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## **Sport Fishes of the Vicinity of the Gulf of Honduras, Certain Caribbean Islands, and Carmen, Mexico\***

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### GULF OF HONDURAS AND THE CARIBBEAN

#### PART I

A study of the fishes in the vicinity of the Gulf of Honduras was made in conjunction with an archeological survey of the region. The expedition was made in January and February, 1950, under the auspices of the Institution for Andean Research, Inc. The sport fishing possibilities of the area were explored, as there appears to be no published information on this subject. The survey was not made in the best fishing season and the party moved on so frequently that no one locality could be thoroughly investigated, but it is hoped that the information contained herein may be of some assistance to persons who have occasion to be in the areas studied and wish to try the sport fishing. This paper groups the facts discovered with the species of fish concerned, while a regional summary at the end of each part lists the species seen and also enumerates fish which were not seen but whose presence was reported by local people. While only the sport fish are discussed here, a collection including other local fishes was made for later study.

Mr. Charles S. Bird, Colonel John K. Howard and the archeologists Dr. Alfred V. Kidder, Dr. Gordon Eckholm and Mr. Gustav Stromsvik, as well as Captain Matthew English of the vessel "Irmay" and his crew, all contributed greatly to the success of the ichthyological work. Valuable assistance was also obtained from officials of the United Fruit Company and from Mr. R. K. Masson, Port Captain and Collector of Customs at Belize. Dr. Lionel A. Walford, Chief of the Branch of Fishery Biology, U. S. Fish and Wildlife Service, directed the first ten days of intensive collecting, setting up procedures which were followed during the remainder of the trip.

There are scattered populations of tarpon (*Tarpon atlanticus*) in rivers and lagoons of the northwestern Caribbean. The Trujillo area was the only one on the coast of Honduras in which these fish were encountered. In the canal at Puerto Castilla, many strikes were obtained by trolling small spoons and two or three very small tarpon were landed. The fish striking appeared to range from three to twelve pounds, except for one which looked to be of nearly fifty pounds. Residents said that tarpon had frequented the steamer dock at Puerto Castilla when it was used by the fruit ships. Some of these fish were also seen in the entrance to the lagoon of Guaimoreto, where fishermen reported that

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they often caught them. Tarpon were said to be plentiful in various lagoons on Utila Island and there are probably other places on the coast of Honduras and among the Bay Islands where they occur.

The coast of Guatemala appears to offer greater possibilities for the tarpon fisherman than that of Honduras. Many tarpon were seen in the Rio Dulce between Livingston and the Golfete, but only three strikes were obtained. This river undoubtedly supports a large population of tarpon and it can be fished a great distance further inland. First hand information indicated that there is often excellent tarpon fishing in the Graciosa River or Hospital Bight, although no fish were seen on the single visit made there.

In British Honduras there are several places which offer good tarpon fishing. A "tarpon hole" near Frenchman's Cay was found with the assistance of native fishermen. Tarpon which were rolling in schools ignored trolled lures but struck at fresh water bass plugs of the swimming type when these were cast accurately among them. One fish of about forty pounds was hooked but parted the light line after running clear across the pool into the mangroves.

In the Manatee River there were times when small tarpon would hit the plug on almost every cast, if a snook or jack crevalle did not get it first. On these occasions, the fish were showing among the mangrove roots on the banks. Some large tarpon were raised by casting, but they more frequently struck lures trolled in mid-stream. The larger fish appeared to be more solitary in their habits than the smaller ones. The tarpon landed here weighed from four to eight pounds, but some of those lost appeared to weigh well over fifty pounds.

The Belize and Sibun Rivers were also said to afford good tarpon fishing. The lighthouse keeper at Cay Bokel directed the party to some creeks among the Turneffe Islands which he said were good tarpon waters, but only one strike was obtained in the short time fished.

At Grand Cayman, two of the party fished for tarpon in small, landlocked lagoons. Natives said that the fish came from the sea through subterranean passages. Many little tarpon were seen rising but they struck only half-heartedly on small plugs. A member of the party who remained on the island caught one by using a live minnow for bait. Natives reported that larger tarpon are caught in the shore waters.

