11. Fishes of the Cayman Islands

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Introduction

The ichthyofauna of the Cayman Islands has not received the scientific attention accorded to fishes of many other Antillean islands. Breder (1927) recorded eight Cayman species captured during a cruise of the R/V *Pawnee* and Potts (1980) subsequently listed fifteen tidepool species taken during limited collecting on Little Cayman. Most systematic studies that cite Caymanian specimens have utilized the collections reported on in Burgess' (1978) unpublished thesis. Biological studies of Cayman fishes are especially lacking with Colin et al.'s (1987) investigation of Nassau grouper reproduction constituting the only publication addressing life history aspects of Cayman fishes. The semi-popular press, particularly dive-oriented publications, has actively covered Cayman Islands in recent years as tourist diving increased.

A comprehensive list of the Cayman Islands ichthyofauna has never been published. It is our hope that this contribution will stimulate scientific interest in this diverse and important component of the Cayman Islands natural history.

Derivation of the ichthyofaunal list

Records of Cayman Islands fishes are derived from several sources. By far the largest number originate from a series of 45 collections made by Carter R. Gilbert and collaborators in 1963–64 and 1966–67. Joining Gilbert in making these Grand Cayman collections were Frank Roulstone (1963), James C. Tyler (1964), and Phillip C. Heemstra (1966–67). Most collections were made using chemical ichthyocides. Specimens emanating from these activities are deposited at the Florida Museum of Natural History, University of Florida (UF) and the Academy of Natural Sciences of Philadelphia (ANSP). William F. Smith-Vaniz (ANSP) made a few Grand Cayman collections while seeking the flashlight fish, *Kryptophanaron alfredi*, in January 1978. Richard Franz (UF) made a series of fresh and brackish water collections on Grand Cayman, Cayman Brac and Little Cayman in July 1980 (with Jackie Bellwood), January-February 1986 (with Gary Morgan), and August 1987 (with Shelley Franz). A small collection of tidepool fishes from Little Cayman was made by Kurt Auffenberg (UF) in May 1980. Fred G. Thompson (UF) made several collections of brackish water fishes on Grand Cayman in November 1983. Thomas M. Baugh also made fresh and brackish water collections on Grand Cayman and Cayman Brac in March 1986. The authors, accompanied by David B. Snyder, added many marine species during May 1987 dive operations on Grand Cayman (specimens deposited at UF). Certain deepwater species are included on the basis of photographs and videotapes provided by Eugenie Clark. Sight records are utilized in our faunal list only if documented by a photograph or seen by one of the authors or major collectors noted above. A collection of photographs housed at the Natural Resources Unit (NRU) documented several species. Sight records of certain gamefishes are accepted on the authority of J.W. 'Bill' Rewalt, International Committee Representative of the International Game Fish Association and long-time keeper of Cayman sportfishing records.

Efforts were made to sample a wide variety of habitats and depths, but collections were heavily

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concentrated in depths of less than 30 m. Certain microhabitats, such as sponges, were not well sampled with ichthyocides and require additional attention; deepwater poison collections, in particular, are sparse and as a result our species list is incomplete for this community. Some deepwater hook and line collections were made but further sampling is still necessary. Fishing in pelagic offshore waters should yield many additional species, as should systematic sampling of Cayman Brac and Little Cayman reefs.

Cayman Island habitats

The major marine habitats are discussed elsewhere in this volume. In this section we will very briefly characterize nine habitats which are significantly different in their physical characteristics and ichthyofaunas. Note that any such categorization is somewhat arbitrary since the fish listed as being characteristic of one zone are seldom confined exclusively to that zone.

Gladfelter, Ogden & Gladfelter (1980) and Luckhurst & Luckhurst (1978) showed that fish species diversity and richness are highly correlated with reef surface complexity, projected reef surface area, and reef height. That is, the more complex the reef, the greater total number and kinds of fish the reef will support. Based upon complexity, area and height, Cayman's marine habitats can be divided into nine decreasingly complex zones: 1) deep terrace reef (DTR), 2) shallow terrace reef (STR), 3) reef crest (RC), 4) deep terrace fore reef (DTFR), 5) lagoonal patch reefs (LPR), 6) mangrove fringe (MF), 7) deep terrace (DT), 8) shallow terrace (ST), and 9) sea grass beds (SGB).

The deep terrace reef with its dramatic relief, often more than 25 m, and complex array of tunnels, caves and ledges contains the largest number of fishes, greatest weight of fishes per unit area, and highest fish species diversity. Groupers (Serranidae), snappers (Lutjanidae), jacks (Carangidae) and triggerfishes (Balistidae) are particularly well represented in this zone. This is also the zone where very large fishes – sharks, spotted eagle rays (*Aetobatus narinari*), barracudas (*Sphyraena barracuda*), wahoos (*Acanthocybium solandri*), dolphins (*Coryphaena hippurus*) and various tunas (Scombridae) are most likely to occur. The DTR contains the highest percent cover of sponges, the greatest diversity of stony corals, and the second highest percentage of live coral cover, all of which help contribute to the rich ichthyofaunal diversity. Tube sponges (*Callyspongia* sp.) and barrel sponges (*Xestospongia muta*) are abundant on the DTR and provide microhabitats for numerous fishes, including cleaning gobies (*Gobiosoma* spp.) and the Nassau grouper (*Epinephelus striatus*). The latter often crowd into barrel sponges at 'grouper holes' during spawning season.

Unfortunately, some large sections of the DTR's on Grand Cayman have been severely damaged or destroyed by anchors from cruise ships and diveboats. Bell & Galzin (1984) showed that a drop of only 2% in live coral cover will cause a statistically significant reduction in the total number and diversity of fishes. The once productive DTR in the anchorage off George Town is now 97% bare rock and rubble (Smith 1988); it is almost completely devoid of all fishes, with the exception of occasional pelagics which cruise through the area. Further to the north is another DTR where the percentage of live coral cover is only half that normally found on an unaffected DTR. As expected, the ichthyofauna is also relatively depauperate.

The shallow terrace reef (STR) is the next most complex habitat and supports a large number of fishes. There are several obvious differences with the ichthyofauna of the DTR. Pomacentrids, especially sergeant majors (*Abudefduf saxatilis*), surgeonfishes (*Acanthurus coeruleus* and *A. chirurgus*), squirrelfishes (Holocentridae), and grunts (Haemulidae) are much more numerous in this zone. Ocean and queen triggerfishes (*Canthidermis sufflamen* and *Balistes vetula*), both abundant on the DTR, are replaced on the STR by the black durgeon (*Melichthys niger*). On a high energy STR the black durgeon may be the most abundant species. A noteworthy situation has developed on several STR's where dive operators have established feeding stations. Over a period of several years these sites have acquired enormous populations of sergeant majors and yellowtail snappers (*Ocyurus chrysurus*). The effect of such protracted augmented feedings upon wild fish populations levels is unknown. Some areas

of the STR on the south, east and north shores of Grand Cayman and south shores of Cayman Brac and Little Cayman sustained substantial damage from hurricane Gilbert in September of 1988.

The reef crest (RC) environment is best developed on the high energy sides of the islands, the east and south coasts of Grand Cayman and Little Cayman and the south coast of Cayman Brac. The outer boundary of North Sound on Grand Cayman also has a well developed RC. This zone is dominated by acroporid corals and fire coral (*Millepora complanata*). Parrotfishes (Scaridae), surgeonfishes and small snappers and grunts are very abundant here. One encounters greater varieties and sizes of fishes as the RC grades into the STR with its increased diversity of benthic species. Hurricane Gilbert severely damaged some areas of this zone (especially south Grand Cayman), breaking almost 100% of the elkhorn, staghorn and fire corals.

The deep terrace fore reef (DTFR) is a steep cliff with a slope generally between 60° and 90°. Although the percentage of live coral cover is the highest of any zone, reaching more than 90% at depths between 60–77 m, coral diversity is low and the plate-like growth forms of the coral limit the available microhabitats for fishes. Jacks, barracudas and spotted eagle rays are the most commonly encountered large fishes, while smaller species are best represented by blue and brown chromis (*Chromis cyaneus* and *C. multilineatus*).

Lagoonal patch reefs (LPR) in the Cayman Islands are best developed off the east ends of Grand Cayman and Little Cayman. Nearly every species found on the STR and DTR occur on the LPR, although the individuals are usually much smaller, often represented as juveniles or subadults. Grunts appear to dominate, followed by snappers. Needlefishes (*Strongylura* spp. and *Tylosurus* spp.) often school along the outer reaches of the patch reefs and appear to be more abundant here than in any other habitat. Mojarras (*Eucinostomus* spp. and *Gerres cinereus*) are very common in areas between the LPR and the sea grass beds.

One of the most interesting environments is the mangrove fringe (MF) with its tangled complex of prop roots festooned with oysters, sponges, tunicates and other sessile invertebrates. Mud caves are often found behind the roots in channel areas subject to fast water flow. Juveniles of many species of reef fishes can be found here. Grunts, snappers and barracudas are very common.

Between the STR and the DTR lies the deep terrace (DT). This is a flat sand plain with scattered large coral heads, some rising more than 3 m off the sand. Fish fauna around the coral heads is comparable to that found on the STR and DTR. The most conspicuous species on the sand plain are garden eels (*Heteroconger halis*), goatfishes (*Mulloides martinicus* and *Pseudupeneus maculatus*), hogfishes (*Lachnolaimus maximus*) and southern stingrays (*Dasyatis americana*). The latter are often accompanied by barjacks (*Caranx ruber*).

In many areas, a flat, hard rock bottom with small scattered coral heads, gorgonians and considerable algal turf stretches from the STR toward shore. This shallow terrace (ST) is called squab bottom by Caymanians because of the great numbers of 'squab' (parrotfishes) found here. Surgeon fishes, jolthead porgies (*Calamus bajonado*) and saucereye porgies (*Calamus calamus*) are also common. Butterfly fishes (*Chaetodon*), squirrelfishes, small groupers and the greater soapfish (*Rypticus saponaceus*) congregate around small coral heads and potholes on the ST.

Sea grass beds in Cayman are dominated by turtle grass (*Thalassia testudinum*), although at least two other sea grasses (*Syringodium* sp. and *Halodule* sp.) are also present. Turtle grass forms dense, tall stands in protected lagoons. Densities exceed 100 blades/tenth square meter and heights often exceed 40 cm. Grunts are the most commonly seen fish in the sea grass beds. Juvenile French and queen angel fishes (*Pomacanthus paru* and *Holacanthus ciliaris*) are abundant over certain sea grass beds in North Sound.

There is no significant marine pollution in the Cayman Islands. Habitat destruction resulting from use of anchors on reefs and suspended sediment produced by dredging in the sounds, and the potential for overfishing represent the greatest threats to Caymanian fishes. In 1986 coastal marine conservation zones were established which offer protection to reef ('Marine Parks'), sound/lagoon ('Replenishment Zones'), and frin-

ging mangrove ('Environmental Zone') habitats (Ebanks & Bush, in press).

Annotated list of the Ichthyofauna

Our list includes 381 species known to occur in the Cayman Islands. Space constraints limit our annotations of the ichthyofauna to the family level and preclude citations of individual catalogued lots. We have included the extent of material examined to give a rough indication of the relative abundances of the various species and families and to inform systematic workers of its availability for study. Preserved specimens are housed at the Florida Museum of Natural History, Gainesville, FL (UF), Academy of Natural Sciences, Philadelphia, PA (ANSP), University of Michigan (UMMZ), and Field Museum of Natural History (FMNH). Species previously recorded from the Caymans include the relevant bibliographic citations; all other species are recorded herein for the first time. Species listed on the basis of sight records (many documented with photographs housed at UF) are noted as such and include the sighting authority's initials: GHB = George H. Burgess, EC = Eugenie Clark, CRG = Carter R. Gilbert, EDL = E. David Lane, JWR = J.W. Rewalt, SHS = Stephen H. Smith, DBS = David B. Snyder. Caymanian names for some species are included in quotation marks following the more widely accepted common name.

Hexanchidae (cow sharks)

Hexanchus griseus (Bonnaterre), bluntnose sixgill shark. Sight record (GHB, EC).
Hexanchus vitulus Springer and Waller, bigeyed sixgill shark. Sight record (GHB, EC).

Sixgill sharks are apex predators in deep (300 + m) waters. Eugenie Clark observed both species during submersible dives; identifications were confirmed (GHB) from photographs and videotape.

Squalidae (dogfish sharks)

Centrophorus granulosus (Bloch & Schneider), gulper shark. Sight record (GHB, EC).
Dalatias licha (Bonnaterre), kitefin shark. Sight record (GHB, EC).

Identification of these deepwater sharks was confirmed (GHB) from photographs and vidoetape taken by Eugenie Clark during submersible dives.

Ginglymostomatidae (carpet sharks)

Ginglymostoma cirratum (Bonnaterre), nurse shark. Sight record (SHS).

Nurse sharks are most often seen lying on the bottom on shallow water reefs and sand flats.

Rhincodontidae (whale sharks)

Rhincodon typus Smith, whale shark. Sight record (JWR).

The whale shark is an infrequent offshore visitor usually encountered at the surface, often in association with schools of mackerel or tuna.

Lamnidae (mackerel sharks)

Isurus paucus Guitart Manday, longfin mako. Sight record (EC).
Isurus oxyrinchus Rafinesque, shortfin mako. Sight record (JWR).

