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CRUISE RESULTS

07/27 - 09/30/2009

Bottom Longline Survey
Coastal Sharks - Red Snapper

NOAA Ship OREGON II, Cruise R2-09-04 (288)

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
Mississippi Laboratories
Pascagoula Facility
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NOAA Ship OREGON II, R2-09-04 (288)

SURVEY PERIOD: 07/27 – 09/30/2009

AREA OF OPERATION

Survey operations were conducted in the western North Atlantic Ocean along the U.S. Gulf of Mexico and U.S. Southeast Atlantic coast (Figure 1).

OBJECTIVES

- 1) Conduct a study to assess the distribution and abundance of coastal sharks, red snapper (*Lutjanus campechanus*) and grouper.
- 2) Collect biological and environmental data with a conductivity-temperature-depth (CTD) sensor at survey sites.
- 3) Tag and release sharks.
- 4) Conduct seven plankton stations (CTD, bongo, neuston) for the Southeast Area Monitoring and Assessment Program (SEAMAP) fall plankton survey of U.S. continental shelf waters in the Gulf of Mexico.

MATERIALS AND METHODS:

The survey platform NOAA/NMFS research vessel OREGON II was outfitted with commercial-type longline gear. Monofilament mainline (426 kg or 1000 lb test 4 mm diameter, 1 nm length) was deployed off the stern through a series of blocks. Radar reflector buoys (start and end of set), with strobes at night, 5 kg (11 lb) weights (start, mid-set, end set), and 3.66 m (12 ft) gangions (332 kg or 700 lb test 3 mm diameter) with hooks (#15 circle, Mustad #39960D) were clipped to the mainline as it was deployed. Vessel speed ranged from 3.5 – 4 kt during the set. Hand-held radios were used for communications between the bridge, stern and longline reel operator.

Bottom longline effort was 100 hooks fished for 1 h (soak time). Soak time was determined from the time the last radar reflector buoy was deployed during the set until the first radar reflector buoy was retrieved to begin the haulback. Some soak times varied depending on survey conditions or gear problems but were generally 1 hr. Hooks were baited with Atlantic mackerel (*Scomber scombrus*, 12 kg or 26 lb per set) cut to fit the circle hooks. Catch was brought aboard (for sharks less than approximately 1.5 m total length and all finfish of any size) or held at surface for estimating size and weight or for tagging. Provided sea conditions were favorable, a catch landing sling deployed with the ship's articulating crane was used to bring large specimens to the ship's rail height for collecting biological data (lengths, weights and to confirm identifications), as well as for tagging and collection of fin clip samples. The landing sling was outfitted with a remotely operated electronic scale used for obtaining specimen weights. Haulback speed

was approximately 3.5 - 4 kt and haulback time ranged from 20 - 60 min depending on catch rates and sea conditions.

Environmental data were collected using a CTD deployed during the soak. The CTD provides a surface to bottom profile of temperature, salinity, dissolved oxygen, chlorophyll, turbidity and depth.

Longline sets and haulbacks were monitored using shipboard Scientific Computing System (SCS)/Fisheries Scientific Computing Systems (FSCS) systems operated with weatherproof laptop computers programmed with touch screen options. SCS/FSCS software allowed data acquisition to describe set and haulback events (GMT time/date stamp, location, ship sensor information), and to describe catch and gear specifics. Other data elements recorded on a per hook basis were hook status (bait missing, damaged or whole), gear status (hook damaged or missing) and visual events (e.g., dolphins sighted).

Plankton stations in the western Gulf of Mexico included CTD casts, neuston and bongo tows.

SURVEY DESIGN

All randomly selected longline survey sites were occupied in the most time efficient manner possible and were not designated as day or night sites prior to the survey. Survey sites for bottom longline effort were selected at random within three depth strata: 9 - 55 m (5 - 30 fm), 55 - 183 m (30 - 100 fm), and 183 - 366 m (100 - 200 fm), (Figure 1). Most bottom longline sets were conducted parallel to depth contours unless survey conditions (i.e., current, sea state, wind) necessitated a different orientation. The number of randomly selected survey sites occupied within 60 nm contiguous sampling zones was proportionally allocated based on the amount of continental shelf area within each of the depth strata. Fifty percent of stations were allocated between 9 - 55 m, 40% between 55 - 183 m, and 10% between 183 - 366 m. At least two longline sites between 183 and 366 m were randomly selected within each sampling zone. Sampling zones with a broad continental shelf were allocated more survey sites than sampling zones with a narrow shelf.

Plankton samples were taken with the standard SEAMAP 61 cm bongo frame outfitted with two 0.335 mm mesh nets and towed in an oblique path from near bottom or 200 m maximum depth to the surface. A SBE19 Seacat Profiler was attached on the towing wire above the frame to provide real time depth readings along with temperature and salinity. A flowmeter mounted inside each side of the bongo frame measured the volume filtered during the tow. Plankton samples were also taken using a 0.950 mm mesh neuston net attached to a 1 x 2 m metal frame that was towed for 10 min at a vessel speed (~ 2 kt) sufficient to keep the net opening half submerged in the water maintaining a sampling depth of 0.5 m.

RESULTS

Bottom longline effort produced 3098 captures from 224 bottom longline sets (Table 1). Elasmobranchs constituted 87% of the catch; teleosts and one loggerhead sea turtle constituted the remaining 13%. Elasmobranchs captured were represented by 26 species; teleosts were represented by 37 species (Table 2). The catch rate for all sharks combined was 12.01 sharks/100 hook hr. The most frequently captured shark was the Atlantic sharpnose shark constituting 69% of shark captures (Table 2), followed by the blacknose shark, blacktip shark, spinner shark, Gulf smoothhound, and sandbar shark (Table 2). The most frequently captured teleost was the red snapper, followed by red grouper, king snake eels, tilefish and yellowedge grouper (Table 2). Sharks and teleosts listed as unidentified in Table 2 were captures that escaped from the hook before a positive identification could be determined.

One day of fishing operations in the western Gulf of Mexico was lost due to ship's manning issues, and a partial fishing day was lost for deploying an injured scientist (wound infection) to Panama City, Florida.

Seven plankton stations were completed (stations 102-108, Table 1). This allowed the NOAA Ship GORDON GUNTER to share mission time with scientists from the Panama City Lab to conduct ROV operations to assess the Pulley Ridge MPA.

