U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P. O. Drawer 1207
Pascagoula, MS 39567-0112

FRS OREGON II Cruise 129
8/26 - 9/30/82

INTRODUCTION

The FRS OREGON II departed Pascagoula, MS on August 26, 1982 to sample deep water stocks of snapper-grouper off Puerto Rico, Culebra and St. Thomas Islands (Fig. 1). Fishing gear included bottom and offbottom longlines fished between 38 and 322 fathoms; fish traps (sablefish and Florida) and handlines fished between 38 and 86 fathoms; and shrimp traps fished in 283 and 301 fathoms. Two hundred and forty-four stations were completed, including 222 bottom and offbottom longline sets, 16 fish traps, 2 shrimp traps and 4 handline stations. Total combined catch from all stations was 6,386 lbs. of which 3,396 lbs. came from bottom longlines, 2776 lbs. from offbottom longlines, 156 lbs. from fish traps, 52 lbs. from shrimp traps and 6 lbs. from handlines. Represented in these catches were 39 species of finfish from 19 families and 11 species of invertebrates from 4 families.

OBJECTIVES

1. Sample snapper and grouper resources on deep water reefs (50-250 fathoms) with bottom and offbottom longlines and traps.

2. Collect species, size and weight composition data as a function of gear, depth and habitat.

3. Collect biological data from selected snapper and grouper specimens including scales, otoliths, sex and maturation stage.

GEAR

Bottom longline: A standard bottom longline set consisted of 50 hooks and 100 fathoms of ground line. Hook number per set varied due to vessel operation and handling problems during set out. Monofilament gangions were 2.5 feet in length with No. 7 circle tuna hooks and the ground line was 3/8" braided nylon. Bottom longline sets soaked 2 hours and squid was used for bait.

Offbottom longline: Offbottom longlines consisted of 100 fathoms of floating polypropylene mainline and 20 evenly spaced 10 ft PVC pipes weighted at the bottom with a 4" float at the top. Each pipe was 10 feet long with 6 evenly spaced hooks on 8-inch monofilament gangions. The pipes were designed to set vertically in the water with one end on the bottom and the other attached to the floating mainline. Squid was used for bait on all hooks and soak time for all sets was 2 hours. Number 7 circle tuna hooks were used exclusively.

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Bottom longlines and offbottom longlines were hooked together and set as a unit. During Cruise 129 the gear was hauled with a hydraulic pot hauler.

Fish traps: Each of the 16 fish trap sets consisted of three sablefish and three Florida fish traps. Sablefish traps were spaced approximately 35 feet apart and bouyed at one end of the set. Three Florida fish traps were attached at the end of the sablefish traps, 30 feet apart. Sablefish traps were 3x3x6 feet with a single funnel, while Florida fish traps were 2x2x4 feet with a single funnel.

Shrimp traps: Eight shrimp traps were set along the mainline with each trap 30 feet apart. Jacks (Carangidae) and squid were used for bait. Shrimp traps measured 4 X 3 X 1 feet and were oval in shape. They were constructed of plastic and had ½ inch mesh liners.

Handlines: Handlines used during the cruise were electric powered commercial snapper reels with 3/32 inch stainless steel cable. Leaders were made from 200 lb. test monofilament with the three hooks 2 feet apart. Twenty pound weights were attached to the leader by a piece of cotton twine, to provide a means of breaking the leader free if the weights snagged. Squid was used as bait.

ENVIRONMENTAL DATA COLLECTION

Expendable bathythermographs were shot at 215 stations to provide temperature profiles of deep water fishing stations. Complete coverage of all 244 stations was not possible due to malfunction of 12 XBT probes, addition of 13 stations south of St. Thomas and Isla de Vieques, which were not anticipated, and sampling of 4 very shallow handline stations where temperature profile from hydrocasts had shown no change from surface to bottom. Hydrocasts were completed at 135 stations providing water samples for laboratory determination of salinities. Adverse weather conditions prevented taking hydrocasts at 5 stations while 4 stations were in very shallow water (less than 5 fathoms). Surface salinity and temperature were taken at all stations. Other environmental observations were taken as part of routine station observations, including air temperature, barometric pressure, sea color, sea conditions, and wind speed and direction. All environmental data have been put into the SEFC computer system.