Ten-pounders (*Elops saurus*) were reported to inhabit the entrance to the lagoon of Guaimoreto near Trujillo. Three were taken by plug casting in a school which surfaced at night around the boats in Belize Harbor, while others were caught or hooked on plugs and feather lures in the Manatee River. These fish take swimming plugs. Those caught weighed about four pounds each.

The bonefish (*Albula vulpes*) inhabit many of the flats of the northwestern Caribbean. Some were caught in the beach net at Cape Honduras off Trujillo, and one was seen at Tela. Many schools of these fish were seen on a flat near the harbor entrance at Utila Island and natives reported that they were far more numerous in a cove on the north side. Others were observed on flats near Coxen Hole, on Roatan Island, and they were said to be plentiful on Bonacca Island. Soldier crabs (*Pagurus*) were the preferred bait for bonefish among the Bay Islands.

The waters of British Honduras evidently support a considerable population of bonefish. Several very small ones were seen in the live well of a fishing boat at Frenchman's Cay. Larger specimens, weighing from about three to six pounds, were for sale in the markets at Stann Creek and Belize. A few schools were seen on the flats near Cay Bokel Light. The keeper reported that bonefish had been very plentiful, but that the local population was now reduced in

numbers by seining. He recommended conch for bait and chum. No strikes were secured in the very short time spent fishing there but it is probable that the bonefish enthusiast could find plenty of these fish in this region.

The great barracuda (*Sphyaena barracuda*) was one of the most common reef fish in the northwestern Caribbean. In the Trujillo area the party did not fish the reefs, but took some of these fish in the entrance to the lagoon of Guaimoreto and in Trujillo Bay where they were said to frequent the steamer dock at Puerto Castilla. They were not caught at the other places fished along the coast of Honduras, most of which were sandy.

Among the Bay Islands barracuda were caught in greater numbers than any other species, taking almost any lure trolled near the reefs. These fish ranged from four to twelve pounds in weight. Some small ones were also taken in the vicinity of Puerto Barrios in Guatemala.

In British Honduras, numerous barracudas were caught along the barrier reef, off Cay Bokel and at Glover Reef, the largest weighing twenty-one pounds. Inside the barrier they were not so plentiful, but a few were taken in river mouths and around the inner reefs and cays. Several barracuda were boated in the short time spent fishing at the Swan Islands.

The barracuda took practically every type of lure voraciously, but a large spoon trolled on a wire line seemed the most attractive in the deeper waters.

Blackfin tuna (*Parathunnus atlanticus*) and false albacore (*Euthynnus alletteratus*) were found in the vicinity of the Gulf of Honduras.

Blackfin tuna of about 3 pounds were taken between Trujillo and Bonacca Island, and small schools of these fish were seen near the Hog Islands, while other schools which may have been of this species were observed near Tela and Puerto Cortes.

Larger schools of small blackfin tuna were found among the Bay Islands, but rod and reel fishing was made almost impossible by the sharks which shadowed the tuna and seized them as soon as the latter started struggling on the line. The blackfins often were shy and refused to strike, but on one occasion ten were taken on handlines in a half-hour with small feather lures and 6/0 hooks. A few solitary blackfin tuna and false albacore were caught by trolling along the reefs or banks. These fish ranged from about two to seven pounds in weight.

Off British Honduras, schooling blackfins were seen inshore of Glover Reef and the Turneffe Islands but none were caught. Some small false albacore were taken inside and along the outer reef of British Honduras. The lighthouse keeper at Cay Bokel reported that fish apparently of these species weighing up to twenty-five or thirty-five pounds had been taken in the vicinity. At Cozumel Island several schools of blackfin tuna were sighted and three fish of about twelve pounds each were caught. Most of the schools of blackfin tunas were found from two to five miles offshore and were between islands or islands and mainland.

