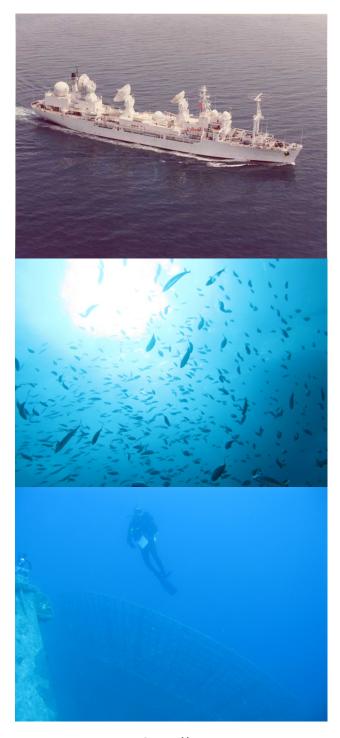
# Final Report Reef Monitoring of the Artificial Reef Gen. Hoyt S Vandenberg Key West, Florida April 30, 2009 to July 19, 2010



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# Final Report REEF Monitoring of Gen Hoyt S Vandenberg

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#### **Background**

The Gen. Hoyt S. Vandenberg is a 523' steel hulled missile tracking ship that was intentionally sunk seven miles off Key West, Florida, on May 27, 2009, to serve as a recreational diving and fishing artificial reef. The ship lies in 140' of water; at its broadest point the deck is 71' wide, creating habitat from 45' to the sandy bottom. The Vandenberg is the largest artificial reef in the Florida Keys National Marine Sanctuary and the second largest in the world. The City of Key West, the Artificial Reefs of the Keys (ARK), Florida Fish and Wildlife Conservation Commission (FWC) and the Florida Keys National Marine Sanctuary (FKNMS) worked closely to obtain, clean, scuttle and sink the vessel, as well as raise funds for the effort. Prior to the sinking, the Reef Environmental Education Foundation (REEF) was contracted by the FWC to conduct a study with pre- and post-deployment monitoring of the fish assemblages associated with the Vandenberg and adjacent reef areas for a period of one year. This document summarizes that effort.

#### **REEF**

REEF is an international non-profit marine conservation organization that runs hands-on grassroots activities designed to educate and engage local communities in conservation-focused activities. REEF is based in Key Largo, Florida, with a Pacific office in Seattle, Washington. The mission of REEF is to conserve marine ecosystems for their recreational, commercial, and intrinsic value by educating, enlisting and enabling SCUBA divers and other marine enthusiasts to become active stewards and citizen scientists. REEF links the diving community with scientists, resource managers and conservationists through marine-life data collection and related activities. REEF coordinates the Volunteer Survey Project, which has trained and involved over 12,000 divers and snorkelers in marine life identification and the collection of useful population and distribution data. This citizen science program has generated one of the largest marine life databases in the world, with over 140,000 surveys conducted to date. REEF's active surveyors achieve one of five ratings of expertise and the most accomplished of these ratings (level 4/5) are considered experts. Active members holding expert surveyor status make up our Advanced Assessment Team and take part in high level assessments for the State of Florida, National Park Service, NOAA and other international organizations.

#### **Monitoring objectives**

The primary objectives of this effort were to descriptively and comparatively quantify the fish assemblages over time at the *Vandenberg* and nearby reefs to document change as a result of increased habitat provided by the sinking of the *Vandenberg*. In 2009, REEF implemented a year-long monitoring effort to document fish species presence/absence, sighting frequency, and estimated abundance over time at the *Vandenberg* site and at seven nearby natural and artificial reef sites (Table 1 and Figure 1). Comparing changes in fish assemblage similarity between sites and over time, documenting progression of recruitment on the ship, and addressing differences in community assemblages were key elements of this effort. Additional efforts to document the occurrence of any non-native marine fishes, orange cup coral (*Tubastraea coccinea*) or titan acorn barnacles (*Megabalanus coccopoma*) were included to facilitate early detection and rapid response removal efforts. These organisms have been known to colonize artificial structures in other areas of Florida (Schofield et al 2009, USGS NAS database 2010) and are of concern due to potential impacts to native systems.

#### <u>Methods</u>

The study employed two methods to quantify fish assemblages; Roving Diver Technique surveys (RDT; Schmitt & Sullivan 1996) and stationery visual counts (Bohnsack and Bannerot, 1986). The RDT is a visual survey method specifically designed to generate a comprehensive species list and sighting frequency and relative abundance estimates. During RDT surveys, divers swim freely throughout a dive site and record every observed fish species. During each survey, divers assign each recorded species one of four log10 abundance categories [single (1); few (2-10), many (11-100), and abundant (>100)]. The RDT survey methodology is employed by the REEF Volunteer Fish Survey Project, and all survey data are archived in the REEF Marine Life Sightings Database. Following each survey dive, the surveyor enters their species data along with survey time, depth (from dive computers), temperature (from dive computers), and other environmental information, including habitat type, current, and visibility (estimated) into the REEF database via on-line data entry. During entry and prior to final uploading, data undergo QC/QA checks including automated and human reviews. Once uploaded into the REEF database, summary data are displayed on the Internet at REEF's homepage (http://www.REEF.org) by geographic location. In addition to a species list, the following metrics can be calculated from survey data for each site:

Sighting Frequency (%SF) = number of surveys reporting species / total number of surveys at that site

and

**Density Score (DEN)**= [(nsx1)+(nfx2)+(nmx3)+(nax4)]/(ns+nf+nm+na)

where n is the number of times each abundance category was assigned and s=single, f=few, m=many and a=abundant (the four categories of abundance recorded during RDT surveys). Using these two metrics, a weighted measure of abundance, Abundance Score, can be calculated as

Abundance Score = %SF \* DEN

These Abundance Scores were used in ranking species for similarity analysis.

The RDT method does not include size estimates and so documenting changes in size structure is not be possible from this dataset. To document sizes of fish over time, we conducted stationary visual (SV) surveys on the *Vandenberg* and at one nearby reference site (Joe's Tug). During SV surveys the diver is stationery in the middle of an imaginary cylinder with a radius of 7.5m, recording all species present in the cylinder for a period of 5 minutes. Following the 5 minute list compilation, an abundance count and the corresponding minimum, maximum and mean sizes are recorded for each species present in the cylinder area. Additional information on time of day, depth, current, and visibility are recorded.

During all surveys, the occurrence of non-native marine species (including lionfish; *Pterois volitans/miles*), titan acorn barnacle (*Megabalanus coccopoma*), and orange cup coral (*Tubastraea coccinea*), was recorded and the information was passed to FKNMS staff within 48 hours of the sighting.

Each sampling event was conducted by a team of REEF Advanced Assessment Team (AAT) members. The AAT is comprised of REEF surveyors who have achieved a Level 4 or 5 REEF experience level (Expert rating) through testing and a requisite number of diving surveys and have considerable experience and expertise in surveying local fish populations.

Eight sites were surveyed during each monitoring event. These included the *Vandenberg* sinking site, six adjacent natural reefs, and one artificial reef (Table 1). Dives were conducted using scuba from a commercial dive vessel (Dive Key West) with between 5-8 divers taking part in each dive. Shallow dive times were standardized to 60 minutes for each diver while deeper dives were standardized to 30 minutes. As per the original monitoring agreement, Vandenberg dives did not exceed 100 fsw nor did they penetrate any part of the inside of the ship. Vandenberg surveys were conducted primarily during swims along the main deck and superstructure. Surveying

was conducted once prior to deployment in April 2009. Post-deployment monitoring began 34 days following deployment and continued quarterly for the following three quarters for a total of five monitoring events. Between five and eight RDT surveys were conducted at each site during each monitoring period (Forty surveys were conducted during the March 2010 event, as opposed to the planned 48, due to diver equalization problems leaving the team one diver short. Eastern Dry Rocks sites also had two other events with only five surveys due to diver health issues and one set of point count data was lost from Joe's Tug when a diver was boarding the vessel during the November 2009 event.) (Table 2).

Table 1

REEF SITE NAME	REEF Code	DEPTH	TYPE	LOCATION
Western Sambos Deep	34080094	60'-100'	Natural	24º 28.66' N/ -81º 42.93' W
Western Sambos Shallow	34080001	15'-30'	Natural	24º 28.75' N/ -81º 42.98' W
Joe's Tug	34080010	40'-65'	Artificial	24º 27.83' N/ -81º 44.24' W
Marker 32 Deep	34080095	60'-100'	Natural	24º 28.25' N/ -81º 44.72' W
Marker 32 Shallow	34080023	15'-30'	Natural	24º 28.34' N/ -81º 44.73' W
Eastern Dry Rocks Deep	34080096	60'-100'	Natural	24º 27.45' N/ -81º 50.44' W
Eastern Dry Rocks Shallow	34080008	15'-30'	Natural	24º 27.52' N/ -81º 50.67 W
Gen. Hoyt S Vandenberg	34080097	40'-100'	Artificial	24º 27.60' N/ -81º 44.25' W

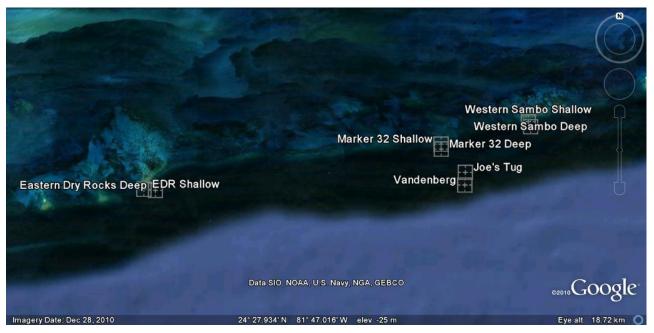
Table 2. RDT and Point Count (PC) survey effort during monitoring events 1-5.

	4/30-5/3,2009	6/30-7/4,2009	11/13-11/14,2009	3/27-3/28,2010	7/14-7/19,2010
	Event1	Event 2	Event 3	Event 4	Event 5
Vandenberg	6	6+2pc	6+2pc	5+2pc	7+2pc
Joe's Tug	6+2pc	6+2pc	6+1pc	5+2pc	8+2pc
Western Sambos Deep	6	6	6	5	6
Western Sambos Shallow	7	6	6	5	6
Marker 32 Deep	6	6	6	5	6
Marker 32 Shallow	6	6	6	5	6
Eastern Dry Rocks Deep	6	6	5	5	5
Eastern Dry Rocks Shallow	6	6	5	5	5
Total RDT	49	48	46	40	49
Total PC	2	4	3	4	4

#### **Site Descriptions**

The *Vandenberg* is located on a level sand bottom at a depth of approximately 140′. The seven reference sites were selected in consultation with FWC staff and represent a range of nearby natural and artificial structure (Figure 1 and Table 1)). The closest structure to the Vandenberg is a small patch of hard coral substrate and remnant sunken vessel rubble (*Joe's Tug*) located approximately 0.25 miles from the sinking location in a depth of approximately 70′. The nearest substantial reef structures are the natural reef edges at Marker 32 deep and Marker 32 (Topino Buoy), approximately 0.80 miles shoreward of the sinking site. These reefs include a sloping drop-off featuring a sediment covered low profile hardbottom with sparse coverings of small hard corals, soft corals such as gorgonians, and sponges and a shallow spur and groove reef featuring high profile coral ridges and *Montasrea* coral heads separated by narrow sand channels. Located approximately 1.8 miles east of the sinking site are Western Sambos Deep and Western Sambos Shallow (Haystacks buoy). These two sites are similar in depth and structure to the Marker 32 deeper and shallower sites, but differ from all other sites in that they are located inside a no-take Ecological Reserve zone of the FKNMS. The furthest study sites from the *Vandenberg* (6.5 miles West) are Eastern Dry Rocks Deep and Shallow, again featuring a deeper sloping reef similar in depth and structure to the Deep Sambos and Marker 32 site, and a shallow spur and groove site at the West end of Eastern Dry Rocks.

Figure 1. Aerial image of survey sites

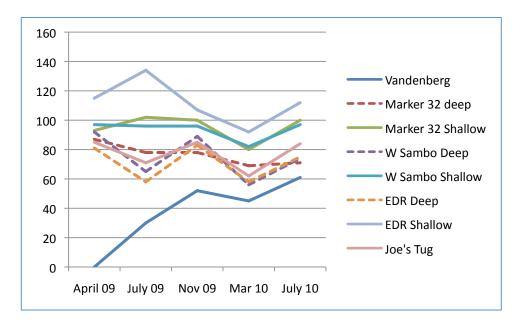


#### **Results and Discussion**

#### **RDT** surveys

A total of 218 fish species were identified from all sites within the study area between April 2009 and July 2010. Of these, 59 species were found at all sites and 34 species were sighted at a single site (Appendix 1). Fish species rapidly colonized the *Vandenberg* following deployment with thirty species documented on the wreck less than a month after it was deployed (Figure 2). During the November 2009 survey, the team documented 52 species and within six months of sinking, 100 different fish species had been documented on REEF surveys at the *Vandenberg*. Total number of species reported from the ship increased to 123 species by the end of the survey period. When comparing species richness among sites, the shallow sites consistently showed the highest richness during each monitoring event (Fig 2). Cumulatively, the Eastern Dry Rocks Shallow and Western Sambos Shallow sites had the most species reported during the monitoring period with 182 and 157 species, respectively, and the Marker 32 Deep was the lowest with 116 species reported (Appendix 1). A comprehensive list of fish species recorded on the *Vandenberg* during REEF surveys (both during the coordinated monitoring events and during individual REEF volunteer efforts) is given in Appendix 2A and 2B, respectively.

Figure 2 Number of fish species reported at each site during each monitoring event



#### **RDT Analysis**

The software package Primer (by Marti Anderson) was used in calculating statistics and generating MDS ordination plots. The persistence in species present at the Vandenberg (e.g. the similarity of which species were seen during each monitoring event) as measured by the Jaccard Coefficient (J'), gradually increased through time (Figure 3). The Jaccard Coefficient measures similarity between sample sets, and is defined as the size of the intersection divided by the size of the union of the sample sets. In this instance we are measuring the percent similarity in species present between two sites or between two time points at a given site. A J' of 0.7 indicates a 70% overlap in species present between the two samples. Relatively low J' values between the first few monitoring events reflect the early colonization of the artificial reef. Over time we would expect to see the similarity in species present from one monitoring event to the next increase as the fish community on the ship became more stable. Indeed, the difference between the March 2010 and final July 2010 events show an overlap of close to 0.60 (indicating overlap of 60% in species present from one time period to the next, which approaches the similarity at natural reference sites). To evaluate the persistence in species composition (incorporating both species presence and abundance), Spearman Similarity Coefficient values were calculated based on the rank abundance scores of species with a sighting frequency of at least 10% at each site (Table 4). The similarity in species composition was generally lowest for the three shallow sites and highest at the deeper reference sites. This is likely due to the fact that shallow sites are not only more diverse, but also the habitat more variable than at the deeper sites. Lower similarities exhibited during the June 2009 and March 2010 events (Figure 4) may be due to poor visibility effects on both observers and on fish behaviours (Table 3).

Table 3. Estimated visibility across sites and survey periods

	March 09	June 09	November 09	March 10	July 10
Vandenberg	60	30	45	20	80
Joe's Tug	40	20	30	15	60
Eastern Dry Rocks	25	15	35	25	25
Eastern Dry Rocks Deep	20	8	35	10	30
Marker 32	20	10	35	10	25
Marker 32 Deep	20	12	30	8	18
Western Sambos	20	10	35	15	15
Western Sambos Deep	20	10	40	8	15
Average Visibility (ft)	28.15	14.37	35.62	13.87	33.5

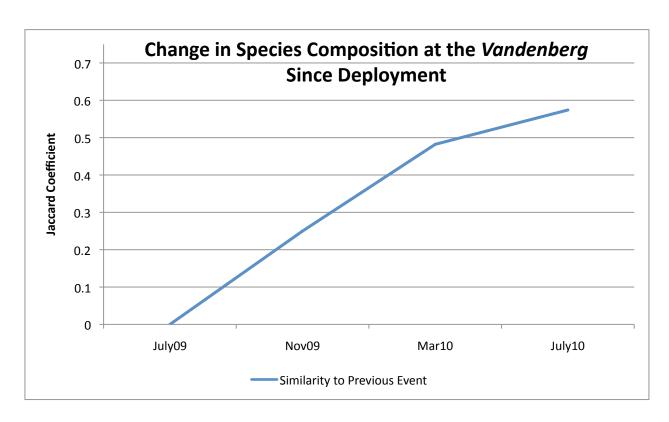


Figure 3. Change in fish species composition at the Vandenberg through time, as measured by the Jaccard Coefficient of each monitoring event compared with species recorded during the previous monitoring event.

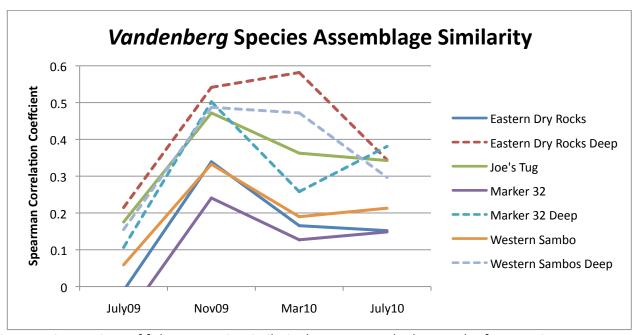


Figure 4. Comparison of fish community similarity between Vandenberg and reference sites.

Table 4. Similarity in species present among monitoring events for each site, measured by percent overlap in species present. Values given are mean Jaccard Coefficient (J') values for all events.

Site	J'
Eastern Dry Rocks	0.492
Eastern Dry Rocks Deep	0.609
Joe's Tug	0.633
Marker 32	0.640
Marker 32 Deep	0.288
Vandenberg	0.399
Western Sambos	0.553
Western Sambos Deep	0.665

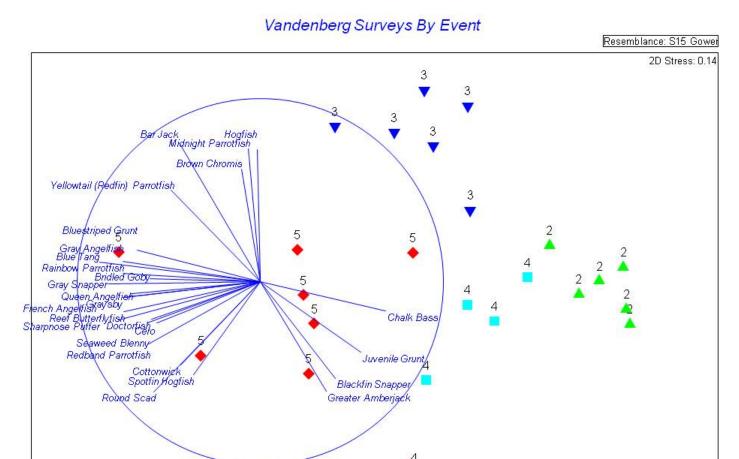
<sup>\*</sup>Value given for the Vandenberg does not include the similarity between monitoring time 1 and 2 (which is 0, due to no species sighted). If that is included, the value would be 0.299.

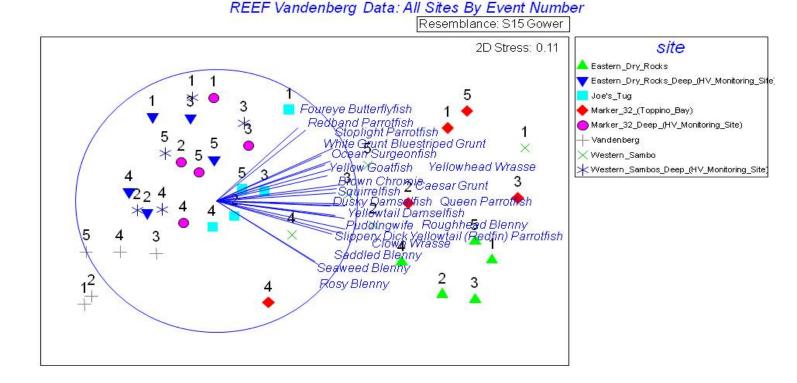
#### **Ordination plots**

In order to determine the degree of similarity between the fish species assemblage at the *Vandenberg* site over time and in comparison to other reference sites, we developed Multi-Dimensional Scaling (MDS) ordination plots based on the Gower similarity index using presence/absence and abundance. In Figure 4, Pearson's correlations show that the earlier *Vandenberg* surveys were characterized by sand dwelling and pelagic species such as chalk bass, juvenile grunts, blackfin snapper, and amberjack. Subsequently, in later surveys, correlations were driven by angelfishes, parrotfishes, surgeonfishes, and many other reef-dwelling species. This figure also shows that individual surveys tend to group together based on survey date, showing a higher degree of similarity between divers during the same event compared to differences between events. This similarity provides support for diver consistency and accuracy in observations.

