



Channel Islands National Park Kelp Forest Monitoring Program

Annual Report 2009

Natural Resource Data Series NPS/MEDN/NRDS—2013/581



ON THE COVER

Macrocystis pyrifera, giant kelp

Photograph by: Channel Islands National Park

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List of Acronyms

ARM	Artificial Recruitment Module
CDFG	California Department of Fish and Game
CINP	Channel Islands National Park
CINMS	Channel Islands National Marine Sanctuary
KFM	Kelp Forest Monitoring
KFMP	Kelp Forest Monitoring Program
KGB	Kelp/Gopher/Copper/Black & Yellow rockfish young of the year complex
MPA	Marine Protected Area
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRPP	Natural Resources Preservation Program
PISCO	Partnership for Interdisciplinary Studies of Coastal Oceans
RPC	Random Point Contacts
UCSB	University of California, Santa Barbara

Executive Summary

Channel Islands National Park (CINP) has conducted long-term ecological monitoring of the kelp forests around San Miguel, Santa Rosa, Santa Cruz, Anacapa and Santa Barbara Islands since 1982. Permanent transects were established at 16 sites between 1981 and 1986 with the first sampling beginning in 1982. An additional site, Miracle Mile, was established at San Miguel Island in 2001 by a commercial fisherman with assistance from the Park and has been intermittently monitored since. In 2005, an additional 16 permanent sites were established to collect base line data from inside and adjacent to four of the newly established Marine Protected Areas (MPAs) for later evaluation. These new sites were initially established with three years (2005-2007) of funding from the National Park Service (NPS) Natural Resource Preservation Program (NRPP). In 2009, the Park secured NPS and outside funding to continue monitoring these additional sites. The results of the sampling effort at all 33 sites mentioned are included in this report.

The 2009 monitoring efforts utilized 51 days of vessel time to conduct 1,061 dives for a total of 1029 hours of bottom time. Population dynamics of 70 taxa or categories, of algae, fish and invertebrates were measured at the 33 permanent sites in 2009. These 33 sites consisted of the original 16 kelp forest monitoring sites at the five park Islands, one additional site on San Miguel Island added in 2001, and the 16 new sites that were established in 2005 at Santa Barbara, Anacapa, Santa Cruz and Santa Rosa Islands. Survey techniques follow CINP's Kelp Forest Monitoring Protocol Handbook Volume 1 (Davis et al. 1997, new version in prep). The techniques utilize SCUBA and surface-supplied-air to perform 1 m² quadrats, 5 m² quadrats, band transects, random point contacts, fish transects, roving diver fish counts, video transects, size frequency measurements, and artificial recruitment modules. Temperature data were collected using remote temperature loggers at 32 sites, the exception being Miracle Mile where there is no temperature logger installed. This annual report contains a brief description of each site, a summary of methods used, and monitoring results for 2009. All of the data collected during 2009 can be found summarized in the Appendices A-L in this report.

All 33 permanent sites were established in areas that are known to have kelp forests. In 2009, 14 of the 33 sites monitored were characterized as kelp forests. In addition one site was half mature kelp forest with the other half dominated by *Strongylocentrotus* spp., and one other site was in a state of transition presumably toward kelp forest. The remaining 17 sites were mostly dominated by echinoderms. Of these 17, six were dominated by *S. purpuratus* and *S. franciscanus*, one by *S. franciscanus*, three by *S. purpuratus*, three by *S. purpuratus*, *S. franciscanus* and *Ophiothrix spiculata*, one by *S. purpuratus* and *O. spiculata*, two by *O. spiculata* and one was an open area with a moderately high density of *S. purpuratus*. Overall, the number of sites with kelp forests and those dominated by echinoderms was similar to last year. The site status information in comparison to the 2008 status is summarized in Table 3.

The status of kelp forests is notably different among the five Islands. Overall, there was little change at all six Santa Barbara Island monitoring sites since last year and in recent years. All sites remain dominated by echinoderms with the exception of Southeast Reef which remains half dominated by

sea urchins an half by a kelp forest. *Ophiothrix spiculata* continue to be abundant at the Island and were abundant at three of the monitoring sites. Overall, *Strongylocentrotus purpuratus* densities remained about the same, with increases at two, decreases at two and similar densities at the remaining two sites. *Strongylocentrotus franciscanus* abundance decreased overall, decreasing at three sites and remaining about the same at the other three sites. A partial kelp forest was present at only one site with the density of *Macrocystis pyrifera* there remaining similar to last year's. With the continued domination by echinoderms at the monitoring sites, as well as on most hard substrates around the Island, there is little indication that kelp forests will return to this Island in the near future.

The monitoring sites at Anacapa Island remained similar to last year. The two sites (Landing Cove and Cathedral Cove) in the Anacapa State Ecological Reserve that was established in 1978 continue to be kelp forest, while the five remaining sites continue to be mostly dominated by echinoderms. However, two of these echinoderm-dominated sites, Keyhole and Black Sea Bass Reef, have noticeably more algae present than in recent years. These two sites are in within the newer MPA established in 2003. Of the seven sites, *Strongylocentrotus purpuratus* densities declined at one, increased at two and remained about the same at the four other sites. *Strongylocentrotus franciscanus* densities changed little from last year at all seven sites. *Ophiothrix spiculata* abundance also remained similar at sites where it is abundant. The site with the most notable change was Black Sea Bass Reef, which appears to be gradually transitioning towards a kelp forest with a notable increase in algae cover at the east end of the site as well as within adjacent areas near the transect.

Several of the monitoring sites at Santa Cruz Island have changed dramatically in recent years. Three in particular have changed most notably are Fry's Harbor, Pelican Bay and Scorpion Anchorage, all on the north side of the Island. Fry's Harbor has been developing into a mature kelp forest over the past three years, with this year being the first since the early 1980's we have considered it a mature kelp forest with large widely spaced plants, understory algae and high biodiversity that a mature kelp forest habitat fosters. Pelican Bay has been dominated by *Strongylocentrotus* spp. since 1994; however their abundance declined to the lowest recorded since we began monitoring in 1982, allowing this site to rapidly transition to kelp forest. Lastly, although Scorpion Anchorage remains dominated by *S. purpuratus*, their density declined at the western end of the transect and a small kelp forest is present, similar to areas adjacent to the transect. However, *Strongylocentrotus* spp. continues to dominate five of the 10 sites at this Island with little overall change since last year.

Strongylocentrotus purpuratus densities decreased at two sites and remained similar at eight. *Strongylocentrotus franciscanus* densities decreased at one site and remained similar at nine. Though the Kelp Forest Monitoring (KFM) sites as a group appropriately represent the status of kelp forests at most of the Island, the sites do under-represent the western third of the Island since there are no monitoring sites west of Gull Island.

Kelp forests continued to be abundant around Santa Rosa and San Miguel Islands. Mature kelp forests were present at eight of the 10 sites at these two islands. The site with the most notable change was Rodes Reef. This site changed from a mature kelp forest in 2008 to an open area with an abundance of *Strongylocentrotus franciscanus*. Overall, there were no patterns of change in the

abundance of *Strongylocentrotus* spp. at these two islands. The monitoring sites here appear to represent the conditions of these islands well.

Acknowledgments

Funding for the kelp forest monitoring program was provided by the U.S. National Park Service. In addition, supplemental funding was provided by the Montrose Settlements Restoration Program to continue monitoring the sites associated with the marine reserve evaluation.

The monitoring program is conducted in cooperation with the California Department of Fish and Game (CDFG) and the U.S. Department of Commerce, National Oceanographic and Atmospheric Administration (NOAA), Marine Sanctuary Program.

We are deeply indebted to the many divers who have participated in this project in 2009 (Table 7). All of our volunteer divers are trained and/or certified with other agencies such as NOAA, CDFG, Aquariums 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 our Captain Keith Duran and our Diving Safety Officer, Dave Stoltz, for ensuring that all of our operations run safely and successfully.

Information Requests

The kelp forest monitoring handbooks and annual reports are available in digital format from Mediterranean Coast Inventory and Monitoring Network site (<http://science.nature.nps.gov/im/units/medn/index.cfm>) and the Natural Resource Publications Management website (<http://www.nature.nps.gov/publications/nrpm/>).

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

Introduction

The waters of CINP and Channel Islands National Marine Sanctuary (CINMS) contain one-third of southern California's kelp forests (Davies, 1968). Giant kelp, *Macrocystis pyrifera*, is the primary constituent of the 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 tourism 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 Area of Special Biological Significance. The State of California maintains jurisdiction over the living marine resources within the Park and manages them through CDFG.

The KFMP 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 guidelines for remedial action through management recommendations.

Following a five-year design study that began in 1982, the KFMP 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. (2001a), Kushner et al. (2001b), Kushner et al. (2004), Kushner et al. (2007a), Kushner et al. (2007b), Kushner et al. (2007c), Kushner et al. (2012), Kushner et al. (2013), Moore et al. (2013), and Sprague et al. (2013) describe the 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007 and 2008 monitoring efforts and results respectively. A review of the Kelp Forest Monitoring Program was conducted in 1995 (Davis et al., 1996).

Though KFMP was fully implemented in 1987, monitoring began at 14 sites in 1982 and two additional sites in 1986. An additional site, Miracle Mile, was established at San Miguel Island in 2001 by a commercial fisherman with assistance from the park and has been at least partially monitored since. In 2005, an additional 16 permanent sites were established to collect base line data from inside and adjacent to four marine reserves that were established in 2003. These new sites were initially established with three years (2005-2007) of funding from the NPS NRPP to help evaluate the

efficacy of the MPAs. In 2009, the park secured NPS and outside funding to continue monitoring these additional sites. Sampling results from all 33 sites are included in this report.

The 16 sites established in 2005 were located inside or adjacent to the following four State Marine Reserves: Santa Barbara Island, Anacapa Island, Scorpion Anchorage MPA at Santa Cruz Island, and the South Point MPA at Santa Rosa Island. Only four of the 11 existing MPAs were selected because of limited funding and the logistics of conducting this type of monitoring. Such logistical criteria included site accessibility, consideration of the KFMP's existing base line data, and the degree of fishing impact.

This report summarizes the monitoring efforts and results from 2009, our 27th 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 when non-indicator species are mentioned where both scientific and common names are used. Common names for the indicator species are cross-referenced to their scientific names in Table 1. Since the design of the KFMP, several genera and species names have been changed. These new names are cross-referenced in Table 1.

Table 1. Regularly monitored species and associated monitoring technique(s).

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	<i>Gelidium</i> spp.	R
Sea tongue	<i>Gigartina</i> spp.	R
Miscellaneous brown algae		R
Acid weed	<i>Desmarestia</i> spp.	R
Oar weed	<i>Laminaria farlowii</i>	R,Q
Bladder chain kelp	<i>Cystoseira</i> spp.	R
Giant kelp	<i>Macrocystis pyrifera</i>	R,Q,M
California sea palm	<i>Pterygophora californica</i>	R,Q
Southern sea palm	<i>Eisenia arborea</i>	R,Q
Miscellaneous plants		R
INVERTEBRATES		
Miscellaneous sponges		R
Orange puffball sponge	<i>Tethya aurantia</i>	B,S
Southern staghorn bryozoan	<i>Diaperoecia californica</i>	R
Miscellaneous bryozoans		R
California hydrocoral	<i>Stylaster californica</i>	B,S
White-spotted rose anemone	<i>Tealia lofotensis</i>	B
Red gorgonian	<i>Lophogorgia chilensis</i>	B,S
Brown gorgonian	<i>Muricea fruticosa</i>	B,S
Californian golden gorgonian	<i>Muricea californica</i>	B,S
Strawberry anemone	<i>Corynactis californica</i>	R
Orange cup coral	<i>Balanophyllia elegans</i>	R
Cup coral	<i>Astrangia lajollaensis</i>	R
Ornate tube worm	<i>Diopatra ornata</i>	R
Colonial sand-tube worm	<i>Phragmatopoma californica</i>	R
Scaled-tube snail	<i>Serpulorbis squamigerus</i>	R
Chestnut cowrie	<i>Cypraea spadicea</i>	Q
Wavy turban snail	<i>Megastrea undosa</i>	Q,S
Red turban snail	<i>Astraea gibberosa</i>	Q,S
Bat star	<i>Patiria miniata</i>	Q,S
Giant-spined sea star	<i>Pisaster giganteus</i>	Q,S,M
Sunflower star	<i>Pycnopodia helianthoides</i>	B,S
White sea urchin	<i>Lytechinus anamesus</i>	B,S
Red sea urchin	<i>Strongylocentrotus franciscanus</i>	Q,S
Purple sea urchin	<i>Strongylocentrotus purpuratus</i>	Q,S
Warty sea cucumber	<i>Parastichopus parvimensis</i>	Q
Aggregated red sea cucumber	<i>Pachythyone rubra</i>	R
Red abalone	<i>Haliotis rufescens</i>	B,S
Pink abalone	<i>Haliotis corrugata</i>	B,S
Green abalone	<i>Haliotis fulgens</i>	B,S
Kellett's whelk	<i>Kelletia kelletii</i>	B,S
Giant keyhole limpet	<i>Megathura crenulata</i>	B,S
California brown sea hare	<i>Aplysia californica</i>	B
Rock scallop	<i>Crassidoma giganteum</i>	B,S
California spiny lobster	<i>Panulirus interruptus</i>	B
Tunicates		R
Stalked tunicate	<i>Styela montereyensis</i>	Q

Table 1. Regularly monitored species and associated monitoring technique(s), continued.

Taxa/Common Name	Scientific Name	Technique
Miscellaneous invertebrates		R
FISH		
Bluebanded goby	<i>Lythrypnus dalli</i>	Q, F
Blackeye goby	<i>Coryphopterus nicholsii</i>	Q, F
Island kelpfish	<i>Alloclinus holderi</i>	Q, F
Blacksmith	<i>Chromis punctipinnis</i>	V, F
Señorita	<i>Oxyjulis californica</i>	V, F
Blue rockfish	<i>Sebastes mystinus</i>	V, F
Olive rockfish	<i>Sebastes serranoides</i>	V, F
Kelp rockfish	<i>Sebastes atrovirens</i>	V, F
Kelp bass	<i>Paralabrax clathratus</i>	V, F
California sheephead	<i>Semicossyphus pulcher</i>	V, F
Black surfperch	<i>Embiotoca jacksoni</i>	V, F
Striped surfperch	<i>Embiotoca lateralis</i>	V, F
Pile perch	<i>Damalichthys vacca</i>	V, F
Garibaldi	<i>Hypsypops rubicundus</i>	V, F
Opaleye	<i>Girella nigricans</i>	F
Rock Wrasse	<i>Halichoeres semicinctus</i>	V, F
SUBSTRATE		
Bare substrate		R
Substrate types: Rock		R
Cobble		R
Sand		R

*Technique codes: Q= 1 m Quadrats, M= 5 m Quadrats, B= Band Transects, R= Random Point Contacts, S= Size Frequency Measurements, F= Roving Diver Fish Count, V= Visual Fish Transect.

**Not an indicator species, but observed so frequently that we include this species on our datasheets.

Table 2. Changes in scientific nomenclature.

Current Name	Former Name
<i>Patiria miniata</i>	<i>Asterina miniata</i>
<i>Megastraea undosa</i>	<i>Lithopoma undosum</i> / <i>Astraea undosa</i>
<i>Lithopoma gibberosa</i>	<i>Astraea gibberosa</i>
<i>Crassedoma giganteum</i>	<i>Hinnites giganteum</i>
<i>Stylaster californica</i>	<i>Allopora californica</i>
<i>Telia lofotensis</i>	<i>Urticina lofotensis</i>
<i>Coryphopterus nicholsii</i>	<i>Rhinogobiops nicholsii</i>
<i>Rhacochilus vacca</i>	<i>Damalychthys vacca</i>

Methods

Abundances, and in some cases size structure, of 70 taxa or categories of algae, fish, and invertebrates (Table 1) were measured at 33 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 Volume I (Davis et al., 1997). Sites were monitored between May 18th and October 23rd 2009 using the NPS vessel “Sea Ranger”. Data management and entry procedures are described in the Kelp Forest Monitoring Handbook Volume II (Kushner et al. 1997).

Table 3. Site information.

Island	Site Location	Site Abbreviation	Depth Meters	Year Sampling Began
San Miguel	Wyckoff Ledge	SMWL	13-15	1982
San Miguel	Hare Rock	SMHR	6-9	1982
San Miguel	Miracle Mile	SMMM	7-10	2001
Santa Rosa	Johnson's Lee North	SRJLNO	9-11	1982
Santa Rosa	Johnson's Lee South	SRJLSO	14-16	1982
Santa Rosa	Rodes Reef	SRRR	13-15	1983
Santa Rosa	Cluster Point	SRCP	12-15	2005
Santa Rosa	Trancion Canyon	SRTC	9-15	2005
Santa Rosa	Chickasaw	SRCSAW	10-13	2005
Santa Rosa	South Point	SRSP	11-13	2005
Santa Cruz	Gull Island South	SCGI	14-16	1982
Santa Cruz	Fry's Harbor	SCFH	12-13	1982
Santa Cruz	Pelican Bay	SCPB	6-8	1982
Santa Cruz	Scorpion Anchorage	SCSA	5-6	1982
Santa Cruz	Yellowbanks	SCYB	14-15	1986
Santa Cruz	Devil's Peak Member	SCDPM	10-13	2005
Santa Cruz	Potato Pasture	SCPP	9-12	2005
Santa Cruz	Cavern Point	SCCVP	12-13	2005
Santa Cruz	Little Scorpion	SCLS	9-14	2005
Santa Cruz	Pedro Reef	SCPRF	7-10	2005
Anacapa	Admiral's Reef	ANAR	13-15	1982
Anacapa	Cathedral Cove	ANCC	6-11	1982
Anacapa	Landing Cove	ANLC	5-12	1982
Anacapa	Keyhole	ANKH	7-10	2005
Anacapa	East Fish Camp	ANFC	9-14	2005
Anacapa	Black Sea Bass Reef	ANBSBR	15-16	2005
Anacapa	Lighthouse	ANLH	7-9	2005
Santa Barbara	Southeast Sea Lion Rookery	SBSESL	12-14	1982
Santa Barbara	Arch Point	SBAR	7-8	1982
Santa Barbara	Cat Canyon	SBCAT	7-9	1986
Santa Barbara	Webster's Arch	SBWA	14-16	2005
Santa Barbara	Graveyard Canyon	SBGC	10-12	2005
Santa Barbara	Southeast Reef	SBSE	10-15	2005



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

Each site is marked by a 100m long transect line affixed to the seabed. The sampling techniques employed to gather patterns of abundance and age structure are summarized in Table 4. At each station, 24 paired 1m x 1m quadrats were systematically arranged along the transect with a random start, 40 continuous and adjacent 1m x 5m quadrats, and 24 paired 3m x 10m 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 2m x 3m x 50m 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; videotaped transects provide a record of the site appearance; and size frequency measurements were collected to determine age structure and recruitment cohorts Table 5. All animals measured for the natural habitat 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 positively identified species. Artificial recruitment modules (ARMs) were in place at 11 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.

Table 4. Summary of sampling techniques.

Technique	Area or Time Sampled	# of Replicates (per site)
1 m ² Quadrat	1 m x 2 m	12
5 m ² Quadrat	1 m x 5 m	40
Band Transect	3 m x 20 m	12
Random Point Contact	40 points (0.5x3)	15
Visual Fish Transect	2 m (w) x 3 m (h) x 50 m (l)	4
Fish Size Frequency	30 minutes	1 (minimum)
Roving Diver Fish Count	30 minutes	4-8
Video Transect	100 m, 5 minutes	2
Video Plot	360° pan of bolt, 360° pan of water column	3 (0 m, 50 m, and 100 m marks)
Natural Habitat Size Frequency	individual	30-200 per species
Artificial Recruitment Module	module, time variable	7-20
Species Checklist	30-90 minutes	1
Temperature	hourly	all sites

Table 5. Size frequency measurement dimensions.

Scientific Name	Sample Size	Measurement
<i>Macrocystis pyrifera</i>	100	Stipe count (1 m above bottom), max. holdfast diameter, mm
<i>Tethya aurantia</i>	60	Max. diameter, mm
<i>Stylaster (Allopora) californica</i>	60	Max. height and width, mm
<i>Lophogorgia chilensis</i>	60	Max. height and width, mm
<i>Muricea californica</i>	60	Max. height and width, mm
<i>Megathura crenulata</i>	60	Max. shell length, mm
<i>Haliotis</i> spp.	60	Max. shell length, mm
<i>Megastraea (Lithopoma/Astraea) undosa</i>	60	Max. shell diameter, mm
<i>Astraea (Lithopoma) gibberosa</i>	60	Max. shell diameter, mm
<i>Kelletia kelletii</i>	60	Max. shell length, mm
<i>Crassedoma (Hinnites) giganteum</i>	60	Max. shell length, mm
<i>Tegula regina</i>	60	Max. shell length, mm
<i>Strongylocentrotus</i> spp.	200	Max. shell diameter, mm
<i>Lytechinus anamesus</i>	200	Max. shell diameter, mm
<i>Pycnopodia helianthoides</i>	60	Length of longest ray, mm
<i>Asterina (Patiria) miniata</i>	60	Length of longest ray, mm
<i>Pisaster giganteus</i>	60	Length of longest ray, mm

Remote temperature loggers, TIDBIT®, made by Onset Computer Corporation were deployed at each site. Loggers were encased in underwater housings and attached to stainless steel thread rods cemented to the bottom at each site. At most sites, two temperature loggers were placed in the underwater housing. At these sites, a comparison of several temperatures from both loggers was made to see if the loggers were recording within their specifications ($\pm 0.2^{\circ}\text{C}$).

In past years, sampling at the KFM sites typically occurred over at least two separate dates, ranging from two weeks to several months apart during the sampling season. Separate sampling dates enabled us to conduct fish transects and roving diver fish counts two times at each site at least two weeks apart. Due to the addition of 16 new monitoring sites in 2005, effectively doubling the size of the KFMP, logistical constraints enabled us to only conduct fish transect and roving diver fish counts once per site at all 33 sites this year.

In past years, and this year, we attempt to complete all of the abundance estimate techniques (1 m quadrats, 5 m quadrats, band transects, random point contacts, roving diver fish counts, fish transects and fish size frequencies) during the same visit. During the second and/or the remaining sampling visits we will often conduct size frequency sampling, transect line repair and fish protocol for a second time if time allows. On rare occasions the abundance techniques are not completed during our first visit and are completed at subsequent visits as soon as possible. If this happens, it is documented under the site information in Appendix A. If there appears to be large changes in abundance between visits within a sampling season, an additional sampling may be conducted to document these changes. Differences are reported in Appendix A. In the text we report numbers to two significant digits.

Results

Sampling was completed at all 33 monitoring sites in 2009 and a summary of the status at each site is presented in Table 6. Nineteen divers (Table 7) collected data on Seven five-day cruises and four four-day cruises between May and October (Table 8). The divers logged 1061 dives with over 1029 hours of bottom time. All prescribed monitoring data were collected in 2009 with a few exceptions which are listed in the discussion.

Table 6. 2009 Kelp forest monitoring site status with 2008 status for comparison.

Island/Site	2009 Status	2008 Status
San Miguel Island		
Wyckoff Ledge	Mature kelp forest	Mature kelp forest
Hare Rock	Dominated by <i>S. franciscanus</i>	Dominated by <i>S. franciscanus</i>
Miracle Mile	Mature kelp forest	Mature kelp forest
Santa Rosa Island		
Johnson's Lee North	Mature kelp forest	Mature kelp forest
Johnson's Lee South	Mature kelp forest	Mature kelp forest
Rodes Reef	Open area with a moderately high density of <i>S. franciscanus</i>	Mature kelp forest
Cluster Point	Mature kelp forest	Mature kelp forest
Trancion Canyon	Mature kelp forest	Mature kelp forest
Chickasaw	Mature kelp forest	Mature kelp forest
South Point	Mature kelp forest	Mature kelp forest
Santa Cruz Island		
Gull Island South	Mature kelp forest	Mature kelp forest
Fry's Harbor	Mature kelp forest	Kelp forest
Pelican Bay	Kelp forest	Dominated by <i>S. purpuratus</i>
Scorpion Anchorage	Dominated by <i>S. purpuratus</i>	Dominated by <i>S. purpuratus</i>
Yellow banks	Kelp forest	Mature kelp forest
Devil's Peak Member	Dominated by <i>S. purpuratus</i>	Dominated by <i>S. purpuratus</i>
Potato Pasture	Dominated by <i>Strongylocentrotus</i> spp.	Dominated by <i>Strongylocentrotus</i> spp.
Cavern Point	State of transition	Dominated by <i>Strongylocentrotus</i> spp.
Little Scorpion	Dominated by <i>Strongylocentrotus</i> spp.	Dominated by <i>Strongylocentrotus</i> spp.
Pedro Reef	Dominated by <i>Strongylocentrotus</i> spp.	Dominated by <i>Strongylocentrotus</i> spp.
Anacapa Island		
Admiral's Reef	Dominated by <i>O. spiculata</i>	Dominated by <i>O. spiculata</i>
Cathedral Cove	Mature kelp forest	Mature kelp forest
Landing Cove	Mature kelp forest	Mature kelp forest
Keyhole	Dominated by <i>S. purpuratus</i>	Dominated by <i>S. purpuratus</i>
East Fish Camp	Dominated by <i>Strongylocentrotus</i> spp. and <i>O. spiculata</i>	Dominated by <i>Strongylocentrotus</i> spp.
Black Sea Bass Reef	Dominated by <i>O. spiculata</i>	Dominated by <i>O. spiculata</i>
Lighthouse	Dominated by <i>Strongylocentrotus</i> spp.	Dominated by <i>Strongylocentrotus</i> spp.
Santa Barbara Island		
Southeast Sea Lion Rookery	Dominated by <i>Strongylocentrotus</i> spp. and <i>O. spiculata</i>	Dominated by <i>Strongylocentrotus</i> spp. and <i>O. spiculata</i>
Arch Point	Dominated by <i>Strongylocentrotus</i> spp.	Dominated by <i>Strongylocentrotus</i> spp.
Cat Canyon	Dominated by <i>Strongylocentrotus</i> spp.	Dominated by <i>Strongylocentrotus</i> spp.
Webster's Arch	Dominated by <i>Strongylocentrotus</i> spp. and <i>O. spiculata</i>	Dominated by <i>Strongylocentrotus</i> spp.
Graveyard Canyon	Dominated by <i>S. purpuratus</i> and <i>O. spiculata</i>	Dominated by <i>Strongylocentrotus</i> spp. and <i>O. spiculata</i>
Southeast Reef	Half dominated by mature kelp forest and half dominated by <i>Strongylocentrotus</i> spp.	Half dominated by mature kelp forest and half dominated by <i>Strongylocentrotus</i> spp.

Table 7. 2009 Kelp Forest Monitoring participant list.

Participants	Affiliation	Cruises Participated
Canestro, Don	VIP	10
Dee, Laura	VIP	8
Duran, Keith	CHIS	All Cruises
Grunden, James	SCA	All Cruises
Guardino, Michael	Monterey Bay High School	3
Ibarra, Sonia	CHIS	All Cruises
Kushner, David	CHIS	All Cruises
Lerma, Derek	Tierra Data Inc.	4
Metzger, Jacob	SCA	All Cruises
Mooney, Eric	CHIS	1,2,3,4,5,6,7,9,10,11
Moore, Kelly	CHIS	All Cruises
Moore, Rachel	VIP	1,2
Moss, Michael	CHIS	3,4,5
Osorio, Dave	CDFG	6
Parnell, Ed	SCRIPPS	11
Richards, Dan	CHIS	2
Taniguchi, Ian	CDFG	1
Whitaker, Stephen	CHIS	5,7,8
Witting, Dave	NOAA	9

Table 8. 2009 Kelp Forest Monitoring Program cruise list.

Cruise #	Cruise Dates	KFM Sites Visited
Cruise #1	5/18-5/22	SBAP,SBCAT,SBWA,SBSER,ANCC
Cruise #2	6/1-6/5	ANLC,SCDPM,SRRR,SCGI
Cruise #3	6/15-6/18	SCCVP,SBSESL,SBSER,SBGC,ANAR
Cruise #4	6/29-7/2	SCGI,SRTC,SRCP,SCFH
Cruise #5	7/13-7/17	SRSP,SRCSAW,SMMM,SRJLNO,ANBSBR
Cruise #6	7/28-7/30	SCPRF,ANKH,ANCC,ANLH
Cruise #7	8/17-8/21	SCFH,SMWL,SMHR,SRJLNO,ANEFC
Cruise #8	8/31-9/4	ANEFC,ANBSBR,SCPP,SCLS,ANAR
Cruise #9	9/21-9/25	ANKH,SRJLSO,SCPB,
Cruise #10	10/5-10/8	SCSA,SCYB
Cruise #11	10/19-10/23	ANCC,ANBSBR,ANKH

A brief description of each site is included with the site results (Appendix A). Complete data summaries from the sampling protocol are listed in the appendices. Mean densities for quadrats are in Appendix B and represent average counts obtained from 24 paired 1 m x 1 m quadrats or otherwise described as 12-2 m² quadrats. Mean densities for 5 m quadrats in Appendix C represent average counts obtained from 40 continuous and adjacent 1m x 5 m 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 5 m-quadrats, and the juvenile densities from the 1m quadrats unless otherwise noted. Mean densities for band transects in Appendix D represent average counts obtained from 24 paired 3 m X 10 m transects or otherwise described as twelve 3 m X 20 m transects. Mean percent cover for random point contacts in Appendix E represent average percent cover for a given organism, group of taxa, or substrate for the 600 points systematically taken along

the transect. Percent cover for all categories combined may total more than 100% due to layering (Davis et al., 1997).

Mean densities for fish transects in Appendix F represent the average of four adjacent and continuous 2 m X 3 m X 50 m transects along the transect line.

The Roving Diver Fish Count data are presented in Appendix G. The first page of this Appendix contains the number of observers that sampled for each site, the date that the fish count was conducted, and the total number of species observed. The following pages in Appendix G contain the average timed Score, the average Abundance score and an average Count for each sampling date and site. The score field is the average score of all observers. Score fields range between 5-10 for all observed fish species, but non-present indicator species will receive a score of zero. As a result, it is possible for indicator species to have an average score of less than 5, but not possible for non-indicator (write-in) species. The Abundance field is the number assigned to the abundance categories: single (1 fish), few (2-10 fish), common (11-100 fish), or many (>100 fish). This field is summarized numerically where 1 = single, 2 = few, 3 = common and 4 = many. The Count field is the average number of fish counted by an observer during the 30 minute Roving Diver Fish Count and is presented as the average count for all observers for each species listed. All fish transects and Roving Diver Fish Counts were conducted between 0900 and 1500 hours unless otherwise noted.

In the site descriptions below we began using the whole counts in 2003 to describe the abundance of fish as they are better and more consistent at describing fish abundance than descriptive words like common or rare. However, different observers count different numbers of the same species at a site for a number of reasons. We mostly describe fish below with the highest number of fish observed at a site, which is why we use the wording of “up to” or “as many as” XX number of fish were observed.

Natural habitat size frequency distributions for invertebrates other than gorgonians and *Stylaster (Allopora) californica* are in Appendix I. *Macrocystis pyrifera* size frequency distributions are in Appendix J. Gorgonian and *Stylaster (Allopora) californica* size frequency distributions are in Appendix K. Size frequency measurements taken from the Artificial Recruitment Modules were kept separate from the natural habitat measurements and their distributions are in Appendix L. Video transects were completed for all locations, and the videotapes are stored at the Park's headquarters in Ventura.

Temperature data were collected using TIDBIT™ temperature loggers. The temperature loggers are retrieved and deployed during our regular sampling season of May - October. To expedite report writing we will present 12 months of temperature data from June 1st 2008 – May 31st 2009 (Appendix M). In 2009, temperature data were collected from 32 sites where loggers were installed. For explanations of any missing data, please see the site results in Appendix A.

Discussion

General trends and observations are described within this section. We would like to emphasize that these are only general trends and observations. A statistical trend analysis for each of the indicator species is required to look at actual trends, but this is beyond the scope of this annual report.

All 33 permanent monitoring sites were monitored in 2009. All proposed data collection was completed this year except annual species list surveys. Additionally, due to a temperature logger deployment error, we are missing about four months of temperature data from Potato Pasture at Santa Cruz Island. Though NPS no longer has a Cooperative Agreement with the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) at the University of California, they continued to monitor fish at many of our sites. This monitoring began in 2005.

In 2009, 14 sites were kelp forests, in addition one site that was half a mature kelp forest and the other half dominated by *Strongylocentrotus* spp., and one site that was in a state of transition. The remaining 17 sites were mostly dominated by echinoderms. Of these 17, six were dominated by *S. purpuratus* and *S. franciscanus*, one by *S. franciscanus*, three by *S. purpuratus*, three by *S. purpuratus*, *S. franciscanus* and *Ophiothrix spiculata*, one by *S. purpuratus* and *O. spiculata*, two by *O. spiculata* and one was an open area with a moderately high density of *S. purpuratus*. Overall, the number of sites characterized by kelp forests or dominated by echinoderms was similar to last year. The site status information is summarized in Table 6.

Kelp Forests

The status of kelp forests was notably different among the five Islands. This is a result of a combination of factors that include but are not limited to, Oceanography, Biogeography and associated differences in species abundance and composition, as well as sport and commercial fishing pressure. Overall, there was little change at all six Santa Barbara Island monitoring sites since last year and in recent years. All sites remain dominated by echinoderms with the exception of Southeast Reef which remains half dominated by sea urchins and half by a kelp forest. *Ophiothrix spiculata* continue to be abundant at the Island and were abundant at three of the monitoring sites. Overall, *Strongylocentrotus purpuratus* densities remained about the same, with increases at two, decreases at two and similar densities at the remaining two sites. *Strongylocentrotus franciscanus* abundance decreased overall, decreasing at three sites and remaining about the same at the other three sites. A partial kelp forest was present at only one site with the density of *Macrocystis pyrifera* there remaining similar to last year's. With the continued domination by echinoderms at the monitoring sites, as well as on most hard substrates around the Island, there is little indication that kelp forests will return to this Island in the near future.

The monitoring sites at Anacapa Island remained similar to last year. The two sites (Landing Cove and Cathedral Cove) in the Anacapa State Ecological Reserve that was established in 1978 continue to be kelp forest, while the five remaining sites continue to be mostly dominated by echinoderms. However, two of these echinoderm dominated sites, Keyhole and Black Sea Bass

Reef, have noticeably more algae than has been present in recent years. These two sites are in within the newer marine reserve established in 2003. Of the seven sites, *Strongylocentrotus purpuratus* densities declined at one, increased at two and remained about the same at the four other sites. *Strongylocentrotus franciscanus* densities changed little from last year at all seven sites. *Ophiothrix spiculata* abundance also remained similar at sites where it is abundant. The site with the most notable change was Black Sea Bass Reef, which appears to be gradually transitioning towards a kelp forest with a notable increase in algae cover at the east end of the site as well as within adjacent areas near the transect.

Several of the monitoring sites at Santa Cruz Island have changed dramatically in recent years. Three in particular have changed most notably are Fry's Harbor, Pelican Bay and Scorpion Anchorage, all on the north side of the Island. Fry's Harbor has been developing into a mature kelp forest over the past three years, with this year being the first since the early 1980's we have considered it a mature kelp forest with large widely spaced plants, understory algae and high biodiversity that good habitat fosters. Pelican Bay has been dominated by *Strongylocentrotus* spp. since 1994; however their abundance declined to the lowest recorded since we began monitoring in 1982, allowing this site to rapidly transition to kelp forest. Lastly, although Scorpion Anchorage remains dominated by *S. purpuratus*, its density declined at the western end of the transect and a small kelp forest is present similar to areas adjacent to the transect. However, *Strongylocentrotus* spp. continues to dominate five of the 10 sites at this Island with little overall change since last year. *Strongylocentrotus purpuratus* densities decreased at two sites and remained similar at eight. *Strongylocentrotus franciscanus* densities decreased at one site and remained similar at nine. Though the KFM sites as a group appropriately represent the status of kelp forests at most of the Island, the sites do under-represent the western third of the Island since there are no monitoring sites west of Gull Island.

Kelp forests continued to be abundant around Santa Rosa and San Miguel Islands. Mature kelp forests were present at eight of the 10 sites at these two islands. The site with the most notable change was Rodes Reef, this site that changed from a mature kelp forest present in 2008 to an open area with an abundance of *Strongylocentrotus franciscanus*. Overall, there were no patterns of change in the abundance of *Strongylocentrotus* spp. at these two islands. The monitoring sites here appear to represent the conditions of these islands well.

Invertebrates

Overall, there were few changes in sea urchin abundance at the KFM sites this year. However, several sites had changes in sea urchin abundance that were likely a main cause of notable change at these sites. There was little change in *Strongylocentrotus franciscanus* abundance, increasing at two sites and the remaining about the same at 31 sites. *Strongylocentrotus purpuratus* densities increased at five sites, decreased at six and changed little at the remaining 22 sites. Though densities of *S. purpuratus* remain low on Santa Rosa Island, they increased at most of the sites on the south side of the Island. *Lytechinus anamesus* densities remained low at all the sites. However, there were small increases at two sites on Anacapa Island and small increases at five, with four on Santa Cruz Island

and one on Santa Barbara Island. *Centrostephanus coronatus* continue to be common at Santa Barbara, Anacapa and the eastern half of Santa Cruz Islands. Similar the past several years, we have observed little change in abundance of this species.

Overall, *Strongylocentrotus* spp. recruitment remained low, and was similar to recent years. Though we observed high *Strongylocentrotus purpuratus* recruitment at some of the monitoring sites, there were no general patterns other than recruitment was more common at Anacapa and Santa Barbara Islands, similar to past years. At the 11 sites where we have ARMs, *S. purpuratus* recruitment (<16 mm) increased at three sites, decreased at three sites and remained about the same at five sites. *Strongylocentrotus franciscanus* recruitment was similar to recent years and remained low. At the sites with ARMs *S. franciscanus* recruitment (<16 mm) increased at two sites, decreased at four sites and remained about the same at five sites.

Lytechinus anamesus densities remained low at the monitoring sites with no trends to report since last year. *Centrostephanus coronatus* recruitment remained low at all sites, but we observed several more juveniles than last year, indicating slightly higher recruitment of this warm water species.

We continue to observe sea urchin wasting disease (Lafferty and Kushner, 1999, and Richards and Kushner, 1992) at a few sites. In addition, at the sites where it was present, its prevalence was lower than in recent years. Wasting disease was observed at 12 sites, compared to 14 in 2008. *Lytechinus anamesus* with wasting disease were observed at four sites on Santa Cruz and Anacapa Islands. The prevalence of diseased *L. anamesus* was estimated at 3-5% at Little Scorpion, Keyhole and Lighthouse, and only one diseased *L. anamesus* was observed at Pedro Reef. Diseased *Strongylocentrotus franciscanus* were observed at eight sites (Admiral's Reef, East Fish Camp, Keyhole, Little Scorpion, Pedro Reef, Cat Canyon, SE Sea Lion Rookery and Arch Point). Diseased *Strongylocentrotus purpuratus* were also observed at eight sites (Rodes Reef, Pelican Bay, Little Scorpion, Pedro Reef, East Fish Camp, Lighthouse, Arch Point and Cat Canyon). In most cases, the prevalence of the disease was less than 1% in *Strongylocentrotus* spp., however, we observed up to 30% of *S. purpuratus* and 20% of *S. franciscanus* with wasting disease at East Fish Camp.

Overall, sea star densities remain relatively high and changed little from last year. *Pycnopodia helianthoides* remain common and are one of the most ecologically important invertebrate predators in the kelp forests at the Channel Islands, especially San Miguel, Santa Rosa and Santa Cruz Islands. Their densities were similar to last year with increases at two, decreases at four and the remaining 27 sites about the same as last year. *Patiria miniata* densities remained relatively high at most of the monitoring sites and either increased or changed little, as this year we observed increases at seven sites with little change at the remaining 26 sites. Overall, there were no general trends in *Pisaster giganteus* densities across islands as there was little change at most of the sites. Likewise, *Ophiothrix spiculata* remained relatively abundant at six sites, similar to last year, with little change in overall abundance. *Ophiothrix spiculata* continues to be most common at Anacapa and Santa Barbara Islands and covers large areas of the bottom.

Table 9. 2009 Echinoderm wasting disease observations.

Island/Site	Sea Star Wasting Disease		Sea Urchin Wasting Disease	
	Species Observed	Date(s) of Observation	Species Observed	Date(s) of Observation
San Miguel Island				
Wyckoff Ledge	None		None	
Hare Rock	None		None	
Miracle Mile	None		None	
Santa Rosa Island				
Johnson's Lee North	None		None	
Johnson's Lee South	None		None	
Rodes Reef	None		2	6/03
Cluster Point	None		None	
Trancion Canyon	None		None	
Chickasaw	None		None	
South Point	None		None	
Santa Cruz Island				
Gull Island South	None		None	
Fry's Harbor	None		None	
Pelican Bay	1,10	9/24	2	9/24
Scorpion Anchorage	1	10/6	None	
Yellow banks	None		None	
Devil's Peak Member	None		None	
Potato Pasture	None		None	
Cavern Point	None		None	
Little Scorpion	None		2,3,6	9/3
Pedro Reef	1	7/28	2,3,6	7/28
Anacapa Island				
Admiral's Reef	None		6	6/18
Cathedral Cove	None		None	
Landing Cove	None		None	
Keyhole	1	9/21	3,6	9/21
East Fish Camp	None		2,6	8/21,8/31
Black Sea Bass Reef	None		None	
Lighthouse	None		2,3	7/30
Santa Barbara Island				
SE Sea Lion Rookery	None		6	6/16
Arch Point	None		2,6	5/18,5/19
Cat Canyon	None		2,6	5/19
Webster's Arch	None		None	
Graveyard Canyon	None		None	
Southeast Reef	None		None	

None = Not observed at this site during our visits in 2009.

Date = Date(s) disease/syndrome was observed.

Note: Urchins appearing to have black spot disease were not included in table. Look in site write-up for these observations.

Species Legend

1 = <i>Patiria (Asterina) miniata</i>	7 = <i>Parastichopus parvimensis</i>
2 = <i>Strongylocentrotus purpuratus</i>	8 = <i>Dermasterias imbricata</i>
3 = <i>Lytechinus anamesus</i>	9 = <i>Mediaster aequalis</i>
4 = <i>Pisaster giganteus</i>	10 = <i>Pycnopodia helianthoides</i>
5 = <i>Astrometis sertulifera</i>	11 = <i>Pisaster ochraceus</i>
6 = <i>Strongylocentrotus franciscanus</i>	

Sea star wasting disease was uncommon at most of the sites this year. *Patiria miniata* with wasting disease were observed at four sites this year, as compared with seven sites in 2008. These sites were Pedro Reef, Pelican Bay, Scorpion Anchorage and Keyhole, all on the north side of Anacapa and Santa Cruz Islands. With the exception of an estimated prevalence of 20% at Keyhole, only several stars were observed with the disease at the other three sites. One *Pycnopodia helianthoides* was observed with wasting disease at Pelican Bay. No other sea stars were observed with the disease this year.

Parastichopus parvimensis densities changed little this year. Densities increased at one, decreased at two and remained about the same at the remaining 30 sites. However, densities for this species continue to be relatively low at many of the sites, especially adjacent to the marine reserves.

Overall, *Tethya aurantia* remain relatively abundant at many of the sites with densities remaining similar to last year's. Two sites increased, three sites decreases and there was little change in density at the remaining 28 sites. Sponge cover was similar to last year and remained relatively high compared with the past 28 years.

Similar to sponges, tunicate cover also remained relatively high since we began monitoring. Overall, their cover increased slightly, but there were decreases at some sites as well as increases. *Styela montereyensis* remain common at the Santa Rosa and San Miguel Island sites, though their densities decreased overall compared to the past two years.

Overall, bryozoans were less abundant than last year. In the miscellaneous bryozoans category, decreases were observed at 10 sites, an increase at one site, and the remaining 22 sites changed little. The decreases were observed at all islands except Santa Barbara Island. *Diaperoecia californica* abundance changed little with no noticeable trends since last year.

Corynactis californica cover was similar to last year and remained relatively high compared to the past five years. Overall, there was little change at most of the monitoring sites. There was notable change in abundance of *Urticina lofotensis*, similar to recent years. *Balanophyllia elegans* cover was similar to recent years with no notable trends. The cover of this species has remained relatively low since 1996 compared to years prior. There was no notable change in *Astrangia lajollaensis* cover this year.

From our general observations, both the abundance and size of *Panulirus interruptus* are dramatically increasing inside of all of the marine reserves at Santa Barbara, Anacapa, Santa Cruz and Santa Rosa Islands. Nearly everyone who has recently dived inside and adjacent to these reserves will confirm this. Unfortunately, our monitoring program does not target *P. interruptus* populations sufficiently to infer any trends for two main reasons. First, they are nocturnal and all of our monitoring is conducted during daylight hours. Second, the monitoring sites were not established to include specific den habitat that *P. interruptus* prefer to utilize during daylight hours. As a result, many of our sites do not give a good estimate of lobster abundance in those areas. However, because of the long time scale of the monitoring project, we can see general trends over time and have identified sites with higher or lower daytime abundances. In recent years we have observed what

appears to be a trend toward increasing lobster abundance at the monitoring sites inside the marine reserves that were established in 2003. Even if our monitoring sites do not encompass very much prime *P. interruptus* den habitat, we would expect to see more lobsters as dramatically increasing densities elsewhere are likely to spill over into the less optimal habitat found at many of the monitoring sites.

Aside from the dramatic increases seen within the marine reserves, at our monitoring sites, *Panulirus interruptus* densities have gradually increased in recent years. This year, we observed increases at four sites, decreases at two and similar densities at the remaining 27 sites. The two sites that decreases had very high densities last year and are the two sites that have historically had the highest abundances, Landing Cove and Cathedral Cove at Anacapa Island. Of the four sites with increases, three of those sites had the highest densities recorded since we began monitoring and three were within marine reserves.

Megastrea undosa densities continue to decline. There were no sites with increases this year and few juveniles were observed. Averaging all sites, densities were at their lowest level since we began monitoring in 1982. The pattern in density changes we have recently observed in *M. undosum* of increasing abundance post the 1997/1998 El Niño followed by a decline is similar to what was observed post the 1982/1983 El Niño (Zacharias and Kushner, 2006). We have not observed a widespread significant recruitment event since 1997/1998. *Lithopoma gibberosa* continue to be common at only several of the monitoring sites and we have observed no recent trends in their abundance.

Overall, *Megathura crenulata* densities continue to be relatively abundant compared to the past ten years, but remain notably lower than the early 1980s. Densities were similar to last year but seem to have leveled off or may be decreasing with 28 sites remaining about the same, decreases at four sites, and an increase at only one. Generally, *Crassedoma giganteus* densities have gradually decreased since 2005 at both the original KFM sites and the new sites established in 2005. The average density for the 16 original KFM sites is the lowest recorded since we began monitoring this species in 1983. We have observed notable declines at some sites that are described in the site descriptions of the results section. There were no noticeable changes in *Kelletia kelletii* densities in recent years. Overall, *Aplysia californica* were moderately abundant this year but were mostly small. Densities were on average higher than the past several years with increases at 12 sites, decreases at one and little change at the remaining 20 sites.

At the sites where *Haliotis rufescens* have recently been present, densities were similar to last year and remained higher relative to the past 10-20 years. With the exception of one small *H. rufescens* at Santa Cruz Island, all other observations were at San Miguel and Santa Rosa Islands. . The Miracle Mile site near Wyckoff Ledge that was initially installed in 2001 specifically to monitor *H. rufescens* continued to have a high density. Though Wyckoff Ledge has lower densities relative to Miracle Mile, the density at this site remains relatively high since we began monitoring it in 1982. Densities of *H. rufescens* at Santa Rosa Island are notably lower than at San Miguel and overall remained similar to last year. However the sites and areas around Johnson's Lee appear to continue to increase

in *H. rufescens* abundance. Recruitment in the ARMs remained low with only three observed at the ten sites where ARMs are present. Please see ARMs section below.

Haliotis corrugata continue to be nonexistent or rare at all the monitoring sites. We observed *H. corrugata* during band transects at three sites this year, two more than last year. These sites were Scorpion Anchorage, Landing Cove and Cathedral Cove. Additionally, we observed juvenile (<50 mm) *H. corrugata* in the ARMs at Pelican Bay and Yellow Banks. However, recruitment remained low in the ARMs with a total of five juvenile (<50 mm) and one 52 mm *H. corrugata* observed at the 10 sites with ARMs. In addition to the live *H. corrugata* observed, we also found two small fresh juvenile *H. corrugata* shells, one at East Fish Camp and the other at Keyhole, Anacapa Island. These observations imply a low level of *H. corrugata* recruitment, similar to recent years. In areas other than our monitoring sites at Anacapa and Santa Cruz Islands *H. corrugata* are also rare. However, in recent years it appears a few more adults have been observed at the southeast end of Santa Cruz Island.

One live juvenile *Haliotis fulgens* (25 mm) was observed in the ARMs at Yellowbanks. Because of the depth, this is an unlikely place for an *H. fulgens*. David Kushner identified the abalone and though he was nearly sure of this identification, he had noted it was a difficult small abalone to 100% positively identify. There were also two very fresh 22 mm juvenile *H. fulgens* shells observed at Santa Barbara Island. These observations indicate some, albeit a small amount, of recruitment of this now rare species at the Channel Islands. Though this species continues to be relatively rare in southern California, they have notably increased in abundance in areas of San Diego County and Catalina Island. We have not observed an adult *H. fulgens* at the Channel Islands for many years and we presume the recruitment is occurring from larvae coming from further south.

No live *Haliotis assimilis* or *Haliotis sorenseni* were observed this year. One old *H. assimilis* shell was observed at Yellowbanks. It appears that the *H. assimilis* that recruited out in 1999 and early 2000's have all died off.

Since at least 1990, we conduct very thorough searches for abalone in an effort to find all that may be present at a site. This year as with the past several we performed our search for abalone at the sites where they are common while conducting band transects. As part of the band transect protocol we search for abalone, but also search between each band transect using the transect tape for reference, covering the entire length of the transect and out ten meters on either side. This thorough search allows us to locate all or nearly all abalone present at a site with a consistent search effort. *Haliotis rufescens* densities have gradually increased at several of the sites in recent years though they were similar to last year. This year, we measured the largest number of abalone for size frequencies, though this number was similar to last. Because we are relatively consistent in our search effort, we believe that the sample size for size frequencies is an additional proxy of density for the sites.

Fish

Most of the comments below and in the site descriptions are based on observations made during the roving diver fish counts. Density observations are based on data collected from 1 m quadrats for the three fish species we monitor with this protocol, *Coryphopterus nicholsii*, *Alloclinus holderi* and

Lythrypnus dalli. *Coryphopterus nicholsii* densities remained relatively high, similar to recent years. Overall, both their mean density on 1 m quadrats and mean number observed per site on roving diver fish counts increased from last year. *Alloclinus holderi* densities remained relatively low and overall continued to decline in abundance this year. *Lythrypnus dalli* were notably more abundant than last year. They were observed at 17 sites compared with 14 in 2008, and their average densities on 1 m quadrats and average counts on roving diver fish counts either remained about the same or increased. Juvenile *Chromis punctipinnis* were observed at 11 sites this year, compared with eight in 2008. However, their average count was notably lower than last year with mean of 6.3/site where they were observed compared to 232/site in 2008. Adult *C. punctipinnis* were observed at 26 sites, similar to recent years, but were more abundant. At the sites where they were observed their mean counts increased to 264/site from 161/site in 2008. We observed no *C. punctipinnis* with bacterial infections as we have in past years usually at Admiral's Reef, Anacapa Island.

One of the most notable changes we observed from the monitoring this year is the dramatic increase of juvenile *Semicossyphus pulcher*. We observed juveniles at 27 sites compared to 12 in 2008. We observed juveniles at all Santa Barbara, Anacapa and Santa Cruz Island sites, four of the five Santa Rosa Island sites, but none were observed at the San Miguel Island sites. In addition to juveniles being observed at more sites, average counts at these sites increased to 6.0/site from 1.3/site in 2008. Over the course of the summer field season, we observed rapid growth in the juveniles and many were approaching small female morphology. Female and male *S. pulcher* abundance were similar to recent years. We observed juvenile *Oxyjulis californica* at more sites this year, especially at the western islands. However, their average abundance at the sites where we observed them was notably lower than last year. Juveniles were observed 19 sites, compared with 12 in 2008. We observed adults at 29 sites, same as in 2008 and their average abundance at these sites increased. Juvenile *Halichoeres semicinctus* were observed at ten sites compared to six in 2008. Male and female *H. semicinctus* abundances were similar to recent years. *Hypsypops rubicundus* abundance was similar to past years. Juveniles continue to be rare and relatively large with observations at three sites, while adults were observed at 22 sites, similar to previous years. *Girella nigricans* were observed at 24 sites, similar to recent years. Juvenile *Paralabrax clathratus* were observed at six sites this year compared to one in 2008. However, our fish counts are often completed at many sites before juvenile *P. clathratus* recruit. Adult *P. clathratus* were observed at 23 sites and overall their abundance was similar to last year. There were no large changes in overall abundance of *Embiotoca* spp. and other surfperch species this year. Adult and juvenile *Embiotoca jacksoni* were observed at 27 and 13 sites, similar to recent years. Adult and juvenile *Embiotoca lateralis* were observed at 14 and 12 sites, respectively, both similar to recent years. Adult and juvenile *Rhacochilus vacca* were observed at 22 and nine sites, respectively.

Juvenile *Sebastes mystinus* remained relatively abundant and were observed at more sites than last year. We observed juveniles at 21 sites compared to 13 in 2008 and their abundance was slightly higher. Adult *S. mystinus* were observed at 13 sites, similar to last year. *Sebastes serranoides/flavidus*, olive/yellowtail, juveniles were observed at 10 sites, similar to recent years. Adult *S. serranoides* were observed at 16 sites, fewer than last year. Over the past several years we have observed a noticeable increase in abundance of *Sebastes atrovirens* at the Channel Islands.

Juvenile *S atrovirens* were notably more abundant this year, but similar to what we observed in 2007. We observed juveniles at 15 sites compared to 10 in 2008 and their average counts at the sites where they were observed were notably higher. Similarly, adult counts were on average higher at the sites where they were observed, and were present at 25 sites, similar last year. Juvenile *Sebastes* spp. and the kelp/gopher/black & yellow/copper rockfish (KGB) juvenile complex were notably more abundant in 2009 than in recent years. We observed KGBs at 18 sites compared with 11 in 2008 and they were more abundant at these sites. Juvenile *Sebastes* spp. were observed at 15 sites compared with 11 in 2008 and they were also notably more abundant, similar to what was observed in 2007. Adult and juvenile *Sebastes chrysomelas*, black and yellow rockfish were similar in abundance as last year and we observed them at 22 and three sites, respectively. Juvenile *Sebastes paucispinis*, bocaccio, were notably more abundant than last year. They were observed at seven sites compared to four in 2008 and their average count per site where we observed them was 16.2/site compared with 5.8/site in 2008. Adult and juvenile *Sebastes serripes* were common at most sites. They were observed at 25 and 22 sites, respectively, and similar to last year. Adult and juvenile abundance were higher with the average counts at 1.67/site and 1.39/site compared to 1.27/site and 0.59/site in 2008, respectively. Juvenile *Sebastes miniatus*, vermillion rockfish, were more common than last year with observations at remain common at several sites with observations at 10 sites, compared to four in 2008. Their average count per site where they were present was also higher at 2.75/site compared to 1.25/site in 2008. Small adult *S. miniatus* were observed at four sites, same as in 2008. *Sebastes carnatus*, gopher rockfish, were observed at 11 sites, similar to past years. *Sebastes caurinus*, copper rockfish, were observed at 10 sites, similar to past years. *Sebastes auriculatus*, brown rockfish, were observed at three sites, similar to last year. *Sebastes melanops*, black rockfish, were rare with observations at four sites, two more than last year.

Ophiodon elongatus, lingcod, were observed at ten sites, similar to recent years. *Scorpaenichthys marmoratus*, cabezon, were observed at 11 sites compared with eight in 2008. *Stereolepis gigas*, giant black sea bass, were observed at one site this year compared with three in 2008 during the roving diver fish counts. However, similar to past years we observed *S. gigas* at several other sites after the fish counts were conducted. Similar to last year we observed *Squatina californica*, Pacific angel shark, at one site during the fish counts. Several other observations were made of this species throughout the field season, but not on the fish counts. They continue to appear more common than they were in the 1990's. *Sardinops sagax*, sardines were common this year but appeared less abundant than in recent years. *Scomber japonicas*, Pacific mackerel, were common throughout the summer and appeared to be more abundant than in recent years with some larger fish observed. *Sarda chilensis*, Pacific bonito, were observed this year, but not as often as in 2008.

Unusual Species / Non-Indicator Species

We again observed one large *Pteria sterna*, pearl oyster, at the monitoring sites. We believe these recruited primarily during the 1997/1998 El Niño, have been senescing since and now are very rare.

Artificial Recruitment Modules (ARMs)

ARMs were monitored at all 11 sites where they are present. The ARMs were in good condition this year with the exception of two at Fry's Harbor and one at Pelican Bay that needed repair from either vandalism or possibly anchor damage.

Haliotis spp. continue to be in low abundance in the ARMs. For the purpose of this report, we consider juvenile abalone less than 51 mm and adults > 50 mm. Juvenile *Haliotis rufescens* continue to be in low abundance with only three observed. Two were in the ARMs at Yellowbanks, and the other at Johnson's Lee North. Albeit small, this represents an increase in recruitment at both these sites. This is the first time since 2005 we have observed a juvenile at Johnson's Lee North and the first time at Yellowbanks since 2003. However, juveniles declined at Miracle Mile with none observed, even though this site is where we have observed most of the recruitment in the ARMs in recent years. At Miracle Mile, we observed eight adult *H. rufescens* in the ARMs, similar to last year. *Haliotis corrugata* recruitment remained low, and was slightly lower than last year with five juveniles observed at four sites. One *Haliotis* juvenile *Haliotis fulgens* measuring 25 mm was observed at Yellowbanks. This is a relatively deep site for this species, but as best as David Kushner could identify this abalone he believes it was a *H. fulgens*. No *H. sorenseni* or *H. assimilis* were observed in the ARMs this year, similar to recent years.

Overall, *Cypraea spadicea* abundance in the ARMs was similar to last year, but overall density decreased slightly. Their density increased at two sites, decreased at four sites and remained about the same at eight sites. Small, less than 51 mm *Kelletia Kelletii* were more common in the ARMs this year with 12 found compared with three in 2008. *Megathura crenulata* density in the ARMs was similar to recent years and we continue to see regular recruitment of juveniles in them. Though the overall density and size of *Crassidoma giganteum* was similar to last year, there were about half as many less than 50 mm, indicating less recruitment than in 2008.

Overall, *Patiria miniata* densities increased some in the ARMs with increases at four sites, decreases at two sites and little to no change at the remaining five sites. *Pisaster giganteus* densities increased at two sites, decreased at four sites and remained about the same at five sites. Overall, there was little change in *Pycnopodia helianthoides* abundance in the ARMs was similar to last year with decreases at one site and similar densities as last year at ten sites.. Overall there was little change in *Strongylocentrotus franciscanus* densities in the ARMs with an increase at one site, decreases at three sites and little to no change at seven sites. Densities of *Strongylocentrotus purpuratus* in the ARMs on average were about the same, but there was noticeable change at many of the sites with increases at four sites, decreases at five sites and little change at two sites. *Centrostephanus coronatus* remained in low abundance in the ARMs this year with five observed in all the ARMs combined. Two were less than 10 mm indicating some recent recruitment of this warmer water species

Temperature

Two Tidbit temperature loggers were deployed at every site except for Miracle Mile, which has no temperature logger stake. All temperature data was collected this year with the exception of data

missing for Potato Pasture at Santa Cruz Island due to human deployment error, see details under that site in the results section. Overall, water temperature was normal this year with no notable anomalies.

Sampling Difficulties

All proposed data collection was completed this year. No species list surveys were conducted due to time constraints and/or the availability of a diver with adequate expertise.

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Appendix A. Results by Individual Site

Location: Wyckoff Ledge, San Miguel Island

Site #1 SMWL

Year sampling began: 1982

2009 sampling dates: 8/18

2009 status: Mature kelp forest

This site continued to be a mature kelp forest. Canopy cover was thinner than last year at an estimated 60%. *Macrocystis pyrifera* adult, subadult and juvenile densities were similar to recent years at 0.33/m² and 0.09/m² and 1.6/m², respectively. Cover of *M. pyrifera* was 17% and stipe density was 5.1/m². *Eisenia arborea* were relatively uncommon with adult and juvenile densities at 0.0/m² and 0.042/m², respectively, and a cover of 0.17%. *Pterygophora californica* adults were moderately abundant at 1.1/m², and juveniles were common at 0.29/m². Cover of *P. californica* was 10%. No *Laminaria farlowii* were observed, similar to previous years. *Dictyoneuropsis reticulata* were moderately abundant, however we did not count this species on quadrats this year, however it was counted in the miscellaneous brown algae category on RPCs and had a cover of 11%.

Desmarestia spp. were moderately abundant at 9.3% cover. *Cystoseira* spp. were common at 1.3% cover. Miscellaneous red algae were abundant and increased to a cover of 56%, similar to previous years. *Gelidium* spp. were not observed during sampling, similar to previous years. *Gigartina* spp. were common at 1.7% cover. Green algae cover was 0.17%. Articulated coralline cover was 16%, similar to recent years. Encrusting coralline cover increased to 35%, but was still similar to recent years. Bare substrate cover was 23%, similar to past years.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover remained similar to last year at 6.0% and consisted mostly of hydroids and anemones, specifically the anemone *Epiactis prolifera*. Tunicates were common with a cover of 4.0%. *Styela montereyensis* were common at 0.42/m², similar to last year, with several small individuals noted. Sponge cover was 0.33%. *Tethya aurantia* were common at 0.19/m², similar to previous years. *Phragmatopoma californica* cover was 0.50%. *Diopatra ornata* were common and seemed more abundant than recent years although cover was similar at 15%. Miscellaneous bryozoans were common with a cover of 28%, the highest recorded cover at this site though similar to the past two years. No *Diaperoecia californica* were observed on RPCs. *Urticina lofotensis* density was 0.27/m², similar to past years. *Corynactis californica* cover was 0.33%. *Balanophyllia elegans* were common at 0.33% cover. *Astrangia lajollaensis* were common at the site, although none were observed on RPCs. No gorgonians were observed at the site, similar to past years.

Strongylocentrotus franciscanus were moderately abundant in the crevice habitat at a density of 0.42/m² and juveniles were common in the spine canopy. *Strongylocentrotus purpuratus* were less abundant but common under larger *S. franciscanus*. *Strongylocentrotus purpuratus* density was 0.21/m², similar to recent years. No *Lytechinus anamesus* or *Centrostephanus coronatus* were observed, similar to past years. No sea urchin wasting disease was observed.

Pisaster giganteus were common and counted on 1 m quadrats and 5 m quadrats with densities of 0.13/m² and 0.050/m², respectively. *Patiria miniata* were abundant with a density of 2.3/m², similar

to past years. *Pycnopodia helianthoides* were relatively uncommon with a density of 0.011/m². Most *P. helianthoides* were small with an average size of 92 mm. *Ophiothrix spiculata* cover was 0.83%. This is first time this species has been recorded at this site during sampling since 2003. They were observed in *M. pyrifera* holdfasts. *Parastichopus parvimensis* were uncommon, but notably large with a density of 0.13/m², similar to previous years. No sea star wasting disease was observed.

Haliotis rufescens remained relatively abundant with a density of 0.075/m², one of the highest recorded at this site and similar to the past two years. A total of 143 *H. rufescens* were located for size frequency measurements with a mean size increasing to 182 mm, the largest average size recorded at this site. Similar to past years since at least 1990, we conducted a very thorough search of the entire transect, out ten meters on either side, for abalone. Similar to past years, we conducted this search while conducting the band transects and searched for abalone between the transects. This was the largest number of abalone we have measured for size frequencies, though similar to last year. Because we are relatively consistent in our search effort, we believe that the sample size for size frequencies is an additional proxy of density for the site. *Cypraea spadicea* were uncommon with none observed on 1 m quadrats. *Lithopoma gibberosa* were moderately abundant with a density of 0.79/m², similar to last year. No *Megastrea undosa* or *Tegula regina* were observed at the site. *Kelletia kelletii* continue to be abundant at this site with a density of 0.23/m². *Megathura crenulata* were rare and none were observed on band transects, although three were found for size frequencies for a mean size of 105 mm. *Crassedoma giganteum* were rare at 0.0056/m², similar to recent years. No *Aplysia californica* were observed. Three *Cryptochiton stelleri*, gumboot chiton, were recorded on band transects for a density of 0.0042/m², similar to last year. This species is not one of our indicator species, but we have been trying to remember to count them on band transects. No *Panulirus interruptus* were observed. Two active fishing crab pots were observed on the reef where the transect line is located, similar to what we have observed in past years.

Similar to recent years, fish were moderately abundant and diverse at this site. *Coryphopterus nicholsii* density was 0.21/m², and up to 20 were counted during the roving diver fish count. No *Lythrypnus dalli* or *Alloclinus holderi* were observed. *Oxylebius pictus* were common with up to 18 observed. Up to two female, no juvenile and two male *Semicossyphus pulcher* were observed. Several more large males were observed after the fish count. Up to eight adult and 80 juvenile *Oxyjulis californica* were observed. No *Hypsypops rubicundus* or *Paralabrax clathratus* were observed. No *Girella nigricans* were observed. *Embiotoca jacksoni* were rare with two adults and one juvenile observed. Up to four adult and seven juvenile *Embiotoca lateralis* were observed. *Sebastes* spp. continued to be abundant and diverse with many juveniles observed. *Sebastes mystinus* were common with up to 21 adults and one juvenile observed. Up to 10 adult and 200 juvenile *Sebastes atrovirens* were observed. Two juvenile and no adult *Sebastes serranoides* were observed. Up to four adult and one juvenile *Sebastes serriceps* were observed. Up to four *Sebastes caurinus*, copper rockfish, were observed. Up to nine adult *Sebastes chrysomelas*, black and yellow rockfish were observed. One large adult *Sebastes miniatus*, vermillion rockfish, and five juveniles were recorded during the count, and one more adult was observed after the fish count. Up to 219 kelp/gopher/black and yellow/copper rockfish young of the year complex (KGB) were observed. One *Ophiodon elongatus*, lingcod, was observed. *Brachyistius frenatus*, kelp surfperch, were common to

the kelp canopy with up to 20 recorded. Up to five *Hypsurus caryi*, rainbow surfperch, were observed as well as one unidentified juvenile surfperch. Two adult and one juvenile *Heterostichus rostratus*, giant kelpfish, were observed. One adult male *Hexagrammos decagrammus*, kelp greenling, was observed after the fish count. Roving diver fish counts were conducted on August 18th by seven divers observing 20 species.

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

Location: Hare Rock, San Miguel Island

Site #2 SMHR

Year sampling began: 1982

2009 sampling dates: 8/19

2009 status: Dominated by *Strongylocentrotus franciscanus*

This site continues to be dominated by large *Strongylocentrotus franciscanus* and is mostly devoid of macroalgae. *Macrocystis pyrifera* was abundant near outside of the transect area but no adult and only a few subadult and juvenile plants were observed within the site. Adult, subadult and juvenile *Macrocystis pyrifera* all had densities of 0.0/m², similar to recent years, and a cover of 0.0%. No *Eisenia arborea*, *Pterygophora californica*, *Laminaria farlowii*, *Desmarestia* spp. or *Cystoseira* spp. were observed at the site. Several small drift *Desmarestia* spp. plants were observed being eaten by sea urchins. Miscellaneous red algae cover was 14%. Several small patches of filamentous red algae were observed and *Laurencia pacifica* was common and are included in that category, similar to past years. *Gelidium* spp. and *Gigartina* spp. were not observed. Green algae were not observed on RPCs; however there was some *Ulva* sp. present at the site. Articulated coralline algae cover was 0.0%. Encrusting coralline algae were abundant and continued to dominate the site with a cover of 72%, the highest recorded since 1998. Bare substrate cover was 19%.

Overall, this site had few encrusting invertebrates. Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover was 5.8%, and consisted mostly of *Dodecaceria concharum*, similar to recent years. Tunicates were rare with 0.0% cover. No *Styela montereyensis* were observed. Sponges were rare with a cover of 0.0%. *Tethya aurantia* were common at 0.067/m², similar to past years. *Phragmatopoma californica* were not observed. *Diopatra ornata* cover was 0.33%, similar to recent years. Miscellaneous bryozoans were relatively uncommon at 1.3% cover. *Diaperoecia californica* cover was 0.0%, similar to past years. *Urticina lofotensis* density was 0.033/m² and *Corynactis californica* cover at 2.3%. *Balanophyllia elegans* and *Astrangia lajollaensis* were moderately abundant with covers of 3.5% and 2.3%, respectively. There some notable high density patches of *B. elegans*. No gorgonians were observed, similar to past years.

Overall, there was little change in *Strongylocentrotus* spp. from recent years. *Strongylocentrotus franciscanus* dominated the site, and were evenly distributed and out in the open over most of the transect. Density of *S. franciscanus* remained high at 11/m² and most were large with no juveniles observed. *Strongylocentrotus purpuratus* remained rare with a density of 0.0/m², the first time an absence of this species has been recorded during 1 m quadrats since 1982. Most of the *S. purpuratus* observed along the transect were from the zero/east end towards the temperature logger, with most

near the logger. No *Lytechinus anamesus* or *Centrostephanus coronatus* were observed. No sea urchin wasting disease was observed.

Patiria miniata remained very abundant at 4.6/m² and most were large. *Pisaster giganteus* densities on 1 m and 5 m quadrats were 0.17/m² and 0.11/m², respectively, similar to past years. Most *P. giganteus* were small with a mean of 70 mm. *Pycnopodia helianthoides* density decreased to 0.092/m² and had a large range of sizes, from 18 mm to 300 mm, with a mean of 113 mm. No *Ophiothrix spiculata* were observed. *Parastichopus parvimensis* density remained low at 0.042/m². No sea star wasting disease was observed.

One large *Haliotis rufescens* (209 mm), several moderately sized (~80 mm), and few small (< 50 mm) were observed along the transect, however not all of these were measured for size frequencies. The density of *H. rufescens* was 0.0014/m². In addition to the smaller *H. rufescens* mentioned above, we found a few small fresh shells indicating some recent but low recruitment. *Cypraea spadicea* were common at a density of 0.58/m². *Lithopoma gibberosa* remained relatively abundant, but density declined for the second year to 0.17/m². No *Megastrea undosa* were observed at the site. *Kelletia kelletii* and *Megathura crenulata* were both uncommon with densities of 0.0083/m² and 0.0069/m², respectively, similar to last year. *Crassidoma giganteum* remained rare with a density of 0.013/m². No *Aplysia californica* were observed at the site.

Fish abundance and diversity was moderate, similar to recent years. *Coryphopterus nicholsii* were moderately abundant with a density of 1.4/m² and up to 247 observed during the roving diver fish count, both increases from last year. Up to 10 *Oxylebius pictus* were observed. No *Chromis punctipinnis* were observed, the first recorded absence from the site since 2004. No *Oxyjulis californica* were observed, the first recorded absence of this species since 1997. Up to four female, no juvenile and one male *Semicossyphus pulcher* were observed, with fewer adults observed than last year. Up to three adult and no juvenile *Embiotoca jacksoni* were observed. Up to eight adults and three juvenile *Embiotoca lateralis* were observed. Up to one adult and no juvenile *Rhacochilus vacca* were observed. *Sebastes mystinus* were common with up to 56 adults and one juvenile observed. *Sebastes atrovirens* were abundant with up to 18 adults and five juveniles observed. This is an increase in adult *S. atrovirens* but a decrease in juvenile abundance from last year. One adult and no juvenile *Sebastes serranoides* were observed. Up to three adult and no juvenile *Sebastes serriceps* were observed. Up to 14 adult *Sebastes chrysomelas*, black and yellow rockfish, were observed. Up to two adult, *Sebastes caurinus*, copper rockfish, were observed. Up to three juvenile *Sebastes miniatus*, vermillion rockfish, were observed. Up to 16 kelp/gopher/black and yellow/copper rockfish young of the year complex (KGB) were observed. Two *Scorpaenichthys marmoratus*, cabezon, were observed. Roving diver fish counts were conducted on August 19th by five divers observing 21 species.

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

Location: Johnson's Lee North, Santa Rosa Island

Site #3 SRJLNO

Year sampling began: 1982

2009 sampling dates: 7/16, 8/20

2009 status: Mature kelp forest

This site continued to be a mature kelp forest with an increase in understory macroalgae. *Macrocystis pyrifera* canopy cover was estimated at 15%. *Macrocystis pyrifera* was abundant and the density of adults, subadults and juveniles were 0.39/m², 0.41/m² and 3.5/m², respectively, and a cover of 40%, all similar to last year. Stipes density was 2.8/m², lower than the past two years. *Eisenia arborea* were common at the site on the tops of ridges but none were recorded during sampling, similar to past years. *Pterygophora californica* were moderately abundant with adult density at 0.46/m² and had a cover of 18%, both the highest recorded at this site. Juvenile density was 0.21/m², similar to past years. Similarly, adult *Laminaria farlowii* density was 0.63/m² and had a cover of 8.3%, both the highest recorded at this site, while juvenile *L. farlowii* density was 0.29/m², similar to last year. *Cystoseira* spp. were common at 1.0% cover. *Desmarestia* spp. were present, but not notably common at 0.33% cover. Miscellaneous red algae were moderately abundant and diverse with a cover of 67%, the highest recorded at this site. *Botryoglossum* spp. were notably abundant in this category. *Gigartina* spp. were moderately abundant with a cover of 15%, the highest on record for this site. Miscellaneous brown algae were not observed on RPCs. Miscellaneous green algae were rare at 0.33%. Articulated coralline algae cover was similar to last year at 7.5%, and encrusting coralline algae cover was 21%, an increase from recent years. Bare substrate remained low at 4% cover.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover increased to 17%, but was similar to recent years and consisted mostly of hydroids. *Aglaophenia latirostris* was the most abundant hydroid observed at the site. Tunicates were abundant and diverse with a 20% cover. *Styela montereyensis* density was 3.0/m², similar to previous years. Sponges were common with a cover of 4.0%, similar to last year. *Tethya aurantia* density was 0.10/m². *Phragmatopoma californica* cover was 0.33%. *Diopatra ornata* cover was 0.83%, a decrease from last year. *Serpulorbis squamigerus* were rare at 0.17% cover. Miscellaneous bryozoans were abundant with a cover of 33% and *Diaperoecia californica* cover was 3.0%. *Urticina lofotensis* density was 0.014/m² and *Corynactis californica* cover was 1.7%, both similar to recent years. *Balanophyllia elegans* and *Astrangia lajollaensis* were present with covers of 2.2% and 0.33%, respectively. *Lophogorgia chilensis* were rare with a density at 0.0014/m², while *Muricea californica* and *Muricea fruticosa* were not observed at the site.

Strongylocentrotus spp. remained at low densities at this site. *S. purpuratus* showed an increase in both density and average size from last year to 0.33/m² and 32 mm, respectively. *Strongylocentrotus franciscanus* density was 0.25/m², similar to recent years, with the smallest recorded average size since 2000 at 62 mm. The *Strongylocentrotus* spp. were mainly using crevice habitat with few out in the open. No *Lytechinus anamesus* or *Centrostephanus coronatus* were observed at the site, similar to past years. No sea urchin wasting disease was observed.

Pisaster giganteus were common and recorded on both 1 m quadrats and 5 m quadrats at 0.33/m² and 0.15/m², respectively. *Patiria miniata* density was 1.7/m², the highest density on record at this site since 1982. *Pycnopodia helianthoides* density was observed at 0.069/m², the lowest recorded at this site since 2000. Most *P. helianthoides* were notably small with very few large individuals present and a decrease in mean size to 118 mm. No *Parastichopus parvimensis* were recorded during sampling, although they were common at the site. *Ophiothrix spiculata* were not recorded on RPCs. No sea star wasting disease was observed.

Haliotis rufescens were observed scattered over much of the transect deep in crevices. Forty-two *H. rufescens* were measured during size frequencies for a mean size of 178 mm; this is the largest number of *H. rufescens* located for size frequencies since we began measuring them in 1985. In addition, there has been a gradual continuous increase in mean size since 2002. *Haliotis rufescens* density was 0.029/m², the highest recorded density since 1995. No *Haliotis corrugata* or *Haliotis fulgens* were observed. *Cypraea spadicea* density remained low at 0.083/m², the same as last year. *Megastrea undosa* were rare and notably large, and one was recorded on quadrats for the first time since 2000 at 0.042/m². *Lithopoma gibberosa* were rare with none observed on 1 m quadrats. *Kelletia kelletii* were rare with a density of 0.0042/m², similar to previous years. *Megathura crenulata* continued to be rare with a density of 0.0083/m², similar to recent years. *Crassidoma giganteum* were common at 0.011/m² and were notably small with a mean size of 58 mm. *Aplysia californica* were common and recorded for the first time since 2001 at 0.0042/m². Most *Aplysia californica* were notably large and dark colored and it seemed like their density may have been higher than what we estimated on band transects.

Fish were abundant and diverse at this site, similar to past years. *Coryphopterus nicholsii* density was 0.083/m² and up to 50 were observed during the roving diver fish count. *Oxylebius pictus* were common with up to 18 observed. Up to 100 adult and three juvenile *Chromis punctipinnis* were observed. *Oxyjulis californica* were the most abundant fish species with up to 139 adults and 16 juveniles observed. Up to four female and four juvenile *Semicossyphus pulcher* were observed. One male *Semicossyphus pulcher* was observed, but not during the fish count. One male *Halichoeres semicinctus* was recorded during the fish count and one female was observed during fish transects. Three adult *Hypsypops rubicundus* were observed and no juveniles, this is a relatively high number for this site. The resident male *H. rubicundus* at the south end of the transect at meter 73 had been observed trying to move the meter tape off his turf nest. One adult *Paralabrax clathratus* was observed. Up to two adult *Girella nigricans* were observed. Up to 20 adult and four juvenile *Embiotoca jacksoni* were observed. Up to 23 adult and 15 juvenile *E. lateralis* were observed. Up to 11 adult and 20 juvenile *Rhacochilus vacca* were observed. One adult and up to six juvenile *Sebastes mystinus* were observed. *Sebastes atrovirens* were abundant with up to 42 adults and 13 juveniles observed. One adult and three juvenile *Sebastes serriceps* were observed. Up to 16 adult and three juvenile *Sebastes serranoides* were observed, with several observed in a large stationary school. Up to nine adult *Sebastes chrysomelas*, black and yellow rockfish, were observed. Up to 92 KGB juveniles were observed and appeared to be morphing into *S. atrovirens* or *S. chrysomelas*. One *Sebastes carnatus*, gopher rockfish, was observed. Up to four *Rhacochilus toxotes*, rubberlip surfperch, were observed. Up to three *Hypsurus caryi*, rainbow surfperch, were observed. Up to 13

Brachyistius frenatus, kelp surfperch, were observed. One adult and up to three juvenile *Heterostichus rostratus*, giant kelpfish, were observed. One *Scorpaenichthys marmoratus*, cabezon, and one *Pleuronichthys coenosus*, C-O turbot, were observed. Two *Aulorhynchus flavidus*, tubesnouts, were observed as well an estimated 130 unidentified larval fish. Roving diver fish counts were conducted on July 16th by seven divers observing 30 species.

All nine ARMs were monitored for all indicator species. All ARMs were in excellent condition. One *Haliotis rufescens* was observed for the first time since 2005 for a density of 0.11/ARM. No other *Haliotis* spp. were observed in the ARMs. *Cypraea spadicea* remained relatively abundant at 8.4/ARM, same as last year. No *Lithopoma* spp. or *Kelletia kelletii* were observed. *Megathura crenulata* were present at 0.44/ARM, and this is the second consecutive year they have been found in the ARMs since 2000. *Crassedoma giganteum* density was 0.67/ARM and a mean of 86 mm was observed, similar to last year. *Patiria miniata* density was 4.6/ARM with a mean of 40 mm, similar to recent years. *Pisaster giganteus* density remained low at 1.2/ARM with a mean of 49 mm. *Pycnopodia helianthoides* density was 1.1/ARM and a mean of 95 mm was observed, similar to recent years. *Strongylocentrotus franciscanus* density remained relatively high for this site at 32/ARM with a mean of 53 mm. *Strongylocentrotus purpuratus* density was 15/ARM and a mean of 21 mm was observed, similar to the past two years. *Parastichopus parvimensis* <10 cm were absent from the ARMs and individuals >10 cm were present at 0.66/ARM. Two small *Octopus* spp. and three *Urticina lofotensis* were also observed in the ARMs.

Location: Johnson's Lee South, Santa Rosa Island

Site #4 SRJLSO

Year sampling began: 1982

2009 sampling dates: 9/22, 9/23

2009 status: Mature kelp forest

Overall, this site appeared similar to last year and was a mature kelp forest. However, there were noticeably fewer large widely spaced *Macrocystis pyrifera* than last year. Many of the plants were small subadults and not tall enough to form a surface canopy. There was no canopy cover observed at this site all summer, and we pass by this site often. Understory algae were abundant and diverse, with almost all indicator species present. Cover of *M. pyrifera* was recorded at 26% and densities of adult, subadult, and juvenile *M. pyrifera* were 0.13/m², 0.40/m² and 0.92/m², respectively. Stipe density was noticeably lower than last year at 0.83/ m². Adult *Eisenia arborea* were common over much of the transect with a cover of 2.7%, but neither adults nor juveniles were observed in 1 m quadrats. Juvenile *E. arborea* were rare. Adult and juvenile *Pterygophora californica* were common with densities of 0.083/m² and 0.042/m², respectively and a cover of 0.0%, similar to past years. Adult and juvenile *Laminaria farlowii* densities were 0.46/m² and 0.13/m², respectively, and cover was 5.2%, all similar to recent years. *Desmarestia* spp. were rare and *Cystoseira* spp. were uncommon and neither were observed on RPCs. Miscellaneous brown algae cover was 2.2%. *Gigartina* spp. were moderately abundant and notably large with a cover of 23% the highest recorded since 1995. *Gelidium* spp. were not observed. Miscellaneous red algae cover increased to 66%, relatively high for this site. The increase in understory red algae this year may be a result of the lack of canopy that creates higher light conditions on the bottom. Other green algae cover was 0.17%. Articulated

coralline algae cover was 7.5%. Encrusting coralline algae cover was 37%, an increase from last year. Bare substrate cover was 5.5%, relatively low for this site and is possibly attributed to the high light conditions on the bottom.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover was 12% and this category mainly consisted of the hydroid *Aglaophenia latirostris*. Tunicates were moderately abundant with a cover of 4.3%. *Styela montereyensis* were common with a density of 1.0/m². Sponge cover was 2.2% and *Tethya aurantia* remained abundant at a density of 0.24/m², similar to recent years. The following sponges were noticeably common as well: *Tetilla arb*, *Polymastia* sp., and *Speciospongia confoederata*. *Diopatra ornata* were moderately abundant with a cover of 16%, but didn't seem as dense as it recent years. *Phragmatopoma californica* were not observed on RPCs, similar to past years. Bryozoans were moderately abundant with other bryozoans cover at 21%, and *Diaperoecia californica* cover at 1.5%. *Corynactis californica* cover was 3.8%. *Urticina lofotensis* density was 0.096/m². The cup corals, *Astrangia lajollaensis* and *Balanophyllia elegans*, had covers of 0.50% and 4.5%, respectively. *Balanophyllia elegans* were abundant, even in areas with high algae cover. *Lophogorgia chilensis* were common at 0.043/m², similar to recent years. One *Muricea californica* was observed at the site, but not during band transects. No *Muricea fruticosa* were present at the site.

Overall, it seemed that there were more *Strongylocentrotus* spp. at the site than in recent years. However, their distribution was patchy and they inhabited mostly crevice space, with much of that available habitat being full of sea urchins. *Strongylocentrotus franciscanus* and *S. purpuratus* densities were 0.33/m² and 3.0/m², respectively. Juvenile *Strongylocentrotus* spp. were common, especially under the spine canopy of larger *S. franciscanus*. No *Lytechinus anamesus* or *Centrostephanus coronatus* were observed. No sea urchin wasting disease was observed.

Sea stars were abundant with many size classes present. *Pisaster giganteus* were common and counted on 1 m quadrats and 5 m quadrats with densities of 0.17/m² and 0.050/m², respectively. *Patiria miniata* were abundant, similar to recent years, at 4.5/m² with all sizes present. *Pycnopodia helianthoides* were common but small with a density decreased to 0.072/ m², and mean size of 98 mm, the lowest recorded since 1986. No *Ophiothrix spiculata* were observed on RPCs. *Parastichopus parvimensis* were common with a density similar to recent years at 0.042/m². Several *Parastichopus californica* were observed. *Dermasterias imbricata* were common to this site similar to recent years. No sea star wasting disease was observed.

There were more *Haliotis rufescens* in the transect area this year with a density of 0.042/m², similar to last year, but we were able to find 15 for size frequencies for a mean size of 158 mm. This is the highest number of abalone we have observed for size frequencies since 2000. One fresh 147 mm *H. rufescens* shell was found. There were several *H. rufescens* observed out in the open and the others were in crevices. The very large *H. rufescens* very close to the transect line at meter 89 was present again this year. This abalone has been here for many years and it was measured at 260 mm this year. This abalone is very large and deep and difficult to measure using the calipers we have, so this is our best estimate, but could be a few mm off. *Cypraea spadicea* were moderately abundant at a density of 0.50/m². *Kelletia kelletii* were common and mostly large at 0.043/m². *Megathura crenulata* were uncommon at 0.0028/m². *Crassedoma giganteum* were mostly small with a density of 0.018/m².

Aplysia californica were common and notably large with a density of 0.011/m². These were patchy and density seemed to be a bit under represented on band transects this year.

Fish were abundant and diverse, similar to past years. *Coryphopterus nicholsii* were relatively abundant with a density of 1.7/m² and up to 154 observed. Up to 28 *Oxylebius pictus* were observed. The most abundant fish was *Oxyjulis californica* with up to 543 adults and 555 juveniles observed. Up to 187 adult and no juvenile *Chromis punctipinnis* were observed. Up to 12 female, two juvenile and six male *Semicossyphus pulcher* were observed. There were no *Halichoeres semicinctus* observed, same as previous years and we would not expect to see this species at this site. No *Hypsypops rubicundus* were observed. No *Paralabrax clathratus* were recorded but one large individual was observed after roving diver fish counts had been completed. There were up to eight adult *Girella nigricans* observed. Similar to past years, adult surfperch were abundant. There were up to 16 adult and five juvenile *Embiotoca jacksoni* observed. Up to 17 adult and four juvenile *Embiotoca lateralis* were observed. Up to 41 adult and one juvenile *Damalichthys vacca* were observed. Up to 45 adult and seven juvenile *Sebastes mystinus* were observed. *Sebastes serranoides* were present with up to four adults and four juveniles observed. *Sebastes atrovirens* were abundant with up to 41 adult and 16 juveniles observed. Up to one adult and six juvenile *Sebastes serriceps* were counted. One adult *Sebastes carnatus*, gopher rockfish, was observed. Up to seven adult *Sebastes chrysomelas*, black and yellow rockfish, were observed. Nine kelp/gopher/black and yellow/copper rockfish young of year complex (KGB) were observed. Eight adult *Rhacochilus toxotes*, rubberlip surfperch, were observed. Up to 17 adult *Hypsurus caryi*, rainbow surfperch, were counted. *Brachyistius frenatus*, kelp surfperch, were common with up to 48 observed. Up to three *Medialuna californiensis*, halfmoon, were observed. Two *Caulolatilus princeps*, ocean whitefish, were observed. A school of up to 150 *Scomber japonicus*, Pacific mackerel, was observed. One cabezon, *Scorpaenichthys marmoratus*, and one *Ophiodon elongatus*, lingcod, were observed. Roving diver fish counts were conducted on September 22nd with three divers observing 32 species.

All seven ARMs were monitored for all indicator species. We continued to observe *Phyllolithodes papillosus*, heart crabs, in the ARMs at this site, which is a range extension for this northern species. This year six were recorded during sampling. We have observed this species consistently in the ARMs since 1997. Two small *Brosmophycis marginata*, red brotula, were also observed, similar to last year. These are a rare fish that we have also seen regularly in the ARMs at this site in recent years.

No *Haliotis rufescens* were observed in the ARMs this year. *Cypraea spadicea* density was 5.1/ARM and had a mean size of 47 mm. One *C. spadicea* had juvenile morphology. Three *Megathura crenulata* were observed in the ARMs for a density of 0.43/ARM and had a mean size of 37 mm. *Crassedoma giganteus* density was 0.57/ARM, similar to last year. No *Kelletia kelletii* were observed. *Patiria miniata* density was 7.9/ARM, similar to recent years with a mean size of 42 mm. *Pisaster giganteus* density was 1.3/ARM and had a mean size of 35 mm, similar to past years. *Pycnopodia helianthoides* density was 1.4/ARM with a mean size of 64 mm, similar to last year. *Strongylocentrotus franciscanus* density was 34/ARM with a mean size of 59 mm, similar to recent years. *Strongylocentrotus purpuratus* density was 15/ARM with a mean size of 39 mm, similar to

recent years. No *Centrostephanus coronatus* or *Lytechinus anamesus* were observed. Four *Parastichopus parvimensis* <10 cm and two *P. parvimensis* >10 cm were observed in the ARMs for densities of 0.57/ARM and 0.29/ARM, respectively. Three *Parastichopus californicus* were also found in the ARMs.

The temperature loggers were retrieved and deployed successfully and all data was successfully downloaded. The temperature logger was moved to the North end of the transect last year.

Location: Rodes Reef, Santa Rosa Island

Site # 5 SRRR

Year sampling began: 1983

2009 sampling dates: 6/3

2009 status: Open area with a moderately high density of *Strongylocentrotus franciscanus*

Macroalgae at this site continued to decrease from last year. Except for 17 adult *Macrocystis pyrifera* plants, no other indicator brown macroalgae were observed during sampling. *Macrocystis pyrifera* canopy cover was estimated at 5% and adult, subadult and juvenile *Macrocystis pyrifera* densities all decreased to 0.0/m² this year with no *M. pyrifera* present within one meter of the transect line. A small number of *Desmarestia* spp. were present on the western end of the transect, but none were observed during RPCs. No *Eisenia arborea*, *Pterygophora californica*, *Laminaria farlowii* or *Cystoseira* spp. were observed, similar to last year. No miscellaneous brown algae were observed on RPCs. Miscellaneous red algae decreased significantly from 53% to 8.2%. *Gigartina* spp. and *Gelidium* spp. were not observed. Articulated coralline algae were not observed, similar to last year. Encrusting coralline algae cover increased to 64% from last year's 25%. Bare substrate cover was 10%, similar to last year.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover decreased to 4.8%, the lowest recorded since 2003. The most common miscellaneous invertebrates in this category were barnacles. Tunicate cover was 1.3%, similar to last year. There continued to still be a few of the bright orange tunicates that were once relatively abundant at this site. *Styela montereyensis* were rare and not observed on 1 m quadrats this year. Sponges were common at a cover of 3.0%. *Tethya aurantia* were abundant at 0.25/m², similar to recent years. *Diopatra ornata* were less abundant than in recent years with a cover of 2.5%. *Phragmatopoma californica* were not observed. Miscellaneous bryozoan cover decreased to 5.3%, notably less abundant than the past several years. *Diaperoecia californica* were not observed on RPCs and were also notably less abundant than in recent years. *Urticina lofotensis* density was 0.09/m², similar to last year, but relatively high for this site. *Corynactis californica* were common on the tops of rocks at 0.33% cover. *Balanophyllia elegans* had a cover of 0.83%. *Astrangia lajollaensis* were moderately abundant, with a cover to 12.7%. No *Lophogorgia chilensis*, *Muricea californica* or *M. fruticosa* were observed.

Strongylocentrotus franciscanus density remained high at 9.4/m². The density of *S. franciscanus* was notably patchy and several small feeding fronts were observed on the west end of the transect, especially around *M. pyrifera* holdfasts. *Strongylocentrotus purpuratus* density remained relatively low at 2.5/m². Juvenile *Strongylocentrotus* spp. were rare. *Lytechinus anamesus* and *Centrostephanus*

coronatus were not observed at the site. One *S. purpuratus* with sea urchin wasting disease was observed measuring 55 mm and another was observed at the site but not measured.

Pisaster giganteus were moderately abundant on 1 m and 5 m quadrats at 0.58/m² and 0.19/m², respectively. Similar to last year, *Patiria miniata* were abundant with a density of 5.5/m². The density of *Pycnopodia helianthoides* increased to 0.18/m², the highest recorded since 2002. All sizes of *P. helianthoides* were present and appeared to be feeding on *S. purpuratus* from the high prevalence of whole sea urchin tests at the site. No *Ophiothrix spiculata* was observed. *Parastichopus parvimensis* continued to be rare, but were notably large with a density of 0.042/m², the first time this species has been observed during sampling since 2000. No sea star wasting disease was observed.

One *Haliotis rufescens* measuring 155 mm was found at the site on band transects. Fourteen small (most around 19-37 mm and one at 65 mm) fresh *H. rufescens* shells were found at the site, indicative of recent recruitment. *Cypraea spadicea* were moderately abundant on rocks with a density of 0.25/m². No *Megastraea undosa* or *L. gibberosa* were observed during sampling, but several *L. gibberosa* were observed at the site. *Kelletia kelletii* were moderately abundant with a density of 0.11/m², similar to last year. Mean size of *K. kelletii* decreased from 104 mm to 89 mm this year, the lowest mean size since 1997. *Megathura crenulata* were observed at the western end of the transect with a density of 0.028/m². *Crassidoma giganteus* were rare with a density of 0.013/m², similar to past years. *Aplysia californica* were not observed during sampling.

Fish have remained moderately abundant and diverse at this site. *Coryphopterus nicholsii* remained rare, but were recorded on 1 m quadrats for the first time since 2004 with a density of 0.083/m² and five were counted during roving diver fish counts. No *Alloclinus holderi* or *Lythrypnus dalli* were observed during sampling. *Oxylebius pictus* were present with up to 14 counted. Up to 14 adult *Chromis punctipinnis* were observed, similar to last year. No *Oxyjulis californica* were observed. Four female and five male *Semicossyphus pulcher* were counted with no juveniles observed at the site. Four adult *Paralabrax clathratus* were observed. Up to seven adult *Embiotoca jacksoni* and no juveniles were observed. *Embiotoca lateralis* were moderately abundant with up to 13 adults and two juveniles observed. Up to three adult *Rhacochilus vacca* were observed. *Sebastes mystinus* were more abundant this year with up to 54 adults observed along with seven juveniles counted at the site. One juvenile *Sebastes serranoides* was observed. *Sebastes atrovirens* were more abundant this year with up to 38 adults and three juveniles observed. *Sebastes caurinus*, copper rockfish, adults were present with three observed, similar to last year. One *Sebastes carnatus*, gopher rockfish, was observed. Two juvenile *Sebastes miniatus*, vermillion rockfish, were observed. One *Rhacochilus toxotes*, rubberlip surfperch, was observed. *Rathbunella hypoplecta*, stripefin ronquil, were common at the site with up to five counted. *Caulolatilus princeps*, ocean whitefish, were also present and up to two counted. Roving diver fish counts were conducted on June 3rd by three divers observing 25 species of fish.

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

Location: Gull Island South, Santa Cruz Island

Site #6 SCGI

Year sampling began: 1982

2009 sampling dates: 6/4, 6/29

2009 status: Mature kelp forest

This site remains a mature kelp forest with a moderate amount of understory algae. *Macrocystis pyrifera* canopy cover was estimated at 80%, but it was relatively thin. Adult, subadult and juvenile densities were all similar to last year at 0.17/m², 0.12/m² and 0.25/m², respectively, and a cover of 23% was observed. *Eisenia arborea* density increased this year with adult and juvenile densities at 0.25/m² and 0.54/m², respectively, and a cover of 2.5%. *Pterygophora californica* were present in the low-lying areas, but were rare overall, similar to recent years, and no *P. californica* were observed during sampling. *Laminaria farlowii* were rare and scattered around the transect with adult and juvenile densities at 0.083/m² and 0.0/m², respectively, and a 0.0% cover was observed. No *Desmarestia* spp. were observed. *Cystoseira* spp. cover increased to 0.83%. Miscellaneous brown algae cover was 0.67%, similar to recent years. Miscellaneous red algae remained relatively abundant with a cover of 58%. *Gigartina* spp. were abundant with a cover of 0.50%. Green algae cover was 0.17%. Articulated coralline algae and encrusting coralline algae were both common with respective densities of 2.3% and 26%. Bare substrate cover was 3.2%.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover was notably higher than last year at 33%. The most abundant invertebrates in this category were hydroids. Tunicate cover decreased to 4.0%, but remained similar to years prior. *Garveia annulata*, a very bright orange hydroid, has been documented at this site in past years towards the 100 m end, and it was notably more abundant throughout the site this year. *Styela montereyensis* density increased to 0.13/m². Sponge cover increased to 5.5%, also the highest cover recorded since we began monitoring this category in 1985. *Tethya aurantia* were abundant and increased in density to 0.35/m², the highest density recorded since we began monitoring this species in 1983. *Diopatra ornata* cover was similar to recent years at 5.3%. Miscellaneous bryozoans cover remained high at 32%. *Diaperoecia californica* cover was observed at 2.3%, a decrease from last year. *Corynactis californica* cover was 2.5%. *Balanophyllia elegans* and *Astrangia lajollaensis* cover were 1.8% and 2.0%, respectively, similar to recent years. *Stylaster californica* continued to increase abundance to 0.22/m², the highest recorded at this site since we began monitoring this species in 1983. Small *S. californica* colonies were common, similar to recent years. *Lophogorgia chilensis* density was 0.042/m², similar to last year. No *Muricea californica* or *Muricea fruticosa* were observed during sampling.

Overall, *Strongylocentrotus* spp. remained relatively uncommon at this site similar to last year. *Strongylocentrotus franciscanus* and *Strongylocentrotus purpuratus* densities both decreased to 0.88/m² and 1.7/m², respectively. Their mean sizes were similar to last year at 68 mm and 32 mm, respectively. We made a considerable effort to collect size frequencies for 200 of each species but only measured 148 *S. franciscanus* and 144 *S. purpuratus*. No *Centrostephanus coronatus* or *Lytechinus anamesus* were observed during sampling. No sea urchin wasting disease was observed during our visits in June.

Pisaster giganteus were sampled on both 1 m quadrats and 5 m quadrats with densities of 0.38/m² and 0.16/m², respectively. *Patiria miniata* remained moderately abundant with a density of 2.8/m². *Pycnopodia helianthoides* were present with a density of 0.019/m², similar to recent years. *Ophiothrix spiculata* were present mostly in kelp holdfasts, but none were observed during sampling. *Parastichopus parvimensis* had a density of 0.29/m², similar to recent years, and most individuals were large. No *Pachythyone rubra* were observed. No sea star wasting disease was observed.

Haliotis rufescens density was 0.0/m²; however, one relatively large *H. rufescens* was observed at the site, but not measured. We presume that this is the same *H. rufescens* individual that was observed nearby last year and was measured at approximately 200 mm. *Cypraea spadicea* were common at a density of 0.58/m². *Megastrea undosa* were rare with a density of 0.042/m², and only two individuals were found for size frequencies. No *L. gibberosa* were observed, similar to last year. No *Tegula regina* were observed. *Kelletia kelletii* density was similar to recent years at 0.015/m². *Megathura crenulata* continued to be rare with a density of 0.0028/m². *Aplysia californica* density remained low at 0.013/m². *Crassidoma giganteum* density remained similar to recent years at 0.042/m². We observed *Panulirus interruptus* on band transects for the second time at this site since monitoring began in 1983, last year being our first observation. The density for *P. interruptus* was 0.0056/m².

Fish were moderately abundant and diverse, similar to past years. The density of *Coryphopterus nicholsii* was 0.50/m² and up to 33 were observed during the roving diver fish count. No *Alloclinus holderi* were observed. *Lythrypnus Dalli* were not present during 1 m quadrats, but six were observed during the fish count. *Oxylebius pictus* were present with up to 19 observed. *Chromis punctipinnis* were the most abundant fish at this site with up to 250 adults observed. *Oxyjulis californica* were common with up to 180 observed. *Semicossyphus pulcher* were notably abundant. Male *Semicossyphus pulcher* were notably large with up to 11 observed, similar to recent years. *Semicossyphus pulcher* females were common with up to 16 individuals observed and juveniles were relatively abundant with up to eight observed. No *Halichoeres semicinctus* were observed. One adult *Hypsypops rubicundus* was observed. Two *Paralabrax clathratus* adults were observed. *Embiotoca jacksoni* were present with up to four adults and no juveniles observed. Up to three adult and one juvenile *Embiotoca lateralis* were observed. There were up to three adult and no juvenile *Rhacochilus vacca* observed. One *Girella nigricans* was observed. *Sebastes mystinus* were common with up to 51 adults and 36 juveniles observed. *Sebastes atrovirens* were abundant with up to 17 adults and eight juveniles observed. Up to 15 adult and no juvenile *Sebastes serranoides* were observed. One adult and no juvenile *Sebastes serriceps* were observed. Five *Sebastes carnatus*, gopher rockfish, and five *Sebastes chrysomelas*, black and yellow rockfish, were observed. One *Sebastes caurinus*, copper rockfish, was observed. *Brachyistius frenatus*, kelp surfperch, were rare in the kelp canopy with only one observed. A large school of *Atherinops affinis*, topsmelt, was observed and estimated at around 1000 individuals. One *Ophiodon elongatus*, lingcod, was observed. Roving diver fish counts were conducted on June 4th with six divers observing 29 species.

All 14 ARMs were intact and monitored for all indicator species. There were no *Haliotis* spp. observed for the fourth consecutive year. The density of *Cypraea spadicea* was 11/ARM, lower than

last year, but similar to recent years. Only two *C. spadicea* were noted as having juvenile morphology, and the mean size of *C. spadicea* remained similar to last year at 46 mm. No *C. spadicea* egg masses were noted in the ARMs. *Kelletia kelletii* were observed at a density of 0.14/ARM. No *Megastraea undosa* or *Lithopoma gibberosa* were observed, similar to recent years. *Megathura crenulata* were present with a density of 0.71/ARM. *Crassidoma giganteum* were present at 1.4/ARM, a decrease from last year's high, with a mean size of 41 mm. No *Tegula regina* were observed. *Patiria miniata* density remained similar to last year at 6.1/ARM, and a mean size of 21 mm was recorded. *Pisaster giganteus* density was lower than last year at 1.0/ARM, and mean size remained the same as last year at 48 mm. *Pycnopodia helianthoides* were not observed in the ARMs. *Strongylocentrotus franciscanus* density remained relatively low, similar to last year at 22/ARM, with a mean of 35 mm. *Strongylocentrotus purpuratus* density also remained relatively low at 9.4/ARM, higher than last year and similar mean size at 22 mm. No *Centrostephanus coronatus* were observed in the ARMs. No *Parastichopus parvimensis* at <10 cm were observed and individuals >10 cm were present at 0.14/ARM. One *Octopus* spp. was observed. Several of the ARMs had one layer of bricks covered in sand. *Hymenaphiastra cyanocrypta*, blue cobalt sponge, was very abundant in the north and south ARM groups and several *Loxorhynchus crispatus*, decorator crabs, were observed inside the ARMs.

This site has two temperature logger stakes. The original stake and a new stake that was installed in 2007 at the 0 m end about 20 meters away from the original stake. Four temperature loggers were deployed for the past two years, two at each stake, to test for a difference in temperature between the two locations. All four loggers were retrieved and all data were downloaded successfully. There was no significant difference in temperature between the two different logger locations over the last two years. As a result, the location of the temperature logger has now been moved permanently to the new location at the 0 m end of the transect.

Location: Fry's Harbor, Santa Cruz Island

Site #7 SCFH

Year sampling began: 1982

2009 sampling dates: 7/2, 8/17

2009 status: Mature kelp forest

This site continued to change dramatically while maturing into a lush kelp forest with a dense understory of *Eisenia arborea*. Both large adult and subadult *Macrocystis pyrifera* were present during our first visit (7/2/2009), however, during our second visit (8/17/2009) fewer subadult plants and several dead holdfasts were noted. *Macrocystis pyrifera* canopy cover was estimated at 75%, an increase from last year. *Macrocystis pyrifera* adults and subadults had densities of 0.28/m² and 0.22/m², respectively, and a cover of 12%. Juvenile *M. pyrifera* were common, but none were observed during 1 m quadrats. *Eisenia arborea* adult density remained high at 2.8/m², similar to last year, and juvenile density was 0.042/m², a decrease from last year. *Eisenia arborea* cover was 29%, also a decrease from last year. No *Pterygophora californica*, *Laminaria farlowii* or *Desmarestia* spp. were observed. Several *Cystoseira* spp. were observed along the transect, but none were observed on RPCs. Miscellaneous red algae cover decreased to 14%. *Gigartina* spp. were observed with a cover of 0.67%. *Gelidium* spp. were not observed. Miscellaneous green algae had a cover of 0.33%, a

decrease from last year. Encrusting coralline algae cover remained similar to previous years at 44% and articulated coralline algae cover was 0.33%. Bare substrate cover continued to decrease for the third consecutive year to 1.3%, the lowest recorded since 1984.

Overall, encrusting invertebrates such as bryozoans and hydroids were abundant. Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover was 6.5%. Tunicate cover was 1.0%. Miscellaneous sponges covered 0.50% of the bottom, similar to past years. One of the most notable changes at this site was the dramatic increase in *Tethya aurantia*. *Tethya aurantia* continued to increase for the fourth consecutive year and had a density of 0.17/m², the highest recorded since 1984 and similar to densities when the monitoring program began in 1983. During the first three years of monitoring for this species at this site (1983-1985) it was abundant and then densities declined and it was common until around 2000. Between 2000 and 2006, it was rare at the site and for some of those years it was difficult to find more than several for size frequency measurements. We can't emphasize enough how dramatic and surprising this increase in abundance has been for this species, we have not seen an increase like this for *T. aurantia* anywhere since the monitoring program began. It appears that *T. aurantia* may be a good indicator of the condition of a kelp forest as this site's conditions have recently changed to a kelp forest again, similar to how it was described in 1983. *Diopatra ornata* cover was observed at a record high of 4.0%. Miscellaneous bryozoans were notably abundant with a cover of 49%, the highest recorded at this site since monitoring began for this category in 1985. They were notably diverse as well and consisted mostly of *Hippodiplosia insculpta*, *Costazia* sp., *Heteropora* sp., *Bugula* spp. and *Phidolopora* sp. *Diaperoecia californica* cover was 1.7%, similar to recent years. *Balanophyllia elegans* were common, but none were observed during RPCs. *Astrangia lajollaensis* cover was 9.3%, similar to last year. *Corynactis californica* cover was observed at 0.17%. *Lophogorgia chilensis* were moderately abundant on the offshore side of the transect with a density of 0.23/m², similar to recent years. *Muricea* spp. were not observed. *Eugorgia rubens* were common, similar to past years, but we do not sample this species.

Strongylocentrotus purpuratus were not observed on 1 m quadrats for the first time since 1984 and only 33 could be found for size frequencies with a moderate search effort. *Strongylocentrotus franciscanus* density also remained low for the sixth consecutive year at 0.17/m². *Centrostephanus coronatus* were common and notably large, but none were observed on 1 m quadrats. No *Lytechinus anamesus* were observed along the transect this year. No sea urchin wasting disease was observed.

Pisaster giganteus were sampled on both 1 m quadrats and 5 m quadrats with densities of 0.29/m² and 0.33/m², respectively, similar to last year. Juvenile *P. giganteus* were moderately abundant on *Macrocystis pyrifera* blades. *Patiria miniata* remained relatively abundant for this site at a density of 2.0/m², and juveniles were common in the ARMs. *Pycnopodia helianthoides* continued to be relatively abundant for this site with a density of 0.063/m². *Parastichopus parvimensis* density remained relatively low at 0.13/m², similar to recent years, some small recruits were observed in the ARMs. *Ophiothrix spiculata* were not observed on RPCs, similar to recent years, but were observed at the site. *Pachythyone rubra* were not observed during sampling, however, a few were observed at the site. No sea star wasting disease was observed.

One small (less than 75 mm) *Haliotis rufescens* was observed at the site but not measured and none were observed during sampling. *Cypraea spadicea* were observed at the site, but not observed during 1 m quadrats for the first time since 1983. *Megastraea undosa* remained rare with none observed on 1 m quadrats and only two small juveniles were observed along the transect this year. Both of these measured 16 mm and one was along the transect and the other in an ARM. No *Lithopoma gibberosa* or *Tegula regina* were observed during sampling. *Kelletia kelletii* were present at a density of 0.022/m². *Megathura crenulata* remained common at a density of 0.043/m². *Crassedoma giganteum* were rare at a density of 0.013/m². No *Aplysia californica* were observed, similar to last year. No *Panulirus interruptus* were observed during band transects, but one fresh molt was observed at the site.

Similar to past years, fish diversity and abundance were high at this site. *Coryphopterus nicholsii* were common at 1.5/m², similar to last year. Up to 163 *C. nicholsii* were observed during the roving diver fish counts. *Alloclinus holderi* density remained low at 0.13/m², with six individuals observed. *Lythrypnus dalli* were moderately abundant at a density of 1.2/m² and up to 90 individuals counted, an increase from last year. *Oxylebius pictus* were common with up to 29 observed, similar to last year. *Chromis punctipinnis* were the most abundant fish with up to 756 adults and nine juveniles observed. Up to 245 adult and seven juvenile *Oxyjulis californicus* were observed. Up to five female, three male and one juvenile *Halichoeres semicinctus* were observed. Up to five female, 14 juvenile and no male *Semicossyphus pulcher* were observed. As has been the case at many of our sites this year, juvenile *S. pulcher* were very abundant during our first visit to this site, and were notably larger during our second visit about a month later. *Hypsypops rubicundus* were common with up to eight adults observed. Up to five adult and five juvenile *Paralabrax clathratus* were observed, and they were notably less common than in past years with notably few large fish. Up to three *Girella nigricans* were observed. Up to 15 adult and 12 juvenile *Embiotoca jacksoni* were observed. Up to four adult and two juvenile *Embiotoca lateralis* were observed. *Damalichthys vacca* were abundant with up to 25 adults and 62 juveniles observed. The school of juvenile *D. vacca* observed seemed a bit darker than usual, and although they were recorded as juvenile *D. vacca* in the database, it should be noted that there was some discussion that the school could have been juvenile *Rhacochilus toxotes*, rubberlip surfperch, instead. However, the conclusion was that we are nearly positive they were *D. vacca*. Up to 14 juvenile *Sebastes mystinus* were observed. Up to four adult and six juvenile *Sebastes serranoides* were observed. *Sebastes atrovirens* were notably more abundant than in recent years with up to 28 adults and 220 juveniles observed. Juvenile *S. atrovirens* were notably abundant this year, especially near the base of kelp plants, and were surprisingly missed by many divers during the fish count. *Sebastes serripes* were common with up to 21 adults and five juveniles observed. Up to nine *Sebastes carnatus*, gopher rockfish, were observed. Up to three adult *Sebastes caurinus*, copper rockfish, were observed. Up to eight adult *Sebastes chrysomelas*, black and yellow rockfish, was observed. Up to 69 kelp/gopher/black and yellow/copper rockfish young of the year complex (KGB) were observed. A school of up to 53 juvenile *Sebastes paucispinis*, bocaccio, were observed. Overall, *Sebastes spp.* were notably abundant at this site and there were more observed this year than at least the past 20 years as noted by David Kushner. *Brachyistius frenatus*, kelp surfperch, were abundant with up to 68 observed.. Four adult *Rhacochilus toxotes*, rubberlip surfperch, were observed. One *Ophiodon elongatus*, lingcod, was observed. One *Scorpaena guttata*, California

scorpionfish, was observed. One *Cephaloscyllium ventriosum*, swell shark, was observed. One school of approximately 1600 *Scomber japonicas*, Pacific mackerel, was observed. Roving diver fish counts were performed on August 17th by five divers observing 32 species.

All five ARMs were intact and monitored for all indicator species. No *Haliotis* spp. were found in the ARMs this year, similar to recent years. *Cypraea spadicea* were abundant at 9.2/ARM. No *Kelletia kelletii* were observed in the ARMs. One *Megastrea undosa* was observed in the ARMs for a density of 0.20/ARM. *Megathura crenulata* were rare with a density of 0.6/ARM. *Crassidoma giganteum* recruits were relatively abundant at 5.4/ARM, similar to past years. *Patiria miniata* density increased from last year to 11.2/ARM with a mean size of 30 mm. *Pisaster giganteus* density was 2.4/ARM, higher than the past several years and had a mean size of 31 mm. One *Pycnopodia helianthoides* was found in an ARM for a density of 0.20/ARM. *Strongylocentrotus franciscanus* density was 22.8/ARM, similar to last year, with a mean size of 41 mm. *Strongylocentrotus purpuratus* density was 11.0/ARM, a small decrease from last year, with a mean size of 24 mm. *Parastichopus parvimensis* density <10 cm was 1.4/ARM and density >10 cm was 1.4/ARM

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully. The temperature loggers were installed on a new bolt within 100 cm of the old bolt at the zero/north end of the transect. The new bolt was installed last year because the old one had a weakening attachment to the rock.

Location: Pelican Bay, Santa Cruz Island

Site #8 SCPB

Year sampling began: 1982

2009 sampling dates: 9/24

2009 status: Kelp forest

This site changed dramatically from last year and is now a kelp forest dominated by subadult *Macrocystis pyrifera* rather than by *Strongylocentrotus* spp. as in past years. This site has only had a significant amount algae three times since it was established in 1982. *Macrocystis pyrifera* abundance was the highest or near the highest recorded since monitoring began at this site in 1982. Canopy cover over the site was estimated at 80% and most of the *M. pyrifera* appeared healthy. Adult, subadult and juvenile *M. pyrifera* densities were 0.15/m², 1.9/m² and 1.5/m², respectively and cover was 35%. Adult and juvenile *Eisenia arborea* densities were 0.13/m² and 0.46/m², respectively and cover was 1.7%, all the highest recorded at this site since monitoring began for this species in 1982. *Pterygophora californica*, *Laminaria farlowii*, *Desmarestia* spp., *Cystoseira* spp. and *Gigartina* spp. were not observed at the site. Green algae was relatively common with a cover of 2.3%. The green algae *Codium fragile* was common. Miscellaneous brown algae cover was 0.67%. Small *Sargassum muticum* were common in the shallow areas of the transect. Miscellaneous red algae cover was 5.7%. Miscellaneous plants, consisting of filamentous diatoms, had a cover of 6.0%. Articulated coralline algae remained rare at 1.2%, but were noticeably more abundant than in recent years. Encrusting coralline algae cover was 52%, relatively high for this site. Bare substrate cover was 27%, relatively low for this site.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover was 6.2%, similar to previous years. The most abundant invertebrate in this category were barnacles and then *Clavularia* sp. Tunicates remained rare at 0.83% cover. Sponge cover was 0.67%. *Tethya aurantia* were common with a density of 0.029/m², similar to last year. *Diopatra ornata* cover was 4.7%. Other bryozoans cover was relatively high for this site at 4.7%. *Diaperoecia californica* was common on top of large rocks and was often covered with filamentous algae. Cover of *D. californica* was 0.50%.

Balanophyllia elegans were common with 1.0% cover. No *Corynactis californica* were observed on RPCs. *Astrangia lujollaensis* had a cover of 5.5%, relatively low for this site and patches were notably less dense than in recent years and more scattered. *Lophogorgia chilensis* was moderately abundant with a density of 0.17/m², similar to last year. One *Muricea californica* and no *M. fruticosa* were observed at the site.