The kingfish (*Scomberomorus cavalla*) and its relatives, the cero (*Scomberomorus regalis*) and the Spanish mackerel (*Scomberomorus maculatus*) were well represented in the northwestern Caribbean.

Cero and Spanish mackerel of about six pounds were caught off Cape Honduras and in Trujillo Bay and some larger ones were lost. Off the Motagua River, five kingfish, ranging from six to sixteen pounds in weight, were taken in two and a half hours. At Utila Island, one or two large kingfish struck at the marlin baits and one of about eight pounds was caught by trolling along the reefs. Five Spanish mackerel were taken in a gill net set in the harbor. The rip off Cape Tres Puntas in Guatemala provided good

kingfishing. Six ranging from five to fifteen pounds were taken with feather lures in about two hours of trolling.

Small cero and Spanish mackerel were abundant among the inside reefs of British Honduras and some small kingfish were also caught there. Larger cero and kingfish were taken by trolling off the outer reefs, and the lighthouse keeper at Cay Bokel said that there was a fine run of large kingfish there in the spring. Natives of Grand Cayman said that large kingfish were taken by trolling with sprats (*Sardinella sardina*) from sailing canoes and constitute an important commercial catch for the island.

No wahoo (*Acanthocybium solandri*) were caught in the vicinity of the Gulf of Honduras, but it was reported that they were occasionally taken in the offshore waters. The Hog Islands and the waters off Belize were reported to be good grounds for these fish, the best season at the latter place being in the spring and early summer.

A seven pound wahoo was caught from the "Irmay" off Grand Cayman. Natives there said that these fish, locally called "queenfish," are caught regularly and reach weights of eighty pounds or more. They attributed the poor fishing at the time of our visit to the long duration of fresh easterly winds. At the Swan Islands these fine fish appear to be relatively abundant. An eleven pounder was caught from the "Irmay" as she approached the Island, while what appeared to be a much larger one was hooked at the same time on another line but got away and soon after this a heavy handline was parted. The next morning four wahoo were hooked simultaneously and three were boated. The two largest weighed fifty-seven and thirty-six pounds respectively, while the third was only slightly smaller. Another heavy handline was parted as the party left the islands. It was unfortunate that more time could not be devoted to exploring the possibilities of these islands and that a more suitable fishing boat was not available. The wahoo took white, yellow, and red and white feathers at speeds of four to nine knots.

Blue marlin (*Makaira nigricans ampla*) and sailfish (*Istiophorus americanus*) were reported in the Gulf of Honduras region, but most of our information on these fish was obtained from local fishermen. As they make no attempt to catch these species, they are not as well acquainted with them as with the fish they catch commercially. No estimates of their abundance could be made, except that they did not appear to be plentiful in midwinter.

Trujillo was the only locality on the coast of Honduras where we found convincing evidence of the presence of billfish. An employee of the United Fruit Company has caught a sailfish and lost a marlin off Cape Honduras. Residents at Puerto Castilla had observed sailfish in Trujillo Bay and reported one which they had seen speared from the town dock. Trolling with outrigger baits in the Bay and off Cape Honduras was unproductive, but the time spent was not nearly sufficient to test the possibilities of the place. The baits were not molested by other species of fish.

The Bay Islands appear to be a better fishing ground, especially for large marlin. The only certain billfish strikes were obtained about a mile or two north of Conical Hill on Utila Island. A fish believed to be a blue marlin of about 200 pounds was hooked and parted the 24-thread line after making a considerable run and two or three leaps. On the next day, a fish thought to be a white marlin (*Makaira albida*) struck, but threw the hook on its first jump. Both struck at large mullets, a bait which was rarely obtainable. On both days other strikes were obtained which might have been from billfish. About twenty hours were spent in offshore trolling at Utila and five hours

at Bonacca. Off Utila smaller fish, especially barracudas, often spoiled the outrigger baits, making it virtually useless to troll them near any bank or reef and at Bonacca large quantities of floating weed continually fouled the lures.

