

Appendix 1. Kilometers surveyed by the ROV at both exploratory and quantitative sites from 2003 to 2008.

<b>Island</b>	<b>Location</b>	<b>Nov</b>	<b>May</b>	<b>Sep</b>	<b>Aug-Oct</b>	<b>Aug-Oct</b>	<b>Aug</b>	<b>Aug</b>
<b>Site Name</b>	<b>Code</b>	<b>2003</b>	<b>2004</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
<b>San Miguel Island</b>								
Harris Point SMR	SMI-1	--	--	--	15	8	7	7
Castle Rock	SMI-2	--	--	--	10	5	4	4
<b>Santa Rosa Island</b>								
Carrington Point SMR	SRI-1	2	--	--	--	--	--	--
Carrington Point	SRI-2	2	--	12	7	8	7	7
Rodes Reef	SRI-3	2	--	12	6	8	6	7
Cluster Point	SRI-4	1	--	--	--	--	--	--
South Point SMR	SRI-5	1	--	--	--	--	--	--
East Point	SRI-6	--	4	12	12	11	9	10
Cluster Point	SRI-7	--	--	--	10	9	6	6
South Point	SRI-8	--	--	--	13	8	8	9
<b>Santa Cruz Island</b>								
Gull Island SMR	SCI-1	4	--	--	--	--	--	--
Gull Island SMR	SCI-2	4	--	12	13	11	11	12
Bowen Point	SCI-3	2	--	--	--	--	--	--
Blue Banks Arch	SCI-4	--	3	--	--	--	--	--
<b>Anacapa Island</b>								
Anacapa SMCA	AI-1	--	3	9	12	9	7	8
Anacapa SMR 1	AI-2	--	3	--	--	--	--	--
Anacapa SMR 2	AI-3	--	3	--	19	8	9	8
Arch Rock	AI-4	--	3	--	--	--	--	--
<b>Total</b>		<b>18</b>	<b>18</b>	<b>57</b>	<b>117</b>	<b>85</b>	<b>71</b>	<b>77</b>

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## Appendix 2. ROV data collection and post-processing complete methods for 2008.

### ROV Equipment

The basic ROV equipment used was similar to that described by Veisze and Karpov (2002) with some improvements. The ROV used in this study was a Deep Ocean Engineering model Phantom® HD 2+2<sup>3</sup>. The ROV was equipped with a three-axis autopilot including a rate gyro-damped compass card. Together, these allowed the pilot to maintain a constant heading ( $\pm 1$  degree) and constant depth ( $\pm 0.3$ m) with minimal corrections. In addition, a forward cruise control was added to help the pilot maintain a constant forward velocity.

An ORE Trackpoint III® acoustic positioning system with ORE Offshore MRU pitch and roll sensor was used to reference the ROV position relative to the ship's Wide Area Augmentation System GPS (WAAS GPS). WAAS GPS (Wilson unpublished <http://www.users.erols.com/dlwilson/gpswaas.htm>) has an accuracy of 3.2 m. The ship's heading was determined using a Hemisphere® Crescent VS100 Series dual antennae compass. The Trackpoint III® calculated the XY position of the ROV at approximately two-second intervals. The position was recorded in meters as X and Y using the WGS 1984 UTM coordinate system in both ARC VIEW® 9.2 and HYPACK® 6.2 navigational software.

Measurements of ROV heading and depth, water temperature, camera tilt and sonar distance both forward and downward to the substrate were averaged over a one-second period and recorded by HYPACK®.

The ROV was equipped with two color cameras, one facing forward and set approximately 20° below the horizon and the other pointing downwards at 85°. The two-camera system provided a continuous, slightly overlapping view forward and downward. Digital video for both the forward and down facing cameras was captured using SONY® DSR 45s and Pioneer DVR510s. Data collection protocols require a minimum of 3 m of water visibility. In addition to capturing biological and habitat observations, the forward video captured redundant onscreen recordings of time code, depth, temperature, range, forward camera angle and heading.

GPS time was used to provide a basis for linking position, field data and video observations (Veisze and Karpov 2002). A Horita® GPS3 and WG-50 were used to generate on screen displays of GPS time, as well as output audio time code data for capture on SONY® DSR audio tracks at an interval of 1/30<sup>th</sup> of a second. This method was improved by customizing HYPACK® navigational software to link all data collected in the field to the GPS time. ROV tracked position and sensor data was recorded directly by HYPACK® as a time-linked text file. A redundant one-second time code file of sensor data was also collected in the field using Deep Oceans HD2 OSD® operating system software with time code extracted from the system's internal clock.

All data collected by the ROV, along with subsequent observations extracted during post-processing of the video, were linked in a Microsoft Access® database using GPS time. Data management software was developed to expand all data records to one second of GMT time code. During video post-processing, a Horita® Time Wedge (model number TCW50) was used in conjunction with a computer to record the audio time code in a Microsoft Access® database.

### **ROV Sampling Operations**

Individual ROV dives were limited to approximately 2 hours (3 km) each due to DVD recording capability. When 2 hours of DVD recording was reached, a new dive was initiated, often while the ROV remained on the seafloor. Surveys were conducted between the hours of 0800 and 1700 PST to avoid twilight conditions that might affect fish abundances.

At each site, the ROV was flown along pre-planned track lines, targeting  $\pm 10$  m of the line. GPS time was recorded on each video frame (1/30<sup>th</sup> sec) and on an audio track using methods developed by Veisze and Karpov (2002). ROV sensor data for water depth, temperature, ROV heading, ranging sonar and camera tilt angle were also recorded. A pair of Tritech® 500 kHz ranging sonars, which measure distance across a range of 0.1–10 m using a 6° conical transducer, was added in 2003 to replace paired lasers as the primary method for measuring transect width. The ranging sonars were secured to both the forward and downward facing cameras and measured the distance from the camera to the sea floor. Readings from these sonars were averaged five times per second and recorded at a one-second interval with all other sensor data.

The ROV was flown off the vessel's stern using a "live boat" technique that employed a 227-kg (600-lb) clump weight. Using this method, all but 40 m of the ROV umbilical was secured from current-induced drag by coupling it with the clump weight cable and suspending the clump weight at least 10 m off the bottom. The 40-m tether allowed the ROV pilot to maintain a constant speed (0.5 to 0.75 m/sec) and a straight course down the planned line by using the location of the ship, the ROV and its calculated speed, and the track line displayed on shipboard monitors. The ship's captain also used the displays to maintain the position of the ship within 30 m of the ROV. Three ridged foam floats were affixed to the 40-m tether to help keep the umbilical off the ocean floor and prevent snagging in high relief areas.

Track line width on the forward camera was calculated using the ranging sonar fixed below and parallel to the camera between two forward-facing red lasers spaced 110 mm apart. Measurements of transect width using a ranging sonar are accurate to  $\pm 0.1$  m (Karpov et al. 2006). The ROV pilot used the sonar reading to sustain a transect width between 2 and 4 m by maintaining the distance from the camera to the substrate (at the screen horizontal mid-point)

between 1.5 and 3 m. Transect width was computed each second based on the camera field of view as 1.3 times the ranging sonar distance.

