**
20 - 39	**0.0%**
40 - 59	**0.0%**
60 - 79	**7.7%**
80 - 99	**7.7%**
100 - 119	**7.7%**
120 - 139	**15.4%**
140 - 159	**7.7%**
160 - 179	**7.7%**
180 - 199	**15.4%**
200 - 219	**15.4%**
220 - 239	**7.7%**
240 - 259	**7.7%**
260 - 279	**0.0%**
280 - 299	**0.0%**
> 299	**0.0%**
(Cases) N=	**13**
mean	**166**
min size (mm)	**78**
max size (mm)	**252**

S. franciscanus

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**0.0%**
15 - 19	**1.6%**
20 - 24	**4.2%**
25 - 29	**4.7%**
30 - 34	**3.1%**
35 - 39	**1.0%**
40 - 44	**2.1%**
45 - 49	**2.6%**
50 - 54	**2.6%**
55 - 59	**5.2%**
60 - 64	**5.8%**
65 - 69	**6.8%**
70 - 74	**8.4%**
75 - 79	**8.4%**
80 - 84	**14.7%**
85 - 89	**14.1%**
90 - 94	**11.0%**
95 - 99	**3.1%**
100 - 104	**0.0%**
105 - 109	**0.5%**
> 109	**0.0%**
(Cases) N=	**191**
mean	**69**
min size (mm)	**16**
max size (mm)	**108**

Strongylocentrotus purpuratus

< 5	**0.0%**
5 - 9	**1.6%**
10 - 14	**3.3%**
15 - 19	**8.2%**
20 - 24	**14.8%**
25 - 29	**6.6%**
30 - 34	**16.4%**
35 - 39	**9.8%**
40 - 44	**3.3%**
45 - 49	**4.9%**
50 - 54	**8.2%**
55 - 59	**3.3%**
60 - 64	**13.1%**
65 - 69	**4.9%**
70 - 74	**1.6%**
75 - 79	**0.0%**
> 79	**0.0%**
(Cases) N=	**61**
mean	**38**
min size (mm)	**7**
max size (mm)	**70**

2002 Natural Habitat Size Frequency Distributions

San Miguel Island - Hare Rock

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	3.0%
30 - 39	6.1%
40 - 49	12.1%
50 - 59	33.3%
60 - 69	21.2%
70 - 79	15.2%
80 - 89	9.1%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	33
mean	59
min size (mm)	24
max size (mm)	84

Pycnopodia helianthoides

< 20	0.0%
20 - 39	3.0%
40 - 59	6.1%
60 - 79	13.6%
80 - 99	19.7%
100 - 119	15.2%
120 - 139	21.2%
140 - 159	10.6%
160 - 179	1.5%
180 - 199	1.5%
200 - 219	1.5%
220 - 239	1.5%
240 - 259	4.5%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	66
mean	116
min size (mm)	32
max size (mm)	250

S. franciscanus

< 5	0.5%
5 - 9	0.5%
10 - 14	2.3%
15 - 19	0.9%
20 - 24	8.0%
25 - 29	7.0%
30 - 34	5.6%
35 - 39	3.8%
40 - 44	8.0%
45 - 49	15.0%
50 - 54	16.9%
55 - 59	7.0%
60 - 64	8.0%
65 - 69	3.8%
70 - 74	4.7%
75 - 79	5.2%
80 - 84	2.3%
85 - 89	0.5%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	213
mean	48
min size (mm)	4
max size (mm)	89

Strongylocentrotus purpuratus

< 5	0.4%
5 - 9	0.8%
10 - 14	14.2%
15 - 19	43.5%
20 - 24	15.9%
25 - 29	12.1%
30 - 34	6.7%
35 - 39	2.1%
40 - 44	2.5%
45 - 49	1.3%
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=	239
mean	21
min size (mm)	4
max size (mm)	51

Tethya aurantia

<10	0.0%
10 - 19	1.7%
20 - 29	1.7%
30 - 39	1.7%
40 - 49	6.8%
50 - 59	11.9%
60 - 69	5.1%
70 - 79	30.5%
80 - 89	18.6%
90 - 99	10.2%
> 99	11.9%
(Cases) N=	59
mean	75
min size (mm)	12
max size (mm)	115

Haliotis rufescens

<25	50.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	0.0%
55 - 64	0.0%
65 - 74	25.0%
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	25.0%
165 - 174	0.0%
175 - 184	0.0%
185 - 194	0.0%
>195	0.0%
(Cases) N=	4
mean	64
min size (mm)	12
max size (mm)	160

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	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	25.0%
100 - 109	50.0%
110 - 119	25.0%
> 119	0.0%
(Cases) N=	4
mean	107
min size (mm)	98
max size (mm)	119

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	1.7%
30 - 39	1.7%
40 - 49	8.3%
50 - 59	20.0%
60 - 69	21.7%
70 - 79	16.7%
80 - 89	20.0%
90 - 99	10.0%
> 99	0.0%
(Cases) N=	60
mean	68
min size (mm)	21
max size (mm)	94

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	21.7%
60 - 79	56.7%
80 - 99	16.7%
100 - 119	3.3%
120 - 139	0.0%
140 - 159	0.0%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	1.7%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	60

Pycnopodia helianthoides

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	13.1%
80 - 99	13.1%
100 - 119	19.7%
120 - 139	24.6%
140 - 159	11.5%
160 - 179	9.8%
180 - 199	1.6%
200 - 219	3.3%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	1.6%
280 - 299	1.6%
> 299	0.0%
(Cases) N=	61
mean	127
min size (mm)	61
max size (mm)	289

S. franciscanus

< 5	0.0%
5 - 9	1.5%
10 - 14	1.0%
15 - 19	2.9%
20 - 24	5.4%
25 - 29	4.4%
30 - 34	8.8%
35 - 39	2.0%
40 - 44	2.4%
45 - 49	1.0%
50 - 54	1.5%
55 - 59	1.5%
60 - 64	5.4%
65 - 69	5.4%
70 - 74	14.6%
75 - 79	8.3%
80 - 84	20.5%
85 - 89	8.3%
90 - 94	3.9%
95 - 99	0.5%
100 - 104	1.0%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	205
mean	63
min size (mm)	5
max size (mm)	101

mean	**73**
min size (mm)	**49**
max size (mm)	**210**

Strongylocentrotus purpuratus

< 5	**0.0%**
5 - 9	**7.0%**
10 - 14	**9.3%**
15 - 19	**4.7%**
20 - 24	**9.3%**
25 - 29	**9.3%**
30 - 34	**11.6%**
35 - 39	**11.6%**
40 - 44	**14.0%**
45 - 49	**9.3%**
50 - 54	**11.6%**
55 - 59	**2.3%**
60 - 64	**0.0%**
65 - 69	**0.0%**
70 - 74	**0.0%**
75 - 79	**0.0%**
> 79	**0.0%**
(Cases) N=	**43**
mean	**32**
min size (mm)	**7**
max size (mm)	**56**

Santa Rosa Island - Johnson's Lee South

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	**0.0%**
175 - 184	**0.0%**
185 - 194	**0.0%**
>195	**100.0%**
(Cases) N=	**1**
mean	**203**
min size (mm)	**203**
max size (mm)	**203**

Asterina miniata

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**0.0%**
30 - 39	**0.0%**
40 - 49	**5.8%**
50 - 59	**25.8%**
60 - 69	**32.5%**
70 - 79	**32.5%**
80 - 89	**3.3%**
90 - 99	**0.0%**
> 99	**0.0%**
(Cases) N=	**120**
mean	**65**
min size (mm)	**41**
max size (mm)	**88**

Pisaster giganteus

< 20	**0.0%**
20 - 39	**5.9%**
40 - 59	**32.4%**
60 - 79	**20.6%**
80 - 99	**23.5%**
100 - 119	**5.9%**
120 - 139	**11.8%**
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=	**34**
mean	**75**
min size (mm)	**38**
max size (mm)	**131**

Pycnopodia helianthoides

< 20	**0.0%**
20 - 39	**0.0%**
40 - 59	**0.0%**
60 - 79	**0.0%**
80 - 99	**5.1%**
100 - 119	**11.9%**
120 - 139	**23.7%**
140 - 159	**40.7%**
160 - 179	**6.8%**
180 - 199	**6.8%**
200 - 219	**3.4%**
220 - 239	**1.7%**
240 - 259	**0.0%**
260 - 279	**0.0%**
280 - 299	**0.0%**
> 299	**0.0%**
(Cases) N=	**59**
mean	**145**
min size (mm)	**86**
max size (mm)	**220**

S. franciscanus

< 5	**0.0%**
5 - 9	**1.4%**
10 - 14	**0.5%**
15 - 19	**1.8%**
20 - 24	**5.1%**
25 - 29	**2.8%**
30 - 34	**6.5%**
35 - 39	**4.6%**
40 - 44	**5.1%**
45 - 49	**4.6%**
50 - 54	**6.9%**
55 - 59	**6.9%**
60 - 64	**5.5%**
65 - 69	**8.3%**
70 - 74	**6.9%**
75 - 79	**5.1%**
80 - 84	**9.2%**
85 - 89	**9.2%**
90 - 94	**4.1%**
95 - 99	**2.8%**
100 - 104	**1.8%**
105 - 109	**0.5%**
> 109	**0.5%**
(Cases) N=	**217**
mean	**61**
min size (mm)	**7**
max size (mm)	**110**

Strongylocentrotus purpuratus

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**1.1%**
15 - 19	**3.2%**
20 - 24	**3.2%**
25 - 29	**6.3%**
30 - 34	**15.8%**
35 - 39	**18.9%**
40 - 44	**25.3%**
45 - 49	**16.8%**
50 - 54	**6.3%**
55 - 59	**2.1%**
60 - 64	**1.1%**
65 - 69	**0.0%**
70 - 74	**0.0%**
75 - 79	**0.0%**
> 79	**0.0%**
(Cases) N=	**95**
mean	**39**
min size (mm)	**14**
max size (mm)	**64**

2002 Natural Habitat Size Frequency Distributions

Santa Rosa Island - Rodes Reef

Haliotis rufescens

<25	0.0%
25 - 34	0.0%
35 - 44	0.0%
45 - 54	50.0%
55 - 64	50.0%
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=	2
mean	53
min size (mm)	49
max size (mm)	56

Pisaster giganteus

< 20	1.3%
20 - 39	4.0%
40 - 59	46.7%
60 - 79	32.0%
80 - 99	12.0%
100 - 119	2.7%
120 - 139	0.0%
140 - 159	1.3%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	75
mean	63
min size (mm)	17
max size (mm)	152

Pycnopodia helianthoides

< 20	0.0%
20 - 39	2.3%
40 - 59	8.0%
60 - 79	24.1%
80 - 99	33.3%
100 - 119	18.4%
120 - 139	4.6%
140 - 159	2.3%
160 - 179	1.1%
180 - 199	2.3%
200 - 219	1.1%
220 - 239	2.3%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	87
mean	95
min size (mm)	27
max size (mm)	236

S. franciscanus

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	2.3%
20 - 24	0.9%
25 - 29	2.3%
30 - 34	6.5%
35 - 39	15.2%
40 - 44	24.9%
45 - 49	16.1%
50 - 54	14.7%
55 - 59	7.8%
60 - 64	1.8%
65 - 69	3.7%
70 - 74	0.9%
75 - 79	0.9%
80 - 84	1.8%
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=	217
mean	46
min size (mm)	16
max size (mm)	83

Lithopoma undosum

<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	57.1%
70 - 79	28.6%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	7
mean	68
min size (mm)	56
max size (mm)	78

Lithopoma gibberosum

<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	45
min size (mm)	45
max size (mm)	45

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	0.0%
70 - 79	16.7%
80 - 89	66.7%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	16.7%
(Cases) N=	6
mean	101
min size (mm)	79
max size (mm)	186

Asterina miniata

<10	0.0%
10 - 19	1.6%
20 - 29	1.6%
30 - 39	8.1%
40 - 49	12.9%
50 - 59	22.6%
60 - 69	32.3%
70 - 79	16.1%
80 - 89	1.6%
90 - 99	1.6%
> 99	1.6%
(Cases) N=	62
mean	59
min size (mm)	15
max size (mm)	100

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	1.5%
60 - 79	18.5%
80 - 99	16.9%
100 - 119	30.8%
120 - 139	16.9%
140 - 159	6.2%
160 - 179	6.2%
180 - 199	1.5%
200 - 219	1.5%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	65
mean	111

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	12.5%
140 - 159	16.7%
160 - 179	25.0%
180 - 199	33.3%
200 - 219	12.5%
220 - 239	0.0%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	24
mean	173
min size (mm)	120
max size (mm)	217

S. franciscanus

< 5	0.0%
5 - 9	0.0%
10 - 14	6.7%
15 - 19	6.7%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	13.3%
35 - 39	13.3%
40 - 44	6.7%
45 - 49	0.0%
50 - 54	6.7%
55 - 59	13.3%
60 - 64	0.0%
65 - 69	6.7%
70 - 74	0.0%
75 - 79	20.0%
80 - 84	0.0%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	6.7%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	15
mean	52
min size (mm)	12
max size (mm)	102

min size (mm)	**57**
max size (mm)	**215**

Santa Cruz Island - Gull Island South

Strongylocentrotus purpuratus

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**0.0%**
15 - 19	**11.4%**
20 - 24	**20.0%**
25 - 29	**31.4%**
30 - 34	**31.4%**
35 - 39	**5.7%**
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	**0.0%**
75 - 79	**0.0%**
> 79	**0.0%**
(Cases) N=	**35**
mean	**28**
min size (mm)	**17**
max size (mm)	**39**

Santa Cruz Island - Fry's Harbor

Kelletia kelletii

< 40	**0.0%**
40 - 49	**0.0%**
50 - 59	**0.0%**
60 - 69	**0.0%**
70 - 79	**0.0%**
80 - 89	**12.5%**
90 - 99	**0.0%**
100 - 109	**62.5%**
110 - 119	**25.0%**
120 - 129	**0.0%**
130 - 139	**0.0%**
140 - 149	**0.0%**
> 149	**0.0%**
(Cases) N=	**8**
mean	**104**
min size (mm)	**88**
max size (mm)	**118**

Megathura crenulata

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**1.6%**
30 - 39	**0.0%**
40 - 49	**1.6%**
50 - 59	**13.1%**
60 - 69	**36.1%**
70 - 79	**36.1%**
80 - 89	**9.8%**
90 - 99	**1.6%**
100 - 109	**0.0%**
110 - 119	**0.0%**
> 119	**0.0%**
(Cases) N=	**61**
mean	**68**
min size (mm)	**21**
max size (mm)	**90**

Asterina miniata

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**0.0%**
30 - 39	**4.1%**
40 - 49	**12.3%**
50 - 59	**24.7%**
60 - 69	**34.2%**
70 - 79	**20.5%**
80 - 89	**4.1%**
90 - 99	**0.0%**
> 99	**0.0%**
(Cases) N=	**73**
mean	**61**
min size (mm)	**31**
max size (mm)	**89**

Lithopoma undosum

<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=	**1**
mean	**52**
min size (mm)	**52**
max size (mm)	**52**

Crassedoma giganteum

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**0.0%**
30 - 39	**12.5%**
40 - 49	**18.8%**
50 - 59	**6.3%**
60 - 69	**0.0%**
70 - 79	**6.3%**
80 - 89	**12.5%**
90 - 99	**0.0%**
100 - 109	**6.3%**
110 - 119	**12.5%**
120 - 129	**6.3%**
130 - 139	**12.5%**
> 139	**6.3%**
(Cases) N=	**16**
mean	**86**
min size (mm)	**33**
max size (mm)	**157**

Pisaster giganteus

< 20	**0.0%**
20 - 39	**1.5%**
40 - 59	**26.2%**
60 - 79	**47.7%**
80 - 99	**7.7%**
100 - 119	**7.7%**
120 - 139	**4.6%**
140 - 159	**1.5%**
160 - 179	**1.5%**
180 - 199	**1.5%**
200 - 219	**0.0%**
220 - 239	**0.0%**
> 239	**0.0%**
(Cases) N=	**65**
mean	**75**
min size (mm)	
min size (mm)	**37**
max size (mm)	**181**

Lytechinus anamesus

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**0.6%**
15 - 19	**27.1%**
20 - 24	**66.5%**
25 - 29	**5.9%**
30 - 34	**0.0%**
35 - 39	**0.0%**
40 - 44	**0.0%**
45 - 49	**0.0%**
> 49	**0.0%**
(Cases) N=	**170**
mean	**21**
min size (mm)	**14**

max size (mm) 28

S. franciscanus

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**1.5%**
15 - 19	**2.0%**
20 - 24	**5.5%**
25 - 29	**24.6%**
30 - 34	**21.1%**
35 - 39	**17.6%**
40 - 44	**9.5%**
45 - 49	**4.0%**
50 - 54	**4.5%**
55 - 59	**2.0%**
60 - 64	**2.0%**
65 - 69	**2.5%**
70 - 74	**0.5%**
75 - 79	**0.5%**
80 - 84	**0.5%**
85 - 89	**0.0%**
90 - 94	**0.5%**
95 - 99	**0.5%**
100 - 104	**0.0%**
105 - 109	**0.5%**
> 109	**0.0%**
(Cases) N=	**199**
mean	**37**
min size (mm)	**12**
max size (mm)	**109**

Strongylocentrotus purpuratus

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**2.0%**
15 - 19	**25.7%**
20 - 24	**36.3%**
25 - 29	**20.8%**
30 - 34	**6.3%**
35 - 39	**5.6%**
40 - 44	**1.7%**
45 - 49	**1.0%**
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=	**303**
mean	**24**
min size (mm)	**13**
max size (mm)	**52**

Tethya aurantia

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

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	0.0%
110 - 119	25.0%
120 - 129	50.0%
130 - 139	25.0%
140 - 149	0.0%
> 149	0.0%
(Cases) N=	4
mean	123
min size (mm)	117
max size (mm)	130

Lithopoma undosum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	9.4%
50 - 59	28.1%
60 - 69	39.1%
70 - 79	17.2%
80 - 89	6.3%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	64
mean	62

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	3.1%
40 - 49	3.1%
50 - 59	15.6%
60 - 69	18.8%
70 - 79	12.5%
80 - 89	6.3%
90 - 99	6.3%
100 - 109	6.3%
110 - 119	3.1%
120 - 129	15.6%
130 - 139	6.3%
> 139	3.1%
(Cases) N=	32
mean	86
min size (mm)	39
max size (mm)	152

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	3.3%
40 - 49	1.7%
50 - 59	8.3%
60 - 69	23.3%
70 - 79	40.0%
80 - 89	15.0%
90 - 99	5.0%
> 99	3.3%
(Cases) N=	60
mean	73
min size (mm)	38
max size (mm)	119

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	1.6%
60 - 79	8.2%
80 - 99	23.0%
100 - 119	18.0%
120 - 139	23.0%
140 - 159	11.5%
160 - 179	9.8%
180 - 199	4.9%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	61
mean	(Cases) N=119
mean	119
min size (mm)	59
max size (mm)	199

Lytechinus anamesus

< 5	0.0%
5 - 9	0.0%
10 - 14	0.5%
15 - 19	0.5%
20 - 24	52.9%
25 - 29	42.3%
30 - 34	3.7%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	189
mean	24
min size (mm)	13
max size (mm)	31

min size (mm)	**43**
max size (mm)	**84**

S. franciscanus

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**0.0%**
15 - 19	**0.5%**
20 - 24	**6.4%**
25 - 29	**19.1%**
30 - 34	**21.1%**
35 - 39	**22.1%**
40 - 44	**12.7%**
45 - 49	**7.4%**
50 - 54	**6.9%**
55 - 59	**2.0%**
60 - 64	**1.0%**
65 - 69	**0.5%**
70 - 74	**0.5%**
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=	**204**
mean	**36**
min size (mm)	**15**
max size (mm)	**70**

Strongylocentrotus purpuratus

< 5	**0.0%**
5 - 9	**0.5%**
10 - 14	**0.5%**
15 - 19	**10.0%**
20 - 24	**41.4%**
25 - 29	**26.4%**
30 - 34	**12.3%**
35 - 39	**5.0%**
40 - 44	**3.2%**
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=	**220**
mean	**26**
min size (mm)	**7**
max size (mm)	**45**

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	27.6%
30 - 39	34.5%
40 - 49	6.9%
50 - 59	17.2%
60 - 69	10.3%
70 - 79	3.4%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	29
mean	40
min size (mm)	22
max size (mm)	70

Lithopoma undosum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	13.1%
40 - 49	72.1%
50 - 59	13.1%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	1.6%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	61
mean	45
min size (mm)	32
max size (mm)	85

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	2.3%
40 - 49	11.4%
50 - 59	25.0%
60 - 69	22.7%
70 - 79	34.1%
80 - 89	4.5%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	44
mean	63

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	10.2%
50 - 59	13.6%
60 - 69	22.0%
70 - 79	15.3%
80 - 89	10.2%
90 - 99	6.8%
100 - 109	6.8%
110 - 119	13.6%
120 - 129	1.7%
130 - 139	0.0%
> 139	0.0%
(Cases) N=	59
mean	77
min size (mm)	42
max size (mm)	121

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	5.3%
40 - 49	7.4%
50 - 59	12.6%
60 - 69	25.3%
70 - 79	27.4%
80 - 89	16.8%
90 - 99	4.2%
> 99	1.1%
(Cases) N=	95
mean	68
min size (mm)	31
max size (mm)	105

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	2.7%
60 - 79	40.0%
80 - 99	34.7%
100 - 119	17.3%
120 - 139	2.7%
140 - 159	1.3%
160 - 179	0.0%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	1.3%
(Cases) N=	75
mean	(Cases) N=87
mean	87
min size (mm)	52
max size (mm)	242

Lytechinus anamesus

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	7.4%
20 - 24	3.7%
25 - 29	59.3%
30 - 34	29.6%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	27
mean	28
min size (mm)	18
max size (mm)	34

min size (mm)	**32**
max size (mm)	**83**

S. franciscanus

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**0.0%**
15 - 19	**0.0%**
20 - 24	**1.4%**
25 - 29	**10.5%**
30 - 34	**12.0%**
35 - 39	**18.2%**
40 - 44	**25.8%**
45 - 49	**9.6%**
50 - 54	**9.6%**
55 - 59	**6.7%**
60 - 64	**3.8%**
65 - 69	**1.0%**
70 - 74	**1.0%**
75 - 79	**0.0%**
80 - 84	**0.5%**
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=	**209**
mean	**42**
min size (mm)	**20**
max size (mm)	**84**

Strongylocentrotus purpuratus

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**0.9%**
15 - 19	**43.3%**
20 - 24	**45.0%**
25 - 29	**8.7%**
30 - 34	**2.2%**
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=	**231**
mean	**20**
min size (mm)	**14**
max size (mm)	**34**

Lithopoma undosum

<10	0.0%
10 - 19	1.5%
20 - 29	6.2%
30 - 39	7.7%
40 - 49	15.4%
50 - 59	60.0%
60 - 69	4.6%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	3.1%
100 - 109	0.0%
110 - 119	1.5%
> 119	0.0%
(Cases) N=	65
mean	51
min size (mm)	19
max size (mm)	117

Lithopoma gibberosum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	42.9%
40 - 49	28.6%
50 - 59	28.6%
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=	7
mean	41
min size (mm)	31
max size (mm)	56

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	10.9%
40 - 49	16.4%
50 - 59	27.3%
60 - 69	16.4%
70 - 79	21.8%
80 - 89	3.6%
90 - 99	3.6%
> 99	0.0%
(Cases) N=	55
mean	59

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	18.2%
60 - 79	4.5%
80 - 99	9.1%
100 - 119	18.2%
120 - 139	22.7%
140 - 159	13.6%
160 - 179	13.6%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	22
mean	113
min size (mm)	40
max size (mm)	178

