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Fishes Rarely Caught in Shrimp Trawl.

By

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During a three year study made of the offshore waters of Mississippi the author became interested in the fishes "rarely caught" in shrimp trawls. This report concerns all data for the project, which was carried out during 1967, 1968 and 1969. The only characteristic common to the following species is the rarity with which they are taken in regular shrimp trawling operations. Some are by no means rare in terms of total number available in the Gulf of Mexico, but it is worthwhile to report data collected as compared to others taken thirty-nine to forty-one years ago in nearby Louisiana. (Gunter, 1935). Later Gunter (1941) listed certain rare fishes from Texas taken in both inside and outside waters. The data given here concern only offshore stations, which extended farther out than any previously reported from this coast.

A series of stations was set with the inner one at the sea buoy just beyond Dog Keys Pass. The buoy is in 6 fathoms of water and is located 2½ miles southwest of the south end of Horn Island in the open Gulf. The stations were set on a south SE course at ten fathom intervals to the fifty fathom curve. The vessel used during the survey was the *Gulf Researcher*.

A 40 foot trawl of one and five-eighths inches stretched mesh was pulled for a 30 minute period at three miles per hour. At each station, bottom salinity and temperature determinations were made. The shrimp trawl is designed for bottom fishing. The trawl generally closes going down and coming up. Other gear are devised for mid-water fishing.

The location and depth of each station by latitude and longitude are:

Station 1, 6 fms, 30° 13' 15" N, 88° 47' 30" W

Station 2, 10 fms, 30° 02' 30" N, 88° 40' 15" W

Station 3, 20 fms, 29^o 42' 00" N, 88^o 27' 30" W
Station 4, 30 fms, 29^o 24' 15" N, 88^o 17' 00" W
Station 5, 40 fms, 29^o 19' 00" N, 88^o 14' 00" W
Station 6, 50 fms, 29^o 15' 00" N, 88^o 11' 30" W

DISCUSSION

Two hundred and thirty-nine trawl hauls produced in three years (1967, 68, 69) 93,703 specimens of 135 species. Two hundred and fifty-seven specimens comprised of eighty-eight species represented 0.27 per cent of the total. D and N in Table 1 represent day and night catches of these 257 specimens. One hundred and fifty-seven specimens, representing 61 percent of the total, were the day catches and one hundred specimens, 39 per cent, were night catches. They are made up of species caught in numbers of ten or less per species.

During day trawls, 69 species comprised of 157 specimens were taken from 138 hauls. In terms of specimens per haul these data may be broken down as follows: 1.14 specimens were taken in each trawl or 0.5 species per haul.

Similarly since 52 species (100 specimens) were taken in 101 night trawls, the breakdown shows that 0.99 specimens were obtained from each haul or 0.51 species per haul. There was not much difference between the number of fishes rarely caught between day and night.

In all the catches 88 species made up 0.27 per cent, whereas 48 species made up 99.73 per cent of the total.

The majority of specimens were measured in both standard and total length on a measuring board. Standard lengths (from the tip of the snout to the posterior edge of the hypural plate) were taken with few exceptions on all fishes collected. All measurements were recorded in mm and the figures given are for total length. The majority of fishes were dried by blotting, and weight determinations were made by means of a top loading precision Mettler balance. Specimens were identified by the author, and several are deposited in the Gulf Coast Research Laboratory museum.

TABLE 1

SPECIES	DATE	Total Wgt. G.	Wgt. Ave. per Species	Total
Mustelus canis	Mar. 67 D. 6	4082.3	2041.4	2
	Mar. 68 D. 6	4560.0	4560.0	1
Scoliodon terraenovae	Aug. 67 D. 6	986.6	986.6	1
	Jan. 68 N. 3	3900.9	3900.9	1
Sphyrna tiburo	Mar. 67 D. 2	1299.0	433.0	3
	Nov. 67 D. 2	299.9	299.9	1
	Mar. 69 D. 1	297.1	297.1	1
	Mar. 69 D. 2	298.8	298.8	1
Squatina dumerili	Mar. 67 D. 6	407.2	407.2	1
	Mar. 68 D. 6	2880.0	2880.0	1
	Jan. 69 D. 6	13608.0	6804.0	2
	Mar. 69 D. 6	343.3	343.3	1
Narcine brasiliensis	Dec. 68 D. 4	453.6	453.6	1
Raja eglanteria	Aug. 67 D. 4	385.3	385.3	1
	Apr. 69 N. 1	1144.0	1144.0	1
Raja texana	May 67 D. 4	455.5	455.5	1
	Jul. 67 D. 4	463.4	463.4	1
	Jul. 67 D. 6	398.2	398.2	1
	Jul. 67 D. 5	425.0	425.5	1
	July. 68 D. 3	598.3	598.3	1
	Dec. 68 D. 3	175.9	175.9	1
	Jun. 68 N. 5	365.7	365.7	1
	May 68 D. 6	429.6	429.6	1
Dasyatis americanus	Feb. 69 D. 5	37648.8	37648.8	1
Dasyatis sayi	Mar. 67 D. 2	1542.2	1542.2	1
Alosa chrysochloris	May 69 N. 1	17.9	17.9	1
Brevoortia patronus	Nov. 68 D. 1	141.3	141.3	1
	Jan. 69 N. 1	77.7	38.8	2
	Apr. 69 D. 2	11.0	3.6	3
Harengula pensacolae	Nov. 67 D. 3	69.2	34.6	2
Opisthonema oglinum	Jan 68 D 1	35.2	35.2	1
	Apr. 69 D. 1	13.5	13.5	1
	Apr. 69 D. 2	22.4	22.4	1
Anchoa hepsetus	Aug. 67 D. 6	18.3	9.1	2
Saurida brasiliensis	Apr. 69 N. 3	17.4	17.4	1
Trachinocephalus myops	Feb. 67 N. 4	113.5	113.5	1
	Jun. 67 N. 4	45.3	45.3	1
	May 67 N. 5	52.0	52.0	1
	Oct. 68 N. 4	127.5	637.5	2
	Nov. 68 N. 4	148.6	148.6	1
	Jul. 68 D. 5	147.9	739.5	2
	Apr. 69 D. 5	85.8	85.8	1
	Apr. 69 D. 5	85.8	85.8	1
Bagre marinus	Feb. 69 N. 1	46.3	46.3	1
Anguilla rostrata	Nov. 67 D. 2	72.1	72.1	1
	May 68 N. 2	71.3	71.3	1
	May 68 N. 3	73.1	73.1	1
	Jan. 68 D. 4	144.3	144.3	1
	Mar. 68 D. 6	97.8	97.8	1
	Feb. 69 N. 3	98.3	98.3	1