Bay Island fishermen related many stories about marlin and showed us the bill of a sailfish they had taken. They told of a U. S. sportsman who had hooked five large blue marlin in one week fishing off Bonacca Island, but had lost all of them. They did not recall what time of year this occurred and there seemed to be no agreement as to which season was the best for this fishing.

Fishermen in British Honduras report sailfish, which they call "ocean pipers," and marlin along the barrier and outlying reefs. Among the favored localities are Columbus Reef, English Cay, Cay Bokel and Glover Reef. The lighthouse keeper at Cay Bokel said that he frequently observed sailfish, sometimes three or four at a time and also saw a very large marlin caught by handline. No billfish were raised in about twenty-five hours of trolling in these localities and off the Zapotilla Cays. The latter is an excellent looking ground with fine rips, but fishing was hampered by excessive amounts of floating weed. The best season for marlin and sailfish in British Honduras was said to be in the spring and early summer.

Natives reported large marlin, locally called spikefish, off Grand Cayman Island and sailfish off the Swan Islands and Cozumel Island, but little specific information was obtained.

Jacks were among the most common fish in many of the localities visited. In the Trujillo area, the jack crevalle (*Caranx hippos*) was very abundant. Eight, ranging from two to twelve pounds, were taken in an hour and a half of trolling off Cape Honduras. Some were also caught in the channel to the lagoon of Guaimoreto and off the mouth of a small river west of Trujillo. Off the Motagua River, twelve of these fish were boated in two and a half hours, although the very effective wire line was used only for the first few minutes. A blue runner or hardtail (*Caranx crysos*) was also taken at this place.

Among the Bay Islands jacks were not so plentiful. A large yellow jack (*Caranx bartholomaei*) was taken off Utila. Horse-eye jack (*Caranx latus*) and brown jack (*Caranx ruber*) were taken in the harbor and lagoons of this island. A brown jack and a rainbow runner (*Elagatis bipinnulatus*) were caught off the reefs of Barburata, near Roatan Island.

Off the coast of Guatemala blue runners were the only jacks taken but they were very numerous. Some were caught at Ox Tongue Light, where schools of them were seen surfacing in the rips, while others were taken off Cape Tres Puntas and en route to Punta Gorda.

In British Honduras, jack crevalles were numerous in the rivers and many were taken by plug casting or trolling in the Manatee. Some yellow jack were caught by trolling off the inner reefs and cays.

A six pound rainbow runner was taken off the Swan Islands, and a twenty-six pound amberjack (*Seriola dumerili*) was caught off Cozumel Island.

Jack crevalle struck freely at almost any lure, but in water of sufficient depth a spoon trolled on a wire line was extremely effective and in rivers we had good luck with plugs. Most of the other jacks were caught on trolled feather lures. Fifteen thread tackle was usually used for trolling, but better sport would be had with lighter gear. The jack crevalles and yellow jacks taken

weighed from two to about fifteen pounds, while most of the brown and horse-eye jacks and blue runners weighed less than three pounds.

Dolphin (*Coryphaena hippurus*) were found occasionally in the northwest Caribbean. Although none were encountered along the coast of Honduras and Guatemala, four were caught in three hours of fishing off Conical Hill, Utila Island, and two were boated while trolling along the rips off the Zapotilla Cays. One was caught at the Swan Islands and two at Cozumel Island, where they were also seen leaping in spectacular pursuit of flying fish. Those caught weighed from eight to eighteen pounds each and were taken on heavy handlines or 15-thread rigs, but 9 or 6-thread tackle would be more sporting. They took strip baits trolled at five knots and feather lures trolled similarly or when cruising at nine knots.

The snook (*Centropomus undecimalis*) is plentiful in the rivers of Guatemala and British Honduras. None were taken in Honduras or the Bay Islands but little fishing was done there in waters suitable for these fish. It is probable that they could be found in some of the lagoons and rivers of these regions.