When comparing the *Vandenberg* to reference sites, the fish communities at the ship were most similar to those at the deep reference sites and the *Vandenberg* becomes more similar to these sites over time (Figure 5). Figure 5 also shows vectors representing similarity between sites driven by butterflyfish, parrotfish, blennies, and other reef-dwelling species.

Figure 4. Ordination plot of Vandenberg fish assemblage over time. Numbers/symbols represent monitoring events 2-5.





#### Stationary Visual Point Count Data

During each survey event at the *Vandenberg* and Joe's Tug, point count (PC) survey data were gathered by two divers during the beginning of each dive. Following point count surveys divers completed RDT surveys for the remainder of their dives and included PC sightings in their RDT survey data. Surveys were conducted at approximately 80' on the upper decks of the Vandenberg and at 70' within 100' of the mooring at Joe's Tug. Abundance and size of each fish species was recorded and data were entered into an Excel spreadsheet (attached Appendix 3). Differences between surveys were very high and with only 2-3 surveys per event, statistical analysis on this low sample size is unable to determine variation or establish error. For these reasons, these data are included as reference only. Of note in the point count results are the large numbers of individual fish on the *Vandenberg* during the March and July 2010 surveys (see Table 4) dominated primarily by round scad observed feeding on plankton in the water column above the ship. The larger number of individual fish documented on Joe's Tug consisted primarily of french and bluestriped grunts and masked gobies.

Table 5. Point count data representing number of species and number of fish seen in each survey.

	04/09	04/09	07/09	07/09	11/09	11/09	03/10	03/10	07/10	07/10
	species	# fish								
Vandenberg										
Diver 1	0	0	4	70	9	43	11	4561	20	699
Diver 2	0	0	6	49	12	87	12	125	14	226
Diver 3	0	0	-	-	7	93	-	-	-	-
Joe Tug										
Diver 1	23	113	25	228	15	112	14	213	18	157
Diver 2	18	209	-	-	30	99	16	266	30	423
Diver 3	23	315	-	-	20	464	-	-	-	-

#### **Exotic Species**

Lionfish (*Pterois volitans*) were the only non-native species observed during the project monitoring events. Team members reported lionfish from Joe's Tug and from Eastern Dry Rocks during events in March and July 2010. These reports were forwarded immediately to the FKNMS. Lionfish were not reported from project surveys at the Vandenberg site. However, both lionfish reports and removals by recreational divers have taken place on the ship since its sinking. Most lionfish reports from the site have come from deeper areas near the bottom of the ship, at depths beyond those included in this monitoring effort, and removals by volunteers have been ongoing in efforts to keep populations down.

#### Conclusion

REEF monitored the fish assemblages of the *Vandenberg* and seven nearby natural and artificial reefs in Key West, Florida, from April 2009, prior to the ship's sinking, through July 2010. In the 12 months following deployment, fishes began to take residence on the *Vandenberg*. The total number of species present increased over time, from 30 species documented on the wreck approximately one month after it was sunk to a total of 123 species documented during the entire report period. Notable species such as little tunny, school bass, mackerel scad, king mackerel, almaco jack, and bank butterflyfish were sighted only on the *Vandenberg*. The overall persistence in species presence on the wreck was relatively low between early monitoring events just following deployment, however, by the end of year one, persistence in species composition increased to levels closer to those of the surrounding natural reefs. Currently, the species composition of the *Vandenberg* just one year after deployment appears more similar to that of the deeper, natural reefs and least similar to that of the shallow reference sites.

#### **Recommendations for Future Assessments**

After completing the first year of the *Vandenberg* assessment, REEF offers two recommendations for continuation of this monitoring program:

- 1) Increase survey effort on the artificial reef structure itself. Due to the large size of the *Vandenberg* (500+') and the depth (~100-110' survey area), it is often impossible to survey the entire deck structure with a six-person team on a single dive. Sea conditions, currents, mooring buoy availability, and visibility also conspire to make a single assessment dive that covers the entire wreck untenable. It is recommended that survey effort be doubled on the *Vandenberg*, covering half the ship on each dive.
- 2) Increase effort of Stationary Visual surveys. Data resulting from only two point count surveys is not statistically capable of providing any measure of variation. In addition, the area (~350 sq meters) assessed during two point count surveys represents such a small portion of the overall ship structure that placement of the point count

surveys could widely influence results. It is recommended that at least 6 point counts be conducted on the site at set stations on the wreck to address biomass and size distribution questions.

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Appendix 1. Species sightings across monitoring sites, Green represents sightings at all sites, Yellow represents sightings at only a single site.

Species				Western	Western			
•		Marker 32	Marker 32	Sambos	Sambos	EDR	EDR	Joe's
	Vandenberg	Deep	Shallow	Deep	Shallow	Deep	Shallow	Tug
Almaco Jack	X							
Atlantic Spadefish						x	x	X
Balloonfish			X		x		X	
Ballyhoo							X	
Banded								
Butterflyfish	Х	Х	Х		Х	Х	Х	Х
Banded Jawfish							X	
Bandtail Puffer	Х	Х		Х		Х	Х	
Bank Butterflyfish	X							
Bar Jack	X	X	X	X	X	X	X	X
Barred Blenny Barred	X							
Cardinalfish	X		X	X			X	
Barred Hamlet	x	x			x			
Beaugregory Bermuda	Х	Х	Х	Х	x	X	×	x
Chub/Yellow Chub	x	×	x	×	×	X	×	x
Bicolor Damselfish	x	×	x	×	×	х	×	x
Bigeye						×		
Black Grouper	х	х	х	х	×	х	х	X
Blackfin Snapper	Х						х	
Black Margate		X	X	×	x	x	X	X
Blackbar								
Soldierfish			X				x	
Blackear Wrasse					X		X	
Blue Angelfish	X	X	X	X	x	x	X	X
Blue Chromis	X	X	X	X	X	X	X	X
Blue Dartfish								
(Blue Goby)		X	X	X			X	X
Blue Hamlet		X		X	X	X	X	X
Blue Parrotfish	X	Х	Х	X	X		X	X
Blue Runner	X	X		X	X	Х	Х	X
Blue Tang	X	X	X	X	X	X	X	X
Bluehead	X	X	X	X	X	X	X	X
Bluelip Parrotfish	X	X	X	X	X		X	X
Bluestriped Grunt	X	X	X	Х	X	X	X	X
Boga	Х							Х
Bridled burrfish					X			
Bridled Goby	X	X	X	X	X	X	X	X
Brown Chromis Bucktooth	X	X	Х	Х	X	X	X	X
Parrotfish					x		X	
Butter Hamlet	х	×	×	X	X	X	X	X
Caesar Grunt	×	×	×	X	X	Α	X	X
Cero	X	×	×	X	X	X	X	×
Chalk Bass	X	Α	<u> </u>	X	X	X	X	X
Cherubfish	X		x	^	X	^	^	X
Clown Wrasse	X	×	X		X	X	X	X
15	^	^	^		^	^	^	^

Cocoa Damselfish	х	x	х	x	Х	×	X	X
Colon Goby	x	х	х	х	х		х	x
Coney		x		x	X	×	X	x
Cottonwick	X		x		×	x	×	x
Creole Wrasse	X	X	X	X	×	x	x	X
Creole-fish	х						х	Х
Crevalle Jack	X					x	X	
Cubera Snapper	x					x		
Cubbyu								X
Dash Goby					X		X	
Darkheaded								
Blenny			X	X				
Doctorfish	x	×	x	x	×	x	x	x
Dog Snapper			х	х	×	x	x	
Dusky Cardinalfish					×			
Dusky Damselfish	x	x	х	х	x		x	х
Dusky Jawfish			x		×		x	
Dusky Squirrelfish			x				x	
Emerald Parrotfish					×		×	
Flamefish			x		×		×	
Foureye								
Butterflyfish	x	×	x	x	X	×	X	×
French Angelfish	X	X	X	x	X	x	X	x
French Grunt	X	X	x	X	×	X	×	
Gag			X	X	×		x	X
Glasseye Snapper			Х					
Glassy Sweeper			Х		×		X	
Goldentail Moray			x		x		x	x
Goldspot Goby	х	x	х	х	×	×	×	X
Goliath Grouper								
(Jewfish)	Х	Х		Х		X	X	Х
Gray Angelfish	X	X	X	X	×	x	×	X
Gray Snapper	X	X	X	X	X	x	X	X
Gray Triggerfish	X						Х	
Graysby	X	x	X	X	×	×	×	X
Great Barracuda	X	X	X	X	X	X	X	X
Greater								
Amberjack	X			X	Х			X
Greater Soapfish			X				X	X
Green Moray		X	X	X	X	X		X
Green Razorfish		Х	Х		Х		Х	
Greenblotch	V	V	V	V	v	v	v	V
Parrotfish Hamlet - Juvenile	X	X	X	X	X	X	X	X
Harlequin Bass	<b>V</b>	<b>V</b>	X	X	X	X	X	X
	X	X	X	X	X	X	X	X
Highhat Hogfish	V	X	X		X	X	X	X
Honeycomb	Х	Х	X	X	X	X	X	X
Cowfish		X					x	X
Horse-Eye Jack	X	^			X		X	^
Hovering Dartfish	^				^		۸	
(Hovering Goby)			X	X		x		
Jolthead Porgy		×	X	X	X		х	
Juvenile Grunt	х	X	x	X	X	X	X	X
King Mackerel	X							
Knobbed Porgy		Х	×	×	x	X	Х	
				•			••	

Lancer Dragonet		x						
Lane Snapper		х	x	X	x	x	×	X
Lantern Bass		X	x		x		×	
Leopard Goby						×		
Little Tunny	X							
Longfin								
Damselfish	X	X	X	X	x	X	x	X
Longjaw								
Squirrelfish		X	X					
Longsnout Butterflyfish	X					V		
Longspine	^					Х		
Squirrelfish		x	x	x	x	×	X	х
Mackerel Scad	X							
Mahogany								
Snapper	X	X	×	x	x	x	×	
Marbled Blenny							×	
Masked								
Goby/Glass Goby	X	X	×	x	×	×	×	×
Midnight								
Parrotfish	Х	X	Х		Х	х	Х	x
Mirrorwing								
Flyingfish Common					X			
Mutton Snapper		X	X	X	X	X	X	X
Nassau Grouper		X		Х	X		X	
Neon Goby		X	X	X	X	X	Х	X
Nurse Shark	X		X	X	Х	Х	Х	
Ocean Surgeonfish	v	v	v	v	v	v	v	v
	X	X	X	Х	X	X	X	X
Ocean Triggerfish Orangespotted	X				Х	X	X	Х
Filefish			×		X		X	
Pallid Goby		x	×	X	X	X	X	x
Papillose Blenny			×	~		^		,
Permit					х		X	
Porcupinefish			×		X		X	X
Porkfish	Х	X	×	X	X	X	X	X
Princess Parrotfish	X	×	×	×	X	×	x	X
Puddingwife	^	^	×	×	X	^	×	X
Pugjaw Wormfish			^	^	X		^	^
Purple Reeffish	X	X	X	x	X	X	X	X
Purple Reemsii Purplemouth	*	<b>X</b>	^	X	<b>X</b>	X	X	
Moray							×	
Pygmy Filefish	X						.,	
Queen Angelfish	X	×	×	x	Х	X	×	X
Queen Parrotfish	X	×	×	×	X	X	×	X
Queen Triggerfish	X						***	
Rainbow								
Parrotfish	X	x	x		X	x	X	×
Rainbow Runner	X							×
Rainbow Wrasse							Х	
Red Grouper				x	х		X	
Red Hind		x	x	X	X	×	X	
Red Lionfish								
(exotic)		x					X	×
Redband								
Parrotfish	X	x	x	X	Х	x	Х	×
Redeye Triplefin					X			

Redlip Blenny Redspotted			X		X		x	
Hawkfish	Х		X		X		X	
Redtail Parrotfish	X	X	X	X	X	×	x	X
Reef Butterflyfish	X	X	X	X	X	x	x	X
Reef Croaker						X	Х	Х
Reef Shark							×	
Reef Squirrelfish			X				X	
Rock Beauty	X	X	X	X	X	×	×	X
Rock Hind		X	X	X	X	x	X	X
Rosy Blenny			X		X	x	x	
Rosy Razorfish			X		x		x	
Roughhead								
Blenny		X	X	X	X	X	x	Χ
Round Scad	X							X
Rusty Goby				X	X		X	
Saddled Blenny	Х	Х	Х	х	х	x	x	X
Sand Diver						X		Х
Sailfin Blenny			x		x		x	
Sailors Choice	Х	X	X	x	X		x	
Sand Diver		X		X	X		x	
Sand Tilefish			X				X	
Saucereye Porgy		X	X	X	x	X	X	X
Scamp	X			X		X	X	
School Bass	X			^		^	^	
Schoolmaster	×	×	×	Х	X	x	х	x
Scrawled Cowfish	<b>X</b>	X	X	X	X	X	X	X
Scrawled Filefish	V	^				^		
	X		X	X	X	v	X	X
Seaweed Blenny	X		X		X	X	X	X
Sergeant Major	X	X	X	X	X	.,	X	X
Sharksucker	X	X	X	X	X	X	X	X
Sharpnose Puffer	х	Х	X	Х	×	Х	X	X
Shy Hamlet							X	
Silver Porgy Silversides,			X					
Herrings,								
Anchovies	X						X	
Slender Filefish	X		x	X	×		X	x
Slippery Dick	X	X	X	X	X	X	X	X
Smallmouth Grunt	X	×	×	^	X	X	X	^
Smooth Trunkfish	<b>A</b>	^	×	x	X	^	X	X
Southern Stingray			^	^	X	X	X	^
Spanish Grunt	x	x	Х	X	X	X	X	X
Spanish Hogfish								
Spotfin	X	X	X	X	X	X	X	×
Butterflyfish	x	x	x	x	×	x	x	×
Spotfin Hogfish	X	×	**	X		X	X	X
Spottail Pinfish	^	X	x	^		^	X	Λ
Spotted Drum		^	×	x	X	x	X	
Spotted Eagle Ray			^	^	^	^	X	
Spotted Lagle Ray  Spotted Goatfish	x	×	X	X	X	X	X	X
Spotted Moray	^	X	X	^	^	X	X	^
Spotted Moray Spotted		^	^			^	^	
Scorpionfish	х	X	X	X	×		X	
Spotted Trunkfish		X	x	X	×		X	X
Squirrelfish		X	x	X	X	x	X	X
			• •		* *		• •	

Starksia Blenny								
(unidentified)				X				
Stoplight								
Parrotfish	X	X	x	x	X	×	X	×
Striped Grunt	X		x					
Striped Parrotfish	X	x	x	x	×	x	x	×
Sunshinefish	Х	X	х	Х		Х	X	X
Tan Hamlet				X			X	
Tarpon	X		X		x		X	
Threespot								
Damselfish	Х	X	X	X	X	Х	Х	×
Tiger Grouper							X	
Tobaccofish	Х	Х	X	Х	X		X	X
Tomtate	X	X	X	X	x	X	x	×
Townsend								
Angelfish		X		X		X	X	X
Triplefin species			X	X	Х		Х	X
Trumpetfish	X	X	X	х	X	x	X	x
Twospot								
Cardinalfish	X							
White Grunt	X	X	X	X	Х	Х	Х	X
White Margate	X		X	X	Х		Х	
Whitespotted Filefish			X			X	х	
Wrasse Blenny	.,							
Yellow Goatfish	X	X	X X	x	X	X X	X X	X
Yellow Jack	X	X		X				
Yellow Stingray	X		X X		X	X	Х	X
Yellowcheek			Х					
Wrasse		X	x					×
Yellowface			7.					
Pikeblenny							×	
Yellowfin Grouper	Х					х	x	
Yellowfin Mojarra				x		x		
Yellowhead								
Jawfish		X	x	x	x		x	X
Yellowhead								
Wrasse	X	X	X	X	X	X	X	X
Yellowmouth	.,							
Grouper Yellowtail (Redfin)	Х					Х	Х	
Parrotfish	x	×	×	×	x	x	x	×
Yellowtail	^	^	^	<b>X</b>	^	^	^	^
Damselfish		X	×	x	Х	Х	Х	×
Yellowtail Reeffish	X	X		x	Х	x		×
	X	X	x	X	Х	X	Х	X

Appendix 2 – Summary of Vandenberg sightings from REEF database, between 4/1/2009 and 7/31/2010; report can also be accessed with this URL-

http://www.reef.org/db/reports/geo/TWA/34080097/2009-04-01/2010-07-31

Appendix 3 - Spreadsheet of Stationery Visual data



Published on Reef Environmental Education Foundation (REEF) (http://www.reef.org)

<u>Home</u> > <u>Database Reports</u> > <u>Geographic Reports</u> > Geographic Zone Report

# **Geographic Zone Report**

Tropical Western Atlantic	Vandenberg (Hoyt Vandenberg Artificial Reef) (34080097)
Start Date:  Apr   1   2009	End Date:  Jul
Species Display: Show Com	M: mon names 💠
Change  Reset report options (4)	

Survey Type: SA = Species & Abundance; SO = Species Only $\frac{?}{2}$  Click on a geographic place name to expand its sub-zones, or on a numeric zone ID to include only sites under that ID

		Surveys			Bottom Time	
		Ex	pert	No	vice	BOLLOIII TIIIIE
Code	Site	SA	so	SA	so	(H:M)
<u>TWA</u> [3]						
3 [4]	FLORIDA (East Coast and Keys)	36	0	12	3	23:54
34 [5]	KEYS (Key Largo to Key West, including Fla. Bay)	36	0	12	3	23:54
3408 [6]	Key West	36	0	12	3	23:54
34080097 [7]	Vandenberg (Hoyt Vandenberg Artificial Reef)	36	0	12	3	23:54
TOTALS		36	0	12	3	23:54

# **Species**

# Bar length corresponds to sighting frequency Color saturation corresponds to density score

Great Barracuda	SF: 86.3% I DEN: 2.5
Yellowtail Snapper	SF: 78.4% I DEN: 3.2
<u>Bluehead</u>	SF: 74.5% I DEN: 3.2
Bicolor Damselfish	SF: 72.5% I DEN: 2.9
Sharpnose Puffer	SF: 66.7% I DEN: 2.2
Blue Tang	SF: 62.7% I DEN: 2.2
Reef Butterflyfish	SF: 62.7% I DEN: 2.2
Gray Snapper	SF: 60.8% I DEN: 3
Purple Reeffish	SF: 58.8% I DEN: 2.2
Harlequin Bass	SF: 52.9% I DEN: 1.8
<u>Sunshinefish</u>	SF: 51%   DEN: 2.5
Rainbow Parrotfish	SF: 51%   DEN: 1.4
Scrawled Filefish	SF: 49%   DEN: 1.5
Spanish Hogfish	SF: 47.1%   DEN: 1.8
Bar Jack	SF: 47.1%   DEN: 2.7
Queen Angelfish	SF: 45.1%   DEN: 1.7
Ocean Surgeonfish	SF: 43.1%   DEN: 2.2
Gray Angelfish	SF: 43.1%   DEN: 1.5
<u>Creole Wrasse</u>	SF: 41.2%   DEN: 2.7
<u>Porkfish</u>	SF: 39.2%   DEN: 1.7
Round Scad	SF: 37.3% I DEN: 4
Bluestriped Grunt	SF: 35.3% I DEN: 2.1
Striped Grunt	SF: 33.3%   DEN: 3.2
Rock Beauty	SF: 33.3%   DEN: 1.5
Yellowtail Reeffish	SF: 33.3%   DEN: 1.9
<u>Cero</u>	SF: 31.4%   DEN: 2.1
Spotfin Hogfish	SF: 31.4%   DEN: 1.9
Redband Parrotfish	SF: 29.4%   DEN: 2.4
Striped Parrotfish	SF: 29.4%   DEN: 2.1
<u>Hogfish</u>	SF: 29.4%   DEN: 1.8
<b>Butter Hamlet</b>	SF: 27.5%   DEN: 1.6
Creole-fish	SF: 27.5%   DEN: 2.3

