

Acanthurus coeruleus (Blue Tang Surgeonfish)

Family: Acanthuridae (Tangs and Surgeonfish)

Order: Perciformes (Perch and Allied Fish)

Class: Actinopterygii (Ray-finned Fish)



Fig. 1. Blue tang surgeonfish, *Acanthurus coeruleus*.

[<http://artssciences.lamar.edu/biology/marine-critters/marine-critters-2012/the-blue-tang-surgeonfish.html>, downloaded 12 February 2015]

TRAITS. *Acanthurus coeruleus* is commonly known as the blue tang surgeonfish because of the colour and physical structures of the fish (Fig. 1). They have extremely sharp spines on either side of their tails that imitate a surgeon's scalpel (Lamar University, 2012). They can get as big as 39cm in length, with a range of 12-39cm. They are very thin and compressed, and their eyes are located high on the head, while their mouths are much lower and smaller (MarineBio, 2013).

DISTRIBUTION. *Acanthurus coeruleus* is found in the western Atlantic Ocean from New York, which is seasonal, to Bermuda and the Gulf of Mexico, then to Brazil in the south, between 41°N and 33°S latitudes (Sea World, 2015). Typically they are abundant in tropical regions, including Trinidad and Tobago. This species is also found in a very few scattered locations in the eastern Atlantic Ocean (Fig. 2).

HABITAT AND ACTIVITY. Typically found in water ranging from 2-40m in depth with temperatures of 24-26°C (MarineBio, 2013). The blue tang surgeonfish habitats are specific to coral reefs, where they hide out from predators (Luna, 2015). Blue tang surgeonfish confine themselves to sheltered areas where they are secure from unwanted danger especially at night as they are diurnal in nature. This fish can be found in groups or by itself (IUCN, 2014). The groups contain no more than 10-12 members, however rarely large aggregations of 100 members may be formed as a mechanism for foraging shallow reefs grazing for algae (MarineBio, 2013). The smaller groups do more foraging in the water column (Woodruff, 2013). Baby blue tangs are hardly seen as they are much smaller and are easy targets of predators. Juveniles can mainly be found in the reef crest and spur zones as well as the fringe of the reef flat zone. Interestingly as the juveniles grow so too does their home range, therefore causing them to be solitary and defend their territory.

FOOD AND FEEDING. Blue tang surgeonfish are residents of coral reefs as well as grassy inshore habitats and rocky areas where marine plants such as algae and detritus are their primary food source. Adult blue tangs are primarily algivores; herbivores that feed on filamentous algae. This is their preferred choice because of the simplicity their digestive system. Their stomach lacks the gizzard like structure of other surgeonfish, as a result they avoid eating calcareous matter (corals) (Woodruff, 2013). They not only eat algae from the surroundings but also off fish in their vicinity, therefore being categorised as cleaners. Because of the amount they eat, they prevent the coral reefs from the proliferation of algae.

POPULATION ECOLOGY. Blue Tangs were found to be more abundant than other species of fish in the regional scale, they account for 15.4% of the region's fish (Woodruff, 2013). This species does not have a set way of co-existing, they can be found by themselves, in pairs and in groups with numbers ranging from 10-12 for small groups and 100 members for larger groups.

REPRODUCTION. For these fish to mate it is highly dependent on a few factors such as currents, moon phase, the absence of predators, and must be in a suitable location. Normally mating occurs at approximately 6-10 m deep where the currents are available to transport the fertilized eggs. When the female is ready to mate she changes her colour to a lighter blue. The process occurs when the males release gametes at the water surface and fertilization occurs after contact is made with the female. After the eggs hatch the larvae are then in the pelagic (open-water) stage. They then move inshore where they take approximately a week to develop into juveniles. After one year they reach sexual maturity and can then survive for 10-15 years.

BEHAVIOUR. A special characteristic of this fish is that they go through three colour phases (MarineBio, 2013), just as they go through phases of schooling, territorial and wandering. From juvenile to adolescence the fishes go through a change in colour which starts off as yellow and as they grow older the colour changes to blue. The entire population does not have the same colour, in some cases the extent of the colour on the fishes may vary. Some might be seen with blue or yellow bodies with blue fins; and again as they become adults there is a more distinct appearance that sets them apart, they are usually bright blue and may even appear purplish-grey with a yellow caudal fin (MarineBio, 2013). By being territorial this group uses colour as a means of communicating, marking their space and as a result their food resources. Wandering blue tangs are casual, they do not swim aggressively or attack in any way, rather they swim

quickly visiting cleaning stations more than other blue tangs. Wandering usually takes place during the morning.

APPLIED ECOLOGY. According to Lamar University (2012), the blue tang surgeonfish is not yet listed on the IUCN red list. This species does not seem to have any major threats to their life but are suffering a gradual loss of their habitat. They spend most of their lives in coral reefs habitats, although most of them occupy coral reefs as their main habitat others find comfort in sea grass beds, mangroves and algae. Approximately 80% of the fish that occupy coral reefs are experiencing a 30% loss of coral reef and degradation of coral reef habitat quality across their distributions.

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Author: Anusha Bissoon

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Fig. 2. Geographic distribution of *Acanthurus coeruleus*.

[<http://maps.iucnredlist.org/map.html?id=177953>, downloaded 2 February 2015]

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