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	0.0%
160 - 179	0.0%
180 - 199	33.3%
200 - 219	33.3%
220 - 239	33.3%
240 - 259	0.0%
260 - 279	0.0%
280 - 299	0.0%
> 299	0.0%
(Cases) N=	3
mean	206
min size (mm)	180
max size (mm)	230

Lytechinus anamesus

< 5	0.0%
5 - 9	0.3%
10 - 14	6.3%
15 - 19	49.2%
20 - 24	41.6%
25 - 29	2.5%
30 - 34	0.0%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	317
mean	19
min size (mm)	9
max size (mm)	29

S. franciscanus

< 5	0.0%
5 - 9	1.0%
10 - 14	11.3%
15 - 19	6.4%
20 - 24	14.7%
25 - 29	20.1%
30 - 34	13.7%
35 - 39	6.9%
40 - 44	2.0%
45 - 49	2.5%
50 - 54	1.0%
55 - 59	1.5%
60 - 64	1.5%
65 - 69	3.4%
70 - 74	2.0%
75 - 79	2.9%
80 - 84	3.4%
85 - 89	1.5%
90 - 94	1.0%
90 - 94	1.0%
95 - 99	2.9%
100 - 104	0.0%
105 - 109	0.5%
> 109	0.0%
(Cases) N=	204
mean	37
min size (mm)	5
max size (mm)	107

min size (mm)	**30**
max size (mm)	**91**

Santa Cruz Island - Yellow Banks

Strongylocentrotus purpuratus

< 5	**0.0%**
5 - 9	**1.7%**
10 - 14	**9.0%**
15 - 19	**54.8%**
20 - 24	**22.0%**
25 - 29	**5.6%**
30 - 34	**2.8%**
35 - 39	**1.1%**
40 - 44	**2.3%**
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%**
> 79	**0.0%**
(Cases) N=	**177**
mean	**19**
min size (mm)	**7**
max size (mm)	**45**

Lithopoma undosum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	2.0%
50 - 59	14.3%
60 - 69	14.3%
70 - 79	42.9%
80 - 89	24.5%
90 - 99	2.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	49
mean	73
min size (mm)	48
max size (mm)	91

Megathura crenulata

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	0.0%
40 - 49	3.0%
50 - 59	15.2%
60 - 69	15.2%
70 - 79	45.5%
80 - 89	21.2%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	33
mean	70
min size (mm)	46
max size (mm)	85

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	1.6%
30 - 39	1.6%
40 - 49	18.8%
50 - 59	29.7%
60 - 69	20.3%
70 - 79	20.3%
80 - 89	6.3%
90 - 99	1.6%
> 99	0.0%
(Cases) N=	64
mean	61

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	10.0%
100 - 119	0.0%
120 - 139	10.0%
140 - 159	10.0%
160 - 179	10.0%
180 - 199	10.0%
200 - 219	20.0%
220 - 239	0.0%
> 239	30.0%
(Cases) N=	10
mean	197
min size (mm)	92
max size (mm)	271

Lytechinus anamesus

< 5	0.0%
5 - 9	0.0%
10 - 14	14.2%
15 - 19	35.4%
20 - 24	35.4%
25 - 29	13.4%
30 - 34	1.6%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	127
mean	20
min size (mm)	10
max size (mm)	34

S. franciscanus

< 5	0.0%
5 - 9	0.0%
10 - 14	0.0%
15 - 19	0.4%
20 - 24	8.5%
25 - 29	31.4%
30 - 34	18.2%
35 - 39	13.6%
40 - 44	14.0%
45 - 49	7.2%
50 - 54	3.8%
55 - 59	1.3%
60 - 64	0.4%
65 - 69	0.4%
70 - 74	0.0%
75 - 79	0.8%
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=	236
mean	34
min size (mm)	17
max size (mm)	75

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	0.0%
10 - 14	0.4%
15 - 19	20.1%
20 - 24	47.4%
25 - 29	16.4%
30 - 34	10.9%
35 - 39	2.2%
40 - 44	1.8%
45 - 49	0.4%
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=	274
mean	24
min size (mm)	12
max size (mm)	54

min size (mm)	**29**
max size (mm)	**90**

Anacapa Island - Cathedral Cove

Lithopoma undosum

<10	0.0%
10 - 19	12.5%
20 - 29	21.2%
30 - 39	8.7%
40 - 49	13.8%
50 - 59	11.3%
60 - 69	13.8%
70 - 79	10.0%
80 - 89	7.5%
90 - 99	1.3%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	80
mean	47
min size (mm)	13
max size (mm)	90

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	0.0%
30 - 39	3.2%
40 - 49	11.1%
50 - 59	9.5%
60 - 69	22.2%
70 - 79	17.5%
80 - 89	7.9%
90 - 99	15.9%
100 - 109	7.9%
110 - 119	3.2%
120 - 129	0.0%
130 - 139	1.6%
> 139	0.0%
(Cases) N=	63
mean	74
min size (mm)	36
max size (mm)	136

S. franciscanus

< 5	0.0%
5 - 9	2.3%
10 - 14	0.5%
15 - 19	0.0%
20 - 24	0.0%
25 - 29	0.0%
30 - 34	0.5%
35 - 39	0.9%
40 - 44	4.2%
45 - 49	1.4%
50 - 54	2.8%
55 - 59	0.9%
60 - 64	4.7%
65 - 69	5.6%
70 - 74	8.9%
75 - 79	7.5%
80 - 84	8.9%
85 - 89	12.1%
90 - 94	10.7%
95 - 99	11.7%
100 - 104	8.9%
105 - 109	6.1%
> 109	1.4%
(Cases) N=	214
mean	80
min size (mm)	7
max size (mm)	117

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	1.5%
10 - 14	1.5%
15 - 19	2.0%
20 - 24	1.0%
25 - 29	3.1%
30 - 34	5.6%
35 - 39	9.2%
40 - 44	10.2%
45 - 49	13.8%
50 - 54	19.4%
55 - 59	18.4%
60 - 64	10.7%
65 - 69	2.6%
70 - 74	1.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	196
mean	48
min size (mm)	8
max size (mm)	72

Anacapa Island - Landing Cove

Haliotis corrugata

<25	**0.0%**
25 - 34	**0.0%**
35 - 44	**0.0%**
45 - 54	**0.0%**
55 - 64	**0.0%**
65 - 74	**0.0%**
75 - 84	**0.0%**
85 - 94	**0.0%**
95 - 104	**0.0%**
105 - 114	**0.0%**
115 - 124	**0.0%**
125 - 134	**0.0%**
135 - 144	**0.0%**
145 - 154	**20.0%**
155 - 164	**60.0%**
165 - 174	**20.0%**
175 - 184	**0.0%**
185 - 194	**0.0%**
>195	**0.0%**
(Cases) N=	**5**
mean	**160**
min size (mm)	**146**
max size (mm)	**165**

Lithopoma undosum

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**7.8%**
30 - 39	**6.3%**
40 - 49	**28.1%**
50 - 59	**29.7%**
60 - 69	**15.6%**
70 - 79	**4.7%**
80 - 89	**1.6%**
90 - 99	**1.6%**
100 - 109	**4.7%**
110 - 119	**0.0%**
> 119	**0.0%**
(Cases) N=	**64**
mean	**55**
min size (mm)	**22**
max size (mm)	**107**

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	**0.0%**
70 - 79	**0.0%**
80 - 89	**20.0%**
90 - 99	**30.0%**
100 - 109	**30.0%**
110 - 119	**10.0%**
> 119	**10.0%**
(Cases) N=	**10**
mean	**101**
min size (mm)	**82**
max size (mm)	**123**

Crassedoma giganteum

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**0.0%**
30 - 39	**0.0%**
40 - 49	**17.0%**
50 - 59	**20.8%**
60 - 69	**18.9%**
70 - 79	**17.0%**
80 - 89	**13.2%**
90 - 99	**3.8%**
100 - 109	**5.7%**
110 - 119	**1.9%**
120 - 129	**1.9%**
130 - 139	**0.0%**
> 139	**0.0%**
(Cases) N=	**53**
mean	**69**
min size (mm)	**42**
max size (mm)	**120**

Asterina miniata

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**11.8%**
30 - 39	**52.9%**
40 - 49	**29.4%**
50 - 59	**5.9%**
60 - 69	**0.0%**
70 - 79	**0.0%**
80 - 89	**0.0%**
90 - 99	**0.0%**
> 99	**0.0%**
(Cases) N=	**17**
mean	**39**
min size (mm)	**25**
min size (mm)	**25**
max size (mm)	**57**

Pisaster giganteus

< 20	**0.0%**
20 - 39	**0.0%**
40 - 59	**0.0%**
60 - 79	**30.0%**
80 - 99	**20.0%**
100 - 119	**0.0%**
120 - 139	**10.0%**
140 - 159	**0.0%**
160 - 179	**0.0%**
180 - 199	**10.0%**
200 - 219	**10.0%**
220 - 239	**10.0%**
> 239	**10.0%**
(Cases) N=	**10**
mean	**138**
min size (mm)	**63**
max size (mm)	**240**

S. franciscanus

< 5	**0.0%**
5 - 9	**3.0%**
10 - 14	**0.6%**
15 - 19	**0.6%**
20 - 24	**1.8%**
25 - 29	**1.2%**
30 - 34	**1.2%**
35 - 39	**0.6%**
40 - 44	**2.4%**
45 - 49	**1.2%**
50 - 54	**3.6%**
55 - 59	**4.8%**
60 - 64	**0.0%**
65 - 69	**2.4%**
70 - 74	**3.0%**
75 - 79	**4.8%**
80 - 84	**6.6%**
85 - 89	**9.0%**
90 - 94	**3.6%**
95 - 99	**12.0%**
100 - 104	**10.8%**
105 - 109	**9.6%**
> 109	**16.9%**
(Cases) N=	**166**
mean	**85**
min size (mm)	**6**
max size (mm)	**131**

Strongylocentrotus purpuratus

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**8.0%**
15 - 19	**2.0%**
20 - 24	**4.0%**
25 - 29	**12.0%**
30 - 34	**6.0%**
35 - 39	**6.0%**
40 - 44	**22.0%**
45 - 49	**8.0%**
50 - 54	**12.0%**
55 - 59	**18.0%**
60 - 64	**0.0%**
65 - 69	**2.0%**
70 - 74	**0.0%**
75 - 79	**0.0%**
> 79	**0.0%**
(Cases) N=	**50**
mean	**40**
min size (mm)	**10**
max size (mm)	**68**

Santa Barbara Island - SE Sea Lion Rookery

Tethya aurantia

<10	0.0%
10 - 19	0.0%
20 - 29	5.6%
30 - 39	13.9%
40 - 49	25.0%
50 - 59	33.3%
60 - 69	19.4%
70 - 79	2.8%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	36
mean	50
min size (mm)	20
max size (mm)	72

Lithopoma undosum

<10	0.0%
10 - 19	1.7%
20 - 29	30.0%
30 - 39	21.7%
40 - 49	6.7%
50 - 59	11.7%
60 - 69	21.7%
70 - 79	6.7%
80 - 89	0.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	60
mean	44
min size (mm)	18
max size (mm)	74

Crassedoma giganteum

<10	0.0%
10 - 19	0.0%
20 - 29	14.3%
30 - 39	0.0%
40 - 49	14.3%
50 - 59	14.3%
60 - 69	0.0%
70 - 79	0.0%
80 - 89	0.0%
90 - 99	28.6%
100 - 109	0.0%
110 - 119	0.0%
120 - 129	14.3%
130 - 139	14.3%
> 139	0.0%
(Cases) N=	7
mean	81
min size (mm)	28
max size (mm)	132

Asterina miniata

<10	0.0%
10 - 19	0.0%
20 - 29	1.4%
30 - 39	2.7%
40 - 49	12.3%
50 - 59	17.8%
60 - 69	23.3%
70 - 79	30.1%
80 - 89	5.5%
90 - 99	5.5%
> 99	1.4%
(Cases) N=	73
mean	65
min size (mm)	24
max size (mm)	106

Pisaster giganteus

< 20	0.0%
20 - 39	2.0%
40 - 59	0.0%
60 - 79	0.0%
80 - 99	10.2%
100 - 119	28.6%
120 - 139	40.8%
140 - 159	16.3%
160 - 179	0.0%
180 - 199	2.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	49
mean	(Cases) N=122
mean	122
min size (mm)	36
max size (mm)	182

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	0.0%
160 - 179	0.0%
180 - 199	100.0%
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=	2
mean	186
min size (mm)	180
max size (mm)	192

S. franciscanus

< 5	**0.0%**
5 - 9	**2.7%**
10 - 14	**8.9%**
15 - 19	**8.9%**
20 - 24	**3.4%**
25 - 29	**4.1%**
30 - 34	**10.3%**
35 - 39	**13.0%**
40 - 44	**21.9%**
45 - 49	**8.9%**
50 - 54	**6.2%**
55 - 59	**4.1%**
60 - 64	**0.7%**
65 - 69	**1.4%**
70 - 74	**0.0%**
75 - 79	**0.7%**
80 - 84	**1.4%**
85 - 89	**1.4%**
90 - 94	**0.7%**
95 - 99	**0.7%**
100 - 104	**0.7%**
105 - 109	**0.0%**
> 109	**0.0%**
(Cases) N=	**146**
mean	**38**
min size (mm)	**9**
max size (mm)	**100**

Lithopoma undosum

<10	0.0%
10 - 19	2.0%
20 - 29	8.0%
30 - 39	6.0%
40 - 49	28.0%
50 - 59	31.0%
60 - 69	6.0%
70 - 79	13.0%
80 - 89	6.0%
90 - 99	0.0%
100 - 109	0.0%
110 - 119	0.0%
> 119	0.0%
(Cases) N=	100
mean	53
min size (mm)	18
max size (mm)	85

Asterina miniata

<10	0.0%
10 - 19	1.6%
20 - 29	17.5%
30 - 39	23.8%
40 - 49	28.6%
50 - 59	19.0%
60 - 69	7.9%
70 - 79	1.6%
80 - 89	0.0%
90 - 99	0.0%
> 99	0.0%
(Cases) N=	63
mean	42
min size (mm)	12
max size (mm)	70

Pisaster giganteus

< 20	0.0%
20 - 39	0.0%
40 - 59	3.1%
60 - 79	12.5%
80 - 99	34.4%
100 - 119	23.4%
120 - 139	21.9%
140 - 159	3.1%
160 - 179	1.6%
180 - 199	0.0%
200 - 219	0.0%
220 - 239	0.0%
> 239	0.0%
(Cases) N=	64

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	50.0%
160 - 179	50.0%
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=	2
mean	158
min size (mm)	152
max size (mm)	163

Lytechinus anamesus

< 5	0.0%
5 - 9	7.1%
10 - 14	7.1%
15 - 19	7.1%
20 - 24	21.4%
25 - 29	42.9%
30 - 34	14.3%
35 - 39	0.0%
40 - 44	0.0%
45 - 49	0.0%
> 49	0.0%
(Cases) N=	14
mean	24
min size (mm)	9
max size (mm)	32

S. franciscanus

< 5	0.0%
5 - 9	17.8%
10 - 14	13.1%
15 - 19	1.9%
20 - 24	0.5%
25 - 29	5.6%
30 - 34	8.5%
35 - 39	16.0%
40 - 44	9.4%
45 - 49	5.6%
50 - 54	7.0%
55 - 59	3.8%
60 - 64	2.3%
65 - 69	1.9%
70 - 74	2.8%
75 - 79	0.9%
80 - 84	2.3%
80 - 84	2.3%
85 - 89	0.0%
90 - 94	0.0%
95 - 99	0.0%
100 - 104	0.5%
105 - 109	0.0%
> 109	0.0%
(Cases) N=	213
mean	33
min size (mm)	5
max size (mm)	100

Strongylocentrotus purpuratus

< 5	0.0%
5 - 9	0.5%
10 - 14	5.9%
15 - 19	31.4%
20 - 24	37.7%
20 - 24	37.7%
25 - 29	12.7%
30 - 34	5.5%
35 - 39	3.6%
40 - 44	2.3%
45 - 49	0.0%
50 - 54	0.5%
55 - 59	0.0%
60 - 64	0.0%
65 - 69	0.0%
70 - 74	0.0%
75 - 79	0.0%
> 79	0.0%
(Cases) N=	220
mean	22
min size (mm)	5
max size (mm)	52

mean	**102**
min size (mm)	**53**
max size (mm)	**173**

Santa Barbara Island - Cat Canyon

Lithopoma undosum

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**21.8%**
30 - 39	**3.6%**
40 - 49	**10.9%**
50 - 59	**10.9%**
60 - 69	**14.5%**
70 - 79	**18.2%**
80 - 89	**14.5%**
90 - 99	**5.5%**
100 - 109	**0.0%**
110 - 119	**0.0%**
> 119	**0.0%**
(Cases) N=	**55**
mean	**59**
min size (mm)	**23**
max size (mm)	**99**

Asterina miniata

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**0.0%**
30 - 39	**28.6%**
40 - 49	**14.3%**
50 - 59	**42.9%**
60 - 69	**14.3%**
70 - 79	**0.0%**
80 - 89	**0.0%**
90 - 99	**0.0%**
> 99	**0.0%**
(Cases) N=	**7**
mean	**50**
min size (mm)	**34**
max size (mm)	**63**

Pisaster giganteus

< 20	**0.0%**
20 - 39	**0.0%**
40 - 59	**0.0%**
60 - 79	**18.6%**
80 - 99	**46.5%**
100 - 119	**27.9%**
120 - 139	**4.7%**
140 - 159	**2.3%**
160 - 179	**0.0%**
180 - 199	**0.0%**
200 - 219	**0.0%**
220 - 239	**0.0%**
> 239	**0.0%**
(Cases) N=	**43**
mean	**96**

S. franciscanus

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**0.0%**
15 - 19	**0.5%**
20 - 24	**0.0%**
25 - 29	**0.0%**
30 - 34	**0.5%**
35 - 39	**0.5%**
40 - 44	**4.1%**
45 - 49	**6.1%**
50 - 54	**18.8%**
55 - 59	**9.6%**
60 - 64	**11.2%**
65 - 69	**13.7%**
70 - 74	**17.8%**
75 - 79	**9.6%**
80 - 84	**5.1%**
85 - 89	**2.0%**
90 - 94	**0.0%**
95 - 99	**0.5%**
100 - 104	**0.0%**
105 - 109	**0.0%**
> 109	**0.0%**
(Cases) N=	**197**
mean	**63**
min size (mm)	**19**
max size (mm)	**95**

Strongylocentrotus purpuratus

< 5	**0.5%**
5 - 9	**0.0%**
10 - 14	**0.0%**
15 - 19	**0.0%**
20 - 24	**0.5%**
25 - 29	**13.5%**
30 - 34	**31.8%**
35 - 39	**30.7%**
40 - 44	**18.8%**
45 - 49	**2.6%**
50 - 54	**1.6%**
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=	**192**
mean	**35**
min size (mm)	**4**
max size (mm)	**52**

min size (mm)	**68**
max size (mm)	**140**

2002 Macrocystis pyrifera Size Frequency Distributions

San Miguel Island - Wyckoff Ledge

Macrocystis pyrifera Ad.(>1m) number of stipes

< 3	**18.4%**
3 - 5	**16.7%**
6 - 8	**20.2%**
9 - 11	**7.9%**
12 - 14	**7.9%**
15 - 17	**6.1%**
18 - 20	**7.9%**
21 - 23	**5.3%**
24 - 26	**1.8%**
27 - 29	**1.8%**
30 - 32	**1.8%**
33 - 35	**3.5%**
36 - 38	**0.0%**
39 - 41	**0.0%**
42 - 44	**0.0%**
> 44	**0.9%**
(Cases) N=	**114**
mean	**11**
min number	**1**
max number	**49**

Macrocystis pyrifera Ad.(>1m) holdfast diameters

< 6	**3.5%**
6 - 11	**19.3%**
12 - 17	**20.2%**
18 - 23	**13.2%**
24 - 29	**18.4%**
30 - 35	**8.8%**
36 - 41	**8.8%**
42 - 47	**2.6%**
48 - 53	**4.4%**
54 - 59	**0.9%**
60 - 65	**0.0%**
66 - 71	**0.0%**
72 - 77	**0.0%**
78 - 83	**0.0%**
84 - 89	**0.0%**
> 89	**0.0%**
(Cases) N=	**114**
mean	**22**
min width (cm)	**2**
max width (cm)	**55**

2002 Macrocystis pyrifera Size Frequency Distributions

Santa Rosa Island - Johnson's Lee North

Macrocystis pyrifera Ad.(>1m) number of stipes

< 3	**9.0%**
3 - 5	**20.0%**
6 - 8	**39.0%**
9 - 11	**21.0%**
12 - 14	**4.0%**
15 - 17	**4.0%**
18 - 20	**1.0%**
21 - 23	**1.0%**
24 - 26	**0.0%**
27 - 29	**0.0%**
30 - 32	**1.0%**
33 - 35	**0.0%**
36 - 38	**0.0%**
39 - 41	**0.0%**
42 - 44	**0.0%**
> 44	**0.0%**
(Cases) N=	**100**
mean	**8**
min number	**1**
max number	**31**

Macrocystis pyrifera Ad.(>1m) holdfast diameters

< 6	**0.0%**
6 - 11	**6.0%**
12 - 17	**21.0%**
18 - 23	**27.0%**
24 - 29	**17.0%**
30 - 35	**20.0%**
36 - 41	**8.0%**
42 - 47	**1.0%**
48 - 53	**0.0%**
54 - 59	**0.0%**
60 - 65	**0.0%**
66 - 71	**0.0%**
72 - 77	**0.0%**
78 - 83	**0.0%**
84 - 89	**0.0%**
> 89	**0.0%**
(Cases) N=	**100**
mean	**24**
min width (cm)	**8**
max width (cm)	**44**

Santa Rosa Island - Johnson's Lee South

Macrocystis pyrifera Ad.(>1m) number of stipes

< 3	**21.0%**
3 - 5	**21.9%**
6 - 8	**17.1%**
9 - 11	**21.9%**
12 - 14	**6.7%**
15 - 17	**2.9%**
18 - 20	**3.8%**
21 - 23	**2.9%**
24 - 26	**1.0%**
27 - 29	**1.0%**
30 - 32	**0.0%**
33 - 35	**0.0%**
36 - 38	**0.0%**
39 - 41	**0.0%**
42 - 44	**0.0%**
> 44	**0.0%**
(Cases) N=	**105**
mean	**8**
min number	**1**
max number	**28**

Macrocystis pyrifera Ad.(>1m) holdfast diameters

< 6	**1.0%**
6 - 11	**16.2%**
12 - 17	**20.0%**
18 - 23	**16.2%**
24 - 29	**20.0%**
30 - 35	**15.2%**
36 - 41	**5.7%**
42 - 47	**3.8%**
48 - 53	**1.9%**
54 - 59	**0.0%**
60 - 65	**0.0%**
66 - 71	**0.0%**
72 - 77	**0.0%**
78 - 83	**0.0%**
84 - 89	**0.0%**
> 89	**0.0%**
(Cases) N=	**105**
mean	**23**
min width (cm)	**5**
max width (cm)	**50**

2002 Macrocystis pyrifera Size Frequency Distributions

Santa Cruz Island - Gull Island South

Macrocystis pyrifera Ad.(>1m) number of stipes

< 3	**47.3%**
3 - 5	**39.3%**
6 - 8	**12.7%**
9 - 11	**0.0%**
12 - 14	**0.7%**
15 - 17	**0.0%**
18 - 20	**0.0%**
21 - 23	**0.0%**
24 - 26	**0.0%**
27 - 29	**0.0%**
30 - 32	**0.0%**
33 - 35	**0.0%**
36 - 38	**0.0%**
39 - 41	**0.0%**
42 - 44	**0.0%**
> 44	**0.0%**
(Cases) N=	**150**
mean	**3**
min number	**1**
max number	**14**