French Angelfish	SF: 27.5% I DEN: 1.6
Brown Chromis	SF: 27.5%   DEN: 2.4
<u>Tomtate</u>	SF: 27.5%   DEN: 2.1
Greater Amberjack	SF: 25.5% I DEN: 2.2
<u>Trumpetfish</u>	SF: 23.5%   DEN: 1.4
<u>Graysby</u>	SF: 23.5%   DEN: 1.8
Yellow Jack	SF: 23.5%   DEN: 2.4
<u>Doctorfish</u>	SF: 23.5%   DEN: 1.7
<u>Cottonwick</u>	SF: 21.6%   DEN: 1.8
Juvenile Grunt	SF: 21.6%   DEN: 3.4
Seaweed Blenny	SF: 19.6%   DEN: 2.2
<u>Silversides, Herrings,</u> Anchovies	SF: 17.6%   DEN: 4
Stoplight Parrotfish	SF: 17.6%   DEN: 2.8
Redspotted Hawkfish	SF: 17.6%   DEN: 1.6
<u>Yellowtail (Redfin)</u> Parrotfish	SF: 15.7%   DEN: 1.9
Redtail Parrotfish	SF: 15.7%   DEN: 1.6
Blackfin Snapper	SF: 13.7%   DEN: 2
Bridled Goby	SF: 13.7%   DEN: 2.1
Spotfin Butterflyfish	SF: 13.7%   DEN: 1.9
Chalk Bass	SF: 13.7%   DEN: 2
Yellowhead Wrasse	SF: 13.7% I DEN: 3.1
Midnight Parrotfish	SF: 13.7%   DEN: 1.4
<u>Tobaccofish</u>	SF: 13.7%   DEN: 1.3
Blue Chromis	SF: 11.8% I DEN: 2.8
Spotted Goatfish	SF: 11.8% I DEN: 1.8
Slender Filefish	SF: 11.8%   DEN: 1.5
Queen Parrotfish	SF: 11.8%   DEN: 2
Almaco Jack	SF: 11.8% I DEN: 2.5
Blue Parrotfish	SF: 11.8%   DEN: 2
Yellowfin Grouper	SF: 11.8%   DEN: 1.2
<u>Scamp</u>	SF: 11.8%   DEN: 1
Goliath Grouper (Jewfish)	SF: 11.8%   DEN: 1.3
Greenblotch Parrotfish	SF: 11.8%   DEN: 2
French Grunt	SF: 9.8%   DEN: 2

Goldspot Goby	SF: 9.8%   DEN: 1.8
<u>Sharksucker</u>	SF: 9.8% I DEN: 2
Black Grouper	SF: 9.8% I DEN: 1.2
Princess Parrotfish	SF: 9.8% I DEN: 1.6
Cubera Snapper	SF: 9.8% I DEN: 1.2
Spotted Scorpionfish	SF: 7.8% I DEN: 1.8
White Grunt	SF: 7.8% I DEN: 1.8
Smallmouth Grunt	SF: 7.8% I DEN: 2.8
Sailors Choice	SF: 7.8% I DEN: 2
Yellowmouth Grouper	SF: 7.8% I DEN: 1.3
Banded Butterflyfish	SF: 7.8% I DEN: 1.8
Barred Hamlet	SF: 7.8%   DEN: 1
Rainbow Runner	SF: 7.8% I DEN: 2.5
Pygmy Filefish	SF: 5.9% I DEN: 1.3
Sergeant Major	SF: 5.9% I DEN: 1.7
<u>Boga</u>	SF: 5.9% I DEN: 3.7
School Bass	SF: 5.9% I DEN: 3.3
Mackerel Scad	SF: 5.9% I DEN: 2.7
<u>Schoolmaster</u>	SF: 5.9% I DEN: 2.7
Bluelip Parrotfish	SF: 5.9% I DEN: 2.7
Queen Triggerfish	SF: 3.9% I DEN: 1.5
Blue Runner	SF: 3.9% I DEN: 2.5
Saddled Blenny	SF: 3.9% I DEN: 2
Caesar Grunt	SF: 3.9% I DEN: 2
<u>Beaugregory</u>	SF: 3.9% I DEN: 2.5
Masked Goby/Glass Goby	SF: 3.9%   DEN: 2.5
Foureye Butterflyfish	SF: 3.9% I DEN: 1.5
Spanish Grunt	SF: 3.9% I DEN: 2
White Margate	SF: 3.9% I DEN: 2
Cherubfish	SF: 3.9% I DEN: 1.5
Horse-Eye Jack	SF: 3.9%   DEN: 4
Cocoa Damselfish	SF: 3.9%   DEN: 1.5
Dusky Damselfish	SF: 3.9%   DEN: 1.5
Longfin Damselfish	SF: 3.9%   DEN: 2
<b>-</b>	

Wrasse Blenny	SF: 2% I DEN: 1
Barred Blenny	SF: 2% I DEN: 2
Twospot Cardinalfish	SF: 2% I DEN: 2
King Mackerel	SF: 2% I DEN: 1
Loggerhead Sea Turtle	SF: 2% I DEN: 1
Little Tunny	SF: 2% I DEN: 3
Bank Butterflyfish	SF: 2% I DEN: 1
Longsnout Butterflyfish	SF: 2% I DEN: 1
Barred Cardinalfish	SF: 2% I DEN: 1
Bermuda Chub/Yellow	SF: 2% I DEN: 2
<u>Chub</u>	
Blue Angelfish	SF: 2% I DEN: 2
Gray Triggerfish	SF: 2% I DEN: 2
Crevalle Jack	SF: 2% I DEN: 2
Mahogany Snapper	SF: 2% I DEN: 2
Bandtail Puffer	SF: 2% I DEN: 1
Ocean Triggerfish	SF: 2% I DEN: 2
Colon Goby	SF: 2% I DEN: 1
Threespot Damselfish	SF: 2% I DEN: 2
Nurse Shark	SF: 2% I DEN: 1
Slippery Dick	SF: 2% I DEN: 3
Yellow Goatfish	SF: 2% I DEN: 2
Clown Wrasse	SF: 2% I DEN: 3
<u>Tarpon</u>	SF: 2% I DEN: 2

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**Source URL:** http://www.reef.org/db/reports/geo/TWA/34080097/2009-04-01/2010-07-31

### Links:

- [1] http://www.reef.org/db/reports/geo
- [2] http://www.reef.org/programs/volunteersurvey/interpreting
- [3] http://www.reef.org/db/mydata/TWA
- [4] http://www.reef.org/db/reports/geo/TWA/3
- [5] http://www.reef.org/db/reports/geo/TWA/34
- [6] http://www.reef.org/db/reports/geo/TWA/3408
- [7] http://www.reef.org/db/reports/geo/TWA/34080097

Sp#	Name	#	Min	Max	Mean
235	Atlantic Spadefish				
30	Banded Butterflyfish	2	12	12	12
133	Bar Jack	1	30	30	30
47	Beaugregory	]			
	Bermuda Chub/Yellow				
1	Chub	1	30	30	30
_	Bicolor Damselfish	50	6	10	6
	Black Grouper				
	Black Margate				
	Blue Angelfish	3	30	40	35
	Blue Chromis	2	10	10	10
	Blue Dartfish (Blue Goby)				
	Blue Hamlet				
144	Blue Parrotfish				
134	Blue Runner				
204	Blue Tang	]			
213	Bluehead	25	3	15	12
145	Bluelip Parrotfish	İ			
105	Bluestriped Grunt	Ī			
23	Boga	Ī			
79	Bridled Goby	1			
43	Brown Chromis	2	8	10	9
121	Butter Hamlet	1	10	10	10
106	Caesar Grunt	1			
142	Cero	1			
179	Chalk Bass	1			
2	Cherubfish	1			
214	Clown Wrasse	1			
49	Cocoa Damselfish	1			
80	Colon Goby	1			
93	Coney	1			
	Cottonwick	1			
215	Creole Wrasse	1	20	20	20
180	Creole-fish	1			
55	Cubbyu	1			
	Doctorfish	1			
50	Dusky Damselfish	1			
31	Foureye Butterflyfish	1			
3	French Angelfish	1			
108	French Grunt	1			
94	Gag	1			
62	Goldentail Moray	1			
	Goldspot Goby	1			
	Goliath Grouper (Jewfish)	1			
	Gray Angelfish	1			
	Gray Snapper	1			
	Graysby	1			
	· · ·	1			

Sp#	Name	#	Min	Max	Mean	
7	Great Barracuda		_	•	•	
136	Greater Amberjack	1				
234	Greater Soapfish	1				
63	Green Moray	1				
147	Greenblotch Parrotfish	1				
843	Hamlet - Juvenile	1				
181	Harlequin Bass	1				
56	Highhat					
130	Hogfish					
	Honeycomb Cowfish					
792	Juvenile Grunt					
	Lane Snapper					
	Longfin Damselfish					
	Longspine Squirrelfish					
	Masked Goby/Glass Goby					
	Midnight Parrotfish	]				
195	Mutton Snapper					
84	Neon Goby					
206	Ocean Surgeonfish					
209	Ocean Triggerfish					
86	Pallid Goby					
	Porcupinefish					
	Porkfish					
	Princess Parrotfish		1	30	30	30
	Puddingwife					
	Purple Reeffish					
	Queen Angelfish		1	30	30	30
	Queen Parrotfish	]				
	Rainbow Parrotfish					
	Rainbow Runner	]				
	Red Lionfish (exotic)	]				
	Redband Parrotfish	]	5	20	20	20
	Redtail Parrotfish	]				
	Reef Butterflyfish	]	2	12	12	12
	Reef Croaker	1				
	Rock Beauty	1	1	15	15	15
	Rock Hind	1				
	Roughhead Blenny	1				
	Round Scad	1				
	Saddled Blenny	1				
	Sand Diver	1				
	Saucereye Porgy	1				
	Schoolmaster	1				
	Scrawled Cowfish	1				
	Scrawled Filefish	1	1	50	50	50
	Seaweed Blenny	1				
52	Sergeant Major	]				

Sp#	Name	#	Min	Max	Mea	an
231	Sharksucker					
	Sharpnose Puffer					
71	Slender Filefish					
218	Slippery Dick					
	Smooth Trunkfish					
114	Spanish Grunt					
131	Spanish Hogfish		1	8	10	9
34	Spotfin Butterflyfish		2	12	12	12
132	Spotfin Hogfish					
76	Spotted Goatfish		1	25	25	25
28	Spotted Trunkfish	7				
203	Squirrelfish					
155	Stoplight Parrotfish	7				
156	Striped Parrotfish		1	25	25	25
45	Sunshinefish	7				
53	Threespot Damselfish					
185	Tobaccofish					
116	Tomtate					
592	Townsend Angelfish	7				
622	Triplefin species					
239	Trumpetfish					
117	White Grunt		1	25	25	25
77	Yellow Goatfish					
141	Yellow Jack					
219	Yellowcheek Wrasse					
228	Yellowhead Jawfish					
220	Yellowhead Wrasse		2	4	15	9
	Yellowtail (Redfin)					
	Parrotfish `					
54	Yellowtail Damselfish					
46	Yellowtail Reeffish					
197	Yellowtail Snapper		6	20	30	25

Sp#	Name	#	Min	Max	Mean	
	Atlantic Spadefish		•	•	•	
30	Banded Butterflyfish	İ				
133	Bar Jack	1				
47	Beaugregory	1				
	Bermuda Chub/Yellow	1				
	Chub					
	Bicolor Damselfish	] 1	25	3	5	4
	Black Grouper					
	Black Margate					
	Blue Angelfish	]				
	Blue Chromis					
	Blue Dartfish (Blue Goby)	]				
	Blue Hamlet		1	10	10	10
	Blue Parrotfish	]				
	Blue Runner	_				
	Blue Tang	_				
	Bluehead	] :	36	6	15	8
	Bluelip Parrotfish	]				
	Bluestriped Grunt	]				
	Boga	]				
	Bridled Goby	]				
	Brown Chromis	_				
	Butter Hamlet	]	3	10	10	10
	Caesar Grunt	]				
	Cero	]				
	Chalk Bass	]				
	Cherubfish	]				
	Clown Wrasse	1				
	Cocoa Damselfish	]				
	Colon Goby	]				
	Coney	]				
	Cottonwick	]				
	Creole Wrasse	]	1	15	15	15
	Creole-fish					
	Cubbyu					
	Doctorfish	]				
	Dusky Damselfish					
	Foureye Butterflyfish		1	10	10	10
	French Angelfish					
	French Grunt	1				
	Gag	]				
	Goldentail Moray	]				
	Goldspot Goby					
	Goliath Grouper (Jewfish)	]				
	Gray Angelfish	1				
	Gray Snapper	]				
95	Graysby	]	2	20	20	20

	Name	#	Min	Max	Mean
	Great Barracuda				
136	Greater Amberjack				
234	Greater Soapfish				
63	Green Moray				
147	Greenblotch Parrotfish				
843	Hamlet - Juvenile	]			
181	Harlequin Bass	] 1	8	8	8
56	Highhat				
	Hogfish				
	Honeycomb Cowfish				
792	Juvenile Grunt				
193	Lane Snapper				
51	Longfin Damselfish				
201	Longspine Squirrelfish				
83	Masked Goby/Glass Goby	] 1	3	3	3
148	Midnight Parrotfish				
195	Mutton Snapper				
84	Neon Goby				
206	Ocean Surgeonfish	2	14	14	14
209	Ocean Triggerfish	1			
86	Pallid Goby				
166	Porcupinefish				
111	Porkfish				
1	Princess Parrotfish	] 1	30	30	30
1	Puddingwife				
44	Purple Reeffish				
	Queen Angelfish				
	Queen Parrotfish				
151	Rainbow Parrotfish				
	Rainbow Runner				
	Red Lionfish (exotic)				
152	Redband Parrotfish	6	10	20	10
	Redtail Parrotfish				
	Reef Butterflyfish				
	Reef Croaker				
	Rock Beauty				
	Rock Hind				
	Roughhead Blenny				
	Round Scad				
	Saddled Blenny				
	Sand Diver				
	Saucereye Porgy				
	Schoolmaster				
	Scrawled Cowfish	]			
	Scrawled Filefish	1	50	50	50
	Seaweed Blenny				
52	Sergeant Major				

## Joe's Tug May 09 PZ

Sp#	Name	#	Min		Max	Mean
	Sharksucker		<u>'</u>			
1	Sharpnose Puffer		3	4	6	4
71	Slender Filefish					
218	Slippery Dick	]				
	Smooth Trunkfish	]				
	Spanish Grunt					
131	Spanish Hogfish					
1	Spotfin Butterflyfish					
	Spotfin Hogfish					
76	Spotted Goatfish		1	20	20	20
	Spotted Trunkfish	]				
	Squirrelfish					
155	Stoplight Parrotfish	$\exists$				
	Striped Parrotfish	]	2	10	20	15
	Sunshinefish					
53	Threespot Damselfish					
185	Tobaccofish					
	Tomtate					
	Townsend Angelfish					
	Triplefin species					
	Trumpetfish					
117	White Grunt	$\Box$				
	Yellow Goatfish	]				
	Yellow Jack					
219	Yellowcheek Wrasse	$\Box$				
	Yellowhead Jawfish		20	6	10	8
	Yellowhead Wrasse					
	Yellowtail (Redfin)					
	Parrotfish	_				
	Yellowtail Damselfish	╛				
	Yellowtail Reeffish					
197	Yellowtail Snapper	_	2	30	30	30
	# C	$\exists$				
	# Species	_	18			
l	# Fish		209			

## Joe's Tug May 09 LA

30 Ban 133 Bar 47 Bea	antic Spadefish nded Butterflyfish	#	Min	Max	Mean
30 Ban 133 Bar 47 Bea		1			
133 Bar 47 Bea					
<u> </u>	augregory	1	6	6	6
Ber	muda Chub/Yellow	1			
221 Chu					
	olor Damselfish	39	2	5	4
	ck Grouper				
	ck Margate				
	e Angelfish				
	e Chromis				
	e Dartfish (Blue Goby)				
	e Hamlet				
	e Parrotfish				
	e Runner				
204 Blue					
213 Blu		25	3	7	5
	elip Parrotfish				
105 Blue	estriped Grunt	3	22	24	22
23 Bog					
	dled Goby	2	6	6	6
	wn Chromis	60	8	10	8
	ter Hamlet				
106 Cae	esar Grunt				
142 Cer					
179 Cha					
	erubfish				
	wn Wrasse				
	coa Damselfish				
	on Goby				
93 Con					
107 Cot					
	ole Wrasse	9	18	21	20
180 Cre					
55 Cub	-				
205 Doc					
	sky Damselfish				
	reye Butterflyfish	1	7	7	7
	nch Angelfish				
	nch Grunt	140	15	20	20
94 Gag					
	dentail Moray				
	dspot Goby				
	iath Grouper (Jewfish)				
	y Angelfish				
	y Snapper				
95 Gra	ysby				

	Name	#	Min	Max	Mean	
	Great Barracuda		1	80	80	80
136	Greater Amberjack					
234	Greater Soapfish					
63	Green Moray					
	Greenblotch Parrotfish					
843	Hamlet - Juvenile					
	Harlequin Bass		1	10		
	Highhat					
	Hogfish					
	Honeycomb Cowfish					
	Juvenile Grunt					
	Lane Snapper					
	Longfin Damselfish					
	Longspine Squirrelfish					
	Masked Goby/Glass Goby	]	11	4	6	5
	Midnight Parrotfish	]				
	Mutton Snapper	]				
	Neon Goby	]				
	Ocean Surgeonfish					
	Ocean Triggerfish					
	Pallid Goby					
	Porcupinefish					
	Porkfish		2	24	26	25
	Princess Parrotfish					
	Puddingwife					
	Purple Reeffish					
	Queen Angelfish					
	Queen Parrotfish					
	Rainbow Parrotfish					
	Rainbow Runner					
	Red Lionfish (exotic)					
	Redband Parrotfish		2	24	24	24
	Redtail Parrotfish					
	Reef Butterflyfish					
	Reef Croaker					
	Rock Beauty					
	Rock Hind					
	Roughhead Blenny					
	Round Scad					
	Saddled Blenny					
	Sand Diver					
	Saucereye Porgy		_			_
	Schoolmaster		1	29	29	29
	Scrawled Cowfish					
	Scrawled Filefish					
	Seaweed Blenny		_		4.6	. –
52	Sergeant Major		7	14	16	15

## Joe's Tug May 09 LA

Sp#	Name	<u> </u> #	Min	Max	Mea	an l
	Sharksucker	-	1	1	1	· · · ]
	Sharpnose Puffer	$\dashv$	2	6	6	6
	Slender Filefish	┪				
218	Slippery Dick					
27	Smooth Trunkfish		1	20	20	20
114	Spanish Grunt					
131	Spanish Hogfish	7	1	3	3	3
34	Spotfin Butterflyfish	7	2	14	14	14
132	Spotfin Hogfish					
76	Spotted Goatfish	$\neg$				
28	Spotted Trunkfish					
203	Squirrelfish					
155	Stoplight Parrotfish					
156	Striped Parrotfish					
45	Sunshinefish					
53	Threespot Damselfish					
185	Tobaccofish					
116	Tomtate					
592	Townsend Angelfish					
	Triplefin species					
	Trumpetfish					
117	White Grunt		1	22	22	22
	Yellow Goatfish					
	Yellow Jack					
	Yellowcheek Wrasse					
	Yellowhead Jawfish					
220	Yellowhead Wrasse		2	8	10	9
	Yellowtail (Redfin)					
	Parrotfish					
	Yellowtail Damselfish		1	14	14	14
	Yellowtail Reeffish					
197	Yellowtail Snapper	_				
		_				
		_				
	# Species	_	23			
	# Fish		315			

# Joe's Tug July 09 LA

Sp#	Name	#	Min	Max	Mean
	Atlantic Spadefish				
	Banded Butterflyfish	1			
	Bar Jack	1	20	20	20
47	Beaugregory	1			
	Bermuda Chub/Yellow	1			
221	Chub				
48	Bicolor Damselfish	31	2	6	5
91	Black Grouper	]			
109	Black Margate				
	Blue Angelfish	1	22	22	22
	Blue Chromis				
	Blue Dartfish (Blue Goby)				
120	Blue Hamlet				
144	Blue Parrotfish	] 1	40	40	40
	Blue Runner				
	Blue Tang				
	Bluehead	21	5	10	7
	Bluelip Parrotfish				
	Bluestriped Grunt	14	20	25	22
	Boga				
79	Bridled Goby				
43	Brown Chromis	] 1	7	7	7
	Butter Hamlet				
106	Caesar Grunt				
	Cero				
179	Chalk Bass				
2	Cherubfish				
214	Clown Wrasse				
49	Cocoa Damselfish	] 1	5	5	5
	Colon Goby				
93	Coney				
107	Cottonwick				
215	Creole Wrasse	] 1	20	20	20
180	Creole-fish				
	Cubbyu				
	Doctorfish				
	Dusky Damselfish				
	Foureye Butterflyfish	] 1	8	8	8
	French Angelfish				
	French Grunt	120	15	20	18
94	Gag	]			
	Goldentail Moray				
	Goldspot Goby	]			
96	Goliath Grouper (Jewfish)				
	Gray Angelfish	1			
192	Gray Snapper	3	30	30	30
	Graysby	1			

