Monacanthus tuckeri (Slender Filefish)

Family: Monacanthidae (Filefish)
Order: Tetraodontiformes (Pufferfish, Triggerfish and Boxfish)
Class: Actinopterygii (Ray-finned Fish)

Fig. 1. Slender filefish, *Monacanthus tuckeri*.

[http://www.coralreefphotos.com/slender-filefish-monacanthus-tuckeri-filefishes/, downloaded 2 November 2016]

TRAITS. The slender filefish is one of the smallest fish in the world (Brown, 2013). This species of filefish is a master of camouflage (Allen et al., 2015), it changes appearance in less than four seconds. Total length is 10mm maximum, 5mm standard (Lieske and Myers, 2002). Two dorsal fins, but lacks pelvic fins (Michael, 2015); approximately 32-37 dorsal soft rays and 31-36 anal soft rays. Concave facial structure with an elongated, laterally compressed body (Fig. 1), and coarse skin (Wikipedia, 2015), spherical caudal fin, body fringed with dermal (skin) flaps. Teeth are designed for nibbling and eyes are high on head. Sexual dimorphism exists, the males have ventral flaps, females do not. Colour: blotchy brown toned with scattered black spots in adults, transparent brown in larvae (Fig. 2).

DISTRIBUTION. Found mainly in the shallow, sandy and rocky depths of the Atlantic Ocean (Fig. 3). Stretches from the coast of North Carolina, South Carolina through the Caribbean to Trinidad and Tobago, also ranges through the eastern coast of Central America.

HABITAT AND ECOLOGY. Found in strictly marine habitats, of shallow sandy and rocky bottoms. It hovers over soft coral, especially gorgonians, foraging on tiny crustaceans and zooplankton (Allen et al., 2015); it also forages on algae and plants. Zooplankton are a mainstay food in coral; corals require sunlight for survival and so abound in shallow depths, which corresponds to the depths where *Monacanthus tuckeri* are found. Strictly diurnal, slender filefish are active during the day (Miller et al., 1971). Most of the time is spent feeding and disguising from predators. Filefishes are gonochoristic (with separate sexes). Females lay spherical benthic eggs at the floor of shallow waters during the new moon (Marinebreeder.org, 2007).

BEHAVIOUR. Slender filefish are seen independently or in pairs. The adults are observed more frequently at smaller depths compared to the young. Slender filefish are able to camouflage into the environment within 3 seconds (Fig 4.), due to their dermal flaps which soften the distinct edges of the fish producing invisibility, allowing them to forage surreptitiously in a three dimensional environment. Due to the extremely small size of the slender filefish, they do not lie on the seabed as bigger fish do, but use their mouth to grasp the soft corals which prevents them from drifting with the sea currents (Fig. 5). The pelagic larval stage is about 42 days long, which allows an increased area for dispersal. The phase of the moon affects the pattern of settlement; slender filefish tend to settle during the new moon.

APPLIED BIOLOGY. This slender filefish consumes zooplankton and crustaceans; they are of no threat to humans. It is listed as of Least Concern on the IUCN Red List and so is not endangered. They are the smallest filefish species and one of the smallest fish sea-wide. It has been observed that the *Monacanthus tuckeri* has become prey to the invasive lionfish, *Pterois volitans*.

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Fig. 2. Slender filefish at larva stage.

[http://www.fishbase.org/Photos/PicturesSummary.php?ID=4283&what=larvegg, downloaded 2 November 2016]

Fig. 3. Slender filefish geographic distribution (indicated in red).

[http://www.aquamaps.org/receive.php?type_of_map=regular, downloaded 2 November 2016]

Fig. 4. Slender filefish camouflaged into environs.

[https://www.newscientist.com/article/dn27753-zoologger-the-fish-that-can-vanish-in-2seconds-flat/#.VYQ1LflVikq, downloaded 2 November 2016]

Fig. 5. Slender filefish sleeping mechanism.

[https://youtu.be/xcJ3IxUOvS0, downloaded 2 November 2016]