

Pterois miles (Devil Firefish or Common Lionfish)

Family: Scorpaenidae (Scorpionfish)

Order: Scorpaeniformes (Mail-cheeked Fish)

Class: Actinopterygii (Ray-finned fishes)



Fig. 1. Devil firefish, *Pterois miles*.

[http://pre.apaaweb.com/jordania_2009.html, downloaded 8 October 2016]

TRAITS. The devil firefish or common lionfish *Pterois miles* has maroon and white coloured stripes throughout its entire body that allows them to blend into some habitats; it has elaborate dorsal, pelvic and pectoral fins and a pair of tentacles above its eyes (Fig. 1). It has cycloid (rounded) scales (Belmore, 2013), and the head is large, up to one third its body length. The firefish has 10 dorsal and 6 anal fin spines, all with venom that is produced from the enclosing skin (Schofield et al., 2012). The caudal (tail) rays are not enclosed by venom-producing skin. Males and females look exactly alike except during times of mating (Morris et al., 2009). Adults typically grow up to 30cm in length, but can reach 43cm and weigh 1.1kg (Belmore, 2013).

DISTRIBUTION. The native geographical area of *Pterois miles* is mainly in the Indian Ocean (Fig. 2). More specifically it is found from the Indochina Peninsula to India and the Red Sea (Belmore, 2013). However, the devil firefish has been introduced and invaded other far-reaching regions of the world such as the east coast of the USA and Caribbean waters (Morris, 2009), and the Red Sea, probably migrating through the Suez Canal (Schofield et al., 2012). This species invaded Tobago's waters a few years ago, at the tail end of the Caribbean, demonstrating its continued migration.

HABITAT AND ECOLOGY. The devil firefish is presently very abundant in numbers. It is popularly found in coral reefs and sheltered areas most times no more than 80m deep (Morris et al., 2009). The devil firefish is nocturnal and hunts primarily at night, very rarely during daylight (Fig. 3). Being slow in movement, it has adapted to overcome this disadvantage as a predator by sneaking up and using its long fins to corner its prey. As it comes closer to its prey, it sucks in the whole prey with a few powerful rapid gulps, countering the disadvantage of having small teeth. It can live up to 15 years of age (Belmore, 2013). It is mainly piscivorous meaning that its diet is small fish, also crustaceans, and even feeding on its own juveniles at times. Its natural and only known successful predator currently is the grouper, but even that rarely has the devil firefish as a meal (Morris et al., 2009).

REPRODUCTION. A two-year old devil firefish would have reached maturity (Belmore, 2013). There is a courtship phase between the fish that occurs right before dark and leads on late into the night, where the male and female circle around each other, then ascend near the surface of the water. The female releases her eggs and the male fertilizes it and the egg clumps float. Embryos then form in adhesive mucus and within a few days they become free floating larvae. The size of larvae on hatching is estimated to be about 1.5 mm (Morris et al., 2009). During one mating session, a female can lay up to 30,000 eggs during spawning (Belmore, 2013). Once warm water is present, it can reproduce easily throughout the year because it is an asynchronous batch spawner. In the Red Sea, a kind of parental care takes place where the adults isolate themselves from the juveniles (Fig. 4), as a strategy to reduce predation on the juveniles (Morris, 2009).

BEHAVIOUR. Adults are solitary, juveniles typically live alone or in small groups (Schofield et al., 2012). When a predator approaches an adult, it expands its pectoral fins and there is no flight response (Fig. 5). The predator moves back as the devil firefish approaches even when its pectoral fins are not fully on display. The devil firefish's prey avoid it as well even though it may not be a known predator species to that fish in non-native areas. This is probably due to its striking colour (Morris, 2009).

