

Scorpaena plumieri (Spotted Scorpionfish)

Family: Scorpaenidae (Scorpionfish)

Order: Scorpaeniformes (Mail-cheeked Fish)

Class: Actinopterygii (Ray-finned Fish)

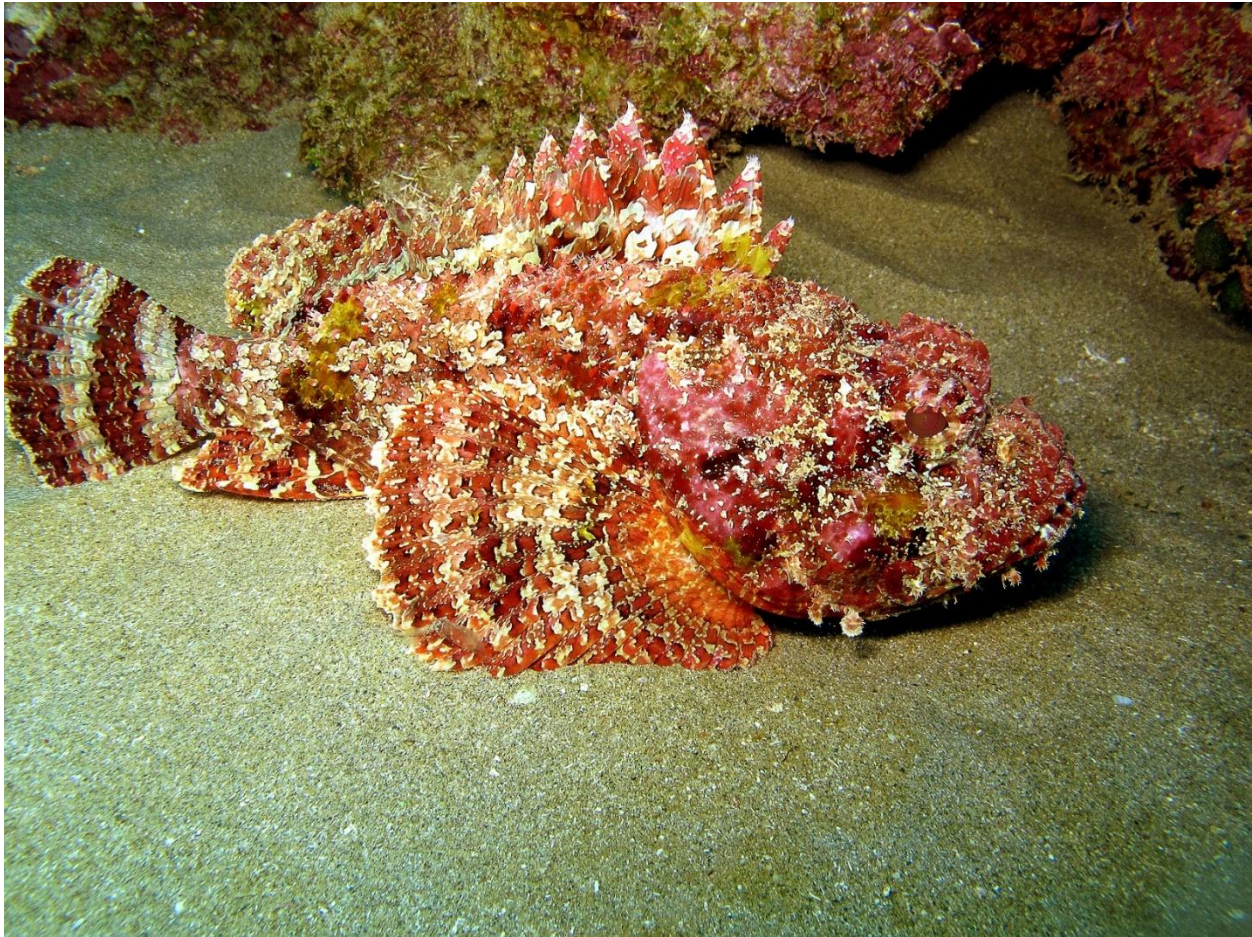


Fig. 1. Spotted scorpionfish, *Scorpaena plumieri*.

[<http://sosuadiving.com/about-personal/colin-williamson>, downloaded 10 February 2015]

TRAITS. The spotted scorpionfish (also known as stinging groupers) are regarded as one of the largest species of scorpionfish in the Caribbean and Atlantic. The typical size of the scorpionfish ranges from 18-36cm in length however the male can grow up to 45cm in length and can weigh up to 1.55kg (Marinebio, 2011). Camouflage is one of the scorpion fishes most effective capabilities. Cirri (fleshy plumes) cover the eyes of the scorpion fish along with skin flaps covering its head. They have a distinct brown-red colouration of their skin which enhances their ability to blend into the reefs and rock substrate. The spotted scorpionfish attains its name from the unique colouration on the inside of its pectoral fin, spots of white on the inside of the pectoral fins black surface. However this quality is only exhibited when the organism feels threatened or while it is swimming.

They also possess dark bands on their tail fins (Fig. 1). One of the most noticeable features of the spotted scorpionfish is the long spines which are found on their dorsal fins.