TABLE 1
(continued)

SPECIES	DATE	Total Wgt. G.	Wgt. Ave. per Special	Total
Gymnothorax nigromarginatus	Mar. 67 N. 3	298.0	149.1	2
	Oct. 67 N. 3	103.2	103.2	1
	May 67 D. 5	122.4	122.4	1
Congrina flava	Nov. 68 D. 3	67.0	67.0	1
	Jan. 68 D. 4	5.2	5.2	1
	Oct. 68 D. 6	101.5	101.5	1
Hoplunnis macrurus	Jun. 67 N. 6	24.9	24.9	1
	Mar. 69 N. 6	25.0	25.0	1
	Mar. 69 N. 4	7.6	7.6	1
Ophichthus ocellatus	Jan. 69 N. 3	7.5	7.5	1
	Mar. 69 D. 5	86.5	86.5	1
	Apr. 67 D. 2	52.0	15.5	4
Urophycis regius	Oct. 68 D. 6	150.7	150.7	1
Zenopsis ocellata	Mar. 67 D. 6	27.2	6.8	4
Serranus notospilus	Aug. 67 D. 4	26.8	13.4	2
Serranus atrobranchus	Jul. 67 N. 4	13.0	13.0	1
	Jul. 67 N. 5	24.7	24.7	1
Pristipomoides andersoni	May 67 D. 6	66.6	66.6	1
	Jun. 67 N. 4	267.8	267.8	1
	Feb. 69 D. 6	111.5	111.5	1
Priacanthus arenatus	Jul. 67 D. 5	51.8	51.8	1
	Sept. 68 D. 6	69.5	69.5	1
	Mar. 69 N. 6	124.5	124.5	1
Pomatomus saltatrix	May 69 D. 6	36.6	36.6	1
	Jan. 68 D. 1	17.0	17.0	1
	Sept. 68 D. 4	335.5	335.5	1
Rachycentron canadum	Sept. 68 D. 5	430.7	430.7	1
	Jan. 68 D. 4	730.2	730.2	1
Chloroscombrus chrysurus	Oct. 67 N. 3	30.2	30.2	1
	Nov. 67 D. 3	39.8	39.8	1
	Apr. 69 D. 4	61.2	61.2	1
Selar crumenophthalmus	May 68 D. 6	111.5	111.5	1
Vomer setapinnis	Dec. 68 D. 2	11.4	11.4	1
	Jun. 68 D. 4	138.0	138.0	1
Eucinostomus argenteus	Feb. 69 N. 4	40.8	40.8	1
Cynoscion nothus	Mar. 67 D. 5	298.3	149.1	2
	Jan. 67 D. 2	5.3	5.3	1
Equetus acuminatus	Mar. 69 N. 4	28.7	28.7	1
	Mar. 69 D. 4	172.9	576.3	3
	Apr. 69 N. 4	31.3	31.3	1
Larimus fasciatus	Nov. 67 D. 2	304.4	76.1	4
	Sept. 67 D. 2	40.8	40.8	1
Menticirrhus americanus	Jan. 67 N. 2	122.9	61.4	2
	Aug. 67 N. 2	121.9	121.9	1
	Sept. 67 N. 2	91.5	91.5	1
Pogonias cromis	Nov. 67 D. 1	4309.1	4309.1	1

TABLE 1
(continued)

