

ECONOMICALLY IMPORTANT MARINE ORGANISMS IN BISCAYNE BAY

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A large number of fishes and a still larger number of invertebrates occur in Biscayne Bay. This is characteristic of tropical and subtropical regions, where the warm water and other environmental conditions tend to produce many kinds of animals, each with relatively few individuals compared to high latitude regions where there are fewer species, many of the represented by very large numbers of individuals.

Of the numerous species occurring in Biscayne Bay a relatively small number are of major or even moderate economic importance. But another large group are of minor economic importance since they are caught and sold as aquarium specimens. Many of the latter are listed in Table 1.

In Table 2 are listed species occurring in Biscayne Bay which are economically important commercially or for sport or bait, here or elsewhere. Some of these do not occur in sufficient numbers to be of economic impact in Biscayne Bay; others (as later tables show) support valuable fisheries here.

In Table 3 invertebrates occurring in Biscayne Bay which are actually of major economic importance are listed.

In Table 4 fishes occurring in Biscayne Bay which are potentially or actually of minor economic importance are listed.

The marine animals caught in Biscayne Bay in large quantities are the pink and brown shrimp, the spiny lobster, the stone crab, the jack and silver mullets, and the king and Spanish mackerels.

The shrimp are caught in a special fishery to supply the live bait market for anglers. This is a valuable industry which has been expanding over overall years. It now produces between a third and a half million dollars per year at the primary level. The shrimp are caught by a fleet of specially rigged trawlers. Their area of operation is shown in the figure.

Table 5 shows production for that live bait fishery in Biscayne Bay for the past three years. In 1965-66, 46 licensees were issued in Dade County for bait shrimp boats; the number in 1964-65 was 52.

Considerable (but unrecorded) quantities of shrimp are caught in Biscayne Bay in a "sport" fishery. Bridges like Rickenbacker Causeway are sometimes crowded with people catching shrimp. The gear is a lamp to attract the shrimp and a long handled dip net to capture them.

Table 1. Fishes occurring in Biscayne Bay which are valuable as aquarium fishes.

Blue striped grunt	<i>Haemulon sciurur</i>
Parrotfish	<i>Pseudoscarus coelestinus</i>
Rainbow parrotfish	<i>Pseudoscarus guacamaia</i>
Green parrotfish	<i>Sparisoma viride</i>
Blue parrotfish	<i>Scarus caeruleus</i>
Striped goby	<i>Garmania macrodon</i>
Fat goby	<i>Gobiosoma robustum</i>
Whitehurst's jewfish	<i>Opisthognathus whithursti</i>
Pike blenny	<i>Chaenopsis ocellata</i>
Hairy blenny	<i>Labrisomus nuchipinnis</i>
Marbled clinid	<i>Paraclinus marmoratus</i>
Banded clinid	<i>Paraclinus rasciatus</i>
Sea robin	<i>Prinotus scitulus</i>
Clingfish	<i>Gobiesox strumosus</i>
Cowfish	<i>Lactophrys tricornis</i>
Smooth trunkfish	<i>Lactophrys trigonus</i>
Brown demoiselle	<i>Pomacentrus fuscus</i>
Mapo	<i>Bathygobius soporator</i>
Blue tang	<i>Acanthurus caeruleus</i>
Ocean Surgeon	<i>Acanthurus bahianus</i>
Doctor fish	<i>Acanthurus chiturgus</i>
Fringed filefish	<i>Monacanthus hispidus</i>
Hairy filefish	<i>Monacanthus ciliatus</i>
Spiny boxfish	<i>Chilomycterus schoepfi</i>
Queen angelfish	<i>Holacanthus ciliatus</i>
Blue angelfish	<i>Holacanthus isabellita</i>
Black angelfish	<i>Holacanthus aureus</i>
French angelfish	<i>Holacanthus paru</i>
Foureyed butterflyfish	<i>Chaetodon ocellatus</i>
Butterflyfish	<i>Chaetodon capistratus</i>
Butterflyfish	<i>Chaetodon striatus</i>
Two lined cardinalfish	<i>Apogon binotatus</i>
Spotted cardinalfish	<i>Apogon maculatus</i>
False spotted cardinalfish	<i>Apogon pseudomaculatus</i>
Conchfish	<i>Apogonichthys stellatus</i>
Variiegated wrasse	<i>Halichoeres garnoti</i>
Pudding wife	<i>Halichoeres radiata</i>
Blue head	<i>Thalassoma bifasciatum</i>
Dwarf wrasse	<i>Doratonotus megalepis</i>
Dusky squirrelfish	<i>Holocentrus vexillarius</i>
Sergeant major	<i>Abudefduf saxatilis</i>
Rock sergeant	<i>Abudefduf taurus</i>
Spotted moray	<i>Gymnothorax moringa</i>
Green moray	<i>Gymnothorax funebris</i>
Round stingray	<i>Urolophus jamaicensis</i>
Spotted moray	<i>Gymnothorax nigromarginatus</i>
Dwarf seahorse	<i>Hippocampus zosterae</i>
Smooth puffer	<i>Spheroides spengleri</i>