Strongylocentrotus purpuratus and *S. franciscanus* densities were the lowest recorded at this site since monitoring began in 1982; their densities were 2.5/m² and 0.79/m², respectively. On the onshore side of the transect from 0 – 50 meters, there was a moderate density of *S. purpuratus* and *S. franciscanus* with the latter being more abundant, and both species were of similar size.

Strongylocentrotus purpuratus were rare overall within the transect, but in the shallow area inshore of the transect they were moderately abundant. Juveniles of both species were moderately abundant under the spine canopy of larger conspecifics. Whole *S. purpuratus* tests were moderately abundant at the site and we observed several *Pycnopodia helianthoides* feeding on them and we think this species may have caused much of the decline in *Strongylocentrotus* spp.. Though we only observed a few *P. helianthoides* at this site, we heard of a report from two Island Packers Co. staff (Jean Scholes and Alexandra Craig) that observed high abundance of mostly large (up to 1 meter in diameter) actively feeding on sea urchins near our transect in Pelican Bay on January 16th, 2009. *Lytechinus anamesus* densities also declined and were at their lowest since 1998, at 0.0014/m². Only two *L. anamesus* could be found on the transect for size frequencies. *Centrostephanus coronatus* were not observed on 1 m quadrats, but were common at the site. Sea urchin wasting disease was observed in several (<1%) of the *S. purpuratus*.

Patiria miniata were rare at 0.17/m², and notably large *Pisaster giganteus* were common with densities of 0.0/m² and 0.025/m² on 1 m and 5 m quadrats, respectively. *Pycnopodia helianthoides* were common at 0.0097/m², the highest density recorded at this site since monitoring began. *Ophiothrix spiculata* were rare, with none observed on RPCs. *Parastichopus parvimensis* were notably rare with none observed on 1 m quadrats and only two or three observed at the entire site. No *Pachythyone rubra* also were observed at the site. One *P. helianthoides* and five large *P. miniata* were observed exhibiting wasting disease on September 24th.

One live *Haliotis corrugata* was observed in the ARMs (see below). *Cypraea spadicea* were moderately abundant, but none were observed on 1 m quadrats. *Kelletia kelletii* were rare, but notably large and none were observed on band transect for the first time since monitoring began for this species in 1983. *Megathura crenulata* density was 0.083/m². *Crassidoma giganteum* density was 0.029/m², similar to recent years. *Megastraea undosa* were rare with only several large ones observed, though one small one was observed in an ARM. Their density was 0.0/m², relatively low

for this site, but similar to recent years. One *L. gibberosa* was observed. *Tegula regina* were common, but similar to past years had a density of 0.0/m². *Aplysia californica* density was 0.0028/m². Several *Panulirus interruptus* and at least six molts were observed. During a night dive, divers reported seeing at least seven *P. interruptus* on the transect all were above legal size and estimated at three pounds. Their density was 0.0028/m².

The fish at this site continued to be moderately abundant and diverse. There were noticeably fewer *Coryphopterus nicholsii* with up to 160 observed and a decline in density to 1.1/m², the lowest recorded since 1998. Abundance of *Lythrypnus dalli* increased with up to 248 observed with a density of 0.042/m². *Alloclinus holderi* were not observed on 1 meter quadrats but up to two were observed during the fish count. Up to 10 *Oxylebius pictus* were observed. Up to 220 adult and one juvenile *Chromis punctipinnis* were observed. *Oxyjulis californicus* were common with up to 74 adults and two juveniles observed. Up to eight female, no male and eight juvenile *Semicossyphus pulcher* were observed. Up to 14 female, two juvenile and ten male *Halichoeres semicinctus* were observed. Up to 50 adult and 13 juvenile *Paralabrax clathratus* were observed. Up to 18 adult *Hypsypops rubicundus* were observed, similar to past years. Up to six *Girella nigricans* were observed. Up to 43 adult and ten juvenile *Embiotoca jacksoni* were observed. Similar to past years, no *Embiotoca lateralis* were observed. Up to 12 adult and ten juvenile *Damalichthys vacca* were observed. No adult and up to two juvenile *Sebastes serranoides* were observed. One adult and one juvenile *Sebastes serripes* were observed. One *Sebastes chrysomelas*, black and yellow rockfish, was observed. One *Sebastes auriculatus*, brown rockfish, was observed. Up to 45 juvenile *Sebastes paucispinis*, bocaccio, were observed. One juvenile *Sebastes caurinus*, copper rockfish, and one kelp/gopher/black and yellow/copper rockfish young of the year complex (KGB) were observed. Up to three adult *Rhacochilus toxotes*, rubberlip surfperch, were observed. Up to 42 *Brachyistius frenatus*, kelp surfperch, were observed. Up to 131 *Cymatogaster aggregate*, shiner surfperch, were observed. Up to 53 *Phanerodon furcatus*, white surfperch, were observed. One juvenile giant kelpfish, *Heterostichus rostratus*, was observed. Up to two *Scorpaena guttata*, California scorpionfish, were observed. One *Medialuna californiensis*, halfmoon, was observed. One *Myliobatis californica*, bat ray, was observed. After the fish count three Cabezon, *Scorpaenichthys marmoratus* were observed. Roving diver fish counts were conducted on September 24th with seven divers observing 31 species.

Five of the six ARMs at this site were in good condition and sampled for all indicator species. The remaining ARM, #2314, was found with its lid and side open and several blocks removed, therefore it was not sampled, but it was repaired. Two *Octopus* spp. were found in the ARMs. One *Haliotis corrugata* measuring 30 mm was found in the ARMs, this is the first time since 1999 a *Haliotis* spp. has been found in ARMs here. One fresh *H. rufescens* shell measuring 46 mm was found in an ARM. *Cypraea spadicea* density was 7.2/ARM. *Megastrea undosa* were density was 0.40/ARM. *Megathura crenulata* density was 0.40/ARM. *Crassidoma giganteum* density remained relatively high at 7.8/ARM. *Patiria miniata* remained abundant at 21/ARM, similar to last year. *Pisaster giganteus* were rare at 0.20/ARM. No *Lytechinus anamesus* were observed in the ARMs. *Strongylocentrotus franciscanus* density increased to 29/ARM, the highest density since 2000 and the mean size remained similar to last year at 28 mm. *Strongylocentrotus purpuratus* density also

increased to 36/ARM the highest since 1996 and had a notably lower mean size of 17 mm, the lowest recorded in the ARMs at this site. Two small *Centrostephanus coronatus* were observed in ARMs for a density on 0.40/ARM, the first occurrence of this species since 2000, and indicative of recent recruitment. *Parastichopus parvimensis* density decreased with 0.40/ARM at <10 cm and 0.80/ARM at >10 cm.

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

Location: Scorpion Anchorage, Santa Cruz Island

Site #9 SCSA

Year sampling began: 1982

2009 sampling dates: 10/06

2009 status: Dominated by *Strongylocentrotus purpuratus*

This site continued to be dominated by *Strongylocentrotus purpuratus* and had a moderate density of *Strongylocentrotus franciscanus*, similar to past years. However, there was notably more *Macrocystis pyrifera* around the site, especially inshore of the transect and was moderately abundant at the western most 25 meters of the transect. In general, the Scorpion Anchorage area appears to be recovering from being mostly dominated by *Strongylocentrotus* spp. The kelp forest at the west end consisted mostly of subadult and juvenile *M. pyrifera*, but several large adults were also present. Adult *M. pyrifera* density continued to increase for the second year to 0.17/m². Subadult and juvenile *M. pyrifera* densities were similar to last year at 0.15/m² and 0.21/m², respectively and cover was 6.7%. *Laminaria farlowii* was rare with several adults observed at the site, but none on 1 m quadrats and a cover of 0.33%. No *Eisenia arborea*, *Pterygophora californica*, or *Desmarestia* spp. were observed on the transect. One *Cystoseira* spp. was observed at the site, but not on RPCs. Similar to past years, small *Sargassum muticum* were common along the transect near the zero end. Miscellaneous brown algae cover was 3.2% and consisted of *Colpomenia* spp. and *Dictyota* sp./*Pachydictyon* sp. Green algae were not observed during sampling. Miscellaneous red algae cover decreased to 0.50%. No *Gelidium* spp. or *Gigartina* spp. were observed during sampling. Miscellaneous plants, consisting mostly of filamentous diatoms, had a cover of 12%. Articulated coralline algae were rare with a cover of 0.50%. Encrusting coralline algae cover was 55%. Bare substrate cover was 25%, similar to past years.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover remained similar to previous years at 13%. Similar to past years, the most common miscellaneous invertebrates were *Spirobranchus spinosus*, the Christmas tree worm. Tunicates were rare with a cover of 0.33%, similar to past years, and no *Styela montereyensis* were present at the site. Sponges were common with a cover of 0.17%. *Tethya aurantia* were common at 0.053/m², similar to last year but relatively abundant for this site and this is the highest density recorded since sampling began in 1983. David Kushner noted that they appeared more abundant than last year. No *Phragmatopoma californica* or *Serpulorbis squamigerus* were observed during sampling. *Diopatra ornata* were rare with a cover of 0.17%. Miscellaneous bryozoans remained common with a cover of 1.5% and *Diaperoecia californica* were moderately abundant on the steep sides of large rocks with a cover of 1.0%. *Corynactis californica* were common with a cover of 0.17%, *Astrangia lajollaensis* and *Balanophyllia elegans* covers were 1.3%

and 0.50%, similar to past years. Gorgonians were rare with only three small *Lophogorgia chilensis* present on the entire transect, their density was 0.0042/m², similar to past years. No *Muricea californica* or *Muricea fruticosa* were present at the site, similar to past years.

The site continued to be dominated by *Strongylocentrotus purpuratus* with a moderate abundance of *Strongylocentrotus franciscanus*. *Strongylocentrotus franciscanus* density was 3.7/m², similar to past years, with a mean size of 50 mm. *Strongylocentrotus purpuratus* density increased to 43/m² with a mean size of 30 mm. Urchin mean sizes remained similar to past years. Juvenile *S. franciscanus* and *S. purpuratus* were common. No *Centrostephanus coronatus* were observed on 1 m quadrats, but they were common at the site. No *Lytechinus anamesus* were observed at the site. No sea urchin wasting disease was observed.

Pisaster giganteus were counted on 1 m quadrats and 5 m quadrats with densities of 0.083/m² and 0.075/m², respectively. *Patiria miniata* density remained similar to recent years at 0.38/m². No *Pycnopodia helianthoides* were observed at the site. *Ophiothrix spiculata* were rare and none were observed on RPCs. *Parastichopus parvimensis* were common along the transect and abundant in the ARMs, but none were observed on 1 m quadrats, a decrease from last year. No *Pachythyone rubra* were observed on RPCs. Two or three *P. miniata* were observed with wasting disease on October 6th.

Haliotis corrugata measuring 36 mm was found on band transects resulting in a density of 0.0014/m². Though a juvenile, this is the first time a *H. corrugata* has been observed on band transects since 1987. *Cypraea spadicea* density was 0.13/m². *Megastrea undosa* density remained low at 0.13/m², and several small recruits were observed. We were only able to find 24 for size frequencies, the lowest sample size for this species since we began measuring them in 1995. No *Tegula regina* were observed on 1 m quadrats. No *Kelletia kelletii* were observed at the site, similar to past years. *Megathura crenulata* were moderately abundant at 0.15/m² and all sizes were present. *Crassidoma giganteum* density was 0.017/m², and all sizes were present. Large adult *Aplysia californica* were rare with several dead ones observed, but small juvenile *A. californica* <60 mm were moderately abundant and this species density was 0.072/m², similar to past years. One live *Panulirus interruptus* were common and seem to have increased in abundance and size over the past several years. Their density was 0.015/m², similar to last recent years and several large (estimated at over 5 lbs) ones were observed.

In 2008 and 2009 we observed an increase in fish diversity at this site relative to the past 12 years. Overall, fish were abundant and diverse. *Coryphopterus nicholsii* were abundant at a density of 1.4/m², and up to 262 observed. *Alloclinus holderi* were rare with only two observed during the fish count and none on 1 m quadrats. *Lythrypnus dalli* were rare with four observed during the roving diver fish count and none on 1 m quadrats. *Oxylebius pictus* were common with up to 24 observed. *Chromis punctipinnis* were the most abundant fish with 347 adults and 62 juveniles observed. *Oxyjulis californica* were common with up to 118 adults and 52 juveniles observed. Six female, eight juvenile and no male *Semicossyphus pulcher* were observed. Eight female, no juvenile and two male *Halichoeres semicinctus* were observed. Up to nine adult and one juvenile *Hypsypops rubicundus* were observed. The juvenile was large, about 15 cm, but still had juvenile coloration on it. *Paralabrax clathratus* were abundant with up to 30 adults and one juvenile observed during the fish

count. However, several more juveniles were observed after the fish count. Up to 30 adult *Girella nigricans* were observed. *Embiotoca jacksoni* were common with up to 35 adults observed. Thirteen adult and one juvenile *Rhacochilus vacca* were observed. Up to six adult and no juvenile *Sebastes atrovirens* were observed during the fish count, however eight juveniles were observed inside the ARMs. No *Sebastes serranoides* were observed. Three adult and no juvenile *Sebastes serriceps* were observed. One juvenile *Sebastes paucispinis*, Bocaccio rockfish, was observed. Three *Sebastes chrysomelas*, black and yellow rockfish, were observed. Up to 28 of *Brachyistius frenatus*, kelp surfperch, were observed. A school of 30 *Sphyræna argentea*, Pacific barracuda, was observed. One *Phanerodon furcatus*, white surfperch, was observed. Four *Cymatogaster aggregate*, shiner surfperch, were observed. Two *Rhacochilus toxotes*, rubberlip surfperch, were observed. One *Myliobatis californica*, bat ray, was observed. Two adult *Heterodontus francisci*, horn shark, were observed. One *Pleuronichthys coenosus*, C-O turbot, was observed. One *Lythrypnus zebra*, zebra goby, was observed. One *Paralabrax nebulifer*, barred sand bass, was recorded for the third consecutive year; these are rarely observed at the Channel Islands. Roving diver fish counts were conducted on October 6th by five divers observing 30 species.

All seven ARMs were monitored for all indicator species. ARMs #2382 and #2424 each had one layer of bricks covered in sand/sediment. ARM #2427 had two layers of bricks covered in sand and one ARMs cage was replaced. The bricks of the ARMs appeared to have fewer encrusting *Spirobranchus spinosus*, Christmas tree worm, than in recent years. No *Octopus* spp. were observed in the ARMs. No *Haliotis* spp. were observed in the ARMs. *Cypraea spadicea* were abundant at a density of 18/ARM. No *Megastraea undosa* were present in the ARMs. *Megathura crenulata* density was 0.14/ARM. *Crassidoma giganteum* density decreased to 1.4/ARM and mean size was larger than in recent years at 122 mm, indicating less recruitment this year. *Patiria miniata* remain relatively rare in the ARMs with a density of 0.71/ARM. *Pisaster giganteus* were relatively abundant at 1.1/ARM, the highest recorded density at this site and they were relatively small with a mean size of 42 mm. No *Pycnopodia helianthoides* were observed in the ARMs. *Strongylocentrotus franciscanus* density remained the same as last year at 9.3/ARM, with an average size of 34 mm. *Strongylocentrotus purpuratus* density increased for the fifth consecutive year to 117/ARM, the highest density recorded since 1993. Average size for *S. purpuratus* was 38 mm, similar to recent years. No *Centrostephanus coronatus* were observed. *Parastichopus parvimensis* were abundant in the ARMs; with a density of 5.3/ARM and 9.1/ARM for sizes <10 cm and >10 cm, respectively.

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

Location: Yellow Banks, Santa Cruz Island

Site #10 SCYB

Year sampling began: 1986

2009 sampling dates: 7/31, 10/5, 10/7

2009 status: Kelp forest

Overall, algae at the site appeared similar to last year. However there were fewer large adult *Macrocystis pyrifera* plants this year. Nearly all of the *M. pyrifera* were non-canopy forming subadult plants and they appeared healthy. Canopy cover was estimated at 5% over the transect.

Adult *M. pyrifera* density declined while subadults and juveniles increased. Their densities were 0.045/m², 0.3/m², and 0.96/m² respectively with a cover of 13%. *Eisenia arborea* were rare with none observed during sampling, though several adults but no juveniles were observed at the site. *Pterygophora californica* were common with both adult and juveniles present, though no adults were observed on 1 m quadrats. Juvenile *P. californica* density was 0.25/m² and cover was 1.3%. *Laminaria farlowii* was relatively common for this site with adult and juvenile densities at 0.042/m² and 0.042/m², respectively, and none observed on RPCs. *Cystoseira* spp. were common and mostly small with a cover of 2.0%. *Desmarestia* spp. was rare at a cover of 0.17%. No *Gigartina* spp. or *Gelidium* spp. were recorded during sampling and only one *Gigartina* spp. was observed at the site. No green algae were observed during sampling. Miscellaneous brown algae were present at a cover of 0.67%. Miscellaneous red algae cover was 21%, relatively high for this site and the highest recorded since 2006. This category consisted mainly of filamentous red algae. Miscellaneous plants, consisting of filamentous diatoms, were common at a cover of 8.0%, relatively high for this site. Encrusting coralline algae were abundant especially in low lying areas with cover increasing to 63%, the highest recorded since sampling began in 1986. Articulated coralline algae were rare at a cover of 3.7%, similar to recent years. Bare substrate cover decreased to 15%. This decrease in bare substrate correlates with the increase in encrusting coralline algae.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover was 27%, the highest recorded cover since 2004, and consisted of mostly silt covered hydroids of the genus *Obelia* sp. Silt accumulation was similar to recent years, but notably less prevalent than in the 1990's as per David Kushner's observation. Tunicates were uncommon overall at 0.83% cover. The most common tunicate was *Didemnum* sp. and/or *Trididemnum* sp. Sponges were common at 1.0% cover. *Tethya aurantia* were abundant at a density of 0.19/m², the highest density recorded since sampling began. *Diopatra ornata* were common and had a cover of 0.17%. Bryozoans were notably less abundant than last year and miscellaneous bryozoans cover declined to 2.0%, the lowest recorded cover since 2002. *Diaperoecia californica* were common on steep rocks with a cover of 1.2%. No *Urticina lofotensis* were observed during sampling. *Corynactis californica* were relatively rare at 0.17% cover. *Balanophyllia elegans* and *Astrangia lajollaensis* were common with covers of 1.3% and 1.0%, respectively. *Lophogorgia chilensis* were moderately abundant at a density of 0.060/m², similar to recent years. *Muricea fruticosa* were present with several small individuals (that may have been recent recruits) observed at a density of 0.0014/m². *Muricea californica* were common at a density of 0.019/m², similar to past years.

There were notably more *Strongylocentrotus* spp. and in particular more *S. purpuratus* than in recent years. This is particularly interesting due to the moderate number of large *Pycnopodia helianthoides* that have been remained at the site and are observed actively feeding on *S. purpuratus*. Whole urchin tests were moderately abundant and most *S. purpuratus* were small though large ones were abundant in the ARMs (which possibly act as a refuge for sea urchins). Density of *S. purpuratus* was the highest recorded density since 2001 at 15/m². This increase in *S. purpuratus* abundance is interesting to note as there was a moderate amount of *Pycnopodia helianthoides* observed feeding on *S. purpuratus* all around the site and whole urchin tests were common. *Strongylocentrotus franciscanus* were common but less abundant than *S. purpuratus* at a density of 1.3/m². Both *S. purpuratus* and *S.*

franciscanus had high densities in the crevice habitat with juveniles of both species being common. *Lytechinus anamesus* were rare and observed on band transects with a density of 0.03/m². This is the lowest density recorded for this species on band transects since 1992. Most *L. anamesus* were small and whole tests were also common indicating recent mortality. *Centrostephanus coronatus* were rare with one juvenile observed and they had a density of 0.042/m². No urchin wasting disease was observed.

Pisaster giganteus were uncommon and sampled on 1 m quadrats and 5 m quadrats with densities of 0.042/m² and 0.015/m², respectively. All sizes of *P. giganteus* were observed and tiny juveniles were common. *Patiria miniata* were notably abundant for this site at a density of 2.5/m², the highest recorded density at this site. Many of them were small, indicating recent recruitment. *Pycnopodia helianthoides* were moderately abundant and notably large at a density of 0.025/m². A total of 57 *P. helianthoides* were measured for size frequencies for a mean size of 282 mm. *Dermasterias leviuscula* were notably abundant with both large and small individuals present. *Ophiothrix spiculata* were rare with a cover of 0.17%. No *Parastichopus parvimensis* were observed during sampling, but they were present at the site. No sea star wasting disease was observed.

No live *Haliotis* spp. were observed along the transect. One small old *Haliotis assimilis* shell was found. *Megastraea undosa* were common with very large individuals relatively abundant. *Cypraea spadicea* were common at a density of 0.2/m². Density of *Megastraea undosa* was 0.13/m², the highest density since 2006. There were distinct size classes and their mean size was 88 mm. *Lithopoma gibberosa* were rare and not observed during sampling, though one was measured during size frequencies at 55 mm. *Tegula regina* were not observed during sampling. *Kelletia kelletii* were common with one small one observed, their density was 0.032/m². *Megathura crenulata* were uncommon and notably small at a density of 0.0069/m². *Crassidoma giganteum* density was 0.0083/m², similar to past years. No *Aplysia californica* were observed for the third consecutive year. Several *Panulirus interruptus* were observed and had a density of 0.0028/m².

Fish abundance and diversity were moderate, similar to last year. *Coryphopterus nicholsii* were common with up to 223 observed and a density of 1.2/m². *Alloclinus holderi* were rare with none observed during 1 m quadrats or the roving diver fish count. *Lythrypnus dalli* were also rare and were not observed on quadrats, and up to three were seen during the roving diver fish count. *Oxylebius pictus* were common with up to 36 observed. Up to 65 adult *Chromis punctipinnis* were observed. *Oxyjulis californica* were abundant with up to 565 adults and no juveniles observed. Up to 12 female and no male *Semicossyphus pulcher* were observed, similar to last year. Juvenile *S. pulcher* were more abundant than last year, as seen at many of our other sites this year, with up to eight observed. All of the females were small, similar to what we have observed in past years at this site. No *Hypsypops rubicundus* were observed. Four female, no juvenile and two male *Halichoeres semicinctus* were observed. *Paralabrax clathratus* were present with up to 16 adults observed, most were small and below the legal size of 30 cm. No *Girella nigricans* were observed. One adult *Embiotoca jacksoni* was observed. No *Embiotoca lateralis* or *Damalichthys vacca* were observed. Up to 13 adult and three juvenile *Sebastes atrovirens* were observed. One adult and no juvenile *Sebastes serranoides* were observed. No *Sebastes mystinus* were observed. One adult and two

juvenile *Sebastes serriceps* were observed. Up to one small adult and 13 juvenile *Sebastes miniatus*, vermillion rockfish, were observed. We have observed this species regularly over the past several years. Four adult and five juvenile *Sebastes caurinus*, copper rockfish, were observed. Three *Sebastes chrysomelas*, black and yellow rockfish, was observed. Two *Sebastes carnatus*, gopher rockfish, were observed. Up to 45 kelp/gopher/black and yellow/copper rockfish young of the year complex (KGB) were observed. Up to seven *Brachyistius frenatus*, kelp surfperch, were observed. A school of up to 30 *Trachurus symmetricus*, jack mackerel, were observed. One juvenile *Heterostichus rostratus*, giant kelpfish, was observed. Four *Sphyrna argentea*, California barracuda, and one *Leiocottus hirundo*, lavender sculpin, were also observed. Roving diver fish counts were conducted on July 31st by five divers observing 22 species. Though no fish count was conducted on October 5th, we observed several juvenile *C. punctipinnis* and small female *S. pulcher* were moderately abundant.

Along this transect there are three groups of five ARMs. Over the last several years this site has become a kelp forest and a decline in *Strongylocentrotus* spp. densities has been observed in 1 m quadrats. There has been a corresponding shift in sea urchin habitat preference from being out in the open to the current usage of crevices for habitat. The ARMs function as excellent crevice habitat and as expected, we are observing much higher densities of sea urchins inside the ARMs as compared to outside. Due to the high number of *Strongylocentrotus* spp. in the ARMs and the increase in bottom time required to sample at this relatively deep site, we did not sample all ARMs for *Strongylocentrotus* spp. this year. A total of nine ARMs were monitored for all indicator species (three from each of the three groups of five) and the remaining six ARMs were sampled for all indicator species excluding *Strongylocentrotus* spp. Four cages were replaced, two from the east group and two from the west group.

Three species of monitored *Haliotis* spp. were observed in the ARMs this year, all were small and all were between 21-29 mm. *Haliotis rufescens* were observed for the first time since 2005 and two were observed with a density of 0.13/ARM and a mean size of 27 mm. Two *Haliotis corrugata* were also present at a density of 0.13/ARM with a mean of 22 mm, and were recorded for the first time since 2007. One 25 mm *Haliotis fulgens* was observed in an ARM for the first time since 2000 at a density of 0.07/ARM. This is a notable increase in *Haliotis* spp. recruitment from the past several years. *Cypraea spadicea* density was 3.3/ARM. No *Tegula regina*, *Megastrea undosa* or *Lithopoma gibberosa* were observed in the ARMs. *Megathura crenulata* density was 0.60/ARM with a mean size of 22 mm, similar to past years. *Crassidoma giganteum* density was 0.73/ARM. Two *Octopus* spp. were observed in the ARMs. *Strongylocentrotus franciscanus* density decreased from last year to 30/ARM, the lowest recorded density for this species since 1992. The mean size for *S. franciscanus* was 19 mm, also the lowest mean size for this species since 1999. *Strongylocentrotus purpuratus* density also decreased from last year to 209/ARM, but remains relatively high. The mean for *S. purpuratus* remained similar to last year at 33 mm. Two juvenile *Centrostephanus coronatus* were observed with a density of 0.13/ARM and their sizes were 9 and 13 mm. *Patiria miniata* density was 8.5/ARM and mean size was 21 mm, similar to past years. *Pisaster giganteus* density continued to decreased for the fifth consecutive year to 1.4/ARM and a mean size of 18 mm. *Parastichopus parvimensis* <10 cm and >10 cm were observed at 0.86/ARM and 0.93/ARM,

respectively. One *Parastichopus californicus* was present in the ARMs this year. We do not monitor *P. californicus* in the ARMs, but we have been keeping notes on this species over the past few years.

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

Location: Admiral's Reef, Anacapa Island

Site #11 ANAR

Year sampling began: 1982

2009 sampling dates: 6/18, 9/4

2009 status: Dominated by *Ophiothrix spiculata*

Overall, there was little change at this site and it continued to be largely dominated by *Ophiothrix spiculata*. Most of the transect directly along the line is devoid of macroalgae, but there was some algae on the top of the reef near the 70 meter mark. *Macrocystis pyrifera* were rare directly along the transect with no adults, subadults or juveniles observed during sampling. However, inshore of the reef there were some small dense patches of *M. pyrifera* as we have observed in the past. *Eisenia arborea* were rare with no adults or juveniles observed, but several plants were observed on top of the reef. *Pterygophora californica*, *Laminaria farlowii* and *Cystoseira* spp. were absent from the transect, similar to recent years. Miscellaneous red algae cover continued to decrease for the fourth consecutive year, from 35% cover in 2005 to 8.5% cover this year. *Gigartina* spp. and *Gelidium* spp. were not observed on RPCs. Green algae cover was 0.50%, slightly higher than last year. Miscellaneous plants cover, consisting of filamentous diatoms, was 7.5%. Encrusting coralline algae was at the highest cover on record for this site at 62% cover, but similar to the past several years. Articulated coralline algae continued to be rare at 0.0% cover. Bare substrate cover was 15%, similar to recent years.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover was 18%, similar to last year and the most common invertebrates in this category were *Spirobranchus spinosus* and hydroids; many of which included *Clavularia* sp. Tunicate and sponge cover were similar to last year at 1.0% each. *Tethya aurantia* density was 0.093/m², similar to the past several years, with a mean size was 75 mm, the largest on record. Miscellaneous bryozoans decreased to a cover of 0.67%. *Diaperoecia californica* were present at a cover of 0.83%. *Corynactis californica* cover was 0.50%, the lowest recorded since 1987. *Astrangia lajollaensis* cover remained relatively low at 0.50%. Similarly, *Balanophyllia elegans* remained rare and none were observed on RPCs. Gorgonians were moderately abundant, similar to past years at this site. *Lophogorgia chilensis* density was 0.064/m². *Muricea fruticosa* and *Muricea californica* densities were 0.0069/m² and 0.025/m², respectively.

Echinoderm densities remained high with *Ophiothrix spiculata* being most abundant and covering 45% of the bottom, similar to recent years. *Ophiothrix spiculata* dominated the site for about the first 70 meters of the transect where the reef begins to have more dramatic relief. *Strongylocentrotus* spp. densities remained similar to the past several years. *Strongylocentrotus franciscanus* density was recorded at 8.7/m² and a mean of 44 mm was observed, similar to last year. *Strongylocentrotus purpuratus* density was 4.5/m², similar to the past several years, but continued to decline from a high of 78/m² in 2000. Mean size of *S. purpuratus* was similar to last year at 30 mm. Little recruitment

was observed for both these species this year. *Lytechinus anamesus* remained rare with a density of 0.043/m². *Centrostephanus coronatus* density remained high at 0.92/m², similar to past years at this site. At most sites where *C. coronatus* recruited during the 1997/1998 El Niño we have observed recent declines. However, at this site the density has remained stable over the last several years. On June 16th we observed sea urchin wasting disease only in *S. franciscanus* and prevalence was estimated at 2%.

Pisaster giganteus were sampled on 1 m quadrats and 5 m quadrats and remained relatively abundant with densities of 0.083/m² and 0.095/m², respectively. *Patiria miniata* also remained relatively abundant at this site for the fifth consecutive year with a density of 2.3/m², the highest recorded density since monitoring began. No *Pycnopodia helianthoides* were observed, similar to last year. *Ophiothrix spiculata* abundance remained high at 45%. *Parastichopus parvimensis* density was low at 0.29/m², the same as last year and the lowest recorded since 1982. No sea star wasting disease was observed.

No *Haliotis corrugata* were observed along the transect for the tenth consecutive year. *Cypraea spadicea* were uncommon at a density of 0.083/m², similar to recent years. *Megastrea undosa* were rare with none observed on 1 m quadrats. *Kelletia kelletii* density was 0.047/m², similar to recent years. *Megathura crenulata* were relatively abundant with a density of 0.096/m², similar to last year. *Crassedoma giganteum* were common with a density 0.025/m², similar to the past several years. *Aplysia californica* density was 0.028/m², also similar to last year. *Panulirus interruptus* density was 0.0042/m² and at least five were observed at the site.

Overall, fish continued to be diverse and relatively abundant for a reef that is dominated by echinoderms. *Coryphopterus nicholsii* abundance was similar to recent years at 2.9/m² and up to 448 observed during the roving diver fish count. *Alloclinus holderi* density was 0.083/m² with up to 12 observed, similar to last year. *Lythrypnus dalli* were not present on 1 m quadrats but 35 were observed during roving diver fish count, an increase from last year. *Oxylebius pictus* were common with up to 55 counted, an increase from last year. Up to ten female, 14 juvenile and no male *Semicossyphus pulcher* were observed. This high number of juvenile *S. pulcher* has been a common observation at many of our monitoring sites this year. Adult *Chromis punctipinnis* were the most abundant fish at this site with up to 1350 observed. Adult *Oxyjulis californica* were common with up to 113 observed. Four female, no juvenile and four male *Halichoeres semicinctus* were observed. Up to three adult *Paralabrax clathratus* were observed. *Girella nigricans* were present with up to ten observed. Up to five adult *Hypsypops rubicundus* were observed. *Embiotoca jacksoni* were present with up to six adults and one juvenile observed. *Rhacochilus vacca* were not observed. No adult and 19 juvenile *Sebastes mystinus* were recorded. Up to five adult and no juvenile *Sebastes atrovirens* were observed. Up to nine adult and two juvenile *Sebastes serriceps* were observed. Three *Sebastes chrysomelas*, black and yellow rockfish, were observed. One kelp/gopher/black and yellow/copper rockfish young of the year complex (KGB) was observed. One *Rhacochilus toxotes*, rubberlip surfperch, was observed. Two *Medialuna californiensis*, halfmoon, were observed. Up to five *Lythrypnus zebra*, zebra goby, were observed. Two hundred, *Trachurus symmetricus*, jack mackerel, were observed. Approximately 5,000 *Sardinops sagax*, Pacific sardines, were observed.

Approximately 1,000 *Scomber japonicus*, Pacific mackerel, were observed. Roving diver fish counts were conducted on June 18th by six divers counting 26 species.

All six ARMs were monitored for all indicator species. *Cypraea spadicea* were present at 0.50/ARM, similar to last year. *Megathura crenulata* were present at 1.0/ARM. *Crassedoma giganteum* were present at 0.50/ARM, similar to last year, with a mean size of 61 mm. *Tegula regina* were present at 0.50/ARM. *Patiria miniata* density was 11/ARM and a mean size of 22 mm was observed. *Pisaster giganteus* were not observed in the ARMs. *Strongylocentrotus franciscanus* density was 11/ARM with a mean of 27 mm. *Strongylocentrotus purpuratus* abundance remained similar to last year at 29/ARM and a mean of 13 mm was observed. *Parastichopus parvimensis* <10 cm were present at 0.66/ARM and individuals >10 cm were absent from the ARMs. Two *Eugorgia rubens*, purple gorgonians, were observed in the ARMs.

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

Location: Cathedral Cove, Anacapa Island

Site #12 ANCC

Year sampling began: 1982

2009 sampling dates: 5/22, 7/29, 10/21

2009 status: Mature kelp forest

This site continued to be a mature kelp forest with a canopy cover of approximately 75%. Adult, subadult and juvenile *Macrocystis pyrifera* were abundant along the entire transect and included plants that looked tattered with a moderate amount of epiphytic bryozoans growing on the blades. Adult density was 0.23/m², subadult density decreased to 0.39/m², and juvenile density increased from last year to 19/m². Cover of *M. pyrifera* increased to 39%. Adult *Eisenia arborea* density increased from last year to 0.21/m², while juvenile density remained the same at 0.21/m². Cover of *E. arborea* was 3.5%. Adult *Laminaria farlowii* density increased from last year's record high to 8.9/m². Juvenile *L. farlowii* density remained similar to last year at 23/m² and cover of *L. farlowii* increased from last to 42%. *Cystoseira* spp. remained moderately abundant with a cover of 14%, a decrease from last year. No *Desmarestia* spp. were observed at the site. No adult *Pterygophora californica* were observed, but several adults and juveniles were present in the deeper parts of the transect. Juvenile *P. californica* density was 0.13/m². One small *Sargassum horneri* was observed just inshore of the transect area. This is one of two sites where we have observed this newly invasive alga this year. Miscellaneous brown algae cover was similar to last year at 1.2%. Miscellaneous red algae cover increased from last year to 16%. No *Gelidium* spp. or *Gigartina* spp. were observed. Green algae cover was 0.5%. Miscellaneous plants cover was 0.0%. Articulated coralline algae cover decreased to 15%. Encrusting coralline algae cover remained similar to last year at 15%. Bare substrate cover also remained similar to last year at 27%.

Miscellaneous invertebrates cover excluding *Ophiothrix spiculata* was 8.0%, similar to recent years. The most abundant invertebrates in this category were *Clavularia* sp. and hydroids. *Clavularia* sp. is common to this site, however, it was observed to be less common this year. Tunicates were abundant and moderately diverse this year with a 12% cover, the highest cover recorded at the site since

monitoring began in 1982. The most abundant tunicates were *Metandrocarpa* sp., *Pycnoclavella* sp., and *Aplidium* sp. Sponges were moderately abundant with a cover of 1.7%. *Tethya aurantia* were rare at a density of 0.0042/m². *Diopatra ornata* were relatively common for this site at 2.5% cover. *Phragmatopoma californica* were not observed during sampling. Miscellaneous bryozoans remained abundant with a cover of 15% and included *Bugula* spp. and *Thalamoporella* spp. *Diaperoecia californica* cover was 0.33%, similar to past years. *Astrangia lajollaensis* was present this year at 0.17%. *Corynactis californica* and *Balanophyllia elegans* were not observed during sampling. No gorgonians were observed during sampling, similar to past years.

Strongylocentrotus franciscanus and *Strongylocentrotus purpuratus* were moderately abundant and distributed evenly over the transect. *Strongylocentrotus franciscanus* and *S. purpuratus* densities were similar to the last several years at 2.8/m² and 1.2/m², respectively. A wide range of sizes were present for *Strongylocentrotus* spp. and juveniles were common. The mean size of *S. franciscanus* was 71 mm and mean size of *S. purpuratus* was 30 mm, similar to past years. No *Centrostephanus coronatus* were observed during sampling, but were common at the site. No *Lytechinus anamesus* were observed. No sea urchin wasting disease was observed.

Patiria miniata and *Pisaster giganteus* were not observed during sampling and were rare at the site overall, similar to previous years. Only three *A. miniata* were located for size frequencies for a mean size of 24 mm. Small *P. giganteus* recruits were moderately abundant on the kelp blades. Five *P. giganteus* were measured for a mean size of 137 mm. *Pycnopodia helianthoides* were observed on band transects for the first time at this site with a density of 0.0014/m². No *Ophiothrix spiculata* were observed during sampling. *Parastichopus parvimensis* were common with a density of 1.3/m², similar to past years. No sea star wasting disease was observed.

One small live *Haliotis corrugata* was observed at the site this year. *Cypraea spadicea* were moderately abundant at 0.042/m². *Megastraea undosa* were common, at 0.67/m², but not as abundant as past years. The *L. undosum* density is the lowest recorded since 1984. No *Tegula regina* were observed at the site. No *Kelletia kelletii* were recorded during sampling however, several juveniles were observed at the site. *Megathura crenulata* were rare at 0.0028/m². *Crassidoma giganteum* were rare at 0.031/m², similar to recent years. No *Aplysia californica* were observed. *Panulirus interruptus* density remained similar to recent years at 0.015/m².

Similar to past years, fish were abundant and diverse. *Coryphopterus nicholsii* were present at a density of 1.1/m² with up to 51 observed during the roving diver fish count. *Alloclinus holderi* were present at a density of 0.46/m² with up to 15 observed. Two *Lythrypnus dalli* were observed during the fish count, but none were observed on 1 m quadrats. *Oxylebius pictus* were present with up to seven observed. *Chromis punctipinnis* were the most abundant fish at the site with up to 323 adults and three juveniles observed. This was the first observation made of juvenile *C. punctipinnis* all year. *Oxyjulis californica* were abundant with up to 170 adults and four juveniles observed. This site, as in many other sites this year, had an abundance of juvenile *Semicossyphus pulcher* present and there were several more observed than were counted during the fish count. Up to ten female, six juvenile and two male *S. pulcher* were observed. Up to four female, five juvenile and two male *Halichoeres semicinctus* were observed. Up to seven adult and one juvenile *Hypsypops rubicundus* were

observed. The juvenile *H. rubicundus* was nearing adult size, but still had the prominent blue markings on it. *Paralabrax clathratus* were common with up to 11 adults and five juveniles observed. *Embiotoca jacksoni* were common with up to 20 adults and 15 juveniles observed. No adults and seven juvenile *Rhacochilus vacca* were observed. Up to two *Girella nigricans* were observed. Up to 26 adult and eight juvenile *Sebastes atrovirens* were observed. No adults and up to seven juvenile *Sebastes serranoides* were observed. Five adult and four juvenile *Sebastes serriceps* were observed. One of the most notable observations was a small school of up to 24 juvenile *Sebastes paucispinis*, bocaccio, in the kelp canopy. Up to 75 kelp/gopher/black and yellow/copper rockfish young of the year complex (KGB) were counted. One adult *Medialuna californiensis*, halfmoon, was observed. *Brachyistius frenatus*, kelp surfperch, were more present with up to 17 observed and although this number is not very big, we observed the most *B. frenatus* at this site than we have observed all year. Up to 12 juvenile *Heterostichus rostratus*, giant kelpfish, were observed. One *Scorpaena guttata*, California scorpionfish, was present. One *Lythrypnus zebra*, zebra goby, one *Gymnothorax mordax*, California moray eel, and up to 58 *Atherinops affinis*, top smelt were observed. The roving diver fish counts were conducted on July 29th by five divers counting 25 species.

Five of the seven ARMs were sampled for all indicator species and two of the ARMs were not sampled and had to be completely reconstructed. The five ARMs that were best intact were sampled then moved back to their original location, about ten meters northwest of the transect. ARMs #2476 and #2346 were destroyed and several bricks were buried in the sand, so they were not sampled and those two ARMs were reconstructed. ARMs #2348, #2349, #2350 and #2429 were all found upside down with at least one layer of bricks buried in sand. Eleven *Cypraea spadicea* egg masses and three *Octopus* spp. were found in the ARMs this year. One *Haliotis corrugata* was observed for a density of 0.14/ARM. *Cypraea spadicea* were recorded at a density of 7.9/ARM. *Megastrea undosa* density was 0.29/ARM. *Kelletia kelletii* were rare with a density of 0.29/ARM, similar to past years. *Megathura crenulata* were absent from all ARMs. *Crassidoma giganteum* density was 0.57/ARM, the lowest since ARMs monitoring began here in 1992. *Patiria miniata* density was the lowest since 1998, at 5.9/ARM. *Pisaster giganteus* density was also the lowest since 1998 at 0.71/ARM. *Strongylocentrotus franciscanus* density was the lowest since 1998 at 24/ARM. *Strongylocentrotus purpuratus* density was also the lowest since 1998 at 59/ARM. *Centrostephanus coronatus* were absent from all ARMs. *Parastichopus parvimensis* densities decreased from last year with individuals <10 cm and >10 cm observed at 0.2/ARM and 0.63/ARM, respectively.

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

Location: Landing Cove, Anacapa Island

Site #13 ANLC

Year sampling began: 1982

2009 sampling dates: 6/1, 6/5

2009 status: Mature kelp forest

Overall, the site was similar to recent years with all indicator algae present in similar abundances to last year. The site remains a mature kelp forest with canopy cover approximately 30%, and a thick

understory of brown and red algae. *Macrocystis pyrifera* adult density was high similar to last year at 0.15/m². Subadult density was notably lower than the past several years at 0.075/m² and may have been in part due to a relatively early sampling date for this site. Juveniles were abundant with a density of 17.0/m², the highest density recorded at the site, and cover was 9.0%, less than past years. *Macrocystis pyrifera* stipe counts decreased to 1.5/m². Adult *Eisenia arborea* were abundant on top of the reef and juveniles were common with densities of 1.7/m² and 0.38/m², respectively, and cover was 28%, all similar to last year. Adult and juvenile *Pterygophora californica* remained moderately abundant in the low-lying areas consisting of cobble, near the middle of the transect with densities of 1.2/m² and 5.3/m², respectively, and a cover of 7.5%. *Laminaria farlowii* remained very abundant at this site. Adult *L. farlowii* density remained similar to last year at 8.0/m² and juvenile density continued to follow an increasing trend since 2004 with the highest recorded density this year of 65/m². Cover of *L. farlowii* was 33%. *Cystoseira* spp. were common with a cover of 1.7%. *Desmarestia* spp. were common in the low-lying areas with a cover of 3.2%, the highest recorded cover for this species. Miscellaneous brown algae cover was low for this site at 0.83%. Miscellaneous red algae cover increased to 37%, but was similar to recent years. *Gelidium* spp. were observed on top of the reef at the eastern end of the transect, similar to past years, with a cover of 16%. No *Gigartina* spp. were observed on RPCs. Green algae cover was 0.17%, similar to last year. Miscellaneous plants cover was 1.2%. Articulated coralline algae cover was 12%, similar to previous years. Encrusting coralline algae cover was similar to last year and the lowest on record for this site at 17%. Bare substrate cover decreased from last year to 11%, but remains similar to years past.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover increased to 20%, the highest on record since monitoring began. The most common invertebrate were hydroids. Tunicates were relatively abundant and diverse on the top of the reef with a cover of 12%, higher than the past several years. Sponges were moderately abundant and diverse in high relief areas at 4.3% cover, similar to past years. *Tethya aurantia* increased to a density of 0.014/m². *Diopatra ornata* cover was 0.50%, same as last year. *Phragmatopoma californica* cover was 0.17%. *Serpulorbis squamigerus* were present at 0.50% cover, similar to recent years. Miscellaneous bryozoans were moderately abundant with a cover of 21%, similar to recent years. *Diaperoecia californica* appeared more abundant this year on top of the reef with a cover of 3.5%, similar to last year. *Corynactis californica* cover was similar to last year at 0.83%. Cup corals were uncommon and only a few *Astrangia lajollaensis* were observed on RPCs with an observed cover of 0.33%. *Balanophyllia elegans* were not observed, similar to past years. *Lophogorgia chilensis* and *Muricea fruticosa* were rare with densities of 0.0028/m² and 0.0014/m², respectively. No *Muricea californica* were observed on band transects.

Strongylocentrotus franciscanus density was the same as last year at 1.9/m², the lowest recorded since 1992. Mean size of *S. franciscanus* increased from last year to 81 mm and there was relatively low recruitment under the spine canopy. *Strongylocentrotus purpuratus* density was similar to recent years at 2.6/m² and recruitment also appeared low. Mean sizes of *S. purpuratus* increased from last year to 39 mm. *Centrostephanus coronatus* were present but not observed on 1 m quadrats. No *Lytechinus anamesus* were observed at the site, similar to past years. No sea urchin wasting disease was observed.

Pisaster giganteus remained common and large but mostly only in high relief areas. *Pisaster giganteus* were recorded on 5 m quadrats with densities of 0.020/m², similar to last year, and were absent from 1 m quadrats. Average size of *P. giganteus* decreased this year to 155 mm, the lowest since 2003, but still notably large. *Patiria miniata* were rare as usual for this site and none were observed on 1 m quadrats. However, many were present in the ARMs, see below. No *Pycnopodia helianthoides* were observed at the site. *Ophiothrix spiculata* were rare, and none were observed on RPCs. *Parastichopus parvimensis* were abundant in the low lying areas with a density of 0.88/m², similar to past years. No sea star wasting disease was observed.

Though densities remain low at 0.0028/m², there were notably more *Haliotis corrugata* present at the site this year than in recent years. The seven adult *H. corrugata* observed at the site this year measured 35 mm, 98 mm, 138 mm, 143 mm, 153 mm, 157 mm and 172 mm. The last time we observed more than this number of abalone at this site for size frequencies was in 1999. Two fresh *H. corrugata* shells measuring 68 mm and 213 mm were found.

Cypraea spadicea density was 0.017/m², similar to past years. *Megastrea undosa* were common but density remained relatively low for this site at 0.21/m². *Kelletia kelletii* remained rare at 0.0056/m². *Megathura crenulata* were rare at 0.013/m², similar to past years. *Crassidoma giganteus* were common on the steep walls of the cove, though their density notably declined to 0.086/m²; the lowest density on record since monitoring began in 1983. Average size for *C. giganteus* increased to 87 mm, the highest recorded since 1987. *Aplysia californica* remained rare at a density of 0.0014/m². *Panulirus interruptus* density decreased from last year to 0.0083/m², the lowest recorded at this since 1998.

Similar to past years, fish were abundant and diverse. *Coryphopterus nicholsii* density remained low at 0.042/m², and up to eight were observed. *Alloclinus holderi* density was 0.083/m², a decrease from last year. Up to four *A. holderi* were observed during the fish count, a decrease from last year, but more were observed after the fish counts. *Lythrypnus dalli* were not observed on 1 m quadrats but up to 19 were observed during the roving diver fish count, a decrease from last year. Up to four *Oxylebius pictus* were observed. *Chromis punctipinnis* were the most abundant fish at the site with up to 700 adults and no juveniles observed. Up to 87 adult and no juvenile *Oxyjulis californica* were observed. Up to six female, ten juvenile and one male *Semicossyphus pulcher* were observed. *Halichoeres semicinctus* were present with five females, no juvenile and one male observed. *Paralabrax clathratus* were common with up to ten adults observed. *Hypsypops rubicundus* were moderately abundant with up to 12 adults observed. *Girella nigricans* were present with a total of 26 counted. Up to 13 adult and one juvenile *Embiotoca jacksoni* were observed. Three adult *Embiotoca lateralis* were observed. This is one of the more common places to observe this species at the eastern islands where these are typically rare. No adult or juvenile *Rhacochilus vacca* were observed. Up to seven adult *Sebastes atrovirens* were observed. Up to three adult *Sebastes serriceps* were observed. One *Sebastes chrysomelas*, black and yellow rockfish, were observed. One *Lythrypnus zebra*, zebra goby, was observed. One *Cephaloscyllium ventriosum*, swell shark, was observed. Up to seven *Brachyistius frenatus*, kelp surfperch, were observed. Up to four kelp/gopher/black and yellow/copper rockfish young of the year complex (KGB) were observed along with one juvenile

Sebastes paucispinis, bocaccio rockfish. Up to four *Medialuna californiensis*, halfmoon, were observed. Roving diver fish counts were conducted on June 1st by four divers observing 23 species.

All six ARMs were sampled for all indicator species. Two *Haliotis corrugata* were observed in the ARMs for a density of 0.33/ARM and were measured at 32 mm and 52 mm. It is unlikely that these were the same abalone found in the ARMs last year since one is smaller in size and there is only a small size difference in the other. *Cypraea spadicea* were more abundant this year. The density of *C. spadicea* in the ARMs was 11/ARM. Small *Kelletia kelletii* were relatively common in the ARMs with a density of 1.8/ARM, higher than the past several years. *Megastrea undosa* density was 0.17/ARM, low for this site. *Megathura crenulata* density remained low at 0.17/ARM similar to past years. *Crassidoma giganteum* density was 4.7/ARM, similar to last year. *Tegula regina* density was 0.33/ARM. *Patiria miniata* density was similar to last year at 7.3/ARM. *Pisaster giganteus* density was 0.83/ARM, a decrease from year. *Strongylocentrotus franciscanus* density was similar to last year at 60/ARM. *Strongylocentrotus purpuratus* density was 149/ARM similar to recent years. Two sick *S. purpuratus* were found in the ARMs although it was not confirmed as wasting disease. *Parastichopus parvimensis* density was similar to recent years with 3.0/ARM <10 cm and 1.83/ARM >10 cm. Two small *Octopus* spp. were observed in the ARMs while a total of 22 *Cypraea spadicea* egg masses were observed.

The temperature loggers were retrieved and deployed and all temperature data were downloaded successfully. One new eyebolt was installed at the zero end to replace an aging one, so there are now two there about 50 cm apart.

Location: Southeast Sea Lion Rookery, Santa Barbara Island

Site #14 SBSESL

Year sampling began: 1982

2009 sampling dates: 6/16

2009 status: Dominated by *Ophiothrix spiculata*, *Strongylocentrotus purpuratus* and *S. franciscanus*

Overall, this site was nearly devoid of macroalgae and dominated by *Ophiothrix spiculata* with moderately high abundances of *Strongylocentrotus* spp., similar to last year. There were no *Macrocystis pyrifera*, *Laminaria farlowii*, *Pterygophora californica*, *Eisenia arborea*, *Desmarestia* spp. or *Cystoseira* spp. observed during sampling, similar to recent years. However, one subadult *Macrocystis pyrifera* individual and several *Desmarestia* spp. were observed growing epiphytically on *Muricea californica*. Miscellaneous brown algae were not observed on RPCs, same as last year. Miscellaneous red algae cover was 5.7% and this category consisted mostly of *Laurencia pacifica* and filamentous red algae. Green algae were observed with a cover of 0.67%, similar to recent years. Miscellaneous plant cover, consisting of filamentous diatoms, was recorded at 13%. Encrusting coralline algae were abundant with a cover of 70%, similar to last year. Articulated coralline cover was 0.50%. Bare substrate cover was 15%.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover was 5.7%, similar to recent years. Tunicate cover increased to 3.7%. Sponge cover was 0.67%, similar to recent years. *Tethya aurantia* density remained low at 0.14/m². Miscellaneous bryozoan cover was 3.7%. *Diaperoecia californica*

were not observed on RPCs. *Corynactis californica* cover was 3.2%, similar to recent years, but continues to gradually increase. *Astrangia lajollaensis* and *Balanophyllia elegans* both had covers of 0.0% on RPCs, but were observed at the site. *Lophogorgia chilensis* were common with a density of 0.17/m², similar to recent years. *Muricea fruticosa* and *M. californica* had densities of 0.0069/m² and 0.033/m², respectively.

Strongylocentrotus purpuratus density was 20/m² with a mean size of 17 mm, both similar to last year. *Strongylocentrotus franciscanus* density decreased to 7.1/m². The mean size of *S. franciscanus* was 27 mm, similar to last year. *Lytechinus anamesus* density remained low at 0.015/m². Adult *Centrostephanus coronatus* were common with a density of 0.33/m². Less than 1% of *S. franciscanus* individuals were observed with sea urchin wasting disease.

Pisaster giganteus densities on 1 m quadrats and 5 m quadrats were 0.0/m² and 0.025/m², respectively, similar to last year. *Patiria miniata* were common with a density of 0.33/m². Most *P. miniata* individuals were notably large and their mean size was 75 mm. No *Pycnopodia helianthoides* were observed at the site. Cover of *Ophiothrix spiculata* remained very high at 59%, similar to recent years. *Parastichopus parvimensis* density was 0.13/m², the same as last year. No sea star wasting disease was observed.

No *Haliotis* spp. or fresh shells were observed. *Cypraea spadicea* were rare with a density of 0.042/m². *Megastraea undosa* density remained low at 0.17/m². *Tegula regina* had a density of 0.25/m², similar to recent years. *Kelletia kelletii* were rare at 0.0014/m². *Megathura crenulata* density was low relative to recent years at 0.0069/m². *Crassedoma giganteum* were rare at a density of 0.011/m² but were notably large with eight found for size frequencies having a mean of 109 mm. *Aplysia californica* density was 0.0097/m². Four *Panulirus interruptus* were observed along the transect for a density of 0.0028/m²; the highest recorded since we began monitoring in 1983. This site is inside the new marine reserve at Santa Barbara Island.

Overall, fish diversity and abundance were low at this site, similar to most other sites at this island. *Coryphopterus nicholsii* were common with up to 43 individuals and a density of 0.75/m² observed. *Alloclinus holderi* had a density of 0.29/m² and up to three were observed during roving diver fish count. However, later in the day *A. holderi* were notably more abundant and up to ~15 were noted. No *Lythrypnus dalli* were observed during the fish count, but two were observed later on at the site. *Oxylebius pictus* were present with up to 14 observed. *Chromis punctipinnis* were abundant with up to 132 adults and no juveniles observed. No *Oxyjulis californicus* were observed. One female, five juvenile and no male *Semicossyphus pulcher* were observed. One juvenile *Halichoeres semicinctus* was observed. Up to five adult *Hypsypops rubicundus* were observed, similar to last year. No *Embiotoca jacksoni* or *E. lateralis* were observed. One *Sebastes mystinus* juvenile was observed. No *Sebastes atrovirens* were recorded, but one was observed after the roving diver fish count. One juvenile *Sebastes miniatus*, vermillion rockfish, was observed during the fish count and an additional one was observed afterwards. One *Sebastes chrysomelas*, black and yellow rockfish, was observed. One *Scorpaena guttata*, California scorpionfish, was observed. One *Squatina californica*, Pacific angel shark, was observed. Roving diver fish counts were performed on June 16th by five divers observing 13 species.

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

Location: Arch Point, Santa Barbara Island

Site #15 SBAP

Year sampling began: 1982

2009 sampling dates: 5/18, 5/19

2009 status: Dominated by *Strongylocentrotus purpuratus* and *S. franciscanus*

Similar to last year, this site was mostly devoid of macroalgae and what little algae that was present was located primarily on the tops of rocks. No *Macrocystis pyrifera*, *Laminaria farlowii*, *Pterygophora californica*, *Cystoseira* spp. or *Desmarestia* spp. were observed at this site except for one small, unhealthy *Eisenia arborea* that was observed along the transect. Miscellaneous brown algae cover was 0.17% and at the onshore side of the 100 meter end there was a patch of *Dictyota* sp./*Pachydictyon* sp. similar to what we have observed in past years. Miscellaneous red algae cover, was similar to last year with the highest cover recorded for this site at 29%. Green algae remains rare with 1.2% cover and consisted mostly of *Codium setchellii/hubbsii*. Miscellaneous plant cover, consisting mostly of filamentous diatoms, decreased to 0.0% cover. Articulated coralline algae were rare with a cover at 0.67%. Encrusting coralline algae cover was recorded at 50%. Bare substrate cover was 26%, similar to last year.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover was 7.3%, similar to last year. The most common invertebrates in this category were *Spirobranchus spinosus* followed by hydroids. Tunicate cover was higher than recent years at 2.7% and there was an abundance of *Pycnoclavella stanleyi*. *Serpulorbis squamigerus* remained rare with a cover of 0.0%. Sponge cover remained low at 0.17% and *Tethya aurantia* were not observed. Miscellaneous bryozoans had a higher cover than in recent years at 2.2%. *Diaperoecia californica* was not observed on RPCs, but it was present on the steep sides of rocky reef. *Corynactis californica* continues to be relatively abundant at 7.8% cover, similar to last year. In the past 28 years, *C. californica* has gone through three distinct cycles of high and low percent cover. *Astrangia lajollaensis* cover was 0.67%, similar to recent years. No *Balanophyllia elegans* were observed on RPCs. *Lophogorgia chilensis* and *Muricea californica* density were 0.0056/m² and 0.0028/m², respectively.

Strongylocentrotus purpuratus density was 140/m², similar to last year and one of the highest densities recorded for this site. *Strongylocentrotus franciscanus* density was 6.5/m², a notable decrease from last year and the lowest density recorded since 2002. *Strongylocentrotus purpuratus* recruits were very abundant while *S. franciscanus* recruits were uncommon, similar to our observations elsewhere at this Island. The mean size of *S. purpuratus* remained low at 13 mm. *Lytechinus anamesus* density was 0.14/m², a slight increase from recent years. *Centrostephanus coronatus* density was 0.0/m², but they were commonly observed in their appropriate habitat. Sea urchin wasting disease was observed and prevalence was estimated at 1% of both *S. franciscanus* and *S. purpuratus*.

Pisaster giganteus were common with 69 found at the site for size frequencies, but low densities were observed directly along the line. Their densities on 1 m quadrats and 5 m quadrats were 0.0/m²

and 0.09/m², respectively, similar to past years. *Patiria miniata* density was 1.0/m², similar to recent years. No *Pycnopodia helianthoides* were observed. No *Ophiothrix spiculata* were observed on RPCs, similar to past years, though they were present in low numbers around the site. *Parastichopus parvimensis* density was 0.29/m² and many small individuals were observed. No sea star wasting disease was observed.

One very fresh 22 mm *Haliotis fulgens* shell was observed indicating recent recruitment. This shell was similar in size as one found at Cat Canyon this year. *Cypraea spadicea* were present at a density of 0.042/m² and were relatively uncommon. *Megastrea undosa* density was 0.042/m², the lowest recorded at this site since monitoring began in 1982. Only 26 *L. undosum* were found for size frequencies, a relatively low number for this site. *Tegula regina* were abundant but patchy with a density of 0.50/m². *Kelletia kelletii* were not observed. *Megathura crenulata* density was 0.0/m² and only one was found at the site for size frequencies. *Crassidoma giganteum* density remained low at 0.0042/m², the lowest density since 1990. *Aplysia californica* were relatively abundant with a density of 0.22/m² and small sizes were common. *Panulirus interruptus* were recorded at a density of 0.0042/m², similar to last year.

Fish abundance and diversity at this site remained low. The most abundant fish were *Chromis punctipinnis* and *Oxyjulis californica*. We have seen both these species recruit in high numbers during our late summer visits in past years. *Coryphopterus nicholsii* were recorded with a density 0.42/m² and up to 41 individuals were observed during the roving diver fish count. *Alloclinus holderi* density was 0.13/m². Only one individual was recorded during the roving diver fish count, but later on in the day we observed several more and they were notably large. *Oxylebius pictus* were present with up to 22 observed. The most abundant fish was *Oxyjulis californica* with up to 700 adults mostly in one large school and no juveniles observed. *Chromis punctipinnis* were abundant with up to 675 adults, and no juveniles were observed. Up to nine female, one male, and 13 juvenile *Semicossyphus pulcher* were recorded. Juvenile *S. pulcher* were notably abundant as we have observed at many other sites this year. *Hypsypops rubicundus* were common with up to 30 adults and no juveniles observed. Many of them were near nests. We did not observe the tagged *Hypsypops rubicundus* that we typically see at this site and think that this fish may have died in the past few years. *Paralabrax clathratus* were rare with only one adult observed. *Girella nigricans* were present with up to five recorded. One *Sebastes serriceps* was observed this year. Two *Sebastes rastrelliger*, grass rockfish, were observed during sampling. Six *Medialuna californiensis*, halfmoon, were observed. One *Myliobatis californica*, bat ray, was observed. Thirty *Caulolatilus princeps*, ocean whitefish, of all sizes were observed. One angel shark, *Squatina californica*, was observed. Roving diver fish counts were conducted on May 18, by three divers observing a total of 22 species.

The two temperature loggers (one at the old temperature logger thread rod and one at a new thread rod several meters away) were retrieved, but only one temperature logger at the new thread rod was deployed and all temperature data were downloaded successfully. We compared the data from the two locations collected over the past year and there was no difference in temperature, so the temperature logger location will be moved permanently this year.

Location: Cat Canyon, Santa Barbara Island

Site #16 SBCAT

Year sampling began: 1986

2009 sampling dates: 5/19, 5/21

2009 status: Dominated by *Strongylocentrotus purpuratus* and *S. franciscanus*

This site is similar to other sites on Santa Barbara Island and has changed little over recent years. It continues to have low diversity with very little macroalgae and is dominated by sea urchins. The only indicator brown algae that was present was several small clumps of *Desmarestia* sp. on rocks in a sand channel, but none were observed on RPCs. Miscellaneous red algae cover was 3.0% and consisted mostly of *Laurencia pacifica*, which were notably small as if they had been heavily grazed. Neither miscellaneous brown algae nor green algae were observed during sampling. Miscellaneous plants, consisting mainly of filamentous diatoms, were present at 0.50% cover. Encrusting coralline algae remained abundant with a cover of 52%. Articulated coralline algae were recorded with a cover of 0.83%. Bare substrate cover was 33%, an increase over last year and the highest recorded since 2001.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover increased to 9.3%. This category consisted mostly of *Spirobranchus spinosus*, Christmas tree worm, and hydroids. *Serpulorbis squamigerus* were common and recorded at 0.50%. *Diopatra ornata* were rare and notably large with a cover of 0.17%. Tunicate cover increased to 1.5%, and the most common species were *Pyncoclavella stanleyi* and *Aplidium* spp. *Tethya aurantia* were absent on band transects and none were observed at the site. Sponge cover remained similar at 0.17%. Similar to past years, miscellaneous bryozoan cover was 2.0% and *Diaperoecia californica* were uncommon with none observed during RPCs. *Astrangia lajollaensis* were common with a cover of 1.2%. *Balanophyllia elegans* cover was 0.17% and individuals were notably large. *Corynactis californica* were relatively uncommon with a cover of 1.2%. No *Lophogorgia chilensis* or *Muricea fruticosa* were observed at the site and only one *Muricea californica* was observed.

Strongylocentrotus spp. continued to dominate this site. *Strongylocentrotus purpuratus* density increased for the third consecutive year to 135/m², the highest density since monitoring began in 1986. *Strongylocentrotus purpuratus* were small with a mean size of 13 mm, similar to last year. *Strongylocentrotus franciscanus*, density was 7.9/m², less than last year, and this species has been gradually declining in density since 2004. *Strongylocentrotus franciscanus* were also small with a mean size of 31 mm for the site, the same as last year. *Lytechinus anamesus* were rare with a density of 0.0014/m². *Centrostephanus coronatus* were not observed during sampling, but several were observed at the site. Sea urchin wasting disease was observed in *S. purpuratus* and *S. franciscanus* and we estimated that prevalence was about 1% in both species.

Pisaster giganteus densities on 1 m quadrats and 5 m quadrats were 0.13/m² and 0.070/m² respectively, similar to recent years. *Patiria miniata* density was 0.25/m², similar to recent years. No *Pycnopodia helianthoides* were observed at the site. No *Ophiothrix spiculata* were observed on RPCs. *Parastichopus parvimensis* density decreased to 0.083/m², the lowest recorded since monitoring began at this site in 1986. No sea star wasting disease was observed. It is worth noting that we observed a commercial fishing vessel conducting sea cucumber fishing at the Island and we

have heard that others park personnel have observed this type of fishing around Santa Barbara Island lately.

No live *Haliotis* spp. were observed at the site, however one fresh 22 mm *H. fulgens* shell was found, similar to the one found at Arch Point. This was similar in size to one found at Arch Point, indicating some recent recruitment of this species. *Cypraea spadicea* were rare at this site and none were observed on 1 m quadrats. *Megastrea undosa* density increased to 1.8/m², the highest recorded since 2000. All sizes were present with a mean of 53 mm, similar to last year. *Tegula regina* density was 0.17/m². No *Kelletia kelletii* were observed during band transects although one individual was found at the site. *Megathura crenulata* were rare with a density of 0.0042/m². *Crassidoma giganteum* remained uncommon although density increased from last year to 0.015/m², the highest recorded since we began monitoring this site in 1986. *Aplysia californica* were abundant, similar to last year, with a density of 0.15/m². No *Panulirus interruptus* were observed during band transects.

Overall, fish diversity and abundance remained low. The most abundant fish were *Chromis punctipinnis* and *Oxyjulis californica* juveniles. *Coryphopterus nicholsii* density was 0.25/m², similar to last year but the highest recorded since 1990, and up to 89 were recorded during the roving diver fish count. *Alloclinus holderi* density increased to 0.21/m² and up to four were observed; however more were observed after the fish count and most were notably large. No *Lythrypnus dalli* were observed. *Oxylebius pictus* were common with up to 12 observed. *Chromis punctipinnis* were the most abundant fish with up to 230 adults observed. No juvenile *Chromis punctipinnis* were observed. Up to 92 adult and four juvenile *Oxyjulis californica* were observed. Up to eight female, two male and six juvenile *Semicossyphus pulcher* were observed. No *Sebastes mystinus* were observed. No *Halichoeres semicinctus* were observed. Up to 11 adult and no juvenile *Hypsypops rubicundus* were observed. No *Embiotoca* spp. were observed. Up to two adult and no juvenile *Paralabrax clathratus* were observed. Up to eight adult *Girella nigricans* were observed. Two adult *Sebastes atrovirens* were observed. No *Sebastes serriceps* were observed. Three adult *Sebastes rastrelliger*, grass rockfish, were observed. Seven juvenile *Sebastes miniatus*, vermillion rockfish, were observed, a notable increase from last year. Roving diver fish counts were conducted on May 19th by four divers observing 17 species.

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

Location: Miracle Mile, San Miguel Island

Site #21 SRMM

Year sampling began: 2001

2009 sampling dates: 7/15

2009 status: Mature kelp forest

Miracle Mile is neither one of the original or additional kelp forest monitoring sites to monitor the kelp forest ecosystem and/or marine reserves. This site was established in 2001 by Jim Marshall, a commercial abalone and sea urchin fisherman, in conjunction with the County of Santa Barbara, and with the assistance of the Channel Islands National Park. Originally three sites were proposed to better monitor the abalone population at San Miguel Island, but only one site (Miracle Mile) was

funded. Jim Marshall selected this site based on it exceptionally high density of *H. rufescens*. Unfortunately, when a site is selected for high density of a target species, it is often more likely to experience a decrease in density of the target species rather than an increase. At this site, we observed a decrease in abundance of *H. rufescens* initially, but the site has now stabilized with still a relatively high density. The KFM program has continued to monitor this site at San Miguel Island if time allows as we think more than the two sites on San Miguel are needed to adequately monitor the kelp forests at this Island.

Similar to last year, this site continued to be a healthy and mature kelp forest with a dense and diverse understory of algae. *Macrocystis pyrifera* formed a thick canopy covering 100% of the transect. Adult *M. pyrifera* were moderately abundant with density similar to last year at 0.17/m². Subadult and juvenile *M. pyrifera* densities were 0.015/m² and 0.38/m², respectively. Percent cover of *M. pyrifera* was 18% and stipe density was 1.3/m². *Eisenia arborea* adults were abundant and notably large at 0.13/m², a decrease from last year. No juvenile *E. arborea* were observed on quadrats and were rare at the site. *Eisenia arborea* cover was 16%. Adult *Pterygophora californica* were common at 0.25/m² and juveniles were rare with a density of 0.17/m², both of these densities are relatively low for this site. Cover of *P. californica* decreased to 1.5%, the lowest on record for this site. No *Laminaria farlowii* were observed during sampling or at the site. *Cystoseira* spp. were common with a cover of 1.8%. *Desmarestia* spp. were abundant at 17% cover, an increase from last year. Miscellaneous green and brown algae covers remained similar to last year at 0.17% and 0.0%, respectively. Miscellaneous red algae was abundant with a increase in cover from last year to 75%. *Gigartina* spp. were moderately abundant at 3.5% cover and *Gelidium* spp. were not observed. Miscellaneous plants, consisting of filamentous diatoms, had a cover of 1.7%. Articulated coralline cover was 27%, similar to recent years, and encrusting coralline cover was 47%, an increase from last year. Bare substrate was 9.7%, similar to past years.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover decreased from last year to 5.8% and consisted mostly of hydroids. Tunicates were abundant and diverse with a 12% cover, similar to past years. *Styela montereyensis* density was 0.042/m². Sponges were also abundant and diverse at a cover of 10%, similar to recent years. *Tethya aurantia* had a density of 0.18/m², similar to recent years. Neither *Phragmatopoma californica* nor *Serpulorbis squamigerus* were observed on RPCs, a notable decrease in cover of *P. californica* from last year. Distribution of *Diopatra ornata* was patchy in the sandy areas and individuals were notably large with a cover of 0.50%. Miscellaneous bryozoans cover decreased for the second consecutive year to 6.3%. *Urticina lofotensis* had a density of 0.24/m² and *Corynactis californica* cover was 1.0%. *Balanophyllia elegans* were common with a cover of 0.83%. No *Astrangia lajollaensis* were observed on RPCs, similar to past years. No gorgonians were observed at the site.

Strongylocentrotus spp. abundance remained relatively low for this site, similar to recent years. *Strongylocentrotus franciscanus* density was 3.7/m², similar to the past three years and had a mean size of 88 mm, similar to past years. Many were notably large and found evenly distributed in cracks and crevices and in fewer high density patches than we have observed at similar sites. *Strongylocentrotus purpuratus* were rare with a density of 0.13/m² and a mean of 40 mm. No

Centrostephanus coronatus or *Lytechinus anamesus* were observed. No sea urchin wasting disease was observed.

Pycnopodia helianthoides were common with a density of 0.036/m², similar to recent years. Most were small with a mean size of 103 mm. *Patiria miniata* were abundant at 2.9/m². *Pisaster giganteus* were common and observed on 1 m quadrats and 5 m quadrats with densities of 0.29/m² and 0.25/m², respectively. *Parastichopus parvimensis* were common at 0.083/m². *Ophiothrix spiculata* were not observed during sampling although they were observed in *Macrocystis pyrifera* holdfasts. No sea star wasting disease was observed.

Haliotis rufescens were abundant at this site with a density of 0.76/m², similar to recent years. A total of 165 *H. rufescens* were measured for size frequencies with a mean of 190 mm, the highest mean size recorded for this site. No *H. rufescens* less than 115 mm were observed during the size frequency measurements, but several small abalone were found in the ARMs. *Lithopoma gibberosa* were moderately abundant and variable in size with a density of 0.13/m². No *Megastrea undosa*, *Tegula regina* or *Cypraea spadicea* were observed on 1 m quadrats, similar to past years. *Cypraea spadicea* were observed at this site but were rare. *Kelletia kelletii* were common with a density of 0.026/m², similar to recent years. *Megathura crenulata* density was 0.032/m². *Crassedoma giganteum* were common and most were small with a density of 0.018/m², similar to past years. No *Aplysia californica* were observed.

Fish were moderately abundant and diverse at this site, similar to past years. *Coryphopterus nicholsii* were rare with none were observed on 1 m quadrats and up to seven were observed during the fish count. *Oxylebius pictus* were rare with up to seven observed. *Oxyjulis californica* were relatively abundant with up to 124 adults and 16 juveniles observed. One female, no male and one juvenile *Semicossyphus pulcher* were observed. Up to nine adult and one juvenile *Embiotoca jacksoni* were observed. *Embiotoca lateralis* were present with up to 16 adults and three juveniles observed. Up to six adult *Rhacochilus vacca* were observed. Up to 15 adult and two juvenile *Sebastes mystinus* were observed. *Sebastes atrovirens* were common with up to 24 adults and 56 juveniles observed. Two adult and one juvenile *Sebastes serranoides* was observed. No adult and five juvenile *Sebastes serripes* were observed. Five *Sebastes chrysomelas*, black and yellow rockfish, were observed. *Sebastes melanops*, black rockfish, were present with up to three adults observed. One adult *Sebastes miniatus*, vermillion rockfish, was observed. Up to 312 kelp/gopher/black and yellow/copper rockfish young of year complex (KGB) were observed in the canopy and were the most abundant fish observed during this visit. Up to three *Brachyistius frenatus*, kelp surfperch, were observed. One adult *Scorpaenichthys marmoratus*, cabezon, was observed. Roving diver fish counts were conducted on July 15th by three divers observing 23 species.

All seven ARMs were monitored for all indicator species. Most of the ARMs cages were in good condition and few had sand covering the bottom layer of bricks. ARM #2468 was not closed properly during our 2008 visit and was found open this year with two bricks missing. The contents of this ARM was similar to nearby ARMs, so we decided that the lid missing had little impact and included the contents of this ARM in the data. A total of eight *Haliotis rufescens* were observed for a density of 1.1/ARM, similar to recent years, with an increase in mean size to 108 mm. One 35 mm

Lithopoma gibberosa was observed for a density of 0.14/ARM. Two *Crassedoma giganteum* were observed for a density of 0.29/ARM. *Kelletia kelletii* were not observed. *Patiria miniata* density was 6.3/ARM, and had a mean size of 32 mm, similar to last year. *Pisaster giganteus* were observed at 0.71/ARM with a mean size of 88 mm. *Pycnopodia helianthoides* density was 1.0/ARM and mean size was 61 mm. Both *Strongylocentrotus* spp. densities were similar to last year. *Strongylocentrotus franciscanus* density was 4.7/ARM with a mean size of 81 mm and *Strongylocentrotus purpuratus* density remained low at 0.29/ARM with a mean size of 58 mm.

No temperature loggers are deployed at this site.

Location: Cluster Point, Santa Rosa Island

Site #22 SRCP

Year sampling began: 2005

2009 sampling dates: 7/1

2009 status: Mature kelp forest

This site remained similar to last year as a mature kelp forest with widely spaced adult *Macrocystis pyrifera* plants and a moderate density of subadults. Most *M. pyrifera* individuals were relatively healthy and a canopy cover of 70% was estimated for the site. Understory algae were thick and diverse, except in the low lying areas. Density of adult, subadult and juvenile *Macrocystis pyrifera* were 0.23/m², 0.19/m² and 0.25/m² respectively, and cover was 20%, all similar to recent years. *Eisenia arborea* were common on the top of the reef with adult and juvenile densities at 0.17/m² and 0.042/m², respectively, and cover at 4.2%, all similar to last year. *Pterygophora californica* were common in the low lying areas with high adult densities and cover which were 3.2/m² and 34%, similar to last year. Juvenile *P. californica* density decreased to 0.96/m² from 8.4/m² the previous year. Overall, *P. californica* seemed more abundant along the transect this year. *Laminaria farlowii* were rare with no adults or juveniles observed on 1 m quadrats; although a cover of 0.17% was observed on RPCs, similar to past years. There were several *Laminaria setchellii* observed at the site. *Desmarestia* spp. and *Cystoseira* spp. were present but not notably abundant with covers of 4.8% and 0.83%, respectively. Miscellaneous brown algae had a cover of 2.0%. No green algae were observed. Miscellaneous red algae were abundant on the tops of rocks and cover remained high at 69%, the highest cover recorded for this site, but similar to last year. *Gigartina* spp. cover decreased to 2.5%. Articulated coralline algae cover was 11%, similar to last year. Encrusting coralline algae was 43% cover, the highest cover recorded for this site. Rock, cobble and sand substrate remained similar to last year at 87%, 5.8% and 6.8% respectively. Bare substrate cover was 9.5%.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover was 8.8% and the most dominate species was hydroids. Encrusting invertebrates were abundant in the rocky areas and consisted largely of tunicates and sponges. Tunicates were abundant at 12% cover, the highest recorded at this site. *Styela montereyensis* density was 0.92/m², also the highest recorded at this site. Sponge cover was similar to last year at 8.2%. *Tethya aurantia* density was 0.42/m², similar to last year. *Serpulorbis squamigerus* were not observed on RPCs. *Phragmatopoma californica* were not observed on RPCs. *Diopatra ornata* were moderately abundant in the low lying areas with a 5.0% cover. Miscellaneous bryozoan cover decreased to 12%. *Diaperoecia californica* were not observed on RPCs. *Urticina lofotensis* density increased to 0.076/m², but was similar to previous years.

Corynactis californicus cover was 1.2%. *Balanophyllia elegans* and *Astrangia lajollaensis* covers were low at 2.3% and 0.17%, respectively. *Lophogorgia chilensis*, *Muricea californica* and *Muricea fruticosa* were not observed at this site.

Strongylocentrotus spp. were common at the site, similar to last year; however, they have been gradually increasing in density since we began monitoring in 2005. *Strongylocentrotus franciscanus* density was 4.3/m², the highest on record for this site, and most individuals appeared smaller than those observed at some of our other sites on the south side of Santa Rosa Island. *Strongylocentrotus purpuratus* density was 6.4/m², also the highest on record for this site. No *Lytechinus anamesus* or *Centrostephanus coronatus* were observed, similar to previous years. No sea urchin wasting disease was observed.

Pisaster giganteus density remained similar to last year for both 1 m quadrats and 5 m quadrats at 0.17/m² and 0.13/m², respectively. *Patiria miniata* were abundant and increased in density to 4.2/m², the highest recorded at this site. *Pycnopodia helianthoides* were common with all sizes present and a density of 0.019/m². *Parastichopus parvimensis* were present in the low lying areas with a density of 0.13/m². No *Ophiothrix spiculata* were observed on RPCs. No sea star wasting disease was observed.

Haliotis rufescens were rare with three observed on band transects and a density of 0.0042/m². Aside from these three *H. rufescens*, we could not find any other abalone along the entire transect, so the low density recorded on band transects appears to be an over estimate of what is at the site. Only two of the abalone were measured for size frequencies and they were both large at 195 and 197 mm. *Cypraea spadicea* were common with a density of 0.58/m². No *Megastrea undosa* were observed and *Lithopoma gibberosa* remained rare but none were observed during sampling. *Kelletia kelletii* were common in the low lying areas and most were large with a density of 0.021/m². *Megathura crenulata* were common and relatively large with a density of 0.032/m², and a mean size of 103 mm. *Crassidoma giganteum* were present at a density of 0.015/m². No *Aplysia californica* were observed.

Fish were moderately diverse and abundant, similar to past years. *Coryphopterus nicholsii* were rare at 0.042/m² with up to two observed. *Oxylebius pictus* were present with up to ten counted, similar to last year. *Chromis punctipinnis* were present with up to 45 adults and no juveniles observed. No *Halichoeres semicinctus* or *Oxyjulis californica* were observed. Five female, seven male and no juvenile *Semicossyphus pulcher* were observed. Three *Girella nigricans* were observed. No *Paralabrax clathratus* or *Hypsypops rubicundus* were observed. *Embiotoca jacksoni* were common with up to eight adults and no juveniles observed. *Embiotoca lateralis* were abundant with up to 49 adults and no juveniles observed. Up to two adult and no juveniles *Rhacochilus vacca* were observed. *Sebastes mystinus* were common with up to 33 observed and a large range of size classes were noted. *Sebastes atrovirens* were common with up to 15 adult and no juveniles observed. One adult *Sebastes serriceps* was observed. Up to two *Sebastes chrysomelas*, black and yellow rockfish, were observed. The kelp/gopher/black and yellow/copper complex (KGB) were common in the canopy with up to 31 observed in the 3-5 cm size class. Up to three adult *Sebastes melanops*, black rockfish, were observed. One large *Sebastes miniatus*, vermillion rockfish, was observed harassing divers as they passed by. One adult *Sebastes caurinus*, copper rockfish, was observed during the count. One *Anarrhichthys ocellatus*, wolf eel, and one *Scorpaenichthys marmoratus*, cabezon, were observed.

One *Cephaloscyllium ventriosum*, swell shark, was observed. Roving diver fish counts were performed on July 1st with six divers observing 24 species.

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

Location: Trancion Canyon, Santa Rosa Island

Site #23 SRTC

Year sampling began: 2005

2009 sampling dates: 6/30

2009 status: Mature kelp forest

Overall, there was little change at this site and it remained a mature healthy kelp forest with a thick canopy (estimated at 90% cover) and large widely spaced adult *Macrocystis pyrifera* plants. There was an abundance of understory algae and invertebrates, similar to other nearby Santa Rosa Island sites. *Macrocystis pyrifera* adults were common with a density of 0.35/m², similar to the past two years. Juvenile and subadult densities of *M. pyrifera* were lower than the past several years at 0.46/m² and 0.06/m², respectively, and a cover of 23% was observed. *Eisenia arborea* were common with adult and juvenile densities of 0.083/m² and 0.17/m², respectively and a cover of 0.0%. Adult *Pterygophora californica* were abundant with a density of 0.96/m², the highest recorded for this site. There was a notable recruitment event in 2008 which likely lead to the increase in adults. Juvenile *P. californica* were notably less abundant with a density of 0.75/m², though notably lower than last year, this is similar to previous years. Cover of *P. californica* was 17%, similar to last year. No *Laminaria farlowii* was observed, similar to past years. Several *Laminaria setchellii* were observed, similar to the Cluster Point site. *Desmarestia* spp. decreased in cover to 0.33%. *Cystoseira* spp. cover was similar to last year at 3.3%. Miscellaneous brown algae decreased to 0.67%. Miscellaneous red algae were abundant with a cover of 47%, similar to past years. *Gigartina* spp. was common with a cover of 0.67%, but notably declined from last year's high of 18%. Articulated coralline algae cover was 14%, and encrusting coralline algae cover was 33%. Bare substrate cover was similar to last year at 5.2%.

Miscellaneous invertebrate cover excluding *Ophiothrix spiculata* decreased to 6.0% with hydroids and sea anemones being the most common invertebrates in this category. Tunicates were abundant and diverse with a 9.0% cover, similar to last year. *Styela montereyensis* were present with a density of 0.33/m². Sponges were common with 6.5% cover, similar to previous years. *Tethya aurantia* density was 0.24/m², similar to last year. *Diopatra ornata* were patchy with a cover of 10%, similar to past years. *Phragmatopoma californica* were rare with a cover of 0.17%. Miscellaneous bryozoans decreased in cover to 16%. *Diaperoecia californica* cover was 2.8%. *Urticina lofotensis* density was 0.14/m². *Corynactis californica* cover was 1.2%. *Balanophyllia elegans* and *Astrangia lajollaensis* were relatively abundant and had covers of 2.5% and 1.2%, respectively. No gorgonians were observed at the site.

Strongylocentrotus franciscanus were notably more abundant this year and were present in high density patches over much of the site. *Strongylocentrotus franciscanus* density was 8.2/m², similar to last year, and all sizes were present. Many large individuals were observed out in the open.

Strongylocentrotus purpuratus were also moderately abundant and most were located deep in crevices with a density of 10.3/m², similar to previous years. No *Lytechinus anamesus* or *Ophiothrix spiculata* were observed. No sea urchin wasting disease was observed.

Pisaster giganteus and *Patiria miniata* were both moderately abundant at the site. *Pisaster giganteus* were sampled on both 1 m quadrats and 5 m quadrats with densities of 0.50/m² and 0.53/m², respectively, and most were small with a mean size of 79 mm. *Patiria miniata* were observed with a density of 2.1/m², similar to previous years. *Pycnopodia helianthoides* were rare and notably small (though none were measured for size frequencies this year) with a density of 0.013/m².

Parastichopus parvimensis density was 0.21/m², similar to last year, and consisted mostly of large individuals, but juveniles were observed under rocks. Several *Parastichopus californicus* were observed at the site. No sea star wasting disease was observed.

Two *Haliotis rufescens* were observed at ~128 mm and at 23 mm during sea urchin size frequencies, but a density of 0.0/m² was observed during sampling. *Cypraea spadicea* were abundant at a density of 0.58/m². No *Megastrea undosa* or *Lithopoma gibberosa* were observed. Only one or two *Kelletia kelletii* were observed along the transect with a density of 0.0014/m². *Megathura crenulata* were moderately abundant and notably large with a density of 0.036/m² and a mean size of 107 mm, similar to previous years. *Crassidoma giganteum* were common at a density of 0.014/m². Similar to previous years, no *Aplysia californica* or *Panulirus interruptus* were observed at the site. No *Cryptochiton stelleri*, gumboot chiton, were observed at the site this year although we have observed this species in previous years and have recorded those observations each year.

Fish were moderately abundant and diverse as observed in past years at this site. *Coryphopterus nicholsii* were present with none observed on 1 m quadrats and up to 17 counted during the fish count. *Chromis punctipinnis* were the most abundant fish this year with up to 87 adults observed. No *Lythrypnus dalli* or *Alloclinus holderi* were observed. *Oxylebius pictus* were common with up to 21 observed. Up to nine female, one juvenile and five male *Semicossyphus pulcher* were observed. Up to 26 adult *Oxyjulis californica* were observed, but more were observed throughout the day of sampling. No *Halichoeres semicinctus* were observed. No *Hypsypops rubicundus* were observed. One small *Paralabrax clathratus* was observed, but not during the fish count. Up to four *Girella nigricans* were observed and were notably large. *Embiotoca lateralis* were common with up to 32 adults and three juveniles observed. Up to eight adult *Embiotoca jacksoni* were observed. *Rhacochilus vacca* were common with up to six adults and three juveniles observed. Up to 19 adult *Sebastes atrovirens* were observed. Up to 18 adult *Sebastes serranoides* were observed. *Sebastes mystinus* were common with up to 32 adults and six juveniles observed and several size classes observed. One adult and one juvenile *Sebastes serripes* were observed. *Sebastes chrysomelas*, black and yellow rockfish, were common with up to 10 observed. Up to six *Sebastes melanops*, black rockfish, were observed. Up to 10 young of the year olive/yellowtail juvenile rockfish were observed during the fish size frequency method. Up to 28 kelp/gopher/black and yellow/copper complex (KGB) were observed in the 3-4 cm size class in the canopy. Three adult *Scorpaenichthys marmoratus*, cabezon, were observed. Two lingcod, *Ophiodon elongatus*, were observed with one

being notably large. Up to six *Rhacochilus toxotes*, rubberlip surfperch, were observed. Roving diver fish counts were conducted on June 30th by seven divers observing 22 species.

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

Location: Chickasaw, Santa Rosa Island

Site #24 SRCSAW

Year sampling began: 2005

2009 sampling dates: 7/14

2009 status: Mature kelp forest

Similar to previous years, this site remained a healthy mature kelp forest. There were widely spaced large adult and patches of subadult *Macrocystis pyrifera* plants with a dense and diverse understory of algae. *Macrocystis pyrifera* adults, subadults and juvenile densities were 0.28/m², 0.38/m² and 0.42/m², respectively and all similar to recent years. *Macrocystis pyrifera* cover decreased to 14% and stipe density was 2.1/m². *Eisenia arborea* were uncommon with adult and juvenile densities at 0.042/m², 0.0/m² and a cover of 0.33%, similar to last year. Adult and juvenile *Pterygophora californica* remained moderately abundant with densities of 0.46/m² and 0.083/m², respectively, and a cover of 7.5%. No *Laminaria farlowii* were observed at the site, although *Laminaria setchellii* were present. *Cystoseira* spp. were common at 2.8% cover, similar to last year. Several *Desmarestia* spp. plants were present at the site, but none were observed during sampling. Miscellaneous red algae were abundant with a cover of 63%, an increase from last year but similar to years previous. The most dominant red algae observed at the site include *Callophyllis* spp. and *Botryoglossum* spp. *Gigartina* spp. were abundant with a 11% cover, the highest recorded for this site. Miscellaneous green algae were not observed on RPCs. Miscellaneous brown algae cover was 0.50%, similar to last year. Articulated coralline algae cover remained similar to last year at 6.8%. Encrusting coralline algae cover decreased from last year to 8.2%. Bare substrate cover was 15%.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover increased from last year to 25%. The most common miscellaneous invertebrates were mostly the hydroid *Obelia* spp., same as last year. Tunicates remained abundant and diverse at 9.3% cover and this category included *Pycnoclavella* spp., *Aplidium* spp., *Distaplia* spp., *Cystodytes* spp. and *Polyclinum* spp. *Styela montereyensis* density was 0.17/m², also similar to last year. Sponges were also abundant and diverse at 3.5% cover with *Hymenamphiasira cyanocrypta* being notably abundant. *Tethya aurantia* remained abundant at 0.13/m². *Diopatra ornata* were abundant and large with a cover of 14%. Miscellaneous bryozoans were abundant at 15% cover, similar to last year, and were often observed growing epiphytically on red algae. *Diaperoecia californica* cover was 0.83%, and patchy in their distribution. *Urticina lofotensis* remained common with a density of 0.11/m² and *Corynactis californica* were rare with a cover of 0.83%, both similar to past years. *Balanophyllia elegans* were abundant on high relief areas with a cover of 1.3%. *Astrangia lajollaensis* were rare at 0.33% cover, similar to past years. No *Lophogorgia chilensis*, *Muricea californica* or *Muricea fruticosa* were observed, similar to past years.

Densities of *Strongylocentrotus* spp. remain low, but have gradually increased since we began monitoring this site in 2005 and are currently at the highest densities recorded for this site. *Strongylocentrotus purpuratus* were common but markedly less abundant than *S. franciscanus*. *Strongylocentrotus franciscanus* were moderately abundant in crevices and were notably large. *Strongylocentrotus* spp. recruits were rare but were present in the spine canopy of larger individuals. Densities of *S. purpuratus* and *S. franciscanus* remained similar to last year at 1.8/m² and 2.4/m², respectively. Mean size of *S. purpuratus* and *S. franciscanus* were also similar to last year at 34 mm and 83 mm. No *Lytechinus anamesus* or *Centrostephanus coronatus* were observed. No sea urchin wasting disease was observed.

Pycnopodia helianthoides were rare with a density of 0.0014/m². *Patiria miniata* density continued to increase for the third consecutive year to 2.5/m². *Pisaster giganteus* remained common and were counted on both 1 m quadrats and 5 m quadrats with densities of 0.083/m² and 0.11/m², respectively. *Ophiothrix spiculata* were present in *Macrocystis pyrifera* holdfasts with a cover of 0.17%. *Parastichopus parvimensis* remained rare with a density of 0.083/m². Small *Cucumaria* spp. were common to the site. No sea star wasting disease was observed.

Haliotis rufescens were common with a density of 0.022/m², similar to past years. There were 27 *H. rufescens* measured for size frequencies for a mean of 184 mm. A lower number of *H. rufescens* were found for size frequencies than usual for this site. We searched for them during band transects looking between each transect, resulting in a thorough and effective search effort. Two large fresh *H. rufescens* shells were found indicating some recent mortality. *Cypraea spadicea* remained moderately abundant and had a density of 0.17/m². No *Megastrea undosa* or *L. gibberosa* were observed during sampling, although one large *L. undosum* was observed at the site with an estimated size of 125 mm. *Megathura crenulata* and *Crassidoma giganteum* remained rare with densities of 0.0069/m² and 0.013/m², respectively. *Aplysia californica* were moderately abundant, dark and large, with a density of 0.046/m², the first time this species has been observed on band transects at this site. *Serpulorbis squamigerus* cover was 0.67%. No *Panulirus interruptus* were observed at the site.

The fish at this site were moderately abundant and diverse, similar to last year. *Coryphopterus nicholsii* were rare with a density of 0.083/m² and 13 were observed during the fish count. *Oxylebius pictus* were common with up to 11 observed. Up to 31 adult and no juvenile *Chromis punctipinnis* were observed. Up to two adult and 20 juvenile *Oxyjulis californica* were observed. Up to four female, three male and no juvenile *Semicossyphus pulcher* were observed. Up to seven adult and no juvenile *Embiotoca jacksoni* were observed. *Embiotoca lateralis* were relatively common with 10 adults and one juvenile observed. Three adult and no juvenile *Rhacochilus vacca* were observed. *Sebastes mystinus* were the most abundant indicator species present with up to 45 adults and two juveniles observed. *Sebastes atrovirens* were also abundant with up to 40 adults and one juvenile observed. *Sebastes serranoides* were relatively common with up to 10 adults and no juveniles observed. One adult and one juvenile *Sebastes serripes* were observed. Up to 14 adult and two juvenile *Sebastes chrysomelas*, black and yellow rockfish, were observed. Up to two *Ophiodon elongatus*, lingcod, and one *Ophiodon elongatus*, cabezon, were observed. Roving diver fish counts were conducted on July 14th by four divers observing 15 species.

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

Location: South Point, Santa Rosa Island

Site #25 SRSP

Year sampling began: 2005

2009 sampling dates: 7/13, 7/14

2009 status: Mature kelp forest

This site continued to be a mature kelp forest with notably more algae observed than since we began monitoring in 2005. Many of the densities and covers were at the highest recorded at this site. Canopy cover was estimated at 60%. *Macrocystis pyrifera* were healthy and abundant over the entire transect with adult, subadult and juvenile densities at 0.34/m², 0.58/m² and 2.0/m², respectively. Cover of *M. pyrifera* continued to increase to 37%, the highest since we began monitoring this site in 2005, and stipe counts were 7.7/m². Adult and juvenile *Eisenia arborea* were present, but were not observed during 1 m quadrats and cover was 1.7%. *Pterygophora californica* were abundant; adult and juvenile densities were 0.92/m² and 0.46/m², respectively. Cover of *P. californica* was high at 36%, the highest density recorded for this site. *Laminaria farlowii* are at or near their highest abundances recorded at this site with adult and juvenile densities at 1.0/m² and 1.1/m², respectively and a cover of 22%. *Laminaria setchellii* were also more common than in past years; however, this species is not one of our indicator species and is not sampled. *Desmarestia* spp. were rare at the site with none observed during sampling. *Cystoseira* spp. were common with a record high cover of 8.5%. Miscellaneous brown algae increased to a high of 2.0%. Miscellaneous red algae were abundant and diverse and increased to 76% cover, also the highest recorded cover at this site. *Gigartina* spp. were common with a record high of 5.0% cover. *Gelidium* spp. were not observed during sampling. Articulated coralline algae cover was 19%, higher than last year, but similar previous years. Encrusting coralline algae cover was 16%, similar to previous years. Bare substrate cover was 4.5%.

Overall, invertebrate densities were similar to recent years with encrusting invertebrates being very abundant at this site. Miscellaneous invertebrates, excluding *Ophiothrix spiculata*, cover was 23%, and consisted mainly of *Cucumaria* spp., hydroids and sea anemones. Tunicates remained abundant and diverse with a cover of 9.2% and this category included *Cystodytes lobatus*, *Polyclinum planum* and other encrusting tunicates. *Styela montereyensis* were common with a density of 0.42/m², similar to last year. Sponges were abundant with a cover of 7.0%, similar to last year, and included *Polymastia* spp., which has been abundant at this site in recent years and was noticeably more abundant this year. *Tethya aurantia* density decreased to 0.072/m² and most individuals were covered in red algae. *Phragmatopoma californica* decreased from last year to 0.33%, the lowest recorded at this site. *Diopatra ornata* were notably large and moderately abundant in their appropriate habitat with a cover of 12%. *Serpulorbis squamigerus* were not observed on RPCs. Miscellaneous bryozoan cover decreased to 17% with *Thalamoporella* spp. being common. *Diaperoecia californica* were not observed during sampling. *Urticina lofotensis* were common with a density of 0.044/m², similar to previous years. No *Corynactis californica*, *Astrangia lajollaensis* or *Balanophyllia elegans* were

recorded during sampling. Similar to past years, no *Lophogorgia chilensis*, *Muricea californica* and *Muricea fruticosa* were observed.

Strongylocentrotus spp. remain at low densities, but similar to other nearby sites appear to be increasing. *Strongylocentrotus franciscanus* were mainly in the cracks and crevices of rock piles with a density of 0.63/m² and a mean size of 69 mm. *Strongylocentrotus purpuratus* density was 4.0/m² and mean size of 32 mm, this was the highest density recorded at this site since we began monitoring in 2005. No *Lytechinus anamesus* or *Centrostephanus coronatus* were observed during sampling. No sea urchin wasting disease was observed.

Pycnopodia helianthoides were rare with a density of 0.0056/m² and only several were observed at the site. *Patiria miniata* remained abundant with a density of 1.9/m². *Pisaster giganteus* were moderately abundant and were counted on 1 m and 5 m quadrats with densities of 0.083/m² and 0.090/m², respectively, similar to last year. *Parastichopus parvimensis* were rare with none observed on 1 m quadrats. *Ophiothrix spiculata* were not observed on RPCs. No sea star wasting disease was observed.

Haliotis rufescens were relatively abundant compared to other nearby sites with a density of 0.093/m², similar to past years. We measured *H. rufescens* during band transects and covered the area between the transect so we covered the entire transect. With this search we measured 112 *H. rufescens*, most were large and had a mean size of 183 mm. This was the most abalone we had found at this site for size frequencies, but similar to previous years. Three large fresh *H. rufescens* shells were observed at the site. *Cypraea spadicea* were moderately abundant at 0.29/m². *Lithopoma gibberosa* and *Megastrea undosa* were not observed during sampling, although two large *L. undosum* were observed along the transect, similar to what we have observed in past years. *Kelletia kelletii* remained rare with a density of 0.0014/m² and only several observed at the site. *Megathura crenulata* continued to be rare at 0.0014/m². *Crassidoma giganteum* were rare with a density of 0.0028/m², similar to last year. *Aplysia californica* were rare and notably dark colored at 0.0056/m², the highest recorded at this site. We have observed more *A. californica* at the sites at this side of the Island this year. No *Panulirus interruptus* were observed.

Fish were moderately abundant and diverse, similar to previous years. Most of the *Coryphopterus nicholsii* were large adults and had a density was 0.21/m² and up to 17 observed during the fish count. *Alloclinus holderi* were not observed. *Oxylebius pictus* were present with up to nine observed. *Chromis punctipinnis* were common with 66 adults and no juveniles observed. *Oxyjulis californica* were abundant with up to 244 adults and 12 juveniles observed. Up to five female, one juvenile and three male *Semicossyphus pulcher* were observed. No *Halichoeres semicinctus*, *Hypsypops rubicundus* or *Paralabrax clathratus* were observed. One adult *Girella nigricans* was observed. *Embiotoca jacksoni* were common with up to 13 adults and three juveniles observed. *Embiotoca lateralis* were also common with up to 11 adults and one juvenile observed. Up to seven adult *Rhacochilus vacca* were observed. *Sebastes atrovirens* were common with up to 33 adults and seven juveniles observed. Up to 13 adult and five juvenile *Sebastes mystinus* were observed. Eight adult and four juvenile *Sebastes serranoides* were observed. One adult and eight juvenile *Sebastes serripes* were observed. A school of large adult *S. serripes* was also observed, but not during the

roving diver fish count. Up to seven adult and one juvenile *Sebastes chrysomelas*, black and yellow rockfish, were observed. Thirty-five kelp/gopher/black and yellow/copper rockfish young of year complex (KGB) were observed. Up to three juvenile *Sebastes paucispinis*, bocaccio, were observed. Seven *Brachyistius frenatus*, kelp surfperch, were observed. Up to five *Hypsurus caryi*, rainbow surfperch, were observed. One *Ophiodon elongatus*, lingcod, was observed. Two adult *Scorpaenichthys marmoratus*, cabezon, were observed. Roving diver fish counts were conducted on July 14th by four divers observing 29 species of fish.

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

Location: Devil's Peak Member, Santa Cruz Island

Site #26 SCDPM

Year sampling began: 2005

2009 sampling dates: 6/2

2009 status: Dominated by *Strongylocentrotus purpuratus*

Overall, this site changed little from last year and continued to be dominated by *Strongylocentrotus purpuratus*. The site was devoid of indicator macroalgae species with the exception of several adult and juvenile *Eisenia arborea* individuals located on the tops of large boulders and one *Macrocystis pyrifera* juvenile growing epiphytically on a gorgonian. No other *Macrocystis pyrifera*, *Pterygophora californica*, *Laminaria farlowii*, *Desmarestia* spp., *Cystoseira* spp., *Eisenia arborea* or miscellaneous brown algae were observed during sampling or noted at the site. However, there were patches of *Dictyota/Pachydictyon* near the sand channels on the offshore side. Miscellaneous red algae cover was 14%, similar to last year. Most of this category consisted of *Laurencia pacifica*, but other species were also present. Miscellaneous green algae were not observed. Miscellaneous plant cover, mostly consisting of filamentous diatoms, was 4.3%. Encrusting coralline algae were the most abundant algae with a cover of 57%, similar to last year. Articulated coralline algae were uncommon and none were observed on RPCs. Bare substrate cover was 6.8%.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover increased to 31%, the highest ever recorded at this site. The most common miscellaneous invertebrate on RPCs was *Spirobranchus spinosus* and hydroids. Tunicates were common with cover of 4.8%. Sponge cover was 1.7%. *Tethya aurantia* density continued to gradually increase for the third consecutive year to 0.099/m², the highest recorded at this site since we began monitoring in 2005. *Diopatra ornata* were present in the low lying areas with sand, and increased slightly to a cover of 0.33%. Miscellaneous bryozoans were abundant with a cover of 12%, relatively high for this site. *Diaperoecia californica* were common with a cover of 1.3%. *Corynactis californica* were not observed on RPCs, similar to last year. *Astrangia lajollaensis* were abundant with a cover of 5.5% similar to past years. *Balanophyllia elegans* cover was 0.67%. *Lophogorgia chilensis* were abundant especially on the offshore side of the transect with a density of 0.20/m², similar to last year. *Muricea californica* were present at a density of 0.0069/m² and *M. fruticosa* density was observed at 0.0042/m².

Strongylocentrotus purpuratus continued to dominate this site with a density of 28/m², while *S. franciscanus* were common at a density of 4.4/m². Both species were found in these relative densities

throughout the site and these observations are similar to last year. *Centrostephanus coronatus* were observed and mostly large, but were not recorded during sampling. *Lytechinus anamesus* were small and cryptic with a density of 0.0069/m². No sea urchin wasting disease was observed.

Pisaster giganteus were counted on 1 m quadrats and 5 m quadrats with densities of 0.17/m² and 0.23/m², respectively, similar to previous years. Most *P. giganteus* were medium-sized. *Patiria miniata* were common and mostly large with an increased density of 0.79/m². *Pycnopodia helianthoides* were present at 0.0097/m², similar to recent years. *Pachythyone rubra* were present, but no high density areas were observed as in recent years. *Pachythyone rubra* cover decreased to 1.5%, the lowest cover recorded at this site since we began monitoring in 2005. *Parastichopus parvimensis* were common with densities increasing to 0.71/m², the highest density we have recorded for this species. In general, sea cucumbers were abundant over most of the site. No sea star wasting disease was observed.

No *Haliotis* spp. or fresh shells were observed. *Cypraea spadicea* were moderately abundant with a density of 0.29/m². *Megastrea undosa* were common with a density of 0.083/m², and mostly consisted of medium to large individuals with no sign of recent recruitment. *Tegula regina* were rare at 0.042/m² similar to last year. *Kelletia kelletii* were rare with none observed during sampling. *Megathura crenulata* were abundant and continued to increase since we began monitoring in 2005 to 0.58/m². *Crassidoma giganteum* were noticeably less abundant than in previous years with densities decreasing to 0.038/m². The decline in *C. giganteum* was visually notable and several small *C. giganteum* observed. *Aplysia californica* were common with a density of 0.031/m², similar to previous years. One large *Pteria sterna* was observed on a *Lophogorgia chilensis*. Nudibranchs were notably diverse and abundant. No *Panulirus interruptus* were observed at the site.

Similar to past years, this site had a high diversity and abundance of fish. *Coryphopterus nicholsii* were common with a density of 1.0/m² and up to 55 observed. *Alloclinus holderi* were rare this year with a density of 0.25/m² and up to seven were observed. Most *A. holderi* were noticeably large indicating no recent recruitment. *Lythrypnus dalli* were present with a density of 0.79/m², the highest density recorded since 2005, and up to 108 were observed. *Oxylebius pictus* were common with up to 35 individuals observed. Up to 70 *Oxyjulis californica* adults were observed, a decrease from last year, and one juvenile was counted. Similar to previous years, *Chromis punctipinnis* was the most abundant species with up to 614 observed. Two female *Semicossyphus pulcher* were observed and no males were observed, both similar to last year. *Semicossyphus pulcher* juveniles were more abundant than in previous years with up to eight counted. Nine female, no juvenile and eight male *Halichoeres semicinctus* were observed. *Hypsypops rubicundus* were abundant with up to 22 adults observed, similar to last year. *Paralabrax clathratus* were less common with up to 16 adults counted. Two adult *Girella nigricans* were observed at the site. Similar to last year *Embiotoca jacksoni* were common with up to 13 adults observed. No *Embiotoca lateralis* were observed. Adult *Rhacochilus vacca* were present with up to seven adults observed. One adult and one juvenile *Sebastes mystinus* were observed. Two adult *Sebastes atrovirens* were observed. Seven adult *Sebastes serranoides* were observed, an increase from last year. Up to seven adult and three juvenile *Sebastes serripes* were observed. No kelp/gopher/black and yellow/copper rockfish young of the year complex (KGB) were

counted this year. Three *Sebastes carnatus*, gopher rockfish, were observed. Four adult *Medialuna californiensis*, halfmoon, were observed. Three *Lythrypnus zebra*, zebra goby, were observed. Roving diver fish counts were conducted on June 2nd with three divers observing 21 species of fish.

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

Location: Potato Pasture, Santa Cruz Island

Site #27 SCPP

Year sampling began: 2005

2009 sampling dates: 9/2

2009 status: Dominated by *Strongylocentrotus purpuratus* and *S. franciscanus*

This site remained dominated by *Strongylocentrotus purpuratus* and *Strongylocentrotus franciscanus* and was mostly devoid of macroalgae, similar to last year. The most abundant algae at the site was *Laurencia pacifica*. There was no *Macrocystis pyrifera* along the transect, but there were several juveniles and small subadults present at a depth of 45 feet just offshore of the transect area. This area also had approximately 15 small (less than 1 meter tall) *Pelagophycus porra* individuals present; this was the first time we have observed these algae here and on the area of the Island. There was no *Pterygophora californica*, *Eisenia arborea*, *Laminaria farlowii*, *Cystoseira* spp., *Desmarestia* spp., or *Gigartina* spp. along the transect. A small amount of *Gelidium* spp. was observed on the top of the high relief areas, but was not present on the RPCs. Miscellaneous brown algae cover was 1.5%. Miscellaneous red algae cover was 14%, similar to previous years. Green algae cover was 2.7%. This category consisted mainly of *Codium setchellii* and *C. fragile*. Miscellaneous plants cover, consisting of filamentous diatoms, cover was 12%. Encrusting coralline algae had a cover of 64%, similar to last year. Articulated coralline algae cover was 0.5%. Bare substrate cover was similar to last year at 12%.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover decreased to 13%. The most dominant miscellaneous invertebrates in this category were *Dodecaceria* spp. and hydroids. Tunicate cover was 1.5%. Sponges were rare at a cover of 0.33%. *Tethya aurantia* density was 0.047/m². *Diopatra ornata* were not observed on RPCs. Bryozoans were more abundant than past years and recorded at their highest covers at this site since monitoring began in 2005. Miscellaneous bryozoan cover increased to 7.2%, and *Diaperoecia californica* were common on the sides of rocks and cover was 4.5%. *Corynactis californica* was common with a cover of 2.5%. *Astrangia lajollaensis* were common in low lying areas with a cover of 2.7%. *Balanophyllia elegans* were present, but not observed on RPCs. *Lophogorgia chilensis* were common and small ones were common on the eastern end of the transect with a density of 0.17/m². *Muricea californica* density was 0.0056/m². No *Muricea fruticosa* were observed on the transect.

Strongylocentrotus spp. continued to be moderately abundant at this site. *Strongylocentrotus purpuratus* density was 20/m², similar to past years. *Strongylocentrotus franciscanus* were moderately abundant at 4.6/m². The mean size for *S. purpuratus* and *S. franciscanus* were 30 mm and 45 mm, respectively and similar to past years. Only a few juvenile *S. purpuratus* were observed, but no juvenile *S. franciscanus*. *Lytechinus anamesus* were rare and notably less abundant than in

previous years, and were counted on both 1 m quadrats and band transects with densities of 0.54/m² and 0.022/m², respectively. *Centrostephanus coronatus* adults were common at a density of 0.21/m². No sea urchin wasting disease was observed.

Pisaster giganteus densities on 1 m quadrats and 5 m quadrats were similar to last year at 0.083/m² and 0.085/m², respectively. *Pisaster giganteus* individuals were notably large with an average size of 169 mm, similar to past years. *Patiria miniata* were common with all sizes present at a density of 1.0/m² and average size of 55 mm. *Pachythyone rubra* were common along the first 20 meters of the transect with a cover of 1.5% cover. *Parastichopus parvimensis* were common at a density of 0.88/m², similar to recent years. No *Pycnopodia helianthoides* were observed during sampling, but one was measured during size frequencies at 175 mm. No sea star wasting disease was observed.

Crassedoma giganteum density was 0.12/m², similar to past years. *Megathura crenulata* were common with a density of 0.068/m² and had a relatively high mean size of 84 mm for this site. We often have observed many fresh small *M. crenulata* at this site, but there were fewer shells than the past years. *Megastraea undosa* were less abundant than in past years and were scattered around the transect with a density of 0.042/m², most were medium sized with a mean size of 62 mm. *Tegula regina* were common at a density of 0.42/m². *Kelletia kelletii* were common at a density of 0.017/m², with both small and large individuals present. *Aplysia californica* were rare at a density of 0.0056/m². *Panulirus interruptus* were common throughout the site at a density of 0.011/m², and have gradually increased in abundance over the past three years. This was the highest recorded density for this site since monitoring began in 2005.

Similar to recent years, fish were moderately abundant and diverse at this site. *Coryphopterus nicholsii* were abundant with a density of 1.7/m² and up to 345 were observed, similar to last year. *Alloclinus holderi* density was 0.042/m² with up to five observed, also similar to last year. *Lythrypnus dalli* were observed on 1 meter quadrats for the first time since monitoring began at this site in 2005, at a density of 0.21/m². Up to 290 *L. dalli* were observed on the roving diver fish count. *Oxylebius pictus* were common with up to 29 observed. *Chromis punctipinnis* were the most abundant fish species with up to 510 adults and no juveniles observed. *Oxyjulis californica* were present with up to 111 adults and five juveniles observed. Ten female, nine juvenile and one male *Semicossyphus pulcher* were observed. This is a unusually large number of juveniles as we have seen at many sites this year. *Halichoeres semicinctus* were common with up to nine females, three juveniles and 11 males observed. *Hypsypops rubicundus* were abundant with up to 19 adults observed, similar to last year. Up to 32 adult *Paralabrax clathratus* were observed, similar to last year. Up to nine *Girella nigricans* were observed. Up to seven adult *Embiotoca jacksoni* were observed. *Rhacochilus vacca* were abundant with up to 28 adults and no juveniles observed. Two adult *Sebastes mystinus* were observed. No *Sebastes atrovirens* or *Sebastes serranoides* were observed. Three adult and three juvenile *Sebastes serripes* were observed. One adult *Sebastes chrysomelas*, black and yellow rockfish, was observed. One adult *Sebastes carnatus*, gopher rockfish, was observed. Two *Sebastes auriculatus*, brown rockfish, were observed. Seven *Lythrypnus zebra*, zebra goby, were observed. Four *Medialuna californiensis*, halfmoon, were observed. One

Gymnothorax mordax, California moray eel, was observed. Roving diver fish counts were conducted on September 2nd by six divers observing 24 species.

The temperature loggers were retrieved and deployed. Unfortunately, the newer UTBI logger was deployed at its factory setting to take temperature every second and the loggers data capacity filled up after about two months and stopped recording. In addition, the Tidbit logger deployed as a backup had its battery prematurely fail and stopped recording temperature on May 20, 2009. As a result of these failures, no temperature data was collected from May 20, 2009 at 1200 until September 2nd, 2009 at 1520. This is the only temperature data that was lost for all of the sites this year.

Location: Cavern Point, Santa Cruz Island

Site #28 SCCVP

Year sampling began: 2005

2009 sampling dates: 6/15

2009 status: State of transition

This site appeared to have more algae, fish and encrusting invertebrates than last year. Macroalgae continued to be relatively uncommon at this site except on the tops of rocks. *Macrocystis pyrifera* were not observed during sampling, however, several juveniles were observed at the site and several adults were observed inshore of the sampling area (ten meters from the transect line). *Eisenia arborea* were recorded on RPCs for the first time at the site with a 2.7% cover. Juvenile *E. arborea* density was 0.042/m². *Pterygophora californica*, *Laminaria farlowii*, *Desmarestia* spp. and *Cystoseira* spp. were not observed at the site. Miscellaneous brown algae cover was 0.67% with *Dictyota/Pachydictyon* being moderately abundant though patchy and not directly along the transect. Miscellaneous red algae decreased to 11% cover. Green algae cover was 3.2%. Miscellaneous plants, consisting of filamentous diatoms, decreased in cover to 1.0%. Encrusting coralline algae had a cover of 48%, similar to last year. Articulate coralline algae were present with a cover of 0.33%. Bare substrate cover remained similar to last year at 9.7%.

Miscellaneous invertebrates cover excluding *Ophiothrix spiculata* was high at 26%, similar to last year. The most common invertebrates were *Spirobranchus spinosus*, hydroids and *Cucumaria* spp. Tunicates and sponges were common with covers of 3.3% and 2.3%, respectively, and both categories had high diversity. *Tethya aurantia* density was 0.12/m², similar to last year but most appeared less healthy. Miscellaneous bryozoan cover was 7.0%, similar to last year. *Diaperoecia californica* was notably more abundant at a 4.7% cover, a notable increase from last year. *Corynactis californica* cover was 0.83%. *Balanophyllia elegans* and *Astrangia lajollaensis* had covers of 0.33% and 3.2%, respectively. *Lophogorgia chilensis* remained abundant at a density of 0.26/m², similar to last year, and *Muricea californica* density was 0.0069/m². *Muricea fruticosa* were not observed during sampling, however several were noted at the site.

Strongylocentrotus purpuratus density noticeably decreased to 17/m², the lowest recorded at this site since we began monitoring in 2005. The mean size of *S. purpuratus* increased to 33 mm, the highest recorded at this site. *Strongylocentrotus franciscanus* density was 1.9/m², similar to the past two years. *Centrostephanus coronatus* were present in the crevice habitat with a density of 0.17/m², similar to last year. *Lytechinus anamesus* were rare at the site and not observed during band transects

but a few small individuals were measured for size frequencies and most were small. No sea urchin wasting disease was observed.

Pisaster giganteus were common and counted on 1 m quadrats and 5 m quadrats with densities of 0.083/m² and 0.15/m², respectively. A total of 65 *P. giganteus* were measured for size frequencies for a mean of 143 mm. *Patiria miniata* were common at a density of 0.83/m². No *Pycnopodia helianthoides* were observed at the site. *Ophiothrix spiculata* were common and their distribution was evenly scattered throughout the site, but none were observed on RPCs. *Parastichopus parvimensis* were abundant at a density of 1.9/m², and we have observed a gradual increase in abundance since 2005. *Cucumaria* spp. were abundant and present throughout the site on the tops of rocks. *Pisaster ochraceus* were unusually abundant for a subtidal site and approximately 15 large individuals were observed. No sea star wasting disease was observed.