SURVEY PARTICIPANTS

Leg I, 7/27 – 8/8/09

Lisa Jones	FPC	NMFS/MS Lab
William Driggers	Biologist	NMFS/MS Lab
Christian Jones	Biologist	NMFS/MS Lab
John Moser	Biologist	NMFS/MS Lab
Joey Salisbury	Intern	NMFS/MS Lab
Lee Trebotich	Volunteer	Pascagoula, MS
Daniel Geary	Volunteer	Auburn University, Auburn, AL
Ian Davenport	Volunteer	Xavier University, New Orleans, LA
Jim Nienow	Volunteer	Valdosta State Univ, Valdosta, GA
Jesse Trull	Volunteer	Valdosta State Univ., Valdosta, GA
Kelcee Smith	Intern	Panama City Lab

Leg II, 8/10 – 8/26/09

Mark Grace	FPC	NMFS/MS Lab
Carolyn Burks	Biologist	NMFS/MS Lab
Adam Pollack	Biologist	NMFS/MS Lab
Brooke Shipley	Biologist	NMFS/MS Lab
Michael Hendon	Biologist	NMFS/MS Lab
Alicia La Porte	Intern	Panama City Lab
Ryan McDermott	Volunteer	Philadelphia, PA
Pam Brown-Eyo	Biologist	NMFS/SEFSC

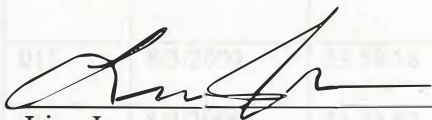
Leg III, 9/1 – 9/13/09

William Driggers	FPC	NMFS/MS Lab
Michael Felts	Biologist	NMFS/MS Lab
Lori Hale	Biologist	NMFS/Panama City Lab
Alyssa Napier	Intern	NMFS/Panama City Lab
Todd Neahr	Biologist	TPWD
Lucas Skinner	Biologist	TPWD
Amanda Canning	Biologist	TPWD
Kristin Hannan	Volunteer	Dauphin Island Sea Lab
Amy Nau	Biologist	NOS
Travis Holland	Volunteer	GCRL

Leg IV, 9/15 – 9/30/09

Lisa Jones	FPC	NMFS/MS Lab
William Driggers	Biologist	NMFS/MS Lab
Michael Felts	Biologist	NMFS/MS Lab
Dana Bethea	Biologist	NMFS/Panama City Lab
Brittany Palm	Intern	NMFS/MS Lab
Sascha Cushner	Biologist	NMFS/SEFSC
Amanda Canning	Biologist	TPWD
Michael Sherburne	Volunteer	Erwin, TN
Travis Holland	Volunteer	GCRL
Claudia Freiss	Volunteer	Ocean Conservancy

SUBMITTED BY

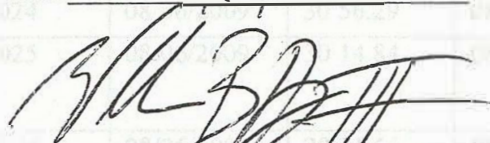


Lisa Jones
Field Party Chief, Legs I, IV

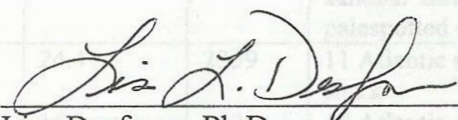
Date 11/5/2010



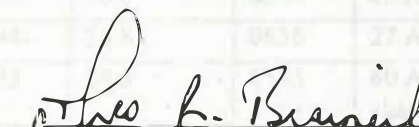
Mark Grace
Field Party Chief, Leg II
Date 11/5/2010



William Driggers, Ph D.
Field Party Chief, Leg III
Date 11/5/10



Lisa Desfosse, Ph.D.
NMFS MS Labs
Laboratory Director
Date 11/20/10



Lonnie Ponwith, Ph D.
NMFS, SEFSC Center Director
Date 02/02/10

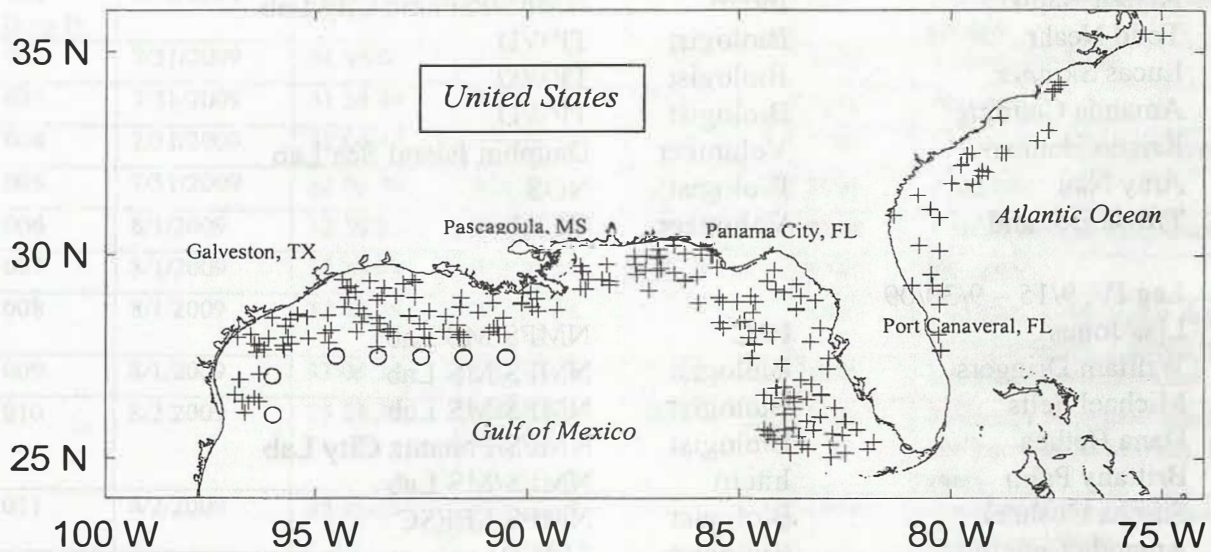


Figure 1. Station locations for the 2009 Bottom Longline Survey R2-09-04 (288); station locations (+ bottom longline, o plankton), latitude degrees north (N), longitude degrees west (W).

Table 1. Station information for 2009 OREGON II R2-09-04 (288).