# Joe's Tug July 09 LA

Sp#	Name	#	Min	Max	Mean	
	Great Barracuda					
136	Greater Amberjack					
234	Greater Soapfish					
63	Green Moray					
147	Greenblotch Parrotfish	]				
843	Hamlet - Juvenile					
181	Harlequin Bass		1	12	12	12
56	Highhat	]				
130	Hogfish					
25	Honeycomb Cowfish					
792	Juvenile Grunt					
193	Lane Snapper	1				
51	Longfin Damselfish	1				
201	Longspine Squirrelfish					
83	Masked Goby/Glass Goby	1				
148	Midnight Parrotfish	1				
195	Mutton Snapper	1				
84	Neon Goby	1				
206	Ocean Surgeonfish	1	2	15	15	15
209	Ocean Triggerfish	1				
86	Pallid Goby	1				
166	Porcupinefish	1				
111	Porkfish	1	1	25	25	25
149	Princess Parrotfish		1	18	18	18
216	Puddingwife					
44	Purple Reeffish	]				
5	Queen Angelfish					
150	Queen Parrotfish	]				
151	Rainbow Parrotfish	]				
	Rainbow Runner					
683	Red Lionfish (exotic)					
152	Redband Parrotfish		1	18	18	18
	Redtail Parrotfish					
	Reef Butterflyfish		1	10	10	10
58	Reef Croaker					
	Rock Beauty					
	Rock Hind		1	30	30	30
	Roughhead Blenny					
	Round Scad					
	Saddled Blenny					
	Sand Diver	]				
	Saucereye Porgy	]				
	Schoolmaster	_	6	25	30	28
26	Scrawled Cowfish					
	Scrawled Filefish	]				
	Seaweed Blenny					
52	Sergeant Major		12	12	15	14

## Joe's Tug July 09 LA

Sp#	Name	#	Min	Max	Mean	
	Sharksucker		1	<u> </u>		
167	Sharpnose Puffer	┪				
71	Slender Filefish	7				
218	Slippery Dick	7				
27	Smooth Trunkfish	$\neg$				
114	Spanish Grunt	$\neg$				
131	Spanish Hogfish	7				
34	Spotfin Butterflyfish					
132	Spotfin Hogfish					
76	Spotted Goatfish		1	15	15	15
28	Spotted Trunkfish					
203	Squirrelfish					
	Stoplight Parrotfish		1	25	25	25
	Striped Parrotfish	$\neg$				
l .	Sunshinefish					
53	Threespot Damselfish					
185	Tobaccofish					
	Tomtate					
	Townsend Angelfish					
622	Triplefin species					
	Trumpetfish					
	White Grunt		1	20	20	20
77	Yellow Goatfish					
l .	Yellow Jack					
	Yellowcheek Wrasse					
	Yellowhead Jawfish					
220	Yellowhead Wrasse		3	7	15	12
	Yellowtail (Redfin)					
	Parrotfish					
	Yellowtail Damselfish	_				
	Yellowtail Reeffish					
197	Yellowtail Snapper	_				
		_				
	# Species	_	25			
	# Fish		228			

### Vandenberg July 09 PZ

Sp#	Name	#	Min	Max	Mean	
449	Almaco Jack		•	•	•	
30	Banded Butterflyfish					
164	Bandtail Puffer					
594	Bank Butterflyfish					
133	Bar Jack					
311	Barred Blenny					
35	Barred Cardinalfish					
118	Barred Hamlet					
47	Beaugregory					
221	Bermuda Chub/Yellow Chub					
48	Bicolor Damselfish		2	2	3	2
91	Black Grouper					
189	Blackfin Snapper					
1	Blue Angelfish					
42	Blue Chromis		5	1	3	2
144	Blue Parrotfish					
134	Blue Runner					
204	Blue Tang					
213	Bluehead					
145	Bluelip Parrotfish					
105	Bluestriped Grunt					
23	Boga					
79	Bridled Goby					
43	Brown Chromis					
121	Butter Hamlet					
106	Caesar Grunt					
142	Cero					
179	Chalk Bass					
2	Cherubfish					
214	Clown Wrasse					
49	Cocoa Damselfish					
80	Colon Goby					
107	Cottonwick					
215	Creole Wrasse					
180	Creole-fish					
135	Crevalle Jack					
190	Cubera Snapper					
205	Doctorfish					
50	Dusky Damselfish					
31	Foureye Butterflyfish					
	French Angelfish					
108	French Grunt	7				
	Goldspot Goby	$\neg$				
96	Goliath Grouper (Jewfish)	7				
4	Gray Angelfish	$\neg$				
192	Gray Snapper	$\neg$				
208	Gray Triggerfish	$\neg$				

Name	#		Min	Max	\	1ean
Great Barracuda		1		110	110	11
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Sharksucker						
Sharpnose Puffer	1					
	Graysby Great Barracuda Greater Amberjack Greenblotch Parrotfish Harlequin Bass Hogfish Horse-Eye Jack Juvenile Grunt King Mackerel Little Tunny Loggerhead Sea Turtle Longfin Damselfish Longsnout Butterflyfish Mackerel Scad Mahogany Snapper Masked Goby/Glass Goby Midnight Parrotfish Nurse Shark Ocean Surgeonfish Ocean Triggerfish Princess Parrotfish Princess Parrotfish Queen Angelfish Queen Angelfish Queen Triggerfish Rainbow Parrotfish Rainbow Parrotfish Red Lionfish (exotic) Redband Parrotfish Redspotted Hawkfish Reds Butterflyfish Rock Beauty Round Scad Saddled Blenny Sailors Choice Scamp School Bass Schoolmaster Scrawled Filefish Seaweed Blenny Sergeant Major	Great Barracuda Greater Amberjack Greenblotch Parrotfish Harlequin Bass Hogfish Horse-Eye Jack Juvenile Grunt King Mackerel Little Tunny Loggerhead Sea Turtle Longfin Damselfish Longsnout Butterflyfish Mackerel Scad Mahogany Snapper Masked Goby/Glass Goby Midnight Parrotfish Nurse Shark Ocean Surgeonfish Ocean Triggerfish Porkfish Princess Parrotfish Purple Reeffish Pygmy Filefish Queen Angelfish Queen Angelfish Rainbow Parrotfish Rainbow Runner Red Lionfish (exotic) Redband Parrotfish Redspotted Hawkfish Reef Butterflyfish Rock Beauty Round Scad Saddled Blenny Sailors Choice Scamp School Bass Schoolmaster Scrawled Filefish Seaweed Blenny Sergeant Major	Graysby Great Barracuda Greater Amberjack Greenblotch Parrotfish Harlequin Bass Hogfish Horse-Eye Jack Juvenile Grunt King Mackerel Little Tunny Loggerhead Sea Turtle Longfin Damselfish Longsnout Butterflyfish Mackerel Scad Mahogany Snapper Masked Goby/Glass Goby Midnight Parrotfish Nurse Shark Ocean Surgeonfish Ocean Triggerfish Porkfish Princess Parrotfish Purple Reeffish Pygmy Filefish Queen Angelfish Queen Angelfish Rainbow Parrotfish Rainbow Parrotfish Red Lionfish (exotic) Redband Parrotfish Redspotted Hawkfish Reef Butterflyfish Reef Butterflyfish Rock Beauty Round Scad Saddled Blenny Sailors Choice Scamp School Bass Schoolmaster Scrawled Filefish Seaweed Blenny Sergeant Major	Graysby Great Barracuda Greater Amberjack Greenblotch Parrotfish Harlequin Bass Hogfish Horse-Eye Jack Juvenile Grunt King Mackerel Little Tunny Loggerhead Sea Turtle Longfin Damselfish Longsnout Butterflyfish Mackerel Scad Mahogany Snapper Masked Goby/Glass Goby Midnight Parrotfish Nurse Shark Ocean Triggerfish Princess Parrotfish Princess Parrotfish Purple Reeffish Pygmy Filefish Queen Angelfish Queen Angelfish Rainbow Parrotfish Rainbow Runner Red Lionfish (exotic) Redband Parrotfish Redspotted Hawkfish Reef Butterflyfish Reef Butterflyfish Rock Beauty Round Scad Saddled Blenny Sailors Choice Scamp School Bass Schoolmaster Scrawled Filefish Seaweed Blenny Sergeant Major	Graysby Great Barracuda Greater Amberjack Greenblotch Parrotfish Harlequin Bass Hogfish Horse-Eye Jack Juvenile Grunt King Mackerel Little Tunny Loggerhead Sea Turtle Longfin Damselfish Longsnout Butterflyfish Mackerel Scad Mahogany Snapper Masked Goby/Glass Goby Midnight Parrotfish Nurse Shark Ocean Surgeonfish Ocean Triggerfish Porkfish Princess Parrotfish Pygmy Filefish Queen Angelfish Queen Angelfish Queen Triggerfish Rainbow Parrotfish Rainbow Runner Red Lionfish (exotic) Redband Parrotfish Redspotted Hawkfish Redspotted Hawkfish Redtail Parrotfish Reds Butterflyfish Reds Butterflyfish Reds Butterflyfish Reds Butterflyfish Red Butterflyfish Reds Butterflyfish Seaddled Blenny Sailors Choice Scamp School Bass Schoolmaster Scrawled Filefish Seaweed Blenny Sergeant Major	Graysby Great Barracuda Greater Amberjack Greenblotch Parrotfish Harlequin Bass Hogfish Horse-Eye Jack Juvenile Grunt King Mackerel Little Tunny Loggerhead Sea Turtle Longfin Damselfish Longsnout Butterflyfish Mackerel Scad Mahogany Snapper Masked Goby/Glass Goby Midnight Parrotfish Nurse Shark Ocean Surgeonfish Ocean Triggerfish Porkfish Princess Parrotfish Pygmy Filefish Queen Angelfish Queen Angelfish Queen Triggerfish Rainbow Parrotfish Rainbow Parrotfish Rainbow Runner Red Lionfish (exotic) Redband Parrotfish Redspotted Hawkfish Redspited Hawkfish Redspited Foreign Redspotted Hawkfish Redspiten Seadel Saddled Blenny Sailors Choice Scamp School Bass School Bass Schoolmaster Scrawled Filefish Seaweed Blenny Sergeant Major

### Vandenberg July 09 PZ

Sp#	Name	#	М	in	Max	Mean	
71	Slender Filefish		-				
	Slippery Dick						
113	Smallmouth Grunt						
114	Spanish Grunt						
131	Spanish Hogfish						
	Spotfin Butterflyfish						
132	Spotfin Hogfish						
59	Spotted Drum						
76	Spotted Goatfish						
	Spotted Scorpionfish						
155	Stoplight Parrotfish						
115	Striped Grunt		60		6	8	7
	Striped Parrotfish						
45	Sunshinefish						
237	Tarpon						
53	Threespot Damselfish						
185	Tobaccofish						
116	Tomtate						
239	Trumpetfish						
	Twospot Cardinalfish						
117	White Grunt						
110	White Margate						
339	Wrasse Blenny						
77	Yellow Goatfish						
141	Yellow Jack						
103	Yellowfin Grouper						
220	Yellowhead Wrasse						
104	Yellowmouth Grouper						
153	Yellowtail (Redfin) Parrotfish						
46	Yellowtail Reeffish						
197	Yellowtail Snapper		1	3	0	30	30
	# Species		6				
	# Fish		70				

### Vandenberg July 09 LC

Sp#	Name	#	Min	Max	Mean	
449	Almaco Jack		•		<u>'</u>	
30	Banded Butterflyfish					
164	Bandtail Puffer					
594	Bank Butterflyfish					
133	Bar Jack					
311	Barred Blenny					
	Barred Cardinalfish					
118	Barred Hamlet					
47	Beaugregory					
221	Bermuda Chub/Yellow Chub					
	Bicolor Damselfish		3	1	2	1
91	Black Grouper					
	Blackfin Snapper					
	Blue Angelfish					
	Blue Chromis					
144	Blue Parrotfish					
	Blue Runner					
	Blue Tang					
	Bluehead					
	Bluelip Parrotfish					
	Bluestriped Grunt					
	Boga					
	Bridled Goby					
	Brown Chromis					
	Butter Hamlet					
	Caesar Grunt					
	Cero					
	Chalk Bass					
	Cherubfish					
	Clown Wrasse					
	Cocoa Damselfish					
	Colon Goby					
	Cottonwick					
	Creole Wrasse					
	Creole-fish					
	Crevalle Jack					
	Cubera Snapper					
	Doctorfish					
	Dusky Damselfish					
	Foureye Butterflyfish					
	French Angelfish					
	French Grunt					
	Goldspot Goby					
	Goliath Grouper (Jewfish)					
	Gray Angelfish					
	Gray Snapper					
	Gray Triggerfish					
	Total maganism					

Sp#	Name	#	Min	Max	Mean	
Ç	95 Graysby			•	•	
	7 Great Barracuda					
13	Greater Amberjack					
14	17 Greenblotch Parrotfish					
18	31 Harlequin Bass					
13	30 Hogfish					
13	37 Horse-Eye Jack					
79	92 Juvenile Grunt					
47	73 King Mackerel					
59	99 Little Tunny					
65	7 Loggerhead Sea Turtle					
Į.	Longfin Damselfish					
17	32 Longsnout Butterflyfish					
45	7 Mackerel Scad					
19	94 Mahogany Snapper					
	33 Masked Goby/Glass Goby					
	18 Midnight Parrotfish					
	37 Nurse Shark					
	06 Ocean Surgeonfish					
	09 Ocean Triggerfish					
	1 Porkfish					
14	19 Princess Parrotfish					
	14 Purple Reeffish					
	94 Pygmy Filefish					
	5 Queen Angelfish					
15	0 Queen Parrotfish					
	10 Queen Triggerfish					
	51 Rainbow Parrotfish					
14	10 Rainbow Runner					
	Red Lionfish (exotic)					
	2 Redband Parrotfish					
	Redspotted Hawkfish					
	54 Redtail Parrotfish					
	Reef Butterflyfish					
	6 Rock Beauty					
46	51 Round Scad					
	19 Saddled Blenny	=				
	2 Sailors Choice	$\dashv$				
	01 Scamp	$\dashv$				
	39 School Bass	$\dashv$	20	1	5	3
	96 Schoolmaster	$\dashv$		_	•	,
	70 Scrawled Filefish	$\dashv$				
	21 Seaweed Blenny	$\dashv$				
	2 Sergeant Major	$\dashv$				
	31 Sharksucker	$\dashv$				
	57 Sharpnose Puffer	$\dashv$				
	32 Silversides, Herrings, Anchovies	$\dashv$				
	Zanversides, Herrings, Andriovies					

### Vandenberg July 09 LC

Sp#	Name	#	Min	Max	Mean	
71	Slender Filefish		•	•	•	
218	Slippery Dick					
113	Smallmouth Grunt					
114	Spanish Grunt					
131	Spanish Hogfish					
34	Spotfin Butterflyfish					
132	Spotfin Hogfish					
59	Spotted Drum					
76	Spotted Goatfish					
178	Spotted Scorpionfish					
155	Stoplight Parrotfish					
115	Striped Grunt					
156	Striped Parrotfish					
45	Sunshinefish					
237	Tarpon					
53	Threespot Damselfish					
185	Tobaccofish		1	2	2	2
116	Tomtate					
239	Trumpetfish					
40	Twospot Cardinalfish					
117	White Grunt					
110	White Margate					
339	Wrasse Blenny					
77	Yellow Goatfish					
141	Yellow Jack					
103	Yellowfin Grouper					
220	Yellowhead Wrasse					
104	Yellowmouth Grouper					
153	Yellowtail (Redfin) Parrotfish					
46	Yellowtail Reeffish					
197	Yellowtail Snapper		25	20	30	25
	# Species		4			
	# Fish		49			

Sp#	Name	#	Min	Max	Mean
	Atlantic Spadefish		•		
	Banded Butterflyfish	1			
	Bar Jack	† g	15	30	25
47	Beaugregory	1			
	Bermuda Chub/Yellow	1			
221	Chub				
48	Bicolor Damselfish	25	2	6	5
91	Black Grouper	İ			
109	Black Margate	1			
1	Blue Angelfish	1			
42	Blue Chromis	] 1	. 5	5	5
78	Blue Dartfish (Blue Goby)	Ī			
120	Blue Hamlet	] 1	. 7	7	7
144	Blue Parrotfish	1			
134	Blue Runner	1			
204	Blue Tang	] 1	10	10	10
213	Bluehead	15	5	8	8
145	Bluelip Parrotfish	1			
105	Bluestriped Grunt	1			
23	Boga	Ī			
79	Bridled Goby	İ			
43	Brown Chromis	İ			
121	Butter Hamlet	Ī			
106	Caesar Grunt	1			
142	Cero	1			
179	Chalk Bass	1			
2	Cherubfish				
214	Clown Wrasse	1			
49	Cocoa Damselfish	] 2	. 5	5	5
	Colon Goby	1			
93	Coney	]			
	Cottonwick	1			
215	Creole Wrasse	]			
180	Creole-fish				
	Cubbyu				
	Doctorfish	] 1	10	10	10
	Dusky Damselfish				
	Foureye Butterflyfish	]			
	French Angelfish	] 1	. 15	15	15
	French Grunt				
94	Gag	]			
	Goldentail Moray	]			
	Goldspot Goby	]			
96		1			
	Goliath Grouper (Jewfish)				
	Goliath Grouper (Jewfish) Gray Angelfish	1			
4		<u>.</u> 			

### Joe's Tug Nov 09 PZ

Sp#	Name	#	Min	Max	Mean	
	Great Barracuda					
136	Greater Amberjack	1	1	30	30	30
234	Greater Soapfish	1				
63	Green Moray	1				
147	Greenblotch Parrotfish	1				
843	Hamlet - Juvenile	1				
181	Harlequin Bass	1				
56	Highhat	1				
130	Hogfish	1	1	20	20	20
25	Honeycomb Cowfish	1				
792	Juvenile Grunt	1				
193	Lane Snapper	1				
51	Longfin Damselfish	1				
201	Longspine Squirrelfish	1				
83	Masked Goby/Glass Goby	1	30	2	3	3
148	Midnight Parrotfish	1				
195	Mutton Snapper	1				
84	Neon Goby	1				
206	Ocean Surgeonfish	1	2	15	15	15
209	Ocean Triggerfish	1				
86	Pallid Goby	1				
166	Porcupinefish	1				
111	Porkfish	1				
149	Princess Parrotfish	1				
216	Puddingwife	1				
44	Purple Reeffish	1				
5	Queen Angelfish	1				
150	Queen Parrotfish	1				
151	Rainbow Parrotfish	1				
140	Rainbow Runner	1				
683	Red Lionfish (exotic)					
152	Redband Parrotfish		1	20	20	20
	Redtail Parrotfish					
	Reef Butterflyfish	]	1	10	10	10
	Reef Croaker	]				
	Rock Beauty	]	1	10	10	10
	Rock Hind					
	Roughhead Blenny					
	Round Scad	]				
	Saddled Blenny					
	Sand Diver	]				
	Saucereye Porgy	]				
	Schoolmaster	]				
	Scrawled Cowfish	]				
	Scrawled Filefish	]				
	Seaweed Blenny	]				
52	Sergeant Major					

### Joe's Tug Nov 09 PZ

Sp#	Name	#		Min	Max	Mean
231	Sharksucker				•	•
167	Sharpnose Puffer					
71	Slender Filefish					
218	Slippery Dick					
27	Smooth Trunkfish					
	Spanish Grunt					
131	Spanish Hogfish					
34	Spotfin Butterflyfish					
132	Spotfin Hogfish					
76	Spotted Goatfish		2	10	) 10	10
28	Spotted Trunkfish					
	Squirrelfish					
155	Stoplight Parrotfish		1	5	5 5	5 5
156	Striped Parrotfish					
45	Sunshinefish					
53	Threespot Damselfish					
185	Tobaccofish					
116	Tomtate					
592	Townsend Angelfish					
622	Triplefin species					
239	Trumpetfish					
117	White Grunt					
	Yellow Goatfish					
	Yellow Jack					
219	Yellowcheek Wrasse		4	5	10	) 5
	Yellowhead Jawfish					
220	Yellowhead Wrasse					
	Yellowtail (Redfin)					
	Parrotfish					
	Yellowtail Damselfish					
	Yellowtail Reeffish					
197	Yellowtail Snapper	_	12	15	30	) 25
	# Chasins		20			
	# Species	_	20			
	# Fish		112			

Sp#	Name	#	Min	Max	Mean
	Atlantic Spadefish				-
	Banded Butterflyfish	2	16	16	16
	Bar Jack	1 -	-3	_3	
	Beaugregory	1			
	Bermuda Chub/Yellow	1			
221	Chub				
48	Bicolor Damselfish	1	10	10	10
91	Black Grouper	1		62	
	Black Margate	2	50		
1	Blue Angelfish	1			
42	Blue Chromis	]			
	Blue Dartfish (Blue Goby)	]			
	Blue Hamlet	]			
144	Blue Parrotfish	]			
134	Blue Runner	]			
204	Blue Tang	]			
213	Bluehead	]			
	Bluelip Parrotfish	]			
	Bluestriped Grunt	30	30	40	40
	Boga	]			
	Bridled Goby				
	Brown Chromis				
	Butter Hamlet				
	Caesar Grunt	]			
	Cero	] 1	65	65	65
	Chalk Bass	]			
	Cherubfish	]			
	Clown Wrasse	]			
	Cocoa Damselfish	]			
	Colon Goby	]			
	Coney	]			
	Cottonwick	]			
	Creole Wrasse	]			
	Creole-fish	]			
	Cubbyu				
	Doctorfish	1	45	45	45
	Dusky Damselfish				
	Foureye Butterflyfish				
	French Angelfish				
	French Grunt	50	23	34	26
	Gag				
	Goldentail Moray				
	Goldspot Goby				
	Goliath Grouper (Jewfish)				
	Gray Angelfish				
	Gray Snapper				
	Graysby	1	32	32	32