No live *Haliotis* spp. or any fresh shells were observed. *Cypraea spadicea* were rare and a density of 0.042/m² was observed. *Megastraea undosa* were also rare and were not observed on 1 m quadrats for the first time since monitoring began at this site in 2005. We found 18 *L. undosum* for size frequencies with a mean size of 70 mm, the highest recorded at this site indicating poor recent recruitment. *Tegula regina* were not observed on 1 m quadrats, but 16 individuals were recorded for a mean size of 53 mm. *Kelletia kelletii* were rare with a density of 0.0014/m². *Megathura crenulata* were abundant at 0.14/m², similar to past years. *Crassedoma giganteum* density was similar to last year at 0.17/m² with all sizes present and a notable abundance of very large individuals was observed. *Aplysia californica* density was 0.033/m². *Panulirus interruptus* density was 0.0028/m² and several molts were observed.

Fish abundance and diversity were moderately high but increased overall from last year. *Coryphopterus nicholsii* were moderately abundant at a density of 2.4/m² with up to 290 observed, up from last year. *Alloclinus holderi* had a density of 0.13/m² with up to 11 observed, similar to recent years. *Lythrypnus dalli* increased from last year to a density of 0.79/m² with up to 220 observed. *Oxylebius pictus* were present with up to 26 observed, similar to last year. *Chromis punctipinnis* were common with up to 194 adults and no juveniles observed. *Oxyjulis californica* were common with up to 92 adults and no juveniles observed. Eight female, 13 juvenile and one male *Semicossyphus pulcher* were observed. This high abundance of juvenile *S. pulcher* has been a common observation for most of our sites at this island. *Halichoeres semicinctus* were common with up to two females, two males and one juvenile observed. Ten adult and no juvenile *Hypsypops rubicundus* were observed. *Paralabrax clathratus* were common with up to 17 adults observed, similar to last year. No *Girella nigricans* were observed during the fish count but some were observed later in the day. Up to ten adult *Embiotoca jacksoni* adults were observed. No *Rhacochilus vacca* were observed. No *Sebastes atrovirens* were observed. Eight adult and six juvenile *Sebastes serripes* were observed, an increase from last year. Two adult *Sebastes carnatus*, gopher rockfish, were observed, similar to last year. Four adult *Sebastes chrysomelas*, black and yellow rockfish, were observed, similar to last year. One adult *Rhacochilus toxotes*, rubberlip surfperch, was observed. Two *Caulolatilus princeps*, ocean whitefish, were observed; however, at least 12 were observed after the roving diver fish count, some

being notably large. *Lythrypnus zebra*, zebra goby, were common with up to seven observed. Roving diver fish counts were conducted on June 15th by three divers observing 21 species.

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

Location: Little Scorpion, Santa Cruz Island

Site #29 SCLS

Year sampling began: 2005

2009 sampling dates: 9/3

2009 status: Dominated by *Strongylocentrotus franciscanus* and *S. purpuratus*

This site continued to be dominated by *Strongylocentrotus* spp. and was almost entirely devoid of macroalgae. Similar to last year, there were no *Macrocystis pyrifera*, *Eisenia arborea*, *Pterygophora californica*, *Laminaria farlowii*, *Cystoseira* spp., *Desmarestia* spp., *Gigartina* spp. or *Gelidium* spp. present. Green algae cover was 0.33%. Miscellaneous red algae cover was 6.3%, a decrease from last year and the lowest cover recorded at this site. This category consisted mostly of *Laurencia pacifica*. Encrusting coralline algae cover was 44%, similar to last year. Articulated coralline algae were rare and none were observed on RPCs, similar to past years. Miscellaneous plants were common, consisting of filamentous diatoms, with a 3.7% cover, a decrease from last year and low for this site. Bare substrate cover was 30%, similar to past years.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover was 19%, similar to last year. The most dominant miscellaneous invertebrates in this category were hydroids and *Spirobranchus* spp. Tunicates were uncommon with a cover of 2.0%. Sponge cover was 0.17%. *Tethya aurantia* density was 0.014/m², and most individuals were cryptic as they were covered with silt and algae. *Diopatra ornata* were not observed on RPCs. Miscellaneous bryozoan cover remained similar to last year at 5.5%. *Diaperoecia californica* cover was 0.17%. *Corynactis californica* cover was 0.5%. *Balanophyllia elegans* were common with a cover of 0.33%. *Astrangia lajollaensis* were moderately abundant with a cover of 5.5%. *Lophogorgia chilensis* were abundant on the offshore side with a density of 0.11/m², similar to last year. No *Muricea fruticosa* were observed at the site. *Muricea californica* were rare with a density of 0.0014/m².

Strongylocentrotus franciscanus and *S. purpuratus* were both moderately abundant and were recorded at densities of 5.3/m² and 9.4/m², respectively and similar to past years. These densities are relatively low for a site that is dominated by *Strongylocentrotus* spp.. Most *Strongylocentrotus* spp. were notably large in size for a barren area, and we suspect that this may be because of a large amount of drift algae that often accumulates downwind of Little Scorpion Rock. No juvenile *Strongylocentrotus* spp. were observed on the transect. *Lytechinus anamesus* were rare, but more abundant offshore of the transect. Density of *L. anamesus* was 0.0097/m². *Centrostephanus coronatus* were common, although none were observed in 1 m quadrats. On September 3rd we estimated 3% of *S. franciscanus*, *S. purpuratus* and *L. anamesus* were observed with wasting disease.

Patiria miniata were common with all sizes present and density remained relatively high for this site with a density of 1.6/m². *Pisaster giganteus* were also common with all sizes present and were

observed on both 1 m quadrats and 5 m quadrats with densities of 0.017/m² and 0.10/m², respectively. *Pycnopodia helianthoides* were rare with none observed on band transects and only one observed at the site. *Parastichopus parvimensis* were common with a density of 0.29/m². No sea star wasting disease was observed.

While we were at the site, we observed a commercial sea cucumber fisher out of Channel Islands Harbor began harvesting just east of the monitoring site. They were using SCUBA and appear to be covering large areas for harvesting.

No *Haliotis* spp. were observed at this site. *Cypraea spadicea* were common with a density of 0.013/m². *Megastraea undosa* seemed notably uncommon compared to recent years with a density of 0.13/m², and only 13 found at the site for size frequencies. Only two small ones were observed and their average size has gradually increased to 77 mm over the past four years, indicating little recruitment at this site. *Tegula regina* were common and large with a density of 0.083/m², similar to last year. *Kelletia kelletii* were rare and large with a density of 0.028/m². *Megathura crenulata* were notably abundant with a density of 0.37/m², similar to last year. *Crassidoma giganteum* were common with all sizes present at a density of 0.044/m², similar to last year. *Aplysia californica* were common with a density of 0.033/m², similar to last year. *Panulirus interruptus* density was 0.0028/m², similar to past years.

This site continued to have high fish abundance and diversity. *Coryphopterus nicholsii* were notably more abundant than last year with a density of 3.0/m² and up to 455 observed. *Alloclinus holderi* density was similar to last year at 0.042/m² and up to six observed. *Lythrypnus dalli* were also notably more abundant than last year with up to 404 observed and a density of 1.0/m². *Oxylebius pictus* were moderately abundant with up to 44 observed. *Chromis punctipinnis* were the most abundant fish with up to 585 adults and 34 juveniles observed. This was one of our first observations of juvenile *C. punctipinnis* this year. *Oxyjulis californica* were common with up to 47 adults and 16 juveniles observed. Up to 17 female and 11 juvenile *Semicossyphus pulcher* were observed. Up to five female, one juvenile and seven male *Halichoeres semicinctus* were observed. *Hypsypops rubicundus* were abundant with up to 23 adults observed. Adult *Paralabrax clathratus* were common with up to 25 observed. Off shore of the transect in midwater adult *P. clathratus* were notably abundant. Up to 16 adult *Girella nigricans* were observed. *Embiotoca jacksoni* were common with up to 13 adults observed. Up to six adult *Rhacochilus vacca* were observed. One adult *Sebastes serranoides* was observed. One adult *Sebastes mystinus* was observed. Up to 18 adult *Sebastes atrovirens* were observed. Eight adult and six juvenile *Sebastes serripes* were observed. Six adult *Sebastes chrysomelas*, black and yellow rockfish, were observed. Three *Heterodontus francisci*, horn shark, were observed. One adult *Caulolatilus princeps*, ocean whitefish, was observed. Eight *Medialuna californiensis*, halfmoon, were observed. One *Gymnothorax mordax*, California moray eel, was observed. One *Sebastes carnatus*, gopher rockfish, was observed. Roving diver fish counts were conducted on September 3rd by five divers observing 23 species.

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

Location: Pedro Reef, Santa Cruz Island

Site #30 SCPRF

Year sampling began: 2005

2009 sampling dates: 7/28

2009 status: Dominated by *Strongylocentrotus franciscanus* and *S. purpuratus*

This site continues to be devoid of macroalgae as it has been since we began monitoring it in 2005. No *Macrocystis pyrifera*, *Eisenia arborea*, *Pterygophora californica*, *Laminaria farlowii*, *Cystoseira* spp., *Desmarestia* spp. or *Gigartina* spp. were observed, similar to past years. A small amount of *Gelidium* spp. was observed directly along the transect for a cover of 0.17% cover. This is the first time we have recorded this algae in RPCs, but a small amount of it has been present in past years on the tops of rocks in the shallower area at the south eastern side of the transect. Miscellaneous red algae cover was 8.7%, similar to past years. Miscellaneous green algae were not observed on RPCs, although *Codium fragile* was observed at the site. Miscellaneous plants (i.e. filamentous diatoms) were observed at 8.0% cover, higher than last year and they were observed throughout the site. Articulated coralline algae cover was 0.67%. Encrusting coralline algae cover was 52%, the highest recorded at this site. Bare substrate cover was 27%, similar to previous years.

Miscellaneous invertebrates cover excluding *Ophiothrix spiculata* cover was 22%, similar to past years. The most dominant miscellaneous invertebrate in this category was *Spirobranchus spinosus*, Christmas tree worms. Tunicates were not observed on RPCs. *Styela montereyensis* was not observed at the site. Sponge cover was 0.67%, similar to last year. *Tethya aurantia* were moderately abundant with a density of 0.10/m². *Diopatra ornata* were common with a cover of 0.17%. *Serpulorbis squamigerus* were not observed on RPCs. Miscellaneous bryozoans were rare with a cover of 1.3%. *Diaperoecia californica* were not observed on RPCs. *Corynactis californica* were very abundant with a cover of 15%, the highest recorded at this site. *Astrangia lajollaensis* and *Balanophyllia elegans* covers were 1.7% and 0.17%, respectively, and both similar to past years. *Lophogorgia chilensis* were abundant with a density of 0.29/m², similar to last year. *Muricea californica* and *M. fruticosa* densities were 0.0069/m² and 0.0028/m², respectively.

Strongylocentrotus spp. remained abundant at this site and were at their highest densities recorded for this site, though similar to past years. *Strongylocentrotus purpuratus* density was 74/m² and most were small with a mean of 19 mm, similar to last year. *Strongylocentrotus franciscanus* were moderately abundant with a density of 12/m² and were also small with a mean size of 33 mm, similar to last year. *Centrostephanus coronatus* were observed at the site, but none were observed on quadrats. *Lytechinus anamesus* were common and we counted them on both band transects and 1 m quadrats. Their densities were 0.63/m² and 0.88/m², respectively. One *L. anamesus* and we estimated that 1.0% of *S. purpuratus* and *S. franciscanus* were observed with wasting disease during our July 28th visit.

Pisaster giganteus were counted on both 1 m and 5 m quadrats with densities of 0.042/m² and 0.070/m², respectively. *Patiria miniata* were common with a density of 0.63/m². Several *A. miniata* looked unhealthy with white patches where the surface tissue appeared to be sloughing off which is indicative of wasting disease. *Pycnopodia helianthoides* were observed at the site, but not during sampling. *Parastichopus parvimensis* were common at a density of 0.29/m², with several small

individuals observed. No *Pachythyone rubra* were observed. We presume that the *A. miniata* described above had sea star wasting disease, but the water temperature was not abnormally warm, so this would be an unusual event.

No *Haliotis* spp. were observed at the site. *Cypraea spadicea* were common at 0.25/m². *Megastrea undosa* were common with a density of 0.042/m². This is the lowest density recorded for this site since we began monitoring in 2005. This density seems to underestimate the actual density at the site, though there has been a gradual decline in density since 2006. No *Tegula regina* were observed. *Kelletia kelletii* density remained relatively low at 0.0042/m². *Megathura crenulata* were relatively abundant for this site with a density of 0.082/m², the highest recorded and an abundance of small individuals observed in crevice habitat. There has been a notable decline in *Crassidoma giganteum* density since we began monitoring this site in 2005. *Crassidoma giganteum* continued to decrease in density for the fifth consecutive year to 0.0069/m², with many empty shells observed. Only 11 were located for size frequencies, similar to last year. *Aplysia californica* were abundant and mostly small in size at a density of 0.072/m², the highest recorded at this site. No *Panulirus interruptus* were observed at the site.

Fish had moderate diversity and abundance for this barren site, similar to last year. *Coryphopterus nicholsii* were the most abundant fish species with up to 425 observed and a density of 2.7/m². *Alloclinus holderi* were rare with up to four observed during the fish count and none on 1 m quadrats, similar to last year. *Lythrypnus dalli* were common with up to 51 observed and a density of 0.042/m². *Oxylebius pictus* were moderately abundant with up to 29 observed. *Chromis punctipinnis* were common with up to 120 adults and no juveniles observed. *Oxyjulis californica* were common with up to 172 adults and 15 juveniles observed. Seven females, nine juveniles and no male *Semicossyphus pulcher* were observed. Two female, three juvenile and one male *Halichoeres semicinctus* were observed. *Hypsypops rubicundus* were common with up to five adults observed. Up to 12 adult and no juvenile *Paralabrax clathratus* were observed. *Girella nigricans* were present with up to three observed. No *Embiotoca jacksoni* were observed. One *Rhacochilus vacca* was observed during the fish count. One juvenile *Sebastes serriceps* was observed. No *Sebastes atrovirens* or *Sebastes serranoides* were observed. A school of up to 14 juvenile *Sebastes mystinus*, blue rockfish, were observed. Two *Caulolatilus princeps*, ocean whitefish, were observed. *Medialuna californiensis*, halfmoon, were observed after the roving diver fish count was conducted. Roving diver fish counts were conducted on July 28th by five divers observing 16 species.

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

Location: Keyhole, Anacapa Island

Site #31 ANKH

Year sampling began: 2005

2009 sampling dates: 7/29, 9/21, 10/21, 12/3

2009 status: Dominated by *Strongylocentrotus purpuratus*

This site remained dominated by *Strongylocentrotus purpuratus*, though about 25% of the transect was estimated to be covered with algae. *Macrocystis pyrifera* was patchy and we estimated that it

was present in approximately 15% of the transect, but plants were small and did not form a canopy. However, inshore of the transect there was some canopy cover. Adult, subadult and juvenile *M. pyrifera* densities were 0.005/m², 0.13/m² and 0.083/m², respectively, and cover was 4.7%. All of the *M. pyrifera* appeared healthy. *Eisenia arborea* were common with adult and juvenile densities at 0.21/m² and 0.33/m², respectively and a cover of 4.7%. No *Pterygophora californica* were observed. Adult *Laminaria farlowii* were rare with none observed on quadrats, but juveniles were common with a density of 0.13/m², and cover was 0.5%, this is the first time this species has been observed during the sampling protocol since we began monitoring the site in 2005. No *Cystoseira* spp. or *Desmarestia* spp. were recorded during sampling, though *Cystoseira* spp. were common though patchy at the site. Miscellaneous brown algae cover was 7.3%, the lowest recorded cover since sampling began. Miscellaneous brown algae consisted mainly of *Dictyota/Pachydictyon* spp., which were moderately abundant in some areas. Green algae cover was similar to last year at 0.67%. Miscellaneous red algae were common at 29%, the highest recorded cover since 2005. No *Gelidium* spp. or *Gigartina* spp. were recorded during sampling. Articulated coralline algae cover was 0.83%. Encrusting coralline algae cover was 46%, similar to past years. Miscellaneous plants, consisting mostly of filamentous diatoms cover was 3.3%, the lowest recorded at this site, and following a decreasing trend since 2006. Bare substrate covered 20% of the bottom, similar to recent years.

On October 21st we made a dive to search for the invasive algae *Sargassum horneri* which recently established on Anacapa Island. *Sargassum horneri* was observed in two small patches within the transect area and three small patches outside the KFM transect area. Two of the patches contained 15 to 20 individuals and the other patches had less than 15 plants. All were small, not reproductive and observed at depths from 4-33 meters. On December 3rd we made another very brief dive at the site to check on the status of the *S. horneri*. On this date, we observed three plants directly along the transect and several more inshore. All of these plants were small, though a bit larger than what we observed on October 21st.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover was 26%. The most common miscellaneous invertebrates in this category consisted of hydroids, *Spirobranchus spinosus* and gorgonians. During our brief visit on December 3rd, there was a significant recruitment event of *Balanus* sp. that we estimated to cover at least 25% of the large boulders along the transect. These were not observed in during our earlier visits. Tunicates cover was 1.5%, no *Styela montereyensis* were observed at the site. *Serpulorbis squamigerus* were not observed on RPCs. Sponges were not observed during RPCs. *Tethya aurantia* were rare and none were observed on band transects. These were rare at the site and we only found one for size frequencies. *Diopatra ornata* were common at 3% cover. Miscellaneous bryozoan cover was 10%, similar to past years. *Diaperoecia californica* were common, though appeared unhealthy with cover at 0.83%. *Corynactis californica* cover was 1%, similar to past years. *Astrangia lajollaensis* and *Balanophyllia elegans* were both common with cover of 0.17% and 1.2%, respectively. All three gorgonian species were present at densities similar to past years. *Lophogorgia chilensis* were abundant with densities at 0.27/m². *Muricea californica* were common at 0.025/m² and *Muricea fruticosa* were relatively rare at 0.0014/m². *Eugorgia rubens* were abundant, similar to past years, although we do not record the density of this species. Several *Eugorgia rubens* recruits, approximately one to two centimeters in length, were observed growing on

Dictyota/Pachydictyon spp. algae. The large colony of *Parazoanthus lucificum* near the 30 meter mark was observed as it has been since 2005.

Strongylocentrotus purpuratus were abundant and most were small with juveniles common. *Strongylocentrotus purpuratus* density was 22/m². Adult *Strongylocentrotus franciscanus* were common with juveniles common under the spine canopy. *S. franciscanus* density was 2.5/m², the lowest recorded at this site and average size was relatively small at 34 mm. *Lytechinus anamesus* were common on the offshore side of the transect and few were observed on the onshore side. Densities were recorded for both 1 m quadrats and band transects at 0.083/m² and 0.18/m², respectively. *Centrostephanus coronatus* were relatively abundant, consisting mostly of large individuals, at a density of 0.75/m². One *S. franciscanus* along with an estimated 4% of *L. anamesus* were observed with sea urchin wasting disease.

Pisaster giganteus were uncommon and counted on 1 m quadrats and 5 m quadrats with densities of 0.0/m² and 0.015/m², respectively. *Pisaster giganteus* consisted of mostly large individuals with only one small one observed. *Patiria miniata* were common with all sizes present at a density of 0.83/m². No *Pycnopodia helianthoides* were observed at the site, similar to previous years. *Ophiothrix spiculata* were rare with a cover of 0.17%. *Parastichopus parvimensis* were moderately abundant at a density of 0.46/m². On September 21st a notable wasting disease event was observed for *Patiria miniata*, with approximately 20% of individuals showing signs of disease.

No *Haliotis* spp. were observed at the site during sampling, though one fresh *Haliotis corrugata* shell was found and measured 35 mm, indicating recent recruitment. *Cypraea spadicea* were rare with none observed on 1 m quadrats this year. *Megastrea undosa* were common, with a density of 0.33/m², and no small ones were observed. One *Lithopoma gibberosa* was observed for a density of 0.042/m². No *Tegula regina* were observed on 1 m quadrats, but they were common at the site. *Kelletia kelletii* were present at a density of 0.013/m². *Megathura crenulata* remained relatively uncommon with a density of 0.011/m². *Crassidoma giganteum* were moderately abundant at a density of 0.086/m², similar to past years and with both large and small individuals present. *Aplysia californica* were observed at a density of 0.0014/m². *Panulirus interruptus* density was 0.0042/m², similar to past years. *Balanus* sp. were notably abundant during our brief visit on December 3rd, these were not observed during our regular sampling in the summer. We estimated that between 25-50% of the rocks directly along the transect were covered in small *Balanus* sp. indicating a relatively high recruitment event for this species.

Fish diversity and abundance remained moderate for this site, similar to last year. *Coryphopterus nicholsii* were common at a density of 1.8/m² and up to 360 observed during the roving diver fish count. *Alloclinus holderi* density was 0.42/m² with up to 33 observed. *Lythrypnus dalli* had a density of 0.42/m² and up to 31 were observed. *Oxylebius pictus* were abundant and notably active with up to 21 observed. *Chromis punctipinnis* were abundant, similar to previous years, with up to 385 adults and one juvenile observed. During additional dives conducted on September 21st up to 200 juvenile *C. punctipinnis* were observed. *Oxyjulis californica* were common with up to 83 adults and 24 juveniles observed. One large male and up to 12 female *Semicossyphus pulcher* were observed. Juvenile *S. pulcher* were especially common with up to 14 observed. Up to seven male, seven female

and two juvenile *Halichoeres semicinctus* were observed. Up to 12 *Hypsypops rubicundus* were observed. Four *Girella nigricans* observed. *Paralabrax clathratus* were common with up to 26 adults and one juvenile observed. Up to 14 adult and two juvenile *Embiotoca jacksoni* were observed. No *Embiotoca lateralis* were observed. One *Damalichthys vacca* was observed. One *Brachyistius frenatus*, kelp surfperch, was observed at the site. No *Sebastes mystinus* or *Sebastes serranoides* were observed. *Sebastes atrovirens* were present with one adult and no juveniles observed. *Sebastes serriceps* were common with up to four adults and four juveniles observed. *Lythrypnus zebra*, zebra goby, were common with up to eleven observed. Two *Medialuna californiensis*, halfmoon, were observed. One juvenile *Heterostichus rostratus*, giant kelpfish, was observed. One *Gibbonsia* spp. was observed. Roving diver fish counts were conducted on July 29th by five divers observing 21 species.

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

Location: East Fish Camp, Anacapa Island

Site #32 ANEFC

Year sampling began: 2005

2009 sampling dates: 8/21, 8/31

2009 status: Dominated by *S. franciscanus*, *S. purpuratus* and *Ophiothrix spiculata*

This site changed little from last year and continued to be dominated by *Strongylocentrotus franciscanus*, *Strongylocentrotus purpuratus* and *Ophiothrix spiculata*. The site remained mostly devoid of macroalgae except for one adult *Eisenia arborea* that was observed on the onshore side at the east end. No *Macrocystis pyrifera*, *Pterygophora californica*, *Laminaria farlowii*, *Cystoseira* spp., *Desmarestia* spp., *Gigartina* spp. or *Gelidium* spp. were observed. Miscellaneous red algae cover was 10%, and consisted mostly of *Laurencia pacifica*. Neither miscellaneous brown algae nor miscellaneous green algae were observed on RPCs. Miscellaneous plants, consisting of filamentous diatoms, were not observed RPCs for the first time since sampling began in 2005. No articulated coralline algae were observed on RPCs, similar to past years. Encrusting coralline algae cover was 52%, similar to past years, and were the most abundant algae at the site. Bare substrate covered 35% of the bottom, similar to previous years.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover was 2.2% and consisted mostly of hydroids. Tunicates were rare with a cover of 0.17%, and no *Styela montereyensis* were observed. Miscellaneous sponges were rare and not observed on RPCs. *Tethya aurantia* were common with a density of 0.019/m², similar to last year. No *Diopatra ornata* were observed on RPCs for the third consecutive year. Miscellaneous bryozoans were rare with a cover of 0.17% and no *Diaperoecia californica* were observed on RPCs. *Corynactis californica* were moderately abundant on the tops of rocks at 8.5% cover. *Balanophyllia elegans* and *Astrangia lajollaensis* were observed at the site but not on RPCs. *Lophogorgia chilensis*, *Muricea californica* and *Muricea fruticosa* were observed with densities of 0.0097/m², 0.0042/m² and 0.0028/m², respectively and only 12, 17, and five, respectively, were found on the entire transect for size frequencies.

Strongylocentrotus purpuratus were very abundant with a density of 96/m², the highest density recorded for this site. Small *S. purpuratus* were common with moderately high recruitment observed in some areas along the transect. *Strongylocentrotus franciscanus* were also abundant and small at 15/m², similar to last year. *Centrostephanus coronatus* were relatively abundant with a density of 0.79/m², and several small recruits were observed. We have observed several other recruits of this species at other sites. *Lytechinus anamesus* were moderately abundant in the low lying sandy areas at the western end of the transect with a density of 0.51/m². Sea urchin wasting disease was prevalent with an estimated 30% of *S. purpuratus* and 20% of *S. franciscanus* showing advanced signs of the disease.

No *Pycnopodia helianthoides* were observed at the site. *Patiria miniata* were relatively abundant for Anacapa Island with a density of 1.2/m², the highest recorded for this site. *Pisaster giganteus* were relatively uncommon and notably large, with a density of 0.015/m² for 5 m quadrats and none observed on 1 m quadrats. Most were large and 34 *P. giganteus* were measured for size frequencies with a mean of 178 mm. *Parastichopus parvimensis* decreased to a density of 0.46/m² and most were notably small and appeared thin and skinny. *Ophiothrix spiculata* were moderately abundant with a cover of 16%, and most were located at the far east and far west ends of the transect. No sea star wasting disease was observed.

Similar to previous years, no live *Haliotis* spp. were observed at the site, although one fresh *H. corrugata* shell measuring 36 mm was found, indicating some recent recruitment. *Cypraea spadicea* were common with density of 0.29/m², similar to previous years. *Megastrea undosa* were common at 0.54/m², similar to last year. We observed a relatively high number of small recent *L. undosum* recruits, more than at any other site this year. No *Lithopoma gibberosa* were observed on 1 m quadrats, although two were seen at the site. *Tegula regina* density was 0.04/m², similar to last year. *Kelletia kelletii* were abundant with an increased density of 0.22/m². *Megathura crenulata* were abundant at 0.26/m², similar to last year. *Crassidoma giganteum* were common with both large and small observed with a density of 0.056/m². *Aplysia californica* were abundant with a density of 0.16/m², similar to recent years. *Panulirus interruptus* density was 0.0069/m², the first time this species has been observed on band transects at this site.

For an area dominated by echinoderms, fish were diverse and abundance seemed to have increased overall. *Coryphopterus nicholsii* were abundant with a density of 2.3/m² and up to 510 were observed during the roving diver fish count. The density for *Alloclinus holderi* was 0.083/m² with up to five observed, similar to last year. One *Lythrypnus dalli* was observed during roving diver fish count, but none were observed on 1 m quadrats. Up to 51 *Oxylebius pictus* were observed. *Chromis punctipinnis* were abundant with up to 720 adults and two juveniles observed. There were 75 adult and no juvenile *Oxyjulis californica* observed. Up to six female, no juvenile and three male *Halichoeres semicinctus* were observed. There were up to 13 female, eight juvenile and no male *Semicossyphus pulcher* observed. *Hypsypops rubicundus* were common with up to 19 adults observed. There were up to 14 adult and no juvenile *Paralabrax clathratus* observed. Seven adult *Girella nigricans* were observed. Three adult and no juvenile *Embiotoca jacksoni* were observed. Up to five adult *Damalichthys vacca* were observed. Two juvenile *Sebastes atrovirens* were observed.

Up to four juvenile *Sebastes mystinus* were observed. One adult and one juvenile *Sebastes serriceps* were observed. No *Sebastes serranoides* were observed. One juvenile *Sebastes* spp. was observed along with three juvenile *Sebastes miniatus*, vermillion rockfish. One *Scorpaenichthys marmoratus*, cabezon, was observed. Two *Lythrypnus zebra*, zebra goby, were observed. Roving diver fish counts were conducted on August 21st by seven divers observing 25 species.

Roving diver fish counts were performed at an earlier date than our other sampling protocols. During our subsequent sampling date on August 31st we made some observations that are worth mentioning as follows: one adult *Sebastes auriculatus*, brown rockfish, was observed. Several *Sebastes chrysomelas*, black and yellow rockfish, were observed. Juvenile life stages of *S. mystinus*, *S. miniatus* and *Sebastes* spp. of the KGB complex were observed along with several juvenile *Oxylebius pictus*. One large adult *Stereolepis gigas*, black sea bass, one large *Caulolatilus princeps*, ocean whitefish, and a *Gymnothorax mordax*, California moray eel, were also observed.

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

Location: Black Sea Bass Reef, Anacapa Island

Site #33 ANBSBR

Year sampling began: 2005

2009 sampling dates: 7/17, 9/01

2009 status: State of transition, but mostly dominated by *Ophiothrix spiculata*

This site continued to be mostly dominated by *Ophiothrix spiculata*; however, there was a notable increase in macroalgae at the east end of the site from approximately 0-30 meters. Adult and subadult *Macrocystis pyrifera* were common in this area and appeared more abundant than last year. Most plants were more than one meter off the transect line, which was probably the cause of the decline in abundance of this species. Juvenile *M. pyrifera* were rare and less abundant than last year. Adult, subadult and juvenile *Macrocystis pyrifera* densities were 0.015/m², 0.015/m², and 0.0/m², respectively. Cover of *M. pyrifera* was 4.3% and stipe density was 0.042/m². No *Eisenia arborea* or *Pterygophora californica* were observed. Adult and juvenile *Laminaria farlowii* were uncommon at densities of 0.042/m², and 0.0/m², respectively. This was first observation of this species at this site since monitoring began in 2005. *Cystoseira* spp. were rare with a cover of 0.17%, also the first observation of this species since 2005. Miscellaneous brown algae cover was 2.7%. Miscellaneous red algae cover was 19%, similar to last year. No *Gelidium* spp. or *Gigartina* spp. were observed during sampling, although several unhealthy *Gigartina* spp. plants were observed within the transect area. Green algae were not observed. Miscellaneous plants cover, consisting mostly of filamentous diatoms, was 3.8%. Encrusting coralline algae cover was high at 78%, similar to past years. Articulated coralline algae cover remained low at 0.33%. Bare substrate cover was 8.3%.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover was 4.2% and consisted mostly of *Chaetopterus variopedatus*, parchment tube worm, and hydroids. Tunicates were rare with 0.0% cover. No *Styela montereyensis* were observed. Sponges were relatively abundant with a cover of 1.3%. *Tethya aurantia* remained common with a density of 0.047/m². Miscellaneous bryozoans were common at 5.5% and consisted mostly of *Bugula* spp. and other encrusting species. *Diaperoecia*

californica were common on the rocky outcrops at 1.7% cover, similar to past years. *Corynactis californica* were common with a cover of 2.2%. *Astrangia lajollaensis* were common but were not observed during RPCs. *Balanophyllia elegans* were rare with 0.0% cover. *Lophogorgia chilensis*, *Muricea fruticosa* and *Muricea californica* were all common with densities of 0.0097/m², 0.0028/m² and 0.0014/m², respectively.

Strongylocentrotus franciscanus and *S. purpuratus* adults were moderately abundant and small while juveniles were common. Mean size and density of *S. franciscanus* was 36 mm and 3.1/m², respectively, similar to last year. Mean size of *S. purpuratus* was 21 mm and notably increased in density to 32/m², the highest density on record for this site. *Centrostephanus coronatus* were common and large with a density of 0.50/m², same as last year. No *Lytechinus anamesus* were observed at the site. No sea urchin wasting disease was observed.

Pisaster giganteus were also common and counted on 1 m quadrats and 5 m quadrats with densities of 0.13/m² and 0.015/m², respectively. *Pisaster giganteus* were mostly large with an average size of 166 mm. *Patiria miniata* were common with a density of 0.042/m² and a large mean size of 81 mm. *Ophiothrix spiculata* remained abundant and dominated most of the site with a cover of 61%, similar to recent years. No *Pycnopodia helianthoides* were observed. *Parastichopus parvimensis* were common and density increased to 1.4/m². No sea star wasting disease was observed.

No *Haliotis* spp. were observed at the site. *Cypraea spadicea* density was 0.13/m². *Megastraea undosa* were common and relatively large with an average size of 74 mm and a density of 0.083/m². No *Lithopoma gibberosa* were observed. *Tegula regina* had a density of 0.042/m². *Kelletia kelletii* were rare at 0.036/m². *Megathura crenulata* were common with a density of 0.075/m², most were large but a few smaller ones were observed. *Crassidoma giganteum* were observed at 0.0097/m², similar to last year. No *Aplysia californica* were observed. *Panulirus interruptus* density was 0.081/m²; the highest since monitoring began at this site. *Panulirus interruptus* were abundant in all sizes with several very large 10 plus pound individuals, approximately 20 at 4-8 pounds, and several 2-4 pounds or less. The crack at the east end of the transect on the north side was full with lobster.

Fish were abundant and diverse at this site, similar to last year. *Coryphopterus nicholsii* remained abundant with a density of 1.5/m² and up to 469 observed. *Alloclinus holderi* were relatively abundant at 0.92/m² and up to 15 observed. There were 185 *Lythrypnus dalli* observed with a density of 0.5/m². Eleven *Oxylebius pictus* were observed. *Chromis punctipinnis* were the most abundant fish species with up to 578 adults observed. Up to 35 adult *Oxyjulis californicus* were observed. Up to 24 female, six juvenile and four male *Semicossyphus pulcher* were observed. Six female, no juvenile and three male *Halichoeres semicinctus* were observed. Up to seven adult *Hypsypops rubicundus* were observed. Four *Girella nigricans* were observed. Up to 10 adult *Embiotoca jacksoni* were observed. *Rhacochilus vacca* were rare with three adults and no juveniles observed. Seven *Sebastes mystinus* juveniles and no adults were observed. Four adult *Sebastes atrovirens* were observed. *Paralabrax clathratus* were abundant with up to 51 adults and one juvenile observed. *Sebastes sericeus* were common with three adults and 19 juveniles observed. Six kelp/gopher/black and yellow/copper rockfish young of the year complex (KGB) were observed. There were up to six *Caulolatilus princeps*, ocean whitefish, observed. *Medialuna californiensis*, halfmoon, were present

with up to six observed. A school of up to three *Seriola lalandi*, yellowtail, were observed swimming through the site. Up to fourteen *Stereolepis gigas*, black sea bass, were observed during the roving diver fish count. During a subsequent visit in September, four black sea bass were observed during sampling. Roving diver fish counts were conducted on July 17th by seven divers observing 27 species.

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

Location: Lighthouse, Anacapa

Site #34 ANLH

Year sampling began: 2005

2009 sampling dates: 7/30, 10/23

2009 status: Dominated by *Strongylocentrotus purpuratus* and *S. franciscanus*

This site was similar to last year and was mostly devoid of brown macroalgae except for a one subadult and several juvenile *Macrocystis pyrifera* and several small *Cystoseira* spp. growing epiphytically on gorgonians. No *Eisenia arborea*, *Laminaria farlowii*, *Pterygophora californica*, or *Desmarestia* spp., were observed at the site. No green algae were observed during RPCs and miscellaneous brown algae cover was 0.17%. Miscellaneous red algae cover was 7.5%. Articulated coralline algae had a cover of 1.2%. Encrusting coralline algae cover was 59%, a record high since monitoring began at this site in 2005. Miscellaneous plants, mostly consisting of filamentous diatoms, were not observed on RPCs, a notable decline from last year. We made a survey dive on October 23rd to look for the newly invasive algae *Sargassum horneri*. None was present at the site and none was observed a estimated 100 meters to the east and west of the site. Bare substrate cover was 13%, similar to last year.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* was high at 26%, consisting mostly of hydroids, gorgonians and sea anemones in that order of abundance. *Spirobranchus spinosus*, Christmas tree worms, and *Chaetopterus variopedatus* were common. Encrusting invertebrates were moderately abundant at this site despite it being dominated by sea urchins. Tunicates were uncommon with a cover of 0.17%. Sponges were common and diverse and some unknown species were notably large and under ledges. Sponge cover was 1.8%. *Tethya aurantia* were common at 0.094/m² with all size classes present, similar to recent years. *Phragmatopoma californica* were not observed on RPCs. *Diopatra ornata* were common with a cover of 2.8%, the lowest recorded at this site since monitoring began in 2005. Miscellaneous bryozoans were common on the large rocks with a cover of 2.7%. *Diaperoecia californica* were present at the site but not observed on RPCs. There seemed to be a considerable amount of appropriate habitat for this species at this site. *Corynactis californica* had a cover of 3.0%. *Astrangia lajollaensis* were common and patchy with a cover of 1.3%. *Balanophyllia elegans* cover was 1.3%. All gorgonian species remained abundant with *Muricea californica* being the most abundant at 0.33/m². *Muricea fruticosa* density was 0.013/m² and *Lophogorgia chilensis* density was 0.096/m², all similar to recent years.

Strongylocentrotus spp. dominated the site, similar to last year. *Strongylocentrotus franciscanus* and *S. purpuratus* densities were 7.2/m² and 48/m², respectively and similar to recent years. Juvenile *S.*

franciscanus were rare and juvenile *S. purpuratus* were common. *Centrostephanus coronatus* were common in crevice habitats with a density of 0.13/m². Both large and small *Lytechinus anamesus* were common with a density of 0.16/m². The *L. anamesus* were very cryptic at the site and covered with debris. Sea urchin wasting disease was observed in three *S. purpuratus* and 10 *L. anamesus* that were collected for size frequency measurements and prevalence were estimated for these species at 1% and 5%, respectively. No sea urchin wasting disease was observed in *S. franciscanus*.

Pisaster giganteus were sampled on 1 m quadrats and 5 m quadrats with densities of 0.00/m² and 0.090/m², respectively. *Patiria miniata* were common at a density of 1.7/m², a notable increase and the highest density recorded for this site since monitoring began in 2005. *Parastichopus parvimensis* density continued to gradual increase for the fifth consecutive year to 0.67/m². Juvenile *P. parvimensis* were observed. *Ophiothrix spiculata* were scattered around the transect though none were observed on RPCs. Sea star wasting disease was not observed.

No *Haliotis* spp. were observed at this site. *Cypraea spadicea* density was 0.042/m². *Megastrea undosa* were common with a density of 0.21/m². No *Lithopoma gibberosa* were observed at the site. *Tegula regina* were rare with a density of 0.0/m² and only one found for size frequency measurements. *Kelletia kelletii* density was 0.16/m², similar to recent years. *Megathura crenulata* density was 0.064/m², similar to last year. *Crassidoma giganteum* were present in a large range of sizes at a density of 0.0069/m², the lowest recorded density and continuing a gradual decline since 1995. *Aplysia californica* were moderately abundant and mostly small. Density of *A. californica* was 0.065/m². No *Panulirus interruptus* were observed along the transect other than three legal size plus that were enclosed in an abandoned lobster trap with no line or buoy. These *P. interruptus* were released and the trap removed from the site after a video record was taken.

Similar to last year, fish diversity was moderate, but overall abundance was high. *Coryphopterus nicholsii* density was 1.7/m² with up to 92 observed during the roving diver fish count. *Alloclinus holderi* had a density of 0.13/m² and up to four were observed. *Oxylebius pictus* were abundant with up to 49 observed, similar to last year. Up to 555 adult and 27 juvenile *Chromis punctipinnis* were observed. *Oxyjulis californica* were common with up to 71 adults observed. Up to eight female, 27 juvenile and one male *Semicossyphus pulcher* were observed. Up to ten female, two juvenile and four male *Halichoeres semicinctus* were observed. *Hypsypops rubicundus* were common with up to 17 adults and no juveniles observed. Up to 13 adult and no juvenile *Paralabrax clathratus* were observed. *Girella nigricans* were abundant with up to ten adults observed. There were up to seven adult and two juvenile *Embiotoca jacksoni* observed. No *Embiotoca lateralis* were observed. Up to two *Rhacochilus vacca* was observed. One juvenile *Sebastes mystinus* was observed. No *Sebastes atrovirens* were observed. No *Sebastes serranoides* were observed. There was one juvenile *Sebastes serriceps* observed, but no adults. *Medialuna californiensis*, halfmoon, were present with up to three adults observed. One *Caulolatilus princeps*, ocean whitefish, was observed. One *Pleuronichthys coenosus*, C-O turbot, was counted. One *Scorpaena guttata*, California scorpionfish, was observed as well as one *Scorpaenichthys marmoratus*, cabezon. Two *Stereolepis gigas*, black sea bass, were observed after roving diver fish counts and thus not recorded on them. Roving diver fish counts were conducted on July 30th by five divers observing 22 species.

There appears to be a lot of fishing pressure at this site as we collected ten fishing weights and two hooks this summer. In the past, these have also been relatively abundant compared to many of our other sites.

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

Location: Webster's Arch, Santa Barbara Island

Site #35 SBWA

Year sampling began: 2005

2009 sampling dates: 5/20

2009 status: Dominated by *Strongylocentrotus purpuratus*, *S. franciscanus* and *Ophiothrix spiculata*

This site continued to be dominated by *Strongylocentrotus purpuratus*, *S. franciscanus* and *Ophiothrix spiculata*. Much of the low lying areas were devoid of macroalgae, but there were more algae on the high relief areas than last year. Adult and subadult *Macrocystis pyrifera* were absent from the site, and juveniles were rare with a density of 0.083/m². Several very small (less than six cm) juvenile *M. pyrifera* were observed on the tops of rocks on ridges. Adult and juvenile *Eisenia arborea* were observed scattered throughout the site and most of the adult plants were young. No *E. arborea* were observed on 1 m quadrats or RPCs this year. Additionally, no *Laminaria farlowii*, *Pterygophora californica*, *Cystoseira* spp. or miscellaneous brown algae were recorded or observed along the transect. Although no *Desmarestia* spp. was observed on RPCs, about ten small clumps were observed at the site. Green algae cover was 4.5%, similar to past years, and consisted mostly of *Codium setchellii/hubbsii*. Miscellaneous red algae cover was 12% lower than last year's all time high. The miscellaneous red algae consisted mostly of *Laurencia pacifica* located on the tops of rocks. Miscellaneous plant cover, consisting of filamentous diatoms, was recorded at 0.17%. Articulated coralline algae cover was 0.83%. Encrusting coralline algae remained abundant at 53% cover, similar to last year. Bare substrate remained similar to last year at 15%.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover was observed at 12% and consisted mostly of *Spirobranchus spinosus*, *Myxicola infundibulum* and hydroids. *Myxicola infundibulum*, a sabellid, has been notably abundant here the past two years. Tunicate cover was 1.8%, similar to last year. Sponges were common along the ridges, but none were observed for a cover of 0.0%. *Tethya aurantia* continued to be rare at 0.0028/m². Bryozoans were common and diverse on the steep ridges towards the west end of the transect, but they were less abundant than last year and cover decreased to 0.67%. *Diaperoecia californica* were also common in these areas, but none were observed on RPCs. *Corynactis californica* were abundant over most of the transect, a trend seen at other Santa Barbara Island sites as well, with a cover of 12%. *Balanophyllia elegans* cover was 1.7%. *Astrangia lajollaensis* cover was 0.17%. *Lophogorgia chilensis*, *Muricea californica* and *Muricea fruticosa* were present with densities of 0.0069/m², 0.0083/m² and 0.0014/m², respectively.

This site continued to be dominated by *Strongylocentrotus purpuratus* and they were abundant over most of the site, similar to past years. The density of *S. purpuratus* was 52/m², lower than last year

and the lowest recorded at this site since we began monitoring in 2005. *Strongylocentrotus franciscanus* were moderately abundant with a density of 9.0/m². Juvenile *S. franciscanus* and *S. purpuratus* were notably less common than at Arch Point and Cat Canyon. The mean size of *S. franciscanus* and *S. purpuratus* were 34 mm and 19 mm, respectively, similar to last year. *Centrostephanus coronatus* density was 0.042/m². *Lytechinus anamesus* were not observed. No sea urchin wasting disease was observed.

Pisaster giganteus were common but mostly found on high relief areas. They were counted on both 1 m quadrats and 5 m quadrats with densities of 0.17/m² and 0.14/m², respectively. *Patiria miniata* were moderately abundant at a density of 1.7/m². Five *Pycnopodia helianthoides* were observed along the transect for a density of 0.0028/m², similar to last year. *Ophiothrix spiculata* was the most abundant echinoderm and dominated the transect from 0-30 meters and was scattered about the rest of the transect. *Ophiothrix spiculata* cover has steadily increased over the last five years and is now at a high of 18%. *Parastichopus parvimensis* were common at a density of 0.38/m². No sea star wasting disease was observed.

No *Haliotis* spp. were observed at this site. *Cypraea spadicea* were common at a density of 0.71/m², similar to past years. *Megastraea undosa* were relatively abundant with a density of 0.83/m² and a mean size was 54 mm, similar to last year. Several *Lithopoma gibberosa* were observed with a density of 0.21/m². *Tegula regina* were present in patches and had a density of 0.33/m². *Kelletia kelletii* were rare, with a density of 0.0056/m². *Megathura crenulata* were moderately abundant, similar to last year, with a density of 0.15/m². *Crassedoma giganteum* continued to be rare with a density of 0.013/m². *Aplysia californica* were small and abundant at 0.13/m². No *Panulirus interruptus* were observed on band transects.

Similar to last year, the fish at this site were low in abundance and diversity. *Coryphopterus nicholsii* density was 0.17/m², similar to last year, and up to 23 individuals were observed during the roving diver fish count. *Alloclinus holderi* density was 0.42/m², although none were observed during the fish count. Several *A. holderi* were observed after the roving diver fish count and all were notably large. *Lythrypnus dalli* were not observed. *Oxylebius pictus* were common with up to 11 observed. *Chromis punctipinnis* were the most abundant fish at this site with up to 372 adults observed. No adult or juvenile *Oxyjulis californica* were observed. Up to five female, three juvenile and one male *Semicossyphus pulcher* were observed. No *Halichoeres semicinctus* or *Paralabrax clathratus* were observed. Two *Girella nigricans* were observed. Up to seven *Hypsypops rubicundus* were observed. No *Embiotocidae* spp. were observed. No *Sebastes serripes*, *Sebastes serranoides* or adult *Sebastes mystinus* were observed, but up to four juvenile *Sebastes mystinus* were observed. Up to one adult and one juvenile *Sebastes atrovirens* were observed. Up to three adult *Sebastes chrysomelas*, black and yellow rockfish, were observed. One *Ophiodon elongatus*, lingcod, was observed. One *Scorpaena guttata*, California scorpionfish, was observed. Roving diver fish counts were conducted on May 20th by two divers observing 14 species.

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

Location: Graveyard Canyon, Santa Barbara Island

Site #36 SBGC

Year sampling began: 2005

2009 sampling dates: 6/17

2009 status: Dominated by *Ophiothrix spiculata* and *Strongylocentrotus purpuratus*

Overall, this site was similar to last year. *Strongylocentrotus purpuratus* and *Ophiothrix spiculata* continued to dominate the site with fewer *S. franciscanus* observed than in years past. No indicator species of macroalgae were observed on 1 m quadrats or on RPCs, similar to past years. However, two subadult *Macrocystis pyrifera* were observed at the site; one attached to rocky substrate and the other growing epiphytically on *Muricea fruticosa*. Additionally, *Desmarestia* spp., *Gigartina* spp., small amounts of *Gelidium* spp. and *Dictyota/Pachydictyon* spp. were all observed growing epiphytically on gorgonians. Gorgonians seem to be a common substrate upon which macroalgae settle at this site. Miscellaneous brown algae and miscellaneous red algae covers were 0.33% and 4.8%, respectively. *Laurencia pacifica* was the most common red algae observed. Miscellaneous plants were present at 2.5% cover and consisted of filamentous diatoms. Encrusting coralline algae cover was similar to last year at 45%. No articulated coralline algae were observed on RPCs. Bare substrate cover remained high at 49%. This site appears to have been subjected to some sand scour, which may account for the high amount of bare substrate in the low lying areas.

Miscellaneous invertebrates cover excluding *Ophiothrix spiculata* was 7.2% with the most dominate species being *Chaetopterus variopedatus*, miscellaneous hydroids and the hydroid *Clavularia*. Tunicate cover was 0.50%, similar to past years. Sponges were common with a cover of 0.17% and *Tethya aurantia* were moderately abundant at 0.11/m². *Corynactis californica* were moderately abundant in some areas with a cover of 2.7%. Neither *Balanophyllia elegans* nor *Astrangia lajollaensis* were observed on RPCs but both were present at the site. *Lophogorgia chilensis*, *Muricea fruticosa* and *Muricea californica* had densities of 0.054/m², 0.0056/m², and 0.029/m², respectively, all similar to last year.

Strongylocentrotus franciscanus density decreased from last year to 2.2/m². This is the lowest density recorded for this species since we began monitoring at this site. *Strongylocentrotus purpuratus* density was 25/m², the highest on record at this site, and juveniles were moderately abundant. *Strongylocentrotus franciscanus* and *S. purpuratus* were both small with mean sizes of 29 mm and 12 mm, respectively. *Centrostephanus coronatus* had a density of 0.042/m², similar to the last four years. *Lytechinus anamesus* density was 0.065/m², being more common towards the 100 m end of the transect and were present in two size classes, large and small. No sea urchin wasting disease was observed.

Pisaster giganteus density was 0.020/m² on 5 m² quadrats while none were observed on 1 m² quadrats. Only five *P. giganteus* were found for size frequency measurements for a mean of 109 mm. *Patiria miniata* density was 0.67/m². No *Pycnopodia helianthoides* were observed, similar to past years. *Ophiothrix spiculata* was the most dominant invertebrate with a cover of 23%, lower than last year, but similar to recent years. *Parastichopus parvimensis* were common with a density of 0.083/m², a decrease from last year but a return to levels observed at this site from 2005-2007. No sea star wasting disease was observed.

No live *Haliotis* spp. or shells were seen at the site. *Cypraea spadicea* were common in their appropriate habitat with a density of 0.042/m². *Megastrea undosa* were not observed on 1 m² quadrats and only 13 were found for size frequencies. *Kelletia kelletii* were not observed. *Megathura crenulata* were rare with a density of 0.0028/m², similar to last year. *Crassedoma giganteum* were rare with a density of 0.0083/m², similar to past years. *Aplysia californica* were more abundant than last year at a density of 0.099/m² and they were mostly small. No *Panulirus interruptus* were observed.

This site continued to be low in fish abundance and diversity, but it was appeared to be more diverse than last year. *Coryphopterus nicholsii* were more abundant than last year and were common with a density of 1.2/m² and up to 220 individuals observed during the roving diver fish count. No *Lythrypnus dalli* were observed during 1 m quadrats this year. *Alloclinus holderi* were rare with a density of 0.042/m², and none were observed during the roving diver fish count. Two *Oxylebius pictus* were observed. Twenty-five adult *Chromis punctipinnis* were observed. Seventeen adult and 65 juvenile *Oxyjulis californicus* were observed, the first sighting of the species at the site since 2006. One female, no male and two juvenile *Semicossyphus pulcher* were observed. No *Halichoeres semicinctus* were observed. No *Hypsypops rubicundus* were observed. Up to three *Paralabrax clathratus* were observed. No *Girella nigricans* were observed. One *Embiotoca jacksoni* juvenile was observed. No *Embiotoca lateralis* were observed. One *Sebastes sericeus* juvenile was observed. No other indicator *Sebastes* spp. were observed. Four *Citharichthys stigmaeus*, speckled sand dab, were observed. One *Squatina californica*, Pacific angel shark, was observed. Two juvenile *Sebastes miniatus*, vermillion rockfish, were observed. Four kelp/gopher/black and yellow/copper rockfish young of the year complex (KGB) were observed. One juvenile *Scorpaenichthys marmoratus*, cabezon, was observed. Roving diver fish count was conducted on June 17th with five divers observing 17 species.

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

Location: Southeast Reef, Santa Barbara Island

Site #37 SBSER

Year sampling began: 2005

2009 sampling dates: 5/21, 6/17

2009 status: Half mature kelp forest and half dominated by *Strongylocentrotus* spp.

This site continued to be a mature and diverse kelp forest on the eastern 50 m half of the transect and *Strongylocentrotus* spp. dominated on the western 50 m of the transect. *Macrocystis pyrifera* was abundant on the western half of the transect, similar to last year. Adult, subadult and juvenile densities were 0.15/m², 0.23/m² and 1.0/m², respectively and cover was 10%. No adult *Laminaria farlowii* were observed but one juvenile was observed on 1 m² quadrats for a density of 0.042/m². *Cystoseira* spp. cover was 2.0%, the highest cover recorded since we began monitoring this site in 2005. *Eisenia arborea* were common along the transect with adult densities increasing to 0.42/m², the highest cover recorded at this site. Juvenile *E. arborea* density was 0.21/m². *Eisenia arborea* cover was relatively high at 4.7%, similar to last year. No *Pterygophora californica* was observed. No *Desmarestia* spp. were observed on RPCs, but was common in the kelp forest half of the transect.

Miscellaneous brown algae cover remained similar to past years at 2.2%. Green algae were observed with a cover of 1.5%. Miscellaneous red algae cover was 28%, lower than last year, and was slightly more abundant on the eastern half of the transect. *Gigartina* spp. were absent on RPCs.

Miscellaneous plants, consisting mostly of filamentous diatoms, were present at a cover of 7.7% and mostly present on the western 50 m of the transect. Encrusting coralline algae cover was high at 43%, similar to last year. Articulated coralline algae cover decreased from last year to 4.5%, but was similar to recent years. Bare substrate cover increased to 10.7%.

Miscellaneous invertebrates excluding *Ophiothrix spiculata* cover was 20%, similar to past years and this category consisted mostly of *Spirobranchus spinosus* and small anemones (probably *Sagartia/Cactosoma* spp.). Encrusting invertebrates were abundant in the kelp forest from 0-50 m and consisted mostly of encrusting tunicates (*Aplidium* sp.) and bryozoans (*Bugula* sp.). There were also notably more incrusting invertebrates on the 50-100 m end than last year, especially in the rock ridges. Tunicates were abundant at 15% cover, the highest density recorded since 2005. Sponges were common with cover at 1.2%. *Tethya aurantia* were rare at a density of 0.0042/m², similar to last year. *Diopatra ornata* were present in the low lying areas with a cover of 0.50%. *Serpulorbis squamigerus* cover was 0.33%. Miscellaneous bryozoans had a 21% cover, the highest on recorded at this site. *Diaperoecia californica* density was 0.0/m². *Corynactis californica* cover was 1.2%, the highest cover recorded since 2005. No *Astrangia lajollaensis* were observed on RPCs and *Balanophyllia elegans* cover was 0.18%. Gorgonians were uncommon with *Lophogorgia chilensis*, *Muricea californica* and *M. fruticosa* densities at 0.015/m², 0.01/m², and 0.0/m² respectively.

Strongylocentrotus spp. continued to dominate the western half of the transect. *Strongylocentrotus franciscanus* density was 8.8/m², similar to last year, and they were notably larger in the kelp forest area. For size frequencies, we collected about half the *S. franciscanus* from within the kelp forest area and half from outside that area recording a mean of 56 mm, the highest recorded at this site. Mean size of *S. franciscanus* has been gradually increasing over the past five years. *Strongylocentrotus purpuratus* densities have notably dropped from last year to 4.5/m² and were the lowest on record since monitoring began in 2005. *Strongylocentrotus purpuratus* were less abundant and patchier than *S. franciscanus* and mostly inhabited the crevices. *Strongylocentrotus franciscanus* and *S. purpuratus* juveniles were rare at the site. *Centrostephanus coronatus* density was 0.17/m², similar to last year. No *Lytechinus anamesus* were observed. No sea urchin wasting disease was observed.

Pisaster giganteus were common with densities on 1 m quadrats and 5 m quadrats at 0.13/m² and 0.06/m², respectively. These densities were higher than last year, but similar to previous years. *Patiria miniata* remained rare with only a few observed at the site and none observed during sampling. No *Pycnopodia helianthoides* were observed, similar to previous years. No *Ophiothrix spiculata* were observed. *Parastichopus parvimensis* were moderately abundant at 0.79/m².

No live *Haliotis* spp. were observed. No *Cypraea spadicea* were observed during sampling and they were uncommon. *Megastrea undosa* were common in relatively low density at 0.042/m². There were few small *L. undosum* indicating low recent recruitment. No *Tegula regina* were observed on 1 m quadrats but they were abundant along the western half of the transect and were notably

aggregated in groups of up to 10. *Kelletia kelletii* were not observed. *Megathura crenulata* density was low at 0.015/m². *Crassedoma giganteum* density was 0.031/m², similar to recent years. *Aplysia californica* density was 0.031/m², similar to past years. *Panulirus interruptus* were present at a density of 0.0014/m² and about six were observed at this site. Several notably larger *P. interruptus* were observed on the 50-100 m end of the site.

Fish diversity and abundance were similar to last year and notably higher than at our other Santa Barbara Island sites. *Coryphopterus nicholsii* were present with a density of 0.13/m² and up to 24 individuals were observed during the roving diver fish count. Two *Alloclinus holderi* were observed on the fish count, but several more were observed afterwards and most were notably large as we have observed at other sites this year. No *A. holderi* were observed on 1 m quadrats. *Oxylebius pictus* were present with up to 24 observed, an increase from last year. *Chromis punctipinnis* were the most abundant fish with up to 1340 adults observed. Adult and juvenile *Oxyjulis californica* were common with 150 and 110 observed, respectively. Nine female, one male and 15 juvenile *Semicossyphus pulcher* were observed. We have noted this high abundance of *S. pulcher* juveniles at many other sites this year. No *Halichoeres semicinctus* were observed. *Hypsypops rubicundus* were common with up to 28 adults recorded, many of these had nests. Three adult *Paralabrax clathratus* was observed. *Girella nigricans* were higher than last year with 40 observed along the transect. *Rhacochilus vacca* were not observed. Up to eight *Embiotoca jacksoni* were observed. *Sebastes atrovirens* were rare with three recorded during the fish count. One adult *Sebastes sericeus* was observed. Also during roving diver fish counts, nine *Medialuna californiensis*, halfmoon, and one large *Ophiodon elongatus*, lingcod, was observed. Two or more *Gymnothorax mordax*, California moral eel, were observed at the site but not counted on roving diver fish counts. Roving diver fish counts were performed on June 17th with six divers observing 18 species.

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

Appendix B. 1 Meter Quadrat Data

2009 1-M QUADRAT DATA: MEAN NUMBER PER M²

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
San Miguel Island - Wyckoff Ledge			
<i>Macrocystis pyrifera</i> , adult	0.6250	0.5691	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	1.6250	1.8356	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	5.1250	5.5478	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0417	0.1443	12
<i>Pterygophora californica</i> , adult	1.1250	1.0472	12
<i>Pterygophora californica</i> , juvenile	0.2917	0.4981	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0000	0.0000	12
<i>Kelletia kelletii</i>	0.9167	1.3456	12
<i>Megastrea undosa</i>	0.0000	0.0000	12
<i>Lithopoma gibberosa</i>	0.7917	0.7821	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	2.2500	2.3404	12
<i>Pisaster giganteus</i>	0.1250	0.3108	12
<i>Strongylocentrotus franciscanus</i>	0.4167	1.0624	12
<i>Strongylocentrotus purpuratus</i>	0.2083	0.3965	12
<i>Parastichopus parvimensis</i>	0.1250	0.2261	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.4167	0.6337	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	0.2083	0.3343	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12
San Miguel Island - Hare Rock			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.0000	0.0000	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.5833	0.8211	12
<i>Megastrea undosa</i>	0.0000	0.0000	12
<i>Lithopoma gibberosa</i>	0.1667	0.3257	12
<i>Tegula regina</i>	0.1250	0.2261	12
<i>Patiria miniata</i>	4.5833	2.2242	12
<i>Pisaster giganteus</i>	0.1667	0.5774	12
<i>Strongylocentrotus franciscanus</i>	11.3333	4.2976	12
<i>Strongylocentrotus purpuratus</i>	0.0000	0.0000	12
<i>Parastichopus parvimensis</i>	0.0417	0.1443	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	1.3750	1.6114	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12

2009 1-M QUADRAT DATA: MEAN NUMBER PER M₂

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - Johnson's Lee North			
<i>Macrocystis pyrifera</i> , adult	0.5417	0.4981	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	3.4583	3.1799	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	2.7917	3.3606	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.4583	0.7525	12
<i>Pterygophora californica</i> , juvenile	0.2083	0.3343	12
<i>Laminaria farlowii</i> , adult	0.6250	0.5276	12
<i>Laminaria farlowii</i> , juvenile	0.2917	0.3965	12
<i>Cypraea spadicea</i>	0.0833	0.1946	12
<i>Megastrea undosa</i>	0.0417	0.1443	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	1.7083	0.8908	12
<i>Pisaster giganteus</i>	0.3333	0.5774	12
<i>Strongylocentrotus franciscanus</i>	0.2500	0.5000	12
<i>Strongylocentrotus purpuratus</i>	0.3333	0.7177	12
<i>Parastichopus parvimensis</i>	0.0000	0.0000	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	3.0000	2.5495	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	0.0833	0.1946	12
<i>Alloclinolus holderi</i>	0.0000	0.0000	12
Santa Rosa Island - Johnson's Lee South			
<i>Macrocystis pyrifera</i> , adult	0.3333	0.3892	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.9167	1.4745	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.8333	1.1146	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0833	0.1946	12
<i>Pterygophora californica</i> , juvenile	0.0417	0.1443	12
<i>Laminaria farlowii</i> , adult	0.4583	0.6557	12
<i>Laminaria farlowii</i> , juvenile	0.1250	0.3108	12
<i>Cypraea spadicea</i>	0.5000	0.7687	12
<i>Megastrea undosa</i>	0.0000	0.0000	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	4.5000	1.9306	12
<i>Pisaster giganteus</i>	0.1667	0.3892	12
<i>Strongylocentrotus franciscanus</i>	0.3333	1.0075	12
<i>Strongylocentrotus purpuratus</i>	3.0417	7.3251	12
<i>Parastichopus parvimensis</i>	0.0417	0.1443	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	1.0000	0.9045	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	1.7083	2.3785	12
<i>Alloclinolus holderi</i>	0.0000	0.0000	12

2009 1-M QUADRAT DATA: MEAN NUMBER PER M₂

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - Rodes Reef			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.0000	0.0000	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.2500	0.3989	12
<i>Megastrea undosa</i>	0.0000	0.0000	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	5.4583	2.5447	12
<i>Pisaster giganteus</i>	0.5833	1.4275	12
<i>Strongylocentrotus franciscanus</i>	9.4167	7.9425	12
<i>Strongylocentrotus purpuratus</i>	2.4583	3.6460	12
<i>Parastichopus parvimensis</i>	0.0417	0.1443	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	0.0833	0.1946	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12
Santa Cruz Island - Gull Island South			
<i>Macrocystis pyrifera</i> , adult	0.3333	0.6155	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.2500	0.3371	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	2.4583	6.0206	12
<i>Eisenia arborea</i> , adult	0.2500	0.3989	12
<i>Eisenia arborea</i> , juvenile	0.5417	0.9160	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0833	0.2887	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Dictyonopsis reticulata/Agarum fimbriatum</i> , adult	0.0417	0.1443	12
<i>Cypraea spadicea</i>	0.5833	0.9495	12
<i>Megastrea undosa</i>	0.0417	0.1443	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	2.7500	1.2523	12
<i>Pisaster giganteus</i>	0.3750	0.6077	12
<i>Strongylocentrotus franciscanus</i>	0.8750	1.1104	12
<i>Strongylocentrotus purpuratus</i>	1.6667	1.4975	12
<i>Parastichopus parvimensis</i>	0.2917	0.4981	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.1250	0.3108	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	0.5000	0.5641	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12

2009 1-M QUADRAT DATA: MEAN NUMBER PER M₂

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Fry's Harbor			
<i>Macrocystis pyrifera</i> , adult	0.6667	0.6853	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	6.1250	6.3644	12
<i>Eisenia arborea</i> , adult	2.8333	1.9109	12
<i>Eisenia arborea</i> , juvenile	0.0417	0.1443	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0000	0.0000	12
<i>Megastrea undosa</i>	0.0000	0.0000	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	2.0000	1.5521	12
<i>Pisaster giganteus</i>	0.2917	0.4502	12
<i>Strongylocentrotus franciscanus</i>	0.1667	0.2462	12
<i>Strongylocentrotus purpuratus</i>	0.0000	0.0000	12
<i>Parastichopus parvimensis</i>	0.1250	0.2261	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	1.2083	1.9709	12
<i>Coryphopterus nicholsi</i>	1.4583	1.1172	12
<i>Alloclinus holderi</i>	0.1250	0.2261	12
Santa Cruz Island - Pelican Bay			
<i>Macrocystis pyrifera</i> , adult	2.4583	2.1047	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	1.5417	0.7821	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	10.4583	10.2635	12
<i>Eisenia arborea</i> , adult	0.1250	0.2261	12
<i>Eisenia arborea</i> , juvenile	0.4583	0.7217	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0000	0.0000	12
<i>Megastrea undosa</i>	0.0000	0.0000	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	0.1667	0.4438	12
<i>Pisaster giganteus</i>	0.0000	0.0000	12
<i>Strongylocentrotus franciscanus</i>	0.7917	1.1766	12
<i>Strongylocentrotus purpuratus</i>	2.4583	3.2923	12
<i>Parastichopus parvimensis</i>	0.0000	0.0000	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.7083	1.1958	12
<i>Coryphopterus nicholsi</i>	1.1250	1.4790	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12

2009 1-M QUADRAT DATA: MEAN NUMBER PER M₂

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Scorpion Anchorage			
<i>Macrocystis pyrifera</i> , adult	0.3333	0.8616	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.2083	0.4502	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	1.0417	2.3400	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.1250	0.3108	12
<i>Megastrea undosa</i>	0.1250	0.3108	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	0.3750	0.6077	12
<i>Pisaster giganteus</i>	0.0833	0.1946	12
<i>Strongylocentrotus franciscanus</i>	3.7083	2.2203	12
<i>Strongylocentrotus purpuratus</i>	43.4167	28.6768	12
<i>Parastichopus parvimensis</i>	0.0000	0.0000	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	1.3750	0.7724	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12
Santa Cruz Island - Yellow Banks			
<i>Macrocystis pyrifera</i> , adult	0.1667	0.2462	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.9583	1.3392	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.3333	0.6155	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.2500	0.3989	12
<i>Laminaria farlowii</i> , adult	0.0417	0.1443	12
<i>Laminaria farlowii</i> , juvenile	0.0417	0.1443	12
<i>Cypraea spadicea</i>	0.0833	0.1946	12
<i>Megastrea undosa</i>	0.1250	0.2261	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	2.5417	1.6440	12
<i>Pisaster giganteus</i>	0.0417	0.1443	12
<i>Lytechinus anamesus</i>	0.0000	0.0000	12
<i>Strongylocentrotus franciscanus</i>	1.2500	1.4062	12
<i>Strongylocentrotus purpuratus</i>	15.1667	15.3258	12
<i>Parastichopus parvimensis</i>	0.0000	0.0000	12
<i>Centrostephanus coronatus</i>	0.0417	0.1443	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	1.1667	1.0075	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12

2009 1-M QUADRAT DATA: MEAN NUMBER PER M₂

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - Admiral's Reef			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.0000	0.0000	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0833	0.1946	12
<i>Megastrea undosa</i>	0.0000	0.0000	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0417	0.1443	12
<i>Patiria miniata</i>	2.3333	1.8257	12
<i>Pisaster giganteus</i>	0.0833	0.1946	12
<i>Strongylocentrotus franciscanus</i>	8.6667	5.8672	12
<i>Strongylocentrotus purpuratus</i>	4.5417	3.5768	12
<i>Parastichopus parvimensis</i>	0.2917	0.6201	12
<i>Centrostephanus coronatus</i>	0.9167	1.1839	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	2.8750	2.8052	12
<i>Alloclinus holderi</i>	0.0833	0.1946	12
Anacapa Island - Cathedral Cove			
<i>Macrocystis pyrifera</i> , adult	0.4583	0.5418	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	19.2083	12.2316	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	5.6250	8.6842	12
<i>Eisenia arborea</i> , adult	0.2083	0.3343	12
<i>Eisenia arborea</i> , juvenile	0.2083	0.4981	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.1250	0.4330	12
<i>Laminaria farlowii</i> , adult	8.9167	2.9142	12
<i>Laminaria farlowii</i> , juvenile	22.9167	21.4199	12
<i>Cypraea spadicea</i>	0.0417	0.1443	12
<i>Megastrea undosa</i>	0.6667	0.5365	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	0.0000	0.0000	12
<i>Pisaster giganteus</i>	0.0000	0.0000	12
<i>Strongylocentrotus franciscanus</i>	2.7500	2.0944	12
<i>Strongylocentrotus purpuratus</i>	1.1667	1.0731	12
<i>Parastichopus parvimensis</i>	1.2500	0.7538	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	1.0833	0.8211	12
<i>Alloclinus holderi</i>	0.4583	0.4981	12

2009 1-M QUADRAT DATA: MEAN NUMBER PER M₂

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - Landing Cove			
<i>Macrocystis pyrifera</i> , adult	0.1667	0.2462	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	16.7083	20.3810	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	1.5417	3.0856	12
<i>Eisenia arborea</i> , adult	1.6667	2.0817	12
<i>Eisenia arborea</i> , juvenile	0.3750	0.5691	12
<i>Pterygophora californica</i> , adult	1.2083	1.4687	12
<i>Pterygophora californica</i> , juvenile	5.3333	10.9779	12
<i>Laminaria farlowii</i> , adult	7.9583	7.9214	12
<i>Laminaria farlowii</i> , juvenile	64.6667	76.9966	12
<i>Cypraea spadicea</i>	0.1667	0.5774	12
<i>Megastrea undosa</i>	0.2083	0.4502	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.2083	0.4981	12
<i>Patiria miniata</i>	0.0000	0.0000	12
<i>Pisaster giganteus</i>	0.0000	0.0000	12
<i>Strongylocentrotus franciscanus</i>	1.9167	1.9981	12
<i>Strongylocentrotus purpuratus</i>	2.6250	3.7545	12
<i>Parastichopus parvimensis</i>	0.8750	1.1894	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	0.0417	0.1443	12
<i>Alloclinus holderi</i>	0.0833	0.1946	12
Santa Barbara Island - SE Sea Lion Rookery			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.0000	0.0000	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0417	0.1443	12
<i>Megastrea undosa</i>	0.1667	0.2462	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.2500	0.7230	12
<i>Patiria miniata</i>	0.3333	0.3892	12
<i>Pisaster giganteus</i>	0.0000	0.0000	12
<i>Strongylocentrotus franciscanus</i>	7.0833	5.5014	12
<i>Strongylocentrotus purpuratus</i>	20.3750	16.2160	12
<i>Parastichopus parvimensis</i>	0.1250	0.2261	12
<i>Centrostephanus coronatus</i>	0.3333	0.5774	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	0.7500	0.6908	12
<i>Alloclinus holderi</i>	0.2917	0.3343	12

2009 1-M QUADRAT DATA: MEAN NUMBER PER M²

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Barbara Island - Arch Point			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.0000	0.0000	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0417	0.1443	12
<i>Megastrea undosa</i>	0.0417	0.1443	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.5000	1.5811	12
<i>Patiria miniata</i>	1.0000	0.7687	12
<i>Pisaster giganteus</i>	0.0000	0.0000	12
<i>Lytechinus anamesus</i>	0.2083	0.3965	12
<i>Strongylocentrotus franciscanus</i>	6.5000	2.2259	12
<i>Strongylocentrotus purpuratus</i>	139.5833	42.9428	12
<i>Parastichopus parvimensis</i>	0.2917	0.3343	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	0.4167	1.1448	12
<i>Alloclinus holderi</i>	0.1250	0.3108	12
Santa Barbara Island - Cat Canyon			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.0000	0.0000	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0000	0.0000	12
<i>Megastrea undosa</i>	1.8333	2.3094	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.1667	0.5774	12
<i>Patiria miniata</i>	0.2500	0.3989	12
<i>Pisaster giganteus</i>	0.1250	0.2261	12
<i>Strongylocentrotus franciscanus</i>	7.8750	3.8913	12
<i>Strongylocentrotus purpuratus</i>	135.4583	50.5310	12
<i>Parastichopus parvimensis</i>	0.0833	0.1946	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	0.2500	0.2611	12
<i>Alloclinus holderi</i>	0.2083	0.3965	12

2009 1-M QUADRAT DATA: MEAN NUMBER PER M₂

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
San Miguel Island - Miracle Mile			
<i>Macrocystis pyrifera</i> , adult	0.2083	0.3343	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.3750	0.5691	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	1.3333	2.8710	12
<i>Eisenia arborea</i> , adult	0.1250	0.2261	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.2500	0.3371	12
<i>Pterygophora californica</i> , juvenile	0.1667	0.3257	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0000	0.0000	12
<i>Megastrea undosa</i>	0.0000	0.0000	12
<i>Lithopoma gibberosa</i>	0.1250	0.3108	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	2.9167	2.2546	12
<i>Pisaster giganteus</i>	0.2917	0.3343	12
<i>Strongylocentrotus franciscanus</i>	3.7083	5.6587	12
<i>Strongylocentrotus purpuratus</i>	0.1250	0.2261	12
<i>Parastichopus parvimensis</i>	0.0833	0.1946	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.0417	0.1443	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	0.0000	0.0000	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12
Santa Rosa Island - Cluster Point			
<i>Macrocystis pyrifera</i> , adult	0.3750	0.6077	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.2500	0.5000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	3.5000	5.3725	12
<i>Eisenia arborea</i> , adult	0.1667	0.3892	12
<i>Eisenia arborea</i> , juvenile	0.0417	0.1443	12
<i>Pterygophora californica</i> , adult	3.2083	4.5898	12
<i>Pterygophora californica</i> , juvenile	0.9583	1.4994	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.5833	0.7334	12
<i>Megastrea undosa</i>	0.0000	0.0000	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	4.2083	1.3049	12
<i>Pisaster giganteus</i>	0.1667	0.3257	12
<i>Strongylocentrotus franciscanus</i>	4.2500	4.4287	12
<i>Strongylocentrotus purpuratus</i>	6.4167	7.5944	12
<i>Parastichopus parvimensis</i>	0.1250	0.2261	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.9167	1.0188	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	0.0417	0.1443	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12

2009 1-M QUADRAT DATA: MEAN NUMBER PER M₂

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - Trancion Canyon			
<i>Macrocystis pyrifera</i> , adult	0.3333	0.4924	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.4583	0.6895	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	3.8750	5.8703	12
<i>Eisenia arborea</i> , adult	0.0833	0.1946	12
<i>Eisenia arborea</i> , juvenile	0.1667	0.3257	12
<i>Pterygophora californica</i> , adult	0.9583	1.3892	12
<i>Pterygophora californica</i> , juvenile	0.7500	1.1580	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.5833	0.7017	12
<i>Megastrea undosa</i>	0.0000	0.0000	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	2.1250	1.5094	12
<i>Pisaster giganteus</i>	0.5000	0.6396	12
<i>Strongylocentrotus franciscanus</i>	8.1667	6.9129	12
<i>Strongylocentrotus purpuratus</i>	10.3333	7.8054	12
<i>Parastichopus parvimensis</i>	0.2083	0.4502	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.3333	0.4438	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	0.0000	0.0000	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12
Santa Rosa Island - Chickasaw			
<i>Macrocystis pyrifera</i> , adult	0.4167	0.6686	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.4167	0.5967	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	2.0833	3.7101	12
<i>Eisenia arborea</i> , adult	0.0417	0.1443	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.4583	0.7821	12
<i>Pterygophora californica</i> , juvenile	0.0833	0.1946	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.1667	0.3257	12
<i>Megastrea undosa</i>	0.0000	0.0000	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	2.4583	1.5294	12
<i>Pisaster giganteus</i>	0.0833	0.1946	12
<i>Strongylocentrotus franciscanus</i>	2.3750	3.5874	12
<i>Strongylocentrotus purpuratus</i>	1.8333	2.4985	12
<i>Parastichopus parvimensis</i>	0.0833	0.1946	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.1667	0.2462	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	0.0833	0.1946	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12

2009 1-M QUADRAT DATA: MEAN NUMBER PER M₂

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - South Point			
<i>Macrocystis pyrifera</i> , adult	1.1667	0.7785	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	2.0417	2.3975	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	7.7083	5.0202	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.9167	0.9003	12
<i>Pterygophora californica</i> , juvenile	0.4583	0.6557	12
<i>Laminaria farlowii</i> , adult	1.0417	1.0104	12
<i>Laminaria farlowii</i> , juvenile	1.0833	2.6700	12
<i>Cypraea spadicea</i>	0.2917	0.5823	12
<i>Megastrea undosa</i>	0.0000	0.0000	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	1.9167	1.9287	12
<i>Pisaster giganteus</i>	0.0833	0.1946	12
<i>Strongylocentrotus franciscanus</i>	0.6250	2.0127	12
<i>Strongylocentrotus purpuratus</i>	4.0000	5.1566	12
<i>Parastichopus parvimensis</i>	0.0000	0.0000	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.4167	0.5573	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	0.2083	0.4502	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12
Santa Cruz Island - Devil's Peak Member			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.0000	0.0000	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.2917	0.4981	12
<i>Megastrea undosa</i>	0.0833	0.1946	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0417	0.1443	12
<i>Patiria miniata</i>	0.7917	0.8649	12
<i>Pisaster giganteus</i>	0.1667	0.2462	12
<i>Strongylocentrotus franciscanus</i>	4.3750	2.2676	12
<i>Strongylocentrotus purpuratus</i>	28.1667	13.1501	12
<i>Parastichopus parvimensis</i>	0.7083	0.5823	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.7917	1.1172	12
<i>Coryphopterus nicholsi</i>	1.0417	0.8107	12
<i>Alloclinus holderi</i>	0.2500	0.3989	12

2009 1-M QUADRAT DATA: MEAN NUMBER PER M₂

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Potato Pasture			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.0000	0.0000	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0417	0.1443	12
<i>Megastrea undosa</i>	0.0417	0.1443	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.4167	0.5967	12
<i>Patiria miniata</i>	1.0417	1.1373	12
<i>Pisaster giganteus</i>	0.0833	0.2887	12
<i>Lytechinus anamesus</i>	0.5417	1.8764	12
<i>Strongylocentrotus franciscanus</i>	4.5833	4.4304	12
<i>Strongylocentrotus purpuratus</i>	19.8333	15.3361	12
<i>Parastichopus parvimensis</i>	0.8750	0.7424	12
<i>Centrostephanus coronatus</i>	0.2083	0.3343	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.2083	0.3965	12
<i>Coryphopterus nicholsi</i>	1.7083	1.3049	12
<i>Alloclinus holderi</i>	0.0417	0.1443	12
Santa Cruz Island - Cavern Point			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.0000	0.0000	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0417	0.1443	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0417	0.1443	12
<i>Megastrea undosa</i>	0.0000	0.0000	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	0.8333	0.7177	12
<i>Pisaster giganteus</i>	0.0833	0.1946	12
<i>Strongylocentrotus franciscanus</i>	1.9167	3.2462	12
<i>Strongylocentrotus purpuratus</i>	16.8750	8.8424	12
<i>Parastichopus parvimensis</i>	1.8750	1.0687	12
<i>Centrostephanus coronatus</i>	0.1667	0.3892	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.7917	0.7525	12
<i>Coryphopterus nicholsi</i>	2.3750	1.4790	12
<i>Alloclinus holderi</i>	0.1250	0.2261	12

2009 1-M QUADRAT DATA: MEAN NUMBER PER M₂

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Little Scorpion			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.0000	0.0000	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.1250	0.2261	12
<i>Megastrea undosa</i>	0.1250	0.3108	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0833	0.2887	12
<i>Patiria miniata</i>	1.6250	1.2990	12
<i>Pisaster giganteus</i>	0.1667	0.2462	12
<i>Strongylocentrotus franciscanus</i>	5.2917	2.3106	12
<i>Strongylocentrotus purpuratus</i>	9.4167	9.3562	12
<i>Parastichopus parvimensis</i>	0.2917	0.3343	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	1.0000	1.1871	12
<i>Coryphopterus nicholsi</i>	3.0000	1.2060	12
<i>Alloclinus holderi</i>	0.0417	0.1443	12
Santa Cruz Island - Pedro Reef			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.0000	0.0000	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.2500	0.5000	12
<i>Megastrea undosa</i>	0.0417	0.1443	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	0.6250	0.7424	12
<i>Pisaster giganteus</i>	0.0417	0.1443	12
<i>Lytechinus anamesus</i>	0.8750	1.3505	12
<i>Strongylocentrotus franciscanus</i>	11.4583	5.8870	12
<i>Strongylocentrotus purpuratus</i>	74.3750	36.8893	12
<i>Parastichopus parvimensis</i>	0.2917	0.4502	12
<i>Centrostephanus coronatus</i>	0.0000	0.0000	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0417	0.1443	12
<i>Coryphopterus nicholsi</i>	2.6667	1.9109	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12

2009 1-M QUADRAT DATA: MEAN NUMBER PER M₂

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - Keyhole			
<i>Macrocystis pyrifera</i> , adult	0.0833	0.2887	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.1250	0.2261	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.3750	1.2990	12
<i>Eisenia arborea</i> , adult	0.2083	0.3343	12
<i>Eisenia arborea</i> , juvenile	0.3333	0.5774	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.1250	0.2261	12
<i>Cypraea spadicea</i>	0.0000	0.0000	12
<i>Megastrea undosa</i>	0.3333	0.6853	12
<i>Lithopoma gibberosa</i>	0.0417	0.1443	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	0.8333	1.1348	12
<i>Pisaster giganteus</i>	0.0000	0.0000	12
<i>Lytechinus anamesus</i>	0.0833	0.1946	12
<i>Strongylocentrotus franciscanus</i>	2.5417	2.0165	12
<i>Strongylocentrotus purpuratus</i>	22.3333	14.3975	12
<i>Parastichopus parvimensis</i>	0.4583	0.4981	12
<i>Centrostephanus coronatus</i>	0.7500	0.5436	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.4167	0.9962	12
<i>Coryphopterus nicholsi</i>	1.7500	0.6216	12
<i>Alloclinus holderi</i>	0.4167	0.4174	12
Anacapa Island - East Fish Camp			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.0000	0.0000	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.2917	0.3343	12
<i>Megastrea undosa</i>	0.5417	0.5823	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0417	0.1443	12
<i>Patiria miniata</i>	1.1667	0.4924	12
<i>Pisaster giganteus</i>	0.0000	0.0000	12
<i>Lytechinus anamesus</i>	1.1667	1.7364	12
<i>Strongylocentrotus franciscanus</i>	14.8333	6.2535	12
<i>Strongylocentrotus purpuratus</i>	95.6250	31.0638	12
<i>Parastichopus parvimensis</i>	0.4583	0.6557	12
<i>Centrostephanus coronatus</i>	0.7917	0.5418	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	2.2917	1.7511	12
<i>Alloclinus holderi</i>	0.0833	0.2887	12

2009 1-M QUADRAT DATA: MEAN NUMBER PER M₂

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - Black Sea Bass Reef			
<i>Macrocystis pyrifera</i> , adult	0.0417	0.1443	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.0417	0.1443	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0417	0.1443	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.1250	0.2261	12
<i>Megastrea undosa</i>	0.0833	0.1946	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0417	0.1443	12
<i>Patiria miniata</i>	0.0417	0.1443	12
<i>Pisaster giganteus</i>	0.1250	0.4330	12
<i>Strongylocentrotus franciscanus</i>	3.1250	3.4911	12
<i>Strongylocentrotus purpuratus</i>	31.7500	19.2135	12
<i>Parastichopus parvimensis</i>	1.3750	1.1894	12
<i>Centrostephanus coronatus</i>	0.5000	1.0445	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.5000	0.9045	12
<i>Coryphopterus nicholsi</i>	1.5417	1.2695	12
<i>Alloclinus holderi</i>	0.9167	0.7930	12
Anacapa Island - Lighthouse			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.0000	0.0000	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0417	0.1443	12
<i>Megastrea undosa</i>	0.2083	0.4502	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	1.6667	1.0941	12
<i>Pisaster giganteus</i>	0.0000	0.0000	12
<i>Strongylocentrotus franciscanus</i>	7.2083	3.8462	12
<i>Strongylocentrotus purpuratus</i>	47.7917	19.7765	12
<i>Parastichopus parvimensis</i>	0.6667	0.7177	12
<i>Centrostephanus coronatus</i>	0.1250	0.2261	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	1.7083	1.3222	12
<i>Alloclinus holderi</i>	0.1250	0.3108	12

2009 1-M QUADRAT DATA: MEAN NUMBER PER M₂

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Barbara Island - Webster's Arch			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0833	0.1946	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.0000	0.0000	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.7083	1.2695	12
<i>Megastrea undosa</i>	0.8333	1.2851	12
<i>Lithopoma gibberosa</i>	0.2083	0.3343	12
<i>Tegula regina</i>	0.3333	0.4924	12
<i>Patiria miniata</i>	1.7083	1.3049	12
<i>Pisaster giganteus</i>	0.1667	0.2462	12
<i>Strongylocentrotus franciscanus</i>	8.9583	3.3942	12
<i>Strongylocentrotus purpuratus</i>	51.7500	33.6287	12
<i>Parastichopus parvimensis</i>	0.3750	0.4827	12
<i>Centrostephanus coronatus</i>	0.0417	0.1443	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	0.1667	0.5774	12
<i>Alloclinus holderi</i>	0.0417	0.1443	12
Santa Barbara Island - Graveyard Canyon			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	0.0000	0.0000	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	0.0000	0.0000	12
<i>Eisenia arborea</i> , adult	0.0000	0.0000	12
<i>Eisenia arborea</i> , juvenile	0.0000	0.0000	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0000	0.0000	12
<i>Cypraea spadicea</i>	0.0417	0.1443	12
<i>Megastrea undosa</i>	0.0000	0.0000	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	0.6667	0.6155	12
<i>Pisaster giganteus</i>	0.0000	0.0000	12
<i>Strongylocentrotus franciscanus</i>	2.1667	2.1567	12
<i>Strongylocentrotus purpuratus</i>	25.2917	25.7227	12
<i>Parastichopus parvimensis</i>	0.0833	0.2887	12
<i>Centrostephanus coronatus</i>	0.0417	0.1443	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	1.2083	1.0326	12
<i>Alloclinus holderi</i>	0.0417	0.1443	12

2009 1-M QUADRAT DATA: MEAN NUMBER PER M₂

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Barbara Island - Southeast Reef			
<i>Macrocystis pyrifera</i> , adult	0.2083	0.3343	12
<i>Macrocystis pyrifera</i> , juvenile, juvenile	1.0417	1.6301	12
<i>Macrocystis pyrifera</i> stipes for plants >1m	1.4583	2.9346	12
<i>Eisenia arborea</i> , adult	0.4167	0.7930	12
<i>Eisenia arborea</i> , juvenile	0.2083	0.4981	12
<i>Pterygophora californica</i> , adult	0.0000	0.0000	12
<i>Pterygophora californica</i> , juvenile	0.0000	0.0000	12
<i>Laminaria farlowii</i> , adult	0.0000	0.0000	12
<i>Laminaria farlowii</i> , juvenile	0.0417	0.1443	12
<i>Cypraea spadicea</i>	0.0000	0.0000	12
<i>Megastrea undosa</i>	0.0417	0.1443	12
<i>Lithopoma gibberosa</i>	0.0000	0.0000	12
<i>Tegula regina</i>	0.0000	0.0000	12
<i>Patiria miniata</i>	0.0000	0.0000	12
<i>Pisaster giganteus</i>	0.1250	0.2261	12
<i>Strongylocentrotus franciscanus</i>	8.7917	6.0320	12
<i>Strongylocentrotus purpuratus</i>	4.4583	4.4439	12
<i>Parastichopus parvimensis</i>	0.7917	0.7217	12
<i>Centrostephanus coronatus</i>	0.1667	0.3257	12
<i>Styela montereyensis</i>	0.0000	0.0000	12
<i>Lythrypnus dalli</i>	0.0000	0.0000	12
<i>Coryphopterus nicholsi</i>	0.1250	0.3108	12
<i>Alloclinus holderi</i>	0.0000	0.0000	12

Appendix C. 5 Meter Quadrat Data

2009 5-M QUADRAT DATA: MEAN NUMBER PER M²

NOTE: *Macrocystis*
Macrocystis

Adult = >1m and haptera above the primary
Subadult = >1m and NO haptera above the primary dichotomy

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
San Miguel Island - Wyckoff Ledge			
<i>Macrocystis pyrifera</i> , adult	0.3300	0.2884	40
<i>Macrocystis pyrifera</i> , subadult	0.0900	0.1429	40
<i>Pisaster giganteus</i>	0.0500	0.1086	40
San Miguel Island - Hare Rock			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> , subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.1050	0.2075	40
Santa Rosa Island - Johnson's Lee North			
<i>Macrocystis pyrifera</i> , adult	0.3850	0.3520	40
<i>Macrocystis pyrifera</i> , subadult	0.4050	0.5349	40
<i>Pisaster giganteus</i>	0.1500	0.2746	40
Santa Rosa Island - Johnson's Lee South			
<i>Macrocystis pyrifera</i> , adult	0.1250	0.1548	40
<i>Macrocystis pyrifera</i> , subadult	0.3950	0.3637	40
<i>Pisaster giganteus</i>	0.0500	0.1414	40
Santa Rosa Island - Rodes Reef			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> , subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.1850	0.2806	40
Santa Cruz Island - Gull Island South			
<i>Macrocystis pyrifera</i> , adult	0.1700	0.1786	40
<i>Macrocystis pyrifera</i> , subadult	0.1200	0.1800	40
<i>Pisaster giganteus</i>	0.1600	0.2274	40
Santa Cruz Island - Fry's Harbor			
<i>Macrocystis pyrifera</i> , adult	0.2750	0.2706	40
<i>Macrocystis pyrifera</i> , subadult	0.2150	0.3085	40
<i>Pisaster giganteus</i>	0.3250	0.2706	40
Santa Cruz Island - Pelican Bay			
<i>Macrocystis pyrifera</i> , adult	0.1500	0.2063	40
<i>Macrocystis pyrifera</i> , subadult	1.9450	1.0525	40
<i>Pisaster giganteus</i>	0.0250	0.0809	40
Santa Cruz Island - Scorpion Anchorage			
<i>Macrocystis pyrifera</i> , adult	0.1700	0.4542	40
<i>Macrocystis pyrifera</i> , subadult	0.1500	0.3728	40
<i>Pisaster giganteus</i>	0.0750	0.1335	40
Santa Cruz Island - Yellow Banks			
<i>Macrocystis pyrifera</i> , adult	0.0450	0.1239	40
<i>Macrocystis pyrifera</i> , subadult	0.3000	0.3679	40
<i>Pisaster giganteus</i>	0.0150	0.0700	40

2009 5-M QUADRAT DATA: MEAN NUMBER PER M₂

NOTE: *Macrocystis*
Macrocystis

Adult = >1m and haptera above the primary
Subadult = >1m and NO haptera above the primary dichotomy

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - Admiral's Reef			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> , subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.0950	0.1568	40
Anacapa Island - Cathedral Cove			
<i>Macrocystis pyrifera</i> , adult	0.2300	0.1843	40
<i>Macrocystis pyrifera</i> , subadult	0.3900	0.3788	40
<i>Pisaster giganteus</i>	0.0000	0.0000	40
Anacapa Island - Landing Cove			
<i>Macrocystis pyrifera</i> , adult	0.1450	0.2828	40
<i>Macrocystis pyrifera</i> , subadult	0.0750	0.1958	40
<i>Pisaster giganteus</i>	0.0200	0.0758	40
Santa Barbara Island - SE Sea Lion Rookery			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> , subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.0250	0.0670	40
Santa Barbara Island - Arch Point			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> , subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.0900	0.1429	40
Santa Barbara Island - Cat Canyon			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> , subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.0700	0.1067	40
San Miguel Island - Miracle Mile			
<i>Macrocystis pyrifera</i> , adult	0.1650	0.2558	40
<i>Macrocystis pyrifera</i> , subadult	0.1500	0.4019	40
<i>Pisaster giganteus</i>	0.2500	0.3382	40
Santa Rosa Island - Cluster Point			
<i>Macrocystis pyrifera</i> , adult	0.2250	0.2570	40
<i>Macrocystis pyrifera</i> , subadult	0.1900	0.4050	40
<i>Pisaster giganteus</i>	0.1300	0.2334	40
Santa Rosa Island - Trancion Canyon			
<i>Macrocystis pyrifera</i> , adult	0.3450	0.3419	40
<i>Macrocystis pyrifera</i> , subadult	0.0600	0.1766	40
<i>Pisaster giganteus</i>	0.5250	0.4976	40
Santa Rosa Island - Chickasaw			
<i>Macrocystis pyrifera</i> , adult	0.2800	0.2672	40
<i>Macrocystis pyrifera</i> , subadult	0.3750	0.5786	40
<i>Pisaster giganteus</i>	0.1050	0.1501	40

2009 5-M QUADRAT DATA: MEAN NUMBER PER M₂

NOTE: *Macrocystis*
Macrocystis

Adult = >1m and haptera above the primary
Subadult = >1m and NO haptera above the primary dichotomy

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - South Point			
<i>Macrocystis pyrifera</i> , adult	0.3400	0.2182	40
<i>Macrocystis pyrifera</i> , subadult	0.5800	0.4046	40
<i>Pisaster giganteus</i>	0.0900	0.1499	40
Santa Cruz Island - Devil's Peak Member			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> , subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.2250	0.2687	40
Santa Cruz Island - Potato Pasture			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> , subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.0850	0.1626	40
Santa Cruz Island - Cavern Point			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> , subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.1450	0.2309	40
Santa Cruz Island - Little Scorpion			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> , subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.1000	0.1633	40
Santa Cruz Island - Pedro Reef			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> , subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.0700	0.1400	40
Anacapa Island - Keyhole			
<i>Macrocystis pyrifera</i> , adult	0.0050	0.0316	40
<i>Macrocystis pyrifera</i> , subadult	0.1300	0.2503	40
<i>Pisaster giganteus</i>	0.0150	0.0533	40
Anacapa Island - East Fish Camp			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> , subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.0150	0.0533	40
Anacapa Island - Black Sea Bass Reef			
<i>Macrocystis pyrifera</i> , adult	0.0150	0.0533	40
<i>Macrocystis pyrifera</i> , subadult	0.0150	0.0533	40
<i>Pisaster giganteus</i>	0.0150	0.0533	40
Anacapa Island - Lighthouse			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> , subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.0900	0.1277	40

2009 5-M QUADRAT DATA: MEAN NUMBER PER M₂

NOTE: *Macrocystis*
Macrocystis

Adult = >1m and haptera above the primary
 Subadult = >1m and NO haptera above the primary dichotomy

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Barbara Island - Webster's Arch			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> , subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.1350	0.1889	40
Santa Barbara Island - Graveyard Canyon			
<i>Macrocystis pyrifera</i> , adult	0.0000	0.0000	40
<i>Macrocystis pyrifera</i> , subadult	0.0000	0.0000	40
<i>Pisaster giganteus</i>	0.0200	0.0608	40
Santa Barbara Island - Southeast Reef			
<i>Macrocystis pyrifera</i> , adult	0.1450	0.2754	40
<i>Macrocystis pyrifera</i> , subadult	0.2300	0.4014	40
<i>Pisaster giganteus</i>	0.0600	0.1215	40

Appendix D. Band Transect Data

2009 BAND TRANSECT DATA: MEAN NUMBER PER M²

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
San Miguel Island - Wyckoff Ledge			
Tethya aurantia	0.1861	0.1259	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.2736	0.1690	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	0.0750	0.0469	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.2264	0.0653	12
Megathura crenulata	0.0000	0.0000	12
Crassidoma giganteum	0.0056	0.0109	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0111	0.0148	12
Lytechinus anamesus	0.0000	0.0000	12
San Miguel Island - Hare Rock			
Tethya aurantia	0.0667	0.0586	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0333	0.0369	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	0.0014	0.0048	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0083	0.0133	12
Megathura crenulata	0.0069	0.0111	12
Crassidoma giganteum	0.0125	0.0176	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0917	0.0447	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Rosa Island - Johnson's Lee North			
Tethya aurantia	0.1014	0.0553	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0139	0.0172	12
Lophogorgia chilensis	0.0014	0.0048	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0292	0.0356	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0042	0.0075	12
Megathura crenulata	0.0083	0.0112	12
Crassidoma giganteum	0.0111	0.0109	12
Aplysia californica	0.0042	0.0075	12
Pycnopodia helianthoides	0.0694	0.0471	12
Lytechinus anamesus	0.0000	0.0000	12

2009 BAND TRANSECT DATA: MEAN NUMBER PER M²

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - Johnson's Lee South			
Tethya aurantia	0.2361	0.1015	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0958	0.0546	12
Lophogorgia chilensis	0.0431	0.0429	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0042	0.0104	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0431	0.0329	12
Megathura crenulata	0.0028	0.0096	12
Crassedoma giganteum	0.0181	0.0230	12
Aplysia californica	0.0111	0.0192	12
Pycnopodia helianthoides	0.0722	0.0484	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Rosa Island - Rodes Reef			
Tethya aurantia	0.2514	0.1284	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0903	0.0411	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	0.1153	0.0897	12
Megathura crenulata	0.0278	0.0457	12
Crassedoma giganteum	0.0125	0.0144	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.1764	0.0903	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Cruz Island - Gull Island South			
Tethya aurantia	0.3500	0.1778	12
Stylaster californicus	0.2167	0.2586	12
Urticina lofotensis	0.0014	0.0048	12
Lophogorgia chilensis	0.0417	0.0241	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0056	0.0082	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0153	0.0181	12
Megathura crenulata	0.0028	0.0096	12
Crassedoma giganteum	0.0417	0.0219	12
Aplysia californica	0.0125	0.0257	12
Pycnopodia helianthoides	0.0194	0.0223	12
Lytechinus anamesus	0.0000	0.0000	12

2009 BAND TRANSECT DATA: MEAN NUMBER PER M²

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Fry's Harbor			
Tethya aurantia	0.1708	0.0993	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.2292	0.2484	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0014	0.0048	12
Haliotis rufescens	0.0014	0.0048	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0222	0.0269	12
Megathura crenulata	0.0431	0.0429	12
Crassedoma giganteum	0.0125	0.0176	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0625	0.0356	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Cruz Island - Pelican Bay			
Tethya aurantia	0.0292	0.0257	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.1736	0.1566	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0028	0.0096	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0000	0.0000	12
Megathura crenulata	0.0083	0.0112	12
Crassedoma giganteum	0.0292	0.0267	12
Aplysia californica	0.0028	0.0096	12
Pycnopodia helianthoides	0.0097	0.0111	12
Lytechinus anamesus	0.0014	0.0048	12
Santa Cruz Island - Scorpion Anchorage			
Tethya aurantia	0.0528	0.0688	12
Stylaster californicus	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	0.0000	0.0000	12
Panulirus interruptus	0.0153	0.0150	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0014	0.0048	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0000	0.0000	12
Megathura crenulata	0.1542	0.0612	12
Crassedoma giganteum	0.0167	0.0266	12
Aplysia californica	0.0722	0.1386	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0000	0.0000	12

2009 BAND TRANSECT DATA: MEAN NUMBER PER M²

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Yellow Banks			
Tethya aurantia	0.1903	0.0869	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0597	0.0463	12
Muricea fruticosa	0.0014	0.0048	12
Muricea californica	0.0194	0.0186	12
Panulirus interruptus	0.0028	0.0065	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0319	0.0452	12
Megathura crenulata	0.0069	0.0111	12
Crassedoma giganteum	0.0083	0.0112	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0250	0.0261	12
Lytechinus anamesus	0.0264	0.0379	12
Anacapa Island - Admiral's Reef			
Tethya aurantia	0.0931	0.0641	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0639	0.0234	12
Muricea fruticosa	0.0069	0.0150	12
Muricea californica	0.0250	0.0271	12
Panulirus interruptus	0.0042	0.0104	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0472	0.0861	12
Megathura crenulata	0.0958	0.0498	12
Crassedoma giganteum	0.0250	0.0181	12
Aplysia californica	0.0278	0.0372	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0431	0.1021	12
Anacapa Island - Cathedral Cove			
Tethya aurantia	0.0042	0.0075	12
Stylaster californicus	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	0.0153	0.0288	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0014	0.0048	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0000	0.0000	12
Megathura crenulata	0.0028	0.0065	12
Crassedoma giganteum	0.0306	0.0340	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0014	0.0048	12
Lytechinus anamesus	0.0000	0.0000	12

2009 BAND TRANSECT DATA: MEAN NUMBER PER M₂

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - Landing Cove			
Tethya aurantia	0.0139	0.0199	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0028	0.0096	12
Muricea fruticosa	0.0014	0.0048	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0083	0.0195	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	0.0109	12
Megathura crenulata	0.0125	0.0161	12
Crassidoma giganteum	0.0861	0.0395	12
Aplysia californica	0.0014	0.0048	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Barbara Island - SE Sea Lion Rookery			
Tethya aurantia	0.1444	0.0753	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.1667	0.0586	12
Muricea fruticosa	0.0069	0.0111	12
Muricea californica	0.0333	0.0310	12
Panulirus interruptus	0.0028	0.0096	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	0.0069	0.0086	12
Crassidoma giganteum	0.0111	0.0205	12
Aplysia californica	0.0097	0.0150	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0153	0.0270	12
Santa Barbara Island - Arch Point			
Tethya aurantia	0.0000	0.0000	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0056	0.0148	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0028	0.0065	12
Panulirus interruptus	0.0042	0.0104	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0000	0.0000	12
Megathura crenulata	0.0000	0.0000	12
Crassidoma giganteum	0.0042	0.0075	12
Aplysia californica	0.2181	0.1184	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.1361	0.1180	12

2009 BAND TRANSECT DATA: MEAN NUMBER PER M²

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Barbara Island - Cat Canyon			
Tethya aurantia	0.0000	0.0000	12
Stylaster californicus	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	0.0000	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	0.0042	0.0104	12
Crassedoma giganteum	0.0153	0.0166	12
Aplysia californica	0.1458	0.0660	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0014	0.0048	12
San Miguel Island - Miracle Mile			
Tethya aurantia	0.1778	0.0462	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.2417	0.1109	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	0.7556	0.6129	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0264	0.0288	12
Megathura crenulata	0.0319	0.0181	12
Crassedoma giganteum	0.0181	0.0181	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0361	0.0199	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Rosa Island - Cluster Point			
Tethya aurantia	0.4222	0.1647	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0764	0.0505	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	0.0042	0.0104	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0208	0.0285	12
Megathura crenulata	0.0319	0.0359	12
Crassedoma giganteum	0.0153	0.0230	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0194	0.0172	12
Lytechinus anamesus	0.0000	0.0000	12

2009 BAND TRANSECT DATA: MEAN NUMBER PER M²

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - Trancion Canyon			
Tethya aurantia	0.2375	0.0838	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.1389	0.0883	12
Lophogorgia chilensis	0.0000	0.0000	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0000	0.0000	12
Panulirus interruptus	0.0000	0.0000	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0014	0.0048	12
Megathura crenulata	0.0361	0.0234	12
Crassedoma giganteum	0.0139	0.0156	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0125	0.0176	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Rosa Island - Chickasaw			
Tethya aurantia	0.1306	0.1015	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.1139	0.0735	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	0.0222	0.0473	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0000	0.0000	12
Megathura crenulata	0.0069	0.0111	12
Crassedoma giganteum	0.0125	0.0126	12
Aplysia californica	0.0458	0.0461	12
Pycnopodia helianthoides	0.0014	0.0048	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Rosa Island - South Point			
Tethya aurantia	0.0722	0.0422	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0444	0.0391	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	0.0931	0.0520	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	0.0028	0.0065	12
Aplysia californica	0.0056	0.0148	12
Pycnopodia helianthoides	0.0056	0.0082	12
Lytechinus anamesus	0.0000	0.0000	12

2009 BAND TRANSECT DATA: MEAN NUMBER PER M²

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Devil's Peak Member			
Tethya aurantia	0.0986	0.0484	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.1958	0.3240	12
Muricea fruticosa	0.0042	0.0104	12
Muricea californica	0.0069	0.0086	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	0.5806	0.1412	12
Crassedoma giganteum	0.0375	0.0384	12
Aplysia californica	0.0306	0.0211	12
Pycnopodia helianthoides	0.0097	0.0111	12
Lytechinus anamesus	0.0069	0.0166	12
Santa Cruz Island - Potato Pasture			
Tethya aurantia	0.0472	0.0264	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.1736	0.1797	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0056	0.0192	12
Panulirus interruptus	0.0111	0.0130	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0167	0.0225	12
Megathura crenulata	0.0681	0.0592	12
Crassedoma giganteum	0.1208	0.1071	12
Aplysia californica	0.0056	0.0109	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0222	0.0484	12
Santa Cruz Island - Cavern Point			
Tethya aurantia	0.1194	0.0873	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.2625	0.1845	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0069	0.0111	12
Panulirus interruptus	0.0028	0.0065	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	0.1389	0.0905	12
Crassedoma giganteum	0.1722	0.1136	12
Aplysia californica	0.0333	0.0275	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0000	0.0000	12

2009 BAND TRANSECT DATA: MEAN NUMBER PER M²

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Little Scorpion			
Tethya aurantia	0.0139	0.0223	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.1083	0.1055	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0014	0.0048	12
Panulirus interruptus	0.0028	0.0065	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0278	0.0269	12
Megathura crenulata	0.3708	0.1596	12
Crassedoma giganteum	0.0444	0.0637	12
Aplysia californica	0.0333	0.0714	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0097	0.0166	12
Santa Cruz Island - Pedro Reef			
Tethya aurantia	0.1000	0.1015	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.2875	0.1521	12
Muricea fruticosa	0.0028	0.0065	12
Muricea californica	0.0069	0.0166	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	0.0042	0.0144	12
Megathura crenulata	0.0819	0.0637	12
Crassedoma giganteum	0.0069	0.0166	12
Aplysia californica	0.0722	0.0446	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.2458	0.2713	12
Anacapa Island - Keyhole			
Tethya aurantia	0.0000	0.0000	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.2708	0.1119	12
Muricea fruticosa	0.0014	0.0048	12
Muricea californica	0.0250	0.0251	12
Panulirus interruptus	0.0042	0.0075	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0125	0.0311	12
Megathura crenulata	0.0111	0.0109	12
Crassedoma giganteum	0.0861	0.0443	12
Aplysia californica	0.0014	0.0048	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.1833	0.2475	12

2009 BAND TRANSECT DATA: MEAN NUMBER PER M²

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - East Fish Camp			
Tethya aurantia	0.0194	0.0139	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0097	0.0166	12
Muricea fruticosa	0.0028	0.0065	12
Muricea californica	0.0042	0.0075	12
Panulirus interruptus	0.0069	0.0132	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.2222	0.1540	12
Megathura crenulata	0.2639	0.1289	12
Crassedoma giganteum	0.0556	0.0328	12
Aplysia californica	0.1611	0.1138	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.5111	0.4573	12
Anacapa Island - Black Sea Bass Reef			
Tethya aurantia	0.0472	0.0300	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0097	0.0166	12
Muricea fruticosa	0.0028	0.0096	12
Muricea californica	0.0014	0.0048	12
Panulirus interruptus	0.0806	0.1143	12
Haliotis rufescens	0.0000	0.0000	12
Haliotis corrugata	0.0000	0.0000	12
Haliotis fulgens	0.0000	0.0000	12
Kelletia kelletii	0.0361	0.0437	12
Megathura crenulata	0.0750	0.0330	12
Crassedoma giganteum	0.0097	0.0150	12
Aplysia californica	0.0000	0.0000	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0000	0.0000	12
Anacapa Island - Lighthouse			
Tethya aurantia	0.0944	0.0519	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0014	0.0048	12
Lophogorgia chilensis	0.0958	0.0736	12
Muricea fruticosa	0.0125	0.0161	12
Muricea californica	0.3264	0.1029	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	0.1569	0.0842	12
Megathura crenulata	0.0639	0.0361	12
Crassedoma giganteum	0.0069	0.0111	12
Aplysia californica	0.0653	0.0557	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.1611	0.1510	12

2009 BAND TRANSECT DATA: MEAN NUMBER PER M²

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Barbara Island - Webster's Arch			
Tethya aurantia	0.0028	0.0065	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0069	0.0132	12
Muricea fruticosa	0.0014	0.0048	12
Muricea californica	0.0083	0.0112	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	0.0148	12
Megathura crenulata	0.1458	0.0967	12
Crassedoma giganteum	0.0125	0.0203	12
Aplysia californica	0.1347	0.1612	12
Pycnopodia helianthoides	0.0028	0.0065	12
Lytechinus anamesus	0.0000	0.0000	12
Santa Barbara Island - Graveyard Canyon			
Tethya aurantia	0.1139	0.0816	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0542	0.0556	12
Muricea fruticosa	0.0056	0.0109	12
Muricea californica	0.0292	0.0226	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	0.0083	0.0167	12
Aplysia californica	0.0986	0.0657	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0653	0.1065	12
Santa Barbara Island - Southeast Reef			
Tethya aurantia	0.0042	0.0104	12
Stylaster californicus	0.0000	0.0000	12
Urticina lofotensis	0.0000	0.0000	12
Lophogorgia chilensis	0.0153	0.0207	12
Muricea fruticosa	0.0000	0.0000	12
Muricea californica	0.0097	0.0194	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	0.0000	0.0000	12
Megathura crenulata	0.0153	0.0194	12
Crassedoma giganteum	0.0306	0.0316	12
Aplysia californica	0.0361	0.0590	12
Pycnopodia helianthoides	0.0000	0.0000	12
Lytechinus anamesus	0.0000	0.0000	12