Macrocystis pyrifera Ad.(>1m) holdfast diameters

< 6	**14.0%**
6 - 11	**37.3%**
12 - 17	**32.0%**
18 - 23	**13.3%**
24 - 29	**3.3%**
30 - 35	**0.0%**
36 - 41	**0.0%**
42 - 47	**0.0%**
48 - 53	**0.0%**
54 - 59	**0.0%**
60 - 65	**0.0%**
66 - 71	**0.0%**
72 - 77	**0.0%**
78 - 83	**0.0%**
84 - 89	**0.0%**
> 89	**0.0%**
(Cases) N=	**150**
mean	**12**
min width (cm)	**3**
max width (cm)	**27**

Anacapa Island - Cathedral Cove

Macrocystis pyrifera Ad.(>1m) number of stipes

< 3	**29.3%**
3 - 5	**12.2%**
6 - 8	**12.2%**
9 - 11	**14.6%**
12 - 14	**7.3%**
15 - 17	**2.4%**
18 - 20	**2.4%**
21 - 23	**2.4%**
24 - 26	**4.9%**
27 - 29	**2.4%**
30 - 32	**2.4%**
33 - 35	**2.4%**
36 - 38	**2.4%**
39 - 41	**2.4%**
42 - 44	**0.0%**
> 44	**0.0%**
(Cases) N=	**41**
mean	**11**
min number	**1**
max number	**40**

Macrocystis pyrifera Ad.(>1m) holdfast diameters

< 6	**9.8%**
6 - 11	**26.8%**
12 - 17	**7.3%**
18 - 23	**9.8%**
24 - 29	**24.4%**
30 - 35	**12.2%**
36 - 41	**4.9%**
42 - 47	**4.9%**
48 - 53	**0.0%**
54 - 59	**0.0%**
60 - 65	**0.0%**
66 - 71	**0.0%**
72 - 77	**0.0%**
78 - 83	**0.0%**
84 - 89	**0.0%**
> 89	**0.0%**
(Cases) N=	**41**
mean	**20**
min width (cm)	**1**
max width (cm)	**47**

2002 Macrocystis pyrifera Size Frequency Distributions

Anacapa Island - Landing Cove

Macrocystis pyrifera Ad.(>1m) number of stipes

< 3	**57.0%**
3 - 5	**8.9%**
6 - 8	**3.8%**
9 - 11	**6.3%**
12 - 14	**2.5%**
15 - 17	**5.1%**
18 - 20	**5.1%**
21 - 23	**1.3%**
24 - 26	**2.5%**
27 - 29	**5.1%**
30 - 32	**0.0%**
33 - 35	**0.0%**
36 - 38	**1.3%**
39 - 41	**1.3%**
42 - 44	**0.0%**
> 44	**0.0%**
(Cases) N=	**79**
mean	**8**
min number	**2**
max number	**41**

Macrocystis pyrifera Ad.(>1m) holdfast diameters

< 6	**26.6%**
6 - 11	**34.2%**
12 - 17	**7.6%**
18 - 23	**2.5%**
24 - 29	**7.6%**
30 - 35	**11.4%**
36 - 41	**7.6%**
42 - 47	**1.3%**
48 - 53	**0.0%**
54 - 59	**1.3%**
60 - 65	**0.0%**
66 - 71	**0.0%**
72 - 77	**0.0%**
78 - 83	**0.0%**
84 - 89	**0.0%**
> 89	**0.0%**
(Cases) N=	**79**
mean	**15**
min width (cm)	**3**
max width (cm)	**54**

2002 Gorgonian/Stylaster californica Size Frequency Distributions

Santa Cruz Island - Gull Island South

Stylaster californica heights		*Stylaster californica widths*	
< 3	**10.9%**	**< 3**	**4.3%**
3 - 4	**8.7%**	**3 - 4**	**6.5%**
5 - 6	**19.6%**	**5 - 6**	**6.5%**
7 - 8	**6.5%**	**7 - 8**	**6.5%**
9 - 10	**10.9%**	**9 - 10**	**4.3%**
11 - 12	**8.7%**	**1 - 12**	**4.3%**
13 - 14	**15.2%**	**13 - 14**	**8.7%**
15 - 16	**6.5%**	**15 - 16**	**8.7%**
17 - 18	**6.5%**	**17 - 18**	**4.3%**
19 - 20	**4.3%**	**19 - 20**	**8.7%**
21 - 22	**0.0%**	**21 - 22**	**2.2%**
23 - 24	**2.2%**	**23 - 24**	**2.2%**
25 - 26	**0.0%**	**25 - 26**	**6.5%**
27 - 28	**0.0%**	**27 - 28**	**6.5%**
29 - 30	**0.0%**	**29 - 30**	**2.2%**
> 30	**0.0%**	**> 30**	**17.4%**
(Cases) N=	**46**	**(Cases) N=**	**46**
mean	**10**	**mean**	**19**
min height (cm)	**1**	**min width (cm)**	**1**
max height (cm)	**23**	**max width (cm)**	**45**

Santa Cruz Island - Fry's Harbor

Lophogorgia chilensis heights		*Lophogorgia chilensis widths*	
< 5	**0.0%**	**< 5**	**0.0%**
5 - 8	**0.0%**	**5 - 8**	**0.0%**
9 - 12	**0.0%**	**9 - 12**	**1.6%**
13 - 16	**0.0%**	**13 - 16**	**0.0%**
17 - 20	**1.6%**	**17 - 20**	**4.7%**
21 - 24	**1.6%**	**21 - 24**	**7.8%**
25 - 28	**6.3%**	**24 - 28**	**20.3%**
29 - 32	**12.5%**	**29 - 32**	**20.3%**
33 - 36	**15.6%**	**33 - 36**	**7.8%**
37 - 40	**14.1%**	**37 - 40**	**4.7%**
41 - 44	**6.3%**	**41 - 44**	**4.7%**
45 - 48	**10.9%**	**45 - 48**	**4.7%**
49 - 52	**12.5%**	**49 - 52**	**4.7%**
53 - 56	**6.3%**	**53 - 56**	**4.7%**
57 - 60	**0.0%**	**57 - 60**	**0.0%**
61 - 64	**3.1%**	**61 - 64**	**1.6%**
65 - 68	**3.1%**	**65 - 68**	**3.1%**
69 - 72	**3.1%**	**69 - 72**	**0.0%**
73 - 76	**0.0%**	**73 - 76**	**0.0%**
77 - 80	**1.6%**	**77 - 80**	**3.1%**
81 - 84	**0.0%**	**81 - 84**	**0.0%**
85 - 88	**0.0%**	**85 - 88**	**0.0%**
89 - 92	**1.6%**	**89 - 92**	**0.0%**
93 - 96	**0.0%**	**93 - 96**	**1.6%**
97 - 100	**0.0%**	**97 - 100**	**0.0%**
> 100	**0.0%**	**> 100**	**4.7%**
(Cases) N=	**64**	**(Cases) N=**	**64**
mean	**43**	**mean**	**40**
min height (cm)	**20**	**min width (cm)**	**11**
max height (cm)	**91**	**max width (cm)**	**106**

2002 Gorgonian/Stylaster californica Size Frequency Distributions

Santa Cruz Island - Pelican Bay

Lophogorgia chilensis heights		*Lophogorgia chilensis widths*	
< 5	0.0%	< 5	1.2%
5 - 8	0.0%	5 - 8	3.7%
9 - 12	1.2%	9 - 12	8.7%
13 - 16	3.1%	13 - 16	13.0%
17 - 20	8.1%	17 - 20	14.9%
21 - 24	8.1%	21 - 24	13.0%
25 - 28	14.9%	24 - 28	14.9%
29 - 32	18.6%	29 - 32	8.1%
33 - 36	18.0%	33 - 36	5.6%
37 - 40	13.7%	37 - 40	6.8%
41 - 44	7.5%	41 - 44	1.9%
45 - 48	3.1%	45 - 48	3.1%
49 - 52	2.5%	49 - 52	1.2%
53 - 56	0.0%	53 - 56	1.2%
57 - 60	0.6%	57 - 60	1.9%
61 - 64	0.6%	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	0.6%
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=	**161**	**(Cases) N=**	**161**
mean	**32**	**mean**	**25**
min height (cm)	**11**	**min width (cm)**	**4**
max height (cm)	**61**	**max width (cm)**	**80**

Anacapa Island - Admiral's Reef

Lophogorgia chilensis heights		*Lophogorgia chilensis widths*	
< 5	0.0%	< 5	0.0%
5 - 8	0.0%	5 - 8	2.6%
9 - 12	0.0%	9 - 12	5.3%
13 - 16	5.3%	13 - 16	10.5%
17 - 20	5.3%	17 - 20	7.9%
21 - 24	7.9%	21 - 24	2.6%
25 - 28	5.3%	24 - 28	2.6%
29 - 32	2.6%	29 - 32	5.3%
33 - 36	5.3%	33 - 36	2.6%
37 - 40	15.8%	37 - 40	2.6%
41 - 44	10.5%	41 - 44	5.3%
45 - 48	13.2%	45 - 48	7.9%
49 - 52	2.6%	49 - 52	13.2%
53 - 56	2.6%	53 - 56	7.9%
57 - 60	7.9%	57 - 60	0.0%
61 - 64	2.6%	61 - 64	7.9%
65 - 68	2.6%	65 - 68	7.9%
69 - 72	5.3%	69 - 72	2.6%
73 - 76	0.0%	73 - 76	2.6%
77 - 80	5.3%	77 - 80	0.0%
81 - 84	0.0%	81 - 84	0.0%
85 - 88	0.0%	85 - 88	2.6%
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=	**38**	**(Cases) N=**	**38**
mean	**43**	**mean**	**42**
min height (cm)	**14**	**min width (cm)**	**7**

max height (cm)	**80**	**max width (cm)**	**88**

2002 Gorgonian/Stylaster californica Size Frequency Distributions

Muricea fruticosa heights

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	100.0%
25 - 28	0.0%
29 - 32	0.0%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	**1**
mean	**22**
min height (cm)	**22**
max height (cm)	**22**

Muricea fruticosa widths

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
24 - 28	0.0%
29 - 32	0.0%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	0.0%
45 - 48	100.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	**1**
mean	**48**
min width (cm)	**48**
max width (cm)	**48**

Muricea californica heights

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
25 - 28	0.0%
29 - 32	12.5%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	12.5%
45 - 48	12.5%
49 - 52	0.0%
53 - 56	12.5%
57 - 60	0.0%
61 - 64	25.0%
65 - 68	0.0%
69 - 72	12.5%
73 - 76	0.0%
77 - 80	12.5%
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=	**8**
mean	**55**
min height (cm)	**30**
max height (cm)	**77**

Muricea californica widths

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
24 - 28	0.0%
29 - 32	0.0%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	0.0%
45 - 48	12.5%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	12.5%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	12.5%
73 - 76	0.0%
77 - 80	12.5%
81 - 84	25.0%
85 - 88	12.5%
89 - 92	12.5%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	**8**
mean	**74**
min width (cm)	**46**
max width (cm)	**92**

2002 Gorgonian/Stylaster californica Size Frequency Distributions

Santa Barbara Island - SE Sea Lion Rookery

Lophogorgia chilensis heights

< 5	0.0%
5 - 8	2.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	4.0%
21 - 24	10.0%
25 - 28	16.0%
29 - 32	20.0%
33 - 36	16.0%
37 - 40	14.0%
41 - 44	6.0%
45 - 48	6.0%
49 - 52	2.0%
53 - 56	0.0%
57 - 60	4.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	**50**
mean	**33**
min height (cm)	**8**
max height (cm)	**60**

Lophogorgia chilensis widths

< 5	2.0%
5 - 8	2.0%
9 - 12	2.0%
13 - 16	6.0%
17 - 20	28.0%
21 - 24	20.0%
24 - 28	12.0%
29 - 32	8.0%
33 - 36	14.0%
37 - 40	4.0%
41 - 44	2.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	**50**
mean	**24**
min width (cm)	**4**
max width (cm)	**42**

Muricea californica heights

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	50.0%
25 - 28	0.0%
29 - 32	50.0%
33 - 36	0.0%
37 - 40	0.0%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	**2**
mean	**26**
min height (cm)	**22**
max height (cm)	**30**

Muricea californica widths

< 5	0.0%
5 - 8	0.0%
9 - 12	0.0%
13 - 16	0.0%
17 - 20	0.0%
21 - 24	0.0%
24 - 28	0.0%
29 - 32	0.0%
33 - 36	0.0%
37 - 40	100.0%
41 - 44	0.0%
45 - 48	0.0%
49 - 52	0.0%
53 - 56	0.0%
57 - 60	0.0%
61 - 64	0.0%
65 - 68	0.0%
69 - 72	0.0%
73 - 76	0.0%
77 - 80	0.0%
81 - 84	0.0%
85 - 88	0.0%
89 - 92	0.0%
93 - 96	0.0%
97 - 100	0.0%
> 100	0.0%
(Cases) N=	**2**
mean	**38**
min width (cm)	**38**
max width (cm)	**38**

2002 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	**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: 9

<30	**0.0%**
30 - 32	**0.0%**
33 - 35	**0.0%**
36 - 38	**3.3%**
39 - 41	**3.3%**
42 - 44	**23.3%**
45 - 47	**20.0%**
48 - 50	**23.3%**
51 - 53	**20.0%**
54 - 56	**6.7%**
>56	**0.0%**
(Cases) N=	**30**
mean	**47**
min size (mm)	**38**
max size (mm)	**55**

Asterina miniata

Number of ARMs sampled: 9

<10	**0.0%**
10 - 19	**20.0%**
20 - 29	**13.3%**
30 - 39	**20.0%**
40 - 49	**26.7%**
50 - 59	**13.3%**
60 - 69	**0.0%**
70 - 79	**6.7%**
80 - 89	**0.0%**
90 - 99	**0.0%**
> 99	**0.0%**
(Cases) N=	**15**
mean	**38**
min size (mm)	**16**
max size (mm)	**73**

Pisaster giganteus

Number of ARMs sampled: 9

< 20	**3.8%**
20 - 39	**3.8%**
40 - 59	**62.3%**
60 - 79	**28.3%**
80 - 99	**1.9%**
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=	**53**
mean	**53**
min size (mm)	**11**
max size (mm)	**88**

Pycnopodia helianthoides

Number of ARMs sampled: 9

< 20	**0.0%**
20 - 39	**0.0%**
40 - 59	**18.2%**
60 - 79	**18.2%**
80 - 99	**18.2%**
100 - 119	**36.4%**
120 - 139	**0.0%**
140 - 159	**9.1%**
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=	**11**
mean	**92**
mean	**92**
min size (mm)	**51**
max size (mm)	**144**

S. franciscanus

Number of ARMs sampled: 9

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**3.7%**
15 - 19	**6.5%**
20 - 24	**4.6%**
25 - 29	**10.2%**
30 - 34	**10.2%**
35 - 39	**11.1%**
40 - 44	**8.3%**
45 - 49	**7.4%**
50 - 54	**2.8%**
55 - 59	**3.7%**
60 - 64	**1.9%**
65 - 69	**4.6%**
70 - 74	**12.0%**
75 - 79	**5.6%**
80 - 84	**5.6%**
85 - 89	**0.9%**
90 - 94	**0.9%**
95 - 99	**0.0%**
100 - 104	**0.0%**
105 - 109	**0.0%**
> 109	**0.0%**
(Cases) N=	**108**
mean	**47**
min size (mm)	**12**
max size (mm)	**94**

2002 Artificial Recruitment Modules Size Frequency Distributions
Santa Rosa Island - Johnson's Lee North

Strongylocentrotus purpuratus

Number of ARMs sampled: 9

< 5	**5.3%**
5 - 9	**31.6%**
10 - 14	**15.8%**
15 - 19	**10.5%**
20 - 24	**5.3%**
25 - 29	**0.0%**
30 - 34	**5.3%**
35 - 39	**0.0%**
40 - 44	**0.0%**
45 - 49	**5.3%**
50 - 54	**15.8%**
55 - 59	**0.0%**
60 - 64	**5.3%**
65 - 69	**0.0%**
70 - 74	**0.0%**
75 - 79	**0.0%**
> 79	**0.0%**
(Cases) N=	**19**
mean	**23**
min size (mm)	**4**
max size (mm)	**60**

2002 Artificial Recruitment Modules Size Frequency Distributions
Santa Rosa Island - Johnson's Lee South

Haliotis rufescens

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=	**3**
mean	**19**
min size (mm)	**18**
max size (mm)	**21**

Cypraea spadicea

Number of ARMs sampled: 7

<30	**0.0%**
30 - 32	**0.0%**
33 - 35	**0.0%**
36 - 38	**0.0%**
39 - 41	**5.9%**
42 - 44	**17.6%**
45 - 47	**35.3%**
48 - 50	**23.5%**
51 - 53	**11.8%**
54 - 56	**5.9%**
>56	**0.0%**
(Cases) N=	**17**
mean	**47**
min size (mm)	**40**
max size (mm)	**54**

Megathura crenulata

Number of ARMs sampled: 7

<10	**0.0%**
10 - 19	**50.0%**
20 - 29	**0.0%**
30 - 39	**0.0%**
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	**41**
min size (mm)	**13**
max size (mm)	**69**

Crassedoma giganteum

Number of ARMs sampled: 7

<10	**14.3%**
10 - 19	**57.1%**
20 - 29	**0.0%**
30 - 39	**14.3%**
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	**14.3%**
110 - 119	**0.0%**
120 - 129	**0.0%**
130 - 139	**0.0%**
> 139	**0.0%**
(Cases) N=	**7**
mean	**29**
min size (mm)	**9**
max size (mm)	**109**

Asterina miniata

Number of ARMs sampled: 7

<10	**0.0%**
10 - 19	**4.2%**
20 - 29	**27.1%**
30 - 39	**35.4%**
40 - 49	**12.5%**
50 - 59	**12.5%**
60 - 69	**8.3%**
70 - 79	**0.0%**
80 - 89	**0.0%**
90 - 99	**0.0%**
> 99	**0.0%**
(Cases) N=	**48**
mean	**38**
min size (mm)	**12**
min size (mm)	**12**
max size (mm)	**69**

Pisaster giganteus

Number of ARMs sampled: 7

< 20	**5.3%**
20 - 39	**36.8%**
40 - 59	**47.4%**
60 - 79	**7.9%**
80 - 99	**2.6%**
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=	**38**
mean	**43**
min size (mm)	**12**
max size (mm)	**83**

2002 Artificial Recruitment Modules Size Frequency Distributions
Santa Rosa Island - Johnson's Lee South

Pycnopodia helianthoides

Number of ARMs sampled: 7

< 20	**0.0%**
20 - 39	**0.0%**
40 - 59	**0.0%**
60 - 79	**0.0%**
80 - 99	**25.0%**
100 - 119	**25.0%**
120 - 139	**50.0%**
140 - 159	**0.0%**
160 - 179	**0.0%**
180 - 199	**0.0%**
200 - 219	**0.0%**
220 - 239	**0.0%**
240 - 259	**0.0%**
260 - 279	**0.0%**
280 - 299	**0.0%**
> 299	**0.0%**
(Cases) N=	**4**
mean	**114**
min size (mm)	**92**
max size (mm)	**123**

Strongylocentrotus purpuratus

Number of ARMs sampled: 7

< 5	**0.0%**
5 - 9	**9.3%**
10 - 14	**23.3%**
15 - 19	**18.6%**
20 - 24	**11.6%**
25 - 29	**7.0%**
30 - 34	**0.0%**
35 - 39	**2.3%**
40 - 44	**14.0%**
45 - 49	**7.0%**
50 - 54	**2.3%**
55 - 59	**4.7%**
60 - 64	**0.0%**
65 - 69	**0.0%**
70 - 74	**0.0%**
75 - 79	**0.0%**
> 79	**0.0%**
(Cases) N=	**43**
mean	**25**
min size (mm)	**6**
max size (mm)	**58**

S. franciscanus

Number of ARMs sampled: 7

< 5	**0.0%**
5 - 9	**2.2%**
10 - 14	**7.5%**
15 - 19	**11.2%**
20 - 24	**4.5%**
25 - 29	**5.6%**
30 - 34	**6.0%**
35 - 39	**5.6%**
40 - 44	**6.4%**
45 - 49	**13.1%**
50 - 54	**16.1%**
55 - 59	**10.9%**
60 - 64	**4.5%**
65 - 69	**3.7%**
70 - 74	**1.9%**
75 - 79	**0.7%**
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=	**267**
mean	**40**
min size (mm)	**7**
max size (mm)	**79**

2002 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Gull Island South

Cypraea spadicea

Number of ARMs sampled: 14

<30	**1.3%**
30 - 32	**0.7%**
33 - 35	**2.7%**
36 - 38	**8.0%**
39 - 41	**20.0%**
42 - 44	**22.0%**
45 - 47	**27.3%**
48 - 50	**14.7%**
51 - 53	**2.0%**
54 - 56	**0.7%**
>56	**0.7%**
(Cases) N=	**150**
mean	**43**
min size (mm)	**18**
max size (mm)	**58**

Megathura crenulata

Number of ARMs sampled: 14

<10	**0.0%**
10 - 19	**25.0%**
20 - 29	**25.0%**
30 - 39	**25.0%**
40 - 49	**25.0%**
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**
mean	**31**
min size (mm)	**18**
max size (mm)	**41**

Asterina miniata

Number of ARMs sampled: 14

<10	**4.3%**
10 - 19	**36.2%**
20 - 29	**29.8%**
30 - 39	**12.8%**
40 - 49	**6.4%**
50 - 59	**8.5%**
60 - 69	**2.1%**
70 - 79	**0.0%**
80 - 89	**0.0%**
90 - 99	**0.0%**
> 99	**0.0%**
(Cases) N=	**47**
mean	**26**
min size (mm)	**6**
max size (mm)	**68**

Kelletia kelletii

Number of ARMs sampled: 14

< 40	**0.0%**
40 - 49	**0.0%**
50 - 59	**0.0%**
60 - 69	**0.0%**
70 - 79	**25.0%**
80 - 89	**25.0%**
90 - 99	**25.0%**
100 - 109	**25.0%**
110 - 119	**0.0%**
120 - 129	**0.0%**
130 - 139	**0.0%**
140 - 149	**0.0%**
> 149	**0.0%**
(Cases) N=	**4**
mean	**93**
min size (mm)	**78**
max size (mm)	**106**

Crassedoma giganteum

Number of ARMs sampled: 14

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**12.5%**
30 - 39	**12.5%**
40 - 49	**0.0%**
50 - 59	**0.0%**
60 - 69	**12.5%**
70 - 79	**25.0%**
80 - 89	**0.0%**
90 - 99	**12.5%**
100 - 109	**12.5%**
110 - 119	**12.5%**
120 - 129	**0.0%**
130 - 139	**0.0%**
> 139	**0.0%**
(Cases) N=	**8**
mean	**74**
min size (mm)	**27**
max size (mm)	**111**

Pisaster giganteus

Number of ARMs sampled: 14

< 20	**0.0%**
20 - 39	**11.1%**
40 - 59	**0.0%**
60 - 79	**44.4%**
80 - 99	**33.3%**
100 - 119	**11.1%**
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=	**9**
mean	**77**
min size (mm)	**21**
max size (mm)	**112**

2002 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Gull Island South

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	**0.0%**
120 - 139	**0.0%**
140 - 159	**0.0%**
160 - 179	**50.0%**
180 - 199	**0.0%**
200 - 219	**50.0%**
220 - 239	**0.0%**
240 - 259	**0.0%**
260 - 279	**0.0%**
280 - 299	**0.0%**
> 299	**0.0%**
(Cases) N=	**2**
mean	**185**
min size (mm)	**166**
max size (mm)	**203**

