

## APPENDIX C

### Flower Garden Banks National Marine Sanctuary

#### Shallow water habitat mural

#### Species Guide

**The species described in this package are all represented on the mural you are creating, and live at the Flower Garden Banks. You can learn about these animals, how they move, what they eat, and much more!**

1. **Great Barracuda** (*Sphyraena barracuda*). Great barracudas range from 0.3-1 meters long and can weigh over 44 kilograms. They are commonly found in the Gulf of Mexico and tropical and sub-tropical waters worldwide. Great barracudas inhabit near shore areas, reef systems, mangroves and sand flats from the surface of deep open waters down to depths of 100 meters. Their mouths help with respiration and contain fang-like teeth they use to capture food. Their diet is composed of small to medium sized fish such as jacks, small tunas, mullets, herrings and anchovies. Barracudas are known to be solitary animals; however, they have been seen in both small and large schools that can number over 100 individuals. Although they are known to approach divers, great barracudas have never been recorded attacking divers unprovoked. Large schools of barracuda aggregate under vessels that tie up to the moorings at the sanctuary. They are also seen on the reef at cleaning stations. When they are being cleaned they often turn a very dark color.



Photo credit: FGBNMS/Hickerson

2. **Scalloped Hammerhead Shark** (*Sphyrna lewini*). Scalloped hammerhead sharks are characterized by their moderately high first dorsal fin and low second dorsal and pelvic fin. They usually range from 2-3 meters in length but can sometimes reach 4 meters. Scalloped hammerheads are coastal-pelagic and semi-oceanic sharks and can be found in deep waters approximately 275 meters in depth. They often approach inshore areas, bays, and estuaries. Adults are often found alone or in pairs but also have been observed in schools. Young individuals travel in large schools. Hammerheads feed on bony fishes, cephalopods (squid, octopus), shrimps, crabs, rays, and other small sharks. Although they are considered dangerous to humans, they tend to become shy and refrain from aggressive behavior when divers are around. Large schools of hammerheads aggregate at the sanctuary during the winter months. It is currently unknown why they aggregate during the winter season here, and where they go during the rest of the year. Sanctuary divers typically see them in the upper portions of the water column, but occasionally at reef depth.



Photo credit: Gary Merritt

- Spotted Drum** (*Equetus punctatus*) Spotted drum are characterized by black and white colored bars with an elongated front dorsal fin and several white spots and dashes on the dark background of their second dorsal and tail fin. Their average length is between 15 and 28 centimeters. Spotted drum can be found in tropical waters such as the Gulf of Mexico and the Caribbean, usually near cave entrances, ledges and coral reefs. They are solitary animals that are often seen during the day at depths between 4 and 30 meters. They are considered to be nocturnal feeders with their diet consisting of crabs, shrimps and polychaetes. This species isn't timid and is easily approachable by scuba divers.



Photo credit: FGBNMS/Hickerson



4. **Manta Ray** (*Manta birostris*) Atlantic manta rays are known to be the largest species in the family of rays. Their “wing” span can reach up to 9 meters, and they can weigh up to 1360 kilograms. The large extensions on the sides of their mouths aid them in filtering through the water column to capture their main diet of plankton. This species is located all around the world in temperate, tropical and sub-tropical waters and is commonly located throughout the Gulf of Mexico. Manta rays can be found in habitats ranging from near shore to pelagic waters as well as around reefs. They have been observed in groups of up to 200 individuals when huge concentrations of zooplankton are found in specific areas. Atlantic manta rays spend a lot of time near the surface often jumping and splashing. They can be seen cruising through the sanctuary waters, or barrel rolling – which is a feeding technique. Manta rays are seen throughout the year at the FGBNMS. Individual mantas can be identified by spot patterns on the underside of the animals. At least 75 individual manta rays have been identified within the sanctuary – you can see the catalog of the individual manta rays at: <http://flowergarden.noaa.gov/science/mantacatalog.html>. The FGBNMS research team and the Wildlife Conservation Society have tagged several mantas with acoustic pingers. Acoustic receivers placed at several banks inside and outside of the sanctuary have revealed that individual animals move between multiple banks. There is some evidence that there are at least three different species of manta rays – although not verified, the FGBNMS mantas appear to be a smaller species than the species identified as *Manta birostris*.