Appendix E. Random Point Contact Data

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
San Miguel Island - Wyckoff Ledge			
Green Algae	0.1667	0.6455	15
Other Brown Algae	11.3333	13.0201	15
Desmarestia spp.	9.3333	11.2784	15
Cystoseira spp.	1.3333	3.2550	15
Macrocystis pyrifera	17.1667	13.7862	15
Eisenia arborea	0.1667	0.6455	15
Pterygophora	10.3333	9.2034	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	56.3333	15.5801	15
Articulated Coralline	15.6667	13.4452	15
Encrusting Coralline	34.6667	15.2030	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	1.6667	2.6163	15
Misc. Plant (i.e. diatom film)	0.0000	0.0000	15
Sponges	0.3333	0.8797	15
Corynactis californica	0.3333	0.8797	15
Balanophyllia elegans	0.3333	0.8797	15
Astrangia lajollaensis	0.0000	0.0000	15
Diopatra ornata	14.5000	10.4454	15
Phragmatopoma	0.5000	1.4015	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	28.3333	11.0060	15
Diaperoecia californica	0.0000	0.0000	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.8333	1.5430	15
Tunicates	4.0000	3.1053	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	6.0000	3.5102	15
Bare	22.5000	26.6592	15
Rock	72.6667	28.0221	15
Cobble	0.6667	1.9970	15
Sand	26.6667	27.3644	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
San Miguel Island - Hare Rock			
Green Algae	0.0000	0.0000	15
Other Brown Algae	0.0000	0.0000	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	0.0000	0.0000	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	13.5000	7.3070	15
Articulated Coralline	0.0000	0.0000	15
Encrusting Coralline	71.5000	24.2163	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	4.5000	6.5602	15
Sponges	0.0000	0.0000	15
Corynactis californica	2.3333	4.1690	15
Balanophyllia elegans	3.5000	2.2756	15
Astrangia lajollaensis	2.3333	2.2093	15
Diopatra ornata	0.3333	0.8797	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	1.1667	2.6502	15
Bryozoans, other	1.3333	3.3894	15
Diaperoecia californica	0.0000	0.0000	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	0.0000	0.0000	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	5.8333	7.4202	15
Bare	19.3333	23.6505	15
Rock	79.8333	28.4176	15
Cobble	19.5000	28.3662	15
Sand	0.6667	1.4840	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - Johnson's Lee North			
Green Algae	0.3333	0.8797	15
Other Brown Algae	0.0000	0.0000	15
Desmarestia spp.	0.3333	0.8797	15
Cystoseira spp.	1.0000	1.8420	15
Macrocystis pyrifera	39.5000	17.2741	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	18.1667	25.9888	15
Laminaria farlowii	8.3333	7.2989	15
Other Reds	67.0000	14.7054	15
Articulated Coralline	7.5000	5.8248	15
Encrusting Coralline	20.6667	13.8701	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	14.5000	15.1540	15
Misc. Plant (i.e. diatom film)	0.0000	0.0000	15
Sponges	4.0000	2.9580	15
Corynactis californica	1.6667	2.4398	15
Balanophyllia elegans	2.1667	2.0845	15
Astrangia lajollaensis	0.3333	0.8797	15
Diopatra ornata	0.8333	2.6163	15
Phragmatopoma	0.3333	1.2910	15
Serpulorbis	0.1667	0.6455	15
Bryozoans, other	33.1667	9.1840	15
Diaperoecia californica	3.0000	4.6483	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	20.1667	7.5868	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	16.8333	5.4663	15
Bare	4.0000	4.0970	15
Rock	96.8333	4.5774	15
Cobble	3.0000	4.6483	15
Sand	0.1667	0.6455	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - Johnson's Lee South			
Green Algae	0.1667	0.6455	15
Other Brown Algae	2.1667	3.2550	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	25.8333	20.6732	15
Eisenia arborea	2.6667	6.0847	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	5.1667	8.1540	15
Other Reds	66.0000	22.1359	15
Articulated Coralline	7.5000	7.1339	15
Encrusting Coralline	36.6667	18.4359	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	22.6667	15.7963	15
Misc. Plant (i.e. diatom film)	0.0000	0.0000	15
Sponges	2.1667	2.9681	15
Corynactis californica	3.8333	7.3111	15
Balanophyllia elegans	4.5000	3.6839	15
Astrangia lajollaensis	0.5000	1.0351	15
Diopatra ornata	16.0000	13.6539	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.1667	0.6455	15
Bryozoans, other	20.5000	10.1419	15
Diaperoecia californica	1.5000	3.9866	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	4.3333	5.3841	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	11.8333	8.6843	15
Bare	5.5000	6.1383	15
Rock	77.3333	20.9265	15
Cobble	3.1667	4.3780	15
Sand	19.5000	20.4241	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - Rodes Reef			
Green Algae	0.0000	0.0000	15
Other Brown Algae	0.0000	0.0000	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	0.0000	0.0000	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	8.1667	5.8605	15
Articulated Coralline	0.0000	0.0000	15
Encrusting Coralline	64.3333	10.4994	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	0.0000	0.0000	15
Sponges	3.0000	2.5355	15
Corynactis californica	0.3333	1.2910	15
Balanophyllia elegans	0.8333	1.2199	15
Astrangia lajollaensis	12.6667	9.7040	15
Diopatra ornata	2.5000	4.2258	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	5.3333	3.5187	15
Diaperoecia californica	0.0000	0.0000	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	1.3333	1.8581	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	4.8333	3.9491	15
Bare	10.0000	25.2311	15
Rock	82.8333	25.5103	15
Cobble	5.5000	7.1464	15
Sand	4.8333	6.9736	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Gull Island South			
Green Algae	0.1667	0.6455	15
Other Brown Algae	0.6667	1.1443	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.8333	1.8094	15
Macrocystis pyrifera	23.0000	15.6468	15
Eisenia arborea	2.5000	3.7796	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	58.1667	20.0550	15
Articulated Coralline	2.3333	3.3363	15
Encrusting Coralline	25.5000	11.5418	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.5000	1.4015	15
Misc. Plant (i.e. diatom film)	0.3333	0.8797	15
Sponges	5.5000	5.1060	15
Corynactis californica	2.5000	3.5355	15
Balanophyllia elegans	1.8333	2.4029	15
Astrangia lajollaensis	2.0000	2.7058	15
Diopatra ornata	5.3333	12.4952	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	32.0000	9.6917	15
Diaperoecia californica	2.3333	3.9491	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	4.0000	3.3806	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	33.3333	18.2656	15
Bare	3.1667	10.2411	15
Rock	93.8333	11.7969	15
Cobble	1.1667	1.5999	15
Sand	5.0000	10.9381	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Fry's Harbor			
Green Algae	0.3333	0.8797	15
Other Brown Algae	0.0000	0.0000	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	12.3333	11.9697	15
Eisenia arborea	29.3333	16.3245	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	13.6667	11.2546	15
Articulated Coralline	0.3333	0.8797	15
Encrusting Coralline	44.1667	6.7920	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.6667	1.9970	15
Misc. Plant (i.e. diatom film)	0.0000	0.0000	15
Sponges	1.0000	1.5811	15
Corynactis californica	0.1667	0.6455	15
Balanophyllia elegans	0.0000	0.0000	15
Astrangia lajollaensis	9.3333	5.5474	15
Diopatra ornata	4.0000	5.3285	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	49.5000	9.0731	15
Diaperoecia californica	1.6667	2.2493	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	4.6667	3.3894	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	6.5000	4.7056	15
Bare	1.3333	1.8581	15
Rock	90.5000	8.3559	15
Cobble	6.0000	6.5329	15
Sand	3.5000	4.8917	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Pelican Bay			
Green Algae	2.3333	3.1997	15
Other Brown Algae	0.6667	1.4840	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	34.8333	20.4299	15
Eisenia arborea	1.6667	2.7817	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	5.6667	5.5474	15
Articulated Coralline	1.1667	2.0845	15
Encrusting Coralline	52.1667	16.0041	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	6.0000	5.1582	15
Sponges	0.6667	1.1443	15
Corynactis californica	0.0000	0.0000	15
Balanophyllia elegans	1.0000	2.0702	15
Astrangia lajollaensis	5.5000	3.4330	15
Diopatra ornata	4.6667	6.1140	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	4.6667	5.2497	15
Diaperoecia californica	0.5000	1.4015	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	0.8333	1.2199	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	6.1667	7.8414	15
Bare	26.5000	21.0823	15
Rock	60.6667	21.8858	15
Cobble	13.6667	13.4916	15
Sand	25.6667	22.2900	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Scorpion Anchorage			
Green Algae	0.0000	0.0000	15
Other Brown Algae	3.1667	7.1631	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	6.6667	13.8766	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.3333	1.2910	15
Other Reds	0.5000	1.0351	15
Articulated Coralline	0.5000	1.4015	15
Encrusting Coralline	55.0000	14.6994	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	12.0000	7.8034	15
Sponges	0.1667	0.6455	15
Corynactis californica	0.1667	0.6455	15
Balanophyllia elegans	0.5000	1.4015	15
Astrangia lajollaensis	1.3333	2.4761	15
Diopatra ornata	0.1667	0.6455	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	1.5000	2.9580	15
Diaperoecia californica	1.0000	3.2459	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	0.3333	0.8797	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	12.5000	8.6603	15
Bare	25.3333	13.1226	15
Rock	89.3333	12.1180	15
Cobble	2.3333	4.7684	15
Sand	8.3333	12.4164	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Yellow Banks			
Green Algae	0.0000	0.0000	15
Other Brown Algae	0.6667	1.1443	15
Desmarestia spp.	0.1667	0.6455	15
Cystoseira spp.	2.0000	3.5607	15
Macrocystis pyrifera	13.3333	23.8048	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	1.3333	3.8807	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	20.6667	17.2033	15
Articulated Coralline	3.6667	3.1149	15
Encrusting Coralline	62.5000	16.5292	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	8.0000	8.5670	15
Sponges	1.0000	1.8420	15
Corynactis californica	0.1667	0.6455	15
Balanophyllia elegans	1.3333	2.8137	15
Astrangia lajollaensis	1.0000	1.5811	15
Diopatra ornata	0.1667	0.6455	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	2.0000	3.4330	15
Diaperoecia californica	1.1667	4.5185	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.1667	0.6455	15
Tunicates	0.8333	1.2199	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	27.1667	19.8851	15
Bare	14.6667	14.5119	15
Rock	70.1667	30.7563	15
Cobble	23.1667	23.4800	15
Sand	6.6667	9.3859	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - Admiral's Reef			
Green Algae	0.5000	1.0351	15
Other Brown Algae	0.0000	0.0000	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	0.0000	0.0000	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	8.5000	7.6064	15
Articulated Coralline	0.0000	0.0000	15
Encrusting Coralline	62.1667	15.7510	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	7.5000	9.5431	15
Sponges	1.0000	1.5811	15
Corynactis californica	0.5000	1.0351	15
Balanophyllia elegans	0.0000	0.0000	15
Astrangia lajollaensis	0.5000	1.0351	15
Diopatra ornata	0.0000	0.0000	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.1667	0.6455	15
Bryozoans, other	0.6667	1.1443	15
Diaperoecia californica	0.8333	1.5430	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	44.6667	37.0071	15
Tunicates	1.0000	2.0702	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	18.0000	12.6844	15
Bare	15.3333	12.4952	15
Rock	79.8333	24.2470	15
Cobble	9.6667	11.8347	15
Sand	10.5000	12.8591	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - Cathedral Cove			
Green Algae	0.5000	1.0351	15
Other Brown Algae	1.1667	1.8581	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	14.1667	14.5978	15
Macrocystis pyrifera	39.0000	26.5720	15
Eisenia arborea	3.5000	7.7805	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	41.6667	22.3340	15
Other Reds	15.8333	12.9445	15
Articulated Coralline	15.3333	10.9735	15
Encrusting Coralline	15.0000	8.1284	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	0.0000	0.0000	15
Sponges	1.6667	2.0412	15
Corynactis californica	0.0000	0.0000	15
Balanophyllia elegans	0.0000	0.0000	15
Astrangia lajollaensis	0.1667	0.6455	15
Diopatra ornata	2.5000	3.4069	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.3333	0.8797	15
Bryozoans, other	14.8333	9.0370	15
Diaperoecia californica	0.3333	0.8797	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	12.3333	7.3477	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	8.0000	7.8604	15
Bare	27.0000	14.8264	15
Rock	66.6667	19.1252	15
Cobble	14.8333	10.9978	15
Sand	18.5000	14.8745	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - Landing Cove			
Green Algae	0.1667	0.6455	15
Other Brown Algae	0.8333	1.5430	15
Desmarestia spp.	3.1667	7.0373	15
Cystoseira spp.	1.6667	3.2275	15
Macrocystis pyrifera	9.0000	7.6649	15
Eisenia arborea	28.1667	25.3980	15
Pterygophora	7.5000	12.5712	15
Laminaria farlowii	32.6667	29.4665	15
Other Reds	37.1667	16.4986	15
Articulated Coralline	11.5000	7.5475	15
Encrusting Coralline	17.0000	12.5071	15
Gelidium spp.	15.6667	25.5906	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	1.1667	1.2910	15
Sponges	4.3333	4.5774	15
Corynactis californica	0.8333	1.5430	15
Balanophyllia elegans	0.0000	0.0000	15
Astrangia lajollaensis	0.3333	0.8797	15
Diopatra ornata	0.5000	1.0351	15
Phragmatopoma	0.1667	0.6455	15
Serpulorbis	0.5000	1.4015	15
Bryozoans, other	20.5000	17.4796	15
Diaperoecia californica	3.5000	6.3246	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	12.3333	9.2807	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	20.0000	13.8873	15
Bare	11.0000	17.1079	15
Rock	80.3333	21.8122	15
Cobble	14.8333	15.4245	15
Sand	4.8333	8.4762	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Barbara Island - SE Sea Lion Rookery			
Green Algae	0.6667	1.1443	15
Other Brown Algae	0.0000	0.0000	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	0.0000	0.0000	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	5.6667	9.8410	15
Articulated Coralline	0.5000	1.4015	15
Encrusting Coralline	70.1667	11.5134	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	13.1667	11.7057	15
Sponges	0.6667	1.1443	15
Corynactis californica	3.1667	3.3363	15
Balanophyllia elegans	0.0000	0.0000	15
Astrangia lajollaensis	0.0000	0.0000	15
Diopatra ornata	0.0000	0.0000	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	3.6667	4.5185	15
Diaperoecia californica	0.0000	0.0000	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	58.8333	30.6749	15
Tunicates	3.6667	6.0405	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	5.6667	5.8605	15
Bare	15.0000	14.3614	15
Rock	90.6667	13.4784	15
Cobble	2.8333	3.2550	15
Sand	6.5000	13.8164	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Barbara Island - Arch Point			
Green Algae	1.1667	3.8807	15
Other Brown Algae	0.1667	0.6455	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	0.0000	0.0000	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	29.0000	9.9463	15
Articulated Coralline	0.6667	1.1443	15
Encrusting Coralline	49.6667	8.4445	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	0.0000	0.0000	15
Sponges	0.1667	0.6455	15
Corynactis californica	7.8333	7.6103	15
Balanophyllia elegans	0.0000	0.0000	15
Astrangia lajollaensis	0.6667	1.4840	15
Diopatra ornata	0.0000	0.0000	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	2.1667	2.9681	15
Diaperoecia californica	0.0000	0.0000	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	2.6667	2.9073	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	7.3333	6.7126	15
Bare	25.6667	11.4746	15
Rock	94.3333	6.3714	15
Cobble	5.1667	5.3005	15
Sand	0.5000	1.4015	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Barbara Island - Cat Canyon			
Green Algae	0.0000	0.0000	15
Other Brown Algae	0.0000	0.0000	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	0.0000	0.0000	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	3.0000	4.3507	15
Articulated Coralline	0.8333	1.2199	15
Encrusting Coralline	52.1667	15.7227	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	0.5000	1.4015	15
Sponges	0.1667	0.6455	15
Corynactis californica	1.1667	2.2887	15
Balanophyllia elegans	0.1667	0.6455	15
Astrangia lajollaensis	1.1667	2.0845	15
Diopatra ornata	0.1667	0.6455	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.5000	1.4015	15
Bryozoans, other	2.0000	2.8661	15
Diaperoecia californica	0.0000	0.0000	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	1.5000	1.8420	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	9.3333	5.8605	15
Bare	32.6667	14.4379	15
Rock	89.8333	12.8684	15
Cobble	4.0000	4.0970	15
Sand	6.1667	11.6445	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
San Miguel Island - Miracle Mile			
Green Algae	0.1667	0.6455	15
Other Brown Algae	0.0000	0.0000	15
Desmarestia spp.	16.6667	18.2166	15
Cystoseira spp.	1.8333	2.5820	15
Macrocystis pyrifera	17.5000	22.7368	15
Eisenia arborea	15.5000	27.8741	15
Pterygophora	1.5000	3.1053	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	75.1667	14.8043	15
Articulated Coralline	26.6667	14.5365	15
Encrusting Coralline	46.6667	16.7616	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	3.5000	4.8917	15
Misc. Plant (i.e. diatom film)	1.6667	2.9378	15
Sponges	10.1667	8.4762	15
Corynactis californica	1.0000	2.2756	15
Balanophyllia elegans	0.8333	1.2199	15
Astrangia lajollaensis	0.0000	0.0000	15
Diopatra ornata	0.5000	1.0351	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	6.3333	7.1256	15
Diaperoecia californica	0.0000	0.0000	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	12.0000	9.6455	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	5.8333	6.5238	15
Bare	9.6667	16.0598	15
Rock	88.3333	18.9376	15
Cobble	4.3333	6.4411	15
Sand	7.3333	13.4784	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - Cluster Point			
Green Algae	0.0000	0.0000	15
Other Brown Algae	2.0000	2.8661	15
Desmarestia spp.	4.8333	10.0653	15
Cystoseira spp.	0.8333	2.6163	15
Macrocystis pyrifera	19.6667	17.3171	15
Eisenia arborea	4.1667	8.8976	15
Pterygophora	33.8333	25.9269	15
Laminaria farlowii	0.1667	0.6455	15
Other Reds	68.5000	22.8309	15
Articulated Coralline	10.8333	11.5599	15
Encrusting Coralline	42.6667	16.6494	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	2.5000	3.8960	15
Misc. Plant (i.e. diatom film)	0.1667	0.6455	15
Sponges	8.1667	7.0373	15
Corynactis californica	1.1667	3.1149	15
Balanophyllia elegans	2.3333	3.3363	15
Astrangia lajollaensis	0.1667	0.6455	15
Diopatra ornata	5.0000	11.4174	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	11.8333	6.8444	15
Diaperoecia californica	0.0000	0.0000	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	12.1667	8.6534	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	8.8333	5.8146	15
Bare	9.5000	17.4540	15
Rock	87.3333	19.4676	15
Cobble	5.8333	10.5079	15
Sand	6.8333	14.0302	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - Trancion Canyon			
Green Algae	0.0000	0.0000	15
Other Brown Algae	0.6667	1.4840	15
Desmarestia spp.	0.3333	0.8797	15
Cystoseira spp.	3.3333	6.6592	15
Macrocystis pyrifera	23.0000	17.3771	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	17.1667	19.9970	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	47.3333	17.8902	15
Articulated Coralline	13.8333	16.3900	15
Encrusting Coralline	33.1667	19.8086	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.6667	1.4840	15
Misc. Plant (i.e. diatom film)	0.1667	0.6455	15
Sponges	6.5000	5.0709	15
Corynactis californica	1.1667	2.0845	15
Balanophyllia elegans	2.5000	3.4069	15
Astrangia lajollaensis	1.1667	2.6502	15
Diopatra ornata	10.0000	10.3940	15
Phragmatopoma	0.1667	0.6455	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	15.5000	5.1060	15
Diaperoecia californica	2.8333	4.8978	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	9.0000	10.5560	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	6.0000	3.8730	15
Bare	5.1667	7.9881	15
Rock	91.0000	10.0800	15
Cobble	1.1667	1.8581	15
Sand	7.8333	9.2999	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - Chickasaw			
Green Algae	0.0000	0.0000	15
Other Brown Algae	0.5000	1.4015	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	2.8333	6.1866	15
Macrocystis pyrifera	13.8333	11.0545	15
Eisenia arborea	0.3333	1.2910	15
Pterygophora	7.5000	15.4689	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	63.3333	12.3081	15
Articulated Coralline	6.8333	7.9881	15
Encrusting Coralline	8.1667	7.0373	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	10.8333	10.1624	15
Misc. Plant (i.e. diatom film)	0.3333	1.2910	15
Sponges	3.5000	3.7559	15
Corynactis californica	0.8333	2.0412	15
Balanophyllia elegans	1.3333	1.2910	15
Astrangia lajollaensis	0.3333	1.2910	15
Diopatra ornata	13.5000	15.5207	15
Phragmatopoma	4.1667	4.6930	15
Serpulorbis	0.6667	1.4840	15
Bryozoans, other	15.1667	10.1095	15
Diaperoecia californica	0.8333	3.2275	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.1667	0.6455	15
Tunicates	9.3333	8.5808	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	24.8333	10.9978	15
Bare	15.1667	12.1914	15
Rock	78.5000	23.3911	15
Cobble	2.3333	5.0415	15
Sand	19.1667	22.7695	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - South Point			
Green Algae	0.0000	0.0000	15
Other Brown Algae	2.0000	3.6839	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	8.5000	11.1724	15
Macrocystis pyrifera	36.5000	18.1708	15
Eisenia arborea	1.1667	3.8807	15
Pterygophora	36.1667	21.9550	15
Laminaria farlowii	22.1667	15.7227	15
Other Reds	75.6667	14.7741	15
Articulated Coralline	18.5000	10.9300	15
Encrusting Coralline	15.6667	9.3287	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	5.0000	4.9099	15
Misc. Plant (i.e. diatom film)	0.0000	0.0000	15
Sponges	7.0000	5.0178	15
Corynactis californica	0.0000	0.0000	15
Balanophyllia elegans	0.0000	0.0000	15
Astrangia lajollaensis	0.0000	0.0000	15
Diopatra ornata	12.3333	16.0208	15
Phragmatopoma	0.3333	1.2910	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	16.5000	6.4642	15
Diaperoecia californica	0.0000	0.0000	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	9.1667	5.6432	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	22.5000	12.1008	15
Bare	4.5000	5.6852	15
Rock	89.8333	17.4864	15
Cobble	1.3333	3.6433	15
Sand	8.8333	17.4455	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Devil's Peak Member			
Green Algae	0.0000	0.0000	15
Other Brown Algae	0.0000	0.0000	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	0.0000	0.0000	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	13.5000	8.0067	15
Articulated Coralline	0.0000	0.0000	15
Encrusting Coralline	56.8333	13.7083	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	4.3333	4.5774	15
Sponges	1.6667	2.0412	15
Corynactis californica	0.0000	0.0000	15
Balanophyllia elegans	0.6667	1.1443	15
Astrangia lajollaensis	5.5000	5.1927	15
Diopatra ornata	0.3333	0.8797	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.1667	0.6455	15
Bryozoans, other	12.1667	10.4739	15
Diaperoecia californica	1.3333	2.4761	15
Pachythyone rubra	1.5000	2.2756	15
Ophiothrix spiculata	0.1667	0.6455	15
Tunicates	4.8333	3.9491	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	31.3333	14.2009	15
Bare	6.8333	5.6273	15
Rock	84.6667	15.9202	15
Cobble	10.3333	12.5665	15
Sand	5.0000	4.7246	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Potato Pasture			
Green Algae	2.6667	2.7495	15
Other Brown Algae	1.5000	3.3806	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	0.0000	0.0000	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	13.8333	10.3020	15
Articulated Coralline	0.5000	1.0351	15
Encrusting Coralline	63.8333	11.2942	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	11.8333	6.7788	15
Sponges	0.3333	0.8797	15
Corynactis californica	2.5000	3.5355	15
Balanophyllia elegans	0.0000	0.0000	15
Astrangia lajollaensis	2.6667	2.9073	15
Diopatra ornata	0.0000	0.0000	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.3333	1.2910	15
Bryozoans, other	7.1667	4.2117	15
Diaperoecia californica	4.5000	7.9170	15
Pachythyone rubra	1.5000	3.3806	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	1.5000	2.0702	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	13.0000	7.6881	15
Bare	12.3333	7.7613	15
Rock	81.1667	25.4051	15
Cobble	16.3333	23.7710	15
Sand	2.5000	4.7246	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Cavern Point			
Green Algae	3.1667	4.3780	15
Other Brown Algae	0.6667	1.9970	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	0.0000	0.0000	15
Eisenia arborea	2.6667	8.3166	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	10.8333	7.7152	15
Articulated Coralline	0.3333	0.8797	15
Encrusting Coralline	48.1667	11.9697	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	1.0000	1.8420	15
Sponges	2.3333	2.7495	15
Corynactis californica	0.8333	1.5430	15
Balanophyllia elegans	0.3333	0.8797	15
Astrangia lajollaensis	3.1667	4.7684	15
Diopatra ornata	0.0000	0.0000	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	7.0000	6.3527	15
Diaperoecia californica	4.6667	3.2550	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	3.3333	2.7817	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	26.3333	10.8507	15
Bare	9.6667	8.6016	15
Rock	95.5000	8.1941	15
Cobble	1.5000	3.2459	15
Sand	3.0000	5.8401	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Little Scorpion			
Green Algae	0.3333	0.8797	15
Other Brown Algae	0.0000	0.0000	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	0.0000	0.0000	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	6.3333	6.2583	15
Articulated Coralline	0.0000	0.0000	15
Encrusting Coralline	43.6667	11.9846	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	3.6667	4.2117	15
Sponges	0.1667	0.6455	15
Corynactis californica	0.5000	1.0351	15
Balanophyllia elegans	0.3333	0.8797	15
Astrangia lajollaensis	5.5000	5.1060	15
Diopatra ornata	0.0000	0.0000	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	3.8333	3.6433	15
Bryozoans, other	5.5000	4.0311	15
Diaperoecia californica	0.1667	0.6455	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.1667	0.6455	15
Tunicates	2.0000	3.0178	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	18.8333	8.2303	15
Bare	30.1667	14.1569	15
Rock	78.1667	24.2101	15
Cobble	11.8333	16.8360	15
Sand	10.0000	18.0278	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Pedro Reef			
Green Algae	0.0000	0.0000	15
Other Brown Algae	0.0000	0.0000	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	0.0000	0.0000	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	8.6667	5.1640	15
Articulated Coralline	0.6667	1.4840	15
Encrusting Coralline	52.0000	18.7131	15
Gelidium spp.	0.1667	0.6455	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	8.0000	8.0844	15
Sponges	0.6667	1.1443	15
Corynactis californica	14.5000	14.3987	15
Balanophyllia elegans	0.1667	0.6455	15
Astrangia lajollaensis	1.6667	2.9378	15
Diopatra ornata	0.1667	0.6455	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	1.3333	1.8581	15
Diaperoecia californica	0.0000	0.0000	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	0.0000	0.0000	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	22.1667	8.9576	15
Bare	27.1667	14.0746	15
Rock	87.6667	19.0504	15
Cobble	6.0000	9.6270	15
Sand	6.3333	11.0948	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - Keyhole			
Green Algae	0.6667	1.4840	15
Other Brown Algae	7.3333	8.4762	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	4.6667	15.4361	15
Eisenia arborea	4.6667	9.7223	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.5000	1.4015	15
Other Reds	28.6667	16.5795	15
Articulated Coralline	0.8333	1.5430	15
Encrusting Coralline	46.3333	11.8723	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	3.3333	3.0861	15
Sponges	0.0000	0.0000	15
Corynactis californica	1.0000	1.2677	15
Balanophyllia elegans	1.1667	1.5999	15
Astrangia lajollaensis	0.1667	0.6455	15
Diopatra ornata	3.0000	4.1404	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	10.0000	8.3986	15
Diaperoecia californica	0.8333	2.0412	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.1667	0.6455	15
Tunicates	1.5000	2.4640	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	25.5000	8.9742	15
Bare	19.5000	16.8290	15
Rock	80.5000	19.8476	15
Cobble	5.0000	6.2678	15
Sand	14.5000	17.3257	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - East Fish Camp			
Green Algae	0.0000	0.0000	15
Other Brown Algae	0.0000	0.0000	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	0.0000	0.0000	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	10.3333	7.8414	15
Articulated Coralline	0.0000	0.0000	15
Encrusting Coralline	51.6667	14.5365	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	0.0000	0.0000	15
Sponges	0.0000	0.0000	15
Corynactis californica	8.5000	7.5475	15
Balanophyllia elegans	0.0000	0.0000	15
Astrangia lajollaensis	0.0000	0.0000	15
Diopatra ornata	0.0000	0.0000	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	0.1667	0.6455	15
Diaperoecia californica	0.0000	0.0000	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	16.3333	20.4605	15
Tunicates	0.1667	0.6455	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	2.1667	2.4761	15
Bare	34.6667	9.8137	15
Rock	90.6667	10.0208	15
Cobble	1.1667	1.2910	15
Sand	8.1667	9.5649	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - Black Sea Bass Reef			
Green Algae	0.0000	0.0000	15
Other Brown Algae	2.6667	5.5474	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.1667	0.6455	15
Macrocystis pyrifera	4.3333	13.2107	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	19.1667	24.5798	15
Articulated Coralline	0.3333	0.8797	15
Encrusting Coralline	77.5000	22.1400	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.5000	1.9365	15
Misc. Plant (i.e. diatom film)	3.8333	7.3111	15
Sponges	1.3333	2.2887	15
Corynactis californica	2.1667	4.2117	15
Balanophyllia elegans	0.0000	0.0000	15
Astrangia lajollaensis	0.0000	0.0000	15
Diopatra ornata	0.0000	0.0000	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	5.5000	10.0089	15
Diaperoecia californica	1.6667	5.2327	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	61.3333	30.5437	15
Tunicates	0.0000	0.0000	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	4.1667	5.7992	15
Bare	8.3333	7.8300	15
Rock	83.6667	21.9347	15
Cobble	13.3333	17.0521	15
Sand	3.0000	5.4445	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - Lighthouse			
Green Algae	0.0000	0.0000	15
Other Brown Algae	0.1667	0.6455	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	0.0000	0.0000	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	7.5000	7.0711	15
Articulated Coralline	1.1667	2.0845	15
Encrusting Coralline	59.1667	8.5912	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	0.0000	0.0000	15
Sponges	1.8333	1.9970	15
Corynactis californica	3.0000	4.6483	15
Balanophyllia elegans	1.3333	2.0845	15
Astrangia lajollaensis	1.3333	2.0845	15
Diopatra ornata	2.8333	3.7639	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	2.6667	2.9073	15
Diaperoecia californica	0.0000	0.0000	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	0.1667	0.6455	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	26.3333	8.1759	15
Bare	13.3333	6.0994	15
Rock	85.1667	8.8875	15
Cobble	8.6667	8.4445	15
Sand	6.1667	5.1640	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Barbara Island - Webster's Arch			
Green Algae	4.5000	8.4092	15
Other Brown Algae	0.0000	0.0000	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	0.0000	0.0000	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	11.8333	10.6682	15
Articulated Coralline	0.8333	1.2199	15
Encrusting Coralline	53.0000	20.8138	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	0.1667	0.6455	15
Sponges	0.0000	0.0000	15
Corynactis californica	12.1667	10.6849	15
Balanophyllia elegans	1.6667	3.0861	15
Astrangia lajollaensis	0.1667	0.6455	15
Diopatra ornata	0.0000	0.0000	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	0.6667	1.9970	15
Diaperoecia californica	0.0000	0.0000	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	17.5000	20.8095	15
Tunicates	1.8333	3.4675	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	12.3333	6.4411	15
Bare	15.1667	7.6454	15
Rock	98.5000	2.2756	15
Cobble	1.3333	2.0845	15
Sand	0.1667	0.6455	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Barbara Island - Graveyard Canyon			
Green Algae	0.0000	0.0000	15
Other Brown Algae	0.3333	1.2910	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	0.0000	0.0000	15
Macrocystis pyrifera	0.0000	0.0000	15
Eisenia arborea	0.0000	0.0000	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	4.8333	6.9093	15
Articulated Coralline	0.0000	0.0000	15
Encrusting Coralline	44.5000	25.3053	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	2.5000	1.8898	15
Sponges	0.1667	0.6455	15
Corynactis californica	2.6667	3.1997	15
Balanophyllia elegans	0.0000	0.0000	15
Astrangia lajollaensis	0.0000	0.0000	15
Diopatra ornata	0.1667	0.6455	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.0000	0.0000	15
Bryozoans, other	1.1667	1.5999	15
Diaperoecia californica	0.0000	0.0000	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	22.8333	23.4876	15
Tunicates	0.5000	1.4015	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	7.1667	8.0659	15
Bare	48.8333	28.4239	15
Rock	68.0000	35.9960	15
Cobble	10.0000	23.8859	15
Sand	22.0000	33.1958	15

2009 RANDOM POINT CONTACT DATA: MEAN PERCENT COVER

<u>Species</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Barbara Island - Southeast Reef			
Green Algae	1.5000	2.6390	15
Other Brown Algae	2.1667	2.9681	15
Desmarestia spp.	0.0000	0.0000	15
Cystoseira spp.	2.0000	7.7460	15
Macrocystis pyrifera	10.3333	18.9658	15
Eisenia arborea	4.6667	10.5164	15
Pterygophora	0.0000	0.0000	15
Laminaria farlowii	0.0000	0.0000	15
Other Reds	28.1667	15.2206	15
Articulated Coralline	4.5000	5.0178	15
Encrusting Coralline	43.3333	20.3905	15
Gelidium spp.	0.0000	0.0000	15
Gigartina spp.	0.0000	0.0000	15
Misc. Plant (i.e. diatom film)	7.6667	9.7498	15
Sponges	1.1667	1.8581	15
Corynactis californica	1.1667	1.5999	15
Balanophyllia elegans	0.1667	0.6455	15
Astrangia lajollaensis	0.0000	0.0000	15
Diopatra ornata	0.5000	1.4015	15
Phragmatopoma	0.0000	0.0000	15
Serpulorbis	0.3333	0.8797	15
Bryozoans, other	20.8333	15.7170	15
Diaperoecia californica	0.0000	0.0000	15
Pachythyone rubra	0.0000	0.0000	15
Ophiothrix spiculata	0.0000	0.0000	15
Tunicates	15.3333	16.1706	15
Miscellaneous Invertebrates w/o Ophiothrix spiculata	19.5000	6.4918	15
Bare	10.6667	12.3370	15
Rock	88.5000	15.9743	15
Cobble	3.6667	6.9351	15
Sand	7.8333	12.6020	15

Appendix F. Fish Transect Data

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
San Miguel Island - Wyckoff Ledge				
<i>Chromis punctipinnis</i> , adult	8/18/2009	0.0000	0.0000	4
<i>Chromis punctipinnis</i> , juvenile	8/18/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	8/18/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , juvenile	8/18/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	8/18/2009	0.2500	0.5000	4
<i>Embiotoca lateralis</i> , juvenile	8/18/2009	0.7500	0.5000	4
<i>Girella nigricans</i> , adult	8/18/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	8/18/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	8/18/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	8/18/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	8/18/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , juvenile	8/18/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	8/18/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , juvenile	8/18/2009	7.7500	14.8408	4
<i>Paralabrax clathratus</i> , adult	8/18/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	8/18/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	8/18/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	8/18/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	8/18/2009	0.7500	0.9574	4
<i>Sebastes atrovirens</i> , juvenile	8/18/2009	13.7500	10.3078	4
<i>Sebastes mystinus</i> , adult	8/18/2009	0.7500	0.9574	4
<i>Sebastes mystinus</i> , juvenile	8/18/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	8/18/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	8/18/2009	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> , female	8/18/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , juvenile	8/18/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	8/18/2009	0.2500	0.5000	4
San Miguel Island - Hare Rock				
<i>Chromis punctipinnis</i> , adult	8/19/2009	0.2500	0.5000	4
<i>Chromis punctipinnis</i> , juvenile	8/19/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	8/19/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , juvenile	8/19/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	8/19/2009	0.2500	0.5000	4
<i>Embiotoca lateralis</i> , juvenile	8/19/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	8/19/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	8/19/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	8/19/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	8/19/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	8/19/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , juvenile	8/19/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	8/19/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , juvenile	8/19/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	8/19/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	8/19/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	8/19/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	8/19/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	8/19/2009	0.2500	0.5000	4
<i>Sebastes atrovirens</i> , juvenile	8/19/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	8/19/2009	0.2500	0.5000	4
<i>Sebastes mystinus</i> , juvenile	8/19/2009	0.2500	0.5000	4
<i>Sebastes serranoides</i> , adult	8/19/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	8/19/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	8/19/2009	0.5000	0.5774	4
<i>Semicossyphus pulcher</i> , juvenile	8/19/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	8/19/2009	0.0000	0.0000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M ³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - Johnson's Lee North				
<i>Chromis punctipinnis</i> , adult	7/16/2009	14.5000	16.7432	4
<i>Chromis punctipinnis</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	7/16/2009	4.2500	3.9476	4
<i>Embiotoca jacksoni</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	7/16/2009	1.0000	1.1547	4
<i>Embiotoca lateralis</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	7/16/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	7/16/2009	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> , male	7/16/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	7/16/2009	0.7500	0.9574	4
<i>Hypsypops rubicundus</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	7/16/2009	4.0000	3.1623	4
<i>Oxyjulis californica</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	7/16/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	7/16/2009	0.5000	0.5774	4
<i>Rhacochilus vacca</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	7/16/2009	1.0000	1.1547	4
<i>Sebastes atrovirens</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	7/16/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	7/16/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	7/16/2009	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	7/16/2009	0.0000	0.0000	4
Santa Rosa Island - Johnson's Lee South				
<i>Chromis punctipinnis</i> , adult	9/22/2009	0.0000	0.0000	4
<i>Chromis punctipinnis</i> , juvenile	9/22/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	9/22/2009	0.7500	0.9574	4
<i>Embiotoca jacksoni</i> , juvenile	9/22/2009	1.0000	1.1547	4
<i>Embiotoca lateralis</i> , adult	9/22/2009	0.2500	0.5000	4
<i>Embiotoca lateralis</i> , juvenile	9/22/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	9/22/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	9/22/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	9/22/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	9/22/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	9/22/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , juvenile	9/22/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	9/22/2009	6.0000	3.5590	4
<i>Oxyjulis californica</i> , juvenile	9/22/2009	6.7500	7.0415	4
<i>Paralabrax clathratus</i> , adult	9/22/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	9/22/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	9/22/2009	0.5000	0.5774	4
<i>Rhacochilus vacca</i> , juvenile	9/22/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	9/22/2009	1.2500	1.8930	4
<i>Sebastes atrovirens</i> , juvenile	9/22/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	9/22/2009	3.2500	6.5000	4
<i>Sebastes mystinus</i> , juvenile	9/22/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	9/22/2009	0.2500	0.5000	4
<i>Sebastes serranoides</i> , juvenile	9/22/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	9/22/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , juvenile	9/22/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	9/22/2009	0.2500	0.5000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - Rodes Reef				
<i>Chromis punctipinnis</i> , adult	6/3/2009	0.2500	0.5000	4
<i>Chromis punctipinnis</i> , juvenile	6/3/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	6/3/2009	0.2500	0.5000	4
<i>Embiotoca jacksoni</i> , juvenile	6/3/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	6/3/2009	0.2500	0.5000	4
<i>Embiotoca lateralis</i> , juvenile	6/3/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	6/3/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	6/3/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	6/3/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	6/3/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	6/3/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , juvenile	6/3/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	6/3/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , juvenile	6/3/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	6/3/2009	0.2500	0.5000	4
<i>Paralabrax clathratus</i> , juvenile	6/3/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	6/3/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	6/3/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	6/3/2009	1.0000	1.1547	4
<i>Sebastes atrovirens</i> , juvenile	6/3/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	6/3/2009	5.5000	7.1414	4
<i>Sebastes mystinus</i> , juvenile	6/3/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	6/3/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	6/3/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	6/3/2009	0.7500	0.9574	4
<i>Semicossyphus pulcher</i> , juvenile	6/3/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	6/3/2009	0.7500	0.9574	4
Santa Cruz Island - Gull Island South				
<i>Chromis punctipinnis</i> , adult	6/4/2009	1.2500	2.5000	4
<i>Chromis punctipinnis</i> , juvenile	6/4/2009	0.2500	0.5000	4
<i>Embiotoca jacksoni</i> , adult	6/4/2009	1.0000	1.4142	4
<i>Embiotoca jacksoni</i> , juvenile	6/4/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	6/4/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	6/4/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	6/4/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	6/4/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	6/4/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	6/4/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	6/4/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , juvenile	6/4/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	6/4/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , juvenile	6/4/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	6/4/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	6/4/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	6/4/2009	0.5000	0.5774	4
<i>Rhacochilus vacca</i> , juvenile	6/4/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	6/4/2009	0.7500	0.9574	4
<i>Sebastes atrovirens</i> , juvenile	6/4/2009	0.2500	0.5000	4
<i>Sebastes mystinus</i> , adult	6/4/2009	1.0000	0.8165	4
<i>Sebastes mystinus</i> , juvenile	6/4/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	6/4/2009	0.2500	0.5000	4
<i>Sebastes serranoides</i> , juvenile	6/4/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	6/4/2009	2.2500	2.0616	4
<i>Semicossyphus pulcher</i> , juvenile	6/4/2009	1.2500	0.9574	4
<i>Semicossyphus pulcher</i> , male	6/4/2009	0.5000	1.0000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Fry's Harbor				
<i>Chromis punctipinnis</i> , adult	7/2/2009	97.0000	50.9771	4
<i>Chromis punctipinnis</i> , adult	8/17/2009	9.7500	10.6888	4
<i>Chromis punctipinnis</i> , juvenile	7/2/2009	0.0000	0.0000	4
<i>Chromis punctipinnis</i> , juvenile	8/17/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	7/2/2009	1.0000	1.4142	4
<i>Embiotoca jacksoni</i> , adult	8/17/2009	2.5000	1.7321	4
<i>Embiotoca jacksoni</i> , juvenile	7/2/2009	1.2500	1.2583	4
<i>Embiotoca jacksoni</i> , juvenile	8/17/2009	0.5000	1.0000	4
<i>Embiotoca lateralis</i> , adult	7/2/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	8/17/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	7/2/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	8/17/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	7/2/2009	0.7500	1.5000	4
<i>Girella nigricans</i> , adult	8/17/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	7/2/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	8/17/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	7/2/2009	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> , female	8/17/2009	0.5000	1.0000	4
<i>Halichoeres semicinctus</i> , male	7/2/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	8/17/2009	0.2500	0.5000	4
<i>Hypsypops rubicundus</i> , adult	7/2/2009	0.5000	0.5774	4
<i>Hypsypops rubicundus</i> , adult	8/17/2009	0.2500	0.5000	4
<i>Hypsypops rubicundus</i> , juvenile	7/2/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , juvenile	8/17/2009	0.2500	0.5000	4
<i>Oxyjulis californica</i> , adult	7/2/2009	9.5000	15.1548	4
<i>Oxyjulis californica</i> , adult	8/17/2009	3.5000	1.2910	4
<i>Oxyjulis californica</i> , juvenile	7/2/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , juvenile	8/17/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	7/2/2009	0.2500	0.5000	4
<i>Paralabrax clathratus</i> , adult	8/17/2009	1.0000	1.1547	4
<i>Paralabrax clathratus</i> , juvenile	7/2/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	8/17/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	7/2/2009	0.5000	0.5774	4
<i>Rhacochilus vacca</i> , adult	8/17/2009	1.7500	1.7078	4
<i>Rhacochilus vacca</i> , juvenile	7/2/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	8/17/2009	7.5000	13.6991	4
<i>Sebastes atrovirens</i> , adult	7/2/2009	1.2500	0.9574	4
<i>Sebastes atrovirens</i> , adult	8/17/2009	2.5000	1.9149	4
<i>Sebastes atrovirens</i> , juvenile	7/2/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	8/17/2009	1.5000	1.2910	4
<i>Sebastes mystinus</i> , adult	7/2/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	8/17/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	7/2/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	8/17/2009	0.5000	1.0000	4
<i>Sebastes serranoides</i> , adult	7/2/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	8/17/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	7/2/2009	0.2500	0.5000	4
<i>Sebastes serranoides</i> , juvenile	8/17/2009	0.7500	0.9574	4
<i>Semicossyphus pulcher</i> , female	7/2/2009	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> , female	8/17/2009	0.7500	0.9574	4
<i>Semicossyphus pulcher</i> , juvenile	7/2/2009	0.5000	1.0000	4
<i>Semicossyphus pulcher</i> , juvenile	8/17/2009	1.7500	0.9574	4
<i>Semicossyphus pulcher</i> , male	7/2/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	8/17/2009	0.0000	0.0000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Pelican Bay				
<i>Chromis punctipinnis</i> , adult	9/24/2009	18.7500	10.5000	4
<i>Chromis punctipinnis</i> , juvenile	9/24/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	9/24/2009	4.0000	2.5820	4
<i>Embiotoca jacksoni</i> , juvenile	9/24/2009	1.5000	1.2910	4
<i>Embiotoca lateralis</i> , adult	9/24/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	9/24/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	9/24/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	9/24/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	9/24/2009	2.0000	0.8165	4
<i>Halichoeres semicinctus</i> , male	9/24/2009	0.5000	0.5774	4
<i>Hypsypops rubicundus</i> , adult	9/24/2009	1.0000	1.1547	4
<i>Hypsypops rubicundus</i> , juvenile	9/24/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	9/24/2009	1.5000	1.2910	4
<i>Oxyjulis californica</i> , juvenile	9/24/2009	0.2500	0.5000	4
<i>Paralabrax clathratus</i> , adult	9/24/2009	4.5000	2.6458	4
<i>Paralabrax clathratus</i> , juvenile	9/24/2009	1.5000	1.7321	4
<i>Rhacochilus vacca</i> , adult	9/24/2009	4.7500	4.1932	4
<i>Rhacochilus vacca</i> , juvenile	9/24/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	9/24/2009	2.2500	0.9574	4
<i>Sebastes atrovirens</i> , juvenile	9/24/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	9/24/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	9/24/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	9/24/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	9/24/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	9/24/2009	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> , juvenile	9/24/2009	0.7500	0.5000	4
<i>Semicossyphus pulcher</i> , male	9/24/2009	0.0000	0.0000	4
Santa Cruz Island - Scorpion Anchorage				
<i>Chromis punctipinnis</i> , adult	10/6/2009	17.5000	7.5939	4
<i>Chromis punctipinnis</i> , juvenile	10/6/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	10/6/2009	3.5000	1.7321	4
<i>Embiotoca jacksoni</i> , juvenile	10/6/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	10/6/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	10/6/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	10/6/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	10/6/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	10/6/2009	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> , male	10/6/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	10/6/2009	0.2500	0.5000	4
<i>Hypsypops rubicundus</i> , juvenile	10/6/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	10/6/2009	5.7500	2.6300	4
<i>Oxyjulis californica</i> , juvenile	10/6/2009	3.2500	3.9476	4
<i>Paralabrax clathratus</i> , adult	10/6/2009	0.7500	1.5000	4
<i>Paralabrax clathratus</i> , juvenile	10/6/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	10/6/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	10/6/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	10/6/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	10/6/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	10/6/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	10/6/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	10/6/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	10/6/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	10/6/2009	0.5000	0.5774	4
<i>Semicossyphus pulcher</i> , juvenile	10/6/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	10/6/2009	0.0000	0.0000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Yellow Banks				
<i>Chromis punctipinnis</i> , adult	7/31/2009	12.2500	4.5735	4
<i>Chromis punctipinnis</i> , juvenile	7/31/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	7/31/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , juvenile	7/31/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	7/31/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	7/31/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	7/31/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	7/31/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	7/31/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	7/31/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	7/31/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , juvenile	7/31/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	7/31/2009	33.7500	32.8976	4
<i>Oxyjulis californica</i> , juvenile	7/31/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	7/31/2009	0.2500	0.5000	4
<i>Paralabrax clathratus</i> , juvenile	7/31/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	7/31/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	7/31/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	7/31/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	7/31/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	7/31/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	7/31/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	7/31/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	7/31/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	7/31/2009	1.7500	0.9574	4
<i>Semicossyphus pulcher</i> , juvenile	7/31/2009	0.7500	0.9574	4
<i>Semicossyphus pulcher</i> , male	7/31/2009	0.0000	0.0000	4
Anacapa Island - Admiral's Reef				
<i>Chromis punctipinnis</i> , adult	6/18/2009	13.7500	10.8743	4
<i>Chromis punctipinnis</i> , juvenile	6/18/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	6/18/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , juvenile	6/18/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	6/18/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	6/18/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	6/18/2009	0.2500	0.5000	4
<i>Girella nigricans</i> , juvenile	6/18/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	6/18/2009	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> , male	6/18/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	6/18/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , juvenile	6/18/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	6/18/2009	19.0000	17.1464	4
<i>Oxyjulis californica</i> , juvenile	6/18/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	6/18/2009	0.5000	1.0000	4
<i>Paralabrax clathratus</i> , juvenile	6/18/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	6/18/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	6/18/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	6/18/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	6/18/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	6/18/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	6/18/2009	2.7500	1.5000	4
<i>Sebastes serranoides</i> , adult	6/18/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	6/18/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	6/18/2009	2.0000	1.4142	4
<i>Semicossyphus pulcher</i> , juvenile	6/18/2009	1.0000	0.8165	4
<i>Semicossyphus pulcher</i> , male	6/18/2009	0.0000	0.0000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - Cathedral Cove				
<i>Chromis punctipinnis</i> , adult	7/29/2009	1.7500	2.3629	4
<i>Chromis punctipinnis</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	7/29/2009	2.0000	1.4142	4
<i>Embiotoca jacksoni</i> , juvenile	7/29/2009	1.0000	1.4142	4
<i>Embiotoca lateralis</i> , adult	7/29/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	7/29/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	7/29/2009	1.2500	1.2583	4
<i>Halichoeres semicinctus</i> , male	7/29/2009	0.5000	0.5774	4
<i>Hypsypops rubicundus</i> , adult	7/29/2009	0.2500	0.5000	4
<i>Hypsypops rubicundus</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	7/29/2009	0.2500	0.5000	4
<i>Oxyjulis californica</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	7/29/2009	1.0000	1.4142	4
<i>Paralabrax clathratus</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	7/29/2009	2.2500	3.8622	4
<i>Rhacochilus vacca</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	7/29/2009	0.5000	0.5774	4
<i>Sebastes atrovirens</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	7/29/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	7/29/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	7/29/2009	1.0000	0.8165	4
<i>Semicossyphus pulcher</i> , juvenile	7/29/2009	1.0000	0.8165	4
<i>Semicossyphus pulcher</i> , male	7/29/2009	0.0000	0.0000	4
Anacapa Island - Landing Cove				
<i>Chromis punctipinnis</i> , adult	6/1/2009	40.2500	13.9374	4
<i>Chromis punctipinnis</i> , juvenile	6/1/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	6/1/2009	1.2500	0.9574	4
<i>Embiotoca jacksoni</i> , juvenile	6/1/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	6/1/2009	0.7500	0.9574	4
<i>Embiotoca lateralis</i> , juvenile	6/1/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	6/1/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	6/1/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	6/1/2009	0.5000	0.5774	4
<i>Halichoeres semicinctus</i> , male	6/1/2009	0.2500	0.5000	4
<i>Hypsypops rubicundus</i> , adult	6/1/2009	1.5000	1.0000	4
<i>Hypsypops rubicundus</i> , juvenile	6/1/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	6/1/2009	2.7500	2.2174	4
<i>Oxyjulis californica</i> , juvenile	6/1/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	6/1/2009	0.5000	1.0000	4
<i>Paralabrax clathratus</i> , juvenile	6/1/2009	0.2500	0.5000	4
<i>Rhacochilus vacca</i> , adult	6/1/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	6/1/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	6/1/2009	1.0000	0.8165	4
<i>Sebastes atrovirens</i> , juvenile	6/1/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	6/1/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	6/1/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	6/1/2009	0.2500	0.5000	4
<i>Sebastes serranoides</i> , juvenile	6/1/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	6/1/2009	1.0000	0.8165	4
<i>Semicossyphus pulcher</i> , juvenile	6/1/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	6/1/2009	0.2500	0.5000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M ³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Barbara Island - SE Sea Lion Rookery				
<i>Chromis punctipinnis</i> , adult	6/16/2009	13.5000	15.5885	4
<i>Chromis punctipinnis</i> , juvenile	6/16/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	6/16/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , juvenile	6/16/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	6/16/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	6/16/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	6/16/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	6/16/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	6/16/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	6/16/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	6/16/2009	0.2500	0.5000	4
<i>Hypsypops rubicundus</i> , juvenile	6/16/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	6/16/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , juvenile	6/16/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	6/16/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	6/16/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	6/16/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	6/16/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	6/16/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	6/16/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	6/16/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	6/16/2009	0.2500	0.5000	4
<i>Sebastes serranoides</i> , adult	6/16/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	6/16/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	6/16/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , juvenile	6/16/2009	0.5000	0.5774	4
<i>Semicossyphus pulcher</i> , male	6/16/2009	0.0000	0.0000	4
Santa Barbara Island - Arch Point				
<i>Chromis punctipinnis</i> , adult	5/18/2009	21.0000	22.8181	4
<i>Chromis punctipinnis</i> , juvenile	5/18/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	5/18/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , juvenile	5/18/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	5/18/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	5/18/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	5/18/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	5/18/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	5/18/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	5/18/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	5/18/2009	2.5000	1.9149	4
<i>Hypsypops rubicundus</i> , juvenile	5/18/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	5/18/2009	1.2500	2.5000	4
<i>Oxyjulis californica</i> , juvenile	5/18/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	5/18/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	5/18/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	5/18/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	5/18/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	5/18/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	5/18/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	5/18/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	5/18/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	5/18/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	5/18/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	5/18/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , juvenile	5/18/2009	0.5000	0.5774	4
<i>Semicossyphus pulcher</i> , male	5/18/2009	0.0000	0.0000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Barbara Island - Cat Canyon				
<i>Chromis punctipinnis</i> , adult	5/19/2009	23.2500	24.2951	4
<i>Chromis punctipinnis</i> , juvenile	5/19/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	5/19/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , juvenile	5/19/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	5/19/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	5/19/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	5/19/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	5/19/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	5/19/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	5/19/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	5/19/2009	0.2500	0.5000	4
<i>Hypsypops rubicundus</i> , juvenile	5/19/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	5/19/2009	0.2500	0.5000	4
<i>Oxyjulis californica</i> , juvenile	5/19/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	5/19/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	5/19/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	5/19/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	5/19/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	5/19/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	5/19/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	5/19/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	5/19/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	5/19/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	5/19/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	5/19/2009	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> , juvenile	5/19/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	5/19/2009	0.0000	0.0000	4
San Miguel Island - Miracle Mile				
<i>Chromis punctipinnis</i> , adult	7/15/2009	0.0000	0.0000	4
<i>Chromis punctipinnis</i> , juvenile	7/15/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	7/15/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , juvenile	7/15/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	7/15/2009	1.0000	1.4142	4
<i>Embiotoca lateralis</i> , juvenile	7/15/2009	0.5000	1.0000	4
<i>Girella nigricans</i> , adult	7/15/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	7/15/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	7/15/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	7/15/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	7/15/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , juvenile	7/15/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	7/15/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , juvenile	7/15/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	7/15/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	7/15/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	7/15/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	7/15/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	7/15/2009	0.2500	0.5000	4
<i>Sebastes atrovirens</i> , juvenile	7/15/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	7/15/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	7/15/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	7/15/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	7/15/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	7/15/2009	0.5000	0.5774	4
<i>Semicossyphus pulcher</i> , juvenile	7/15/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	7/15/2009	0.0000	0.0000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - Cluster Point				
<i>Chromis punctipinnis</i> , adult	7/1/2009	0.2500	0.5000	4
<i>Chromis punctipinnis</i> , juvenile	7/1/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	7/1/2009	0.2500	0.5000	4
<i>Embiotoca jacksoni</i> , juvenile	7/1/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	7/1/2009	0.2500	0.5000	4
<i>Embiotoca lateralis</i> , juvenile	7/1/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	7/1/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	7/1/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	7/1/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	7/1/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	7/1/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , juvenile	7/1/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	7/1/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , juvenile	7/1/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	7/1/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	7/1/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	7/1/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	7/1/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	7/1/2009	0.2500	0.5000	4
<i>Sebastes atrovirens</i> , juvenile	7/1/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	7/1/2009	1.5000	1.7321	4
<i>Sebastes mystinus</i> , juvenile	7/1/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	7/1/2009	0.2500	0.5000	4
<i>Sebastes serranoides</i> , juvenile	7/1/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	7/1/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , juvenile	7/1/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	7/1/2009	0.0000	0.0000	4
Santa Rosa Island - Trancion Canyon				
<i>Chromis punctipinnis</i> , adult	6/30/2009	0.0000	0.0000	4
<i>Chromis punctipinnis</i> , juvenile	6/30/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	6/30/2009	1.2500	1.2583	4
<i>Embiotoca jacksoni</i> , juvenile	6/30/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	6/30/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	6/30/2009	0.2500	0.5000	4
<i>Girella nigricans</i> , adult	6/30/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	6/30/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	6/30/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	6/30/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	6/30/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , juvenile	6/30/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	6/30/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , juvenile	6/30/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	6/30/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	6/30/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	6/30/2009	0.5000	0.5774	4
<i>Rhacochilus vacca</i> , juvenile	6/30/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	6/30/2009	0.2500	0.5000	4
<i>Sebastes atrovirens</i> , juvenile	6/30/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	6/30/2009	0.5000	0.5774	4
<i>Sebastes mystinus</i> , juvenile	6/30/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	6/30/2009	0.5000	0.5774	4
<i>Sebastes serranoides</i> , juvenile	6/30/2009	2.5000	5.0000	4
<i>Semicossyphus pulcher</i> , female	6/30/2009	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> , juvenile	6/30/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	6/30/2009	0.0000	0.0000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M ³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - Chickasaw				
<i>Chromis punctipinnis</i> , adult	7/14/2009	0.2500	0.5000	4
<i>Chromis punctipinnis</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	7/14/2009	0.5000	0.5774	4
<i>Embiotoca jacksoni</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	7/14/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	7/14/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	7/14/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	7/14/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	7/14/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	7/14/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	7/14/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	7/14/2009	0.2500	0.5000	4
<i>Rhacochilus vacca</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	7/14/2009	1.0000	0.8165	4
<i>Sebastes atrovirens</i> , juvenile	7/14/2009	0.2500	0.5000	4
<i>Sebastes mystinus</i> , adult	7/14/2009	0.2500	0.5000	4
<i>Sebastes mystinus</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	7/14/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	7/14/2009	0.7500	0.9574	4
<i>Semicossyphus pulcher</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	7/14/2009	0.0000	0.0000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Rosa Island - South Point				
<i>Chromis punctipinnis</i> , adult	7/13/2009	0.0000	0.0000	4
<i>Chromis punctipinnis</i> , adult	7/14/2009	2.0000	4.0000	4
<i>Chromis punctipinnis</i> , adult	7/16/2009	2.0000	4.0000	4
<i>Chromis punctipinnis</i> , juvenile	7/13/2009	0.0000	0.0000	4
<i>Chromis punctipinnis</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Chromis punctipinnis</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	7/13/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	7/14/2009	0.5000	1.0000	4
<i>Embiotoca jacksoni</i> , adult	7/16/2009	0.5000	1.0000	4
<i>Embiotoca jacksoni</i> , juvenile	7/13/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , juvenile	7/14/2009	0.2500	0.5000	4
<i>Embiotoca jacksoni</i> , juvenile	7/16/2009	0.2500	0.5000	4
<i>Embiotoca lateralis</i> , adult	7/13/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	7/14/2009	1.5000	2.3805	4
<i>Embiotoca lateralis</i> , adult	7/16/2009	1.5000	2.3805	4
<i>Embiotoca lateralis</i> , juvenile	7/13/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	7/13/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	7/14/2009	0.2500	0.5000	4
<i>Girella nigricans</i> , adult	7/16/2009	0.2500	0.5000	4
<i>Girella nigricans</i> , juvenile	7/13/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	7/13/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	7/14/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	7/16/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	7/13/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	7/14/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	7/16/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	7/13/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	7/14/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	7/16/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , juvenile	7/13/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	7/13/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	7/14/2009	3.2500	5.2520	4
<i>Oxyjulis californica</i> , adult	7/16/2009	3.2500	5.2520	4
<i>Oxyjulis californica</i> , juvenile	7/13/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	7/13/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	7/14/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	7/16/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	7/13/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	7/13/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	7/14/2009	0.2500	0.5000	4
<i>Rhacochilus vacca</i> , adult	7/16/2009	0.2500	0.5000	4
<i>Rhacochilus vacca</i> , juvenile	7/13/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	7/13/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	7/14/2009	0.5000	0.5774	4
<i>Sebastes atrovirens</i> , adult	7/16/2009	0.5000	0.5774	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M ³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
<i>Sebastes atrovirens</i> , juvenile	7/13/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	7/13/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	7/14/2009	0.7500	1.5000	4
<i>Sebastes mystinus</i> , adult	7/16/2009	0.7500	1.5000	4
<i>Sebastes mystinus</i> , juvenile	7/13/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	7/13/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	7/14/2009	0.2500	0.5000	4
<i>Sebastes serranoides</i> , adult	7/16/2009	0.2500	0.5000	4
<i>Sebastes serranoides</i> , juvenile	7/13/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	7/14/2009	0.2500	0.5000	4
<i>Sebastes serranoides</i> , juvenile	7/16/2009	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> , female	7/13/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	7/14/2009	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> , female	7/16/2009	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> , juvenile	7/13/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , juvenile	7/14/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , juvenile	7/16/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	7/13/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	7/14/2009	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> , male	7/16/2009	0.2500	0.5000	4

Santa Cruz Island - Devil's Peak Member

<i>Chromis punctipinnis</i> , adult	6/2/2009	2.0000	2.4495	4
<i>Chromis punctipinnis</i> , juvenile	6/2/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	6/2/2009	1.7500	0.5000	4
<i>Embiotoca jacksoni</i> , juvenile	6/2/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	6/2/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	6/2/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	6/2/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	6/2/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	6/2/2009	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> , male	6/2/2009	1.5000	1.7321	4
<i>Hypsypops rubicundus</i> , adult	6/2/2009	1.7500	1.2583	4
<i>Hypsypops rubicundus</i> , juvenile	6/2/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	6/2/2009	8.0000	3.1623	4
<i>Oxyjulis californica</i> , juvenile	6/2/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	6/2/2009	1.5000	1.0000	4
<i>Paralabrax clathratus</i> , juvenile	6/2/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	6/2/2009	0.5000	1.0000	4
<i>Rhacochilus vacca</i> , juvenile	6/2/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	6/2/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	6/2/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	6/2/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	6/2/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	6/2/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	6/2/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	6/2/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , juvenile	6/2/2009	0.5000	0.5774	4
<i>Semicossyphus pulcher</i> , male	6/2/2009	0.0000	0.0000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Potato Pasture				
<i>Chromis punctipinnis</i> , adult	9/2/2009	14.2500	15.7771	4
<i>Chromis punctipinnis</i> , juvenile	9/2/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	9/2/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , juvenile	9/2/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	9/2/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	9/2/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	9/2/2009	0.2500	0.5000	4
<i>Girella nigricans</i> , juvenile	9/2/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	9/2/2009	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> , male	9/2/2009	0.2500	0.5000	4
<i>Hypsypops rubicundus</i> , adult	9/2/2009	0.5000	0.5774	4
<i>Hypsypops rubicundus</i> , juvenile	9/2/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	9/2/2009	13.0000	15.1438	4
<i>Oxyjulis californica</i> , juvenile	9/2/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	9/2/2009	1.5000	0.5774	4
<i>Paralabrax clathratus</i> , juvenile	9/2/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	9/2/2009	0.2500	0.5000	4
<i>Rhacochilus vacca</i> , juvenile	9/2/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	9/2/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	9/2/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	9/2/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	9/2/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	9/2/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	9/2/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	9/2/2009	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> , juvenile	9/2/2009	0.5000	1.0000	4
<i>Semicossyphus pulcher</i> , male	9/2/2009	0.2500	0.5000	4
Santa Cruz Island - Cavern Point				
<i>Chromis punctipinnis</i> , adult	6/15/2009	11.0000	11.8322	4
<i>Chromis punctipinnis</i> , juvenile	6/15/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	6/15/2009	0.2500	0.5000	4
<i>Embiotoca jacksoni</i> , juvenile	6/15/2009	0.2500	0.5000	4
<i>Embiotoca lateralis</i> , adult	6/15/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	6/15/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	6/15/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	6/15/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	6/15/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	6/15/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	6/15/2009	0.2500	0.5000	4
<i>Hypsypops rubicundus</i> , juvenile	6/15/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	6/15/2009	3.7500	3.5000	4
<i>Oxyjulis californica</i> , juvenile	6/15/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	6/15/2009	1.0000	1.4142	4
<i>Paralabrax clathratus</i> , juvenile	6/15/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	6/15/2009	0.5000	0.5774	4
<i>Rhacochilus vacca</i> , juvenile	6/15/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	6/15/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	6/15/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	6/15/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	6/15/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	6/15/2009	0.5000	1.0000	4
<i>Sebastes serranoides</i> , juvenile	6/15/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	6/15/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , juvenile	6/15/2009	0.5000	0.5774	4
<i>Semicossyphus pulcher</i> , male	6/15/2009	0.2500	0.5000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Cruz Island - Little Scorpion				
<i>Chromis punctipinnis</i> , adult	9/3/2009	12.0000	10.9848	4
<i>Chromis punctipinnis</i> , juvenile	9/3/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	9/3/2009	1.0000	0.8165	4
<i>Embiotoca jacksoni</i> , juvenile	9/3/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	9/3/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	9/3/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	9/3/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	9/3/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	9/3/2009	1.7500	0.9574	4
<i>Halichoeres semicinctus</i> , male	9/3/2009	0.5000	0.5774	4
<i>Hypsypops rubicundus</i> , adult	9/3/2009	0.7500	0.5000	4
<i>Hypsypops rubicundus</i> , juvenile	9/3/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	9/3/2009	12.2500	17.8769	4
<i>Oxyjulis californica</i> , juvenile	9/3/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	9/3/2009	0.5000	0.5774	4
<i>Paralabrax clathratus</i> , juvenile	9/3/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	9/3/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	9/3/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	9/3/2009	0.5000	0.5774	4
<i>Sebastes atrovirens</i> , juvenile	9/3/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	9/3/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	9/3/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	9/3/2009	0.2500	0.5000	4
<i>Sebastes serranoides</i> , juvenile	9/3/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	9/3/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , juvenile	9/3/2009	1.5000	1.2910	4
<i>Semicossyphus pulcher</i> , male	9/3/2009	0.0000	0.0000	4
Santa Cruz Island - Pedro Reef				
<i>Chromis punctipinnis</i> , adult	7/28/2009	0.0000	0.0000	4
<i>Chromis punctipinnis</i> , juvenile	7/28/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	7/28/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , juvenile	7/28/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	7/28/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	7/28/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	7/28/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	7/28/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	7/28/2009	0.7500	0.9574	4
<i>Halichoeres semicinctus</i> , male	7/28/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	7/28/2009	0.2500	0.5000	4
<i>Hypsypops rubicundus</i> , juvenile	7/28/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	7/28/2009	1.5000	1.2910	4
<i>Oxyjulis californica</i> , juvenile	7/28/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	7/28/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	7/28/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	7/28/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	7/28/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	7/28/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	7/28/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	7/28/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	7/28/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	7/28/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	7/28/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	7/28/2009	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> , juvenile	7/28/2009	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> , male	7/28/2009	0.0000	0.0000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - Keyhole				
<i>Chromis punctipinnis</i> , adult	7/29/2009	78.7500	53.1311	4
<i>Chromis punctipinnis</i> , juvenile	7/29/2009	18.7500	23.9357	4
<i>Embiotoca jacksoni</i> , adult	7/29/2009	0.5000	0.5774	4
<i>Embiotoca jacksoni</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	7/29/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	7/29/2009	1.0000	2.0000	4
<i>Girella nigricans</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	7/29/2009	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> , male	7/29/2009	1.2500	1.2583	4
<i>Hypsypops rubicundus</i> , adult	7/29/2009	0.2500	0.5000	4
<i>Hypsypops rubicundus</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	7/29/2009	2.0000	1.4142	4
<i>Oxyjulis californica</i> , juvenile	7/29/2009	0.2500	0.5000	4
<i>Paralabrax clathratus</i> , adult	7/29/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	7/29/2009	0.2500	0.5000	4
<i>Rhacochilus vacca</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	7/29/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	7/29/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	7/29/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	7/29/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	7/29/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , juvenile	7/29/2009	1.7500	0.9574	4
<i>Semicossyphus pulcher</i> , male	7/29/2009	0.0000	0.0000	4

Anacapa Island - East Fish Camp

<i>Chromis punctipinnis</i> , adult	8/21/2009	46.0000	11.5758	4
<i>Chromis punctipinnis</i> , juvenile	8/21/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	8/21/2009	0.7500	0.9574	4
<i>Embiotoca jacksoni</i> , juvenile	8/21/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	8/21/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	8/21/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	8/21/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	8/21/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	8/21/2009	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> , male	8/21/2009	0.5000	0.5774	4
<i>Hypsypops rubicundus</i> , adult	8/21/2009	1.7500	0.9574	4
<i>Hypsypops rubicundus</i> , juvenile	8/21/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	8/21/2009	1.0000	1.4142	4
<i>Oxyjulis californica</i> , juvenile	8/21/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	8/21/2009	0.5000	0.5774	4
<i>Paralabrax clathratus</i> , juvenile	8/21/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	8/21/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	8/21/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	8/21/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	8/21/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	8/21/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	8/21/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	8/21/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	8/21/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	8/21/2009	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> , juvenile	8/21/2009	0.2500	0.5000	4
<i>Semicossyphus pulcher</i> , male	8/21/2009	0.0000	0.0000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Anacapa Island - Black Sea Bass Reef				
<i>Chromis punctipinnis</i> , adult	7/17/2009	105.7500	134.0208	4
<i>Chromis punctipinnis</i> , juvenile	7/17/2009	6.2500	12.5000	4
<i>Embiotoca jacksoni</i> , adult	7/17/2009	0.7500	0.9574	4
<i>Embiotoca jacksoni</i> , juvenile	7/17/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	7/17/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	7/17/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	7/17/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	7/17/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	7/17/2009	0.2500	0.5000	4
<i>Halichoeres semicinctus</i> , male	7/17/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	7/17/2009	0.7500	0.9574	4
<i>Hypsypops rubicundus</i> , juvenile	7/17/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	7/17/2009	1.7500	2.0616	4
<i>Oxyjulis californica</i> , juvenile	7/17/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	7/17/2009	0.7500	0.9574	4
<i>Paralabrax clathratus</i> , juvenile	7/17/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	7/17/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	7/17/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	7/17/2009	0.2500	0.5000	4
<i>Sebastes atrovirens</i> , juvenile	7/17/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	7/17/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	7/17/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	7/17/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	7/17/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	7/17/2009	0.7500	0.5000	4
<i>Semicossyphus pulcher</i> , juvenile	7/17/2009	0.5000	1.0000	4
<i>Semicossyphus pulcher</i> , male	7/17/2009	0.0000	0.0000	4
Anacapa Island - Lighthouse				
<i>Chromis punctipinnis</i> , adult	7/30/2009	57.2500	63.0258	4
<i>Chromis punctipinnis</i> , juvenile	7/30/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	7/30/2009	0.2500	0.5000	4
<i>Embiotoca jacksoni</i> , juvenile	7/30/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	7/30/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	7/30/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	7/30/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	7/30/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	7/30/2009	0.7500	0.5000	4
<i>Halichoeres semicinctus</i> , male	7/30/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	7/30/2009	0.5000	0.5774	4
<i>Hypsypops rubicundus</i> , juvenile	7/30/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	7/30/2009	6.7500	4.3493	4
<i>Oxyjulis californica</i> , juvenile	7/30/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	7/30/2009	0.2500	0.5000	4
<i>Paralabrax clathratus</i> , juvenile	7/30/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	7/30/2009	0.5000	1.0000	4
<i>Rhacochilus vacca</i> , juvenile	7/30/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	7/30/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	7/30/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	7/30/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	7/30/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	7/30/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	7/30/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	7/30/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , juvenile	7/30/2009	1.5000	2.3805	4
<i>Semicossyphus pulcher</i> , male	7/30/2009	0.0000	0.0000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Barbara Island - Webster's Arch				
<i>Chromis punctipinnis</i> , adult	5/20/2009	0.0000	0.0000	4
<i>Chromis punctipinnis</i> , juvenile	5/20/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	5/20/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , juvenile	5/20/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	5/20/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	5/20/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	5/20/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	5/20/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	5/20/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	5/20/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	5/20/2009	0.2500	0.5000	4
<i>Hypsypops rubicundus</i> , juvenile	5/20/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	5/20/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , juvenile	5/20/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	5/20/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	5/20/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	5/20/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	5/20/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	5/20/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	5/20/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	5/20/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	5/20/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	5/20/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	5/20/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	5/20/2009	1.2500	0.9574	4
<i>Semicossyphus pulcher</i> , juvenile	5/20/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	5/20/2009	0.0000	0.0000	4
Santa Barbara Island - Graveyard Canyon				
<i>Chromis punctipinnis</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Chromis punctipinnis</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	6/17/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	6/17/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	6/17/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , male	6/17/2009	0.0000	0.0000	4

2009 FISH TRANSECT DATA: MEAN NUMBER PER 300 M³

<u>Species</u>	<u>Date</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>n</u>
Santa Barbara Island - Southeast Reef				
<i>Chromis punctipinnis</i> , adult	6/17/2009	362.7500	224.3752	4
<i>Chromis punctipinnis</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Embiotoca jacksoni</i> , adult	6/17/2009	2.0000	1.6330	4
<i>Embiotoca jacksoni</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Embiotoca lateralis</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Girella nigricans</i> , adult	6/17/2009	0.7500	1.5000	4
<i>Girella nigricans</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , female	6/17/2009	0.0000	0.0000	4
<i>Halichoeres semicinctus</i> , male	6/17/2009	0.0000	0.0000	4
<i>Hypsypops rubicundus</i> , adult	6/17/2009	6.2500	3.3040	4
<i>Hypsypops rubicundus</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Oxyjulis californica</i> , adult	6/17/2009	34.7500	18.2825	4
<i>Oxyjulis californica</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Paralabrax clathratus</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Rhacochilus vacca</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Sebastes atrovirens</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Sebastes mystinus</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , adult	6/17/2009	0.0000	0.0000	4
<i>Sebastes serranoides</i> , juvenile	6/17/2009	0.0000	0.0000	4
<i>Semicossyphus pulcher</i> , female	6/17/2009	3.7500	3.2016	4
<i>Semicossyphus pulcher</i> , juvenile	6/17/2009	1.7500	2.2174	4
<i>Semicossyphus pulcher</i> , male	6/17/2009	0.5000	1.0000	4

Appendix G. Roving Diver Fish Count Data

2009 ROVING DIVER FISH COUNT

Island	Site Name	Date	# of Observer	# of Species Observed
San Miguel Island	Wyckoff Ledge	8/18/2009	6	28
San Miguel Island	Hare Rock	8/19/2009	5	23
Santa Rosa Island	Johnson's Lee North	7/16/2009	6	30
Santa Rosa Island	Johnson's Lee South	9/22/2009	5	33
Santa Rosa Island	Rodes Reef	6/3/2009	7	20
Santa Cruz Island	Gull Island South	6/4/2009	6	28
Santa Cruz Island	Fry's Harbor	8/17/2009	5	34
Santa Cruz Island	Pelican Bay	9/24/2009	7	33
Santa Cruz Island	Scorpion Anchorage	10/6/2009	5	30
Santa Cruz Island	Yellow Banks	7/31/2009	5	22
Anacapa Island	Admiral's Reef	6/18/2009	6	25
Anacapa Island	Cathedral Cove	7/29/2009	5	27
Anacapa Island	Landing Cove	6/1/2009	6	25
Santa Barbara Island	SE Sea Lion Rookery	6/16/2009	5	13
Santa Barbara Island	Arch Point	5/18/2009	3	21
Santa Barbara Island	Cat Canyon	5/19/2009	4	18
San Miguel Island	Miracle Mile	7/15/2009	4	25
Santa Rosa Island	Cluster Point	7/1/2009	6	25
Santa Rosa Island	Trancion Canyon	6/30/2009	6	26
Santa Rosa Island	Chickasaw	7/14/2009	4	25
Santa Rosa Island	South Point	7/14/2009	4	28
Santa Cruz Island	Devil's Peak Member	6/2/2009	7	28
Santa Cruz Island	Potato Pasture	9/2/2009	6	24
Santa Cruz Island	Cavern Point	6/15/2009	6	20
Santa Cruz Island	Little Scorpion	9/3/2009	5	25
Santa Cruz Island	Pedro Reef	7/28/2009	5	16
Anacapa Island	Keyhole	7/29/2009	5	22
Anacapa Island	East Fish Camp	8/21/2009	6	24
Anacapa Island	Black Sea Bass Reef	7/17/2009	7	28
Anacapa Island	Lighthouse	7/30/2009	5	23
Santa Barbara Island	Webster's Arch	5/20/2009	4	14
Santa Barbara Island	Graveyard Canyon	6/17/2009	5	17
Santa Barbara Island	Southeast Reef	6/17/2009	5	19

2009 ROVING DIVER FISH COUNT

San Miguel Island - Wyckoff Ledge

Common Name	Date	Max # of	# of	Score		Abundance		Count	
		Observers	Observations	Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	8/18/2009	6	6	9.33	0.82	2.00	0.00	7.00	1.79
black surfperch, adult	8/18/2009	6	2	5.50	0.71	0.67	1.03	0.67	1.03
black surfperch, all	8/18/2009	6	3	6.33	1.53	0.83	0.98	0.83	0.98
black surfperch, juvenile	8/18/2009	6	1	8.00		0.17	0.41	0.17	0.41
blackeye goby	8/18/2009	6	6	9.00	1.26	2.83	0.41	16.00	4.60
blue rockfish, adult	8/18/2009	6	6	8.33	1.37	2.17	0.41	5.67	3.93
blue rockfish, all	8/18/2009	6	6	8.33	1.37	2.17	0.41	5.83	3.87
blue rockfish, juvenile	8/18/2009	6	1	5.00		0.17	0.41	0.17	0.41
California sheephead, female	8/18/2009	6	2	6.50	0.71	0.50	0.84	0.50	0.84
California sheephead, male	8/18/2009	6	3	8.67	1.53	0.67	0.82	0.67	0.82
copper rockfish, adult	8/18/2009	6	6	8.17	2.14	1.83	0.41	3.00	1.10
coralline sculpin	8/18/2009	6	2	7.00	1.41	1.50	0.71	1.50	0.71
giant kelpfish, adult	8/18/2009	6	1	9.00		2.00		2.00	
giant kelpfish, juvenile	8/18/2009	6	1	10.00		1.00		1.00	
kelp rockfish, adult	8/18/2009	6	6	8.33	1.21	2.00	0.00	5.67	2.58
kelp rockfish, all	8/18/2009	6	6	9.33	1.03	2.67	0.82	52.00	79.54
kelp rockfish, juvenile	8/18/2009	6	5	9.60	0.89	2.33	1.37	46.33	77.30
kelp surfperch	8/18/2009	6	5	8.80	1.64	2.00	0.71	8.40	7.02
kelpfish spp.	8/18/2009	6	3	5.67	0.58	1.67	0.58	2.00	1.00
KGB	8/18/2009	6	6	10.00	0.00	3.00	0.63	76.83	76.42
lavender sculpin	8/18/2009	6	2	8.00	2.83	1.00	0.00	1.00	0.00
lingcod, adult	8/18/2009	6	2	6.50	2.12	1.00	0.00	1.00	0.00
olive rockfish, all	8/18/2009	6	2	10.00	0.00	0.50	0.84	0.50	0.84
olive/yellowtail rockfish, juvenile	8/18/2009	6	2	10.00	0.00	0.50	0.84	0.50	0.84
painted greenling	8/18/2009	6	6	9.67	0.52	2.67	0.52	14.17	3.66
pile perch, adult	8/18/2009	6	3	9.00	1.00	0.50	0.55	0.50	0.55
pile perch, all	8/18/2009	6	4	8.75	0.96	0.83	0.75	0.83	0.75
pile perch, juvenile	8/18/2009	6	1	8.00		0.33	0.82	0.33	0.82
rainbow surfperch	8/18/2009	6	2	6.50	2.12	2.00	0.00	4.00	1.41
rockfish spp., juvenile	8/18/2009	6	2	9.00	1.41	1.00	0.00	1.00	0.00
seporita, adult	8/18/2009	6	3	8.00	2.65	1.00	1.10	3.33	3.93
seporita, all	8/18/2009	6	6	9.00	1.55	2.83	0.41	33.50	27.31
seporita, juvenile	8/18/2009	6	6	8.33	1.63	2.67	0.52	30.17	27.05
snubnose sculpin	8/18/2009	6	2	5.50	0.71	1.50	0.71	1.50	0.71
speckled sanddab	8/18/2009	6	1	7.00		1.00		1.00	
striped surfperch, adult	8/18/2009	6	3	10.00	0.00	1.00	1.10	1.67	1.97
striped surfperch, all	8/18/2009	6	5	9.00	1.73	1.83	0.98	5.67	4.03
striped surfperch, juvenile	8/18/2009	6	5	9.00	1.73	1.67	0.82	4.00	2.76
surfperch spp., juvenile	8/18/2009	6	1	5.00		1.00		1.00	
treefish, adult	8/18/2009	6	4	7.50	1.73	0.83	0.75	1.17	1.47
treefish, juvenile	8/18/2009	6	3	7.67	2.08	0.50	0.55	0.50	0.55
tubesnout, adult	8/18/2009	6	6	9.50	0.55	4.00	0.00	427.33	205.54
vermillion rockfish, adult	8/18/2009	6	4	7.25	1.26	1.00	0.00	1.00	0.00
vermillion rockfish, juvenile	8/18/2009	6	5	8.40	2.07	1.60	0.55	2.80	1.79

2009 ROVING DIVER FISH COUNT

San Miguel Island - Hare Rock

Common Name	Date	Max # of	# of	Score		Abundance		Count	
		Observers	Observations	Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	8/19/2009	5	5	9.80	0.45	2.20	0.45	8.80	3.42
black surfperch, adult	8/19/2009	5	4	7.00	0.00	1.20	0.84	1.40	1.14
black surfperch, all	8/19/2009	5	4	7.00	0.00	1.20	0.84	1.40	1.14
blackeye goby	8/19/2009	5	5	10.00	0.00	4.00	0.00	191.20	42.05
blue rockfish, adult	8/19/2009	5	5	10.00	0.00	3.00	0.00	45.80	9.60
blue rockfish, all	8/19/2009	5	5	10.00	0.00	3.00	0.00	46.20	9.68
blue rockfish, juvenile	8/19/2009	5	2	9.00	1.41	0.40	0.55	0.40	0.55
cabezon, adult	8/19/2009	5	3	7.00	2.65	1.33	0.58	1.33	0.58
California sheephead, female	8/19/2009	5	5	9.40	0.55	1.80	0.45	2.60	1.14
California sheephead, male	8/19/2009	5	2	7.50	3.54	0.40	0.55	0.40	0.55
copper rockfish, adult	8/19/2009	5	5	8.80	1.10	1.80	0.45	1.80	0.45
coralline sculpin	8/19/2009	5	3	10.00	0.00	1.33	0.58	1.67	1.15
fringehead spp.	8/19/2009	5	1	10.00		1.00		1.00	
kelp rockfish, adult	8/19/2009	5	5	9.20	1.10	3.00	0.00	16.80	1.30
kelp rockfish, all	8/19/2009	5	5	9.60	0.89	3.00	0.00	18.80	1.10
kelp rockfish, juvenile	8/19/2009	5	4	9.50	1.00	1.40	0.89	2.00	1.87
kelpfish spp.	8/19/2009	5	2	9.00	0.00	1.50	0.71	2.00	1.41
KGB	8/19/2009	5	5	9.60	0.55	2.60	0.55	11.00	4.64
olive rockfish, adult	8/19/2009	5	1	10.00		0.20	0.45	0.20	0.45
olive rockfish, all	8/19/2009	5	1	10.00		0.20	0.45	0.20	0.45
painted greenling	8/19/2009	5	5	9.40	1.34	2.00	0.00	8.20	2.17
pile perch, adult	8/19/2009	5	5	6.20	0.45	1.00	0.00	1.00	0.00
pile perch, all	8/19/2009	5	5	6.20	0.45	1.00	0.00	1.00	0.00
rockfish spp., juvenile	8/19/2009	5	1	6.00		1.00		1.00	
rubberlip surfperch	8/19/2009	5	1	5.00		1.00		1.00	
sculpin spp.	8/19/2009	5	1	9.00		2.00		6.00	
snubnose sculpin	8/19/2009	5	3	10.00	0.00	2.00	0.00	6.67	4.04
striped surfperch, adult	8/19/2009	5	5	7.60	1.52	2.00	0.00	5.00	1.87
striped surfperch, all	8/19/2009	5	5	7.60	1.52	2.00	0.00	6.00	1.87
striped surfperch, juvenile	8/19/2009	5	2	8.50	2.12	0.80	1.10	1.00	1.41
treefish, adult	8/19/2009	5	4	6.50	1.29	1.20	0.84	1.40	1.14
tubesnout, adult	8/19/2009	5	1	8.00		1.00		1.00	
vermillion rockfish, juvenile	8/19/2009	5	2	10.00	0.00	1.50	0.71	2.00	1.41

2009 ROVING DIVER FISH COUNT

Santa Rosa Island - Johnson's Lee North

Common Name	Date	Max # of	# of	Score		Abundance		Count	
		Observers	Observations	Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	7/16/2009	6	6	8.00	1.67	1.83	0.41	6.17	2.86
black surfperch, adult	7/16/2009	6	6	9.50	1.22	2.67	0.52	14.00	6.16
black surfperch, all	7/16/2009	6	6	9.50	1.22	2.83	0.41	16.83	6.21
black surfperch, juvenile	7/16/2009	6	5	8.60	1.95	1.50	0.84	2.83	1.83
blackeye goby	7/16/2009	6	6	9.33	0.82	2.67	0.52	22.83	15.99
blacksmith, adult	7/16/2009	6	6	10.00	0.00	3.00	0.00	74.50	20.77
blacksmith, all	7/16/2009	6	6	10.00	0.00	3.00	0.00	75.00	20.59
blacksmith, juvenile	7/16/2009	6	1	10.00		0.33	0.82	0.50	1.22
blue rockfish, adult	7/16/2009	6	1	5.00		0.17	0.41	0.17	0.41
blue rockfish, all	7/16/2009	6	4	6.75	1.26	1.17	0.98	2.33	2.58
blue rockfish, juvenile	7/16/2009	6	4	6.75	1.26	1.17	0.98	2.17	2.40
cabezon, adult	7/16/2009	6	2	8.00	1.41	1.00	0.00	1.00	0.00
California sheephead, female	7/16/2009	6	6	8.17	0.98	1.67	0.52	2.50	1.22
California sheephead, juvenile	7/16/2009	6	3	7.33	1.53	0.83	0.98	1.33	1.75
c-o turbot	7/16/2009	6	2	7.00	2.83	1.00	0.00	1.00	0.00
crevice kelpfish	7/16/2009	6	2	9.00	1.41	1.00	0.00	1.00	0.00
garibaldi, adult	7/16/2009	6	6	8.67	1.51	1.83	0.41	2.00	0.63
giant kelpfish, adult	7/16/2009	6	1	8.00		1.00		1.00	
giant kelpfish, juvenile	7/16/2009	6	3	8.33	2.89	1.33	0.58	1.67	1.15
kelp bass, adult	7/16/2009	6	1	9.00		0.17	0.41	0.17	0.41
kelp bass, all	7/16/2009	6	1	9.00		0.17	0.41	0.17	0.41
kelp rockfish, adult	7/16/2009	6	6	10.00	0.00	3.00	0.00	25.83	9.70
kelp rockfish, all	7/16/2009	6	6	10.00	0.00	3.00	0.00	28.00	12.21
kelp rockfish, juvenile	7/16/2009	6	1	7.00		0.50	1.22	2.17	5.31
kelp surfperch	7/16/2009	6	4	7.75	2.63	2.25	0.50	5.75	4.92
KGB	7/16/2009	6	6	9.50	1.22	3.00	0.00	29.33	31.07
larval fish spp.	7/16/2009	6	2	9.50	0.71	3.50	0.71	82.50	67.18
olive rockfish, adult	7/16/2009	6	4	8.25	2.06	1.50	1.22	4.83	6.08
olive rockfish, all	7/16/2009	6	4	8.25	2.06	1.50	1.22	5.33	7.20
olive/yellowtail rockfish, juvenile	7/16/2009	6	1	7.00		0.33	0.82	0.50	1.22
opaleye, adult	7/16/2009	6	3	7.00	1.73	0.67	0.82	0.67	0.82
painted greenling	7/16/2009	6	6	8.83	1.17	2.67	0.52	12.17	3.19
pile perch, adult	7/16/2009	6	6	9.00	0.63	2.33	0.52	6.83	3.54
pile perch, all	7/16/2009	6	6	9.00	0.63	2.50	0.55	10.17	8.52
pile perch, juvenile	7/16/2009	6	1	9.00		0.50	1.22	3.33	8.16
rainbow surfperch	7/16/2009	6	1	10.00		2.00		3.00	
rock wrasse, male	7/16/2009	6	1	9.00		0.17	0.41	0.17	0.41
rubberlip surfperch	7/16/2009	6	3	9.67	0.58	1.33	0.58	2.00	1.73
scalyhead sculpin	7/16/2009	6	1	8.00		1.00		1.00	
seporita, adult	7/16/2009	6	6	10.00	0.00	3.17	0.41	55.50	43.67
seporita, all	7/16/2009	6	6	10.00	0.00	3.17	0.41	64.00	40.78
seporita, juvenile	7/16/2009	6	6	9.50	0.84	2.33	0.52	8.50	4.97
snubnose sculpin	7/16/2009	6	6	8.50	2.07	1.50	0.55	2.00	1.55
striped surfperch, adult	7/16/2009	6	6	10.00	0.00	2.83	0.41	18.83	5.04
striped surfperch, all	7/16/2009	6	6	10.00	0.00	2.83	0.41	23.50	9.97
striped surfperch, juvenile	7/16/2009	6	3	10.00	0.00	1.17	1.33	4.67	6.06
treefish, adult	7/16/2009	6	2	7.50	0.71	0.33	0.52	0.33	0.52
treefish, juvenile	7/16/2009	6	4	8.25	1.71	1.17	0.98	1.50	1.38
tubesnout, adult	7/16/2009	6	2	8.00	0.00	2.00	0.00	2.00	0.00

2009 ROVING DIVER FISH COUNT

Santa Rosa Island - Johnson's Lee South

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	9/22/2009	5	5	9.60	0.89	2.00	0.00	4.20	2.28
black surfperch, adult	9/22/2009	5	5	9.40	1.34	2.00	0.71	6.80	4.71
black surfperch, all	9/22/2009	5	5	9.40	1.34	2.20	0.84	9.60	5.41
black surfperch, juvenile	9/22/2009	5	4	8.75	1.89	1.60	0.89	2.80	1.92
blackeye goby	9/22/2009	5	5	10.00	0.00	3.20	0.45	91.00	41.36
blacksmith, adult	9/22/2009	5	5	9.00	1.22	3.00	1.22	84.60	70.24
blacksmith, all	9/22/2009	5	5	9.00	1.22	3.00	1.22	84.60	70.24
blue rockfish, adult	9/22/2009	5	5	8.60	1.14	2.80	0.45	20.80	15.55
blue rockfish, all	9/22/2009	5	5	9.00	0.71	2.80	0.45	24.40	17.81
blue rockfish, juvenile	9/22/2009	5	5	7.40	1.82	1.80	0.45	3.60	2.70
bocaccio, adult	9/22/2009	5	1	8.00		2.00		3.00	
cabezon, adult	9/22/2009	5	1	8.00		1.00		1.00	
California sheephead, female	9/22/2009	5	5	9.80	0.45	2.20	0.45	9.60	1.67
California sheephead, juvenile	9/22/2009	5	3	8.00	1.73	0.80	0.84	0.80	0.84
California sheephead, male	9/22/2009	5	5	9.60	0.55	2.00	0.00	4.60	1.14
c-o turbot	9/22/2009	5	1	10.00		2.00		2.00	
copper rockfish, adult	9/22/2009	5	1	10.00		1.00		1.00	
coralline sculpin	9/22/2009	5	1	9.00		1.00		1.00	
giant kelpfish, juvenile	9/22/2009	5	4	8.25	0.96	1.25	0.50	1.25	0.50
halfmoon, adult	9/22/2009	5	1	7.00		2.00		3.00	
jack mackerel	9/22/2009	5	1	7.00		4.00		150.00	
kelp rockfish, adult	9/22/2009	5	5	10.00	0.00	2.80	0.45	20.20	13.22
kelp rockfish, all	9/22/2009	5	5	10.00	0.00	2.80	0.45	28.40	16.43
kelp rockfish, juvenile	9/22/2009	5	5	7.00	2.00	2.00	0.71	8.20	5.85
kelp surfperch	9/22/2009	5	3	7.00	1.73	2.00	1.00	18.00	26.06
kelpfish spp.	9/22/2009	5	1	10.00		2.00		2.00	
KGB	9/22/2009	5	5	8.40	1.52	1.60	0.55	4.20	3.96
lingcod, adult	9/22/2009	5	2	8.00	1.41	1.00	0.00	1.00	0.00
ocean whitefish, adult	9/22/2009	5	3	7.33	0.58	1.33	0.58	1.33	0.58
olive rockfish, adult	9/22/2009	5	5	9.00	2.24	1.80	0.45	2.80	1.10
olive rockfish, all	9/22/2009	5	5	9.20	1.79	2.00	0.00	3.00	0.71
olive/yellowtail rockfish, juvenile	9/22/2009	5	1	6.00		0.20	0.45	0.20	0.45
opaleye, adult	9/22/2009	5	3	9.67	0.58	1.20	1.10	3.20	3.35
painted greenling	9/22/2009	5	5	10.00	0.00	2.60	0.55	16.20	9.60
pile perch, adult	9/22/2009	5	5	9.60	0.55	2.60	0.55	16.00	14.04
pile perch, all	9/22/2009	5	5	9.60	0.55	2.60	0.55	16.20	13.95
pile perch, juvenile	9/22/2009	5	1	8.00		0.20	0.45	0.20	0.45
rainbow surfperch	9/22/2009	5	3	8.67	1.53	2.33	0.58	8.67	7.23
rubberlip surfperch	9/22/2009	5	5	8.80	1.10	1.60	0.55	3.00	2.92
sculpin spp.	9/22/2009	5	1	7.00		2.00		3.00	
seporita, adult	9/22/2009	5	5	9.80	0.45	4.00	0.00	386.20	149.90
seporita, all	9/22/2009	5	5	9.80	0.45	4.00	0.00	629.40	204.98
seporita, juvenile	9/22/2009	5	5	8.20	1.48	3.80	0.45	243.20	201.31
snubnose sculpin	9/22/2009	5	1	10.00		2.00		2.00	
striped surfperch, adult	9/22/2009	5	5	9.40	0.55	2.60	0.55	11.20	4.49
striped surfperch, all	9/22/2009	5	5	9.40	0.55	2.60	0.55	12.00	3.32
striped surfperch, juvenile	9/22/2009	5	1	8.00		0.40	0.89	0.80	1.79
treefish, adult	9/22/2009	5	1	9.00		0.20	0.45	0.20	0.45
treefish, juvenile	9/22/2009	5	2	7.50	2.12	0.60	0.89	1.40	2.61
vermillion rockfish, juvenile	9/22/2009	5	2	8.00	2.83	1.50	0.71	1.50	0.71

2009 ROVING DIVER FISH COUNT

Santa Rosa Island - Rodes Reef

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
black surfperch, adult	6/3/2009	7	3	9.67	0.58	2.00	0.00	4.00	2.65
black surfperch, all	6/3/2009	7	3	9.33	0.82	1.71	0.95	4.00	2.65
blackeye goby	6/3/2009	7	3	7.29	0.95	2.00	0.00	3.33	1.53
blacksmith, adult	6/3/2009	7	3	9.00	1.00	2.67	0.58	10.67	3.51
blacksmith, all	6/3/2009	7	3	8.80	0.84	1.71	1.25	10.67	3.51
blue rockfish, adult	6/3/2009	7	3	9.67	0.58	3.00	0.00	41.33	11.37
blue rockfish, all	6/3/2009	7	3	9.86	0.38	3.00	0.00	44.33	14.74
blue rockfish, juvenile	6/3/2009	7	3	7.33	1.53	1.33	0.58	3.00	3.46
California sheephead, female	6/3/2009	7	3	8.50	1.22	1.71	0.76	3.00	1.00
California sheephead, male	6/3/2009	7	3	9.86	0.38	2.00	0.00	4.00	1.00
c-o turbot	6/3/2009	7	1	6.00	0.00	1.00	0.00	1.00	
copper rockfish, adult	6/3/2009	7	3	9.00	0.71	2.00	0.00	3.00	0.00
gopher rockfish, adult	6/3/2009	7	1	8.50	0.71	1.50	0.71	1.00	
kelp bass, adult	6/3/2009	7	3	9.67	0.58	1.67	0.58	2.67	1.53
kelp bass, all	6/3/2009	7	4	9.00	1.15	1.71	0.49	3.00	1.41
kelp rockfish, adult	6/3/2009	7	3	9.67	0.58	3.00	0.00	34.00	3.46
kelp rockfish, all	6/3/2009	7	3	9.57	0.79	3.00	0.00	35.00	3.00
kelp rockfish, juvenile	6/3/2009	7	1	6.00		0.67	1.15	1.00	1.73
ocean whitefish, adult	6/3/2009	7	3	8.75	0.50	1.50	0.58	1.67	0.58
olive rockfish, all	6/3/2009	7	2	7.50	1.00	0.57	0.53	0.67	0.58
olive/yellowtail rockfish, juvenile	6/3/2009	7	2	7.00	1.41	0.67	0.58	0.67	0.58
painted greenling	6/3/2009	7	3	9.71	0.49	3.00	0.00	12.67	1.15
pile perch, adult	6/3/2009	7	2	9.50	0.71	1.00	1.00	1.33	1.53
pile perch, all	6/3/2009	7	2	9.60	0.55	1.29	0.95	1.33	1.53
rubberlip surfperch	6/3/2009	7	1	8.50	0.71	1.50	0.71	1.00	
snubnose sculpin	6/3/2009	7	3	8.00	1.63	2.00	0.00	2.67	1.15
striped surfperch, adult	6/3/2009	7	3	9.00	1.00	2.33	0.58	8.67	4.51
striped surfperch, all	6/3/2009	7	3	9.20	0.84	1.86	1.35	9.33	5.51
striped surfperch, juvenile	6/3/2009	7	1	10.00		0.67	1.15	0.67	1.15
stripedfin ronquil	6/3/2009	7	2	8.20	1.64	1.40	0.55	3.00	2.83
vermillion rockfish, juvenile	6/3/2009	7	2	6.00	0.00	1.67	0.58	1.50	0.71

2009 ROVING DIVER FISH COUNT

Santa Cruz Island - Gull Island South

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	6/4/2009	6	2	8.50	2.12	1.50	0.71	3.00	2.83
black surfperch, adult	6/4/2009	6	3	8.33	2.08	2.00	0.00	3.00	1.00
black surfperch, all	6/4/2009	6	3	8.50	1.64	2.00	0.00	3.00	1.00
blackeye goby	6/4/2009	6	3	9.17	1.60	2.67	0.52	24.00	10.82
blacksmith, adult	6/4/2009	6	3	10.00	0.00	4.00	0.00	242.67	12.70
blacksmith, all	6/4/2009	6	3	10.00	0.00	4.00	0.00	242.67	12.70
blue rockfish, adult	6/4/2009	6	3	10.00	0.00	3.00	0.00	36.67	13.58
blue rockfish, all	6/4/2009	6	3	10.00	0.00	3.00	0.00	68.00	19.67
blue rockfish, juvenile	6/4/2009	6	3	8.67	0.58	3.00	0.00	31.33	7.23
blue-banded goby	6/4/2009	6	1	9.00		0.33	0.82	2.00	3.46
California sheephead, female	6/4/2009	6	3	10.00	0.00	2.67	0.52	12.00	5.29
California sheephead, juvenile	6/4/2009	6	3	8.17	1.33	1.83	0.41	5.00	2.65
California sheephead, male	6/4/2009	6	3	10.00	0.00	2.50	0.55	8.00	2.65
copper rockfish, adult	6/4/2009	6	2	8.40	2.07	1.20	0.45	1.00	0.00
coralline sculpin	6/4/2009	6	1	5.00		1.00		1.00	
garibaldi, adult	6/4/2009	6	2	6.33	1.53	0.50	0.55	0.67	0.58
gopher rockfish, adult	6/4/2009	6	3	8.00	1.83	1.75	0.50	2.67	2.08
kelp bass, adult	6/4/2009	6	2	9.50	0.71	1.33	1.15	1.33	1.15
kelp bass, all	6/4/2009	6	2	9.40	0.55	1.50	0.84	1.33	1.15
kelp rockfish, adult	6/4/2009	6	3	9.67	0.58	2.67	0.58	12.33	5.03
kelp rockfish, all	6/4/2009	6	3	9.00	2.00	2.33	0.52	15.00	7.21
kelp rockfish, juvenile	6/4/2009	6	1	10.00		0.67	1.15	2.67	4.62
kelp surfperch	6/4/2009	6	1	5.00		1.00		1.00	
lingcod, adult	6/4/2009	6	2	6.40	1.34	1.00	0.00	1.00	0.00
olive rockfish, adult	6/4/2009	6	3	10.00	0.00	2.33	0.58	10.67	3.79
olive rockfish, all	6/4/2009	6	3	10.00	0.00	2.67	0.52	10.67	3.79
opaleye, adult	6/4/2009	6	1	6.00	1.00	0.50	0.55	0.33	0.58
painted greenling	6/4/2009	6	3	9.33	0.52	2.67	0.52	14.33	6.43
pile perch, adult	6/4/2009	6	2	9.00	1.41	1.33	1.15	1.67	1.53
pile perch, all	6/4/2009	6	2	8.00	1.41	1.33	1.03	1.67	1.53
rockfish spp., juvenile	6/4/2009	6	1	10.00		4.00		160.00	
rubberlip surfperch	6/4/2009	6	2	6.75	0.96	2.25	0.96	13.50	17.68
scalyhead sculpin	6/4/2009	6	1	10.00		1.00		1.00	
seporita, adult	6/4/2009	6	3	10.00	0.00	3.33	0.58	109.33	63.26
seporita, all	6/4/2009	6	3	9.67	0.82	3.67	0.52	109.33	63.26
snubnose sculpin	6/4/2009	6	1	9.00		1.00		1.00	
striped surfperch, adult	6/4/2009	6	3	8.00	2.65	1.33	0.58	1.67	1.15
striped surfperch, all	6/4/2009	6	3	7.67	1.86	2.00	0.00	2.33	0.58
striped surfperch, juvenile	6/4/2009	6	2	8.50	0.71	0.67	0.58	0.67	0.58
swell shark	6/4/2009	6	2	8.33	2.89	1.67	0.58	1.50	0.71
top smelt	6/4/2009	6	1	5.50	0.71	4.00	0.00	1000.00	
treefish, adult	6/4/2009	6	3	8.50	1.73	0.67	0.52	1.00	0.00

2009 ROVING DIVER FISH COUNT

Santa Cruz Island - Fry's Harbor

Common Name	Date	Max # of	# of	Score		Abundance		Count	
		Observers	Observations	Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	8/17/2009	5	3	9.00	1.00	2.00	0.00	4.67	3.06
black surfperch, adult	8/17/2009	5	5	10.00	0.00	2.40	0.55	9.20	5.07
black surfperch, all	8/17/2009	5	5	10.00	0.00	2.80	0.45	18.00	6.32
black surfperch, juvenile	8/17/2009	5	5	10.00	0.00	2.40	0.55	8.80	3.27
blackeye goby	8/17/2009	5	5	10.00	0.00	3.80	0.45	122.00	34.82
blacksmith, adult	8/17/2009	5	5	10.00	0.00	4.00	0.00	414.80	209.43
blacksmith, all	8/17/2009	5	5	10.00	0.00	4.00	0.00	416.60	208.44
blacksmith, juvenile	8/17/2009	5	1	10.00		0.40	0.89	1.80	4.02
blue rockfish, all	8/17/2009	5	5	8.40	1.14	2.20	0.84	8.20	5.50
blue rockfish, juvenile	8/17/2009	5	5	8.40	1.14	2.20	0.84	8.20	5.50
blue-banded goby	8/17/2009	5	5	9.00	1.22	3.00	0.00	68.20	30.84
bocaccio, juvenile	8/17/2009	5	3	9.00	1.00	3.00	0.00	50.00	2.65
California scorpionfish, adult	8/17/2009	5	1	6.00		1.00		1.00	
California sheephead, female	8/17/2009	5	4	8.00	0.82	1.20	0.84	2.20	2.17
California sheephead, juvenile	8/17/2009	5	5	9.60	0.55	2.40	0.55	8.40	4.56
copper rockfish, adult	8/17/2009	5	1	8.00		2.00		3.00	
garibaldi, adult	8/17/2009	5	5	9.20	1.10	2.00	0.00	4.60	2.07
gopher rockfish, adult	8/17/2009	5	5	9.40	0.89	2.00	0.00	5.60	2.61
island kelpfish	8/17/2009	5	5	8.60	1.95	1.80	0.45	3.80	1.92
kelp bass, adult	8/17/2009	5	4	9.50	1.00	1.60	0.89	3.40	2.07
kelp bass, all	8/17/2009	5	5	9.80	0.45	2.00	0.00	5.80	2.39
kelp bass, juvenile	8/17/2009	5	5	9.00	1.73	1.60	0.55	2.40	1.67
kelp rockfish, adult	8/17/2009	5	5	10.00	0.00	3.00	0.00	26.60	3.58
kelp rockfish, all	8/17/2009	5	5	10.00	0.00	3.20	0.45	87.80	92.61
kelp rockfish, juvenile	8/17/2009	5	4	9.25	1.50	2.20	1.64	61.20	92.16
kelp surfperch	8/17/2009	5	5	9.20	1.79	2.80	0.45	36.00	28.19
KGB	8/17/2009	5	5	10.00	0.00	3.00	0.00	54.00	13.98
lingcod, adult	8/17/2009	5	1	8.00		1.00		1.00	
olive rockfish, adult	8/17/2009	5	4	9.25	0.96	1.20	0.84	1.60	1.52
olive rockfish, all	8/17/2009	5	4	10.00	0.00	1.60	0.89	4.40	3.85
olive/yellowtail rockfish, juvenile	8/17/2009	5	3	10.00	0.00	1.20	1.10	2.80	2.77
opaleye, adult	8/17/2009	5	3	7.67	1.15	0.80	0.84	1.00	1.22
Pacific mackerel	8/17/2009	5	1	10.00		4.00		1600.00	
painted greenling	8/17/2009	5	5	10.00	0.00	3.00	0.00	22.00	4.74
pile perch, adult	8/17/2009	5	5	9.80	0.45	2.60	0.55	14.00	6.67
pile perch, all	8/17/2009	5	5	10.00	0.00	3.00	0.00	39.00	20.37
pile perch, juvenile	8/17/2009	5	5	9.40	0.89	2.40	0.89	25.00	24.09
rainbow surfperch	8/17/2009	5	1	8.00		1.00		1.00	
rock wrasse, female	8/17/2009	5	4	8.00	1.83	1.40	0.89	2.40	1.95
rock wrasse, juvenile	8/17/2009	5	1	7.00		0.20	0.45	0.20	0.45
rock wrasse, male	8/17/2009	5	4	8.00	1.83	1.00	0.71	1.20	1.10
rubberlip surfperch	8/17/2009	5	3	9.33	0.58	2.00	0.00	2.67	1.15
seporita, adult	8/17/2009	5	5	9.00	2.24	3.40	0.55	112.20	92.04
seporita, all	8/17/2009	5	5	9.00	2.24	3.40	0.55	113.60	94.58
seporita, juvenile	8/17/2009	5	1	8.00		0.40	0.89	1.40	3.13
snubnose sculpin	8/17/2009	5	1	7.00		2.00		2.00	
striped surfperch, adult	8/17/2009	5	5	9.20	1.79	1.80	0.45	2.60	1.14
striped surfperch, all	8/17/2009	5	5	9.20	1.79	1.80	0.45	3.00	1.58
striped surfperch, juvenile	8/17/2009	5	1	5.00		0.40	0.89	0.40	0.89
surfperch spp.	8/17/2009	5	1	8.00		3.00		15.00	
surfperch spp., adult	8/17/2009	5	1	9.00		2.00		7.00	
swell shark	8/17/2009	5	2	8.00	2.83	1.00	0.00	1.00	0.00
treefish, adult	8/17/2009	5	5	10.00	0.00	2.60	0.55	13.40	5.86
treefish, juvenile	8/17/2009	5	5	9.20	1.30	2.00	0.00	3.80	1.30
zebra goby	8/17/2009	5	1	6.00		2.00		2.00	

2009 ROVING DIVER FISH COUNT

Santa Cruz Island - Pelican Bay

Common Name	Date	Max # of	# of	Score		Abundance		Count	
		Observers	Observations	Avg	St Dev	Avg	St Dev	Avg	St Dev
bat ray	9/24/2009	7	1	6.00		1.00		1.00	
black and yellow rockfish, adult	9/24/2009	7	2	6.00	0.00	1.00	0.00	1.00	0.00
black surfperch, adult	9/24/2009	7	7	9.86	0.38	3.00	0.00	32.86	9.75
black surfperch, all	9/24/2009	7	7	9.86	0.38	3.00	0.00	35.14	10.67
black surfperch, juvenile	9/24/2009	7	2	9.50	0.71	0.57	0.98	2.29	4.07
blackeye goby	9/24/2009	7	7	9.71	0.49	3.43	0.53	107.29	45.70
blacksmith, adult	9/24/2009	7	7	9.86	0.38	3.86	0.38	159.71	58.43
blacksmith, all	9/24/2009	7	7	9.86	0.38	3.86	0.38	159.86	58.51
blacksmith, juvenile	9/24/2009	7	1	7.00		0.14	0.38	0.14	0.38
blue-banded goby	9/24/2009	7	7	9.71	0.49	3.71	0.49	154.29	62.39
bocaccio, juvenile	9/24/2009	7	3	9.33	0.58	2.67	0.58	32.33	19.40
brown rockfish, adult	9/24/2009	7	2	7.00	1.41	1.00	0.00	1.00	0.00
cabezon, adult	9/24/2009	7	1	6.00		1.00		1.00	
California scorpionfish, adult	9/24/2009	7	2	8.50	0.71	1.50	0.71	1.50	0.71
California sheephead, female	9/24/2009	7	7	8.43	1.90	1.86	0.38	4.86	2.54
California sheephead, juvenile	9/24/2009	7	7	9.57	0.79	2.00	0.00	4.86	2.27
copper rockfish, juvenile	9/24/2009	7	3	7.00	1.00	1.00	0.00	1.00	0.00
fringehead spp.	9/24/2009	7	5	6.80	1.30	1.40	0.55	1.40	0.55
garibaldi, adult	9/24/2009	7	7	9.71	0.49	2.57	0.53	11.29	4.54
giant kelpfish, juvenile	9/24/2009	7	4	9.00	2.00	1.00	0.00	1.00	0.00
halfmoon, adult	9/24/2009	7	1	8.00		1.00		1.00	
island kelpfish	9/24/2009	7	3	6.67	1.53	0.57	0.79	0.57	0.79
kelp bass, adult	9/24/2009	7	7	9.86	0.38	3.00	0.00	38.86	7.08
kelp bass, all	9/24/2009	7	7	10.00	0.00	3.00	0.00	42.86	8.90
kelp bass, juvenile	9/24/2009	7	6	10.00	0.00	1.57	0.98	4.00	4.40
kelp rockfish, adult	9/24/2009	7	7	9.43	0.79	2.71	0.49	16.00	9.59
kelp rockfish, all	9/24/2009	7	7	9.71	0.49	3.00	0.58	44.43	35.52
kelp rockfish, juvenile	9/24/2009	7	6	9.83	0.41	2.29	1.11	28.43	30.83
kelp surfperch	9/24/2009	7	7	9.71	0.49	2.43	0.53	17.86	12.86
KGB	9/24/2009	7	2	7.00	0.00	1.00	0.00	1.00	0.00
olive rockfish, all	9/24/2009	7	5	8.60	2.19	1.00	0.82	1.00	0.82
olive/yellowtail rockfish, juvenile	9/24/2009	7	5	8.60	2.19	1.00	0.82	1.00	0.82
opaleye, adult	9/24/2009	7	5	8.00	2.35	1.29	0.95	2.14	2.12
painted greenling	9/24/2009	7	7	9.14	1.21	2.29	0.49	9.57	4.35
pile perch, adult	9/24/2009	7	7	9.57	0.79	2.14	0.38	5.86	3.02
pile perch, all	9/24/2009	7	7	9.86	0.38	2.43	0.53	10.57	4.20
pile perch, juvenile	9/24/2009	7	6	9.33	1.63	1.71	0.76	4.71	3.04
rock wrasse, female	9/24/2009	7	7	9.86	0.38	2.14	0.38	9.00	2.94
rock wrasse, juvenile	9/24/2009	7	1	9.00		0.29	0.76	0.29	0.76
rock wrasse, male	9/24/2009	7	7	8.71	1.60	2.00	0.00	5.86	2.27
rubberlip surfperch	9/24/2009	7	6	6.67	1.75	1.50	0.55	1.67	0.82
seporita, adult	9/24/2009	7	7	10.00	0.00	3.00	0.00	33.00	21.69
seporita, all	9/24/2009	7	7	10.00	0.00	3.00	0.00	33.29	21.92
seporita, juvenile	9/24/2009	7	1	5.00		0.29	0.76	0.29	0.76
shiner surfperch	9/24/2009	7	6	10.00	0.00	3.00	0.89	60.33	54.65
treefish, adult	9/24/2009	7	2	6.50	0.71	0.29	0.49	0.29	0.49
treefish, juvenile	9/24/2009	7	2	7.00	1.41	0.29	0.49	0.29	0.49
white surfperch	9/24/2009	7	6	9.83	0.41	2.67	0.52	21.67	17.91
zebra goby	9/24/2009	7	3	7.67	2.08	1.33	0.58	1.33	0.58

2009 ROVING DIVER FISH COUNT

Santa Cruz Island - Scorpion Anchorage

Common Name	Date	Max # of	# of	Score		Abundance		Count	
		Observers	Observations	Avg	St Dev	Avg	St Dev	Avg	St Dev
bat ray	10/6/2009	5	1	5.00		1.00		1.00	
black and yellow rockfish, adult	10/6/2009	5	5	7.20	1.64	1.80	0.45	2.20	0.84
black surfperch, adult	10/6/2009	5	5	10.00	0.00	3.00	0.00	26.20	6.14
black surfperch, all	10/6/2009	5	5	10.00	0.00	3.00	0.00	26.20	6.14
blackeye goby	10/6/2009	5	5	10.00	0.00	4.00	0.00	209.60	32.94
blacksmith, adult	10/6/2009	5	5	10.00	0.00	4.00	0.00	300.40	32.67
blacksmith, all	10/6/2009	5	5	10.00	0.00	4.00	0.00	335.80	46.57
blacksmith, juvenile	10/6/2009	5	5	10.00	0.00	2.80	0.45	35.40	25.55
blue-banded goby	10/6/2009	5	5	8.20	2.17	2.00	0.00	2.80	0.84
bocaccio, juvenile	10/6/2009	5	1	5.00		1.00		1.00	
California sheephead, female	10/6/2009	5	5	9.80	0.45	1.80	0.45	4.40	1.95
California sheephead, juvenile	10/6/2009	5	5	10.00	0.00	1.80	0.45	4.60	2.61
c-o turbot	10/6/2009	5	1	8.00		1.00		1.00	
coralline sculpin	10/6/2009	5	1	7.00		1.00		1.00	
fringehead spp.	10/6/2009	5	1	6.00		2.00		2.00	
garibaldi, adult	10/6/2009	5	5	10.00	0.00	2.00	0.00	8.20	1.30
garibaldi, juvenile	10/6/2009	5	1	9.00		0.20	0.45	0.20	0.45
giant kelpfish, adult	10/6/2009	5	3	9.00	1.73	1.33	0.58	1.33	0.58
horn shark	10/6/2009	5	3	8.00	1.73	1.33	0.58	1.33	0.58
island kelpfish	10/6/2009	5	3	7.33	2.08	0.80	0.84	0.80	0.84
kelp bass, adult	10/6/2009	5	5	10.00	0.00	3.00	0.00	22.60	4.72
kelp bass, all	10/6/2009	5	5	10.00	0.00	3.00	0.00	23.00	4.36
kelp bass, juvenile	10/6/2009	5	2	6.50	2.12	0.40	0.55	0.40	0.55
kelp rockfish, adult	10/6/2009	5	5	8.60	1.52	1.80	0.45	3.20	1.92
kelp rockfish, all	10/6/2009	5	5	8.60	1.52	1.80	0.45	3.20	1.92
kelp surfperch	10/6/2009	5	3	9.00	1.73	2.67	0.58	22.00	10.39
lavender sculpin	10/6/2009	5	3	9.00	0.00	1.67	0.58	1.67	0.58
opaleye, adult	10/6/2009	5	5	9.40	0.89	3.00	0.00	26.40	4.93
Pacific barracuda	10/6/2009	5	2	9.00	0.00	3.00	0.00	30.00	0.00
painted greenling	10/6/2009	5	5	10.00	0.00	3.00	0.00	18.80	4.76
pile perch, adult	10/6/2009	5	5	8.40	1.52	2.00	0.71	4.00	5.05
pile perch, all	10/6/2009	5	5	8.40	1.52	2.00	0.71	4.20	4.97
pile perch, juvenile	10/6/2009	5	1	10.00		0.20	0.45	0.20	0.45
rock wrasse, female	10/6/2009	5	5	8.80	1.10	2.00	0.00	5.40	2.07
rock wrasse, male	10/6/2009	5	2	7.00	2.83	0.60	0.89	0.60	0.89
rubberlip surfperch	10/6/2009	5	2	6.50	2.12	1.50	0.71	1.50	0.71
seporita, adult	10/6/2009	5	5	10.00	0.00	3.40	0.55	73.00	39.72
seporita, all	10/6/2009	5	5	10.00	0.00	3.60	0.55	89.20	35.44
seporita, juvenile	10/6/2009	5	3	10.00	0.00	1.60	1.52	16.20	22.32
shiner surfperch	10/6/2009	5	1	7.00		2.00		4.00	
treefish, adult	10/6/2009	5	3	8.33	2.89	1.00	1.00	1.20	1.30
white surfperch	10/6/2009	5	3	5.67	0.58	1.00	0.00	1.00	0.00
zebra goby	10/6/2009	5	2	5.50	0.71	1.00	0.00	1.00	0.00

2009 ROVING DIVER FISH COUNT

Santa Cruz Island - Yellow Banks

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	7/31/2009	5	2	8.00	1.41	2.00	0.00	2.50	0.71
black surfperch, adult	7/31/2009	5	1	6.00		0.20	0.45	0.20	0.45
black surfperch, all	7/31/2009	5	1	6.00		0.20	0.45	0.20	0.45
blackeye goby	7/31/2009	5	5	9.80	0.45	3.80	0.45	170.80	57.42
blacksmith, adult	7/31/2009	5	5	9.40	0.55	3.00	0.00	46.80	16.57
blacksmith, all	7/31/2009	5	5	9.40	0.55	3.00	0.00	46.80	16.57
blue-banded goby	7/31/2009	5	1	6.00		0.40	0.89	0.60	1.34
California sheephead, female	7/31/2009	5	5	9.80	0.45	2.40	0.55	9.00	2.74
California sheephead, juvenile	7/31/2009	5	5	9.00	1.00	2.00	0.00	5.20	1.92
copper rockfish, adult	7/31/2009	5	5	8.80	1.30	1.80	0.45	2.60	1.14
copper rockfish, juvenile	7/31/2009	5	5	9.20	0.84	1.60	0.55	2.60	1.82
giant kelpfish, juvenile	7/31/2009	5	1	10.00		1.00		1.00	
gopher rockfish, adult	7/31/2009	5	2	10.00	0.00	1.50	0.71	1.50	0.71
jack mackerel	7/31/2009	5	1	10.00		3.00		30.00	
kelp bass, adult	7/31/2009	5	5	9.80	0.45	2.60	0.55	11.80	3.56
kelp bass, all	7/31/2009	5	5	9.80	0.45	2.60	0.55	11.80	3.56
kelp rockfish, adult	7/31/2009	5	5	9.40	0.55	2.40	0.55	8.40	3.78
kelp rockfish, all	7/31/2009	5	5	9.40	0.55	2.40	0.55	9.00	4.64
kelp rockfish, juvenile	7/31/2009	5	1	9.00		0.40	0.89	0.60	1.34
kelp surfperch	7/31/2009	5	3	8.67	2.31	2.00	0.00	5.67	1.53
KGB	7/31/2009	5	4	9.00	1.41	2.00	1.15	14.50	20.87
lavender sculpin	7/31/2009	5	1	10.00		1.00		1.00	
olive rockfish, adult	7/31/2009	5	2	9.00	0.00	0.40	0.55	0.40	0.55
olive rockfish, all	7/31/2009	5	2	9.00	0.00	0.40	0.55	0.40	0.55
Pacific barracuda	7/31/2009	5	1	6.00		2.00		4.00	
painted greenling	7/31/2009	5	5	9.80	0.45	3.00	0.00	25.80	8.04
rock wrasse, female	7/31/2009	5	3	9.00	1.00	1.20	1.10	2.20	2.05
rock wrasse, male	7/31/2009	5	1	8.00		0.40	0.89	0.40	0.89
seporita, adult	7/31/2009	5	5	10.00	0.00	4.00	0.00	297.60	157.57
seporita, all	7/31/2009	5	5	10.00	0.00	4.00	0.00	297.60	157.57
treefish, adult	7/31/2009	5	2	10.00	0.00	0.40	0.55	0.40	0.55
treefish, juvenile	7/31/2009	5	2	9.50	0.71	0.60	0.89	0.60	0.89
vermillion rockfish, adult	7/31/2009	5	3	9.33	0.58	1.00	0.00	1.00	0.00
vermillion rockfish, juvenile	7/31/2009	5	5	8.60	1.67	2.40	0.55	9.20	2.77