Eugenie Clark reports observing a longfin mako, estimated at 275 cm TL, at a depth of 748 m during a submersible dive. This species and the shortfin mako are pelagic sharks normally found in offshore waters.

Scyliorhinidae (cat sharks)

Apristurus sp., brown cat shark. Sight record (EC).

Two catsharks of the genus *Apristurus* were seen by Eugenie Clark at depths of 876 and 945 m during submersible dives.

Triakidae (smoothhound sharks)

Mustelus sp., smooth dogfish. Sight record (GHB, EC, EDL).

Two smooth dogfishes were observed by Eugenie Clark during deep submersible dives. A *Mustelus* photograph housed at the Natural Resources Unit (copy at UF) cannot be attributed to *M. norrisi*, the Florida smoothhound, on the basis of lower caudal lobe shape.

Carcharhinidae (requiem sharks)

Carcharhinus longimanus (Poey), oceanic whitetip shark. Sight record (SHS).
Galeocerdo cuvier (Peron & Lesueur), tiger shark. Sight record (EC, JWR).

The oceanic whitetip is an offshore, blue-water species that occasionally makes forays into deep-reef areas. The tiger shark is at home on reefs and frequents deep drop-offs and ledges.

Sphyrnidae (hammerhead sharks)

Sphyrna mokarran (Rüppell), great hammerhead. Sight record (CRG).
Sphyrna tiburo (Linnaeus), bonnethead. Sight record (JWR).

The great hammerhead is an uncommon visitor to inshore reefs and is more frequently encountered in offshore waters. Bonnetheads frequent inshore sand flats.

Urolophidae (round stingrays)

Urolophus jamaicensis (Cuvier), yellow stingray. 3 collections, 5 specimens (UF, ANSP).

The round stingray is a shallow-water inhabitant of sandy bottoms. While not achieving the size of its larger cousin, the southern stingray (*Dasyatis americana*), the tail spine of *Urolophus* is equally dangerous.

Dasyatidae (stingrays)

Dasyatis americana Hildebrand and Schroeder, southern stingray, 'stingray'. Sight record (GHB, EDL, SHS).

Like the round stingray (*Urolophus jamaicensis*), the southern stingray is a common reef dweller and is usually seen partially buried in coralline sand. *Dasyatis* is easily frightened and often swims off in a cloud of sand when approached by divers. However, at a shallow back-reef area in North Sound on Grand Cayman a stingray feeding station has been established by local dive operators. Often a dozen or more large southern stingrays will swim around and over the divers, waiting to be fed squid or ballyhoo. Spotted eagle rays occasionally participate in these feeding sessions.

Myliobatidae (eagle rays)

Aetobatus narinari (Euphrasen), spotted eagle ray, 'choochoo'. Sight record (GHB, SHS).
Manta birostris (Walbaum), Atlantic manta, 'sea devil'. Sight record (GHB, JWR).

Nishida (1990) unites the manta rays, formerly placed in the Mobulidae, with the eagle, bullnose, and cownose rays in the Myliobatidae. Usually seen swimming over the reef, the spotted eagle ray is an active animal that commonly leaps into the air. The manta, primarily a pelagic offshore inhabitant, occasionally makes forays into reef areas where it, too, frequently goes airborne.

Elopidae (tarpons)

Megalops atlanticus Valenciennes, tarpon. Sight record (GHB, EDL, JWR, DBS, SHS).
Elops saurus, ladyfish. Sight record (SHS).

Tarpons are especially common in brackish waters around mangroves, but large adults are frequently encountered on reefs. Tarpon Lake, a brackish water pond completely separated from the sea on Little Cayman, hosts a large population of small-sized tarpon which support an important sport fishery. Ladyfish, probably *Elops saurus* Linnaeus, were observed in nearshore shallows, and a specimen was taken from a brackish pond on Grand Cayman.

Albulidae (bonefishes)

Albula vulpes (Linnaeus), bonefish. Sight record (GHB, EDL, JWR, SHS).

This popular gamefish is a denizen of sand flats where it is

often seen with one or more fins protruding above the water surface as it noses about the substrate seeking food. Flyfishing for bonefish is a popular tourist activity in South Hole Sound on Little Cayman.

Moringuidae (spaghetti eels)

Moringua edwardsi (Jordan & Bollman), spaghetti eel. 16 collections, 339 specimens (UF, ANSP). Smith (1989c).

Spaghetti eels burrow in the sand by day and are free swimming foragers by night. They are shallow water fishes, usually found in waters less than 12 m in depth and most commonly in ten feet or less.

Chlopsidae (false moray eels)

Chilorhinus suensonii Lütken, seagrass eel. 1 collection, 2 specimens (UF).
Kaupichthys hyoproroides (Strömann), false moray. 17 collections, 113 specimens (UF, ANSP). Smith (1989a).
Kaupichthys nuchalis Böhlke, collared eel. 7 collections, 12 specimens (UF, ANSP). Böhlke (1967), Smith (1989a).

The seagrass eel is confined to shallow water and the two species of *Kaupichthys* are most commonly found in deeper waters, reaching peaks of abundance in 12–25 m. The seagrass eel prefers sandy bottomed nearshore shallows, often in association with turtle grass; *Kaupichthys* species are found near coral heads and sponges.

Muraenidae (moray eels)

Echidna catenata (Bloch), chain moray. 4 collections, 28 specimens (UF, ANSP). Potts (1980), Böhlke et al. (1989).
Enchelycore carychroa Böhlke & Böhlke, chestnut moray. 9 collections, 30 specimens (UF, ANSP). Böhlke & Böhlke (1976), Böhlke et al. (1989).
Enchelycore nigricans (Bonnaterre), viper moray. 7 collections, 17 specimens (UF, ANSP). Böhlke et al. (1989).
Gymnothorax funebris Ranzani, green moray. 4 collections, 18 specimens (UF, ANSP). Böhlke et al. (1989).
Gymnothorax maderensis (Johnson), sharktooth moray. Sight record (GHB, EC).
Gymnothorax miliaris (Kaup), goldentail moray. 3 collections, 8 specimens (UF, ANSP). Böhlke et al. (1989).
Gymnothorax moringa (Cuvier), spotted moray. 7 collections, 24 specimens (UF, ANSP). Böhlke et al. (1989).
Gymnothorax vicinus (Castelnau), purplemouth moray. 6 collections, 14 specimens (UF, ANSP). Böhlke et al. (1989).
Monopenchelys acuta (Parr), redface moray. 1 collection, 1 specimen (UF). Böhlke & McCosker (1982), Böhlke et al. (1989).
Uropterygius macularius (Lesueur), marbled moray. 1 collection, 2 specimens (UF). Böhlke (1967), Böhlke et al. (1989).

As a group the morays are shallow water fishes that inhabit waters of less than 12 m. Of the above species, all but the chestnut and redface morays are most abundant in waters of 3 m or less. The chestnut moray has been collected in water depths up to 37 m, although it is most common in 3–12 m; the redface moray is truly a deeper water form, with most known collections being from 14–60 m. Morays are nearly always associated with rock and coral; they are nocturnally active predators and scavengers that depend on smell to locate their prey. The sharktooth moray was identified from a submersible photograph taken in about 300 m of water. At several locations around the islands dive operators have trained large green morays to allow divers to feed and pet them. Occasionally this has resulted in divers being bitten.

Ophichthidae (snake eels)

Ahlia egmontis (Jordan), key worm eel. 7 collections, 11 specimens (UF, ANSP). McCosker et al. (1989).
Aprognathodon platyventris Böhlke, striped eel. 1 collection, 4 specimens (UF, ANSP). Böhlke (1967), McCosker et al. (1989).
Myrichthys breviceps (Richardson), sharptail eel. 6 collections, 29 specimens (UF, ANSP). McCosker et al. (1989).
Myrichthys ocellatus (Lesueur), goldspotted eel. 8 collections, 22 specimens (UF, ANSP). McCosker et al. (1989).
Myrophis platyrhynchus Breder, broadnose worm eel. 1 collection, 1 specimen (UF).
Myrophis punctatus Lütken, speckled worm eel. 4 collections, 17 specimens (UF, ANSP). McCosker et al. (1989).

With the exception of the key worm eel, members of this family are confined to very shallow water, usually less than 3 m. *Ahlia* was collected from as deep as 20 m, but was most common in depths less than 12 m. All of these eels are burrowers in sand and are nocturnally active.

Congridae (conger eels)

Conger triporiceps Kanazawa, manytooth conger. 1 collection, 1 specimen (UF). Smith (1989b).
Heteroconger halis (Böhlke), brown garden eel. 3 collections, 224 specimens (UF, ANSP).

Both species are sand dwellers, the *Conger* from a wide depth range (3–30 m) and the garden eel from more restricted depths (14–24 m). Garden eels are frequently seen in large colonies ('gardens'), partially protruding from the substrate, swaying in unison with the surge or current.

Clupeidae (herrings)

Harengula humeralis (Cuvier), redear sardine. 5 collections, 173 specimens (UF, ANSP).
Jenkinsia lamprotaenia (Gosse), dwarf herring. 2 collections, 214 specimens (UF).
Jenkinsia majua Whitehead, slender herring. 2 collections, 25 specimens (ANSP).
Jenkinsia stolifera (Jordan and Gilbert), shortband herring. 1 collection, 24 specimens (UF).

These species were found in shallow nearshore waters (less than 3 m) in large schools. All are planktivores that serve as forage for larger predatory species.

Engraulidae (anchovies)

Anchoa lamprotaenia Hildebrand, bigeye anchovy. 1 collection, 3 specimens (UF).

Like the herrings (Clupeidae), anchovies are schooling planktivores that inhabit nearshore (less than 3 m) shallows.

Synodontidae (lizardfishes)

Synodus intermedius (Agassiz), sand diver. 1 collection, 1 specimen (ANSP).
Synodus synodus (Linnaeus), red lizardfish. 12 collections, 40 specimens (UF, ANSP).

Lizardfishes are found on sand bottoms near reefs and coral outcroppings, most commonly in depths of 3–24 m. They are small but efficient predators that partially bury in the substrate and ambush prey.

Ophidiidae (cusk-eels)

Otophidium dormitator Böhlke & Robins, sleeper cusk-eel. 1 collection, 1 specimen (UF).
Parophidion schmidti (Woods & Kanazawa), dusky cusk-eel. 1 collection, 2 specimens (UF, ANSP).

Ophidiids are burrowing fishes that enter the substrate tail first. The sleeper cusk-eel was collected from sand bottom adjacent to a coral head in 9 m of water and the dusky cusk-eels from a turtle grass bed in a depth of 2 m.

Carapidae (pearlfishes)

Carapus bermudensis (Jones), pearlfish. Arnold (1956).

The pearlfish is a symbiont of the sea cucumber, *Actinopyga agassizi*, entering its host tail-first through the anus. The transparent flesh of the pearlfish allows one to watch the activity of its internal organs while in captivity.

Bythitidae (brotulas)

Calamopteryx goslinei Böhlke and Cohen, longarm brotula. 5 collections, 8 specimens (UF, ANSP). Böhlke & Cohen (1966).
Grammonus claudei (Torre), reef-cave brotula. 1 collection, 1 specimen (UF).
Ogilbia spp., brotulas. 18 collections, 177 specimens (UF, ANSP).
Petrotyx sanguineus (Meek & Hildebrand), redfin brotula. 4 collections, 11 specimens (UF, ANSP).

Brotulas are secretive reef dwellers unseen by most divers. Our collections, all made with rotenone, suggest that some species, most notably *Ogilbia* spp., are quite common. *Ogilbia* is a taxonomic morass with at least four or five species represented. Some brotulas are live-bearers, others lay eggs.

Antennariidae (frogfishes)

Antennarius multiocellatus (Valenciennes), longlure frogfish. Sight record (GHB, EDL, SHS).
Histrio histrio (Linnaeus), sargassumfish. 1 collection, 1 specimen (ANSP).

The longlure frogfish is a sedentary denizen of shallow waters. Cleverly disguised and sitting quietly on the bottom, it ambushes its prey (fishes and crustaceans) with lightning efficiency. The longlure exhibits a wide variety of color phases, from pale to mottled to jet black. The sargassumfish is a small frogfish that has become adapted to living in free-floating sargassum algae; like its larger brethren it is an efficient predator on small fish and crustaceans.

Chaunacidae (sea toads)

Chaunax sp., sea toad. Sight record (Clark 1987).

Clark (1987) presents a photograph of a *Chaunax* taken at a depth of 792 m from a submersible; identification by GHB.

Ogcocephalidae (batfishes)

Ogcocephalus nasutus (Valenciennes), shortnose batfish. Sight record (GHB).

Batfishes are usually seen using their arm-like pectoral fins to shuffle about the bottom in very shallow water.

Gobiesocidae (clingfishes)

Acyrtops beryllinus (Hildebrand & Ginsburg), emerald clingfish. 1 collection, 1 specimen (UF).
Acyrtus artius Briggs, papillate clingfish. 16 collections, 78 specimens (UF, ANSP). Johnson & Greenfield (1983).
Acyrtus rubiginosus (Poey), red clingfish. 10 collections, 315 specimens (UF, ANSP). Johnson & Greenfield (1983).
Derilissus sp. 1 collection, 1 specimen (ANSP).
Gobiesox punctulatus (Poey), stippled clingfish. 7 collections, 18 specimens (UF, ANSP). Johnson & Greenfield (1983).
Tomicodon fasciatus Peters, barred clingfish. 10 collections, 67 specimens (UF, ANSP). Potts (1980), Johnson & Greenfield (1983).