Table 2. Fishes occurring in Biscayne Bay which are of maor importance to commercial, sport or bait fisheries either in Biscayne Bay or elsewhere.

Black mullet	<i>Mugil cephalus</i>
Silver mullet	<i>Mugil trichodon</i>
Common barracuda	<i>Sphyraena barracuda</i>
King mackerel	<i>Scombermorus regalis</i>
Spanish mackerel	<i>Scombermorus maculatus</i>
Blue runner	<i>Caranx crysos</i>
Bar jack	<i>Caranx ruber</i>
Crevelle jack	<i>Caranx hippos</i>
Gray snapper	<i>Lutjanus griseus</i>
Lane snapper	<i>Lutjanus synagris</i>
Schoolmaster	<i>Lutjanus apodus</i>
Spotted weakfish	<i>Cynoscion nebulosus</i>
Halfbeak	<i>Hemirhamphus brasiliensis</i>
Thread herring	<i>Opisthonema oglinum</i>
Grouper	<i>Epinephalus striatus</i>
Grouper	<i>Epinephalus morio</i>
Spotted jewfish	<i>Promicrops itaiar</i>
Spadefish	<i>Chaetodipterus faber</i>
Bonefish	<i>Albula vulpes</i>
Pinfish	<i>Lagodon rhomboides</i>
Bluefish	<i>Pomatomus saltatrix</i>
Thin snook	<i>Centropomis undecimalis</i>
Tarpon	<i>Megalops atlanticus</i>
Hog snapper	<i>Lacnolaimus maximus</i>
Flat herring	<i>Harenrula pensacolae</i>
Common pompano	<i>Trachinotus carolinus</i>
Permit	<i>Trachinotus goodei</i>

Table 3. Invertebrates occurring in Biscayne Bay which are of maor importance to commercial, sport or bait fisheries either in Biscayne Bay or elsewhere.

Grass sponge	<i>Spongia graminea</i>
Sheepswool sponge	<i>Hippiospongia lachne</i>
Yellow sponge	<i>Spongia barbara</i>
Queen conch	<i>Strombus gigas</i>
Blue crab	<i>Callinectes sapidus</i>
Stone crab	<i>Menippe mercenaria</i>
Spiny lobster	<i>Panulirus argus</i>
Pink shrimp	<i>Penaeus duorarum</i>
Brown shrimp	<i>Penaeus braziliensis</i>

Table 4. Fishes occurring in Biscayne Bay which are of minor importance to commercial, sport or bait fisheries either in Biscayne Bay or elsewhere.

French grunt	<i>Haemulon flavolineatum</i>
White grunt	<i>Haemulon plumieri</i>
Sailor choice	<i>Haemulon parra</i>
Caesar grunt	<i>Haemulon carbonarium</i>
Broad mojarra	<i>Cerres cinereus</i>
Common mojarra	<i>Eucinostomus gala</i>
Sandperch	<i>Diplectrum formosum</i>
Lookdown	<i>Selene vomer</i>
Ladyfish	<i>Elops saurus</i>
Pinfish	<i>Archosargus rhomboidalis</i>
Chob	<i>Kyphosus sectatrix</i>
Spanish hogfish	<i>Bodianua rufus</i>
Common hogfish	<i>Lacnolaimus maximus</i>
Hardhead silversides	<i>Atherinomorus stipea</i>
Mojarra	<i>Eucinostomus lefroyi</i>
Sheepshead	<i>Archosargus probatocephalus</i>
Drum	<i>Pogonias cromis</i>
Moonfish	<i>Vomer setapinnis</i>

The spiny lobster fishery is of considerable importance in Biscayne Bay (Tables 6, 7, 8). It has expanded greatly in recent years. The value at the fisherman's level in 1965 was \$81,000. The general area of fishing in Biscayne Bay is shown in the figure. [FIGURE NOT IN ORIGINAL.] The gear is a wooden slat trap.