### **Site and Track Line Selection**

With the aid of acoustic survey maps (sidescan and multibeam), study areas were selected inside and outside of marine reserves. Each area located within marine reserves was paired with a reference area located outside but not immediately adjacent to the reserve boundaries. Where possible, sites were selected offshore of Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) sites sampled by SCUBA. The reference sites were chosen based upon comparable criteria which included: distance to port, exposure, habitat (rocky substrate) and depth range. In order to cover patchy rock outcroppings, some sites were broken into adjoining 500-m wide rectangular zones.

Within each zone, GIS-based track lines for the site were randomly selected and placed across the width of each site parallel to the prevailing depth contour and bathymetry. The locations of the track lines were chosen by selecting random numbers, rounded to the nearest 10 m, from zero to the total length of the site in meters from shallow to deep. Numbers that did not produce line spacing of  $\geq 20$  m were rejected. This approach avoids overlapping of adjacent lines that are typically navigable within  $\pm 10$  m (Karpov et al. 2006). Track lines were numbered according to the distance along the site boundary running from shallow to deep.

To ensure that the sampling was distributed across the entire depth range, each site was divided into zones. Zones were structured depending on the site's depth and habitat composition. The total number of track lines selected within each zone was dependent on the size of the zone.

The number of 500-m lines selected at each site was determined based on available habitat data and a 10% buffer was added to allow for sampling losses (e.g., being pulled off course by the boat, flying too high off the bottom, temporary equipment failure). In case the amount of hard and mixed substrate was underestimated, additional auxiliary lines were randomly pre-selected and sequentially labeled. Thus, if the number of transects needed to be increased, a subset of the randomly selected lines could be added to each zone.

Areas determined to be mostly sand were excluded during the placement of random transect lines. These areas were defined from existing multibeam or sidescan sonar data and also by overlaying data from previous ROV surveys completed within the study site (Karpov et al. 2005a).

Two approaches were adopted to assess the amount of usable substrate and track line while at sea. First, a technique was applied to estimate in real-time the amount of soft-only substrate for track lines while sampling (Bergen et al. 2006).

During the survey of each line, the data officer recorded the total time spent over soft-only substrate, which was divided by the total time to survey the entire track line. Assuming constant velocity, this approximated post-processed estimates based on actual tracked distance. Real-time estimates allowed us to adjust the number of track lines surveyed by site to meet our sampling goals. The second approach adopted was to review the tracking data at the end of each sampling day for content and quality. If the quality was compromised, lines were repeated later in the survey.

### **Post-Processing**

Following the survey, positional data was post-processed to produce the final track lines. Positional information, in the form of XY metric coordinates, was filtered for outliers and smoothed using a 21-point running mean (Karpov et al. 2006). The distance formula was used to calculate planar length tracked per second and combined with width to calculate area tracked per second. Gaps in the tracking data that occurred due to deviations from quantitative protocols, such as pulls (ROV pulled back by tension on the 40-m tether), stops (ROV stops to let the boat catch up which affects tracking) or backsides of high relief structures (visual loss of 4 m target distance for more than 6 seconds which typically occurs on the downward slope of high relief habitat) were removed from the data prior to transect computation.

The remaining usable portions of the line were then divided into 25-m<sup>2</sup> segments (subunits). Component subunits were typically 8 to 10 m in length with a transect width averaging approximately 3 m. Each subunit's total percent hard and/or mixed habitat was then calculated and those with percentages below 50% were removed. The remaining subunits were concatenated into 100-m<sup>2</sup> transects (four sequential useable 25-m<sup>2</sup> subunits) for use in density calculations. A spacer subunit was discarded between each to avoid bias of contiguous transects. Using this method for generating transects has allowed us to focus on rocky substrate without the loss of rock/sand interface habitat.

### **Substrate and Habitat**

Substrate classification used during post-processing was simplified from Green et al. (1999). The video record was reviewed and substrate types encountered were classified independently as rock, boulder, cobble, or sand. Rock was defined as any igneous, metamorphic or sedimentary substrate; boulder as rounded rock material that is between 0.25 and 3.0 m in diameter and clearly detached from the base substrate; cobble as rounded rock material that is between 6 and 25 cm in diameter and clearly detached; and sand as any granular material with a diameter less than 6 cm (may include mud, organic debris such as shell or bone, gravel or pebble).

During review of a video record, a transparency film overlay with guidelines approximating a 1.5-m wide swath was placed over a monitor screen. Each of the substrate types are independent of each other and were recorded as discrete

segments with a beginning and ending GPS time code, thus the total available substrate often exceeds 100%. A substrate layer was considered continuous until a break of 2 m or greater occurred or the substrate dropped below 20% of the total combined substrates for a distance of at least 3 m.

After processing, the substrates were combined to create three independent habitat types: hard (rock and/or boulder), mixed (rock and/or boulder with either cobble and/or sand) or soft (cobble and/or sand). These habitat types combined total 100% of the available habitat.

### **Fish Abundance, Transects, and Descriptive Statistics**

Fish processing consisted of reviewing the video records in a single-pass method in which observed fish were identified to one of the following levels: species, complex, family or unidentified (Appendix 3). Fish observations recorded were limited to a size greater than 11 cm with the exception of seniorita (*Oxyjulis californica*), surf perch and blacksmith (*Chromis punctipinnis*). Several fish species were excluded: skates, flatfish, young of the year (YOY) rockfish, pelagic species, painted greenling (*Oxylebius pictus*) and sculpins (except cabezon [*Scorpaenichthys marmoratus*]).

A screen overlay was also used during fish quantification to approximate the transect width, calculated by the ranging sonar, at mid-screen (Karpov et al. 2006). The overlay served as a guide for determining if a fish was in or out of the ROV transect. Fish enumeration was limited to a distance of approximately 4 meters, the lower working visibility of the ROV based on analysis by Karpov et al. (2006). Using the sonar range value depicted on the screen as a gauge, the processor determined if a fish was within 4 meters as it entered the viewing area. Fish that entered the viewing area were only counted if more than half the fish crossed the overlay guidelines.

In order to match the location of the fish with the habitat, time code entry was made when the fish crossed the mid-screen line. For fish that were within 4 meters, but swam away before they crossed the mid-screen line, time code entry was made when the location where the fish had been observed reached the mid-screen point. All data entries were recorded in a Microsoft Access® database linked with the time code.

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Appendix 3. Scientific and common names for quantified finfish in 2008.

Taxa	Scientific Name
Ocean whitefish	<i>Caulolatilus princeps</i>
Blacksmith	<i>Chromis punctipinnis</i>
Black perch	<i>Embiotoca jacksoni</i>
Unidentified surfperch	<i>Embiotocidae</i>
Rock wrasse	<i>Halichoeres semicinctus</i>
Kelp greenling	<i>Hexagrammos decagrammus</i>
Lingcod	<i>Ophiodon elongatus</i>
Señorita	<i>Oxyjulis californica</i>
Kelp bass	<i>Paralabrax clathratus</i>
Pile perch	<i>Rhacochilus vacca</i>
California scorpionfish	<i>Scorpaena guttata</i>
Unidentified rockfish	Sebastes 1
Olive/Yellowtail complex	Sebastes 4
Sebastomus complex	Sebastes 5
Kelp rockfish	<i>Sebastes atrovirens</i>
Gopher rockfish	<i>Sebastes carnatus</i>
Copper rockfish	<i>Sebastes caurinus</i>
Vermilion rockfish	<i>Sebastes miniatus</i>
Blue rockfish	<i>Sebastes mystinus</i>
Bocaccio	<i>Sebastes paucispinis</i>
Canary rockfish	<i>Sebastes pinniger</i>
Treefish	<i>Sebastes serriceps</i>
California sheephead	<i>Semicossyphus pulcher</i>
Giant seabass	<i>Stereolepis gigas</i>

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Appendix 4. Finfish abundances and sample size of 100 m<sup>2</sup> transects for all ten sites surveyed in 2008.