Except for *Derilissus* sp. (represented by a single tiny specimen collected in deep water by William F. Smith-Vaniz) and the papillate clingfish, all Cayman gobiesocids are residents of nearshore shallows, usually waters of 3 m or less. The papillate clingfish is widely distributed from the shoreline to depths of at least 35 m with a peak abundance at 12–18 m. Clingfishes possess a thoracic sucking disk which allows them to adhere to rocks and other substrates; most occupy high energy shoreline habitats characterized by breaking waves and surge. The emerald clingfish is an exception to this generalization, inhabiting turtle grass beds.

Exocoetidae (flyingfishes)

Cypselurus cyanopterus (Valenciennes), margined flyingfish. 1 collection, 3 specimens (UF).
Prognichthys gibbifrons (Valenciennes), bluntnose flyingfish. 1 collection, 1 specimen (UF).

Flyingfishes are pelagic, surface-dwelling forms that are found primarily in offshore waters. Individuals of some species frequently make incursions over drop-offs, often at night. Many additional species are found farther offshore.

Hemiramphidae (halfbeaks)

Hemirhamphus sp.? Sight record (SHS).

Like flyingfishes, halfbeaks are found at the surface in offshore waters. Four species, *Hemirhamphus balao*, *Hemirhamphus brasiliensis*, *Hyporhamphus unifasciatus*, and *Euleptorhamphus velox*, are expected to occur in Cayman waters.

Belonidae (needlefishes)

Strongylura notata (Poey), redfin needlefish, 'garfish'. 6 collections, 14 specimens (UF, ANSP).
Strongylura timucu (Walbaum), timucu, 'garfish'. 4 collections, 7 specimens (UF, ANSP).
Tylosurus crocodilus crocodilus (Peron & Lesueur), houndfish, 'sawfish'. Sight record (JWR,SHS).

Needlefishes are surface carnivores that inhabit both inshore and offshore waters. In addition to the two inshore species we collected, three other primarily offshore species (*Ablennes hians*, *Platybelone argalus argalus*, *Tylosurus acus acus*) are expected to co-occur with *T.c. crocodilus*.

Cyprinodontidae (killifishes)

Cyprinodon variegatus Lacepède, sheepshead minnow. 3 collections, 5 specimens (UF).

Systematics of the *Cyprinodon variegatus* complex are badly in need of revision. In the Caymans, sheepshead minnows are confined to brackish water ditches and ponds, such as Collier Pond on Grand Cayman.

Rivulidae (rivulines)

Rivulus marmoratus Poey, mangrove rivulus. 2 collections, 4 specimens (UF, ANSP).

Confined to brackish water situations; our collections are from a roadside ditch (Grand Cayman) ditch and tidal pond (Little Cayman). Systematics of this widespread species are in need of critical review. We choose to retain use of the specific name *marmoratus* until the nomenclatural status of *ocellatus* is resolved.

Poeciliidae (livebearers)

Gambusia puncticulata puncticulata Poey, Caribbean gambusia. 32 collections, 968 specimens (UF). Fink (1971).
Gambusia xanthosoma Greenfield, Cayman gambusia. 4 collections, 15 specimens (UF). Greenfield (1983).
Limia caymanensis Rivas & Fink, Cayman limia. 15 collections, 288 specimens (UF). Rivas & Fink (1970).

These species are found in brackish water in mangrove lagoons, and in fresh water ditches and limestone depressions. The Cayman gambusia has been collected only on Grand Cayman, the Cayman limia from Grand Cayman and Cayman Brac, and the Caribbean gambusia from all three Caymanian islands.

Atherinidae (silversides)

Atherinomorus stipes (Müller & Troschal), hardhead silverside, 'loggerhead frys'. 5 collections, 17 specimens (UF). Breder (1927).
Hypoatherina harringtonensis (Goode), reef silverside, 'fine frys'. Breder (1927).

The hardhead silverside is a nearshore (less than 3 m) species. We have not collected any reef silversides, which are less common than the former in other West Indian areas.

Anomalopidae (flashlightfishes)

Kryptophanaron alfredi Silvester & Fowler, Caribbean flashlightfish. 4 collections, 6 specimens (ANSP). Colin et al. (1979), McCosker & Rosenblatt (1987).

Six specimens (all deposited at ANSP) were collected by William Smith-Vaniz, Paul Humann and Don Kinkaid at Grand Cayman in 1978. Despite recent collections, less than 20 of these remarkable fishes have been captured. Flashlightfishes use a large light organ under each eye (containing luminous bacteria) to locate prey and possibly communicate during nocturnal activities. They are secretive by day, probably living in deep water, but become active and move into shallower depths (30–36 meters) at night, especially on moonless nights.

Holocentridae (squirrelfishes)

Holocentrus adscensionis (Osbeck), squirrelfish, 'big eye squirrel'. 6 collections, 35 specimens (UF).
Holocentrus rufus (Walbaum), longspine squirrelfish, 'hardhead'. 14 collections, 41 specimens (UF, ANSP).
Myripristis jacobus Cuvier, blackbar soldierfish, 'drummer'. 4 collections, 7 specimens (UF, ANSP).
Neoniphon marianus (Cuvier), longjaw squirrelfish. 8 collections, 51 specimens (UF, ANSP).
Ostichthys trachypoma (Günther), bigeye soldierfish. 1 collection, 1 specimen (UF). Woods (1973).
Plectrypops retrospinis (Guichenot), cardinal soldierfish. 11 collections, 70 specimens (UF, ANSP).
Sargocentron coruscum (Poey), reef squirrelfish. 2 collections, 2 specimens (UF, ANSP).
Sargocentron poco (Woods), saddle squirrelfish. 2 collections, 3 specimens (UF, ANSP, FMNH). Woods (1965, 1973).
Sargocentron vexillarium (Poey), dusky squirrelfish, 'little eye squirrel'. 16 collections, 263 specimens (UF, ANSP). Potts (1980).

Squirrelfishes are generally nocturnal fishes (*Holocentrus* spp. are exceptions) that are not usually seen by divers. Possessing large eyes and sharp spines, they are characteristic reef species. While most species are most common in shallow (12 m or less) waters, some, such as the longspine squirrelfish and cardinal soldierfish, often are found in deeper waters. A longjaw squirrelfish was captured from 183 m of water on hook and line off Grand Cayman.

Aulostomidae (trumpetfishes)

Aulostomus maculatus Valenciennes, trumpetfish, 'bottom garfish'. 3 collections, 5 specimens (UF, ANSP).

The trumpetfish frequently orients itself vertically in the water column among swaying gorgonians, then darts out to consume small fishes and crustaceans. It inhabits a wide range of depths in association with reefs.

Fistulariidae (cornetfishes)

Fistularia tabacaria Linnaeus, bluespotted cornetfish. Sight record (SHS).

Cornetfishes, like the closely related trumpetfishes, are predators of fish and shrimp; however, they differ in preferring shallow water habitats, especially turtle grass beds.

Syngnathidae (pipefishes)

Anarchopterus tectus (Dawson), insular pipefish. Dawson (1982b).
Bryx dunckeri (Metzelaar), pugnose pipefish. 3 collections, 3 specimens (UF). Dawson (1982b).
Cosmocampus brachycephalus (Poey), crested pipefish. 1 collection, 1 specimen (UF). Dawson (1982b).
Cosmocampus elucens (Poey), shortfin pipefish. 1 collection, 1 specimen (UF). Dawson (1982b).
Halicampus crinitus (Jenyns), banded pipefish. 1 collection, 1 specimen (UF). Dawson (1982b).
Hippocampus reidi Ginsburg, longsnout seahorse. 1 collection, 1 specimen (UF).

Seahorses and pipefishes typically inhabit nearshore turtle grass beds, but some species, such as *H. crinitus*, are found on reefs.

Dactylopteridae (flying gurnards)

Dactylopterus volitans (Linnaeus), flying gurnard. Sight record (EDL).

Well camouflaged, but seen fairly regularly in shallow-water, mixed coral rubble-sand areas.

Scorpaenidae (scorpionfishes)

Scorpaena bergi Evermann & Marsh, goosehead scorpionfish. 1 collection, 1 specimen (UF).
Scorpaena grandicornis Cuvier, plumed scorpionfish. Sight record (GHB).
Scorpaena inermis Cuvier, mushroom scorpionfish. 3 collections, 3 specimens (UF).
Scorpaena plumieri Bloch, spotted scorpionfish. 6 collections, 8 specimens (UF, ANSP).
Scorpaenodes caribbaeus Meek & Hildebrand, reef scorpionfish. 4 collections, 8 specimens (UF, ANSP).
Scorpaenodes tredecimspinosus (Metzelaar), deepreef scorpionfish. 1 collection, 1 specimen (UF).

Named for the venomous dorsal, anal and pelvic spines that many species possess, scorpionfishes are bottom fishes that usually are extremely well camouflaged. Voracious predators, they remain motionless on the bottom until an unsuspecting prey item moves close. Cayman species tend to be found in shallow (less than 12 m) depths, but other species inhabit very deep water.

Centropomidae (snooks)

Centropomus undecimalis (Bloch), snook. Sight record (GHB, JWR).

This popular game fish is not uncommon around mangroves; it is a skilled predator that feeds on fishes and crustaceans.

Serranidae (sea basses)

Cephalopholis cruentata (Lacepède), graysby (Fig. 11.1), 'butterfish'. 11 collections, 59 specimens (UF, ANSP). Breder (1927).
Cephalopholis fulva (Linnaeus), coney, 'butterfish'. 5 collections, 7 specimens (UF, ANSP).
Epinephelus adscensionis (Osbeck), rock hind, 'hind'. Sight record (SHS).
Epinephelus guttatus (Linnaeus), red hind, 'hind'. 3 collections, 5 specimens (UF).
Epinephelus itajara (Lichtenstein), jewfish. Sight record (GHB, SHS).
Epinephelus mystacinus (Poey), misty grouper. Sight record (GHB, SHS).
Epinephelus striatus (Bloch), Nassau grouper. 2 collections, 2 specimens (UF). Colin et al. (1987).
Gonioplectrus hispanus (Cuvier), Spanish flag. 1 collection, 1 specimen (UF, ANSP).
Hypoplectrus aberrans (Poey), yellowbelly hamlet. 1 collection, 1 specimen (UF).
Hypoplectrus gummigutta (Poey), orange hamlet. Sight record (GHB).
Hypoplectrus guttavarius (Poey), shy hamlet. Sight record (GHB, SHS, DBS).
Hypoplectrus indigo (Poey), indigo hamlet. Sight record (GHB, SHS, DBS).
Hypoplectrus nigricans (Poey), black hamlet. Sight record (GHB, SHS, DBS).
Hypoplectrus puella (Cuvier), barred hamlet (Fig. 11.2). 1 collection, 1 specimen (UF).
Hypoplectrus unicolor (Walbaum), butter hamlet. 2 collections, 2 specimens (UF).
Hypoplectrus n.sp., bicolor hamlet. Sight record (WFS).
Hypoplectrus n.sp., blacktail hamlet. Sight record (EDL).
Liopropoma mowbrayi Woods & Kanazawa, cave bass. 1 collection, 2 specimens (UF).
Liopropoma rubre Poey, peppermint bass. 8 collections, 16 specimens (UF, ANSP).
Mycteroperca bonaci (Poey), black grouper, 'rockfish'. Sight record (GHB, EDL, SHS, DBS).
Mycteroperca interstitialis (Poey), yellowmouth grouper. Sight record (GHB).
Mycteroperca tigris (Valenciennes), tiger grouper, 'rockfish'. Sight record (GHB, SHS, DBS).
Mycteroperca venenosa (Linnaeus), yellowfin grouper. Sight record (SHS).
Pseudogrammus gregoryi (Breder), reef bass. 14 collections, 54 specimens (UF, ANSP).
Rypticus saponaceus (Schneider), greater soapfish, 'soapfish'. 6 collections, 16 specimens (UF, ANSP).
Rypticus subbifrenatus (Gill), spotted soapfish, 'soapfish'. 10 collections, 18 specimens (UF, ANSP).
Serranus luciopercanus Poey, walleye bass. 1 collection, 10 specimens (UF).
Serranus tabacarius (Cuvier), tobaccofish. 4 collections, 6 specimens (UF, ANSP).
Serranus tigrinus (Bloch), harlequin bass (Fig. 11.3). 6 collections, 18 specimens (UF, ANSP).

Groupers and basses are among the most obvious members of the reef community, ranging in size from about four inches (harlequin bass, Fig. 11.3) to eight feet (jewfish). Some serranids change sex, starting life as females and becoming functional males later in life. Groupers are capable of rapidly changing their color pattern; some species, such as the yellowfin grouper, have distinct shallow water and deep water color phases. Groupers are popular sport fishes that, prior to protection, fell easy prey to spearfishermen because of their curious nature. Many of the small basses, such as the hamlets (Fig. 11.2), are highly sought as aquarium fishes. Hinds, coneys, graysbys (Fig. 11.1), Nassau and black groupers are now regularly fed by dive operators. All these species, on heavily dived reefs, identify divers with food and follow them.