A large sport fishery exists for spiny lobsters in Biscayne Bay. Lobsters are caught by hand, by spear, by dip net and by bally net. This fishery is increasing.

The stone crab fishery has also expanded rapidly in recent years, and show signs of continuing this trend. In 1965 atone crab landings were worth \$145,000 to the fishermen. The area of fishing in Biscayne Bay is similar to that of the spiny lobster (figure). The gear is a special wooden trap.

Mullet are still caught in considerable quantities in Biscayne Bay, although this fishery is smaller than it used to be in twelve months of 1950-51, 637,144 pounds off mullet were caught in the Bay and in 1951-52 nearly a million pounds (Table 9) compared to 74,300 pounds in 1965 (Table 8). The largest catches are of silver mullet, which are used mainly for bait. Some silver mullet and a considerable portion of the black mullet catches are used for human food. General areas of fishing are shown in Figure 1.

The catches of mackerel in Biscayne Bay are sporadic. In some years these species do not enter the Bay in great numbers, and catches are a fraction of those of some other years. In 1961, for example, 113,000 pounds were caught compared to 18,000 in 1965 and 12 pounds in 1950-51. There is very large sport fishery for mackerel when they enter the Bay.

Table 5. Numbers of live bait shrimp caught in Biscayne Bay, and values of the catch, 1964, 1965 and part of 1966.

Month	1964		1965		1966	
	No. of Individuals In 1000s	Value in \$1000	No. of Individuals In 1000s	Value in \$1000	No. of Individuals In 1000s	Value in \$1000
Jan.	4,105	65.0	4,290	58.2		
Feb.	2,903	40.8	3,722	50.7	8,409*	116.3*
Mar.	2,362	33.3	3,220	45.1	3,693	53.8
Apr.	1,568	22.9	2,547	39.3	3,089	46.1
May	1,739	26.2	2,353	37.4	2,584	39.0
June	824	11.4	2,004	31.4	1,399	19.4
July	1,324	19.4	1,405	23.0	1,877	27.1
Aug.	1,142	17.7	1,277	20.2	2,995	47.2
Sept.	1,075	17.9	591	9.4		
Oct.	1,590	21.3	1,056	16.4		
Nov.	2,653	39.7	1,455	22.6		
Dec.	3,344	46.9	2,757	39.9		
TOTAL	24,630	362.7	26,677	393.6		

[* SUM OF VALUES FOR JANUARY AND FEBRUARY.]

It is certain that greater catches are made of some species of fishes and invertebrates in Biscayne Bay by sport fishermen than are made by commercial gear. Unfortunately no statistics are available to estimate the sport catch. The size of the sport fishing fleet is impressive on many days, however considerable quantities are caught of such species as spotted weakfish, snook, tarpon, mackerel, bonefish, jacks, mangrove snappers, groupers, lookdowns, bluefish, permit, sandperch, mojarras, grunts, pinfish and numerous other "panfish". Lesser quantities of many other species are landed.

Altogether, significant use is made by man of the fish and invertebrate resources of Biscayne Bay.

Table 6. Quantity and value of landings of major commercial species in Biscayne Bay with comparisons of the total landings of these species in Dade County, 1961.

