

Acanthostracion quadricornis (Scrawled Cowfish)

Family: Ostraciidae (Boxfish)

Order: Tetraodontiformes (Pufferfish, Triggerfish and Boxfish)

Class: Actinopterygii (Ray-finned Fish)



Fig. 1. Scrawled cowfish, *Acanthostracion quadricornis*.

[<https://classconnection.s3.amazonaws.com/394/flashcards/5065394/png/picture1-144C7E450A20DA0C6A8.png>, downloaded 6 October 2016]

TRAITS. *Acanthostracion quadricornis* is commonly known as a cowfish because it has a distinguishing pair of bones that protrude from in front of its eyes in a way that resembles cow horns (Bester, 2010). Its body is enclosed by a yellow/greyish-brown carapace which runs from its snout to the bases of the dorsal and anal fins. The carapace is formed by the merging of several hexagonally-shaped epidermal bony plates, and protects the cowfish from being prey to larger fish. There is another pair of bones located at the point where the carapace ceases (Bester, 2010). The body is covered with vivid, opalescent blue spots, lines and blotches (Figs 1 and 2). The scrawled cowfish has a short rounded caudal fin. It does not possess dorsal fin spines or pelvic fins. It commonly ranges from 20-40cm in length (Luna and Bailly, 2002), however the largest scrawled cowfish is reportedly 55cm (Bester, 2010). It has a small mouth with thick lips and 15 or less cone-shaped teeth per jaw. This species does not display sexual dimorphism, and is often confused with *Acanthostracion polygonius*, the honeycomb cowfish (Bester, 2010).

DISTRIBUTION. It is native to Trinidad and Tobago and found in tropical and temperate waters of the west Atlantic from Massachusetts, Bermuda, the Bahamas and throughout the northern Gulf of Mexico to south-eastern Brazil, including the Caribbean Sea, and also in the eastern Atlantic (Fig. 3). It is most common in Florida and the Caribbean especially in the Bahamas (Tyler et al., 2015).

HABITAT AND ECOLOGY. The scrawled cowfish dwells in marine habitats, and is common within its range (Digital Fish Library, 2014). They inhabit coral reefs or sea grass beds at shallow depths of about 80m, typically found in gently sloping, protected coastlines (Fig. 4). The scrawled cowfish eats crustaceans, sea anemones, marine vegetation, and sessile invertebrates such as sponges, tunicates, and gorgonians (Tyler et al., 2015). The scrawled cowfish exhibits diurnal activity. The lifespan of this organism is currently unknown.

REPRODUCTION. The scrawled cowfish is an egg laying species and spawns during January through February and June through September (Bester, 2010). Fertilization occurs by external means. Its eggs are discharged and scattered into pelagic waters. The cowfish does not guard or protect its eggs. The larval stage is completed in pelagic zones (open water) and the young juveniles eventually settle out of the water column (Luna, 2004).

BEHAVIOUR. *Acanthostracion quadricornis* is a calm and slow swimmer which operates its dorsal and pectoral fins in a rowing-like fashion to drive itself forward (Digital Fish Library, 2014). The juvenile scrawled cowfish has an oval body shape (Fig. 5) as opposed to the mature species which has a box-like body shape, making it a faster swimmer. Its body is also enclosed by a carapace that is light tan in colour and protects it from being attacked by predators. Its exterior is covered with equally dispersed melanophores on all the hexagonal plates, which appear black because of their light absorbing properties. This feature allows the fish to camouflage by changing colour (Schmidt and Lake, 2001).

The scrawled cowfish is wary of predators. When harassed or frightened, it sometimes makes grunting noises, becomes motionless or partly buries itself in sand in an attempt to camouflage. The adults may also discharge a toxic substance known as ostacitoxin (Digital Fish Library, 2014).

APPLIED BIOLOGY. The scrawled cowfish is not currently listed as endangered by the IUCN as there are no major threats to the species (Tyler et al., 2015), hence there are no conservation methods in place. It is often reared for commercial purposes and sold as an aquarium fish due to its attractive coloration (Digital Fish Library, 2014).

REFERENCES

- Bester, C. 2010. Florida Museum of Natural History. May 21. <https://www.flmnh.ufl.edu/fish/discover/species-profiles/acanthostracion-quadricornis/>.
- Digital Fish Library. 2014. *Acanthostracion quadricornis* (Scrawled Cowfish). August 4. <http://www.digitalfishlibrary.org/library/ViewSpecies.php?id=6>.
- Exotic Aquariums. 2009. Saltwater & Marine Reef Fish Care & Breeding Guide . November 13. <http://exotic-aquariums.com/cowfish.html>.
- Luna, S. M. 2004. *Acanthostracion quadricornis* (Linnaeus, 1758). April 17. <http://www.fishbase.org/Reproduction/FishReproSummary.php?ID=92&GenusName=Acanthostracion&SpeciesName=quadricornis&fc=446&StockCode=106>.

Luna, S.M. and Bailly, N. 2002. FishBase. February 1. <http://www.fishbase.org/summary/92>.