The Cayman Islands have traditionally supported seasonally large spawning aggregations of Nassau groupers off the eastern (upcurrent) ends of all three islands (Colin et al. 1987). Aggregations occur primarily during the full moon of January and February; during the 1960s these were reputed to have involved tens of thousands of fish. The Cayman Islands populations of Nassau grouper are potentially self-recruiting (Colin et al. 1987). Since Nassau grouper are one of the

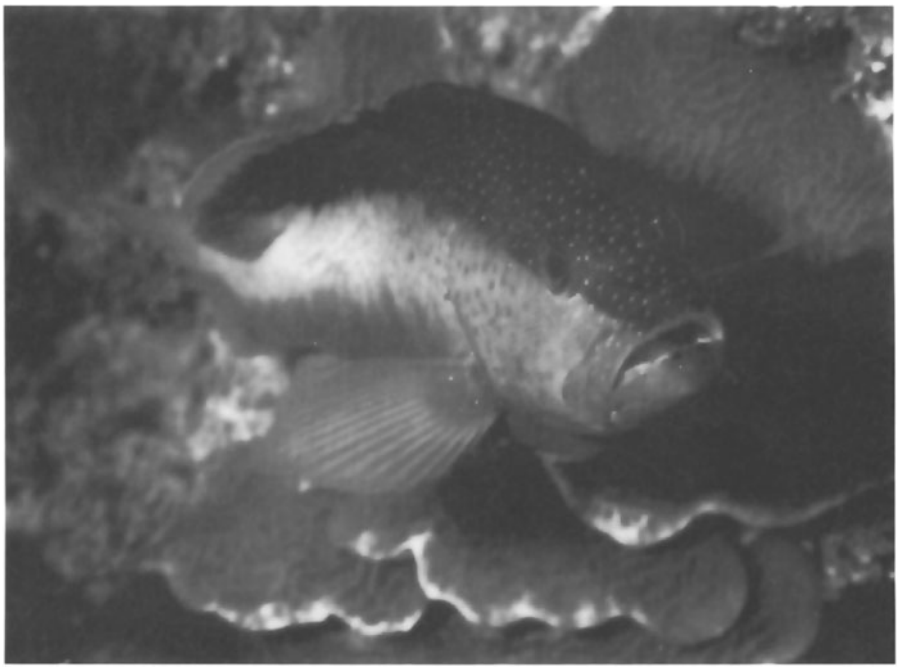

Figure 11.1. One of the small reef-dwelling groupers, the graysby, *Cephalopholis cruentata* (Lacepède) (photo: D.B. Snyder).

Figure 11.2. A barred hamlet, *Hypoplectrus puella* (Cuvier), one of nine species of the genus found in the Caymans (photo: D.B. Snyder).

Figure 11.3. The harlequin bass, *Serranus tigrinus* (Bloch), a small sea bass that frequents shallow nearshore waters (photo: D.B. Snyder).

Caribbean's most highly prized food fish, both for their flesh and for their roe, great fishing pressure was put on these aggregations by local and foreign fishermen and local stocks may have become depleted. At the present a local fishery exists during spawning season.

The mucous of soapfishes is a topical irritant and is toxic if injested; it likely serves as a deterent to predation. Soapfishes are common residents of reefs, but are seldom seen because of their secretive nature. The two *Rypticus* species tend to be more common in shallower (less than 12 m) water than the reef bass, which occurs as deep as 24 m.

Grammatidae (basslets)

Gramma loreto Poey, fairy basslet (Fig. 11.4). 15 collections, 998 specimens (UF, ANSP).
Gramma melacara Böhlke & Randall, blackcap basslet. 3 collections, 43 specimens (UF, ANSP).
Lipogramma trilineatum Randall, threeline basslet. 1 collection, 1 specimen (UF).

Basslets are small fishes that are among the most colorful and abundant creatures found on reefs and are highly sought for aquaria. *Gramma* spp. characteristically are found on the undersides of ledges, swimming upside down as they orient to the substrate. The fairy and blackcap basslets segregate themselves according to depth: the fairy basslet (Fig. 11.4) is the shallow water form (most common at 3–24 m) and the the blackcap basslet is its deepwater replacement (24 m to depths greater than 36 m). The threeline basslet is less common on reefs and prefers depths greater than 18 m.

Priacanthidae (bigeyes)

Heteropriacanthus cruentatus (Lacepède), glasseye. 4 collections, 7 specimens (UF, ANSP).
Priacanthus arenatus Cuvier, bigeye, 'drummer'. 1 collection, 1 specimen (UF).

Priacanthids are large-eyed reef dwellers that are most active at night. The bigeye tends to inhabit deeper water than the glasseye.

Apogonidae (cardinalfishes)

Apogon binotatus (Poey), barred cardinalfish. 9 collections, 31 specimens (UF, ANSP). Breder (1927).
Apogon lachneri Böhlke, whitestar cardinalfish. 8 collections, 131 specimens (UF, ANSP).
Apogon maculatus (Poey), flamefish. 22 collections, 116 specimens (UF, ANSP). Breder (1927).
Apogon phenax Böhlke & Randall, mimic cardinalfish. 6 collections, 10 specimens (UF, ANSP). Böhlke & Randall (1968).
Apogon planifrons Longley & Hildebrand, pale cardinalfish.

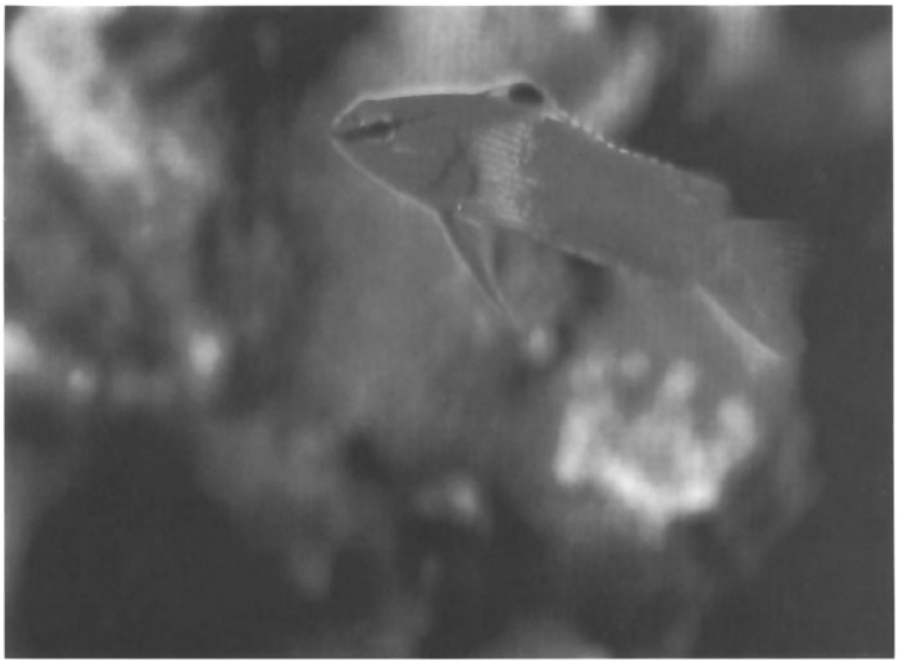

Figure 11.4. Perhaps Cayman's most attractive fish, the fairy basslet, *Gramma loreto* Poey, is extremely common under reef ledges (photo: D.B. Snyder).

2 collections, 2 specimens (UF, ANSP). Böhlke & Randall (1968).
Apogon pseudomaculatus Longley, twospot cardinalfish. 1 collection, 1 specimen (UF).
Apogon quadrisquamatus Longley, sawcheek cardinalfish. 4 collections, 16 specimens (UF, ANSP).
Apogon robinsi Böhlke & Randall, roughlip cardinalfish. 2 collections, 4 specimens (UF, ANSP). Böhlke & Randall (1968).
Apogon townsendi (Breder), belted cardinalfish. 12 collections, 204 specimens (UF, ANSP).
Astrapogon puncticulatus (Poey), blackfin cardinalfish. 2 collections, 3 specimens (UF).
Astrapogon stellatus (Cope), conchfish. 2 collections, 5 specimens (UF).
Phaeoptyx conklini (Silvester), freckled cardinalfish (Fig. 11.5). 13 collections, 376 specimens (UF, ANSP). Breder (1927).
Phaeoptyx pigmentaria (Poey), dusky cardinalfish. 14 collections, 145 specimens (UF, ANSP).

Cardinalfishes are one of the most diverse and abundant groups of fishes in the Caymans, but most people are not aware of them because of their small size and secretive diurnal habits. They remain hidden in crevices and caves by day, but at night emerge and hover above the bottom (Fig. 11.5). Most species are red or pink with distinctive dark markings; males of many species orally incubate eggs. All are carnivorous, feeding on crustaceans and small fishes. One species, the conchfish, lives symbiotically in the mantle cavity of the queen conch, *Strombus gigas*. Most species show definite depth preferences, with the greatest familial abundance being found on deep (24–36 m) reefs.

Malacanthidae (tilefishes)

Malacanthus plumieri (Bloch), sand tilefish, 'whitey'. 4 collections, 6 specimens (UF, ANSP).

This species lives in burrows constructed in sand near reefs or turtle grass in moderately shallow depths (5–15 m). Burrows often are rather complex with the entrances marked by mounds of sand and coral rubble; frightened *Malacanthus* dart into their burrows head-first.

Echeneidae (remoras)

Echeneis naucrates Linnaeus, sharksucker. Sight record (GHB, SHS).

Remoras possess a distinctive sucking disc on the top of the head, a modification of the first dorsal fin. The sharksucker, unlike others of its kin, spends at least portions of its adult time free swimming rather than more or less continuously 'riding' attached to a host fish or turtle.

Figure 11.5. The freckled cardinalfish, *Phaeoptyx conklini* (Silvester), is the most commonly seen apogonid at night (photo: D.B. Snyder).

Carangidae (jacks)

Alectis ciliaris (Bloch), African pompano, 'silver jack'. Sight record (JWR, SHS).
Caranx bartholomaei (Cuvier), yellow jack. 1 collection, 1 specimen (UF).
Caranx crysos (Mitchill), blue runner. 1 collection, 1 specimen (ANSP).
Caranx hippos (Linnaeus), crevalle jack. Sight record (EDL).
Caranx latus Agassiz, horse-eye jack, 'horse-eye crevalle'. 2 collections, 3 specimens (UF).
Caranx lugubris Poey, black jack. Sight record (JWR, SHS).
Caranx ruber (Bloch), bar jack, 3 collections, 4 specimens (UF, ANSP).
Decapterus sp., scad. Sight record (DBS).
Elagatis bipinnulata (Quoy & Gaimard), rainbow runner, 'ocean yellowtail'. Sight record (GHB, JWR, SHS).
Selar crumenophthalmus (Bloch), bigeye scad, 'goggle eye'. 1 collection, 1 specimen (UF).
Selene vomer (Linnaeus), lookdown. Sight record (SHS).
Seriola dumerili (Risso), greater amberjack. Sight record (JWR, SHS).
Trachinotus falcatus (Linnaeus), permit. Sight record (EDL, JWR, SHS).
Trachinotus goodei Jordan & Evermann, palometa. Sight record (JWR, SHS).

Jacks are found in all Cayman habitats, from nearshore shallows to deep reefs and offshore blue-waters. Some, such as the permit, horse-eye jack and greater amberjack, are fine game fishes. The scads are smaller species that are popular Caymanian food fishes and sought as bait by anglers. All are carnivores that eat fishes. Horse-eye jacks, like many other Cayman fishes, are frequently hand-fed by divers.

Coryphaenidae (dolphins)

Coryphaena hippurus Linnaeus, dolphin. Sight record (GHB, JWR).

Dolphins are primarily open water fishes, although they occasionally venture over the deep reef. Usually found near the surface, they associate with floating sargassum and flotsam. Dolphin are excellent eating and worthy gamefishes.

Lutjanidae (snappers)

Apsilus dentatus Guichenot, black snapper. 3 collections, 11 specimens (UF).
Etelis oculatus (Valenciennes), queen snapper. Sight record (GHB, EDL, SHS).
Lutjanus analis (Cuvier), mutton snapper. Sight record (GHB, DBS).
Lutjanus apodus (Walbaum), schoolmaster (Fig. 11.6), 'mangrove snapper', 'mangra'. 9 collections, 47 specimens (UF). Potts (1980).

Lutjanus buccanella (Cuvier), blackfin snapper. 3 collections, 7 specimens (UF).
Lutjanus cyanopterus (Cuvier), cubera snapper. Sight record (GHB, DBS).
Lutjanus griseus (Linnaeus), gray snapper, 'lagoon snapper'. 4 collections, 7 specimens (UF, ANSP).
Lutjanus jocu (Schneider), dog snapper, 'dogteeth snapper'. 2 collections, 6 specimens (UF).
Lutjanus mahogoni (Cuvier), mahogany snapper, 'pot snapper'. 2 collection, 4 specimens (UF, ANSP).
Lutjanus synagris (Linnaeus), lane snapper. 2 collections, 2 specimens (UF).
Lutjanus vivanus (Cuvier), silk snapper, 'deep water snapper'. 2 collections, 3 specimens (UF).
Ocyurus chrysurus (Bloch), yellowtail snapper (Fig. 11.7). 5 collections, 6 specimens (UF, ANSP).
Pristipomoides macrophthalmus (Müller & Troschel), cardinal snapper. 3 collections, 12 specimens (UF).