RESULTS

Bottom longlines: Bottom longlines were fished along the west and north coast of Puerto Rico and the north coast of both Culebra and St. Thomas Island. An additional two days of fishing was completed south of St. Thomas and Isle de Vieques. Fishing depth varied between 38 and 322 fathoms (Fig. 1). Bottom longline catches are listed in Tables 1, 2 and 3. Dominant snapper species taken on bottom longlines during the cruise were, by weight, queen snapper (*Etelis oculatus*), wenchman snapper (*Pristipomoides macropthalmus*) and silk snapper (*Lutjanus vivanus*).

Dominant groupers were misty grouper (Epinephelus mystacinus), yellowedge grouper (Epinephelus flavolimbatus) and snowy grouper (Epinephelus niveatus). The dominant species of shark caught were the slope shark (Centrophorous granulosus), cuban dogfish (Squalus cubensis), and smooth dogfish (Mustelus canis). Five other species of shark were also caught. All species were taken between 98 and 278 fathoms (Table 2).

Catches along the west coast of Puerto Rico were poor for all species, however, frequency of sharks was highest in this area. As fishing operations continued eastward along the north coast of Puerto Rico, catches of shark per set dropped slightly accompanied by an increase in the catch of snapper and grouper. This trend continued as fishing operations moved north of St. Thomas where snapper was the dominant species taken. Grouper catches also showed a slight increase in number and weight per set north of St. Thomas. Most notable along the northern slope of Puerto Rico and the Virgin Islands was the marked decrease in sharks taken as fishing operations moved easterly.

Catch composition seen south of St. Thomas remained about the same as seen on the north coast with snapper the most frequently taken species followed by shark and grouper. Grouper catches were slightly lower than seen on the north coast of St. Thomas (Table 3). the north coast of St. Thomas (Table 3).

Offbottom longline: Offbottom longlines were fished in conjunction with bottom longlines and reflected a similar catch composition as seen on the bottom longlines. By weight, wenchman snapper (Pristipomoides macropthalmus) was the dominant snapper caught on offbottom longlines, with queen snapper (Etelis oculatus) second, and silk snapper (Lutjanus vivanus) third.

Species composition of grouper, by weight, remained the same as seen on bottom longlines with misty grouper (Epinephelus mystacinus) first, yellowedge grouper (Epinephelus flavolimbatus) second, and snowy grouper (Epinephelus niveatus) third. Offbottom longlines produced 11 species of sharks with the dominant species, by weight, being the slope shark (Centrophorus granulosus), the cuban dogfish (Squalus cubensis) and the smooth dogfish (Mustelus canis) respectively. These species were taken between 98 and 322 fathoms (Tables 4 and 5).

Catch trends for offbottom longlines were similar to bottom longlines with the lowest per set catches of snapper and grouper occuring along the west coast of Puerto Rico; but sharks were again more prevalent in this area. The occurrence of sharks decreased and snapper captures increased along the north coast of Puerto Rico and Culebra Island with the occurrence of grouper remaining about the same. Frequency of snapper and grouper per set then increased north of St. Thomas as the occurrence of sharks decreased. South of St. Thomas grouper were not taken on offbottom longlines, however, the frequency of snapper captures remained the same as for the north coast.

Overall, the catch of snapper and grouper was lower on offbottom longlines but sharks were caught more frequently. Catches of 20 pounds, or more

of snapper or grouper on longlining gear are listed in Table 6.

Frequent gear tangles occurred with the offbottom longline and are probably the result of improper gear handling techniques during set out and retrieval. Some of these problems would be resolved with a smaller vessel.

