

## *Chaetodon capistratus* (Four-eye Butterflyfish)

Family: Chaetodontidae (Butterflyfish)

Order: Perciformes (Perch and Allied Fish)

Class: Actinopterygii (Ray-finned Fish)



**Fig. 1.** Four-eye butterflyfish, *Chaetodon capistratus*.

[<http://www.marinelifephotography.com/fishes/butterflyfishes/chaetodon-capistratus.htm>, downloaded 10 March 2015]

**TRAITS.** This fish's body is flattened and discoid in shape (Bohlke and Chaplin, 1968). It possesses a sunken forehead. Its body morphology is well suited for manoeuvring through the sea grass beds and coral reefs in its natural habitat. Its protruding mouth is small and ends in a short snout (Nelson, 1984). The dorsal and anal fins bear protuberant spines (Bohlke and Chaplin, 1968). The feature characteristic of the four-eye butterflyfish relates to it bearing a dark spot surrounded by a white ring that functions as a false eye (Fig. 1). This is observed on the posterior region of the body and is the feature that generated its common name. The head bears a black bar in which the actual eye can be found, thus rendering it inconspicuous to predators. The adult fish possesses a white body covered in many thin dark lines that diverge from the centre of the body and extend to the top and bottom portions of the body. Adults are commonly less than 10cm in length but may reach a maximum of 15cm in some cases. Butterflyfishes are sexually monomorphic; the males and females look alike and are indistinguishable from one another, but there are some occurrences of males being slightly larger than the females in size.

**DISTRIBUTION.** Geographical range spans the tropical western Atlantic (Fig. 2), specifically along the South and North American coasts (ranging from Massachusetts to Brazil, inclusive of the Gulf of Mexico and the Caribbean).

**HABITAT AND ACTIVITY.** This fish populates shallow coral reefs and sea grass beds and can be observed at depths of less than 20m, very seldom up to 50m (Nelson, 1984). Juveniles (Fig. 3) are known to occupy comparatively shallow regions such as shallow reefs or grass beds and are usually found in sheltered areas such as coral heads or rocks where their food sources thrive. Juveniles are normally solitary while the adults can be observed alone or in pairs. One of its more prominent features relates to its ability to manoeuvre skilfully around coral heads and reefs. They are known to swim upside down or sideways to navigate through convoluted passages to find food and shelter. They are active during the day and sleep at night and are known as a diurnal species. As a result the fish is more susceptible to being preyed upon by predators of the night including some sharks and moray eels.

**FOOD AND FEEDING.** Four-eye butterflyfish feed on a vast array of small invertebrates during the day. Its characteristic short protruding snout enable the fish to easily acquire such food in between intricate crevices in coral reef (Fig. 4) where small invertebrates tend to conceal themselves. They possess teeth that can be likened to fine hair-like bristles which are arranged in narrow rows in the jaws and aid in nipping at invertebrates such as polychaete worms, tunicates, gorgonians and zoantharians in inaccessible areas (Wikipedia, 2014). Observed feeding behaviour or pattern associated with the four-eye butterflyfish could be described as rapid, consecutive nips on coral, and that a lot of its movements are swimming back and forth to coral heads.

**POPULATION ECOLOGY.** Juveniles are typically solitary. Adults can be observed alone but are most commonly observed in pairs (Fig. 5) after maturation as they are one in a small group of fish species that mate for life. It is common for the adult fish, upon potential separation, to endeavour to be reunited with its respective partner. In areas where the density of adults are high social foraging groups consisting of several fish (Fig. 6), up to fifteen individuals, can be seen. The life span of the four-eye butterflyfish is expected to be a maximum of seven years in the wild, however, in the captivity of an aquarium they can survive for up to ten years. This species is relatively abundant and their population is not threatened to be endangered or extinct by any means.

**REPRODUCTION.** These fish are known to pair up early in life with a mate for which they remain with for their entire life span. The courtship process involves circling one another and chasing among the reef. They are pelagic spawners, that is, they release their eggs and sperm into the open sea. Upon mating, the fish release their eggs (3000-4000 small eggs) into the water amongst the plankton. This puts the eggs at risk of being accidentally eaten when they are mistaken for plankton. The larvae grow into the post-larval tholichthys stage (Fig. 3), with a bony armour around their head from which bony plates protrude for protection. They are silver/grey in colour and are nearly transparent. The tholichthys then assume the physical form of the juvenile stage with regards to their colour.

**BEHAVIOUR.** The four-eye butterflyfish is preyed upon by larger fish, moray eels and some sharks. Upon coming into contact with such a predator, the fish usually attempts to flee, taking care to position its false eye spot closer to the predator, rather than its head. However, when

chances of eluding are unfavourable, the fish will approach its aggressor face forward and lower its head and raise its dorsal fins in an intimidating posture to reveal fully erect spines. This tactic is employed to scare away the predator as well as convey to them that they are spiny and will therefore be unpleasant to consume.