Strongylocentrotus purpuratus

Number of ARMs sampled: 14

< 5	**2.8%**
5 - 9	**12.8%**
10 - 14	**17.7%**
15 - 19	**41.1%**
20 - 24	**12.8%**
25 - 29	**5.7%**
30 - 34	**2.8%**
35 - 39	**2.1%**
40 - 44	**1.4%**
45 - 49	**0.0%**
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=	**141**
mean	**17**
min size (mm)	**4**
max size (mm)	**51**

S. franciscanus

Number of ARMs sampled: 14

< 5	**0.0%**
5 - 9	**8.0%**
10 - 14	**31.8%**
15 - 19	**17.9%**
20 - 24	**6.0%**
25 - 29	**10.4%**
30 - 34	**8.1%**
35 - 39	**5.3%**
40 - 44	**3.8%**
45 - 49	**3.8%**
50 - 54	**3.5%**
55 - 59	**1.2%**
60 - 64	**0.3%**
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=	**1366**
mean	**22**
min size (mm)	**5**
max size (mm)	**63**

2002 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Fry's Harbor

Cypraea spadicea

Number of ARMs sampled: 7

<30	**0.0%**
30 - 32	**0.0%**
33 - 35	**9.1%**
36 - 38	**40.0%**
39 - 41	**23.6%**
42 - 44	**20.0%**
45 - 47	**3.6%**
48 - 50	**1.8%**
51 - 53	**1.8%**
54 - 56	**0.0%**
>56	**0.0%**
(Cases) N=	**55**
mean	**39**
min size (mm)	**33**
max size (mm)	**51**

Megathura crenulata

Number of ARMs sampled: 7

<10	**0.0%**
10 - 19	**20.0%**
20 - 29	**0.0%**
30 - 39	**0.0%**
40 - 49	**20.0%**
50 - 59	**60.0%**
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=	**5**
mean	**43**
min size (mm)	**12**
max size (mm)	**57**

Crassedoma giganteum

Number of ARMs sampled: 7

<10	**11.8%**
10 - 19	**17.6%**
20 - 29	**0.0%**
30 - 39	**5.9%**
40 - 49	**0.0%**
50 - 59	**0.0%**
60 - 69	**23.5%**
70 - 79	**11.8%**
80 - 89	**0.0%**
90 - 99	**5.9%**
100 - 109	**0.0%**
110 - 119	**0.0%**
120 - 129	**5.9%**
130 - 139	**11.8%**
> 139	**5.9%**
(Cases) N=	**17**
mean	**68**
min size (mm)	**8**
max size (mm)	**158**

Asterina miniata

Number of ARMs sampled: 7

<10	**0.9%**
10 - 19	**13.0%**
20 - 29	**14.8%**
30 - 39	**11.3%**
40 - 49	**24.3%**
50 - 59	**27.0%**
60 - 69	**8.7%**
70 - 79	**0.0%**
80 - 89	**0.0%**
90 - 99	**0.0%**
> 99	**0.0%**
(Cases) N=	**115**
mean	**41**
min size (mm)	**9**
max size (mm)	**68**

Pisaster giganteus

Number of ARMs sampled: 7

< 20	**2.5%**
20 - 39	**25.3%**
40 - 59	**53.2%**
60 - 79	**17.7%**
80 - 99	**1.3%**
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=	**79**
mean	**(Cases) N=46**
mean	**46**
min size (mm)	**15**
max size (mm)	**82**

Pycnopodia helianthoides

Number of ARMs sampled: 7

< 20	**0.0%**
20 - 39	**0.0%**
40 - 59	**0.0%**
60 - 79	**0.0%**
80 - 99	**25.0%**
100 - 119	**25.0%**
120 - 139	**50.0%**
140 - 159	**0.0%**
160 - 179	**0.0%**
180 - 199	**0.0%**
200 - 219	**0.0%**
220 - 239	**0.0%**
240 - 259	**0.0%**
260 - 279	**0.0%**
280 - 299	**0.0%**
> 299	**0.0%**
(Cases) N=	**4**
mean	**116**
min size (mm)	**98**
max size (mm)	**126**

2002 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Fry's Harbor

S. franciscanus

Number of ARMs sampled: 7

< 5	**0.0%**
5 - 9	**5.6%**
10 - 14	**13.4%**
15 - 19	**13.0%**
20 - 24	**16.2%**
25 - 29	**18.1%**
30 - 34	**21.3%**
35 - 39	**9.3%**
40 - 44	**2.8%**
45 - 49	**0.5%**
50 - 54	**0.0%**
55 - 59	**0.0%**
60 - 64	**0.0%**
65 - 69	**0.0%**
70 - 74	**0.0%**
75 - 79	**0.0%**
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=	**216**
mean	**25**
min size (mm)	**6**
max size (mm)	**48**

Centrostephanus coronatus

Number of ARMs sampled: 7

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**0.0%**
15 - 19	**0.0%**
20 - 24	**0.0%**
25 - 29	**0.0%**
30 - 34	**0.0%**
35 - 39	**0.0%**
40 - 44	**0.0%**
45 - 49	**0.0%**
50 - 54	**0.0%**
55 - 59	**100.0%**
60 - 64	**0.0%**
65 - 69	**0.0%**
70 - 74	**0.0%**
75 - 79	**0.0%**
> 79	**0.0%**
(Cases) N=	**1**
mean	**58**
min size (mm)	**58**
max size (mm)	**58**

Strongylocentrotus purpuratus

Number of ARMs sampled: 7

< 5	**0.0%**
5 - 9	**9.0%**
10 - 14	**21.2%**
15 - 19	**35.3%**
20 - 24	**29.5%**
25 - 29	**1.9%**
30 - 34	**1.3%**
35 - 39	**1.3%**
40 - 44	**0.6%**
45 - 49	**0.0%**
50 - 54	**0.0%**
55 - 59	**0.0%**
60 - 64	**0.0%**
65 - 69	**0.0%**
70 - 74	**0.0%**
75 - 79	**0.0%**
> 79	**0.0%**
(Cases) N=	**156**
mean	**17**
min size (mm)	**5**
max size (mm)	**43**

2002 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	**22.2%**
39 - 41	**37.0%**
42 - 44	**25.9%**
45 - 47	**11.1%**
48 - 50	**3.7%**
51 - 53	**0.0%**
54 - 56	**0.0%**
>56	**0.0%**
(Cases) N=	**27**
mean	**41**
min size (mm)	**36**
max size (mm)	**49**

Kelletia kelletii

Number of ARMs sampled: 6

< 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	**100.0%**
120 - 129	**0.0%**
130 - 139	**0.0%**
140 - 149	**0.0%**
> 149	**0.0%**
(Cases) N=	**1**
mean	**112**
min size (mm)	**112**
max size (mm)	**112**

Crassedoma giganteum

Number of ARMs sampled: 6

<10	**0.0%**
10 - 19	**9.1%**
20 - 29	**0.0%**
30 - 39	**0.0%**
40 - 49	**27.3%**
50 - 59	**18.2%**
60 - 69	**0.0%**
70 - 79	**0.0%**
80 - 89	**0.0%**
90 - 99	**18.2%**
100 - 109	**0.0%**
110 - 119	**18.2%**
120 - 129	**0.0%**
130 - 139	**9.1%**
> 139	**0.0%**
(Cases) N=	**11**
mean	**74**
min size (mm)	**16**
max size (mm)	**130**

Asterina miniata

Number of ARMs sampled: 6

<10	**2.8%**
10 - 19	**11.1%**
20 - 29	**5.6%**
30 - 39	**16.7%**
40 - 49	**16.7%**
50 - 59	**22.2%**
60 - 69	**11.1%**
70 - 79	**13.9%**
80 - 89	**0.0%**
90 - 99	**0.0%**
> 99	**0.0%**
(Cases) N=	**36**
mean	**46**
min size (mm)	**8**
max size (mm)	**77**

Pisaster giganteus

Number of ARMs sampled: 6

< 20	**12.5%**
20 - 39	**25.0%**
40 - 59	**0.0%**
60 - 79	**37.5%**
80 - 99	**25.0%**
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=	**8**
mean	**(Cases) N=57**
mean	**57**
min size (mm)	**15**
max size (mm)	**90**

S. franciscanus

Number of ARMs sampled: 6

< 5	**0.0%**
5 - 9	**1.1%**
10 - 14	**1.1%**
15 - 19	**1.1%**
20 - 24	**18.2%**
25 - 29	**28.4%**
30 - 34	**17.0%**
35 - 39	**15.9%**
40 - 44	**8.0%**
45 - 49	**5.7%**
50 - 54	**0.0%**
55 - 59	**2.3%**
60 - 64	**0.0%**
65 - 69	**1.1%**
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=	**88**
mean	**31**
min size (mm)	**6**
max size (mm)	**66**

2002 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Pelican Bay

Strongylocentrotus purpuratus

Number of ARMs sampled: 6

< 5	**0.0%**
5 - 9	**0.9%**
10 - 14	**0.0%**
15 - 19	**0.9%**
20 - 24	**43.6%**
25 - 29	**36.8%**
30 - 34	**8.5%**
35 - 39	**7.7%**
40 - 44	**1.7%**
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=	**117**
mean	**26**
min size (mm)	**9**
max size (mm)	**41**

2002 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Scorpion Anchorage

Cypraea spadicea

Number of ARMs sampled: 6

<30	**4.8%**
30 - 32	**10.8%**
33 - 35	**18.1%**
36 - 38	**24.1%**
39 - 41	**22.9%**
42 - 44	**10.8%**
45 - 47	**3.6%**
48 - 50	**3.6%**
51 - 53	**1.2%**
54 - 56	**0.0%**
>56	**0.0%**
(Cases) N=	**83**
mean	**37**
min size (mm)	**20**
max size (mm)	**52**

Lithopoma undosum

Number of ARMs sampled: 6

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**0.0%**
30 - 39	**0.0%**
40 - 49	**83.3%**
50 - 59	**16.7%**
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=	**12**
mean	**46**
min size (mm)	**41**
max size (mm)	**50**

Crassedoma giganteum

Number of ARMs sampled: 6

<10	**0.0%**
10 - 19	**18.2%**
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	**27.3%**
100 - 109	**0.0%**
110 - 119	**27.3%**
120 - 129	**9.1%**
130 - 139	**18.2%**
> 139	**0.0%**
(Cases) N=	**11**
mean	**95**
min size (mm)	**13**
max size (mm)	**137**

Asterina miniata

Number of ARMs sampled: 6

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**60.0%**
30 - 39	**40.0%**
40 - 49	**0.0%**
50 - 59	**0.0%**
60 - 69	**0.0%**
70 - 79	**0.0%**
80 - 89	**0.0%**
90 - 99	**0.0%**
> 99	**0.0%**
(Cases) N=	**5**
mean	**28**
min size (mm)	**22**
max size (mm)	**35**

Pisaster giganteus

Number of ARMs sampled: 6

< 20	**0.0%**
20 - 39	**0.0%**
40 - 59	**0.0%**
60 - 79	**57.1%**
80 - 99	**42.9%**
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=	**7**
mean	**(Cases) N=78**
mean	**78**
min size (mm)	**67**
max size (mm)	**93**

S. franciscanus

Number of ARMs sampled: 6

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**4.6%**
15 - 19	**0.0%**
20 - 24	**1.5%**
25 - 29	**6.2%**
30 - 34	**18.5%**
35 - 39	**21.5%**
40 - 44	**29.2%**
45 - 49	**7.7%**
50 - 54	**4.6%**
55 - 59	**4.6%**
60 - 64	**1.5%**
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=	**65**
mean	**38**
min size (mm)	**10**
max size (mm)	**61**

2002 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Scorpion Anchorage

Strongylocentrotus purpuratus

Number of ARMs sampled: 6

< 5	**0.0%**
5 - 9	**3.4%**
10 - 14	**1.7%**
15 - 19	**2.9%**
20 - 24	**40.3%**
25 - 29	**32.8%**
30 - 34	**14.7%**
35 - 39	**3.8%**
40 - 44	**0.4%**
45 - 49	**0.0%**
50 - 54	**0.0%**
55 - 59	**0.0%**
60 - 64	**0.0%**
65 - 69	**0.0%**
70 - 74	**0.0%**
75 - 79	**0.0%**
> 79	**0.0%**
(Cases) N=	**238**
mean	**25**
min size (mm)	**5**
max size (mm)	**42**

2002 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Yellow Banks

Haliotis rufescens

Number of ARMs sampled: 15

<25	**0.0%**
25 - 34	**0.0%**
35 - 44	**100.0%**
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	**35**
min size (mm)	**35**
max size (mm)	**35**

Cypraea spadicea

Number of ARMs sampled: 15

<30	**0.0%**
30 - 32	**3.9%**
33 - 35	**11.8%**
36 - 38	**19.6%**
39 - 41	**17.6%**
42 - 44	**23.5%**
45 - 47	**17.6%**
48 - 50	**3.9%**
51 - 53	**2.0%**
54 - 56	**0.0%**
>56	**0.0%**
(Cases) N=	**51**
mean	**41**
min size (mm)	**31**
max size (mm)	**51**

Lithopoma undosum

Number of ARMs sampled: 15

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**20.0%**
30 - 39	**20.0%**
40 - 49	**0.0%**
50 - 59	**60.0%**
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=	**5**
mean	**43**
min size (mm)	**25**
max size (mm)	**55**

Lithopoma gibberosum

Number of ARMs sampled: 15

<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	**38**
min size (mm)	**38**
max size (mm)	**38**

Megathura crenulata

Number of ARMs sampled: 15

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**28.6%**
30 - 39	**28.6%**
40 - 49	**0.0%**
50 - 59	**14.3%**
60 - 69	**14.3%**
70 - 79	**0.0%**
80 - 89	**14.3%**
90 - 99	**0.0%**
100 - 109	**0.0%**
110 - 119	**0.0%**
> 119	**0.0%**
(Cases) N=	**7**
mean	**46**
min size (mm)	**29**
max size (mm)	**82**

Crassedoma giganteum

Number of ARMs sampled: 15

<10	**33.3%**
10 - 19	**11.1%**
20 - 29	**22.2%**
30 - 39	**11.1%**
40 - 49	**0.0%**
50 - 59	**0.0%**
60 - 69	**11.1%**
70 - 79	**0.0%**
80 - 89	**0.0%**
90 - 99	**0.0%**
100 - 109	**0.0%**
110 - 119	**0.0%**
120 - 129	**11.1%**
130 - 139	**0.0%**
> 139	**0.0%**
(Cases) N=	**9**
(Cases) N=	**9**
mean	**34**
min size (mm)	**8**
max size (mm)	**124**

2002 Artificial Recruitment Modules Size Frequency Distributions
Santa Cruz Island - Yellow Banks

Asterina miniata

Number of ARMs sampled: 15

<10	**7.2%**
10 - 19	**39.2%**
20 - 29	**24.2%**
30 - 39	**19.6%**
40 - 49	**7.2%**
50 - 59	**2.6%**
60 - 69	**0.0%**
70 - 79	**0.0%**
80 - 89	**0.0%**
90 - 99	**0.0%**
> 99	**0.0%**
(Cases) N=	**153**
mean	**23**
min size (mm)	**4**
max size (mm)	**57**

Pisaster giganteus

Number of ARMs sampled: 15

< 20	**18.1%**
20 - 39	**55.6%**
40 - 59	**13.9%**
60 - 79	**5.6%**
80 - 99	**4.2%**
100 - 119	**1.4%**
120 - 139	**1.4%**
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=	**72**
mean	**35**
min size (mm)	**14**
max size (mm)	**123**

Pycnopodia helianthoides

Number of ARMs sampled: 15

< 20	**0.0%**
20 - 39	**0.0%**
40 - 59	**25.0%**
60 - 79	**0.0%**
80 - 99	**50.0%**
100 - 119	**0.0%**
120 - 139	**0.0%**
140 - 159	**0.0%**
160 - 179	**25.0%**
180 - 199	**0.0%**
200 - 219	**0.0%**
220 - 239	**0.0%**
240 - 259	**0.0%**
260 - 279	**0.0%**
280 - 299	**0.0%**
> 299	**0.0%**
(Cases) N=	**4**
mean	**101**
min size (mm)	**43**
max size (mm)	**179**

Lytechinus anamesus

Number of ARMs sampled: 15

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**2.2%**
15 - 19	**51.6%**
20 - 24	**46.2%**
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=	**91**
mean	**19**
min size (mm)	**10**
max size (mm)	**24**

S. franciscanus

Number of ARMs sampled: 15

< 5	**0.0%**
5 - 9	**8.3%**
10 - 14	**17.7%**
15 - 19	**15.5%**
20 - 24	**27.8%**
25 - 29	**16.0%**
30 - 34	**7.2%**
35 - 39	**6.0%**
40 - 44	**1.2%**
45 - 49	**0.3%**
50 - 54	**0.0%**
55 - 59	**0.0%**
60 - 64	**0.0%**
65 - 69	**0.0%**
70 - 74	**0.0%**
75 - 79	**0.0%**
80 - 84	**0.0%**
85 - 89	**0.0%**
90 - 94	**0.0%**
95 - 99	**0.0%**
95 - 99	**0.0%**
100 - 104	**0.0%**
105 - 109	**0.0%**
> 109	**0.0%**
(Cases) N=	**651**
mean	**21**
min size (mm)	**5**
max size (mm)	**49**

Strongylocentrotus purpuratus

Number of ARMs sampled: 15

< 5	**8.1%**
5 - 9	**62.6%**
10 - 14	**9.8%**
15 - 19	**3.3%**
20 - 24	**2.4%**
20 - 24	**2.4%**
25 - 29	**2.4%**
30 - 34	**4.9%**
35 - 39	**1.6%**
40 - 44	**4.9%**
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=	**123**
mean	**12**
min size (mm)	**3**

max size (mm)	**42**

2002 Artificial Recruitment Modules Size Frequency Distributions
Anacapa Island - Admiral's Reef

Cypraea spadicea

Number of ARMs sampled: 6

<30	**0.0%**
30 - 32	**25.0%**
33 - 35	**0.0%**
36 - 38	**50.0%**
39 - 41	**0.0%**
42 - 44	**25.0%**
45 - 47	**0.0%**
48 - 50	**0.0%**
51 - 53	**0.0%**
54 - 56	**0.0%**
>56	**0.0%**
(Cases) N=	**4**
mean	**37**
min size (mm)	**31**
max size (mm)	**44**

Megathura crenulata

Number of ARMs sampled: 6

<10	**0.0%**
10 - 19	**25.0%**
20 - 29	**37.5%**
30 - 39	**12.5%**
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	**31**
min size (mm)	**18**
max size (mm)	**63**

Crassedoma giganteum

Number of ARMs sampled: 6

<10	**0.0%**
10 - 19	**25.0%**
20 - 29	**0.0%**
30 - 39	**0.0%**
40 - 49	**0.0%**
50 - 59	**12.5%**
60 - 69	**0.0%**
70 - 79	**12.5%**
80 - 89	**0.0%**
90 - 99	**12.5%**
100 - 109	**0.0%**
110 - 119	**0.0%**
120 - 129	**25.0%**
130 - 139	**12.5%**
> 139	**0.0%**
(Cases) N=	**8**
mean	**78**
min size (mm)	**14**
max size (mm)	**136**

Asterina miniata

Number of ARMs sampled: 6

<10	**4.7%**
10 - 19	**32.6%**
20 - 29	**38.4%**
30 - 39	**16.3%**
40 - 49	**4.7%**
50 - 59	**1.2%**
60 - 69	**2.3%**
70 - 79	**0.0%**
80 - 89	**0.0%**
90 - 99	**0.0%**
> 99	**0.0%**
(Cases) N=	**86**
mean	**24**
min size (mm)	**6**
max size (mm)	**62**

Lytechinus anamesus

Number of ARMs sampled: 6

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**0.0%**
15 - 19	**0.0%**
20 - 24	**100.0%**
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=	**1**
mean	**21**
min size (mm)	**21**
max size (mm)	**21**

S. franciscanus

Number of ARMs sampled: 6

< 5	**0.0%**
5 - 9	**1.5%**
10 - 14	**3.0%**
15 - 19	**19.7%**
20 - 24	**56.1%**
25 - 29	**18.2%**
30 - 34	**1.5%**
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%**
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=	**66**
mean	**22**
min size (mm)	**9**
max size (mm)	**30**

2002 Artificial Recruitment Modules Size Frequency Distributions
Anacapa Island - Admiral's Reef

Strongylocentrotus purpuratus

Number of ARMs sampled: 6

< 5	**0.0%**
5 - 9	**2.7%**
10 - 14	**4.5%**
15 - 19	**56.3%**
20 - 24	**30.4%**
25 - 29	**6.3%**
30 - 34	**0.0%**
35 - 39	**0.0%**
40 - 44	**0.0%**
45 - 49	**0.0%**
50 - 54	**0.0%**
55 - 59	**0.0%**
60 - 64	**0.0%**
65 - 69	**0.0%**
70 - 74	**0.0%**
75 - 79	**0.0%**
> 79	**0.0%**
(Cases) N=	**112**
mean	**19**
min size (mm)	**6**
max size (mm)	**29**

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	**0.0%**
40 - 44	**25.0%**
45 - 49	**25.0%**
50 - 54	**50.0%**
55 - 59	**0.0%**
60 - 64	**0.0%**
65 - 69	**0.0%**
70 - 74	**0.0%**
75 - 79	**0.0%**
> 79	**0.0%**
(Cases) N=	**4**
mean	**49**
min size (mm)	**43**
max size (mm)	**53**

2002 Artificial Recruitment Modules Size Frequency Distributions
Anacapa Island - Cathedral Cove

Cypraea spadicea

Number of ARMs sampled: 7

<30	**0.0%**
30 - 32	**10.4%**
33 - 35	**11.9%**
36 - 38	**31.3%**
39 - 41	**23.9%**
42 - 44	**9.0%**
45 - 47	**10.4%**
48 - 50	**3.0%**
51 - 53	**0.0%**
54 - 56	**0.0%**
>56	**0.0%**
(Cases) N=	**67**
mean	**39**
min size (mm)	**30**
max size (mm)	**49**

Lithopoma undosum

Number of ARMs sampled: 7

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**10.0%**
30 - 39	**20.0%**
40 - 49	**0.0%**
50 - 59	**10.0%**
60 - 69	**10.0%**
70 - 79	**20.0%**
80 - 89	**30.0%**
90 - 99	**0.0%**
100 - 109	**0.0%**
110 - 119	**0.0%**
> 119	**0.0%**
(Cases) N=	**10**
mean	**61**
min size (mm)	**28**
max size (mm)	**85**

Crassedoma giganteum

Number of ARMs sampled: 7

<10	**0.0%**
10 - 19	**10.5%**
20 - 29	**0.0%**
30 - 39	**0.0%**
40 - 49	**5.3%**
50 - 59	**0.0%**
60 - 69	**5.3%**
70 - 79	**5.3%**
80 - 89	**0.0%**
90 - 99	**10.5%**
100 - 109	**21.1%**
110 - 119	**15.8%**
120 - 129	**21.1%**
130 - 139	**5.3%**
> 139	**0.0%**
(Cases) N=	**19**
mean	**94**
min size (mm)	**13**
max size (mm)	**137**

Asterina miniata

Number of ARMs sampled: 7

<10	**12.4%**
10 - 19	**22.5%**
20 - 29	**22.5%**
30 - 39	**22.5%**
40 - 49	**13.5%**
50 - 59	**6.7%**
60 - 69	**0.0%**
70 - 79	**0.0%**
80 - 89	**0.0%**
90 - 99	**0.0%**
> 99	**0.0%**
(Cases) N=	**89**
mean	**27**
min size (mm)	**4**
max size (mm)	**56**

Pisaster giganteus

Number of ARMs sampled: 7

< 20	**14.7%**
20 - 39	**29.4%**
40 - 59	**55.9%**
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=	**34**
mean	**(Cases) N=37**
mean	**37**
min size (mm)	**13**
max size (mm)	**56**