At Livingston, Guatemala, in the mouth of the Rio Dulce, there is a commercial fishery for snook. They are shipped to Guatemala City where they are a favorite table fish. The director of this fishery said that three hundred snook had been caught in the early morning of the day the party made a trip up the Dulce. On the next morning, the "Black Prince" was fishing in the harbor along with forty-five native canoes but no catches were observed. The captain of the fishing cruiser operated by the United Fruit Company reported taking very large catches of snook far up the river. Two snook, weighing three and six pounds respectively, were caught by trolling small spoons off the mouth of the Graciosa River where a Guatemalan sportsman reported taking them in considerable numbers.

In British Honduras, excellent snook fishing was found in the Manatee River where these fish were often seen surfacing among the mangrove roots, grouped with small tarpon and jack crevalles. Almost every cast with a fresh water bass plug would secure a strike from one of these species and they also hit spoons or feathers, either cast or trolled. In one day eight snook weighing from about four to twelve pounds were taken, although much of the time was spent trolling for large tarpon in mid-stream, and playing large jacks on light tackle. Snook could usually be caught, even if they were not showing, by casting or trolling close to the banks. It is probable that they are equally plentiful in other rivers of British Honduras. Fresh water plug casting rigs are ideal for this fishing.

Groupers are an important food fish in the northwestern Caribbean. None were taken along the coast of Honduras, but they were fairly numerous among the Bay Islands. A 35 pound black grouper (*Mycteroperca bonaci*)\* was boated after making a leaping strike at a marlin bait off Utila Island. Commercial catches at Utila also included yellow groupers (*M. venenosa*)\* and Nassau groupers (*Epinephelus striatus*), weighing less than seven pounds each. Some four or five pound tiger rockfish (*M. tigris*)\* were taken by deep trolling with a large spoon on a wire line off Bonacca and Roatan Islands. A small spotted jewfish (*Promicrops itajara*)\* was caught on a small spoon trolled near the entrance of the Graciosa River in Guatemala.

The barrier and outlying reefs of British Honduras produced a good many black and yellowfin groupers. Almost all of these were taken by deep trolling

\*Tentative identification

along the outside of the reefs with a large spoon on the wire line, and they ranged from 8 to 26 pounds in weight. Cay Bokel in the Turneffe Islands offered the most consistent fishing for these species. Nassau groupers were also caught occasionally in the waters of this colony.

Snappers also form an important part of the commercial catch in the northwest Caribbean. On the coast of Honduras we encountered the grey snapper (*Lutianus griseus*) the school-master (*L. apodus*)\*, the muttonfish (*L. analis*) and the black snapper (*L. cyanopterus*). A thirty-eight pound specimen of the last species was caught on a trolled surface plug in the inlet to the lagoon of Guaimoreto.

Among the Bay Islands, some yellowtails (*Ocyurus chrysurus*) were taken by trolling feather lures, and schoolmasters and muttonfish were seen among the commercial landings. Handliners fishing in deep water took some vermilion snappers (*Rhomboplites aurorubens*)\*, a fish called "salmon" (*Etelis oculatus*)\* and red snappers of a species not determined.

In the waters of British Honduras, some muttonfish, yellowtails, and a dog snapper (*Lutianus jocu*)\* were taken among the reefs and cays, and a 30 pound black snapper was caught on a trolled swimming plug in the Belize River. Lane snappers (*Lutianus synagris*) were occasionally seen among commercial catches.

## PART II. VICINITY OF CARMEN, CAMPECHE, MEXICO

A survey of the sport fishes in the vicinity of Carmen, Mexico, on the Gulf of Campeche, was made from March 6 to March 26, 1950. The party comprised Col. John K. Howard, of the Harvard Museum of Comparative Zoology, Dr. Raymond A. Gilmore of the U. S. Fish and Wildlife Service, and the author, representing the Woods Hole Oceanographic Institution. While there the party collected many species of the local fish fauna for future study.