2009 ROVING DIVER FISH COUNT

Anacapa Island - Admiral's Reef

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	6/18/2009	6	3	8.50	1.97	1.67	0.52	3.00	0.00
black surfperch, adult	6/18/2009	6	3	9.00	1.00	2.00	0.00	5.33	1.15
black surfperch, all	6/18/2009	6	3	9.00	0.89	1.83	0.41	6.00	1.73
black surfperch, juvenile	6/18/2009	6	2	8.50	2.12	0.67	0.58	0.67	0.58
blackeye goby	6/18/2009	6	3	10.00	0.00	4.00	0.00	391.00	52.37
blacksmith, adult	6/18/2009	6	3	10.00	0.00	4.00	0.00	1212.33	229.84
blacksmith, all	6/18/2009	6	3	10.00	0.00	4.00	0.00	1212.33	229.84
blue rockfish, all	6/18/2009	6	3	10.00	0.00	2.17	1.17	12.67	5.51
blue rockfish, juvenile	6/18/2009	6	3	10.00	0.00	2.33	0.58	12.67	5.51
blue-banded goby	6/18/2009	6	3	7.83	1.47	2.50	0.55	25.33	9.07
California sheephead, female	6/18/2009	6	3	9.83	0.41	2.17	0.41	5.67	3.79
California sheephead, juvenile	6/18/2009	6	3	9.50	0.84	2.67	0.52	11.00	3.61
garibaldi, adult	6/18/2009	6	3	9.67	0.52	2.00	0.00	4.33	0.58
halfmoon, adult	6/18/2009	6	3	8.83	0.75	1.33	0.52	1.33	0.58
island kelpfish	6/18/2009	6	3	8.60	1.52	1.83	0.98	7.33	5.03
jack mackerel	6/18/2009	6	1	7.00		4.00		200.00	
kelp bass, adult	6/18/2009	6	3	8.33	0.58	2.00	0.00	2.33	0.58
kelp bass, all	6/18/2009	6	3	8.33	1.37	1.83	0.41	2.33	0.58
kelp rockfish, adult	6/18/2009	6	3	8.00	1.73	2.00	0.00	4.33	0.58
kelp rockfish, all	6/18/2009	6	3	7.83	1.47	1.83	0.41	4.33	0.58
KGB	6/18/2009	6	1	9.00		1.00		1.00	
ocean whitefish, adult	6/18/2009	6	1	7.00		1.00		1.00	
olive rockfish, adult	6/18/2009	6	2	5.50	0.71	0.67	0.58	0.67	0.58
olive rockfish, all	6/18/2009	6	2	5.50	0.71	0.33	0.52	0.67	0.58
opaleye, adult	6/18/2009	6	3	9.17	0.98	2.00	0.00	8.00	1.73
Pacific mackerel	6/18/2009	6	2	7.50	0.71	3.50	0.71	550.00	636.40
Pacific sardine	6/18/2009	6	2	8.25	2.06	4.00	0.00	2625.00	3358.76
painted greenling	6/18/2009	6	3	10.00	0.00	3.00	0.00	49.00	6.56
rock wrasse, female	6/18/2009	6	3	8.67	1.63	1.67	0.52	2.67	1.53
rock wrasse, male	6/18/2009	6	3	8.83	1.60	1.33	0.52	2.33	1.53
rubberlip surfperch	6/18/2009	6	1	10.00	0.00	1.00	0.00	1.00	
seporita, adult	6/18/2009	6	3	10.00	0.00	3.00	1.00	57.67	48.81
seporita, all	6/18/2009	6	3	10.00	0.00	3.00	0.63	61.00	53.56
seporita, juvenile	6/18/2009	6	1	8.00		0.67	1.15	3.33	5.77
treefish, adult	6/18/2009	6	3	9.33	0.82	2.00	0.00	8.67	0.58
treefish, juvenile	6/18/2009	6	2	5.67	0.58	0.67	0.82	1.00	1.00
zebra goby	6/18/2009	6	3	6.67	1.53	2.00	0.00	3.67	1.53

2009 ROVING DIVER FISH COUNT

Anacapa Island - Cathedral Cove

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
black surfperch, adult	7/29/2009	5	5	10.00	0.00	3.00	0.00	15.00	3.39
black surfperch, all	7/29/2009	5	5	10.00	0.00	3.00	0.00	23.80	4.66
black surfperch, juvenile	7/29/2009	5	5	9.40	1.34	2.40	0.55	8.80	4.15
blackeye goby	7/29/2009	5	5	9.40	0.89	2.80	0.45	24.60	15.55
blacksmith, adult	7/29/2009	5	5	9.40	1.34	3.40	0.89	157.00	123.73
blacksmith, all	7/29/2009	5	5	9.40	1.34	3.40	0.89	157.60	123.21
blacksmith, juvenile	7/29/2009	5	1	10.00		0.40	0.89	0.60	1.34
blue-banded goby	7/29/2009	5	3	6.67	2.08	0.80	0.84	0.80	0.84
bocaccio, juvenile	7/29/2009	5	1	10.00		3.00		24.00	
California moray eel	7/29/2009	5	1	7.00		1.00		1.00	
California scorpionfish, adult	7/29/2009	5	1	10.00		1.00		1.00	
California sheephead, female	7/29/2009	5	5	9.00	1.73	2.00	0.00	5.40	2.88
California sheephead, juvenile	7/29/2009	5	5	9.00	1.22	2.00	0.00	3.80	1.79
California sheephead, male	7/29/2009	5	4	7.75	1.50	1.20	0.84	1.20	0.84
garibaldi, adult	7/29/2009	5	5	9.40	0.55	2.00	0.00	4.60	1.82
garibaldi, juvenile	7/29/2009	5	2	8.50	0.71	0.40	0.55	0.40	0.55
giant kelpfish, juvenile	7/29/2009	5	3	8.33	2.89	1.67	1.15	4.67	6.35
halfmoon, adult	7/29/2009	5	1	5.00		1.00		1.00	
island kelpfish	7/29/2009	5	5	9.40	0.89	2.20	0.45	7.80	4.32
kelp bass, adult	7/29/2009	5	5	9.80	0.45	2.20	0.45	8.80	1.64
kelp bass, all	7/29/2009	5	5	9.80	0.45	2.40	0.55	9.80	3.27
kelp bass, juvenile	7/29/2009	5	1	9.00		0.40	0.89	1.00	2.24
kelp rockfish, adult	7/29/2009	5	5	9.60	0.89	2.40	0.55	10.40	9.18
kelp rockfish, all	7/29/2009	5	5	9.60	0.89	2.40	0.55	12.00	12.63
kelp rockfish, juvenile	7/29/2009	5	1	10.00		0.40	0.89	1.60	3.58
kelp surfperch	7/29/2009	5	5	10.00	0.00	2.60	0.55	11.00	4.06
KGB	7/29/2009	5	4	10.00	0.00	3.00	0.00	44.75	30.14
olive rockfish, all	7/29/2009	5	3	7.67	2.08	1.20	1.10	2.60	2.97
olive/yellowtail rockfish, juvenile	7/29/2009	5	3	7.67	2.08	1.20	1.10	2.60	2.97
opaleye, adult	7/29/2009	5	2	7.50	0.71	0.80	1.10	0.80	1.10
painted greenling	7/29/2009	5	5	8.60	1.67	2.00	0.00	3.80	2.17
pile perch, all	7/29/2009	5	5	8.60	1.67	2.00	0.00	4.20	1.92
pile perch, juvenile	7/29/2009	5	5	8.60	1.67	2.00	0.00	4.20	1.92
rock wrasse, female	7/29/2009	5	5	8.40	1.52	1.60	0.55	2.00	1.22
rock wrasse, juvenile	7/29/2009	5	1	8.00		0.40	0.89	1.00	2.24
rock wrasse, male	7/29/2009	5	4	6.25	0.50	1.20	0.84	1.20	0.84
seporita, adult	7/29/2009	5	5	10.00	0.00	3.40	0.55	83.60	58.84
seporita, all	7/29/2009	5	5	10.00	0.00	3.40	0.55	85.00	58.77
seporita, juvenile	7/29/2009	5	2	8.50	2.12	0.80	1.10	1.40	1.95
striped surfperch, adult	7/29/2009	5	2	7.50	2.12	0.40	0.55	0.40	0.55
striped surfperch, all	7/29/2009	5	2	7.50	2.12	0.40	0.55	0.40	0.55
top smelt	7/29/2009	5	4	7.00	2.16	3.00	0.00	32.25	21.01
treefish, adult	7/29/2009	5	5	8.80	1.10	1.80	0.45	2.80	1.48
treefish, juvenile	7/29/2009	5	4	8.25	1.71	1.20	0.84	1.60	1.52
zebra goby	7/29/2009	5	1	8.00		1.00		1.00	

2009 ROVING DIVER FISH COUNT

Anacapa Island - Landing Cove

Common Name	Date	Max # of	# of	Score		Abundance		Count	
		Observers	Observations	Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	6/1/2009	6	1	7.00	1.00	1.00	0.00	1.00	
black surfperch, adult	6/1/2009	6	3	9.67	0.58	2.67	0.58	11.67	2.31
black surfperch, all	6/1/2009	6	3	9.50	0.55	2.50	0.55	12.00	1.73
black surfperch, juvenile	6/1/2009	6	1	7.00		0.33	0.58	0.33	0.58
blackeye goby	6/1/2009	6	3	8.40	1.14	1.67	0.82	5.67	2.08
blacksmith, adult	6/1/2009	6	3	10.00	0.00	4.00	0.00	522.00	168.89
blacksmith, all	6/1/2009	6	3	10.00	0.00	4.00	0.00	525.00	164.71
blacksmith, juvenile	6/1/2009	6	1	7.00		0.67	1.15	3.00	5.20
blue-banded goby	6/1/2009	6	3	8.20	1.30	1.83	0.98	10.00	7.81
bocaccio, juvenile	6/1/2009	6	1	5.00		1.00		1.00	
California sheephead, female	6/1/2009	6	3	9.50	0.55	1.83	0.41	4.33	1.53
California sheephead, juvenile	6/1/2009	6	3	8.33	1.37	1.83	0.41	5.00	4.58
California sheephead, male	6/1/2009	6	3	9.50	0.84	1.33	0.52	1.00	0.00
garibaldi, adult	6/1/2009	6	3	9.83	0.41	2.50	0.55	10.67	1.53
giant kelpfish, adult	6/1/2009	6	2	7.33	2.52	1.33	0.58	1.50	0.71
halfmoon, adult	6/1/2009	6	2	9.25	1.50	1.75	0.50	3.50	0.71
island kelpfish	6/1/2009	6	3	8.75	0.96	1.17	0.98	3.00	1.00
kelp bass, adult	6/1/2009	6	3	10.00	0.00	2.00	0.00	8.67	1.15
kelp bass, all	6/1/2009	6	3	9.33	1.03	2.17	0.41	8.67	1.15
kelp rockfish, adult	6/1/2009	6	3	8.67	0.58	2.00	0.00	6.33	0.58
kelp rockfish, all	6/1/2009	6	3	8.33	0.52	1.83	0.41	6.33	0.58
kelp surfperch	6/1/2009	6	3	7.00	2.74	1.60	0.55	3.67	3.06
KGB	6/1/2009	6	1	5.00		2.00		4.00	
lavender sculpin	6/1/2009	6	1	8.00		1.00		1.00	
olive rockfish, adult	6/1/2009	6	3	7.33	0.58	2.00	0.00	3.33	1.53
olive rockfish, all	6/1/2009	6	3	7.33	0.82	1.83	0.41	3.33	1.53
opaleye, adult	6/1/2009	6	3	10.00	0.00	2.83	0.41	18.67	6.66
painted greenling	6/1/2009	6	3	9.33	1.21	1.83	0.41	3.00	1.00
rock wrasse, female	6/1/2009	6	2	8.00	1.00	0.83	0.98	2.00	2.65
rock wrasse, male	6/1/2009	6	3	7.50	1.29	0.83	0.75	1.00	0.00
seporita, adult	6/1/2009	6	3	10.00	0.00	3.00	0.00	54.33	28.36
seporita, all	6/1/2009	6	3	10.00	0.00	3.00	0.00	54.33	28.36
striped surfperch, adult	6/1/2009	6	3	8.67	2.31	2.00	0.00	2.67	0.58
striped surfperch, all	6/1/2009	6	3	8.67	2.31	1.00	1.10	2.67	0.58
swell shark	6/1/2009	6	1	9.00		1.00		1.00	
treefish, adult	6/1/2009	6	3	7.83	0.98	1.67	0.52	2.67	0.58
zebra goby	6/1/2009	6	1	10.00		1.00		1.00	

2009 ROVING DIVER FISH COUNT

Santa Barbara Island - SE Sea Lion Rookery

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	6/16/2009	5	1	7.00	0.00	1.00	0.00	1.00	
blackeye goby	6/16/2009	5	3	10.00	0.00	3.00	0.00	34.67	11.15
blacksmith, adult	6/16/2009	5	3	9.67	0.58	3.33	0.58	88.33	41.26
blacksmith, all	6/16/2009	5	3	9.40	0.55	3.40	0.55	88.33	41.26
blue rockfish, all	6/16/2009	5	1	10.00		0.20	0.45	0.33	0.58
blue rockfish, juvenile	6/16/2009	5	1	10.00		0.33	0.58	0.33	0.58
California scorpionfish, adult	6/16/2009	5	1	7.00		1.00		1.00	
California sheephead, female	6/16/2009	5	1	9.00		0.20	0.45	0.33	0.58
California sheephead, juvenile	6/16/2009	5	3	9.40	0.89	2.00	0.00	3.33	1.53
coralline sculpin	6/16/2009	5	1	9.00		1.00		1.00	
garibaldi, adult	6/16/2009	5	3	9.60	0.55	1.80	0.45	3.33	1.53
island kelpfish	6/16/2009	5	1	10.00	0.00	0.80	0.84	1.00	1.73
larval fish spp.	6/16/2009	5	1	9.00		4.00		250.00	
painted greenling	6/16/2009	5	3	9.80	0.45	2.60	0.55	10.33	3.51
rock wrasse, juvenile	6/16/2009	5	1	9.00		0.20	0.45	0.33	0.58
vermillion rockfish, juvenile	6/16/2009	5	1	6.00	0.00	1.50	0.71	1.00	

2009 ROVING DIVER FISH COUNT

Santa Barbara Island - Arch Point

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
bat ray	5/18/2009	3	2	7.50	3.54	1.00	0.00	1.00	0.00
blackeye goby	5/18/2009	3	3	9.67	0.58	3.00	0.00	33.00	13.00
blacksmith, adult	5/18/2009	3	3	10.00	0.00	4.00	0.00	444.33	223.84
blacksmith, all	5/18/2009	3	3	10.00	0.00	4.00	0.00	444.33	223.84
blue rockfish, all	5/18/2009	3	1	10.00		0.33	0.58	0.33	0.58
blue rockfish, juvenile	5/18/2009	3	1	10.00		0.33	0.58	0.33	0.58
California halibut	5/18/2009	3	1	8.00		1.00		1.00	
California scorpionfish, adult	5/18/2009	3	2	7.50	0.71	1.00	0.00	1.00	0.00
California sheephead, female	5/18/2009	3	3	10.00	0.00	2.00	0.00	7.00	1.73
California sheephead, juvenile	5/18/2009	3	3	10.00	0.00	2.33	0.58	8.00	4.36
California sheephead, male	5/18/2009	3	1	6.00		0.33	0.58	0.33	0.58
coralline sculpin	5/18/2009	3	1	9.00		1.00		1.00	
garibaldi, adult	5/18/2009	3	3	10.00	0.00	3.00	0.00	22.67	7.02
grass rockfish, adult	5/18/2009	3	3	8.00	2.00	1.33	0.58	1.33	0.58
halfmoon, adult	5/18/2009	3	3	9.33	1.15	1.33	0.58	2.67	2.89
island kelpfish	5/18/2009	3	3	9.33	1.15	1.00	0.00	1.00	0.00
kelp bass, adult	5/18/2009	3	1	9.00		0.33	0.58	0.33	0.58
kelp bass, all	5/18/2009	3	1	9.00		0.33	0.58	0.33	0.58
ocean whitefish, adult	5/18/2009	3	1	6.00		3.00		30.00	
opaleye, adult	5/18/2009	3	2	8.00	1.41	1.00	1.00	2.00	2.65
painted greenling	5/18/2009	3	3	10.00	0.00	3.00	0.00	21.33	0.58
rockfish spp., juvenile	5/18/2009	3	1	7.00		1.00		1.00	
seporita, adult	5/18/2009	3	2	7.50	3.54	2.33	2.08	248.33	391.80
seporita, all	5/18/2009	3	2	7.50	3.54	2.33	2.08	248.33	391.80
snubnose sculpin	5/18/2009	3	1	9.00		1.00		1.00	
treefish, adult	5/18/2009	3	1	10.00		0.33	0.58	0.33	0.58
vermillion rockfish, juvenile	5/18/2009	3	1	5.00		1.00		1.00	

2009 ROVING DIVER FISH COUNT

Santa Barbara Island - Cat Canyon

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
bat ray	5/19/2009	4	1	6.00		1.00		1.00	
blackeye goby	5/19/2009	4	4	10.00	0.00	3.00	0.00	54.25	28.39
blacksmith, adult	5/19/2009	4	4	10.00	0.00	4.00	0.00	178.00	39.12
blacksmith, all	5/19/2009	4	4	10.00	0.00	4.00	0.00	178.00	39.12
California sheephead, female	5/19/2009	4	4	9.50	0.58	2.00	0.00	6.25	1.26
California sheephead, juvenile	5/19/2009	4	3	9.67	0.58	1.50	1.00	3.25	2.50
California sheephead, male	5/19/2009	4	3	8.67	1.53	1.25	0.96	1.25	0.96
coralline sculpin	5/19/2009	4	1	7.00		1.00		1.00	
garibaldi, adult	5/19/2009	4	4	10.00	0.00	2.25	0.50	9.25	1.26
giant kelpfish, juvenile	5/19/2009	4	1	6.00		3.00		15.00	
grass rockfish, adult	5/19/2009	4	3	6.67	1.53	1.33	0.58	1.67	1.15
island kelpfish	5/19/2009	4	4	8.50	1.29	1.75	0.50	2.75	1.26
kelp bass, adult	5/19/2009	4	3	9.00	1.73	1.25	0.96	1.25	0.96
kelp bass, all	5/19/2009	4	3	9.00	1.73	1.25	0.96	1.25	0.96
kelp rockfish, adult	5/19/2009	4	2	7.00	1.41	0.75	0.96	0.75	0.96
kelp rockfish, all	5/19/2009	4	2	7.00	1.41	0.75	0.96	0.75	0.96
larval fish spp.	5/19/2009	4	1	5.00		4.00		250.00	
opaleye, adult	5/19/2009	4	4	7.50	2.08	1.75	0.50	4.00	3.16
painted greenling	5/19/2009	4	4	9.75	0.50	2.25	0.50	9.00	2.58
seporita, adult	5/19/2009	4	4	9.50	1.00	3.00	0.00	49.00	35.03
seporita, all	5/19/2009	4	4	9.50	1.00	3.00	0.00	50.00	34.09
seporita, juvenile	5/19/2009	4	1	10.00		0.50	1.00	1.00	2.00
snubnose sculpin	5/19/2009	4	4	7.75	1.89	1.25	0.50	1.50	1.00
tubesnout, adult	5/19/2009	4	1	6.00		3.00		25.00	
tubesnout, juvenile	5/19/2009	4	2	7.50	2.12	3.50	0.71	90.00	42.43
vermillion rockfish, juvenile	5/19/2009	4	4	8.25	2.06	1.75	0.50	3.75	2.75

2009 ROVING DIVER FISH COUNT

San Miguel Island - Miracle Mile

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
bat ray	7/15/2009	4	1	5.00		1.00		1.00	
black and yellow rockfish, adult	7/15/2009	4	4	8.50	1.91	2.00	0.00	3.50	1.29
black rockfish, adult	7/15/2009	4	3	7.00	1.73	1.33	0.58	1.67	1.15
black surfperch, adult	7/15/2009	4	4	9.75	0.50	2.00	0.00	7.50	1.73
black surfperch, all	7/15/2009	4	4	10.00	0.00	2.00	0.00	8.00	2.16
black surfperch, juvenile	7/15/2009	4	2	8.50	2.12	0.50	0.58	0.50	0.58
blackeye goby	7/15/2009	4	4	9.75	0.50	1.75	0.50	4.00	2.45
blue rockfish, adult	7/15/2009	4	4	9.00	0.82	2.25	0.50	10.50	11.85
blue rockfish, all	7/15/2009	4	4	9.00	0.82	2.25	0.50	10.75	12.34
blue rockfish, juvenile	7/15/2009	4	1	7.00		0.25	0.50	0.25	0.50
bocaccio, juvenile	7/15/2009	4	1	5.00		2.00		2.00	
cabezon, adult	7/15/2009	4	1	10.00		1.00		1.00	
California sheephead, female	7/15/2009	4	3	7.33	1.53	0.75	0.50	0.75	0.50
California sheephead, male	7/15/2009	4	2	8.50	2.12	0.50	0.58	0.50	0.58
crevice kelpfish	7/15/2009	4	1	9.00		1.00		1.00	
giant kelpfish, juvenile	7/15/2009	4	1	5.00		2.00		2.00	
goby spp.	7/15/2009	4	1	5.00		1.00		1.00	
kelp rockfish, adult	7/15/2009	4	4	9.50	0.58	2.50	0.58	15.75	9.00
kelp rockfish, all	7/15/2009	4	4	9.50	0.58	2.50	0.58	30.25	33.82
kelp rockfish, juvenile	7/15/2009	4	2	5.00	0.00	1.25	1.50	14.50	27.68
kelp surfperch	7/15/2009	4	4	6.75	2.22	1.50	0.58	1.75	0.96
KGB	7/15/2009	4	4	8.75	2.50	3.00	0.82	94.75	145.53
olive rockfish, adult	7/15/2009	4	2	8.00	0.00	1.00	1.15	1.00	1.15
olive rockfish, all	7/15/2009	4	2	9.00	1.41	1.00	1.15	1.75	2.06
olive/yellowtail rockfish, juvenile	7/15/2009	4	2	8.00	2.83	0.75	0.96	0.75	0.96
painted greenling	7/15/2009	4	4	10.00	0.00	2.00	0.00	5.75	0.96
pile perch, adult	7/15/2009	4	3	7.67	2.08	1.25	0.96	2.50	2.65
pile perch, all	7/15/2009	4	3	7.67	2.08	1.25	0.96	2.50	2.65
rainbow surfperch	7/15/2009	4	1	10.00		2.00		2.00	
seporita, adult	7/15/2009	4	4	8.25	2.06	3.25	0.50	64.75	48.09
seporita, all	7/15/2009	4	4	8.25	2.06	3.25	0.50	70.25	43.65
seporita, juvenile	7/15/2009	4	3	7.67	2.08	1.50	1.29	5.50	7.33
snubnose sculpin	7/15/2009	4	2	5.00	0.00	1.50	0.71	1.50	0.71
striped surfperch, adult	7/15/2009	4	4	9.75	0.50	2.50	0.58	11.50	4.65
striped surfperch, all	7/15/2009	4	4	9.75	0.50	2.50	0.58	13.25	4.99
striped surfperch, juvenile	7/15/2009	4	3	8.00	1.73	1.50	1.00	1.75	1.26
treefish, juvenile	7/15/2009	4	2	9.00	1.41	1.00	1.15	2.00	2.45
vermillion rockfish, adult	7/15/2009	4	4	8.50	1.29	1.00	0.00	1.00	0.00

2009 ROVING DIVER FISH COUNT

Santa Rosa Island - Cluster Point

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	7/1/2009	6	4	7.75	0.50	1.75	0.50	1.75	0.50
black rockfish, adult	7/1/2009	6	5	7.40	1.14	1.20	0.45	1.40	0.89
black surfperch, adult	7/1/2009	6	5	8.60	1.52	1.67	0.82	3.83	2.86
black surfperch, all	7/1/2009	6	5	8.60	1.52	1.67	0.82	3.83	2.86
blackeye goby	7/1/2009	6	4	8.25	1.71	0.83	0.75	0.83	0.75
blacksmith, adult	7/1/2009	6	6	8.33	0.52	3.00	0.00	27.33	9.22
blacksmith, all	7/1/2009	6	6	8.33	0.52	3.00	0.00	27.33	9.22
blue rockfish, adult	7/1/2009	6	6	10.00	0.00	3.00	0.00	24.17	6.91
blue rockfish, all	7/1/2009	6	6	10.00	0.00	3.00	0.00	24.17	6.91
cabezon, adult	7/1/2009	6	3	8.33	0.58	1.00	0.00	1.00	0.00
California sheephead, female	7/1/2009	6	6	9.50	0.84	2.00	0.00	3.83	1.47
California sheephead, male	7/1/2009	6	6	9.67	0.52	2.00	0.00	3.67	1.75
copper rockfish, adult	7/1/2009	6	5	7.80	1.10	1.00	0.00	1.00	0.00
giant kelpfish, juvenile	7/1/2009	6	2	10.00	0.00	1.50	0.71	1.50	0.71
kelp rockfish, adult	7/1/2009	6	6	9.33	0.82	2.33	0.52	10.00	3.63
kelp rockfish, all	7/1/2009	6	6	9.33	0.82	2.33	0.52	10.00	3.63
kelpfish spp.	7/1/2009	6	1	10.00		2.00		2.00	
KGB	7/1/2009	6	3	10.00	0.00	2.67	0.58	19.33	16.56
larval fish spp.	7/1/2009	6	3	8.33	2.89	3.33	0.58	92.33	136.55
olive rockfish, adult	7/1/2009	6	6	9.17	1.17	2.00	0.00	7.50	2.43
olive rockfish, all	7/1/2009	6	6	9.17	1.17	2.00	0.00	7.50	2.43
opaleye, adult	7/1/2009	6	5	8.40	1.14	1.50	0.84	1.83	1.17
painted greenling	7/1/2009	6	6	9.33	0.52	2.00	0.00	7.17	2.32
pile perch, adult	7/1/2009	6	3	6.67	0.58	0.83	0.98	0.83	0.98
pile perch, all	7/1/2009	6	3	6.67	0.58	0.83	0.98	0.83	0.98
snubnose sculpin	7/1/2009	6	1	8.00		1.00		1.00	
striped surfperch, adult	7/1/2009	6	6	9.67	0.52	3.00	0.00	28.67	10.71
striped surfperch, all	7/1/2009	6	6	9.67	0.52	3.00	0.00	28.83	10.67
striped surfperch, juvenile	7/1/2009	6	1	9.00		0.17	0.41	0.17	0.41
swell shark	7/1/2009	6	4	7.50	2.89	1.00	0.00	1.00	0.00
treefish, adult	7/1/2009	6	1	8.00		0.17	0.41	0.17	0.41
tubesnout, adult	7/1/2009	6	6	9.00	1.10	3.50	0.55	207.17	245.65
vermillion rockfish, adult	7/1/2009	6	3	7.00	1.00	1.00	0.00	1.00	0.00
wolf eel	7/1/2009	6	4	6.00	0.82	1.00	0.00	1.00	0.00

2009 ROVING DIVER FISH COUNT

Santa Rosa Island - Trancion Canyon

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	6/30/2009	6	6	8.33	1.03	1.83	0.41	3.83	3.49
black rockfish, adult	6/30/2009	6	4	9.75	0.50	2.00	0.00	3.25	1.89
black surfperch, adult	6/30/2009	6	6	9.00	0.89	2.00	0.00	5.83	1.72
black surfperch, all	6/30/2009	6	6	9.00	0.89	2.00	0.00	5.83	1.72
blackeye goby	6/30/2009	6	6	7.33	1.51	1.67	0.82	4.67	6.22
blacksmith, adult	6/30/2009	6	6	9.33	0.52	3.00	0.00	49.83	22.44
blacksmith, all	6/30/2009	6	6	9.33	0.52	3.00	0.00	49.83	22.44
blue rockfish, adult	6/30/2009	6	6	10.00	0.00	3.00	0.00	25.33	5.28
blue rockfish, all	6/30/2009	6	6	10.00	0.00	3.00	0.00	26.33	6.53
blue rockfish, juvenile	6/30/2009	6	1	10.00		0.33	0.82	1.00	2.45
cabezon, adult	6/30/2009	6	4	8.75	0.50	1.25	0.50	1.50	1.00
California sheephead, female	6/30/2009	6	6	9.50	0.84	2.00	0.00	6.33	2.50
California sheephead, juvenile	6/30/2009	6	1	7.00		0.17	0.41	0.17	0.41
California sheephead, male	6/30/2009	6	6	9.67	0.52	2.00	0.00	4.33	0.82
giant kelpfish, juvenile	6/30/2009	6	2	10.00	0.00	1.00	0.00	1.00	0.00
grass rockfish, adult	6/30/2009	6	1	7.00		1.00		1.00	
kelp rockfish, adult	6/30/2009	6	6	9.83	0.41	2.33	0.52	10.67	4.27
kelp rockfish, all	6/30/2009	6	6	9.83	0.41	2.33	0.52	10.67	4.27
kelpfish spp.	6/30/2009	6	1	6.00		1.00		1.00	
KGB	6/30/2009	6	2	8.50	2.12	1.50	0.71	2.00	1.41
larval fish spp.	6/30/2009	6	3	10.00	0.00	4.00	0.00	173.33	46.19
lingcod, adult	6/30/2009	6	4	8.00	0.00	1.00	0.00	1.00	0.00
olive rockfish, adult	6/30/2009	6	6	9.33	1.21	2.33	0.52	9.17	4.54
olive rockfish, all	6/30/2009	6	6	9.67	0.52	2.33	0.52	9.83	5.04
olive/yellowtail rockfish, juvenile	6/30/2009	6	2	7.00	2.83	0.67	1.03	0.67	1.03
opaleye, adult	6/30/2009	6	4	7.50	2.38	1.00	0.89	1.50	1.64
painted greenling	6/30/2009	6	6	8.83	0.75	2.50	0.55	10.50	6.44
pile perch, adult	6/30/2009	6	6	8.17	1.72	1.67	0.52	3.17	2.04
pile perch, all	6/30/2009	6	6	8.17	1.72	1.67	0.52	3.67	2.34
pile perch, juvenile	6/30/2009	6	1	7.00		0.33	0.82	0.50	1.22
rockfish spp., juvenile	6/30/2009	6	1	10.00		1.00		1.00	
rubberlip surfperch	6/30/2009	6	2	9.00	1.41	2.00	0.00	4.50	2.12
seporita, adult	6/30/2009	6	4	10.00	0.00	1.83	1.47	12.33	10.84
seporita, all	6/30/2009	6	4	10.00	0.00	1.83	1.47	12.33	10.84
snubnose sculpin	6/30/2009	6	2	6.50	0.71	1.00	0.00	1.00	0.00
striped surfperch, adult	6/30/2009	6	6	9.50	0.84	2.83	0.41	20.83	8.95
striped surfperch, all	6/30/2009	6	6	9.67	0.82	2.83	0.41	21.83	8.66
striped surfperch, juvenile	6/30/2009	6	3	8.00	2.00	0.83	0.98	1.00	1.26
treefish, adult	6/30/2009	6	1	5.00		0.17	0.41	0.17	0.41
treefish, juvenile	6/30/2009	6	1	7.00		0.17	0.41	0.17	0.41

2009 ROVING DIVER FISH COUNT

Santa Rosa Island - Chickasaw

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	7/14/2009	4	4	9.50	0.58	2.75	0.50	9.50	5.20
black and yellow/gopher rockfish, juvenile	7/14/2009	4	2	8.50	2.12	1.50	0.71	1.50	0.71
black rockfish, adult	7/14/2009	4	1	6.00		1.00		1.00	
black surfperch, adult	7/14/2009	4	4	9.25	0.96	2.00	0.00	5.00	1.63
black surfperch, all	7/14/2009	4	4	9.25	0.96	2.00	0.00	5.00	1.63
blackeye goby	7/14/2009	4	4	8.25	1.50	2.25	0.50	10.00	2.16
blacksmith, adult	7/14/2009	4	3	8.00	1.73	1.50	1.29	8.50	15.02
blacksmith, all	7/14/2009	4	3	8.00	1.73	1.50	1.29	8.50	15.02
blue rockfish, adult	7/14/2009	4	4	9.50	0.58	2.50	0.58	19.00	17.34
blue rockfish, all	7/14/2009	4	4	9.50	0.58	2.50	0.58	19.50	18.34
blue rockfish, juvenile	7/14/2009	4	1	10.00		0.50	1.00	0.50	1.00
cabezon, adult	7/14/2009	4	1	7.00		1.00		1.00	
California sheephead, female	7/14/2009	4	3	9.67	0.58	1.00	0.82	1.50	1.73
California sheephead, male	7/14/2009	4	4	8.50	1.91	1.75	0.50	2.25	0.96
copper rockfish, adult	7/14/2009	4	1	6.00		1.00		1.00	
crevice kelpfish	7/14/2009	4	1	9.00		2.00		3.00	
gopher rockfish, adult	7/14/2009	4	1	10.00		1.00		1.00	
kelp rockfish, adult	7/14/2009	4	4	9.25	0.96	2.75	0.50	19.00	14.90
kelp rockfish, all	7/14/2009	4	4	9.25	0.96	2.75	0.50	19.25	14.86
kelp rockfish, juvenile	7/14/2009	4	1	5.00		0.25	0.50	0.25	0.50
KGB	7/14/2009	4	4	9.50	1.00	2.50	0.58	10.25	5.38
lingcod, adult	7/14/2009	4	1	8.00		2.00		2.00	
olive rockfish, adult	7/14/2009	4	4	10.00	0.00	2.00	0.00	5.00	3.46
olive rockfish, all	7/14/2009	4	4	10.00	0.00	2.00	0.00	5.00	3.46
painted greenling	7/14/2009	4	4	8.75	1.89	2.25	0.50	6.75	4.35
pile perch, adult	7/14/2009	4	4	8.25	1.26	1.50	0.58	1.75	0.96
pile perch, all	7/14/2009	4	4	8.25	1.26	1.50	0.58	1.75	0.96
scalyhead sculpin	7/14/2009	4	1	5.00		1.00		1.00	
seporita, adult	7/14/2009	4	1	10.00		0.50	1.00	0.50	1.00
seporita, all	7/14/2009	4	2	7.50	3.54	1.25	1.50	5.50	9.71
seporita, juvenile	7/14/2009	4	1	5.00		0.75	1.50	5.00	10.00
snubnose sculpin	7/14/2009	4	1	8.00		1.00		1.00	
striped surfperch, adult	7/14/2009	4	3	9.00	1.00	1.50	1.00	4.75	4.11
striped surfperch, all	7/14/2009	4	3	9.00	1.00	1.50	1.00	5.00	4.08
striped surfperch, juvenile	7/14/2009	4	1	7.00		0.25	0.50	0.25	0.50
top smelt	7/14/2009	4	2	7.50	3.54	2.50	0.71	13.50	9.19
treefish, adult	7/14/2009	4	1	7.00		0.25	0.50	0.25	0.50
treefish, juvenile	7/14/2009	4	4	7.00	1.41	1.25	0.50	1.25	0.50
tubesnout, adult	7/14/2009	4	4	7.25	2.22	3.75	0.50	183.75	112.50

2009 ROVING DIVER FISH COUNT

Santa Rosa Island - South Point

Common Name	Date	Max # of	# of	Score		Abundance		Count	
		Observers	Observations	Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	7/14/2009	4	4	8.25	1.50	1.75	0.50	4.00	2.94
black and yellow/gopher rockfish, juvenile	7/14/2009	4	1	7.00		1.00		1.00	
black surfperch, adult	7/14/2009	4	4	9.25	0.50	2.25	0.50	8.25	3.69
black surfperch, all	7/14/2009	4	4	9.25	0.50	2.50	0.58	9.25	3.86
black surfperch, juvenile	7/14/2009	4	2	7.00	1.41	0.75	0.96	1.00	1.41
blackeye goby	7/14/2009	4	4	9.00	0.82	2.25	0.50	10.25	4.72
blacksmith, adult	7/14/2009	4	4	9.00	1.41	2.50	1.00	38.50	30.69
blacksmith, all	7/14/2009	4	4	9.00	1.41	2.50	1.00	38.50	30.69
blue rockfish, adult	7/14/2009	4	4	9.75	0.50	2.25	0.50	9.25	3.77
blue rockfish, all	7/14/2009	4	4	9.75	0.50	2.50	0.58	11.75	4.65
blue rockfish, juvenile	7/14/2009	4	3	7.00	2.00	1.50	1.00	2.50	2.08
bocaccio, juvenile	7/14/2009	4	1	10.00		2.00		3.00	
cabezon, adult	7/14/2009	4	1	6.00		2.00		2.00	
California sheephead, female	7/14/2009	4	4	9.50	1.00	2.00	0.00	3.50	1.29
California sheephead, juvenile	7/14/2009	4	2	6.00	1.41	0.50	0.58	0.50	0.58
California sheephead, male	7/14/2009	4	4	9.25	0.96	2.00	0.00	2.75	0.50
c-o turbot	7/14/2009	4	2	8.00	0.00	1.00	0.00	1.00	0.00
crevice kelpfish	7/14/2009	4	2	7.00	0.00	1.00	0.00	1.00	0.00
giant kelpfish, juvenile	7/14/2009	4	2	10.00	0.00	2.00	1.41	6.50	7.78
kelp rockfish, adult	7/14/2009	4	4	10.00	0.00	3.00	0.00	22.50	8.81
kelp rockfish, all	7/14/2009	4	4	10.00	0.00	3.00	0.00	24.50	10.60
kelp rockfish, juvenile	7/14/2009	4	2	10.00	0.00	0.75	0.96	2.00	3.37
kelp surfperch	7/14/2009	4	3	9.00	1.73	1.33	0.58	3.00	3.46
KGB	7/14/2009	4	4	10.00	0.00	2.75	0.50	20.00	11.92
lingcod, adult	7/14/2009	4	1	7.00		1.00		1.00	
olive rockfish, adult	7/14/2009	4	4	10.00	0.00	2.00	0.00	5.75	2.63
olive rockfish, all	7/14/2009	4	4	10.00	0.00	2.00	0.00	7.50	3.11
olive/yellowtail rockfish, juvenile	7/14/2009	4	3	8.67	0.58	1.25	0.96	1.75	1.71
opaleye, adult	7/14/2009	4	1	7.00		0.25	0.50	0.25	0.50
painted greenling	7/14/2009	4	4	8.50	1.91	2.00	0.00	5.00	2.83
pile perch, adult	7/14/2009	4	4	8.75	0.96	2.00	0.00	5.00	2.16
pile perch, all	7/14/2009	4	4	8.75	0.96	2.00	0.00	5.00	2.16
rainbow surfperch	7/14/2009	4	2	9.50	0.71	2.00	0.00	3.50	2.12
seporita, adult	7/14/2009	4	4	10.00	0.00	3.75	0.50	179.25	65.48
seporita, all	7/14/2009	4	4	10.00	0.00	3.75	0.50	184.50	62.98
seporita, juvenile	7/14/2009	4	2	9.00	1.41	1.25	1.50	5.25	6.18
snubnose sculpin	7/14/2009	4	1	9.00		2.00		3.00	
striped surfperch, adult	7/14/2009	4	4	9.50	1.00	2.25	0.50	7.25	3.50
striped surfperch, all	7/14/2009	4	4	9.50	1.00	2.25	0.50	7.50	3.11
striped surfperch, juvenile	7/14/2009	4	1	7.00		0.25	0.50	0.25	0.50
top smelt	7/14/2009	4	1	10.00		3.00		25.00	
treefish, adult	7/14/2009	4	1	7.00		0.25	0.50	0.25	0.50
treefish, juvenile	7/14/2009	4	4	9.25	1.50	1.75	0.50	4.00	2.94
tubesnout, adult	7/14/2009	4	4	9.25	0.50	3.75	0.50	132.75	64.27

2009 ROVING DIVER FISH COUNT

Santa Cruz Island - Devil's Peak Member

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	6/2/2009	7	2	9.00	1.41	1.00	0.00	1.00	0.00
black surfperch, adult	6/2/2009	7	3	10.00	0.00	2.67	0.58	11.33	2.89
black surfperch, all	6/2/2009	7	3	9.86	0.38	2.71	0.49	11.33	2.89
blackeye goby	6/2/2009	7	3	9.86	0.38	3.14	0.38	39.67	13.87
blacksmith, adult	6/2/2009	7	3	8.67	1.15	3.00	1.00	209.67	350.19
blacksmith, all	6/2/2009	7	3	9.00	1.10	2.57	1.40	210.00	349.90
blacksmith, juvenile	6/2/2009	7	1	7.00		0.33	0.58	0.33	0.58
blue rockfish, all	6/2/2009	7	1	7.50	0.58	1.00	1.00	0.33	0.58
blue rockfish, juvenile	6/2/2009	7	1	8.00		0.33	0.58	0.33	0.58
blue-banded goby	6/2/2009	7	3	9.57	0.79	3.00	0.82	83.33	41.86
brown rockfish, adult	6/2/2009	7	1	8.00		1.00		1.00	
California sheephead, female	6/2/2009	7	3	8.71	0.95	1.71	0.49	1.33	0.58
California sheephead, juvenile	6/2/2009	7	3	9.43	0.53	2.00	0.00	6.33	1.53
copper rockfish, adult	6/2/2009	7	1	8.00		1.00		1.00	
garibaldi, adult	6/2/2009	7	3	9.57	1.13	2.86	0.38	19.00	3.61
gopher rockfish, adult	6/2/2009	7	1	7.00	1.41	1.50	0.71	3.00	
halfmoon, adult	6/2/2009	7	3	7.40	1.95	1.40	0.55	2.00	1.73
horn shark	6/2/2009	7	1	9.00	0.00	1.00	0.00	1.00	
island kelpfish	6/2/2009	7	3	8.50	1.38	1.71	0.76	5.67	1.15
kelp bass, adult	6/2/2009	7	3	10.00	0.00	2.67	0.58	13.33	3.06
kelp bass, all	6/2/2009	7	3	10.00	0.00	2.14	1.07	13.33	3.06
kelp rockfish, adult	6/2/2009	7	3	8.00	0.00	1.67	0.58	1.67	0.58
kelp rockfish, all	6/2/2009	7	3	8.50	0.84	1.57	0.79	1.67	0.58
lingcod, adult	6/2/2009	7	2	8.50	1.73	1.00	0.00	1.00	0.00
olive rockfish, adult	6/2/2009	7	3	9.33	0.58	1.67	0.58	3.33	3.21
olive rockfish, all	6/2/2009	7	3	9.71	0.49	2.00	0.58	3.33	3.21
opaleye, adult	6/2/2009	7	1	9.00		0.29	0.76	0.67	1.15
painted greenling	6/2/2009	7	3	10.00	0.00	3.00	0.00	30.00	5.57
pile perch, adult	6/2/2009	7	3	9.00	0.00	2.00	0.00	5.00	2.00
pile perch, all	6/2/2009	7	3	9.14	0.69	2.14	0.38	5.00	2.00
rock wrasse, female	6/2/2009	7	3	7.57	1.27	2.00	0.00	6.00	2.65
rock wrasse, male	6/2/2009	7	2	8.83	1.47	1.57	0.79	4.00	4.00
rockfish spp., juvenile	6/2/2009	7	1	6.50	0.71	1.00	0.00	1.00	
rubberlip surfperch	6/2/2009	7	2	7.75	1.50	1.25	0.50	1.00	0.00
seporita, adult	6/2/2009	7	3	10.00	0.00	3.00	0.00	64.00	5.29
seporita, all	6/2/2009	7	3	10.00	0.00	3.29	0.49	64.33	4.93
seporita, juvenile	6/2/2009	7	1	7.00		0.33	0.58	0.33	0.58
treefish, adult	6/2/2009	7	3	7.50	1.52	1.71	0.76	5.00	2.00
treefish, juvenile	6/2/2009	7	1	9.50	0.71	0.57	0.98	1.00	1.73
yellowfin fringehead	6/2/2009	7	1	9.00		1.00		1.00	
zebra goby	6/2/2009	7	2	8.50	0.71	2.00	0.00	2.50	0.71

2009 ROVING DIVER FISH COUNT

Santa Cruz Island - Potato Pasture

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	9/2/2009	6	1	7.00		1.00		1.00	
black surfperch, adult	9/2/2009	6	5	9.33	0.82	2.00	0.00	5.60	1.67
black surfperch, all	9/2/2009	6	5	9.33	0.82	2.00	0.00	5.60	1.67
blackeye goby	9/2/2009	6	5	10.00	0.00	4.00	0.00	221.00	71.77
blacksmith, adult	9/2/2009	6	5	9.33	0.82	3.83	0.41	236.00	161.47
blacksmith, all	9/2/2009	6	5	9.33	0.82	3.83	0.41	236.00	161.47
blue rockfish, adult	9/2/2009	6	4	9.60	0.55	1.50	0.84	1.40	0.89
blue rockfish, all	9/2/2009	6	4	9.60	0.55	1.50	0.84	1.40	0.89
blue-banded goby	9/2/2009	6	5	9.67	0.52	3.67	0.52	158.40	77.01
brown rockfish, adult	9/2/2009	6	5	8.20	1.10	1.40	0.55	1.40	0.55
California moray eel	9/2/2009	6	1	7.00		1.00		1.00	
California scorpionfish, adult	9/2/2009	6	1	7.50	3.54	1.00	0.00	1.00	
California sheephead, female	9/2/2009	6	5	9.83	0.41	2.00	0.00	6.40	2.61
California sheephead, juvenile	9/2/2009	6	5	8.83	1.17	1.83	0.41	5.60	2.41
California sheephead, male	9/2/2009	6	4	7.40	1.34	0.83	0.41	0.80	0.45
garibaldi, adult	9/2/2009	6	5	10.00	0.00	3.00	0.00	16.60	2.88
gopher rockfish, adult	9/2/2009	6	2	7.00	0.00	1.00	0.00	1.00	0.00
halfmoon, adult	9/2/2009	6	2	8.00	1.73	2.00	0.00	3.00	1.41
island kelpfish	9/2/2009	6	5	7.67	1.86	1.50	0.55	2.80	1.79
kelp bass, adult	9/2/2009	6	5	10.00	0.00	3.00	0.00	27.80	5.67
kelp bass, all	9/2/2009	6	5	10.00	0.00	3.00	0.00	27.80	5.67
ocean whitefish, adult	9/2/2009	6	1	10.00		1.00		1.00	
opaleye, adult	9/2/2009	6	5	9.00	1.26	2.00	0.00	7.00	1.58
painted greenling	9/2/2009	6	5	10.00	0.00	3.00	0.00	22.00	5.57
pile perch, adult	9/2/2009	6	5	8.00	1.79	2.17	0.41	9.00	10.72
pile perch, all	9/2/2009	6	5	8.00	1.79	2.17	0.41	9.00	10.72
rock wrasse, female	9/2/2009	6	5	9.33	1.21	2.00	0.00	6.20	3.03
rock wrasse, juvenile	9/2/2009	6	1	9.00		0.33	0.82	0.60	1.34
rock wrasse, male	9/2/2009	6	5	10.00	0.00	2.33	0.52	7.20	2.49
rubberlip surfperch	9/2/2009	6	5	8.17	1.83	1.67	0.52	1.80	0.45
seporita, adult	9/2/2009	6	5	10.00	0.00	3.17	0.41	74.20	38.13
seporita, all	9/2/2009	6	5	10.00	0.00	3.17	0.41	75.20	39.38
seporita, juvenile	9/2/2009	6	1	10.00		0.33	0.82	1.00	2.24
treefish, adult	9/2/2009	6	3	9.00	1.41	1.33	1.03	1.40	1.34
treefish, juvenile	9/2/2009	6	5	9.00	0.63	1.67	0.52	2.00	0.71
zebra goby	9/2/2009	6	5	8.40	0.89	1.80	0.45	3.40	2.51

2009 ROVING DIVER FISH COUNT

Santa Cruz Island - Cavern Point

Common Name	Date	Max # of	# of	Score		Abundance		Count	
		Observers	Observations	Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	6/15/2009	6	1	8.50	0.71	1.50	0.71	4.00	
black surfperch, adult	6/15/2009	6	3	9.67	0.58	2.00	0.00	8.67	1.53
black surfperch, all	6/15/2009	6	3	9.67	0.52	2.00	0.00	8.67	1.53
blackeye goby	6/15/2009	6	3	10.00	0.00	3.50	0.55	253.33	59.23
blacksmith, adult	6/15/2009	6	3	10.00	0.00	4.00	0.00	162.67	29.28
blacksmith, all	6/15/2009	6	3	9.83	0.41	3.83	0.41	162.67	29.28
blue-banded goby	6/15/2009	6	3	10.00	0.00	3.33	0.52	169.33	81.77
California sheephead, female	6/15/2009	6	3	9.00	1.10	1.83	0.41	6.00	3.46
California sheephead, juvenile	6/15/2009	6	3	9.50	0.55	2.67	0.52	10.00	4.36
California sheephead, male	6/15/2009	6	3	8.67	1.15	0.50	0.55	1.00	0.00
garibaldi, adult	6/15/2009	6	3	9.67	0.52	2.00	0.00	6.67	3.06
gopher rockfish, adult	6/15/2009	6	2	9.50	0.71	2.00	0.00	2.00	0.00
horn shark	6/15/2009	6	1	7.00		1.00		1.00	
island kelpfish	6/15/2009	6	3	9.00	1.26	2.33	0.52	7.67	3.06
kelp bass, adult	6/15/2009	6	3	9.33	1.15	2.33	0.58	11.67	4.73
kelp bass, all	6/15/2009	6	3	9.33	0.82	2.17	0.41	11.67	4.73
ocean whitefish, adult	6/15/2009	6	1	6.00		2.00		2.00	
olive rockfish, adult	6/15/2009	6	3	7.67	2.31	1.67	0.58	1.67	0.58
olive rockfish, all	6/15/2009	6	3	8.20	1.92	1.17	0.75	1.67	0.58
painted greenling	6/15/2009	6	3	10.00	0.00	3.00	0.00	22.67	4.93
rock wrasse, female	6/15/2009	6	3	8.60	0.55	1.33	0.82	1.67	0.58
rock wrasse, juvenile	6/15/2009	6	2	9.50	1.00	1.00	0.89	0.67	0.58
rock wrasse, male	6/15/2009	6	1	7.00		0.33	0.82	0.67	1.15
rubberlip surfperch	6/15/2009	6	1	6.00	0.00	1.50	0.58	1.00	
seporita, adult	6/15/2009	6	3	10.00	0.00	3.00	0.00	51.33	35.73
seporita, all	6/15/2009	6	3	10.00	0.00	3.17	0.41	51.33	35.73
snubnose sculpin	6/15/2009	6	2	7.50	0.71	1.00	0.00	1.00	0.00
treefish, adult	6/15/2009	6	3	8.00	1.10	1.67	0.52	5.33	2.52
treefish, juvenile	6/15/2009	6	3	8.50	1.64	1.67	0.52	3.67	2.08
zebra goby	6/15/2009	6	2	8.33	1.15	1.67	0.58	7.00	0.00

2009 ROVING DIVER FISH COUNT

Santa Cruz Island - Little Scorpion

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
bat ray	9/3/2009	5	1	6.00		1.00		1.00	
black and yellow rockfish, adult	9/3/2009	5	5	8.20	1.30	1.80	0.45	3.80	1.92
black surfperch, adult	9/3/2009	5	5	10.00	0.00	2.40	0.55	10.20	2.39
black surfperch, all	9/3/2009	5	5	10.00	0.00	2.40	0.55	10.20	2.39
blackeye goby	9/3/2009	5	5	10.00	0.00	4.00	0.00	314.60	127.14
blacksmith, adult	9/3/2009	5	5	10.00	0.00	4.00	0.00	347.20	148.35
blacksmith, all	9/3/2009	5	5	10.00	0.00	4.00	0.00	369.00	141.80
blacksmith, juvenile	9/3/2009	5	5	9.40	1.34	2.80	0.45	21.80	10.01
blue rockfish, adult	9/3/2009	5	4	7.75	2.06	0.80	0.45	0.80	0.45
blue rockfish, all	9/3/2009	5	5	8.20	2.05	1.60	0.55	2.60	1.82
blue rockfish, juvenile	9/3/2009	5	3	7.67	2.52	1.00	1.00	1.80	2.05
blue-banded goby	9/3/2009	5	5	10.00	0.00	4.00	0.00	310.40	66.56
California sheephead, female	9/3/2009	5	5	10.00	0.00	2.20	0.45	9.20	4.76
California sheephead, juvenile	9/3/2009	5	5	9.40	0.55	2.20	0.45	8.40	1.95
garibaldi, adult	9/3/2009	5	5	10.00	0.00	3.00	0.00	19.20	4.97
gopher rockfish, adult	9/3/2009	5	1	9.00		1.00		1.00	
halfmoon, adult	9/3/2009	5	4	8.75	1.26	1.75	0.50	4.00	3.56
horn shark	9/3/2009	5	4	7.75	1.71	1.00	0.00	1.00	0.00
island kelpfish	9/3/2009	5	4	7.75	2.22	1.40	0.89	2.80	2.39
kelp bass, adult	9/3/2009	5	5	9.80	0.45	3.00	0.00	17.00	4.90
kelp bass, all	9/3/2009	5	5	9.80	0.45	3.00	0.00	17.00	4.90
kelp rockfish, adult	9/3/2009	5	4	10.00	0.00	1.80	1.10	9.20	6.42
kelp rockfish, all	9/3/2009	5	4	10.00	0.00	1.80	1.10	9.20	6.42
ocean whitefish, adult	9/3/2009	5	1	5.00		2.00		3.00	
olive rockfish, adult	9/3/2009	5	1	8.00		0.20	0.45	0.20	0.45
olive rockfish, all	9/3/2009	5	1	8.00		0.20	0.45	0.20	0.45
opaleye, adult	9/3/2009	5	5	9.40	0.89	2.40	0.55	11.00	4.18
painted greenling	9/3/2009	5	5	10.00	0.00	3.00	0.00	33.60	8.50
pile perch, adult	9/3/2009	5	5	8.00	1.87	1.80	0.45	2.80	1.92
pile perch, all	9/3/2009	5	5	8.00	1.87	1.80	0.45	2.80	1.92
rock wrasse, female	9/3/2009	5	5	10.00	0.00	2.00	0.00	4.40	0.89
rock wrasse, juvenile	9/3/2009	5	2	6.50	2.12	0.40	0.55	0.40	0.55
rock wrasse, male	9/3/2009	5	5	9.00	1.41	2.00	0.00	4.80	1.48
seporita, adult	9/3/2009	5	5	10.00	0.00	3.00	0.00	32.40	12.10
seporita, all	9/3/2009	5	5	10.00	0.00	3.00	0.00	38.40	16.50
seporita, juvenile	9/3/2009	5	3	8.00	2.00	1.40	1.34	6.00	6.93
snubnose sculpin	9/3/2009	5	1	7.00		1.00		1.00	
treefish, adult	9/3/2009	5	5	9.00	1.00	2.00	0.00	3.80	2.39
treefish, juvenile	9/3/2009	5	5	8.80	1.30	2.00	0.00	3.60	1.67
zebra goby	9/3/2009	5	5	8.00	1.41	1.80	0.45	3.80	3.11

2009 ROVING DIVER FISH COUNT

Santa Cruz Island - Pedro Reef

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
blackeye goby	7/28/2009	5	5	10.00	0.00	4.00	0.00	252.60	103.58
blacksmith, adult	7/28/2009	5	3	7.33	2.52	1.60	1.67	25.00	53.12
blacksmith, all	7/28/2009	5	3	7.33	2.52	1.60	1.67	25.00	53.12
blue rockfish, all	7/28/2009	5	1	6.00		0.60	1.34	2.80	6.26
blue rockfish, juvenile	7/28/2009	5	1	6.00		0.60	1.34	2.80	6.26
blue-banded goby	7/28/2009	5	5	9.40	0.89	3.00	0.00	32.40	14.45
California sheephead, female	7/28/2009	5	5	9.20	0.45	2.00	0.00	5.00	2.00
California sheephead, juvenile	7/28/2009	5	5	9.20	0.45	1.80	0.45	5.80	3.27
coralline sculpin	7/28/2009	5	1	6.00		2.00		2.00	
garibaldi, adult	7/28/2009	5	5	9.20	0.45	2.00	0.00	4.60	0.89
island kelpfish	7/28/2009	5	1	7.00		0.40	0.89	0.80	1.79
kelp bass, adult	7/28/2009	5	5	10.00	0.00	2.20	0.45	8.80	2.28
kelp bass, all	7/28/2009	5	5	10.00	0.00	2.20	0.45	8.80	2.28
ocean whitefish, adult	7/28/2009	5	2	6.50	2.12	1.50	0.71	1.50	0.71
opaleye, adult	7/28/2009	5	2	8.00	0.00	0.80	1.10	1.00	1.41
painted greenling	7/28/2009	5	5	9.40	0.55	3.00	0.00	19.60	7.40
pile perch, adult	7/28/2009	5	2	5.50	0.71	0.40	0.55	0.40	0.55
pile perch, all	7/28/2009	5	2	5.50	0.71	0.40	0.55	0.40	0.55
rock wrasse, female	7/28/2009	5	4	8.25	1.26	1.20	0.84	1.20	0.84
rock wrasse, juvenile	7/28/2009	5	3	8.33	1.15	1.00	1.00	1.20	1.30
rock wrasse, male	7/28/2009	5	1	10.00		0.20	0.45	0.20	0.45
seporita, adult	7/28/2009	5	5	10.00	0.00	3.20	0.45	68.40	60.60
seporita, all	7/28/2009	5	5	10.00	0.00	3.20	0.45	71.40	60.88
seporita, juvenile	7/28/2009	5	1	10.00		0.60	1.34	3.00	6.71
treefish, juvenile	7/28/2009	5	3	7.67	0.58	0.60	0.55	0.60	0.55

2009 ROVING DIVER FISH COUNT

Anacapa Island - Keyhole

Common Name	Date	Max # of	# of	Score		Abundance		Count	
		Observers	Observations	Avg	St Dev	Avg	St Dev	Avg	St Dev
black surfperch, adult	7/29/2009	5	5	9.40	0.55	2.60	0.55	10.40	2.88
black surfperch, all	7/29/2009	5	5	9.40	0.55	2.80	0.45	11.60	2.88
black surfperch, juvenile	7/29/2009	5	5	7.40	1.95	1.20	0.45	1.20	0.45
blackeye goby	7/29/2009	5	5	10.00	0.00	4.00	0.00	263.20	73.78
blacksmith, adult	7/29/2009	5	5	9.20	1.30	3.40	0.55	125.80	146.91
blacksmith, all	7/29/2009	5	5	9.20	1.30	3.40	0.55	126.20	147.31
blacksmith, juvenile	7/29/2009	5	2	9.50	0.71	0.40	0.55	0.40	0.55
blue-banded goby	7/29/2009	5	5	9.80	0.45	3.00	0.00	25.20	4.32
California sheephead, female	7/29/2009	5	5	8.20	1.48	2.00	0.71	4.40	4.51
California sheephead, juvenile	7/29/2009	5	5	9.20	1.30	2.60	0.55	10.80	3.70
California sheephead, male	7/29/2009	5	1	8.00		0.20	0.45	0.20	0.45
garibaldi, adult	7/29/2009	5	5	9.40	0.89	2.20	0.45	7.60	3.36
garibaldi, juvenile	7/29/2009	5	1	5.00		0.20	0.45	0.20	0.45
giant kelpfish, juvenile	7/29/2009	5	2	5.00	0.00	1.00	0.00	1.00	0.00
halfmoon, adult	7/29/2009	5	1	7.00		2.00		2.00	
island kelpfish	7/29/2009	5	5	10.00	0.00	3.00	0.00	24.20	5.97
kelp bass, adult	7/29/2009	5	5	9.00	1.73	2.20	0.45	10.40	8.79
kelp bass, all	7/29/2009	5	5	9.00	1.73	2.20	0.45	10.60	9.24
kelp bass, juvenile	7/29/2009	5	1	8.00		0.20	0.45	0.20	0.45
kelp rockfish, adult	7/29/2009	5	1	8.00		0.20	0.45	0.20	0.45
kelp rockfish, all	7/29/2009	5	1	8.00		0.20	0.45	0.20	0.45
kelp surfperch	7/29/2009	5	1	8.00		1.00		1.00	
kelpfish spp.	7/29/2009	5	1	6.00		1.00		1.00	
opaleye, adult	7/29/2009	5	4	7.75	1.89	1.40	0.89	2.20	1.79
painted greenling	7/29/2009	5	5	9.80	0.45	2.60	0.55	12.40	6.54
pile perch, adult	7/29/2009	5	2	6.00	0.00	0.40	0.55	0.40	0.55
pile perch, all	7/29/2009	5	2	6.00	0.00	0.40	0.55	0.40	0.55
rock wrasse, female	7/29/2009	5	5	9.20	0.84	2.00	0.00	5.20	1.79
rock wrasse, juvenile	7/29/2009	5	5	8.00	1.58	1.40	0.55	1.40	0.55
rock wrasse, male	7/29/2009	5	4	9.00	0.82	1.60	0.89	4.60	2.79
sculpin spp.	7/29/2009	5	1	5.00		1.00		1.00	
seporita, adult	7/29/2009	5	5	8.80	1.30	2.40	0.55	24.60	32.77
seporita, all	7/29/2009	5	5	8.80	1.30	2.80	0.45	32.60	29.90
seporita, juvenile	7/29/2009	5	3	7.33	2.08	1.60	1.52	8.00	10.02
snubnose sculpin	7/29/2009	5	1	5.00		1.00		1.00	
treefish, adult	7/29/2009	5	4	8.00	0.82	1.20	0.84	1.60	1.52
treefish, juvenile	7/29/2009	5	5	6.80	1.30	1.80	0.45	2.60	1.14
zebra goby	7/29/2009	5	5	9.80	0.45	2.20	0.45	5.60	3.58

2009 ROVING DIVER FISH COUNT

Anacapa Island - East Fish Camp

Common Name	Date	Max # of	# of	Score		Abundance		Count	
		Observers	Observations	Avg	St Dev	Avg	St Dev	Avg	St Dev
black surfperch, adult	8/21/2009	6	2	8.50	2.12	0.67	1.03	0.83	1.33
black surfperch, all	8/21/2009	6	2	8.50	2.12	0.67	1.03	0.83	1.33
blackeye goby	8/21/2009	6	6	10.00	0.00	4.00	0.00	380.83	120.98
blacksmith, adult	8/21/2009	6	6	10.00	0.00	4.00	0.00	507.17	159.41
blacksmith, all	8/21/2009	6	6	10.00	0.00	4.00	0.00	507.50	159.94
blacksmith, juvenile	8/21/2009	6	1	8.00		0.33	0.82	0.33	0.82
blue rockfish, all	8/21/2009	6	3	8.67	1.53	0.83	0.98	0.83	0.98
blue rockfish, juvenile	8/21/2009	6	3	8.67	1.53	0.83	0.98	0.83	0.98
blue-banded goby	8/21/2009	6	1	10.00		0.17	0.41	0.17	0.41
cabezon, adult	8/21/2009	6	1	6.00		1.00		1.00	
California sheephead, female	8/21/2009	6	6	9.50	1.22	2.50	0.55	10.33	2.34
California sheephead, juvenile	8/21/2009	6	6	8.67	1.51	2.00	0.00	4.83	1.94
c-o turbot	8/21/2009	6	2	7.00	0.00	1.00	0.00	1.00	0.00
garibaldi, adult	8/21/2009	6	6	10.00	0.00	3.00	0.00	16.50	3.08
halfmoon, adult	8/21/2009	6	3	7.67	2.08	1.00	0.00	1.00	0.00
island kelpfish	8/21/2009	6	6	8.67	1.75	1.50	0.55	2.17	1.60
kelp bass, adult	8/21/2009	6	6	9.67	0.82	2.50	0.55	10.17	3.25
kelp bass, all	8/21/2009	6	6	9.67	0.82	2.50	0.55	10.17	3.25
kelp rockfish, all	8/21/2009	6	2	8.50	2.12	0.50	0.84	0.50	0.84
kelp rockfish, juvenile	8/21/2009	6	2	8.50	2.12	0.50	0.84	0.50	0.84
KGB	8/21/2009	6	1	9.00		1.00		1.00	
ocean whitefish, adult	8/21/2009	6	2	8.00	2.83	1.00	0.00	1.00	0.00
opaleye, adult	8/21/2009	6	3	6.33	0.58	1.00	1.10	2.00	2.76
painted greenling	8/21/2009	6	6	10.00	0.00	3.00	0.00	36.67	9.24
pile perch, adult	8/21/2009	6	3	7.00	2.65	0.67	0.82	1.17	1.94
pile perch, all	8/21/2009	6	3	7.00	2.65	0.67	0.82	1.17	1.94
rock wrasse, female	8/21/2009	6	4	8.50	2.38	1.17	0.98	2.17	2.40
rock wrasse, male	8/21/2009	6	5	8.00	1.87	1.33	0.82	2.50	2.88
seporita, adult	8/21/2009	6	6	8.67	1.75	3.00	0.00	32.00	23.60
seporita, all	8/21/2009	6	6	8.67	1.75	3.00	0.00	32.00	23.60
snubnose sculpin	8/21/2009	6	2	9.00	0.00	2.00	0.00	2.00	0.00
treefish, adult	8/21/2009	6	1	6.00		0.17	0.41	0.17	0.41
treefish, juvenile	8/21/2009	6	3	9.00	1.73	0.50	0.55	0.50	0.55
vermillion rockfish, juvenile	8/21/2009	6	1	9.00		2.00		3.00	
zebra goby	8/21/2009	6	1	10.00		2.00		2.00	

2009 ROVING DIVER FISH COUNT

Anacapa Island - Black Sea Bass Reef

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
black and yellow rockfish, adult	7/17/2009	7	1	5.00		1.00		1.00	
black and yellow/gopher rockfish, juvenile	7/17/2009	7	1	10.00		1.00		1.00	
black surfperch, adult	7/17/2009	7	7	8.00	1.83	1.86	0.38	4.57	3.05
black surfperch, all	7/17/2009	7	7	8.00	1.83	1.86	0.38	4.57	3.05
blackeye goby	7/17/2009	7	7	10.00	0.00	4.00	0.00	269.29	119.00
blacksmith, adult	7/17/2009	7	7	10.00	0.00	3.86	0.38	299.29	168.11
blacksmith, all	7/17/2009	7	7	10.00	0.00	3.86	0.38	299.29	168.11
blue rockfish, all	7/17/2009	7	6	9.33	0.82	1.71	0.76	4.43	2.30
blue rockfish, juvenile	7/17/2009	7	6	9.33	0.82	1.71	0.76	4.43	2.30
blue-banded goby	7/17/2009	7	7	9.29	0.76	3.43	0.53	90.29	58.56
California scorpionfish, adult	7/17/2009	7	1	5.00		1.00		1.00	
California sheephead, female	7/17/2009	7	7	9.86	0.38	2.14	0.38	7.29	2.87
California sheephead, juvenile	7/17/2009	7	7	7.43	0.98	2.00	0.00	3.86	1.07
California sheephead, male	7/17/2009	7	7	9.29	1.25	1.43	0.53	1.71	1.11
copper rockfish, juvenile	7/17/2009	7	3	9.00	1.00	1.67	0.58	3.67	2.52
garibaldi, adult	7/17/2009	7	7	8.29	1.38	2.00	0.00	4.86	1.21
giant black sea bass, adult	7/17/2009	7	6	9.17	1.60	1.83	0.98	5.33	6.35
gopher rockfish, adult	7/17/2009	7	1	10.00		1.00		1.00	
halfmoon, adult	7/17/2009	7	6	8.00	0.63	1.67	0.52	3.00	1.90
island kelpfish	7/17/2009	7	7	9.71	0.49	2.86	0.38	11.29	4.31
kelp bass, adult	7/17/2009	7	7	10.00	0.00	2.86	0.38	31.86	16.85
kelp bass, all	7/17/2009	7	7	10.00	0.00	2.86	0.38	32.14	17.08
kelp bass, juvenile	7/17/2009	7	2	6.50	0.71	0.29	0.49	0.29	0.49
kelp rockfish, adult	7/17/2009	7	2	8.00	0.00	0.43	0.79	0.71	1.50
kelp rockfish, all	7/17/2009	7	2	8.00	0.00	0.43	0.79	0.71	1.50
KGB	7/17/2009	7	5	7.00	1.41	1.40	0.55	2.80	2.49
ocean whitefish, adult	7/17/2009	7	5	8.40	1.67	2.00	0.00	3.60	1.52
opaleye, adult	7/17/2009	7	6	7.17	1.33	1.14	0.69	1.57	1.40
painted greenling	7/17/2009	7	7	9.43	0.98	2.29	0.49	8.29	4.46
pile perch, adult	7/17/2009	7	5	5.60	0.89	0.86	0.69	1.00	1.00
pile perch, all	7/17/2009	7	5	5.60	0.89	0.86	0.69	1.00	1.00
pile perch, juvenile	7/17/2009	7	1	5.00		0.14	0.38	0.14	0.38
rock wrasse, female	7/17/2009	7	5	7.00	1.58	1.14	0.90	2.57	2.64
rock wrasse, male	7/17/2009	7	4	6.75	2.06	0.86	0.90	1.00	1.15
seporita, adult	7/17/2009	7	7	9.00	1.73	2.86	0.38	16.71	10.69
seporita, all	7/17/2009	7	7	9.00	1.73	2.86	0.38	16.71	10.69
snubnose sculpin	7/17/2009	7	1	6.00		1.00		1.00	
treefish, adult	7/17/2009	7	5	7.60	0.55	1.14	0.90	1.29	1.11
treefish, juvenile	7/17/2009	7	7	9.71	0.49	2.86	0.38	13.14	3.58
yellowtail	7/17/2009	7	1	5.00		2.00		3.00	
zebra goby	7/17/2009	7	5	8.60	1.14	2.00	0.00	5.80	2.17

2009 ROVING DIVER FISH COUNT

Anacapa Island - Lighthouse

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
black surfperch, adult	7/30/2009	5	5	9.60	0.89	1.80	0.45	3.80	2.59
black surfperch, all	7/30/2009	5	5	9.60	0.89	1.80	0.45	4.20	3.27
black surfperch, juvenile	7/30/2009	5	1	10.00		0.40	0.89	0.40	0.89
blackeye goby	7/30/2009	5	5	10.00	0.00	3.00	0.00	70.00	23.96
blacksmith, adult	7/30/2009	5	5	9.80	0.45	4.00	0.00	432.20	108.98
blacksmith, all	7/30/2009	5	5	9.80	0.45	4.00	0.00	437.60	107.14
blacksmith, juvenile	7/30/2009	5	1	9.00		0.60	1.34	5.40	12.07
blue rockfish, all	7/30/2009	5	1	6.00		0.20	0.45	0.20	0.45
blue rockfish, juvenile	7/30/2009	5	1	6.00		0.20	0.45	0.20	0.45
blue-banded goby	7/30/2009	5	1	6.00		0.20	0.45	0.20	0.45
cabezon, adult	7/30/2009	5	1	6.00		1.00		1.00	
California scorpionfish, adult	7/30/2009	5	1	8.00		1.00		1.00	
California sheephead, female	7/30/2009	5	5	9.40	0.89	2.00	0.00	6.20	1.10
California sheephead, juvenile	7/30/2009	5	5	10.00	0.00	3.00	0.00	22.40	5.18
California sheephead, male	7/30/2009	5	1	10.00		0.20	0.45	0.20	0.45
c-o turbot	7/30/2009	5	2	8.50	2.12	1.00	0.00	1.00	0.00
garibaldi, adult	7/30/2009	5	5	9.80	0.45	2.80	0.45	13.80	3.11
gopher rockfish, adult	7/30/2009	5	1	5.00		1.00		1.00	
halfmoon, adult	7/30/2009	5	3	8.33	2.89	1.67	0.58	2.00	1.00
island kelpfish	7/30/2009	5	4	9.00	1.15	1.40	0.89	2.40	1.82
kelp bass, adult	7/30/2009	5	5	10.00	0.00	2.20	0.45	9.20	2.39
kelp bass, all	7/30/2009	5	5	10.00	0.00	2.20	0.45	9.20	2.39
ocean whitefish, adult	7/30/2009	5	1	6.00		1.00		1.00	
opaleye, adult	7/30/2009	5	4	8.50	1.29	1.40	0.89	3.20	3.96
painted greenling	7/30/2009	5	5	10.00	0.00	3.00	0.00	43.80	5.81
pile perch, adult	7/30/2009	5	4	8.25	1.71	1.20	0.84	1.20	0.84
pile perch, all	7/30/2009	5	4	8.25	1.71	1.20	0.84	1.20	0.84
rock wrasse, female	7/30/2009	5	5	9.40	0.89	2.00	0.00	5.00	3.00
rock wrasse, juvenile	7/30/2009	5	2	8.50	2.12	0.60	0.89	0.60	0.89
rock wrasse, male	7/30/2009	5	5	6.80	1.64	1.80	0.45	2.40	1.14
sculpin spp.	7/30/2009	5	1	7.00		1.00		1.00	
seporita, adult	7/30/2009	5	5	10.00	0.00	3.00	0.00	52.40	16.13
seporita, all	7/30/2009	5	5	10.00	0.00	3.00	0.00	52.40	16.13
snubnose sculpin	7/30/2009	5	2	9.50	0.71	1.00	0.00	1.00	0.00
treefish, juvenile	7/30/2009	5	2	5.00	0.00	0.40	0.55	0.40	0.55

2009 ROVING DIVER FISH COUNT

Santa Barbara Island - Webster's Arch

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
blackeye goby	5/20/2009	4	2	9.50	1.00	3.00	0.00	21.50	2.12
blacksmith, adult	5/20/2009	4	2	10.00	0.00	4.00	0.00	254.00	166.88
blacksmith, all	5/20/2009	4	2	10.00	0.00	4.00	0.00	254.00	166.88
blue rockfish, all	5/20/2009	4	2	9.33	0.58	1.50	1.00	4.00	0.00
blue rockfish, juvenile	5/20/2009	4	2	9.33	0.58	1.50	1.00	4.00	0.00
California scorpionfish, adult	5/20/2009	4	1	9.00	0.00	1.00	0.00	1.00	
California sheephead, female	5/20/2009	4	2	10.00	0.00	2.00	0.00	4.50	0.71
California sheephead, juvenile	5/20/2009	4	2	9.33	0.58	1.25	0.96	2.00	1.41
California sheephead, male	5/20/2009	4	1	6.67	2.89	1.00	0.82	0.50	0.71
coralline sculpin	5/20/2009	4	1	5.00		1.00		1.00	
garibaldi, adult	5/20/2009	4	2	9.50	0.58	2.00	0.00	6.00	1.41
kelp rockfish, adult	5/20/2009	4	2	7.00	2.65	0.75	0.50	1.00	0.00
kelp rockfish, all	5/20/2009	4	2	7.67	2.52	1.00	0.82	1.50	0.71
kelp rockfish, juvenile	5/20/2009	4	1	8.00		0.25	0.50	0.50	0.71
lingcod, adult	5/20/2009	4	2	7.75	0.50	1.00	0.00	1.00	0.00
opaleye, adult	5/20/2009	4	2	8.33	2.08	1.25	0.96	2.00	0.00
painted greenling	5/20/2009	4	2	9.75	0.50	3.00	0.00	11.00	0.00
rockfish spp., juvenile	5/20/2009	4	2	8.00	1.00	1.33	0.58	1.50	0.71
snubnose sculpin	5/20/2009	4	2	6.50	0.71	1.50	0.71	1.50	0.71
tubesnout, juvenile	5/20/2009	4	1	7.00	0.00	3.00	0.00	30.00	

2009 ROVING DIVER FISH COUNT

Santa Barbara Island - Graveyard Canyon

Common Name	Date	Max # of	# of	Score		Abundance		Count	
		Observers	Observations	Avg	St Dev	Avg	St Dev	Avg	St Dev
black surfperch, all	6/17/2009	5	3	9.67	0.58	0.60	0.55	0.75	0.50
black surfperch, juvenile	6/17/2009	5	3	9.67	0.58	0.75	0.50	0.75	0.50
blackeye goby	6/17/2009	5	4	10.00	0.00	4.00	0.00	185.50	37.35
blacksmith, adult	6/17/2009	5	4	8.75	1.89	2.25	0.50	10.25	10.05
blacksmith, all	6/17/2009	5	4	9.00	1.73	2.20	0.45	10.25	10.05
cabezon, juvenile	6/17/2009	5	1	5.00		1.00		1.00	
California sheephead, female	6/17/2009	5	1	9.50	0.71	0.40	0.55	0.25	0.50
California sheephead, juvenile	6/17/2009	5	4	9.25	0.50	1.40	0.89	2.00	0.82
coralline sculpin	6/17/2009	5	1	5.00		1.00		1.00	
giant kelpfish, juvenile	6/17/2009	5	1	5.00		1.00		1.00	
kelp bass, adult	6/17/2009	5	3	6.00	1.00	1.00	0.82	1.25	1.26
kelp bass, all	6/17/2009	5	3	6.00	1.00	0.80	0.84	1.25	1.26
KGB	6/17/2009	5	3	9.50	0.58	2.00	0.00	3.33	1.15
Pacific angel shark	6/17/2009	5	1	5.00		1.00		1.00	
painted greenling	6/17/2009	5	3	9.25	0.50	1.20	0.84	1.25	0.96
scalyhead sculpin	6/17/2009	5	1	8.00		1.00		1.00	
seporita, adult	6/17/2009	5	3	8.67	1.53	1.75	1.50	8.50	9.26
seporita, all	6/17/2009	5	4	7.80	1.64	2.60	0.89	43.50	32.80
seporita, juvenile	6/17/2009	5	3	6.67	0.58	2.25	1.50	35.00	27.39
snubnose sculpin	6/17/2009	5	2	9.33	1.15	2.00	0.00	3.00	0.00
speckled sanddab	6/17/2009	5	1	8.00		2.00		4.00	
reef fish, juvenile	6/17/2009	5	1	8.50	0.71	0.40	0.55	0.25	0.50
vermillion rockfish, juvenile	6/17/2009	5	4	8.80	1.64	1.80	0.45	1.75	0.50

2009 ROVING DIVER FISH COUNT

Santa Barbara Island - Southeast Reef

Common Name	Date	Max # of Observers	# of Observations	Score		Abundance		Count	
				Avg	St Dev	Avg	St Dev	Avg	St Dev
black surfperch, adult	6/17/2009	5	2	10.00	0.00	2.00	0.00	7.50	0.71
black surfperch, all	6/17/2009	5	2	10.00	0.00	2.20	0.45	7.50	0.71
blackeye goby	6/17/2009	5	2	9.20	1.10	2.60	0.55	18.50	7.78
blacksmith, adult	6/17/2009	5	2	10.00	0.00	4.00	0.00	1237.50	144.96
blacksmith, all	6/17/2009	5	2	10.00	0.00	4.00	0.00	1237.50	144.96
California sheephead, female	6/17/2009	5	2	10.00	0.00	2.20	0.45	8.00	1.41
California sheephead, juvenile	6/17/2009	5	2	9.60	0.89	2.80	0.45	14.50	0.71
California sheephead, male	6/17/2009	5	1	7.50	3.54	0.40	0.55	0.25	0.50
coralline sculpin	6/17/2009	5	1	5.00		1.00		1.00	
garibaldi, adult	6/17/2009	5	2	10.00	0.00	3.00	0.00	26.00	2.83
giant kelpfish, adult	6/17/2009	5	1	7.00		1.00		1.00	
halfmoon, adult	6/17/2009	5	2	9.20	0.45	2.00	0.00	7.00	2.83
island kelpfish	6/17/2009	5	1	8.67	1.53	0.80	0.84	0.67	1.15
kelp bass, adult	6/17/2009	5	2	8.00	2.83	2.00	0.00	2.50	0.71
kelp bass, all	6/17/2009	5	2	9.00	2.00	1.40	0.89	1.67	1.53
kelp rockfish, adult	6/17/2009	5	2	10.00	0.00	2.00	0.00	2.50	0.71
kelp rockfish, all	6/17/2009	5	2	9.25	0.96	1.40	0.89	1.67	1.53
kelp surfperch	6/17/2009	5	1	7.00		2.00		2.00	
lingcod, adult	6/17/2009	5	2	8.75	1.50	1.00	0.00	1.00	0.00
opaleye, adult	6/17/2009	5	2	9.60	0.89	2.80	0.45	27.50	17.68
painted greenling	6/17/2009	5	2	9.60	0.55	3.00	0.00	20.00	5.66
sculpin spp.	6/17/2009	5	1	8.00		1.00		1.00	
seporita, adult	6/17/2009	5	2	10.00	0.00	3.50	0.71	117.50	45.96
seporita, all	6/17/2009	5	2	10.00	0.00	4.00	0.00	222.50	53.03
seporita, juvenile	6/17/2009	5	2	8.50	2.12	3.50	0.71	105.00	7.07
top smelt	6/17/2009	5	1	7.50	3.54	3.50	0.71	100.00	
treefish, adult	6/17/2009	5	1	6.00		0.20	0.45	0.20	0.45

Appendix H. Fish Size Frequency Distributions

Fish size frequency distributions are not presented in this annual report, but will be in future reports.
The raw data is available by request.

Appendix I. Natural Habitat Size Frequency Distributions

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Wyckoff Ledge

<i>Tethya aurantia</i>		<i>Kelletia kelletii</i>		<i>Megathura crenulata</i>	
<10	0.0 %	< 40	0.0 %	<10	0.0 %
10 - 19	1.7 %	40 - 49	0.0 %	10 - 19	0.0 %
20 - 29	3.4 %	50 - 59	0.0 %	20 - 29	0.0 %
30 - 39	5.1 %	60 - 69	6.1 %	30 - 39	0.0 %
40 - 49	6.8 %	70 - 79	13.6 %	40 - 49	0.0 %
50 - 59	10.2 %	80 - 89	31.8 %	50 - 59	0.0 %
60 - 69	11.9 %	90 - 99	34.8 %	60 - 69	0.0 %
70 - 79	16.9 %	100 - 109	12.1 %	70 - 79	0.0 %
80 - 89	20.3 %	110 - 119	1.5 %	80 - 89	0.0 %
90 - 99	5.1 %	120 - 129	0.0 %	90 - 99	33.3 %
> 99	18.6 %	130 - 139	0.0 %	100 - 109	33.3 %
(Cases) N =	59	140 - 149	0.0 %	110 - 119	0.0 %
mean	74	> 149	0.0 %	> 119	33.3 %
min size (mm)	10	(Cases) N =	66	(Cases) N =	3
max size (mm)	136	mean	87	mean	105
		min size (mm)	67	min size (mm)	94
		max size (mm)	110	max size (mm)	122

<i>Haliotis rufescens</i>		<i>Lithopoma gibberosa</i>		<i>Crassidoma giganteum</i>	
<25	0.0 %	<10	0.0 %	<10	0.0 %
25 - 34	0.0 %	10 - 19	0.0 %	10 - 19	0.0 %
35 - 44	0.0 %	20 - 29	0.0 %	20 - 29	0.0 %
45 - 54	0.0 %	30 - 39	9.4 %	30 - 39	0.0 %
55 - 64	0.0 %	40 - 49	13.2 %	40 - 49	0.0 %
65 - 74	0.0 %	50 - 59	50.9 %	50 - 59	16.7 %
75 - 84	0.0 %	60 - 69	26.4 %	60 - 69	50.0 %
85 - 94	0.0 %	70 - 79	0.0 %	70 - 79	0.0 %
95 - 104	0.7 %	80 - 89	0.0 %	80 - 89	0.0 %
105 - 114	2.1 %	90 - 99	0.0 %	90 - 99	0.0 %
115 - 124	4.9 %	100 - 109	0.0 %	100 - 109	0.0 %
125 - 134	2.8 %	110 - 119	0.0 %	110 - 119	0.0 %
135 - 144	0.7 %	> 119	0.0 %	120 - 129	0.0 %
145 - 154	6.3 %	(Cases) N =	53	130 - 139	16.7 %
155 - 164	7.7 %	mean	51	> 139	16.7 %
165 - 174	10.5 %	min size (mm)	33	(Cases) N =	6
175 - 184	9.8 %	max size (mm)	67	mean	90
185 - 194	17.5 %			min size (mm)	53
>195	35.7 %			max size (mm)	162
(Cases) N =	143				
mean	181				
min size (mm)	102				
max size (mm)	253				

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Wyckoff Ledge

<i>Patiria miniata</i>		<i>Pycnopodia helianthoides</i>		<i>Strongylocentrotus purpuratus</i>	
<10	0.0 %	< 20	0.0 %	< 5	2.5 %
10 - 19	0.0 %	20 - 39	0.0 %	5 - 9	2.5 %
20 - 29	0.0 %	40 - 59	0.0 %	10 - 14	9.9 %
30 - 39	0.0 %	60 - 79	27.8 %	15 - 19	32.1 %
40 - 49	0.0 %	80 - 99	50.0 %	20 - 24	16.0 %
50 - 59	17.2 %	100 - 119	5.6 %	25 - 29	13.6 %
60 - 69	41.4 %	120 - 139	5.6 %	30 - 34	9.9 %
70 - 79	24.1 %	140 - 159	11.1 %	35 - 39	4.9 %
80 - 89	15.5 %	160 - 179	0.0 %	40 - 44	3.7 %
90 - 99	1.7 %	180 - 199	0.0 %	45 - 49	3.7 %
> 99	0.0 %	200 - 219	0.0 %	50 - 54	0.0 %
(Cases) N =	58	220 - 239	0.0 %	55 - 59	1.2 %
mean	69	240 - 259	0.0 %	60 - 64	0.0 %
min size (mm)	50	260 - 279	0.0 %	65 - 69	0.0 %
max size (mm)	91	280 - 299	0.0 %	70 - 74	0.0 %
		> 299	0.0 %	75 - 79	0.0 %
		(Cases) N =	18	> 79	0.0 %
		mean	92	(Cases) N =	81
		min size (mm)	62	mean	25
		max size (mm)	150	min size (mm)	3
				max size (mm)	57
<i>Pisaster giganteus</i>		<i>Strongylocentrotus franciscanus</i>			
< 20	0.0 %	< 5	0.0 %		
20 - 39	0.0 %	5 - 9	0.0 %		
40 - 59	21.7 %	10 - 14	0.5 %		
60 - 79	43.5 %	15 - 19	3.6 %		
80 - 99	34.8 %	20 - 24	7.2 %		
100 - 119	0.0 %	25 - 29	7.2 %		
120 - 139	0.0 %	30 - 34	2.3 %		
140 - 159	0.0 %	35 - 39	2.3 %		
160 - 179	0.0 %	40 - 44	6.8 %		
180 - 199	0.0 %	45 - 49	4.1 %		
200 - 219	0.0 %	50 - 54	9.0 %		
220 - 239	0.0 %	55 - 59	5.0 %		
> 239	0.0 %	60 - 64	4.1 %		
(Cases) N =	23	65 - 69	2.3 %		
mean	71	70 - 74	3.6 %		
min size (mm)	47	75 - 79	5.0 %		
max size (mm)	99	80 - 84	3.2 %		
		85 - 89	5.0 %		
		90 - 94	5.4 %		
		95 - 99	7.2 %		
		100 - 104	7.2 %		
		105 - 109	2.7 %		
		> 109	6.8 %		
		(Cases) N =	222		
		mean	68		
		min size (mm)	13		
		max size (mm)	137		

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Hare Rock

<i>Tethya aurantia</i>			<i>Kelletia kelletii</i>			<i>Megathura crenulata</i>		
<10	0.0 %		< 40	0.0 %		<10	0.0 %	
10 - 19	2.9 %		40 - 49	0.0 %		10 - 19	0.0 %	
20 - 29	11.8 %		50 - 59	0.0 %		20 - 29	0.0 %	
30 - 39	11.8 %		60 - 69	0.0 %		30 - 39	0.0 %	
40 - 49	26.5 %		70 - 79	0.0 %		40 - 49	0.0 %	
50 - 59	17.6 %		80 - 89	0.0 %		50 - 59	0.0 %	
60 - 69	11.8 %		90 - 99	25.0 %		60 - 69	0.0 %	
70 - 79	8.8 %		100 - 109	25.0 %		70 - 79	0.0 %	
80 - 89	5.9 %		110 - 119	25.0 %		80 - 89	57.1 %	
90 - 99	2.9 %		120 - 129	25.0 %		90 - 99	0.0 %	
> 99	0.0 %		130 - 139	0.0 %		100 - 109	14.3 %	
(Cases) N =	34		140 - 149	0.0 %		110 - 119	14.3 %	
mean	48		> 149	0.0 %		> 119	14.3 %	
min size (mm)	12		(Cases) N =	4		(Cases) N =	7	
max size (mm)	97		mean	111		mean	100	
			min size (mm)	97		min size (mm)	86	
			max size (mm)	124		max size (mm)	123	
<i>Haliotis rufescens</i>			<i>Lithopoma gibberosa</i>			<i>Crassedoma giganteum</i>		
<25	0.0 %		<10	0.0 %		<10	0.0 %	
25 - 34	0.0 %		10 - 19	0.0 %		10 - 19	0.0 %	
35 - 44	0.0 %		20 - 29	0.0 %		20 - 29	0.0 %	
45 - 54	0.0 %		30 - 39	0.0 %		30 - 39	0.0 %	
55 - 64	0.0 %		40 - 49	1.0 %		40 - 49	20.0 %	
65 - 74	66.7 %		50 - 59	83.7 %		50 - 59	0.0 %	
75 - 84	0.0 %		60 - 69	15.3 %		60 - 69	20.0 %	
85 - 94	0.0 %		70 - 79	0.0 %		70 - 79	0.0 %	
95 - 104	0.0 %		80 - 89	0.0 %		80 - 89	20.0 %	
105 - 114	0.0 %		90 - 99	0.0 %		90 - 99	0.0 %	
115 - 124	0.0 %		100 - 109	0.0 %		100 - 109	0.0 %	
125 - 134	0.0 %		110 - 119	0.0 %		110 - 119	20.0 %	
135 - 144	0.0 %		> 119	0.0 %		120 - 129	0.0 %	
145 - 154	0.0 %		(Cases) N =	98		130 - 139	0.0 %	
155 - 164	0.0 %		mean	57		> 139	20.0 %	
165 - 174	0.0 %		min size (mm)	49		(Cases) N =	5	
175 - 184	0.0 %		max size (mm)	67		mean	92	
185 - 194	0.0 %					min size (mm)	44	
>195	33.3 %					max size (mm)	154	
(Cases) N =	3							
mean	116							
min size (mm)	67							
max size (mm)	210							

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Hare Rock

<i>Patiria miniata</i>		<i>Pycnopodia helianthoides</i>		<i>Strongylocentrotus purpuratus</i>	
<10	0.0 %	< 20	1.7 %	< 5	0.0 %
10 - 19	0.0 %	20 - 39	20.0 %	5 - 9	0.0 %
20 - 29	1.0 %	40 - 59	13.3 %	10 - 14	0.5 %
30 - 39	6.0 %	60 - 79	6.7 %	15 - 19	5.8 %
40 - 49	10.0 %	80 - 99	11.7 %	20 - 24	11.1 %
50 - 59	21.0 %	100 - 119	5.0 %	25 - 29	10.1 %
60 - 69	21.0 %	120 - 139	8.3 %	30 - 34	6.3 %
70 - 79	25.0 %	140 - 159	5.0 %	35 - 39	10.6 %
80 - 89	13.0 %	160 - 179	6.7 %	40 - 44	16.3 %
90 - 99	3.0 %	180 - 199	3.3 %	45 - 49	17.8 %
> 99	0.0 %	200 - 219	1.7 %	50 - 54	16.8 %
(Cases) N =	100	220 - 239	6.7 %	55 - 59	2.4 %
mean	64	240 - 259	3.3 %	60 - 64	1.9 %
min size (mm)	29	260 - 279	5.0 %	65 - 69	0.5 %
max size (mm)	98	280 - 299	0.0 %	70 - 74	0.0 %
		> 299	1.7 %	75 - 79	0.0 %
		(Cases) N =	60	> 79	0.0 %
		mean	117	(Cases) N =	208
		min size (mm)	18	mean	38
		max size (mm)	300	min size (mm)	14
				max size (mm)	65
<i>Pisaster giganteus</i>		<i>Strongylocentrotus franciscanus</i>			
< 20	0.0 %	< 5	0.0 %		
20 - 39	2.2 %	5 - 9	0.0 %		
40 - 59	27.5 %	10 - 14	0.0 %		
60 - 79	44.0 %	15 - 19	0.0 %		
80 - 99	17.6 %	20 - 24	0.0 %		
100 - 119	6.6 %	25 - 29	0.0 %		
120 - 139	1.1 %	30 - 34	0.0 %		
140 - 159	0.0 %	35 - 39	0.0 %		
160 - 179	1.1 %	40 - 44	2.1 %		
180 - 199	0.0 %	45 - 49	3.6 %		
200 - 219	0.0 %	50 - 54	5.1 %		
220 - 239	0.0 %	55 - 59	11.8 %		
> 239	0.0 %	60 - 64	16.4 %		
(Cases) N =	91	65 - 69	11.3 %		
mean	73	70 - 74	9.7 %		
min size (mm)	38	75 - 79	6.7 %		
max size (mm)	160	80 - 84	6.2 %		
		85 - 89	6.7 %		
		90 - 94	10.3 %		
		95 - 99	7.2 %		
		100 - 104	1.5 %		
		105 - 109	1.0 %		
		> 109	0.5 %		
		(Cases) N =	195		
		mean	74		
		min size (mm)	41		
		max size (mm)	111		

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee North

<i>Tethya aurantia</i>		<i>Kelletia kelletii</i>		<i>Megathura crenulata</i>	
<10	0.0 %	< 40	0.0 %	<10	0.0 %
10 - 19	0.0 %	40 - 49	0.0 %	10 - 19	0.0 %
20 - 29	0.0 %	50 - 59	0.0 %	20 - 29	0.0 %
30 - 39	0.0 %	60 - 69	0.0 %	30 - 39	0.0 %
40 - 49	1.8 %	70 - 79	0.0 %	40 - 49	0.0 %
50 - 59	8.8 %	80 - 89	0.0 %	50 - 59	0.0 %
60 - 69	22.8 %	90 - 99	0.0 %	60 - 69	0.0 %
70 - 79	28.1 %	100 - 109	0.0 %	70 - 79	0.0 %
80 - 89	17.5 %	110 - 119	0.0 %	80 - 89	33.3 %
90 - 99	12.3 %	120 - 129	100.0 %	90 - 99	0.0 %
> 99	8.8 %	130 - 139	0.0 %	100 - 109	66.7 %
(Cases) N =	57	140 - 149	0.0 %	110 - 119	0.0 %
mean	78	> 149	0.0 %	> 119	0.0 %
min size (mm)	48	(Cases) N =	1	(Cases) N =	3
max size (mm)	111	mean	121	mean	97
		min size (mm)	121	min size (mm)	85
		max size (mm)	121	max size (mm)	105

<i>Haliotis rufescens</i>		<i>Megastraea undosa</i>		<i>Crassedoma giganteum</i>	
<25	0.0 %	<10	0.0 %	<10	0.0 %
25 - 34	0.0 %	10 - 19	0.0 %	10 - 19	0.0 %
35 - 44	0.0 %	20 - 29	0.0 %	20 - 29	12.5 %
45 - 54	0.0 %	30 - 39	0.0 %	30 - 39	0.0 %
55 - 64	0.0 %	40 - 49	0.0 %	40 - 49	25.0 %
65 - 74	0.0 %	50 - 59	0.0 %	50 - 59	12.5 %
75 - 84	0.0 %	60 - 69	0.0 %	60 - 69	12.5 %
85 - 94	4.8 %	70 - 79	0.0 %	70 - 79	25.0 %
95 - 104	0.0 %	80 - 89	0.0 %	80 - 89	0.0 %
105 - 114	0.0 %	90 - 99	16.7 %	90 - 99	12.5 %
115 - 124	0.0 %	100 - 109	33.3 %	100 - 109	0.0 %
125 - 134	2.4 %	110 - 119	0.0 %	110 - 119	0.0 %
135 - 144	2.4 %	> 119	50.0 %	120 - 129	0.0 %
145 - 154	2.4 %	(Cases) N =	6	130 - 139	0.0 %
155 - 164	2.4 %	mean	122	> 139	0.0 %
165 - 174	16.7 %	min size (mm)	99	(Cases) N =	8
175 - 184	23.8 %	max size (mm)	145	mean	58
185 - 194	19.0 %			min size (mm)	23
>195	23.8 %			max size (mm)	90
(Cases) N =	42				
mean	177				
min size (mm)	89				
max size (mm)	215				

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee North

<i>Patiria miniata</i>		<i>Pycnopodia helianthoides</i>		<i>Strongylocentrotus purpuratus</i>	
<10	0.0 %	< 20	0.0 %	< 5	0.0 %
10 - 19	0.0 %	20 - 39	0.0 %	5 - 9	1.6 %
20 - 29	0.0 %	40 - 59	6.1 %	10 - 14	4.9 %
30 - 39	5.1 %	60 - 79	16.7 %	15 - 19	9.3 %
40 - 49	13.6 %	80 - 99	10.6 %	20 - 24	14.2 %
50 - 59	5.1 %	100 - 119	25.8 %	25 - 29	17.5 %
60 - 69	23.7 %	120 - 139	13.6 %	30 - 34	13.1 %
70 - 79	35.6 %	140 - 159	7.6 %	35 - 39	11.5 %
80 - 89	11.9 %	160 - 179	7.6 %	40 - 44	10.4 %
90 - 99	5.1 %	180 - 199	6.1 %	45 - 49	6.0 %
> 99	0.0 %	200 - 219	4.5 %	50 - 54	5.5 %
(Cases) N =	59	220 - 239	1.5 %	55 - 59	1.1 %
mean	65	240 - 259	0.0 %	60 - 64	3.8 %
min size (mm)	33	260 - 279	0.0 %	65 - 69	1.1 %
max size (mm)	93	280 - 299	0.0 %	70 - 74	0.0 %
		> 299	0.0 %	75 - 79	0.0 %
		(Cases) N =	66	> 79	0.0 %
		mean	120	(Cases) N =	183
		min size (mm)	52	mean	34
		max size (mm)	220	min size (mm)	7
				max size (mm)	68
<i>Pisaster giganteus</i>		<i>Strongylocentrotus franciscanus</i>			
< 20	0.0 %	< 5	0.0 %		
20 - 39	0.0 %	5 - 9	0.0 %		
40 - 59	4.3 %	10 - 14	1.0 %		
60 - 79	13.0 %	15 - 19	3.5 %		
80 - 99	47.8 %	20 - 24	8.9 %		
100 - 119	23.9 %	25 - 29	9.4 %		
120 - 139	6.5 %	30 - 34	8.9 %		
140 - 159	2.2 %	35 - 39	5.4 %		
160 - 179	2.2 %	40 - 44	3.0 %		
180 - 199	0.0 %	45 - 49	3.5 %		
200 - 219	0.0 %	50 - 54	5.4 %		
220 - 239	0.0 %	55 - 59	2.5 %		
> 239	0.0 %	60 - 64	4.0 %		
(Cases) N =	46	65 - 69	2.5 %		
mean	95	70 - 74	2.0 %		
min size (mm)	54	75 - 79	5.4 %		
max size (mm)	174	80 - 84	3.0 %		
		85 - 89	3.5 %		
		90 - 94	4.0 %		
		95 - 99	4.0 %		
		100 - 104	3.0 %		
		105 - 109	3.5 %		
		> 109	13.9 %		
		(Cases) N =	202		
		mean	63		
		min size (mm)	14		
		max size (mm)	132		

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee South

<i>Tethya aurantia</i>		<i>Kelletia kelletii</i>		<i>Megathura crenulata</i>	
<10	0.0 %	< 40	0.0 %	<10	0.0 %
10 - 19	0.0 %	40 - 49	0.0 %	10 - 19	0.0 %
20 - 29	0.0 %	50 - 59	0.0 %	20 - 29	0.0 %
30 - 39	5.8 %	60 - 69	0.0 %	30 - 39	0.0 %
40 - 49	8.7 %	70 - 79	0.0 %	40 - 49	0.0 %
50 - 59	20.3 %	80 - 89	0.0 %	50 - 59	0.0 %
60 - 69	21.7 %	90 - 99	4.8 %	60 - 69	0.0 %
70 - 79	20.3 %	100 - 109	9.5 %	70 - 79	0.0 %
80 - 89	13.0 %	110 - 119	57.1 %	80 - 89	100.0 %
90 - 99	5.8 %	120 - 129	28.6 %	90 - 99	0.0 %
> 99	4.3 %	130 - 139	0.0 %	100 - 109	0.0 %
(Cases) N =	69	140 - 149	0.0 %	110 - 119	0.0 %
mean	68	> 149	0.0 %	> 119	0.0 %
min size (mm)	30	(Cases) N =	21	(Cases) N =	1
max size (mm)	131	mean	114	mean	84
		min size (mm)	96	min size (mm)	84
		max size (mm)	125	max size (mm)	84

<i>Haliotis rufescens</i>		<i>Megastraea undosa</i>		<i>Crassedoma giganteum</i>	
<25	0.0 %	<10	0.0 %	<10	0.0 %
25 - 34	0.0 %	10 - 19	0.0 %	10 - 19	0.0 %
35 - 44	0.0 %	20 - 29	0.0 %	20 - 29	2.6 %
45 - 54	0.0 %	30 - 39	0.0 %	30 - 39	10.3 %
55 - 64	0.0 %	40 - 49	0.0 %	40 - 49	30.8 %
65 - 74	6.7 %	50 - 59	0.0 %	50 - 59	20.5 %
75 - 84	6.7 %	60 - 69	0.0 %	60 - 69	10.3 %
85 - 94	0.0 %	70 - 79	0.0 %	70 - 79	7.7 %
95 - 104	6.7 %	80 - 89	0.0 %	80 - 89	5.1 %
105 - 114	0.0 %	90 - 99	0.0 %	90 - 99	0.0 %
115 - 124	13.3 %	100 - 109	0.0 %	100 - 109	7.7 %
125 - 134	0.0 %	110 - 119	0.0 %	110 - 119	0.0 %
135 - 144	0.0 %	> 119	100.0 %	120 - 129	0.0 %
145 - 154	0.0 %	(Cases) N =	1	130 - 139	2.6 %
155 - 164	13.3 %	mean	129	> 139	2.6 %
165 - 174	6.7 %	min size (mm)	129	(Cases) N =	39
175 - 184	13.3 %	max size (mm)	129	mean	64
185 - 194	20.0 %			min size (mm)	25
>195	13.3 %			max size (mm)	166
(Cases) N =	15				
mean	155				
min size (mm)	65				
max size (mm)	260				

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee South

<i>Patiria miniata</i>		<i>Pycnopodia helianthoides</i>		<i>Strongylocentrotus purpuratus</i>	
<10	0.0 %	< 20	0.0 %	< 5	0.0 %
10 - 19	0.0 %	20 - 39	0.0 %	5 - 9	0.4 %
20 - 29	0.0 %	40 - 59	11.6 %	10 - 14	4.6 %
30 - 39	5.0 %	60 - 79	37.2 %	15 - 19	8.2 %
40 - 49	5.0 %	80 - 99	20.9 %	20 - 24	12.8 %
50 - 59	18.3 %	100 - 119	9.3 %	25 - 29	13.9 %
60 - 69	40.0 %	120 - 139	9.3 %	30 - 34	10.3 %
70 - 79	28.3 %	140 - 159	0.0 %	35 - 39	10.3 %
80 - 89	3.3 %	160 - 179	0.0 %	40 - 44	9.3 %
90 - 99	0.0 %	180 - 199	7.0 %	45 - 49	12.5 %
> 99	0.0 %	200 - 219	0.0 %	50 - 54	10.7 %
(Cases) N =	60	220 - 239	0.0 %	55 - 59	3.2 %
mean	62	240 - 259	0.0 %	60 - 64	2.8 %
min size (mm)	35	260 - 279	4.7 %	65 - 69	0.4 %
max size (mm)	80	280 - 299	0.0 %	70 - 74	0.7 %
		> 299	0.0 %	75 - 79	0.0 %
		(Cases) N =	43	> 79	0.0 %
		mean	102	(Cases) N =	281
		min size (mm)	53	mean	37
		max size (mm)	270	min size (mm)	6
				max size (mm)	70
<i>Pisaster giganteus</i>		<i>Strongylocentrotus franciscanus</i>			
< 20	0.0 %	< 5	0.0 %		
20 - 39	2.9 %	5 - 9	0.4 %		
40 - 59	25.7 %	10 - 14	0.4 %		
60 - 79	37.1 %	15 - 19	0.8 %		
80 - 99	8.6 %	20 - 24	5.0 %		
100 - 119	8.6 %	25 - 29	7.1 %		
120 - 139	0.0 %	30 - 34	8.3 %		
140 - 159	5.7 %	35 - 39	7.1 %		
160 - 179	8.6 %	40 - 44	7.1 %		
180 - 199	0.0 %	45 - 49	4.1 %		
200 - 219	2.9 %	50 - 54	2.5 %		
220 - 239	0.0 %	55 - 59	3.7 %		
> 239	0.0 %	60 - 64	4.1 %		
(Cases) N =	35	65 - 69	8.3 %		
mean	90	70 - 74	5.4 %		
min size (mm)	39	75 - 79	5.0 %		
max size (mm)	212	80 - 84	7.5 %		
		85 - 89	5.8 %		
		90 - 94	3.3 %		
		95 - 99	4.6 %		
		100 - 104	3.7 %		
		105 - 109	2.9 %		
		> 109	2.9 %		
		(Cases) N =	241		
		mean	64		
		min size (mm)	7		
		max size (mm)	122		

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Rodes Reef

<i>Tethya aurantia</i>		<i>Crassedoma giganteum</i>		<i>Pisaster giganteus</i>	
<10	0.0 %	<10	0.0 %	< 20	0.0 %
10 - 19	1.7 %	10 - 19	0.0 %	20 - 39	0.0 %
20 - 29	8.3 %	20 - 29	0.0 %	40 - 59	35.3 %
30 - 39	15.0 %	30 - 39	0.0 %	60 - 79	38.2 %
40 - 49	13.3 %	40 - 49	16.7 %	80 - 99	16.2 %
50 - 59	25.0 %	50 - 59	16.7 %	100 - 119	5.9 %
60 - 69	20.0 %	60 - 69	0.0 %	120 - 139	0.0 %
70 - 79	10.0 %	70 - 79	0.0 %	140 - 159	1.5 %
80 - 89	5.0 %	80 - 89	33.3 %	160 - 179	1.5 %
90 - 99	0.0 %	90 - 99	0.0 %	180 - 199	1.5 %
> 99	1.7 %	100 - 109	33.3 %	200 - 219	0.0 %
(Cases) N =	60	110 - 119	0.0 %	220 - 239	0.0 %
mean	53	120 - 129	0.0 %	> 239	0.0 %
min size (mm)	14	130 - 139	0.0 %	(Cases) N =	68
max size (mm)	109	> 139	0.0 %	mean	76
		(Cases) N =	6	min size (mm)	40
		mean	79	max size (mm)	186
		min size (mm)	41		
		max size (mm)	101		
<i>Kelletia kelletii</i>		<i>Patiria miniata</i>		<i>Pycnopodia helianthoides</i>	
< 40	0.0 %	<10	0.0 %	< 20	0.0 %
40 - 49	6.8 %	10 - 19	0.0 %	20 - 39	4.3 %
50 - 59	10.2 %	20 - 29	1.5 %	40 - 59	1.4 %
60 - 69	11.9 %	30 - 39	21.5 %	60 - 79	1.4 %
70 - 79	8.5 %	40 - 49	21.5 %	80 - 99	13.0 %
80 - 89	15.3 %	50 - 59	20.0 %	100 - 119	11.6 %
90 - 99	5.1 %	60 - 69	23.1 %	120 - 139	7.2 %
100 - 109	16.9 %	70 - 79	9.2 %	140 - 159	15.9 %
110 - 119	10.2 %	80 - 89	3.1 %	160 - 179	8.7 %
120 - 129	10.2 %	90 - 99	0.0 %	180 - 199	15.9 %
130 - 139	5.1 %	> 99	0.0 %	200 - 219	8.7 %
140 - 149	0.0 %	(Cases) N =	65	220 - 239	5.8 %
> 149	0.0 %	mean	54	240 - 259	5.8 %
(Cases) N =	59	min size (mm)	29	260 - 279	0.0 %
mean	90	max size (mm)	84	280 - 299	0.0 %
min size (mm)	42			> 299	0.0 %
max size (mm)	138			(Cases) N =	69
				mean	151
				min size (mm)	23
				max size (mm)	244
<i>Megathura crenulata</i>					
<10	0.0 %				
10 - 19	0.0 %				
20 - 29	0.0 %				
30 - 39	0.0 %				
40 - 49	0.0 %				
50 - 59	0.0 %				
60 - 69	5.6 %				
70 - 79	5.6 %				
80 - 89	27.8 %				
90 - 99	33.3 %				
100 - 109	27.8 %				
110 - 119	0.0 %				
> 119	0.0 %				
(Cases) N =	18				
mean	91				
min size (mm)	62				
max size (mm)	104				

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Rodes Reef

<i>Strongylocentrotus franciscanus</i>		<i>Tethya aurantia</i>	
< 5	0.0 %	<10	0.0 %
5 - 9	0.0 %	10 - 19	0.0 %
10 - 14	0.0 %	20 - 29	8.2 %
15 - 19	3.4 %	30 - 39	13.7 %
20 - 24	4.4 %	40 - 49	15.1 %
25 - 29	7.8 %	50 - 59	20.5 %
30 - 34	8.8 %	60 - 69	17.8 %
35 - 39	10.8 %	70 - 79	15.1 %
40 - 44	4.9 %	80 - 89	2.7 %
45 - 49	2.9 %	90 - 99	4.1 %
50 - 54	3.4 %	> 99	2.7 %
55 - 59	4.4 %	(Cases) N =	73
60 - 64	1.5 %	mean	54
65 - 69	2.5 %	min size (mm)	22
70 - 74	5.4 %	max size (mm)	110
75 - 79	3.4 %		
80 - 84	8.3 %		
85 - 89	9.8 %		
90 - 94	8.3 %		
95 - 99	4.4 %		
100 - 104	4.4 %		
105 - 109	0.0 %		
> 109	1.0 %		
(Cases) N =	204		
mean	60		
min size (mm)	15		
max size (mm)	115		
<i>Strongylocentrotus purpuratus</i>		<i>Kelletia kelletii</i>	
< 5	0.0 %	< 40	0.0 %
5 - 9	0.0 %	40 - 49	0.0 %
10 - 14	2.5 %	50 - 59	0.0 %
15 - 19	4.5 %	60 - 69	0.0 %
20 - 24	7.9 %	70 - 79	0.0 %
25 - 29	11.4 %	80 - 89	0.0 %
30 - 34	13.4 %	90 - 99	0.0 %
35 - 39	13.4 %	100 - 109	100.0 %
40 - 44	10.4 %	110 - 119	0.0 %
45 - 49	10.4 %	120 - 129	0.0 %
50 - 54	11.4 %	130 - 139	0.0 %
55 - 59	8.4 %	140 - 149	0.0 %
60 - 64	4.5 %	> 149	0.0 %
65 - 69	2.0 %	(Cases) N =	1
70 - 74	0.0 %	mean	107
75 - 79	0.0 %	min size (mm)	107
> 79	0.0 %	max size (mm)	107
(Cases) N =	202		
mean	40		
min size (mm)	10		
max size (mm)	68		
		<i>Megastrea undosa</i>	
		<10	0.0 %
		10 - 19	0.0 %
		20 - 29	25.0 %
		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	0.0 %
		110 - 119	25.0 %
		> 119	25.0 %
		(Cases) N =	4
		mean	88
		min size (mm)	26
		max size (mm)	120

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Gull Island South

<i>Megathura crenulata</i>		<i>Patiria miniata</i>		<i>Pycnopodia helianthoides</i>	
<10	0.0 %	<10	0.0 %	< 20	0.0 %
10 - 19	0.0 %	10 - 19	1.5 %	20 - 39	0.0 %
20 - 29	0.0 %	20 - 29	3.0 %	40 - 59	0.0 %
30 - 39	0.0 %	30 - 39	4.5 %	60 - 79	0.0 %
40 - 49	0.0 %	40 - 49	16.4 %	80 - 99	0.0 %
50 - 59	0.0 %	50 - 59	32.8 %	100 - 119	0.0 %
60 - 69	0.0 %	60 - 69	28.4 %	120 - 139	11.1 %
70 - 79	50.0 %	70 - 79	13.4 %	140 - 159	11.1 %
80 - 89	0.0 %	80 - 89	0.0 %	160 - 179	22.2 %
90 - 99	0.0 %	90 - 99	0.0 %	180 - 199	33.3 %
100 - 109	50.0 %	> 99	0.0 %	200 - 219	11.1 %
110 - 119	0.0 %	(Cases) N =	67	220 - 239	11.1 %
> 119	0.0 %	mean	54	240 - 259	0.0 %
(Cases) N =	2	min size (mm)	15	260 - 279	0.0 %
mean	91	max size (mm)	79	280 - 299	0.0 %
min size (mm)	78			> 299	0.0 %
max size (mm)	104			(Cases) N =	9
				mean	176
				min size (mm)	122
				max size (mm)	220
<i>Crassidoma giganteum</i>		<i>Pisaster giganteus</i>		<i>Strongylocentrotus franciscanus</i>	
<10	0.0 %	< 20	0.0 %	< 5	0.0 %
10 - 19	0.0 %	20 - 39	4.3 %	5 - 9	0.7 %
20 - 29	0.0 %	40 - 59	8.7 %	10 - 14	0.0 %
30 - 39	0.0 %	60 - 79	4.3 %	15 - 19	4.7 %
40 - 49	16.7 %	80 - 99	47.8 %	20 - 24	6.1 %
50 - 59	0.0 %	100 - 119	26.1 %	25 - 29	8.8 %
60 - 69	33.3 %	120 - 139	8.7 %	30 - 34	4.7 %
70 - 79	16.7 %	140 - 159	0.0 %	35 - 39	2.0 %
80 - 89	0.0 %	160 - 179	0.0 %	40 - 44	2.7 %
90 - 99	16.7 %	180 - 199	0.0 %	45 - 49	2.0 %
100 - 109	16.7 %	200 - 219	0.0 %	50 - 54	4.1 %
110 - 119	0.0 %	220 - 239	0.0 %	55 - 59	5.4 %
120 - 129	0.0 %	> 239	0.0 %	60 - 64	3.4 %
130 - 139	0.0 %	(Cases) N =	23	65 - 69	2.7 %
> 139	0.0 %	mean	92	70 - 74	4.1 %
(Cases) N =	6	min size (mm)	37	75 - 79	2.0 %
mean	76	max size (mm)	132	80 - 84	6.1 %
min size (mm)	48			85 - 89	8.1 %
max size (mm)	104			90 - 94	5.4 %
				95 - 99	8.1 %
				100 - 104	7.4 %
				105 - 109	4.7 %
				> 109	6.8 %
				(Cases) N =	148
				mean	70
				min size (mm)	9
				max size (mm)	127