Species	Biscayne Bay		Dade County Landings in in pounds
	Landings in Pounds	Value in \$	
FISH			
Bluefish	2,000	190	3,981
Blue runners	24,400	1,708	32,885
Crevale (jacks)	3,000	90	3,000
Red drum	300	41	551
Grunts	4,000	292	18,635
King mackerel	2,000	260	143,355
King whiting	[NO DATA IN ORIGINAL]		
Menhaden	200	5	200
Black mullet	12,700	610	12,700
Silver mullet	167,900	11,249	167,900
Sand perch	100	9	21,086
Spotted seatrout	5,700	1,362	5,698
Sheepshead	200	14	200
Mangrove snapper	8,600	1,574	14,097
Spanish mackerel	111,500	11,484	413,273
Spot	200	23	210
TOTAL FISH	342,800	28,911	838,700
SHELLFISH			
Stone crabs	24,200	8,349	24,200
Spiny lobsters	50,000	17,500	171,295
TOTAL SHELLFISH	74,200	25,849	195,495
GRAND TOTAL FISH SHELLFISH	417,000	\$ 54,760	\$ 1,034,195

Table 7. Quantity and value of landings of major commercial species in Biscayne Bay with comparisons of the total landings of these species in Dade County, 1964.

Species	Biscayne Bay		Dade County Landings in in pounds
	Landings in Pounds	Value in \$	
FISH			
Bluefish	1,000	92	20,121
Blue runners	400	13	6,552
Crevalle (jacks)	1,000	30	5,613
Croakers	400	61	392
Red drum	1,000	183	1,000
Flounders	600	99	570
Groupers	1,500	188	54,216
Grunts	2,800	202	19,141
King mackerel	14,300	1,931	137,245
Black mullet	18,100	869	18,100
Silver mullet	22,200	1,779	22,200
Spotted seatrout	3,500	945	5,565
Sheepshead	900	74	905
Spanish mackerel	14,200	1,193	35,559
Spot	100	13	100
Unclassified food fish	13,900	645	27,058
TOTAL FISH	95,900	8,614	354,337
SHELLFISH			
Conchs	100	30	100
Stone crabs	180,400	81,390	185,418
Spiny lobsters	77,500	34,565	700,288
Sheepswool	100	550	100
Yellow sponges	200	203	200
TOTAL SHELLFISH	258,300	116,738	886,106
GRAND TOTAL FISH SHELLFISH	354,200	\$ 125,352	\$ 1,240,443

Table 8. Quantity and value of landings of major commercial species in Biscayne Bay with comparisons of the total landings of these species in Dade County, 1965.

Species	Biscayne Bay		Dade County Landings in in pounds
	Landings in Pounds	Value in \$	
FISH			
Bluefish	1,000	132	2,401
Blue runners	1,500	99	16,049
Crevalle (jacks)	2,000	67	3,070
Croakers	200	27	200
Flounders	600	90	600
Groupers	1,500	209	29,834
Grunts	8,000	603	26,623
King mackerel	6,500	1,012	70,811
King whiting	200	15	169
Black mullet	5,100	407	5,100
Silver mullet	69,200	3,455	69,200
Pompano	3,000	2,178	14,027
Spotted seatrout	3,800	998	3,800
Sheepshead	400	48	400
Mangrove snapper	7,500	1,752	21,446
Spanish mackerel	11,500	920	84,991
Unclassified food fish	5,000	596	13,626
TOTAL FISH	127,000	12,508	362,347
SHELLFISH			
Conchs	500	100	500
Stone crabs	295,000	145,828	1,080,052
Spiny lobsters	171,700	81,074	205,229
Grass sponges	1,600	1,784	1,600
Sheepswool	4,800	24,111	5,234
Yellow sponges	4,900	7,434	4,900
TOTAL SHELLFISH	478,500	260,331	1,297,515
GRAND TOTAL FISH SHELLFISH	605,500	\$ 272,839	\$ 1,659,862

Table 9. Commercial landings of some species in Biscayne Bay and their value at three levels, seasons 1950-51 and 1951-52.

Species	1950-51				1951-52			
	Landings In pounds	To fishermen	To wholesaler	To retailer	Landings In pounds	To fishermen	To wholesaler	To retailer
Silver Mullet	468,490	46.3	54.5	129.4	664,543	60.2	84.7	166.1
Black mullet	88,514	11.5	17.7	29.2	300,972	39.1	60.2	102.3
"Small" mullet	80,140							
Pinfish	1,468				3,891			
Jacks	2,627				3,069			
Broad shad	553				441			
Spotted	1,048							
Weakfish					378			
Pompano	267	0.9	1.6	4.5		1.4	2.5	6.6
Mangrove	519	/			178	/		
Bluefish	247				100			
Spanish mackerel	12				30			
Sheepshead	32							
Permit	22							
Snook	3							
"Bottom" fish	6,085				16,486			
	650,024	56.7	73.7	163.1	990,317	100.7	147.4	275.0