SPECIED	DATE	Total Wgt. G.	Wgt. Ave. per Species	Total
	Mar. 69 D. 2	2041.2	2041.2	1
	Jan. 69 N. 5	3402.0	3402.0	1
Mullus auratus	Mar. 67 D. 6	57.8	57.8	1
Archosargus				
probatoccephalus	Jan 67 N. 2	4536.0	4356.0	1
	Jan. 69 N. 3	1134.0	1134.0	1
Lagodon rhomboides	Jan. 67 N. 3	106.0	53.0	2
Pagrus sedicem	Mar. 67 D. 6	978.1	489.0	2
Chaetodipterus faber	Mar. 67 N. 31	214.6	107.3	2
	Feb. 67 D. 3	195.2	97.6	2
	Oct. 67 N. 3	59.6	59.6	1
Scomber colias	Mar. 69 N. 5	86.5	86.5	1
Scomberomorus maculatus	Sept. 67 D. 2	257.8	128.9	2
	Oct. 68 D. 2	76.8	38.4	2
	Nov. 68 N. 2	134.4	134.4	1
Bollmania communis	Mar. 67 N. 3	2.9	2.9	1
	Aug. 67 N. 3	11.8	3.8	3
	Jun. 68 D. 1	5.9	5.9	1
Neomerinthe pollux	May 67 N. 6	453.6	453.6	1
Scorpaena calcarata	Aug. 67 D. 6	13.4	13.4	1
Bellator militaris	Nov. 67 D. 5	33.5	33.5	1
	July 67 D. 6	12.7	12.7	1
Peristedion gracile	Mar. 67 D. 6	107.7	35.9	3
	Mar. 67 D. 5	54.9	27.4	2
Prionotus alatus	Mar. 67 D. 6	45.3	15.1	3
Prionotus ophryas	Mar. 67 D. 6	57.8	57.8	1
Prionotus roseus	Nov. 67 D. 4	54.1	54.1	1
Prionotus scitulus	Aug. 67 N. 5	18.8	18.8	1
Prionotus stearnsi	May 67 D. 6	35.2	11.7	3
	Nov. 67 D. 3	5.3	5.3	2
	Nov. 68 D. 3	15.7	15.7	1
	Dec. 68 D. 3	17.9	17.9	1
	Sept. 68 D. 6	30.4	30.4	1
Astroscoptes y-graecum	Jan. 68 N. 1	152.9	152.9	1
Kathetostoma albigutta	Aug. 67 N. 5	30.8	30.8	1
	Jun. 67 D. 5	79.2	79.2	1
	July 67 N. 5	30.7	30.7	1
	July 68 D. 5	28.8	28.8	1
	Oct. 68 D. 5	37.8	37.8	1
	Oct. 68 D. 5	51.7	51.7	1
Bregmaceros atlanticus	Mar. 67 D. 6	1.6	0.8	2
Brotula barbata	Jan. 67 N. 3	64.2	64.2	1
	Oct. 67 N. 3	61.0	61.0	1
	Oct. 67 N. 6	75.7	75.7	1
	Jul. 67 D. 6	177.9	177.9	1
Lepophidium graellsii	Jul. 67 N. 5	101.6	50.8	2
Ophidion welshi	Feb. 69 N. 1	41.1	41.1	1

TABLE 1
(continued)

SPECIES	DATE	Total Wgt. G.	Wgt. Ave. per Species	Total
	Feb. 69 N. 2	39.2	39.2	1
	May 69 D. 2	7.9	7.9	1
<i>Peprilus paru</i>	Mar. 67 N. 3	63.8	63.8	1
	Jan. 68 N. 1	14.6	14.6	1
	Jan. 68 D. 1	41.3	41.3	1
<i>Sphyraena guachancho</i>	Dec. 68 N. 1	167.7	167.7	1
	Mar. 68 N. 2	53.5	53.5	1
	Mar. 68 D. 5	160.0	160.0	1
	Nov. 67 D. 4	19.3	19.3	1
<i>Mugil cephalus</i>	Nov. 68 D. 3	375.1	375.1	1
<i>Ancyclopsetta dilecta</i>	Mar. 67 D. 5	129.2	129.2	1
	May 69 N. 6	43.5	43.5	1
<i>Ancyclopsetta quadrocellata</i>	Mar. 67 N. 3	150.6	150.6	1
<i>Citharichthys macrops</i>	Jun. 67 N. 2	121.6	30.4	4
<i>Citharichthys spilopterus</i>	Jul. 67 D. 3	34.2	17.1	2
	Mar. 67 N. 3	29.8	29.8	1
<i>Engyophrys sentus</i>	Mar. 68 D. 3	3.1	3.1	1
	Nov. 68 D. 5	7.6	7.6	1
<i>Etropus crossotus</i>	Mar. 67 D. 5	7.7	7.7	1
	May 67 N. 5	5.2	5.2	1
<i>Paralichthys lethostigma</i>	Mar. 67 N	188.1	188.1	1
	May 67 D. 3	514.0	514.0	1
	Jun. 67 D. 3	251.0	251.0	1
	Aug. 67 N. 3	269.8	269.8	1
	May 67 D. 6	551.0	551.0	1
	Feb. 69 D. 1	330.8	165.4	2
<i>Paralichthys squamilentus</i>	Mar. 67 D. 6	1620.0	810.0	2
	Jan. 69 D. 4	167.8	167.8	1
	Apr. 69 N. 4	200.9	200.9	1
	Jan. 69 N. 5	73.4	73.4	1
<i>Syacium gunteri</i>	Mar. 67 D. 6	176.9	176.9	1
	Jun. 67 D. 6	93.7	93.7	1
<i>Syacium papillosum</i>	Nov. 68 D. 4	34.6	17.3	2
<i>Gymnachirus texae</i>	July 67 N. 2	15.8	7.9	2
	Aug. 67 D. 2	18.3	9.1	2
	May 67 D. 4	17.3	17.3	1
<i>Gymnachirus melas</i>	Mar. 68 D. 5	44.0	44.0	1
<i>Symphurus diomedianus</i>	Jan. 67 N. 3	27.4	27.4	1
	Mar. 67 D. 6	25.1	25.1	1
<i>Symphurus plagiusa</i>	Aug. 67 D. 5	36.2	36.2	1
<i>Echeneis naucrates</i>	Mar. 67 N. 4	230.5	230.5	1
<i>Alutera scripta</i>	July 67 D. 6	12.6	12.6	1
	Aug. 67 D. 6	16.3	16.3	1
	Oct. 67 N. 6	15.8	15.8	1
	Jul. 67 D. 2	12.1	12.1	1
	Mar. 67 N. 3	10.8	10.8	1

TABLE 1
(continued)