DISTRIBUTION. The geographic distribution of *Scorpaena plumieri* ranges from the Atlantic Ocean (western), the north of the Gulf of Mexico and along the shoreline of southern Brazil (Fig. 2). They can be found in the coral reefs of the Caribbean, Florida, Bermuda, and Bahamas in which they are native.

HABITAT AND ACTIVITY. Spotted scorpionfish are largely bottom dwelling predators, found in mainly coral reef habitats and areas in which the substrate is a mixture of sand and rock (Eschmeyer, 1969). Their water depth preference ranges from 5-55m in depth. *Scorpaenia plumieri* is not usually an aggressive species, it is typically nocturnal, they rest throughout the day by lying motionless camouflaged against the substrate and most of their movement takes place during the night (Michael, 1998). When the spotted scorpionfish feels threatened the spots on its pectoral fins become visible.

FOOD AND FEEDING. Characteristically carnivorous organisms, preying mainly on fish and crustaceans. The spotted scorpionfishes method of hunting is unique, they are called ambush predators. Lying motionless, camouflaged by substrate where they are undetected by prey, they wait until the prey is close enough so that they can strike. When they strike their large cavernous mouth is used like a vacuum to quickly pull the prey into their mouth and swallow it.

POPULATION ECOLOGY. Around the globe there are more than 200 recognized species of scorpionfish. This particular species *Scorpaena plumieri* is typically solitary but on rare occasions may be seen in pairs. Most of the interactions in this species occur with other members of its species during spawning. In this particular species, population doubling would take more than 14 years to occur (Randall, 1967). As the spotted scorpionfish spends most of its time camouflaged against the substrate of coral and rocks on the seabed during the day, it is rarely seen moving about. Information on the population ecology of the scorpion fish is very limited because of the mysterious nature of the fish, spending most of its time lying motionless at the bottom of coral reefs so the scorpionfish's population is not totally known. However the typical lifespan of the scorpionfish is approximately 10-15 years.

REPRODUCTION. Typically solitary animals, who dwell mainly in shallow waters, they migrate to waters 40-120m deep where spawning takes place. Spawning occurs during the period of June to August. In *Scorpaenia plumieri* the females are known as being oviparous i.e. they lay eggs, these eggs produced by the female are transparent or sometimes can have a green colour. During spawning the eggs are released by the female and the sperm released by the male, the resulting fertilized eggs float at the surface of the water. The maximum clutch size is 6000 eggs. Once the eggs are produced and fertilized it remains floating at the surface, the colour changes from transparent to more white. The females do not remain to care for the offspring, the parents leave usually in August after spawning occurs to return to the shallow waters where they normally reside. The eggs are left, where they are susceptible to predation but the transparency of the eggs help to reduce their vulnerability.

BEHAVIOUR. With respect to behaviour of juveniles this aspect has very little documentation, the only information which is known about the early stages in the life of the spotted scorpionfish is that after hatching at the water's surface, they migrate towards shallow waters to take their place amongst coral reefs and other rocky substrate (Humann and Deloach, 2002).

Antipredator behaviour of the scorpion fish is known to be effective, when the spotted scorpionfish feels threatened the spots located at the inner part of the pectoral fins become visible (Fig. 3). Camouflage is the first mechanism of the spotted scorpionfish to avoid predation, using their unique colouration to blend into the coral reefs where they lie motionless or along with their colouration, they cover themselves in fine substrate of the seabed (Fig. 4) to hide from passing predators; this mechanism is also used in hunting their prey. The most unique defence of these organisms are the venomous spines located at the dorsal fins (Fig. 5) which prevents it from being consumed. There are approximately 12 dorsal spines, which are linked to a pressurized venom gland located at the bottom of the dorsal fin (Uyeno et al., 1983). The spotted scorpionfish has very few predators, some of the predators include two species of snappers *Lutjanus apodus* and *Lutjanus analis* (moutton snapper), sharks, large moray eel and also some ray species (Eschmeyer, 1969).

APPLIED ECOLOGY. With respect to conservation of the *Scorpaenia plumieri*, it has not been listed a species that is threatened, it is listed as of least concern by the IUCN. However there have been many encounters with the spotted scorpion fish mostly by divers and tourists who visit the coral reefs where they reside, due to their camouflage capability they remain unseen by humans and sometimes are stepped on, this does little harm to the scorpion fish but can cause harm to human as the venom from their glands are toxic.

REFERENCES

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Posted online: 2015



Fig. 2. Spotted scorpionfish geographic distribution.

[<http://www.flmnh.ufl.edu/fish/gallery/Descript/Sscorpionfish/spottedscorpionfish.html>, downloaded 11 February 2015]



Fig. 3. Spotted scorpionfish, distinctive white spots (characteristic of its name).

[<http://www.flmnh.ufl.edu/fish/gallery/Descript/Sscorpionfish/spottedscorpionfish.html>, downloaded 11 February 2015]



Fig. 4. Spotted scorpionfish, camouflaged against rock substrate, waiting for prey.

[<http://www.fishbase.org/photos/UploadedBy.php?autoctr=24543&win=uploaded>, downloaded 13 February 2015]



Fig. 5. Spotted scorpionfish, venomous spines located at the dorsal fin, distinctive colouring.

[<http://www.flmnh.ufl.edu/fish/gallery/Descript/Sscorpionfish/spottedscorpionfish.html>, downloaded 13 February 2015]