Common Name	SMI-1			SMI-2			SRI-2			SRI-3			SRI-6	
	Ave	SD	%FO	Ave	SD	%FO	Ave	SD	%FO	Ave	SD	%FO	Ave	SD
Black perch	0.22	0.218	1.111				1.00	0.85	1.14	0.25	0.156	2.46	0.56	0.33
Blacksmith	3.36	16.17	8.889	0.19	1.90	1	0.58	2.46	7.95	0.11	0.69	3.28	0.63	2.92
Blue rockfish	1.35	3.17	32.32	2.90	8.54	23	0.74	1.97	19.3	0.58	1.54	16.4	0.82	2.87
Bocaccio	0.33	0.22	2.222	0.30	0.22	2								
California scorpionfish							0.11	0.17	1.14					
California sheephead	0.14	0.47	1.111	0.20	0.15	2	0.13	0.40	1.23	0.25	0.59	18.9	0.29	0.73
Canary rockfish										0.25	0.22	1.64		
Copper rockfish	0.33	0.67	26.26	0.50	0.22	5	0.11	0.38	10	0.15	0.46	11.5	0.78	0.29
Giant seabass														
Gopher rockfish	0.13	0.37	12.12	0.30	0.17	3	0.35	0.18	3.5					
Kelp bass													0.11	0.15
Kelp greenling													0.11	0.15
Kelp rockfish	0.11	0.15	1.111											
Lingcod	0.44	0.20	4.444	0.10	0.10	1	0.11	0.17	1.14	0.82	0.95	0.82	0.11	0.15
Oceanwhite	0.11	0.15	1.111										0.22	0.14
Pile perch	0.89	0.34	6.667	0.20	0.94	6	0.12	0.86	2.27	0.41	3.50	4.98	0.31	2.72
Rock wrasse														
Sebastes	0.44	0.78	26.26	0.85	1.29	46	0.45	0.29	4.55				0.22	0.14
Señorita	0.67	0.63	1.111				0.80	0.35	5.68	0.64	3.49	1.66	2.47	8.37
Treefish	1.00	0.29	10				0.11	0.17	1.14	0.16	0.13	1.64		
Ul perch	0.53	2.56	17.17	0.39	1.54	11	1.00	0.40	5.68	0.19	0.93	5.74	0.41	2.12
Ul rockfish	0.35	1.14	2.222	0.14	0.57	1	0.13	0.40	1.23	0.74	0.34	5.74	0.67	0.24
Vermilion rockfish	0.76	0.86	53.54	0.30	0.63	23	0.25	0.59	18.2	0.34	0.85	21.3	0.89	0.27
Yellowtail/Olive rockfish	0.33	0.70	23.23	0.43	0.74	32	0.11	0.17	1.14	0.16	0.13	1.64	0.89	0.27
<b>Average</b>	0.64	1.62	13	0.52	1.31	12	0.38	0.61	5	0.36	1.00	7	0.59	1.37

## Appendix 4 continued.

Common Name	SRI-7			SRI-8			SCI-2			AI-1			AI-3	
	Ave	SD	%FO	Ave	SD	%FO	Ave	SD	%FO	Ave	SD	%FO	Ave	SD
Black perch	0.12	0.72	3.895	0.13	0.113	1.266								
Blacksmith	0.24	1.42	2.857				0.78	3.93	9.84	8.35	26.84	37.5	5.28	14.42
Blue rockfish	2.27	8.29	26.67	1.16	2.88	27.85	2.83	6.34	5.98	0.97	3.89	16.7	0.55	0.27
Bocaccio														
California scorpionfish													0.20	0.15
California sheephead	0.11	0.40	9.524	0.22	0.593	16.46	0.42	0.99	24.6	0.53	0.88	34.4	0.19	0.49
Canary rockfish				0.13	0.11	1.266								
Copper rockfish	0.29	0.17	2.857	0.13	0.45	1.127	0.14	0.40	11.8	0.53	0.22	5.28	0.44	0.26
Giant seabass													0.20	0.15
Gopher rockfish	0.95	0.384	6.667	0.89	0.33	7.595	0.69	0.25	6.86	0.28	0.14	2.83	0.44	0.26
Kelp bass							0.98	0.99	0.98	0.47	0.96	26.4	0.38	0.73
Kelp greenling	0.95	0.98	0.952											
Kelp rockfish	0.19	0.14	1.948											
Lingcod	0.95	0.98	0.952	0.56	0.23	5.633	0.49	0.29	2.94	0.53	0.27	4.17	0.22	0.15
Oceanwhite							0.29	0.23	1.97					
Pile perch	0.32	2.64	6.667	0.11	0.41	7.595	0.59	0.54	1.97	0.31	0.23	2.83	0.88	0.68
Rock wrasse										0.28	0.14	2.83		
Sebastes	0.30	0.60	14.29	0.76	0.38	5.633	0.67	1.12	37.3	0.28	0.14	2.83	0.99	0.34
Señorita				1.18	9.83	3.797	0.29	0.30	0.98	3.12	13.44	12.5		
Treefish				0.13	0.11	1.266	0.98	0.99	0.98	0.14	0.13	1.42	0.22	0.15
UI perch	0.50	1.21	19.48	0.84	2.97	26.58	0.60	1.13	25.5	0.74	2.18	21.9	0.52	2.67
UI rockfish	0.76	0.27	7.619	0.16	0.67	8.868	0.31	0.60	24.6	0.18	0.88	9.38	0.15	0.87
Vermilion rockfish	0.22	0.50	18.95	0.46	0.80	31.65	0.53	0.88	33.3	0.16	0.49	11.5	0.55	0.27
Yellowtail/Olive rockfish	0.36	1.33	18.95	0.14	0.42	11.39	0.18	0.48	13.7	0.83	0.31	7.29		
<b>Average</b>	<b>0.57</b>	<b>1.34</b>	<b>9</b>	<b>0.47</b>	<b>1.35</b>	<b>11</b>	<b>0.67</b>	<b>1.22</b>	<b>13</b>	<b>1.11</b>	<b>3.20</b>	<b>12</b>	<b>0.75</b>	<b>1.46</b>



## Appendix 5 continued.

South Pt. SMR			Gull Island SMR			East Point			Anacapa Island SMCA			Anacapa Island SMR		
Line	% Soft Only		Line	% Soft Only		Line	% Soft Only		Line	% Soft Only		Line	% Soft Only	
	At Sea	Post		At Sea	Post		At Sea	Post		At Sea	Post		At Sea	Post
160	53	28	550	67	69	490	67	72	10	63	48	10	38	50
270	70	74	660	78	66	560	53	51	30	64	56	50	36	36
420	69	41	670	69	63	580	26	59	50	63	69	70	26	38
490	62	56	680	65	56	610	64	59	70	61	63	100	10	18
570	70	50	700	74	74	680	43	67	130	54	54	130	15	32
Zone 2			730	71	61	810	57	57	160	34	26	190	21	32
Zone 2			750	54	67	880	93	78	190	27	34	Zone 2		
620	45	45	830	71	62	Zone 2			230	66	56	Zone 2		
650	50	52	850	87	71	Zone 2			270	40	38	730	58	74
730	66	60	860	63	61	1670	50	41	290	75	62	750	47	60
790	67	66	870	76	70	1760	44	39	320	49	47	830	65	74
820	71	69	920	48	61	1840	37	34	Zone 2			850	60	61
920	84	76	930	43	70	1890	60	60	Zone 2			870	67	59
940	61	62	940	71	70	2060	13	37	540	59	61	900	36	40
960	70	68	950	65	74	2130	69	70	560	21	19	940	26	58
1070	38	50	970	61	53	Zone 3			580	56	42	960	65	60
1100	36	63	1010	75	70	Zone 3								
			1020	59	56	2820	36	21						
			1070	63	50	2890	28	24						
			1090	59	69	2950	40	33						
			1120	79	67	3010	76	40						
						3200	84	78						