SPECIES	DATE	Total Wgt. G.	Wgt. Ave. per Species	Total
<i>Balistes capriscus</i>	Nov. 67 D. 3	85.0	85.0	1
	Mar. 67 N. 4	46.7	46.7	1
<i>Monacanthus hispidus</i>	Feb. 67 N. 4	113.5	113.5	1
	Jan. 69 N. 4	57.6	28.8	2
	Mar. 69 D. 4	47.7	47.7	1
	Apr. 69 N. 4	32.5	32.5	1
<i>Lagocephalus laevigatus</i>	Apr. 69 N. 4	29.1	29.1	1
	Jan. 69 N. 5	45.1	45.1	1
<i>Chilomycterus schoepfi</i>	Jan. 69 N. 1	7.7	7.7	1
	May 69 D. 2	134.8	134.8	1
<i>Antennarius radiosus</i>	May 69 D. 2	7.0	3.5	2
	May 69 D. 3	22.9	22.9	1
	May 69 D. 3	25.8	25.8	1
	Apr. 69 D. 5	23.1	23.1	1
<i>Ogcocephalus parvus</i>	Mar. 67 D. 5	8.2	8.2	1

None of the elasmobranchs reported are known to be greatly abundant anywhere on the northern Gulf Coast.

In contrast *Chloroscombrus chrysurus*, *Cynoscion nothus*, *Anchoa hepsetus*, *Pogonias cromis*, *Menticirrhus americanus*, *Archosargus probatocephalus*, *Harengula pensacolae*, *Citharichthys spilopterus*, *Etropus crossotus*, *Paralichthys lethostigma*, and *Symphurus plagiusa* are quite common nearer shore and in bay waters. The Spanish mackerel, *Scomberomorus*, is sometimes present in vast schools from spring to fall, but it is mostly a pelagic fish and is seldom taken in trawls. Eels and other thin fishes are not often taken in trawls.

Many of the other fishes taken are slow moving bottom species and many of them are probably relatively uncommon off the Mississippi coast.

Data on Specimens Rarely Caught

Mustelus canis (Mitchell)

1967 – Two smooth dogfish (690-825 mm) were taken on March 15 from the 50 fathom station. The salinity was 33.8 parts per thousand and the bottom temperature was 20.2 C.

1968 – One smooth dogfish (974 mm) was taken on March 27 from the 50 fathom station. The salinity was 34.6 parts per thousand and the bottom temperature was 15.3 C.

Scoliodon terraenovae (Richardson)

1967 – One (633 mm) specimen was taken at 50 fathoms on August 9 (salinity 36.8, temperature 25.1).

1968 – One (959 mm) specimen was taken at 50 fathoms on January (salinity 30.5, temperature 18.4).

Sphyrna tiburo (Linnaeus)

1967 – A total of four bonnetheads (400-462 mm) were taken during this study from the 10 fathom station, three in March and one in November (salinity 34.2 and temperature 14.6 on March 21; on November 14 salinity 36.8 and temperature 20.3).

1969 – Two bonnetheads (413-416 mm) were taken, one from 10 fathoms on March 23 (salinity 32.4, temperature 15.0) and one March 23 from 6 fathoms (salinity 30.7, temperature 15.2).

Squatina dumerili LeSueur

1967 – One large (360 mm) specimen was taken from 50 fathoms on March 15 (salinity 33.8, temperature 20.0).

1968 – A single (646 mm) specimen was taken on March 27 from the 50 fathom station (salinity 34.6, temperature 15.3).

1969 – Three Atlantic angel sharks (375-898 mm) were taken, two from the 50 fathom station on January 23 (salinity 36.5, temperature 16.8), and one from the 50 fathom station on March 22 (salinity 36.5, temperature 17.2).

Narcine brasiliensis (Olfers)

1968 – One (367 mm) lesser electric skate was taken on December 10 from the 30 fathom station (salinity 31.8, temperature 21.8).

Raja eglanteria Bosc

1967 – One (400 mm) specimen was taken from the 30 fathom station on August 30 (salinity 37.1, temperature 25.5).

1969 – One (554 mm) clearnose skate was taken from the 6 fathom station on April 30 (salinity 34.9, temperature 19.5)

Raja texana Chandler

1967 – Four specimens (438-515 mm) were taken from 30 fathoms, 40 fathoms, 50 fathoms, and 30 fathoms during four hauls (May 24 salinity 36.4, temperature 22.0; July 12 salinity 37.0, temperature 25.1; July 25 salinity 36.6, temperature 20.5; July 25 salinity 37.0, temperature 24.6).

1968 – Four specimens (323-441 mm) were taken, two from the 20 fathom, and one each from 40 fathom and 50 fathom stations (December 10 salinity 35.7, temperature 17.5; July 30 salinity 29.8, temperature 26.5; May 21 salinity 27.0, temperature 20.5).

Dasyatis americana Hildebrand and Schroeder

1969 – One southern stingray (1935 mm) was taken on February 27 from the 40 fathom station (salinity 33.5, temperature 16.9).

Dasyatis sayi (Le Sueur)

1967 - A single (664 mm) specimen was taken on March 2 from 10 fathoms (salinity 34.2, temperature 14.6).

Alosa chrysochloris (Rafinesque)

1969 – One (136 mm) skipjack herring was taken on May 15 from the 6 fathom station (salinity 24.9, temperature 22.0).

Brevoortia patronus Goode

1968 – One Gulf menhaden (180 mm) was taken from the 6 fathom station on November 20 (salinity 36.5, temperature 16.4).

1969 – Two (132-162 mm) menhaden were taken on January 23 from the 6 fathom station (salinity 32.1, temperature 14.1).

Estrumeus sadina (Mitchell)

1969 – Three Atlantic round herring (84-87 mm) were taken on April 29 from the 10 fathom station (salinity 35.7, temperature 19.6).