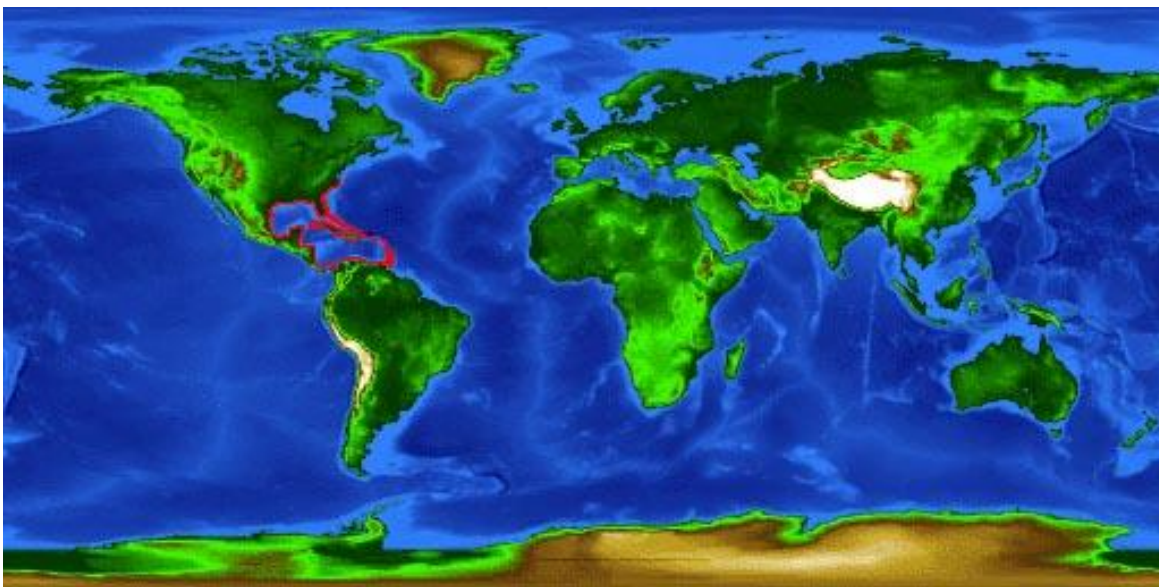
**APPLIED ECOLOGY.** Four-eye butterfly fish are harvested by humans for their commercial value. They are targeted for the aquarium trade due to their favourable small size and their attractive physical appearance in spite of the fact that their diet is very specific which makes feeding them a relatively daunting task. The World Conservation Union (IUCN), which is a reputable body that assesses the conservation status of species, does not include the four-eye butterflyfish on its list of endangered or threatened species.

#### REFERENCES

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**Fig. 2.** World distribution map of the four-eye butterflyfish.

[<http://www.flmnh.ufl.edu/fish/gallery/Descript/ButterflyFour/ButterflyFour.htm>, downloaded 28 February 2015]

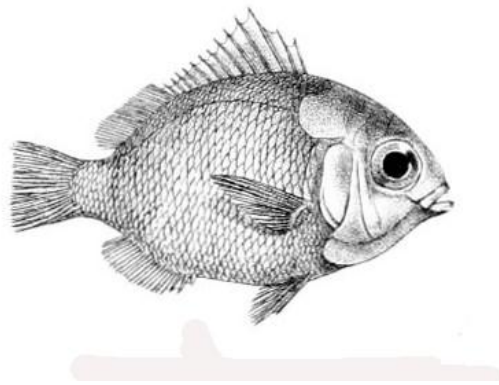


Photo by David Snyder ©

**Fig. 3.** Tholichthys and juvenile stage four-eye butterflyfish.

[<http://de.wikipedia.org/wiki/Tholichthys#/media/File:Tholichthys.jpg>, downloaded 15 May 2015;  
<http://www.flmnh.ufl.edu/fish/gallery/Descript/ButterflyFour/ButterflyFour.htm>, downloaded 10 March 2015]



**Fig. 4.** Four-eye butterflyfish feeding on coral known as *Acropora palmata*.

[[http://www.ocean-planet.info/ocean\\_planet/cur\\_2009\\_uw/cur\\_2009\\_chaetodon\\_feeding\\_on\\_acropora\\_palmata.JPG](http://www.ocean-planet.info/ocean_planet/cur_2009_uw/cur_2009_chaetodon_feeding_on_acropora_palmata.JPG),  
downloaded 17 March 2015]



**Fig. 5.** Pair of adult four-eye butterflyfish.

[<http://life-sea.blogspot.com/2011/07/life-of-four-eye-butterflyfish.html>, downloaded 11 March 2015]



**Fig. 6.** Group of four-eye butterflyfish swimming around coral reef.

[<http://www.coralreefphotos.com/2011/11/>, downloaded March 12 2015)