S. franciscanus

Number of ARMs sampled: 7

< 5	**0.0%**
5 - 9	**3.6%**
10 - 14	**7.9%**
15 - 19	**7.9%**
20 - 24	**13.0%**
25 - 29	**16.1%**
30 - 34	**13.0%**
35 - 39	**12.1%**
40 - 44	**8.2%**
45 - 49	**4.2%**
50 - 54	**6.1%**
55 - 59	**2.4%**
60 - 64	**3.0%**
65 - 69	**0.9%**
70 - 74	**0.3%**
75 - 79	**0.0%**
80 - 84	**0.0%**
85 - 89	**0.0%**
90 - 94	**0.3%**
95 - 99	**0.3%**
100 - 104	**0.3%**
105 - 109	**0.0%**
> 109	**0.3%**
(Cases) N=	**330**
mean	**32**
min size (mm)	**6**
max size (mm)	**119**

2002 Artificial Recruitment Modules Size Frequency Distributions
Anacapa Island - Cathedral Cove

Strongylocentrotus purpuratus

Number of ARMs sampled: 7

< 5	**0.5%**
5 - 9	**11.5%**
10 - 14	**5.9%**
15 - 19	**3.7%**
20 - 24	**4.8%**
25 - 29	**5.5%**
30 - 34	**6.5%**
35 - 39	**9.7%**
40 - 44	**8.4%**
45 - 49	**11.9%**
50 - 54	**10.2%**
55 - 59	**9.8%**
60 - 64	**8.1%**
65 - 69	**2.8%**
70 - 74	**0.5%**
75 - 79	**0.1%**
> 79	**0.0%**
(Cases) N=	**775**
mean	**38**
min size (mm)	**3**
max size (mm)	**76**

Centrostephanus coronatus

Number of ARMs sampled: 7

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**0.0%**
15 - 19	**0.0%**
20 - 24	**0.0%**
25 - 29	**0.0%**
30 - 34	**0.0%**
35 - 39	**0.0%**
40 - 44	**100.0%**
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	**43**
min size (mm)	**42**
max size (mm)	**43**

2002 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	**100.0%**
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	**40**
min size (mm)	**40**
max size (mm)	**40**

Cypraea spadicea

Number of ARMs sampled: 7

<30	**0.0%**
30 - 32	**4.0%**
33 - 35	**8.0%**
36 - 38	**8.0%**
39 - 41	**12.0%**
42 - 44	**28.0%**
45 - 47	**24.0%**
48 - 50	**12.0%**
51 - 53	**4.0%**
54 - 56	**0.0%**
>56	**0.0%**
(Cases) N=	**25**
mean	**43**
min size (mm)	**31**
max size (mm)	**53**

Lithopoma undosum

Number of ARMs sampled: 7

<10	**0.0%**
10 - 19	**0.0%**
20 - 29	**0.0%**
30 - 39	**0.0%**
40 - 49	**0.0%**
50 - 59	**50.0%**
60 - 69	**0.0%**
70 - 79	**50.0%**
80 - 89	**0.0%**
90 - 99	**0.0%**
100 - 109	**0.0%**
110 - 119	**0.0%**
> 119	**0.0%**
(Cases) N=	**2**
mean	**62**
min size (mm)	**51**
max size (mm)	**72**

Crassedoma giganteum

Number of ARMs sampled: 7

<10	**0.0%**
10 - 19	**13.3%**
20 - 29	**6.7%**
30 - 39	**13.3%**
40 - 49	**6.7%**
50 - 59	**0.0%**
60 - 69	**6.7%**
70 - 79	**20.0%**
80 - 89	**6.7%**
90 - 99	**6.7%**
100 - 109	**13.3%**
110 - 119	**0.0%**
120 - 129	**6.7%**
130 - 139	**0.0%**
> 139	**0.0%**
(Cases) N=	**15**
mean	**65**
min size (mm)	**13**
max size (mm)	**121**

Asterina miniata

Number of ARMs sampled: 7

<10	**3.4%**
10 - 19	**43.7%**
20 - 29	**27.6%**
30 - 39	**10.3%**
40 - 49	**12.6%**
50 - 59	**2.3%**
60 - 69	**0.0%**
70 - 79	**0.0%**
80 - 89	**0.0%**
90 - 99	**0.0%**
> 99	**0.0%**
(Cases) N=	**87**
mean	**24**
min size (mm)	**6**
min size (mm)	**6**
max size (mm)	**56**

Pisaster giganteus

Number of ARMs sampled: 7

< 20	**23.1%**
20 - 39	**46.2%**
40 - 59	**30.8%**
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=	**13**
mean	**30**
min size (mm)	**11**
max size (mm)	**46**

2002 Artificial Recruitment Modules Size Frequency Distributions
Anacapa Island - Landing Cove

S. franciscanus

Number of ARMs sampled: 7

< 5	**0.0%**
5 - 9	**9.7%**
10 - 14	**16.4%**
15 - 19	**9.4%**
20 - 24	**7.4%**
25 - 29	**11.7%**
30 - 34	**9.1%**
35 - 39	**6.4%**
40 - 44	**6.0%**
45 - 49	**6.4%**
50 - 54	**4.0%**
55 - 59	**3.0%**
60 - 64	**2.3%**
65 - 69	**1.3%**
70 - 74	**2.3%**
75 - 79	**1.7%**
80 - 84	**1.7%**
85 - 89	**0.3%**
90 - 94	**0.3%**
95 - 99	**0.0%**
100 - 104	**0.0%**
105 - 109	**0.0%**
> 109	**0.3%**
(Cases) N=	**298**
mean	**31**
min size (mm)	**6**
max size (mm)	**119**

Strongylocentrotus purpuratus

Number of ARMs sampled: 7

< 5	**1.1%**
5 - 9	**9.7%**
10 - 14	**6.5%**
15 - 19	**2.5%**
20 - 24	**3.8%**
25 - 29	**3.2%**
30 - 34	**6.5%**
35 - 39	**8.0%**
40 - 44	**8.7%**
45 - 49	**14.4%**
50 - 54	**14.6%**
55 - 59	**9.7%**
60 - 64	**7.6%**
65 - 69	**2.3%**
70 - 74	**1.3%**
75 - 79	**0.2%**
> 79	**0.0%**
(Cases) N=	**527**
mean	**39**
min size (mm)	**4**
max size (mm)	**76**

2002 Artificial Recruitment Modules Size Frequency Distributions
San Miguel Island - Miracle Mile

Haliotis rufescens

Number of ARMs sampled: 3

<25	**50.0%**
25 - 34	**0.0%**
35 - 44	**0.0%**
45 - 54	**16.7%**
55 - 64	**0.0%**
65 - 74	**16.7%**
75 - 84	**0.0%**
85 - 94	**16.7%**
95 - 104	**0.0%**
105 - 114	**0.0%**
115 - 124	**0.0%**
125 - 134	**0.0%**
135 - 144	**0.0%**
145 - 154	**0.0%**
155 - 164	**0.0%**
165 - 174	**0.0%**
175 - 184	**0.0%**
185 - 194	**0.0%**
>195	**0.0%**
(Cases) N=	**6**
mean	**44**
min size (mm)	**13**
max size (mm)	**86**

Megathura crenulata

Number of ARMs sampled: 3

<10	**0.0%**
10 - 19	**100.0%**
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%**
> 119	**0.0%**
(Cases) N=	**1**
mean	**16**
min size (mm)	**16**
max size (mm)	**16**

Crassedoma giganteum

Number of ARMs sampled: 3

<10	**0.0%**
10 - 19	**50.0%**
20 - 29	**50.0%**
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=	**4**
mean	**19**
min size (mm)	**11**
max size (mm)	**25**

Asterina miniata

Number of ARMs sampled: 3

<10	**0.0%**
10 - 19	**26.9%**
20 - 29	**7.7%**
30 - 39	**30.8%**
40 - 49	**15.4%**
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	**33**
min size (mm)	**13**
max size (mm)	**58**

Pisaster giganteus

Number of ARMs sampled: 3

< 20	**73.3%**
20 - 39	**0.0%**
40 - 59	**0.0%**
60 - 79	**20.0%**
80 - 99	**6.7%**
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=	**15**
mean	**31**
min size (mm)	**9**
min size (mm)	**9**
max size (mm)	**90**

Pycnopodia helianthoides

Number of ARMs sampled: 3

< 20	**20 - 390.0%**
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	**100.0%**
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	**163**
min size (mm)	**163**
max size (mm)	**163**

2002 Artificial Recruitment Modules Size Frequency Distributions
San Miguel Island - Miracle Mile

S. franciscanus

Number of ARMs sampled: 3

< 5	**0.0%**
5 - 9	**0.0%**
10 - 14	**31.8%**
15 - 19	**40.9%**
20 - 24	**4.5%**
25 - 29	**9.1%**
30 - 34	**0.0%**
35 - 39	**0.0%**
40 - 44	**0.0%**
45 - 49	**0.0%**
50 - 54	**4.5%**
55 - 59	**0.0%**
60 - 64	**9.1%**
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=	**22**
mean	**22**
min size (mm)	**10**
max size (mm)	**62**

Strongylocentrotus purpuratus

Number of ARMs sampled: 3

< 5	**0.0%**
5 - 9	**2.7%**
10 - 14	**2.7%**
15 - 19	**0.0%**
20 - 24	**1.4%**
25 - 29	**2.7%**
30 - 34	**2.7%**
35 - 39	**1.4%**
40 - 44	**6.8%**
45 - 49	**2.7%**
50 - 54	**17.6%**
55 - 59	**20.3%**
60 - 64	**21.6%**
65 - 69	**10.8%**
70 - 74	**6.8%**
75 - 79	**0.0%**
> 79	**0.0%**
(Cases) N=	**74**
mean	**53**
min size (mm)	**8**
max size (mm)	**74**

Appendix K. **2002 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																
BRYOPSIS CORTICULANS																1
CHAETOMORPHA SP.													x			
CLADOPHORA GRAMINEA															1	
CODIUM CUNEATUM															1	
CODIUM FRAGILE						x	1					x	x	x		
CODIUM HUBBSII/SETCHELLII							1			x				4	2	1
DERBESIA MARINA															1	
FILAMENTOUS GREEN ALGAE													x			
HALICYSTIS OVALIS														1	1	
ULVA SP.	1	4														
PHAEOPHYTA																
COLPOMENIA SP.									x	x	2	1	2	2	x	1
CYSTOSEIRA SP.	2	0	2/ J4	2	0	1	0	0	0	0	0	1	2	2	0	0
DESMARESTIA SP.	3	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0
DICTYOTA/PACHYDICTYON			3	2						X	2	2	1	X	2	2
EISENIA ARBOREA	1	J1	J1	1/J2	0	2/J2	0/J1	0/J1	0	0/J1	1/J1	0	2	1/J1	1	0
GIFFORDIA/ECTOCARPUS															X	
LAMINARIA FARLOWII	0/J1	0	1/J2	2/J2	0	1	0	0	0	0	0	1/J1	3/J2	0	0	0
LEATHESIA DIFFORMIS																
MACROCYSTIS PYRIFERA	3/J2	1/J1	4/J4	2/J3	1	4/J4	0	0	0	2/J1	0	3/J2	3/J3	2/J1	0	J1
PTERYGOPHORA CALIFORNICA	3/J2	0	2/J2	2/J2	0	1	0	0	0	0	0	0	J2	0	0	0
TAONIA LENNEBACKERIAE														X		2
RHODOPHYTA	4	2	3	3	2	2	1	1	1	1	2	2	3	X		
AMPHIROA ZONATA															1	1
CALLIARTHRON SP.															2	1
CALLOPHYLLIS SP.	X															
CARPOPELTIS BUSHIAE															1	
CERAMIUM SP.															X	
CHONDRIA CALIFORNICA																1
CORALLINA OFFICINALIS															1	1
CORALLINA VANCOUVERIENSIS															1	1
CORALLINES - ENCRUSTING	4	4	1	2	4	2	2	3	4	1	2	3	2	3	3	3
CORALLINES - ERECT	3	X	2	2	X	3	1	1	1	2	X	2	3	1	1	1
FAUCHEA SP.																1
GELIDIUM SP.	X	0	X	X	0	1	1	0	1	0	0	3	1	0	1	0
GELIDIUM PURPURASCENS																1
GIGARTINA SP.	1	0	1	1		1	0	0	0	0			1	1	0	0
GIGARTINA CORYMBIFERA	X	0	X	X										1		
GIGARTINA SPINOSA															1	
LAURENCIA PACIFICA						X	2	2	2	2	2	2	2	2	3	1
PLOCAMIUM VIOLACEUM											1		2			
POLYSIPHONIA SP.															X	
PTEROCLADIA SP.															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
FILAMENTOUS RED ALGAE	2	2				X	X	X	X	X	X	X	X	2	3	1
HYPSYPOPS TURF NEST	0	0	1	0		0	1	1	2	0	1	2	2	1	2	1
DIATOMS																
DIATOM FILM						X	X	X	X	X	X			X	X	X
PROTOZOA																
HOMOTREMA RUBRUM						X				X			X		X	
PORIFERA	3	1	2	2	2	2	2	1	2	2	1	1	3	2	1	1
LEUCETTA LOSANGELENSIS													X			
LEUCILLA NUTTINGI	X												X			
HYMENAMPHIASTRA CYANOCRYPTA			2										X			
HYMENIACIDON SINAPIUM						X										
RED SPONGES - ENCRUSTING			X	X			X	1	X	X	X	X	X			
SPHECIOSPONGIA CONFOEDERATA													X			
TETHYA AURANTIA	2	1	2	2	2	1	1	1	2	2	1	1	1	3	1	1
TETILLA ARB			X	X												
XESTOSPONGIA TRINDINAEA			X	X												
CNIDARIA																
HYDROZOA											3					
ABIETINARIA SP.														X		
AGLAOPHENIA SP.	2		3	2		2				X		1	2			
ALLOPORA CALIFORNICA	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
ANTENELLA AVALONIA															1	
CORYMORPHA SP.															1	
EUDENDRIUM SP.															2	
GARVEIA ANNULATA						1										
HYDRACTINIA SP.															2	1
OBELIA SP.	X					X					X	X	X			
PLUMULARIA SP.															2	
SERTULARELLA SP./SERTULARIA SP.	X												X		X	
TUBULARIA SP.			X	X												
CLAVULARIA SP.											X				2	1
PACHYCERIANTHUS FIMBRIATUS						X		2		2		X	X	X	X	
Hydractinia milleri							4	x	x	x	x					
ANTHOZOA																
EUGORGIA RUBENS											4					
LOPHOGORGIA CHILENSIS	0	0	0	2	X	3	3	3	1	2	2	1	1	3	1	1
MURICEA CALIFORNICA	0	0	0	0	0	0	1	1	0	2	2	0	0	2	1	1
MURICEA FRUTICOSA	0	0	0	0	0	0	0	X	0	1	1	0	0	1	1	0
STYLATULA ELONGATA										2		1				
PARAZOANTHUS LUCIFICUM											X					
CORYNACTIS CALIFORNICA	2	3	2	3	2	2	2	1	2	2	3	1	2	2	3	2
ANTHOPLEURA ARTEMISIA															2	
ANTHOPLEURA SOLA															2	X
EPIACTIS PROLIFERA	X		X	X												
HALCAMPA DECEMTENTACULATA															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
METRIDIUM EXILIS				1											1	
SAGARTIA CATALINENSIS															2	
TEALIA SP. (=URTICINA SP.)															1	
TEALIA CORIACEA			X	X						X	2	X		X		
TEALIA LOFOTENSIS	3	1	2	2	2	0	0	0	0	0	0	0	0	0	0	0
ZAOLUTUS ACTIUS															1	
ORDER MADREPORARIA																
ASTRANGIA LAJOLLENSIS (=A. HAIMEI)	1	2	2	2	3	2	4	3	2	2	2	2	2	2	2	2
BALANOPHYLLIA ELEGANS	1	2	2	3	3	2	1	1	2	2	1	1	1	2	2	2
COENOCYATHUS BOWERSI											X				1	
PARACYATHUS STEARNSI (=P. STEARNSII)	3						X	X	X	X	X		2		2	2
PLATYHELMINTHES									X	X						
KABURAKIA/Alloioplana californica															x	
NEMERTEA			X		X					X						
SIPUNCULA																X
ANNELIDA																
POLYCHAETE																
APHRODITE															X	
ARCTONOE SP.										X						
ARCTONOE PULCHRA															X	
CHAETOPTERUS VARIOPEDATUS						X	X	X	X	X	X			X	1	X
DIOPATRA ORNATA	3	X	1	3	X	1	2	3	X	1	1	X	X	0	0	1
DODECACERIA FEWKESI	2										X				X	X
EUDISTYLIA POLYMORPHA	2					2	X		X		X	X	X			
MYXICOLA INFUNDIBULUM								2	X	X	X	X				
OPHIODROMUS PUGETTENSIS															X	
PHRAGMATOPOMA CALIFORNICA	2	0	2	X	0	0	0	0	0	0	0	1	1	0	1	1
PISTA ELONGATA	2					X			X	X			X	X	1	
SABELLID															X	X
SALMACINA TRIBRANCHIATA								X		X	X			X	2	X
SPIROBRANCHUS SPINOSUS						X	2	3	3		3	3	2	X	3	4
SPIRORBID		X							X							
POLYCHAETE "BALLOONS"								X	X			X	X			
ARTHROPODA																
PYCNOGONIDA																
CRUSTACEA																
CIRRIPEDIA/THORACIA																
BALANUS SP.			X	X			X	2	X	X	X		X		3	X
BALANUS AQUILA/NUBILUS			X	X	X											
CONOPEA GALEATA											X			X		
MEGABALANUS CALIFORNICUS															2	
MALACOSTRACA																
MYSIDS (brown canopy dwellers)						2										
MYSIDS (clear bottom dwellers)															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
ISOPODA																
IDOTEA RESECATA			4	4		2	0	0	0	0				0		
AMPHIPODA																
AMPHIPOD TUBE MASSES			X	X		2			X	X						
GAMMARIDEA															X	X
CAPRELLIDEA																
EUPHSUSIACEA																
COPEPODS ON MEGATHURA CRENULATA									X							
COPEPODS ON FISH	X		X	X			X	X	X	X	X	X	X			
DECAPODA																
ALPHEUS SP.									X				X		X	
ALPHEUS CLAMATOR										X						
BETAEUS MACGINITIEAE			X	X											3	
LYSMATA CALIFORNICA						X	X		X			X		X	X	
PANDALUS DANAE			X	X		2				2	2	X	X			
SPIRONTOCARIS PRIONATA						X										
PANULIRUS INTERRUPTUS	0	0	1	0	0	0	1	1	2	1	1	2	3	1	2	1
HAPALOGASTER CAVICAUDA			2	2												
PAGURISTES SP.			X	X		X	X	X	X	X	X		X	X	X	X
PAGURUS SP.			X	X		X	X	X	X	X	X			X	3	
CANCER SP.												S				
CANCER ANTENNARIUS	2		2	X		S	S	S								
HERBSTIA PARVIFRONS			2	2			2	X	X	X	X	X	X	X	X	
LOXORHYNCHUS CRISPATUS	X		X	X												
LOXORHYNCHUS GRANDIS							X	X	X	1		X	X	X	2	X
PARAXANTHIAS TAYLORI							X	X	X		X					
PELIA TUMIDA			X	X												
PHYLLOLITHODES PAPILLOSUS				1												
PUGETTIA SP.									1							
PUGETTIA RICHII	2		X	X												
MOLLUSCA																
GASTROPODA																
ACMAEA MITRA				X												
AMPHISSA VERSICOLOR						X	X	X	X	X	X		X		3	
LITHOPOMA GIBBEROSUM (=Astraea gibberosa)	X	0	0	0	X	2	0	0	0	2	0	0	0	0	0	0
LITHOPOMA UNDOSUM (=Astraea undosa)	0	0	0	0	0	1	1	2	3/J1	3/J2	2	2	3	3/J3	3	2
BURSA CALIFORNICA (=Crossata californica)						X				X		1	1	1	1	
CALLIOSTOMA SP.						X				X	X		X			
CALLIOSTOMA ANNULATUM						X				X						
CALLIOSTOMA SUPRAGRANOSUM															2	2
CERATOSTOMA NUTTALLI							X	X	X		X	X	X		3	
CONUS CALIFORNICUS			X	X		X	X	X		X	X			X	3	3
CREPIPATELLA LINGULATA															X	
CREPIDULA SP.								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
CYPRAEA SPADICEA		2	2	2	2	2/J2	2	2	3	1/J1	2	2	2	1	2	2
FISSURELLA VOLCANO															1	
HALIOTIS CORRUGATA	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
HALIOTIS CRACHERODII	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HALIOTIS FULGENS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HALIOTIS RUFESCENS	2	0	1/J1	1/J1	0	0	0	0	0	1	0	0	0	0	0	0
HALIOTIS SORENSENI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HALIOTIS WALALLENSIS	S	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0
HALIOTIS ASSIMILIS			0	0			1	0	0	2	0	0	0	0	0	0
HOMALOPOMA SP.									X	X						
KELLETIA KELLETII	3	1	1	2	1	1	1	1	1	2	1	1	1	1	0	0
MAXWELLIA GEMMA									X		X				2	1
MEGATHURA CRENULATA	X	X	2	2	2	2	2	2	2	2/J2	2	2	2	1	1	2
MITRA IDAE											X		X			
NORRISIA NORRISI			X			X	0	0	0	1					2	2
SERPULORBIS SQUAMIGERUS		X	X								2	2	2		3	2
SIMNIA VIDLERI (=Neosimnia)														X		
TEGULA SP.										X		X	X	2		
TEGULA AUREOTINCTA									3						3	2
TEGULA EISENI															4	3
TEGULA REGINA						2	X	X	X	2				2	3	2
TRIVIA SP.										X						
TRIVIA CALIFORNIANA									X						X	X
VOLVARINA TAENIOLATA						X				X	X				X	
OPISTOBRANCHIA																
APLYSIA CALIFORNICA	0	1	0	2	1	1	1	2	3	1	2	2	2	3	3	3
BERTHELLA CALIFORNICA						X	X				X		X			
NAVANAX INERMIS						X	2			1		X				
HAMINOEA VIRESCENS EGGS														X	X	X
NUDIBRANCHIA																
DENDRONOTUS IRIS										X						
DIAULULA SANDIEGENSIS														X	X	
DORIOPSILLA ALBOPUNCTATA															X	
FLABELLINOPSIS IODINEA (=Coryphella iodinea)						X	X	X	X	X	X	X	X		X	
HERMISSENDA CRASSICORNIS							X								X	
LAILA COCKERELLI													X		X	
MEXICHROMIS PORTERAE											X		X			
PHIDIANA PUGNAX										X						
ROSTANGA PULCHRA															X	
TRIOPHA CATALINAE						X										
POLYPLACOPHORA																
TONICELLA LINEATA			X	X						X						
BIVALVIA																
CHACEIA OVOIDEA															X	
CHAMA ARCANA							2	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
GARI CALIFORNICA											S				S	
CRASSEDOMA GIGANTEUM (=Hinnites giganteus)	2	1	1	1	1	1	1	2	2	2/J1	2	3	4	2	2	2
LIMA HEMPHILLI							X	X	X		S		X			
PECTEN DIEGENSIS								S								
PODODESMUS CEPIO	X	X	2	2	X	2	X	X	X	2	X				S	
SEMELE DECISA															S	
VENTRICOLARIA FORDII								X	X						S	
CEPHALAPODA																
OCTOPUS SP.			X			X										
OCTOPUS BIMACULATUS/BIMACULOIDES				X				2	X	X			X		3	X
OCTOPUS RUBESCENS										X						
ECTOPROCTA																
BUGULA SP.										X						
BUGULA CALIFORNICA														X	2	X
BUGULA NERITINA			X	X		X	2	2	X		X	2	2	X	1	
COSTAZIA ROBERTSONIAE			X	X												
DIAPEROECIA CALIFORNICA	X	1	2	2	X	3	3	2	2	2	2	2	3	1	1	0
HIPPODIPLOSIA INSCULPTA													X			
LICHENOPORA NOVAE-ZELANDIAE						X				X			X	3	2	1
MEMBRANIPORA MEMBRANACEA			X	X		X	X	X	X	X	X	X	X	X	X	X
PARASMITTINA/RHYNCHOZOON															X	
PHIDOLOPORA LABIATA															X	
PHIDOLOPORA PACIFICA						X							X			
THALAMOPORELLA CALIFORNICA							3	2	X						2	
PHORONIDA																
PHORONOPSIS CALIFORNICA															2	1
ECHINODERMATA																
ASTEROIDEA																
ASTROPECTEN SP.								X		X						
DERMASTERIAS IMBRICATA	2		X	X												
HENRICIA LEVIUSCULA						X	X			X	2			2		
LINCKIA COLUMBIAE							1	1	X		3	1	2	1		
LUIDIA FOLIOLATA				X												
MEDIASTER AEQUALIS	X		X	X												
ORTHASTERIAS KOEHLERI							1	1			1	1	1	1		
ASTERINA MINIATA (=Patiria miniata)	2	2	2	2	3	2	2	2	2	2	3	1	1	2	3/J3	2
PISASTER GIGANTEUS	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2
PISASTER OCHRACEUS															2	
PYCNOPODIA HELIANTHOIDES	2	3	3	3	4	2	0	0	0	2	0	0	0	1	1	0
diseased seastars			0	0		0	0	0	0		0	0	0			
ECHINOIDEA																
ARBACIA INCISA											1				1	1
CENTROSTEPHANUS CORONATUS	0	0	0	0	0	1	2	2	2	1	2	2	2	3	2	2
LYTECHINUS ANAMESUS	0	0	0	0	0	0	2	2	1	4	2	0	0	2	2	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
LYTECHINUS ANAMESUS JUVENILES	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
STRONGYLOCENTROTUS FRANCISCANUS	4	4	3	3	4	1	3	3	2	2	3	3	3	3	3	3
STRONGLYOCENTROTUS FRANCISCANUS JUV.	2	X	1	1	2	2	1	1	1	2	1	1	1	1	2	1
STRONGYLOCENTROTUS PURPURATUS	2	2	1	2	1	1	3	3	4	2	3	2	2	1	4	3
STRONGLYOCENTROTUS PURPURATUS JUV.	1	X	1	1	X	1	1	1	1	1	1	1	1	1	1	1
diseased urchins			0	0		0	2	2	2	1	2	0	0	0	1	1
OPHIUROIDEA																
OPHIODERMA PANAMENSE							2				2	X	X	3	2	1
OPHIOPLOCUS ESMARKI															1	
OPHIOPSILLA CALIFORNICA									X							
OPHIOPTERIS PAPILLOSA							X	X			X	X	X		2	X
OPHIOTHRIX SPICULATA			0	0			4	1			4			4	1	
HOLOTHUROIDEA																
CUCUMARIA SP.						X				X	2	2	3			
CUCUMARIA MINIATA															1	
CUCUMARIA PIPERATA							2	2	X	X	2	X	X			
CUCUMARIA SALMA																1
EUPENTACTA QUINQUESEMITA																1
PACHYTHYONE RUBRA						1		1								
PARASTICHOPUS CALIFORNICUS	1	1	1	1		1										
PARASTICHOPUS PARVIMENSIS	2	1	1	2	0	2	2	2	2	1/J1	2/J1	2	2	2	2	1
CHORDATA																
UROCHORDATA (TUNICATA)																
APLIDIUM SP.												X	X		X	
BOLTENIA VILLOSA			2	X		X				X						
CLAVELINA HUNTSMANI													X	X		
CYSTODYTES LOBATUS			X	X												
DIDEMNUM SP.														X	2	2
DIDEMNUM CARNULENTUM												X	X			
DISTAPLIA OCCIDENTALIS													X			
METANDROCARPA TAYLORI			X			X	X	X	X		X	2	2	X	1	1
PEROPHORA ANNECTENS														X		
POLYCLINUM PLANUM			2	1												
PYCNOCLAVELLA STANLEYI													X	X	2	2
PYURA HAUSTOR												X	X			
SALPS							X	X	X							
STYELA MONTEREYENSIS	2	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0
THETIS VAGINA	X		X	X				X		X					X	
VERTEBRATA																
CHONDRICHTYES																
CEPHALOSCYLLIUM VENTRIOSUM		X	1				X	X	X	1	1	X	4			
HETERODONTUS FRANCISCI								X	X	1						