Sp#	Name	#	Min	Max	Mean	
7	Great Barracuda			<u> </u>	•	
136	Greater Amberjack	1				
234	Greater Soapfish	1				
63	Green Moray	1				
147	Greenblotch Parrotfish					
843	Hamlet - Juvenile	1				
181	Harlequin Bass	1				
56	Highhat	1				
130	Hogfish	1				
25	Honeycomb Cowfish	1				
792	Juvenile Grunt	Ī				
193	Lane Snapper	Ī				
51	Longfin Damselfish	1				
201	Longspine Squirrelfish	Ī				
83	Masked Goby/Glass Goby	Ī				
148	Midnight Parrotfish					
195	Mutton Snapper	1				
84	Neon Goby					
206	Ocean Surgeonfish	1				
209	Ocean Triggerfish	]				
86	Pallid Goby					
166	Porcupinefish	]				
	Porkfish		2	30	30	30
149	Princess Parrotfish		1	28	28	28
	Puddingwife					
	Purple Reeffish					
	Queen Angelfish					
	Queen Parrotfish					
	Rainbow Parrotfish					
	Rainbow Runner		1	53	53	53
	Red Lionfish (exotic)					
	Redband Parrotfish					
	Redtail Parrotfish	_				
	Reef Butterflyfish	]				
	Reef Croaker	<u> </u>				
	Rock Beauty	1				
	Rock Hind	1				
	Roughhead Blenny	]				
	Round Scad	]				
	Saddled Blenny	]				
	Sand Diver	1				
	Saucereye Porgy	]				
	Schoolmaster	1	1	45	45	45
	Scrawled Cowfish	1				
	Scrawled Filefish	1				
	Seaweed Blenny	1				
52	Sergeant Major	]				

### Joe's Tug Nov 09 SG

Sp#	Name	#	Min	Max	Mean	
	Sharksucker		1			
167	Sharpnose Puffer					
71	Slender Filefish					
218	Slippery Dick					
27	Smooth Trunkfish					
114	Spanish Grunt					
131	Spanish Hogfish	$\neg$				
34	Spotfin Butterflyfish					
132	Spotfin Hogfish					
76	Spotted Goatfish					
28	Spotted Trunkfish					
203	Squirrelfish					
	Stoplight Parrotfish		1	58	58	58
	Striped Parrotfish					
	Sunshinefish					
	Threespot Damselfish					
185	Tobaccofish					
	Tomtate					
	Townsend Angelfish					
622	Triplefin species					
	Trumpetfish					
	White Grunt					
77	Yellow Goatfish					
	Yellow Jack					
	Yellowcheek Wrasse					
	Yellowhead Jawfish					
220	Yellowhead Wrasse					
	Yellowtail (Redfin)					
	Parrotfish					
	Yellowtail Damselfish					
	Yellowtail Reeffish					
197	Yellowtail Snapper		4	40	55	50
		_				
	# Species		15			
	# Fish		99			

### Joe's tug Nov 09 LA

Sp#	Name	# N	⁄lin l	Max	Mean
235	Atlantic Spadefish	<u>'</u>	<u>'</u>		
30	Banded Butterflyfish	1			
133	Bar Jack	1	22	22	22
47	Beaugregory	1			
	Bermuda Chub/Yellow	1			
	Chub				
l .	Bicolor Damselfish	42	1	7	6
	Black Grouper	1			
	Black Margate	1	45	45	45
1	Blue Angelfish	1			
	Blue Chromis	1			
	Blue Dartfish (Blue Goby)	1			
	Blue Hamlet	1	12	12	12
	Blue Parrotfish	1	70	70	70
	Blue Runner	1			
	Blue Tang	1			
	Bluehead	6	4	9	6
	Bluelip Parrotfish	1			
	Bluestriped Grunt	26	22	30	26
1	Boga	1			
	Bridled Goby	1			
	Brown Chromis	25	10	14	12
	Butter Hamlet	1	9	9	9
	Caesar Grunt	1			
	Cero	1			
	Chalk Bass	1			
	Cherubfish	1			
	Clown Wrasse	1			
	Cocoa Damselfish	1			
1	Colon Goby	1			
	Coney	1			
	Cottonwick	1			
	Creole Wrasse	9	7	24	12
	Creole-fish	1			
	Cubbyu	1			
	Doctorfish	1			
	Dusky Damselfish				•
	Foureye Butterflyfish	1	9	9	9
	French Angelfish	1	35	35	35
	French Grunt	220	16	22	20
	Gag	-			
	Goldentail Moray		_	_	_
	Goldspot Goby	1	7	7	7
	Goliath Grouper (Jewfish)		20	22	22
	Gray Angelfish	1	30	30	30
	Gray Snapper	1	40	40	40
95	Graysby	] 1	16	16	16

### Joe's tug Nov 09 LA

Sp#	Name	#	Min	Max	Mean	
	Great Barracuda					
136	Greater Amberjack	1				
234	Greater Soapfish	1				
63	Green Moray	1				
147	Greenblotch Parrotfish	1				
843	Hamlet - Juvenile	1				
181	Harlequin Bass	1				
56	Highhat	1	1	12	12	12
130	Hogfish	1				
25	Honeycomb Cowfish	1				
792	Juvenile Grunt	1				
193	Lane Snapper	1				
51	Longfin Damselfish	1				
201	Longspine Squirrelfish	1				
83	Masked Goby/Glass Goby	1	95	2	5	4
148	Midnight Parrotfish	1	1	90	90	90
195	Mutton Snapper	1				
84	Neon Goby	1				
206	Ocean Surgeonfish	1	1	16	16	16
209	Ocean Triggerfish	1				
86	Pallid Goby	1				
166	Porcupinefish	1				
111	Porkfish	1	12	26	32	28
149	Princess Parrotfish	1	1	18	18	18
216	Puddingwife	1				
44	Purple Reeffish	1				
5	Queen Angelfish	1				
150	Queen Parrotfish	1				
151	Rainbow Parrotfish	1				
140	Rainbow Runner	1				
683	Red Lionfish (exotic)	1				
152	Redband Parrotfish	1				
154	Redtail Parrotfish	1				
33	Reef Butterflyfish	1				
58	Reef Croaker	1				
6	Rock Beauty	1				
100	Rock Hind	1				
336	Roughhead Blenny	1				
461	Round Scad	1				
19	Saddled Blenny	]				
230	Sand Diver					
160	Saucereye Porgy	]				
196	Schoolmaster	]	2	26	26	26
26	Scrawled Cowfish	]				
70	Scrawled Filefish	1				
21	Seaweed Blenny	1				
52	Sergeant Major	1	3	17	17	17

### Joe's tug Nov 09 LA

Sp#	Name	#	Min	Ma	X	Mean
	Sharksucker	1	•			
167	Sharpnose Puffer	$\neg$	1	6	6	6
71	Slender Filefish	$\neg$				
218	Slippery Dick	7				
27	Smooth Trunkfish					
114	Spanish Grunt					
131	Spanish Hogfish					
	Spotfin Butterflyfish	$\neg$	3	12	12	12
	Spotfin Hogfish					
76	Spotted Goatfish					
28	Spotted Trunkfish					
	Squirrelfish					
155	Stoplight Parrotfish	$\Box$	1	32	32	32
	Striped Parrotfish					
45	Sunshinefish	$\exists$				
53	Threespot Damselfish					
185	Tobaccofish					
116	Tomtate					
592	Townsend Angelfish	$\Box$				
	Triplefin species	$\Box$				
	Trumpetfish					
117	White Grunt	$\Box$	1	24	24	24
	Yellow Goatfish	$\Box$				
	Yellow Jack	$\Box$				
219	Yellowcheek Wrasse	$\Box$				
	Yellowhead Jawfish	$\Box$				
	Yellowhead Wrasse	$\Box$				
	Yellowtail (Redfin)					
153	Parrotfish					
	Yellowtail Damselfish	_]				
	Yellowtail Reeffish	$\Box$				
197	Yellowtail Snapper	$\dashv$	3	25	25	25
	# Chasins	$\exists$	20			
	# Species	$\dashv$	30			
	# Fish		464			

### Vandenberg Nov 09 LA

Sp#	Name	#	Min	Max	Mean	
44	9 Almaco Jack		•	•	·	
3	0 Banded Butterflyfish					
16	4 Bandtail Puffer					
59	4 Bank Butterflyfish					
13	3 Bar Jack					
31	1 Barred Blenny					
3	5 Barred Cardinalfish					
11	8 Barred Hamlet					
4	7 Beaugregory					
22	1 Bermuda Chub/Yellow Chub					
4	8 Bicolor Damselfish		5	6	7	7
9	1 Black Grouper					
18	9 Blackfin Snapper					
	1 Blue Angelfish					
4	2 Blue Chromis					
14	4 Blue Parrotfish					
13	4 Blue Runner					
20	4 Blue Tang		2	18	18	18
	3 Bluehead		27	2	10	8
14	5 Bluelip Parrotfish					
	5 Bluestriped Grunt					
2	3 Boga					
I .	9 Bridled Goby					
	3 Brown Chromis					
12	1 Butter Hamlet					
10	6 Caesar Grunt					
	2 Cero					
17	9 Chalk Bass					
	2 Cherubfish					
21	4 Clown Wrasse					
4	9 Cocoa Damselfish					
8	0 Colon Goby					
	7 Cottonwick					
21	5 Creole Wrasse					
18	0 Creole-fish					
13	5 Crevalle Jack					
19	0 Cubera Snapper					
20	5 Doctorfish					
5	0 Dusky Damselfish					
3	1 Foureye Butterflyfish					
	3 French Angelfish					
10	8 French Grunt					
8	1 Goldspot Goby					
	6 Goliath Grouper (Jewfish)					
	4 Gray Angelfish		1	33	33	33
	2 Gray Snapper		1	26	26	26
	8 Gray Triggerfish					
	<u>, , , , , , , , , , , , , , , , , , , </u>					

95 Graysby 7 Great Barracuda 1 70 70 136 Greater Amberjack 147 Greenblotch Parrotfish 181 Harlequin Bass 130 Hogfish 137 Horse-Eye Jack 792 Juvenile Grunt 473 King Mackerel 599 Little Tunny 657 Loggerhead Sea Turtle 51 Longfin Damselfish 32 Longsnout Butterflyfish 457 Mackerel Scad 194 Mahogany Snapper 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 187 Nurse Shark 206 Ocean Surgeonfish 209 Ocean Triggerfish 111 Porkfish 149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 151 Rainbow Parrotfish 150 Queen Triggerfish 151 Rainbow Parrotfish 151 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	ean
136 Greater Amberjack 147 Greenblotch Parrotfish 181 Harlequin Bass 130 Hogfish 137 Horse-Eye Jack 792 Juvenile Grunt 473 King Mackerel 599 Little Tunny 657 Loggerhead Sea Turtle 51 Longfin Damselfish 32 Longsnout Butterflyfish 457 Mackerel Scad 194 Mahogany Snapper 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 187 Nurse Shark 206 Ocean Surgeonfish 209 Ocean Triggerfish 111 Porkfish 149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Reetail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
147 Greenblotch Parrotfish 181 Harlequin Bass 130 Hogfish 137 Horse-Eye Jack 792 Juvenile Grunt 473 King Mackerel 599 Little Tunny 657 Loggerhead Sea Turtle 51 Longfin Damselfish 32 Longsnout Butterflyfish 457 Mackerel Scad 194 Mahogany Snapper 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 187 Nurse Shark 206 Ocean Surgeonfish 209 Ocean Triggerfish 111 Porkfish 144 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Angelfish 151 Rainbow Parrotfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Reeffi Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	70
181 Harlequin Bass 130 Hogfish 137 Horse-Eye Jack 792 Juvenile Grunt 473 King Mackerel 599 Little Tunny 657 Loggerhead Sea Turtle 51 Longfin Damselfish 32 Longsnout Butterflyfish 457 Mackerel Scad 194 Mahogany Snapper 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 187 Nurse Shark 206 Ocean Surgeonfish 209 Ocean Triggerfish 111 Porkfish 149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
130 Hogfish 137 Horse-Eye Jack 792 Juvenile Grunt 473 King Mackerel 599 Little Tunny 657 Loggerhead Sea Turtle 51 Longfin Damselfish 32 Longsnout Butterflyfish 457 Mackerel Scad 194 Mahogany Snapper 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 187 Nurse Shark 206 Ocean Surgeonfish 209 Ocean Triggerfish 111 Porkfish 149 Princess Parrotfish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
137 Horse-Eye Jack 792 Juvenile Grunt 473 King Mackerel 599 Little Tunny 657 Loggerhead Sea Turtle 51 Longfin Damselfish 32 Longsnout Butterflyfish 457 Mackerel Scad 194 Mahogany Snapper 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 187 Nurse Shark 206 Ocean Surgeonfish 209 Ocean Triggerfish 111 Porkfish 149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 151 Rainbow Parrotfish 151 Rainbow Parrotfish 152 Redband Parrotfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
792 Juvenile Grunt 473 King Mackerel 599 Little Tunny 657 Loggerhead Sea Turtle 51 Longfin Damselfish 32 Longsnout Butterflyfish 457 Mackerel Scad 194 Mahogany Snapper 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 187 Nurse Shark 206 Ocean Surgeonfish 209 Ocean Triggerfish 111 Porkfish 149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 151 Rainbow Parrotfish 1683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Reutail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
473 King Mackerel 599 Little Tunny 657 Loggerhead Sea Turtle 51 Longfin Damselfish 32 Longsnout Butterflyfish 457 Mackerel Scad 194 Mahogany Snapper 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 187 Nurse Shark 206 Ocean Surgeonfish 209 Ocean Triggerfish 111 Porkfish 149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 1151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
599 Little Tunny 657 Loggerhead Sea Turtle 51 Longfin Damselfish 32 Longsnout Butterflyfish 457 Mackerel Scad 194 Mahogany Snapper 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 187 Nurse Shark 206 Ocean Surgeonfish 209 Ocean Triggerfish 111 Porkfish 149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Angelfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 211 Seaweed Blenny 52 Sergeant Major	
657 Loggerhead Sea Turtle 51 Longfin Damselfish 32 Longsnout Butterflyfish 457 Mackerel Scad 194 Mahogany Snapper 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 187 Nurse Shark 206 Ocean Surgeonfish 209 Ocean Triggerfish 111 Porkfish 149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 210 Queen Triggerfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
51 Longfin Damselfish 32 Longsnout Butterflyfish 457 Mackerel Scad 194 Mahogany Snapper 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 187 Nurse Shark 206 Ocean Surgeonfish 209 Ocean Triggerfish 111 Porkfish 149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 111 Rainbow Parrotfish 111 Rainbow Parrotfish 151 Rainbow Parrotfish 151 Rainbow Parrotfish 152 Redband Parrotfish 154 Redtail Parrotfish 155 Redband Parrotfish 156 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
51 Longfin Damselfish 32 Longsnout Butterflyfish 457 Mackerel Scad 194 Mahogany Snapper 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 187 Nurse Shark 206 Ocean Surgeonfish 209 Ocean Triggerfish 111 Porkfish 149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 1151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 38 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
32 Longsnout Butterflyfish 457 Mackerel Scad 194 Mahogany Snapper 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 187 Nurse Shark 206 Ocean Surgeonfish 209 Ocean Triggerfish 111 Porkfish 149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 210 Queen Triggerfish 151 Rainbow Parrotfish 168 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
457 Mackerel Scad 194 Mahogany Snapper 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 187 Nurse Shark 206 Ocean Surgeonfish 209 Ocean Triggerfish 111 Porkfish 149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 151 Rainbow Parrotfish 161 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
83 Masked Goby/Glass Goby  148 Midnight Parrotfish  187 Nurse Shark  206 Ocean Surgeonfish  209 Ocean Triggerfish  111 Porkfish  149 Princess Parrotfish  44 Purple Reeffish  394 Pygmy Filefish  5 Queen Angelfish  150 Queen Parrotfish  210 Queen Triggerfish  151 Rainbow Parrotfish  140 Rainbow Runner  683 Red Lionfish (exotic)  152 Redband Parrotfish  226 Redspotted Hawkfish  154 Redtail Parrotfish  33 Reef Butterflyfish  6 Rock Beauty  461 Round Scad  19 Saddled Blenny  112 Sailors Choice  101 Scamp  539 School Bass  196 Schoolmaster  70 Scrawled Filefish  21 Seaweed Blenny  52 Sergeant Major	
83 Masked Goby/Glass Goby  148 Midnight Parrotfish  187 Nurse Shark  206 Ocean Surgeonfish  209 Ocean Triggerfish  111 Porkfish  149 Princess Parrotfish  44 Purple Reeffish  394 Pygmy Filefish  5 Queen Angelfish  150 Queen Parrotfish  210 Queen Triggerfish  151 Rainbow Parrotfish  140 Rainbow Runner  683 Red Lionfish (exotic)  152 Redband Parrotfish  226 Redspotted Hawkfish  154 Redtail Parrotfish  33 Reef Butterflyfish  6 Rock Beauty  461 Round Scad  19 Saddled Blenny  112 Sailors Choice  101 Scamp  539 School Bass  196 Schoolmaster  70 Scrawled Filefish  21 Seaweed Blenny  52 Sergeant Major	
187 Nurse Shark 206 Ocean Surgeonfish 209 Ocean Triggerfish 111 Porkfish 1149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 210 Queen Triggerfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
187 Nurse Shark 206 Ocean Surgeonfish 209 Ocean Triggerfish 111 Porkfish 1149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 210 Queen Triggerfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
209 Ocean Triggerfish 111 Porkfish 149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 210 Queen Triggerfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
209 Ocean Triggerfish 111 Porkfish 149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 210 Queen Triggerfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
111 Porkfish 149 Princess Parrotfish 44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 210 Queen Triggerfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 210 Queen Triggerfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
44 Purple Reeffish 394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 210 Queen Triggerfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
394 Pygmy Filefish 5 Queen Angelfish 150 Queen Parrotfish 210 Queen Triggerfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
5 Queen Angelfish 150 Queen Parrotfish 210 Queen Triggerfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
150 Queen Parrotfish 210 Queen Triggerfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
210 Queen Triggerfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
683 Red Lionfish (exotic) 152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
152 Redband Parrotfish 226 Redspotted Hawkfish 154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
226 Redspotted Hawkfish  154 Redtail Parrotfish  33 Reef Butterflyfish  6 Rock Beauty  461 Round Scad  19 Saddled Blenny  112 Sailors Choice  101 Scamp  539 School Bass  196 Schoolmaster  70 Scrawled Filefish  21 Seaweed Blenny  52 Sergeant Major	
154 Redtail Parrotfish 33 Reef Butterflyfish 6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
6 Rock Beauty 461 Round Scad 19 Saddled Blenny 112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
461 Round Scad  19 Saddled Blenny  112 Sailors Choice  101 Scamp  539 School Bass  196 Schoolmaster  70 Scrawled Filefish  21 Seaweed Blenny  52 Sergeant Major	
112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
112 Sailors Choice 101 Scamp 539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
539 School Bass 196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
196 Schoolmaster 70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
70 Scrawled Filefish 21 Seaweed Blenny 52 Sergeant Major	
21 Seaweed Blenny 52 Sergeant Major	
52 Sergeant Major	
231 Sharksucker	
167 Sharpnose Puffer 2 5 7	6
232 Silversides, Herrings, Anchovies	J

### Vandenberg Nov 09 LA

Sp#	Name	#	Min	Max	Mean	
71	Slender Filefish		•	•		
	Slippery Dick					
113	Smallmouth Grunt					
	Spanish Grunt					
131	Spanish Hogfish					
	Spotfin Butterflyfish					
	Spotfin Hogfish					
59	Spotted Drum					
76	Spotted Goatfish					
	Spotted Scorpionfish					
155	Stoplight Parrotfish					
	Striped Grunt					
	Striped Parrotfish					
	Sunshinefish					
	Tarpon					
	Threespot Damselfish					
	Tobaccofish					
	Tomtate		1	10	10	10
	Trumpetfish					
	Twospot Cardinalfish					
117	White Grunt					
	White Margate					
	Wrasse Blenny					
	Yellow Goatfish					
	Yellow Jack					
	Yellowfin Grouper					
	Yellowhead Wrasse					
	Yellowmouth Grouper					
	Yellowtail (Redfin) Parrotfish					
46	Yellowtail Reeffish					
197	Yellowtail Snapper		3	30	30	30
	# Species		9			
	# Fish		43			