## Appendix 6. ROV dive data for Harris Point SMR surveyed in 2008.

Date	Zone	Dive	Line Number	Beginning Time (GMT)	Ending Time (GMT)	Begin X	Begin Y	End X	End Y	Avg Velocity (m/s)	Avg Width (m)	Min Depth (m)	Max Depth (m)	Avg Depth (m)
	<b>SMI-1</b>													
8/12/2008	1	399	790	23:46:59	23:56:26	193245.28	3774049.00	192987.96	3774237.74	0.9	3.0	38.4	47.9	42.8
			820	23:34:33	23:44:09	193005.98	3774259.31	193394.62	3773971.39	0.9	3.4	30.1	49.5	42.7
			1050	23:12:35	23:27:22	193550.64	3774156.60	193143.79	3774452.69	0.6	3.1	42.7	53.8	48.9
			1070	22:57:48	23:10:22	193152.43	3774455.78	193553.10	3774169.44	0.7	3.3	41.8	53.8	49.2
	2		1200	22:34:36	22:46:31	192870.06	3774824.97	193263.65	3774536.12	0.7	3.1	41.2	51.9	46.7
			1390	22:12:13	22:25:31	193389.72	3774700.02	192989.03	3774990.04	0.7	3.0	42.7	53.4	48.6
			1410	21:57:11	22:09:17	192990.88	3775011.56	193396.65	3774713.92	0.8	3.2	39.6	55.3	48.7
			2040	21:17:50	21:30:59	192970.62	3775798.79	193371.98	3775510.59	0.7	3.3	51.3	62.1	57.2
8/13/2008	1	400	750	0:00:13	0:10:43	193046.72	3774145.02	193349.61	3773909.38	0.8	3.0	6.5	45.1	41.2
			140	18:16:22	18:29:14	193149.71	3773315.95	193407.37	3773137.88	0.7	2.7	29.1	38.5	33.3
			170	18:02:58	18:13:40	193395.47	3773175.06	193304.09	3773242.08	0.8	3.1	29.7	37.4	33.4
			300	17:46:07	17:58:25	193195.94	3773487.67	193284.99	3773418.04	0.7	3.0	22.5	41.8	36.5
			600	17:21:43	17:36:27	193537.35	3773590.60	193348.75	3773738.76	0.6	2.8	36.5	46.4	41.8

## Appendix 6. ROV dive data for Castle Rock surveyed in 2008.

Date	Zone	Dive	Line Number	Beginning Time (GMT)	Ending Time (GMT)	Begin X	Begin Y	End X	End Y	Avg Velocity (m/s)	Avg Width (m)	Min Depth (m)	Max Depth (m)	Avg Depth (m)
	<b>SMI-2</b>													
8/12/2008	1	398	80	20:05:53	20:20:45	182459.54	3776012.38	182929.56	3776138.96	0.7	4.1	15.4	39.9	28.6
			370	19:44:11	19:56:11	182851.57	3776408.61	182387.24	3776289.19	0.7	3.2	36.3	48.3	41.8
			510	19:25:57	19:37:36	183303.77	3776664.56	182831.26	3776553.71	0.8	3.3	42.3	49.5	45.8
	2		1490	18:43:57	18:57:21	182118.42	3777380.64	182595.22	3777500.47	0.7	3.4	45.7	54.5	50.3
			1780	18:19:56	18:34:27	182528.04	3777784.47	182037.72	3777654.74	0.6	3.2	48.5	57.2	52.3
			1950	18:02:52	18:13:42	182006.99	3777831.19	182486.97	3777958.03	0.8	4.1	49.5	57.8	53.5
			2390	17:36:00	17:46:53	182380.19	3778378.78	181903.15	3778251.76	0.8	3.5	55.3	63.6	58.8
			2430	17:15:06	17:32:13	181881.94	3778294.98	182376.13	3778420.70	0.6	2.9	53.2	63.6	59.2



## Appendix 6. ROV dive data for Carrington Point SMR surveyed in 2008.

Date	Zone	Dive	Line Number	Beginning Time (GMT)	Ending Time (GMT)	Begin X	Begin Y	End X	End Y	Avg Velocity (m/s)	Avg Width (m)	Min Depth (m)	Max Depth (m)	Avg Depth (m)
	<b>SRI-2</b>													
8/11/2008	1	395	30	19:13:25	19:25:16	216926.24	3771524.32	217372.81	3771720.29	0.7	2.8	23.9	32.9	29.5
			60	18:57:52	19:10:12	217357.68	3771741.86	216904.02	3771543.08	0.7	2.5	23.9	34.1	28.9
			130	18:43:01	18:53:03	216870.42	3771610.94	217328.17	3771805.03	0.8	2.9	23.7	31.0	27.6
			230	18:24:47	18:35:28	217292.01	3771904.17	216825.92	3771698.84	0.8	2.9	20.9	29.5	26.5
			370	18:09:35	18:19:03	216779.72	3771828.86	217233.22	3772029.18	0.9	2.9	22.5	31.0	27.8
			650	17:42:33	17:54:43	217127.83	3772289.44	216643.18	3772082.16	0.8	2.6	20.3	35.9	26.7
	2	394	1600	16:44:37	16:54:49	216247.55	3772935.79	216703.54	3773135.69	0.9	3.2	26.7	37.4	31.7
			1620	16:29:13	16:42:31	216699.88	3773152.38	216220.74	3772951.98	0.7	3.4	27.0	38.4	31.9
			1710	16:12:21	16:23:56	216200.71	3773029.08	216667.92	3773225.21	0.8	3.4	28.2	38.5	32.6
			1790	15:55:16	16:06:26	216617.58	3773306.14	216160.18	3773098.00	0.8	3.4	28.0	39.3	33.5
			2040	15:37:45	15:46:44	216051.38	3773327.05	216513.77	3773527.82	1.0	3.9	31.0	40.6	35.7
			2210	15:13:09	15:26:12	216436.85	3773693.64	215985.47	3773477.19	0.7	3.3	32.9	43.6	39.3
			2320	14:53:53	15:05:13	215947.82	3773586.49	216399.22	3773783.24	0.8	3.6	36.9	44.0	40.3