Most of the sport fishing was done with rod and reel from a boat chartered from Senor Miguel A. Manjarrez, the local representative of the Department of Fisheries of the Mexican government, who also provided a large beach seine. While only two hauls were made with this gear, one of them, made in a small lagoon at the northwest corner of Carmen Island, was very successful. Thanks are extended to Don Pedro Palazuelos who invited the party to spend a day on one of his shrimp boats and select specimens from the catch. He also presented the party with a collection of fish from another of his boats, and furnished much other assistance. Gratitude is also expressed to Mr. Lewis Frank for donating working space in his shrimp processing plant, and to Mr. Torquato Paz of La Aguada, who was most helpful in arranging purchases from local fishermen and in guiding the party.

There follows a description of the sport fishing possibilities for the various species which were encountered at the time of the sojourn. Other game fish which were seen in the markets or reported by residents are included in a list at the end of the paper. Fish which are of no sporting interest have been omitted.

Carmen is becoming famous for its tarpon fishing. These fish appeared to be extremely numerous in this area, although their average size may not be as great as in some other well known tarpon grounds.

The many rivers and passes in the Laguna de Terminos offer a wide choice

\*Tentative identification





COMMON NAME	SCIENTIFIC NAME	COAST OF HONDURAS		BAY ISLANDS		GUATEMALA		BRITISH HONDURAS		GRAND CAYMAN ISLAND		SWAN ISLANDS		COZUMEL ISLAND	
		1	2	1	2	1	2	1	2	1	2	1	2	1	2
Margate fish	<i>Haemulon album</i>														
Muttonfish	<i>Lutjanus analis</i>	x		x				x							
Nassau grouper	<i>Epinephelus striatus</i>			x				x							
Permit	<i>Trachinotus goodii</i>			x											
Rainbow runner	<i>Elagatis bipinnulatus</i>			x				x							
Red hind	<i>Petrometopon cruentatus</i>			x											
Red snapper	<i>Lutjanus sp.</i>			x											
Reef jack	<i>Seriola falcata</i>														
Round pompano	<i>Trachinotus falcatus</i>														
Sailfish	<i>Istiophorus americanus</i>			x											
Schoolmaster	<i>Lutjanus apodus*</i>														
Spanish mackerel	<i>Scomberomorus maculatus</i>	x		x											
Snook	<i>Centropomus undecimalis</i>														
Spotted jewfish	<i>Promicrops itajara</i>														
Tarpon	<i>Tarpon atlanticus</i>														
Ten-pounder	<i>Elops saurus</i>														
Tiger rockfish	<i>Mycteroperca tigris*</i>														
Vermillion snapper	<i>Rhomboplites aurorubens*</i>														
Wahoo	<i>Acanthocybium solandri</i>														
White marlin	<i>Makaira albida</i>														
Yellow jack	<i>Caranx bartholomaci</i>														
Yellowfin grouper	<i>Mycteroperca venenosa*</i>														
Yellowtail	<i>Ocyurus chrysurus</i>														

\* Tentative Identification

1 Seen or taken

2 Reported but not seen

of fishing spots to the tarpon enthusiast. Among the most popular is the Eastern Entrance or Barra Aguada, which at times is full of schools of surfacing tarpon (*Tarpon atlanticus*). The party took several fish there ranging from twenty to fifty pounds, by trolling, and no larger ones were seen.

Larger tarpon were found in the arm of the lagoon east of Aguada leading to Sabancuy. One fish weighing slightly over fifty pounds was boated and several which looked larger were lost.

Another excellent tarpon ground is on the Candelaria River at Polvoshal Ranch. The party trolled there for only about an hour, but fish were rising and striking steadily and two, weighing twenty-five and forty pounds respectively, were caught. Another party of fishermen reported catching about twenty tarpon in one day at this place and these were also of a medium size.

The best tarpon fishing found in the western part of the lagoon was at Boca Chica, a narrow passage which connects a small lagoon fed by two large rivers with the main one. Tarpon in the main channel appeared to run from twenty-five to over a hundred pounds. A smaller channel was frequently full of little tarpon near its entrance to the main passage.