Harengula pensacolae Goode and Bean

1967 – Two scaled sardines (116-118 mm) were caught on November 14 from the 20 fathom station (salinity 36.8, temperature 20.3).

Opisthonema oglinum (LeSueur)

1968 – One (143 mm) specimen was taken at 6 fathoms on January 29 (salinity 28.5, temperature 14.8).

1969 – Two Atlantic thread herring (113-135 mm) were taken, one from the 6 fathom station on April 29 (salinity 32.4, temperature 20.9), and one from the 10 fathom station on April 29 (salinity 35.7, temperature 19.6).

Anchoa hepsetus (Linnaeus)

1967 – Two specimens (72 and 105 mm) were taken at 50 fathoms on August 9 (salinity 36.8, temperature 25.1).

Saurida brasiliensis Norman

1969 - One (133 mm) specimen was taken on April 29 from the 20 fathom station (salinity 39.8, temperature 17.8).

Trachinocephalus myops (Foster)

1967 – Three snakefishes (177 – 300 mm) were caught. Two were from the 30 fathom station, one on June 21 (salinity 36.8, temperature 20.4), and the other on February 22 (salinity 35.6, temperature 16.4). One from the 50 fathom station was taken on May 24 (salinity 36.7, temperature 18.8).

1968 – Five snakefish (190-252 mm) were caught, including two from the 30 fathom station on October 9 (salinity 26.5, temperature 21.7), two from the 40 fathom station on July 25 (salinity 23.2, temperature 19.2), and one from the 30 fathom station on November 13 (salinity 37.3, temperature 20.8).

1969 – One (218 mm) snakefish was taken from the 40 fathom station on April 30 (salinity 34.4, temperature 18.4).

Bagre marinus (Mitchill)

1969 – One (191 mm) was taken on February 13 from the 6 fathom station (salinity 31.5, temperature 14.0).

Anguilla rostrata (LeSueur)

1967 – A single (409 mm) specimen was taken at the 10 fathom station on November 14 (salinity 36.8, temperature 20.3).

1968 – Four American eels were taken (378-495 mm). One was from the 10 fathom station on May 28 (salinity 34.4, temperature 20.3), one from the 20 fathom station on May 20 (salinity 34.4, temperature 22.0), one from 30 fathoms on January 17 (salinity 33.0, temperature 15.2), and one from 50 fathoms on March 27 (salinity 34.6, temperature 15.3).

1969 – One (445 mm) American eel was taken from the 20 fathom station on February 27 (salinity 30.1, temperature 15.1).

Gymnothorax nigromarginatus (Girard)

1967 – A total of four blackedge morays (390-427 mm) were caught. They were taken in the months of March, May and October. Two were from the 20 fathom station, one on March 21 (salinity 36.1, temperature 17.8), and one on October 27 (salinity 34.9, temperature 20.3). The other two came from the 40 fathom station on May 17 (salinity 35.5, temperature 20.2).

Congrina flava (Goode and Bean)

1968 – Three yellow congers (196-414 mm) were taken, one from the 50 fathom station on October 9 (salinity 27.9, temperature 19.3), one from the 30 fathom station on January 17 (salinity 33.0, temperature 15.2), and one from the 20 fathom station on November 13 (salinity 37.3, temperature 15.2).

Hoplunnis macrurus Ginsburg

1967 – One (447 mm) silver conger was caught from the 50 fathom station on June 27 (salinity 35.4, temperature 18.3).

1969 – Three silver congers (226-333 mm) were taken, one on January 14 from the 20 fathom station (salinity 43.1, temperature 16.7), one on March 21 from the 30 fathom station (salinity 35.7, temperature 16.9), and one on May 29 from the 50 fathom station (salinity 19.9,

temperature 20.5).

Ophichthus ocellatus (LeSueur)

1969 – One palespotted eel (6 ft.) was taken on March 22 from the 40 fathom station (salinity 35.7, temperature 16.4).

Urophycis regius (Walbaum)

1967 – Four spotted hake (98-131 mm) were caught in one haul from the 10 fathom station on April 18 (salinity 34.8, temperature 20.5).

Zenopsis ocellata (Storer)

1968 – One American John Dory (198 mm) was taken from the 50 fathom station on October 9 (salinity 26.5, temperature 21.8).

Serranus notospilus (Longley)

1967 – Four examples (72-93 mm) were secured in one haul from the 50 fathom station on March 15 (salinity 33.8, temperature 20.0).

Serranus atrobranchus (Cuvier)

1967 – Four specimens (69-119 mm) were taken, two from 20 fathoms on August 8 (salinity 37.1, temperature 25.2), one from the 40 fathom station on July 12 (salinity 37.0, temperature 25.1), and one from the 30 fathom station on July 25 (salinity 36.0, temperature 25.2).

Pristipomoides andersoni Ginsburg

1967 – Two wenchmen (177-267 mm) were taken on May 21 from the 50 fathom station (salinity 36.4, temperature 20.5). Another one was taken from the 30 fathom station on June 21 (salinity 36.8, temperature 20.4).

1969 - One (221 mm) wenchman was taken on February 27 from the 50 fathom station (salinity 34.6, temperature 16.6).

Priacanthus arenatus Cuvier

1967 – One (146 mm) bigeye was taken in the Gulf on July 25 at the 40 fathom station (salinity 37.2, temperature 20.6).

1968 – One bigeye (185 mm) was taken from the 50 fathom station on September 25 (salinity 37.3, temperature 18.9).

1969 – Two bigeye (148-215 mm) were taken, one on March 21 from the 50 fathom station (salinity 36.5, temperature 16.4), and one on May 26 from the 50 fathom station (salinity 36.5, temperature 18.2).

