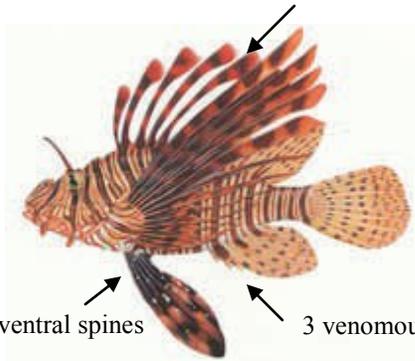


Marine Invaders: The Lionfish

Lionfish (*Pterois volitans* and *P. miles*) are members of the scorpionfish family and are native to the Indo-Pacific and Red Sea. The distinctive lionfish has elongated fins and venomous spines. Their coloration pattern consists of dark red or maroon and white vertical stripes which provides them great camouflage for their environment.

13 venomous dorsal spines

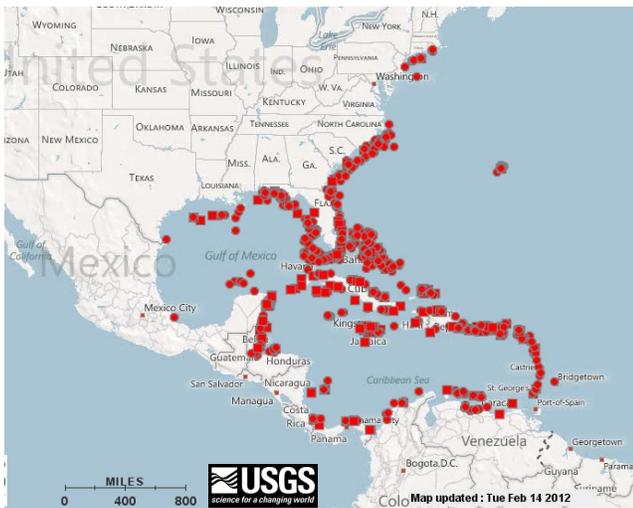


2 venomous ventral spines

3 venomous anal spines

Where are they?

Lionfish have become the first non-native invasive marine species to be successfully established throughout the Western Atlantic Ocean, Caribbean and Gulf of Mexico.



Map: USGS

The first documented sightings of lionfish in the United States occurred off Dania, Florida in 1985 but lionfish sightings in the area remained rare until 2000. Lionfish have since become frequent in Southeast Florida and thousands of sightings have been reported from the region. Lionfish are expected to invade the remainder of the Caribbean and to continue the southward along the coast of South America until water temperatures

limit the lionfish's continued expansion. Lionfish temperature tolerance is approximately 10-35°C (50-95° F).

How did lionfish get into the Atlantic Ocean?

Researchers believe that the most likely pathway is due to accidental or deliberate releases of aquarium fish into Florida waters, despite it being illegal to release non-native fish into Florida's fresh or salt waters. Genetic analyses of lionfish populations show low genetic diversity and a strong founder effect. This means that the continued expansion of lionfish throughout the Northwestern Atlantic and Caribbean is likely to be the result of the original invading population from Florida.

Dispersal was likely facilitated by ocean currents which transport the free-floating egg masses and larvae of lionfish across the Western Atlantic^{1,2}.



Image: FSG

What's the problem?

As with other invasive species, lionfish have few natural predators and they are thriving in the Atlantic and Caribbean Basin. Throughout their invaded range, lionfish inhabit a variety of habitats including coral reefs, hardbottom habitats as well as seagrasses, mangroves and artificial structures. They are found at a range of depths from the shoreline to greater than 1,000 feet. They also grow larger and are found at higher densities than in their native range³.

Researchers have several concerns about the increasing abundance of lionfish in the Atlantic. There is a fear that the lionfish will alter coral reef food webs by competing with native species for food and space and by promoting greater predatory mortality on native species.

What is being done about the lionfish?

Although it's unlikely that lionfish will be completely eradicated, efforts are in place to control lionfish

abundance. Though differing in their estimates, recent publications indicate that large numbers of lionfish (between 15-65% per year⁴ and 27% of the adult population per month⁵) would need to be removed regularly to elicit a decrease in the overall lionfish population. However, with plenty of manpower, it may be possible to keep populations in control in specific, targeted areas. Thus, local removals can help to manage lionfish densities and minimize impacts.

Anglers and divers who have training handling the fish and who use puncture resistant gloves are encouraged to capture and kill any lionfish they come across. The Florida Fish and Wildlife Conservation Commission (FWC) has



Image: Roxane Boonstra

asked the public to increase lionfish opportunities by eliminating bag limits and the required recreational fishing license when harvesting lionfish with approved gear. Lionfish may also be an unwelcome haul in traps or infrequently on hook and line. In these instances, lionfish should NOT be released back into the ocean if caught.

Venomology

Lionfish venom is a proteinaceous neurotoxin found in the spines of the lionfish. Each spine contains two grooves of glandular epithelium that houses the venom-producing tissue. These spines are encased in a skin called integumentary sheath. When this skin is pushed down, as in the case of a puncture, the glandular tissue tears and releases the venom into the puncture wound.

What to do if stung?

Since lionfish are cryptic, divers can get stung if they are not careful. First aid is generally simple as heat denatures the proteins within the venom. If stung, apply heat as soon as possible and as hot as possible without scalding. Submersion of the affected body part in hot water will denature the toxin and relieve the pain. Pain relievers (aspirin) may also be used. Symptoms of a lionfish sting can include intense pain, redness, swelling and weakness around the wound, blistering, headaches,

nausea or vomiting. Though rare, if untreated there is a chance of more serious complications. Seek medical attention or call the 24-hour Florida Poison Information Center immediately (888-232-8635).

For more information please visit these websites:

- <http://www.ccfhr.noaa.gov/stressors/lionfish.aspx>
- <http://nas.er.usgs.gov>
- <http://www.reef.org/lionfish>



Image: Roxane Boonstra

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