Snappers are carnivorous fishes of ecological and economic importance. They are predators of fish and crustaceans and are highly regarded food fishes sought by sport and commercial fishermen. Found in both shallow and deep waters, on reefs, flats and around mangroves, most snappers are easily recognized by their head profiles and prominent teeth (Fig. 11.6). Deepwater species such as black, queen, silk, blackfin and cardinal snappers are of commercial interest in the Caymans, while shallow water species are eagerly sought by sportsfishermen. Divers have apparently influenced local population sizes of the yellowtail snapper (Fig. 11.7) in recent years. Frequently dived reefs (where the snappers are regularly hand fed by divers) appear to support exceptionally large populations of these fishes, subjectively estimated to be 10 times the number found on comparable reefs where divers do not feed the fish.

Gerreidae (mojarras)

Eucinostomus argenteus Baird, spotfin mojarra. 4 collections, 12 specimens (UF, ANSP). Potts (1980).
Eucinostomus cf. *gula*. 1 collection, 1 specimen (UF).
Eucinostomus havana (Nichols), bigeye mojarra. 8 collections, 28 specimens (UF, ANSP).
Eucinostomus jonesii (Günther), slender mojarra. 2 collections, 3 specimens (UF, ANSP).
Gerres cinereus (Walbaum), yellowfin mojarra. 5 collections, 12 specimens (UF, ANSP). Potts (1980).

These silvery fishes are always found in very shallow water over sand bottoms, most frequently in surge or surf zones, sometimes in grass beds. Their protrusible mouths are well designed for foraging in the substrate for small invertebrates. *Eucinostomus* spp. are usually found in schools.

Haemulidae (grunts)

Anisotremus surinamensis (Bloch), black margate, 'sweet lips'. Sight record (GHB, SHS).
Anisotremus virginicus (Linnaeus), porkfish. Sight record (GHB, EDL, SHS).
Haemulon album Cuvier, margate. 1 collection, 3 specimens (UF, ANSP).
Haemulon aurolineatum Cuvier, tomtate. 1 collection, 1 specimen (ANSP).
Haemulon carbonarium Poey, caesar grunt. Sight record (SHS, DBS).
Haemulon chrysargyreum Günther, smallmouth grunt, 'croaker', 'witch grunt'. Breder (1927).
Haemulon flavolineatum (Desmarest), French grunt, 'red grunt' (Fig. 11.8). 8 collections, 82 specimens (UF, ANSP).
Haemulon parra (Desmarest), sailors choice. 1 collection, 2 specimens (UF).
Haemulon plumieri (Lacepède), white grunt. 1 collection, 1 specimen (UF).
Haemulon sciurus (Shaw), bluestriped grunt, 'yellow grunt'. 4 collections, 9 specimens (UF, ANSP).

Grunts are probably the most well recognized family of tropical marine fishes (Fig. 11.8). Their abundance and schooling nature on reefs, flats and around mangroves make them favorites of divers and anglers alike. Most species show a preference for shallow (less than 18 m) water. Grunts usually school by day on reefs and spread out onto the flats at night to feed.

Sparidae (porgies)

Calamus bajonado (Schneider), jolthead porgy, 'sea egg porgy'. 1 collection, 1 specimen (UF).
Calamus calamus (Valenciennes), saucereye porgy, 'yellowhead porgy'. Sight record (SHS).

Additional species of porgies certainly occur in the Caymans, especially in grass beds, a favorite habitat for the group. The jolthead porgy inhabits shallow water reefs and deep tidal creeks.

Sciaenidae (drums)

Equetus lanceolatus (Linnaeus), jackknife fish. Sight record (SHS).
Equetus punctatus (Schneider), spotted drum. 3 collections, 32 specimens (UF).
Odontoscion dentex (Cuvier), reef croaker. Sight record (GHB, EDL).
Pareques acuminatus (Schneider), high-hat. Sight record (SHS).

As a group, sciaenids tend to be found in continental situations over soft, often mud, bottoms rather than on reefs.

Figure 11.6. Schools of snappers, such as these schoolmasters, *Lutjanus apodus* (Walbaum), and grunts frequent 'artificial reefs' like the wreck of the *Balboa* (photo: D.B. Snyder).

Figure 11.7. The yellowtail snapper, *Ocyurus chrysurus* (Bloch), is extremely common on frequently-dived reefs (photo: D.B. Snyder).

Figure 11.8. The most abundant Cayman grunt is the French grunt, *Haemulon flavolineatum* (Desmarest), usually found in schools (photo: D.B. Snyder).

Thus, this speciose family is poorly represented in the Caymans and Antilles. *Equetus* and *Pareques* frequent shallow water (usually less than 12 m) patch reefs, and are most often seen under ledges or overhangs. Young of these species are striking in appearance; small jackknife fishes are popular aquarium fishes.

Mullidae (goatfishes)

Mulloidichthys martinicus (Cuvier), yellow goatfish. 6 collections, 6 specimens (UF, ANSP).
Pseudupeneus maculatus (Bloch), spotted goatfish. 1 collection, 1 specimen (UF). Breder (1927).

Long barbels on the chin readily identify goatfishes. Usually found over sand bottoms in depths less than 18 m, goatfishes use their barbels to locate food items, invertebrates on or in the substrate.

Pempheridae (sweepers)

Pempheris schomburgki Müller & Troschel, glassy sweeper. Sight record (SHS).

The glassy sweeper is a shallow water (usually less than 15 m) schooling species that characteristically is seen during the day in caves, under ledges and inside coral head openings.

Kyphosidae (chubs)

Kyphosus incisor (Cuvier), yellow chub, 'chub'. 1 collection, 1 specimen (UF).
Kyphosus sectatrix (Linnaeus), Bermuda chub, 'chub'. 1 collection, 1 specimen (UF).

Chubs are herbivorous fishes that nevertheless can be caught on hook and line using cut bait. The young are frequently captured in floating sargassum and adults are usually found on reefs, grass beds and flats in shallow (less than 12 m) water.

Chaetodontidae (butterflyfishes)

Chaetodon aculeatus (Poey), longsnouted butterflyfish. 2 collections, 3 specimens (UF, ANSP).
Chaetodon capistratus Linnaeus, foureye butterflyfish. 12 collections, 13 specimens (UF, ANSP)
Chaetodon ocellatus Bloch, spotfin butterflyfish. 1 collection, 1 specimen (ANSP).
Chaetodon sedentarius Poey, reef butterflyfish. 1 collection, 1 specimen (UF).

Chaetodon striatus Linnaeus, banded butterflyfish. 3 collections, 3 specimens (UF, ANSP).

Few reef fishes receive as much attention as the butterflyfishes and their near-kin, the angelfishes. Usually seen solitarily, occasionally in pairs, their deeply compressed bodies and beautiful coloration make these species conspicuous residents of patch reefs and reefs. The longsnouted butterflyfish normally resides in deep water (24 m or more); other species are most common in shallower depths.

Pomacanthidae (angelfishes)

Centropyge argi Woods & Kanazawa, cherubfish. Sight record (GHB).
Holacanthus ciliaris (Linnaeus), queen angelfish. 2 collections, 2 specimens (UF, ANSP).
Holacanthus tricolor (Bloch), rock beauty. 10 collections, 20 specimens (UF, ANSP).
Pomacanthus arcuatus (Linnaeus), gray angelfish, 'sweet lips'. 1 collection, 1 specimen (ANSP).
Pomacanthus paru (Bloch), French angelfish, 'prong lar'. 1 collection, 6 specimens (UF). Potts (1980).

Like the butterflyfishes, angelfishes are spectacular members of the reef community. They usually are quite tame and are favorite photo subjects of divers. The young are particularly beautiful and are regularly found in the aquarium trade. Both groups are omnivorous, eating plant material, sponges and small invertebrates. The cherubfish is usually found in deep water (30 m or more), but also is seen in very shallow depths. Both French and gray angelfishes are regularly fed by divers.

Pomacentridae (damselfishes)

Abudefduf saxatilis (Linnaeus), sergeant major, 'cock pilot', 'pic pic'. 15 collections, 93 specimens (UF, ANSP). Potts (1980).
Abudefduf taurus (Müller & Troschel), night sergeant, 'Spanish cock pilot'. 3 collections, 3 specimens (UF, ANSP). Potts (1980).
Chromis cyaneus (Poey), blue chromis. 12 collections, 163 specimens (UF, ANSP).
Chromis multilineatus (Guichenot), brown chromis. 4 collections, 11 specimens (UF, ANSP).
Microspathodon chrysurus (Cuvier & Valenciennes), yellowtail damselfish. 10 collections, 33 specimens (UF, ANSP).
Stegastes diencaeus (Jordan & Rutter), longfin damselfish. 5 collections, 18 specimens (ANSP).
Stegastes dorsopunicans (Poey), dusky damselfish. 7 collections, 87 specimens (UF, ANSP).
Stegastes leucostictus (Müller & Troschel), beaugregory. 15 collections, 134 specimens (UF, ANSP). Potts (1980).
Stegastes mellis (Emery & Burgess), honey damselfish. 4 collections, 10 specimens (UF).
Stegastes partitus (Poey), bicolor damselfish. 18 collections, 102 specimens (UF, ANSP).
Stegastes planifrons (Cuvier), threespot damselfish. 15 collections, 79 specimens (UF, ANSP).
Stegastes variabilis (Castelnau), cocoa damselfish. 9 collections, 41 specimens (UF, ANSP).

Damselfishes are prominent members of the reef ichthyofauna. Most species orient closely to the substrate, usually coral or rock, and are highly territorial; the three *Chromis* species differ in living higher up in the water column where they feed on plankton. Damselfishes are mostly omnivorous, although some (e.g., *Abudefduf*) are herbivores. *Chromis* species generally replace other damselfishes at about 18 m depth.

The sergeant major, along with the yellowtail snapper, was one of the first fishes to be regularly fed by divers. Like the snapper, the sergeant major has become extremely abundant on reefs regularly visited by divers. This is particularly interesting, since sergeant majors are generally believed to have a small home range. Subjective estimates place their numbers at 10 times that of comparable undived reefs.

Cirrhitidae (hawkfishes)

Amblycirrhitus pinos (Mowbray), redspotted hawkfish. 6 collections, 10 specimens (UF, ANSP).

Small and colorful, the redspotted hawkfish inhabits coral and rubble areas punctuated with holes and crevices. It has a wide depth range, from nearshore shallows to at least 45 m.

Mugilidae (mullets)

Mugil cephalus Linnaeus, striped mullet. 1 collection, 1 specimen (UF).
Mugil curema Valenciennes, white mullet. 3 collections, 6 specimens (UF).
Mugil gyrans (Jordan & Gilbert), fantail mullet. 1 collection, 39 specimens (UF).

Mullets are schooling herbivores that frequent nearshore shallows over sand bottoms; they are especially common in brackish water situations. Mullet ingest algae and detritus from the surface of sand or mud substrates, resuspending sediment in the process.

Sphyraenidae (barracudas)

Sphyraena barracuda (Walbaum), great barracuda, 'barra'. 3 collections, 5 specimens (UF).
Sphyraena sp., sennet. Sight record (DBS).

Rivaled only by sharks in lore as efficient predators, barracudas are highly visible residents of many habitats. Young of the great barracuda are found in nearshore areas, adults frequent deeper waters. Brash and curious, the great barracuda's reputation as an attacker of man is overblown, but not without foundation. Like many other Caymanian fishes, barracuda are also regularly fed by dive operators. Several serious injuries have been incurred, however, and the authors do not recommend feeding these potentially dangerous fish.

Labridae (wrasses)

Bodianus pulchellus (Poey), spotfin hogfish. Sight record (EDL).
Bodianus rufus (Linnaeus), Spanish hogfish, 'Spanish fish'. 1 collection, 1 specimen (UF).
Clepticus parrae (Bloch & Schneider), creole wrasse, 'ocean fish'. 9 collections, 13 specimens (UF).
Decodon puellaris (Poey), red hogfish. 1 collection, 2 specimens (UF).
Doratonotus megalepis Günther, dwarf wrasse. 4 collections, 6 specimens (UF, ANSP).
Halichoeres bivittatus (Bloch), slippery dick. 11 collections, 50 specimens (UF, ANSP).
Halichoeres garnoti (Valenciennes), yellowhead wrasse. 8 collections, 31 specimens (UF, ANSP).
Halichoeres maculipinna (Müller & Troschel), clown wrasse. 5 collections, 11 specimens (UF, ANSP).
Halichoeres radiatus (Linnaeus), puddingwife. 2 collections, 2 specimens (UF).
Hemipteronotus splendens (Castelnau), green razorfish. 1 collection, 1 specimen (UF).
Lachnolaimus maximus (Walbaum), hogfish, 'blackhead hogfish' (adult males), 'English hogfish' (females and immature males). Sight record (GHB, DBS).
Thalassoma bifasciatum (Bloch), bluehead. 20 collections, 256 specimens (UF, ANSP). Potts (1980).

Wrasses exhibit a wide variety of colors, shapes and sizes and occur in many different habitats. They are gregarious carnivores by day, sedentary (often buried in the sand) by night. Most species are small, pencil-shaped, and abundant on reefs. Others are found in different niches, e.g., grass beds (*Doratonotus*), up in the water column (*Clepticus*), in sand (*Hemipteronotus*). Hogfishes are the largest species; *Lachnolaimus* is a highly esteemed food fish but prone to overfishing by spearfishing because of its trusting ways.