Station	Date (GMT)	Latitude °N	Longitude °W	Depth (m)	Time (GMT)	Catch
001 (Leg I)	7/30/2009	30 06.20	080 15.90	66.7	2355	3 scalloped hammerheads, 1 snowy grouper
002	7/31/2009	31 45.05	079 27.89	108.7	1024	4 palespotted eels
003	7/31/2009	31 58.49	079 18.80	20.1	1410	No catch
004	7/31/2009	32 06.43	079 14.12	77.9	1707	1 scamp, 1 snowy grouper
005	7/31/2009	32 03.39	079 05.18	216.0	2001	2 tilefish
006	8/1/2009	32 30.93	078 46.48	62.9	0104	5 Atlantic sharpnose sharks
007	8/1/2009	32 30.92	078 40.43	126.0	0741	No catch
008	8/1/2009	32 48.54	077 55.84	211.9	1418	3 tilefish, 1 shortspine dogfish, 1 snowy grouper, 1 dwarf scorpionfish
009	8/1/2009	33 05.79	077 39.74	118.7	1836	1 scalloped hammerhead, 1 night shark
010	8/2/2009	35 23.01	074 57.54	56.7	1416	4 Atlantic sharpnose sharks, 3 scalloped hammerheads, 1 bignose shark
011	8/2/2009	35 25.65	075 23.03	22.7	1904	4 scalloped hammerheads, 21 Atlantic sharpnose sharks
012	8/3/2009	34 14.00	077 25.82	20.8	1428	42 Atlantic sharpnose sharks, 1 dusky shark, 1 black seabass
013	8/3/2009	34 09.64	077 21.71	23.8	1706	18 Atlantic sharpnose sharks, 1 black grouper, 1 black seabass, 1 great barracuda
014	8/3/2009	34 04.35	077 30.86	21.5	2039	19 Atlantic sharpnose sharks, 1 sandbar shark, 1 great barracuda, 1 palespotted eel
015	8/3/2009	33 59.18	077 34.35	24.4	2359	11 Atlantic sharpnose sharks, 1 nurse shark
016	8/4/2009	33 23.87	078 48.48	16.3	1121	19 Atlantic sharpnose sharks
017	8/4/2009	32 30.78	079 29.28	21.2	2051	14 Atlantic sharpnose sharks, 1 great barracuda
018	8/4/2009	32 28.63	079 36.36	23.7	2352	6 Atlantic sharpnose sharks
019	8/5/2009	32 14.14	079 45.38	30.0	0344	25 Atlantic sharpnose sharks
020	8/5/2009	31 48.65	079 58.44	36.8	0836	27 Atlantic sharpnose sharks
021	8/5/2009	31 29.65	080 46.33	18.3	1535	60 Atlantic sharpnose sharks, 1 nurse shark
022	08/05/2009	31 10.06	080 29.08	30.1	2004	36 Atlantic sharpnose sharks, 2 tiger sharks, 1 remora
023	08/05/2009	30 58.63	080 27.81	27.8	2343	35 Atlantic sharpnose sharks
024	08/06/2009	30 56.29	080 14.67	38.9	0248	18 Atlantic sharpnose sharks
025	08/06/2009	30 14.84	080 45.06	29.9	1014	4 sandbar sharks, 4 tiger sharks, 1 Atlantic sharpnose shark, 1 red snapper
026	08/06/2009	29 31.66	080 27.14	34.1	1710	1 tiger shark
027	08/06/2009	29 16.00	080 54.16	20.9	2231	48 Atlantic sharpnose sharks, 1 blacknose shark
028	08/07/2009	29 16.08	080 26.43	31.3	0255	1 Atlantic sharpnose shark, 1 sandbar shark

Station	Date (GMT)	Latitude °N	Longitude °W	Depth (m)	Time (GMT)	Catch
029	08/07/2009	29 08.11	080 11.38	70.7	0623	2 silky sharks
030	08/07/2009	28 46.73	080 15.68	37.8	1044	3 sandbar sharks
031	08/07/2009	28 02.29	080 17.91	22.8	2011	6 Atlantic sharpnose sharks, 1 nurse shark
032	08/07/2009	27 38.95	080 13.15	18.7	0121	5 Atlantic sharpnose sharks, 1 bluefish, 1 tiger shark
Begin Leg II						
33	08/12/2009	25 07.61	083 46.73	97.9	1450	1 <i>Mustelus</i> sp., 1 silky shark
034	08/12/2009	25 22.48	083 57.91	129.1	2016	No catch
035	08/13/2009	25 27.92	084 09.73	149.9	0001	3 yellowedge grouper, 2 reticulated morays, 1 blueline tilefish
036	08/13/2009	25 34.62	084 18.74	161.6	0433	1 smooth dogfish, 1 chain dogfish
037	08/13/2009	25 42.48	084 23.38	196.9	0840	1 yellowedge grouper
038	08/13/2009	25 39.34	084 14.78	160.7	1150	2 yellowedge grouper
039	08/13/2009	25 41.23	083 54.72	126.4	1629	2 silky sharks, 1 dolphinfish, 1 palespotted eel
040	08/13/2009	25 44.82	083 43.53	92.1	1945	1 sandbar shark, 2 <i>Mustelus</i> sp., 1 vernillion snapper
041	08/13/2009	25 32.31	083 34.53	73.1	2329	1 sandbar shark, 1 red grouper, 6 great barracudas
042	08/14/2009	25 18.96	083 29.06	69.5	0318	1 sandbar shark
043	08/14/2009	25 13.37	083 20.22	63.6	0633	1 tiger shark
044	08/14/2009	25 19.72	082 50.85	46.7	1129	16 Atlantic sharpnose sharks, 1 blacknose shark
045	08/14/2009	25 01.54	082 47.90	43.1	1525	18 Atlantic sharpnose sharks, 5 blacknose sharks, 1 Cobia, 1 Southern stingray
046	08/14/2009	25 08.06	082 30.00	35.3	1926	18 Atlantic sharpnose sharks, 11 blacknose sharks, 1 great barracuda
047	08/15/2009	25 14.41	081 57.60	18.8	0057	1 bull shark, 1 blacktip shark, 1 red grouper
048	08/15/2009	25 24.08	081 48.52	14.3	0447	3 Atlantic sharpnose sharks, 1 blacktip shark, 1 blacknose shark, 1 nurse shark
049	08/15/2009	25 42.77	082 12.14	23.4	1010	5 Atlantic sharpnose sharks, 1 bull shark
050	08/15/2009	25 55.09	082 28.79	29.0	1404	2 tiger sharks, 1 silky shark, 1 blacknose shark, 21 Atlantic sharpnose sharks
051	08/15/2009	25 34.61	082 33.36	31.5	1835	13 Atlantic sharpnose sharks, 1 <i>Carcharhinus</i> sp., 7 red grouper
052	08/15/2009	25 36.12	082 45.90	41.1	2204	1 tiger shark, 10 Atlantic sharpnose, 8 red grouper
053	08/16/2009	25 41.84	083 12.65	57.6	0441	1 Atlantic sharpnose shark, 1 blacknose shark, 1 sandbar shark, 2 red snapper, 1 mutton snapper, 1 grey snapper
054	08/16/2009	25 54.98	083 23.11	63.5	0914	4 sandbar sharks, 1 tiger shark, 1 Atlantic sharpnose shark

Table 1 continued.