### Vandenberg Nov 09 SG

Sp#	Name	#	Min	Max	Mean	
44	19 Almaco Jack		•	·	•	
3	BO Banded Butterflyfish					
16	64 Bandtail Puffer					
59	94 Bank Butterflyfish					
13	33 Bar Jack					
31	1 Barred Blenny					
3	B5 Barred Cardinalfish					
11	8 Barred Hamlet					
4	17 Beaugregory					
	21 Bermuda Chub/Yellow Chub					
	18 Bicolor Damselfish		8	6	8	7
9	91 Black Grouper	$\neg$				
	B9 Blackfin Snapper	$\neg$				
	1 Blue Angelfish					
4	12 Blue Chromis		3	8	11	10
	14 Blue Parrotfish		J	· ·		
	34 Blue Runner					
	04 Blue Tang	_	3	12	30	25
	.3 Bluehead	_	60	4	10	7
	15 Bluelip Parrotfish	$\overline{}$	00	-	10	,
	05 Bluestriped Grunt	$\overline{}$				
	23 Boga	_				
	79 Bridled Goby	$\dashv$				
	13 Brown Chromis	_	1	7	7	7
	21 Butter Hamlet		1	,	,	,
	06 Caesar Grunt	_				
	12 Cero	$\dashv$				
	79 Chalk Bass	-				
	2 Cherubfish	_				
21	4 Clown Wrasse	-				
	19 Cocoa Damselfish					
	30 Colon Goby					
	77 Cottonwick					
	L5 Creole Wrasse	$\dashv$				
	30 Creole-fish					
	35 Crevalle Jack					
	90 Cubera Snapper	_				
	05 Doctorfish					
	50 Dusky Damselfish					
	31 Foureye Butterflyfish					
	3 French Angelfish	$\overline{}$				
10	08 French Grunt	$\overline{}$				
	31 Goldspot Goby	$\dashv$				
	96 Goliath Grouper (Jewfish)	-				
	4 Gray Angelfish	$\dashv$	1	40	40	40
1.0	92 Gray Snapper		1 3	40 40	40 45	40 42
	92 Gray Triggerfish		5	40	45	42
20	oldiak iliddellisii					

### Vandenberg Nov 09 SG

Sp#	Name	#	Min	Max	Mean	
	Graysby					
	Great Barracuda		2	65	85	75
	Greater Amberjack					
	Greenblotch Parrotfish					
183	Harlequin Bass		2	9	9	9
130	Hogfish					
	Horse-Eye Jack					
792	Juvenile Grunt					
473	King Mackerel					
599	Little Tunny					
657	Loggerhead Sea Turtle					
51	Longfin Damselfish					
32	Longsnout Butterflyfish					
457	Mackerel Scad					
194	Mahogany Snapper					
83	Masked Goby/Glass Goby					
148	Midnight Parrotfish					
187	Nurse Shark					
206	Ocean Surgeonfish					
209	Ocean Triggerfish					
113	Porkfish					
149	Princess Parrotfish					
44	Purple Reeffish					
394	Pygmy Filefish	7				
1	Queen Angelfish					
150	Queen Parrotfish					
210	Queen Triggerfish	7				
15:	Rainbow Parrotfish		1	55	55	55
140	Rainbow Runner					
683	Red Lionfish (exotic)					
152	Redband Parrotfish					
226	Redspotted Hawkfish	7				
154	Redtail Parrotfish					
33	Reef Butterflyfish		1	10	10	10
(	Rock Beauty					
463	Round Scad					
19	Saddled Blenny					
112	Sailors Choice	7				
10:	Scamp					
539	School Bass					
196	Schoolmaster					
70	Scrawled Filefish					
2:	Seaweed Blenny	7				
	Sergeant Major	1				
	Sharksucker	7				
	7 Sharpnose Puffer	7				
	Silversides, Herrings, Anchovies	7				
		_				

### Vandenberg Nov 09 SG

Sp#	Name	#	Min	Max	Mean	
71	Slender Filefish		•	•	•	
	Slippery Dick	7				
113	Smallmouth Grunt	1				
114	Spanish Grunt	7				
	Spanish Hogfish	7				
34	Spotfin Butterflyfish	7				
	Spotfin Hogfish					
	Spotted Drum					
76	Spotted Goatfish	7				
178	Spotted Scorpionfish	7				
	Stoplight Parrotfish	7				
	Striped Grunt	7				
	Striped Parrotfish	7				
45	Sunshinefish	7				
237	Tarpon	1				
53	Threespot Damselfish	1				
185	Tobaccofish	7				
116	Tomtate	7				
239	Trumpetfish	7				
40	Twospot Cardinalfish	7				
117	White Grunt	7				
110	White Margate					
339	Wrasse Blenny	7				
77	Yellow Goatfish	7				
	Yellow Jack					
	Yellowfin Grouper					
	Yellowhead Wrasse					
	Yellowmouth Grouper					
	Yellowtail (Redfin) Parrotfish					
	Yellowtail Reeffish					
197	Yellowtail Snapper	]	2	32	36	34
	# Species	1	2			
	# Fish	8				
	!					

### Vandenberg Nov 09 LC

Sp#	Name	#	Min	Max	Mean	
449	Almaco Jack		•	•	•	
30	Banded Butterflyfish	7				
164	Bandtail Puffer	7				
594	Bank Butterflyfish	7				
133	Bar Jack	7				
311	Barred Blenny	7				
35	Barred Cardinalfish	7				
118	Barred Hamlet	7				
47	Beaugregory					
221	Bermuda Chub/Yellow Chub	7				
48	Bicolor Damselfish	7	25	3	7	5
91	Black Grouper					
	Blackfin Snapper	7				
	Blue Angelfish	7				
	Blue Chromis	7				
144	Blue Parrotfish	7				
134	Blue Runner	1				
	Blue Tang	1				
	Bluehead		40	4	12	8
	Bluelip Parrotfish	1	10	•	- <b>-</b>	Ü
	Bluestriped Grunt	1				
	Boga	1				
	Bridled Goby	-				
	Brown Chromis	-				
	Butter Hamlet	1				
	Caesar Grunt	7				
	Cero	7				
	Chalk Bass	1				
	Cherubfish	1				
	Clown Wrasse					
	Cocoa Damselfish	1				
	Colon Goby	1				
	Cottonwick	-				
	Creole Wrasse	┪				
	Creole-fish	┪				
	Crevalle Jack	1				
	Cubera Snapper	┥				
	Doctorfish	┥				
	Dusky Damselfish	┥				
	Foureye Butterflyfish	┥				
	French Angelfish	┥				
	French Grunt	┪				
	Goldspot Goby	┥				
	Goliath Grouper (Jewfish)	┪				
	Gray Angelfish	1				
	Gray Snapper	┥				
	Gray Triggerfish	1				
		_				

### Vandenberg Nov 09 LC

95 Graysby 7 Great Barracuda 136 Greater Amberjac						
136 Greater Amberjac						
		5	5	40	75	57
	ck					
147 Greenblotch Parro	otfish					
181 Harlequin Bass		1	L	10	10	10
130 Hogfish						
137 Horse-Eye Jack						
792 Juvenile Grunt						
473 King Mackerel						
599 Little Tunny						
657 Loggerhead Sea	Turtle					
51 Longfin Damselfis	sh					
32 Longsnout Butter	flyfish					
457 Mackerel Scad						
194 Mahogany Snapp	er					
83 Masked Goby/Gla	ss Goby					
148 Midnight Parrotfis	sh					
187 Nurse Shark						
206 Ocean Surgeonfis	sh					
209 Ocean Triggerfish						
111 Porkfish						
149 Princess Parrotfis	h					
44 Purple Reeffish						
394 Pygmy Filefish						
5 Queen Angelfish						
150 Queen Parrotfish						
210 Queen Triggerfish	l					
151 Rainbow Parrotfis	h	1	<u>[</u>	75	75	75
140 Rainbow Runner						
683 Red Lionfish (exo	tic)					
152 Redband Parrotfis	sh					
226 Redspotted Hawk	fish					
154 Redtail Parrotfish						
33 Reef Butterflyfish						
6 Rock Beauty						
461 Round Scad						
19 Saddled Blenny						
112 Sailors Choice						
101 Scamp						
539 School Bass						
196 Schoolmaster						
70 Scrawled Filefish						
21 Seaweed Blenny						
52 Sergeant Major						
231 Sharksucker						
167 Sharpnose Puffer		1	L	6	6	6
232 Silversides, Herri	ngs, Anchovies					

### Vandenberg Nov 09 LC

Sp#	Name	#	Min	Max	Mean	
71	Slender Filefish				•	
	Slippery Dick	]				
113	Smallmouth Grunt					
114	Spanish Grunt					
131	Spanish Hogfish					
34	Spotfin Butterflyfish					
132	Spotfin Hogfish					
59	Spotted Drum					
76	Spotted Goatfish					
178	Spotted Scorpionfish					
155	Stoplight Parrotfish					
115	Striped Grunt					
	Striped Parrotfish	1				
45	Sunshinefish					
237	Tarpon					
53	Threespot Damselfish					
185	Tobaccofish	1				
116	Tomtate					
239	Trumpetfish					
40	Twospot Cardinalfish					
117	White Grunt					
110	White Margate					
339	Wrasse Blenny					
77	Yellow Goatfish					
141	Yellow Jack					
103	Yellowfin Grouper					
220	Yellowhead Wrasse	]				
104	Yellowmouth Grouper	]				
153	Yellowtail (Redfin) Parrotfish	]				
46	Yellowtail Reeffish	]				
197	Yellowtail Snapper	20	2	0	30	25
	# Species	7	,			
	# Fish	93				
		1				

### Joe's Tug March 10 AA

Sp#	Name	#	Min	Max	Mean	
	Atlantic Spadefish		1			
	Banded Butterflyfish	1				
	Bar Jack	1				
47	Beaugregory	1				
	Bermuda Chub/Yellow	1				
221	Chub					
	Bicolor Damselfish	] 8	3	5	9	7
	Black Grouper					
	Black Margate	]				
	Blue Angelfish					
	Blue Chromis	] :	2	9	11	10
	Blue Dartfish (Blue Goby)					
	Blue Hamlet	_				
	Blue Parrotfish					
	Blue Runner	]				
	Blue Tang	1				
	Bluehead		9	5	11	8
	Bluelip Parrotfish	]				
	Bluestriped Grunt	] :	2	28	32	30
	Boga	1				
	Bridled Goby	1				
	Brown Chromis	1				
	Butter Hamlet	1				
	Caesar Grunt	1				
	Challe Bass	1				
	Chalk Bass Cherubfish	-				
	Clown Wrasse	-				
	Cocoa Damselfish	1				
	Colon Goby	1				
	Coney	1				
	Cottonwick	-				
	Creole Wrasse		7	7	25	16
	Creole-fish	-	7	7	25	16
	Cubbyu	1				
	Doctorfish	1				
	Dusky Damselfish	1				
	Foureye Butterflyfish	1	1	7	7	7
	French Angelfish	1	<u>-</u>	,	,	,
	French Grunt	50	)	14	25	19
	Gag	1 3	•			10
	Goldentail Moray	1				
	Goldspot Goby	1				
	Goliath Grouper (Jewfish)	†				
	Gray Angelfish	†				
	Gray Snapper	†				
	Graysby	1				
	·	1				

### Joe's Tug March 10 AA

Great Barracuda   136   Greater Amberjack   234   Greater Soapfish   63   Greater Moray   147   Greenblotch Parrotfish   843   Hamlet - Juvenile   181   Harlequin Bass   56   Highhat   130   Hogfish   25   Honeycomb Cowfish   792   Juvenile Grunt   193   Lane Snapper   51   Longfin Damselfish   201   Longspine Squirrelfish   83   Masked Goby/Glass Goby   148   Midnight Parrotfish   195   Mutton Snapper   84   Neon Goby   206   Ocean Surgeonfish   1   16   16   16   16   16   16   16	Sp#	Name	#	Min	Max	Mean	
234   Greater Soapfish   63   Green Moray   147   Greenblotch Parrotfish   843   Hamlet - Juvenile   181   Harlequin Bass   56   Highhat   130   Hogfish   25   Honeycomb Cowfish   792   Juvenile Grunt   193   Lane Snapper   51   Longfin Damselfish   201   Longspine Squirrelfish   83   Masked Goby/Glass Goby   148   Midnight Parrotfish   195   Mutton Snapper   84   Neon Goby   206   Ocean Surgeonfish   1	7	Great Barracuda		•		<u> </u>	
63   Green Moray   147   Greenblotch Parrotfish   843   Hamlet - Juvenile   181   Harlequin Bass   56   Highhat   130   Hogfish   25   Honeycomb Cowfish   792   Juvenile Grunt   193   Lane Snapper   51   Longfin Damselfish   201   Longspine Squirrelfish   83   Masked Goby/Glass Goby   148   Midnight Parrotfish   195   Mutton Snapper   84   Neon Goby   206   Ocean Surgeonfish   1	136	Greater Amberjack	1				
147   Greenblotch Parrotfish   843   Hamlet - Juvenile   181   Harlequin Bass   56   Highhat   130   Hogfish   25   Honeycomb Cowfish   792   Juvenile Grunt   193   Lane Snapper   51   Longfin Damselfish   201   Longspine Squirrelfish   83   Masked Goby/Glass Goby   148   Midnight Parrotfish   195   Mutton Snapper   84   Neon Goby   206   Ocean Surgeonfish   1   16   16   16   209   Ocean Triggerfish   86   Pallid Goby   166   Porcupinefish   111   Porkfish   3   23   36   28   149   Princess Parrotfish   216   Puddingwife   44   Purple Reeffish   5   Queen Angelfish   150   Queen Angelfish   151   Rainbow Parrotfish   151   Rainbow Parrotfish   151   Rainbow Parrotfish   152   Redband Parrotfish   154   Redtail Parrotfish   155   Reef Croaker   6   Rock Beauty   100   Rock Hind   336   Roughhead Blenny   461   Round Scad   100   10   25   17   19   Saddled Blenny   230   Sand Diver   160   Saucereye Porgy   196   Schoolmaster   1   28   28   28   28   26   Scrawled Filefish   21   Seaweed Blenny   21   Seaweed Blenny   22   Seaweed Blenny   23   Scrawled Filefish   21   Seaweed Blenny   23   Seaweed Blenny   24   Seaweed Blenny   25   Seaweed Blenny   25   Seaweed Blenny   25   Seaweed Blenny   25   Seaweed Blenny   25   Seaweed Blenny   26   Scrawled Filefish   21   Seaweed Blenny   25   Seaweed Blenny   26   Scrawled Filefish   27   Seaweed Blenny   28   Seaw	234	Greater Soapfish	1				
843   Hamlet - Juvenile   181   Harlequin Bass   56   Highhat   130   Hogfish   25   Honeycomb Cowfish   792   Juvenile Grunt   193   Lane Snapper   51   Longfin Damselfish   201   Longspine Squirrelfish   83   Masked Goby/Glass Goby   148   Midnight Parrotfish   195   Mutton Snapper   84   Neon Goby   206   Ocean Surgeonfish   1   16   16   16   16   209   Ocean Triggerfish   86   Pallid Goby   166   Porcupinefish   111   Porkfish   3   23   36   28   149   Princess Parrotfish   216   Puddingwife   44   Purple Reeffish   5   Queen Angelfish   150   Queen Parrotfish   151   Rainbow Parrotfish   151   Rainbow Parrotfish   151   Rainbow Runner   683   Red Lionfish (exotic)   152   Redband Parrotfish   154   Redtail Parrotfish   33   Reef Butterflyfish   58   Reef Croaker   6   Rock Beauty   100   Rock Hind   336   Roughhead Blenny   461   Round Scad   100   10   25   17   19   Saddled Blenny   230   Sand Diver   160   Saucereye Porgy   196   Schoolmaster   1   28   28   28   28   28   28   Corawled Cowfish   70   Scrawled Cowfish   70   Scrawled Cowfish   70   Scrawled Cowfish   70   Scrawled Filefish   21   Seaweed Blenny	63	Green Moray					
181   Harlequin Bass   56   Highhat   130   Hogfish   25   Honeycomb Cowfish   792   Juvenile Grunt   193   Lane Snapper   51   Longfin Damselfish   201   Longspine Squirrelfish   83   Masked Goby/Glass Goby   148   Midnight Parrotfish   195   Mutton Snapper   84   Neon Goby   206   Ocean Surgeonfish   1	147	Greenblotch Parrotfish					
130   Hogfish   130   Hogfish   25   Honeycomb Cowfish   792   Juvenile Grunt   193   Lane Snapper   51   Longfin Damselfish   201   Longspine Squirrelfish   83   Masked Goby/Glass Goby   148   Midnight Parrotfish   195   Mutton Snapper   84   Neon Goby   206   Ocean Surgeonfish   1	843	Hamlet - Juvenile	1				
130   Hogfish   25   Honeycomb Cowfish   792   Juvenile Grunt   193   Lane Snapper   51   Longfin Damselfish   201   Longspine Squirrelfish   83   Masked Goby/Glass Goby   148   Midnight Parrotfish   195   Mutton Snapper   84   Neon Goby   206   Ocean Surgeonfish   1   16   16   16   209   Ocean Triggerfish   86   Pallid Goby   166   Porcupinefish   111   Porkfish   3   23   36   28   28   249   Princess Parrotfish   216   Puddingwife   44   Purple Reeffish   5   Queen Angelfish   150   Queen Parrotfish   151   Rainbow Parrotfish   140   Rainbow Runner   683   Red Lionfish (exotic)   152   Redband Parrotfish   154   Redtail Parrotfish   155   Reef Croaker   6   Rock Beauty   100   Rock Hind   336   Roughhead Blenny   230   Sand Diver   160   Saucereye Porgy   196   Scrawled Cowfish   70   Scrawled Filefish   21   Seaweed Blenny   22   Seaweed Blenny   22   Seaweed Blenny   22   Seaweed Blenny   22   Seaweed Blenny   23   Seaweed Blenny   24   Seaweed Blenny   25   Seaweed Blenny   26   Scrawled Cowfish   70   Scrawled Filefish   21   Seaweed Blenny   25   Seaweed Blenny   26   Scrawled Cowfish   27   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   28   Seaweed Blenny   38   Se	181	Harlequin Bass					
25   Honeycomb Cowfish   792   Juvenile Grunt   193   Lane Snapper   51   Longfin Damselfish   201   Longspine Squirrelfish   83   Masked Goby/Glass Goby   148   Midnight Parrotfish   195   Mutton Snapper   84   Neon Goby   206   Ocean Surgeonfish   1	56	Highhat					
792   Juvenile Grunt   193   Lane Snapper   51   Longfin Damselfish   201   Longspine Squirrelfish   83   Masked Goby/Glass Goby   148   Midnight Parrotfish   195   Mutton Snapper   84   Neon Goby   206   Ocean Surgeonfish   1	130	Hogfish	1				
193   Lane Snapper   51   Longfin Damselfish   201   Longspine Squirrelfish   83   Masked Goby/Glass Goby   148   Midnight Parrotfish   195   Mutton Snapper   84   Neon Goby   206   Ocean Surgeonfish   1	25	Honeycomb Cowfish	1				
51 Longfin Damselfish 201 Longspine Squirrelfish 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 195 Mutton Snapper 84 Neon Goby 206 Ocean Surgeonfish 1 16 16 16 209 Ocean Triggerfish 86 Pallid Goby 166 Porcupinefish 111 Porkfish 3 23 36 28 149 Princess Parrotfish 216 Puddingwife 44 Purple Reeffish 5 Queen Angelfish 150 Queen Parrotfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 154 Redtail Parrotfish 155 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 100 10 25 17 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 21 Seaweed Blenny 21 Seaweed Blenny	792	Juvenile Grunt					
201 Longspine Squirrelfish 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 195 Mutton Snapper 84 Neon Goby 206 Ocean Surgeonfish 86 Pallid Goby 166 Porcupinefish 111 Porkfish 216 Puddingwife 44 Purple Reeffish 5 Queen Angelfish 150 Queen Parrotfish 151 Rainbow Parrotfish 151 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 154 Redtail Parrotfish 155 Reef Butterflyfish 58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 21 Seaweed Blenny 21 Seaweed Blenny	193	Lane Snapper	1				
201 Longspine Squirrelfish 83 Masked Goby/Glass Goby 148 Midnight Parrotfish 195 Mutton Snapper 84 Neon Goby 206 Ocean Surgeonfish 86 Pallid Goby 166 Porcupinefish 111 Porkfish 216 Puddingwife 44 Purple Reeffish 5 Queen Angelfish 150 Queen Parrotfish 151 Rainbow Parrotfish 151 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 154 Redtail Parrotfish 155 Reef Butterflyfish 58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 21 Seaweed Blenny 21 Seaweed Blenny			1				
83 Masked Goby/Glass Goby 148 Midnight Parrotfish 195 Mutton Snapper 84 Neon Goby 206 Ocean Surgeonfish 86 Pallid Goby 166 Porcupinefish 111 Porkfish 216 Puddingwife 44 Purple Reeffish 5 Queen Angelfish 150 Queen Parrotfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 154 Redtail Parrotfish 33 Reef Butterflyfish 58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 21 Seaweed Blenny 21 Seaweed Blenny		-	1				
148 Midnight Parrotfish         195 Mutton Snapper         84 Neon Goby         206 Ocean Surgeonfish       1       16       16         209 Ocean Triggerfish         86 Pallid Goby       166 Porcupinefish         111 Porkfish       3       23       36       28         149 Princess Parrotfish       3       23       36       28         149 Princess Parrotfish       3       23       36       28         44 Purple Reeffish       5       Queen Angelfish       5       Queen Angelfish       150 Queen Parrotfish       151 Rainbow Parrotfish       151 Rainbow Parrotfish       152 Redband Parrotfish       154 Redtail Parrotfish       154 Redtail Parrotfish       33 Reef Butterflyfish       58 Reef Croaker       6 Rock Beauty       100 Rock Hind       336 Roughhead Blenny       100 Rock Hind       336 Roughhead Blenny       100 Description Sound Sound Parrotfish       17       19 Saddled Blenny       100 Description Sound Parrotfish       17       19 Saddled Blenny       100 Description Sound Parrotfish       100 Description	83	Masked Goby/Glass Goby	1				
195   Mutton Snapper   84   Neon Goby   206   Ocean Surgeonfish   1   16   16   16   209   Ocean Triggerfish   86   Pallid Goby   166   Porcupinefish   111   Porkfish   3   23   36   28   149   Princess Parrotfish   216   Puddingwife   44   Purple Reeffish   5   Queen Angelfish   150   Queen Parrotfish   151   Rainbow Parrotfish   140   Rainbow Runner   683   Red Lionfish (exotic)   152   Redband Parrotfish   154   Redtail Parrotfish   33   Reef Butterflyfish   58   Reef Croaker   6   Rock Beauty   100   Rock Hind   336   Roughhead Blenny   461   Round Scad   100   10   25   17   19   Saddled Blenny   230   Sand Diver   160   Saucereye Porgy   196   Schoolmaster   1   28   28   28   28   26   Scrawled Cowfish   70   Scrawled Filefish   21   Seaweed Blenny			1				
84   Neon Goby   206   Ocean Surgeonfish   1			†				
209 Ocean Triggerfish 86 Pallid Goby 166 Porcupinefish 111 Porkfish 3 23 36 28 149 Princess Parrotfish 216 Puddingwife 44 Purple Reeffish 5 Queen Angelfish 150 Queen Parrotfish 140 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 33 Reef Butterflyfish 58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 100 10 25 17 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 21 Seaweed Blenny 23 Seaweed Blenny			†				
209 Ocean Triggerfish 86 Pallid Goby 166 Porcupinefish 111 Porkfish 3 23 36 28 149 Princess Parrotfish 216 Puddingwife 44 Purple Reeffish 5 Queen Angelfish 150 Queen Parrotfish 140 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 33 Reef Butterflyfish 58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 100 10 25 17 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 21 Seaweed Blenny 23 Seaweed Blenny	206	Ocean Surgeonfish	1 1	L	16	16	16
166 Porcupinefish         111 Porkfish       3       23       36       28         149 Princess Parrotfish       216 Puddingwife       44 Purple Reeffish       5 Queen Angelfish       5 Queen Parrotfish       150 Queen Parrotfish       151 Rainbow Parrotfish       140 Rainbow Runner       683 Red Lionfish (exotic)       152 Redband Parrotfish       154 Redtail Parrotfish       33 Reef Butterflyfish       58 Reef Croaker       6 Rock Beauty       100 Rock Hind       336 Roughhead Blenny       100 10 25 17       17         461 Round Scad       100 10 25 17       17       19 Saddled Blenny       230 Sand Diver       160 Saucereye Porgy       196 Schoolmaster       1 28 28 28 28       28         26 Scrawled Cowfish       70 Scrawled Filefish       21 Seaweed Blenny       1 28 28 28       28			†				
111 Porkfish 149 Princess Parrotfish 216 Puddingwife 44 Purple Reeffish 5 Queen Angelfish 150 Queen Parrotfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 154 Redtail Parrotfish 33 Reef Butterflyfish 58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 100 10 25 17 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	86	Pallid Goby	-				
149 Princess Parrotfish 216 Puddingwife 44 Purple Reeffish 5 Queen Angelfish 150 Queen Parrotfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 154 Redtail Parrotfish 33 Reef Butterflyfish 58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 100 10 25 17 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	166	Porcupinefish					
216 Puddingwife  44 Purple Reeffish  5 Queen Angelfish  150 Queen Parrotfish  151 Rainbow Parrotfish  140 Rainbow Runner  683 Red Lionfish (exotic)  152 Redband Parrotfish  154 Redtail Parrotfish  33 Reef Butterflyfish  58 Reef Croaker  6 Rock Beauty  100 Rock Hind  336 Roughhead Blenny  461 Round Scad  100  10  25  17  19 Saddled Blenny  230 Sand Diver  160 Saucereye Porgy  196 Schoolmaster  26 Scrawled Cowfish  70 Scrawled Filefish  21 Seaweed Blenny	111	Porkfish	1 3	3	23	36	28
44 Purple Reeffish 5 Queen Angelfish 150 Queen Parrotfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 154 Redtail Parrotfish 33 Reef Butterflyfish 58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 100 10 25 17 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	149	Princess Parrotfish	1				
5 Queen Angelfish 150 Queen Parrotfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 154 Redtail Parrotfish 33 Reef Butterflyfish 58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 100 10 25 17 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	216	Puddingwife	1				
150 Queen Parrotfish 151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 154 Redtail Parrotfish 33 Reef Butterflyfish 58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 100 10 25 17 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	44	Purple Reeffish	1				
151 Rainbow Parrotfish 140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 154 Redtail Parrotfish 33 Reef Butterflyfish 58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 100 10 25 17 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	5	Queen Angelfish	1				
140 Rainbow Runner 683 Red Lionfish (exotic) 152 Redband Parrotfish 154 Redtail Parrotfish 33 Reef Butterflyfish 58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 100 10 25 17 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	150	Queen Parrotfish	1				
683 Red Lionfish (exotic) 152 Redband Parrotfish 154 Redtail Parrotfish 33 Reef Butterflyfish 58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 100 10 25 17 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 1 28 28 28 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	151	Rainbow Parrotfish					
152 Redband Parrotfish 154 Redtail Parrotfish 33 Reef Butterflyfish 58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 100 10 25 17 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	140	Rainbow Runner	1				
152 Redband Parrotfish 154 Redtail Parrotfish 33 Reef Butterflyfish 58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 100 10 25 17 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	683	Red Lionfish (exotic)	1				
33 Reef Butterflyfish 58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 100 10 25 17 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	152	Redband Parrotfish	1				
58 Reef Croaker 6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 100 10 25 17 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	154	Redtail Parrotfish	1				
6 Rock Beauty 100 Rock Hind 336 Roughhead Blenny 461 Round Scad 100 10 25 17 19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	33	Reef Butterflyfish	1				
100 Rock Hind         336 Roughhead Blenny         461 Round Scad       100       10       25       17         19 Saddled Blenny         230 Sand Diver       160 Saucereye Porgy         196 Schoolmaster       1       28       28       28         26 Scrawled Cowfish       70 Scrawled Filefish       21 Seaweed Blenny	58	Reef Croaker	1				
336 Roughhead Blenny         461 Round Scad       100       10       25       17         19 Saddled Blenny       230 Sand Diver         160 Saucereye Porgy       1       28       28       28         26 Scrawled Cowfish       70 Scrawled Filefish       21 Seaweed Blenny	6	Rock Beauty	1				
461 Round Scad       100       10       25       17         19 Saddled Blenny       230 Sand Diver       160 Saucereye Porgy       196 Schoolmaster       1       28       28       28         26 Scrawled Cowfish       70 Scrawled Filefish       21 Seaweed Blenny       25       17	100	Rock Hind	1				
19 Saddled Blenny 230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	336	Roughhead Blenny	1				
230 Sand Diver 160 Saucereye Porgy 196 Schoolmaster 1 28 28 28 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	461	Round Scad	100	)	10	25	17
160 Saucereye Porgy 196 Schoolmaster 1 28 28 28 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	19	Saddled Blenny	]				
196 Schoolmaster 1 28 28 28 26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	230	Sand Diver	]				
26 Scrawled Cowfish 70 Scrawled Filefish 21 Seaweed Blenny	160	Saucereye Porgy	1				
70 Scrawled Filefish 21 Seaweed Blenny	196	Schoolmaster	] 1	L	28	28	28
21 Seaweed Blenny	26	Scrawled Cowfish	]				
·			]				
52 Sergeant Major         7         12         22         18	21	Seaweed Blenny	]				
	52	Sergeant Major	] 7	7	12	22	18