Scaridae (parrotfishes)

Cryptotomus roseus Cope, bluelip parrotfish. Sight record (GHB, EDL).
Scarus coelestinus Valenciennes, midnight parrotfish, 'grog', 'tumper'. 1 collection, 1 specimen (UF).
Scarus coeruleus (Bloch), blue parrotfish, 'blue tumper'. 1 collection, 3 specimens (UF).
Scarus croicensis Bloch, striped parrotfish, 'white teeter' (female), 'squab' (male). 3 collections, 3 specimens (UF, ANSP).
Scarus guacamaia Cuvier, rainbow parrotfish, 'gillumbow'. 2 collections, 11 specimens (UF).
Scarus taeniopterus Desmarest, princess parrotfish, 'white teeter' (female), 'blueteeter' or 'saleye teeter' (male). 5 collections, 6 specimens (UF, ANSP).
Scarus vetula Schneider, queen parrotfish. Sight record (GHB, EDL, SS, DBS).
Sparisoma aurofrenatum (Valenciennes), redband parrotfish, 'wonkey'. 4 collections, 4 specimens (UF, ANSP).
Sparisoma chrysopterum (Bloch & Schneider), redtail parrotfish. 4 collections, 7 specimens (UF).
Sparisoma radians (Valenciennes), bucktooth parrotfish. 4 collections, 9 specimens (UF, ANSP).
Sparisoma rubripinne (Valenciennes), redfin parrotfish. 6 collections, 33 specimens (UF, ANSP).
Sparisoma viride (Bonnaterre), stoplight parrotfish, 'redbelly squab' (female), 'wonkey squab' (male) (Fig. 11.9). 8 collections, 15 specimens (UF, ANSP).

Instantly recognizable because of their distinctive beak-like fused teeth and spectacular color (Fig. 11.9), parrotfishes are shallow (less than 18 m) water residents of reef and rubble. They are diurnally active herbivores that play an active role in bioturbation of the reef. Some species secrete a mucous 'cocoon' around themselves while resting at night. Sexual dimorphism and ontogenetic color changes are the rule in this group.

Opistognathidae (jawfishes)

Opistognathus maxillosus (Poey), mottled jawfish. 5 collections, 14 specimens (UF, ANSP).

Jawfishes are appropriately named, for their jaws are indeed large. Males of some species incubate eggs in the mouth, as in apogonids. Jawfishes build elaborate burrows lined with small coralline rocks and shells and enter tail-first. They are carnivores and inhabit a wide range of depths on sand bottoms.

Tripterygiidae (triplefins)

Enneanectes altivelis Rosenblatt, lofty triplefin. 11 collections, 167 specimens (UF, ANSP).
Enneanectes atrorus Rosenblatt, blackedge triplefin. 9 collections, 58 specimens (UF, ANSP).
Enneanectes boehlkei Rosenblatt, roughhead triplefin. 12 collections, 148 specimens (UF, ANSP).
Enneanectes jordani (Evermann & Marsh), mimic goby. 1 collection, 1 specimen (ANSP).
Enneanectes pectoralis (Fowler), redeye triplefin. 6 collections, 29 specimens (UF, ANSP).

Common on rubble, patch reefs and reefs, triplefins are not

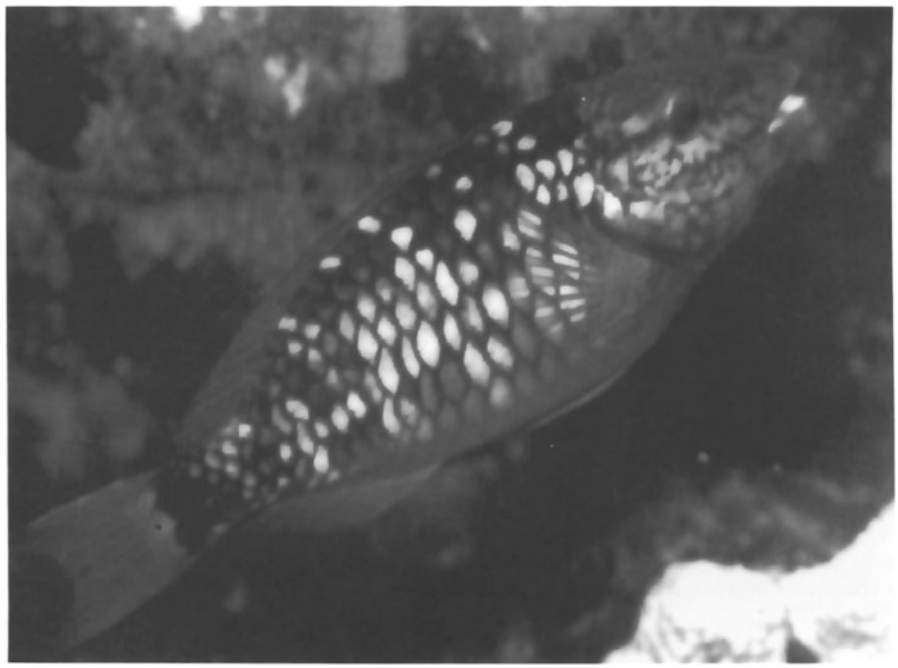

Figure 11.9. An adult female stoplight parrotfish, *Sparisoma viride* (Bonnaterre), one of the most distinctive Cayman parrotfishes (photo: D.B. Snyder).

readily seen because of their small size. There is depth segregation among the above species with roughheads and redeyes most abundant in nearshore (less than 3 m) waters, the lofty in 3–12 m, and blackedges in 12–30 m depths.

Dactyloscopidae (sand stargazers)

Dactyloscopus tridigitatus Gill, sand stargazer. 2 collections, 2 specimens (UF). Dawson (1982a).
Gillelus uranidea Böhlke, warteye stargazer. 5 collections, 13 specimens (UF, ANSP). Dawson (1982a).
Platygillellus rubrocinctus (Longley) saddle stargazer. 3 collections, 5 specimens (UF, ANSP). Dawson (1982a).

Sand stargazers are another group of obligate sand-bottom fishes of shallow (less than 9 m) waters. Small and blenny-like, sand stargazers bury in the sand and surprise their prey. Males of some species carry eggs under their modified pectoral fins.

Labrisomidae (scaled blennies)

Labrisomus bucciferus (Poey), puffcheek blenny. 11 collections, 100 specimens (UF, ANSP). Springer (1958)
Labrisomus gobio (Valenciennes), palehead blenny. 11 collections, 357 specimens (UF, ANSP).
Labrisomus guppyi (Norman), mimic blenny. 11 collections, 185 specimens (UF, ANSP).
Labrisomus haitiensis Beebe & Tee-Van, longfin blenny. 4 collections, 18 specimens (UF, ANSP).
Labrisomus nigricinctus Howell Rivero, spotcheek blenny. 2 collections, 3 specimens (UF, ANSP).
Labrisomus nuchipinnis (Quoy & Gaimard), hairy blenny. 1 collection, 1 specimen (UF).
Malacoctenus aurolineatus Smith, goldline blenny. 8 collections, 153 specimens (UF, ANSP).
Malacoctenus boehlkei Springer, diamond blenny. 4 collections, 4 specimens (UF, ANSP).
Malacoctenus erdmani Smith, imitator blenny. 6 collection, 35 specimens (UF, ANSP).
Malacoctenus gilli (Steindachner), dusky blenny. 7 collections, 39 specimens (UF, ANSP). Springer (1958).
Malacoctenus macropus (Poey), rosy blenny. 17 collections, 248 specimens (UF, ANSP). Springer (1958).
Malacoctenus triangulatus Springer, saddled blenny. 15 collections, 310 specimens (UF, ANSP). Springer (1958), Springer & Goman (1975).
Malacoctenus versicolor (Poey), barfin blenny. 1 collection, 2 specimens (UF).
Paraclinus cingulatus (Evermann & Marsh), coral blenny. 1 collection, 1 specimen (ANSP).
Paraclinus fasciatus (Steindachner), banded blenny. Sight record (GHB, EDL).
Paraclinus nigripinnis (Steindachner), blackfin blenny. 8 collections, 19 specimens (UF, ANSP).
Starksia lepicoelia Böhlke & Springer, blackcheek blenny. 10 collections, 49 specimens (UF, ANSP).

Starksia nanodes Böhlke & Springer, dwarf blenny. 13 collections, 276 specimens (UF, ANSP).
Starksia y-lineata Gilbert, Y-lined blenny. 9 collections, 77 specimens (UF, ANSP). Gilbert (1965).
Stathmonotus gymnodermis Springer, naked blenny. 3 collections, 4 specimens (UF, ANSP).
Stathmonotus stahlitekla (Nichols), eelgrass blenny. 2 collections, 2 specimens (UF, ANSP).

Scaled blennies dominate the nearshore (less than 3 m) ichthyofauna. Abundant and obvious, labrisomids frequent nearly all available habitats, including limestone 'ironshore' areas, grass beds, patch reefs, and tidepools. Some members of the genus *Starksia* differ from their relatives by inhabiting deeper water reef environments. All are predators of small invertebrates.

Chaenopsidae (flag blennies)

Acanthemblemaria aspera (Longley), roughhead blenny. 10 collections, 161 specimens (UF, ANSP). Smith-Vaniz & Palacio (1974).
Acanthemblemaria maria Böhlke, secretary blenny. 5 collections, 77 specimens (UF, ANSP). Smith-Vaniz & Palacio (1974).
Acanthemblemaria spinosa Metzelaar, spinyhead blenny. 7 collections, 28 specimens (UF, ANSP). Smith-Vaniz & Palacio (1974).
Chaenopsis limbaughi Robins & Randall, yellowface pikeblenny. 6 collections, 13 specimens (UF, ANSP). Robins & Randall (1965).
Coralliozetus cardonae Evermann & Marsh, twinhorn blenny. 1 collection, 1 specimen (UF).
Emblemaria pandionis Evermann & Marsh, sailfin blenny. 1 collection, 1 specimen (UF).
Emblemariopsis bahamensis Stephens, blackhead blenny. 6 collections, 11 specimens (UF, ANSP). Stephens (1970).
Emblemariopsis bottomei Stephens. 1 collection, 1 specimen (ANSP).
Emblemariopsis diaphana Longley. 5 collections, 27 specimens (ANSP).
Emblemariopsis leptocirris Stephens, fine blenny. 8 collections, 43 specimens (UF). Stephens (1970).
Emblemariopsis occidentalis Stephens, western blenny. 2 collections, 4 specimens (UF). Stephens (1970).
Emblemariopsis signifera (Ginsburg), highfin blenny. 1 collection, 9 specimens (UF). Stephens (1970).
Lucayablennius zingaro (Böhlke), arrow blenny. 9 collections, 50 specimens (UF, ANSP). Robins & Randall (1965).

If flag blennies achieved a larger size they would be highly sought as aquarium fishes because of their interesting sexual dimorphism and behavior. Most species are extremely small (about an inch) and identification is often difficult. Chaenopsids frequent a wide range of depths and habitats, but are always found near hiding places in holes, corals or sponges. One species, the arrow blenny, is pike-shaped, suggesting a mini-predator lifestyle.

Blenniidae (combtooth blennies)

Entomacrodus nigricans Gill, pearl blenny. 15 collections, 396 specimens (UF, ANSP).
Hypleurochilus springeri Randall, orangespotted blennny. 3 collections, 5 specimens (UF, ANSP). Randall (1966).
Lupinoblennius sp. 1 collection, 1 specimen (UF).
Ophioblennius atlanticus (Valenciennes), redlip blenny. 10 collections, 91 specimens (UF, ANSP).
Scartella cristata (Linnaeus), molly miller. 2 collections, 3 specimens (UF, ANSP).

Purely shallow water forms, combtooth blennies share the same habitats occupied by scaled blennies. Some are carnivorous, others herbivorous. The pearl and redlip blennies are often extremely abundant on patch reefs and in tidepools.

Callionymidae (dragonets)

Paradiplogrammus bairdi (Jordan), lancer dragonet. 6 collections, 7 specimens (UF).

Brightly colored and exhibiting sexual dimorphism, dragonets are found on or near sand in reef, patch reef, or coral rubble habitats over a range of depths.

Eleotridae (sleepers)

Eleotris pisonis (Gmelin), spinycheek sleeper. 2 collections, 2 specimens (UF).
Erotelis smaragdus (Valenciennes), emerald sleeper. 5 collections, 23 specimens (UF).

As a group, sleepers tend to inhabit brackish waters more frequently than other gobies, but Cayman species frequent fully saline waters as well.

Gobiidae (gobies)

Bathygobius curacao (Metzelaar), notchtongue goby. 2 collections, 6 specimens (UF).
Bathygobius mystacium Ginsburg, island frillfin. 5 collections, 35 specimens (UF).
Bathygobius soporator (Valenciennes), frillfin goby. 12 collections, 204 specimens (UF, ANSP). Potts (1980).
Chriolepis fisheri Herre, translucent goby. 1 collection, 2 specimens (UF).
Chriolepis n.sp. 6 collections, 16 specimens (UF).