Photo credit: FGBNMS/Schmahl

5. **Horse-eye Jack** (*Caranx latus*). Horse-eye jacks are usually found around reefs, sandy beaches and muddy bottoms in the Gulf of Mexico and the Caribbean. Jacks feed on small fishes and invertebrates such as shrimps and crabs. They swim at depths between 0 -140 meters but are usually found at a depth of around 20 meters. Horse-eye jacks can be found alone or in pelagic schools. Pelagic school groups are able to swim into brackish waters and swim up rivers. Pelagic schools are also known to be attracted to bubbles produced by scuba divers. Solitary individuals are more cautious and tend to slowly swim away from divers. These jacks, as well as crevalle jacks, are sometimes seen in large schools at the sanctuary.



Photo credit: FGBNMS/Schmahl

6. **Mardi Gras Wrasse** (*Halichoeres burekai*). The Mardi Gras wrasse was described as a new species by sanctuary researchers and partners in 2007. This new species of wrasse was given the common name Mardi Gras wrasse by sanctuary staff due to the bright purple, yellow, and green coloration of the adult male. The scientific species name honors sanctuary photographers, Frank and Joyce Burek, who first photographed the male fish. Like other wrasses, juvenile and female Mardi Gras wrasse are a completely different color from the adult male. Males associated with “harems” of females. They have been observed at all the banks within the sanctuary, and have also been reported in the Vera Cruz region of Mexico. The best places to spot these rare fish are on the pinnacles of Stetson Bank schooling with bluehead wrasse (*Thalassoma bifasciatum*).



Photo credit: FGBNMS/Schmahl

7. **Redlip blenny** (*Ophioblennius atlanticus*). Redlip blennies, with their characteristic red lips, are commonly found in shallow waters between 0 and 8 meters throughout the Caribbean, however they also do well on the deep reefs of the sanctuary. Blennies are often seen in coral reef zones near flat areas where there is at least one hole they can use for shelter. Blennies are a diurnal species that feed on reef algae and are well known for defending their territory. At night, they stay in their shelters to hide from predators such as groupers and trumpet fish. They are often seen perched on top or large coral boulders at the sanctuary.



Photo credit: FGBNMS/Schmahl



8. **Queen angelfish** (*Holocanthus ciliaris*). The Queen angelfish can be found in the western Atlantic and Caribbean in shallow and deep waters up to 70 meters. These fish have a characteristic spot on their forehead that resembles a crown. This species is usually solitary during its juvenile stage but can be found in pairs as an adult. Queen angelfish are very territorial but often switch between curious and shy behavior. Their diet consists of a variety of marine invertebrates including sponges, algae, corals, jellyfish and tunicates.



Photo credit: FGBNMS/Schmahl



9. **Boulder Brain Coral** (*Colpophyllia natans*). Boulder brain corals grow in rounded domes or plates. These corals have distinct brown ridges and green or tan valleys with grooves on top. Their polyps, usually located on the ridges, extend their tentacles out at night to feed. This coral can be found in the Caribbean and the Gulf of Mexico at depths of 12-50 meters. They are commonly located on reef tops and slopes. Both species are mass spawners, and participate in the mass spawning event in August or September. The symmetrical brain coral, *Diploria strigosa*, is also a very common brain coral in the sanctuary. The boulder brain coral has wider grooves and ridges than the symmetrical brain coral. Both species are monoecious, which means a single colony releases both female and male gametes during the mass spawning event. In this picture both species are shown – can you guess which is which?



Photo credit: FGBNMS/Joyce & Frank Burek

10. **Great Star Coral** (*Montastraea cavernosa*). Star corals are stony corals commonly found in reef environments at depths from 12- 90 meters in the Caribbean and the Gulf of Mexico. They form massive boulders, domes or plates/sheets, depending upon the depth. Boulders can be over 1.5 meters in diameter and are usually found in shallow and moderate depths. Plate formations are found in deeper waters as the colonies spread out to maximize surface area to capture light for photosynthesis by the symbiotic algae living in the tissues of the coral. They have large, thumb -sized polyps that fully extend their tentacles during the night to feed and retract during the day. This species is also a broadcast spawner and participates in the mass spawning event in August or September. This species is dioecious, which mean sexes are separate – the male colonies release what looks like puffs of smoke, and the female colonies release streams or beads of eggs.