Fish traps: Sixteen fish trap stations between 55 and 86 fathoms were completed, representing 189 hours of soak time. Sablefish traps produced 48 finfish weighing 49 lbs. while Florida fish traps produced 71 finfish weighing 107 lbs. The principal finfish was silk snapper (*Lutjanus vivanus*), (Table 7).

Shrimp traps: Two shrimp trap stations were made in 283 and 301 fathoms, with soak times of 26 and 18 hours, respectively. Catches included 40 *Bathynomus giganteus* weighing 34 lbs., 8 nephropsis weighing 6.2 lbs. and 170 *Hetrocarpus* weighing 12 lbs. The south slope may have some limited commercial potential for trapping blind lobsters.

Handlines: Four handline stations were completed between 21 and 40 fathoms representing 7 hours of effort for 3 reels. Catches were low with a 4 lb. red hind (*Epinephelus guttatus*) and a 2 lb. coney (*Epinephelus fulvus*) caught. Handline fishing aboard the OREGON II is marginal due to the vessels rapid drift rate and its inability to maintain position.

Cruise Participants

Mike Russell, Field Party Chief, Pascagoula, MS 8/26-9/30/82
Larry Braswell, Coop Student, Pascagoula, MS 8/26-9/30/82
Fred Diaz, NOAA Officer, Pascagoula, MS 8/26-9/30/82
Malcolm Meaburn, Chemist, Charleston, SC 9/1-9/24/82
Guy Davenport, Biologist, Miami, FL 9/1-9/24/82
Essie Coleman, Biologist, Miami, FL 9/1-9/24/82
Diane Mason, Biologist, Beaufort, NC 9/1-9/24/82
Steve Candileri, Biologist, FL. Dept. Nat. Res., Tampa, FL 8/26-9/30/82
Frida Schnitzler, Biologist, LaFayette, LA 8/26-9/30/82
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Lewis Mendoze, Caribbean Council, P.R. 9/1-9/30/82
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Table 1. Number and Weight of All Species Taken With Bottom and Offbottom Longlines.

Species	Bottom L.L.		Off Bottom L.L.	
	No.	Wt.	No.	Wt.
Snapper				
Etelis oculatus	17	187	8	82
Lutjanus buccanella	4	9	2	5
Lutjanus vivanus	9	30	13	27
Pristipomoides aquilonaris	23	26	19	20
Pristipomoides macropthalmus	69	146	53	108
Rhomboplites aurorubens	6	5	4	4
Grouper				
Epinephelus flavolimbatus	3	86	4	86
Epinephelus guttatus	1	2	1	1
Epinephelus mystacinus	13	336	7	159
Epinephelus niveatus	2	70	2	42
Sharks				
Carcharhinidae	2	58	1	19
Centrophorous granulosus	111	1181	139	1333
Dalatias licha			1	21
Etmopterus hillianus			4	4
Galeus arae			1	1
Heptranchias perlo	2	5	8	30
Hexanchus vitulus	13	327	10	132
Mustelus canis	49	263	54	241
Scyliorhinus retifer	1	1		
Scyliorhinus torrei			1	1
Scymnodon sp.	2	11	1	6
Squalus cubensis	162	457	190	445

Table 1.--continued

Species	Bottom L.L.		Offbottom L.L.	
	No.	Wt.	No.	Wt.
Other				
Caranx lugubris			1	7
Chimera cubana			1	6
Gymnothorax funebris	1	1		
Gymnothorax moringa	11	33	5	26
Hildebrandi fluva	1		1	1
Hildebrandi gracilior			3	12
Ophichthus sp.	9	39	1	2
Polymixia lowei			2	1
Pomadasysi crocro			1	1
*Ruvettus pretiosus**			1	-
Seriola dumerili	3	90		
Seriola rivoliana	2	24		
Odontoscion dentex	1	1		