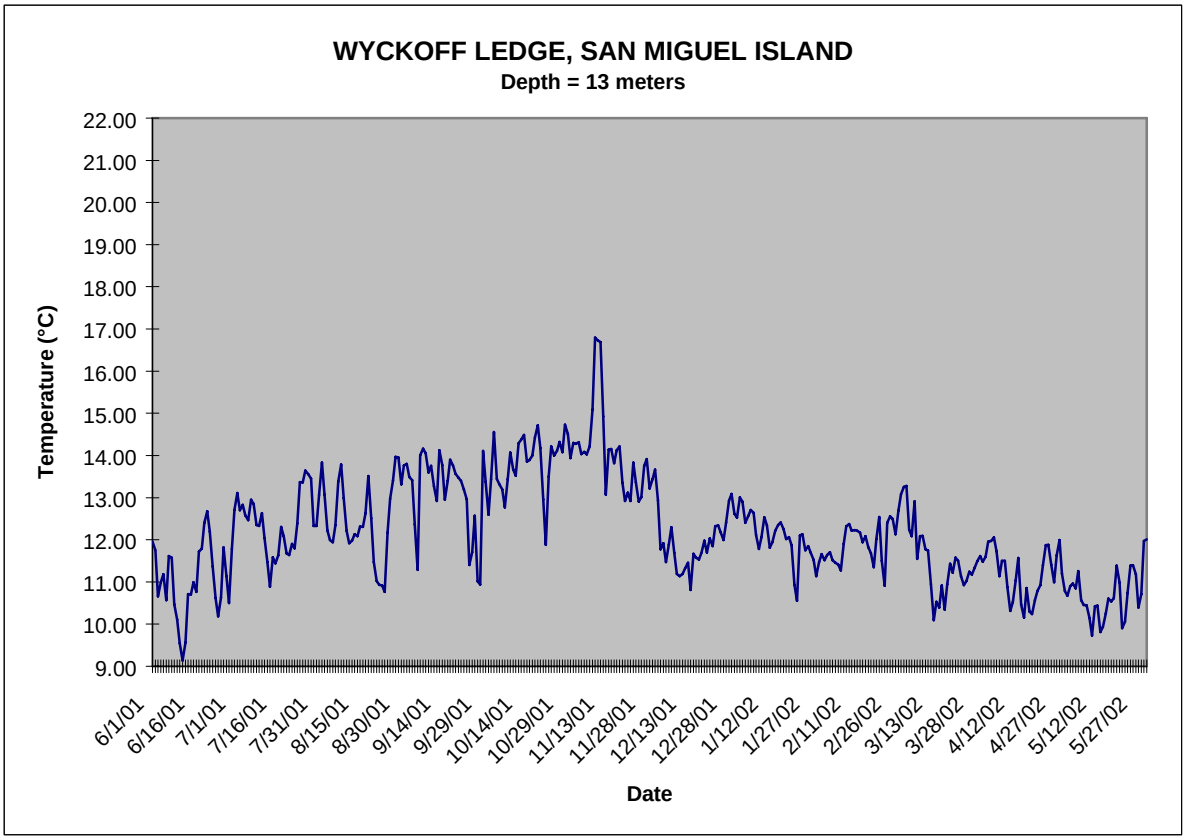
LOCATION	SMWL	SMHR	SRJLNO	SRJLSO	SRRR	SCGI	SCFH	SCPB	SCSA	SCYB	ANAR	ANCC	ANLC	SBSESL	SBAP	SBCAT
SPECIES SITE #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MYLIOBATIS CALIFORNICA				X			X		X			1	X			X
SQUATINA CALIFORNICA																X
OSTEICHTHYES																
GYMNOTHORAX MORDAX															1	1
PORICHTHYS NOTATUS												X				
GOBIESOX SP.											X		X			
SARDINOPS SAGAX			4	4												
ATHERINOPS AFFINIS			4	4		X						X	X		X	
AULORHYNCHUS FLAVIDUS	4	X		3												
LIPARIS PULCHELLINI																1
SERIOLA LALANDEI															X	
TRACHURUS SYMMETRICUS											X					
ALLOCLINUS HOLDERI	0	X	0	0	0	1	1	1	1	1	2	3	3	2	2	2
GIBBONSIA SP.			X	X			X	X			1	2	2		1	
HETEROSTICHUS ROSTRATUS						X										
HETEROSTICHUS ROSTRATUS (JUVENILES)			X									1	2	X		
NEOCLINUS SP.								2	X							
NEOCLINUS STEPHANSAE															1	1
ARTEDIUS CORALLINUS		X		X	X		X			X	X				2	2
LEIOCOTTUS HIRUNDO													X			
ORTHONOPIAS TRIACIS		X	X	X	X	X		X	X		X			2	2	2
SCORPAENICHTHYS MARMORATUS	2	1	X	1		1			X				X		X	
BRACHYISTIUS FRENATUS	2		4	2		X						3	3			
RHACOCHILUS VACCA	2	2	3	3	2	2	2	3	1	1	1	1/J1	1/J1	0	0	0
EMBIOTOCA JACKSONI	J2	J2	3/J2	2/J2	2/J1	2/J2	2/J0	3/J1	2/J0	1	2	2/J2	2/J1	0	0	1
EMBIOTOCA LATERALIS	2/J2	3/J3	3/J2	3/J2	2/J1	2	0	0	0	0	0	1	0	0	0	0
HYPSURUS CARYI	X		X	X	X	X						X				
PHANERODON FURCATUS							X	X								
RHACOCHILUS TOXOTES			X	X	X	X	X	X				X				
CORYPHOPTERUS NICHOLSI	2	4	2	2	X	2	2	4	2	4	4	3	2	3	3	3
LYTHRYPNUS DALLI	0	0	0	0	0	0	X	X	X	0	0	0	1	0	0	0
LYTHRYPNUS ZEBRA			0	0			1	1	1	0	0	1	2		0	
ANISOTREMUS DAVIDSONII								X								
OPHIODON ELONGATUS	X	X	X		X	X				X	X					
OXYLEBIUS PICTUS	2	1	3	3	X	2	2	2	2	2	3	2	2	2	2	2
GIRELLA NIGRICANS	0	0	4	2	X	2	2	2	2	0	3	2	2	3	4	2
MEDIALUNA CALIFORNIENSIS				1			X		X		1	1	2	1	3	1
MEDIALUNA (JUVENILES)							0	0	0		0	0	0	0	0	
HALICHOERES SEMICINCTUS	0	0	0	0	0	0	2	1	1	2	2	1	1	1	2	2
H. SEMICINCTUS (FEMALES)	0	0	0	0	0	0	2	1	1	2	2	1	1	1	2	2
H. SEMICINCTUS (MALES)	0	0	0	0	0	0	1	1	1	2	2	1	1	1	1	1
H. SEMICINCTUS (JUVENILES)									0	0	0	1	0	0	0	0
OXYJULIS CALIFORNICA	2	2	2	3	0	2	2	2	1	0	1	2	1	1	2	2
O. CALIFORNICA (JUVENILES)	1	0	0	0	0	0	0	0	0	0	0	0	0	2	3	3
SEMICOSSYPHUS PULCHER											2	2	2			

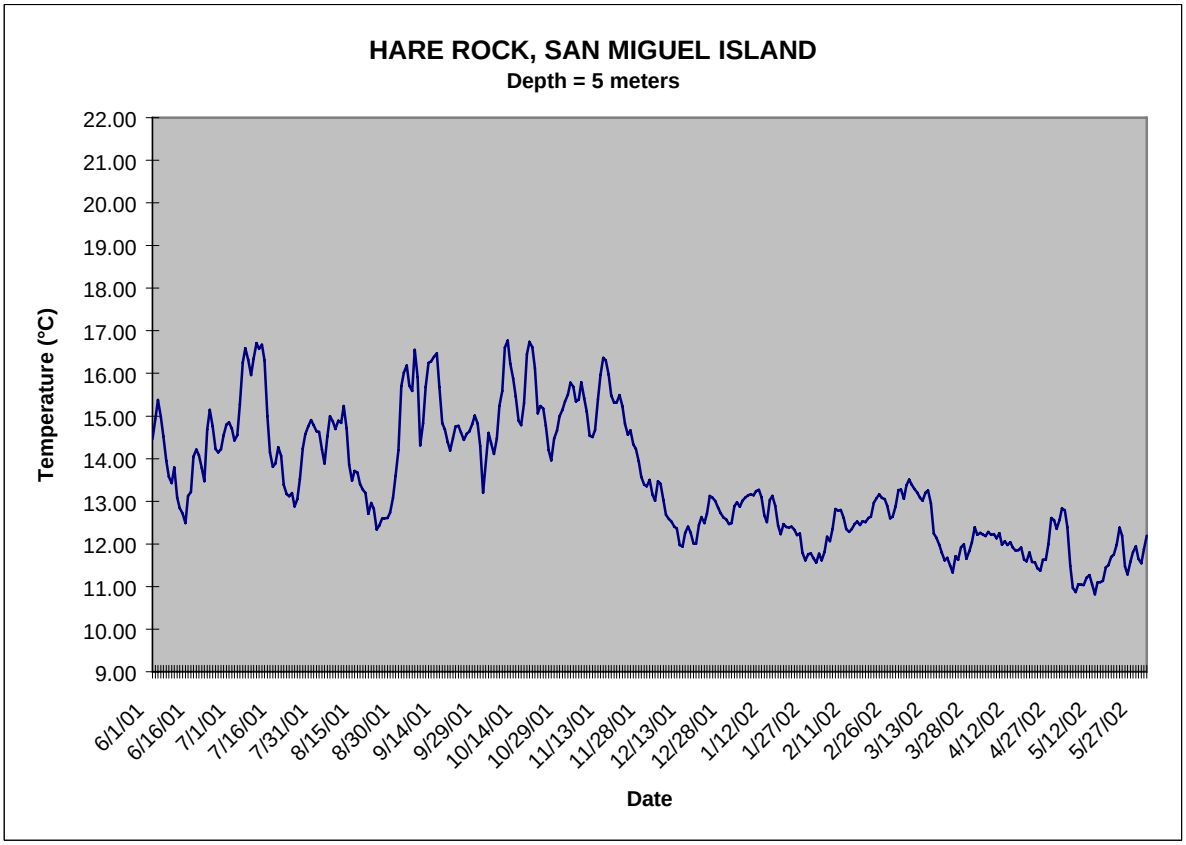
LOCATION	SMWL	SMHR	SRJLNO	SRJLSO	SRRR	SCGI	SCFH	SCPB	SCSA	SCYB	ANAR	ANCC	ANLC	SBSESL	SBAP	SBCAT
SPECIES SITE #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
S. PULCHER (FEMALES)	2	2	2	2	2	2	2	2	1	2	2	2	2	1	2	2
S. PULCHER (MALES)	0	2	1	1	2	1	2	0	0	0	1	1	2	1	1	1
S. PULCHER (JUVENILES)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1
CAULOLATILUS PRINCEPS			X	X		X	X	3		X		1		2	X	X
STEREOLEPIS GIGAS											1					
CHROMIS PUNCTIPINNIS	0	2	3	2	2	2	2	1	2	1	3	2	2	3	3	2
CHROMIS PUNCTIPINNIS (JUVENILES)	0	0	2	0	0	0	0	0	0	0	0	1	0	1	4	
HYPSYPOPS RUBICUNDUS	0	0	1	0	0	1	2	2	2	0	2	3	2	3	4	3
HYPSOPOPS RUBICUNDUS (JUVENILES)	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0
SCORPAENA GUTTATA								X	X		1			X		
SEBASTES SP. (JUVS.)	3	3	2	2	2	2	0	0	0	2	1	0	2	0	0	0
SEBASTES AURICULATUS						X		X								
SEBASTES ATROVIRENS	2	2	2	3	2	1	1	2	2	1	1	2	1	1	0	1
S. ATROVIRENS (JUVENILES)					2	2	0	0	0	0	0	0	0	0		
SEBASTES CARNATUS	X			X	X	X	X									
SEBASTES CAURINUS	X	X		X	X	X				X	X					
S. CARNATUS/CAURINUS (JUVENILES)										1	1					
SEBASTES CHRYSOMELAS	X	X	1	1	X	1	1	0	1	1	1		X			
SEBASTES MELANOPS		X					X									
SEBASTES MINIATUS	X		0	0	X					1						
S. MINIATUS (JUVENILES)				1						1						
SEBASTES MYSTINUS	2	2	1	2	2	3	2	0	1	0	1	1	0	0	0	1
S. MYSTINUS (JUVENILES)	2	2	2	2	2	3	2	0	1	0	1	1	1	0	0	0
SEBASTES RASTRELLIGER									X						1	1
SEBASTES SERRANOIDES	2	2	3	1	0	1	2	1	1	1	2	1	1	0	0	0
S. SERRAN./S. FLAVIDUS (JUVENILES)	1	2	3	2	2	1	0	0	2	0	1	2	1	1	0	0
SEBASTES SERRICEPS	1	1	2	1	0	1	2	2	1	1	1	1	1	0	1	0
S. SERRICEPS (JUVENILES)	0	0	0	0	0	1	1	1	0	1	1	1	1	0	0	0
PARALABRAX CLATHRATUS	0	0	1	1	2	1	3	3	3	1	1	2	3	1	2	1
P. CLATHRATUS (JUVENILES)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SPHYRAENA ARGENTEA										X						
CITHARICHTHYS STIGMAEUS	X										X				1	1
PARALICHTHYS CALIFORNICUS												1	X	1		
PLEURONICHTHYS COENOSUS										X					1	1
MAMMALIA																
ZALOPHUS CALIFORNIANUS														X	X	X

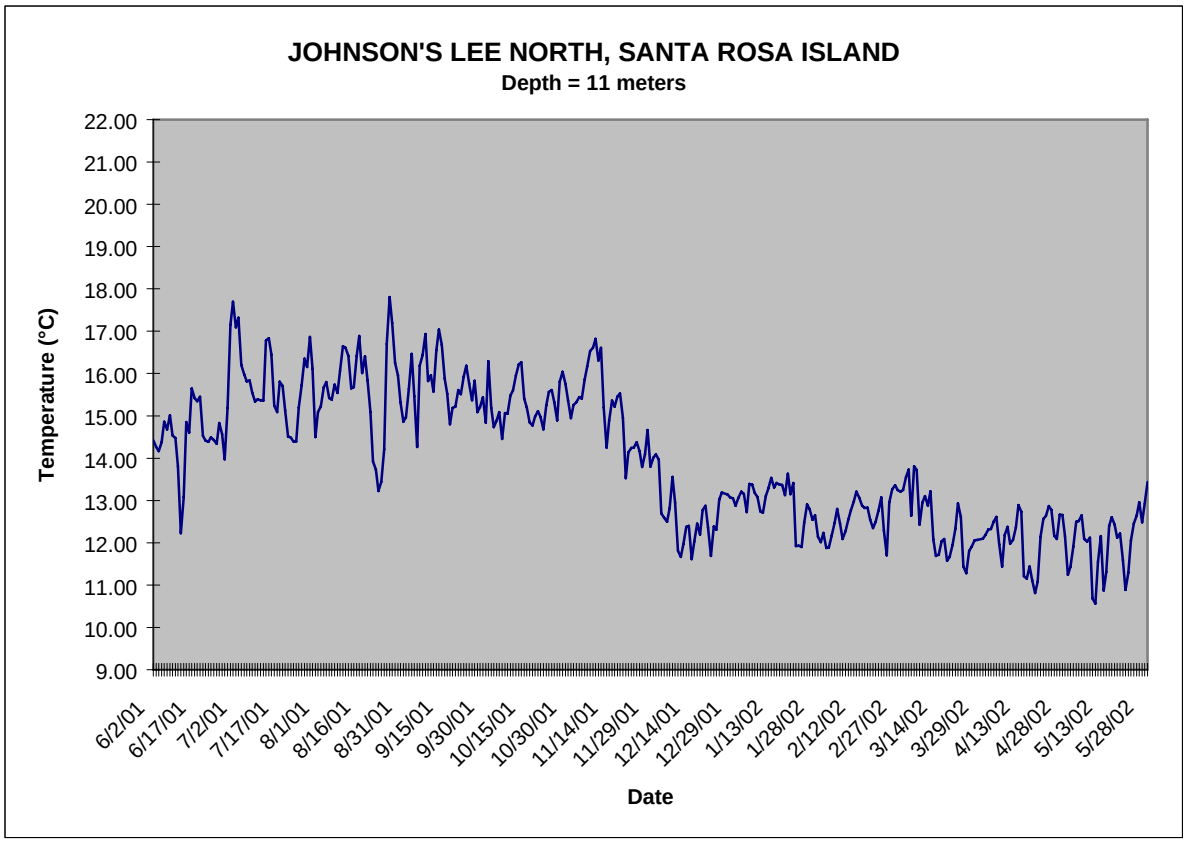
Appendix L. **2002 Temperature data collected at Channel Islands National Park Kelp Forest Monitoring Stations by remote temperature loggers.**

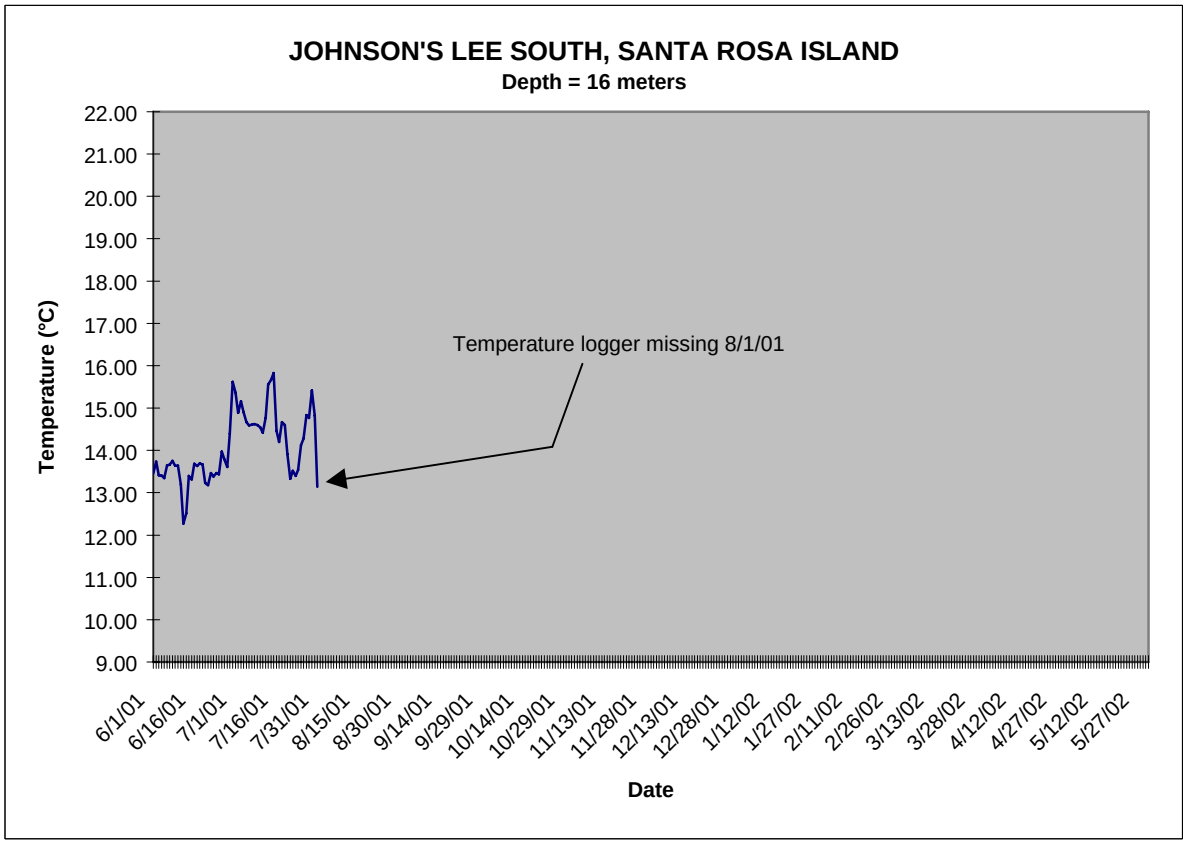
Introduction:

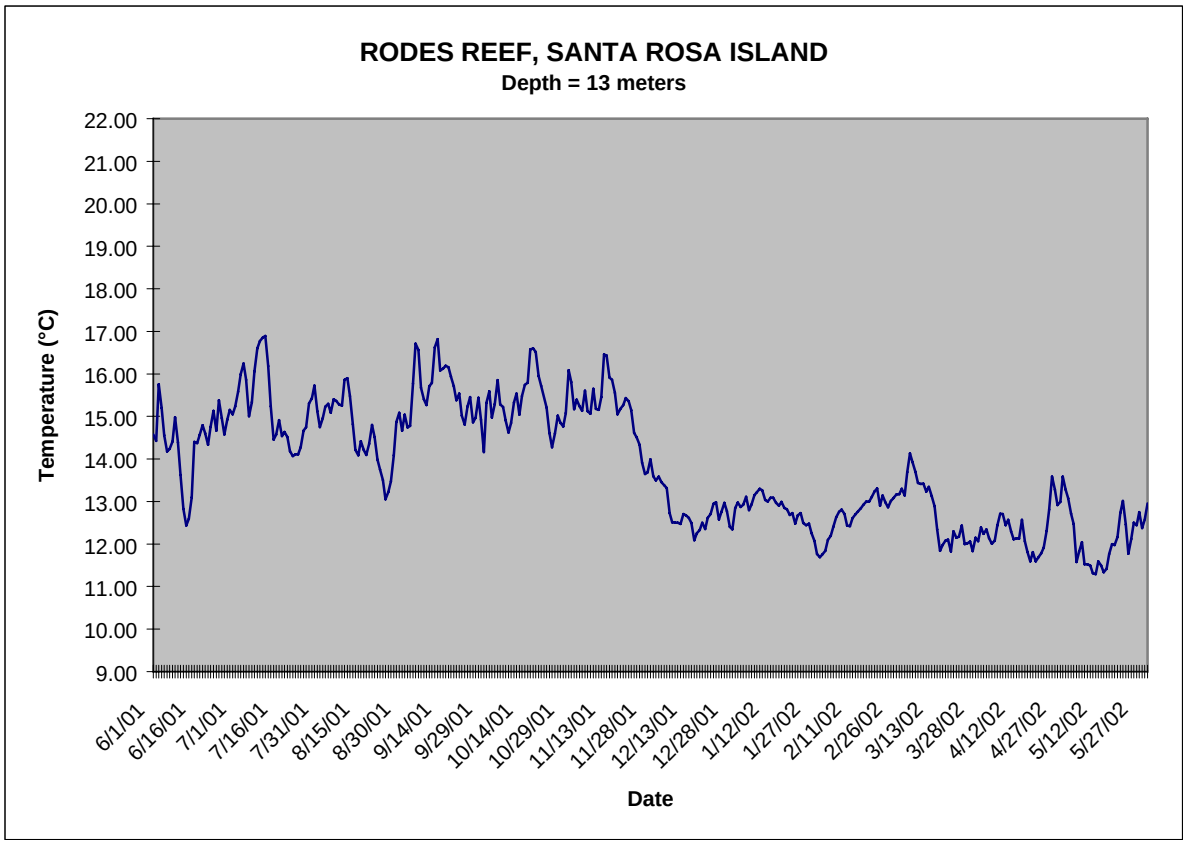
This appendix contains the temperature data (presented graphically) collected by STOWAWAY$^{TM.}$ temperature loggers that were deployed at all 16 Kelp Forest Monitoring sites. Missing data at some sites is the result of technical problems or loss of temperature logger.

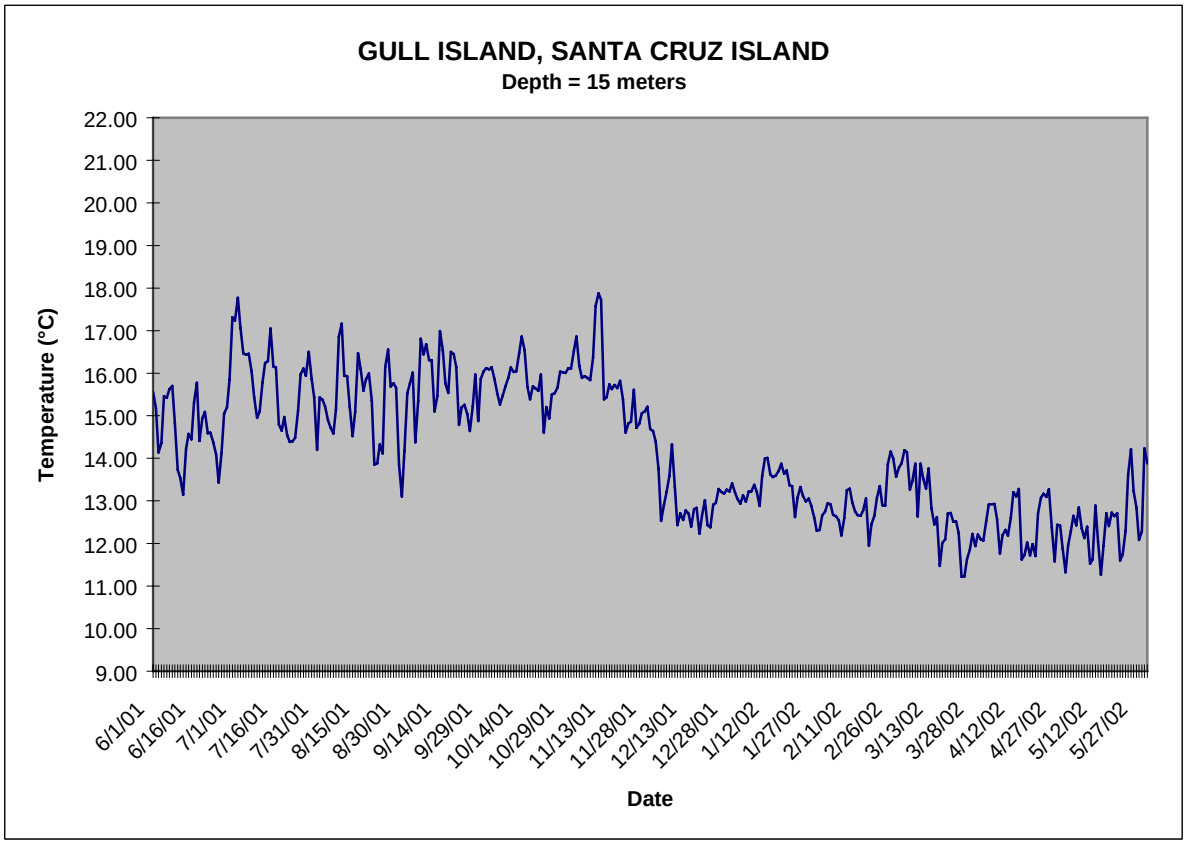

WYCKOFF LEDGE, SAN MIGUEL ISLAND
Depth = 13 meters
Temperature (°C)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
6/1/01
6/16/01
7/1/01
7/16/01
7/31/01
8/15/01
8/30/01
9/14/01
9/29/01
10/14/01
10/29/01
11/13/01
11/28/01
12/13/01
12/28/01
1/12/02
1/27/02
2/11/02
2/26/02
3/13/02
3/28/02
4/12/02
4/27/02
5/12/02
5/27/02
Date

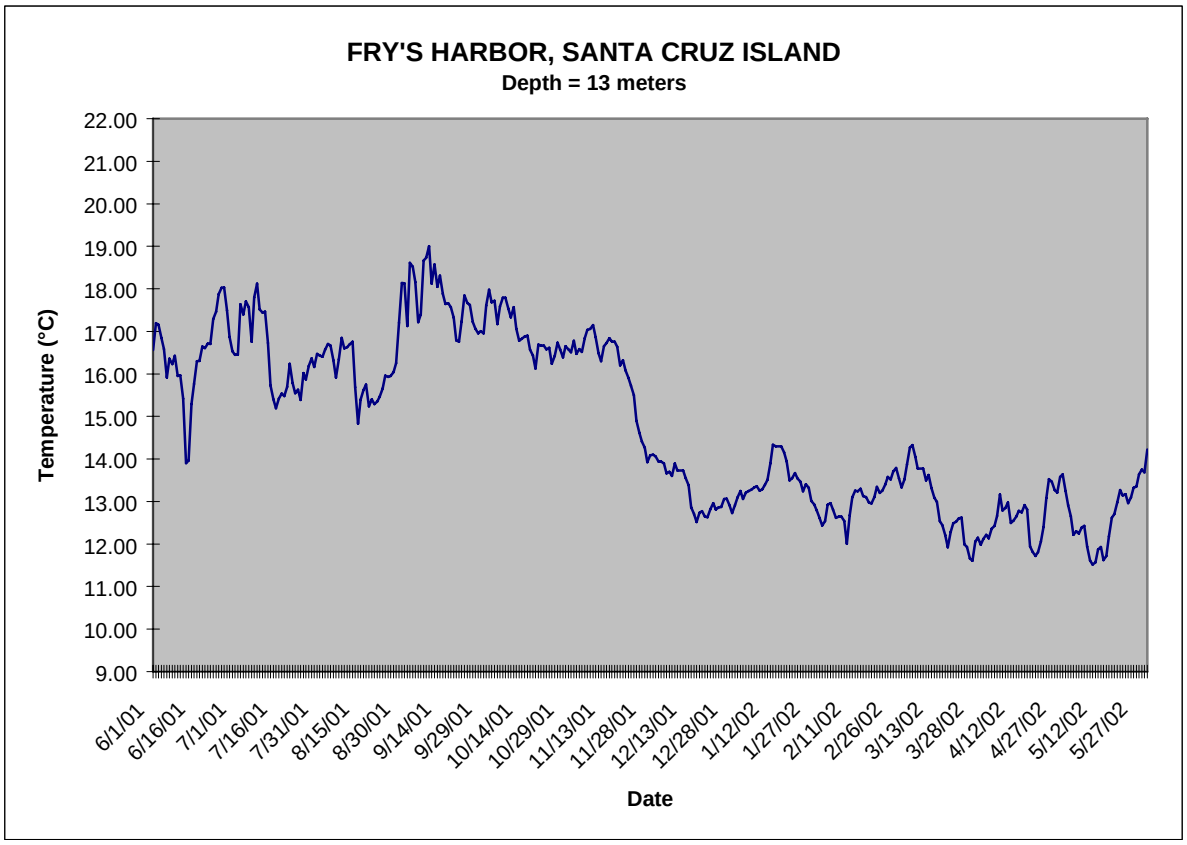

HARE ROCK, SAN MIGUEL ISLAND
Depth = 5 meters
Temperature (°C)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
6/1/01
6/16/01
7/1/01
7/16/01
7/31/01
8/15/01
8/30/01
9/14/01
9/29/01
10/14/01
10/29/01
11/13/01
11/28/01
12/13/01
12/28/01
1/12/02
1/27/02
2/11/02
2/26/02
3/13/02
3/28/02
4/12/02
4/27/02
5/12/02
5/27/02
Date

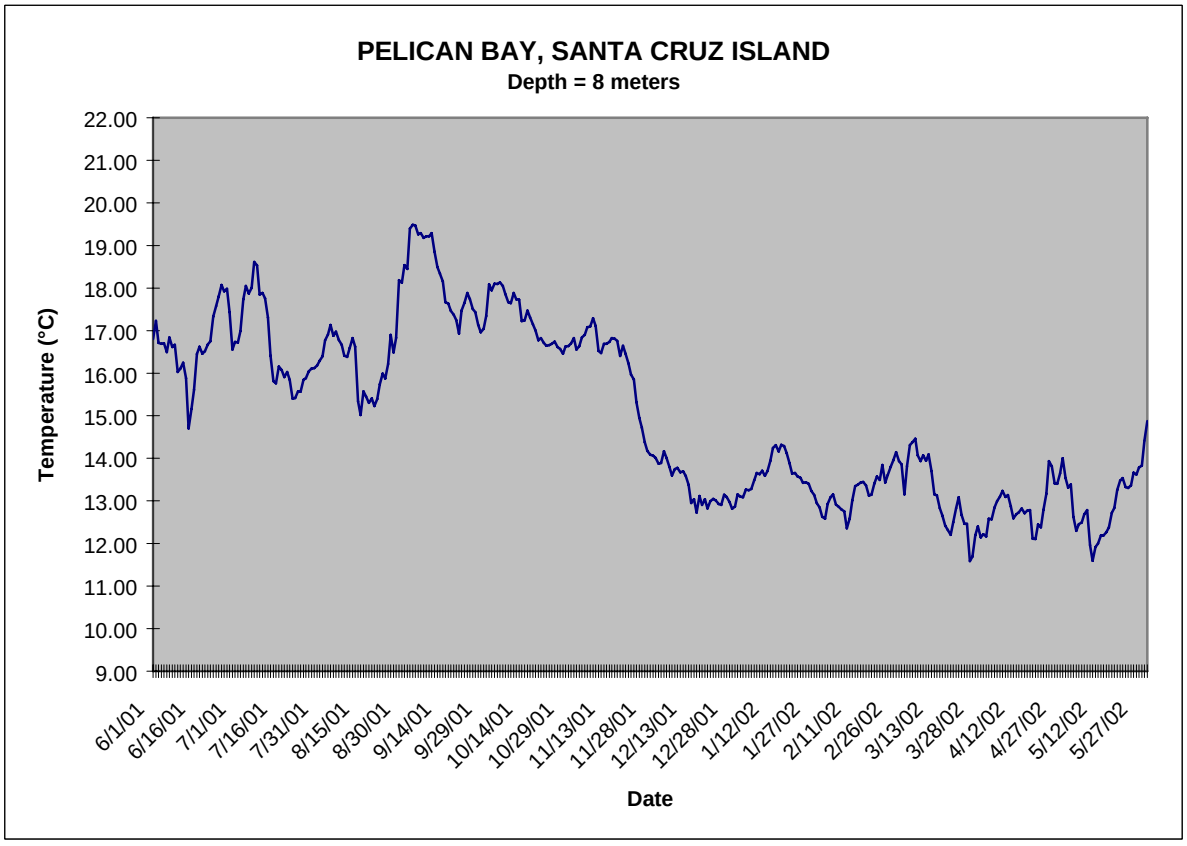

JOHNSON'S LEE NORTH, SANTA ROSA ISLAND
Depth = 11 meters
Temperature (°C)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
6/2/01
6/17/01
7/2/01
7/17/01
8/1/01
8/16/01
8/31/01
9/15/01
9/30/01
10/15/01
10/30/01
11/14/01
11/29/01
12/14/01
12/29/01
1/13/02
1/28/02
2/12/02
2/27/02
3/14/02
3/29/02
4/13/02
4/28/02
5/13/02
5/28/02
Date

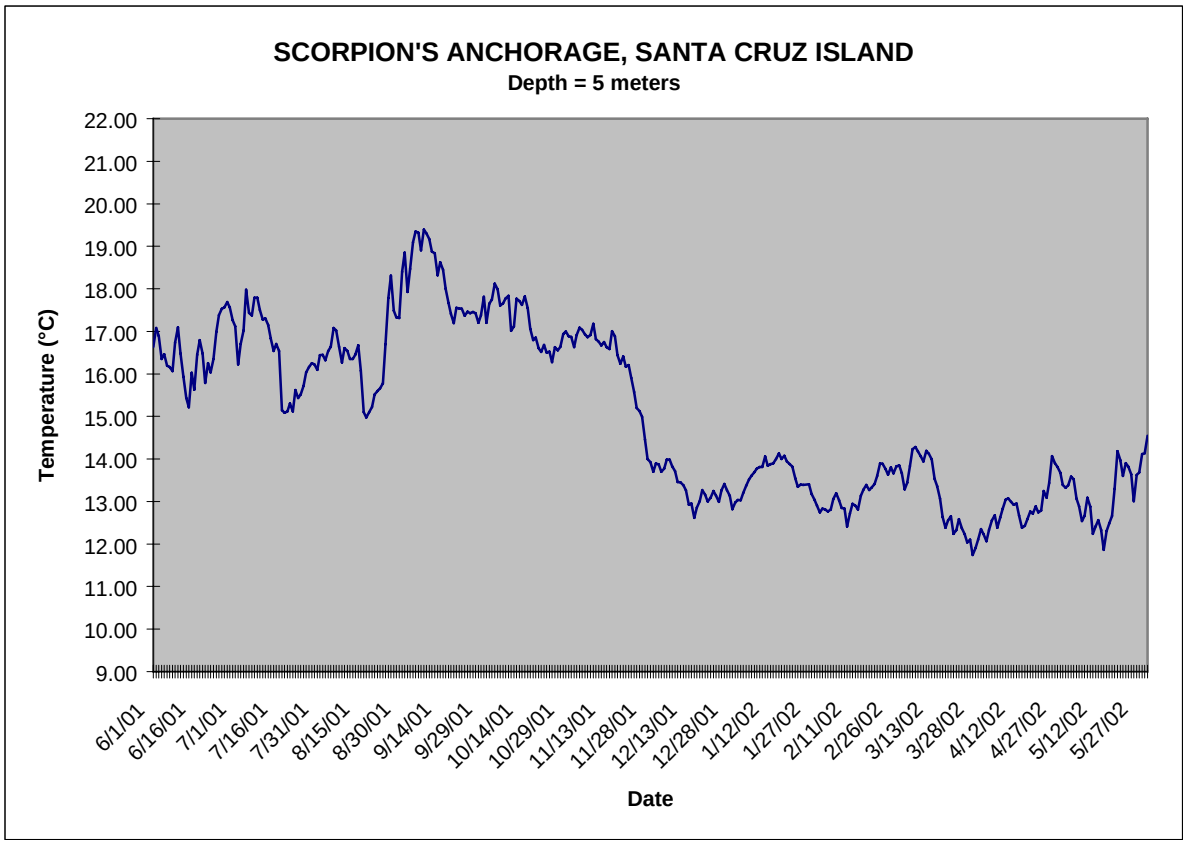

JOHNSON'S LEE SOUTH, SANTA ROSA ISLAND
Depth = 16 meters
Temperature (°C)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
Temperature logger missing 8/1/01
6/1/01
6/16/01
7/1/01
7/16/01
7/31/01
8/15/01
8/30/01
9/14/01
9/29/01
10/14/01
10/29/01
11/13/01
11/28/01
12/13/01
12/28/01
1/12/02
1/27/02
2/11/02
2/26/02
3/13/02
3/28/02
4/12/02
4/27/02
5/12/02
5/27/02
Date

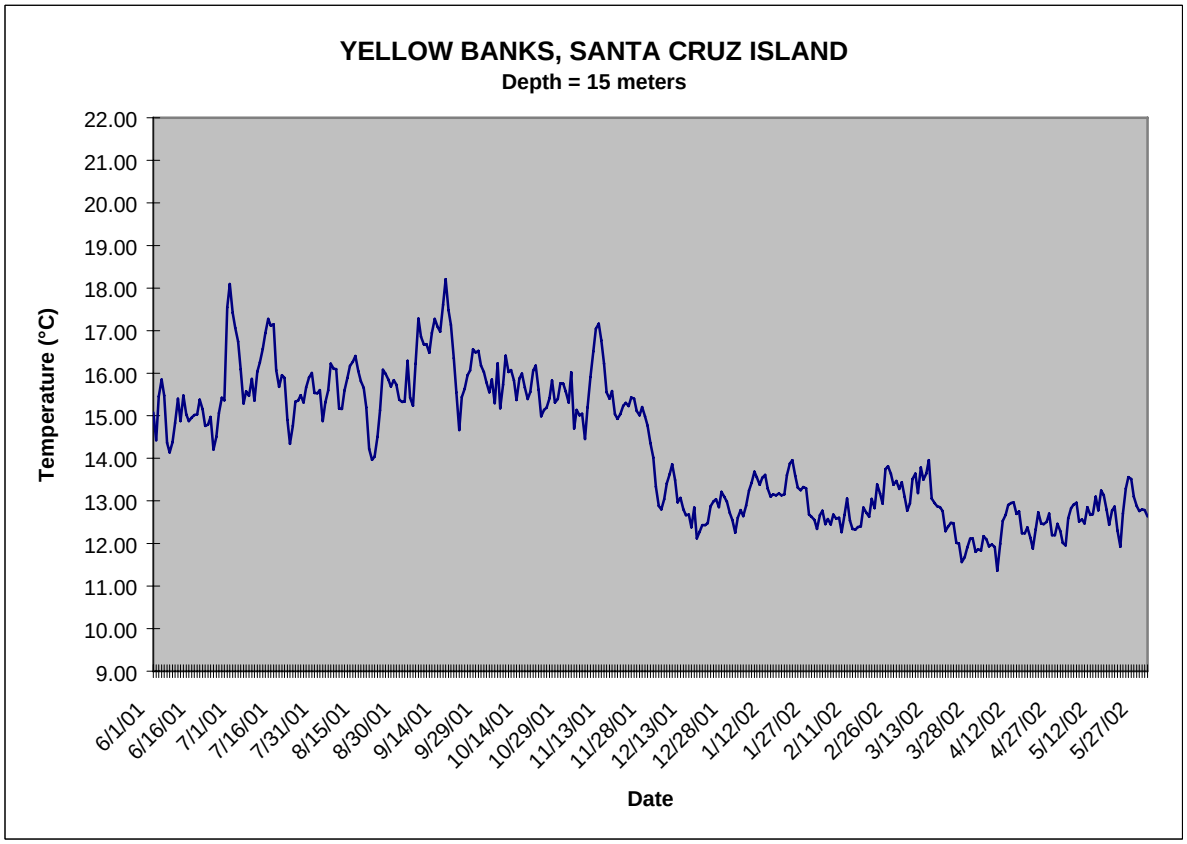

RODES REEF, SANTA ROSA ISLAND
Depth = 13 meters
Temperature (°C)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
6/1/01
6/16/01
7/1/01
7/16/01
7/31/01
8/15/01
8/30/01
9/14/01
9/29/01
10/14/01
10/29/01
11/13/01
11/28/01
12/13/01
12/28/01
1/12/02
1/27/02
2/11/02
2/26/02
3/13/02
3/28/02
4/12/02
4/27/02
5/12/02
5/27/02
Date

