Eusmilia fastigiata (Smooth Flower Coral)

Order: Scleractinia (Stony Corals)
Class: Anthozoa (Corals and Sea Anemones)
Phylum: Cnidaria (Corals, Sea Anemones and Jellyfish)

Fig. 1. Smooth flower coral, *Eusmilia fastigiata*.

[http://coralpedia.bio.warwick.ac.uk/en/corals/eusmilia_fastigiata, downloaded 9 March 2016]

TRAITS. *Eusmilia fastigiata* is made up of hemispherical mounds, with polyps that are widely spaced on long stalks or corallites, which appear to branch off from one particular point (Fig. 1). The colour of the corals vary from yellow-brown to brown and also grey, many times with a blue-green tinge that appears to change colour as the angle of view or illumination changes. The tentacles of these corals are white and translucent and are seen extended only in the dark (Fig. 2). The brownish or green polyps are closed during the day and the septa (ridges) on the corallites are then revealed.

DISTRIBUTION. *Eusmilia fastigiata* is native to Trinidad and Tobago, and is also found throughout the Caribbean, Brazil, Bermuda, the Bahamas, the southern Gulf of Mexico and Florida (Fig. 2) (IUCN, 2008).

HABITAT AND ACTIVITY. *Eusmilia fastigiata* is found in intermediate, shallow and deep fore-reef environments, ranging from about 1-65m, but mostly between 10-25m (IUCN, 2008). This species is mostly present in patch reefs in lagoon environments, and on the back and the front edges of reefs, and is occasionally overtopped by larger corals. At night, the translucent white tentacles of the polyps extend in order to feed and this phenomenon is when the coral "flowers". *Eusmilia fastigiata* has a delicate skeleton and still water is a necessity, but it is confined to areas where the bottom of the water is clean as it is unable to withstand much silt (Dubinsky and Stambler, 2011).

FOOD AND FEEDING. Slow conduction system may have a role during feeding behaviour by promoting expansion of tentacles and the production of mucus. The polyps remain closed in the skeleton during the day time but are extended at night to engage in feeding activities (Fig. 2). The tentacles undergo a quest for small invertebrates and zooplankton, which are transferred to the mouth. Another way they acquire energy is by symbiotic algae which produce nutrients by photosynthesis. *Eusmilia fastigiata* gains additional benefit from the carbohydrates generated and the coral's nitrogenous waste products are used by the algae (Kluijver and Gijswijt, 2009).

POPULATION ECOLOGY. Coral colonies consists of many genetically identical polyps. A corallite is the calcareous skeletons produced by individual polyps. Stony corals secret calcium carbonate in the form of aragonite, thereby forming an exoskeleton which aids in the protection of the polyps. A tissue layer covers the calcium carbonate skeleton thus connecting the coral polyps. The first age of maturity of most reef building corals is generally 3-8 years and the average age of mature individuals is more than 8 years, with a generation length of 10 years. The longevity of the coral is unknown, but it is likely to be more than 10 years (IUCN, 2008).

REPRODUCTION. Corals reproduce when there is dispersal of gametes into the water. After this happens, the development of the fertilized egg into a planula larva occurs, that results in the formation of part of the zooplankton and travels with the movement of water. Several larval stages pass until it settles on the bed of the water and metamorphosis takes place, forming the polyp. The calcium carbonate skeleton is secreted by the base of the polyp and the polyp founds a new colony, creating new polyps by the process of budding.

APPLIED ECOLOGY. *Eusmilia fastigiata* is listed in IUCN red list of threatened species (IUCN, 2008). This species is in danger due to a disease known as white plague and bleaching as a result of climate change and ocean acidification. There have been mortalities of this coral reported. *Eusmilia fastigiata* is also harmed by overgrowth and excessive presence of macroalgae. In addition, these corals are damaged when they break by high sedimentation and hurricanes in shallow depths and localized predation by *Sparisoma virdis* (stoplight parrotfish).

REFERENCES

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Fig. 2. Opening of tentacles of *Eusmilia fastigiata* at night when feeding.

[http://www.dreamstime.com/royalty-free-stock-images-smooth-flower-coral-eusmilia-fastigiata-image4891589, downloaded 9 March 2016]

Fig. 3. Distribution of *Eusmilia fastigiata.*

[http://www.iucnredlist.org/details/133400/0, downloaded 9 March 2016]