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Gull Island South

<i>Strongylocentrotus purpuratus</i>		<i>Tethya aurantia</i>	
< 5	0.0 %	<10	1.2 %
5 - 9	0.7 %	10 - 19	14.0 %
10 - 14	2.1 %	20 - 29	22.1 %
15 - 19	6.3 %	30 - 39	36.0 %
20 - 24	16.0 %	40 - 49	12.8 %
25 - 29	19.4 %	50 - 59	11.6 %
30 - 34	19.4 %	60 - 69	2.3 %
35 - 39	14.6 %	70 - 79	0.0 %
40 - 44	6.3 %	80 - 89	0.0 %
45 - 49	8.3 %	90 - 99	0.0 %
50 - 54	4.9 %	> 99	0.0 %
55 - 59	1.4 %	(Cases) N =	86
60 - 64	0.7 %	mean	33
65 - 69	0.0 %	min size (mm)	9
70 - 74	0.0 %	max size (mm)	64
75 - 79	0.0 %		
> 79	0.0 %		
(Cases) N =	144		
mean	33		
min size (mm)	8		
max size (mm)	62		
		<i>Kelletia kelletii</i>	
		< 40	0.0 %
		40 - 49	0.0 %
		50 - 59	0.0 %
		60 - 69	9.1 %
		70 - 79	0.0 %
		80 - 89	9.1 %
		90 - 99	9.1 %
		100 - 109	27.3 %
		110 - 119	36.4 %
		120 - 129	9.1 %
		130 - 139	0.0 %
		140 - 149	0.0 %
		> 149	0.0 %
		(Cases) N =	11
		mean	103
		min size (mm)	63
		max size (mm)	121
		<i>Megastrea undosa</i>	
		<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

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Fry's Harbor

<i>Megathura crenulata</i>		<i>Tegula regina</i>		<i>Pisaster giganteus</i>	
<10	0.0 %	< 5	0.0 %	< 20	0.0 %
10 - 19	0.0 %	5 - 9	0.0 %	20 - 39	0.0 %
20 - 29	0.0 %	10 - 14	0.0 %	40 - 59	0.0 %
30 - 39	0.0 %	15 - 19	0.0 %	60 - 79	23.0 %
40 - 49	0.0 %	20 - 24	0.0 %	80 - 99	36.1 %
50 - 59	0.0 %	25 - 29	0.0 %	100 - 119	23.0 %
60 - 69	14.6 %	30 - 34	0.0 %	120 - 139	8.2 %
70 - 79	18.8 %	35 - 39	0.0 %	140 - 159	6.6 %
80 - 89	37.5 %	40 - 44	0.0 %	160 - 179	3.3 %
90 - 99	25.0 %	45 - 49	0.0 %	180 - 199	0.0 %
100 - 109	4.2 %	50 - 54	100.0 %	200 - 219	0.0 %
110 - 119	0.0 %	55 - 59	0.0 %	220 - 239	0.0 %
> 119	0.0 %	60 - 64	0.0 %	> 239	0.0 %
(Cases) N =	48	65 - 69	0.0 %	(Cases) N =	61
mean	82	70 - 74	0.0 %	mean	103
min size (mm)	60	> 75	0.0 %	min size (mm)	66
max size (mm)	102	(Cases) N =	1	max size (mm)	164
		mean	51		
		min size (mm)	51		
		max size (mm)	51		
<i>Crassidoma giganteum</i>		<i>Patiria miniata</i>		<i>Pycnopodia helianthoides</i>	
<10	0.0 %	<10	0.0 %	< 20	0.0 %
10 - 19	0.0 %	10 - 19	0.0 %	20 - 39	0.0 %
20 - 29	9.1 %	20 - 29	1.6 %	40 - 59	0.0 %
30 - 39	18.2 %	30 - 39	1.6 %	60 - 79	0.0 %
40 - 49	9.1 %	40 - 49	0.0 %	80 - 99	0.0 %
50 - 59	18.2 %	50 - 59	15.6 %	100 - 119	1.9 %
60 - 69	0.0 %	60 - 69	25.0 %	120 - 139	0.0 %
70 - 79	0.0 %	70 - 79	40.6 %	140 - 159	5.8 %
80 - 89	9.1 %	80 - 89	14.1 %	160 - 179	9.6 %
90 - 99	0.0 %	90 - 99	0.0 %	180 - 199	19.2 %
100 - 109	9.1 %	> 99	1.6 %	200 - 219	36.5 %
110 - 119	0.0 %	(Cases) N =	64	220 - 239	15.4 %
120 - 129	0.0 %	mean	68	240 - 259	5.8 %
130 - 139	9.1 %	min size (mm)	27	260 - 279	1.9 %
> 139	18.2 %	max size (mm)	102	280 - 299	1.9 %
(Cases) N =	11			> 299	1.9 %
mean	81			(Cases) N =	52
min size (mm)	26			mean	203
max size (mm)	185			min size (mm)	110
				max size (mm)	320

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Fry's Harbor

<i>Strongylocentrotus franciscanus</i>		<i>Tethya aurantia</i>	
< 5	0.0 %	<10	1.8 %
5 - 9	0.0 %	10 - 19	7.0 %
10 - 14	1.1 %	20 - 29	14.0 %
15 - 19	1.1 %	30 - 39	28.1 %
20 - 24	5.4 %	40 - 49	33.3 %
25 - 29	2.7 %	50 - 59	7.0 %
30 - 34	4.3 %	60 - 69	8.8 %
35 - 39	4.3 %	70 - 79	0.0 %
40 - 44	2.2 %	80 - 89	0.0 %
45 - 49	1.6 %	90 - 99	0.0 %
50 - 54	1.6 %	> 99	0.0 %
55 - 59	0.5 %	(Cases) N =	57
60 - 64	5.9 %	mean	38
65 - 69	4.9 %	min size (mm)	9
70 - 74	9.7 %	max size (mm)	65
75 - 79	11.9 %		
80 - 84	13.5 %		
85 - 89	9.2 %		
90 - 94	10.8 %		
95 - 99	4.9 %		
100 - 104	1.6 %		
105 - 109	2.2 %		
> 109	0.5 %		
(Cases) N =	185		
mean	65		
min size (mm)	10		
max size (mm)	118		
<i>Strongylocentrotus purpuratus</i>		<i>Kelletia kelletii</i>	
< 5	2.0 %	< 40	0.0 %
5 - 9	4.1 %	40 - 49	0.0 %
10 - 14	8.2 %	50 - 59	0.0 %
15 - 19	16.3 %	60 - 69	0.0 %
20 - 24	16.3 %	70 - 79	0.0 %
25 - 29	8.2 %	80 - 89	0.0 %
30 - 34	14.3 %	90 - 99	0.0 %
35 - 39	12.2 %	100 - 109	0.0 %
40 - 44	16.3 %	110 - 119	0.0 %
45 - 49	0.0 %	120 - 129	0.0 %
50 - 54	0.0 %	130 - 139	0.0 %
55 - 59	2.0 %	140 - 149	50.0 %
60 - 64	0.0 %	> 149	50.0 %
65 - 69	0.0 %	(Cases) N =	2
70 - 74	0.0 %	mean	146
75 - 79	0.0 %	min size (mm)	140
> 79	0.0 %	max size (mm)	151
(Cases) N =	49		
mean	28		
min size (mm)	4		
max size (mm)	56		
		<i>Megastrea undosa</i>	
		<10	0.0 %
		10 - 19	0.0 %
		20 - 29	20.0 %
		30 - 39	20.0 %
		40 - 49	0.0 %
		50 - 59	0.0 %
		60 - 69	0.0 %
		70 - 79	0.0 %
		80 - 89	0.0 %
		90 - 99	20.0 %
		100 - 109	0.0 %
		110 - 119	40.0 %
		> 119	0.0 %
		(Cases) N =	5
		mean	76
		min size (mm)	24
		max size (mm)	112

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Pelican Bay

<i>Lithopoma gibberosa</i>		<i>Crassidoma giganteum</i>		<i>Patiria miniata</i>	
<10	0.0 %	<10	4.0 %	<10	0.0 %
10 - 19	0.0 %	10 - 19	8.0 %	10 - 19	0.0 %
20 - 29	0.0 %	20 - 29	12.0 %	20 - 29	2.0 %
30 - 39	0.0 %	30 - 39	16.0 %	30 - 39	2.0 %
40 - 49	100.0 %	40 - 49	12.0 %	40 - 49	4.0 %
50 - 59	0.0 %	50 - 59	16.0 %	50 - 59	6.0 %
60 - 69	0.0 %	60 - 69	12.0 %	60 - 69	12.0 %
70 - 79	0.0 %	70 - 79	0.0 %	70 - 79	36.0 %
80 - 89	0.0 %	80 - 89	4.0 %	80 - 89	22.0 %
90 - 99	0.0 %	90 - 99	0.0 %	90 - 99	16.0 %
100 - 109	0.0 %	100 - 109	4.0 %	> 99	0.0 %
110 - 119	0.0 %	110 - 119	4.0 %	(Cases) N =	50
> 119	0.0 %	120 - 129	4.0 %	mean	75
(Cases) N =	1	130 - 139	4.0 %	min size (mm)	24
mean	42	> 139	0.0 %	max size (mm)	99
min size (mm)	42	(Cases) N =	25		
max size (mm)	42	mean	54		
		min size (mm)	9		
		max size (mm)	134		
<i>Megathura crenulata</i>		<i>Tegula regina</i>		<i>Pisaster giganteus</i>	
<10	0.0 %	< 5	0.0 %	< 20	0.0 %
10 - 19	0.0 %	5 - 9	0.0 %	20 - 39	0.0 %
20 - 29	0.0 %	10 - 14	0.0 %	40 - 59	2.3 %
30 - 39	0.0 %	15 - 19	0.0 %	60 - 79	2.3 %
40 - 49	0.0 %	20 - 24	0.0 %	80 - 99	2.3 %
50 - 59	0.0 %	25 - 29	0.0 %	100 - 119	16.3 %
60 - 69	0.0 %	30 - 34	0.0 %	120 - 139	9.3 %
70 - 79	31.3 %	35 - 39	0.0 %	140 - 159	34.9 %
80 - 89	25.0 %	40 - 44	0.0 %	160 - 179	20.9 %
90 - 99	25.0 %	45 - 49	0.0 %	180 - 199	4.7 %
100 - 109	18.8 %	50 - 54	66.7 %	200 - 219	0.0 %
110 - 119	0.0 %	55 - 59	33.3 %	220 - 239	2.3 %
> 119	0.0 %	60 - 64	0.0 %	> 239	4.7 %
(Cases) N =	16	65 - 69	0.0 %	(Cases) N =	43
mean	86	70 - 74	0.0 %	mean	149
min size (mm)	72	> 75	0.0 %	min size (mm)	57
max size (mm)	102	(Cases) N =	6	max size (mm)	287
		mean	52		
		min size (mm)	50		
		max size (mm)	56		

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Pelican Bay

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	14.3 %
180 - 199	21.4 %
200 - 219	14.3 %
220 - 239	35.7 %
240 - 259	7.1 %
260 - 279	7.1 %
280 - 299	0.0 %
> 299	0.0 %
(Cases) N =	14
mean	210
min size (mm)	165
max size (mm)	262

Lytechinus anamesus

< 5	0.0 %
5 - 9	0.0 %
10 - 14	0.0 %
15 - 19	50.0 %
20 - 24	0.0 %
25 - 29	50.0 %
30 - 34	0.0 %
35 - 39	0.0 %
40 - 44	0.0 %
45 - 49	0.0 %
> 49	0.0 %
(Cases) N =	2
mean	22
min size (mm)	18
max size (mm)	26

Strongylocentrotus franciscanus

< 5	0.0 %
5 - 9	6.0 %
10 - 14	15.5 %
15 - 19	4.3 %
20 - 24	2.6 %
25 - 29	0.9 %
30 - 34	5.2 %
35 - 39	4.7 %
40 - 44	9.5 %
45 - 49	9.5 %
50 - 54	15.1 %
55 - 59	13.4 %
60 - 64	9.1 %
65 - 69	2.2 %
70 - 74	2.2 %
75 - 79	0.0 %
80 - 84	0.0 %
85 - 89	0.0 %
90 - 94	0.0 %
95 - 99	0.0 %
100 - 104	0.0 %
105 - 109	0.0 %
> 109	0.0 %
(Cases) N =	232
mean	39
min size (mm)	5
max size (mm)	71

Strongylocentrotus purpuratus

< 5	0.0 %
5 - 9	4.5 %
10 - 14	11.8 %
15 - 19	19.9 %
20 - 24	31.7 %
25 - 29	17.5 %
30 - 34	9.3 %
35 - 39	2.8 %
40 - 44	1.2 %
45 - 49	1.2 %
50 - 54	0.0 %
55 - 59	0.0 %
60 - 64	0.0 %
65 - 69	0.0 %
70 - 74	0.0 %
75 - 79	0.0 %
> 79	0.0 %
(Cases) N =	246
mean	26
min size (mm)	6
max size (mm)	47

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Scorpion Anchorage

<i>Tethya aurantia</i>		<i>Megastraea undosa</i>		<i>Crassedoma giganteum</i>	
<10	0.0 %	<10	0.0 %	<10	0.0 %
10 - 19	6.7 %	10 - 19	0.0 %	10 - 19	0.0 %
20 - 29	8.3 %	20 - 29	0.0 %	20 - 29	0.0 %
30 - 39	11.7 %	30 - 39	0.0 %	30 - 39	0.0 %
40 - 49	21.7 %	40 - 49	0.0 %	40 - 49	14.3 %
50 - 59	35.0 %	50 - 59	8.3 %	50 - 59	0.0 %
60 - 69	10.0 %	60 - 69	12.5 %	60 - 69	7.1 %
70 - 79	6.7 %	70 - 79	12.5 %	70 - 79	7.1 %
80 - 89	0.0 %	80 - 89	29.2 %	80 - 89	7.1 %
90 - 99	0.0 %	90 - 99	20.8 %	90 - 99	21.4 %
> 99	0.0 %	100 - 109	8.3 %	100 - 109	0.0 %
(Cases) N =	60	110 - 119	8.3 %	110 - 119	14.3 %
mean	46	> 119	0.0 %	120 - 129	7.1 %
min size (mm)	15	(Cases) N =	24	130 - 139	0.0 %
max size (mm)	76	mean	84	> 139	21.4 %
		min size (mm)	50	(Cases) N =	14
		max size (mm)	116	mean	99
				min size (mm)	40
				max size (mm)	147
<i>Haliotis corrugata</i>		<i>Megathura crenulata</i>		<i>Tegula regina</i>	
<25	0.0 %	<10	0.0 %	< 5	0.0 %
25 - 34	0.0 %	10 - 19	0.0 %	5 - 9	0.0 %
35 - 44	100.0 %	20 - 29	0.0 %	10 - 14	0.0 %
45 - 54	0.0 %	30 - 39	0.0 %	15 - 19	0.0 %
55 - 64	0.0 %	40 - 49	0.0 %	20 - 24	0.0 %
65 - 74	0.0 %	50 - 59	0.0 %	25 - 29	0.0 %
75 - 84	0.0 %	60 - 69	22.4 %	30 - 34	0.0 %
85 - 94	0.0 %	70 - 79	46.6 %	35 - 39	0.0 %
95 - 104	0.0 %	80 - 89	24.1 %	40 - 44	0.0 %
105 - 114	0.0 %	90 - 99	6.9 %	45 - 49	0.0 %
115 - 124	0.0 %	100 - 109	0.0 %	50 - 54	0.0 %
125 - 134	0.0 %	110 - 119	0.0 %	55 - 59	100.0 %
135 - 144	0.0 %	> 119	0.0 %	60 - 64	0.0 %
145 - 154	0.0 %	(Cases) N =	58	65 - 69	0.0 %
155 - 164	0.0 %	mean	76	70 - 74	0.0 %
165 - 174	0.0 %	min size (mm)	60	> 75	0.0 %
175 - 184	0.0 %	max size (mm)	94	(Cases) N =	1
185 - 194	0.0 %			mean	55
>195	0.0 %			min size (mm)	55
(Cases) N =	1			max size (mm)	55
mean	36				
min size (mm)	36				
max size (mm)	36				

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Scorpion Anchorage

<i>Patiria miniata</i>		<i>Strongylocentrotus franciscanus</i>	
<10	0.0 %	< 5	0.0 %
10 - 19	0.0 %	5 - 9	0.0 %
20 - 29	0.0 %	10 - 14	0.0 %
30 - 39	0.0 %	15 - 19	0.0 %
40 - 49	1.7 %	20 - 24	0.0 %
50 - 59	6.7 %	25 - 29	0.9 %
60 - 69	21.7 %	30 - 34	2.2 %
70 - 79	38.3 %	35 - 39	4.4 %
80 - 89	23.3 %	40 - 44	15.5 %
90 - 99	8.3 %	45 - 49	28.3 %
> 99	0.0 %	50 - 54	22.1 %
(Cases) N =	60	55 - 59	12.8 %
mean	74	60 - 64	6.2 %
min size (mm)	41	65 - 69	3.5 %
max size (mm)	95	70 - 74	1.8 %
		75 - 79	1.8 %
		80 - 84	0.0 %
		85 - 89	0.4 %
		90 - 94	0.0 %
		95 - 99	0.0 %
		100 - 104	0.0 %
		105 - 109	0.0 %
		> 109	0.0 %
		(Cases) N =	226
		mean	54
		min size (mm)	28
		max size (mm)	86
<i>Pisaster giganteus</i>		<i>Strongylocentrotus purpuratus</i>	
< 20	0.0 %	< 5	0.0 %
20 - 39	0.0 %	5 - 9	0.5 %
40 - 59	5.2 %	10 - 14	0.5 %
60 - 79	15.5 %	15 - 19	1.0 %
80 - 99	10.3 %	20 - 24	5.5 %
100 - 119	22.4 %	25 - 29	32.8 %
120 - 139	37.9 %	30 - 34	55.7 %
140 - 159	6.9 %	35 - 39	4.0 %
160 - 179	0.0 %	40 - 44	0.0 %
180 - 199	1.7 %	45 - 49	0.0 %
200 - 219	0.0 %	50 - 54	0.0 %
220 - 239	0.0 %	55 - 59	0.0 %
> 239	0.0 %	60 - 64	0.0 %
(Cases) N =	58	65 - 69	0.0 %
mean	106	70 - 74	0.0 %
min size (mm)	51	75 - 79	0.0 %
max size (mm)	186	> 79	0.0 %
		(Cases) N =	201
		mean	26
		min size (mm)	5
		max size (mm)	38

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Yellow Banks

<i>Tethya aurantia</i>			<i>Lithopoma gibberosa</i>			<i>Crassedoma giganteum</i>		
<10	0.0 %		<10	0.0 %		<10	0.0 %	
10 - 19	6.1 %		10 - 19	0.0 %		10 - 19	0.0 %	
20 - 29	14.6 %		20 - 29	0.0 %		20 - 29	0.0 %	
30 - 39	14.6 %		30 - 39	0.0 %		30 - 39	0.0 %	
40 - 49	29.3 %		40 - 49	0.0 %		40 - 49	0.0 %	
50 - 59	18.3 %		50 - 59	100.0 %		50 - 59	14.3 %	
60 - 69	7.3 %		60 - 69	0.0 %		60 - 69	0.0 %	
70 - 79	6.1 %		70 - 79	0.0 %		70 - 79	0.0 %	
80 - 89	3.7 %		80 - 89	0.0 %		80 - 89	0.0 %	
90 - 99	0.0 %		90 - 99	0.0 %		90 - 99	42.9 %	
> 99	0.0 %		100 - 109	0.0 %		100 - 109	14.3 %	
(Cases) N =	82		110 - 119	0.0 %		110 - 119	0.0 %	
mean	45		> 119	0.0 %		120 - 129	0.0 %	
min size (mm)	11		(Cases) N =	1		130 - 139	14.3 %	
max size (mm)	85		mean	55		> 139	14.3 %	
			min size (mm)	55		(Cases) N =	7	
			max size (mm)	55		mean	105	
						min size (mm)	50	
						max size (mm)	145	
<i>Kelletia kelletii</i>			<i>Megathura crenulata</i>			<i>Tegula regina</i>		
< 40	0.0 %		<10	0.0 %		< 5	0.0 %	
40 - 49	0.0 %		10 - 19	0.0 %		5 - 9	0.0 %	
50 - 59	0.0 %		20 - 29	0.0 %		10 - 14	0.0 %	
60 - 69	5.3 %		30 - 39	0.0 %		15 - 19	0.0 %	
70 - 79	0.0 %		40 - 49	16.7 %		20 - 24	0.0 %	
80 - 89	5.3 %		50 - 59	33.3 %		25 - 29	0.0 %	
90 - 99	31.6 %		60 - 69	16.7 %		30 - 34	0.0 %	
100 - 109	31.6 %		70 - 79	33.3 %		35 - 39	0.0 %	
110 - 119	21.1 %		80 - 89	0.0 %		40 - 44	0.0 %	
120 - 129	5.3 %		90 - 99	0.0 %		45 - 49	33.3 %	
130 - 139	0.0 %		100 - 109	0.0 %		50 - 54	66.7 %	
140 - 149	0.0 %		110 - 119	0.0 %		55 - 59	0.0 %	
> 149	0.0 %		> 119	0.0 %		60 - 64	0.0 %	
(Cases) N =	19		(Cases) N =	6		65 - 69	0.0 %	
mean	99		mean	61		70 - 74	0.0 %	
min size (mm)	60		min size (mm)	45		> 75	0.0 %	
max size (mm)	123		max size (mm)	78		(Cases) N =	3	
						mean	49	
						min size (mm)	46	
						max size (mm)	52	
<i>Megastrea undosa</i>								
<10	0.0 %							
10 - 19	0.0 %							
20 - 29	0.0 %							
30 - 39	1.6 %							
40 - 49	0.0 %							
50 - 59	11.5 %							
60 - 69	21.3 %							
70 - 79	13.1 %							
80 - 89	14.8 %							
90 - 99	3.3 %							
100 - 109	3.3 %							
110 - 119	6.6 %							
> 119	24.6 %							
(Cases) N =	61							
mean	89							
min size (mm)	32							
max size (mm)	142							

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Yellow Banks

<i>Patiria miniata</i>			<i>Pycnopodia helianthoides</i>			<i>Strongylocentrotus franciscanus</i>		
<10	0.0 %		< 20	0.0 %		< 5	0.0 %	
10 - 19	0.0 %		20 - 39	0.0 %		5 - 9	0.5 %	
20 - 29	6.7 %		40 - 59	0.0 %		10 - 14	2.9 %	
30 - 39	6.7 %		60 - 79	0.0 %		15 - 19	12.2 %	
40 - 49	16.7 %		80 - 99	0.0 %		20 - 24	21.0 %	
50 - 59	10.0 %		100 - 119	0.0 %		25 - 29	14.1 %	
60 - 69	16.7 %		120 - 139	0.0 %		30 - 34	7.3 %	
70 - 79	25.0 %		140 - 159	0.0 %		35 - 39	10.2 %	
80 - 89	15.0 %		160 - 179	0.0 %		40 - 44	7.3 %	
90 - 99	1.7 %		180 - 199	0.0 %		45 - 49	4.9 %	
> 99	1.7 %		200 - 219	1.8 %		50 - 54	2.4 %	
(Cases) N =	60		220 - 239	7.0 %		55 - 59	2.4 %	
mean	61		240 - 259	14.0 %		60 - 64	3.4 %	
min size (mm)	21		260 - 279	28.1 %		65 - 69	3.4 %	
max size (mm)	101		280 - 299	14.0 %		70 - 74	2.0 %	
			> 299	35.1 %		75 - 79	2.0 %	
			(Cases) N =	57		80 - 84	2.4 %	
			mean	287		85 - 89	1.0 %	
			min size (mm)	200		90 - 94	0.0 %	
			max size (mm)	360		95 - 99	0.0 %	
						100 - 104	0.0 %	
						105 - 109	0.5 %	
						> 109	0.0 %	
						(Cases) N =	205	
						mean	40	
						min size (mm)	9	
						max size (mm)	105	
<i>Pisaster giganteus</i>			<i>Lytechinus anamesus</i>			<i>Strongylocentrotus purpuratus</i>		
< 20	0.0 %		< 5	0.0 %		< 5	1.9 %	
20 - 39	0.0 %		5 - 9	12.5 %		5 - 9	7.5 %	
40 - 59	10.5 %		10 - 14	29.2 %		10 - 14	9.7 %	
60 - 79	26.3 %		15 - 19	29.2 %		15 - 19	13.9 %	
80 - 99	21.1 %		20 - 24	16.7 %		20 - 24	8.2 %	
100 - 119	0.0 %		25 - 29	12.5 %		25 - 29	11.6 %	
120 - 139	15.8 %		30 - 34	0.0 %		30 - 34	13.5 %	
140 - 159	15.8 %		35 - 39	0.0 %		35 - 39	12.4 %	
160 - 179	5.3 %		40 - 44	0.0 %		40 - 44	8.2 %	
180 - 199	5.3 %		45 - 49	0.0 %		45 - 49	7.1 %	
200 - 219	0.0 %		> 49	0.0 %		50 - 54	3.0 %	
220 - 239	0.0 %		(Cases) N =	24		55 - 59	2.2 %	
> 239	0.0 %		mean	16		60 - 64	0.7 %	
(Cases) N =	19		min size (mm)	7		65 - 69	0.0 %	
mean	107		max size (mm)	26		70 - 74	0.0 %	
min size (mm)	51					75 - 79	0.0 %	
max size (mm)	196					> 79	0.0 %	
						(Cases) N =	267	
						mean	28	
						min size (mm)	4	
						max size (mm)	62	

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Admiral's Reef

<i>Tethya aurantia</i>		<i>Strongylocentrotus franciscanus</i>	
<10	0.0 %	< 5	0.0 %
10 - 19	0.0 %	5 - 9	0.0 %
20 - 29	2.1 %	10 - 14	0.0 %
30 - 39	2.1 %	15 - 19	0.5 %
40 - 49	4.3 %	20 - 24	1.4 %
50 - 59	12.8 %	25 - 29	2.9 %
60 - 69	29.8 %	30 - 34	6.7 %
70 - 79	6.4 %	35 - 39	33.5 %
80 - 89	10.6 %	40 - 44	19.6 %
90 - 99	23.4 %	45 - 49	12.4 %
> 99	8.5 %	50 - 54	6.7 %
(Cases) N =	47	55 - 59	5.3 %
mean	76	60 - 64	5.3 %
min size (mm)	28	65 - 69	1.9 %
max size (mm)	108	70 - 74	3.3 %
		75 - 79	0.0 %
		80 - 84	0.0 %
		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 =	209
		mean	47
		min size (mm)	18
		max size (mm)	86
<i>Patiria miniata</i>		<i>Strongylocentrotus purpuratus</i>	
<10	0.0 %	< 5	0.0 %
10 - 19	0.0 %	5 - 9	0.0 %
20 - 29	0.0 %	10 - 14	3.2 %
30 - 39	4.5 %	15 - 19	4.8 %
40 - 49	10.4 %	20 - 24	16.5 %
50 - 59	13.4 %	25 - 29	22.9 %
60 - 69	37.3 %	30 - 34	22.3 %
70 - 79	22.4 %	35 - 39	18.6 %
80 - 89	10.4 %	40 - 44	9.6 %
90 - 99	1.5 %	45 - 49	1.6 %
> 99	0.0 %	50 - 54	0.5 %
(Cases) N =	67	55 - 59	0.0 %
mean	65	60 - 64	0.0 %
min size (mm)	34	65 - 69	0.0 %
max size (mm)	93	70 - 74	0.0 %
		75 - 79	0.0 %
		> 79	0.0 %
		(Cases) N =	188
		mean	30
		min size (mm)	12
		max size (mm)	50
<i>Pisaster giganteus</i>			
< 20	0.0 %		
20 - 39	0.0 %		
40 - 59	0.0 %		
60 - 79	0.0 %		
80 - 99	1.5 %		
100 - 119	19.1 %		
120 - 139	22.1 %		
140 - 159	25.0 %		
160 - 179	17.6 %		
180 - 199	4.4 %		
200 - 219	4.4 %		
220 - 239	1.5 %		
> 239	4.4 %		
(Cases) N =	68		
mean	152		
min size (mm)	96		
max size (mm)	245		

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Cathedral Cove

<i>Haliotis corrugata</i>		<i>Megathura crenulata</i>		<i>Patiria miniata</i>	
<25	0.0 %	<10	0.0 %	<10	0.0 %
25 - 34	0.0 %	10 - 19	0.0 %	10 - 19	33.3 %
35 - 44	0.0 %	20 - 29	33.3 %	20 - 29	66.7 %
45 - 54	0.0 %	30 - 39	0.0 %	30 - 39	0.0 %
55 - 64	0.0 %	40 - 49	33.3 %	40 - 49	0.0 %
65 - 74	0.0 %	50 - 59	0.0 %	50 - 59	0.0 %
75 - 84	0.0 %	60 - 69	33.3 %	60 - 69	0.0 %
85 - 94	0.0 %	70 - 79	0.0 %	70 - 79	0.0 %
95 - 104	0.0 %	80 - 89	0.0 %	80 - 89	0.0 %
105 - 114	0.0 %	90 - 99	0.0 %	90 - 99	0.0 %
115 - 124	100.0 %	100 - 109	0.0 %	> 99	0.0 %
125 - 134	0.0 %	110 - 119	0.0 %	(Cases) N =	3
135 - 144	0.0 %	> 119	0.0 %	mean	24
145 - 154	0.0 %	(Cases) N =	3	min size (mm)	17
155 - 164	0.0 %	mean	47	max size (mm)	28
165 - 174	0.0 %	min size (mm)	27		
175 - 184	0.0 %	max size (mm)	66		
185 - 194	0.0 %				
>195	0.0 %				
(Cases) N =	1				
mean	118				
min size (mm)	118				
max size (mm)	118				
<i>Megastrea undosa</i>		<i>Crassidoma giganteum</i>		<i>Pisaster giganteus</i>	
<10	0.0 %	<10	0.0 %	< 20	0.0 %
10 - 19	0.0 %	10 - 19	3.7 %	20 - 39	0.0 %
20 - 29	0.0 %	20 - 29	3.7 %	40 - 59	0.0 %
30 - 39	11.3 %	30 - 39	7.4 %	60 - 79	0.0 %
40 - 49	16.1 %	40 - 49	3.7 %	80 - 99	40.0 %
50 - 59	16.1 %	50 - 59	11.1 %	100 - 119	0.0 %
60 - 69	16.1 %	60 - 69	7.4 %	120 - 139	20.0 %
70 - 79	4.8 %	70 - 79	25.9 %	140 - 159	0.0 %
80 - 89	12.9 %	80 - 89	3.7 %	160 - 179	0.0 %
90 - 99	21.0 %	90 - 99	7.4 %	180 - 199	40.0 %
100 - 109	1.6 %	100 - 109	11.1 %	200 - 219	0.0 %
110 - 119	0.0 %	110 - 119	7.4 %	220 - 239	0.0 %
> 119	0.0 %	120 - 129	7.4 %	> 239	0.0 %
(Cases) N =	62	130 - 139	0.0 %	(Cases) N =	5
mean	64	> 139	0.0 %	mean	137
min size (mm)	30	(Cases) N =	27	min size (mm)	92
max size (mm)	101	mean	76	max size (mm)	182
		min size (mm)	16		
		max size (mm)	128		

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Cathedral Cove

<i>Strongylocentrotus franciscanus</i>		<i>Tethya aurantia</i>	
< 5	0.0 %	<10	0.0 %
5 - 9	0.0 %	10 - 19	0.0 %
10 - 14	3.2 %	20 - 29	0.0 %
15 - 19	6.4 %	30 - 39	18.8 %
20 - 24	6.8 %	40 - 49	25.0 %
25 - 29	2.7 %	50 - 59	12.5 %
30 - 34	1.4 %	60 - 69	12.5 %
35 - 39	0.5 %	70 - 79	6.3 %
40 - 44	3.7 %	80 - 89	18.8 %
45 - 49	2.3 %	90 - 99	6.3 %
50 - 54	2.7 %	> 99	0.0 %
55 - 59	2.3 %	(Cases) N =	16
60 - 64	5.0 %	mean	62
65 - 69	5.0 %	min size (mm)	38
70 - 74	5.5 %	max size (mm)	92
75 - 79	2.7 %		
80 - 84	5.9 %		
85 - 89	5.0 %		
90 - 94	9.1 %		
95 - 99	4.1 %		
100 - 104	11.0 %		
105 - 109	2.7 %		
> 109	11.9 %		
(Cases) N =	219		
mean	69		
min size (mm)	11		
max size (mm)	123		
<i>Strongylocentrotus purpuratus</i>		<i>Haliotis corrugata</i>	
< 5	0.0 %	<25	0.0 %
5 - 9	1.9 %	25 - 34	0.0 %
10 - 14	6.3 %	35 - 44	14.3 %
15 - 19	17.7 %	45 - 54	0.0 %
20 - 24	20.3 %	55 - 64	0.0 %
25 - 29	8.2 %	65 - 74	0.0 %
30 - 34	11.4 %	75 - 84	0.0 %
35 - 39	5.7 %	85 - 94	0.0 %
40 - 44	7.0 %	95 - 104	14.3 %
45 - 49	6.3 %	105 - 114	0.0 %
50 - 54	7.6 %	115 - 124	0.0 %
55 - 59	5.1 %	125 - 134	0.0 %
60 - 64	1.9 %	135 - 144	28.6 %
65 - 69	0.6 %	145 - 154	14.3 %
70 - 74	0.0 %	155 - 164	14.3 %
75 - 79	0.0 %	165 - 174	14.3 %
> 79	0.0 %	175 - 184	0.0 %
(Cases) N =	158	185 - 194	0.0 %
mean	32	>195	0.0 %
min size (mm)	5	(Cases) N =	7
max size (mm)	65	mean	128
		min size (mm)	35
		max size (mm)	172

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Landing Cove

<i>Kelletia kelletii</i>		<i>Megathura crenulata</i>		<i>Tegula regina</i>	
< 40	0.0 %	<10	0.0 %	< 5	0.0 %
40 - 49	0.0 %	10 - 19	0.0 %	5 - 9	0.0 %
50 - 59	25.0 %	20 - 29	0.0 %	10 - 14	0.0 %
60 - 69	12.5 %	30 - 39	0.0 %	15 - 19	0.0 %
70 - 79	12.5 %	40 - 49	0.0 %	20 - 24	0.0 %
80 - 89	0.0 %	50 - 59	7.7 %	25 - 29	0.0 %
90 - 99	12.5 %	60 - 69	0.0 %	30 - 34	0.0 %
100 - 109	25.0 %	70 - 79	30.8 %	35 - 39	0.0 %
110 - 119	12.5 %	80 - 89	46.2 %	40 - 44	16.7 %
120 - 129	0.0 %	90 - 99	0.0 %	45 - 49	83.3 %
130 - 139	0.0 %	100 - 109	15.4 %	50 - 54	0.0 %
140 - 149	0.0 %	110 - 119	0.0 %	55 - 59	0.0 %
> 149	0.0 %	> 119	0.0 %	60 - 64	0.0 %
(Cases) N =	8	(Cases) N =	13	65 - 69	0.0 %
mean	84	mean	83	70 - 74	0.0 %
min size (mm)	54	min size (mm)	51	> 75	0.0 %
max size (mm)	115	max size (mm)	106	(Cases) N =	6
				mean	46
				min size (mm)	42
				max size (mm)	48
<i>Megastrea undosa</i>		<i>Crassidoma giganteum</i>		<i>Pisaster giganteus</i>	
<10	0.0 %	<10	0.0 %	< 20	0.0 %
10 - 19	0.0 %	10 - 19	0.0 %	20 - 39	0.0 %
20 - 29	1.7 %	20 - 29	0.0 %	40 - 59	0.0 %
30 - 39	3.3 %	30 - 39	2.3 %	60 - 79	3.6 %
40 - 49	26.7 %	40 - 49	9.3 %	80 - 99	17.9 %
50 - 59	28.3 %	50 - 59	16.3 %	100 - 119	0.0 %
60 - 69	16.7 %	60 - 69	16.3 %	120 - 139	14.3 %
70 - 79	13.3 %	70 - 79	7.0 %	140 - 159	17.9 %
80 - 89	8.3 %	80 - 89	4.7 %	160 - 179	10.7 %
90 - 99	1.7 %	90 - 99	14.0 %	180 - 199	14.3 %
100 - 109	0.0 %	100 - 109	7.0 %	200 - 219	17.9 %
110 - 119	0.0 %	110 - 119	0.0 %	220 - 239	0.0 %
> 119	0.0 %	120 - 129	0.0 %	> 239	3.6 %
(Cases) N =	60	130 - 139	11.6 %	(Cases) N =	28
mean	60	> 139	11.6 %	mean	153
min size (mm)	27	(Cases) N =	43	min size (mm)	72
max size (mm)	90	mean	88	max size (mm)	292
		min size (mm)	34		
		max size (mm)	154		

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Landing Cove

<i>Strongylocentrotus franciscanus</i>		<i>Tethya aurantia</i>	
< 5	0.0 %	<10	0.0 %
5 - 9	0.0 %	10 - 19	4.9 %
10 - 14	1.5 %	20 - 29	4.9 %
15 - 19	1.5 %	30 - 39	9.8 %
20 - 24	1.5 %	40 - 49	16.4 %
25 - 29	1.0 %	50 - 59	23.0 %
30 - 34	1.5 %	60 - 69	11.5 %
35 - 39	1.5 %	70 - 79	18.0 %
40 - 44	2.6 %	80 - 89	9.8 %
45 - 49	0.0 %	90 - 99	1.6 %
50 - 54	3.1 %	> 99	0.0 %
55 - 59	3.6 %	(Cases) N =	61
60 - 64	5.6 %	mean	55
65 - 69	4.1 %	min size (mm)	15
70 - 74	6.2 %	max size (mm)	92
75 - 79	4.6 %		
80 - 84	8.7 %		
85 - 89	7.2 %		
90 - 94	10.8 %		
95 - 99	8.7 %		
100 - 104	12.8 %		
105 - 109	3.6 %		
> 109	9.7 %		
(Cases) N =	195		
mean	80		
min size (mm)	11		
max size (mm)	132		
<i>Strongylocentrotus purpuratus</i>		<i>Megastrea undosa</i>	
< 5	0.0 %	<10	0.0 %
5 - 9	2.0 %	10 - 19	0.0 %
10 - 14	8.2 %	20 - 29	0.0 %
15 - 19	7.5 %	30 - 39	3.3 %
20 - 24	6.8 %	40 - 49	21.7 %
25 - 29	6.1 %	50 - 59	43.3 %
30 - 34	8.2 %	60 - 69	20.0 %
35 - 39	8.2 %	70 - 79	3.3 %
40 - 44	10.9 %	80 - 89	5.0 %
45 - 49	10.2 %	90 - 99	3.3 %
50 - 54	15.0 %	100 - 109	0.0 %
55 - 59	8.2 %	110 - 119	0.0 %
60 - 64	4.1 %	> 119	0.0 %
65 - 69	3.4 %	(Cases) N =	60
70 - 74	1.4 %	mean	59
75 - 79	0.0 %	min size (mm)	32
> 79	0.0 %	max size (mm)	99
(Cases) N =	147		
mean	39		
min size (mm)	7		
max size (mm)	72		
		<i>Lithopoma gibberosa</i>	
		<10	0.0 %
		10 - 19	0.0 %
		20 - 29	0.0 %
		30 - 39	0.0 %
		40 - 49	60.0 %
		50 - 59	40.0 %
		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	46
		min size (mm)	41
		max size (mm)	53

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - SE Sea Lion Rookery

<i>Megathura crenulata</i>		<i>Tegula regina</i>		<i>Pisaster giganteus</i>	
<10	0.0 %	< 5	0.0 %	< 20	0.0 %
10 - 19	0.0 %	5 - 9	0.0 %	20 - 39	0.0 %
20 - 29	0.0 %	10 - 14	0.0 %	40 - 59	0.0 %
30 - 39	0.0 %	15 - 19	0.0 %	60 - 79	0.0 %
40 - 49	0.0 %	20 - 24	0.0 %	80 - 99	15.8 %
50 - 59	16.7 %	25 - 29	0.0 %	100 - 119	31.6 %
60 - 69	16.7 %	30 - 34	0.0 %	120 - 139	26.3 %
70 - 79	8.3 %	35 - 39	1.6 %	140 - 159	10.5 %
80 - 89	8.3 %	40 - 44	16.4 %	160 - 179	5.3 %
90 - 99	33.3 %	45 - 49	44.3 %	180 - 199	10.5 %
100 - 109	16.7 %	50 - 54	34.4 %	200 - 219	0.0 %
110 - 119	0.0 %	55 - 59	3.3 %	220 - 239	0.0 %
> 119	0.0 %	60 - 64	0.0 %	> 239	0.0 %
(Cases) N =	12	65 - 69	0.0 %	(Cases) N =	19
mean	82	70 - 74	0.0 %	mean	128
min size (mm)	52	> 75	0.0 %	min size (mm)	88
max size (mm)	105	(Cases) N =	61	max size (mm)	193
		mean	48		
		min size (mm)	37		
		max size (mm)	57		
<i>Crassidoma giganteum</i>		<i>Patiria miniata</i>		<i>Lytechinus anamesus</i>	
<10	0.0 %	<10	0.0 %	< 5	4.2 %
10 - 19	0.0 %	10 - 19	0.0 %	5 - 9	4.2 %
20 - 29	0.0 %	20 - 29	1.6 %	10 - 14	12.5 %
30 - 39	0.0 %	30 - 39	1.6 %	15 - 19	50.0 %
40 - 49	0.0 %	40 - 49	3.3 %	20 - 24	12.5 %
50 - 59	12.5 %	50 - 59	3.3 %	25 - 29	16.7 %
60 - 69	0.0 %	60 - 69	19.7 %	30 - 34	0.0 %
70 - 79	12.5 %	70 - 79	26.2 %	35 - 39	0.0 %
80 - 89	0.0 %	80 - 89	31.1 %	40 - 44	0.0 %
90 - 99	0.0 %	90 - 99	9.8 %	45 - 49	0.0 %
100 - 109	0.0 %	> 99	3.3 %	> 49	0.0 %
110 - 119	25.0 %	(Cases) N =	61	(Cases) N =	24
120 - 129	25.0 %	mean	74	mean	16
130 - 139	12.5 %	min size (mm)	29	min size (mm)	3
> 139	12.5 %	max size (mm)	108	max size (mm)	26
(Cases) N =	8				
mean	109				
min size (mm)	57				
max size (mm)	143				

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - SE Sea Lion Rookery

<i>Strongylocentrotus franciscanus</i>		<i>Megastrea undosa</i>	
< 5	0.0 %	<10	0.0 %
5 - 9	0.0 %	10 - 19	0.0 %
10 - 14	1.0 %	20 - 29	0.0 %
15 - 19	7.5 %	30 - 39	15.4 %
20 - 24	36.0 %	40 - 49	19.2 %
25 - 29	24.0 %	50 - 59	42.3 %
30 - 34	18.5 %	60 - 69	7.7 %
35 - 39	10.0 %	70 - 79	3.8 %
40 - 44	2.5 %	80 - 89	0.0 %
45 - 49	0.5 %	90 - 99	3.8 %
50 - 54	0.0 %	100 - 109	7.7 %
55 - 59	0.0 %	110 - 119	0.0 %
60 - 64	0.0 %	> 119	0.0 %
65 - 69	0.0 %	(Cases) N =	26
70 - 74	0.0 %	mean	57
75 - 79	0.0 %	min size (mm)	30
80 - 84	0.0 %	max size (mm)	109
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 =	200		
mean	28		
min size (mm)	11		
max size (mm)	46		
<i>Strongylocentrotus purpuratus</i>		<i>Megathura crenulata</i>	
< 5	0.9 %	<10	0.0 %
5 - 9	0.9 %	10 - 19	0.0 %
10 - 14	29.2 %	20 - 29	0.0 %
15 - 19	42.9 %	30 - 39	0.0 %
20 - 24	20.2 %	40 - 49	0.0 %
25 - 29	5.6 %	50 - 59	0.0 %
30 - 34	0.4 %	60 - 69	0.0 %
35 - 39	0.0 %	70 - 79	100.0 %
40 - 44	0.0 %	80 - 89	0.0 %
45 - 49	0.0 %	90 - 99	0.0 %
50 - 54	0.0 %	100 - 109	0.0 %
55 - 59	0.0 %	110 - 119	0.0 %
60 - 64	0.0 %	> 119	0.0 %
65 - 69	0.0 %	(Cases) N =	1
70 - 74	0.0 %	mean	72
75 - 79	0.0 %	min size (mm)	72
> 79	0.0 %	max size (mm)	72
(Cases) N =	233		
mean	17		
min size (mm)	3		
max size (mm)	30		

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Arch Point

<i>Crassedoma giganteum</i>		<i>Patiria miniata</i>		<i>Strongylocentrotus franciscanus</i>	
<10	0.0 %	<10	0.0 %	< 5	0.0 %
10 - 19	0.0 %	10 - 19	0.0 %	5 - 9	5.9 %
20 - 29	0.0 %	20 - 29	18.5 %	10 - 14	10.2 %
30 - 39	0.0 %	30 - 39	19.6 %	15 - 19	13.2 %
40 - 49	0.0 %	40 - 49	20.7 %	20 - 24	8.3 %
50 - 59	0.0 %	50 - 59	20.7 %	25 - 29	4.9 %
60 - 69	0.0 %	60 - 69	13.0 %	30 - 34	14.1 %
70 - 79	50.0 %	70 - 79	5.4 %	35 - 39	17.1 %
80 - 89	50.0 %	80 - 89	2.2 %	40 - 44	9.8 %
90 - 99	0.0 %	90 - 99	0.0 %	45 - 49	5.4 %
100 - 109	0.0 %	> 99	0.0 %	50 - 54	2.9 %
110 - 119	0.0 %	(Cases) N =	92	55 - 59	0.0 %
120 - 129	0.0 %	mean	46	60 - 64	2.4 %
130 - 139	0.0 %	min size (mm)	21	65 - 69	3.4 %
> 139	0.0 %	max size (mm)	87	70 - 74	2.4 %
(Cases) N =	2			75 - 79	0.0 %
mean	81			80 - 84	0.0 %
min size (mm)	73			85 - 89	0.0 %
max size (mm)	89			90 - 94	0.0 %
<i>Tegula regina</i>		<i>Pisaster giganteus</i>		95 - 99	0.0 %
< 5	0.0 %	< 20	0.0 %	100 - 104	0.0 %
5 - 9	0.0 %	20 - 39	0.0 %	105 - 109	0.0 %
10 - 14	0.0 %	40 - 59	0.0 %	> 109	0.0 %
15 - 19	0.0 %	60 - 79	5.8 %	(Cases) N =	205
20 - 24	0.0 %	80 - 99	30.4 %	mean	35
25 - 29	0.0 %	100 - 119	37.7 %	min size (mm)	6
30 - 34	0.0 %	120 - 139	11.6 %	max size (mm)	72
35 - 39	9.2 %	140 - 159	11.6 %		
40 - 44	40.0 %	160 - 179	2.9 %		
45 - 49	33.8 %	180 - 199	0.0 %		
50 - 54	13.8 %	200 - 219	0.0 %		
55 - 59	0.0 %	220 - 239	0.0 %		
60 - 64	0.0 %	> 239	0.0 %		
65 - 69	0.0 %	(Cases) N =	69		
70 - 74	3.1 %	mean	109		
> 75	0.0 %	min size (mm)	72		
(Cases) N =	65	max size (mm)	164		
mean	47				
min size (mm)	35				
max size (mm)	74				
		<i>Lytechinus anamesus</i>		<i>Strongylocentrotus purpuratus</i>	
		< 5	0.0 %	< 5	0.4 %
		5 - 9	0.0 %	5 - 9	37.5 %
		10 - 14	3.3 %	10 - 14	32.9 %
		15 - 19	3.3 %	15 - 19	15.0 %
		20 - 24	6.7 %	20 - 24	6.8 %
		25 - 29	52.2 %	25 - 29	5.0 %
		30 - 34	31.1 %	30 - 34	1.4 %
		35 - 39	3.3 %	35 - 39	0.4 %
		40 - 44	0.0 %	40 - 44	0.7 %
		45 - 49	0.0 %	45 - 49	0.0 %
		> 49	0.0 %	50 - 54	0.0 %
		(Cases) N =	90	55 - 59	0.0 %
		mean	27	60 - 64	0.0 %
		min size (mm)	11	65 - 69	0.0 %
		max size (mm)	38	70 - 74	0.0 %
				75 - 79	0.0 %
				> 79	0.0 %
				(Cases) N =	280
				mean	19
				min size (mm)	4
				max size (mm)	43

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Cat Canyon

<i>Megastraea undosa</i>		<i>Tegula regina</i>		<i>Pisaster giganteus</i>	
<10	0.0 %	< 5	0.0 %	< 20	0.0 %
10 - 19	0.0 %	5 - 9	0.0 %	20 - 39	0.0 %
20 - 29	0.9 %	10 - 14	0.0 %	40 - 59	0.0 %
30 - 39	17.1 %	15 - 19	0.0 %	60 - 79	12.2 %
40 - 49	7.7 %	20 - 24	0.0 %	80 - 99	29.3 %
50 - 59	52.1 %	25 - 29	0.0 %	100 - 119	43.9 %
60 - 69	18.8 %	30 - 34	0.0 %	120 - 139	9.8 %
70 - 79	2.6 %	35 - 39	4.5 %	140 - 159	4.9 %
80 - 89	0.0 %	40 - 44	9.1 %	160 - 179	0.0 %
90 - 99	0.9 %	45 - 49	36.4 %	180 - 199	0.0 %
100 - 109	0.0 %	50 - 54	45.5 %	200 - 219	0.0 %
110 - 119	0.0 %	55 - 59	4.5 %	220 - 239	0.0 %
> 119	0.0 %	60 - 64	0.0 %	> 239	0.0 %
(Cases) N =	117	65 - 69	0.0 %	(Cases) N =	41
mean	51	70 - 74	0.0 %	mean	102
min size (mm)	29	> 75	0.0 %	min size (mm)	67
max size (mm)	93	(Cases) N =	22	max size (mm)	150
		mean	48		
		min size (mm)	38		
		max size (mm)	55		
<i>Crassedoma giganteum</i>		<i>Patiria miniata</i>		<i>Strongylocentrotus franciscanus</i>	
<10	0.0 %	<10	0.0 %	< 5	0.0 %
10 - 19	0.0 %	10 - 19	1.6 %	5 - 9	0.0 %
20 - 29	0.0 %	20 - 29	1.6 %	10 - 14	2.6 %
30 - 39	0.0 %	30 - 39	6.3 %	15 - 19	8.1 %
40 - 49	25.0 %	40 - 49	21.9 %	20 - 24	17.1 %
50 - 59	0.0 %	50 - 59	23.4 %	25 - 29	12.4 %
60 - 69	0.0 %	60 - 69	25.0 %	30 - 34	21.8 %
70 - 79	0.0 %	70 - 79	10.9 %	35 - 39	25.6 %
80 - 89	0.0 %	80 - 89	7.8 %	40 - 44	9.8 %
90 - 99	25.0 %	90 - 99	1.6 %	45 - 49	0.9 %
100 - 109	25.0 %	> 99	0.0 %	50 - 54	1.3 %
110 - 119	0.0 %	(Cases) N =	64	55 - 59	0.0 %
120 - 129	25.0 %	mean	58	60 - 64	0.0 %
130 - 139	0.0 %	min size (mm)	19	65 - 69	0.4 %
> 139	0.0 %	max size (mm)	90	70 - 74	0.0 %
(Cases) N =	4			75 - 79	0.0 %
mean	92			80 - 84	0.0 %
min size (mm)	42			85 - 89	0.0 %
max size (mm)	120			90 - 94	0.0 %
				95 - 99	0.0 %
				100 - 104	0.0 %
				105 - 109	0.0 %
				> 109	0.0 %
				(Cases) N =	234
				mean	31
				min size (mm)	12
				max size (mm)	66

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Cat Canyon

<i>Strongylocentrotus purpuratus</i>		<i>Tethya aurantia</i>	
< 5	0.0 %	<10	0.0 %
5 - 9	8.8 %	10 - 19	0.0 %
10 - 14	69.7 %	20 - 29	1.4 %
15 - 19	13.0 %	30 - 39	4.3 %
20 - 24	2.7 %	40 - 49	2.9 %
25 - 29	3.1 %	50 - 59	8.7 %
30 - 34	2.7 %	60 - 69	11.6 %
35 - 39	0.0 %	70 - 79	21.7 %
40 - 44	0.0 %	80 - 89	13.0 %
45 - 49	0.0 %	90 - 99	14.5 %
50 - 54	0.0 %	> 99	21.7 %
55 - 59	0.0 %	(Cases) N =	69
60 - 64	0.0 %	mean	79
65 - 69	0.0 %	min size (mm)	22
70 - 74	0.0 %	max size (mm)	130
75 - 79	0.0 %		
> 79	0.0 %		
(Cases) N =	261		
mean	17		
min size (mm)	5		
max size (mm)	33		
		<i>Haliotis rufescens</i>	
		<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	2.4 %
		125 - 134	1.2 %
		135 - 144	3.0 %
		145 - 154	1.8 %
		155 - 164	7.3 %
		165 - 174	8.5 %
		175 - 184	12.1 %
		185 - 194	12.1 %
		>195	49.7 %
		(Cases) N =	165
		mean	187
		min size (mm)	115
		max size (mm)	260

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Miracle Mile

<i>Kelletia kelletii</i>		<i>Megathura crenulata</i>		<i>Patiria miniata</i>	
< 40	0.0 %	<10	0.0 %	<10	0.0 %
40 - 49	0.0 %	10 - 19	0.0 %	10 - 19	0.0 %
50 - 59	0.0 %	20 - 29	0.0 %	20 - 29	3.3 %
60 - 69	0.0 %	30 - 39	0.0 %	30 - 39	9.8 %
70 - 79	18.2 %	40 - 49	0.0 %	40 - 49	14.8 %
80 - 89	9.1 %	50 - 59	0.0 %	50 - 59	39.3 %
90 - 99	27.3 %	60 - 69	0.0 %	60 - 69	27.9 %
100 - 109	27.3 %	70 - 79	0.0 %	70 - 79	4.9 %
110 - 119	18.2 %	80 - 89	7.7 %	80 - 89	0.0 %
120 - 129	0.0 %	90 - 99	7.7 %	90 - 99	0.0 %
130 - 139	0.0 %	100 - 109	30.8 %	> 99	0.0 %
140 - 149	0.0 %	110 - 119	38.5 %	(Cases) N =	61
> 149	0.0 %	> 119	15.4 %	mean	52
(Cases) N =	11	(Cases) N =	13	min size (mm)	22
mean	94	mean	112	max size (mm)	77
min size (mm)	71	min size (mm)	81		
max size (mm)	110	max size (mm)	147		
<i>Lithopoma gibberosa</i>		<i>Crassedoma giganteum</i>		<i>Pisaster giganteus</i>	
<10	0.0 %	<10	0.0 %	< 20	0.0 %
10 - 19	0.0 %	10 - 19	0.0 %	20 - 39	0.0 %
20 - 29	2.8 %	20 - 29	0.0 %	40 - 59	5.6 %
30 - 39	5.6 %	30 - 39	0.0 %	60 - 79	45.1 %
40 - 49	47.2 %	40 - 49	0.0 %	80 - 99	40.8 %
50 - 59	22.2 %	50 - 59	50.0 %	100 - 119	7.0 %
60 - 69	19.4 %	60 - 69	0.0 %	120 - 139	1.4 %
70 - 79	2.8 %	70 - 79	0.0 %	140 - 159	0.0 %
80 - 89	0.0 %	80 - 89	50.0 %	160 - 179	0.0 %
90 - 99	0.0 %	90 - 99	0.0 %	180 - 199	0.0 %
100 - 109	0.0 %	100 - 109	0.0 %	200 - 219	0.0 %
110 - 119	0.0 %	110 - 119	0.0 %	220 - 239	0.0 %
> 119	0.0 %	120 - 129	0.0 %	> 239	0.0 %
(Cases) N =	36	130 - 139	0.0 %	(Cases) N =	71
mean	51	> 139	0.0 %	mean	80
min size (mm)	25	(Cases) N =	2	min size (mm)	46
max size (mm)	75	mean	69	max size (mm)	120
		min size (mm)	56		
		max size (mm)	81		

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Miracle Mile

<i>Pycnopodia helianthoides</i>		<i>Strongylocentrotus purpuratus</i>	
< 20	0.0 %	< 5	0.0 %
20 - 39	0.0 %	5 - 9	0.0 %
40 - 59	10.5 %	10 - 14	11.1 %
60 - 79	36.8 %	15 - 19	5.6 %
80 - 99	26.3 %	20 - 24	0.0 %
100 - 119	10.5 %	25 - 29	11.1 %
120 - 139	0.0 %	30 - 34	11.1 %
140 - 159	0.0 %	35 - 39	11.1 %
160 - 179	0.0 %	40 - 44	16.7 %
180 - 199	5.3 %	45 - 49	11.1 %
200 - 219	0.0 %	50 - 54	0.0 %
220 - 239	0.0 %	55 - 59	5.6 %
240 - 259	5.3 %	60 - 64	5.6 %
260 - 279	0.0 %	65 - 69	5.6 %
280 - 299	5.3 %	70 - 74	0.0 %
> 299	0.0 %	75 - 79	0.0 %
(Cases) N =	19	> 79	5.6 %
mean	105	(Cases) N =	18
min size (mm)	47	mean	40
max size (mm)	296	min size (mm)	10
		max size (mm)	87

<i>Strongylocentrotus franciscanus</i>	
< 5	0.0 %
5 - 9	0.0 %
10 - 14	0.0 %
15 - 19	1.3 %
20 - 24	1.3 %
25 - 29	0.0 %
30 - 34	1.3 %
35 - 39	0.9 %
40 - 44	0.9 %
45 - 49	0.4 %
50 - 54	0.9 %
55 - 59	1.8 %
60 - 64	2.6 %
65 - 69	1.8 %
70 - 74	9.3 %
75 - 79	7.5 %
80 - 84	4.8 %
85 - 89	11.5 %
90 - 94	10.1 %
95 - 99	10.6 %
100 - 104	9.3 %
105 - 109	7.9 %
> 109	15.9 %
(Cases) N =	227
mean	84
min size (mm)	15
max size (mm)	127

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Cluster Point

<i>Tethya aurantia</i>		<i>Kelletia kelletii</i>		<i>Pisaster giganteus</i>	
<10	0.0 %	< 40	0.0 %	< 20	0.0 %
10 - 19	0.0 %	40 - 49	0.0 %	20 - 39	0.0 %
20 - 29	0.0 %	50 - 59	0.0 %	40 - 59	3.2 %
30 - 39	8.3 %	60 - 69	0.0 %	60 - 79	21.0 %
40 - 49	8.3 %	70 - 79	0.0 %	80 - 99	54.8 %
50 - 59	3.3 %	80 - 89	0.0 %	100 - 119	14.5 %
60 - 69	11.7 %	90 - 99	28.6 %	120 - 139	3.2 %
70 - 79	15.0 %	100 - 109	42.9 %	140 - 159	1.6 %
80 - 89	23.3 %	110 - 119	28.6 %	160 - 179	1.6 %
90 - 99	6.7 %	120 - 129	0.0 %	180 - 199	0.0 %
> 99	23.3 %	130 - 139	0.0 %	200 - 219	0.0 %
(Cases) N =	60	140 - 149	0.0 %	220 - 239	0.0 %
mean	75	> 149	0.0 %	> 239	0.0 %
min size (mm)	30	(Cases) N =	7	(Cases) N =	62
max size (mm)	130	mean	105	mean	92
		min size (mm)	94	min size (mm)	42
		max size (mm)	118	max size (mm)	174
<i>Haliotis rufescens</i>		<i>Megathura crenulata</i>		<i>Pycnopodia helianthoides</i>	
<25	0.0 %	<10	0.0 %	< 20	0.0 %
25 - 34	0.0 %	10 - 19	0.0 %	20 - 39	0.0 %
35 - 44	0.0 %	20 - 29	0.0 %	40 - 59	0.0 %
45 - 54	0.0 %	30 - 39	0.0 %	60 - 79	0.0 %
55 - 64	0.0 %	40 - 49	0.0 %	80 - 99	0.0 %
65 - 74	0.0 %	50 - 59	0.0 %	100 - 119	0.0 %
75 - 84	0.0 %	60 - 69	2.0 %	120 - 139	20.0 %
85 - 94	0.0 %	70 - 79	8.2 %	140 - 159	10.0 %
95 - 104	0.0 %	80 - 89	8.2 %	160 - 179	40.0 %
105 - 114	0.0 %	90 - 99	24.5 %	180 - 199	10.0 %
115 - 124	0.0 %	100 - 109	22.4 %	200 - 219	10.0 %
125 - 134	0.0 %	110 - 119	22.4 %	220 - 239	10.0 %
135 - 144	0.0 %	> 119	12.2 %	240 - 259	0.0 %
145 - 154	0.0 %	(Cases) N =	49	260 - 279	0.0 %
155 - 164	0.0 %	mean	102	280 - 299	0.0 %
165 - 174	0.0 %	min size (mm)	67	> 299	0.0 %
175 - 184	0.0 %	max size (mm)	134	(Cases) N =	10
185 - 194	0.0 %			mean	172
>195	50.0 %			min size (mm)	134
(Cases) N =	2			max size (mm)	239
mean	196				
min size (mm)	195				
max size (mm)	197				
<i>Patiria miniata</i>					
<10	0.0 %				
10 - 19	0.0 %				
20 - 29	3.1 %				
30 - 39	7.7 %				
40 - 49	16.9 %				
50 - 59	35.4 %				
60 - 69	27.7 %				
70 - 79	7.7 %				
80 - 89	1.5 %				
90 - 99	0.0 %				
> 99	0.0 %				
(Cases) N =	65				
mean	54				
min size (mm)	28				
max size (mm)	80				

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Cluster Point

<i>Strongylocentrotus franciscanus</i>		<i>Tethya aurantia</i>	
< 5	0.0 %	<10	0.0 %
5 - 9	0.0 %	10 - 19	0.0 %
10 - 14	0.4 %	20 - 29	3.1 %
15 - 19	1.8 %	30 - 39	3.1 %
20 - 24	3.1 %	40 - 49	4.6 %
25 - 29	4.4 %	50 - 59	12.3 %
30 - 34	4.4 %	60 - 69	13.8 %
35 - 39	7.9 %	70 - 79	16.9 %
40 - 44	3.1 %	80 - 89	9.2 %
45 - 49	1.3 %	90 - 99	13.8 %
50 - 54	2.6 %	> 99	23.1 %
55 - 59	4.0 %	(Cases) N =	65
60 - 64	6.2 %	mean	77
65 - 69	5.7 %	min size (mm)	27
70 - 74	6.6 %	max size (mm)	126
75 - 79	7.0 %		
80 - 84	5.3 %		
85 - 89	5.7 %		
90 - 94	6.6 %		
95 - 99	8.8 %		
100 - 104	6.2 %		
105 - 109	4.4 %		
> 109	4.4 %		
(Cases) N =	227		
mean	69		
min size (mm)	14		
max size (mm)	124		
<i>Strongylocentrotus purpuratus</i>		<i>Haliotis rufescens</i>	
< 5	0.0 %	<25	100.0 %
5 - 9	1.7 %	25 - 34	0.0 %
10 - 14	1.3 %	35 - 44	0.0 %
15 - 19	2.5 %	45 - 54	0.0 %
20 - 24	3.8 %	55 - 64	0.0 %
25 - 29	5.5 %	65 - 74	0.0 %
30 - 34	7.2 %	75 - 84	0.0 %
35 - 39	13.5 %	85 - 94	0.0 %
40 - 44	16.5 %	95 - 104	0.0 %
45 - 49	13.9 %	105 - 114	0.0 %
50 - 54	16.5 %	115 - 124	0.0 %
55 - 59	8.4 %	125 - 134	0.0 %
60 - 64	5.1 %	135 - 144	0.0 %
65 - 69	3.0 %	145 - 154	0.0 %
70 - 74	1.3 %	155 - 164	0.0 %
75 - 79	0.0 %	165 - 174	0.0 %
> 79	0.0 %	175 - 184	0.0 %
(Cases) N =	237	185 - 194	0.0 %
mean	41	>195	0.0 %
min size (mm)	7	(Cases) N =	1
max size (mm)	72	mean	23
		min size (mm)	23
		max size (mm)	23

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Trancion Canyon

<i>Kelletia kelletii</i>		<i>Crassedoma giganteum</i>		<i>Pisaster giganteus</i>	
< 40	0.0 %	<10	0.0 %	< 20	0.0 %
40 - 49	0.0 %	10 - 19	0.0 %	20 - 39	0.0 %
50 - 59	0.0 %	20 - 29	4.0 %	40 - 59	16.4 %
60 - 69	0.0 %	30 - 39	8.0 %	60 - 79	40.3 %
70 - 79	0.0 %	40 - 49	20.0 %	80 - 99	29.9 %
80 - 89	0.0 %	50 - 59	8.0 %	100 - 119	6.0 %
90 - 99	0.0 %	60 - 69	32.0 %	120 - 139	4.5 %
100 - 109	0.0 %	70 - 79	4.0 %	140 - 159	1.5 %
110 - 119	66.7 %	80 - 89	16.0 %	160 - 179	1.5 %
120 - 129	33.3 %	90 - 99	0.0 %	180 - 199	0.0 %
130 - 139	0.0 %	100 - 109	4.0 %	200 - 219	0.0 %
140 - 149	0.0 %	110 - 119	0.0 %	220 - 239	0.0 %
> 149	0.0 %	120 - 129	4.0 %	> 239	0.0 %
(Cases) N =	3	130 - 139	0.0 %	(Cases) N =	67
mean	117	> 139	0.0 %	mean	82
min size (mm)	110	(Cases) N =	25	min size (mm)	45
max size (mm)	123	mean	64	max size (mm)	160
		min size (mm)	27		
		max size (mm)	125		
<i>Megathura crenulata</i>		<i>Patiria miniata</i>		<i>Strongylocentrotus franciscanus</i>	
<10	0.0 %	<10	0.0 %	< 5	0.0 %
10 - 19	0.0 %	10 - 19	0.0 %	5 - 9	0.0 %
20 - 29	0.0 %	20 - 29	0.0 %	10 - 14	1.0 %
30 - 39	0.0 %	30 - 39	3.2 %	15 - 19	5.0 %
40 - 49	0.0 %	40 - 49	11.3 %	20 - 24	8.4 %
50 - 59	0.0 %	50 - 59	16.1 %	25 - 29	6.4 %
60 - 69	3.3 %	60 - 69	35.5 %	30 - 34	5.9 %
70 - 79	3.3 %	70 - 79	24.2 %	35 - 39	4.5 %
80 - 89	3.3 %	80 - 89	9.7 %	40 - 44	1.5 %
90 - 99	6.7 %	90 - 99	0.0 %	45 - 49	0.5 %
100 - 109	30.0 %	> 99	0.0 %	50 - 54	2.5 %
110 - 119	43.3 %	(Cases) N =	62	55 - 59	3.5 %
> 119	10.0 %	mean	62	60 - 64	4.5 %
(Cases) N =	30	min size (mm)	34	65 - 69	3.5 %
mean	106	max size (mm)	86	70 - 74	2.5 %
min size (mm)	63			75 - 79	2.0 %
max size (mm)	126			80 - 84	1.0 %
				85 - 89	4.5 %
				90 - 94	5.4 %
				95 - 99	4.0 %
				100 - 104	6.4 %
				105 - 109	8.9 %
				> 109	18.3 %
				(Cases) N =	202
				mean	70
				min size (mm)	11
				max size (mm)	126

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Trancion Canyon

<i>Strongylocentrotus purpuratus</i>		<i>Tethya aurantia</i>	
< 5	0.5 %	<10	0.0 %
5 - 9	2.5 %	10 - 19	0.0 %
10 - 14	6.4 %	20 - 29	0.0 %
15 - 19	6.9 %	30 - 39	5.3 %
20 - 24	5.4 %	40 - 49	1.8 %
25 - 29	11.9 %	50 - 59	7.0 %
30 - 34	16.3 %	60 - 69	21.1 %
35 - 39	18.3 %	70 - 79	26.3 %
40 - 44	10.4 %	80 - 89	26.3 %
45 - 49	10.9 %	90 - 99	10.5 %
50 - 54	5.4 %	> 99	1.8 %
55 - 59	4.0 %	(Cases) N =	57
60 - 64	0.0 %	mean	73
65 - 69	1.0 %	min size (mm)	33
70 - 74	0.0 %	max size (mm)	119
75 - 79	0.0 %		
> 79	0.0 %		
(Cases) N =	202		
mean	33		
min size (mm)	4		
max size (mm)	67		
		<i>Haliotis rufescens</i>	
		<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	3.7 %
		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	11.1 %
		155 - 164	11.1 %
		165 - 174	3.7 %
		175 - 184	18.5 %
		185 - 194	14.8 %
		>195	37.0 %
		(Cases) N =	27
		mean	183
		min size (mm)	79
		max size (mm)	242

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Chickasaw

<i>Megathura crenulata</i>		<i>Patiria miniata</i>		<i>Pycnopodia helianthoides</i>	
<10	0.0 %	<10	0.0 %	< 20	0.0 %
10 - 19	0.0 %	10 - 19	0.0 %	20 - 39	0.0 %
20 - 29	0.0 %	20 - 29	0.0 %	40 - 59	28.6 %
30 - 39	0.0 %	30 - 39	5.5 %	60 - 79	14.3 %
40 - 49	8.3 %	40 - 49	11.0 %	80 - 99	14.3 %
50 - 59	0.0 %	50 - 59	21.9 %	100 - 119	14.3 %
60 - 69	8.3 %	60 - 69	32.9 %	120 - 139	0.0 %
70 - 79	0.0 %	70 - 79	20.5 %	140 - 159	14.3 %
80 - 89	0.0 %	80 - 89	8.2 %	160 - 179	0.0 %
90 - 99	16.7 %	90 - 99	0.0 %	180 - 199	0.0 %
100 - 109	16.7 %	> 99	0.0 %	200 - 219	0.0 %
110 - 119	16.7 %	(Cases) N =	73	220 - 239	0.0 %
> 119	33.3 %	mean	61	240 - 259	14.3 %
(Cases) N =	12	min size (mm)	31	260 - 279	0.0 %
mean	109	max size (mm)	88	280 - 299	0.0 %
min size (mm)	41			> 299	0.0 %
max size (mm)	168			(Cases) N =	7
				mean	118
				min size (mm)	58
				max size (mm)	248
<i>Crassidoma giganteum</i>		<i>Pisaster giganteus</i>		<i>Strongylocentrotus franciscanus</i>	
<10	0.0 %	< 20	0.0 %	< 5	0.0 %
10 - 19	0.0 %	20 - 39	0.0 %	5 - 9	0.0 %
20 - 29	11.1 %	40 - 59	2.9 %	10 - 14	0.4 %
30 - 39	0.0 %	60 - 79	21.4 %	15 - 19	0.4 %
40 - 49	11.1 %	80 - 99	41.4 %	20 - 24	3.1 %
50 - 59	22.2 %	100 - 119	22.9 %	25 - 29	3.1 %
60 - 69	0.0 %	120 - 139	8.6 %	30 - 34	6.2 %
70 - 79	22.2 %	140 - 159	1.4 %	35 - 39	1.3 %
80 - 89	0.0 %	160 - 179	1.4 %	40 - 44	1.8 %
90 - 99	11.1 %	180 - 199	0.0 %	45 - 49	4.0 %
100 - 109	11.1 %	200 - 219	0.0 %	50 - 54	4.0 %
110 - 119	0.0 %	220 - 239	0.0 %	55 - 59	1.3 %
120 - 129	11.1 %	> 239	0.0 %	60 - 64	3.5 %
130 - 139	0.0 %	(Cases) N =	70	65 - 69	2.6 %
> 139	0.0 %	mean	95	70 - 74	4.4 %
(Cases) N =	9	min size (mm)	44	75 - 79	2.6 %
mean	71	max size (mm)	161	80 - 84	2.6 %
min size (mm)	20			85 - 89	2.2 %
max size (mm)	122			90 - 94	8.4 %
				95 - 99	4.0 %
				100 - 104	9.3 %
				105 - 109	7.5 %
				> 109	27.3 %
				(Cases) N =	227
				mean	77
				min size (mm)	13
				max size (mm)	133

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Chickasaw

<i>Strongylocentrotus purpuratus</i>		<i>Tethya aurantia</i>	
< 5	0.0 %	<10	0.0 %
5 - 9	0.0 %	10 - 19	0.0 %
10 - 14	2.7 %	20 - 29	2.2 %
15 - 19	7.2 %	30 - 39	8.9 %
20 - 24	14.0 %	40 - 49	2.2 %
25 - 29	12.7 %	50 - 59	11.1 %
30 - 34	14.0 %	60 - 69	2.2 %
35 - 39	10.9 %	70 - 79	20.0 %
40 - 44	14.0 %	80 - 89	28.9 %
45 - 49	8.6 %	90 - 99	20.0 %
50 - 54	9.5 %	> 99	4.4 %
55 - 59	2.7 %	(Cases) N =	45
60 - 64	3.2 %	mean	75
65 - 69	0.0 %	min size (mm)	20
70 - 74	0.5 %	max size (mm)	112
75 - 79	0.0 %		
> 79	0.0 %		
(Cases) N =	221		
mean	37		
min size (mm)	10		
max size (mm)	70		
		<i>Haliotis rufescens</i>	
		<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	0.9 %
		85 - 94	0.0 %
		95 - 104	0.0 %
		105 - 114	0.0 %
		115 - 124	0.0 %
		125 - 134	2.7 %
		135 - 144	0.0 %
		145 - 154	4.5 %
		155 - 164	10.7 %
		165 - 174	10.7 %
		175 - 184	20.5 %
		185 - 194	17.0 %
		>195	30.4 %
		(Cases) N =	112
		mean	182
		min size (mm)	83
		max size (mm)	220

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - South Point

<i>Megastrea undosa</i>		<i>Crassedoma giganteum</i>		<i>Pisaster giganteus</i>	
<10	0.0 %	<10	0.0 %	< 20	0.0 %
10 - 19	0.0 %	10 - 19	0.0 %	20 - 39	0.0 %
20 - 29	0.0 %	20 - 29	0.0 %	40 - 59	6.1 %
30 - 39	0.0 %	30 - 39	0.0 %	60 - 79	10.2 %
40 - 49	0.0 %	40 - 49	0.0 %	80 - 99	28.6 %
50 - 59	0.0 %	50 - 59	33.3 %	100 - 119	24.5 %
60 - 69	0.0 %	60 - 69	0.0 %	120 - 139	12.2 %
70 - 79	0.0 %	70 - 79	0.0 %	140 - 159	12.2 %
80 - 89	0.0 %	80 - 89	33.3 %	160 - 179	4.1 %
90 - 99	0.0 %	90 - 99	0.0 %	180 - 199	2.0 %
100 - 109	0.0 %	100 - 109	33.3 %	200 - 219	0.0 %
110 - 119	0.0 %	110 - 119	0.0 %	220 - 239	0.0 %
> 119	100.0 %	120 - 129	0.0 %	> 239	0.0 %
(Cases) N =	2	130 - 139	0.0 %	(Cases) N =	49
mean	129	> 139	0.0 %	mean	111
min size (mm)	125	(Cases) N =	3	min size (mm)	51
max size (mm)	133	mean	81	max size (mm)	197
		min size (mm)	57		
		max size (mm)	105		
<i>Megathura crenulata</i>		<i>Patiria miniata</i>		<i>Pycnopodia helianthoides</i>	
<10	0.0 %	<10	0.0 %	< 20	0.0 %
10 - 19	0.0 %	10 - 19	0.0 %	20 - 39	0.0 %
20 - 29	0.0 %	20 - 29	1.6 %	40 - 59	0.0 %
30 - 39	0.0 %	30 - 39	3.2 %	60 - 79	0.0 %
40 - 49	0.0 %	40 - 49	12.9 %	80 - 99	0.0 %
50 - 59	0.0 %	50 - 59	30.6 %	100 - 119	0.0 %
60 - 69	0.0 %	60 - 69	32.3 %	120 - 139	0.0 %
70 - 79	0.0 %	70 - 79	16.1 %	140 - 159	33.3 %
80 - 89	33.3 %	80 - 89	3.2 %	160 - 179	0.0 %
90 - 99	0.0 %	90 - 99	0.0 %	180 - 199	33.3 %
100 - 109	0.0 %	> 99	0.0 %	200 - 219	0.0 %
110 - 119	33.3 %	(Cases) N =	62	220 - 239	33.3 %
> 119	33.3 %	mean	58	240 - 259	0.0 %
(Cases) N =	3	min size (mm)	23	260 - 279	0.0 %
mean	111	max size (mm)	84	280 - 299	0.0 %
min size (mm)	84			> 299	0.0 %
max size (mm)	132			(Cases) N =	3
				mean	190
				min size (mm)	154
				max size (mm)	230

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - South Point

<i>Strongylocentrotus franciscanus</i>		<i>Tethya aurantia</i>	
< 5	0.0 %	<10	0.0 %
5 - 9	0.0 %	10 - 19	4.7 %
10 - 14	1.8 %	20 - 29	25.0 %
15 - 19	7.2 %	30 - 39	32.8 %
20 - 24	9.0 %	40 - 49	20.3 %
25 - 29	5.4 %	50 - 59	6.3 %
30 - 34	7.2 %	60 - 69	7.8 %
35 - 39	3.6 %	70 - 79	1.6 %
40 - 44	1.8 %	80 - 89	1.6 %
45 - 49	3.2 %	90 - 99	0.0 %
50 - 54	1.8 %	> 99	0.0 %
55 - 59	1.4 %	(Cases) N =	64
60 - 64	1.8 %	mean	39
65 - 69	1.8 %	min size (mm)	10
70 - 74	2.3 %	max size (mm)	85
75 - 79	1.4 %		
80 - 84	8.1 %		
85 - 89	3.6 %		
90 - 94	5.9 %		
95 - 99	5.4 %		
100 - 104	4.5 %		
105 - 109	5.4 %		
> 109	17.6 %		
(Cases) N =	222		
mean	73		
min size (mm)	13		
max size (mm)	139		
<i>Strongylocentrotus purpuratus</i>		<i>Megastrea undosa</i>	
< 5	0.0 %	<10	0.0 %
5 - 9	0.4 %	10 - 19	0.0 %
10 - 14	1.5 %	20 - 29	0.0 %
15 - 19	6.9 %	30 - 39	0.0 %
20 - 24	16.7 %	40 - 49	2.5 %
25 - 29	22.2 %	50 - 59	5.0 %
30 - 34	16.4 %	60 - 69	5.0 %
35 - 39	12.0 %	70 - 79	25.0 %
40 - 44	7.6 %	80 - 89	35.0 %
45 - 49	7.6 %	90 - 99	17.5 %
50 - 54	6.2 %	100 - 109	10.0 %
55 - 59	1.8 %	110 - 119	0.0 %
60 - 64	0.4 %	> 119	0.0 %
65 - 69	0.0 %	(Cases) N =	40
70 - 74	0.4 %	mean	82
75 - 79	0.0 %	min size (mm)	43
> 79	0.0 %	max size (mm)	105
(Cases) N =	275		
mean	33		
min size (mm)	8		
max size (mm)	71		
		<i>Lithopoma gibberosa</i>	
		<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	49
		min size (mm)	49
		max size (mm)	49

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Devil's Peak Member

<i>Megathura crenulata</i>		<i>Tegula regina</i>		<i>Pisaster giganteus</i>	
<10	0.0 %	< 5	0.0 %	< 20	0.0 %
10 - 19	0.0 %	5 - 9	0.0 %	20 - 39	0.0 %
20 - 29	0.0 %	10 - 14	0.0 %	40 - 59	0.0 %
30 - 39	0.0 %	15 - 19	0.0 %	60 - 79	3.7 %
40 - 49	0.0 %	20 - 24	0.0 %	80 - 99	26.8 %
50 - 59	2.9 %	25 - 29	0.0 %	100 - 119	40.2 %
60 - 69	11.6 %	30 - 34	0.0 %	120 - 139	11.0 %
70 - 79	58.0 %	35 - 39	0.0 %	140 - 159	6.1 %
80 - 89	27.5 %	40 - 44	0.0 %	160 - 179	3.7 %
90 - 99	0.0 %	45 - 49	11.9 %	180 - 199	4.9 %
100 - 109	0.0 %	50 - 54	66.7 %	200 - 219	2.4 %
110 - 119	0.0 %	55 - 59	19.0 %	220 - 239	0.0 %
> 119	0.0 %	60 - 64	2.4 %	> 239	1.2 %
(Cases) N =	69	65 - 69	0.0 %	(Cases) N =	82
mean	74	70 - 74	0.0 %	mean	124
min size (mm)	57	> 75	0.0 %	min size (mm)	68
max size (mm)	88	(Cases) N =	42	max size (mm)	268
		mean	53		
		min size (mm)	47		
		max size (mm)	60		
<i>Crassidoma giganteum</i>		<i>Patiria miniata</i>		<i>Pycnopodia helianthoides</i>	
<10	0.0 %	<10	0.0 %	< 20	0.0 %
10 - 19	0.0 %	10 - 19	0.0 %	20 - 39	0.0 %
20 - 29	0.0 %	20 - 29	1.4 %	40 - 59	0.0 %
30 - 39	6.3 %	30 - 39	0.0 %	60 - 79	0.0 %
40 - 49	6.3 %	40 - 49	9.7 %	80 - 99	20.0 %
50 - 59	9.4 %	50 - 59	27.8 %	100 - 119	0.0 %
60 - 69	3.1 %	60 - 69	31.9 %	120 - 139	0.0 %
70 - 79	3.1 %	70 - 79	23.6 %	140 - 159	20.0 %
80 - 89	6.3 %	80 - 89	5.6 %	160 - 179	20.0 %
90 - 99	15.6 %	90 - 99	0.0 %	180 - 199	20.0 %
100 - 109	3.1 %	> 99	0.0 %	200 - 219	20.0 %
110 - 119	18.8 %	(Cases) N =	72	220 - 239	0.0 %
120 - 129	15.6 %	mean	62	240 - 259	0.0 %
130 - 139	3.1 %	min size (mm)	22	260 - 279	0.0 %
> 139	9.4 %	max size (mm)	87	280 - 299	0.0 %
(Cases) N =	32			> 299	0.0 %
mean	97			(Cases) N =	5
min size (mm)	30			mean	163
max size (mm)	158			min size (mm)	96
				max size (mm)	204

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Devil's Peak Member

<i>Lytechinus anamesus</i>		<i>Strongylocentrotus purpuratus</i>	
< 5	0.0 %	< 5	0.0 %
5 - 9	100.0 %	5 - 9	0.6 %
10 - 14	0.0 %	10 - 14	4.5 %
15 - 19	0.0 %	15 - 19	11.6 %
20 - 24	0.0 %	20 - 24	20.1 %
25 - 29	0.0 %	25 - 29	22.1 %
30 - 34	0.0 %	30 - 34	25.5 %
35 - 39	0.0 %	35 - 39	12.7 %
40 - 44	0.0 %	40 - 44	2.8 %
45 - 49	0.0 %	45 - 49	0.0 %
> 49	0.0 %	50 - 54	0.0 %
(Cases) N =	1	55 - 59	0.0 %
mean	8	60 - 64	0.0 %
min size (mm)	8	65 - 69	0.0 %
max size (mm)	8	70 - 74	0.0 %
		75 - 79	0.0 %
		> 79	0.0 %
		(Cases) N =	353
		mean	26
		min size (mm)	5
		max size (mm)	42
<i>Strongylocentrotus franciscanus</i>			
< 5	0.0 %		
5 - 9	0.0 %		
10 - 14	0.9 %		
15 - 19	1.3 %		
20 - 24	6.6 %		
25 - 29	8.3 %		
30 - 34	5.7 %		
35 - 39	7.5 %		
40 - 44	12.3 %		
45 - 49	23.7 %		
50 - 54	17.1 %		
55 - 59	12.3 %		
60 - 64	3.9 %		
65 - 69	0.4 %		
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 =	228		
mean	40		
min size (mm)	12		
max size (mm)	65		

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Potato Pasture

<i>Tethya aurantia</i>		<i>Megathura crenulata</i>		<i>Tegula regina</i>	
<10	0.0 %	<10	0.0 %	< 5	0.0 %
10 - 19	7.0 %	10 - 19	0.0 %	5 - 9	0.0 %
20 - 29	15.8 %	20 - 29	0.0 %	10 - 14	0.0 %
30 - 39	35.1 %	30 - 39	0.0 %	15 - 19	0.0 %
40 - 49	22.8 %	40 - 49	0.0 %	20 - 24	0.0 %
50 - 59	12.3 %	50 - 59	0.0 %	25 - 29	2.2 %
60 - 69	7.0 %	60 - 69	0.0 %	30 - 34	0.0 %
70 - 79	0.0 %	70 - 79	22.2 %	35 - 39	2.2 %
80 - 89	0.0 %	80 - 89	51.1 %	40 - 44	6.5 %
90 - 99	0.0 %	90 - 99	26.7 %	45 - 49	19.6 %
> 99	0.0 %	100 - 109	0.0 %	50 - 54	58.7 %
(Cases) N =	57	110 - 119	0.0 %	55 - 59	10.9 %
mean	38	> 119	0.0 %	60 - 64	0.0 %
min size (mm)	12	(Cases) N =	45	65 - 69	0.0 %
max size (mm)	66	mean	84	70 - 74	0.0 %
		min size (mm)	70	> 75	0.0 %
		max size (mm)	95	(Cases) N =	46
				mean	48
				min size (mm)	27
				max size (mm)	59
<i>Kelletia kelletii</i>		<i>Crassidoma giganteum</i>		<i>Patiria miniata</i>	
< 40	0.0 %	<10	0.0 %	<10	0.0 %
40 - 49	0.0 %	10 - 19	0.0 %	10 - 19	0.0 %
50 - 59	17.4 %	20 - 29	0.0 %	20 - 29	3.3 %
60 - 69	4.3 %	30 - 39	1.7 %	30 - 39	6.7 %
70 - 79	17.4 %	40 - 49	3.3 %	40 - 49	21.7 %
80 - 89	26.1 %	50 - 59	10.0 %	50 - 59	30.0 %
90 - 99	8.7 %	60 - 69	13.3 %	60 - 69	21.7 %
100 - 109	13.0 %	70 - 79	1.7 %	70 - 79	15.0 %
110 - 119	0.0 %	80 - 89	8.3 %	80 - 89	1.7 %
120 - 129	13.0 %	90 - 99	5.0 %	90 - 99	0.0 %
130 - 139	0.0 %	100 - 109	6.7 %	> 99	0.0 %
140 - 149	0.0 %	110 - 119	6.7 %	(Cases) N =	60
> 149	0.0 %	120 - 129	15.0 %	mean	53
(Cases) N =	23	130 - 139	13.3 %	min size (mm)	21
mean	84	> 139	15.0 %	max size (mm)	81
min size (mm)	51	(Cases) N =	60		
max size (mm)	129	mean	105		
		min size (mm)	38		
		max size (mm)	182		
<i>Megastrea undosa</i>					
<10	0.0 %				
10 - 19	0.0 %				
20 - 29	5.0 %				
30 - 39	5.0 %				
40 - 49	20.0 %				
50 - 59	20.0 %				
60 - 69	20.0 %				
70 - 79	5.0 %				
80 - 89	15.0 %				
90 - 99	10.0 %				
100 - 109	0.0 %				
110 - 119	0.0 %				
> 119	0.0 %				
(Cases) N =	20				
mean	60				
min size (mm)	28				
max size (mm)	92				

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Potato Pasture

<i>Pisaster giganteus</i>		<i>Lytechinus anamesus</i>		<i>Strongylocentrotus purpuratus</i>	
< 20	0.0 %	< 5	0.0 %	< 5	0.0 %
20 - 39	0.0 %	5 - 9	0.0 %	5 - 9	0.5 %
40 - 59	0.0 %	10 - 14	13.8 %	10 - 14	0.5 %
60 - 79	0.0 %	15 - 19	44.8 %	15 - 19	0.9 %
80 - 99	3.3 %	20 - 24	24.1 %	20 - 24	3.2 %
100 - 119	18.3 %	25 - 29	17.2 %	25 - 29	37.1 %
120 - 139	5.0 %	30 - 34	0.0 %	30 - 34	42.1 %
140 - 159	13.3 %	35 - 39	0.0 %	35 - 39	15.4 %
160 - 179	18.3 %	40 - 44	0.0 %	40 - 44	0.5 %
180 - 199	13.3 %	45 - 49	0.0 %	45 - 49	0.0 %
200 - 219	23.3 %	> 49	0.0 %	50 - 54	0.0 %
220 - 239	1.7 %	(Cases) N =	29	55 - 59	0.0 %
> 239	3.3 %	mean	19	60 - 64	0.0 %
(Cases) N =	60	min size (mm)	12	65 - 69	0.0 %
mean	168	max size (mm)	27	70 - 74	0.0 %
min size (mm)	95			75 - 79	0.0 %
max size (mm)	292			> 79	0.0 %
<i>Pycnopodia helianthoides</i>		<i>Strongylocentrotus franciscanus</i>			
< 20	0.0 %	< 5	0.0 %	(Cases) N =	221
20 - 39	0.0 %	5 - 9	0.0 %	mean	29
40 - 59	0.0 %	10 - 14	0.0 %	min size (mm)	8
60 - 79	0.0 %	15 - 19	0.0 %	max size (mm)	42
80 - 99	0.0 %	20 - 24	0.0 %		
100 - 119	0.0 %	25 - 29	2.3 %		
120 - 139	0.0 %	30 - 34	6.4 %		
140 - 159	0.0 %	35 - 39	13.3 %		
160 - 179	100.0 %	40 - 44	20.2 %		
180 - 199	0.0 %	45 - 49	33.5 %		
200 - 219	0.0 %	50 - 54	16.5 %		
220 - 239	0.0 %	55 - 59	6.0 %		
240 - 259	0.0 %	60 - 64	1.4 %		
260 - 279	0.0 %	65 - 69	0.5 %		
280 - 299	0.0 %	70 - 74	0.0 %		
> 299	0.0 %	75 - 79	0.0 %		
(Cases) N =	1	80 - 84	0.0 %		
mean	175	85 - 89	0.0 %		
min size (mm)	175	90 - 94	0.0 %		
max size (mm)	175	95 - 99	0.0 %		
		100 - 104	0.0 %		
		105 - 109	0.0 %		
		> 109	0.0 %		
		(Cases) N =	218		
		mean	45		
		min size (mm)	25		
		max size (mm)	67		

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Cavern Point

<i>Tethya aurantia</i>			<i>Crassedoma giganteum</i>			<i>Patiria miniata</i>		
<10	0.0 %		<10	0.0 %		<10	0.0 %	
10 - 19	0.0 %		10 - 19	1.5 %		10 - 19	0.0 %	
20 - 29	9.5 %		20 - 29	1.5 %		20 - 29	4.8 %	
30 - 39	20.6 %		30 - 39	0.0 %		30 - 39	8.1 %	
40 - 49	27.0 %		40 - 49	3.1 %		40 - 49	8.1 %	
50 - 59	25.4 %		50 - 59	4.6 %		50 - 59	12.9 %	
60 - 69	7.9 %		60 - 69	12.3 %		60 - 69	27.4 %	
70 - 79	7.9 %		70 - 79	10.8 %		70 - 79	16.1 %	
80 - 89	1.6 %		80 - 89	6.2 %		80 - 89	19.4 %	
90 - 99	0.0 %		90 - 99	10.8 %		90 - 99	3.2 %	
> 99	0.0 %		100 - 109	7.7 %		> 99	0.0 %	
(Cases) N =	63		110 - 119	12.3 %		(Cases) N =	62	
mean	47		120 - 129	12.3 %		mean	62	
min size (mm)	25		130 - 139	7.7 %		min size (mm)	21	
max size (mm)	83		> 139	9.2 %		max size (mm)	94	
			(Cases) N =	65				
			mean	97				
			min size (mm)	19				
			max size (mm)	172				
<i>Megastrea undosa</i>			<i>Tegula regina</i>			<i>Pisaster giganteus</i>		
<10	0.0 %		< 5	0.0 %		< 20	0.0 %	
10 - 19	0.0 %		5 - 9	0.0 %		20 - 39	0.0 %	
20 - 29	0.0 %		10 - 14	0.0 %		40 - 59	1.5 %	
30 - 39	5.6 %		15 - 19	0.0 %		60 - 79	3.1 %	
40 - 49	16.7 %		20 - 24	0.0 %		80 - 99	3.1 %	
50 - 59	11.1 %		25 - 29	0.0 %		100 - 119	16.9 %	
60 - 69	5.6 %		30 - 34	0.0 %		120 - 139	20.0 %	
70 - 79	16.7 %		35 - 39	0.0 %		140 - 159	23.1 %	
80 - 89	22.2 %		40 - 44	0.0 %		160 - 179	23.1 %	
90 - 99	22.2 %		45 - 49	6.3 %		180 - 199	6.2 %	
100 - 109	0.0 %		50 - 54	75.0 %		200 - 219	1.5 %	
110 - 119	0.0 %		55 - 59	12.5 %		220 - 239	1.5 %	
> 119	0.0 %		60 - 64	6.3 %		> 239	0.0 %	
(Cases) N =	18		65 - 69	0.0 %		(Cases) N =	65	
mean	69		70 - 74	0.0 %		mean	143	
min size (mm)	39		> 75	0.0 %		min size (mm)	56	
max size (mm)	95		(Cases) N =	16		max size (mm)	230	
			mean	53				
			min size (mm)	48				
			max size (mm)	60				
<i>Megathura crenulata</i>			<i>Lytechinus anamesus</i>					
<10	0.0 %		< 5	0.0 %		< 5	0.0 %	
10 - 19	0.0 %		5 - 9	25.0 %		5 - 9	25.0 %	
20 - 29	0.0 %		10 - 14	63.9 %		10 - 14	63.9 %	
30 - 39	0.0 %		15 - 19	8.3 %		15 - 19	8.3 %	
40 - 49	0.0 %		20 - 24	2.8 %		20 - 24	2.8 %	
50 - 59	0.0 %		25 - 29	0.0 %		25 - 29	0.0 %	
60 - 69	7.4 %		30 - 34	0.0 %		30 - 34	0.0 %	
70 - 79	33.3 %		35 - 39	0.0 %		35 - 39	0.0 %	
80 - 89	44.4 %		40 - 44	0.0 %		40 - 44	0.0 %	
90 - 99	14.8 %		45 - 49	0.0 %		45 - 49	0.0 %	
100 - 109	0.0 %		> 49	0.0 %		> 49	0.0 %	
110 - 119	0.0 %		(Cases) N =	36		(Cases) N =	36	
> 119	0.0 %		mean	13		mean	13	
(Cases) N =	81		min size (mm)	8		min size (mm)	8	
mean	80		max size (mm)	22		max size (mm)	22	
min size (mm)	63							
max size (mm)	99							

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Cavern Point

<i>Strongylocentrotus franciscanus</i>		<i>Tethya aurantia</i>	
< 5	0.0 %	<10	0.0 %
5 - 9	0.0 %	10 - 19	7.1 %
10 - 14	0.4 %	20 - 29	17.9 %
15 - 19	0.0 %	30 - 39	14.3 %
20 - 24	0.0 %	40 - 49	21.4 %
25 - 29	0.9 %	50 - 59	25.0 %
30 - 34	5.7 %	60 - 69	14.3 %
35 - 39	7.4 %	70 - 79	0.0 %
40 - 44	19.1 %	80 - 89	0.0 %
45 - 49	25.2 %	90 - 99	0.0 %
50 - 54	20.9 %	> 99	0.0 %
55 - 59	11.7 %	(Cases) N =	28
60 - 64	7.4 %	mean	42
65 - 69	1.3 %	min size (mm)	15
70 - 74	0.0 %	max size (mm)	65
75 - 79	0.0 %		
80 - 84	0.0 %		
85 - 89	0.0 %		
90 - 94	0.0 %	<i>Kelletia kelletii</i>	
95 - 99	0.0 %	< 40	0.0 %
100 - 104	0.0 %	40 - 49	0.0 %
105 - 109	0.0 %	50 - 59	0.0 %
> 109	0.0 %	60 - 69	0.0 %
(Cases) N =	230	70 - 79	0.0 %
mean	47	80 - 89	0.0 %
min size (mm)	12	90 - 99	0.0 %
max size (mm)	69	100 - 109	22.2 %
		110 - 119	44.4 %
		120 - 129	33.3 %
		130 - 139	0.0 %
		140 - 149	0.0 %
		> 149	0.0 %
		(Cases) N =	9
		mean	115
		min size (mm)	106
		max size (mm)	128
<i>Strongylocentrotus purpuratus</i>		<i>Megastrea undosa</i>	
< 5	0.0 %	<10	0.0 %
5 - 9	0.0 %	10 - 19	0.0 %
10 - 14	0.8 %	20 - 29	7.7 %
15 - 19	0.0 %	30 - 39	0.0 %
20 - 24	0.8 %	40 - 49	15.4 %
25 - 29	18.5 %	50 - 59	0.0 %
30 - 34	49.2 %	60 - 69	0.0 %
35 - 39	25.8 %	70 - 79	7.7 %
40 - 44	4.6 %	80 - 89	38.5 %
45 - 49	0.4 %	90 - 99	30.8 %
50 - 54	0.0 %	100 - 109	0.0 %
55 - 59	0.0 %	110 - 119	0.0 %
60 - 64	0.0 %	> 119	0.0 %
65 - 69	0.0 %	(Cases) N =	13
70 - 74	0.0 %	mean	75
75 - 79	0.0 %	min size (mm)	28
> 79	0.0 %	max size (mm)	98
(Cases) N =	260		
mean	33		
min size (mm)	11		
max size (mm)	45		

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Little Scorpion

<i>Megathura crenulata</i>		<i>Tegula regina</i>		<i>Pisaster giganteus</i>	
<10	0.0 %	< 5	0.0 %	< 20	0.0 %
10 - 19	0.0 %	5 - 9	0.0 %	20 - 39	0.0 %
20 - 29	0.0 %	10 - 14	0.0 %	40 - 59	1.6 %
30 - 39	1.1 %	15 - 19	0.0 %	60 - 79	0.0 %
40 - 49	1.1 %	20 - 24	0.0 %	80 - 99	3.2 %
50 - 59	11.4 %	25 - 29	0.0 %	100 - 119	6.5 %
60 - 69	14.8 %	30 - 34	0.0 %	120 - 139	8.1 %
70 - 79	33.0 %	35 - 39	0.0 %	140 - 159	17.7 %
80 - 89	21.6 %	40 - 44	0.0 %	160 - 179	24.2 %
90 - 99	13.6 %	45 - 49	0.0 %	180 - 199	22.6 %
100 - 109	2.3 %	50 - 54	50.0 %	200 - 219	16.1 %
110 - 119	1.1 %	55 - 59	50.0 %	220 - 239	0.0 %
> 119	0.0 %	60 - 64	0.0 %	> 239	0.0 %
(Cases) N =	88	65 - 69	0.0 %	(Cases) N =	62
mean	76	70 - 74	0.0 %	mean	161
min size (mm)	39	> 75	0.0 %	min size (mm)	48
max size (mm)	110	(Cases) N =	18	max size (mm)	215
		mean	54		
		min size (mm)	50		
		max size (mm)	57		
<i>Crassedoma giganteum</i>		<i>Patiria miniata</i>		<i>Pycnopodia helianthoides</i>	
<10	0.0 %	<10	0.0 %	< 20	0.0 %
10 - 19	0.0 %	10 - 19	0.0 %	20 - 39	0.0 %
20 - 29	0.0 %	20 - 29	1.6 %	40 - 59	0.0 %
30 - 39	0.0 %	30 - 39	6.5 %	60 - 79	0.0 %
40 - 49	9.1 %	40 - 49	17.7 %	80 - 99	0.0 %
50 - 59	18.2 %	50 - 59	24.2 %	100 - 119	0.0 %
60 - 69	36.4 %	60 - 69	24.2 %	120 - 139	0.0 %
70 - 79	0.0 %	70 - 79	19.4 %	140 - 159	0.0 %
80 - 89	9.1 %	80 - 89	6.5 %	160 - 179	0.0 %
90 - 99	0.0 %	90 - 99	0.0 %	180 - 199	0.0 %
100 - 109	0.0 %	> 99	0.0 %	200 - 219	0.0 %
110 - 119	0.0 %	(Cases) N =	62	220 - 239	100.0 %
120 - 129	18.2 %	mean	58	240 - 259	0.0 %
130 - 139	0.0 %	min size (mm)	26	260 - 279	0.0 %
> 139	9.1 %	max size (mm)	84	280 - 299	0.0 %
(Cases) N =	11			> 299	0.0 %
mean	83			(Cases) N =	1
min size (mm)	49			mean	220
max size (mm)	163			min size (mm)	220
				max size (mm)	220

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Little Scorpion

<i>Lytechinus anamesus</i>		<i>Strongylocentrotus purpuratus</i>	
< 5	0.0 %	< 5	0.0 %
5 - 9	0.0 %	5 - 9	0.0 %
10 - 14	0.0 %	10 - 14	1.5 %
15 - 19	33.3 %	15 - 19	8.0 %
20 - 24	50.0 %	20 - 24	9.0 %
25 - 29	16.7 %	25 - 29	10.4 %
30 - 34	0.0 %	30 - 34	13.9 %
35 - 39	0.0 %	35 - 39	7.5 %
40 - 44	0.0 %	40 - 44	10.0 %
45 - 49	0.0 %	45 - 49	19.4 %
> 49	0.0 %	50 - 54	11.9 %
(Cases) N =	6	55 - 59	5.0 %
mean	22	60 - 64	2.5 %
min size (mm)	18	65 - 69	1.0 %
max size (mm)	29	70 - 74	0.0 %
		75 - 79	0.0 %
		> 79	0.0 %
		(Cases) N =	201
		mean	38
		min size (mm)	13
		max size (mm)	66
<i>Strongylocentrotus franciscanus</i>			
< 5	0.0 %		
5 - 9	0.0 %		
10 - 14	0.0 %		
15 - 19	0.0 %		
20 - 24	4.3 %		
25 - 29	5.7 %		
30 - 34	5.7 %		
35 - 39	3.3 %		
40 - 44	5.7 %		
45 - 49	9.5 %		
50 - 54	11.9 %		
55 - 59	15.2 %		
60 - 64	15.7 %		
65 - 69	10.0 %		
70 - 74	4.3 %		
75 - 79	6.2 %		
80 - 84	1.4 %		
85 - 89	0.0 %		
90 - 94	1.0 %		
95 - 99	0.0 %		
100 - 104	0.0 %		
105 - 109	0.0 %		
> 109	0.0 %		
(Cases) N =	210		
mean	53		
min size (mm)	20		
max size (mm)	91		

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Pedro Reef

<i>Tethya aurantia</i>			<i>Lithopoma gibberosa</i>			<i>Crassidoma giganteum</i>		
<10	0.0 %		<10	0.0 %		<10	0.0 %	
10 - 19	0.0 %		10 - 19	0.0 %		10 - 19	0.0 %	
20 - 29	4.6 %		20 - 29	0.0 %		20 - 29	0.0 %	
30 - 39	12.3 %		30 - 39	0.0 %		30 - 39	0.0 %	
40 - 49	23.1 %		40 - 49	100.0 %		40 - 49	9.1 %	
50 - 59	18.5 %		50 - 59	0.0 %		50 - 59	0.0 %	
60 - 69	13.8 %		60 - 69	0.0 %		60 - 69	36.4 %	
70 - 79	16.9 %		70 - 79	0.0 %		70 - 79	0.0 %	
80 - 89	10.8 %		80 - 89	0.0 %		80 - 89	0.0 %	
90 - 99	0.0 %		90 - 99	0.0 %		90 - 99	0.0 %	
> 99	0.0 %		100 - 109	0.0 %		100 - 109	0.0 %	
(Cases) N =	65		110 - 119	0.0 %		110 - 119	9.1 %	
mean	56		> 119	0.0 %		120 - 129	0.0 %	
min size (mm)	24		(Cases) N =	1		130 - 139	0.0 %	
max size (mm)	86		mean	46		> 139	45.5 %	
			min size (mm)	46		(Cases) N =	11	
			max size (mm)	46		mean	106	
						min size (mm)	47	
						max size (mm)	172	
<i>Kelletia kelletii</i>			<i>Megathura crenulata</i>			<i>Tegula regina</i>		
< 40	0.0 %		<10	0.0 %		< 5	0.0 %	
40 - 49	0.0 %		10 - 19	0.0 %		5 - 9	0.0 %	
50 - 59	0.0 %		20 - 29	0.0 %		10 - 14	0.0 %	
60 - 69	25.0 %		30 - 39	0.0 %		15 - 19	0.0 %	
70 - 79	0.0 %		40 - 49	0.0 %		20 - 24	0.0 %	
80 - 89	25.0 %		50 - 59	4.8 %		25 - 29	0.0 %	
90 - 99	0.0 %		60 - 69	21.0 %		30 - 34	0.0 %	
100 - 109	0.0 %		70 - 79	37.1 %		35 - 39	0.0 %	
110 - 119	25.0 %		80 - 89	27.4 %		40 - 44	0.0 %	
120 - 129	25.0 %		90 - 99	9.7 %		45 - 49	0.0 %	
130 - 139	0.0 %		100 - 109	0.0 %		50 - 54	87.5 %	
140 - 149	0.0 %		110 - 119	0.0 %		55 - 59	12.5 %	
> 149	0.0 %		> 119	0.0 %		60 - 64	0.0 %	
(Cases) N =	4		(Cases) N =	62		65 - 69	0.0 %	
mean	99		mean	77		70 - 74	0.0 %	
min size (mm)	69		min size (mm)	54		> 75	0.0 %	
max size (mm)	126		max size (mm)	96		(Cases) N =	8	
						mean	53	
						min size (mm)	50	
						max size (mm)	57	
<i>Megastrea undosa</i>								
<10	0.0 %							
10 - 19	7.5 %							
20 - 29	0.0 %							
30 - 39	1.3 %							
40 - 49	2.5 %							
50 - 59	6.3 %							
60 - 69	11.3 %							
70 - 79	33.8 %							
80 - 89	27.5 %							
90 - 99	8.8 %							
100 - 109	1.3 %							
110 - 119	0.0 %							
> 119	0.0 %							
(Cases) N =	80							
mean	69							
min size (mm)	13							
max size (mm)	106							

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Pedro Reef

<i>Patiria miniata</i>		<i>Pycnopodia helianthoides</i>		<i>Strongylocentrotus franciscanus</i>	
<10	0.0 %	< 20	0.0 %	< 5	0.0 %
10 - 19	0.0 %	20 - 39	0.0 %	5 - 9	0.0 %
20 - 29	3.4 %	40 - 59	0.0 %	10 - 14	1.0 %
30 - 39	12.5 %	60 - 79	0.0 %	15 - 19	6.2 %
40 - 49	15.9 %	80 - 99	0.0 %	20 - 24	14.9 %
50 - 59	17.0 %	100 - 119	100.0 %	25 - 29	12.3 %
60 - 69	21.6 %	120 - 139	0.0 %	30 - 34	19.0 %
70 - 79	11.4 %	140 - 159	0.0 %	35 - 39	19.0 %
80 - 89	10.2 %	160 - 179	0.0 %	40 - 44	14.4 %
90 - 99	6.8 %	180 - 199	0.0 %	45 - 49	6.2 %
> 99	1.1 %	200 - 219	0.0 %	50 - 54	5.6 %
(Cases) N =	88	220 - 239	0.0 %	55 - 59	0.5 %
mean	60	240 - 259	0.0 %	60 - 64	0.5 %
min size (mm)	26	260 - 279	0.0 %	65 - 69	0.0 %
max size (mm)	101	280 - 299	0.0 %	70 - 74	0.5 %
		> 299	0.0 %	75 - 79	0.0 %
		(Cases) N =	4	80 - 84	0.0 %
		mean	109	85 - 89	0.0 %
		min size (mm)	100	90 - 94	0.0 %
		max size (mm)	115	95 - 99	0.0 %
				100 - 104	0.0 %
				105 - 109	0.0 %
				> 109	0.0 %
				(Cases) N =	195
				mean	34
				min size (mm)	12
				max size (mm)	74
<i>Pisaster giganteus</i>		<i>Lytechinus anamesus</i>		<i>Strongylocentrotus purpuratus</i>	
< 20	0.0 %	< 5	0.0 %	< 5	0.4 %
20 - 39	0.0 %	5 - 9	0.0 %	5 - 9	2.3 %
40 - 59	3.4 %	10 - 14	3.0 %	10 - 14	10.2 %
60 - 79	13.8 %	15 - 19	10.0 %	15 - 19	37.5 %
80 - 99	10.3 %	20 - 24	23.0 %	20 - 24	35.2 %
100 - 119	19.0 %	25 - 29	52.0 %	25 - 29	12.9 %
120 - 139	17.2 %	30 - 34	12.0 %	30 - 34	1.6 %
140 - 159	19.0 %	35 - 39	0.0 %	35 - 39	0.0 %
160 - 179	6.9 %	40 - 44	0.0 %	40 - 44	0.0 %
180 - 199	6.9 %	45 - 49	0.0 %	45 - 49	0.0 %
200 - 219	3.4 %	> 49	0.0 %	50 - 54	0.0 %
220 - 239	0.0 %	(Cases) N =	200	55 - 59	0.0 %
> 239	0.0 %	mean	23	60 - 64	0.0 %
(Cases) N =	58	min size (mm)	11	65 - 69	0.0 %
mean	125	max size (mm)	34	70 - 74	0.0 %
min size (mm)	51			75 - 79	0.0 %
max size (mm)	210			> 79	0.0 %
				(Cases) N =	256
				mean	19
				min size (mm)	4
				max size (mm)	32

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Keyhole

<i>Tethya aurantia</i>		<i>Lithopoma gibberosa</i>		<i>Tegula regina</i>	
<10	0.0 %	<10	0.0 %	< 5	0.0 %
10 - 19	0.0 %	10 - 19	0.0 %	5 - 9	0.0 %
20 - 29	0.0 %	20 - 29	0.0 %	10 - 14	0.0 %
30 - 39	0.0 %	30 - 39	0.0 %	15 - 19	0.0 %
40 - 49	0.0 %	40 - 49	100.0 %	20 - 24	0.0 %
50 - 59	100.0 %	50 - 59	0.0 %	25 - 29	0.0 %
60 - 69	0.0 %	60 - 69	0.0 %	30 - 34	0.0 %
70 - 79	0.0 %	70 - 79	0.0 %	35 - 39	0.0 %
80 - 89	0.0 %	80 - 89	0.0 %	40 - 44	2.8 %
90 - 99	0.0 %	90 - 99	0.0 %	45 - 49	27.8 %
> 99	0.0 %	100 - 109	0.0 %	50 - 54	55.6 %
(Cases) N =	1	110 - 119	0.0 %	55 - 59	11.1 %
mean	52	> 119	0.0 %	60 - 64	2.8 %
min size (mm)	52	(Cases) N =	1	65 - 69	0.0 %
max size (mm)	52	mean	43	70 - 74	0.0 %
		min size (mm)	43	> 75	0.0 %
		max size (mm)	43	(Cases) N =	36
				mean	51
				min size (mm)	42
				max size (mm)	62
<i>Kelletia kelletii</i>		<i>Crassedoma giganteum</i>		<i>Patiria miniata</i>	
< 40	0.0 %	<10	0.0 %	<10	0.0 %
40 - 49	0.0 %	10 - 19	0.0 %	10 - 19	1.7 %
50 - 59	0.0 %	20 - 29	0.0 %	20 - 29	0.0 %
60 - 69	0.0 %	30 - 39	0.0 %	30 - 39	10.0 %
70 - 79	0.0 %	40 - 49	11.7 %	40 - 49	33.3 %
80 - 89	50.0 %	50 - 59	15.0 %	50 - 59	25.0 %
90 - 99	0.0 %	60 - 69	16.7 %	60 - 69	23.3 %
100 - 109	0.0 %	70 - 79	15.0 %	70 - 79	5.0 %
110 - 119	50.0 %	80 - 89	8.3 %	80 - 89	1.7 %
120 - 129	0.0 %	90 - 99	8.3 %	90 - 99	0.0 %
130 - 139	0.0 %	100 - 109	5.0 %	> 99	0.0 %
140 - 149	0.0 %	110 - 119	0.0 %	(Cases) N =	60
> 149	0.0 %	120 - 129	8.3 %	mean	53
(Cases) N =	2	130 - 139	1.7 %	min size (mm)	15
mean	96	> 139	10.0 %	max size (mm)	80
min size (mm)	81	(Cases) N =	60		
max size (mm)	110	mean	88		
		min size (mm)	40		
		max size (mm)	162		
<i>Megastrea undosa</i>					
<10	0.0 %				
10 - 19	0.0 %				
20 - 29	0.0 %				
30 - 39	0.0 %				
40 - 49	7.0 %				
50 - 59	5.6 %				
60 - 69	16.9 %				
70 - 79	26.8 %				
80 - 89	31.0 %				
90 - 99	11.3 %				
100 - 109	1.4 %				
110 - 119	0.0 %				
> 119	0.0 %				
(Cases) N =	71				
mean	74				
min size (mm)	42				
max size (mm)	100				

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Keyhole

<i>Pisaster giganteus</i>		<i>Strongylocentrotus franciscanus</i>	
< 20	0.0 %	< 5	0.0 %
20 - 39	0.0 %	5 - 9	1.4 %
40 - 59	12.5 %	10 - 14	7.6 %
60 - 79	0.0 %	15 - 19	9.0 %
80 - 99	25.0 %	20 - 24	12.3 %
100 - 119	12.5 %	25 - 29	15.6 %
120 - 139	12.5 %	30 - 34	13.3 %
140 - 159	0.0 %	35 - 39	10.0 %
160 - 179	37.5 %	40 - 44	10.0 %
180 - 199	0.0 %	45 - 49	3.3 %
200 - 219	0.0 %	50 - 54	4.7 %
220 - 239	0.0 %	55 - 59	4.3 %
> 239	0.0 %	60 - 64	0.9 %
(Cases) N =	8	65 - 69	3.3 %
mean	121	70 - 74	1.4 %
min size (mm)	43	75 - 79	1.4 %
max size (mm)	175	80 - 84	0.9 %
		85 - 89	0.0 %
		90 - 94	0.0 %
		95 - 99	0.5 %
		100 - 104	0.0 %
		105 - 109	0.0 %
		> 109	0.0 %
		(Cases) N =	211
		mean	39
		min size (mm)	6
		max size (mm)	98
<i>Lytechinus anamesus</i>		<i>Strongylocentrotus purpuratus</i>	
< 5	0.0 %	< 5	0.5 %
5 - 9	0.0 %	5 - 9	3.3 %
10 - 14	11.4 %	10 - 14	7.4 %
15 - 19	25.2 %	15 - 19	20.9 %
20 - 24	32.7 %	20 - 24	28.4 %
25 - 29	20.8 %	25 - 29	27.9 %
30 - 34	8.9 %	30 - 34	9.8 %
35 - 39	1.0 %	35 - 39	0.9 %
40 - 44	0.0 %	40 - 44	0.0 %
45 - 49	0.0 %	45 - 49	0.9 %
> 49	0.0 %	50 - 54	0.0 %
(Cases) N =	202	55 - 59	0.0 %
mean	23	60 - 64	0.0 %
min size (mm)	10	65 - 69	0.0 %
max size (mm)	37	70 - 74	0.0 %
		75 - 79	0.0 %
		> 79	0.0 %
		(Cases) N =	215
		mean	22
		min size (mm)	4
		max size (mm)	47