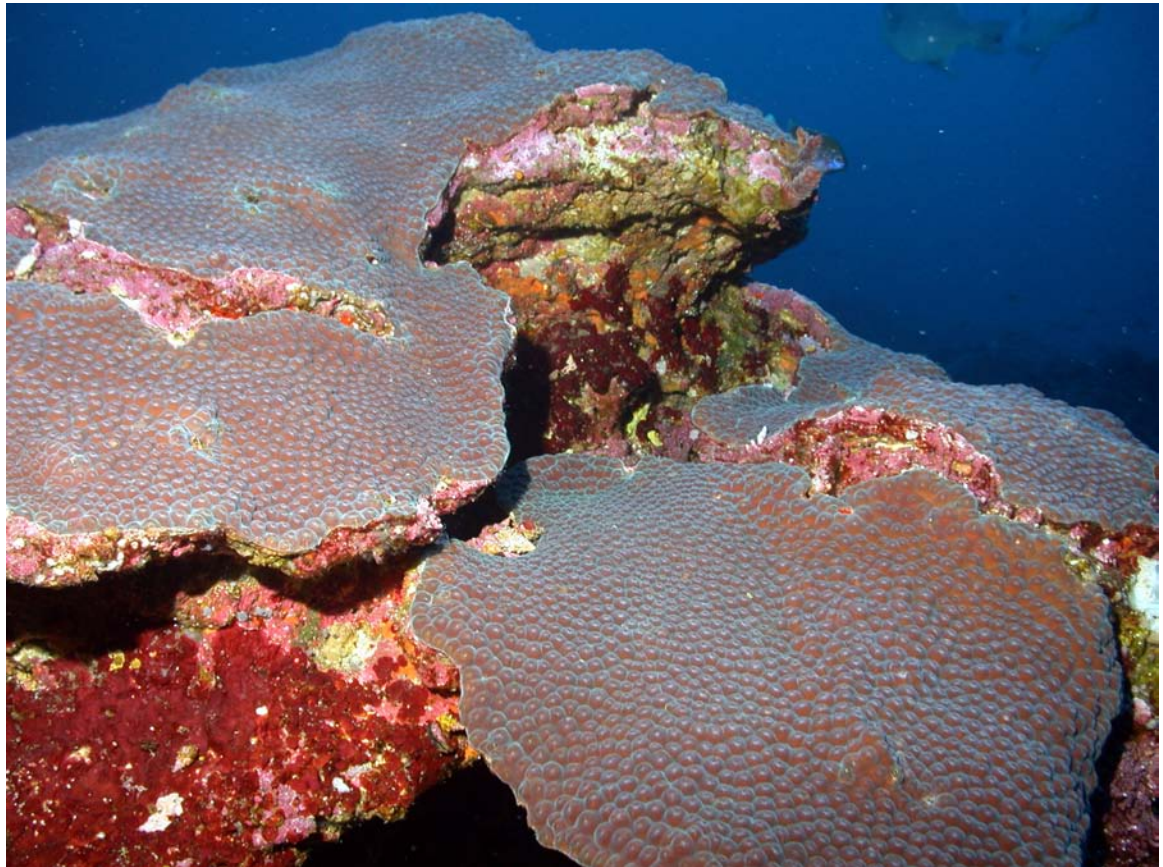


Photo credit: FGBNMS/Hickerson



11. **Marbled Grouper** (*Dermatolepis inermis*). Marbled grouper can be found in the Gulf of Mexico, Caribbean, and western Atlantic (usually from Florida to Brazil), but are considered rare throughout its range. They usually inhabit deep coral reefs and caves of depths up to 230m. The reefs and banks of the Northwestern Gulf of Mexico are considered a hotspot for this species. Marbled Groupers are easily identifiable by their white blotches on dark brown skin that becomes lighter brown to greenish brown when they reach adulthood. They are thought to live for many years and are slow to reach sexual maturity. It is also believed they gather in seasonally predictable aggregations for mass spawning, making it extremely vulnerable to over fishing, although no spawning sites are definitively known. Like all groupers, marbled groupers have a large mouth that can help them consume fish and crustaceans. In general, very little is known about the biology of this species. They are curious and often swim up to divers and remotely operated vehicles in the sanctuary.