Station	Date (GMT)	Latitude °N	Longitude °W	Depth (m)	Time (GMT)	Catch
055	08/16/2009	26 01.11	083 04.09	49.1	1409	4 Atlantic sharpnose sharks, 5 red grouper
056	08/16/2009	26 14.79	082 43.51	32.2	1827	1 lemon shark, 2 blacktip sharks, 1 silky shark, 20 blacknose sharks, 9 Atlantic sharpnose sharks, 1 Carcharhinid, 1 red grouper
057	08/17/2009	26 33.26	083 02.15	39.5	0015	26 Atlantic sharpnose sharks, 1 blacknose shark, 1 barracuda
058	08/17/2009	26 35.76	083 02.66	40.3	0240	14 Atlantic sharpnose sharks, 1 blacktip shark, 1 red grouper
059	08/17/2009	26 27.66	083 22.16	53.3	0655	5 Atlantic sharpnose sharks, 3 sandbar sharks
060	08/17/2009	26 12.01	083 40.69	65.5	1124	10 Atlantic sharpnose sharks, 1 barracuda
061	08/17/2009	26 03.51	083 54.50	113.1	1458	5 <i>Mustelus</i> sp., 1 tiger shark, 1 bonito
062	08/17/2009	26 22.70	083 41.60	71.1	1922	2 sandbar sharks, 1 Atlantic sharpnose shark, 1 barracudas
063	08/17/2009	26 30.99	083 41.49	66.4	2219	1 sandbar shark, 1 Atlantic sharpnose shark
064	08/18/2009	26 27.79	083 48.44	89.5	0142	No catch
065	08/18/2009	26 28.73	083 57.03	116.2	0446	No catch
066	08/18/2009	26 21.54	084 12.68	162.9	0836	No catch
067	08/18/2009	26 31.91	084 22.83	184.7	1200	5 yellowedge grouper, 1 blueline tilefish, 1 smooth dogfish
068	08/18/2009	26 43.56	084 05.67	123.4	1602	No catch
069	08/18/2009	26 45.44	083 54.98	84.7	1859	1 scalloped hammerhead, 1 <i>Sphyrna</i> sp., 3 Atlantic sharpnose sharks, 1 gag, 1 red grouper
070	08/18/2009	26 54.87	083 30.98	53.9	2329	7 Atlantic sharpnose sharks, 2 red groupers, 1 red snapper
071	08/19/2009	27 57.39	084 45.51	173.1	1144	No catch
072	08/19/2009	28 09.31	084 35.99	72.9	1636	1 sandbar, 1 Atlantic sharpnose shark
073	08/19/2009	28 23.08	084 51.35	76.5	2046	2 Atlantic sharpnose sharks
074	08/19/2009	28 19.64	084 58.25	117.5	2350	1 sandbar shark
075	08/20/2009	28 11.97	085 20.87	284.0	0422	1 tilefish, 1 <i>Raja garricki</i>
076	08/20/2009	28 20.38	085 26.72	238.7	0744	3 Warsaw grouper
077	08/20/2009	28 48.79	085 56.80	262.3	1412	1 smooth dogfish, 3 <i>Mustelus</i> sp., 2 tilefish, 2 yellowedge grouper
078	08/20/2009	28 56.68	085 26.61	109.0	2026	1 bignose shark, 1 sandbar shark, 2 red snapper, 2 gags groupers, 1 Warsaw grouper, 1 loggerhead turtle
079	08/21/2009	28 51.49	085 21.37	91.0	0122	1 sandbar shark, 1 smooth dogfish
080	08/21/2009	28 50.76	085 00.32	51.7	0513	5 sandbar sharks
081	08/21/2009	28 50.65	084 35.54	41.1	1021	3 Atlantic sharpnose sharks, 1 nurse shark, 1 sandbar shark
082	08/21/2009	28 58.92	084 41.47	38.5	1341	1 sandbar shark, 1 blacknose shark, 1 Atlantic sharpnose shark, 2 tiger sharks, 1 red grouper, 1 red snapper, 1

Station	Date (GMT)	Latitude °N	Longitude °W	Depth (m)	Time (GMT)	Catch
						<i>Seriola</i> sp.
083	08/21/2008	29 21.03	084 19.02	28.4	1848	1 blacknose shark, 1 Atlantic sharpnose shark, 1 red grouper
084	08/21/2009	29 37.55	084 08.37	17.0	2310	1 great hammerhead, 1 blacknose shark, 1 red grouper
085	08/22/2009	29 09.21	084 05.91	27.20	0430	1 nurse shark, 1 sandbar shark, 2 Atlantic sharpnose sharks, 3 red grouper
086	08/22/2009	29 04.42	083 55.41	26.50	0814	5 red grouper, 1 tiger shark, 1 nurse shark, 1 sandbar shark, 10 Atlantic sharpnose sharks, 1 leopard toadfish
087	08/22/2009	29 16.54	083 37.34	14.20	1306	1 nurse shark
088	08/22/2009	28 58.68	083 30.38	17.3	1704	1 great hammerhead, 1 nurse shark, 1 tiger shark, 2 red groupers
089	08/22/2009	28 52.26	083 09.63	12.7	2125	1 nurse shark, 1 Atlantic sharpnose shark, 1 red grouper
090	08/23/2009	28 39.88	083 37.67	23.9	0209	3 Atlantic sharpnose sharks, 1 white grunt, 13 red grouper, 1 nurse shark
091	08/23/2009	28 12.60	083 04.27	14.7	0824	1 nurse shark, 2 blacknose sharks, 2 red grouper
092	08/23/2009	27 52.71	083 17.70	26.9	1301	1 nurse shark, 1 red grouper, 1 blacktip shark, 14 blacknose sharks
093	08/23/2009	27 27.03	082 50.99	12.5	1858	2 blacknose sharks
094	08/23/2009	27 11.27	082 53.81	23.4	2231	No catch
095	08/24/2009	26 48.41	083 16.25	47.5	0331	2 Atlantic sharpnose sharks, 2 blacknose sharks, 3 red grouper
096	08/24/2009	27 19.92	083 57.23	66.7	1036	3 red grouper, 1 barracuda
097	08/24/2009	27 27.74	084 40.31	191.1	1615	1 smooth dogfish, 1 tilefish, 2 yellowedge groupers
098	08/24/2009	27 47.76	084 37.08	157.2	2032	2 smooth dogfish
099	08/25/2009	28 00.48	084 11.34	50.7	0122	2 sandbar sharks
100	08/25/2009	28 11.64	084 19.66	57.50	0501	5 Atlantic sharpnose sharks, 1 blacknose shark, 1 red grouper
101	08/25/2009	28 35.41	084 38.34	53.50	1011	2 sandbar sharks, 2 red snapper, 1 blacknose shark, 1 tiger shark, 1 clearnose skate
Begin Leg III						
102	09/02/2009	27 30.11	090 30.06	1034.20	1402	Plankton station
103	09/02/2009	27 30.08	091 29.87	959.7	1935	Plankton station
104	09/03/2009	27 30.20	092 29.94	867.60	0101	Plankton station
105	09/03/2009	27 29.28	093 30.17	528.5	0638	Plankton station
106	09/03/2009	27 29.92	094 29.82	715.0	1226	Plankton station
107	09/03/2009	27 00.28	096 00.08	781.5	2242	Plankton station
108	09/04/2009	26 02.89	095 59.78	998.7	0504	Plankton station
109	09/04/2009	26 06.08	096 40.01	48.6	0900	11 Atlantic sharpnose sharks