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - East Fish Camp

<i>Tethya aurantia</i>			<i>Megathura crenulata</i>			<i>Tegula regina</i>		
<10	0.0 %		<10	0.0 %		< 5	0.0 %	
10 - 19	0.0 %		10 - 19	0.0 %		5 - 9	0.0 %	
20 - 29	12.5 %		20 - 29	0.0 %		10 - 14	0.0 %	
30 - 39	25.0 %		30 - 39	0.0 %		15 - 19	0.0 %	
40 - 49	18.8 %		40 - 49	11.5 %		20 - 24	0.0 %	
50 - 59	25.0 %		50 - 59	31.1 %		25 - 29	0.0 %	
60 - 69	18.8 %		60 - 69	32.8 %		30 - 34	0.0 %	
70 - 79	0.0 %		70 - 79	21.3 %		35 - 39	0.0 %	
80 - 89	0.0 %		80 - 89	3.3 %		40 - 44	0.0 %	
90 - 99	0.0 %		90 - 99	0.0 %		45 - 49	6.7 %	
> 99	0.0 %		100 - 109	0.0 %		50 - 54	73.3 %	
(Cases) N =	16		110 - 119	0.0 %		55 - 59	20.0 %	
mean	48		> 119	0.0 %		60 - 64	0.0 %	
min size (mm)	25		(Cases) N =	61		65 - 69	0.0 %	
max size (mm)	68		mean	61		70 - 74	0.0 %	
			min size (mm)	44		> 75	0.0 %	
			max size (mm)	81		(Cases) N =	15	
						mean	53	
						min size (mm)	48	
						max size (mm)	59	
<i>Kelletia kelletii</i>			<i>Crassedoma giganteum</i>			<i>Patiria miniata</i>		
< 40	1.4 %		<10	0.0 %		<10	0.0 %	
40 - 49	0.0 %		10 - 19	0.0 %		10 - 19	0.0 %	
50 - 59	0.0 %		20 - 29	0.0 %		20 - 29	15.3 %	
60 - 69	5.7 %		30 - 39	0.0 %		30 - 39	13.6 %	
70 - 79	7.1 %		40 - 49	29.2 %		40 - 49	13.6 %	
80 - 89	5.7 %		50 - 59	25.0 %		50 - 59	15.3 %	
90 - 99	22.9 %		60 - 69	0.0 %		60 - 69	18.6 %	
100 - 109	38.6 %		70 - 79	4.2 %		70 - 79	10.2 %	
110 - 119	18.6 %		80 - 89	8.3 %		80 - 89	11.9 %	
120 - 129	0.0 %		90 - 99	4.2 %		90 - 99	1.7 %	
130 - 139	0.0 %		100 - 109	8.3 %		> 99	0.0 %	
140 - 149	0.0 %		110 - 119	0.0 %		(Cases) N =	59	
> 149	0.0 %		120 - 129	0.0 %		mean	56	
(Cases) N =	70		130 - 139	12.5 %		min size (mm)	20	
mean	93		> 139	8.3 %		max size (mm)	94	
min size (mm)	37		(Cases) N =	24				
max size (mm)	119		mean	84				
			min size (mm)	40				
			max size (mm)	149				
<i>Megastrea undosa</i>								
<10	0.0 %							
10 - 19	0.0 %							
20 - 29	1.9 %							
30 - 39	16.5 %							
40 - 49	43.7 %							
50 - 59	33.0 %							
60 - 69	2.9 %							
70 - 79	1.0 %							
80 - 89	0.0 %							
90 - 99	1.0 %							
100 - 109	0.0 %							
110 - 119	0.0 %							
> 119	0.0 %							
(Cases) N =	103							
mean	47							
min size (mm)	23							
max size (mm)	90							

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - East Fish Camp

<i>Pisaster giganteus</i>		<i>Strongylocentrotus franciscanus</i>	
< 20	0.0 %	< 5	0.0 %
20 - 39	0.0 %	5 - 9	3.5 %
40 - 59	0.0 %	10 - 14	0.4 %
60 - 79	0.0 %	15 - 19	10.6 %
80 - 99	0.0 %	20 - 24	22.0 %
100 - 119	2.9 %	25 - 29	40.6 %
120 - 139	14.7 %	30 - 34	20.1 %
140 - 159	11.8 %	35 - 39	2.0 %
160 - 179	29.4 %	40 - 44	0.8 %
180 - 199	5.9 %	45 - 49	0.0 %
200 - 219	23.5 %	50 - 54	0.0 %
220 - 239	5.9 %	55 - 59	0.0 %
> 239	5.9 %	60 - 64	0.0 %
(Cases) N =	34	65 - 69	0.0 %
mean	174	70 - 74	0.0 %
min size (mm)	102	75 - 79	0.0 %
max size (mm)	290	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 =	254
		mean	23
		min size (mm)	5
		max size (mm)	41
<i>Lytechinus anamesus</i>		<i>Strongylocentrotus purpuratus</i>	
< 5	0.0 %	< 5	1.2 %
5 - 9	0.0 %	5 - 9	17.1 %
10 - 14	4.3 %	10 - 14	18.0 %
15 - 19	15.2 %	15 - 19	36.6 %
20 - 24	33.5 %	20 - 24	24.7 %
25 - 29	40.0 %	25 - 29	2.1 %
30 - 34	7.0 %	30 - 34	0.3 %
35 - 39	0.0 %	35 - 39	0.0 %
40 - 44	0.0 %	40 - 44	0.0 %
45 - 49	0.0 %	45 - 49	0.0 %
> 49	0.0 %	50 - 54	0.0 %
(Cases) N =	230	55 - 59	0.0 %
mean	23	60 - 64	0.0 %
min size (mm)	12	65 - 69	0.0 %
max size (mm)	34	70 - 74	0.0 %
		75 - 79	0.0 %
		> 79	0.0 %
		(Cases) N =	328
		mean	16
		min size (mm)	3
		max size (mm)	32

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Black Sea Bass Reef

<i>Tethya aurantia</i>		<i>Megathura crenulata</i>		<i>Tegula regina</i>	
<10	0.0 %	<10	0.0 %	< 5	0.0 %
10 - 19	2.9 %	10 - 19	0.0 %	5 - 9	0.0 %
20 - 29	17.1 %	20 - 29	0.0 %	10 - 14	0.0 %
30 - 39	14.3 %	30 - 39	0.0 %	15 - 19	0.0 %
40 - 49	22.9 %	40 - 49	0.0 %	20 - 24	0.0 %
50 - 59	31.4 %	50 - 59	1.8 %	25 - 29	0.0 %
60 - 69	5.7 %	60 - 69	1.8 %	30 - 34	0.0 %
70 - 79	5.7 %	70 - 79	12.3 %	35 - 39	5.3 %
80 - 89	0.0 %	80 - 89	31.6 %	40 - 44	10.5 %
90 - 99	0.0 %	90 - 99	49.1 %	45 - 49	57.9 %
> 99	0.0 %	100 - 109	3.5 %	50 - 54	26.3 %
(Cases) N =	35	110 - 119	0.0 %	55 - 59	0.0 %
mean	44	> 119	0.0 %	60 - 64	0.0 %
min size (mm)	18	(Cases) N =	57	65 - 69	0.0 %
max size (mm)	73	mean	87	70 - 74	0.0 %
		min size (mm)	57	> 75	0.0 %
		max size (mm)	107	(Cases) N =	19
				mean	47
				min size (mm)	36
				max size (mm)	52
<i>Kelletia kelletii</i>		<i>Crassedoma giganteum</i>		<i>Patiria miniata</i>	
< 40	0.0 %	<10	0.0 %	<10	0.0 %
40 - 49	0.0 %	10 - 19	0.0 %	10 - 19	0.0 %
50 - 59	0.0 %	20 - 29	0.0 %	20 - 29	0.0 %
60 - 69	0.0 %	30 - 39	7.1 %	30 - 39	0.0 %
70 - 79	0.0 %	40 - 49	0.0 %	40 - 49	0.0 %
80 - 89	0.0 %	50 - 59	21.4 %	50 - 59	0.0 %
90 - 99	0.0 %	60 - 69	7.1 %	60 - 69	33.3 %
100 - 109	2.5 %	70 - 79	0.0 %	70 - 79	0.0 %
110 - 119	5.0 %	80 - 89	7.1 %	80 - 89	50.0 %
120 - 129	37.5 %	90 - 99	0.0 %	90 - 99	16.7 %
130 - 139	40.0 %	100 - 109	0.0 %	> 99	0.0 %
140 - 149	12.5 %	110 - 119	0.0 %	(Cases) N =	6
> 149	2.5 %	120 - 129	14.3 %	mean	81
(Cases) N =	40	130 - 139	7.1 %	min size (mm)	66
mean	130	> 139	35.7 %	max size (mm)	92
min size (mm)	107	(Cases) N =	14		
max size (mm)	151	mean	110		
		min size (mm)	33		
		max size (mm)	181		
<i>Megastrea undosa</i>					
<10	0.0 %				
10 - 19	0.0 %				
20 - 29	0.0 %				
30 - 39	8.7 %				
40 - 49	8.7 %				
50 - 59	0.0 %				
60 - 69	17.4 %				
70 - 79	30.4 %				
80 - 89	0.0 %				
90 - 99	26.1 %				
100 - 109	8.7 %				
110 - 119	0.0 %				
> 119	0.0 %				
(Cases) N =	23				
mean	74				
min size (mm)	39				
max size (mm)	102				

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Black Sea Bass Reef

<i>Pisaster giganteus</i>		<i>Strongylocentrotus purpuratus</i>	
< 20	0.0 %	< 5	0.5 %
20 - 39	0.0 %	5 - 9	8.6 %
40 - 59	0.0 %	10 - 14	12.4 %
60 - 79	3.8 %	15 - 19	22.5 %
80 - 99	0.0 %	20 - 24	23.4 %
100 - 119	7.7 %	25 - 29	20.1 %
120 - 139	7.7 %	30 - 34	8.1 %
140 - 159	26.9 %	35 - 39	3.3 %
160 - 179	19.2 %	40 - 44	1.0 %
180 - 199	11.5 %	45 - 49	0.0 %
200 - 219	23.1 %	50 - 54	0.0 %
220 - 239	0.0 %	55 - 59	0.0 %
> 239	0.0 %	60 - 64	0.0 %
(Cases) N =	26	65 - 69	0.0 %
mean	160	70 - 74	0.0 %
min size (mm)	65	75 - 79	0.0 %
max size (mm)	217	> 79	0.0 %
		(Cases) N =	209
		mean	21
		min size (mm)	4
		max size (mm)	42
<i>Strongylocentrotus franciscanus</i>			
< 5	0.0 %		
5 - 9	0.5 %		
10 - 14	1.0 %		
15 - 19	9.7 %		
20 - 24	15.9 %		
25 - 29	21.3 %		
30 - 34	12.6 %		
35 - 39	5.8 %		
40 - 44	4.3 %		
45 - 49	3.9 %		
50 - 54	8.7 %		
55 - 59	6.8 %		
60 - 64	4.3 %		
65 - 69	2.9 %		
70 - 74	1.4 %		
75 - 79	1.0 %		
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 =	207		
mean	43		
min size (mm)	9		
max size (mm)	76		

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Lighthouse

<i>Tethya aurantia</i>		<i>Megathura crenulata</i>		<i>Tegula regina</i>	
<10	0.0 %	<10	0.0 %	< 5	0.0 %
10 - 19	0.0 %	10 - 19	0.0 %	5 - 9	0.0 %
20 - 29	4.6 %	20 - 29	0.0 %	10 - 14	0.0 %
30 - 39	7.7 %	30 - 39	0.0 %	15 - 19	0.0 %
40 - 49	15.4 %	40 - 49	0.0 %	20 - 24	0.0 %
50 - 59	24.6 %	50 - 59	9.2 %	25 - 29	0.0 %
60 - 69	15.4 %	60 - 69	20.0 %	30 - 34	0.0 %
70 - 79	15.4 %	70 - 79	43.1 %	35 - 39	0.0 %
80 - 89	12.3 %	80 - 89	21.5 %	40 - 44	0.0 %
90 - 99	4.6 %	90 - 99	6.2 %	45 - 49	0.0 %
> 99	0.0 %	100 - 109	0.0 %	50 - 54	100.0 %
(Cases) N =	65	110 - 119	0.0 %	55 - 59	0.0 %
mean	63	> 119	0.0 %	60 - 64	0.0 %
min size (mm)	25	(Cases) N =	65	65 - 69	0.0 %
max size (mm)	98	mean	74	70 - 74	0.0 %
		min size (mm)	50	> 75	0.0 %
		max size (mm)	94	(Cases) N =	1
				mean	50
				min size (mm)	50
				max size (mm)	50
<i>Kelletia kelletii</i>		<i>Crassidoma giganteum</i>		<i>Patiria miniata</i>	
< 40	0.0 %	<10	0.0 %	<10	0.0 %
40 - 49	0.0 %	10 - 19	0.0 %	10 - 19	3.3 %
50 - 59	0.0 %	20 - 29	0.0 %	20 - 29	8.3 %
60 - 69	0.0 %	30 - 39	0.0 %	30 - 39	8.3 %
70 - 79	0.0 %	40 - 49	0.0 %	40 - 49	16.7 %
80 - 89	1.5 %	50 - 59	14.3 %	50 - 59	13.3 %
90 - 99	9.0 %	60 - 69	0.0 %	60 - 69	8.3 %
100 - 109	23.9 %	70 - 79	14.3 %	70 - 79	20.0 %
110 - 119	26.9 %	80 - 89	0.0 %	80 - 89	13.3 %
120 - 129	20.9 %	90 - 99	0.0 %	90 - 99	5.0 %
130 - 139	11.9 %	100 - 109	0.0 %	> 99	3.3 %
140 - 149	6.0 %	110 - 119	0.0 %	(Cases) N =	60
> 149	0.0 %	120 - 129	28.6 %	mean	58
(Cases) N =	67	130 - 139	28.6 %	min size (mm)	16
mean	116	> 139	14.3 %	max size (mm)	101
min size (mm)	87	(Cases) N =	7		
max size (mm)	144	mean	116		
		min size (mm)	59		
		max size (mm)	168		
<i>Megastrea undosa</i>					
<10	0.0 %				
10 - 19	2.3 %				
20 - 29	6.8 %				
30 - 39	0.0 %				
40 - 49	2.3 %				
50 - 59	13.6 %				
60 - 69	25.0 %				
70 - 79	9.1 %				
80 - 89	22.7 %				
90 - 99	11.4 %				
100 - 109	4.5 %				
110 - 119	2.3 %				
> 119	0.0 %				
(Cases) N =	44				
mean	71				
min size (mm)	19				
max size (mm)	115				

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Lighthouse

<i>Pisaster giganteus</i>		<i>Strongylocentrotus franciscanus</i>	
< 20	0.0 %	< 5	0.4 %
20 - 39	0.0 %	5 - 9	0.4 %
40 - 59	0.0 %	10 - 14	0.4 %
60 - 79	6.8 %	15 - 19	0.7 %
80 - 99	10.2 %	20 - 24	3.7 %
100 - 119	40.7 %	25 - 29	8.6 %
120 - 139	27.1 %	30 - 34	28.1 %
140 - 159	5.1 %	35 - 39	34.1 %
160 - 179	3.4 %	40 - 44	16.1 %
180 - 199	5.1 %	45 - 49	2.6 %
200 - 219	0.0 %	50 - 54	1.1 %
220 - 239	0.0 %	55 - 59	1.5 %
> 239	1.7 %	60 - 64	0.7 %
(Cases) N =	59	65 - 69	0.4 %
mean	124	70 - 74	0.7 %
min size (mm)	74	75 - 79	0.0 %
max size (mm)	290	80 - 84	0.0 %
		85 - 89	0.4 %
		90 - 94	0.0 %
		95 - 99	0.0 %
		100 - 104	0.0 %
		105 - 109	0.0 %
		> 109	0.0 %
		(Cases) N =	267
		mean	38
		min size (mm)	4
		max size (mm)	86
<i>Lytechinus anamesus</i>		<i>Strongylocentrotus purpuratus</i>	
< 5	0.0 %	< 5	3.3 %
5 - 9	0.9 %	5 - 9	5.2 %
10 - 14	28.3 %	10 - 14	2.4 %
15 - 19	44.2 %	15 - 19	10.5 %
20 - 24	15.0 %	20 - 24	28.6 %
25 - 29	10.6 %	25 - 29	31.4 %
30 - 34	0.9 %	30 - 34	13.3 %
35 - 39	0.0 %	35 - 39	4.3 %
40 - 44	0.0 %	40 - 44	0.0 %
45 - 49	0.0 %	45 - 49	1.0 %
> 49	0.0 %	50 - 54	0.0 %
(Cases) N =	113	55 - 59	0.0 %
mean	19	60 - 64	0.0 %
min size (mm)	8	65 - 69	0.0 %
max size (mm)	30	70 - 74	0.0 %
		75 - 79	0.0 %
		> 79	0.0 %
		(Cases) N =	210
		mean	21
		min size (mm)	3
		max size (mm)	48

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Webster's Arch

<i>Megastraea undosa</i>		<i>Megathura crenulata</i>		<i>Patiria miniata</i>	
<10	0.0 %	<10	0.0 %	<10	0.0 %
10 - 19	0.0 %	10 - 19	0.0 %	10 - 19	0.0 %
20 - 29	0.0 %	20 - 29	0.0 %	20 - 29	1.3 %
30 - 39	0.0 %	30 - 39	0.0 %	30 - 39	7.8 %
40 - 49	44.0 %	40 - 49	0.0 %	40 - 49	7.8 %
50 - 59	41.3 %	50 - 59	1.6 %	50 - 59	15.6 %
60 - 69	6.7 %	60 - 69	11.3 %	60 - 69	32.5 %
70 - 79	4.0 %	70 - 79	29.0 %	70 - 79	29.9 %
80 - 89	0.0 %	80 - 89	30.6 %	80 - 89	5.2 %
90 - 99	4.0 %	90 - 99	21.0 %	90 - 99	0.0 %
100 - 109	0.0 %	100 - 109	4.8 %	> 99	0.0 %
110 - 119	0.0 %	110 - 119	1.6 %	(Cases) N =	77
> 119	0.0 %	> 119	0.0 %	mean	61
(Cases) N =	75	(Cases) N =	62	min size (mm)	27
mean	59	mean	82	max size (mm)	87
min size (mm)	44	min size (mm)	58		
max size (mm)	95	max size (mm)	111		

<i>Lithopoma gibberosa</i>		<i>Tegula regina</i>		<i>Pisaster giganteus</i>	
<10	0.0 %	< 5	0.0 %	< 20	0.0 %
10 - 19	0.0 %	5 - 9	0.0 %	20 - 39	0.0 %
20 - 29	0.0 %	10 - 14	0.0 %	40 - 59	0.0 %
30 - 39	0.0 %	15 - 19	0.0 %	60 - 79	7.9 %
40 - 49	100.0 %	20 - 24	0.0 %	80 - 99	6.3 %
50 - 59	0.0 %	25 - 29	0.0 %	100 - 119	36.5 %
60 - 69	0.0 %	30 - 34	0.0 %	120 - 139	30.2 %
70 - 79	0.0 %	35 - 39	9.1 %	140 - 159	11.1 %
80 - 89	0.0 %	40 - 44	54.5 %	160 - 179	3.2 %
90 - 99	0.0 %	45 - 49	31.8 %	180 - 199	0.0 %
100 - 109	0.0 %	50 - 54	4.5 %	200 - 219	1.6 %
110 - 119	0.0 %	55 - 59	0.0 %	220 - 239	1.6 %
> 119	0.0 %	60 - 64	0.0 %	> 239	1.6 %
(Cases) N =	7	65 - 69	0.0 %	(Cases) N =	63
mean	44	70 - 74	0.0 %	mean	125
min size (mm)	41	> 75	0.0 %	min size (mm)	66
max size (mm)	47	(Cases) N =	22	max size (mm)	260
		mean	44		
		min size (mm)	38		
		max size (mm)	50		

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Webster's Arch

<i>Pycnopodia helianthoides</i>		<i>Strongylocentrotus purpuratus</i>	
< 20	0.0 %	< 5	0.0 %
20 - 39	0.0 %	5 - 9	0.6 %
40 - 59	0.0 %	10 - 14	14.1 %
60 - 79	0.0 %	15 - 19	48.2 %
80 - 99	0.0 %	20 - 24	28.4 %
100 - 119	0.0 %	25 - 29	6.7 %
120 - 139	0.0 %	30 - 34	1.6 %
140 - 159	0.0 %	35 - 39	0.3 %
160 - 179	50.0 %	40 - 44	0.0 %
180 - 199	0.0 %	45 - 49	0.0 %
200 - 219	0.0 %	50 - 54	0.0 %
220 - 239	50.0 %	55 - 59	0.0 %
240 - 259	0.0 %	60 - 64	0.0 %
260 - 279	0.0 %	65 - 69	0.0 %
280 - 299	0.0 %	70 - 74	0.0 %
> 299	0.0 %	75 - 79	0.0 %
(Cases) N =	4	> 79	0.0 %
mean	195	(Cases) N =	313
min size (mm)	170	mean	21
max size (mm)	220	min size (mm)	8
		max size (mm)	36

<i>Strongylocentrotus franciscanus</i>	
< 5	0.0 %
5 - 9	0.0 %
10 - 14	1.6 %
15 - 19	7.0 %
20 - 24	15.0 %
25 - 29	14.4 %
30 - 34	21.4 %
35 - 39	18.7 %
40 - 44	11.8 %
45 - 49	3.7 %
50 - 54	0.0 %
55 - 59	0.5 %
60 - 64	0.0 %
65 - 69	0.0 %
70 - 74	0.0 %
75 - 79	1.1 %
80 - 84	1.6 %
85 - 89	1.6 %
90 - 94	1.1 %
95 - 99	0.5 %
100 - 104	0.0 %
105 - 109	0.0 %
> 109	0.0 %
(Cases) N =	187
mean	41
min size (mm)	12
max size (mm)	95

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Graveyard Canyon

<i>Tethya aurantia</i>		<i>Crassedoma giganteum</i>		<i>Pisaster giganteus</i>	
<10	0.0 %	<10	0.0 %	< 20	0.0 %
10 - 19	0.0 %	10 - 19	0.0 %	20 - 39	0.0 %
20 - 29	0.0 %	20 - 29	0.0 %	40 - 59	0.0 %
30 - 39	6.1 %	30 - 39	0.0 %	60 - 79	0.0 %
40 - 49	13.6 %	40 - 49	0.0 %	80 - 99	40.0 %
50 - 59	18.2 %	50 - 59	0.0 %	100 - 119	20.0 %
60 - 69	15.2 %	60 - 69	0.0 %	120 - 139	40.0 %
70 - 79	24.2 %	70 - 79	33.3 %	140 - 159	0.0 %
80 - 89	15.2 %	80 - 89	0.0 %	160 - 179	0.0 %
90 - 99	4.5 %	90 - 99	33.3 %	180 - 199	0.0 %
> 99	3.0 %	100 - 109	0.0 %	200 - 219	0.0 %
(Cases) N =	66	110 - 119	0.0 %	220 - 239	0.0 %
mean	67	120 - 129	0.0 %	> 239	0.0 %
min size (mm)	30	130 - 139	0.0 %	(Cases) N =	5
max size (mm)	103	> 139	33.3 %	mean	109
		(Cases) N =	3	min size (mm)	92
		mean	113	max size (mm)	131
		min size (mm)	75		
		max size (mm)	169		
<i>Megastrea undosa</i>		<i>Patiria miniata</i>		<i>Lytechinus anamesus</i>	
<10	0.0 %	<10	0.0 %	< 5	0.0 %
10 - 19	0.0 %	10 - 19	0.0 %	5 - 9	13.1 %
20 - 29	0.0 %	20 - 29	1.5 %	10 - 14	28.6 %
30 - 39	7.7 %	30 - 39	2.9 %	15 - 19	7.1 %
40 - 49	0.0 %	40 - 49	5.9 %	20 - 24	39.3 %
50 - 59	23.1 %	50 - 59	1.5 %	25 - 29	11.9 %
60 - 69	30.8 %	60 - 69	25.0 %	30 - 34	0.0 %
70 - 79	23.1 %	70 - 79	33.8 %	35 - 39	0.0 %
80 - 89	0.0 %	80 - 89	20.6 %	40 - 44	0.0 %
90 - 99	0.0 %	90 - 99	7.4 %	45 - 49	0.0 %
100 - 109	7.7 %	> 99	1.5 %	> 49	0.0 %
110 - 119	7.7 %	(Cases) N =	68	(Cases) N =	84
> 119	0.0 %	mean	71	mean	18
(Cases) N =	13	min size (mm)	29	min size (mm)	7
mean	71	max size (mm)	102	max size (mm)	28
min size (mm)	37				
max size (mm)	116				
<i>Megathura crenulata</i>					
<10	0.0 %				
10 - 19	0.0 %				
20 - 29	0.0 %				
30 - 39	0.0 %				
40 - 49	0.0 %				
50 - 59	40.0 %				
60 - 69	0.0 %				
70 - 79	20.0 %				
80 - 89	40.0 %				
90 - 99	0.0 %				
100 - 109	0.0 %				
110 - 119	0.0 %				
> 119	0.0 %				
(Cases) N =	5				
mean	71				
min size (mm)	53				
max size (mm)	88				

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Graveyard Canyon

<i>Strongylocentrotus franciscanus</i>		<i>Tethya aurantia</i>	
< 5	0.0 %	<10	0.0 %
5 - 9	1.6 %	10 - 19	0.0 %
10 - 14	7.6 %	20 - 29	0.0 %
15 - 19	8.7 %	30 - 39	0.0 %
20 - 24	22.8 %	40 - 49	0.0 %
25 - 29	15.2 %	50 - 59	100.0 %
30 - 34	20.7 %	60 - 69	0.0 %
35 - 39	10.3 %	70 - 79	0.0 %
40 - 44	4.3 %	80 - 89	0.0 %
45 - 49	3.3 %	90 - 99	0.0 %
50 - 54	1.6 %	> 99	0.0 %
55 - 59	1.1 %	(Cases) N =	1
60 - 64	1.6 %	mean	59
65 - 69	0.5 %	min size (mm)	59
70 - 74	0.5 %	max size (mm)	59
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 =	184		
mean	34		
min size (mm)	7		
max size (mm)	71		
<i>Strongylocentrotus purpuratus</i>		<i>Megastrea undosa</i>	
< 5	1.4 %	<10	0.0 %
5 - 9	35.3 %	10 - 19	0.0 %
10 - 14	38.1 %	20 - 29	0.0 %
15 - 19	13.8 %	30 - 39	6.5 %
20 - 24	9.2 %	40 - 49	13.0 %
25 - 29	2.3 %	50 - 59	21.7 %
30 - 34	0.0 %	60 - 69	28.3 %
35 - 39	0.0 %	70 - 79	8.7 %
40 - 44	0.0 %	80 - 89	4.3 %
45 - 49	0.0 %	90 - 99	8.7 %
50 - 54	0.0 %	100 - 109	8.7 %
55 - 59	0.0 %	110 - 119	0.0 %
60 - 64	0.0 %	> 119	0.0 %
65 - 69	0.0 %	(Cases) N =	46
70 - 74	0.0 %	mean	68
75 - 79	0.0 %	min size (mm)	33
> 79	0.0 %	max size (mm)	103
(Cases) N =	218		
mean	14		
min size (mm)	3		
max size (mm)	26		
		<i>Megathura crenulata</i>	
		<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	25.0 %
		70 - 79	0.0 %
		80 - 89	25.0 %
		90 - 99	0.0 %
		100 - 109	0.0 %
		110 - 119	0.0 %
		> 119	0.0 %
		(Cases) N =	4
		mean	66
		min size (mm)	52
		max size (mm)	86

2009 NATURAL HABITAT SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Southeast Reef

<i>Crassedoma giganteum</i>		<i>Patiria miniata</i>		<i>Strongylocentrotus franciscanus</i>	
<10	0.0 %	<10	0.0 %	< 5	0.0 %
10 - 19	0.0 %	10 - 19	0.0 %	5 - 9	2.5 %
20 - 29	0.0 %	20 - 29	50.0 %	10 - 14	4.5 %
30 - 39	0.0 %	30 - 39	0.0 %	15 - 19	3.5 %
40 - 49	13.3 %	40 - 49	50.0 %	20 - 24	6.6 %
50 - 59	33.3 %	50 - 59	0.0 %	25 - 29	4.5 %
60 - 69	13.3 %	60 - 69	0.0 %	30 - 34	2.5 %
70 - 79	0.0 %	70 - 79	0.0 %	35 - 39	2.0 %
80 - 89	13.3 %	80 - 89	0.0 %	40 - 44	3.5 %
90 - 99	20.0 %	90 - 99	0.0 %	45 - 49	6.1 %
100 - 109	0.0 %	> 99	0.0 %	50 - 54	7.6 %
110 - 119	0.0 %	(Cases) N =	2	55 - 59	7.1 %
120 - 129	0.0 %	mean	35	60 - 64	7.1 %
130 - 139	0.0 %	min size (mm)	28	65 - 69	9.6 %
> 139	6.7 %	max size (mm)	41	70 - 74	5.6 %
(Cases) N =	15			75 - 79	5.1 %
mean	73			80 - 84	7.6 %
min size (mm)	44			85 - 89	5.1 %
max size (mm)	145			90 - 94	3.0 %
<i>Tegula regina</i>		<i>Pisaster giganteus</i>			
< 5	0.0 %	< 20	0.0 %	95 - 99	1.5 %
5 - 9	0.0 %	20 - 39	0.0 %	100 - 104	3.0 %
10 - 14	0.0 %	40 - 59	9.1 %	105 - 109	0.5 %
15 - 19	0.0 %	60 - 79	4.5 %	> 109	1.5 %
20 - 24	0.0 %	80 - 99	9.1 %	(Cases) N =	198
25 - 29	0.0 %	100 - 119	4.5 %	mean	56
30 - 34	0.0 %	120 - 139	27.3 %	min size (mm)	7
35 - 39	3.9 %	140 - 159	27.3 %	max size (mm)	115
40 - 44	35.3 %	160 - 179	9.1 %		
45 - 49	33.3 %	180 - 199	4.5 %		
50 - 54	27.5 %	200 - 219	4.5 %		
55 - 59	0.0 %	220 - 239	0.0 %		
60 - 64	0.0 %	> 239	0.0 %		
65 - 69	0.0 %	(Cases) N =	22		
70 - 74	0.0 %	mean	129		
> 75	0.0 %	min size (mm)	45		
(Cases) N =	51	max size (mm)	205		
mean	46				
min size (mm)	39				
max size (mm)	53				
				<i>Strongylocentrotus purpuratus</i>	
				< 5	3.3 %
				5 - 9	6.2 %
				10 - 14	14.8 %
				15 - 19	18.1 %
				20 - 24	17.1 %
				25 - 29	7.6 %
				30 - 34	6.2 %
				35 - 39	10.0 %
				40 - 44	9.0 %
				45 - 49	4.8 %
				50 - 54	1.9 %
				55 - 59	1.0 %
				60 - 64	0.0 %
				65 - 69	0.0 %
				70 - 74	0.0 %
				75 - 79	0.0 %
				> 79	0.0 %
				(Cases) N =	210
				mean	24
				min size (mm)	3
				max size (mm)	58

Appendix J. *Macrocystis pyrifera* Size Frequency Distributions

2009 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Wyckoff Ledge

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	7.9 %	< 6	0.0 %
3 - 5	7.9 %	6 - 11	7.9 %
6 - 8	11.9 %	12 - 17	5.9 %
9 - 11	14.9 %	18 - 23	6.9 %
12 - 14	13.9 %	24 - 29	16.8 %
15 - 17	10.9 %	30 - 35	19.8 %
18 - 20	11.9 %	36 - 41	19.8 %
21 - 23	6.9 %	42 - 47	13.9 %
24 - 26	7.9 %	48 - 53	5.0 %
27 - 29	4.0 %	54 - 59	2.0 %
30 - 32	3.0 %	60 - 65	1.0 %
33 - 35	0.0 %	66 - 71	1.0 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	101	(Cases) N =	101
mean	14	mean	33
min size (mm)	1	min size (mm)	6
max size (mm)	32	max size (mm)	70

San Miguel Island - Hare Rock

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	30.8 %	< 6	15.4 %
3 - 5	46.2 %	6 - 11	38.5 %
6 - 8	15.4 %	12 - 17	23.1 %
9 - 11	7.7 %	18 - 23	23.1 %
12 - 14	0.0 %	24 - 29	0.0 %
15 - 17	0.0 %	30 - 35	0.0 %
18 - 20	0.0 %	36 - 41	0.0 %
21 - 23	0.0 %	42 - 47	0.0 %
24 - 26	0.0 %	48 - 53	0.0 %
27 - 29	0.0 %	54 - 59	0.0 %
30 - 32	0.0 %	60 - 65	0.0 %
33 - 35	0.0 %	66 - 71	0.0 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	13	(Cases) N =	13
mean	4	mean	12
min size (mm)	2	min size (mm)	5
max size (mm)	9	max size (mm)	20

2009 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee North

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	16.0 %	< 6	0.7 %
3 - 5	25.3 %	6 - 11	7.3 %
6 - 8	26.0 %	12 - 17	6.0 %
9 - 11	20.0 %	18 - 23	8.7 %
12 - 14	6.7 %	24 - 29	16.7 %
15 - 17	5.3 %	30 - 35	12.7 %
18 - 20	0.7 %	36 - 41	15.3 %
21 - 23	0.0 %	42 - 47	11.3 %
24 - 26	0.0 %	48 - 53	8.0 %
27 - 29	0.0 %	54 - 59	8.0 %
30 - 32	0.0 %	60 - 65	4.0 %
33 - 35	0.0 %	66 - 71	1.3 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	150	(Cases) N =	150
mean	7	mean	34
min size (mm)	1	min size (mm)	5
max size (mm)	20	max size (mm)	68

Santa Rosa Island - Johnson's Lee South

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	55.0 %	< 6	1.0 %
3 - 5	30.0 %	6 - 11	27.0 %
6 - 8	11.0 %	12 - 17	33.0 %
9 - 11	4.0 %	18 - 23	17.0 %
12 - 14	0.0 %	24 - 29	6.0 %
15 - 17	0.0 %	30 - 35	2.0 %
18 - 20	0.0 %	36 - 41	2.0 %
21 - 23	0.0 %	42 - 47	4.0 %
24 - 26	0.0 %	48 - 53	1.0 %
27 - 29	0.0 %	54 - 59	6.0 %
30 - 32	0.0 %	60 - 65	1.0 %
33 - 35	0.0 %	66 - 71	0.0 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	100	(Cases) N =	100
mean	3	mean	20
min size (mm)	1	min size (mm)	4
max size (mm)	11	max size (mm)	61

2009 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Rodes Reef

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	41.2 %	< 6	23.5 %
3 - 5	23.5 %	6 - 11	23.5 %
6 - 8	11.8 %	12 - 17	23.5 %
9 - 11	5.9 %	18 - 23	0.0 %
12 - 14	5.9 %	24 - 29	11.8 %
15 - 17	0.0 %	30 - 35	5.9 %
18 - 20	0.0 %	36 - 41	0.0 %
21 - 23	0.0 %	42 - 47	0.0 %
24 - 26	5.9 %	48 - 53	11.8 %
27 - 29	0.0 %	54 - 59	0.0 %
30 - 32	0.0 %	60 - 65	0.0 %
33 - 35	5.9 %	66 - 71	0.0 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	17	(Cases) N =	17
mean	7	mean	17
min size (mm)	1	min size (mm)	2
max size (mm)	35	max size (mm)	52

Santa Cruz Island - Gull Island South

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	11.0 %	< 6	3.7 %
3 - 5	13.8 %	6 - 11	7.3 %
6 - 8	15.6 %	12 - 17	7.3 %
9 - 11	11.0 %	18 - 23	7.3 %
12 - 14	10.1 %	24 - 29	5.5 %
15 - 17	11.0 %	30 - 35	7.3 %
18 - 20	10.1 %	36 - 41	22.9 %
21 - 23	6.4 %	42 - 47	19.3 %
24 - 26	2.8 %	48 - 53	11.9 %
27 - 29	4.6 %	54 - 59	1.8 %
30 - 32	1.8 %	60 - 65	2.8 %
33 - 35	2.8 %	66 - 71	0.9 %
36 - 38	0.0 %	72 - 77	1.8 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	109	(Cases) N =	109
mean	12	mean	35
min size (mm)	1	min size (mm)	4
max size (mm)	35	max size (mm)	77

2009 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Fry's Harbor

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	1.4 %	< 6	1.4 %
3 - 5	14.4 %	6 - 11	5.5 %
6 - 8	17.8 %	12 - 17	18.5 %
9 - 11	20.5 %	18 - 23	21.2 %
12 - 14	16.4 %	24 - 29	23.3 %
15 - 17	8.9 %	30 - 35	17.8 %
18 - 20	6.8 %	36 - 41	7.5 %
21 - 23	7.5 %	42 - 47	4.1 %
24 - 26	4.1 %	48 - 53	0.7 %
27 - 29	2.1 %	54 - 59	0.0 %
30 - 32	0.0 %	60 - 65	0.0 %
33 - 35	1.4 %	66 - 71	0.0 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	146	(Cases) N =	146
mean	12	mean	25
min size (mm)	1	min size (mm)	3
max size (mm)	35	max size (mm)	52

Santa Cruz Island - Pelican Bay

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	20.0 %	< 6	7.0 %
3 - 5	32.0 %	6 - 11	35.0 %
6 - 8	26.0 %	12 - 17	39.0 %
9 - 11	14.0 %	18 - 23	17.0 %
12 - 14	7.0 %	24 - 29	1.0 %
15 - 17	1.0 %	30 - 35	1.0 %
18 - 20	0.0 %	36 - 41	0.0 %
21 - 23	0.0 %	42 - 47	0.0 %
24 - 26	0.0 %	48 - 53	0.0 %
27 - 29	0.0 %	54 - 59	0.0 %
30 - 32	0.0 %	60 - 65	0.0 %
33 - 35	0.0 %	66 - 71	0.0 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	100	(Cases) N =	100
mean	6	mean	13
min size (mm)	1	min size (mm)	1
max size (mm)	16	max size (mm)	30

2009 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Scorpion Anchorage

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	30.7 %	< 6	0.7 %
3 - 5	25.0 %	6 - 11	16.4 %
6 - 8	13.6 %	12 - 17	31.4 %
9 - 11	14.3 %	18 - 23	17.9 %
12 - 14	6.4 %	24 - 29	18.6 %
15 - 17	5.0 %	30 - 35	8.6 %
18 - 20	2.9 %	36 - 41	2.9 %
21 - 23	0.7 %	42 - 47	1.4 %
24 - 26	0.0 %	48 - 53	0.0 %
27 - 29	1.4 %	54 - 59	2.1 %
30 - 32	0.0 %	60 - 65	0.0 %
33 - 35	0.0 %	66 - 71	0.0 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	140	(Cases) N =	140
mean	7	mean	20
min size (mm)	1	min size (mm)	5
max size (mm)	28	max size (mm)	58

Santa Cruz Island - Yellow Banks

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	65.3 %	< 6	18.7 %
3 - 5	25.3 %	6 - 11	44.7 %
6 - 8	6.0 %	12 - 17	16.7 %
9 - 11	2.0 %	18 - 23	14.0 %
12 - 14	0.7 %	24 - 29	3.3 %
15 - 17	0.0 %	30 - 35	0.7 %
18 - 20	0.7 %	36 - 41	0.7 %
21 - 23	0.0 %	42 - 47	1.3 %
24 - 26	0.0 %	48 - 53	0.0 %
27 - 29	0.0 %	54 - 59	0.0 %
30 - 32	0.0 %	60 - 65	0.0 %
33 - 35	0.0 %	66 - 71	0.0 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	150	(Cases) N =	150
mean	3	mean	11
min size (mm)	1	min size (mm)	3
max size (mm)	19	max size (mm)	47

2009 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Cathedral Cove

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	31.6 %	< 6	8.5 %
3 - 5	22.2 %	6 - 11	24.8 %
6 - 8	14.5 %	12 - 17	16.2 %
9 - 11	2.6 %	18 - 23	7.7 %
12 - 14	9.4 %	24 - 29	9.4 %
15 - 17	5.1 %	30 - 35	9.4 %
18 - 20	6.8 %	36 - 41	8.5 %
21 - 23	4.3 %	42 - 47	10.3 %
24 - 26	0.9 %	48 - 53	5.1 %
27 - 29	0.9 %	54 - 59	0.0 %
30 - 32	0.9 %	60 - 65	0.0 %
33 - 35	0.0 %	66 - 71	0.0 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.9 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	117	(Cases) N =	117
mean	8	mean	22
min size (mm)	1	min size (mm)	2
max size (mm)	42	max size (mm)	52

Anacapa Island - Landing Cove

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	17.0 %	< 6	3.6 %
3 - 5	12.5 %	6 - 11	10.7 %
6 - 8	13.4 %	12 - 17	29.5 %
9 - 11	11.6 %	18 - 23	28.6 %
12 - 14	16.1 %	24 - 29	12.5 %
15 - 17	8.9 %	30 - 35	9.8 %
18 - 20	4.5 %	36 - 41	3.6 %
21 - 23	10.7 %	42 - 47	1.8 %
24 - 26	0.9 %	48 - 53	0.0 %
27 - 29	1.8 %	54 - 59	0.0 %
30 - 32	0.9 %	60 - 65	0.0 %
33 - 35	0.0 %	66 - 71	0.0 %
36 - 38	0.9 %	72 - 77	0.0 %
39 - 41	0.9 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.9 %	> 89	0.0 %
(Cases) N =	112	(Cases) N =	112
mean	11	mean	20
min size (mm)	1	min size (mm)	2
max size (mm)	48	max size (mm)	43

2009 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Miracle Mile

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	11.7 %	< 6	2.9 %
3 - 5	8.0 %	6 - 11	10.9 %
6 - 8	5.1 %	12 - 17	5.8 %
9 - 11	4.4 %	18 - 23	3.6 %
12 - 14	4.4 %	24 - 29	7.3 %
15 - 17	8.0 %	30 - 35	9.5 %
18 - 20	10.2 %	36 - 41	17.5 %
21 - 23	11.7 %	42 - 47	16.8 %
24 - 26	5.8 %	48 - 53	8.8 %
27 - 29	6.6 %	54 - 59	3.6 %
30 - 32	6.6 %	60 - 65	6.6 %
33 - 35	2.9 %	66 - 71	2.2 %
36 - 38	2.9 %	72 - 77	2.2 %
39 - 41	2.2 %	78 - 83	0.7 %
42 - 44	1.5 %	84 - 89	0.7 %
> 44	10.2 %	> 89	0.7 %
(Cases) N =	137	(Cases) N =	137
mean	22	mean	38
min size (mm)	1	min size (mm)	4
max size (mm)	74	max size (mm)	94

Santa Rosa Island - Cluster Point

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	3.7 %	< 6	0.0 %
3 - 5	11.0 %	6 - 11	0.7 %
6 - 8	14.0 %	12 - 17	14.7 %
9 - 11	23.5 %	18 - 23	25.7 %
12 - 14	18.4 %	24 - 29	27.9 %
15 - 17	14.0 %	30 - 35	19.1 %
18 - 20	8.8 %	36 - 41	8.8 %
21 - 23	3.7 %	42 - 47	2.9 %
24 - 26	1.5 %	48 - 53	0.0 %
27 - 29	1.5 %	54 - 59	0.0 %
30 - 32	1.5 %	60 - 65	0.0 %
33 - 35	0.0 %	66 - 71	0.0 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	136	(Cases) N =	136
mean	12	mean	26
min size (mm)	1	min size (mm)	10
max size (mm)	32	max size (mm)	44

2009 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Trancion Canyon

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	4.4 %	< 6	0.0 %
3 - 5	11.8 %	6 - 11	4.4 %
6 - 8	8.8 %	12 - 17	6.6 %
9 - 11	15.4 %	18 - 23	11.0 %
12 - 14	14.7 %	24 - 29	12.5 %
15 - 17	13.2 %	30 - 35	16.9 %
18 - 20	11.0 %	36 - 41	16.9 %
21 - 23	5.9 %	42 - 47	12.5 %
24 - 26	2.9 %	48 - 53	8.8 %
27 - 29	2.2 %	54 - 59	6.6 %
30 - 32	1.5 %	60 - 65	2.9 %
33 - 35	1.5 %	66 - 71	0.7 %
36 - 38	2.2 %	72 - 77	0.0 %
39 - 41	2.2 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	2.2 %	> 89	0.0 %
(Cases) N =	136	(Cases) N =	136
mean	15	mean	35
min size (mm)	1	min size (mm)	6
max size (mm)	48	max size (mm)	67

Santa Rosa Island - Chickasaw

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	20.0 %	< 6	0.8 %
3 - 5	20.8 %	6 - 11	8.3 %
6 - 8	12.5 %	12 - 17	17.5 %
9 - 11	11.7 %	18 - 23	7.5 %
12 - 14	8.3 %	24 - 29	7.5 %
15 - 17	11.7 %	30 - 35	6.7 %
18 - 20	7.5 %	36 - 41	10.0 %
21 - 23	5.8 %	42 - 47	17.5 %
24 - 26	0.8 %	48 - 53	11.7 %
27 - 29	0.8 %	54 - 59	6.7 %
30 - 32	0.0 %	60 - 65	1.7 %
33 - 35	0.0 %	66 - 71	4.2 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	120	(Cases) N =	120
mean	9	mean	34
min size (mm)	1	min size (mm)	4
max size (mm)	27	max size (mm)	70

2009 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - South Point

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	24.5 %	< 6	6.1 %
3 - 5	13.5 %	6 - 11	13.5 %
6 - 8	8.6 %	12 - 17	7.4 %
9 - 11	12.9 %	18 - 23	12.9 %
12 - 14	11.7 %	24 - 29	8.0 %
15 - 17	9.2 %	30 - 35	11.7 %
18 - 20	8.6 %	36 - 41	14.7 %
21 - 23	5.5 %	42 - 47	8.6 %
24 - 26	3.1 %	48 - 53	8.0 %
27 - 29	1.2 %	54 - 59	4.9 %
30 - 32	0.6 %	60 - 65	3.7 %
33 - 35	0.0 %	66 - 71	0.6 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.6 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	163	(Cases) N =	163
mean	10	mean	30
min size (mm)	1	min size (mm)	2
max size (mm)	40	max size (mm)	71

Anacapa Island - Keyhole

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	66.0 %	< 6	6.6 %
3 - 5	25.5 %	6 - 11	59.4 %
6 - 8	6.6 %	12 - 17	25.5 %
9 - 11	0.9 %	18 - 23	5.7 %
12 - 14	0.9 %	24 - 29	1.9 %
15 - 17	0.0 %	30 - 35	0.9 %
18 - 20	0.0 %	36 - 41	0.0 %
21 - 23	0.0 %	42 - 47	0.0 %
24 - 26	0.0 %	48 - 53	0.0 %
27 - 29	0.0 %	54 - 59	0.0 %
30 - 32	0.0 %	60 - 65	0.0 %
33 - 35	0.0 %	66 - 71	0.0 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	106	(Cases) N =	106
mean	3	mean	11
min size (mm)	1	min size (mm)	4
max size (mm)	14	max size (mm)	30

2009 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Black Sea Bass Reef

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	38.7 %	< 6	0.0 %
3 - 5	16.1 %	6 - 11	6.5 %
6 - 8	22.6 %	12 - 17	12.9 %
9 - 11	3.2 %	18 - 23	41.9 %
12 - 14	12.9 %	24 - 29	19.4 %
15 - 17	3.2 %	30 - 35	12.9 %
18 - 20	3.2 %	36 - 41	6.5 %
21 - 23	0.0 %	42 - 47	0.0 %
24 - 26	0.0 %	48 - 53	0.0 %
27 - 29	0.0 %	54 - 59	0.0 %
30 - 32	0.0 %	60 - 65	0.0 %
33 - 35	0.0 %	66 - 71	0.0 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	31	(Cases) N =	31
mean	6	mean	23
min size (mm)	1	min size (mm)	7
max size (mm)	18	max size (mm)	41

Santa Barbara Island - Graveyard Canyon

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	100.0 %	< 6	0.0 %
3 - 5	0.0 %	6 - 11	100.0 %
6 - 8	0.0 %	12 - 17	0.0 %
9 - 11	0.0 %	18 - 23	0.0 %
12 - 14	0.0 %	24 - 29	0.0 %
15 - 17	0.0 %	30 - 35	0.0 %
18 - 20	0.0 %	36 - 41	0.0 %
21 - 23	0.0 %	42 - 47	0.0 %
24 - 26	0.0 %	48 - 53	0.0 %
27 - 29	0.0 %	54 - 59	0.0 %
30 - 32	0.0 %	60 - 65	0.0 %
33 - 35	0.0 %	66 - 71	0.0 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	1	(Cases) N =	1
mean	2	mean	11
min size (mm)	2	min size (mm)	11
max size (mm)	2	max size (mm)	11

2009 *Macrocystis pyrifera* SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Southeast Reef

<i>Macrocystis pyrifera</i> Adult (>1m) Number of Stipes		<i>Macrocystis pyrifera</i> Adult (>1m) Holdfast Diameter	
< 3	9.4 %	< 6	1.7 %
3 - 5	29.1 %	6 - 11	23.1 %
6 - 8	22.2 %	12 - 17	23.1 %
9 - 11	18.8 %	18 - 23	20.5 %
12 - 14	7.7 %	24 - 29	18.8 %
15 - 17	8.5 %	30 - 35	8.5 %
18 - 20	2.6 %	36 - 41	3.4 %
21 - 23	0.9 %	42 - 47	0.9 %
24 - 26	0.9 %	48 - 53	0.0 %
27 - 29	0.9 %	54 - 59	0.0 %
30 - 32	0.0 %	60 - 65	0.0 %
33 - 35	0.0 %	66 - 71	0.0 %
36 - 38	0.0 %	72 - 77	0.0 %
39 - 41	0.0 %	78 - 83	0.0 %
42 - 44	0.0 %	84 - 89	0.0 %
> 44	0.0 %	> 89	0.0 %
(Cases) N =	117	(Cases) N =	117
mean	8	mean	19
min size (mm)	1	min size (mm)	5
max size (mm)	29	max size (mm)	42

Appendix K. Gorgonian/*Stylaster californica* Size Frequency Distributions

2009 Gorgonian/*Stylaster californica* SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee South

<i>Lophogorgia chilensis</i> heights		<i>Lophogorgia chilensis</i> widths	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	1.5 %
9 - 12	0.0 %	9 - 12	4.5 %
13 - 16	0.0 %	13 - 16	12.1 %
17 - 20	4.5 %	17 - 20	9.1 %
21 - 24	1.5 %	21 - 24	4.5 %
25 - 28	4.5 %	24 - 28	13.6 %
29 - 32	6.1 %	29 - 32	9.1 %
33 - 36	7.6 %	33 - 36	9.1 %
37 - 40	4.5 %	37 - 40	18.2 %
41 - 44	19.7 %	41 - 44	3.0 %
45 - 48	12.1 %	45 - 48	1.5 %
49 - 52	18.2 %	49 - 52	9.1 %
53 - 56	16.7 %	53 - 56	7.6 %
57 - 60	6.1 %	57 - 60	0.0 %
61 - 64	0.0 %	61 - 64	0.0 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	3.0 %	69 - 72	1.5 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	66	(Cases) N =	66
mean	44	mean	31
min size (mm)	17	min size (mm)	8
max size (mm)	72	max size (mm)	71

<i>Muricea fruticosa</i> heights		<i>Muricea fruticosa</i> widths	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	0.0 %	9 - 12	0.0 %
13 - 16	0.0 %	13 - 16	0.0 %
17 - 20	0.0 %	17 - 20	0.0 %
21 - 24	0.0 %	21 - 24	0.0 %
25 - 28	100.0 %	24 - 28	100.0 %
29 - 32	0.0 %	29 - 32	0.0 %
33 - 36	0.0 %	33 - 36	0.0 %
37 - 40	0.0 %	37 - 40	0.0 %
41 - 44	0.0 %	41 - 44	0.0 %
45 - 48	0.0 %	45 - 48	0.0 %
49 - 52	0.0 %	49 - 52	0.0 %
53 - 56	0.0 %	53 - 56	0.0 %
57 - 60	0.0 %	57 - 60	0.0 %
61 - 64	0.0 %	61 - 64	0.0 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	0.0 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	1	(Cases) N =	1
mean	27	mean	27
min size (mm)	27	min size (mm)	27
max size (mm)	27	max size (mm)	27

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee South

<i>Muricea californica heights</i>		<i>Muricea californica widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	0.0 %	9 - 12	0.0 %
13 - 16	0.0 %	13 - 16	0.0 %
17 - 20	0.0 %	17 - 20	0.0 %
21 - 24	0.0 %	21 - 24	0.0 %
25 - 28	0.0 %	24 - 28	0.0 %
29 - 32	0.0 %	29 - 32	0.0 %
33 - 36	0.0 %	33 - 36	0.0 %
37 - 40	0.0 %	37 - 40	0.0 %
41 - 44	0.0 %	41 - 44	0.0 %
45 - 48	0.0 %	45 - 48	0.0 %
49 - 52	0.0 %	49 - 52	0.0 %
53 - 56	0.0 %	53 - 56	0.0 %
57 - 60	0.0 %	57 - 60	0.0 %
61 - 64	0.0 %	61 - 64	0.0 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	0.0 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	100.0 %
93 - 96	100.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	1	(Cases) N =	1
mean	95	mean	91
min size (mm)	95	min size (mm)	91
max size (mm)	95	max size (mm)	91

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Gull Island South

Stylaster californicus heights

< 3	8.3 %
3 - 4	20.0 %
5 - 6	18.3 %
7 - 8	25.0 %
9 - 10	10.0 %
11 - 12	6.7 %
13 - 14	1.7 %
15 - 16	1.7 %
17 - 18	3.3 %
19 - 20	3.3 %
21 - 22	1.7 %
23 - 24	0.0 %
25 - 26	0.0 %
27 - 28	0.0 %
29 - 30	0.0 %
> 30	0.0 %
(Cases) N =	60
mean	8
min size (mm)	2
max size (mm)	22

Stylaster californicus widths

< 3	5.0 %
3 - 4	11.7 %
5 - 6	8.3 %
7 - 8	5.0 %
9 - 10	13.3 %
11 - 12	10.0 %
13 - 14	5.0 %
15 - 16	5.0 %
17 - 18	8.3 %
19 - 20	5.0 %
21 - 22	3.3 %
23 - 24	3.3 %
25 - 26	1.7 %
27 - 28	1.7 %
29 - 30	1.7 %
> 30	11.7 %
(Cases) N =	60
mean	15
min size (mm)	2
max size (mm)	50

Lophogorgia chilensis heights

< 5	0.0 %
5 - 8	0.0 %
9 - 12	5.9 %
13 - 16	5.9 %
17 - 20	17.6 %
21 - 24	29.4 %
25 - 28	0.0 %
29 - 32	29.4 %
33 - 36	11.8 %
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 =	17
mean	25
min size (mm)	9
max size (mm)	36

Lophogorgia chilensis widths

< 5	0.0 %
5 - 8	11.8 %
9 - 12	29.4 %
13 - 16	17.6 %
17 - 20	5.9 %
21 - 24	11.8 %
24 - 28	11.8 %
29 - 32	5.9 %
33 - 36	5.9 %
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 =	17
mean	17
min size (mm)	5
max size (mm)	34

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Fry's Harbor

<i>Lophogorgia chilensis heights</i>		<i>Lophogorgia chilensis widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	0.0 %	9 - 12	0.0 %
13 - 16	0.0 %	13 - 16	5.2 %
17 - 20	3.4 %	17 - 20	8.6 %
21 - 24	6.9 %	21 - 24	8.6 %
25 - 28	10.3 %	24 - 28	6.9 %
29 - 32	0.0 %	29 - 32	6.9 %
33 - 36	8.6 %	33 - 36	8.6 %
37 - 40	8.6 %	37 - 40	5.2 %
41 - 44	13.8 %	41 - 44	5.2 %
45 - 48	3.4 %	45 - 48	5.2 %
49 - 52	15.5 %	49 - 52	12.1 %
53 - 56	12.1 %	53 - 56	6.9 %
57 - 60	1.7 %	57 - 60	3.4 %
61 - 64	5.2 %	61 - 64	1.7 %
65 - 68	3.4 %	65 - 68	6.9 %
69 - 72	1.7 %	69 - 72	1.7 %
73 - 76	1.7 %	73 - 76	1.7 %
77 - 80	5.2 %	77 - 80	3.4 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	1.7 %
89 - 92	0.0 %	89 - 92	1.7 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	3.4 %
(Cases) N =	58	(Cases) N =	58
mean	45	mean	45
min size (mm)	20	min size (mm)	15
max size (mm)	80	max size (mm)	115

Santa Cruz Island - Pelican Bay

<i>Lophogorgia chilensis heights</i>		<i>Lophogorgia chilensis widths</i>	
< 5	0.0 %	< 5	2.0 %
5 - 8	2.0 %	5 - 8	4.1 %
9 - 12	2.0 %	9 - 12	8.2 %
13 - 16	8.2 %	13 - 16	12.2 %
17 - 20	2.0 %	17 - 20	16.3 %
21 - 24	14.3 %	21 - 24	6.1 %
25 - 28	12.2 %	24 - 28	4.1 %
29 - 32	10.2 %	29 - 32	12.2 %
33 - 36	2.0 %	33 - 36	8.2 %
37 - 40	4.1 %	37 - 40	4.1 %
41 - 44	10.2 %	41 - 44	4.1 %
45 - 48	10.2 %	45 - 48	6.1 %
49 - 52	16.3 %	49 - 52	6.1 %
53 - 56	6.1 %	53 - 56	8.2 %
57 - 60	2.0 %	57 - 60	0.0 %
61 - 64	0.0 %	61 - 64	2.0 %
65 - 68	2.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	0.0 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	49	(Cases) N =	49
mean	35	mean	28
min size (mm)	6	min size (mm)	3
max size (mm)	65	max size (mm)	63

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Scorpion Anchorage

<i>Lophogorgia chilensis heights</i>		<i>Lophogorgia chilensis widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	0.0 %	9 - 12	20.0 %
13 - 16	0.0 %	13 - 16	20.0 %
17 - 20	60.0 %	17 - 20	20.0 %
21 - 24	20.0 %	21 - 24	20.0 %
25 - 28	0.0 %	24 - 28	20.0 %
29 - 32	20.0 %	29 - 32	0.0 %
33 - 36	0.0 %	33 - 36	0.0 %
37 - 40	0.0 %	37 - 40	0.0 %
41 - 44	0.0 %	41 - 44	0.0 %
45 - 48	0.0 %	45 - 48	0.0 %
49 - 52	0.0 %	49 - 52	0.0 %
53 - 56	0.0 %	53 - 56	0.0 %
57 - 60	0.0 %	57 - 60	0.0 %
61 - 64	0.0 %	61 - 64	0.0 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	0.0 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	5	(Cases) N =	5
mean	22	mean	18
min size (mm)	18	min size (mm)	9
max size (mm)	30	max size (mm)	27

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Yellow Banks

Lophogorgia chilensis heights

< 5	0.0 %
5 - 8	0.0 %
9 - 12	0.0 %
13 - 16	3.8 %
17 - 20	21.2 %
21 - 24	15.4 %
25 - 28	11.5 %
29 - 32	13.5 %
33 - 36	1.9 %
37 - 40	7.7 %
41 - 44	7.7 %
45 - 48	5.8 %
49 - 52	5.8 %
53 - 56	1.9 %
57 - 60	1.9 %
61 - 64	1.9 %
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 =	52
mean	31
min size (mm)	15
max size (mm)	64

Lophogorgia chilensis widths

< 5	0.0 %
5 - 8	3.8 %
9 - 12	7.7 %
13 - 16	25.0 %
17 - 20	21.2 %
21 - 24	15.4 %
24 - 28	13.5 %
29 - 32	3.8 %
33 - 36	1.9 %
37 - 40	1.9 %
41 - 44	3.8 %
45 - 48	1.9 %
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 =	52
mean	21
min size (mm)	6
max size (mm)	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	28.6 %
33 - 36	14.3 %
37 - 40	14.3 %
41 - 44	21.4 %
45 - 48	14.3 %
49 - 52	7.1 %
53 - 56	7.1 %
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 =	14
mean	39
min size (mm)	30
max size (mm)	52

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	7.1 %
29 - 32	0.0 %
33 - 36	14.3 %
37 - 40	14.3 %
41 - 44	0.0 %
45 - 48	14.3 %
49 - 52	0.0 %
53 - 56	0.0 %
57 - 60	0.0 %
61 - 64	0.0 %
65 - 68	7.1 %
69 - 72	7.1 %
73 - 76	14.3 %
77 - 80	7.1 %
81 - 84	7.1 %
85 - 88	7.1 %
89 - 92	0.0 %
93 - 96	0.0 %
97 - 100	0.0 %
> 100	0.0 %
(Cases) N =	14
mean	58
min size (mm)	27
max size (mm)	87

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Admiral's Reef

<i>Lophogorgia chilensis heights</i>		<i>Lophogorgia chilensis widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	0.0 %	9 - 12	3.0 %
13 - 16	0.0 %	13 - 16	3.0 %
17 - 20	3.0 %	17 - 20	4.5 %
21 - 24	0.0 %	21 - 24	1.5 %
25 - 28	3.0 %	24 - 28	14.9 %
29 - 32	9.0 %	29 - 32	6.0 %
33 - 36	9.0 %	33 - 36	7.5 %
37 - 40	9.0 %	37 - 40	6.0 %
41 - 44	4.5 %	41 - 44	4.5 %
45 - 48	11.9 %	45 - 48	6.0 %
49 - 52	13.4 %	49 - 52	7.5 %
53 - 56	13.4 %	53 - 56	3.0 %
57 - 60	7.5 %	57 - 60	10.4 %
61 - 64	6.0 %	61 - 64	1.5 %
65 - 68	4.5 %	65 - 68	4.5 %
69 - 72	6.0 %	69 - 72	7.5 %
73 - 76	0.0 %	73 - 76	3.0 %
77 - 80	3.0 %	77 - 80	3.0 %
81 - 84	0.0 %	81 - 84	1.5 %
85 - 88	0.0 %	85 - 88	1.5 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	1.5 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	67	(Cases) N =	67
mean	48	mean	46
min size (mm)	17	min size (mm)	11
max size (mm)	80	max size (mm)	100

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - SE Sea Lion Rookery

Lophogorgia chilensis heights

< 5	0.0 %
5 - 8	0.0 %
9 - 12	0.0 %
13 - 16	0.0 %
17 - 20	0.0 %
21 - 24	1.7 %
25 - 28	3.3 %
29 - 32	5.0 %
33 - 36	18.3 %
37 - 40	18.3 %
41 - 44	30.0 %
45 - 48	13.3 %
49 - 52	3.3 %
53 - 56	5.0 %
57 - 60	1.7 %
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 =	60
mean	41
min size (mm)	23
max size (mm)	57

Lophogorgia chilensis widths

< 5	0.0 %
5 - 8	0.0 %
9 - 12	1.7 %
13 - 16	0.0 %
17 - 20	16.7 %
21 - 24	15.0 %
24 - 28	16.7 %
29 - 32	11.7 %
33 - 36	11.7 %
37 - 40	3.3 %
41 - 44	11.7 %
45 - 48	3.3 %
49 - 52	1.7 %
53 - 56	5.0 %
57 - 60	1.7 %
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 =	60
mean	31
min size (mm)	12
max size (mm)	60

Muricea fruticosa 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	100.0 %
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	27
min size (mm)	27
max size (mm)	27

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	0.0 %
49 - 52	0.0 %
53 - 56	0.0 %
57 - 60	0.0 %
61 - 64	100.0 %
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	64
min size (mm)	64
max size (mm)	64

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - SE Sea Lion Rookery

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	4.0 %
33 - 36	16.0 %
37 - 40	24.0 %
41 - 44	12.0 %
45 - 48	4.0 %
49 - 52	8.0 %
53 - 56	12.0 %
57 - 60	8.0 %
61 - 64	0.0 %
65 - 68	0.0 %
69 - 72	0.0 %
73 - 76	0.0 %
77 - 80	4.0 %
81 - 84	0.0 %
85 - 88	4.0 %
89 - 92	4.0 %
93 - 96	0.0 %
97 - 100	0.0 %
> 100	0.0 %
(Cases) N =	25
mean	48
min size (mm)	31
max size (mm)	89

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	4.0 %
41 - 44	8.0 %
45 - 48	8.0 %
49 - 52	4.0 %
53 - 56	4.0 %
57 - 60	0.0 %
61 - 64	16.0 %
65 - 68	0.0 %
69 - 72	8.0 %
73 - 76	12.0 %
77 - 80	8.0 %
81 - 84	4.0 %
85 - 88	8.0 %
89 - 92	0.0 %
93 - 96	0.0 %
97 - 100	0.0 %
> 100	16.0 %
(Cases) N =	25
mean	71
min size (mm)	40
max size (mm)	113

Santa Cruz Island - Devil's Peak Member

<i>Lophogorgia chilensis</i> heights		<i>Lophogorgia chilensis</i> widths	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	1.6 %
9 - 12	0.0 %	9 - 12	3.3 %
13 - 16	3.3 %	13 - 16	9.8 %
17 - 20	6.6 %	17 - 20	6.6 %
21 - 24	4.9 %	21 - 24	14.8 %
25 - 28	16.4 %	24 - 28	8.2 %
29 - 32	14.8 %	29 - 32	19.7 %
33 - 36	16.4 %	33 - 36	4.9 %
37 - 40	13.1 %	37 - 40	8.2 %
41 - 44	11.5 %	41 - 44	6.6 %
45 - 48	6.6 %	45 - 48	3.3 %
49 - 52	3.3 %	49 - 52	4.9 %
53 - 56	1.6 %	53 - 56	1.6 %
57 - 60	0.0 %	57 - 60	1.6 %
61 - 64	0.0 %	61 - 64	0.0 %
65 - 68	0.0 %	65 - 68	3.3 %
69 - 72	0.0 %	69 - 72	0.0 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	1.6 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	1.6 %
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 =	61	(Cases) N =	61
mean	34	mean	32
min size (mm)	16	min size (mm)	8
max size (mm)	78	max size (mm)	87

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Potato Pasture

<i>Lophogorgia chilensis heights</i>		<i>Lophogorgia chilensis widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	6.7 %
9 - 12	1.3 %	9 - 12	2.7 %
13 - 16	0.0 %	13 - 16	9.3 %
17 - 20	1.3 %	17 - 20	16.0 %
21 - 24	8.0 %	21 - 24	10.7 %
25 - 28	9.3 %	24 - 28	9.3 %
29 - 32	14.7 %	29 - 32	6.7 %
33 - 36	10.7 %	33 - 36	10.7 %
37 - 40	21.3 %	37 - 40	8.0 %
41 - 44	6.7 %	41 - 44	4.0 %
45 - 48	8.0 %	45 - 48	2.7 %
49 - 52	8.0 %	49 - 52	2.7 %
53 - 56	6.7 %	53 - 56	0.0 %
57 - 60	4.0 %	57 - 60	6.7 %
61 - 64	1.3 %	61 - 64	1.3 %
65 - 68	0.0 %	65 - 68	1.3 %
69 - 72	1.3 %	69 - 72	1.3 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	75	(Cases) N =	75
mean	38	mean	30
min size (mm)	12	min size (mm)	5
max size (mm)	71	max size (mm)	69

<i>Muricea californica heights</i>		<i>Muricea californica widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	0.0 %	9 - 12	0.0 %
13 - 16	0.0 %	13 - 16	0.0 %
17 - 20	0.0 %	17 - 20	0.0 %
21 - 24	0.0 %	21 - 24	0.0 %
25 - 28	0.0 %	24 - 28	0.0 %
29 - 32	33.3 %	29 - 32	0.0 %
33 - 36	0.0 %	33 - 36	33.3 %
37 - 40	66.7 %	37 - 40	0.0 %
41 - 44	0.0 %	41 - 44	0.0 %
45 - 48	0.0 %	45 - 48	0.0 %
49 - 52	0.0 %	49 - 52	0.0 %
53 - 56	0.0 %	53 - 56	0.0 %
57 - 60	0.0 %	57 - 60	66.7 %
61 - 64	0.0 %	61 - 64	0.0 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	0.0 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	3	(Cases) N =	3
mean	35	mean	50
min size (mm)	29	min size (mm)	35
max size (mm)	39	max size (mm)	59

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Cavern Point

<i>Lophogorgia chilensis heights</i>		<i>Lophogorgia chilensis widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	1.5 %
9 - 12	0.0 %	9 - 12	1.5 %
13 - 16	4.6 %	13 - 16	6.2 %
17 - 20	6.2 %	17 - 20	15.4 %
21 - 24	3.1 %	21 - 24	9.2 %
25 - 28	6.2 %	24 - 28	0.0 %
29 - 32	1.5 %	29 - 32	16.9 %
33 - 36	6.2 %	33 - 36	13.8 %
37 - 40	13.8 %	37 - 40	15.4 %
41 - 44	23.1 %	41 - 44	7.7 %
45 - 48	7.7 %	45 - 48	3.1 %
49 - 52	10.8 %	49 - 52	1.5 %
53 - 56	10.8 %	53 - 56	1.5 %
57 - 60	4.6 %	57 - 60	1.5 %
61 - 64	3.1 %	61 - 64	1.5 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	3.1 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	1.5 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	65	(Cases) N =	65
mean	41	mean	32
min size (mm)	14	min size (mm)	8
max size (mm)	77	max size (mm)	71

<i>Muricea fruticosa heights</i>		<i>Muricea fruticosa widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	0.0 %	9 - 12	0.0 %
13 - 16	0.0 %	13 - 16	0.0 %
17 - 20	0.0 %	17 - 20	0.0 %
21 - 24	100.0 %	21 - 24	0.0 %
25 - 28	0.0 %	24 - 28	0.0 %
29 - 32	0.0 %	29 - 32	0.0 %
33 - 36	0.0 %	33 - 36	0.0 %
37 - 40	0.0 %	37 - 40	0.0 %
41 - 44	0.0 %	41 - 44	100.0 %
45 - 48	0.0 %	45 - 48	0.0 %
49 - 52	0.0 %	49 - 52	0.0 %
53 - 56	0.0 %	53 - 56	0.0 %
57 - 60	0.0 %	57 - 60	0.0 %
61 - 64	0.0 %	61 - 64	0.0 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	0.0 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	1	(Cases) N =	1
mean	23	mean	43
min size (mm)	23	min size (mm)	43
max size (mm)	23	max size (mm)	43

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Cavern Point

Muricea californica heights

< 5	0.0 %
5 - 8	0.0 %
9 - 12	0.0 %
13 - 16	0.0 %
17 - 20	50.0 %
21 - 24	0.0 %
25 - 28	0.0 %
29 - 32	0.0 %
33 - 36	0.0 %
37 - 40	0.0 %
41 - 44	0.0 %
45 - 48	50.0 %
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	32
min size (mm)	17
max size (mm)	47

Muricea californica widths

< 5	0.0 %
5 - 8	0.0 %
9 - 12	0.0 %
13 - 16	0.0 %
17 - 20	0.0 %
21 - 24	50.0 %
24 - 28	0.0 %
29 - 32	0.0 %
33 - 36	0.0 %
37 - 40	50.0 %
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	31
min size (mm)	22
max size (mm)	40

Santa Cruz Island - Little Scorpion

Lophogorgia chilensis heights

< 5	0.0 %
5 - 8	0.0 %
9 - 12	0.0 %
13 - 16	0.0 %
17 - 20	0.0 %
21 - 24	9.3 %
25 - 28	5.3 %
29 - 32	2.7 %
33 - 36	4.0 %
37 - 40	5.3 %
41 - 44	13.3 %
45 - 48	16.0 %
49 - 52	5.3 %
53 - 56	9.3 %
57 - 60	9.3 %
61 - 64	6.7 %
65 - 68	8.0 %
69 - 72	1.3 %
73 - 76	2.7 %
77 - 80	1.3 %
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 =	75
mean	48
min size (mm)	22
max size (mm)	80

Lophogorgia chilensis widths

< 5	0.0 %
5 - 8	1.3 %
9 - 12	4.0 %
13 - 16	8.0 %
17 - 20	4.0 %
21 - 24	2.7 %
24 - 28	10.7 %
29 - 32	8.0 %
33 - 36	5.3 %
37 - 40	12.0 %
41 - 44	2.7 %
45 - 48	1.3 %
49 - 52	6.7 %
53 - 56	4.0 %
57 - 60	5.3 %
61 - 64	0.0 %
65 - 68	4.0 %
69 - 72	4.0 %
73 - 76	1.3 %
77 - 80	2.7 %
81 - 84	5.3 %
85 - 88	2.7 %
89 - 92	2.7 %
93 - 96	1.3 %
97 - 100	0.0 %
> 100	0.0 %
(Cases) N =	75
mean	44
min size (mm)	6
max size (mm)	96

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Pedro Reef

<i>Lophogorgia chilensis heights</i>		<i>Lophogorgia chilensis widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	0.0 %	9 - 12	5.3 %
13 - 16	0.0 %	13 - 16	1.3 %
17 - 20	2.7 %	17 - 20	1.3 %
21 - 24	5.3 %	21 - 24	1.3 %
25 - 28	4.0 %	24 - 28	12.0 %
29 - 32	2.7 %	29 - 32	6.7 %
33 - 36	12.0 %	33 - 36	8.0 %
37 - 40	16.0 %	37 - 40	10.7 %
41 - 44	20.0 %	41 - 44	10.7 %
45 - 48	12.0 %	45 - 48	6.7 %
49 - 52	14.7 %	49 - 52	8.0 %
53 - 56	9.3 %	53 - 56	14.7 %
57 - 60	1.3 %	57 - 60	1.3 %
61 - 64	0.0 %	61 - 64	9.3 %
65 - 68	2.7 %	65 - 68	2.7 %
69 - 72	0.0 %	69 - 72	0.0 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	1.3 %
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 =	75	(Cases) N =	75
mean	42	mean	42
min size (mm)	17	min size (mm)	10
max size (mm)	68	max size (mm)	88

<i>Muricea fruticosa heights</i>		<i>Muricea fruticosa widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	0.0 %	9 - 12	0.0 %
13 - 16	100.0 %	13 - 16	0.0 %
17 - 20	0.0 %	17 - 20	0.0 %
21 - 24	0.0 %	21 - 24	0.0 %
25 - 28	0.0 %	24 - 28	0.0 %
29 - 32	0.0 %	29 - 32	100.0 %
33 - 36	0.0 %	33 - 36	0.0 %
37 - 40	0.0 %	37 - 40	0.0 %
41 - 44	0.0 %	41 - 44	0.0 %
45 - 48	0.0 %	45 - 48	0.0 %
49 - 52	0.0 %	49 - 52	0.0 %
53 - 56	0.0 %	53 - 56	0.0 %
57 - 60	0.0 %	57 - 60	0.0 %
61 - 64	0.0 %	61 - 64	0.0 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	0.0 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	1	(Cases) N =	1
mean	14	mean	29
min size (mm)	14	min size (mm)	29
max size (mm)	14	max size (mm)	29

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Pedro Reef

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	66.7 %
29 - 32	0.0 %
33 - 36	0.0 %
37 - 40	16.7 %
41 - 44	0.0 %
45 - 48	0.0 %
49 - 52	0.0 %
53 - 56	0.0 %
57 - 60	0.0 %
61 - 64	16.7 %
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 =	6
mean	35
min size (mm)	25
max size (mm)	61

Muricea californica widths

< 5	0.0 %
5 - 8	0.0 %
9 - 12	0.0 %
13 - 16	16.7 %
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	33.3 %
49 - 52	16.7 %
53 - 56	16.7 %
57 - 60	0.0 %
61 - 64	0.0 %
65 - 68	0.0 %
69 - 72	16.7 %
73 - 76	0.0 %
77 - 80	0.0 %
81 - 84	0.0 %
85 - 88	16.7 %
89 - 92	0.0 %
93 - 96	0.0 %
97 - 100	0.0 %
> 100	0.0 %
(Cases) N =	6
mean	53
min size (mm)	13
max size (mm)	88

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Keyhole

<i>Lophogorgia chilensis heights</i>		<i>Lophogorgia chilensis widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	0.0 %	9 - 12	5.0 %
13 - 16	0.0 %	13 - 16	6.7 %
17 - 20	3.3 %	17 - 20	6.7 %
21 - 24	1.7 %	21 - 24	8.3 %
25 - 28	11.7 %	24 - 28	16.7 %
29 - 32	11.7 %	29 - 32	10.0 %
33 - 36	11.7 %	33 - 36	3.3 %
37 - 40	13.3 %	37 - 40	6.7 %
41 - 44	11.7 %	41 - 44	11.7 %
45 - 48	13.3 %	45 - 48	5.0 %
49 - 52	3.3 %	49 - 52	6.7 %
53 - 56	10.0 %	53 - 56	8.3 %
57 - 60	10.0 %	57 - 60	3.3 %
61 - 64	1.7 %	61 - 64	1.7 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	1.7 %
73 - 76	0.0 %	73 - 76	1.7 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	60	(Cases) N =	60
mean	40	mean	34
min size (mm)	17	min size (mm)	12
max size (mm)	61	max size (mm)	74

<i>Muricea fruticosa heights</i>		<i>Muricea fruticosa widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	0.0 %	9 - 12	0.0 %
13 - 16	0.0 %	13 - 16	0.0 %
17 - 20	33.3 %	17 - 20	0.0 %
21 - 24	66.7 %	21 - 24	0.0 %
25 - 28	0.0 %	24 - 28	33.3 %
29 - 32	0.0 %	29 - 32	0.0 %
33 - 36	0.0 %	33 - 36	33.3 %
37 - 40	0.0 %	37 - 40	33.3 %
41 - 44	0.0 %	41 - 44	0.0 %
45 - 48	0.0 %	45 - 48	0.0 %
49 - 52	0.0 %	49 - 52	0.0 %
53 - 56	0.0 %	53 - 56	0.0 %
57 - 60	0.0 %	57 - 60	0.0 %
61 - 64	0.0 %	61 - 64	0.0 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	0.0 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	3	(Cases) N =	3
mean	20	mean	33
min size (mm)	17	min size (mm)	26
max size (mm)	22	max size (mm)	39

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Keyhole

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	15.6 %
33 - 36	12.5 %
37 - 40	34.4 %
41 - 44	12.5 %
45 - 48	9.4 %
49 - 52	15.6 %
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 =	32
mean	40
min size (mm)	29
max size (mm)	50

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	3.1 %
37 - 40	3.1 %
41 - 44	3.1 %
45 - 48	12.5 %
49 - 52	9.4 %
53 - 56	9.4 %
57 - 60	3.1 %
61 - 64	0.0 %
65 - 68	9.4 %
69 - 72	9.4 %
73 - 76	3.1 %
77 - 80	12.5 %
81 - 84	6.3 %
85 - 88	9.4 %
89 - 92	0.0 %
93 - 96	3.1 %
97 - 100	0.0 %
> 100	3.1 %
(Cases) N =	32
mean	66
min size (mm)	33
max size (mm)	110

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - East Fish Camp

<i>Lophogorgia chilensis heights</i>		<i>Lophogorgia chilensis widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	0.0 %	9 - 12	0.0 %
13 - 16	0.0 %	13 - 16	0.0 %
17 - 20	0.0 %	17 - 20	0.0 %
21 - 24	0.0 %	21 - 24	8.3 %
25 - 28	0.0 %	24 - 28	8.3 %
29 - 32	8.3 %	29 - 32	16.7 %
33 - 36	0.0 %	33 - 36	33.3 %
37 - 40	8.3 %	37 - 40	8.3 %
41 - 44	16.7 %	41 - 44	16.7 %
45 - 48	8.3 %	45 - 48	8.3 %
49 - 52	41.7 %	49 - 52	0.0 %
53 - 56	8.3 %	53 - 56	0.0 %
57 - 60	8.3 %	57 - 60	0.0 %
61 - 64	8.3 %	61 - 64	0.0 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	0.0 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	12	(Cases) N =	12
mean	48	mean	35
min size (mm)	32	min size (mm)	23
max size (mm)	62	max size (mm)	48

<i>Muricea fruticosa heights</i>		<i>Muricea fruticosa widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	0.0 %	9 - 12	0.0 %
13 - 16	0.0 %	13 - 16	20.0 %
17 - 20	20.0 %	17 - 20	0.0 %
21 - 24	0.0 %	21 - 24	0.0 %
25 - 28	20.0 %	24 - 28	20.0 %
29 - 32	0.0 %	29 - 32	20.0 %
33 - 36	0.0 %	33 - 36	20.0 %
37 - 40	0.0 %	37 - 40	0.0 %
41 - 44	0.0 %	41 - 44	20.0 %
45 - 48	20.0 %	45 - 48	0.0 %
49 - 52	40.0 %	49 - 52	0.0 %
53 - 56	20.0 %	53 - 56	0.0 %
57 - 60	0.0 %	57 - 60	0.0 %
61 - 64	0.0 %	61 - 64	0.0 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	0.0 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	5	(Cases) N =	5
mean	38	mean	29
min size (mm)	18	min size (mm)	15
max size (mm)	52	max size (mm)	43

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - East Fish Camp

Muricea californica heights

< 5	0.0 %
5 - 8	0.0 %
9 - 12	0.0 %
13 - 16	0.0 %
17 - 20	0.0 %
21 - 24	5.9 %
25 - 28	5.9 %
29 - 32	17.6 %
33 - 36	17.6 %
37 - 40	11.8 %
41 - 44	5.9 %
45 - 48	11.8 %
49 - 52	17.6 %
53 - 56	0.0 %
57 - 60	0.0 %
61 - 64	0.0 %
65 - 68	0.0 %
69 - 72	5.9 %
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 =	17
mean	40
min size (mm)	21
max size (mm)	70

Muricea californica widths

< 5	0.0 %
5 - 8	0.0 %
9 - 12	0.0 %
13 - 16	5.9 %
17 - 20	0.0 %
21 - 24	0.0 %
24 - 28	5.9 %
29 - 32	0.0 %
33 - 36	11.8 %
37 - 40	0.0 %
41 - 44	0.0 %
45 - 48	11.8 %
49 - 52	0.0 %
53 - 56	17.6 %
57 - 60	5.9 %
61 - 64	0.0 %
65 - 68	0.0 %
69 - 72	0.0 %
73 - 76	11.8 %
77 - 80	17.6 %
81 - 84	0.0 %
85 - 88	5.9 %
89 - 92	5.9 %
93 - 96	0.0 %
97 - 100	0.0 %
> 100	0.0 %
(Cases) N =	17
mean	58
min size (mm)	13
max size (mm)	90

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Black Sea Bass Reef

<i>Lophogorgia chilensis heights</i>		<i>Lophogorgia chilensis widths</i>	
< 5	0.0 %	< 5	8.3 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	8.3 %	9 - 12	8.3 %
13 - 16	0.0 %	13 - 16	0.0 %
17 - 20	0.0 %	17 - 20	0.0 %
21 - 24	8.3 %	21 - 24	0.0 %
25 - 28	0.0 %	24 - 28	0.0 %
29 - 32	0.0 %	29 - 32	25.0 %
33 - 36	8.3 %	33 - 36	8.3 %
37 - 40	8.3 %	37 - 40	8.3 %
41 - 44	8.3 %	41 - 44	8.3 %
45 - 48	0.0 %	45 - 48	8.3 %
49 - 52	25.0 %	49 - 52	8.3 %
53 - 56	8.3 %	53 - 56	8.3 %
57 - 60	8.3 %	57 - 60	0.0 %
61 - 64	8.3 %	61 - 64	0.0 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	8.3 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	8.3 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	12	(Cases) N =	12
mean	46	mean	37
min size (mm)	11	min size (mm)	2
max size (mm)	77	max size (mm)	72

<i>Muricea fruticosa heights</i>		<i>Muricea fruticosa widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	0.0 %	9 - 12	0.0 %
13 - 16	0.0 %	13 - 16	0.0 %
17 - 20	0.0 %	17 - 20	0.0 %
21 - 24	0.0 %	21 - 24	0.0 %
25 - 28	16.7 %	24 - 28	0.0 %
29 - 32	0.0 %	29 - 32	0.0 %
33 - 36	66.7 %	33 - 36	0.0 %
37 - 40	0.0 %	37 - 40	16.7 %
41 - 44	0.0 %	41 - 44	0.0 %
45 - 48	0.0 %	45 - 48	0.0 %
49 - 52	16.7 %	49 - 52	16.7 %
53 - 56	16.7 %	53 - 56	33.3 %
57 - 60	0.0 %	57 - 60	0.0 %
61 - 64	0.0 %	61 - 64	0.0 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	33.3 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	6	(Cases) N =	6
mean	36	mean	56
min size (mm)	26	min size (mm)	38
max size (mm)	52	max size (mm)	71

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Black Sea Bass Reef

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	0.0 %
33 - 36	0.0 %
37 - 40	16.7 %
41 - 44	33.3 %
45 - 48	0.0 %
49 - 52	50.0 %
53 - 56	16.7 %
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 =	6
mean	46
min size (mm)	37
max size (mm)	52

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	0.0 %
49 - 52	0.0 %
53 - 56	0.0 %
57 - 60	16.7 %
61 - 64	0.0 %
65 - 68	16.7 %
69 - 72	33.3 %
73 - 76	16.7 %
77 - 80	0.0 %
81 - 84	0.0 %
85 - 88	0.0 %
89 - 92	0.0 %
93 - 96	16.7 %
97 - 100	0.0 %
> 100	0.0 %
(Cases) N =	6
mean	73
min size (mm)	59
max size (mm)	96

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Lighthouse

<i>Lophogorgia chilensis heights</i>		<i>Lophogorgia chilensis widths</i>	
< 5	0.0 %	< 5	2.1 %
5 - 8	2.1 %	5 - 8	2.1 %
9 - 12	2.1 %	9 - 12	0.0 %
13 - 16	0.0 %	13 - 16	10.4 %
17 - 20	6.3 %	17 - 20	6.3 %
21 - 24	8.3 %	21 - 24	6.3 %
25 - 28	2.1 %	24 - 28	14.6 %
29 - 32	18.8 %	29 - 32	12.5 %
33 - 36	25.0 %	33 - 36	8.3 %
37 - 40	12.5 %	37 - 40	4.2 %
41 - 44	12.5 %	41 - 44	16.7 %
45 - 48	4.2 %	45 - 48	8.3 %
49 - 52	4.2 %	49 - 52	6.3 %
53 - 56	2.1 %	53 - 56	2.1 %
57 - 60	0.0 %	57 - 60	0.0 %
61 - 64	0.0 %	61 - 64	0.0 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	0.0 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	2.1 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	48	(Cases) N =	48
mean	33	mean	33
min size (mm)	8	min size (mm)	3
max size (mm)	53	max size (mm)	93

<i>Muricea fruticosa heights</i>		<i>Muricea fruticosa widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	6.7 %	5 - 8	0.0 %
9 - 12	33.3 %	9 - 12	0.0 %
13 - 16	20.0 %	13 - 16	6.7 %
17 - 20	33.3 %	17 - 20	0.0 %
21 - 24	0.0 %	21 - 24	20.0 %
25 - 28	0.0 %	24 - 28	0.0 %
29 - 32	6.7 %	29 - 32	13.3 %
33 - 36	0.0 %	33 - 36	26.7 %
37 - 40	0.0 %	37 - 40	13.3 %
41 - 44	0.0 %	41 - 44	20.0 %
45 - 48	0.0 %	45 - 48	0.0 %
49 - 52	0.0 %	49 - 52	0.0 %
53 - 56	0.0 %	53 - 56	0.0 %
57 - 60	0.0 %	57 - 60	0.0 %
61 - 64	0.0 %	61 - 64	0.0 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	0.0 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	15	(Cases) N =	15
mean	15	mean	32
min size (mm)	7	min size (mm)	16
max size (mm)	29	max size (mm)	44

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Lighthouse

Muricea californica heights

< 5	0.0 %
5 - 8	0.0 %
9 - 12	0.0 %
13 - 16	4.4 %
17 - 20	0.0 %
21 - 24	6.6 %
25 - 28	11.0 %
29 - 32	12.1 %
33 - 36	7.7 %
37 - 40	18.7 %
41 - 44	15.4 %
45 - 48	9.9 %
49 - 52	5.5 %
53 - 56	3.3 %
57 - 60	2.2 %
61 - 64	2.2 %
65 - 68	1.1 %
69 - 72	1.1 %
73 - 76	0.0 %
77 - 80	0.0 %
81 - 84	0.0 %
85 - 88	0.0 %
89 - 92	0.0 %
93 - 96	0.0 %
97 - 100	0.0 %
> 100	0.0 %
(Cases) N =	91
mean	38
min size (mm)	15
max size (mm)	72

Muricea californica widths

< 5	0.0 %
5 - 8	0.0 %
9 - 12	0.0 %
13 - 16	1.1 %
17 - 20	1.1 %
21 - 24	1.1 %
24 - 28	1.1 %
29 - 32	3.3 %
33 - 36	5.5 %
37 - 40	2.2 %
41 - 44	2.2 %
45 - 48	3.3 %
49 - 52	2.2 %
53 - 56	7.7 %
57 - 60	7.7 %
61 - 64	8.8 %
65 - 68	4.4 %
69 - 72	8.8 %
73 - 76	5.5 %
77 - 80	5.5 %
81 - 84	4.4 %
85 - 88	12.1 %
89 - 92	4.4 %
93 - 96	4.4 %
97 - 100	1.1 %
> 100	2.2 %
(Cases) N =	91
mean	66
min size (mm)	15
max size (mm)	120

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Graveyard Canyon

<i>Lophogorgia chilensis heights</i>		<i>Lophogorgia chilensis widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	0.0 %	9 - 12	2.4 %
13 - 16	0.0 %	13 - 16	0.0 %
17 - 20	2.4 %	17 - 20	9.8 %
21 - 24	0.0 %	21 - 24	4.9 %
25 - 28	7.3 %	24 - 28	17.1 %
29 - 32	12.2 %	29 - 32	22.0 %
33 - 36	12.2 %	33 - 36	22.0 %
37 - 40	24.4 %	37 - 40	2.4 %
41 - 44	22.0 %	41 - 44	2.4 %
45 - 48	9.8 %	45 - 48	0.0 %
49 - 52	7.3 %	49 - 52	9.8 %
53 - 56	4.9 %	53 - 56	9.8 %
57 - 60	0.0 %	57 - 60	0.0 %
61 - 64	0.0 %	61 - 64	0.0 %
65 - 68	0.0 %	65 - 68	0.0 %
69 - 72	0.0 %	69 - 72	0.0 %
73 - 76	0.0 %	73 - 76	0.0 %
77 - 80	0.0 %	77 - 80	0.0 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	0.0 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	41	(Cases) N =	41
mean	39	mean	33
min size (mm)	17	min size (mm)	10
max size (mm)	53	max size (mm)	56

<i>Muricea fruticosa heights</i>		<i>Muricea fruticosa widths</i>	
< 5	0.0 %	< 5	0.0 %
5 - 8	0.0 %	5 - 8	0.0 %
9 - 12	0.0 %	9 - 12	0.0 %
13 - 16	0.0 %	13 - 16	0.0 %
17 - 20	0.0 %	17 - 20	0.0 %
21 - 24	0.0 %	21 - 24	0.0 %
25 - 28	6.3 %	24 - 28	0.0 %
29 - 32	0.0 %	29 - 32	0.0 %
33 - 36	25.0 %	33 - 36	0.0 %
37 - 40	25.0 %	37 - 40	0.0 %
41 - 44	12.5 %	41 - 44	0.0 %
45 - 48	12.5 %	45 - 48	6.3 %
49 - 52	12.5 %	49 - 52	0.0 %
53 - 56	0.0 %	53 - 56	18.8 %
57 - 60	6.3 %	57 - 60	12.5 %
61 - 64	0.0 %	61 - 64	18.8 %
65 - 68	0.0 %	65 - 68	18.8 %
69 - 72	0.0 %	69 - 72	6.3 %
73 - 76	0.0 %	73 - 76	6.3 %
77 - 80	0.0 %	77 - 80	6.3 %
81 - 84	0.0 %	81 - 84	0.0 %
85 - 88	0.0 %	85 - 88	0.0 %
89 - 92	0.0 %	89 - 92	6.3 %
93 - 96	0.0 %	93 - 96	0.0 %
97 - 100	0.0 %	97 - 100	0.0 %
> 100	0.0 %	> 100	0.0 %
(Cases) N =	16	(Cases) N =	16
mean	41	mean	65
min size (mm)	28	min size (mm)	47
max size (mm)	59	max size (mm)	89

2009 Gorgonian/Stylaster californica SIZE FREQUENCY DISTRIBUTIONS

Santa Barbara Island - Graveyard Canyon

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	25.0 %
29 - 32	25.0 %
33 - 36	25.0 %
37 - 40	0.0 %
41 - 44	25.0 %
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 =	8
mean	34
min size (mm)	25
max size (mm)	44

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	12.5 %
33 - 36	0.0 %
37 - 40	0.0 %
41 - 44	0.0 %
45 - 48	0.0 %
49 - 52	0.0 %
53 - 56	50.0 %
57 - 60	0.0 %
61 - 64	12.5 %
65 - 68	0.0 %
69 - 72	25.0 %
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 =	8
mean	57
min size (mm)	29
max size (mm)	71

2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Admiral's Reef

Strongylocentrotus purpuratus

Number of ARMs	6
< 5	16.2 %
5 - 9	27.7 %
10 - 14	10.4 %
15 - 19	17.9 %
20 - 24	17.9 %
25 - 29	7.5 %
30 - 34	2.3 %
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 =	173
mean	16
min size (mm)	2
max size (mm)	32

Crassidoma giganteum

Number of ARMs	5
<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	0.0 %
80 - 89	0.0 %
90 - 99	0.0 %
100 - 109	0.0 %
110 - 119	50.0 %
120 - 129	0.0 %
130 - 139	0.0 %
> 139	0.0 %
(Cases) N =	4
mean	85
min size (mm)	51
max size (mm)	118

Haliotis corrugata

Number of ARMs	5
<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	41
min size (mm)	41
max size (mm)	41

Cypraea spadicea

Number of ARMs	5
<30	0.0 %
30 - 32	5.5 %
33 - 35	12.7 %
36 - 38	21.8 %
39 - 41	25.5 %
42 - 44	10.9 %
45 - 47	14.5 %
48 - 50	7.3 %
51 - 53	1.8 %
54 - 56	0.0 %
>56	0.0 %
(Cases) N =	55
mean	40
min size (mm)	31
max size (mm)	51

Tegula regina

Number of ARMs	6
< 5	0.0 %
5 - 9	0.0 %
10 - 14	0.0 %
15 - 19	0.0 %
20 - 24	33.3 %
25 - 29	0.0 %
30 - 34	0.0 %
35 - 39	0.0 %
40 - 44	33.3 %
45 - 49	33.3 %
50 - 54	0.0 %
55 - 59	0.0 %
60 - 64	0.0 %
65 - 69	0.0 %
70 - 74	0.0 %
> 75	0.0 %
(Cases) N =	3
mean	37
min size (mm)	21
max size (mm)	47

Kelletia kelletii

Number of ARMs	5
< 40	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 %
120 - 129	0.0 %
130 - 139	0.0 %
140 - 149	0.0 %
> 149	0.0 %
(Cases) N =	2
mean	48
min size (mm)	47
max size (mm)	48

2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Cathedral Cove

<i>Megastraea undosa</i>		<i>Pisaster giganteus</i>		<i>Strongylocentrotus purpuratus</i>	
Number of ARMs	5	Number of ARMs	5	Number of ARMs	5
<10	0.0 %	< 20	60.0 %	< 5	0.2 %
10 - 19	0.0 %	20 - 39	40.0 %	5 - 9	6.3 %
20 - 29	50.0 %	40 - 59	0.0 %	10 - 14	19.5 %
30 - 39	50.0 %	60 - 79	0.0 %	15 - 19	18.6 %
40 - 49	0.0 %	80 - 99	0.0 %	20 - 24	10.6 %
50 - 59	0.0 %	100 - 119	0.0 %	25 - 29	6.3 %
60 - 69	0.0 %	120 - 139	0.0 %	30 - 34	6.5 %
70 - 79	0.0 %	140 - 159	0.0 %	35 - 39	5.1 %
80 - 89	0.0 %	160 - 179	0.0 %	40 - 44	4.3 %
90 - 99	0.0 %	180 - 199	0.0 %	45 - 49	4.1 %
100 - 109	0.0 %	200 - 219	0.0 %	50 - 54	5.3 %
110 - 119	0.0 %	220 - 239	0.0 %	55 - 59	5.1 %
> 119	0.0 %	> 239	0.0 %	60 - 64	3.9 %
(Cases) N =	2	(Cases) N =	5	65 - 69	3.6 %
mean	29	mean	20	70 - 74	0.7 %
min size (mm)	23	min size (mm)	10	75 - 79	0.0 %
max size (mm)	34	max size (mm)	34	> 79	0.0 %
				(Cases) N =	415
				mean	34
				min size (mm)	4
				max size (mm)	73
<i>Patiria miniata</i>		<i>Strongylocentrotus franciscanus</i>			
Number of ARMs	5	Number of ARMs	5		
<10	17.1 %	< 5	0.0 %		
10 - 19	43.9 %	5 - 9	0.6 %		
20 - 29	31.7 %	10 - 14	5.9 %		
30 - 39	2.4 %	15 - 19	11.8 %		
40 - 49	4.9 %	20 - 24	8.3 %		
50 - 59	0.0 %	25 - 29	7.1 %		
60 - 69	0.0 %	30 - 34	4.1 %		
70 - 79	0.0 %	35 - 39	3.0 %		
80 - 89	0.0 %	40 - 44	4.1 %		
90 - 99	0.0 %	45 - 49	7.1 %		
> 99	0.0 %	50 - 54	4.1 %		
(Cases) N =	41	55 - 59	4.7 %		
mean	17	60 - 64	4.7 %		
min size (mm)	7	65 - 69	9.5 %		
max size (mm)	44	70 - 74	7.1 %		
		75 - 79	7.1 %		
		80 - 84	4.7 %		
		85 - 89	3.6 %		
		90 - 94	1.8 %		
		95 - 99	0.0 %		
		100 - 104	0.0 %		
		105 - 109	0.0 %		
		> 109	0.6 %		
		(Cases) N =	169		
		mean	48		
		min size (mm)	9		
		max size (mm)	120		

2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Landing Cove

<i>Crassedoma giganteum</i>		<i>Haliotis corrugata</i>		<i>Megastrea undosa</i>	
Number of ARMs	6	Number of ARMs	6	Number of ARMs	6
<10	0.0 %	<25	0.0 %	<10	0.0 %
10 - 19	7.1 %	25 - 34	50.0 %	10 - 19	0.0 %
20 - 29	7.1 %	35 - 44	0.0 %	20 - 29	0.0 %
30 - 39	3.6 %	45 - 54	50.0 %	30 - 39	0.0 %
40 - 49	7.1 %	55 - 64	0.0 %	40 - 49	100.0 %
50 - 59	3.6 %	65 - 74	0.0 %	50 - 59	0.0 %
60 - 69	7.1 %	75 - 84	0.0 %	60 - 69	0.0 %
70 - 79	10.7 %	85 - 94	0.0 %	70 - 79	0.0 %
80 - 89	10.7 %	95 - 104	0.0 %	80 - 89	0.0 %
90 - 99	7.1 %	105 - 114	0.0 %	90 - 99	0.0 %
100 - 109	14.3 %	115 - 124	0.0 %	100 - 109	0.0 %
110 - 119	7.1 %	125 - 134	0.0 %	110 - 119	0.0 %
120 - 129	3.6 %	135 - 144	0.0 %	> 119	0.0 %
130 - 139	10.7 %	145 - 154	0.0 %	(Cases) N =	1
> 139	0.0 %	155 - 164	0.0 %	mean	41
(Cases) N =	28	165 - 174	0.0 %	min size (mm)	41
mean	80	175 - 184	0.0 %	max size (mm)	41
min size (mm)	15	185 - 194	0.0 %		
max size (mm)	135	>195	0.0 %		
		(Cases) N =	2		
		mean	42		
		min size (mm)	32		
		max size (mm)	52		
<i>Cypraea spadicea</i>		<i>Kelletia kelletii</i>		<i>Megathura crenulata</i>	
Number of ARMs	6	Number of ARMs	6	Number of ARMs	6
<30	0.0 %	< 40	27.3 %	<10	0.0 %
30 - 32	3.0 %	40 - 49	36.4 %	10 - 19	0.0 %
33 - 35	13.4 %	50 - 59	18.2 %	20 - 29	0.0 %
36 - 38	6.0 %	60 - 69	18.2 %	30 - 39	0.0 %
39 - 41	22.4 %	70 - 79	0.0 %	40 - 49	100.0 %
42 - 44	25.4 %	80 - 89	0.0 %	50 - 59	0.0 %
45 - 47	11.9 %	90 - 99	0.0 %	60 - 69	0.0 %
48 - 50	13.4 %	100 - 109	0.0 %	70 - 79	0.0 %
51 - 53	3.0 %	110 - 119	0.0 %	80 - 89	0.0 %
54 - 56	1.5 %	120 - 129	0.0 %	90 - 99	0.0 %
>56	0.0 %	130 - 139	0.0 %	100 - 109	0.0 %
(Cases) N =	67	140 - 149	0.0 %	110 - 119	0.0 %
mean	42	> 149	0.0 %	> 119	0.0 %
min size (mm)	31	(Cases) N =	11	(Cases) N =	1
max size (mm)	54	mean	46	mean	44
		min size (mm)	19	min size (mm)	44
		max size (mm)	65	max size (mm)	44

2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

Anacapa Island - Landing Cove

<i>Patiria miniata</i>		<i>Strongylocentrotus franciscanus</i>		<i>Tegula regina</i>	
Number of ARMs	6	Number of ARMs	6	Number of ARMs	6
<10	31.8 %	< 5	0.0 %	< 5	0.0 %
10 - 19	38.6 %	5 - 9	0.6 %	5 - 9	0.0 %
20 - 29	25.0 %	10 - 14	7.3 %	10 - 14	0.0 %
30 - 39	4.5 %	15 - 19	17.9 %	15 - 19	0.0 %
40 - 49	0.0 %	20 - 24	19.9 %	20 - 24	0.0 %
50 - 59	0.0 %	25 - 29	5.9 %	25 - 29	100.0 %
60 - 69	0.0 %	30 - 34	4.2 %	30 - 34	0.0 %
70 - 79	0.0 %	35 - 39	3.1 %	35 - 39	0.0 %
80 - 89	0.0 %	40 - 44	4.2 %	40 - 44	0.0 %
90 - 99	0.0 %	45 - 49	3.9 %	45 - 49	0.0 %
> 99	0.0 %	50 - 54	2.5 %	50 - 54	0.0 %
(Cases) N =	44	55 - 59	2.2 %	55 - 59	0.0 %
mean	16	60 - 64	4.2 %	60 - 64	0.0 %
min size (mm)	5	65 - 69	3.1 %	65 - 69	0.0 %
max size (mm)	35	70 - 74	4.2 %	70 - 74	0.0 %
		75 - 79	4.8 %	> 75	0.0 %
		80 - 84	3.4 %	(Cases) N =	2
		85 - 89	4.8 %	mean	26
		90 - 94	1.7 %	min size (mm)	25
				min size (mm)	25
				max size (mm)	27
				max size (mm)	27
<i>Pisaster giganteus</i>		<i>Strongylocentrotus purpuratus</i>			
Number of ARMs	6	Number of ARMs	6		
< 20	20.0 %	< 5	0.3 %		
20 - 39	60.0 %	5 - 9	8.8 %		
40 - 59	20.0 %	10 - 14	10.8 %		
60 - 79	0.0 %	15 - 19	12.2 %		
80 - 99	0.0 %	20 - 24	10.6 %		
		25 - 29	7.3 %		
		30 - 34	8.3 %		
		35 - 39	7.7 %		
		40 - 44	6.8 %		
		45 - 49	7.7 %		
		50 - 54	8.0 %		
		55 - 59	4.4 %		
		60 - 64	3.9 %		
		65 - 69	1.7 %		
		70 - 74	0.9 %		
		75 - 79	0.6 %		
		> 79	0.0 %		
		(Cases) N =	893		
		mean	36		
		min size (mm)	4		
		max size (mm)	79		

2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Miracle Mile

Crassedoma giganteum

Number of ARMs	7
<10	0.0 %
10 - 19	0.0 %
20 - 29	0.0 %
30 - 39	0.0 %
40 - 49	0.0 %
50 - 59	0.0 %
60 - 69	0.0 %
70 - 79	0.0 %
80 - 89	0.0 %
90 - 99	0.0 %
100 - 109	0.0 %
110 - 119	50.0 %
120 - 129	50.0 %
130 - 139	0.0 %
> 139	0.0 %
(Cases) N =	2
mean	116
min size (mm)	112
max size (mm)	120

Lithopoma gibberosa

Number of ARMs	7
<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	35
min size (mm)	35
max size (mm)	35

Pisaster giganteus

Number of ARMs	7
< 20	0.0 %
20 - 39	0.0 %
40 - 59	0.0 %
60 - 79	40.0 %
80 - 99	0.0 %
100 - 119	60.0 %
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 =	5
mean	88
min size (mm)	65
max size (mm)	104

Patiria miniata

Number of ARMs	7
<10	2.3 %
10 - 19	18.2 %
20 - 29	31.8 %
30 - 39	22.7 %
40 - 49	9.1 %
50 - 59	9.1 %
60 - 69	6.8 %
70 - 79	0.0 %
80 - 89	0.0 %
90 - 99	0.0 %
> 99	0.0 %
(Cases) N =	44
mean	33
min size (mm)	7
max size (mm)	69

Pycnopodia helianthoides

Number of ARMs	7
< 20	0.0 %
20 - 39	0.0 %
40 - 59	42.9 %
60 - 79	57.1 %
80 - 99	0.0 %
100 - 119	0.0 %
120 - 139	0.0 %
140 - 159	0.0 %
160 - 179	0.0 %
180 - 199	0.0 %
200 - 219	0.0 %
220 - 239	0.0 %
240 - 259	0.0 %
260 - 279	0.0 %
280 - 299	0.0 %
> 299	0.0 %
(Cases) N =	7
mean	61
min size (mm)	48
max size (mm)	72

Haliotis rufescens

Number of ARMs	7
<25	0.0 %
25 - 34	0.0 %
35 - 44	0.0 %
45 - 54	0.0 %
55 - 64	25.0 %
65 - 74	12.5 %
75 - 84	0.0 %
85 - 94	0.0 %
95 - 104	0.0 %
105 - 114	12.5 %
115 - 124	12.5 %
125 - 134	12.5 %
135 - 144	0.0 %
145 - 154	12.5 %
155 - 164	12.5 %
165 - 174	0.0 %
175 - 184	0.0 %
185 - 194	0.0 %
>195	0.0 %
(Cases) N =	8
mean	108
min size (mm)	63
max size (mm)	160

2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

San Miguel Island - Miracle Mile

<i>Strongylocentrotus franciscanus</i>		<i>Crassidoma giganteum</i>		<i>Megastrea undosa</i>	
Number of ARMs	7	Number of ARMs	5	Number of ARMs	5
< 5	0.0 %	<10	7.4 %	<10	0.0 %
5 - 9	0.0 %	10 - 19	48.1 %	10 - 19	100.0 %
10 - 14	0.0 %	20 - 29	11.1 %	20 - 29	0.0 %
15 - 19	0.0 %	30 - 39	3.7 %	30 - 39	0.0 %
20 - 24	3.0 %	40 - 49	3.7 %	40 - 49	0.0 %
25 - 29	0.0 %	50 - 59	0.0 %	50 - 59	0.0 %
30 - 34	6.1 %	60 - 69	0.0 %	60 - 69	0.0 %
35 - 39	3.0 %	70 - 79	0.0 %	70 - 79	0.0 %
40 - 44	3.0 %	80 - 89	0.0 %	80 - 89	0.0 %
45 - 49	3.0 %	90 - 99	3.7 %	90 - 99	0.0 %
50 - 54	3.0 %	100 - 109	3.7 %	100 - 109	0.0 %
55 - 59	6.1 %	110 - 119	0.0 %	110 - 119	0.0 %
60 - 64	3.0 %	120 - 129	7.4 %	> 119	0.0 %
65 - 69	0.0 %	130 - 139	7.4 %	(Cases) N =	1
70 - 74	0.0 %	> 139	3.7 %	mean	16
75 - 79	9.1 %	(Cases) N =	27	min size (mm)	16
80 - 84	0.0 %	mean	47	max size (mm)	16
85 - 89	3.0 %	min size (mm)	8		
90 - 94	3.0 %	max size (mm)	143		
95 - 99	24.2 %				
100 - 104	12.1 %				
105 - 109	12.1 %				
> 109	6.1 %				
(Cases) N =	33				
mean	82				
min size (mm)	22				
max size (mm)	121				
<i>Strongylocentrotus purpuratus</i>		<i>Cypraea spadicea</i>		<i>Megathura crenulata</i>	
Number of ARMs	7	Number of ARMs	5	Number of ARMs	5
< 5	0.0 %	<30	0.0 %	<10	0.0 %
5 - 9	0.0 %	30 - 32	0.0 %	<10	0.0 %
10 - 14	50.0 %	33 - 35	4.3 %	10 - 19	33.3 %
15 - 19	0.0 %	36 - 38	17.4 %	10 - 19	33.3 %
20 - 24	0.0 %	39 - 41	19.6 %	20 - 29	33.3 %
25 - 29	0.0 %	42 - 44	34.8 %	30 - 39	0.0 %
30 - 34	0.0 %	45 - 47	6.5 %	40 - 49	33.3 %
35 - 39	0.0 %	48 - 50	8.7 %	50 - 59	0.0 %
40 - 44	0.0 %	51 - 53	8.7 %	60 - 69	0.0 %
45 - 49	0.0 %	54 - 56	0.0 %	70 - 79	0.0 %
50 - 54	0.0 %	>56	0.0 %	80 - 89	0.0 %
55 - 59	0.0 %	(Cases) N =	46	90 - 99	0.0 %
60 - 64	0.0 %	mean	43	100 - 109	0.0 %
65 - 69	0.0 %	min size (mm)	35	110 - 119	0.0 %
70 - 74	0.0 %	max size (mm)	52	> 119	0.0 %
75 - 79	0.0 %			(Cases) N =	3
> 79	50.0 %			mean	28
(Cases) N =	2			min size (mm)	17
mean	58			max size (mm)	43
min size (mm)	11				
max size (mm)	104				

2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Fry's Harbor

Patiria miniata

Number of ARMs	5
<10	5.4 %
10 - 19	28.6 %
20 - 29	23.2 %
30 - 39	17.9 %
40 - 49	12.5 %
50 - 59	5.4 %
60 - 69	1.8 %
70 - 79	5.4 %
80 - 89	0.0 %
90 - 99	0.0 %
> 99	0.0 %
(Cases) N =	56
mean	30
min size (mm)	4
max size (mm)	79

Pisaster giganteus

Number of ARMs	5
< 20	16.7 %
20 - 39	58.3 %
40 - 59	16.7 %
60 - 79	8.3 %
80 - 99	0.0 %
100 - 119	0.0 %
120 - 139	0.0 %
140 - 159	0.0 %
160 - 179	0.0 %
180 - 199	0.0 %
200 - 219	0.0 %
220 - 239	0.0 %
> 239	0.0 %
(Cases) N =	12
mean	31
min size (mm)	7
max size (mm)	71

Pycnopodia helianthoides

Number of ARMs	5
< 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	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	175
min size (mm)	175
max size (mm)	175

Strongylocentrotus franciscanus

Number of ARMs	5
< 5	0.0 %
5 - 9	0.0 %
10 - 14	3.5 %
15 - 19	8.8 %
20 - 24	12.3 %
25 - 29	13.2 %
30 - 34	7.9 %
35 - 39	7.0 %
40 - 44	10.5 %
45 - 49	7.0 %
50 - 54	5.3 %
55 - 59	2.6 %
60 - 64	4.4 %
65 - 69	1.8 %
70 - 74	5.3 %
75 - 79	3.5 %
80 - 84	6.1 %
85 - 89	0.9 %
90 - 94	0.0 %
95 - 99	0.0 %
100 - 104	0.0 %
105 - 109	0.0 %
> 109	0.0 %
(Cases) N =	114
mean	43
min size (mm)	10
max size (mm)	85

Strongylocentrotus purpuratus

Number of ARMs	5
< 5	0.0 %
5 - 9	1.8 %
10 - 14	3.6 %
15 - 19	30.9 %
20 - 24	30.9 %
25 - 29	9.1 %
30 - 34	9.1 %
35 - 39	7.3 %
40 - 44	5.5 %
45 - 49	0.0 %
50 - 54	0.0 %
55 - 59	0.0 %
60 - 64	1.8 %
65 - 69	0.0 %
70 - 74	0.0 %
75 - 79	0.0 %
> 79	0.0 %
(Cases) N =	55
mean	26
min size (mm)	9
max size (mm)	60

2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Gull Island South

<i>Crassedoma giganteum</i>		<i>Kelletia kelletii</i>		<i>Patiria miniata</i>	
Number of ARMs	14	Number of ARMs	14	Number of ARMs	14
<10	5.3 %	< 40	0.0 %	<10	4.7 %
10 - 19	26.3 %	40 - 49	50.0 %	10 - 19	54.7 %
20 - 29	26.3 %	50 - 59	50.0 %	20 - 29	19.8 %
30 - 39	10.5 %	60 - 69	0.0 %	30 - 39	14.0 %
40 - 49	5.3 %	70 - 79	0.0 %	40 - 49	2.3 %
50 - 59	0.0 %	80 - 89	0.0 %	50 - 59	1.2 %
60 - 69	5.3 %	90 - 99	0.0 %	60 - 69	3.5 %
70 - 79	0.0 %	100 - 109	0.0 %	70 - 79	0.0 %
80 - 89	5.3 %	110 - 119	0.0 %	80 - 89	0.0 %
90 - 99	5.3 %	120 - 129	0.0 %	90 - 99	0.0 %
100 - 109	5.3 %	130 - 139	0.0 %	> 99	0.0 %
110 - 119	0.0 %	140 - 149	0.0 %	(Cases) N =	86
120 - 129	5.3 %	> 149	0.0 %	mean	22
130 - 139	0.0 %	(Cases) N =	2	min size (mm)	7
> 139	0.0 %	mean	49	max size (mm)	68
(Cases) N =	19	min size (mm)	46		
mean	41	max size (mm)	51		
min size (mm)	7				
max size (mm)	121				
<i>Cypraea spadicea</i>		<i>Megathura crenulata</i>		<i>Pisaster giganteus</i>	
Number of ARMs	14	Number of ARMs	14	Number of ARMs	14
<30	0.0 %	<10	0.0 %	< 20	7.1 %
30 - 32	0.6 %	10 - 19	40.0 %	20 - 39	21.4 %
33 - 35	2.6 %	20 - 29	30.0 %	40 - 59	50.0 %
36 - 38	5.2 %	30 - 39	30.0 %	60 - 79	7.1 %
39 - 41	20.0 %	40 - 49	0.0 %	80 - 99	14.3 %
42 - 44	25.2 %	50 - 59	0.0 %	100 - 119	0.0 %
45 - 47	27.1 %	60 - 69	0.0 %	120 - 139	0.0 %
48 - 50	15.5 %	70 - 79	0.0 %	140 - 159	0.0 %
51 - 53	3.9 %	80 - 89	0.0 %	160 - 179	0.0 %
54 - 56	0.0 %	90 - 99	0.0 %	180 - 199	0.0 %
>56	0.0 %	100 - 109	0.0 %	200 - 219	0.0 %
(Cases) N =	155	110 - 119	0.0 %	220 - 239	0.0 %
mean	44	> 119	0.0 %	> 239	0.0 %
min size (mm)	31	(Cases) N =	10	(Cases) N =	14
max size (mm)	52	mean	24	mean	48
		min size (mm)	15	min size (mm)	15
		max size (mm)	35	max size (mm)	97

