

Holacanthus ciliaris (Queen Angelfish)

Family: Pomacanthidae (Angelfish)

Order: Perciformes (Perch and Allied Fish)

Class: Actinopterygii (Ray-finned Fish)



Fig. 1. Queen angelfish, *Holacanthus ciliaris*.

[http://eol.org/data_objects/28667656, downloaded 30 March 2015]

TRAITS. *Holacanthus ciliaris* or queen angelfish are easily spotted because of the brilliant blue tones of their flat bodies, adorned with vivid yellow accented scales and yellow tail (Fig. 1). The adults have a somewhat different appearance from juveniles, which usually have a blue body with yellow bands or yellow body with blue bands. A key distinguishing feature of this species is the navy blue patch located above the eye at the centre of the head. This “crown” is freckled with a set of bright blue spots, the same shade outlining the crown. In addition to the single unbroken yellow dorsal and anal fins, each fish is armed with a range of 9-15 spines as well as soft rays. On average, adults grow to a length of about 30cm, but can grow up to 45cm and have a weight of 1.6 kg. Males are usually larger than females (Ajagbe, 2011).

DISTRIBUTION. *Holacanthus ciliaris* do not migrate and can be spotted in reefs in the western Atlantic Ocean. They can be found in waters from Florida in North America, the Caribbean and Central America and all the way down to Brazil in South America (Fig. 2). They are native to Trinidad and Tobago.

HABITAT AND ACTIVITY. The queen angelfish is diurnal and is most commonly found in reefs surrounding offshore islands at depths of up to 70m. These reefs are naturally very rich in nutrients and so provide sufficient food sources for this and other species. The fish are predominantly marine fish and prefer the salinity of the ocean water, however, they can adapt to survive and thrive in waters of slightly different salinities as well. Because of this adaptability, the *Holacanthus ciliaris* is a species that survives easily in marine aquariums, and so, the fish are frequently cultivated outside of their natural habits in the reefs for domestic resale.

FOOD AND FEEDING. Based on the examination of stomach contents of 26 queen angelfish, it became apparent that its diet consists mostly of sponges. Although this is the main element of the diet, the fish was found to have a diverse diet of at least 30 species. They also supplement this with hydroids, corals, byozoans, jellyfish, tunicates, algae and plankton in small amounts. At the juvenile stage, the fish feed on the ectoparasites found growing on larger fish and are, as such, referred to as “cleaners”. Outside of their natural habitats in coral reefs, in settings like aquariums, the fish are given an alternative diet (Patton and Bester, 2010; Reis et al., 2013).

POPULATION ECOLOGY. They are usually observed to be moving singly or in pairs. This is the case for regular behaviour, and does not apply to courtship periods when they are sometimes found in larger groups called harems. The population is relatively abundant and stable throughout most of its range in natural territory. They can survive up to about 15 years in their natural habitats.

REPRODUCTION. According to reports, the queen angelfish are classified as polygynous organisms. During the periods of courtship and pre-spawning, groups with a ratio of 1 male to about 4 females are present. These groups are referred to as harems. For this species, like many others, the females are courted by the males. The male flaunts his pectoral fins by thrusting them out repeatedly. The female typically responds by swimming upward through the water. This allows the male to assume his position below the female. He then proceeds to make contact between her vent (or genital area) and his snout. As this is taking place, they ascend in unison through the water to a depth of about 18 m, with his belly close to hers. At this depth, the male releases sperm and the female releases eggs (Colin, 1983; Patton and Bester, 2010).

Most of the spawning for *Holacanthus ciliaris* has been observed to occur during the months of winter in the area of Puerto Rico. A spike in this behaviour is noticed annually, although some may take part in spawning more than once for the year. The process of spawning has been found to take place on winter evenings, especially at sunset. Females are capable of producing anywhere between 25,000 and 75,000 eggs during one evening spawning session. After the eggs are fertilized, they can be expected to hatch with a 15-20 hour window. The yolk sacs are absorbed by the larvae within 48 hours after hatching. After the sacs are absorbed, the larvae can then start feeding on plankton. They grow at a rapid rate and can reach a size of 15-20mm as juveniles. After eggs are fertilized, the zygotes are left to grow on their own since there is little parental investment after this stage (Colin, 1983; Patton and Bester, 2010).

BEHAVIOUR. As juveniles, the fish situate themselves amongst finger sponge and coral colonies in order to find protection. These are usually at the bottom of the reefs, out of sight of most of the larger predators (Patton and Bester, 2010). Communication between queen angelfish

takes place frequently during mating via temporary colour changes in the body of the fish (Luiz-Junior, 2003).

APPLIED ECOLOGY. This species has not been placed the IUCN endangered or vulnerable list and are classified as a species of “least concern”. It has no special status on the US Federal List and CITES. *Holacanthus ciliaris* is, however used as part of the commercial aquarium trade and is associated with a phenomenon referred to as ciguatera poisoning, caused by an accumulation of ciguatoxins in the fish. When larger fish feed on the affected fish, the toxin levels become high enough to become toxic to humans if ingested. This phenomenon may last for a few weeks and can be identified in humans if the following symptoms are experienced: limb weakness, gastrointestinal issues and the loss of one’s ability to recognize the difference between hot and cold (Luiz-Junior, 2003).

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Author: Saara Shah

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Fig. 2. Queen angelfish distribution based on population numbers.

[<http://iobis.org/mapper/?taxon=Holacanthus%20ciliaris>, downloaded 31 March 2015]

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