Pomatomus saltatrix (Linnaeus)

1968 – Three bluefish (123-346 mm) were taken, one from 6 fathoms on January 29 (salinity 28.5, temperature 14.8), one from the 30 fathom station on September 25 (salinity 36.5, temperature 21.0), and one from the 40 fathom station on September 25 (salinity 24.9, temperature 19.3).

Rachycentron canadum (Linnaeus)

1968 – One (510 mm) cobia was taken on January 17 from the 30 fathom station (salinity 33.0, temperature 15.2).

Chloroscombrus chrysurus (Linnaeus)

1967 – Two specimens (153-180 mm) were taken from the 20 fathom station on October 27 and November 14 (salinity 36.8 - 35.4, temperature 20.3 - 19.5, respectively).

1969 – One bumper (196 mm) was taken on April 30 from the 30 fathom station (salinity 37.4, temperature 18.2).

Selar crumenophthalmus (Bloch)

1968 - One (212 mm) bigeye scad was taken from the 50 fathom station on May 21 (salinity 27.0, temperature 20.5).

Vomer setapinnis (Mitchill)

1968 – Two Atlantic moonfish (96-219 mm) were taken, one from the 10 fathom station on December 9 (salinity 33.2, temperature 16.3), and one from the 30 fathom station on June 10 (salinity 37.9, temperature 27.7).

Eucinostomus argenteus Baird and Girard

1969 – One spotfin mojarra (152 mm) was taken on February 26 from the 30 fathom station (salinity 16.6, temperature 14.1).

Cynoscion nothus (Holbrook)

1967 – Three specimens (225-235 mm) were taken, one from ten fathoms on January 21, the other two from the 40 fathom station on March 15 (salinity 21.5 - 36.2, temperature 14.4 - 19.0, respectively).

Equetus acuminatus (Bloch and Schneider)

1969 – Five cubbyu (130-164 mm) were taken, three on March 22

from the 30 fathom station (salinity 36.5, temperature 16.4), one on March 21 from the 30 fathom station (salinity 35.7, temperature 16.9), and one on April 29 from the 30 fathom station (salinity 19.8, temperature 37.4).

Larimus fasciatus Holbrook

1967 — A total of five banded drum (136-170 mm) were taken from the 10 fathom station, four on November 14 (salinity 35.4, temperature 19.5), and one on September 7 (salinity 33.4, temperature 31.6).

Menticirrhus americanus (Linnaeus)

1967 — Four southern kingfish (178–225 mm) were taken from the 10 fathom station. On January 21 two were taken (salinity 21.5, temperature 14.5), on September 7 one was caught (salinity 33.4, temperature 31.6), on August 3 one specimen was taken (salinity 36.8, temperature 25.2).

Pogonias cromis (Linnaeus)

1967 — One (612 mm) black drum was taken from the 6 fathom station on November 9 (salinity 32.4, temperature 17.0).

1969 — Two black drum (550-593 mm) were taken, one on January 22 from the 40 fathom station (salinity 37.4, temperature 16.9), and one on March 23 from the 10 fathom station (salinity 32.4, temperature 15.0).

Mullus auratus Jordan and Gilbert

1967 — One red goatfish was taken (66.3 mm) from the 50 fathom station on March 15 (salinity 33.8, temperature 20.0).

Archosargus probatocephalus (Walbaum)

1967 — One (546 mm) sheepshead was caught at 6 fathoms on January 29 (salinity 35.6, temperature 16.0).

1969 — One sheepshead (490 mm) was taken on January 14 from the 20 fathom station (salinity 31.5, temperature 16.7).

Lagodon rhomboides (Linnaeus)

1967 — Two specimens (155-174 mm) were taken, both on January 29 from the 20 fathom station (salinity 36.7, temperature 18.4).

Pagrus sedecim Ginsburg

1967 — Two specimens (264-370 mm) were taken at 50 fathoms on March 15 (salinity 33.8, temperature 20.0).

Chaetodipterus faber (Broussonet)

1967 — Five Atlantic spadefish (95-203 mm) were caught during this study, all from the 20 fathom station. On March 21 two specimens were taken (salinity 36.1, temperature 17.8), on February 2 two were taken (salinity 35.4, temperature 16.0), on October 27 one was taken (salinity 34.9, temperature 20.3).

Scomber colias Gmelin

1969 — One chub mackerel (229 mm) was taken on March 21 from the 40 fathom station (salinity 35.7, temperature 16.9).

Scomberomorus maculatus (Mitchill)

1967 — Two Spanish mackerel (285-288 mm) were taken on September 8 from the 10 fathom station (salinity 33.6, temperature 31.6).

1968 — Three Spanish mackerel (177-292 mm) were taken, two from the 10 fathom station on October 23 (salinity 35.7, temperature 24.8), and one from the 10 fathom station on November 20 (salinity 37.3, temperature 19.4).

Bollmannia communis (Ginsburg)

1967 — Four specimens (55-75 mm) were caught in two hauls, one on March 21 and one on August 29. Both hauls were during the night at the 20 fathom station (salinity 31.6 - 36.5, temperature 17.8 - 22.4, respectively).

1968 — One (90 mm) specimen was taken on June 18 from the 6 fathom station (salinity 28.8, temperature 29.5).

Neomerinthe pollux (Poey)

1967 — One (388 mm) spinycheek scorpionfish was taken from the 50 fathom station on March 21 (salinity 35.0, temperature 18.6).

Scorpaena calcarata Goode and Bean

1967 — One (87 mm) smoothheaded scorpionfish was taken on August 8 from the 50 fathom station (salinity 37.0, temperature 25.0).