Table 1 continued.

Station	Date (GMT)	Latitude °N	Longitude °W	Depth (m)	Time (GMT)	Catch
110	09/04/2009	26 22.63	096 18.51	195.9	1307	1 <i>Mustelus</i> sp.
111	09/04/2009	26 27.96	096 25.15	88.8	1554	2 yellowedge grouper, 1 <i>Mustelus</i> sp., 1 red snapper
112	09/04/2009	26 21.86	096 33.78	56.2	1916	15 Atlantic sharpnose sharks, 4 red snapper, 2 scalloped hammerheads
113	09/04/2009	26 22.56	096 43.02	43.6	2158	No catch
114	09/05/2009	26 33.02	096 52.18	41.8	0112	25 Atlantic sharpnose sharks, 1 blacknose shark, 1 scalloped hammerhead
115	09/05/2009	26 54.51	096 46.89	68.8	0532	7 Atlantic sharpnose sharks, 3 scalloped hammerhead sharks, 5 red snapper, 1 silky shark, 1 king snake eel, 1 sandbar shark.
116	09/05/2009	27 03.40	096 18.66	315.8	1025	4 red snapper, 1 silver hake
117	09/05/2009	27 36.64	096 22.54	75.7	1543	7 Atlantic sharpnose sharks, 4 red snapper, 2 sandbar sharks, 1 king snake eel, 1 <i>Mustelus</i> sp., 1 spinner shark
118	09/05/2009	27 40.16	096 11.65	88.0	1914	5 Atlantic sharpnose sharks, 5 red snapper, 4 king snake eels, 2 <i>Mustelus</i> sp., 2 yellowedge grouper
119	09/05/2009	27 46.89	096 19.07	58.6	2211	3 Atlantic sharpnose sharks
120	09/06/2009	27 48.20	096 26.33	47.5	0037	10 Atlantic sharpnose sharks
121	09/06/2009	27 57.51	096 49.62	16.8	0459	1 gafftopsail catfish, 5 blacktip sharks.
122	09/06/2009	28 01.41	096 31.08	25.5	0902	1 Atlantic sharpnose shark, 1 stippled spoon-nose eel, 1 bull shark
123	09/06/2009	27 56.05	096 05.77	50.7	1326	15 Atlantic sharpnose sharks, 2 red snappers, 2 blacknose sharks, <i>Carcharhinus</i> sp.
124	09/06/2009	27 39.13	095 43.80	199.1	1808	3 golden tilefish
125	09/06/2009	27 45.99	095 45.38	70.0	2110	4 red snapper, 4 sandbar sharks
126	09/07/2009	27 47.91	095 33.74	79.0	0043	3 Atlantic sharpnose sharks, 3 sandbar sharks, 1 king snake eel, 1 unidentified <i>Carcharhinid</i>
127	09/07/2009	27 57.09	095 09.85	84.5	0525	11 Atlantic sharpnose sharks, 1 sandbar shark.
128	09/07/2009	27 58.88	095 38.83	52.0	1035	16 Atlantic sharpnose sharks, 2 silky sharks, 1 Blacktip shark, 3 Red snapper
129	09/07/2009	28 14.24	095 41.80	33.0	1423	1 spinner shark, 2 red snapper
130	09/07/2009	28 27.22	095 59.97	17.6	1816	6 Atlantic sharpnose sharks, 4 blacktip sharks, 2 gafftopsail catfish, 2 spinner sharks, 1 scalloped hammerhead
131	09/07/2009	28 24.31	095 35.35	28.5	2314	26 blacknose sharks, 2 blacktip sharks, 1 Atlantic sharpnose shark, 1 bull shark, 1 red drum
132	09/08/2009	28 31.75	095 25.02	27.3	0259	7 Atlantic sharpnose sharks, 6 blacknose sharks, 2 <i>Carcharhinus</i> sp.,