## Appendix 6. ROV dive data for Rodes Reef surveyed in 2008.

Date	Zone	Dive	Line Number	Beginning Time (GMT)	Ending Time (GMT)	Begin X	Begin Y	End X	End Y	Avg Velocity (m/s)	Avg Width (m)	Min Depth (m)	Max Depth (m)	Avg Depth (m)
	<b>SRI-3</b>													
8/11/2008	1	396	260	22:47:46	23:00:37	210725.27	3771837.73	211226.84	3771894.96	0.7	3.0	21.8	29.7	25.9
			320	22:30:29	22:41:03	211224.12	3771949.09	210731.72	3771910.95	0.8	3.9	21.8	28.2	25.3
			470	22:11:56	22:23:09	210719.06	3772053.58	211218.12	3772093.84	0.8	3.5	22.4	31.6	26.2
	2		690	21:54:13	22:02:57	211113.34	3772310.00	210705.14	3772286.79	1.0	3.4	23.7	39.7	31.9
			720	21:39:23	21:50:10	210703.24	3772311.22	211208.23	3772348.90	0.8	3.3	28.0	40.2	33.8
			760	21:24:39	21:35:18	211193.80	3772390.42	210694.67	3772345.44	0.8	3.3	26.7	43.3	35.0
			830	21:07:31	21:19:12	210686.56	3772411.41	211199.54	3772444.69	0.8	3.4	26.7	47.0	37.3
			850	20:54:18	21:04:36	211182.38	3772478.99	210697.69	3772443.02	0.9	3.1	29.7	46.7	37.9
8/12/2008	1	397	0	15:03:13	15:13:37	210758.72	3771603.59	211240.59	3771629.93	0.8	3.2	23.3	30.7	26.5
			70	14:47:18	14:59:13	211249.34	3771696.58	210741.58	3771650.61	0.8	3.2	21.4	31.0	25.9
			120	14:33:44	14:43:48	210731.22	3771721.11	211241.21	3771756.33	0.9	3.4	20.3	28.2	25.0
			200	14:14:40	14:28:29	211229.42	3771829.63	210734.05	3771797.57	0.8	3.2	20.9	28.9	25.0

## Appendix 6. ROV dive data for Cluster Point surveyed in 2008.

Date	Zone	Dive	Line Number	Beginning Time (GMT)	Ending Time (GMT)	Begin X	Begin Y	End X	End Y	Avg Velocity (m/s)	Avg Width (m)	Min Depth (m)	Max Depth (m)	Avg Depth (m)
	<b>SRI-7</b>													
8/13/2008	1	401	690	21:45:40	21:59:52	205206.70	3756849.32	204763.22	3757103.81	0.7	2.9	35.7	45.7	40.7
			710	21:26:30	21:42:58	204732.91	3757082.49	205203.23	3756824.24	0.6	2.6	37.4	46.4	41.5
			900	21:04:05	21:20:01	205106.44	3756669.47	204640.13	3756922.02	0.6	2.3	41.5	51.3	47.0
	2	401	140	22:38:53	22:53:25	205483.10	3757343.24	205025.15	3757568.89	0.6	3.8	23.6	32.5	27.9
			530	22:11:09	22:26:03	204821.66	3757240.40	205287.05	3756978.55	0.7	3.6	30.1	41.2	36.2
			1130	20:32:56	20:50:45	204271.13	3756871.86	204725.88	3756621.33	0.6	2.8	33.8	56.8	52.2
	1	406	200	16:48:29	17:04:02	205441.63	3757273.23	205006.05	3757524.98	0.6	3.3	23.7	33.1	28.6
			260	16:33:24	16:45:39	204979.23	3757476.72	205422.70	3757220.91	0.8	3.4	26.7	32.5	29.4
420			16:12:31	16:26:30	205321.41	3757085.37	204905.29	3757339.54	0.7	3.9	23.9	37.4	31.0	

## Appendix 6. ROV dive data for South Point SMR surveyed in 2008.

Date	Zone	Dive	Line Number	Beginning Time (GMT)	Ending Time (GMT)	Begin X	Begin Y	End X	End Y	Avg Velocity (m/s)	Avg Width (m)	Min Depth (m)	Max Depth (m)	Avg Depth (m)
	<b>SRI-8</b>													
8/17/2008	1	404	490	21:30:32	21:39:55	212173.47	3753744.54	211768.66	3754032.92	1.0	3.3	34.7	50.4	43.7
			570	21:07:09	21:26:58	211732.39	3753959.97	212121.95	3753676.08	0.6	3.2	34.4	53.4	45.3
		405	160	22:20:07	22:38:29	212062.81	3754228.65	212471.91	3753928.62	0.6	3.5	0.0	39.9	28.9
			270	22:07:40	22:16:42	212395.82	3753853.19	212006.87	3754135.78	1.0	2.2	31.4	45.5	38.4
			420	21:45:34	22:01:55	211800.74	3754077.94	212213.50	3753786.82	0.7	2.9	26.7	48.9	40.9
	2	403	820	19:37:25	19:46:42	211979.88	3753480.74	211588.26	3753745.77	0.9	2.6	48.5	57.5	53.7
			920	19:11:07	19:30:19	211532.54	3753680.44	211935.80	3753395.88	0.5	2.3	19.7	62.1	57.1
			940	18:57:37	19:08:05	211921.68	3753378.22	211526.83	3753653.89	0.9	3.3	52.5	62.4	57.8
			960	18:39:02	18:54:57	211500.74	3753645.89	211899.81	3753349.83	0.6	3.0	53.2	64.9	58.8
			1070	18:14:57	18:33:22	211836.32	3753276.08	211455.06	3753553.27	0.5	2.9	0.2	65.5	51.5
		1100	17:48:49	18:11:44	211413.97	3753528.12	211819.22	3753237.94	0.4	3.2	0.0	65.5	22.3	
		404	620	20:55:30	21:04:20	212092.71	3753641.62	211707.88	3753911.99	0.9	3.5	38.5	55.7	47.4
			650	20:34:27	20:52:12	211687.73	3753889.50	212073.43	3753607.54	0.6	3.6	39.7	59.0	47.6
			730	20:19:13	20:30:15	212035.11	3753543.72	211637.38	3753828.13	0.9	2.6	43.6	58.9	50.7
			790	19:57:02	20:15:32	211592.82	3753786.55	212004.51	3753490.59	0.6	2.7	44.2	58.9	52.2