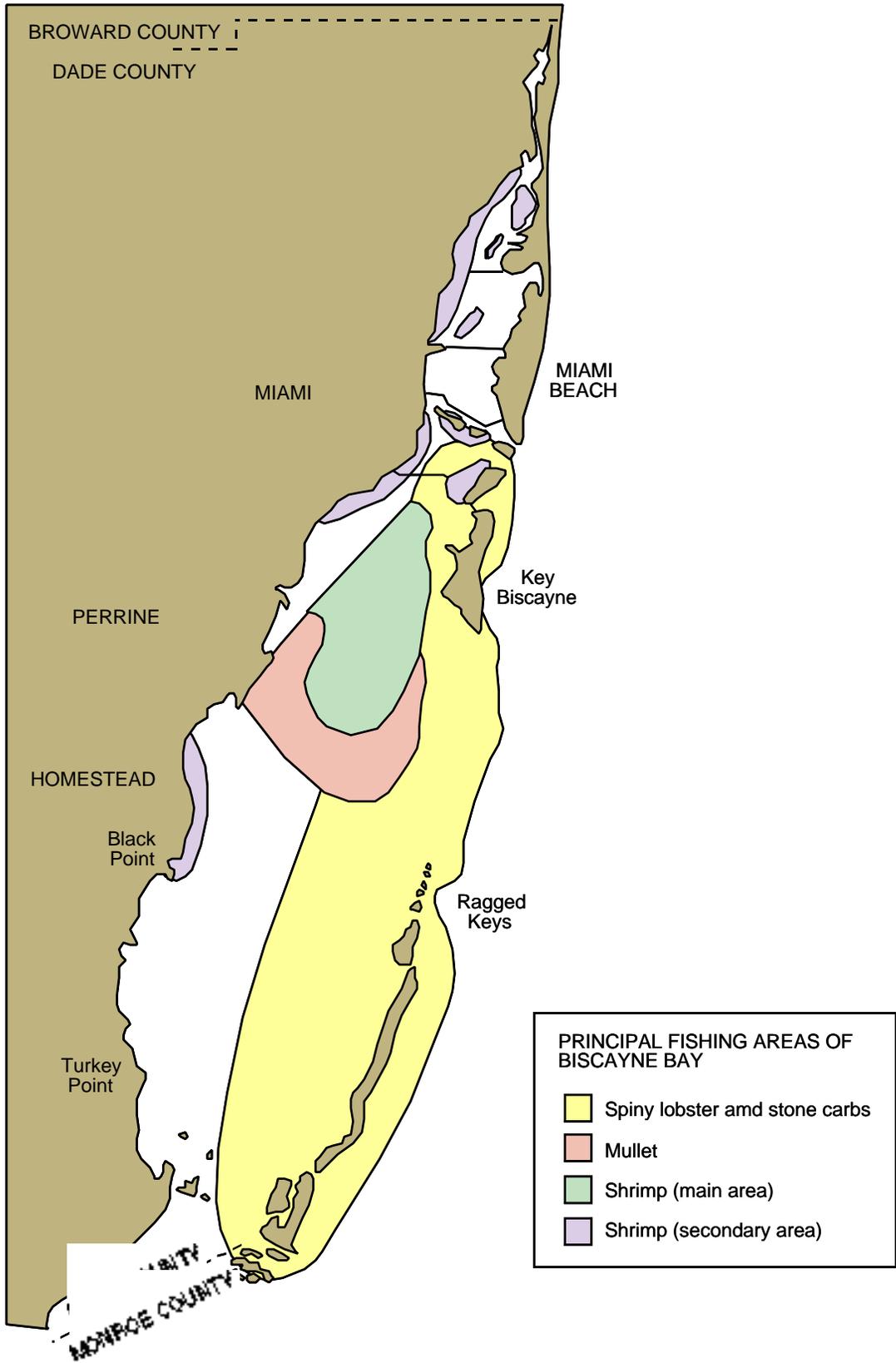


Figure 1. Principal fishing areas of Biscayne Bay.