Station	Date (GMT)	Latitude °N	Longitude °W	Depth (m)	Time (GMT)	Catch
						4 blacktip sharks, 1 gafftopsail catfish
133	9/8/2009	28 27.96	095 10.17	33.8	0642	18 Atlantic sharpnose sharks, 8 blacknose sharks, 3 blacktip sharks, 2 bull sharks, 1 tiger shark, 1 sandbar shark
134	09/08/2009	28 04.41	094 45.45	60.6	1319	1 Blacknose shark, 15 Atlantic sharpnose sharks, 1 bull shark, 2 sandbar sharks, 1 Gulf smoothhound, 1 red snapper
135	09/08/2009	27 50.45	094 39.82	233.00	1655	4 tilefish
136	09/08/2009	28 08.59	094 36.80	55.90	2046	37 Atlantic sharpnose sharks, 1 bull shark, 1 scalloped hammerhead
137	09/08/2009	28 31.57	094 42.24	34.80	1322	12 Atlantic sharpnose sharks, 9 blacknose sharks, 4 blacktip sharks, 1 Great hammerhead, 1 red snapper
138	09/09/2009	28 20.58	093 55.20	55.1	0803	61 Atlantic sharpnose sharks
139	09/09/2009	28 06.76	094 00.54	66.4	1209	9 red snapper, 3 Atlantic sharpnose sharks
140	09/09/2009	27 44.74	093 32.38	266.7	1809	11 tilefish, 1 king snake eel
141	09/09/2009	28 08.97	093 32.08	62.1	2246	6 Atlantic sharpnose sharks, 2 red snapper, 1 king snake eel, 1 sandbar shark
142	09/10/2009	28 06.58	093 17.10	78.9	0237	6 Atlantic sharpnose sharks, 2 Gulf smoothhounds, 3 Mustelus sp., 1 gag grouper 1 red snapper
143	09/10/09	28 00.13	093 08.01	102.5	0544	16 Gulf smoothhounds, 1 sand seatrout, 1 sandbar shark.
144	09/10/2009	28 09.89	093 12.96	71.7	0929	5 Atlantic sharpnose sharks, 7 Red snapper, 7 Gulf smoothhounds
145	09/10/2009	28 18.80	093 28.29	57.2	1322	7 Atlantic sharpnose sharks, 4 blacknose sharks, 4 red snapper
146	09/10/2009	28 26.26	093 32.35	48.8	1615	15 Atlantic sharpnose sharks, 1 red snapper, 1 tiger shark
147	09/10/2009	28 59.21	093 04.69	24.7	2221	6 Atlantic sharpnose sharks, 1 great hammerhead
148	09/11/2009	29 17.03	092 54.84	18.50	0211	29 Atlantic sharpnose sharks, 1 spinner shark, 14 blacktip sharks, 1 Blacknose shark, 1 Southern stingray
149	09/11/09	29 12.37	093 22.05	18.1	0714	6 blacknose sharks, 5 Atlantic sharpnose sharks, 1 <i>Carcharhinus</i> sp.
150	09/11/09	28 58.54	093 26.18	24.2	1100	10 Atlantic sharpnose sharks, 2 Blacknose sharks, 1 <i>Carcharhinus</i> sp.
151	09/11/2009	28 52.18	093 31.60	21.9	1353	6 Atlantic sharpnose sharks, 1 blacknose shark.
152	09/11/2009	28 32.63	093 51.01	38.2	1817	38 Atlantic sharpnose sharks, 5 blacknose sharks, 2 blacktip sharks
153	09/11/2009	28 40.85	093 57.59	28.8	2228	6 blacknose sharks, 3 Atlantic sharpnose sharks, 3 blacktip sharks, 1 red snapper
154	09/12/2009	28 42.80	094 17.80	28.4	0217	9 blacknose sharks, 3 blacktip sharks,

Table 1 continued.

Station	Date (GMT)	Latitude °N	Longitude °W	Depth (m)	Time (GMT)	Catch
						1 Atlantic sharpnose sharks, 1 bull shark
155	09/12/2009	28 57.37	094 12.29	20.7	0612	19 Atlantic sharpnose sharks, 1 bull shark, 5 blacknose sharks.
156	09/12/2009	29 05.57	094 02.37	18.7	0944	1 bull shark, 14 Atlantic sharpnose sharks, 3 blacknose sharks, 1 <i>Dasyatis</i> sp.
Begin Leg IV						
157	09/16/2009	29 23.29	094 22.11	14.5	2038	7 Atlantic sharpnose sharks, 6 blacktip sharks, 1 spinner shark, 1 unidentified Carcharhinid shark
158	09/17/2009	29 14.17	094 09.66	15.4	0008	6 Atlantic sharpnose sharks, 2 blacknose sharks, 1 blacktip shark, 1 spinner shark, 1 bull shark, 1 gafftopsail catfish
159	09/17/2009	29 11.75	094 14.23	14.6	0252	2 Atlantic sharpnose sharks, 3 blacknose sharks, 6 blacktip sharks, 1 bull shark
160	09/17/2009	29 20.87	093 41.83	15.1	0830	15 blacknose sharks, 11 spinner sharks, 8 Atlantic sharpnose sharks, 8 blacktip sharks
161	09/17/2009	27 57.29	092 42.96	137.5	2057	1 night shark, 1 wenchman, 1 king snake eel, 3 yellowedge grouper
162	09/18/2009	27 55.37	092 16.81	220	0112	1 golden tilefish
163	09/18/2009	27 57.27	092 24.46	113.1	0412	2 <i>Mustelus</i> sp., 2 yellowedge groupers, 1 Gulf hake, 1 unidentified <i>Carcharhinus</i> sp.
164	09/18/2009	28 09.58	092 24.98	75.9	0755	23 Atlantic sharpnose sharks, 2 sandbar sharks, 1 kingsnake eel, 1 <i>Mustelus</i> sp., 1 silky shark
165	09/18/2009	28 19.33	092 30.40	60.5	1141	22 Atlantic sharpnose sharks, 2 spinner sharks, 1 blacktip shark, 1 scalloped hammerhead
166	09/18/2009	28 29.71	092 46.41	47.1	1627	41 Atlantic sharpnose sharks, 2 blacknose sharks
167	09/18/2009	28 56.27	092 38.76	27.3	2125	6 Atlantic sharpnose sharks, 1 blacknose shark, 1 spinner shark, 4 gafftopsail catfish
168	09/19/2009	29 19.96	092 37.98	15.8	0157	28 Atlantic sharpnose sharks, 1 bonnethead shark, 3 spinner sharks, 1 blacktip shark, 3 gafftopsail catfish
169	09/19/2009	29 24.44	092 41.38	15.2	0524	10 spinner sharks, 5 blacktip sharks, 4 Atlantic sharpnose sharks, 1 blacknose shark, 1 gafftopsail catfish, 1 rougtail stingray, 1 southern stingray
170	09/19/2009	28 36.50	092 17.87	41.1	1423	28 Atlantic sharpnose sharks, 2 red snapper
171	09/19/2009	28 28.77	091 53.85	52.7	1836	19 Atlantic sharpnose sharks
172	09/19/2009	28 05.73	091 56.59	90.0	2253	7 Atlantic sharpnose sharks, 2 sandbar sharks, 3 red snapper
173	09/20/2009	27 58.60	091 35.21	204.1	0323	1 king snake eel