## Appendix 6. ROV dive data for East Point surveyed in 2008.

Date	Zone	Dive	Line Number	Beginning Time (GMT)	Ending Time (GMT)	Begin X	Begin Y	End X	End Y	Avg Velocity (m/s)	Avg Width (m)	Min Depth (m)	Max Depth (m)	Avg Depth (m)
	<b>SRI-6</b>													
8/18/2008	3	408	2820	22:51:15	23:12:40	226065.82	3756087.15	225607.47	3755927.34	0.5	3.2	15.9	34.4	24.6
			2890	22:37:25	22:46:52	225617.95	3755870.11	226083.31	3756014.22	0.9	2.8	18.3	36.4	25.5
			2950	22:20:14	22:33:03	226103.80	3755959.33	225639.89	3755811.76	0.7	2.8	0.0	37.8	27.0
			3010	21:57:26	22:17:00	225650.11	3755754.50	226113.99	3755904.80	0.5	1.5	0.0	44.9	31.2
			3200	21:39:47	21:50:23	226181.58	3755719.09	225703.95	3755563.83	0.8	2.6	0.0	49.3	36.5
8/19/2008	1	409	880	20:40:32	20:52:09	225463.67	3757919.73	225005.16	3757773.04	0.7	2.5	24.7	30.1	27.8
		410	490	22:10:41	22:21:27	225364.16	3758301.64	224890.13	3758158.24	0.8	2.7	15.1	29.6	25.9
	560		21:57:29	22:06:47	224919.07	3758092.92	225390.00	3758235.93	0.9	2.6	21.3	30.5	26.1	
	580		21:43:45	21:55:10	225388.89	3758215.47	224926.04	3758069.75	0.8	2.8	13.0	30.0	25.4	
	610		21:32:02	21:40:57	224928.94	3758041.87	225402.13	3758184.39	1.0	3.3	19.5	29.6	25.5	
	680		21:15:22	21:28:47	225409.02	3758122.94	224939.76	3757975.70	0.7	2.8	22.8	29.7	26.4	
	810	20:59:57	21:10:40	224980.20	3757844.03	225456.67	3757988.96	0.8	3.2	20.4	29.6	26.7		
	2	409	1670	20:05:24	20:15:06	225513.71	3757115.94	225990.26	3757252.84	0.9	2.4	27.2	34.3	30.9
			1760	19:50:16	20:01:16	226009.26	3757171.98	225531.61	3757020.25	0.8	2.9	16.3	33.5	27.7
			1840	19:36:53	19:46:59	225568.99	3756951.89	226033.07	3757098.86	0.9	3.2	16.5	35.3	26.6
			1890	19:23:53	19:34:24	226045.92	3757041.68	225580.31	3756901.53	0.8	2.6	17.6	35.3	29.1
			2060	19:04:26	19:17:12	225614.81	3756736.79	226084.08	3756892.12	0.7	2.5	12.7	36.3	29.2
			2130	18:50:23	18:59:13	226111.66	3756827.19	225776.83	3756707.69	1.0	2.9	13.6	35.7	31.6

## Appendix 6. ROV dive data for Gull Island SMR surveyed in 2008.

Date	Zone	Dive	Line Number	Beginning Time (GMT)	Ending Time (GMT)	Begin X	Begin Y	End X	End Y	Avg Velocity (m/s)	Avg Width (m)	Min Depth (m)	Max Depth (m)	Avg Depth (m)
	<b>SCI-2</b>													
8/8/2008	1	388	850	19:37:23	19:54:37	239269.74	3759306.77	239764.34	3759203.13	0.5	3.5	0.0	61.0	46.3
			860	19:21:28	19:34:18	239757.59	3759198.03	239266.98	3759294.03	0.7	3.7	0.0	62.0	45.7
			870	19:02:02	19:18:20	239329.23	3759273.68	239760.46	3759184.06	0.5	2.8	0.0	63.0	47.9
			920	18:13:49	18:24:51	239745.40	3759139.83	239263.40	3759246.65	0.8	3.3	0.1	62.4	49.1
			930	17:53:51	18:10:30	239264.41	3759234.97	239752.74	3759132.07	0.6	3.2	0.0	63.6	49.8
			940	17:35:35	17:50:22	239739.56	3759121.28	239232.38	3759224.23	0.7	3.4	0.0	62.2	50.3
		950	17:17:43	17:32:06	239269.87	3759200.57	239750.67	3759102.87	0.6	3.3	0.0	64.3	50.8	
		550	21:59:19	22:10:56	239331.84	3759599.00	239828.39	3759496.37	0.8	3.8	0.0	55.8	38.3	
		660	21:42:53	21:53:41	239792.25	3759392.81	239316.82	3759496.46	0.8	3.0	0.0	59.7	41.8	
		670	21:27:42	21:40:10	239311.81	3759477.49	239795.86	3759379.04	0.8	2.8	0.0	58.3	42.5	
		680	21:06:00	21:18:32	239785.09	3759381.81	239317.92	3759475.28	0.7	2.7	0.0	58.9	41.0	
		700	20:52:09	21:03:31	239297.57	3759441.65	239799.34	3759347.84	0.8	3.3	0.0	59.2	43.4	
		730	20:36:57	20:48:15	239774.55	3759330.21	239302.74	3759437.02	0.8	2.9	0.0	59.0	43.6	
		750	20:19:25	20:33:56	239295.04	3759404.38	239786.34	3759305.47	0.6	3.7	0.0	59.3	42.5	
830	20:03:10	20:14:07	239770.28	3759224.75	239272.44	3759332.42	0.8	3.2	0.0	60.4	46.7			
8/9/2008	1	387	970	16:49:18	17:03:18	239744.75	3759088.97	239238.00	3759179.23	0.7	3.6	2.3	64.1	52.3
			1010	16:29:11	16:44:55	239243.76	3759153.86	239679.32	3759063.16	0.6	3.4	0.0	65.2	55.6
			1020	16:08:23	16:23:18	239705.10	3759039.80	239237.74	3759160.72	0.7	3.3	0.0	65.3	56.9
			1070	15:36:19	16:02:53	239229.88	3759098.85	239716.73	3759003.46	0.5	2.4	0.1	65.5	57.0
			1090	15:17:41	15:31:44	239708.24	3758986.49	239268.71	3759067.08	0.7	3.7	0.1	65.5	61.6
			1120	14:48:42	15:08:00	239208.07	3759049.82	239599.46	3758964.85	0.6	3.2	0.1	65.5	28.6

## Appendix 6. ROV dive data for Anacapa Island SMR surveyed in 2008.

Date	Zone	Dive	Line Number	Beginning Time (GMT)	Ending Time (GMT)	Begin X	Begin Y	End X	End Y	Avg Velocity (m/s)	Avg Width (m)	Min Depth (m)	Max Depth (m)	Avg Depth (m)
	<b>AI-3</b>													
8/9/2008	1	391	10	20:12:56	20:29:02	281436.11	3766902.23	280934.50	3766707.50	0.6	2.6	17.3	26.8	22.9
			50	19:52:53	20:08:43	280925.60	3766747.17	281420.07	3766950.08	0.6	2.5	21.2	29.0	24.6
			70	19:30:15	19:49:29	281052.34	3766816.05	280921.88	3766767.48	0.5	2.5	20.9	29.0	24.9
			100	19:10:09	19:25:42	280900.44	3766791.85	281406.00	3766988.38	0.6	2.7	21.7	29.0	25.7
			130	18:47:56	19:05:16	281390.00	3767018.92	280891.70	3766821.09	0.5	2.8	20.9	29.7	26.2
			190	18:26:33	18:40:57	280865.15	3766867.61	281370.15	3767080.13	0.7	2.7	24.6	33.6	29.5
	2	390	750	17:23:06	17:34:07	280685.00	3767394.07	281182.15	3767585.93	0.9	3.2	54.8	64.8	58.8
			830	16:52:33	17:06:42	281132.24	3767660.71	280650.24	3767464.96	0.7	2.6	0.1	65.5	61.0
			850	16:35:23	16:48:19	280651.88	3767501.30	281127.20	3767677.49	0.8	2.9	0.1	65.5	60.8
			870	16:10:44	16:31:23	281127.42	3767704.93	280636.51	3767510.80	0.5	4.1	0.1	65.5	58.9
			900	15:49:41	16:04:45	280627.88	3767531.41	281117.74	3767729.90	0.6	3.1	0.1	65.5	60.1
			940	15:29:28	15:44:37	281105.00	3767764.94	280597.04	3767577.92	0.6	3.6	0.1	65.5	41.5
			960	15:11:25	15:25:38	280597.95	3767598.94	281104.03	3767782.04	0.7	4.1	0.1	65.5	30.7
			391	730	17:43:41	17:56:17	281174.60	3767573.01	280680.06	3767376.71	0.8	2.9	54.6	63.5

