

Aquatic Invasions Records

First record of the red lionfish (*Pterois volitans* [Linnaeus, 1758]) off the coast of Veracruz, Mexico

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Abstract

A red lionfish, *Pterois volitans* (Linnaeus, 1758), was captured in the Anegada de Adentro Coral Reef (19°13'0.7"N; 96°03'25"W) off the coast of Veracruz, Mexico on January 12, 2012. The collection site is about 700 km (435 mi) from the location where the first lionfish was captured in the Southern Gulf of Mexico in late 2009. The record off the Veracruz suggests that the lionfish may be establishing a well-adapted population along the Mexican coast in the Southern Gulf of Mexico.

Key words: lionfish, Gulf of Mexico, Veracruz, coral reef

Introduction

After more than 20 years since it was first sighted off the coast of Florida (USA) in the 1980s (Morris and Akins 2009), the non-native red lionfish, *Pterois volitans* (Linnaeus, 1758), has covered most of the Western Atlantic ocean, including The Bahamas, Cuba, Dominican Republic, Puerto Rico, most Lesser Antilles, Cayman Islands, Jamaica, Colombia, Costa Rica, Belize, Venezuela, and Mexico (Whitfield et al. 2007; Schofield 2009, 2010). Its continuous expansion may be naturally self-sustaining through larval dispersal (Betancur-R et al. 2011), since its larval phase lasts 25 to 40 days (Ahrenholz and Morris 2010).

The red lionfish represents a threat to the marine ecosystem that may interact with other stressing factors (Albins and Hixon 2012). In fact, detrimental impacts on native reef fishes were recently documented in The Bahamas, where the red lionfish reduced by 65%, on average, the biomass of small-bodied fishes from 42 species in two years (Green et al. 2012).

Currently, there is no scientific understanding about its natural enemies in the invaded ecosystems. Although some groupers (*Mycteroperca tigris* [Valenciennes, 1833], *Epinephelus striatus* [Bloch, 1792]) were able to feed on this invasive fish in the Bahamas (Maljković et al. 2008), whether these groupers act as biocontrol (Mumby et al. 2011) is inconclusive.

The red lionfish invasion throughout the Gulf of Mexico now appears to be widespread. In 2006, the first individual was captured in the Gulf of Mexico off Treasure Island, Pinellas County, Florida (Brown and Ruiz-Carus 2006). In late 2009, the species was detected off the northern Yucatan Peninsula, Southern Gulf of Mexico, by a local lobster-fisher who caught one specimen (Aguilar-Perera and Tuz-Sulub 2010). In 2010, two juveniles were captured north of Dry Tortugas and west of Cape Romano, about 99 and 160 miles respectively, off Florida by the Florida Fish and Wildlife Research Institute (Ruiz-Carus pers. comm.). During one year (2010-2011), lobster fishers voluntarily collected

Figure 1. Location of the Parque Nacional Sistema Arrecifal Veracruzano, Mexico, where a local fisher hand-netted a red lionfish, *Pterois volitans*, in the Anegada de Adentro Coral Reef. Location of capture denoted with *.

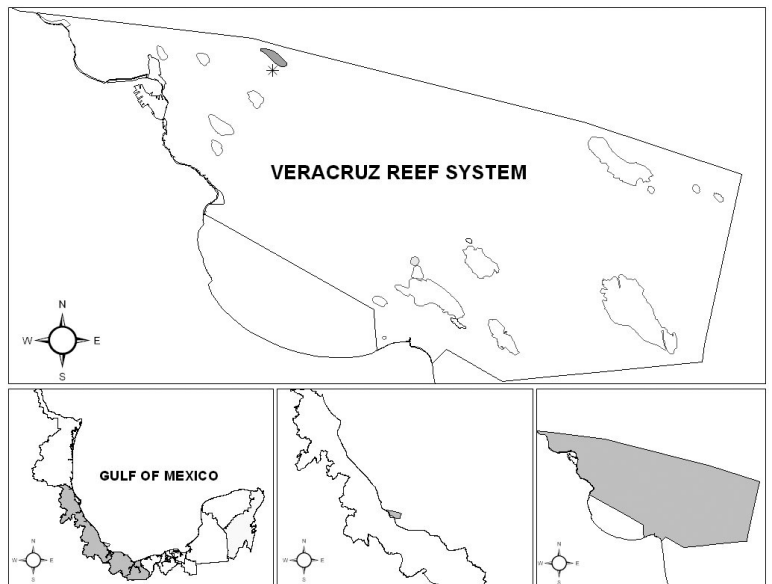


Figure 2. Red lionfish, *Pterois volitans* (185 mm, TL), captured by hand-net in the Anegada de Adentro Coral Reef, off the Veracruz State (Mexico), Southwestern Gulf of Mexico. (Photograph by Gregorio Cruz Aja).



about 445 red lionfish (90-274 mm TL) on various locations off the northern coast of the Yucatan Peninsula, Mexico (Aguilar-Perera et al. 2012). Here, we report a specimen that was captured in a natural protected area off the coast of Veracruz, Mexico, in the Southern Gulf of Mexico. The objective of this note is to report its presence in this protected location, which may suggest that the red lionfish larval dispersion off the Yucatan Peninsula is following the prevalent marine currents.

Materials and methods

Coral reefs and five cays, with a total surface of about 52,239 ha, comprise the Veracruz Reefs. On August 24, 1992, the Mexican Federal Government declared the area Parque Nacional Sistema Arrecifal Veracruzano (PNSAV) a natural protected area. The PNSAV is an important coral reef system supporting a wide array of human activities where at least 101 reef fish species are commercially exploited

(Jiménez-Badillo et al. 2007). With the support of specialists on lionfish control from another protected area, the Parque Nacional Arrecifes de Cozumel (Mexican Caribbean), we implemented training seminars for fishers, recreational divers, and beach rescue organizations to identify red lionfish. On December 30, 2011 (13:30 PM) at 12 m water depth, the first red lionfish was photographed within the PNSAV in the Anegada de Adentro Coral Reef, about 7.5 km from the shoreline (19°13'0.7"N, 96°03'25.9"W; Figure 1). Subsequently, on January 12, 2012 a local fisher captured one specimen with a hand-net and brought it to the laboratory where it was measured in Total Length (TL) to the nearest millimeter and weighed (TW) to the nearest gram. Its meristic characters were counted (number of fin-ray elements) and it was taxonomically identified following Schultz (1986).

Results and discussion

The specimen captured in the PNSAV is *Pterois volitans* (XIII-12, III-8), and it is larger in body size (185 mm in TL, Figure 2) than the specimen (137 mm TL) caught in late 2009 off the northern Yucatan Peninsula (Aguilar-Perera and Tuz-Sulub 2010). The collection site in the PNSAV is about 700 km (435 mi) from the location where the first specimen was captured off the Yucatan Peninsula in late 2009.

It is possible that the red lionfish population entered the Southern Gulf of Mexico as early as late 2009 (Aguilar-Perera and Tuz-Sulub 2010) through larval dispersal. The specimen recorded from the Veracruz suggests that the population appears to continue dispersing as larva carried out by prevalent marine currents. However, this assertion still needs to be verified by molecular markers.

Efforts to eradicate the red lionfish in the Western Atlantic could be fruitless because this predator lives in both shallow and deep waters (Meister et al. 2005), and has a broad diet (Morris and Akins 2009; Green et al. 2012). What could be relevant now is to provide as much information as possible to the users of coastal areas about the red lionfish biology and morphology as an aid to control of the invasion and to organize monitoring efforts to build coherent databases to track its progression in the marine ecosystem of the region.

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