

Alabama Aquatic Nuisance Species Series: Venomous Lionfish

► Learn the basic biology of the venomous lionfish, (*Pterois volitans* and *P. miles*), how to identify lionfish, how it was likely introduced, and the impacts of this aquatic nuisance. Also provided are instructions on what to do if this species is found.

Species Profile

Scientific Name: *Pterois volitans* and *P. miles*

Common Names: Lionfish, red firefish, devil firefish

Native Region: Indo-Pacific

Date of U.S. Introduction: 1980s

First Confirmed in Alabama: 2011

Known U.S. Range: Texas to North Carolina, Puerto Rico

Presumed Means of Introduction: Aquarium trade

Recognized Impacts: Predation on native species, reduction of diversity of reef communities

Identification

Lionfish are marine fish that are mainly red, brown, and white with a striped, zebra-like appearance. Surveys offshore of the Alabama coast have found that lionfish tend to be more abundant at natural and artificial reefs at depths greater than 100 feet; although, recent reports indicate lionfish are now utilizing sea grass beds within Alabama's inshore waters too. They grow to approximately 12 to 15 inches in length in their native range, but have been noted to be larger in areas where they are not indigenous. To date, lionfish collected in Alabama have been 3 to 14 inches.

Lionfish have long and decorative pectoral fins and a row of long dorsal spines. There are two glandular grooves along the dorsal, ventral, and anal spines. The glandular tissue extends about three-fourths the distance from the base of the spine toward the tip (but not at the tip). The glandular grooves contain a colorless glandular tissue, covered by a sheath of tissue. This sheath is pushed down as the spine enters the victim and the glandular tissue is disrupted, releasing the venom.



A venomous lionfish captured in Alabama waters
(Photo credit: Craig Newton)

The venom is composed of acetylcholine and a neurotoxin, which causes severe pain, swelling, and rashes.

How Did They Get Here?

Lionfish are native to the Western Pacific, including Japan, Australia, and the Philippines. They are popular in recreational marine aquaria, and genetic research and monitoring of lionfish distribution suggests that multiple releases of aquarium specimens off the coast of southeastern Florida led to the invasion in the United States. The first confirmed sighting of lionfish in the United States was off Dania Beach, Florida in 1985. By 2000–2001, lionfish had become established in North Carolina's offshore waters as well as South Carolina and Georgia. The first record of lionfish in Alabama was documented when a recreational scuba enthusiast observed a single lionfish at the Trysler Grounds (area of natural hard-bottom approximately 20 nautical miles south of Perdido Pass, Alabama), but biologists were unable to obtain the specimen or photos needed

to validate the report. The first report confirmed by marine scientists was documented when a spear fisher harvested a 4-inch lionfish at an oil rig 43 nautical miles south of Dauphin Island in 2011. By 2012, lionfish were well established throughout the Caribbean Sea and the southeastern United States, including significant portions of the Gulf of Mexico.

Unwanted aquarium plants should be allowed to dry thoroughly and disposed of or composted. Aquarium animals should never be released alive in Alabama's waters, and it is illegal to intentionally stock or release aquatic organisms into the public waters of Alabama.

Why Are These a Problem?

Lionfish are voracious predators, preying on a wide variety of organisms, and utilize a wide range of habitats. In the Atlantic, populations have boomed with lionfish density higher than densities observed in their native range. Typically, lionfish prey on small, cryptic finfish as well as juvenile age classes of native finfish and crustaceans; however, little is known about their prey assemblage along the north central Gulf of Mexico. In the Bahamas, a reduction in diversity and abundance of native finfish has been recorded due to high densities of lionfish. Finally, there are potential indirect effects on trophic food webs and behavioral interactions of native organisms.

Control Efforts

Current data suggest that removal programs at local levels can successfully manage their densities and minimize their influence on native ecosystem. However, large-scale eradication is likely impossible because of their depth range (possibly up to 1,000 feet deep), wide

range of habitat utilization, and larval dispersal. During spearfishing tournaments, dive shops can include a category for lionfish. Similarly, derbies can be held targeting lionfish. Lionfish are edible, as the meat itself does not contain poison. They are reef fish, however, and all precautions taken to avoid ciguatera toxin in reef fish should be observed for lionfish.

What to Do if You Find One

- Do not transport or move them alive.
- Handle with care. Even iced fish can deliver a painful dose of venom. To help with filleting, the spines can be removed. Gloves are highly recommended.
- Record the coordinates and date of capture. If caught while diving, record depth of capture and type of reef. Take a picture of the animal and use a geo-tag if possible. Ideally, include something in the photograph for scale (e.g., a coin).
- Store the fish on ice and transfer to a freezer as soon as possible.
- Report the finding immediately to the Alabama Department of Conservation and Natural Resources, Marine Resources Division: Craig Newton, 251-861-2882 or craig.newton@dcnr.alabama.gov
- If you are interested in doing more, periodically state agencies may have opportunities for volunteers to assist with control programs. Ask about these opportunities to learn more.

Note that the venom from the spines can result in intense pain. The venom should be treated with heat as soon as possible to denature the venom proteins before spread throughout the bloodstream. Keep the wound as hot as possible without scalding for 45 to 60 minutes. A wet cloth heated on the engine block has yielded good results; water coming from the engine typically is not hot enough. An over-the-counter anti-inflammatory medication is recommended. Seek medical attention if symptoms persist.

Additional Reading

Morris, James A. Jr. [ed.]. *Invasive Lionfish, A Guide to Control and Management*. Gulf and Caribbean Fisheries Institute, Special Publication Series 1. 127 pp.



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