## Appendix 6. ROV dive data for Anacapa Island SMCA surveyed in 2008.

Date	Zone	Dive	Line Number	Beginning Time (GMT)	Ending Time (GMT)	Begin X	Begin Y	End X	End Y	Avg Velocity (m/s)	Avg Width (m)	Min Depth (m)	Max Depth (m)	Avg Depth (m)
	<b>AI-1</b>													
8/10/2008	1	392	160	16:44:49	16:59:28	274856.08	3766913.29	274388.24	3766740.88	0.6	3.0	18.4	33.3	25.5
			190	16:23:42	16:41:56	274390.70	3766767.97	274843.18	3766936.21	0.6	3.2	19.3	34.9	27.4
			230	16:06:28	16:19:56	274844.56	3766979.24	274373.36	3766801.31	0.7	2.6	0.0	42.6	33.2
			290	15:43:19	15:56:47	274077.98	3766745.39	274566.59	3766940.71	0.7	2.4	0.0	46.4	33.8
			320	15:25:59	15:39:39	274560.19	3766968.55	274076.18	3766804.24	0.7	2.6	0.0	47.0	35.4
		393	10	18:10:36	18:22:17	274436.04	3766603.47	274919.17	3766774.48	0.8	3.1	13.6	23.9	19.1
			30	17:55:13	18:07:55	274917.75	3766803.36	274419.90	3766618.19	0.7	3.1	12.2	24.8	20.0
			50	17:39:26	17:51:16	274423.47	3766636.01	274902.89	3766812.70	0.8	3.3	10.8	25.5	20.4
			70	17:26:08	17:37:18	274893.42	3766823.44	274406.65	3766654.22	0.8	3.2	13.4	26.8	21.2
			130	17:08:45	17:21:58	274394.11	3766722.89	274887.39	3766897.16	0.7	2.8	18.6	32.9	25.3
	270	18:33:14	18:44:03	274573.64	3766924.72	274087.34	3766747.92	0.8	2.9	0.0	45.0	34.5		
	2	392	540	15:01:50	15:15:37	273992.53	3767010.85	274483.92	3767174.59	0.7	3.2	0.0	51.3	36.6
			580	14:42:12	14:54:49	274477.59	3767211.43	273984.87	3767055.83	0.7	3.6	0.0	53.7	37.8
		393	560	18:52:31	19:02:49	274015.09	3767032.50	274479.00	3767195.27	0.9	3.7	0.0	52.4	40.4



## Appendix 7. ROV substrate and habitat summary data for Harris Point SMR surveyed in 2008.

Site	Line Number	Length (m)	Percentage of substrate on each line					Percentage of habitat on each line			
			Rock	Boulder	Cobble	Sand	Backsides	Hard	Mixed	Soft	Off Transect
<b>SMI-1</b>											
	140	535.2	49	0	15	93	0	7	42	51	0
	170	516.5	75	5	6	63	0	37	38	25	0
	300	533.2	55	2	6	85	2	15	40	45	0
	600	542.9	23	0	0	94	0	5	19	75	1
	750	512.1	33	4	7	85	5	13	20	65	2
	790	516.4	27	6	0	77	0	23	4	73	0
	820	490.7	49	5	20	82	6	13	36	49	2
	1050	569.4	69	6	8	34	0	59	11	30	0
	1070	536.5	71	5	16	72	1	27	44	29	0
	1200	519.3	60	13	5	62	0	37	23	40	0
	1390	550.0	52	13	9	63	0	35	18	47	0
	1410	547.9	59	0	7	63	1	32	27	41	0
	2040	566.4	92	14	36	57	1	37	55	7	1

## Appendix 7. ROV substrate and habitat summary data for Castle Rock surveyed in 2008.

Site	Line Number	Length (m)	Percentage of substrate on each line					Percentage of habitat on each line				
			Rock	Boulder	Cobble	Sand	Backsides	Hard	Mixed	Soft	Off Transect	
<b>SMI-2</b>												
	80	591.1	83	24	8	38	26	50	33	5	12	
	370	522.6	71	11	12	69	1	30	41	29	0	
	510	534.9	76	7	0	68	1	31	44	23	1	
	1490	553.5	95	39	21	35	3	60	36	4	0	
	1780	553.9	82	49	10	1	0	90	9	2	0	
	1950	520.2	100	41	28	22	3	63	37	0	0	
	2390	533.6	89	35	0	7	2	93	0	7	0	
	2430	588.0	81	57	24	22	17	51	30	8	11	

## Appendix 7. ROV substrate and habitat summary data for Carrington Point SMR surveyed in 2008.

Site	Line Number	Length (m)	Percentage of substrate on each line					Percentage of habitat on each line			
			Rock	Boulder	Cobble	Sand	Backsides	Hard	Mixed	Soft	Off Transect
<b>SRI-2</b>											
	30	497.0	64	9	15	88	0	12	52	36	0
	60	527.3	78	0	25	68	0	27	51	22	0
	130	501.9	40	0	36	96	0	4	36	60	0
	230	520.7	8	0	44	99	0	1	7	92	0
	370	512.3	15	2	79	27	0	14	3	83	0
	650	555.0	85	0	14	62	0	38	47	15	0
	1600	519.6	30	12	38	46	0	29	12	59	0
	1620	560.7	58	0	31	83	5	16	41	42	0
	1710	536.4	59	13	52	80	1	18	41	40	0
	1790	517.9	51	0	21	85	0	15	35	49	0
	2040	511.6	75	6	15	96	2	4	71	25	0
	2210	524.3	52	1	6	83	3	17	35	48	0
	2320	529.6	51	6	6	57	0	39	14	47	0

## Appendix 7. ROV substrate and habitat summary data for Rodes Reef surveyed in 2008.

Site	Line Number	Length (m)	Percentage of substrate on each line					Percentage of habitat on each line			
			Rock	Boulder	Cobble	Sand	Backsides	Hard	Mixed	Soft	Off Transect
<b>SRI-3</b>											
	0	520.0	56	0	4	44	1	54	3	44	0
	70	552.6	93	0	3	63	0	37	57	7	0
	120	526.5	81	4	12	22	0	73	12	15	0
	200	642.2	91	0	1	64	0	36	56	8	1
	260	546.0	76	0	0	62	0	38	38	24	0
	320	532.5	77	1	6	88	2	11	66	23	0
	470	532.6	98	0	2	99	1	1	98	2	0
	690	509.8	62	2	5	78	0	21	41	38	0
	720	530.4	54	2	9	56	0	41	13	46	0
	760	525.4	57	2	17	89	1	10	47	43	0
	830	555.6	34	11	5	63	0	35	7	58	0
	850	532.2	52	0	5	79	0	21	31	48	0

## Appendix 7. ROV substrate and habitat summary data for Cluster Point surveyed in 2008.

Site	Line Number	Length (m)	Percentage of substrate on each line					Percentage of habitat on each line			
			Rock	Boulder	Cobble	Sand	Backsides	Hard	Mixed	Soft	Off Transect
<b>SRI-7</b>											
	140	563.0	78	0	0	47	4	50	28	19	3
	200	541.8	84	0	0	50	2	49	35	15	1
	260	569.7	87	8	0	19	0	81	6	13	0
	420	550.2	91	0	1	54	5	46	45	9	0
	530	587.1	78	0	2	79	7	17	61	18	4
	690	564.8	48	0	0	92	1	8	40	52	0
	710	599.4	46	0	2	87	0	13	34	54	0
	900	584.2	39	3	0	67	0	33	6	61	0
	1130	638.1	65	7	4	70	5	26	39	32	3
	1200	622.4	62	17	4	32	4	52	11	25	13
	1330	548.1	56	6	3	86	14	14	42	44	0