Schmidt, R. E., and Lake, T.R. 2001. A benthic juvenile scrawled cowfish (*Acanthostracion quadricornis*) from the lower Hudson River estuary. *Northeastern Naturalist*; 2001, Vol. 8 Issue 3 343-346.

Tyler, J., Robertson, R., Perez-Espana, H. & Vega-Cendejas, M. 2015. The IUCN Red List of Threatened Species 2015. November 21. <http://www.iucnredlist.org/details/193647/25>

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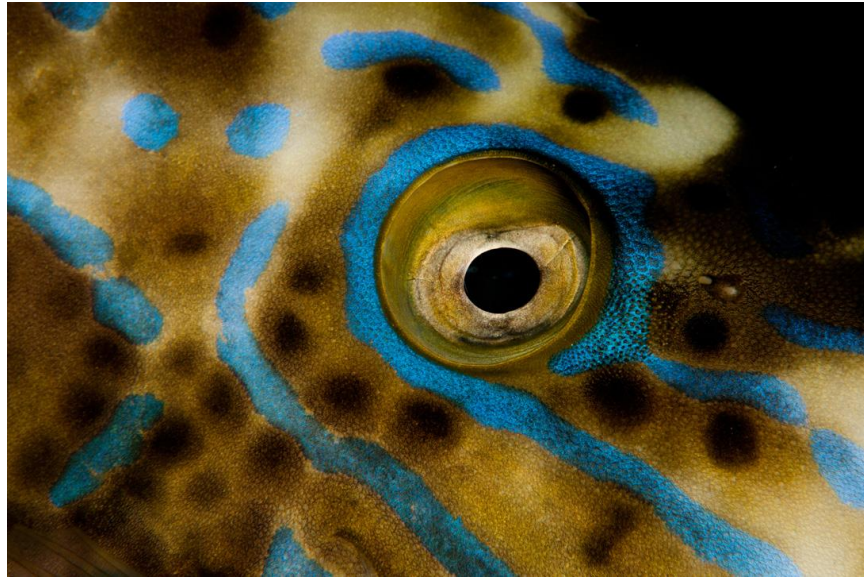


Fig. 2. Scrawled cowfish pattern of blue lines and spots.

[<https://www.flmnh.ufl.edu/fish/discover/species-profiles/acanthostracion-quadricornis/>, downloaded 19 October 2016]

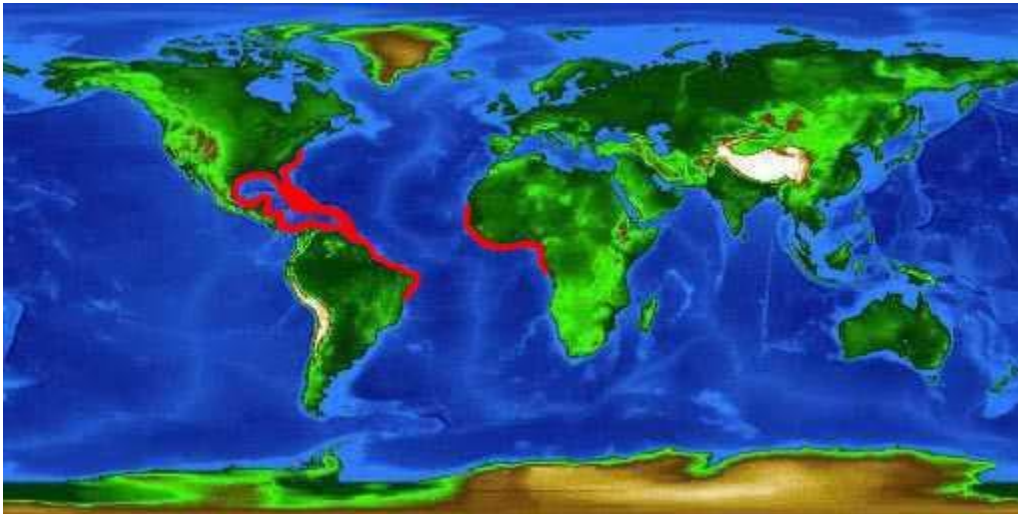


Fig. 3. Scrawled cowfish geographic distribution.

[<https://www.easterisland.travel/images//media/images/nature/eye-rapa-nui-fish-paoa-scrawled-filefish-broomtail-scribbled-leatherjacket-aluterus-scriptus.jpg>, downloaded 19 October 2016]



Fig. 4. Scrawled cowfish in its natural habitat.

[<http://cdn.c.photoshelter.com/img-get2/I0000TZLXqK31vbk/fit=1000x750/Boxfish-Scrawled-Cowfish-Acanthostracion-quadricornis-5.jpg>, downloaded 19 October 2016]



Fig. 5. Juvenile *Acanthostracion quadricornis*.

[https://en.wikipedia.org/wiki/Scrawled_cowfish#/media/File:Acanthostracion_quadricornis_juvenile.jpg, downloaded 19 October 2016]

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