Coryphopterus alloides Böhlke & Robins, barfin goby. 1 collection, 1 specimen (UF).
Coryphopterus dicrus Böhlke & Robins, colon goby. 2 collections, 2 specimens: (UF, ANSP).
Coryphopterus eidolon Böhlke & Robins, pallid goby. 11 collections, 80 specimens (UF, ANSP).
Coryphopterus glaucofraenum Gill, bridled goby. 14 collections, 174 specimens (UF, ANSP).
Coryphopterus hyalinus Böhlke & Robins, glass goby. 10 collections, 390 specimens (UF, ANSP).
Coryphopterus lipernes Böhlke & Robins, peppermint goby. 2 collections, 4 specimens (UF).
Coryphopterus personatus (Jordan & Thompson), masked goby. 9 collections, 22 specimens (UF, ANSP).
Coryphopterus thrix Böhlke & Robins, bartail goby. 3 collections, 3 specimens (UF, ANSP).
Ginsburgellus novemlineatus (Fowler), ninelined goby. 1 collection, 3 specimens (UF, ANSP). Böhlke & Robins (1968).
Gnatholepis thompsoni Jordan, goldspot goby. 22 collections, 172 specimens (UF, ANSP).
Gobionellus boleosoma (Jordan & Gilbert), darter goby. 1 collection, 3 specimens (UF).
Gobionellus saepepallens Gilbert & Randall, dash goby. 3 collections, 55 specimens (UF, ANSP). Gilbert & Randall (1968).
Gobiosoma (*Tigrigobius*) *dilepis* (Robins & Böhlke), orangeside goby. 9 collections, 70 specimens (UF, ANSP). Böhlke & Robins (1968).
Gobiosoma (*Elacatinus*) *evelynae* Böhlke & Robins, sharknose goby. 2 collections, 5 specimens (UF).
Gobiosoma (*Tigrigobius*) *gemmatum* (Ginsburg), frecklefin goby. 4 collections, 12 specimens (UF, ANSP). Böhlke & Robins (1968).
Gobiosoma (*Elacatinus*) *genie* Böhlke & Robins, cleaning goby (Fig. 11.10). 7 collections, 14 specimens (UF, ANSP). Böhlke & Robins (1968).
Gobiosoma (*Elacatinus*) *horsti* Metzelaar, yellowline goby. 3 collections, 12 specimens (UF, ANSP). Böhlke & Robins (1968).
Gobiosoma (*Elacatinus*) *louisae* Böhlke & Robins, spotlight goby. 1 collection, 1 specimen (ANSP). Böhlke & Robins (1968).
Gobiosoma (*Tigrigobius*) *multifasciatum* Steindachner, greenband goby. 4 collections, 21 specimens (UF, ANSP). Böhlke & Robins (1968).
Gobiosoma (*Tigrigobius*) *pallens* (Ginsburg), semiscaled goby. 5 collections, 50 specimens (UF, ANSP). Böhlke & Robins (1968).
Gobiosoma cf. *spes*. 1 collection, 1 specimen (UF).
Lophogobius cyprinoides (Pallas), crested goby. 1 collection, 1 specimen (UF).
Lythrypnus elasson Böhlke & Robins, dwarf goby. 13 collections, 497 specimens (UF, ANSP).
Lythrypnus heterochroma Ginsburg, diphasic goby. 10 collections, 506 specimens (UF, ANSP).
Lythrypnus nesiotes Böhlke & Robins, island goby. 1 collection, 1 specimen (UF).
Lythrypnus okapia Robins & Böhlke, okapi goby. 2 collection, 3 specimens (UF, ANSP).
Lythrypnus spilus Böhlke & Robins, bluegold goby. 8 collections, 142 specimens (UF, ANSP).
Priolepis hipoliti (Metzelaar), rusty goby. 22 collections, 729 specimens (UF, ANSP).
Priolepis n.spp. 9 collections, 68 specimens (UF).
Psilotris alepis Ginsburg, scaleless goby. 1 collection, 2 specimens (UF, ANSP).
Psilotris batrachoides Böhlke, toadfish goby. 5 collections, 8 specimens (UF, ANSP).
Risor ruber (Rosén), tusked goby. 11 collections, 80 specimens (UF, ANSP, UMMZ). Böhlke & Robins (1968).

The most speciose family in Cayman waters, gobies are small fishes that have filled a variety of niches. Gobies are extremely abundant, but most species are unencountered except when poisoned with an ichthyocide such as rotenone. Most western Atlantic reef species have only been discovered within the last 50 years or so, and more await discovery. Many species live in or on sponges; the neon gobies, *Gobiosoma* (*Elacatinus*), are cleaners, i.e., pickers of parasites off other species of fishes, that advertise their services by sitting at 'cleaning stations' on brain corals or sponges (Fig. 11.10). Gobies inhabit all depths, from tide pools to the deepest reefs. *Coryphopterus glaucofraenum* is considered a senior synonym of *C. tortugae* on the advise of William F. Smith-Vaniz.

Acanthuridae (surgeonfishes)

Acanthurus bahianus Castelnau, ocean surgeonfish, 'doctorfish'. 21 collections, 154 specimens (UF, ANSP).
Acanthurus chirurgus (Bloch), doctorfish, 'doctorfish'. 11 collections, 40 specimens (UF, ANSP).
Acanthurus coeruleus Schneider, blue tang, 'tangfish'. 10 collections, 20 specimens (UF, ANSP).

Surgeonfishes get their common name from the paired spines found on the caudal peduncle that resemble (both in form and function) the scalpel of a surgeon. These spines can be folded into horizontal grooves or extended forward; while in the latter condition the fish may use its tail as an offensive weapon, slashing at potential predators. Surgeonfishes, also called tangs, are herbivorous forms that favor shallow waters (usually less than 12 m) where filamentous algae abound.

Gempylidae (snake mackerels)

Gempylus serpens Cuvier, snake mackerel. Sight record (EDL).
Promethichthys prometheus (Cuvier), squat snake mackerel. Sight record (GHB, EDL).

Snake mackerels are uncommonly seen by Caymanian fishermen since they inhabit deep waters. Both of the above species were taken by sportfishermen at night over deep water.

Figure 11.10. Cleaner gobies are frequently seen on coral heads; this is *Gobiosoma genie* Böhlke & Robins (photo: D.B. Snyder).

Scombridae (mackerels)

Acanthocybium solandri (Cuvier), wahoo. Sight record (JWR).
Auxis sp., frigate mackerel. Sight record (JWR).
Euthynnus alletteratus (Rafinesque), little tunny. Sight record (JWR, DBS).
Katsuwonus pelamis (Linnaeus), skipjack tuna. Sight record (JWR).
Scomberomorus regalis (Bloch), cero. Sight record (GHB).
Thunnus albacares (Bonnaterre), yellowfin tuna. Sight record (GHB, JWR).
Thunnus atlanticus (Lesson), blackfin tuna. Sight record (GHB, JWR).

Scombrids are mostly epipelagic fishes; of the above species, only the little tunny and cero are likely to be seen over reefs, the rest being residents of offshore waters. All except the frigate mackerel, which is too small to offer much resistance, are esteemed game fishes. Tunas and mackerels are predators that feed almost exclusively on fishes and squids.

Xiphiidae (swordfishes)

Xiphias gladius Linnaeus, swordfish. Sight record (JWR).

The swordfish is an offshore species that spends most of its time deep in the water column where water temperatures are cooler, rather than at or near the surface like the closely related istiophorid billfishes. It is a highly regarded sport and commercial fishing species.

Istiophoridae (billfishes)

Istiophorus platypterus (Shaw & Nodder), sailfish. Sight record (JWR).
Makaira nigricans Lacepède, blue marlin. Sight record (GHB, JWR).
Tetrapterus albidus Poey, white marlin. Sight record (JWR).
Tetrapterus pfluegeri Robins & De Sylva, longbill spearfish. Sight record (JWR).

Marlins and sailfishes also inhabit offshore waters and are seldom seen in inshore waters. Known for their graceful leaps and respected for their powerful runs, istiophorids generate considerable interest amongst the sport fishing community. Like the swordfish, istiophorids are carnivores that consume fishes and squids.

Bothidae (lefteye flounders)

Bothus lunatus (Linnaeus), peacock flounder, 'flounder'. 5 collections, 7 specimens (UF, ANSP).
Bothus maculiferus (Poey), maculated flounder, 'flounder'. 1 collection, 2 specimens (UF, ANSP).
Bothus ocellatus (Agassiz), eyed flounder, 'flounder'. 5 collections, 6 specimens (UF).

Bothids are left-eyed flounders, that is, both eyes are found on the left side of the adults after metamorphosing from the more traditional one-eye-per-side mode as post-larvae. Flounders are flattened laterally and literally spend their lives living on one side; some *Bothus* species are nearly round when viewed this way. Bothids are carnivores that consume bottom invertebrates and small fishes; Cayman species are found on sand bottoms from nearshore areas to depths of about 20 m.

Soleidae (soles)

Gymnachirus melas (Nichols), naked sole. Sight record (GHB).

Soles are small, oval-shaped, right-eyed flounders of no economic importance. The single Cayman record is based on a photograph of a Little Cayman specimen.

Cynoglossidae (tonguefishes)

Symphurus arawak Robins & Randall, Caribbean tonguefish. 1 collection, 1 specimen (UF).

Tonguefishes are small, tongue-shaped flatfishes with both eyes on the left side and a small, asymmetrical mouth. The above species is found on sand patches adjacent to reefs in depths of 3–12 m. Tonguefishes eat a variety of benthic invertebrates.

Balistidae (triggerfishes)

Balistes capriscus Gmelin, gray triggerfish. Sight record (GHB, DBS).
Balistes vetula Linnaeus, queen triggerfish, 'old wife'. 1 collection, 1 specimen (UF).
Canthidermis sufflamen (Mitchell), ocean triggerfish, 'ocean turbot'. Sight record (SHS).
Melichthys niger (Bloch), black durgeon, 'prup prup', 'buggage'. 3 collections, 12 specimens (UF).

Triggerfishes possess a unique locking mechanism that allows them to fix their dorsal fin spines in an erect position. When frightened, a triggerfish wedges itself in a crevice using these spines and the pelvic spine, which is thrust downwards. The gray and queen triggerfish, and black durgeon are common on reefs while the ocean triggerfish is primarily a pelagic, offshore species that appears over deep reefs. Young gray and queen triggerfish also are observed in seagrass and mangrove habitats. Ocean triggerfishes are one of the most popular food fishes with Caymanian fishermen.

Monacanthidae (filefishes)

Aluterus scriptus (Osbeck), scrawled filefish, 'piper'. Sight record (GHB, DBS).
Cantherhines macrocerus (Hollard), whitespotted filefish. Sight record (GHB, SHS).
Cantherhines pullus (Ranzani), orangespotted filefish. Sight record (EDL).
Monacanthus tuckeri Bean, slender filefish. 3 collections, 3 specimens (UF, ANSP).
Stephanolepis hispidus, planehead filefish. 1 collection, 1 specimen (UF).

Sometimes lumped into the family Balistidae, the filefishes are very similar in morphology and habits. The scrawled, orangespotted, and whitespotted filefish are seen swimming about the reef where they eat coelenterates, algae and sponges; the smaller slender filefish is more secretive and is frequently found among gorgonians.

Ostraciidae (trunkfishes)

Acanthostracion polygonius (Poey), honeycomb cowfish, 'cuggard fish'. Sight record (EDL).
Acanthostracion quadricornis (Linnaeus), scrawled cowfish, 'cuggard fish'. Sight record (SHS).
Lactophrys trigonus (Linnaeus), trunkfish, 'shellfish'. 1 collection, 1 specimen (UF).
Rhinesomus bicaudalis (Linnaeus), spotted trunkfish, 'pug'. 1 collection, 1 specimen (ANSP).
Rhinesomus triqueter (Linnaeus), smooth trunkfish, 'pug'. 1 collection, 1 specimen (ANSP).

Trunkfishes are not likely to be confused with any other fishes since they are covered with a hard exoskeleton made up of polygonal or hexagonal plates, with openings left for the eyes, mouth, fins, gills and caudal peduncle. Ostraciids are slow moving fishes that frequent shallow water patch reefs and seagrass beds. They are fine eating fishes but must be prepared correctly since they secrete a toxic substance when stressed.

Tetraodontidae (puffers)

Canthigaster rostrata (Bloch), sharpnose puffer. 18 collections, 76 specimens (UF, ANSP).
Sphoeroides spengleri (Bloch), bandtail puffer. 1 collection, 1 specimen (UF).

Puffers have the ability to inflate themselves with water or air as a defense mechanism. All are slow moving creatures that feed on a variety of invertebrates. The sharpnose puffer is a small species found primarily on reefs (but also in grassbeds) over a wide depth range, but densities increase in deeper water (30–36 m). It is most frequently associated with gorgoni-

ans. The bandtail puffer is entirely a nearshore species that inhabits seagrass beds and rubble bottom environments.

Diodontidae (porcupinefishes)

Diodon holacanthus Linnaeus, balloonfish, 'hedgehog'. 3 collections, 3 specimens (UF, ANSP).

Diodon hystrix Linnaeus, porcupinefish, 'hedgehog'. Sight record (GHB).

Diodontids are also able to inflate themselves and, since they are also armed with sharp, prominent spines, they are doubly protected from predators. Young of *Diodon* are pelagic and are frequently associated with floating sargassum; in this environment they frequently fall prey to tunas and dolphin. Adults are shallow water denizens of patch reefs, seagrass beds and mangrove areas. Fused tooth plates forming a beak allow these fishes to consume hard-bodied invertebrates with impunity.

Zoogeography

The marine ichthyofauna of the Cayman Islands is similar to that of other small Antillean islands, consisting of a suite of mostly widespread species adapted to reef, flat, grassbed and mangrove habitats. In terms of species diversity, the major families represented are the Gobiidae (37 species); Serranidae and Labrisomidae (21 each); Carangidae (14); Apogonidae, Lutjanidae and Chaenopsidae (13 each); Pomacentridae, Labridae and Scaridae (12 each); and Muraenidae and Haemulidae (10 each). There is only one known endemic marine species, the labrisomid blenny *Starksia y-lineata*, but further sampling with ichthyocides may yield more.