Station	Date (GMT)	Latitude °N	Longitude °W	Depth (m)	Time (GMT)	Catch
174	09/20/2009	27 57.68	091 28.13	145.1	0618	3 kingsnake eel, 2 yellowedge groupers, 1 <i>Mustelus</i> sp.
175	09/20/2009	28 01.89	091 33.81	131.0	1007	2 kingsnake eels, 2 yellowedge grouper, 1 silver hake
176	09/20/2009	28 06.44	091 36.55	96.0	1258	3 Atlantic sharpnose sharks, 2 Gulf smoothhounds, 1 kingsnake eel, 1 silver seatrout, 1 silky shark
177	09/20/2009	28 16.56	091 36.86	70.4	1624	20 Atlantic sharpnose sharks, 3 Gulf smoothhounds, 5 red snapper, 1 king snake eel
178	09/20/2009	28 43.33	091 33.50	27.0	2117	10 Atlantic sharpnose sharks, 1 blacknose shark, 4 spinner sharks, 1 gafftopsail catfish
179	09/21/2009	28 57.70	091 31.99	14.7	0102	4 blacktip sharks, 2 spinner sharks, 1 scalloped hammerhead, 1 southern stingray, 1 unid. Carcharhinid
180	09/21/2009	28 35.69	091 07.83	26.1	0655	21 Atlantic sharpnose sharks, 1 spinner shark
181	09/21/2009	28 49.35	090 47.31	18.0	1125	10 spinner sharks, 3 Atlantic sharpnose shark, 3 blacktip sharks, 3 gafftopsail catfish
182	09/21/2009	28 26.51	090 32.24	32.24	1657	40 Atlantic sharpnose sharks, 3 blacknose sharks, 1 spinner shark, 1 red snapper
183	09/21/2009	28 12.93	090 41.22	78.3	2049	25 Atlantic sharpnose sharks, 1 silky shark, 3 Gulf smoothhounds, 7 red snapper
184	09/21/2009	28 12.44	090 46.36	79.9	2347	19 Atlantic sharpnose sharks, 3 sandbar sharks, 1 Gulf smoothhound, 1 scalloped hammerhead
185	09/22/2009	28 05.82	090 51.86	124.0	0325	8 gulf smoothhounds, 2 <i>Mustelus</i> sp., 7 king snake eels, 2 scalloped hammerheads
186	09/22/2009	28 02.83	090 39.80	161.3	0715	6 kingsnake eels, 4 Gulf smoothhounds, 1 smooth dogfish, 1 <i>Mustelus</i> sp., 1 Cuban dogfish, 1 silver hake
187	09/22/2009	28 02.01	090 30.88	218.4	1018	4 tilefish, 2 kingsnake eels, 1 smooth dogfish, 1 silver hake,
188	09/22/2009	28 42.72	089 52.13	70.0	1756	55 Atlantic sharpnose sharks, 3 sandbar sharks
189	09/22/2009	28 48.02	090 06.83	34.0	2218	58 Atlantic sharpnose sharks, 1 blacknose shark, 8 blacktip sharks, 2 spinner sharks, 1 bull shark
190	09/23/2009	29 02.50	090 05.25	17.8	0235	24 spinner sharks, 18 blacktip sharks, 1 Atlantic sharpnose shark, 1 southern stingray
191	09/23/2009	29 04.40	089 52.49	25.5	0646	29 spinner sharks, 7 blacktip sharks, 2 finetooth sharks, 1 gafftopsail catfish
192	09/23/2009	28 54.69	089 44.17	52.7	1101	53 Atlantic sharpnose sharks, 2 blacktip sharks, 1 blacknose shark, 1 spinner shark
193	09/23/2009	28 37.59	089 43.22	117.9	1555	8 Atlantic sharpnose sharks, 1 silky

Table 1 continued.

Station	Date (GMT)	Latitude °N	Longitude °W	Depth (m)	Time (GMT)	Catch
						shark, 3 sandbar sharks, 16 Gulf smoothhounds, 3 <i>Mustelus</i> sp., king snake eel, 2 bearded brotula
194	09/24/2009	28 38.42	089 15.40	193.4	2148	1 Atlantic cutlass fish, 2 Gulf smoothhounds, 1 <i>Mustelus</i> sp., 13 king snake eels, 1 Yellowedge grouper.
195	09/24/2009	29 10.28	088 42.52	75.9	0459	60 Atlantic sharpnose sharks, 3 scalloped hammerhead sharks, 1 bull shark, 1 Gulf smoothhound
196	09/24/2009	29 08.87	088 35.35	113.6	0851	8 king snake eels, 6 Gulf smoothhounds, 4 silky sharks, 2 scalloped hammerheads, 1 cutlass fish, 1 tiger shark
197	09/24/2009	29 24.06	088 32.22	56.7	1315	71 Atlantic sharpnose sharks, 3 spinner sharks, 1 scalloped hammerhead
198	09/24/2009	29 35.30	088 39.25	17.9	1809	4 Atlantic sharpnose sharks, 3 blacknose sharks
199	09/24/2009	29 44.14	088 41.94	19.0	2112	7 Atlantic sharpnose sharks, 3 blacknose sharks, 1 bull shark, 2 spinner sharks, 1 blacktip shark, 1 great hammerhead
200	09/25/2009	29 24.54	088 11.10	11.1	0305	6 Atlantic sharpnose sharks, 2 blacknose sharks, 1 smooth dogfish
201	09/25/2009	29 15.87	088 00.82	206.7	0641	8 king snake eels, 2 tilefish, 1 <i>Mustelus</i> sp.
202	09/25/2009	29 21.87	088 00.59	87.3	0933	15 Atlantic sharpnose sharks, 3 sandbar sharks, 3 <i>Mustelus</i> sp., 3 cutlassfish, 1 red snapper, 1 silver hake
203	09/25/2009	29 45.10	088 03.83	36.4	1426	2 Atlantic sharpnose sharks, 2 nurse sharks, 1 red snapper, 1 sandbar shark, 1 tiger shark
204	09/25/2009	29 31.37	087 23.57	108.7	2052	4 sandbar sharks, 1 tiger shark, 2 smooth dogfish
205	09/26/2009	29 37.68	087 11.71	257.7	0059	8 tilefish, 1 <i>Urophycis</i> sp.
206	09/26/2009	29 46.01	087 25.65	469.9	0518	1 Atlantic sharpnose shark
207	09/26/2009	29 58.75	087 26.73	34.3	0857	No catch
208	09/26/2009	29 57.91	087 10.49	46.2	1225	21 Atlantic sharpnose sharks, 1 barracuda, 1 blacknose sharks, 1 sandbar shark
209	09/26/2009	29 38.07	086 55.52	236.1	1721	1 smooth dogfish, 4 tilefish, 2 yellowedge grouper, 1 king snake eel
210	09/26/2009	29 55.61	086 54.37	148.9	2110	1 tiger shark, 1 yellowedge grouper
211	09/27/2009	30 03.50	089 41.59	69.6	0105	30 Atlantic sharpnose sharks, 3 blacknose sharks, 1 spinner shark, 1 sandbar shark
212	09/27/2009	30 13.83	086 30.75	25.90	0505	2 tiger sharks, 1 nurse shark, 1 sandbar shark
213	09/27/2009	30 02.08	086 14.84	38.7	1000	3 Atlantic sharpnose sharks
214	09/27/2009	30 07.77	085 51.82	23.5	1412	6 blacknose sharks, 3 tiger sharks, 2 sandbar sharks, 1 hardhead catfish, 1 spinner shark