### Joe's Tug March 10 AA

Sp#	Name	#	N	1in	Max	Mean
	Sharksucker		I			
	Sharpnose Puffer	$\neg$	1	5	5	5
71	Slender Filefish					
218	Slippery Dick					
27	Smooth Trunkfish					
114	Spanish Grunt					
131	Spanish Hogfish					
	Spotfin Butterflyfish					
	Spotfin Hogfish					
76	Spotted Goatfish					
	Spotted Trunkfish					
	Squirrelfish					
155	Stoplight Parrotfish					
	Striped Parrotfish					
	Sunshinefish					
	Threespot Damselfish					
185	Tobaccofish					
116	Tomtate					
592	Townsend Angelfish					
622	Triplefin species					
239	Trumpetfish					
117	White Grunt		1	26	26	26
77	Yellow Goatfish					
	Yellow Jack					
219	Yellowcheek Wrasse					
	Yellowhead Jawfish					
220	Yellowhead Wrasse					
	Yellowtail (Redfin)					
	Parrotfish					
	Yellowtail Damselfish					
	Yellowtail Reeffish					
197	Yellowtail Snapper					
	# Species	$\Box$	14			
	# Fish		213			

# Joe's Tug Mar 10 LA

Sp#	Name	#	Min	Max	Mean	
	Atlantic Spadefish				<u> </u>	
30	Banded Butterflyfish	1				
133	Bar Jack	1				
47	Beaugregory	1				
	Bermuda Chub/Yellow	1				
	Chub	]				
	Bicolor Damselfish					
	Black Grouper	1				
	Black Margate	1				
	Blue Angelfish	1	1			35
	Blue Chromis	1				
	Blue Dartfish (Blue Goby)	1				
	Blue Hamlet	1				
	Blue Parrotfish	1				
	Blue Runner					
	Blue Tang	]	1			14
	Bluehead		2			3
	Bluelip Parrotfish					
105	Bluestriped Grunt		17	22	26	24
	Boga					
79	Bridled Goby					
43	Brown Chromis	1				
121	Butter Hamlet	1				
106	Caesar Grunt	1				
142	Cero	1				
	Chalk Bass					
2	Cherubfish	1				
1	Clown Wrasse					
49	Cocoa Damselfish	]				
	Colon Goby					
93	Coney					
107	Cottonwick					
215	Creole Wrasse		3			12
180	Creole-fish					
	Cubbyu					
205	Doctorfish	1				
	Dusky Damselfish					
	Foureye Butterflyfish					
3	French Angelfish					
108	French Grunt	]	220	16	20	20
94	Gag					
62	Goldentail Moray	]				
	Goldspot Goby					
	Goliath Grouper (Jewfish)					
4	Gray Angelfish	1				
192	Gray Snapper	1				
95	Graysby	1				
		_				

# Joe's Tug Mar 10 LA

Sp#	Name	#	Min	Max	Mea	n
_	Great Barracuda		<u> </u>			
136	Greater Amberjack	1	1			100
234	Greater Soapfish	İ				
63	Green Moray	1				
	Greenblotch Parrotfish	†				
843	Hamlet - Juvenile	1				
181	Harlequin Bass	†				
	Highhat	†				
	Hogfish	1				
	Honeycomb Cowfish	1				
	Juvenile Grunt	†				
193	Lane Snapper	†				
	Longfin Damselfish	†				
	Longspine Squirrelfish	†				
	Masked Goby/Glass Goby	†	1			4
	Midnight Parrotfish	†	_			-
	Mutton Snapper	†				
	Neon Goby	†				
	Ocean Surgeonfish	†	2			18
	Ocean Triggerfish	†	_			
	Pallid Goby	†				
	Porcupinefish	†				
	Porkfish	†				
149	Princess Parrotfish	†	1			30
216	Puddingwife	İ	_			
	Purple Reeffish	1				
	Queen Angelfish	1				
150	Queen Parrotfish	1	1			30
151	Rainbow Parrotfish	1				
140	Rainbow Runner	İ				
683	Red Lionfish (exotic)	1				
	Redband Parrotfish	1				
154	Redtail Parrotfish	İ				
33	Reef Butterflyfish	1				
	Reef Croaker	1				
6	Rock Beauty	İ				
100	Rock Hind	1				
336	Roughhead Blenny	1				
	Round Scad	1				
19	Saddled Blenny	1				
	Sand Diver	1				
160	Saucereye Porgy	1				
	Schoolmaster	1	8	27	35	33
26	Scrawled Cowfish	1				
70	Scrawled Filefish	1				
	C   D	†				
21	Seaweed Blenny					

### Joe's Tug Mar 10 LA

Sp#	Name	#	Min	Max	Mean
231	Sharksucker		•		•
167	Sharpnose Puffer	7			
71	Slender Filefish	7			
218	Slippery Dick				
27	Smooth Trunkfish				
114	Spanish Grunt				
1	Spanish Hogfish				
34	Spotfin Butterflyfish				
132	Spotfin Hogfish				
76	Spotted Goatfish				
28	Spotted Trunkfish				
203	Squirrelfish				
155	Stoplight Parrotfish		1		45
	Striped Parrotfish				
45	Sunshinefish				
53	Threespot Damselfish				
185	Tobaccofish				
116	Tomtate				
592	Townsend Angelfish				
622	Triplefin species				
239	Trumpetfish				
117	White Grunt		2		22
77	Yellow Goatfish				
	Yellow Jack				
219	Yellowcheek Wrasse				
	Yellowhead Jawfish				
220	Yellowhead Wrasse				
	Yellowtail (Redfin)				
	Parrotfish	_			
	Yellowtail Damselfish		1		14
	Yellowtail Reeffish				
197	Yellowtail Snapper	_			
		_			
	# Species	_	16		
	# Fish		266		

# Vandenberg Mar 10 LA

Sp#	Name	#	Min	Max		Mean
449	Almaco Jack					
	Banded Butterflyfish					
164	Bandtail Puffer					
594	Bank Butterflyfish					
133	Bar Jack					
311	Barred Blenny					
35	Barred Cardinalfish					
118	Barred Hamlet					
47	Beaugregory					
221	Bermuda Chub/Yellow Chub					
48	Bicolor Damselfish		2			9
91	Black Grouper		1			38
	Blackfin Snapper					
	Blue Angelfish					
	Blue Chromis					
	Blue Parrotfish					
134	Blue Runner					
	Blue Tang		1			2:
	Bluehead		28	10	15	12
	Bluelip Parrotfish					
	Bluestriped Grunt					
	B Boga					
	Bridled Goby					
	B Brown Chromis					
	Butter Hamlet					
	Caesar Grunt					
	Cero					
	Chalk Bass					
	Cherubfish					
	Clown Wrasse					
	Cocoa Damselfish					
	Colon Goby					
	Cottonwick					
	Creole Wrasse	<del>-  </del> ,	14			16
	Creole-fish	-	14			1, 1,
	Crevalle Jack					
	Cubera Snapper					
	Doctorfish					
	Dusky Damselfish					
	Foureye Butterflyfish					
	French Angelfish					
	French Grunt					
	Goldspot Goby					
	Goliath Grouper (Jewfish)					
	Gray Angelfish					
	Gray Snapper					
208	Gray Triggerfish					

# Vandenberg Mar 10 LA

Sp#	Name	#	Min	Max	Mean
95	Graysby				
7	Great Barracuda	2	80	100	90
136	Greater Amberjack				
	Greenblotch Parrotfish				
181	Harlequin Bass				
130	Hogfish				
137	Horse-Eye Jack				
792	Juvenile Grunt				
473	King Mackerel				
599	Little Tunny				
657	Loggerhead Sea Turtle				
	Longfin Damselfish				
32	Longsnout Butterflyfish				
	Mackerel Scad				
194	Mahogany Snapper				
	Masked Goby/Glass Goby				
	Midnight Parrotfish				
	Nurse Shark				
	Ocean Surgeonfish				
	Ocean Triggerfish				
	Porkfish				
	Princess Parrotfish				
	Purple Reeffish			<u> </u>	
	Pygmy Filefish				
	Queen Angelfish			<u> </u>	
	Queen Parrotfish				
	Queen Triggerfish				
151	Rainbow Parrotfish				
	Rainbow Runner				
	Red Lionfish (exotic)				
	Redband Parrotfish				
	Redspotted Hawkfish				
	Redtail Parrotfish				
	Reef Butterflyfish	1			12
	Rock Beauty	1			12
	Round Scad	1	<u> </u>	<u> </u>	16
	Saddled Blenny	4500			15
	Sailors Choice				
	Scamp				
	School Bass				
	Schoolmaster				
	Scrawled Filefish				
	Seaweed Blenny				
	Sergeant Major	1			15
	Sharksucker				
	Sharpnose Puffer	2	5	7	6
232	Silversides, Herrings, Anchovies				

### Vandenberg Mar 10 LA

Sp#	Name	#	Min	Max	Mean
71	Slender Filefish				
218	Slippery Dick				
_	Smallmouth Grunt				
114	Spanish Grunt				
131	Spanish Hogfish				
34	Spotfin Butterflyfish				
	Spotfin Hogfish				
59	Spotted Drum				
76	Spotted Goatfish				
178	Spotted Scorpionfish				
155	Stoplight Parrotfish				
115	Striped Grunt				
156	Striped Parrotfish				
45	Sunshinefish				
237	Tarpon				
53	Threespot Damselfish				
185	Tobaccofish				
116	Tomtate				
239	Trumpetfish				
40	Twospot Cardinalfish				
117	White Grunt				
110	White Margate				
339	Wrasse Blenny				
77	Yellow Goatfish				
141	Yellow Jack				
103	Yellowfin Grouper				
220	Yellowhead Wrasse				
104	Yellowmouth Grouper				
153	Yellowtail (Redfin) Parrotfish				
46	Yellowtail Reeffish				
197	Yellowtail Snapper	8	25	35	32
	# Species	12			
	# Fish	4561			
				1	

### Vandenberg March 10 AA

Sp#	Name	#	Min	Max	Mean	
	Almaco Jack		<u>.</u>		<u> </u>	
30	Banded Butterflyfish					
164	Bandtail Puffer					
594	Bank Butterflyfish					
	Bar Jack					
311	Barred Blenny					
	Barred Cardinalfish					
118	Barred Hamlet					
47	Beaugregory					
	Bermuda Chub/Yellow Chub					
	Bicolor Damselfish		5	4	9	7
	Black Grouper		J			•
	Blackfin Snapper					
	Blue Angelfish	_				
	Blue Chromis					
	Blue Parrotfish					
	Blue Runner					
	Blue Tang		2	10	28	19
	Bluehead	$\overline{}$	6	5	12	9
	Bluelip Parrotfish		O	J	12	,
	Bluestriped Grunt					
	B Boga	_				
	Bridled Goby					
	Brown Chromis	_				
	Butter Hamlet	-				
	Caesar Grunt	_				
	Cero	_				
	Chalk Bass					
	Cherubfish	$\overline{}$				
	Clown Wrasse					
	Cocoa Damselfish		1	10	10	10
	Colon Goby	-	1	10	10	10
	Cottonwick	-				
	Creole Wrasse					
	Creole-fish	-				
	Crevalle Jack	-				
	Cubera Snapper					
	Doctorfish	_				
	Dusky Damselfish					
	Foureye Butterflyfish					
	French Angelfish					
	French Grunt	$\overline{}$				
	Goldspot Goby	<del> </del>				
	Goliath Grouper (Jewfish)	$\overline{}$				
	Gray Angelfish					
	Gray Snapper		1	26	26	36
	Gray Triggerfish		1	36	36	30
200	gray mygemsn					