Small Antillean islands lack the significant freshwater runoff that characterizes high-relief islands such as Cuba, Jamaica and Puerto Rico. Freshwater inflow influences the composition of an ichthyofauna by providing additional habitats (estuaries, rivers, streams) as well as altering the salinity and clarity of nearshore marine waters. The marine and brackish water ichthyofaunas of these larger Antillean islands are in many ways similar to those of southern Florida and Belize, which also have significant freshwater inflow. The faunas of smaller reef-bearing islands such as Providencia, Curacao, Bonaire, Aruba, Trinidad, and portions of the Bahamas are similarly influenced by their proximity to the mainland and associated continental faunas. Some species of reef fishes are not uniformly distributed on western Atlantic reefs and apparently require the presence of continental-type water conditions; the serranid *Mycteroperca phenax*, sciaenid *Pareques umbrosus*, pomacanthid *Holacanthus bermudensis*, pomacentrid *Chromis enchrysurus*, and gobiids *Ioglossus calliurus* and *Lythrypnus phorellus* are examples of species that are confined to continental or continental-like reefs. By contrast, islands like the Caymans, the Virgin Islands and most of the Lesser Antilles share ichthyofaunas that are largely devoid of continental forms.

Briggs (1974) was perhaps swayed by these ecologically induced differences in faunas when he designated three zoogeographic provinces in the tropical western Atlantic. The Brazilian province, ranging from the Orinoco River south to Cape Frio, Brazil, is apparently a natural unit with many additional endemic fishes being recognized (Greenfield 1988) since Briggs' original discussion. The area to the north and west was divided into two provinces: the West Indian, encompassing Bermuda, the Bahamas, Cuba, Hispaniola, Puerto Rico and all the Lesser Antilles; and the Caribbean, including the mainland from the Orinoco River westward and northward to Cape Rojo, Mexico, and disjunctly, the southern and eastern coasts of Florida. One of the major pieces of evidence Briggs used in separating the Caribbean and West Indian provinces was the distribution of marine shore fishes. He stated that 87 of the 466 species of shore fishes included in Böhlke & Chaplin's (1968) treatment of Bahamian fishes had not been captured outside of the West Indies and emphasized that 'the ultimate proof, as far as the determination of provinces is concerned, is the extent of endemism'. The 19% level of endemism attributed to West Indian shore fishes by Briggs was indeed significant, but collections made since publication of his book have dramatically altered this figure. After re-

examining the distributions of Bahamian shore fishes we now find that only 18 species (3.9%) are confined exclusively to the West Indies; included among these are a number of small, secretive reef-dwellers that almost certainly will eventually appear in ichthyocide collections made on continental reefs. The revised level of endemism is not particularly high and it would appear that the division of the Caribbean area into two faunal provinces was premature. Recognition of a single West Indian province containing diverse ecological (habitat-specific) communities would appear to be more appropriate.

Boundaries between tropical and temperate provinces are often difficult to define because currents and seasonal water temperature regimes greatly influence the relative success of recruitment and survival of the biota at a given geographical locality. Designation of a specific geographic landmark as such a provincial boundary is useful only if one recognizes that there is pronounced seasonal ebb and flow of species around it based on fluctuating physical parameters, and that the boundary represents the mid-line of a broad faunal transition zone. The boundary of our unified West Indian province with the more northerly Carolinian province is a case in point. Briggs (1974) defined the boundaries between his Caribbean and Carolinian provinces as Cape Canaveral and Cape Romano in Florida and Cape Rojo, Mexico. Under this system well-established offshore hard bottom (reef) communities occupying the northern Gulf of Mexico and a 'finger' extending northward along the Atlantic coast from Florida to the offing of Cape Hatteras, NC, would be placed in the temperate Carolinian province despite obvious biological affinities with the tropical biota to the south. As Smith (1976) has noted, provincial lines of demarcation must acknowledge bathymetric submergence as well as latitudinal nearshore gradients if they are to be meaningful. Therefore the northern boundaries of the unified West Indian province must be extended to include the offshore reef areas noted above; the inshore faunal breaks marked by the three capes must also be considered in the context of a seasonally dynamic, rather than static, ichthyofauna.

The freshwater fish fauna of the Caymans is a depauperate one owing to the paucity of available freshwater. Five species of secondary freshwater fishes are known from the islands; all are euryhaline inhabitants of peripheral freshwater habitats (ditches and solution holes) and brackish water mangrove areas. Two species, *Limia caymanensis* and *Gambusia xanthosoma*, are endemic to the Cayman Islands.

Cayman freshwater fishes share zoogeograhic affinities with the Greater Antilles and with mainland Mexico. The genus *Limia* (endemic to the Greater Antilles), plus *Gambusia puncticulata puncticulata*, *Rivulus marmoratus* and *Cyprinodon variegatus* (or their complexes) are found throughout the Greater Antilles as well as on the Cayman Islands. The presence of *G. p. puncticulata* and *C. variegatus* on the Yucatan Peninsula also indicates a Cayman affinity with the continental fauna to the west. See Burgess & Franz (1989) for a more detailed discussion of West Indian freshwater fish zoogeography.

Cayman Island fisheries

In economic terms, the shore fishes of the Cayman Islands are most valuable to the tourist diving industry. In 1990 an estimated 75,000 tourist divers visited the islands to observe and photograph the fishes, reefs, and associated organisms (Anonymous 1992). Scuba divers are prevented by law from spear-fishing, thus the non-consumptive occupation of fish watching is a popular pastime, contributing in a major way to the Cayman Islands tourist economy. The traditional sport and commercial fisheries are still relatively small, but nevertheless are starting to make an impact on the islands' economy.

Inshore sportfishery

Inshore sportfishing on the Cayman Islands is restricted in the most part to a few areas, either inside or immediately outside the fringe reefs. Fishermen are both tourists and Caymanian residents, the latter fishing in their spare time for recreation and to supplement their incomes. Inshore target species include bonefish (*Albula vulpes*), tarpon (*Megalops atlanticus*), permit (*Trachinotus falcatus*), palometa (*T. goodei*), barracuda (*Sphyraena barracuda*), rainbow runner

Table 11.1. Game fish records, Cayman Islands, up to June 1992.*

Species	Size	Date Captured
Barracuda	35 lbs. 4 ozs.	30/6/88
Blackfin tuna	21 lbs. 2 ozs.	24/6/88
Blue Marlin	584 lbs.	9/1/85
Bonefish	7 lbs. 2 ozs.	8/7/85
Dolphin	58 lbs.	22/4/82
Longbill spearfish	27 lbs. 0 ozs.	25/6/89
Rainbow runner	12 lbs. 0 ozs.	13/6/90
Sailfish	70 lbs. 8 ozs.	11/1/92
Skipjack tuna	23 lbs. 8 ozs.	7/6/90
Tarpon	25 lbs. 6 ozs.	28/6/88
Wahoo	105 lbs. 10 ozs.	22/2/87
White Marlin	74 lbs. 14 ozs.	7/4/90
Yellowfin tuna	189 lbs. 4 ozs.	3/6/89

* Data for this table supplied by J.W. 'Bill' Rewalt.

(*Elagatis bipinnulata*), and ocean triggerfish (*Canthidermis sufflamen*). Other species, especially jacks, groupers, snappers, grunts, and parrotfishes are frequently caught. Fishing is largely conducted with trolling, spinning or flyfishing gear. The inshore sportfishery is largest on Little Cayman where it forms a significant part of the tourist economy on this island; resident sportfishing is most common on Cayman Brac.

There are no catch statistics recorded, except for the size records of some species (Table 11.1).

Offshore sportfishery

Pelagic offshore sportfishing centers on George Town and peaks each year in June, the 'Million Dollar Month'. During this month, if a world record blue marlin is caught, a one million dollar prize awaits the fisherman. (It has never been claimed.) Game fish capture records are kept (Table 11.1) for major species. Offshore target species are the billfishes, blue marlin (*Makaira nigricans*), white marlin (*Tetrapterus albidus*), yellowfin tuna (*Thunnus albacares*), dolphin (*Coryphaena hippurus*) and wahoo (*Acanthocybium solandri*). Other species, i.e., sailfish (*Istiophorus platypterus*) and smaller members of the tuna family are also caught. Catch data for the billfishes are compiled annually and published (Table 11.2).

In 1984, the marlin catch per unit effort was 0.277 blue marlin per boat-day fishing, or 1 blue marlin for 4.4 boat-days. With a catch of 392 blue marlin and assuming most of the 148 released billfishes were blue marlin that year, the total number of sportfishing boat days was well in excess of 2,000. At present charter rates, the economic impact of this fishery exceeds a million dollars per year. In 1983, there were 11 boats actively chartering in the big game fishery. Since then, the number has grown to over 70.

Commercial fishery

There are no government records of the commercial fishery catch, either inshore or offshore. F.A.O. (1992) lists catch statistics for the Cayman Islands, which they noted as 'flag of convenience catches'. The 1983 to 1990 commercial catches were recorded from between 274–1021 mt, all allocated to 'decapods'. As far as we can ascertain, no decapods, presumedly lobsters, were captured commercially in the Cayman Islands. The F.A.O. (1992) figures appear to be the result of vessels fishing elsewhere and transshipping their catches through the Cayman Islands. Marine fishes are listed from 1987–1990 at 76–122 mt per year, but we are at a similar loss to explain these data. From time to time there are several vessels with non-Caymanian crews that use Cayman anchorages as a base to fish other Carribbean waters. Their catches are mostly transshipped through the Cayman Islands to the U.S.A.

The inshore commercial fishery is very small, involving Cayman Islands' residents only. The gear used are hook and line, traps, and beach seines. Species observed being sold on the beach in George Town included reef fishes such as groupers, snappers, jacks, barracudas, and parrotfishes. No doubt any captured fish that is large enough to eat is sold. This artisinal fishery is estimated to yield between 3–5 mt/yr. Nassau grouper (*Epinephelus striatus*) fisheries occur off the east ends of Grand Cayman and Little Cayman. The total catch in these fisheries was unrecorded until 1992, when an estimated 4 mt of Nassau grouper was landed. Munro (1973), in his review of the Caribbean fisheries, indicates that no catch data exists for the shelf area of the Cayman Islands. Gulland (1971) has estimated the potential production in the shelf areas of the Caribbean to be between 18–40 kg/ha, less than 25%

Table 11.2. Capture of billfishes in the sportfishery since 1983.*

Species	Number caught by year								
	1983	1984	1985	1986	1987	1988	1989	1990	1991
Landed									
Blue marlin	294	392	263	238	286	281	317	344	327
White marlin	12	21	16	13	31	17	26	15	21
Sailfish	2	4	5	4	5	7	9	9	8
Longbill spearfish	0	1	0	1	0	1	1	0	0
Released – all species	43	148	194	159	173	216	289	361	346
Total	351	566	478	415	495	522	642	729	702

* Data for this table from articles by J.W. 'Bill' Rewalt, published in the Caymanian Compass newspaper, 1984–1991.

of which are demersal species, the remainder pelagic. Obviously the Cayman Islands could increase their inshore catches, as was pointed out by Rae & Stevens (1976), but such an increase should be viewed with extreme caution to prevent negative impacts on the very economically important tourist diving industry.

The offshore commercial fishery involving Cayman Islands' vessels (as opposed to flag of convenience vessels) has fluctuated from ten boats in the 12–15 m size range in 1988 to the same number of smaller (9 m) vessels in 1992. The annual catch has dropped from 200–275 mt in 1988 to 100–150 mt in 1992. Exact figures are lacking since ex-vessel catch weight data is not reported. Most of the catch was taken from Mysteriosa Bank, located approximately 240 km WSW of Grand Cayman and claimed by Honduras, and Baja Nuevo, lying 420 km SSE in Colombian waters. Some offshore fishing occurs on Pickle Bank, situated approximately 130 km NE of Grand Cayman, and on 'Honey Hill', located 30 km south of Grand Cayman. The most common species observed in the catches from the offshore fishery include the blackfin snapper (*Lutjanus buccanella*), silk snapper (*L. vivanus*), queen snapper (*Etelis oculatus*), and wenchman (*Pristipomoides* sp., most likely *macropthalmus*), with lesser amounts of rainbow runner (*Elagatis bipinnulata*), dolphin (*Coryphaena hippurus*), and groupers, most commonly the misty grouper (*Epinephelus mystacinus*). No doubt other species than those observed are occasionally captured.

According to interviews with fishermen, fishing normally occurs at depths between 55–235 m using baited hook and line. Fishing gear consists of up to 15 self-setting circle hooks on a monofilament line. The line is retrieved on a hand cranked drum when the fishermen feels several fish are hooked. Electric motors are occasionally used to assist in cranking. Most boats made two 10-day trips per month in 1988, but by 1992 these trips were more sporadic and the fishery far less organized. In 1988 most of the catch by Cayman vessels was exported, leaving 50–65 mt of snapper and 10–12 mt of grouper sold each year to the local market. By 1992 all the catch of snapper and grouper was sold locally.

Since Mysteriosa Bank and Baja Nuevo are not politically Caymanian waters, data on Cayman commercial fisheries should perhaps exclude these catches. In which case, the total estimated commercial catch would probably be less than 20 mt per year.

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