Photo credit: Joyce & Frank Burek



12. **Smooth Trunkfish** (*Rhinosomus triqueter*). Smooth trunkfish can be found near the reefs in subtropical waters of the Gulf of Mexico and Caribbean. Their angular body shape, which looks like a triangle if viewed from the front, is one of the main characteristics of these fish. They can swim down to a depth of 50 meters near coral reefs and over sandy bottoms. Normally, smooth trunkfish are solitary animals, but have been observed swimming in small groups. Their diet consists of worms, tunicates, small crustaceans and small mollusks. They are sometimes seen blowing jets of water into the soft sediment to stir up a meal. Smooth trunkfish are typically a deep chocolate brown with white spots, however a golden form is special to the Flower Garden Banks, and has only been reported in one other location – the Bay of Honduras.



Photo credit:  
FGBNMS/Schmahl



Photo credit:  
Joyce & Frank Burek

13. **Long-Spine Sea Urchin** (*Diadema antillarum*). Although the appearance of these urchins is delicate, they can easily protect themselves from other species by pointing their spines towards their predators. Long-spine sea urchins can be found in the western Atlantic and Caribbean at an average depth between 1-10 meters. These sea urchins are considered a nocturnal species and are usually inactive during the day. Their diet is based on algae and sea grasses. They are typically black, however many white forms can be seen at the sanctuary. In the early 1980's there was a Caribbean wide die-off the species caused by an unknown pathogen which decimated the populations region wide. Stetson Bank has maintained a reasonable population, however density levels plummeted at the East and West Flower Garden Banks. In reefs throughout the Caribbean this die-off triggered increased coverage of algae as the urchins were important algae grazers on the reef. The algae competes with the corals for space, so without the urchins to keep the algae in check, corals are now under conditions of increased competition for space.