# Vandenberg March 10 AA

Sp #	Name	#	Min	Max	Mean
95	Graysby				
7 (	Great Barracuda				
136	Greater Amberjack	6	74	110	86
147	Greenblotch Parrotfish				
181	Harlequin Bass				
130	Hogfish				
137	Horse-Eye Jack				
792	Juvenile Grunt				
473	King Mackerel				
599	Little Tunny				
657	Loggerhead Sea Turtle				
51	Longfin Damselfish				
32	Longsnout Butterflyfish				
457	Mackerel Scad				
194	Mahogany Snapper				
83	Masked Goby/Glass Goby				
148	Midnight Parrotfish				
187	Nurse Shark				
206	Ocean Surgeonfish	1	12	12	12
209	Ocean Triggerfish				
111	Porkfish				
149	Princess Parrotfish				
1	Purple Reeffish				
394	Pygmy Filefish				
5	Queen Angelfish				
	Queen Parrotfish				
	Queen Triggerfish				
151	Rainbow Parrotfish				
140	Rainbow Runner				
	Red Lionfish (exotic)				
	Redband Parrotfish				
1	Redspotted Hawkfish				
	Redtail Parrotfish				
	Reef Butterflyfish				
	Rock Beauty	1	10	10	10
	Round Scad	100	9	25	15
	Saddled Blenny				
1	Sailors Choice				
	Scamp				
	School Bass				
	Schoolmaster				
1	Scrawled Filefish				
	Seaweed Blenny				
	Sergeant Major				
	Sharksucker				
167	Sharpnose Puffer	1 1	4	4	4
	Silversides, Herrings, Anchovies		•	7	7

### Vandenberg March 10 AA

Sp#	Name	#	Min		Max	I	Mean	
7	1 Slender Filefish		•					
21	8 Slippery Dick							
11	3 Smallmouth Grunt							
11	4 Spanish Grunt							
13	1 Spanish Hogfish							
	4 Spotfin Butterflyfish							
13	2 Spotfin Hogfish		1	21		21		21
5	9 Spotted Drum							
	6 Spotted Goatfish							
	8 Spotted Scorpionfish							
	5 Stoplight Parrotfish							
	5 Striped Grunt							
	6 Striped Parrotfish							
	5 Sunshinefish							
	7 Tarpon							
	3 Threespot Damselfish							
	5 Tobaccofish							
	6 Tomtate							
	9 Trumpetfish							
	0 Twospot Cardinalfish							
	7 White Grunt							
	0 White Margate							
	9 Wrasse Blenny							
	7 Yellow Goatfish							
	1 Yellow Jack							
	3 Yellowfin Grouper							
	O Yellowhead Wrasse							
	4 Yellowmouth Grouper							
	3 Yellowtail (Redfin) Parrotfish							
	6 Yellowtail Reeffish							
19	7 Yellowtail Snapper							
	# Species		11					
	# Fish		125					

### Joe's Tug July 10 OT

Sp#	Name	#	Min	Max	Mean	
	Atlantic Spadefish					
	Banded Butterflyfish	1				
	Bar Jack	1				
47	Beaugregory	1				
	Bermuda Chub/Yellow	Ī				
	Chub					
	Bicolor Damselfish		7	1	4	3
	Black Grouper					
	Black Margate					
	Blue Angelfish					
1	Blue Chromis					
	Blue Dartfish (Blue Goby)					
	Blue Hamlet					
	Blue Parrotfish					
	Blue Runner					
	Blue Tang					
	Bluehead	Ī	8	1	6	2
145	Bluelip Parrotfish	1				
105	Bluestriped Grunt	1	25	17	25	20
23	Boga	1				
79	Bridled Goby	Ī	1	2	2	2
43	Brown Chromis	1				
121	Butter Hamlet	1				
106	Caesar Grunt	Ī				
142	Cero	Ī				
179	Chalk Bass	1				
2	Cherubfish	Ī				
214	Clown Wrasse	Ī				
49	Cocoa Damselfish	Ī				
	Colon Goby	Ī				
93	Coney	Ī				
	Cottonwick	Ī				
215	Creole Wrasse	Ī	4	12	17	14
180	Creole-fish	Ī				
55	Cubbyu	Ī				
205	Doctorfish	Ī				
50	Dusky Damselfish	1				
31	Foureye Butterflyfish	Ī				
3	French Angelfish	Ī				
108	French Grunt	]	13	14	18	16
94	Gag	1				
62	Goldentail Moray	1				
81	Goldspot Goby	1	1	2	2	2
96	Goliath Grouper (Jewfish)	1				
	Gray Angelfish	1				
192	Gray Snapper	1				
95	Graysby	1				
		•				

Sp#	Name	#	Min	Max	Mean	
	Great Barracuda					
136	Greater Amberjack	1				
234	Greater Soapfish	1				
63	Green Moray	1				
147	Greenblotch Parrotfish	1				
843	Hamlet - Juvenile	1				
181	Harlequin Bass	1	1	4	4	4
56	Highhat	1				
130	Hogfish	1				
25	Honeycomb Cowfish	1				
792	Juvenile Grunt	1				
193	Lane Snapper	1				
51	Longfin Damselfish	1				
201	Longspine Squirrelfish	1				
83	Masked Goby/Glass Goby	1 (	50	1	2	1
148	Midnight Parrotfish	1				
195	Mutton Snapper	1				
84	Neon Goby	1				
206	Ocean Surgeonfish	1	2	17	17	17
209	Ocean Triggerfish	1				
86	Pallid Goby	1				
166	Porcupinefish	1				
111	Porkfish	1	1	19	19	19
149	Princess Parrotfish	1				
216	Puddingwife	1				
44	Purple Reeffish	1				
5	Queen Angelfish	1				
150	Queen Parrotfish	1				
151	Rainbow Parrotfish	1				
140	Rainbow Runner	1				
683	Red Lionfish (exotic)	1				
	Redband Parrotfish	1	5	3	17	15
154	Redtail Parrotfish	1				
33	Reef Butterflyfish	1				
58	Reef Croaker	1				
6	Rock Beauty	1				
100	Rock Hind	1				
336	Roughhead Blenny	1				
461	Round Scad	1				
19	Saddled Blenny	1				
	Sand Diver	1				
160	Saucereye Porgy	1				
196	Schoolmaster	1 :	15	18	22	19
	Scrawled Cowfish	1				
	Scrawled Filefish	1				
21	Seaweed Blenny	1				
	Sergeant Major	1	2	8	8	8
		J				-

### Joe's Tug July 10 OT

Sp#	Name	#	Min	Max	Mean	
	Sharksucker		<u> </u>	<u> </u>	<u> </u>	
167	Sharpnose Puffer	$\neg$				
	Slender Filefish	$\dashv$				
218	Slippery Dick					
27	Smooth Trunkfish					
114	Spanish Grunt	$\neg$				
	Spanish Hogfish					
	Spotfin Butterflyfish					
	Spotfin Hogfish					
	Spotted Goatfish					
	Spotted Trunkfish					
	Squirrelfish	$\Box$				
	Stoplight Parrotfish		1	31	31	31
	Striped Parrotfish		1	14	14	14
1	Sunshinefish	_]				
	Threespot Damselfish					
	Tobaccofish					
	Tomtate					
	Townsend Angelfish					
	Triplefin species					
	Trumpetfish					
	White Grunt		6	16	19	18
	Yellow Goatfish					
	Yellow Jack					
	Yellowcheek Wrasse					
	Yellowhead Jawfish					
	Yellowhead Wrasse	_	4	2	6	4
	Yellowtail (Redfin)					
	Parrotfish	_				
	Yellowtail Damselfish	_				
	Yellowtail Reeffish	_				
197	Yellowtail Snapper	_				
		_				
		_				
	# Species	_	18			
	# Fish		157			

Sp#	Name	#	Min	Max	Mean
	Atlantic Spadefish				
	Banded Butterflyfish	1			
	Bar Jack	1			
	Beaugregory	1			
	Bermuda Chub/Yellow	1			
221	Chub				
48	Bicolor Damselfish	34	3	6	5
91	Black Grouper	1			
109	Black Margate	1			
	Blue Angelfish				
	Blue Chromis				
	Blue Dartfish (Blue Goby)				
	Blue Hamlet	] 1	12	12	12
144	Blue Parrotfish				
	Blue Runner				
	Blue Tang	] 1	12	12	12
	Bluehead	] 14	3	9	6
	Bluelip Parrotfish				
	Bluestriped Grunt	20	20	26	24
	Boga				
	Bridled Goby	] 1	6	6	6
	Brown Chromis				
	Butter Hamlet				
	Caesar Grunt				
	Cero				
	Chalk Bass				
	Cherubfish				
	Clown Wrasse				
	Cocoa Damselfish	1	8	8	8
	Colon Goby				
	Coney	]			
	Cottonwick				
	Creole Wrasse	2	10	20	15
	Creole-fish				
	Cubbyu				
	Doctorfish				
	Dusky Damselfish				
	Foureye Butterflyfish	2	8	8	8
	French Angelfish				
	French Grunt	120	16	16	16
	Gag				
	Goldentail Moray				
	Goldspot Goby				
	Goliath Grouper (Jewfish)	]			
	Gray Angelfish				
	Gray Snapper				
95	Graysby	] 1	18	18	18

Sp#	Name	#	Min	Max	Mean
7	Great Barracuda		-		
136	Greater Amberjack	1			
234	Greater Soapfish	1			
63	Green Moray	1			
147	Greenblotch Parrotfish	2	10	8	9
843	Hamlet - Juvenile	1			
181	Harlequin Bass	1	8	8	8
56	Highhat				
130	Hogfish	1			
25	Honeycomb Cowfish				
	Juvenile Grunt				
193	Lane Snapper				
51	Longfin Damselfish	1			
201	Longspine Squirrelfish	-			
83	Masked Goby/Glass Goby	150	2	3	3
148	Midnight Parrotfish	1			
195	Mutton Snapper	†			
84	Neon Goby	†			
206	Ocean Surgeonfish	3	15	15	15
	Ocean Triggerfish	1			_
	Pallid Goby	1			
	Porcupinefish	1			
	Porkfish	14	24	24	24
149	Princess Parrotfish	1	22	22	22
216	Puddingwife	1			
44	Purple Reeffish	1	4	4	4
5	Queen Angelfish	1			
150	Queen Parrotfish	1	22	22	22
151	Rainbow Parrotfish				
140	Rainbow Runner				
683	Red Lionfish (exotic)	1	16	16	16
	Redband Parrotfish	2			
154	Redtail Parrotfish	-			
33	Reef Butterflyfish	1			
58	Reef Croaker	1			
6	Rock Beauty	-			
100	Rock Hind	-			
336	Roughhead Blenny	1			
461	Round Scad	1			
19	Saddled Blenny	1			
230	Sand Diver	1			
160	Saucereye Porgy	1			
196	Schoolmaster	21	24	35	33
	Scrawled Cowfish	1			
70	Scrawled Filefish	1			
21	Seaweed Blenny	1			
52	Sergeant Major	4	14	15	15
		1 .			

# Joe's Tug July 10 LA

Sp#	Name	#	Min	N	Лах	Mean
231	Sharksucker		•			
167	Sharpnose Puffer		1	6	6	6
71	Slender Filefish					
218	Slippery Dick					
27	Smooth Trunkfish					
	Spanish Grunt					
131	Spanish Hogfish		1	15	15	15
34	Spotfin Butterflyfish					
132	Spotfin Hogfish					
76	Spotted Goatfish					
28	Spotted Trunkfish					
203	Squirrelfish					
155	Stoplight Parrotfish					
156	Striped Parrotfish		2	6	6	6
45	Sunshinefish		16	2	3	3
53	Threespot Damselfish					
185	Tobaccofish					
116	Tomtate					
592	Townsend Angelfish					
622	Triplefin species					
239	Trumpetfish					
117	White Grunt		1	24	24	24
77	Yellow Goatfish					
	Yellow Jack					
219	Yellowcheek Wrasse					
228	Yellowhead Jawfish					
220	Yellowhead Wrasse		3	7	12	9
	Yellowtail (Redfin)					
	Parrotfish					
	Yellowtail Damselfish					
	Yellowtail Reeffish					
197	Yellowtail Snapper	$\exists$	1	24	24	24
	# Species		20			
	# Species	-	30 422			
	# Fish		423			

### Vandenberg July 10 LA

Sp#	Name	#	Min	Max	Mean	
44	9 Almaco Jack				·	
3	0 Banded Butterflyfish					
16	4 Bandtail Puffer					
59	4 Bank Butterflyfish					
13	3 Bar Jack		6	30	50	45
31	1 Barred Blenny					
3	5 Barred Cardinalfish					
11	8 Barred Hamlet					
4	7 Beaugregory					
22	1 Bermuda Chub/Yellow Chub					
4	8 Bicolor Damselfish					
9	1 Black Grouper					
	9 Blackfin Snapper					
	1 Blue Angelfish					
4	2 Blue Chromis					
14	4 Blue Parrotfish					
13	4 Blue Runner					
20	4 Blue Tang		1	4	4	4
	3 Bluehead		_		-	•
14	5 Bluelip Parrotfish					
	5 Bluestriped Grunt		1	20	20	20
	3 Boga		_			
	9 Bridled Goby					
	3 Brown Chromis					
12	1 Butter Hamlet					
10	6 Caesar Grunt					
	2 Cero		1	45	45	45
17	9 Chalk Bass					
	2 Cherubfish					
21	4 Clown Wrasse					
4	9 Cocoa Damselfish					
8	0 Colon Goby					
	7 Cottonwick					
21	5 Creole Wrasse					
18	0 Creole-fish					
13	5 Crevalle Jack					
19	0 Cubera Snapper					
	5 Doctorfish					
5	0 Dusky Damselfish	$\neg$				
	1 Foureye Butterflyfish					
	3 French Angelfish	$\neg$				
	8 French Grunt	$\neg$				
	1 Goldspot Goby					
	6 Goliath Grouper (Jewfish)					
	4 Gray Angelfish		1	30	30	30
	2 Gray Snapper	$\dashv$	18	25	35	30
	8 Gray Triggerfish	$\neg$	<del>_</del> = <del>_</del> ·	_ <del>-</del>		

### Vandenberg July 10 LA

Sp#	Name	#	Min	Max	Mean	
9.	Graysby		1	25	25	25
	Great Barracuda	1	1	60	60	60
130	Greater Amberjack	7				
14	Greenblotch Parrotfish	1				
18:	Harlequin Bass					
130	Hogfish	7				
13	Horse-Eye Jack	7				
792	Juvenile Grunt	7				
473	King Mackerel	7				
599	Little Tunny	7				
65	Loggerhead Sea Turtle	7				
5:	L Longfin Damselfish					
32	Longsnout Butterflyfish	7				
45	Mackerel Scad					
194	Mahogany Snapper					
83	Masked Goby/Glass Goby					
148	Midnight Parrotfish	7				
18	Nurse Shark					
200	Ocean Surgeonfish					
209	Ocean Triggerfish	1				
11:	l Porkfish	7				
149	Princess Parrotfish	1				
44	Purple Reeffish	7	6	2	4	3
394	Pygmy Filefish	7				
	Queen Angelfish	1	1	15	15	15
150	Queen Parrotfish					
210	Queen Triggerfish	7				
15	Rainbow Parrotfish					
140	Rainbow Runner					
683	Red Lionfish (exotic)					
157	Redband Parrotfish	1	1	25	25	25
220	Redspotted Hawkfish					
154	Redtail Parrotfish		1	25	25	25
33	Reef Butterflyfish	7	2	7	7	7
(	Rock Beauty	7				
46	Round Scad		600	10	15	13
19	Saddled Blenny	7				
	Sailors Choice	7				
10	1 Scamp	7	1	25	25	25
539	School Bass	1				
190	Schoolmaster	1				
70	Scrawled Filefish	7				
2:	Seaweed Blenny	7	1	6	6	6
	Sergeant Major	7				
	1 Sharksucker	7				
	7 Sharpnose Puffer	1	2	6	6	6
	2 Silversides, Herrings, Anchovies	1		-	-	-
	, 5-,					

### Vandenberg July 10 LA

Sp#	Name	#	Min	Max	Mean	[
71	Slender Filefish		•	•	•	
	Slippery Dick					
113	Smallmouth Grunt					
114	Spanish Grunt					
	Spanish Hogfish					
	Spotfin Butterflyfish					
	Spotfin Hogfish					
	Spotted Drum					
	Spotted Goatfish					
	Spotted Scorpionfish					
155	Stoplight Parrotfish					
	Striped Grunt					
	Striped Parrotfish		2	20	20	20
	Sunshinefish					
	Tarpon					
	Threespot Damselfish					
	Tobaccofish					
116	Tomtate					
239	Trumpetfish					
	Twospot Cardinalfish					
117	White Grunt					
110	White Margate					
	Wrasse Blenny					
	Yellow Goatfish					
	Yellow Jack					
	Yellowfin Grouper					
220	Yellowhead Wrasse					
104	Yellowmouth Grouper					
	Yellowtail (Redfin) Parrotfish					
46	Yellowtail Reeffish		2	4	7	5
197	Yellowtail Snapper		50	25	40	35
	# Species		20			
	# Fish		699			

Sp#	Name	#	Mi	n	Max	Mean
449	Almaco Jack					
30	Banded Butterflyfish					
164	Bandtail Puffer					
594	Bank Butterflyfish					
133	Bar Jack		LO	26	35	5 28
311	Barred Blenny					
35	Barred Cardinalfish					
118	Barred Hamlet					
47	Beaugregory					
	Bermuda Chub/Yellow Chub					
	Bicolor Damselfish		5	3	5	5 3
91	Black Grouper					
	Blackfin Snapper					
	Blue Angelfish					
	Blue Chromis					
144	Blue Parrotfish					
	Blue Runner					
	Blue Tang	_				
	Bluehead		7	1	5	5 3
	Bluelip Parrotfish		•	_		,
	Bluestriped Grunt					
	Boga					
	Bridled Goby					
	Brown Chromis					
	Butter Hamlet					
	Caesar Grunt					
	Cero		1	26	26	5 26
	Chalk Bass		-	20	20	, 20
	Cherubfish					
	Clown Wrasse					
	Cocoa Damselfish					
	Colon Goby					
	Cottonwick					
	Creole Wrasse					
	Creole-fish	_				
	Crevalle Jack					
	Cubera Snapper					
	Doctorfish					
	Dusky Damselfish					
	Foureye Butterflyfish	-				
	French Angelfish	-				
	French Grunt	$\dashv$				
	Goldspot Goby	_				
	Goliath Grouper (Jewfish)	_				
	Gray Angelfish	_				
	Gray Snapper	$\dashv$ ,	12	10	3/	<b>.</b>
	Gray Triggerfish	-	L2	18	26	5 24
200	Gray Higgeriish					

## Vandenberg July 10 OT

Sp # Name	#	Min	Max	Mean	
95 Graysby		-			
7 Great Barracuda		6	36	65	42
136 Greater Amberjack					
147 Greenblotch Parrotf	sh				
181 Harlequin Bass					
130 Hogfish					
137 Horse-Eye Jack					
792 Juvenile Grunt					
473 King Mackerel					
599 Little Tunny					
657 Loggerhead Sea Tui	tle				
51 Longfin Damselfish					
32 Longsnout Butterfly	fish				
457 Mackerel Scad					
194 Mahogany Snapper					
83 Masked Goby/Glass	Goby				
148 Midnight Parrotfish	-				
187 Nurse Shark					
206 Ocean Surgeonfish		1	17	17	17
209 Ocean Triggerfish					
111 Porkfish					
149 Princess Parrotfish					
44 Purple Reeffish					
394 Pygmy Filefish					
5 Queen Angelfish					
150 Queen Parrotfish					
210 Queen Triggerfish					
151 Rainbow Parrotfish					
140 Rainbow Runner					
683 Red Lionfish (exotic	)				
152 Redband Parrotfish		1	16	16	16
226 Redspotted Hawkfis	n				
154 Redtail Parrotfish					
33 Reef Butterflyfish		2	8	11	10
6 Rock Beauty					
461 Round Scad		150	5	5	5
19 Saddled Blenny					
112 Sailors Choice					
101 Scamp					
539 School Bass					
196 Schoolmaster					
70 Scrawled Filefish					
21 Seaweed Blenny					
52 Sergeant Major					
231 Sharksucker					
	Į.				
167 Sharpnose Puffer		4	2	4	3

### Vandenberg July 10 OT

Sp#	Name	#	Min	Max	Mean	
71	Slender Filefish		-	•	•	•
	Slippery Dick	]				
113	Smallmouth Grunt					
114	Spanish Grunt					
131	Spanish Hogfish					
34	Spotfin Butterflyfish					
132	Spotfin Hogfish					
59	Spotted Drum					
76	Spotted Goatfish					
178	Spotted Scorpionfish	] 1		23	23	23
155	Stoplight Parrotfish					
115	Striped Grunt					
	Striped Parrotfish	] 1		15	15	15
45	Sunshinefish	1				
237	Tarpon	1				
53	Threespot Damselfish					
185	Tobaccofish	1				
116	Tomtate					
239	Trumpetfish					
40	Twospot Cardinalfish					
117	White Grunt					
110	White Margate					
339	Wrasse Blenny					
77	Yellow Goatfish					
141	Yellow Jack					
103	Yellowfin Grouper					
220	Yellowhead Wrasse					
	Yellowmouth Grouper					
	Yellowtail (Redfin) Parrotfish					
46	Yellowtail Reeffish	]				
197	Yellowtail Snapper	25		25	35	30
	# Coosing					
	# Species	14				
	# Fish	226				