Station	Date (GMT)	Latitude °N	Longitude °W	Depth (m)	Time (GMT)	Catch
215	09/27/2009	30 01.03	085 51.76	28.5	1728	8 blacknose sharks, 2 nurse sharks
216	09/27/2009	29 59.68	085 38.98	21.0	2115	6 blacknose sharks, 3 tiger sharks
217	09/28/2009	29 41.61	085 29.51	21.9	1638	10 blacknose sharks
218	09/28/2009	29 28.43	085 58.64	56.0	2144	8 Atlantic sharpnose sharks, 1 blacktip shark, 1 tiger shark
219	09/29/2009	29 22.57	086 15.23	185.1	0113	1 blackedge moray
220	09/29/2009	29 32.86	086 31.46	189.2	0551	2 yellowedge grouper, 1 blacktail moray, 1 silky shark
221	09/29/2009	29 39.56	086 50.09	210.18	0957	2 kingsnake eels, 1 yellowedge grouper
222	09/29/2009	29 58.48	086 51.29	129.8	1407	3 yellowedge groupers, 1 king snake eel, 1 tilefish
223	09/29/2009	30 08.21	086 52.99	40.0	1828	14 Atlantic sharpnose sharks, 2 blacknose sharks, 3 sandbar sharks
224	09/29/2009	22 08.20	087 06.13	25.8	2208	1 tiger shark

Table 2. Catch summary for 2009 OREGON II R2-09-04 (288).

Elasmobranchs	Number
Atlantic sharpnose shark, <i>Rhizoprionodon terraenovae</i>	1857
Bignose shark, <i>Carcharhinus altimus</i>	2
Blacknose shark, <i>Carcharhinus acronotus</i>	235
Blacktip shark, <i>Carcharhinus limbatus</i>	118
Bonnethead shark, <i>Sphyrna tiburo</i>	1
Bull shark, <i>Carcharhinus leucas</i>	16
Chain dogfish, <i>Scyliorhinus rotifer</i>	1
Clearnose skate, <i>Raja eglanteria</i>	1
Cuban dogfish, <i>Squalus cubensis</i>	1
Dusky shark, <i>Carcharhinus obscurus</i>	1
Finetooth shark, <i>Carcharhinus isodon</i>	2
Garrick's winged skate, <i>Dipturus garricki</i>	1
Great hammerhead, <i>Sphyrna mokarran</i>	5
Gulf smoothhound, <i>Mustelus sinuatus</i>	86
Lemon shark, <i>Negaprion brevirostris</i>	1
Night shark, <i>Carcharhinus signatus</i>	2
Nurse shark, <i>Ginglymostoma cirratum</i>	24
Roughtail stingray, <i>Dasyatis centroura</i>	1
Sandbar shark, <i>Carcharhinus plumbeus</i>	84
Scalloped hammerhead, <i>Sphyrna lewini</i>	28
Shortspine spurdog, <i>Squalus mitsukurii</i>	1
Silky shark, <i>Carcharhinus falciformis</i>	19
Smooth dogfish, <i>Mustelus canis</i>	6
Southern stingray, <i>Dasyatis americana</i>	5
Spinner shark, <i>Carcharhinus brevipinna</i>	115
Tiger shark, <i>Galeocerdo cuvier</i>	35
Unidentified Carcharhinid	5
Unidentified stingray	1
Unidentified hammerhead	1
<i>Mustelus</i> sp.	45
Teleosts	Number
Atlantic cutlassfish, <i>Trichiurus lepturus</i>	6
Bearded brotula, <i>Brotula barbata</i>	2
Black grouper, <i>Mycteroperca bonaci</i>	1
Black seabass, <i>Centropristis striata</i>	2
Blackedge moray, <i>Gymnothorax nigromarginatus</i>	1
Blacktail moray, <i>Gymnothorax kolpos</i>	1
Bluefish, <i>Pomatomus saltatrix</i>	1
Blueline tilefish, <i>Caulolatilus microps</i>	2
Bonito, <i>Sarda sarda</i>	1
Cobia, <i>Rachycentron canadum</i>	1
Dolphin, <i>Coryphaena hippurus</i>	1

Table 2 continued.	
Dwarf scorpionfish, <i>Scorpaena elachys</i>	1
Gafftopsail catfish, <i>Bagre marinus</i>	18
Gag, <i>Mycteroperca microlepis</i>	3
Great barracuda, <i>Sphyraena barracuda</i>	16
Gray snapper, <i>Lutjanus griseus</i>	1
Hardhead catfish, <i>Arius felis</i>	1
King snake eel, <i>Ophichthus rex</i>	66
Leopard toadfish, <i>Opsanus pardus</i>	1
Mutton snapper, <i>Lutjanus analis</i>	1
Palespotted eel, <i>Ophichthus puncticeps</i>	6
Red drum, <i>Sciaenops ocellatus</i>	1
Red grouper, <i>Epinephelus morio</i>	66
Red snapper, <i>Lutjanus campechanus</i>	86
Remora, <i>Remora remora</i>	1
Reticulate moray, <i>Muraena retifera</i>	2
Sand seatrout, <i>Cynoscion arenarius</i>	1
Scamp, <i>Mycteroperca phenax</i>	1
Silver hake, <i>Merluccius bilinearis</i>	6
Silver seatrout, <i>Cynoscion nothus</i>	1
Snowy grouper, <i>Epinephelus niveatus</i>	3
Tilefish, <i>Lopholatilus chamaeleonticeps</i>	49
Vermilion snapper, <i>Rhomboplites aurorubens</i>	1
Yellowedge grouper, <i>Epinephelus flavolimbatus</i>	39
Warsaw grouper, <i>Epinephelus nigritus</i>	5
Wenchman, <i>Pristipomoides aquilonaris</i>	1
White grunt, <i>Haemulon plumieri</i>	1
<i>Seriola</i> sp	1
Sea Turtle	Number
Loggerhead turtle, <i>Caretta caretta</i>	1