2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Gull Island South

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2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Pelican Bay

Megastraea undosa

Number of ARMs	5
<10	0.0 %
10 - 19	0.0 %
20 - 29	100.0 %
30 - 39	0.0 %
40 - 49	0.0 %
50 - 59	0.0 %
60 - 69	0.0 %
70 - 79	0.0 %
80 - 89	0.0 %
90 - 99	0.0 %
100 - 109	0.0 %
110 - 119	0.0 %
> 119	0.0 %
(Cases) N =	2
mean	27
min size (mm)	26
max size (mm)	28

Patiria miniata

Number of ARMs	5
<10	2.9 %
10 - 19	35.0 %
20 - 29	17.5 %
30 - 39	16.5 %
40 - 49	15.5 %
50 - 59	4.9 %
60 - 69	3.9 %
70 - 79	2.9 %
80 - 89	1.0 %
90 - 99	0.0 %
> 99	0.0 %
(Cases) N =	103
mean	32
min size (mm)	5
max size (mm)	82

Strongylocentrotus franciscanus

Number of ARMs	5
< 5	0.0 %
5 - 9	16.0 %
10 - 14	14.6 %
15 - 19	7.6 %
20 - 24	5.6 %
25 - 29	5.6 %
30 - 34	13.9 %
35 - 39	8.3 %
40 - 44	12.5 %
45 - 49	4.2 %
50 - 54	6.3 %
55 - 59	2.8 %
60 - 64	2.1 %
65 - 69	0.7 %
70 - 74	0.0 %
75 - 79	0.0 %
80 - 84	0.0 %
85 - 89	0.0 %
90 - 94	0.0 %

Pisaster giganteus

Number of ARMs	5
< 20	0.0 %
20 - 39	0.0 %
40 - 59	0.0 %
60 - 79	100.0 %
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 =	1
mean	72
min size (mm)	72
max size (mm)	72

Megathura crenulata

Number of ARMs	5
<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 %
> 119	0.0 %
(Cases) N =	2
mean	21
min size (mm)	19
max size (mm)	22

95 - 99	0.0 %
100 - 104	0.0 %
105 - 109	0.0 %
> 109	0.0 %
(Cases) N =	144
mean	32
min size (mm)	6
max size (mm)	65

Strongylocentrotus purpuratus

Number of ARMs	5
< 5	0.0 %
5 - 9	11.0 %
10 - 14	34.3 %
15 - 19	24.3 %
20 - 24	16.6 %
25 - 29	7.7 %
30 - 34	1.7 %
35 - 39	2.2 %
40 - 44	1.1 %
45 - 49	0.0 %
50 - 54	1.1 %
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 =	181
mean	20
min size (mm)	5
max size (mm)	53

2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Scorpion Anchorage

<i>Crassedoma giganteum</i>		<i>Megathura crenulata</i>		<i>Pisaster giganteus</i>	
Number of ARMs	7	Number of ARMs	7	Number of ARMs	7
<10	0.0 %	<10	0.0 %	< 20	25.0 %
10 - 19	0.0 %	10 - 19	0.0 %	20 - 39	25.0 %
20 - 29	0.0 %	20 - 29	0.0 %	40 - 59	25.0 %
30 - 39	0.0 %	30 - 39	0.0 %	60 - 79	12.5 %
40 - 49	0.0 %	40 - 49	0.0 %	80 - 99	12.5 %
50 - 59	0.0 %	50 - 59	0.0 %	100 - 119	0.0 %
60 - 69	0.0 %	60 - 69	0.0 %	120 - 139	0.0 %
70 - 79	0.0 %	70 - 79	100.0 %	140 - 159	0.0 %
80 - 89	0.0 %	80 - 89	0.0 %	160 - 179	0.0 %
90 - 99	40.0 %	90 - 99	0.0 %	180 - 199	0.0 %
100 - 109	0.0 %	100 - 109	0.0 %	200 - 219	0.0 %
110 - 119	10.0 %	110 - 119	0.0 %	220 - 239	0.0 %
120 - 129	0.0 %	> 119	0.0 %	> 239	0.0 %
130 - 139	30.0 %	(Cases) N =	1	(Cases) N =	8
> 139	20.0 %	mean	76	mean	42
(Cases) N =	10	min size (mm)	76	min size (mm)	3
mean	122	max size (mm)	76	max size (mm)	85
min size (mm)	94				
max size (mm)	162				

<i>Cypraea spadicea</i>		<i>Patiria miniata</i>		<i>Strongylocentrotus franciscanus</i>	
Number of ARMs	7	Number of ARMs	7	Number of ARMs	7
<30	0.8 %	<10	20.0 %	< 5	4.6 %
30 - 32	5.6 %	10 - 19	0.0 %	5 - 9	3.1 %
33 - 35	12.8 %	20 - 29	40.0 %	10 - 14	0.0 %
36 - 38	21.6 %	30 - 39	0.0 %	15 - 19	0.0 %
39 - 41	23.2 %	40 - 49	20.0 %	20 - 24	10.8 %
42 - 44	17.6 %	50 - 59	0.0 %	25 - 29	16.9 %
45 - 47	11.2 %	60 - 69	20.0 %	30 - 34	13.8 %
48 - 50	5.6 %	70 - 79	0.0 %	35 - 39	13.8 %
51 - 53	1.6 %	80 - 89	0.0 %	40 - 44	23.1 %
54 - 56	0.0 %	90 - 99	0.0 %	45 - 49	12.3 %
>56	0.0 %	> 99	0.0 %	50 - 54	0.0 %
(Cases) N =	125	(Cases) N =	5	55 - 59	0.0 %
mean	40	mean	32	60 - 64	0.0 %
min size (mm)	28	min size (mm)	9	65 - 69	1.5 %
max size (mm)	51	max size (mm)	60	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	34
				min size (mm)	3
				max size (mm)	68

2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Scorpion Anchorage

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2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Yellow Banks

Haliotis fulgens

Number of ARMs	15
<25	0.0 %
25 - 34	100.0 %
35 - 44	0.0 %
45 - 54	0.0 %
55 - 64	0.0 %
65 - 74	0.0 %
75 - 84	0.0 %
85 - 94	0.0 %
95 - 104	0.0 %
105 - 114	0.0 %
115 - 124	0.0 %
125 - 134	0.0 %
135 - 144	0.0 %
145 - 154	0.0 %
155 - 164	0.0 %
165 - 174	0.0 %
175 - 184	0.0 %
185 - 194	0.0 %
>195	0.0 %

(Cases) N =	1
mean	25
min size (mm)	25
max size (mm)	25

Haliotis rufescens

Number of ARMs	15
<25	50.0 %
25 - 34	50.0 %
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 =	2
mean	27
min size (mm)	24
max size (mm)	29

Kelletia kelletii

Number of ARMs	15
< 40	33.3 %
40 - 49	0.0 %
50 - 59	0.0 %
60 - 69	0.0 %
70 - 79	0.0 %
80 - 89	0.0 %
90 - 99	66.7 %
100 - 109	0.0 %
110 - 119	0.0 %
120 - 129	0.0 %
130 - 139	0.0 %
140 - 149	0.0 %
> 149	0.0 %
(Cases) N =	3
mean	76
min size (mm)	37
max size (mm)	98

Megathura crenulata

Number of ARMs	15
<10	0.0 %
10 - 19	55.6 %
20 - 29	22.2 %
30 - 39	11.1 %
40 - 49	11.1 %
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 =	9
mean	22
min size (mm)	12
max size (mm)	41

Patiria miniata

Number of ARMs	15
<10	7.9 %
10 - 19	52.8 %
20 - 29	25.2 %
30 - 39	7.1 %
40 - 49	3.1 %
50 - 59	0.8 %
60 - 69	1.6 %
70 - 79	1.6 %
80 - 89	0.0 %
90 - 99	0.0 %
> 99	0.0 %
(Cases) N =	127
mean	21
min size (mm)	5
max size (mm)	72

Pisaster giganteus

Number of ARMs	15
< 20	66.7 %
20 - 39	28.6 %
40 - 59	4.8 %
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 =	21
mean	18
min size (mm)	5
max size (mm)	49

2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

Santa Cruz Island - Yellow Banks

[illegible]

2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee North

<i>Patiria miniata</i>		<i>Pycnopodia helianthoides</i>		<i>Strongylocentrotus purpuratus</i>	
Number of ARMs	9	Number of ARMs	9	Number of ARMs	9
<10	0.0 %	< 20	0.0 %	< 5	0.0 %
10 - 19	14.6 %	20 - 39	0.0 %	5 - 9	5.8 %
20 - 29	22.0 %	40 - 59	10.0 %	10 - 14	19.7 %
30 - 39	14.6 %	60 - 79	20.0 %	15 - 19	24.8 %
40 - 49	12.2 %	80 - 99	40.0 %	20 - 24	24.1 %
50 - 59	14.6 %	100 - 119	20.0 %	25 - 29	10.2 %
60 - 69	17.1 %	120 - 139	0.0 %	30 - 34	5.8 %
70 - 79	4.9 %	140 - 159	0.0 %	35 - 39	4.4 %
80 - 89	0.0 %	160 - 179	10.0 %	40 - 44	0.0 %
90 - 99	0.0 %	180 - 199	0.0 %	45 - 49	2.2 %
> 99	0.0 %	200 - 219	0.0 %	50 - 54	0.7 %
(Cases) N =	41	220 - 239	0.0 %	55 - 59	0.7 %
mean	41	240 - 259	0.0 %	60 - 64	1.5 %
min size (mm)	10	260 - 279	0.0 %	65 - 69	0.0 %
max size (mm)	76	280 - 299	0.0 %	70 - 74	0.0 %
		> 299	0.0 %	75 - 79	0.0 %
		(Cases) N =	10	> 79	0.0 %
		mean	95	(Cases) N =	137
		min size (mm)	55	mean	22
		max size (mm)	175	min size (mm)	7
				max size (mm)	61
<i>Pisaster giganteus</i>		<i>Strongylocentrotus franciscanus</i>			
Number of ARMs	9	Number of ARMs	9		
< 20	18.2 %	< 5	0.0 %		
20 - 39	36.4 %	5 - 9	0.0 %		
40 - 59	9.1 %	10 - 14	0.7 %		
60 - 79	27.3 %	15 - 19	4.5 %		
80 - 99	0.0 %	20 - 24	11.4 %		
100 - 119	9.1 %	25 - 29	8.3 %		
120 - 139	0.0 %	30 - 34	5.9 %		
140 - 159	0.0 %	35 - 39	6.6 %		
160 - 179	0.0 %	40 - 44	6.2 %		
180 - 199	0.0 %	45 - 49	5.5 %		
200 - 219	0.0 %	50 - 54	5.5 %		
220 - 239	0.0 %	55 - 59	6.9 %		
> 239	0.0 %	60 - 64	4.2 %		
(Cases) N =	11	65 - 69	5.2 %		
mean	49	70 - 74	5.2 %		
min size (mm)	15	75 - 79	7.3 %		
max size (mm)	107	80 - 84	3.8 %		
		85 - 89	3.1 %		
		90 - 94	4.8 %		
		95 - 99	2.4 %		
		100 - 104	1.4 %		
		105 - 109	0.7 %		
		> 109	0.3 %		
		(Cases) N =	289		
		mean	54		
		min size (mm)	11		
		max size (mm)	112		

2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee South

<i>Crassedoma giganteum</i>		<i>Megathura crenulata</i>		<i>Pisaster giganteus</i>	
Number of ARMs	7	Number of ARMs	7	Number of ARMs	7
<10	0.0 %	<10	0.0 %	< 20	11.1 %
10 - 19	0.0 %	10 - 19	33.3 %	20 - 39	55.6 %
20 - 29	0.0 %	20 - 29	0.0 %	40 - 59	33.3 %
30 - 39	0.0 %	30 - 39	0.0 %	60 - 79	0.0 %
40 - 49	0.0 %	40 - 49	66.7 %	80 - 99	0.0 %
50 - 59	0.0 %	50 - 59	0.0 %	100 - 119	0.0 %
60 - 69	0.0 %	60 - 69	0.0 %	120 - 139	0.0 %
70 - 79	0.0 %	70 - 79	0.0 %	140 - 159	0.0 %
80 - 89	25.0 %	80 - 89	0.0 %	160 - 179	0.0 %
90 - 99	0.0 %	90 - 99	0.0 %	180 - 199	0.0 %
100 - 109	25.0 %	100 - 109	0.0 %	200 - 219	0.0 %
110 - 119	0.0 %	110 - 119	0.0 %	220 - 239	0.0 %
120 - 129	0.0 %	> 119	0.0 %	> 239	0.0 %
130 - 139	25.0 %	(Cases) N =	3	(Cases) N =	9
> 139	25.0 %	mean	37	mean	35
(Cases) N =	4	min size (mm)	19	min size (mm)	12
mean	115	max size (mm)	48	max size (mm)	51
min size (mm)	87				
max size (mm)	140				

<i>Cypraea spadicea</i>		<i>Patiria miniata</i>		<i>Pycnopodia helianthoides</i>	
Number of ARMs	7	Number of ARMs	7	Number of ARMs	7
<30	0.0 %	<10	3.6 %	< 20	0.0 %
30 - 32	0.0 %	10 - 19	10.9 %	20 - 39	10.0 %
33 - 35	0.0 %	20 - 29	18.2 %	40 - 59	50.0 %
36 - 38	2.8 %	30 - 39	18.2 %	60 - 79	20.0 %
39 - 41	2.8 %	40 - 49	9.1 %	80 - 99	20.0 %
42 - 44	16.7 %	50 - 59	14.5 %	100 - 119	0.0 %
45 - 47	33.3 %	60 - 69	18.2 %	120 - 139	0.0 %
48 - 50	25.0 %	70 - 79	7.3 %	140 - 159	0.0 %
51 - 53	11.1 %	80 - 89	0.0 %	160 - 179	0.0 %
54 - 56	8.3 %	90 - 99	0.0 %	180 - 199	0.0 %
>56	0.0 %	> 99	0.0 %	200 - 219	0.0 %
(Cases) N =	36	(Cases) N =	55	220 - 239	0.0 %
mean	47	mean	41	240 - 259	0.0 %
min size (mm)	37	min size (mm)	8	260 - 279	0.0 %
max size (mm)	55	max size (mm)	74	280 - 299	0.0 %
				> 299	0.0 %
				(Cases) N =	10
				mean	64
				min size (mm)	37
				max size (mm)	95

2009 ARTIFICIAL RECRUITMENT MODULES SIZE FREQUENCY DISTRIBUTIONS

Santa Rosa Island - Johnson's Lee South

Strongylocentrotus franciscanus

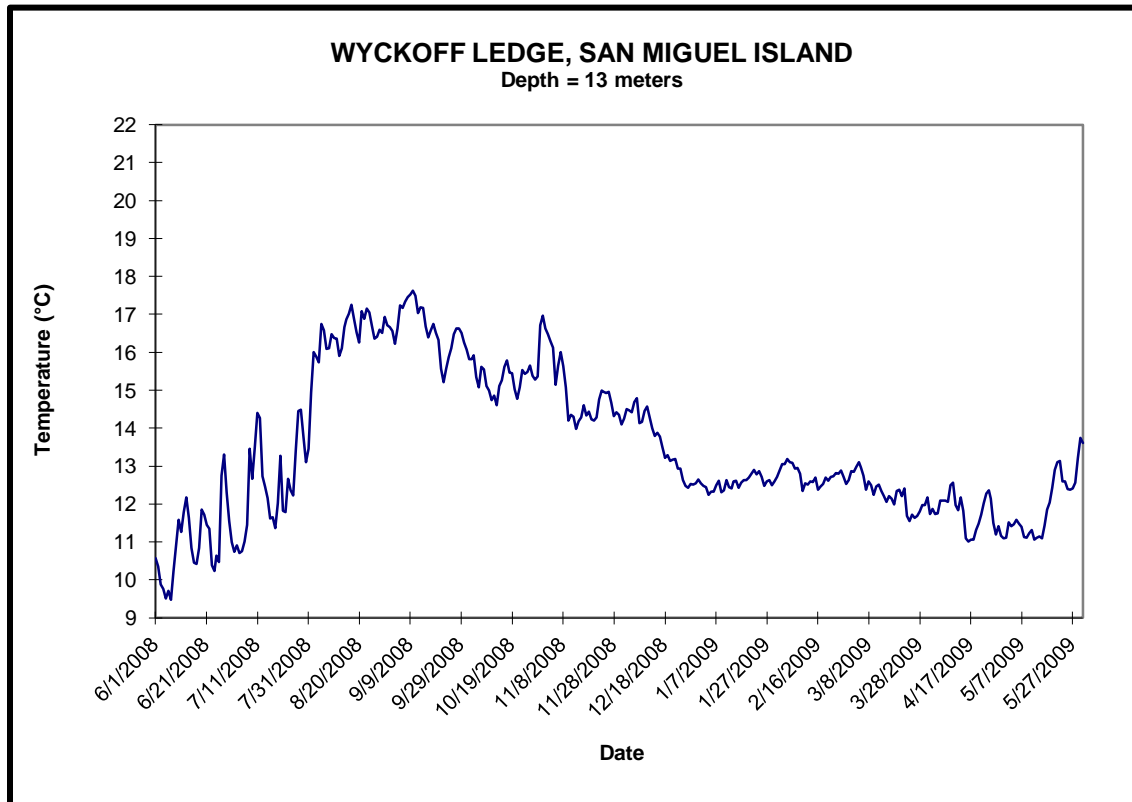
Number of ARMs	7
< 5	0.0 %
5 - 9	0.4 %
10 - 14	5.0 %
15 - 19	2.9 %
20 - 24	6.3 %
25 - 29	9.6 %
30 - 34	4.2 %
35 - 39	5.0 %
40 - 44	5.0 %
45 - 49	2.1 %
50 - 54	3.8 %
55 - 59	1.7 %
60 - 64	5.0 %
65 - 69	3.8 %
70 - 74	6.7 %
75 - 79	8.8 %
80 - 84	5.0 %
85 - 89	6.7 %
90 - 94	8.8 %
95 - 99	5.0 %
100 - 104	2.9 %
105 - 109	0.8 %
> 109	0.8 %
(Cases) N =	240
mean	60
min size (mm)	9
max size (mm)	126

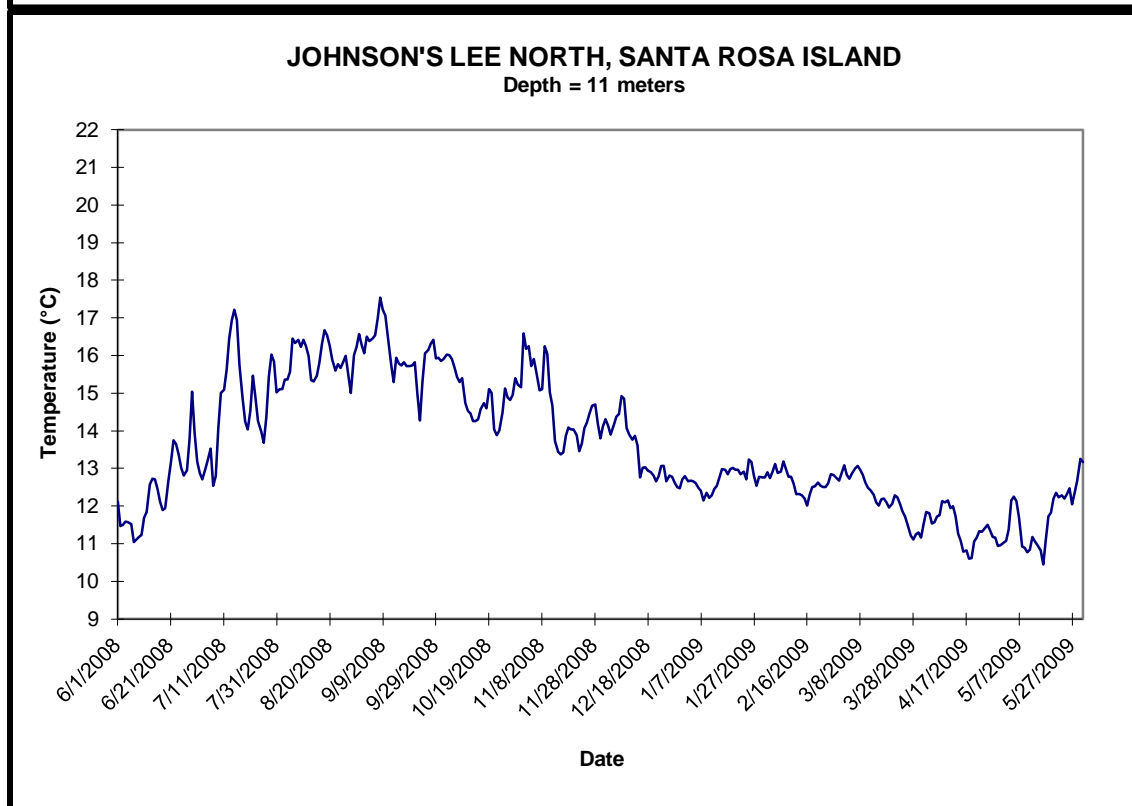
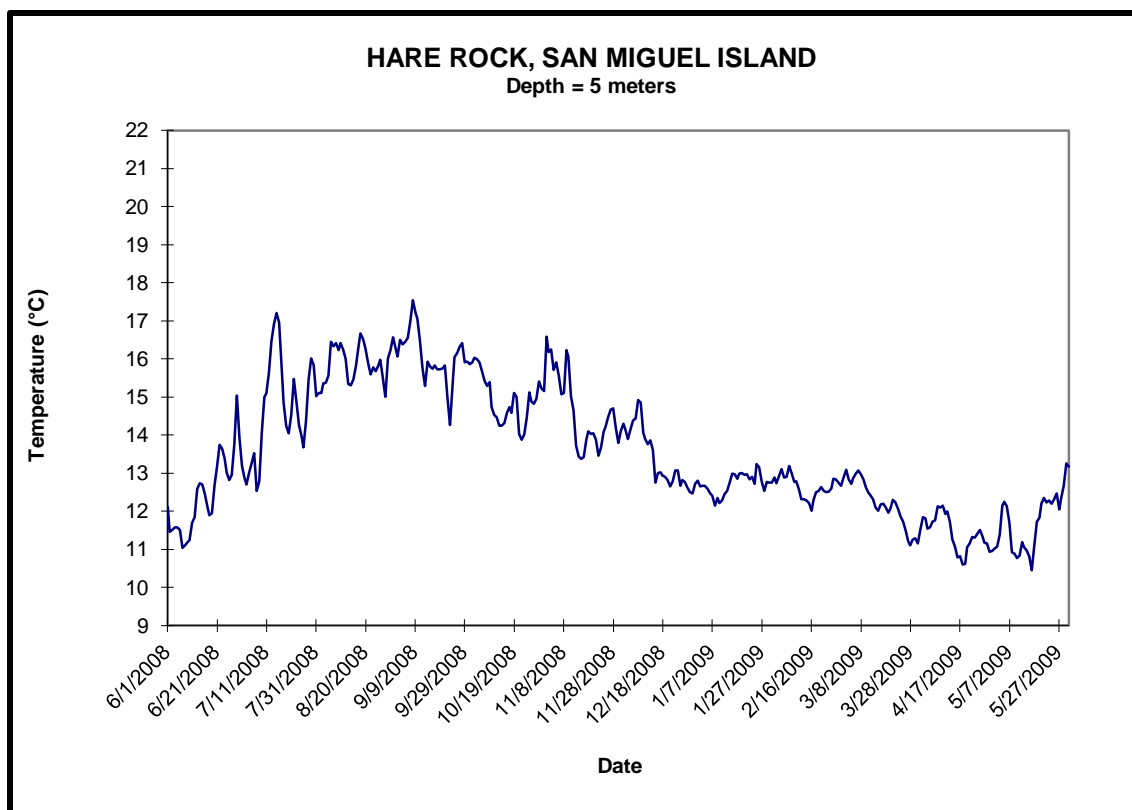
Strongylocentrotus purpuratus

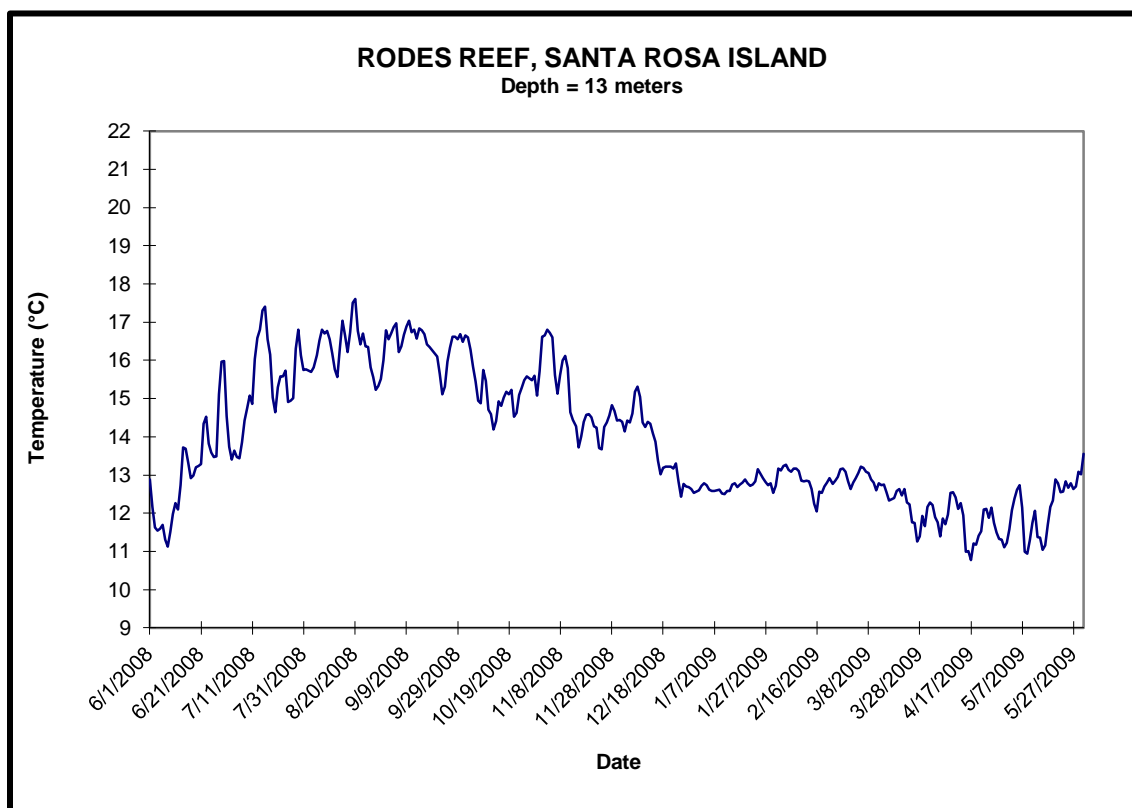
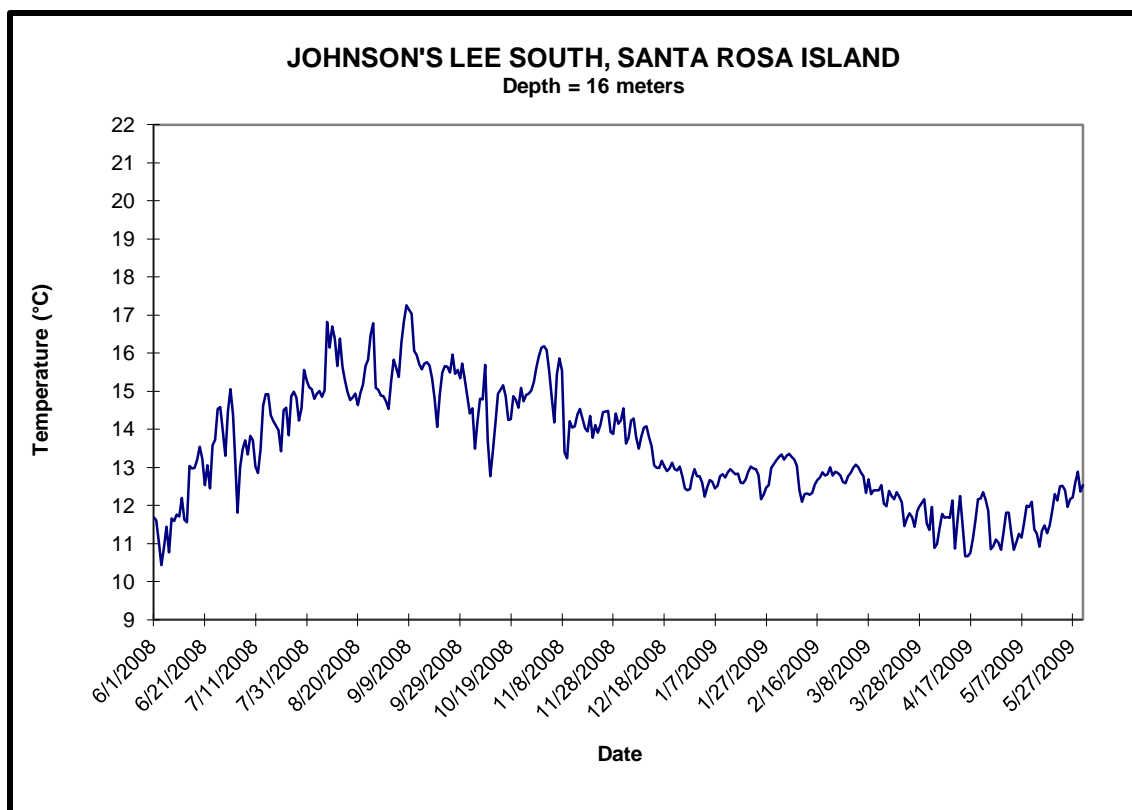
Number of ARMs	7
< 5	0.0 %
5 - 9	5.8 %
10 - 14	1.9 %
15 - 19	8.7 %
20 - 24	10.6 %
25 - 29	8.7 %
30 - 34	2.9 %
35 - 39	7.7 %
40 - 44	9.6 %
45 - 49	8.7 %
50 - 54	14.4 %
55 - 59	12.5 %
60 - 64	6.7 %
65 - 69	1.0 %
70 - 74	0.0 %
75 - 79	0.0 %
> 79	1.0 %
(Cases) N =	104
mean	38
min size (mm)	5
max size (mm)	86

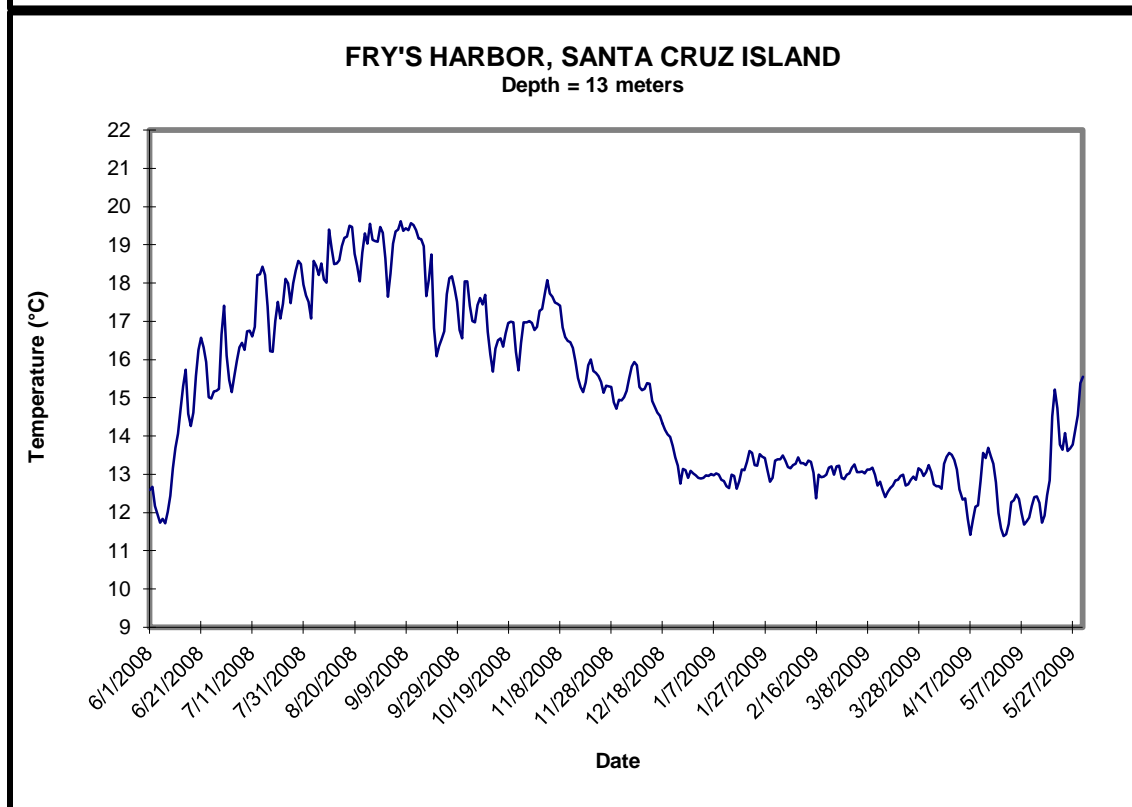
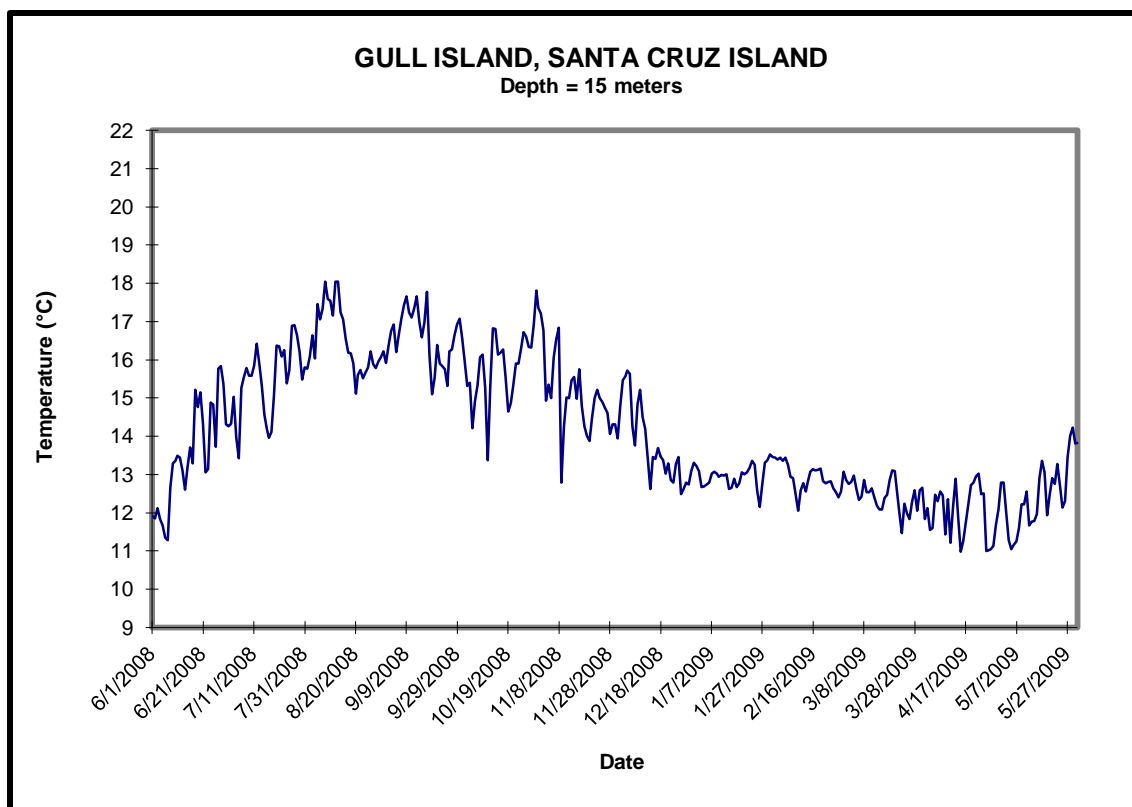
Appendix M. Temperature Data Graphs

This appendix contains the temperature data (presented graphically) collected by temperature loggers that were deployed at 32 Kelp Forest Monitoring sites. We report the average daily temperatures between May 1, 2008 and April 30, 2009. Technical problems or loss of the temperature units may result in missing data for a site and this information is included in the results section for each site.

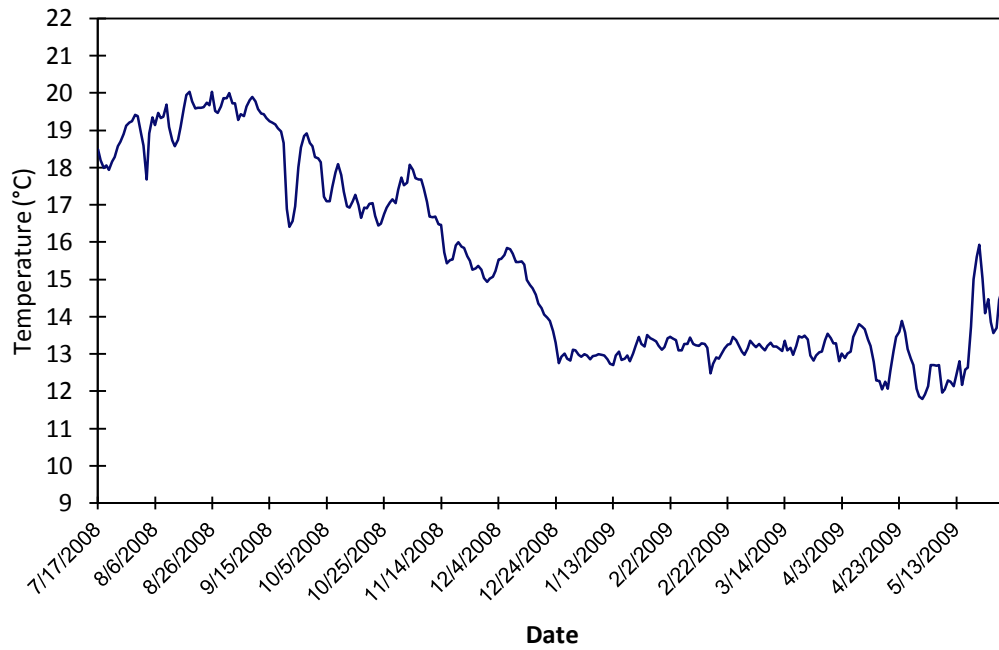




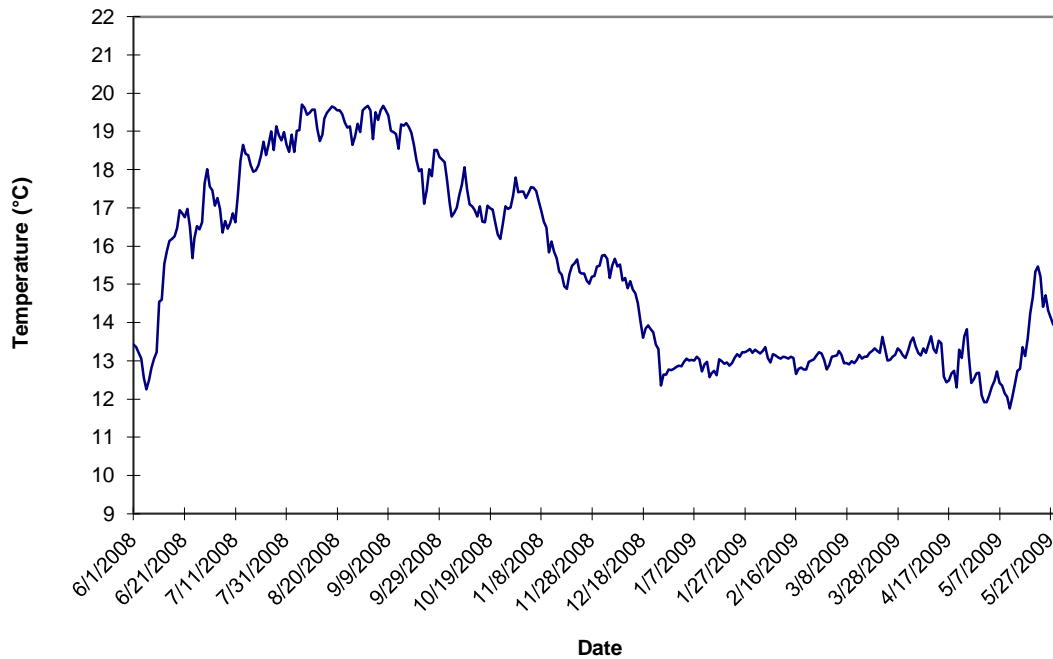


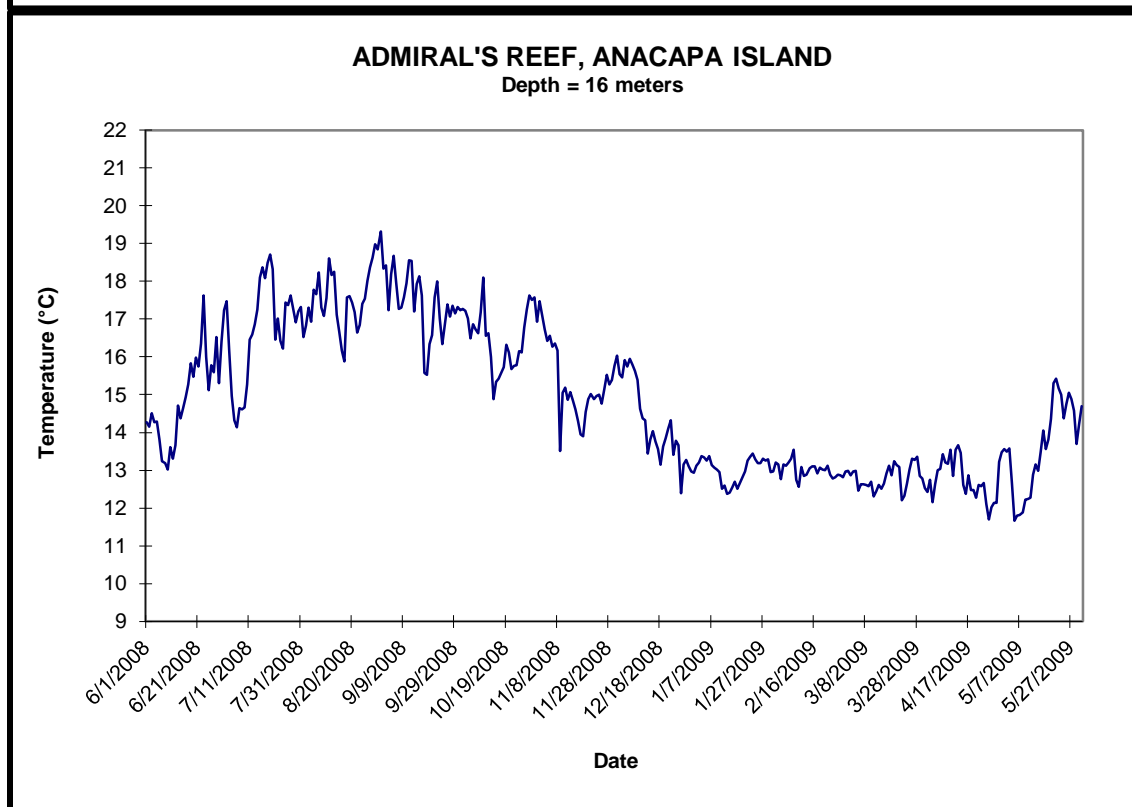
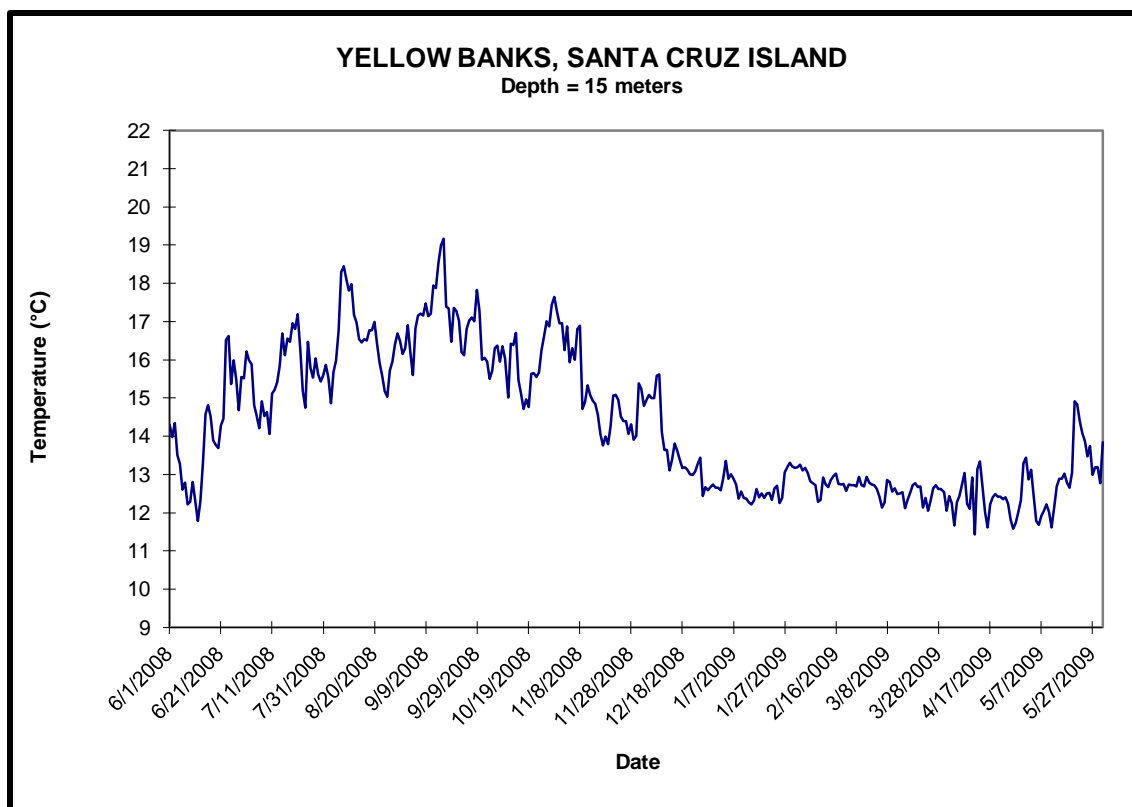


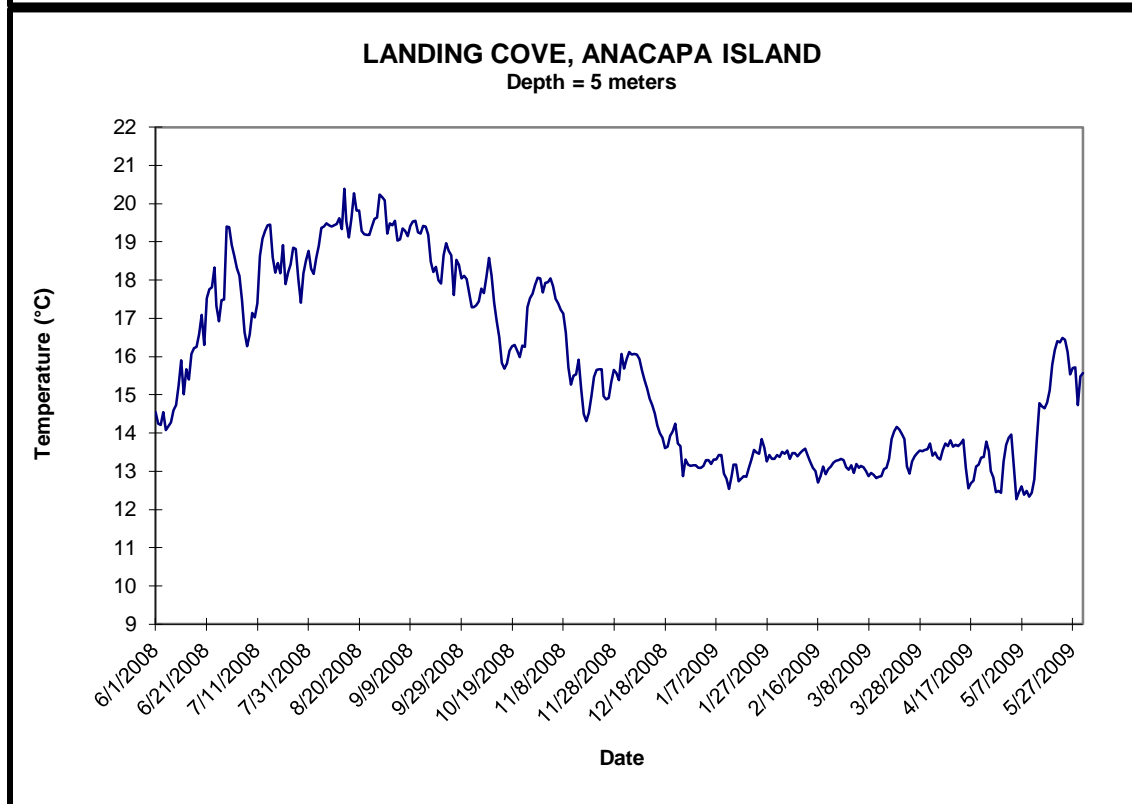
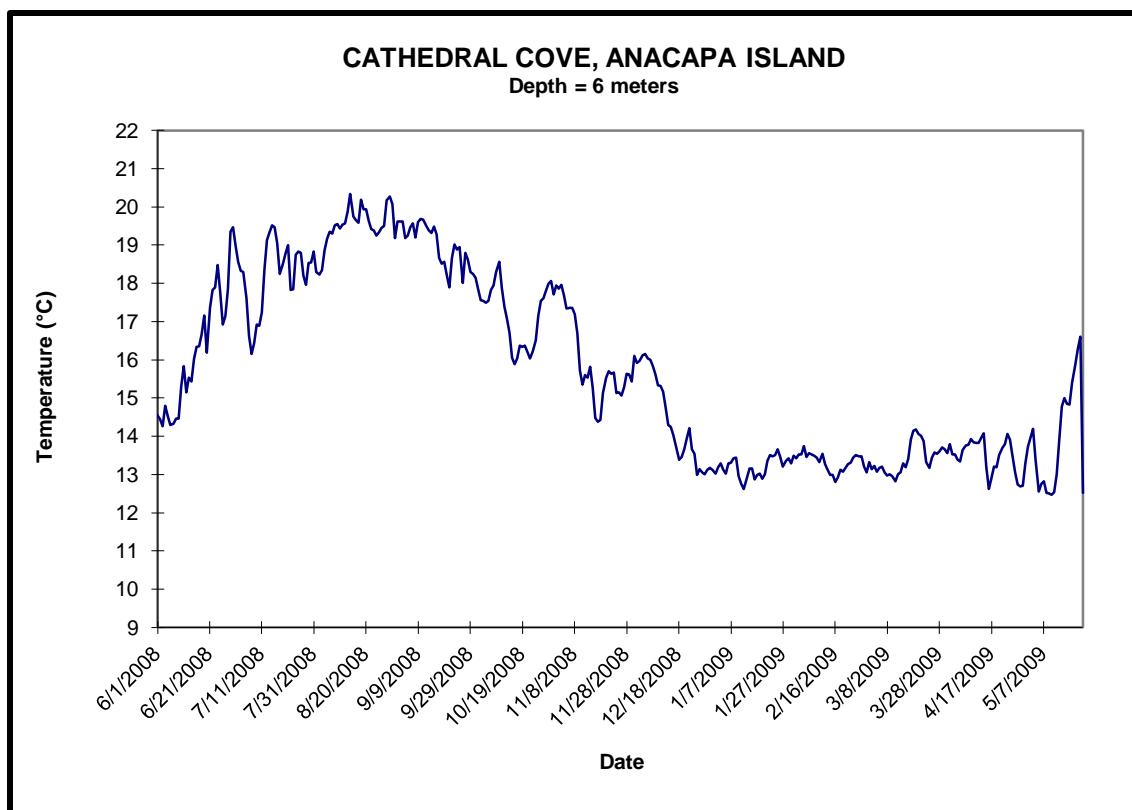
PELICAN BAY, SANTA CRUZ ISLAND
Depth = 8 meters

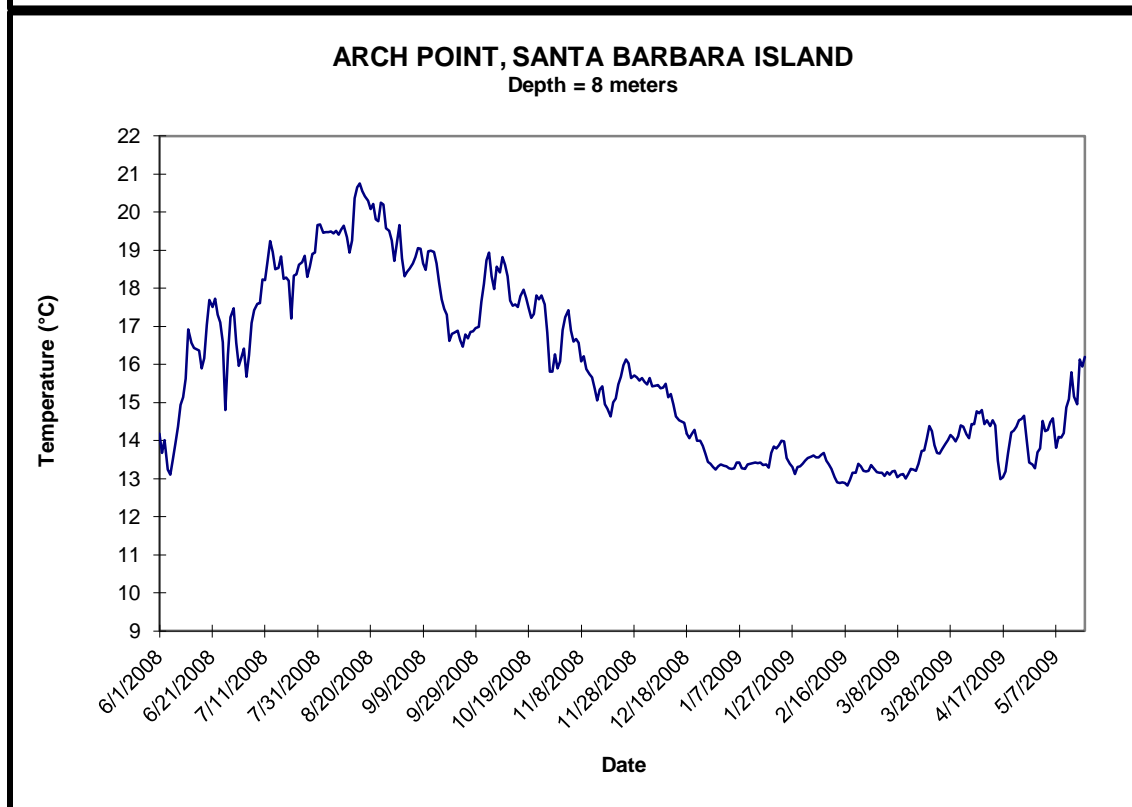
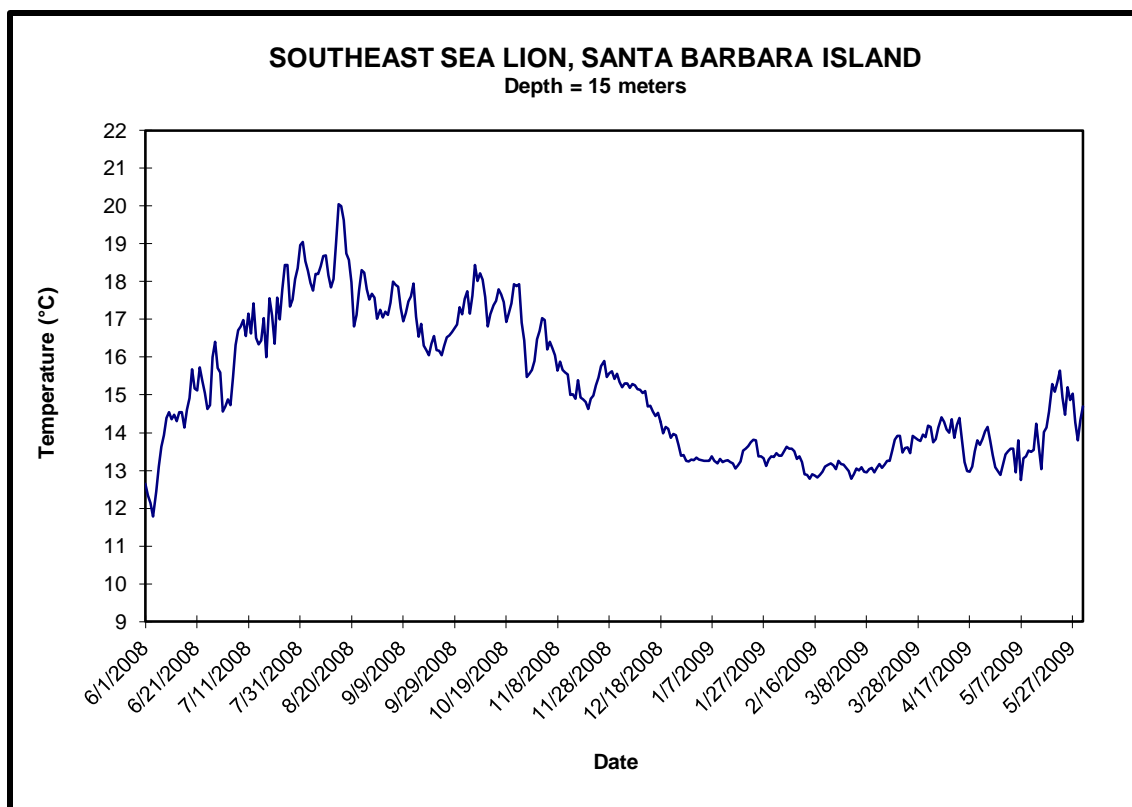


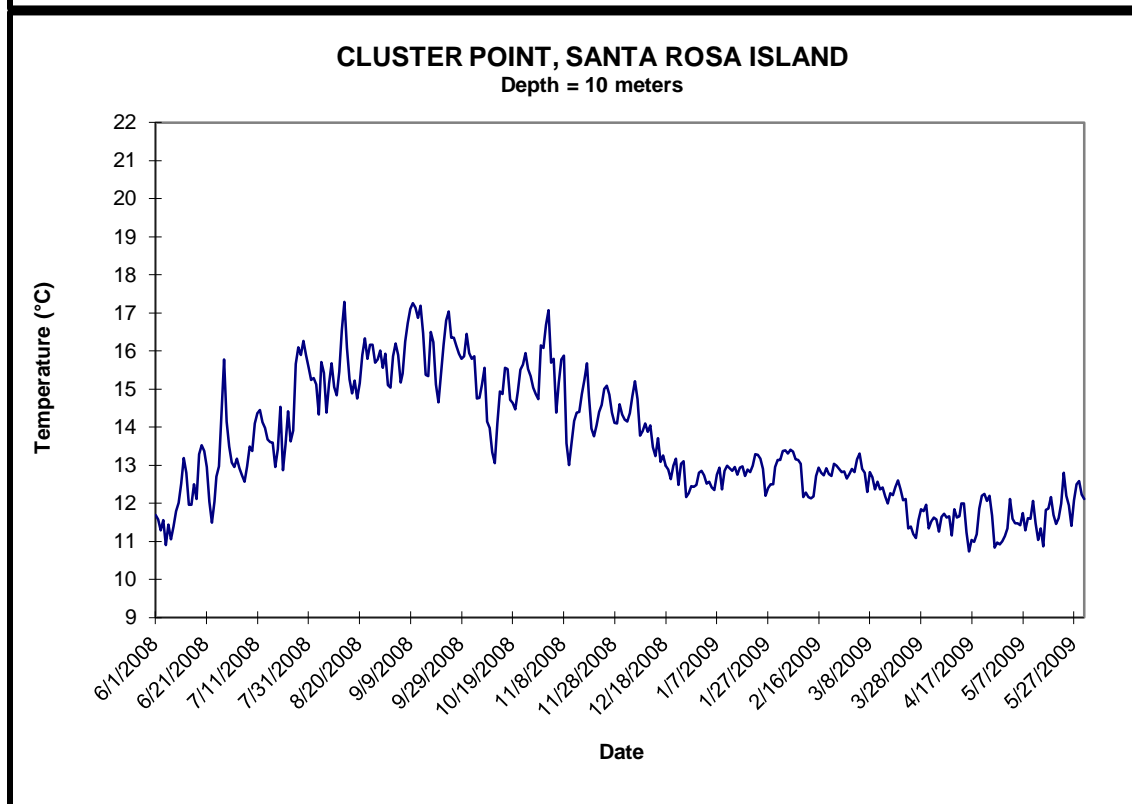
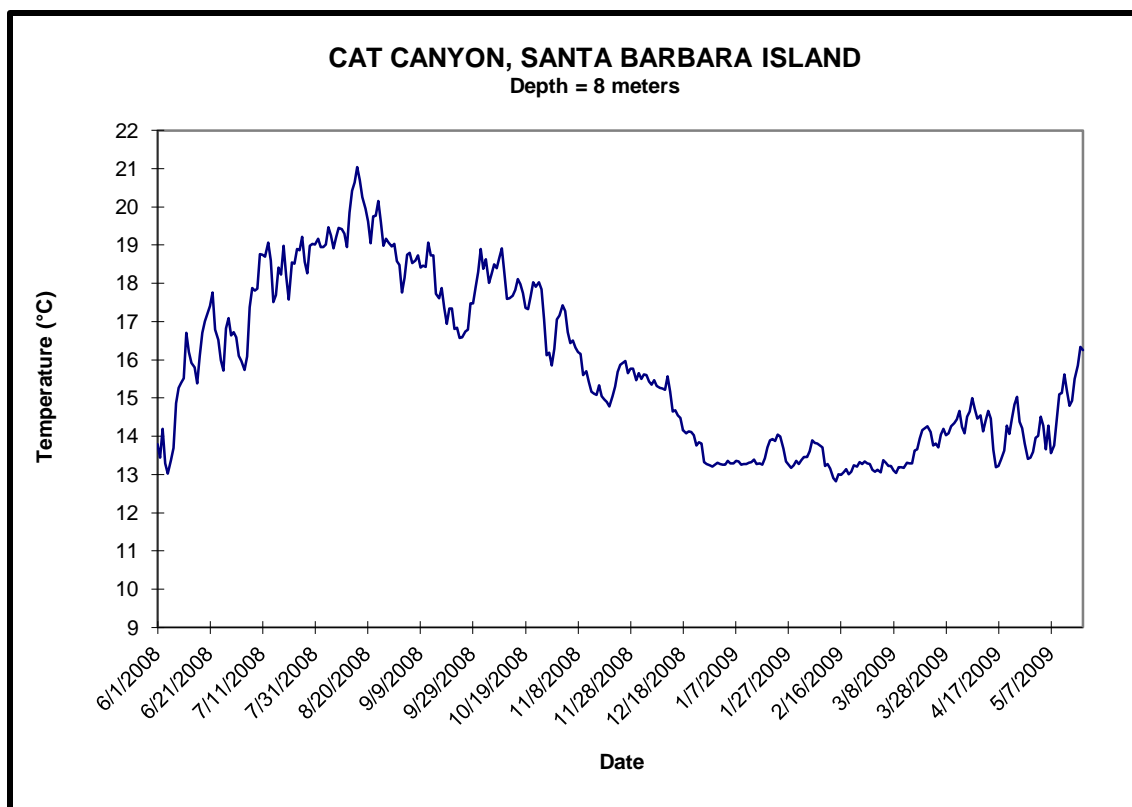
SCORPION'S ANCHORAGE, SANTA CRUZ ISLAND
Depth = 5 meters

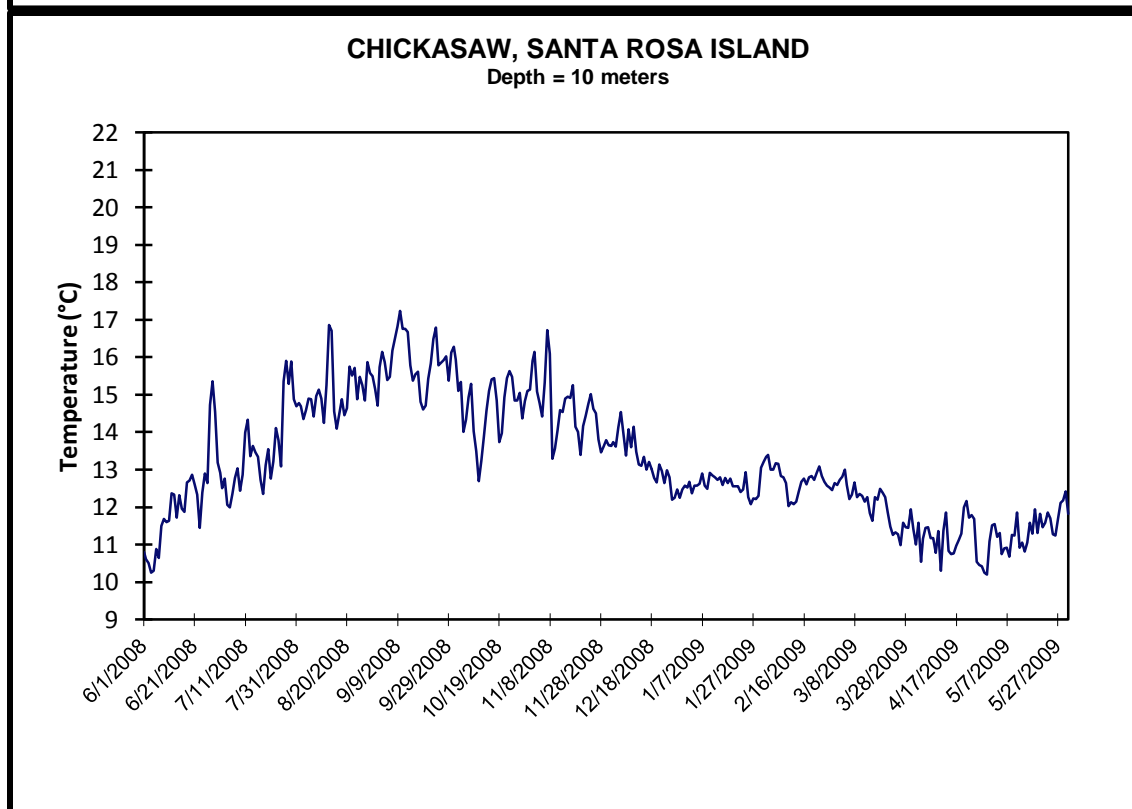
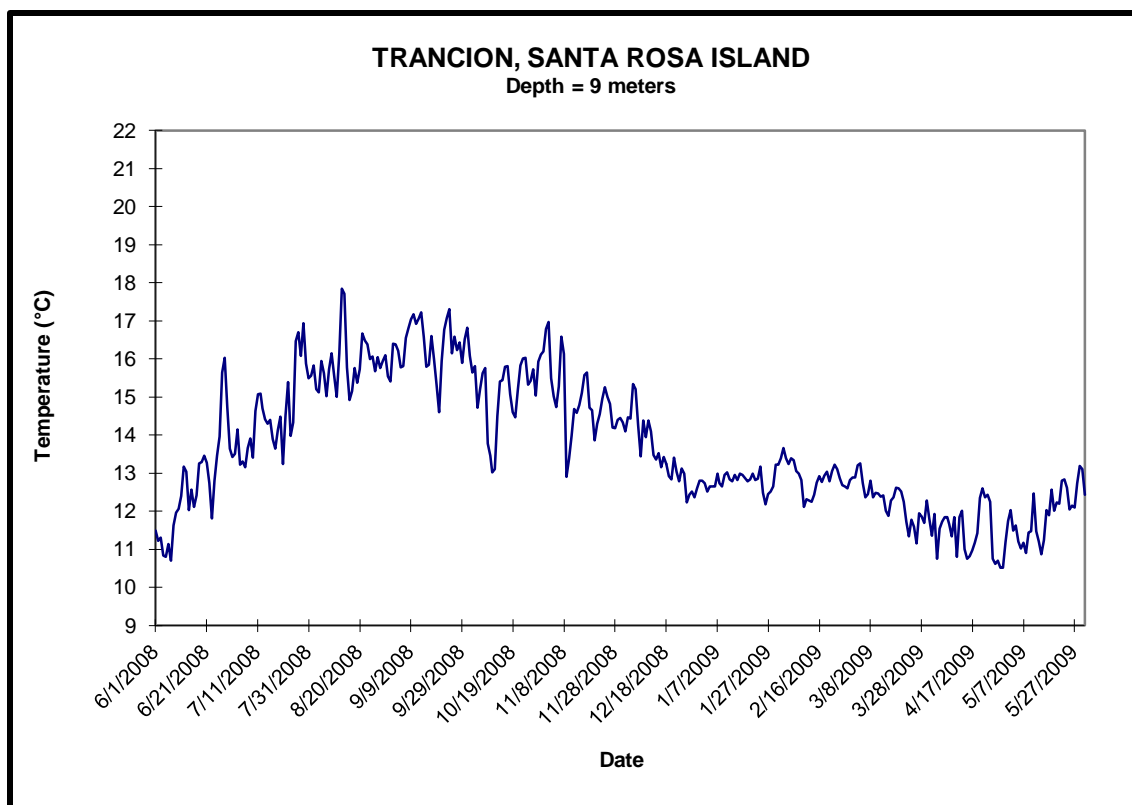


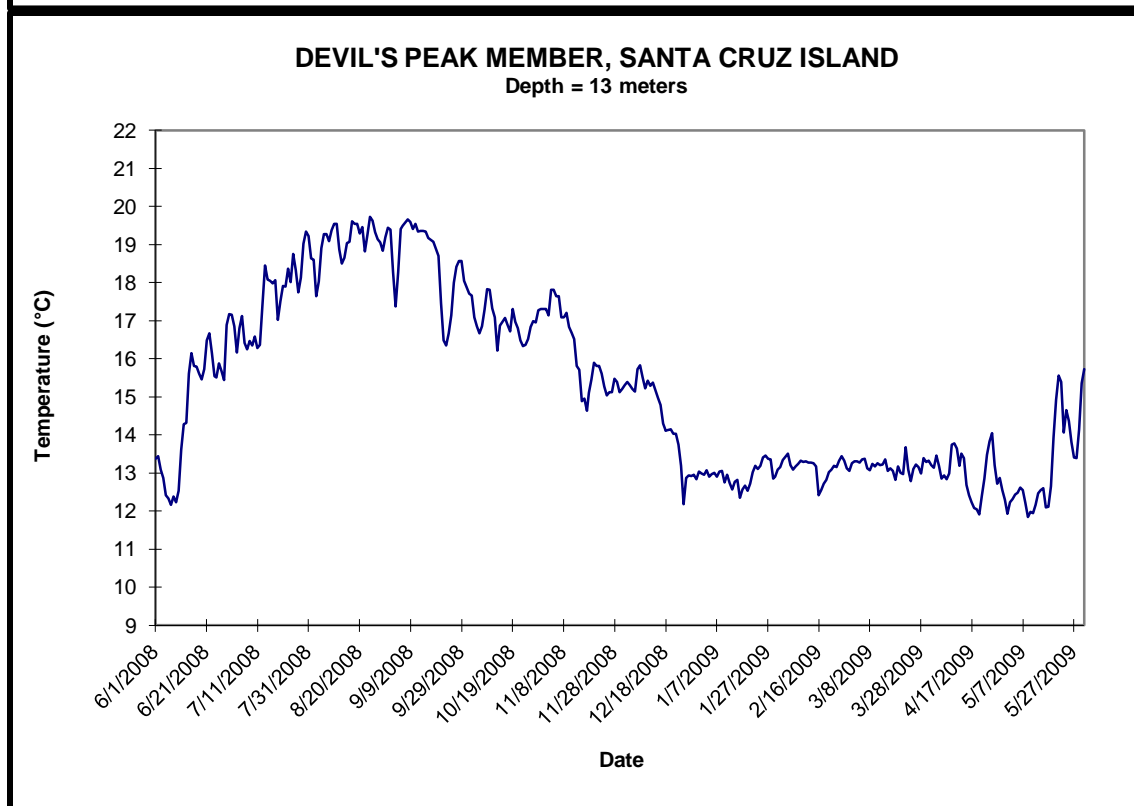
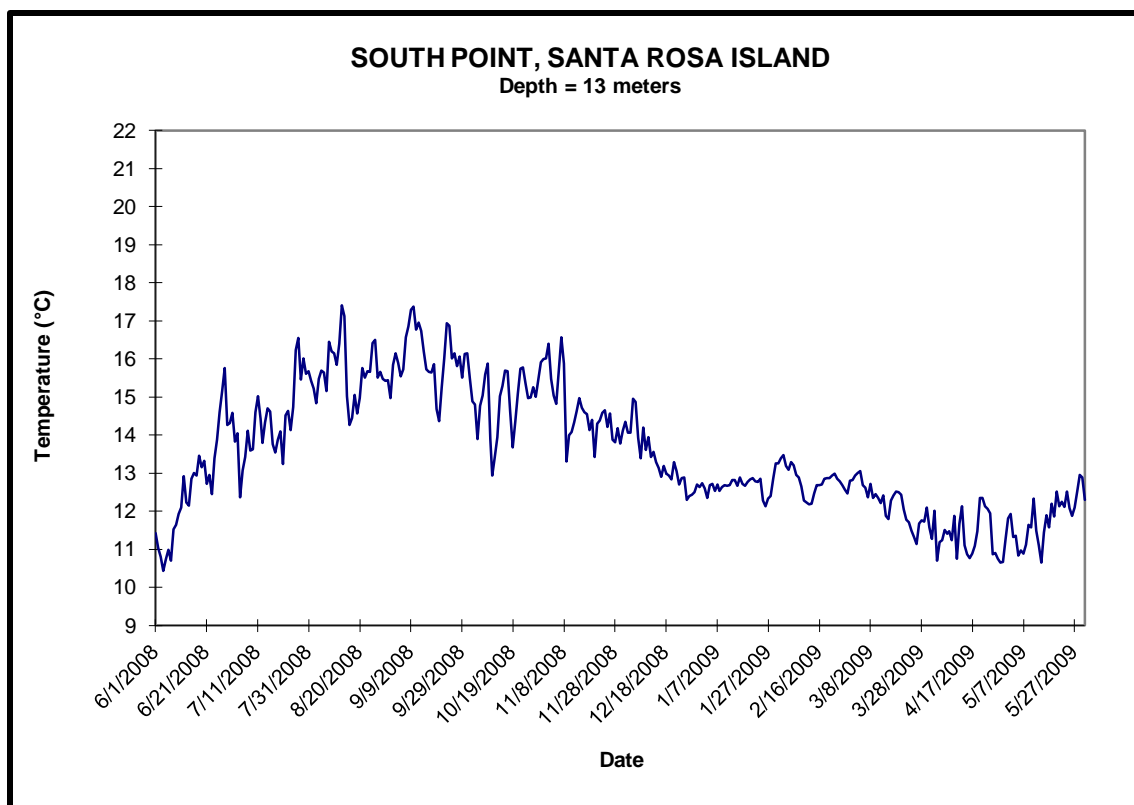


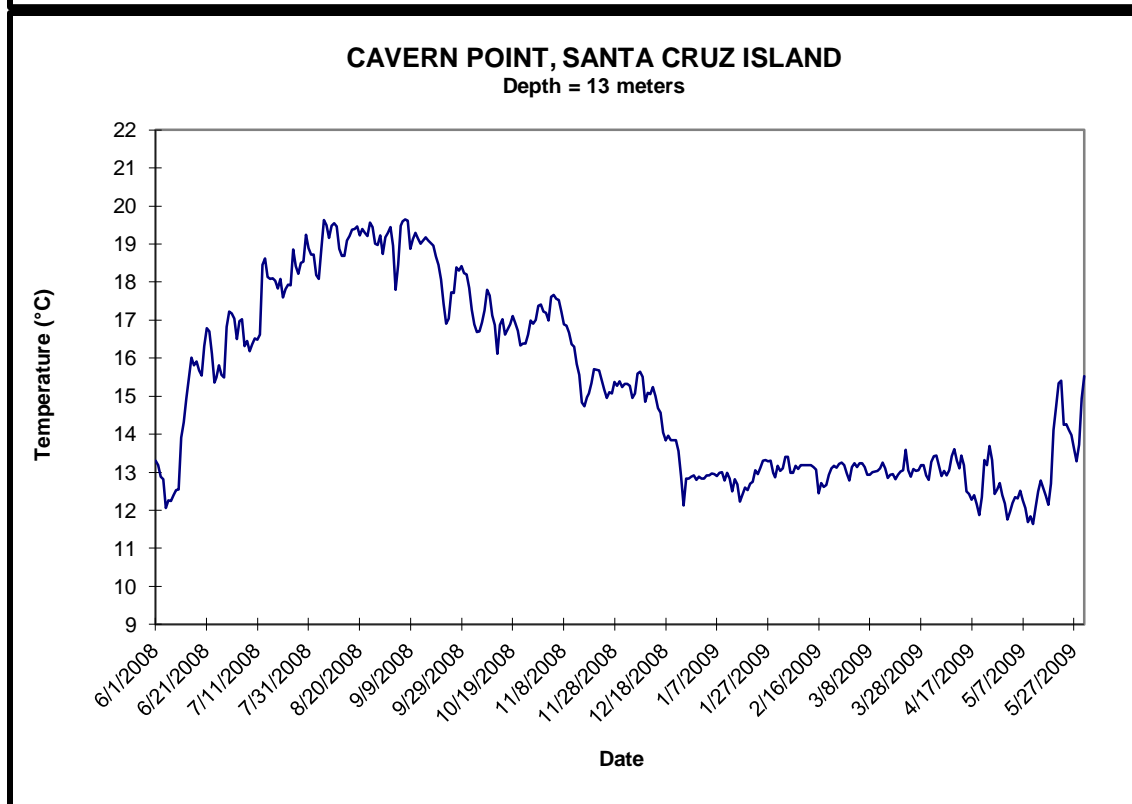
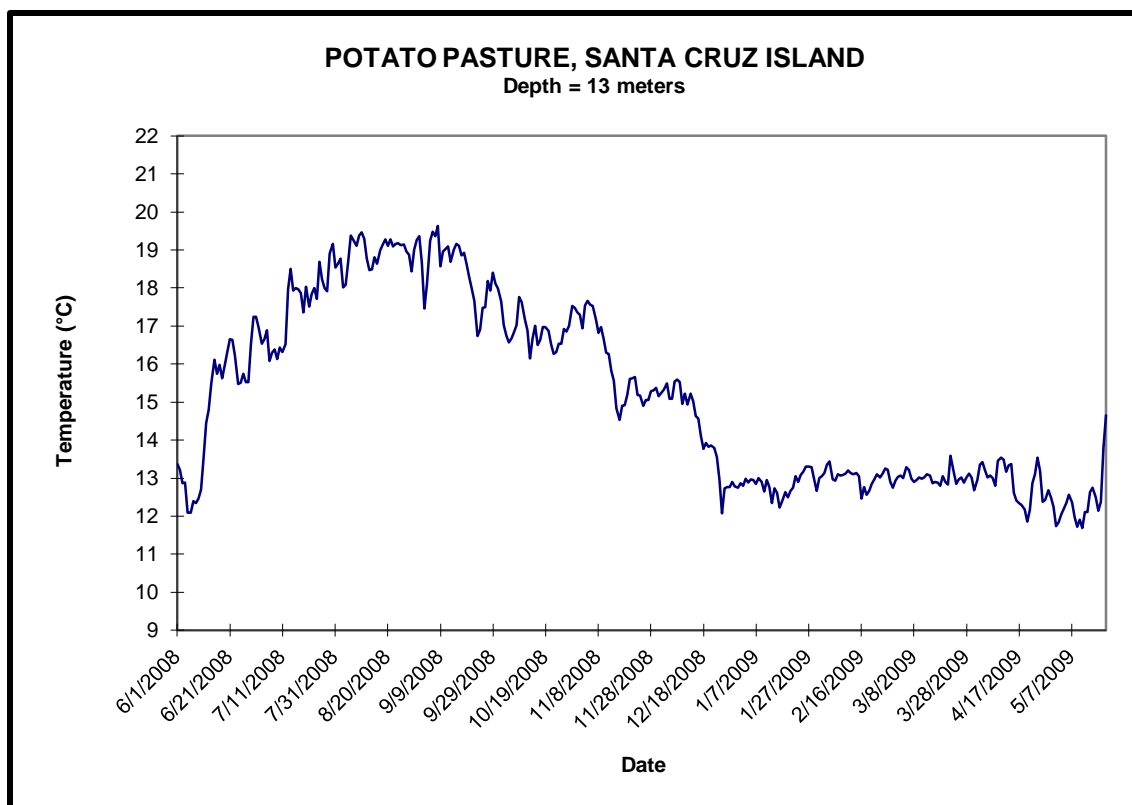


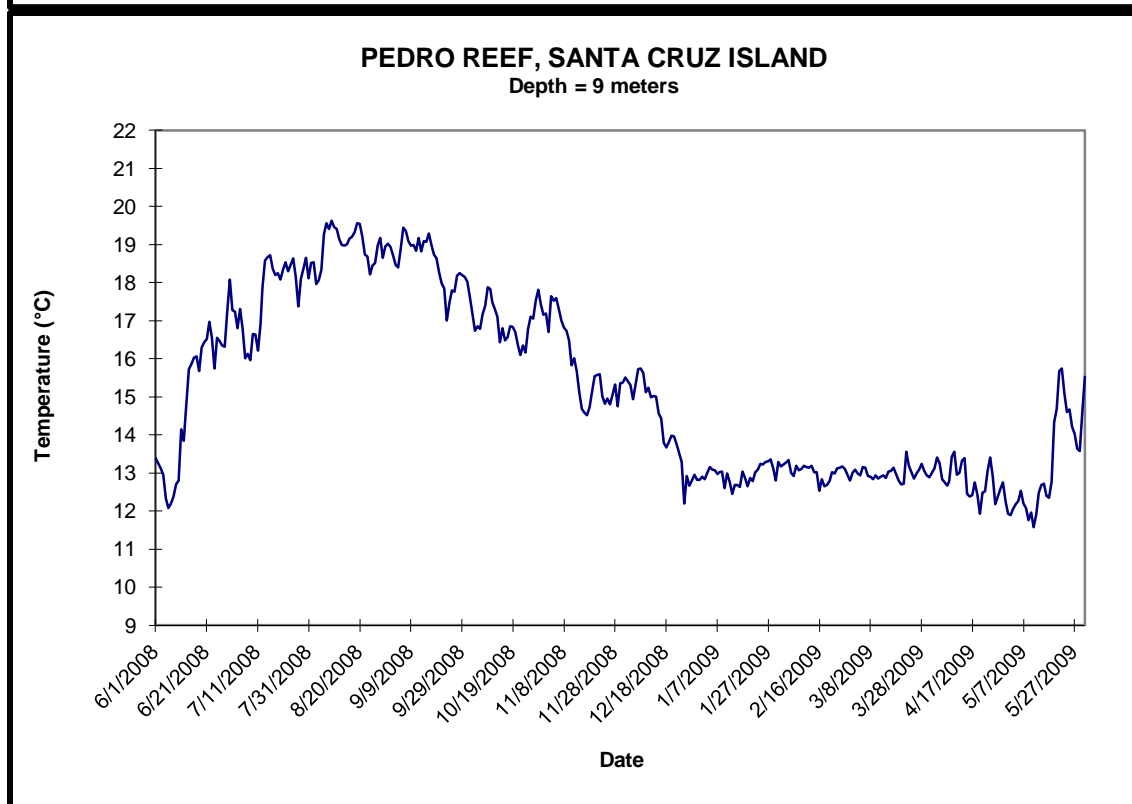
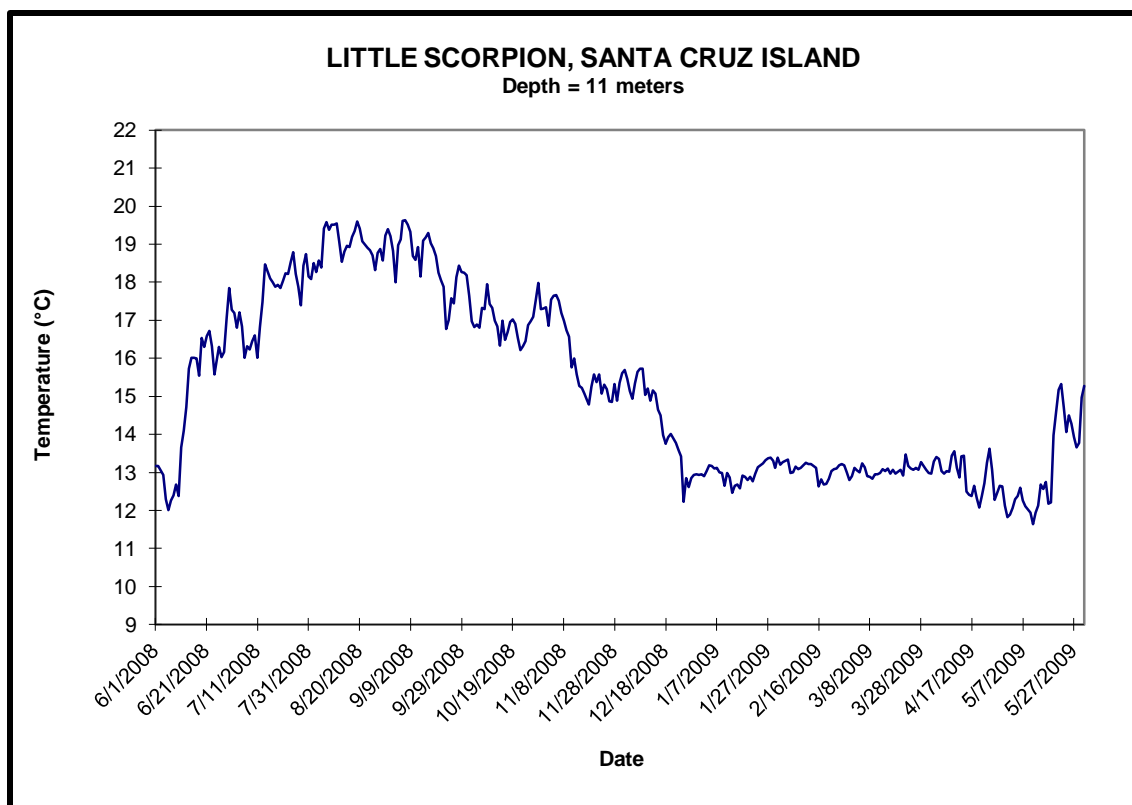


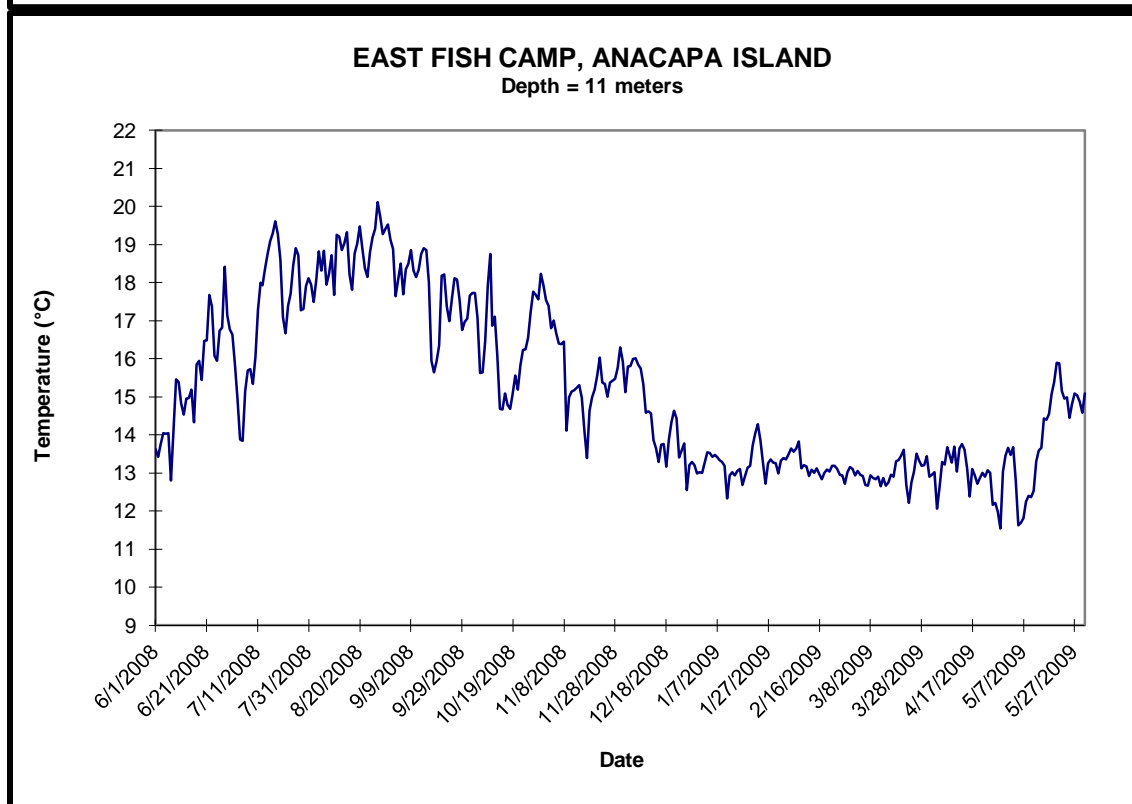
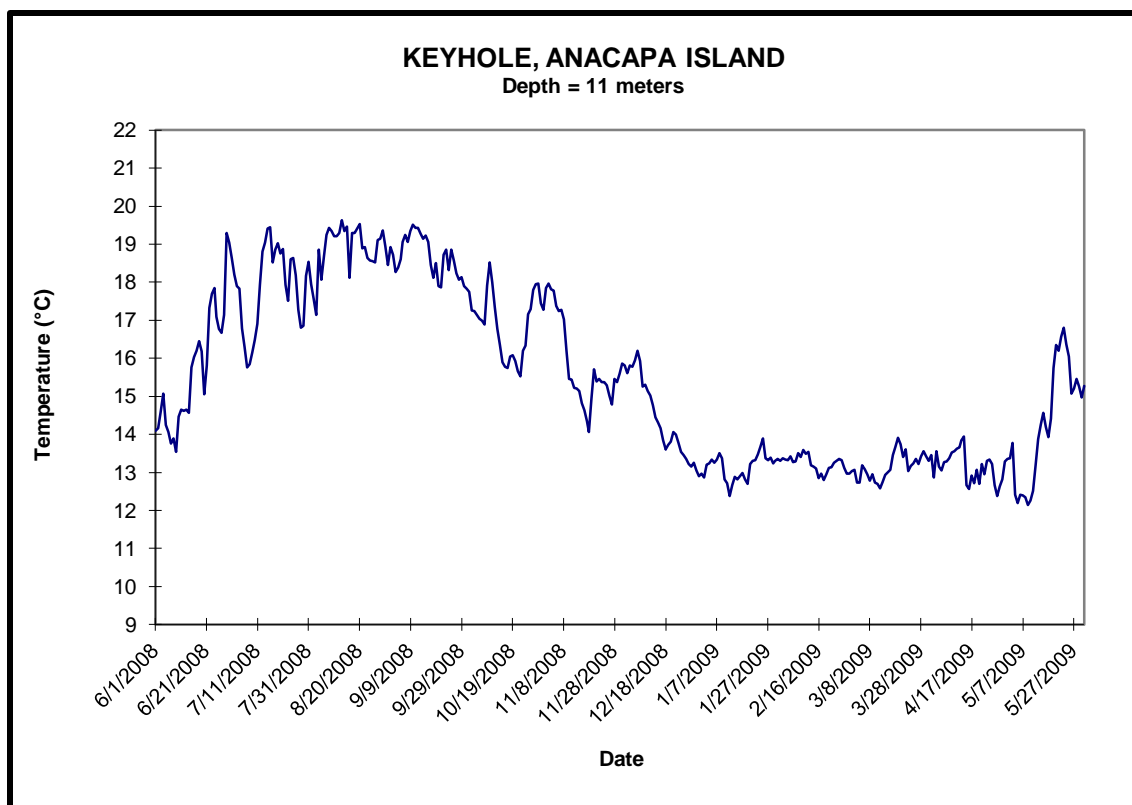


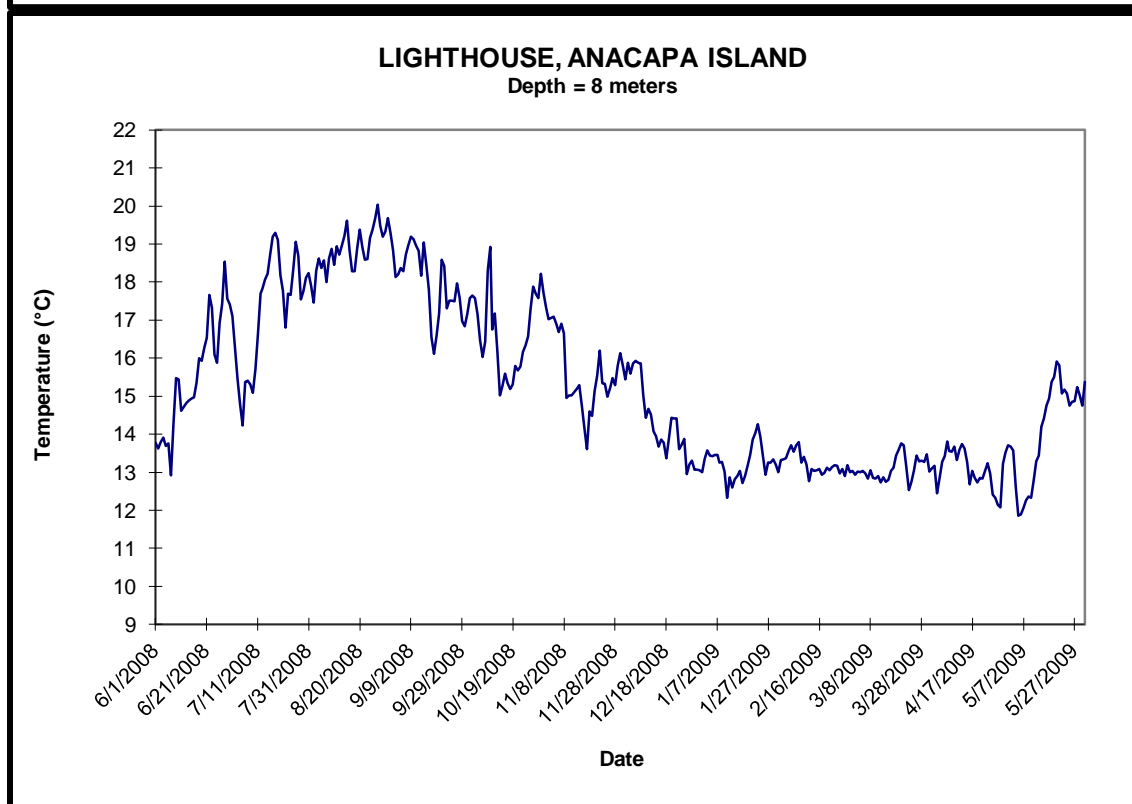
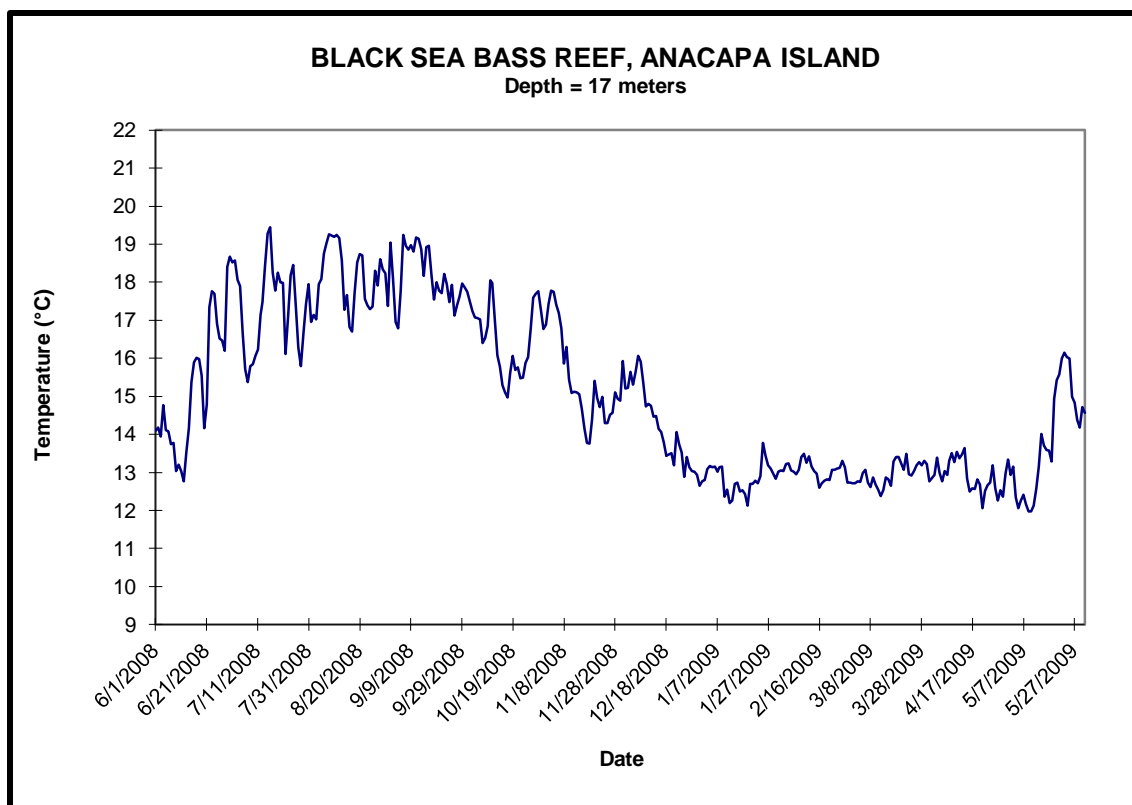


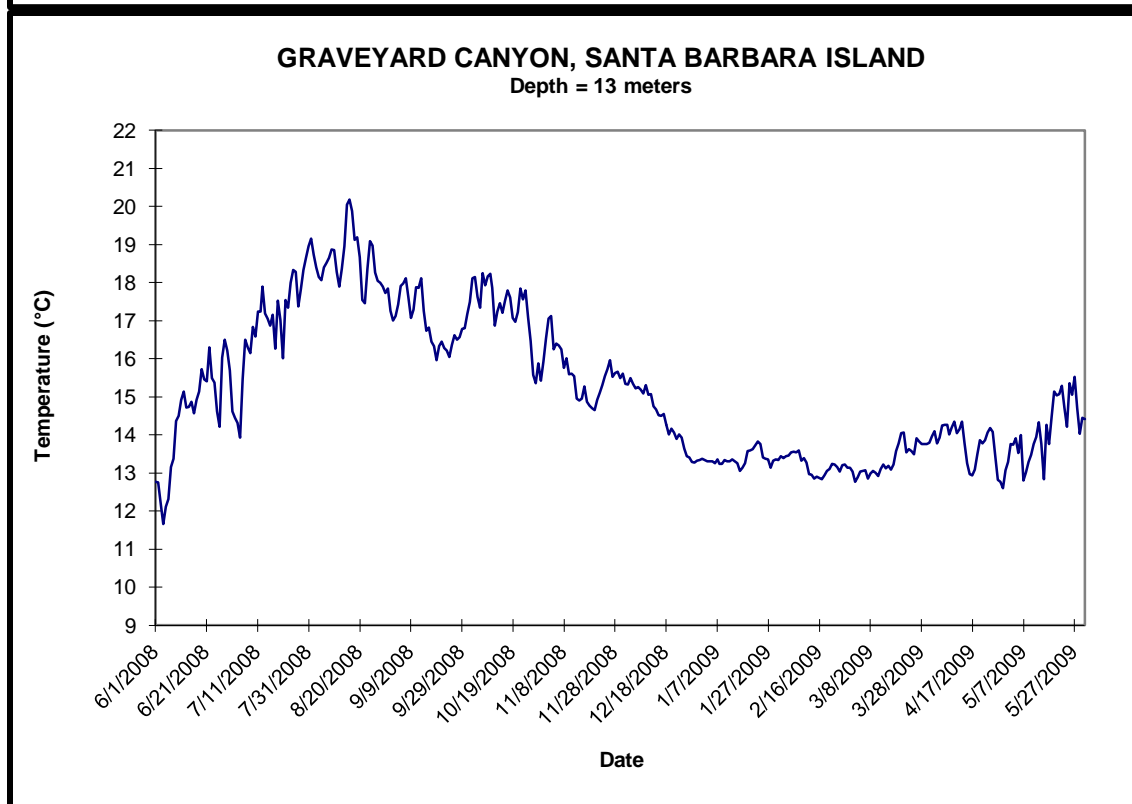
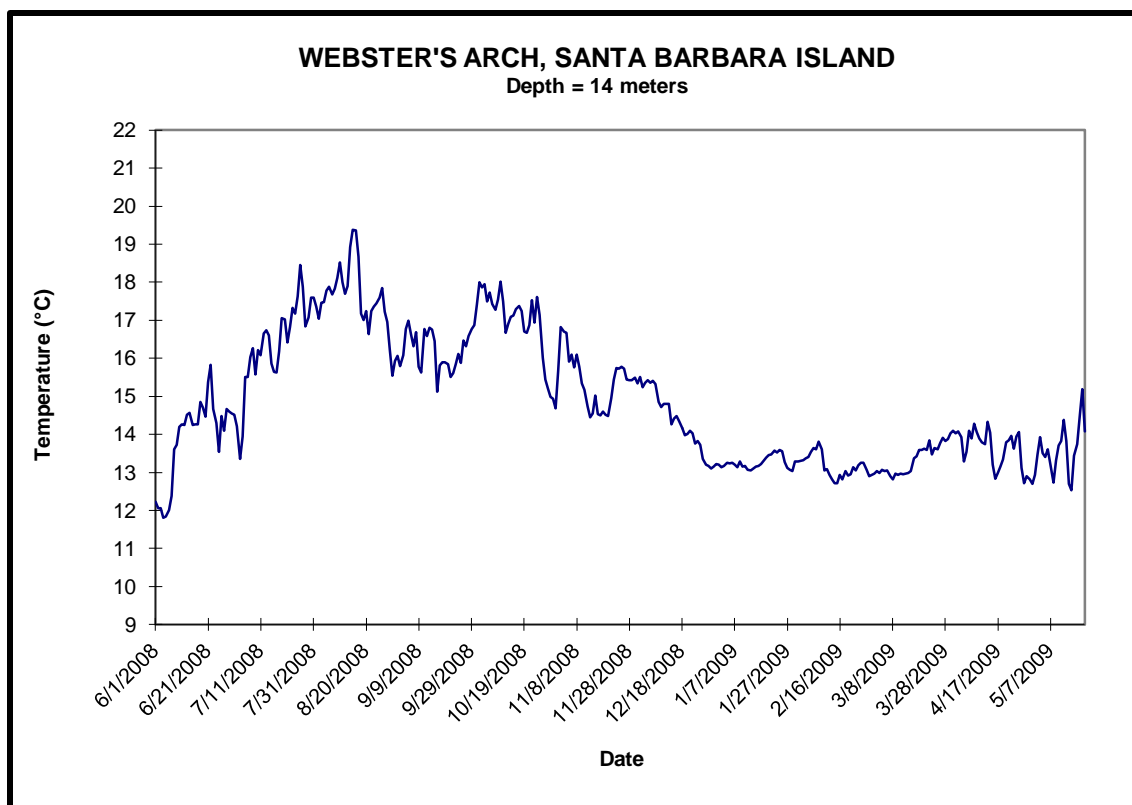


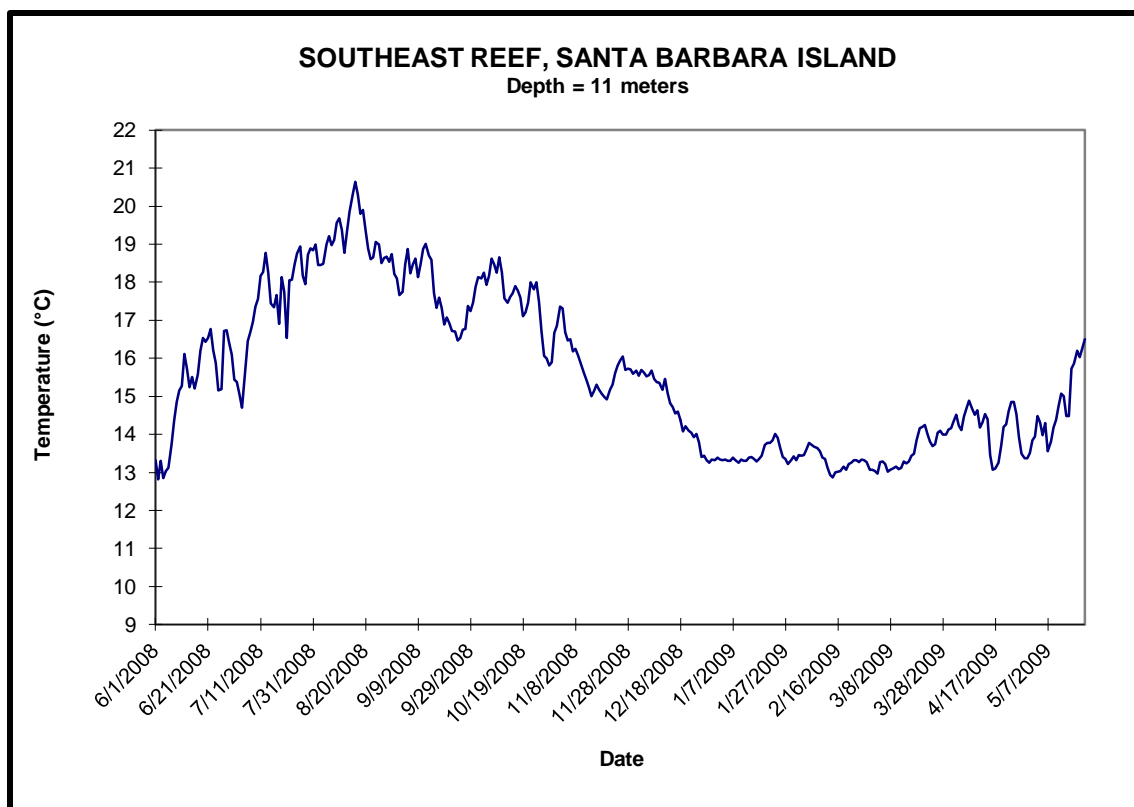












Appendix N. Protocol Modifications, Data Management, and Additional Projects Information

Protocol Changes

There were no changes in protocols this year.

Corrections in the Database

There were no changes to the database this year.

New/Other Projects

There were no new projects this year. However, several survey dives for *Sargassum horneri* were conducted. More information about these survey dives are in Appendix P.

Appendix O. KFM Program Data Usage for 2009

Data Requests

In 2009, we provided data for six formal data requests for the park's kelp forest monitoring program. These requests were as follows:

Abalone recruitment from the ARMs were sent to Dr. Laura Rodgers Bennett at the California Department of Fish and Game.

All of the *Haliotis rufescens* data from the San Miguel Island sites was sent to Derek Stein with CDFG.

Temperature data from all the kelp forest monitoring sites was sent to Dr. Anne Solomon at the University of California, Santa Barbara.

All of the *Strongylocentrotus* spp. data and temperature data was sent to Nick Shear who is working on several publications with David Kushner and other scientists.

All of the abalone, substrate and temperature data was sent to Sarah Valencia, a graduate student at the University of California, Santa Barbara, Bren School. She is helping to develop a abalone fishery plan for San Miguel Island.

Presentations

In 2009, several formal presentations utilizing the kelp forest monitoring data were made, these are listed below.

The following presentation was presented at the 2009 George Wright Society Meeting:

Kushner, David J., Joshua Sprague and Kelly Moore. 2009. 27 years of Kelp Forest Monitoring at the Channel Islands - what does it all mean?

Abstract:

The Kelp Forest Monitoring program at Channel Islands National Park was one of the first “vital signs” Inventory and Monitoring programs implemented by the National Park Service. The program has been collecting baseline population data on over 70 species of algae, invertebrates and fish for 27 years. Information garnered from the program has aided fishery management decisions and the establishment of marine reserves. In addition, the information is becoming useful in explaining large scale ecological patterns in kelp forest communities as well as predicting population trends for some species. With a recently expanded monitoring program we expect the information to be an excellent tool in evaluating the effectiveness of the newly established marine reserves at the Channel Islands.

The following presentation was presented at the Montrose Settlements Restoration Program Symposium:

Kushner, David J., Scott Hamilton, and Jennifer Caselle. 2009. Evaluating the Effectiveness of Channel Islands' Marine Protected Areas Using a Long-term Ecological Monitoring Program.

Dr. Laura Rodgers Bennett with the California Department of Fish and Game presented abalone data from the monitoring program to the California Department of Fish and Game Commissions Abalone Advisory Group to fuse in deliberations regarding a potential abalone fishery at San Miguel Island. In addition, she presented the abalone data collected from the ARMs to the California Department of Fish and Game Commission Recreational Abalone Advisory Board annual meeting.

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 the Kelp Forest Monitoring Program, please write to the address below:

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

Appendix P. *Sargassum horneri* observations from cruise October 19-23, 2009

Surveys were conducted by the following divers working or volunteering on the kelp forest monitoring program: Keith Duran, James Grunden, Sonia Ibarra, David Kushner, Jacob Metzger, Eric Mooney, Kelly Moore and Ed Parnell.

Below are the locations and brief observation where we looked for *Sargassum horneri* on the October 19-23 kelp forest monitoring (KFM) cruise. We made several other dives that are not included here as they were deeper, poor habitat and more importantly we were not searching for *S. horneri*. These dives were mentioned in the KFM trip report for this cruise.

In brief, we made seven dives where we surveyed for *S. horneri* on the north side of ANI and it was observed at five of these sites. On the south side of the Island, we made two dives and it was observed at one site. On the north side of the Island it was observed at four of the five sites. *Sargassum horneri* was observed from 3.5 - 18 m. We observed it growing on rocky reef, on isolated rocks surrounded by sand and on *Chaetopterus variopedatus* (parchment tube worms) tubes. We observed both small and large plants and some of the plants appeared reproductive or near reproductive. We conducted two survey dives on Santa Cruz Island, both were nearby each other and no *S. horneri* were observed. We were hoping to conduct a few more dives on the eastern portion of the Island, but did not have time.

Considering what we observed at Anacapa and how *S. horneri* has established itself at Catalina and other locations, we think it would be a futile effort to attempt any control of this alga. From our observations, it is likely that all or most of the seven permanent KFM sites on Anacapa will likely have *S. horneri* in the near future. Considering the baseline data we have (28 years at three sites and 5 years at the other four sites at ANI), the KFM sites will be one of the best ways to document this alga ecological affect. I think that if we want to document the establishment and rate of increase at these sites we should increase the sampling at these sites for this alga to at least two times per year instead of the one time they are sampled in during our summer sampling season from May-October. This would also apply to all the other KFM sites at the five Park Islands if we feel there is a need.

Unfortunately, we don't monitor *Sargassum muticum* at the KFM sites, though it is very common at SBI, ANI and SCI. Originally, *S. muticum* was one of the KFM indicator species when the program started in 1982, but was dropped after the first two years. I have presumed it was dropped because this is a seasonal alga at the Channel Islands and is most abundant after our summer sampling season is conducted. If we are going to seek funding to monitor *S. horneri*, I suggest considering doing additional sampling at the KFM monitoring sites from Dec-April. I think this would be a cost effective and efficient way to monitor this alga if we wanted to better document the rate of the invasion. If we just monitored for *S. horneri* and *S. muticum* at the sites, I think we could monitoring 2-3 sites per day with four experienced divers, or about three days for ANI.

Below are the dates we surveyed the sites with brief notes and their locations.

October 19, 2009

SCI, Smugglers Cove: 34 00.537 N, 119 32.158 W

This was a small patch reef at a depth of 17 – 20 m, no *S. horneri* was observed. I would consider this reef poor habitat for this species.

SCI, Smugglers Cove: 34 00.912 N, 119 32.524 W

We surveyed the inshore part of this reef from about 2 – 10 m and found no signs of *S. horneri*. I would consider that this reef had some adequate habitat for *S. horneri*.

October 20, 2009

The East side of Cathedral Cove, ANI: 34 00.997 N, 119 22.119 W

We only briefly searched here, but did not find any *S. horneri* between 2 – 10 m.

The KFM permanent Cathedral Cove monitoring site: 34 00.952 N, 119 22.304 W

We searched extensively here and found only one unhealthy small *S. horneri* (~7cm) approximately 13 meters from the transect line at a depth of 3 m.

October 21, 2009

North side of middle ANI 34 00.627 N, 119 23.377 W

This area was a reef at a depth of approximately 17 – 20 m. We searched the reef extensively and found one small *S. horneri* on the reef at ~18 m. About 7 m from the reef across sand was a solitary flat rock with about one square foot of surface area that was nearly completely covered with *S. horneri*. There were at least 20 small non-reproductive plants on it. The reef had a moderate density of *S. purpuratus* on it and my initial thought was that this rock out in the sand may have been a refuge from the sea urchins similar to what we observe with other species of algae. However, we had since observed *S. horneri* growing in areas with high densities of *S. purpuratus* where it looked like it was not preferred as a food source.

The KFM permanent Keyhole monitoring site: 34 00.985 N, 119 25.924 W

We extensively surveyed this area and observed one medium sized (approx 15 cm) *S. horneri* on a small rock along the transect line. In addition we observed at least three other areas with several to 20 plants about 15 meters inshore of the transect line. All plants observed at this site were not reproductive. *Sargassum horneri* was observed at depths ranging from 4 – 13 m at this site. One plant was observed on a very small pebble (~2 cm in diameter) and another on top of a live *Megastraea undosum*.

October 22, 2009

West of the Winfield Scott, ANI 34 00.495 N, 119 23.364 W

We surveyed from 2 – 12 m in this area. There was a large area (approximately 75 meters by 20 meters) where *S. horneri* was moderately abundant in small patches. No areas were dominated by it, but there were a significant number of plants. Most were found at a depth between 6 – 10 meters.

Just offshore of the above dive site at a depth of about 17 m, we observed six small – medium sized *S. horneri* growing on *Chaetopterus variopedatus* (parchment tube worms) tubes. *Chaetopterus variopedatus* creates a substantial amount of habitat in this area.

West of Cathedral Cove, ANI: 34 00.874 N, 119 22.482 W

We surveyed here for *S. horneri* at depths between 2 - 8 m. There was a considerable number of plants in this location and the most we have seen anywhere on ANI to date. They were widespread over a large area and two high density patches estimated at 3x5 m were observed. These patches were notably dominated by *S. horneri* and some of the plants appeared reproductive or near reproductive. In this area we observed many places where *S. horneri* was growing next to *S. muticum*.

East end of ANI, just east of Arch: 34 00.778 N, 119 26.625 W

This was not great habitat for *S. horneri* and we observed none at depths 15 – 23 m.

South side of Rat Rock on West ANI: 34 00.742 N, 119 26.661 W

A brief survey was conducted here and we found small clumps of *S. horneri* scattered at depths ranging from 5 – 18 m.

October 23, 2009

KFM permanent site, Lighthouse, ANI: 34 00.846 N, 119 21.541 W

We extensively surveyed this area from 3-12 m and observed no *S. horneri*