

Acanthurus chirurgus (Doctorfish Tang)

Family: Acanthuridae (Tangs and Surgeonfish)

Order: Perciformes (Perch and Allied Fish)

Class: Actinopterygii (Ray-finned Fish)



Fig. 1. Doctorfish tang, *Acanthurus chirurgus*.

[<http://www.reefs2go.com/product/F-TANG-DOCTOR/Doctorfish-Tang-Saltwater-Fish-Acanthurus-chirurgus.html>, downloaded 19 March 2015]

TRAITS. Their body colour ranges from blue-grey, grey to dark brown. Their colour depends on the occupied habitat. 10-12 narrow vertical bars are present on their sides, which help separate them from other regional *Acanthurus* species. Their fins are blue with a lighter band of blue on their tail fin. A dark spine-like structure is located on each side of the caudal peduncle (base of the tail fin), with the groove edged in blue (Fig. 1). These spines fold into their grooves when they are not in use. Their teeth are designed for scraping algae off of corals and rocks. Internally, they possess a gizzard like organ as their way of digesting the sand and other food sources they ingest whole. Doctorfish tang's length have been recorded to reach up to 39cm; weighing up to 11kg. However, its common growth size is 25cm long with 5kg in weight.

DISTRIBUTION. They are widely spread throughout the tropical and subtropical regions of Western Atlantic. They are located from the North of the Gulf of Mexico, to Sao Paulo in Brazil; 37°N-7°S, 89°W-34°W (Fig. 2). They are commonly found in the shallow, rocky reefs of the West Indies. They are native to Trinidad and Tobago along with many other islands such as Jamaica, Grenada and Barbados.

HABITAT AND ACTIVITY. Doctorfish tangs occupy various habitats. Some may occupy reefs while others may occupy the sandy bottoms of the oceanic bed. They tend to occupy shallow areas of reefs as well as rocky habitats (Fig. 3). Juveniles occupy seagrass beds as well as mangroves. Water depths range from 2-25m. They are documented as diurnal due to their eating habits. Doctorfish tangs are typically herbivores, their diet mainly consists of benthic (bottom-living) algae.

POPULATION ECOLOGY. Doctorfish tang tend to swim singly, in pairs (Fig. 4) or in small aggregations. These aggregations are made up of either their species or related species. They are not too much of an aggressive organism yet they possess territorial traits to an extent. According to IUCN Red List, Doctorfish tang can live up to a maximum of 43 years. It has been recorded in Lee Stocking Island, Bahamas, that these species can live up to 27 years and in San Blas, Panama, up to 16 years. Doctorfish tang survival years fluctuate from 8 to 37 years. Their survival rate is affected due to the stress level of the environment they occupy. These ratings are bases on non-captivity observations. Their lifespan in captivity is usually up to 7 years. They tend to be abundant along the Caribbean strip as they favour the water's warmth and rocky environs.

REPRODUCTION. Spawning occurs in the open ocean, typically around the evening time of the lunar cycle leaving behind fertilized eggs. At this time, the sea current is strongest and the tidal ranges are the largest. These groups consists of one male to one or more females (Robertson, 2008). Fertilization is external as the females lay their eggs and the males fertilize them. Multiple eggs are laid, each consisting of an oil droplet enabling them to float, thus making them pelagic. Egg's diameter are no larger than 1mm. These eggs are hatched within 24 hours into larvae which grow into the acronurus stage (a special stage found in tangs and surgeonfish – Fig. 4). They are commonly found close to the shore. No parental care is given to the young ones - they are left to survive on their own.

BEHAVIOUR. This species possess anti-predator adaptations such as their razor-sharp caudal spine, congregation attacks and sometimes, their colourful appearance. Their razor sharp caudal spine is venomous which can cause pain to small predators. Congregation attack enhances the effect of the caudal spine defence mechanism as this attack is performed as a group onto the predator. Their aposematic (warning) colourful appearance sends a message of their characteristics of poisonous skin and venomous spine to their predators. These fish communicate by changing their body colouration due the condition and their perception on the environment. For example, high stress level environs will result in their skin to deepen in their blue colouration. This effect is due to iridiophores (reflecting bodies) which causes the brighter blue colouration to become smaller and less iridescent, thus producing a darker shade of blue. Change in skin colouration can send messages such as male dominance or warning signals depending on the highlighted area on the fish's body; such as the colouration along the caudal spine.

APPLIED ECOLOGY. *Acanthurus chirurgus* are not listed on the IUCN Red List. The loss of coral reef areas and degradation of their habitat are two of their major threats they are previously encountering. Loss of coral reefs means loss of food source and habitat area. However, many Caribbean countries have implemented laws pertaining to coral reef destruction as a way of conserving such ecosystem. Doctor fish are popular on the trading market as they are usually purchased for harvesting and as pets. They are harvested in Haiti and Jamaica as they are the targeted fish food for other trophic level consumers. They can be sold between prices from \$29.00US to \$69.00US from online trades. Doctorfish tangs are neither a problem towards society nor are they common disease carriers. However, if one was to get cut by their venomous caudal spine, one can experience discolouration and swelling of the skin as they possess high risk infections. The encountered pain can last for hours.

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Fig. 2. Doctorfish tang geographic distribution.

[http://www.aquamaps.org/receive.php?type_of_map=regular, downloaded 19 March 2015]



Fig. 3. *Acanthurus chirurgus* in its typical rocky habitat.

[<http://www.spearboard.com/archive/index.php/t-13038.html>, downloaded 23 March 2015]



Fig. 4. Acronurus juvenile stage of a tang.

[<http://www.flmnh.ufl.edu/fish/gallery/descript/bluetang/bluetang.html>, downloaded 18 April 2015]



Fig. 3. *Acanthurus chirurgus* swimming behaviour; swimming in pairs.

[https://www.google.tt/search?biw=1012&bih=461&source=lnms&tbn=isch&sa=X&ei=xpMQVcCqJKPlsATP9YDoAg&ved=0CAYQAUoAQ&q=Acanthurus+chirurgus+swimming#tbn=isch&q=Acanthurus+chirurgus+communication&imgdii=&imgrc=pIsa3MN0tZjJuM%253A%3B73LugfcqfIuLUM%3Bhttp%253A%252F%252Fupload.wikimedia.org%252Fwikipedia%252Fcommons%252Fa%252Faf%252Facanthurus_chirurgus_and_Acanthurus_coeruleus.jpg%3Bhttp%253A%252F%252Fcommons.wikimedia.org%252Fwiki%252Ffile%253Aacanthurus_chirurgus_and_Acanthurus_coeruleus.jpg%3B2390%3B1593, downloaded 23 March 2015]

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