The tarpon ground nearest to the city of Carmen is at the northwest corner of Carmen Island. When tide and wind are proper, a fine rip makes up. One day some very large tarpon were seen leaping and two of them struck at plugs cast from the beach for snook. On the next day smaller fish were showing and five strikes were secured in quick succession by trolling among them. On other days there was no sign of fish. Undoubtedly many other tarpon habitats could be found by anglers with a suitable boat and sufficient time.

Most of the fish taken trolling were caught on feathers, yellow ones apparently being preferred, but they also struck well on spoons. While only artificial lures were used, other anglers used small fish successfully as trolling baits.

Tarpon struck well at casting lures, especially Pikie Minnows and Husky Pikies. The silver flash color or white and silver with red head were very effective, and the blue mullet scale was also good.

Barracuda (*Sphyraena barracuda*) are not as plentiful in the vicinity of Carmen as in the Caribbean and among the Bahamas. Some inhabit the reef on the west side of the Eastern Entrance of the Laguna de Terminos and the entrance to the arm of the lagoon leading to Sabancuy. In the shallow waters of the latter place a thirty pounder put up a spectacular fight when taken on a light rod with 9 thread line. The barracudas caught here averaged about twenty pounds in weight. One weighing fifty-five pounds was reported to have been caught while the party was at Carmen.

The barracuda took feather lures rigged as for tarpon with 9/0 O'Shaughnessy hooks. The outfits used were 15 thread and 9 thread, the latter, of course, being more sporting.

A few Spanish mackerel (*Scomberomorus maculatus*) were caught in the vicinity of Carmen on trolled feather lures. These ranged from two to six pounds in weight, as did the few seen in the market. There was no indication that these fish were abundant at the time of this survey.

Jack crevalle (*Caranx hippos*) were extremely abundant in the Carmen area. About twenty of these fish, averaging fifteen pounds in weight, were caught from a shrimp boat by trolling and by throwing a baited hook alongside from the stern. In the latter case, the jacks would dart out from under the boat and seize the bait as it sank by the stern. Small fish caught

in the shrimp nets were used for bait, and the big jacks could be seen following the nets to the surface and feeding on escaping or discarded fish and crustacea.

Schools of these fish were observed in rivers and inlets, especially at tide rip. They struck trolled feather lures and spoons, usually being caught on tarpon tackle although they would provide better sport on lighter gear.

The only other jacks observed were blue runners, (*Caranx crysos*) which occasionally appeared in small numbers in the market.

Good snook fishing was found in the rip at the northwest corner of Carmen Island. One of the party took nine of these fish, ranging from four to twelve pounds, in one hour of casting from the beach into this rip. A regular fresh water plug casting rig with eighteen pound test line and a silver flash Pokie Minnow proved to be an effective and very sporty means of taking these leaping fighters. About a bushel of small snook (*Centropomus undecimalis*) was taken in a beach seine haul in the small lagoon nearby, and one was caught by plug casting at its inlet. Residents of Carmen catch a few snook from the docks at night, using handlines with shrimp for bait and chum.

Spotted jewfish (*Promicrops itaiara*) are fairly common in the region. One weighing about twelve pounds was taken in the arm of the lagoon leading to Sabancuy, and the capture of a hundred pounder by a native fisherman was witnessed at Boca Chica. Much larger ones are reportedly taken. Two small red groupers (*Epinephelus morio*) were caught by bottom fishing in the Gulf off Santa Rosa. Few groupers were seen in the market.

The black snapper (*Lutjanus cyanopterus*) is of interest to sport fishermen mainly because of its large size and willingness to take trolling lures. A thirteen pounder was caught on a feather lure in the Eastern Entrance, and a Texas sportsman donated to the collection a sixty-eight pounder taken there on the same day. The capture of a sixty-four pounder in the Candelaria River was also reported. Other species of snappers are taken by native fishermen, including the muttonfish (*Lutjanus analis*), the grey snapper (*L. griseus*), the lane snapper (*L. synagris*) and the red snapper called guachinango, which is the most highly prized.