* Shark Damage

Table 2.--Dominant Components of Bottom Longline Catches

Species	Depth	Total Number	Total Weight	% Number of Total Catch	% Weight of Total Catch	Day/Night Most Frequently Taken
Snapper						
Etelis oculatus	103-242	17	187	3	6	D
Pristipomoides macropthalmus	114-241	69	146	13	4	D
Lutjanus vivanus	98-161	9	30	2	1	D
Grouper						
Epinephelus mystacinus	125-210	13	336	3	10	N
Epinephelus flavolimbatus	180-161	3	86	1	3	N
Epinephelus niveatus	198-236	2	70	.4	2	D
Sharks						
Centrophorus granulosus	184-274	111	1181	21	35	N
Squalus cubensis	114-278	162	457	31	13	N
Mustelus canis	114-251	49	263	9	8	N

Table 3.--Catch distribution by area and depth for bottom longlines.

Depth In Fm	Snapper No.	Snapper Lbs.	Grouper No.	Grouper Lbs	Shark No.	Shark Lbs.	Other No.	Other Lbs.	Total Number	Total Pounds	Total Hooks
West Coast of Puerto Rico, 20 Sets											
50-99											50
100-149	4	2			2	3	4	6	10	11	234
150-199	8	18	1	12	83	701	2	6	94	737	499
200-249			1	33	9	111	4	13	14	157	146
250-299											50
Total	12	20	2	45	94	815	10	25	118	905	979
North Coast of Puerto Rico and Culebra Island, 71 Sets											
50-99	2	2							2	2	50
100-149	8	19	3	62	37	361	2	3	50	445	549
150-199	53	206	7	187	84	512	13	115	157	1,020	1,681
200-249	11	62	2	75	86	435	3	11	102	583	1,000
250-299					5	7			5	7	245
Total	74	289	12	324	212	1,315	18	129	316	2,057	3,525
North Coast of St. Thomas, 9 Sets											
0-49							1	35	1	35	50
100-149	10	22	1	2	1	17			12	41	100
150-199	9	20	2	48	6	17			17	85	200
200-249											
250-299					10	60			10	60	100
Total	19	42	3	50	17	94	1	35	40	221	450
South Coast of St. Thomas, and Isla de Viequez, 11 Sets											
50-99											
100-149	4	11							4	11	150
150-199	14	32	1	31	7	21	1	1	23	85	200
200-249	5	9	1	44	13	64			19	117	200
250-299											
Total	23	52	2	75	20	85	1	1	46	213	550

Table 4.--Dominant Components of Offbottom Longline Catches

Species	Depth	Total Number	Total Weight	% Number of Total Catch	% Weight of Total Catch	Day/Night Most Frequently Taken
Snapper						
Pristipomoides macropthalmus	140-238	53	108	10	4	D
Etelis oculatus	140-225	8	82	2	3	D
Lutjanus vivanus	98-161	13	27	3	1	D
Grouper						
Epinephelus mystacinus	148-176	7	159	2	6	D
Epinephelus flavolimbatus	114-161	4	86	1	3	N
Epinephelus niveatus	198-236	2	42	---	1	D
Sharks						
Centrophorus granulosus	198-322	139	1,333	28	47	N
Squalus cubensis	114-278	190	445	37	16	N
Mustelus canis	100-251	54	241	10	9	N

Table 5.--Catch distribution by area and depth for offbottom longline.