Bellator militaris (Goode and Bean)

Two horned sea robins (87-112 mm) were taken, one from the 40 fath-

om station on November 15 (salinity 36.8, temperature 19.5); the other was caught at 50 fathoms on July 13 (salinity 37.2, temperature 18.9).

Peristedion gracile (Goode and Bean)

1967 — Five specimens (165-190 mm) were taken, three from the 50 fathom station on March 15 (salinity 33.8, temperature 20.0), and two from the 40 fathom station on March 15 (salinity 36.2, temperature 19.0).

Prionotus alatus Goode and Bean

1967 — Three spiny sea robins (110-113 mm) were taken from the 50 fathom station on March 15 (salinity 33.9, temperature 20.0).

Prionotus ophryas Jordan and Swain

1967 — One (160 mm) bandtail sea robin was taken from the Gulf on March 15 from the 50 fathom station (salinity 33.8, temperature 20.0).

Prionotus roseus Jordan and Evermann

1967 — One specimen (176 mm) was taken from the 30 fathom station on November 14 (salinity 37.0, temperature 22.0).

Prionotus scitulus Jordan and Gilbert

1967 — One (114 mm) leopard sea robin was taken from the 40 fathom station on August 8 (salinity 37.2, temperature 25.2).

Prionotus stearnsi Jordan and Swain

1967 — Four specimens were caught (79-105 mm), three on May 10 at the 30 fathom station (salinity 36.9, temperature 20.5). One was caught at the 20 fathom station on November 14 (salinity 36.8, temperature 20.3).

1968 — Four specimens (110-165 mm) were taken, two from the 20 fathom station on November 21 (salinity 37.3, temperature 16.4), one from the 50 fathom station on September 25 (salinity 37.3, temperature 18.9), and one from the 20 fathom station on December 10 (salinity 35.6, temperature 17.5).

Astroscopus y-graecum (Cuvier)

1968 — One (210 mm) Southern stargazer was taken at 6 fathoms on January 15 (salinity 26.1, temperature 15.1).

Kathetostoma albigutta (Bean)

1967 — Three specimens (113-154 mm) were taken during this study at the 40 fathom station in June, July, and August, one each on June 15 (salinity 34.6, temperature 20.3), on July 12 (salinity 37.0, temperature 25.1, and on August 8 (salinity 37.2, temperature 25.2).

1968 — Three lancer stargazers (106-127 mm) were taken from the 40 fathom station, one on July 25 (salinity 23.2, temperature 19.2), one on October 9 (salinity 29.8, temperature 25.5) and one on October 9 (salinity 28.2, temperature 19.2).

Bregmaceros atlanticus (Goode and Bean)

1967 — Two specimens (55 mm) were taken from the 50 fathom station on March 15 (salinity 33.8, temperature 20.0).

Brotula barbata (Bloch and Schneider)

1967 — Four specimens (216-315 mm) were taken. Two were from 50 fathom station, one on October 21 (salinity 37.2, temperature 24.0), the other one on July 25 (salinity 36.6, temperature 20.5). Two were taken from the 20 fathom station, one on August 29 (salinity 34.3, temperature 27.7), and one on January 29 (salinity 36.7, temperature 18.4).

Lepophidium graellsii (Poey)

1967 — Two (242-245 mm) blackedge cusk-eels were taken from the 30 fathom station on July 12 (salinity 37.0, temperature 25.1)

Ophidion welshi (Nichols and Breder)

1969 — Three crested cusk-eels (122-179 mm) were taken, one on May 15 from the 10 fathom station (salinity 33.2, temperature 20.2), one on February 24 from the 10 fathom station (salinity 25.7, temperature 14.9), and one on February 13 from the 6 fathom station (salinity 33.2, temperature 20.2).

Peprilus paru (Linnaeus)

1967 — One (150 mm) northern harvestfish was taken from the 20 fathom station on March 21 (salinity 36.1, temperature 17.8).

1968 — Two northern harvestfish (90-131 mm) were taken from the 6 fathom station, on January 15 (salinity 26.1, temperature 15.1), and on January 29 (salinity 28.5, temperature 14.8).

Sphyraena guachancho Cuvier

1967 – One (113 mm) specimen was taken from the 30 fathom station on November 14 (salinity 37.0, temperature 22.0).

1968 – Three specimens (210-344 mm) were taken, one from the 6 fathom station on March 27 (salinity 26.6, temperature 17.1), one from the 40 fathom station on March 26 (salinity 34.0, temperature 18.0), and one from the 6 fathom station on December 11 (salinity 34.9, temperature 14.4).

Mugil cephalus Linnaeus

1968 – One (355 mm) specimen was taken from the 20 fathom station on November 21 (salinity 37.3, temperature 16.4).

Ancylopsetta dilecta (Goode and Bean)

1967 – One (247 mm) three-eye flounder was secured from the 40 fathom station on March 15 (salinity 36.2, temperature 19.0).

1969 – One (163 mm) specimen was taken on May 29 from the 50 fathom station (salinity 19.9, temperature 20.5).

Ancylopsetta quadrocellata Gill

1967 - One (221 mm) ocellated flounder was taken in the Gulf on August 29 (salinity 36.5, temperature 22.4).

Citharichthys macrops Dresel

1967 – Four spotted whiffs (133-148 mm) were taken from the 10 fathom station on June 5 (salinity 35.1, temperature 25.0).

Citharichthys spilopterus Gunther

1967 – Three bay whiffs (128-152 mm) were taken, all from the 20 fathom station, two on July 26 (salinity 36.8, temperature 20.5), and one on August 29 (salinity 36.5, temperature 22.4).