About half a bushel of spotted weakfish (*Cynoscion nebulosus*), up to four

#### CAMPECHE, MEXICO — Fish taken or seen

COMMON NAME	LOCAL NAME	SCIENTIFIC NAME
Barracuda	Picuda	<i>Sphyræna barracuda</i>
Black drum	Tambor	<i>Pogonias cromis</i>
Black snapper	Pargo mulato	<i>Lutjanus cyanopterus</i>
Blue runner	Cojinua	<i>Caranx crysos</i>
Creaker	Roncador	<i>Micropogon</i> sp.
Grey snapper	Pargo mulato	<i>Lutjanus griseus</i>
Jack crevalle	Jurel	<i>Caranx hippos</i>
King whiting		<i>Menticirrhus americanus</i> *
Lane snapper		<i>Lutjanus synagris</i>
Muttonfish	Pargo rubia	<i>Lutjanus analis</i>
Red grouper	Mero	<i>Epinephelus morio</i>
Red snapper	Guachinango	<i>Lutjanus</i> sp.
Round pompano		<i>Trachinotus falcatus</i>
Sand squeteague		<i>Cynoscion arenarius</i> *
Snook	Robalo	<i>Centropomus undecimalis</i>
Spanish mackerel	Macarel	<i>Scombromorus maculatus</i>
Spotted jewfish	Cherna	<i>Promicrops itaiara</i>
Spotted weakfish		<i>Cynoscion nebulosus</i>
Tarpon	Sabalo	<i>Tarpon atlanticus</i>
Triple tail		<i>Lobotes surinamensis</i>
Ten-pounder	Reported but not seen	<i>Elops saurus</i>
	Macabi	

pounds in weight, was taken in a beach seine haul in the small lagoon on the northwest corner of Carmen Island. Mr. Cecil Branson of Carmen reported that they also frequented a cove on the south side of the island. Some smaller sand squeteague (*Cynoscion arenarius*)\* were caught in the nets of the shrimp boats, as well as small croakers (*Micropogon*) of various species some of which were also caught in the beach seine. A few king whiting (*Menticirrhus americanus*)\* weighing less than two pounds were also taken by the shrimp boats.

\* Tentative identification

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## Early Explorations in the Gulf of Mexico

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History of early explorations in the Gulf of Mexico has a particular appeal to the persons engaged in the present studies of the oceanography and biology of this body of water. Thrilling descriptions of the adventures of the earlier explorers not only contain the records of their accomplishments and frequent failures but provide also an understanding of the personalities of the principal actors of the New World drama. From the yellowish and musty pages of the old books and maps arise live human beings who, poorly equipped but with great courage and determination, went to explore the unknown lands beyond the vast expanse of the western ocean. Their characters and the motives behind their heroic actions become understandable; and one is tempted to compare their lives and the conditions under which they labored with the present situations of scientists engaged in a study of problems of grave national importance.

Political and economic rivalry among the countries of western Europe during the sixteenth and seventeenth centuries was so acute that their successful penetration into the wilderness of the New World, establishment of colonies, and access to gold, silver, and other riches of the new continent had profound effects on their destinies.

The beginning of the explorations in which the adventurers of Spain, Portugal, France, and England competed and frequently fought with each other for the possession of new territories can be formally dated back to the first voyage of Columbus.

The existence of the large sea called, at present, the Gulf of Mexico was known, however, to the natives long before the white man set foot on the newly discovered land. Aztecs of Mexico and natives of Yucatan were able to sail considerable distances from the mainland. Some of them mastered the art of map making to a fairly high degree of perfection. It is known, for instance, that in 1520 Montezuma presented Cortez with a map painted on a henequin cloth in which were marked rivers and bays of the northern coast of the Gulf from Panuco to Tobasco, a distance of about 140 leagues. In July 1502, sailing south from Cuba toward Honduras parallel to the eastern coast of Yucatan, Columbus encountered an Indian vessel of the size of a Spanish galley with 25 men in her crew. The ship, laden with various goods and products, was sighted 150 nautical miles from the coast of Cuba and about 79 miles off the Yucatan coast. Had Columbus followed the Indian ship he would soon have discovered the Yucatan and found the route to