Depth In Fm	Snapper No.	Snapper Lbs.	Grouper No.	Grouper Lbs.	Shark No.	Shark Lbs.	Other No.	Other Lbs.	Total Number	Total Pounds	Total Hooks
West Coast of Puerto Rico, 20 Sets											
50-99					1	19			1	19	119
100-149	3	10	1	31	15	69	1	1	20	111	588
150-199	2	5	1	16	92	892	3	2	98	915	1,308
200-249					13	99			13	99	240
250-299					4	19			4	19	102
Total	5	15	2	47	125	1,098	4	3	136	1,163	2,357
North Coast of Puerto Rico and Culebra Island, 71 Sets											
50-99	2	2							2	2	114
100-149	4	3	2	32	43	136	2	22	51	193	1,560
150-199	30	83	7	192	86	248	4	13	127	536	3,936
200-249	18	63			90	439			108	502	2,400
250-299	1	3			16	71			17	74	360
300-350					3	32			3	32	120
Total	55	154	9	224	238	926	6	35	308	1,339	8,490
North Coast of St. Thomas, 9 Sets											
1-49	2	5	1	1					3	6	120
100-149	14	24			4	21	1	1	19	46	240
150-199	4	7	2	16	6	57	1	7	13	87	474
200-249											
250-299					7	46			7	46	240
Total	20	36	3	17	17	124	2	8	42	185	1,074
South of St. Thomas and Isla de Viequez, 11 Sets											
50-99											
100-149	8	15			1	10			1	10	360
150-199	11	26			23	61	1	1	24	62	474
200-249					6	14	1	3	7	17	474
250-299											
Total	19	41			30	85	2	4	32	89	1,308

Table 6.--Bottom and Offbottom Longline Sets Catching 20 Pounds, or more, of Snapper or Grouper. Bottom Longline, LL; Offbottom, OB.

Station No.	Day/ Night	#/Pounds	Gear	Depth	Position	
37125	D	1/33G	LL	208	18°16'	67°15'
37133	N	1/31G	OB	145	18°28'	67°11'
37176	D	1/26G	OB	198	18°31'	66°31'
37177	D	2/23S	LL	198	18°31'	66°31'
37189	D	2/54G	LL	180	18°31'	66°22'
37197	D	1/58G	LL	236	18°32'	66°21'
37207	N	2/39S	LL	173	18°31'	66°22'
	N	1/14G				
37215	N	2/83G	LL	180	18°31'	66°08'
37223	D	3/22S	LL	187	18°30'	66°04'
37233	D	5/20S	LL	161	18°29'	65°49'
37246	N	1/32G	LL	158	18°29'	65°44'
37249	N	2/61G	LL	140	18°29'	65°52'
37250	N	1/35G	OB	151	18°29'	65°50'
37254	N	5/24S	OB	150	18°29'	65°40'
37256	D	5/29S	OB	225	18°30'	65°40'
37258	D	1/65G	OB	162	18°29'	65°37'
37268	N	1/46G	OB	160	18°32'	65°24'
37279	N	3/9 S	LL	202	18°32'	65°18'
		1/17G				
37309	N	1/40G	LL	184	18°37'	64°58'
37320	D	1/31G	LL	171	18°11'	65°05'
37333	N	1/44G	LL	210	18°06'	65°18'

Table 7.-- Catch Distribution from Fish Traps by Depth and Species.

Depth	Hrs Soaked	*Lutjanus buccanella*	*Lutjanus vivanus*	*Rhomboplites aurorubens*	*Holocentrus rufus*	*Odontoscion dentex*	*Epinephelus striatus*	*Mycteroperca venenosa*	*Mustelus canis*	*Stenorynchus sp*
		No./Lbs.	No./Lbs.	No./Lbs.	No./Lbs.	No./Lbs.	No./Lbs.	No./Lbs.	No./Lbs.	No./Lbs.
55-60	107	8/12	25/23	2/2			1/24	1/30		
61-65	21	1/1	6/5	4/3	3/2					
66-70										
71-75	13	2/7	15/19	38/17					1/6	1/1
76-80										
81-85	20		5/3			2/1				1/1
86-90	28		3/1							