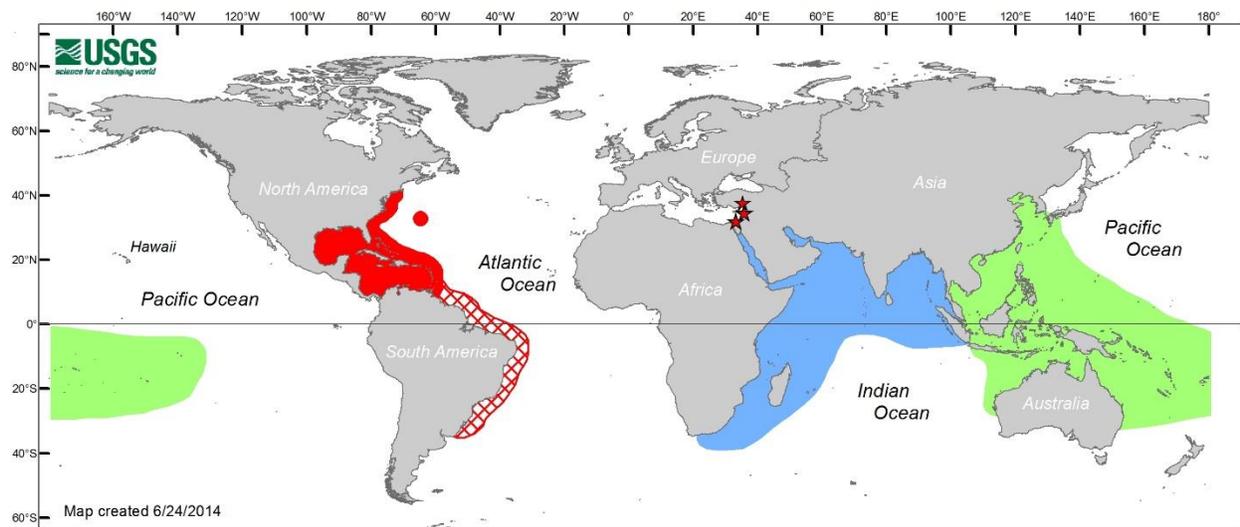
APPLIED BIOLOGY. The devil firefish is in great abundance in the previously mentioned regions on the world including the Caribbean, threatening native reef fish communities (Morris, 2009). It feeds excessively on all fish of the reef threatening the eradication of other species and extinction for those unique endemic species that only live in the invaded areas. The devil firefish is not listed by International Union for Conservation of Nature (IUCN). Increasing devil firefish densities also affect humans because it increases the likelihood of tourists being attacked by the venomous spines causing serious pain and swelling. This may deter tourists causing an economic decline which is crucial for Caribbean countries. In 2006, Bermuda started licensing trained fishers to kill these fish by spearing alongside shores. In 2005, the officials of the Bahamian fisheries issued an order to fishermen to kill these overpopulated fish. There is advancing techniques being developed by the National Oceanic and Atmospheric Administration (NOAA) to catch these fish in deeper areas where divers cannot reach. It has become so critical that Florida has developed a rapid response program (both federal and non-governmental) operating across over thirty states to curb this problem (Morris, 2009).

REFERENCES

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- Schofield, P.J., Morris, J.A., Langston, J.N., and Fuller, P.L. (2012). *Pterois volitans/miles*, <https://nas.er.usgs.gov/queries/factsheet.aspx?speciesid=963>.

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Map of native range of *Pterois volitans* (green) and *P. miles* (blue) adapted from Schultz (1986) and Randall (2005). Stars in Mediterranean Sea denote Lessepsian migration of *P. miles* via the Suez Canal (Golani and Sonin 1992; Bariche et al. 2013; Turan et al. 2014). Non-native range of *P. volitans* and *P. miles* in the Americas is shown in red (from Schofield et al. 2012). Predicted future distribution of lionfish along coastal South America is shown in red hatching (Morris and Whitfield 2009).

Fig. 2. Devil firefish native (blue) and invasive (red) distribution.

[<https://nas.er.usgs.gov/queries/factsheet.aspx?speciesid=963>, downloaded 9 October 2016]



Fig. 3. Devil firefish active at night, sucking a small fish into its mouth.

[<http://17.alamy.com/zooms/98133af09ae149c0a5d6de214967fafa/lionfish-feeding-pteris-miles-red-sea-egypt-d3wyw9.jpg>, downloaded 17 October 2016]



Fig. 4. A juvenile devil firefish display.

[<https://www.flickr.com/photos/26758663@N08/5012653798/in/photostream/>, downloaded 17 October 2016]



Fig. 5. Devil firefish in a defensive display.

[<http://www.panoramio.com/photo/62821202>, downloaded 17 October 2016]

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