Engyophrys sentus Ginsburg

1968 – Two specimens (73-87 mm) were taken, one from the 40 fathom station on November 21 (salinity 38.2, temperature 21.6), and one from the 20 fathom station on March 26 (salinity 24.6, temperature 17.0).

Etropus crossotus Jordan and Gilbert

1967 – Two specimens (80-88 mm) were taken, one at 40 fathoms on May 24 (salinity 36.7, temperature 18.8), the other on March 15 (sal-

inity 36.2, temperature 19.0).

Paralichthys lethostigma Jordan and Gilbert

1967 – Five southern flounders (270-390 mm) were taken. Four were from the 20 fathom station, on March 21 (salinity 36.1, temperature 17.8), on May 25 (salinity 36.7, temperature 20.8), on June 28 (salinity 36.6, temperature 20.3), on August 29 (salinity 36.5, temperature 22.4). From the 50 fathom station one was taken on May 21 (salinity 39.4, temperature 20.5).

1969 – Two southern flounders (250-276 mm) were taken on February 13 from the 6 fathom station (salinity 27.4, temperature 13.3).

Paralichthys squamilentus Jordan and Gilbert

1967 – Two broad flounders (216-265 mm) were taken from the 50 fathom station, one on March 15 (salinity 33.8, temperature 20.0), the other one on July 25 (salinity 36.6, temperature 20.5).

1969 – Three broad flounders (200-267 mm) were taken, one on January 22 from the 40 fathom station (salinity 37.4, temperature 16.9), one on January 23 from the 30 fathom station (salinity 33.8, temperature 14.4), and one on April 29 from the 30 fathom station (salinity 19.8, temperature 37.4).

Syacium gunteri Ginsburg

Two of these flounders (216-265 mm) were taken from the 50 fathom station, one on March 15 (salinity 33.8, temperature 20.0), the other one on July 25 (salinity 36.6, temperature 20.5).

Syacium papillosum (Linnaeus)

1968 – Two of these flounders (114-128 mm) were taken from the 40 fathom station on November 21 (salinity 31.5, temperature 20.7).

Gymnachirus texae (Gunter)

1967 – Five specimens (72-105 mm) were taken, two from the 10 fathom station on July 7 (salinity 34.2, temperature 23.3). On August 3 from the 10 fathom station two were taken (salinity 36.8, temperature 25.2). One was taken on May 24 from the 40 fathom station (salinity was 36.4, temperature 22.0).

Gymnachirus melas (Nichols)

1968 – One (153 mm) specimen was taken from the 40 fathom station

on March 26 (salinity 34.0, temperature 18.0).

Symphurus diomedianus (Goode and Bean)

1967 – Two spottedfin tonguefish (150-151 mm) were taken, one on March 15 from the 50 fathom station (salinity 33.8, temperature 20.0), and the other on January 29 from the 20 fathom station (salinity 36.7, temperature 18.4).

Symphurus plagiusa (Linnaeus)

1967 – One (156 mm) blackcheek tonguefish was taken on August 9 at the 40 fathom station (salinity 36.8, temperature 22.3).

Echeneis naucrates Linnaeus

1967 – One (383 mm) sharksucker was taken from the 30 fathom station on March 15 (salinity 36.2, temperature 20.0).

Alutera scripta (Osbeck)

1967 – Five scrawled filefish (85-97 mm) were taken. Three were from the 50 fathom station, on August 9 (salinity 35.6, temperature 25.0), on October 21 (salinity 37.2, temperature 24.0), on July 12 (salinity 37.2, temperature 18.9); from the 20 fathom station on August 29 one was taken (salinity 34.5, temperature 27.7); on March 7 from the 10 fathom station one specimen was secured (salinity 36.8, temperature 20.4).

Balistes capriscus Gmelin

1967 – Two gray triggerfish (133-153 mm) were taken. One came from the 200 fathom station on November 14 (salinity 36.8, temperature 20.3). The other was taken from the 30 fathom station on March 15 (salinity 36.2, temperature 20.0).

Monocanthus hispidus (Linnaeus)

1967 – One (133 mm) planehead filefish was taken at the 30 fathom station on February 22 (salinity 35.6, temperature 16.4).

1969 – Four planehead filefish (111-134 mm) were taken, two on January 14 from the 30 fathom station (salinity 34.0, temperature 15.5), one on April 29 from the 30 fathom station (salinity 19.8, temperature 37.4), and one on March 22 from the 30 fathom station (salinity 36.5, temperature 16.4).

Lagocephalus laevigatus (Linnaeus)

1969 — Two smooth puffers (91-146 mm) were taken, one on January 22 from the 40 fathom station (salinity 37.4, temperature 16.9), one on April 29 from the 30 fathom station (salinity 19.8, temperature 37.4).

Chilomycterus schoepfi (Walbaum)

1969 — Two striped burrfish (120-140 mm) were taken, one on May 15 from the 10 fathom station (salinity 33.2, temperature 20.2), one on January 14 from the 6 fathom station (salinity 33.2, temperature 10.8).

Antennarius radiosus Garman

1969 — Five singlespot frogfish (42-91 mm) were taken, two on May 15 from the 10 fathom station (salinity 33.2, temperature 20.2), one on April 30 from the 40 fathom station (salinity 37.4, temperature 19.5), one on May 26 from the 20 fathom station (salinity 21.6, temperature 18.4), and one on May 29 from the 20 fathom station (salinity 35.7, temperature 19.9).

Ogocephalus parvus Longley and Hildebrand

1967 — One (68 mm) roughback batfish was taken from the 40 fathom station on March 15 (salinity 36.2, temperature 19.0).

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