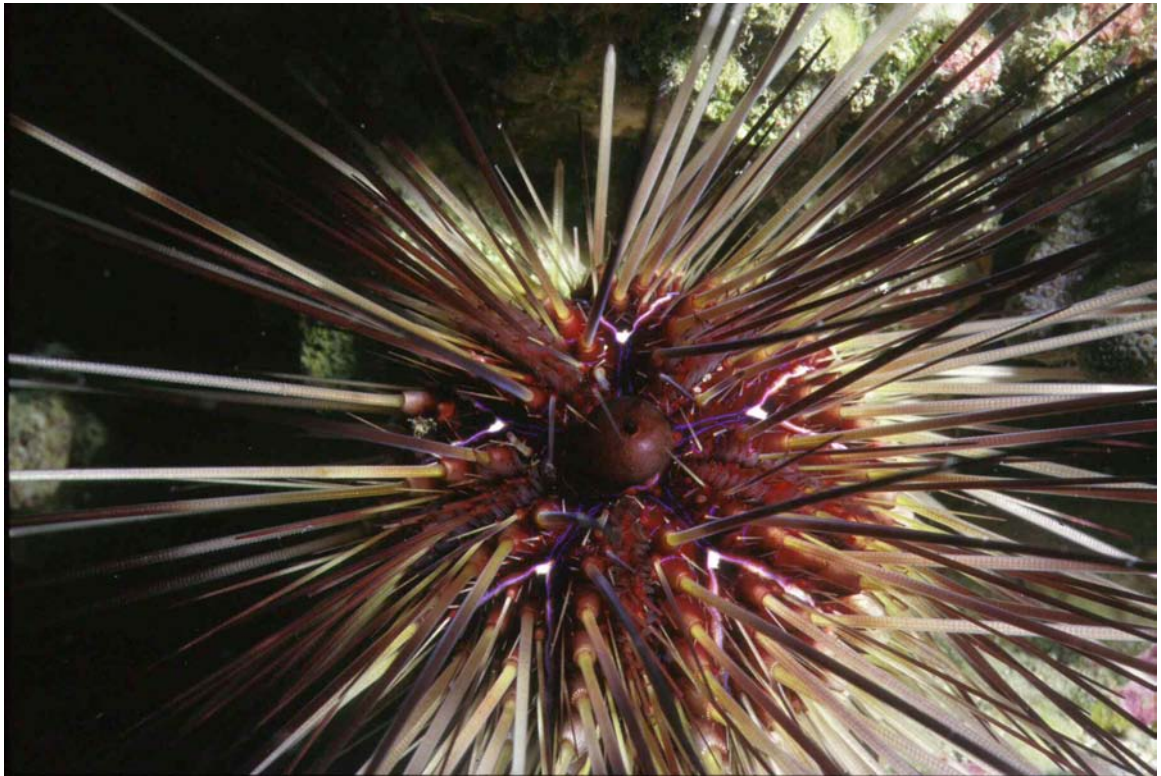


Photo credit: FGBNMS/Hickerson

14. **Banded Coral Shrimp** (*Stenopus hispidus*). Red banded coral shrimp are easily distinguishable by the red and white colored bands on their bodies and claws. These shrimp are commonly known as cleaner shrimp due to their tendency to congregate at cleaning stations in the sanctuary where they advertise their cleaning service by waving their bright white antennae. Fish in need of cleaning then approach the shrimp, and even wait in line if necessary. At cleaning time, the fish open their mouths and flare their gills to allow the shrimp to clean parasites off their teeth all while having no intention of eating them. These shrimp may also remove damaged scales on the outside of the fish. This symbiotic relationship where both species benefit is called mutualism. The fish get rid of nasty parasites, and the shrimp get a meal.



Photo credit: FGBNMS/Hickerson



15. **Barrel Sponge** (*Xestospongia muta*). These large sponges grow in solitary or multi-chambered barrels that can be up to 2 meters wide. They have a red-orange coloration with a hard and jagged surface. They have a life span of 100 years and are most commonly found on steep slopes between 15 and 40 meters in depth as well as coral reefs at various depths. They are usually found in the Bahamas, the Caribbean and along the coast of Florida, as well as the Gulf of Mexico. Their diet consists of organic particles filtered from the surrounding water. Barrel sponges on average grow half an inch per year, and, like corals, are subject to bleaching and subsequent mortality. These sponges are dioecious, and have been documented mass spawning at various times of the year, including around the same time as the mass coral spawning event. The males release dense and large amounts of smoky sperm which makes them look like smoking cauldrons, and the females release eggs in masses that make them look like snow blowers. The gametes are denser than the water and stay close to the substrate.

