Cephalopholis cruentata (Graysby)

Family: Serranidae (Groupers and Sea Basses)
Order: Perciformes (Perch and Allied Fish)
Class: Actinopterygii (Ray-finned Fish)

Fig. 1. Graysby, *Cephalopholis cruentata*.

[http://www.reefcolors.de/Galleries/2008_MariaLaGorda/photos/TG_188_32.jpg, downloaded 29 March 2015]

TRAITS. The graysby is a small grouper fish in the Serranidae family, commonly ranging in size from 15-25cm, up to 43cm. It has nine dorsal spines and three anal spines. Some of the characteristics that identify it are pectoral fins longer than pelvic fins, the caudal fin is round, and it has lateral body scales that are strongly ctenoid (toothed). They have large lips and thick bodies, covered with orange brown spots and they can appear reddish brown to grey (Fig. 1). They have a rounded tail and there are dark spots located at the base of the dorsal fin. They are hermaphrodites, each individual being first a female and then a male (McGinley, 2009).

DISTRIBUTION. The graysby is widespread from south Florida, the Caribbean (Greater Antilles and the Lesser Antilles), the Bahamas and Gulf of Mexico. They can also be found in Bermuda, Trinidad, the Cayman Islands, the Dominican Republic, Mexico, Columbia, Costa Rica, the British Virgin island, from North Carolinas south to Brazil (Fig. 2). They are commonly found in coral reefs in the back reef, fore reef and drop-off zones (Nagelkerken, 2009).

HABITAT. The common habitat of the graysby are offshore coral reefs and also seagress beds. Graysby prefer small ledges and caves in coral beds and reefs are preferred where they blend with the surroundings at depths between 3-20m. In the eastern Gulf of Mexico the graysby are found at the rocky reef ledge at depths more than 27m. The graysby has a powerful connection to the habitat where it resides and is greatly affected by change or damage to their environment.

Graysby are secretive and small fish, which normally conceal themselves in parts of the reef during day time (Sluka, 1995).

FOOD AND FEEDING. Like many groupers the graysby is a carnivore. Graysby are nocturnal fish. They feed on other smaller fish, 75% and crustaceans such as crab and shrimp, 18%. It feed 2-4 times a week. Adult graysby feed mostly on fish. The graysby are insatiable ambush predators. The favorite prey of the adult graysby is *Chromus multilineata*, commonly known as the brown chromis. The juvenile graysby feed more on shrimp and also very small fish. Some other notable fish the graysby consumes are the blue chromis, the bicolor damselfish, the yellow goat fish, squirrelfish, gobies and even smaller groupers such as coneys. It is also believed that they feed on other graysbys (McGinley, 2009). This difference in feeding patterns between the adults and the juveniles can be due to the mode of living of the animal. The adult graysby would be able hide and take shelter in coral reefs where they can patiently await any passing fish that they can easily ambush and eat, while the juvenile graysby usually live on and under the coral where it is easier to feed on shrimp which are likely to be living there. Studies show that there is a correlation between the graysby and its favourite prey the brown chromis, which also has a vertical distribution pattern like that of the graysby. The feeding rate of the graysby is greater at dawn and twilight, this is possibly a result of the behavioural patterns of the chromis. At dawn chromis enter the coral and at dusk they leave the coral, active and easy prey for the graysby. It is suggested that while the graysby is a nocturnal and diurnal predator, there is a peak in feeding pattern at sunrise. After dusk when they move more into the corals, the graysby cease feeding on fish and begin feeding on crustaceans. The graysby prey on the crustaceans at this time because at dusk the crustaceans leave their crevices making themselves within easy range for the graysby. Graysby can also swim above the reef and feed on any prey that tries to elude other predators that come into the reef (Nagelkerken, 2005).

POPULATION ECOLOGY. Graysby are small fish, secretive and solitary, and they commonly remain at their hiding spots in the coral at daytime. They are non-migratory species that usually exhibit stable populations. They stay in a small area with a home range that is approximately 2,120 metres square, especially at daytime. The structure of the coral reef is significant in keeping fish populations such as the graysby stable. The higher and more complex the reef structure means that there are a greater number of spots for the graysby to hide which would lead to more fish living in the reef, and a higher population of graysby. Studies show that the quantity of the structure present in the coral is more of a determining factor than the coral cover. A study showed that the graysby population was large on reef slopes with the peak abundances ranging from 10.5-11.7 for every 1000 metre square (Nagelkerken, 2005).

REPRODUCTION. Graysby are sequential hermaphrodites, meaning they change sex through their lifetime. Graysby change sex at the ages of 4-5 years, after spawning. Maturation for the graysby begins in May and spawning usually takes place during August and September. Females are able to become mature at an age of 2 years, while breeding males are aged 5-7 years. However, there is no exact correlation of the age of the graysby with sexual transition. Other environmental conditions such as starvation and crowding can affect the sex ratio, sexual succession and the development of the primary male gonads. A male graysby forms a harem of females, usually three females for every male. The male defends the harem from other males. The graysby release its' gametes in the water column, where fertilization occurs.

BEHAVIOUR. Graysby may be cleaned by other species of fish on the reef (Fig. 3), which remove parasites from them. Juvenile graysby feed exclusively on shrimp and hide in tube sponges and underneath the reefs (Fig. 4). The graysby avoids predators by using camouflage, the colour of their skin allows them to blend in with their coral reef habits and be undetected by predators. The coral reefs as well provide sufficient shelter and hiding spots as to avoid any predator.

APPLIED ECOLOGY. Listed by IUCN. As a result of its small size it is not sought after. According to the IUCN it has a threat status of least concern (IUCN, 2008).

REFERENCES

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Nagelkerken, W.P.(2005). Biology of the Graysby. Studies of the Fauna of Curacao and Other Caribbean Islands: No.186

Sluka. R. D. (1995). Influence of habitat on density, species, richness and size distribution of groupers in the upper Florida Keys, USA and central Bahamas.

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Fig. 2. Graysby geographic distribution.

[http://www.aquamaps.org/receive.php?type_of_map=regular, downloaded 29 March 2015]

Fig. 3. A graysby with a cleaner fish.

[http://www.aqua.org/~/media/Images/Animals/Graysby/animals-graysby-slide4-web.jpg, downloaded 29 March 2015]

Fig. 4. Juvenile graysby in a reef crevice.

[http://www.whatsthatfish.com/fish/graysby-juvenile/1677, downloaded 29 March 2015]