extension
ALABAMA A&M & AUBURN UNIVERSITIES

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 they were likely introduced, the impacts of this aquatic nuisance, and what to do if you find this species.**

Species Profile

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

Common names: Lionfish, red firefish, devil firefish

Native region: Indo-Pacific

Date of United States introduction: 1980s

First confirmed in Alabama: 2011

Known United States range: Texas to North Carolina, Puerto Rico

Presumed means of introduction: Aquarium trade

Recognized impacts: Predation on native species and reduction of diversity of reef communities

Identification

Lionfish are marine fish that are mainly red, brown, and white with a striped, zebralike appearance. Surveys offshore of the Alabama coast have found that lionfish tend to be most abundant at natural and artificial reefs at depths greater than 100 feet. Recent reports, however, indicate lionfish are now also using seagrass beds within Alabama's inshore waters.

Lionfish grow to approximately 12 to 15 inches in length in their native range but have been documented 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. The venom is composed of acetylcholine and a neurotoxin, which causes severe pain, swelling, and rashes.

What to Do if Stung

The venom from the spines can result in intense pain. Treat the venom with heat as soon as possible

A venomous lionfish captured in Alabama waters.

to denature the venom proteins before they 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. Information on lionfish stings is available on the National Capital Poison Center website.

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. 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. Between 2000 and 2001, lionfish had become established in the offshore waters of North Carolina, 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 (an area of natural

hard-bottom approximately 20 nautical miles south of Perdido Pass, Alabama). 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 spearfisher 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.

To prevent similar introductions of non-native species, always allow unwanted aquarium plants to dry thoroughly before disposing of or composting them. Never release live aquarium animals into Alabama's waters as it is illegal to intentionally stock or release aquatic organisms into the public waters of Alabama.

Why Are These Fish a Problem?

Lionfish are voracious predators that prey 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.

Lionfish in the Atlantic typically prey on small, cryptic finfish as well as juvenile-age classes of native finfish and crustaceans. 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. Indirect effects on food webs and behavioral interactions of native organisms also are possible.

Control Efforts

Current data suggest that removal programs at local levels may help manage lionfish densities and minimize their influence on native ecosystems. However, large-scale eradication is likely impossible because of their depth range (possibly up to 1,000 feet), wide range of habitat utilization, and larvae 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 a Lionfish

- Do not transport or move the fish alive.
- Handle with care. Even iced fish can deliver a painful dose of venom. To help with filleting, remove the spines. Use puncture-resistant gloves, if available.
- Record the following information pertaining to the capture:
    - Coordinates or the name of the water body (include as many details as possible)
    - Date
    - Number of individual fish observed
    - State and county of observation
    - Photos. Ideally, include something in the photograph for scale (e.g., a coin).
    - Additional comments
    - Contact information
- If caught while diving, record depth of capture and type of reef.
- 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: Jessica Marchant, (251) 861-2882 (office), (251) 861-8741 (fax), or jessica.marchant@dcnr.alabama.gov.
- If you are interested in doing more to help, contact your state agencies, which may have opportunities for volunteers to assist with control programs.

Additional Reading

Morris, James A. Jr. (ed.). *Invasive Lionfish, A Guide to Control and Management*. Gulf and Caribbean Fisheries Institute, Special Publication Series 1.

National Capital Poison Center. "How to Treat a Lionfish Sting."

Swift, A. E., and T. R. Swift. 1993. "Ciguatera." *Journal of Toxicology: Clinical Toxicology* 31(1).

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