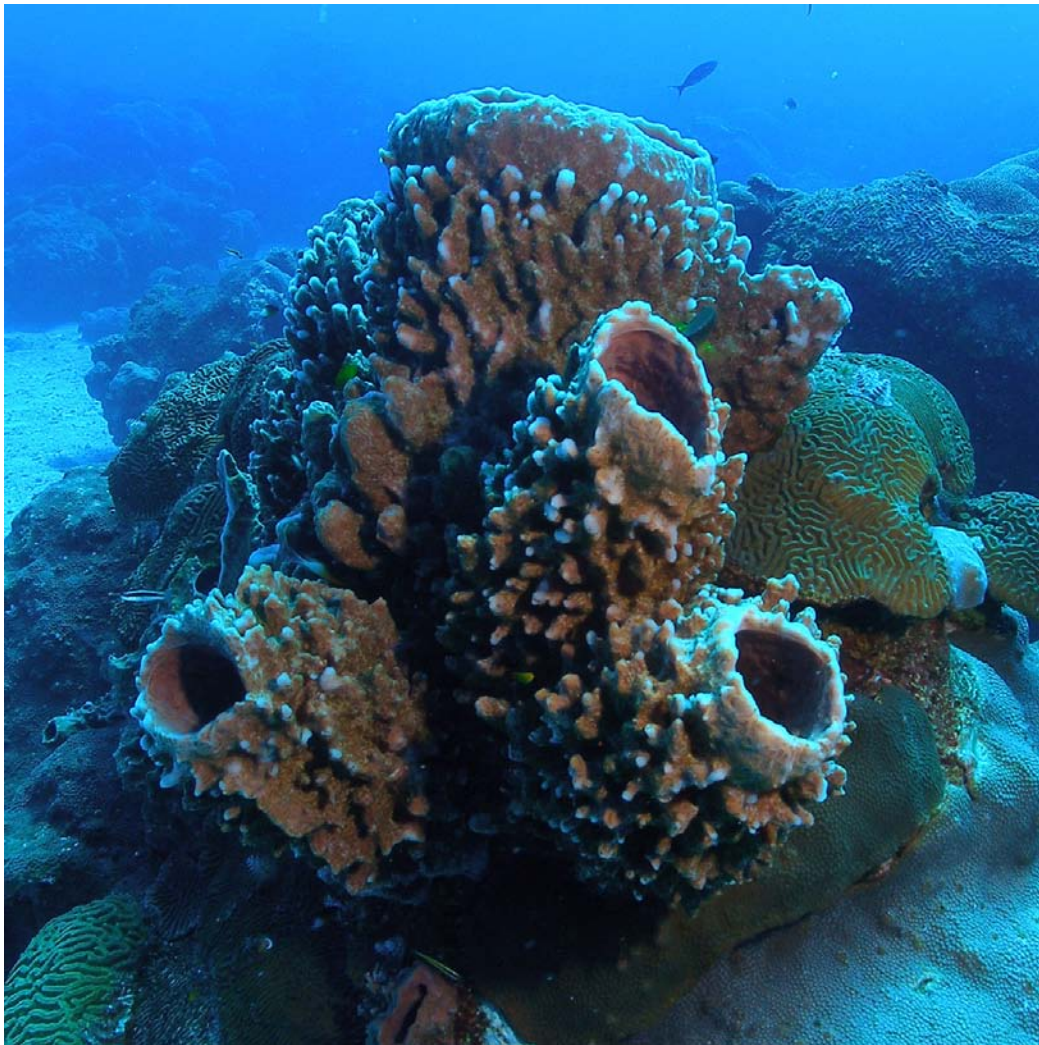


Photo credit: FGBNMS/Hickerson

16. **Loggerhead Sea Turtle** (*Caretta caretta*). Loggerhead sea turtles are air-breathing reptiles that are usually found in the temperate and tropical waters of the Atlantic, Pacific & Indian Oceans. They are considered to be the most abundant species of sea turtle in the United States. Loggerheads weigh approximately 130 kilograms and their carapace can be up to 1 meter long. Sea turtles can be found at shallow and deep waters, near shore and nesting on beaches. This sea turtle is considered omnivorous, feeding mainly on bottom-dwelling invertebrates. During migration they eat jellyfish, squid and flying fish. Loggerheads are considered an endangered species and have been the subject of many different conservation programs around the world. Loggerheads are the most common species found in sanctuary waters. They were the subject of satellite and radio tracking in the 1990's. This project determined that the sanctuary is home to large sub-adult loggerheads that exhibit tight core and home ranges. The turtles caught and tagged at the East Flower Garden Bank stayed at that bank and didn't have a range encompassing both banks. It is thought that they feed during the day off the reef, and come onto the reef and sleep under ledges at night. They surface about once an hour to breathe.



Photo credit: NOAA/Tom Moore



17. **Christmas Tree Worm** (*Spirobranchus giganteus*). Christmas tree worms can be found on coral reefs in tropical waters. They have a tubular segmented body that is embedded into the coral colony and their gills extended out from the cavity. The gills can be a variety of colors – e.g. white, black, yellow, orange, pink - and are characteristically shaped like Christmas trees. These worms feed on plankton by trapping it on their spiral-oriented tentacles. They are one of the most common features seen by scuba divers, but are very light-sensitive and will withdraw into their tubes when shadows or slight disturbances occur in surrounding waters. They have been documented spawning during the mass coral spawning event in August or September. The males release red smoke-like gametes, and the females releasing streams of tiny red eggs.



Photo credit: FGBNMS/Schmahl



18. **Sea Lily.** Sea lilies, also known as crinoids, live in both shallow and deep-water areas of the ocean. Sea lilies use their arms to comb the water for food particles, and move about the reef using their root-like appendages to find a good place to feed. In this picture, the sea lily has climbed onto a bottlebrush coral, a type of black coral, to feed. Sea lilies are closely related to sea stars and usually have arms in multiples of five. Sea lilies are considered living fossils. Their ancestors can be seen in fossil records from the Ordovician Period, approximately 490–443 million years ago! Crinoids are absent from the shallow portions of the sanctuary reefs, but are sometimes found in high densities in the deep coral habitats.