## Appendix 7. ROV substrate and habitat summary data for South Point SMR surveyed in 2008.

Site	Line Number	Length (m)	Percentage of substrate on each line					Percentage of habitat on each line			
			Rock	Boulder	Cobble	Sand	Backsides	Hard	Mixed	Soft	Off Transect
<b>SRI-8</b>											
	160	707.0	50	0	0	35	24	44	6	28	22
	270	522.3	26	0	0	92	0	8	18	74	0
	420	701.9	46	0	0	62	8	26	20	41	13
	490	513.5	44	0	3	90	4	10	34	56	0
	570	688.7	32	0	0	82	22	0	32	50	18
	620	474.3	55	0	1	91	0	9	46	45	0
	650	612.6	39	0	5	62	6	28	11	52	9
	730	577.0	40	0	9	88	0	12	28	60	0
	790	692.1	30	2	2	72	1	24	7	66	3
	820	506.9	31	0	4	94	0	6	26	69	0
	920	624.3	19	2	0	86	1	9	9	76	5
	940	534.1	38	0	2	90	3	10	28	62	0
	960	556.7	32	0	0	94	1	6	26	68	0
	1070	511.2	50	0	0	81	0	19	31	50	0
	1100	586.9	37	0	0	69	2	31	6	63	0

## Appendix 7. ROV substrate and habitat summary data for East Point surveyed in 2008.

Site	Line Number	Length (m)	Percentage of substrate on each line					Percentage of habitat on each line				
			Rock	Boulder	Cobble	Sand	Backsides	Hard	Mixed	Soft	Off Transect	
<b>SRI-6</b>												
	490	496.3	27	0	9	75	0	18	8	72	1	
	560	494.8	49	0	9	87	0	13	36	51	0	
	580	519.8	40	0	1	66	3	33	7	59	1	
	610	506.1	41	0	16	86	3	14	27	59	0	
	680	541.7	33	2	2	84	0	15	17	67	0	
	810	531.9	43	4	7	96	3	4	38	57	0	
	880	515.9	22	0	16	100	0	0	22	78	0	
	1670	532.3	59	0	1	98	0	2	57	41	0	
	1760	524.2	59	1	0	44	0	54	5	39	2	
	1840	544.2	62	0	1	58	7	38	24	34	4	
	1890	504.4	40	0	1	67	1	32	8	60	0	
	2060	545.8	63	0	3	79	0	21	42	37	0	
	2130	511.9	30	0	8	90	1	10	20	70	0	
	2820	700.5	75	0	0	60	7	36	38	21	4	
	2890	487.3	75	0	0	94	0	4	70	24	1	
	2950	563.6	67	0	0	65	1	35	32	33	0	
	3010	630.9	42	0	0	45	13	37	5	40	18	
	3200	529.0	22	0	0	98	0	2	20	78	0	

## Appendix 7. ROV substrate and habitat summary data for Gull Island SMR surveyed in 2008.

Site	Line Number	Length (m)	Percentage of substrate on each line					Percentage of habitat on each line			
			Rock	Boulder	Cobble	Sand	Backsides	Hard	Mixed	Soft	Off Transect
<b>SCI-2</b>											
	550	523.9	30	0	0	73	8	27	4	69	0
	660	529.9	34	2	4	92	2	8	27	66	0
	670	572.1	37	0	1	88	2	12	25	63	0
	680	551.1	44	0	1	83	0	17	27	56	0
	700	550.9	26	0	0	96	7	4	22	74	0
	730	533.3	39	2	3	90	1	10	28	61	0
	750	535.6	31	4	1	74	5	26	7	67	0
	830	539.4	38	1	9	91	1	9	29	62	0
	850	553.0	29	6	7	81	4	14	14	71	1
	860	544.8	39	6	10	94	8	6	32	61	0
	870	534.6	30	9	2	95	1	5	25	70	0
	920	528.9	39	2	1	91	2	9	30	61	0
	930	591.2	29	0	2	92	7	7	22	70	1
	940	596.9	30	2	4	94	2	6	23	70	0
	950	525.7	26	3	3	79	0	18	8	74	0
	970	569.2	47	2	9	93	5	6	41	53	0
	1010	526.5	28	4	0	75	7	25	5	70	0
	1020	587.3	44	5	11	88	9	12	32	56	0
	1070	756.8	42	5	4	72	24	20	22	50	9
	1090	583.3	31	2	9	95	11	5	26	69	0
	1120	675.5	13	1	1	77	22	3	10	67	20



## Appendix 7. ROV substrate and habitat summary data for Anacapa Island SMR surveyed in 2008.

Site	Line Number	Length (m)	Percentage of substrate on each line					Percentage of habitat on each line				
			Rock	Boulder	Cobble	Sand	Backsides	Hard	Mixed	Soft	Off Transect	
<b>AI-3</b>												
	10	567.5	50	0	0	89	0	11	39	50	0	
	50	592.2	64	6	0	70	0	30	34	36	0	
	70	579.7	56	2	9	40	3	48	9	38	5	
	100	578.4	82	3	3	58	0	40	42	18	0	
	130	558.0	67	8	5	36	0	60	8	32	0	
	190	583.5	68	4	3	78	5	22	46	32	0	
	730	569.1	26	5	10	93	2	6	20	74	0	
	750	580.4	40	1	4	100	5	0	40	60	0	
	830	557.1	26	11	0	100	2	0	26	74	0	
	850	582.4	39	4	2	96	1	4	34	61	0	
	870	670.0	26	12	9	59	19	20	9	59	12	
	900	577.7	60	5	4	91	0	9	51	40	0	
	940	584.9	41	8	2	67	1	31	10	58	1	
	960	609.7	40	0	2	96	10	4	36	60	0	

Appendix 7. ROV substrate and habitat summary data for **Anacapa Island SMCA** surveyed in 2008.

Site	Line Number	Length (m)	Percentage of substrate on each line					Percentage of habitat on each line			
			Rock	Boulder	Cobble	Sand	Backsides	Hard	Mixed	Soft	Off Transect
<b>AI-1</b>											
	10	520.7	52	0	0	95	0	5	47	48	0
	30	541.1	44	0	0	89	0	11	33	56	0
	50	539.4	30	9	0	74	3	26	5	69	0
	70	530.6	37	1	0	89	1	11	27	63	0
	130	542.4	45	7	9	57	1	34	11	54	0
	160	559.8	74	10	1	67	1	32	42	26	0
	190	636.5	66	0	4	57	3	43	24	34	0
	230	537.4	44	2	1	87	3	12	31	56	0
	270	533.7	62	0	11	71	1	28	34	38	0
	290	553.2	38	0	0	97	0	3	35	62	0
	320	538.2	53	1	5	81	0	19	34	47	0
	540	552.8	33	11	1	70	1	29	9	61	0
	560	532.5	81	9	0	79	4	21	61	19	0
	580	544.0	58	0	0	92	2	8	50	42	0