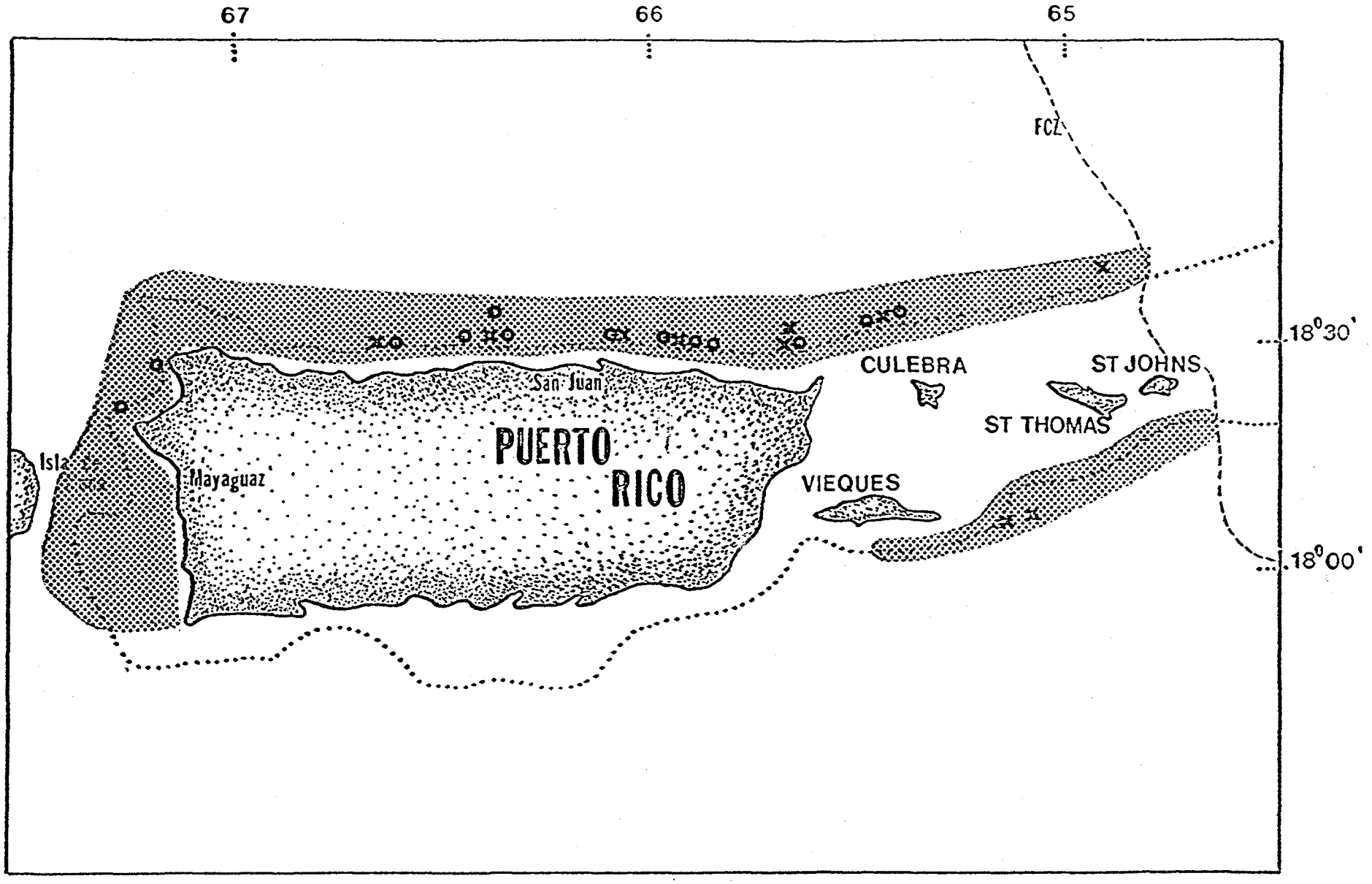

Figure 1. Survey area for OREGON II Cruise 129 is represented by the stippled area with the dotted line representing the 100 fathom contour. Bottom longline sets catching more than 20 lbs. are represented by an x for snapper and an o for grouper.