

Dichocoenia stokesii (Elliptical Star Coral or Pineapple Coral)

Order: Scleractinia (Stony Corals)

Class: Anthozoa (Corals and Sea Anemones)

Phylum: Cnidaria (Corals, Sea Anemones and Jellyfish)



Fig. 1. Elliptical star coral, *Dichocoenia stokesii*.

[<https://www.flickr.com/photos/myfwc/6076689487/in/album-72157627509643448/> , downloaded 8 May 2016]

TRAITS. *Dichocoenia stokesii* or elliptical star coral is also known as the pineapple coral. The colour variations are cream, yellow and brown. It ranges in height from 10-38cm (Charpin, 2014), forming spherical domes of up to 40cm in diameter, and sometimes flattened plate-like shapes (De Kluijver et al., 2016). The structures appear rugged and ridged since the corallites (the calcified structures which surround the polyps) extend in vertical Y-shaped protrusions with characteristic circular, oval or elliptical patterns (Fig. 1) (Wikipedia, 2016). The trabecular or spongy corallite is fragile and surrounded by white ridged septo-costae (EDGE, 2016), and each polyp is from 3.5-4.5mm in diameter. There are wide spaces between the corallites which has a rough, sandy texture (DCNA, 2014).

DISTRIBUTION. The elliptical star coral is a marine species which inhabits the Atlantic Ocean and Caribbean Sea. The range extends from Florida, along the Gulf of Mexico, throughout the Caribbean, the Bahamas and Bermuda (Fig. 2). It is native to the Bahamas, Bermuda, Florida, Mexico and the Caribbean archipelago, including Trinidad and Tobago (Aronson et al., 2008).

HABITAT AND ACTIVITY. The species inhabits the fore reef and back reef and the reef base, but rarely the crest. It also inhabits outer reef channels and lagoons. They are nocturnal. It can be found in tropical marine habitats down to a depth of 70m but typically inhabits shallower depths of 5-20m where there is maximum light availability (Aronson et al., 2008).

FOOD AND FEEDING. During the day the polyps are withdrawn within the corallites, and only extend tentacles with nematocysts (stinging cells) at night to catch prey. Prey include small free-floating organisms in the oceanic currents, and are brought into the mouth by the tentacles. *Dichocoenia stokesii* has a symbiotic relationship with zooxanthellae (single-celled algae) which photosynthesize during the day and provide the energy for the coral. The zooxanthellae live within the coral tissues (Walton Smith, 1948).

POPULATION ECOLOGY. The polyps form colonies. The colonies are found in relatively high abundance among reef-building corals (Palandro et al., 2005). The population trend is declining, similar to that of all coral reef species. There was a severe decline in population in Florida in 1995 due to white plague disease (Fig. 3) causing 38% mortality and 75% colony decrease (EDGE, 2016), however it is still abundant within the Dutch West Indies coral reefs (DCNA, 2014). Due to the slow growth rate and the existing threat the species has not been able to re-colonize the Florida area (EDGE, 2016). The population is dominated by larger colonies which indicates that the existing colonies are growing but there is a failure to reproduce to form new colonies (Aronson et al., 2008).

REPRODUCTION. The polyps are gonochoric (distinctly male or female). Colonies are able to reproduce sexually and asexually via spawning and budding respectively. During sexual reproduction, the separate colonies simultaneously release the gametes into the water. After the sperm fertilizes the egg, a juvenile larval form results which can survive floating freely for several days. The success rate of sexual reproduction is low, as is the survival rate of the larvae. During asexual reproduction, the mature polyp replicates by splitting into two, genetically identical clones (DCNA, 2014).

BEHAVIOUR. The mature polyps are sessile but juvenile larvae float freely within the water for days after each spawning event, until they settle on a hard substrate material and can re-colonize. As the polyps mature, the calcium carbonate secreted forms a hard, protective exoskeleton (EDGE, 2016).

APPLIED ECOLOGY. The species is listed as a vulnerable species on the IUCN Red List and is included in Appendix ii of the CITES according to the United Nations Environment Programme (UNEP) and the World Conservation Monitoring Centre (WCMC) (CITES, 2016). The individual effect on the species is not known but an overall decline in habitat is seen. Global climate change has led to increased temperatures and acidification of the oceans which has resulted in high susceptibility to diseases like white plague (Fig. 3) and black band disease as

well as sedimentation, bleaching and physical damage by storms. The degradation of coral reef has led to a decline in habitat. In addition to habitat loss, other threats include human activity such as overfishing and unsustainable fishing practices, the tourism industry which harvests coral for jewellery and souvenirs, and recreation such as snorkelling and diving where the coral is trampled and physically destroyed. There have been considerable conservation efforts for coral reefs overall including a network of Marine Protected Areas and conservation groups and trust funds, monitoring and education programmes. In situ conservation methods need to be supplemented with captive breeding and genome resource banks (Aronson et al, 2008).

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Fig. 2. Map showing distribution of *Dichocoenia stokesii*.

[www.edgeofexistence.org/coral_reef/species_info.php?id=1853, downloaded 9 May 2016]



Diseased elliptical starcoral - 07-1995

Fig. 3. Elliptical star coral with white plague disease.

[www.keyshistory.org/reef-elliptical-starcoral.jpg, downloaded 9 May 2016]

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