Photo credit: FGBNMS/NURC-UNCW

19. **Spotted Eagle Ray** (*Aetobatus narinari*). These rays can be found in tropical and coastal waters worldwide, usually swimming across the oceanic basins. Spotted eagle rays can grow up to 3.5 meters wide and 9 meters long. Their habitat varies between the coral reefs and sand flats they graze in, looking for mollusks and crustaceans. They have been observed jumping out of the water along the surface for short distances. This ray is considered a near threatened species due to fisheries depletion. They are sometimes seen schooling in large numbers at the sanctuary during the winter months, but individuals or pairs are also seen during the summer months.

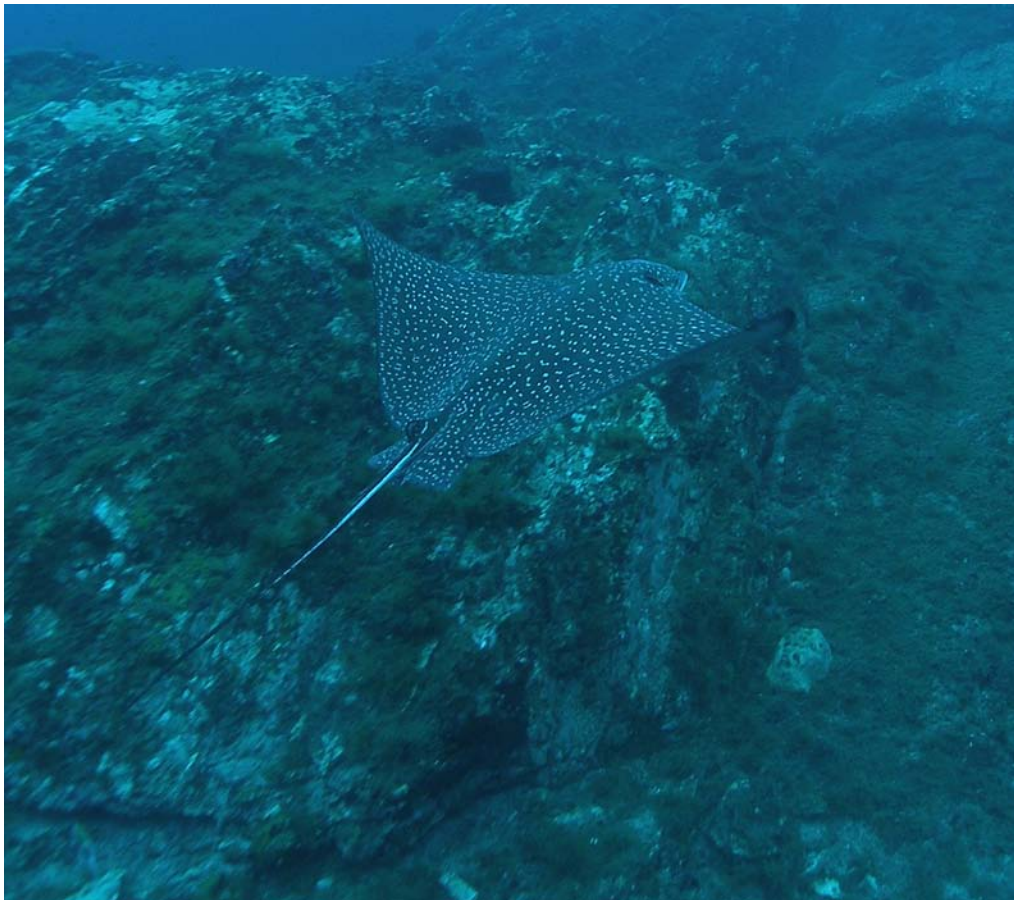


Photo credit: FGBNMS/Hickerson



20. **Ruby Brittle Star** (*Ophioderma rubicundum*). Brittle stars, relatives of sea stars, have long, thin, serpentine arms attached to a central disc. These flexible arms allow brittle stars to move much more quickly than their cousins, but they are also more brittle (hence their name) and can often be seen missing a limb, or in the process of regenerating a new arm. Ruby brittle stars spawn during the same mass coral spawning event in August or September. The male brittle stars aggregate in piles of a dozen or more on top of coral heads for a synchronized release of red smoky sperm. At about the same time, individual female brittle stars climb to the tops of the coral heads, stand on the very tips of their arms, and release streams of bright red eggs. They've also been observed feeding on coral gametes during the mass coral spawning event.



Photo credit: FGBNMS/Schmahl