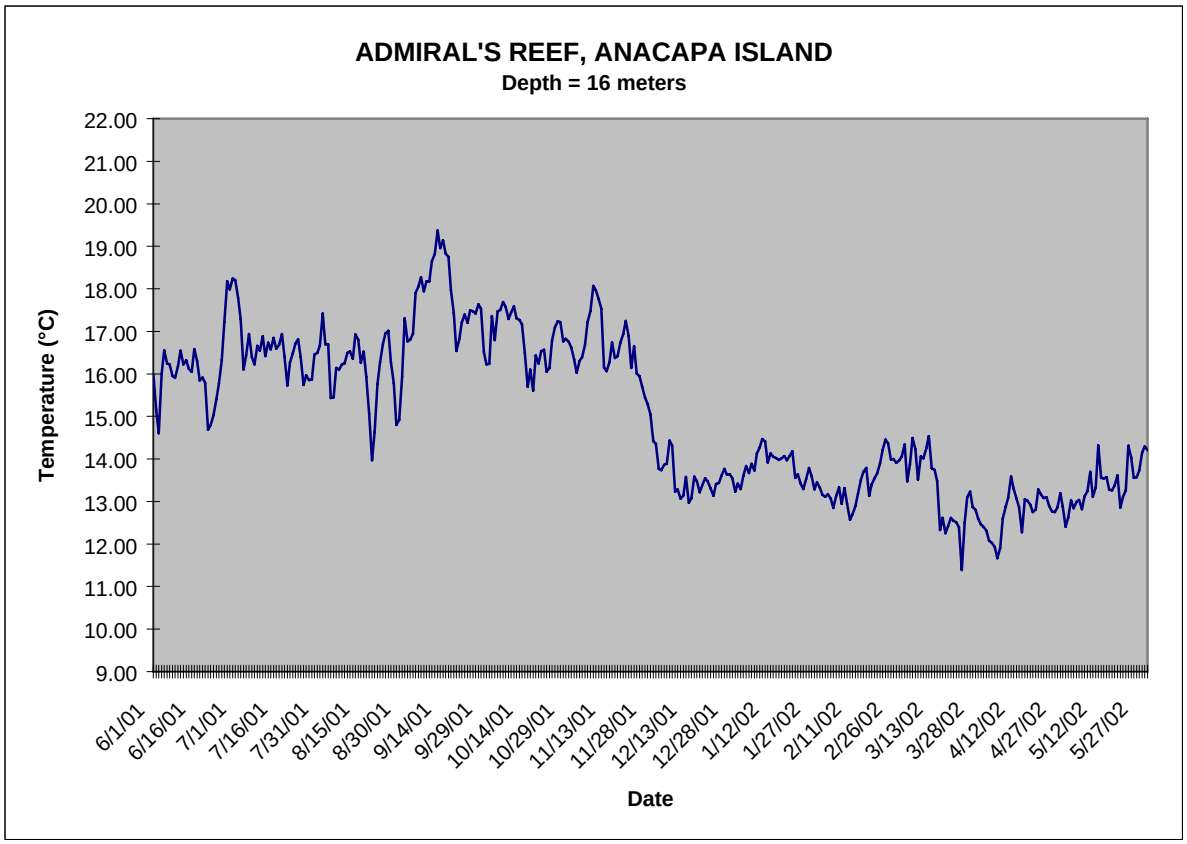

GULL ISLAND, SANTA CRUZ ISLAND
Depth = 15 meters
Temperature (°C)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
6/1/01
6/16/01
7/1/01
7/16/01
7/31/01
8/15/01
8/30/01
9/14/01
9/29/01
10/14/01
10/29/01
11/13/01
11/28/01
12/13/01
12/28/01
1/12/02
1/27/02
2/11/02
2/26/02
3/13/02
3/28/02
4/12/02
4/27/02
5/12/02
5/27/02
Date

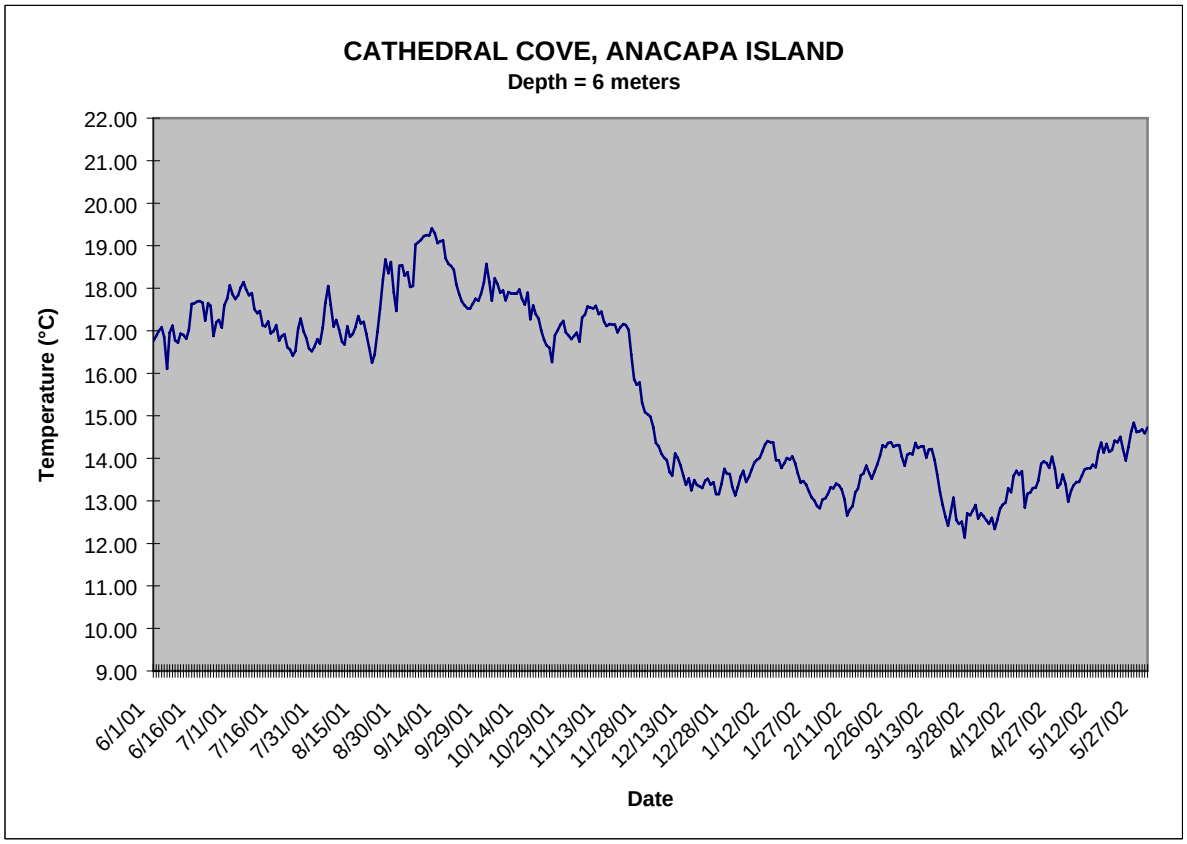

FRY'S HARBOR, SANTA CRUZ ISLAND
Depth = 13 meters
Temperature (°C)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
6/1/01
6/16/01
7/1/01
7/16/01
7/31/01
8/15/01
8/30/01
9/14/01
9/29/01
10/14/01
10/29/01
11/13/01
11/28/01
12/13/01
12/28/01
1/12/02
1/27/02
2/11/02
2/26/02
3/13/02
3/28/02
4/12/02
4/27/02
5/12/02
5/27/02
Date

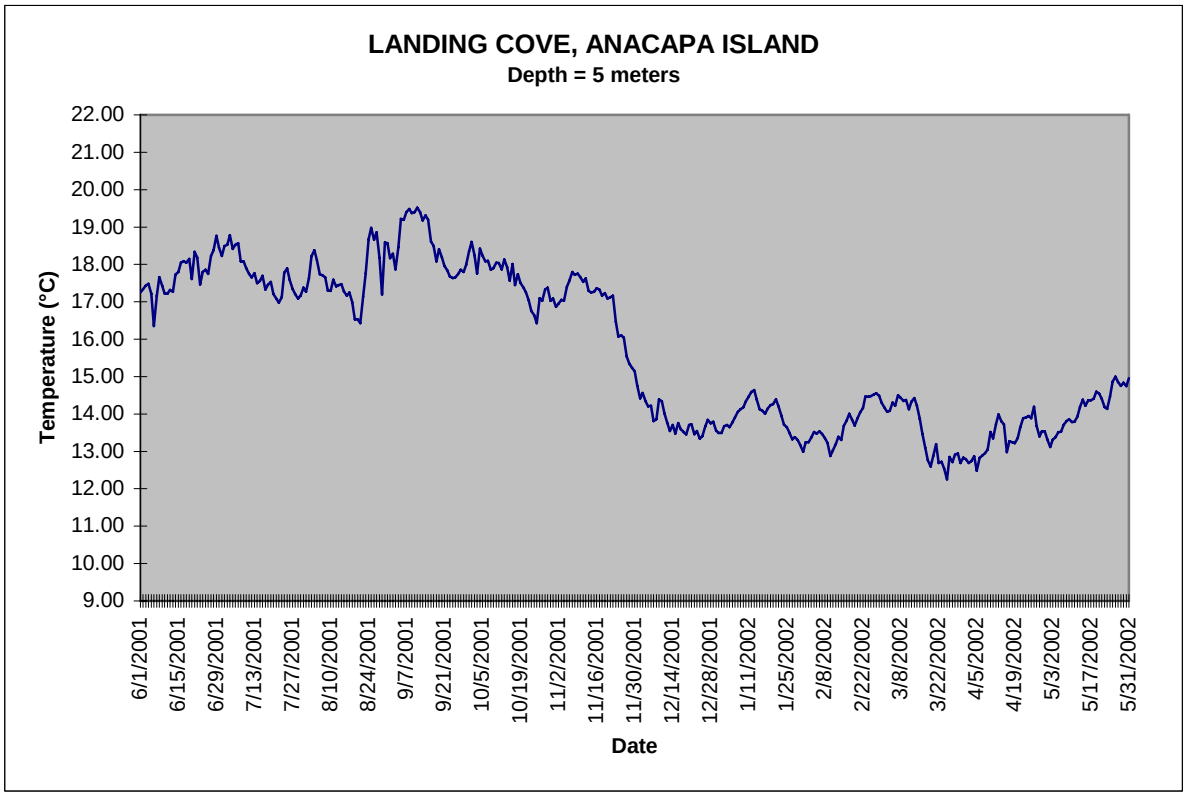

PELICAN BAY, SANTA CRUZ ISLAND
Depth = 8 meters
Temperature (°C)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
6/1/01
6/16/01
7/1/01
7/16/01
7/31/01
8/15/01
8/30/01
9/14/01
9/29/01
10/14/01
10/29/01
11/13/01
11/28/01
12/13/01
12/28/01
1/12/02
1/27/02
2/11/02
2/26/02
3/13/02
3/28/02
4/12/02
4/27/02
5/12/02
5/27/02
Date

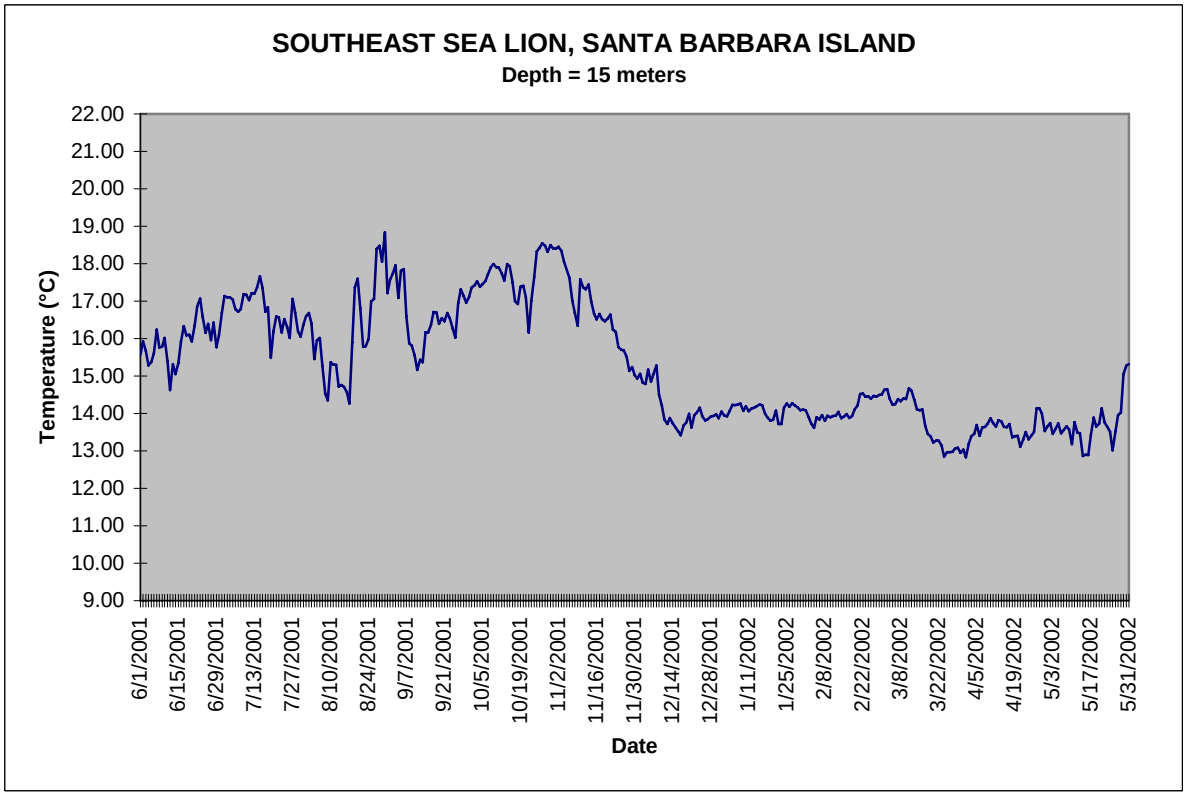

SCORPION'S ANCHORAGE, SANTA CRUZ ISLAND
Depth = 5 meters
Temperature (°C)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
6/1/01
6/16/01
7/1/01
7/16/01
7/31/01
8/15/01
8/30/01
9/14/01
9/29/01
10/14/01
10/29/01
11/13/01
11/28/01
12/13/01
12/28/01
1/12/02
1/27/02
2/11/02
2/26/02
3/13/02
3/28/02
4/12/02
4/27/02
5/12/02
5/27/02
Date

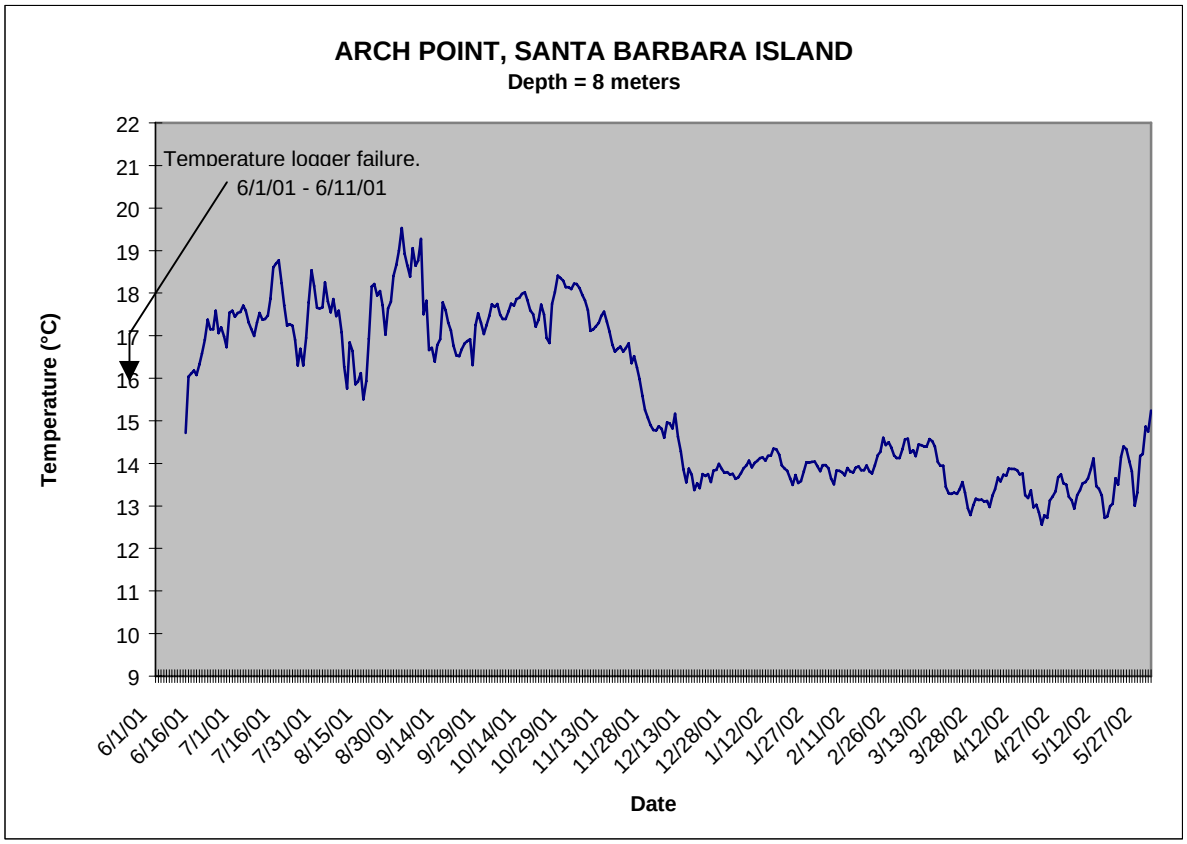

YELLOW BANKS, SANTA CRUZ ISLAND
Depth = 15 meters
Temperature (°C)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
6/1/01
6/16/01
7/1/01
7/16/01
7/31/01
8/15/01
8/30/01
9/14/01
9/29/01
10/14/01
10/29/01
11/13/01
11/28/01
12/13/01
12/28/01
1/12/02
1/27/02
2/11/02
2/26/02
3/13/02
3/28/02
4/12/02
4/27/02
5/12/02
5/27/02
Date

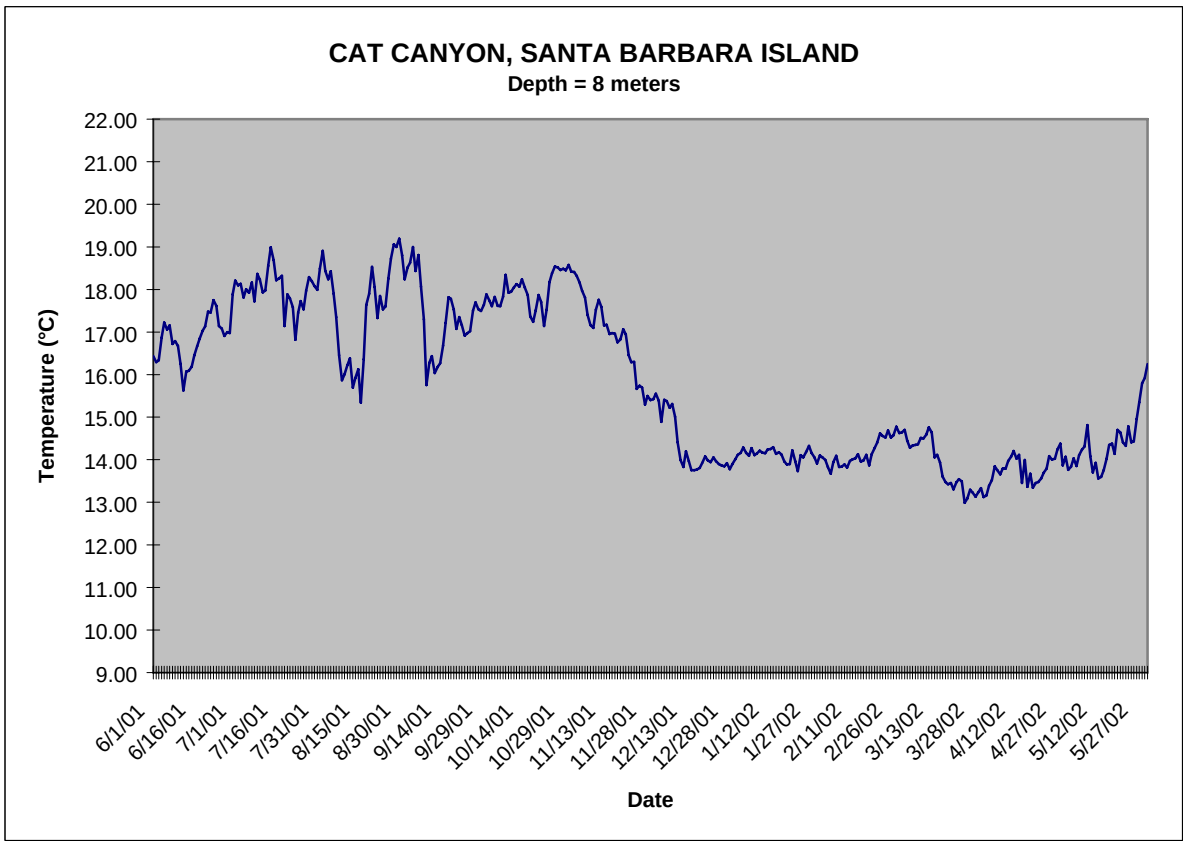

ADMIRAL'S REEF, ANACAPA ISLAND
Depth = 16 meters
Temperature (°C)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
6/1/01
6/16/01
7/1/01
7/16/01
7/31/01
8/15/01
8/30/01
9/14/01
9/29/01
10/14/01
10/29/01
11/13/01
11/28/01
12/13/01
12/28/01
1/12/02
1/27/02
2/11/02
2/26/02
3/13/02
3/28/02
4/12/02
4/27/02
5/12/02
5/27/02
Date


CATHEDRAL COVE, ANACAPA ISLAND
Depth = 6 meters
Temperature (°C)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
6/1/01
6/16/01
7/1/01
7/16/01
7/31/01
8/15/01
8/30/01
9/14/01
9/29/01
10/14/01
10/29/01
11/13/01
11/28/01
12/13/01
12/28/01
1/12/02
1/27/02
2/11/02
2/26/02
3/13/02
3/28/02
4/12/02
4/27/02
5/12/02
5/27/02
Date


LANDING COVE, ANACAPA ISLAND
Depth = 5 meters
Temperature (°C)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
6/1/2001
6/15/2001
6/29/2001
7/13/2001
7/27/2001
8/10/2001
8/24/2001
9/7/2001
9/21/2001
10/5/2001
10/19/2001
11/2/2001
11/16/2001
11/30/2001
12/14/2001
12/28/2001
1/11/2002
1/25/2002
2/8/2002
2/22/2002
3/8/2002
3/22/2002
4/5/2002
4/19/2002
5/3/2002
5/17/2002
5/31/2002
Date


SOUTHEAST SEA LION, SANTA BARBARA ISLAND
Depth = 15 meters
Temperature (°C)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
6/1/2001
6/15/2001
6/29/2001
7/13/2001
7/27/2001
8/10/2001
8/24/2001
9/7/2001
9/21/2001
10/5/2001
10/19/2001
11/2/2001
11/16/2001
11/30/2001
12/14/2001
12/28/2001
1/11/2002
1/25/2002
2/8/2002
2/22/2002
3/8/2002
3/22/2002
4/5/2002
4/19/2002
5/3/2002
5/17/2002
5/31/2002
Date


ARCH POINT, SANTA BARBARA ISLAND
Depth = 8 meters
Temperature logger failure.
6/1/01 - 6/11/01
Temperature (°C)
22
21
20
19
18
17
16
15
14
13
12
11
10
9
6/1/01
6/16/01
7/1/01
7/16/01
7/31/01
8/15/01
8/30/01
9/14/01
9/29/01
10/14/01
10/29/01
11/13/01
11/28/01
12/13/01
12/28/01
1/12/02
1/27/02
2/11/02
2/26/02
3/13/02
3/28/02
4/12/02
4/27/02
5/12/02
5/27/02
Date


CAT CANYON, SANTA BARBARA ISLAND
Depth = 8 meters
Temperature (°C)
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
6/1/01
6/16/01
7/1/01
7/16/01
7/31/01
8/15/01
8/30/01
9/14/01
9/29/01
10/14/01
10/29/01
11/13/01
11/28/01
12/13/01
12/28/01
1/12/02
1/27/02
2/11/02
2/26/02
3/13/02
3/28/02
4/12/02
4/27/02
5/12/02
5/27/02
Date