

Lionfish study explores idea of eating an ecological problem

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"Some areas where lionfish have taken over reefs show a marked decrease in biodiversity," says Emory fisheries expert Tracy Yandle.

The lionfish is a ferocious ocean carnivore with a flamboyant "mane" of venomous spines. This exotic maroon-and-white creature, native to the

Indo-Pacific, made its way west through the aquarium trade. During recent years, however, wild lionfish became established in the Gulf of Mexico, the Caribbean Sea and the Atlantic. Releases of lionfish and their eggs from aquariums have been blamed for this invasion.

While the long-term impact of the [lionfish](#) is unknown, fisheries experts are worried. The lionfish, from the Pterois genus of venomous marine fish, reproduces rapidly and has few natural enemies outside of the Indo-Pacific to keep its population in check. Meanwhile, lionfish are devouring small crustaceans and the young of commercial fish species like snapper and grouper, according to the National Marine Fisheries Service (NMFS).

"Some areas where lionfish have taken over reefs show a marked decrease in bio-diversity," says Tracy Yandle, an associate professor in Emory's Department of Environmental Sciences. Yandle studies issues around the regulation of the fishing industry and the governance of natural resources.

Luckily, the invasive lionfish is not just ecologically "evil." It is also tasty. Many describe lionfish meat as a mildly flavored, nicely textured white fish, similar to snapper.

Yandle recently received a \$300,000 grant from the NMFS to research the opportunities and challenges of creating a market for lionfish as food in the U.S. Virgin Islands, one area where the invader is proliferating. Co-investigators on the grant include Emory post-doctoral associate Jennifer Tookes, Emory environmental sciences lecturer Michael Page and Sherry Larkin from the University of Florida.

About 30 percent of people in the USVI live below the poverty line and food can be expensive in the islands. The fishing industry is also a traditional part of the USVI's economy, as well as its cultural heritage, so

finding ways to control the lionfish population is especially critical.

"The traditional goal of fisheries regulation is to try to avoid overfishing and to preserve a species," Yandle says. "In the case of the lionfish in the USVI, the lionfish is invasive, so the concept of over-fishing doesn't really apply."

As part of the project, Emory undergraduates will spend classroom time next spring learning about fisheries management, research methods and the culture of the USVI. They will then travel to the islands to work in the field.



Some people in the Caribbean have already acquired a taste for lionfish and are

experimenting with ways to prepare the invader. Credit: Scott Crosson.

The students will survey seafood consumers at local markets, and the tourists who often patronize restaurants, to help assess the social and economic viability of the lionfish as a food fish. A graduate student from the Masters in Development Practice program will spend a summer practicum in the USVI coordinating efforts between this research project and The Nature Conservancy's reef preservation efforts.

"Lots of great natural science work has already been done on lionfish," Yandle says. "This is a human project. We want to talk with the local people and understand how they think about lionfish and whether they are interested in fishing and eating them."

Lionfish have already started popping up as an "eco-chic" option on a few select U.S. coastal restaurant menus, from Miami to Maine, and in parts of the Caribbean.

"There's the sustainability factor," Michael Schwartz of Michael's Genuine Food and Drink in Miami, told Garden and Gun Magazine, "but also just that the meat tastes good. We make a great lionfish sandwich."

So what's the catch?

Lionfish, which grow to about 15 inches, are rarely reeled in by hook and line. They are most often taken by more labor-intensive methods, such as a spear or a hand-held net, or as bycatch in trap fisheries.

Then, there are the long, venomous spines jutting out from every lionfish. Special care must be taken during their handling because these spines can cause painful injuries.

The good news is that the flesh of a lionfish is not poisonous.

The bad news: It does not have much flesh compared to other species like grouper. "Lionfish are bony and the yield rate is about 30 percent, which is less meat than some species," Yandle says.

The project will analyze whether there are viable ways to deal with these challenges in the local context of the USVI and create a new market for sustainable seafood.

In addition to consumers, the research team will also survey local fishermen. The fishermen will be asked their knowledge of where lionfish are most prevalent in the local waters, and whether those areas overlap with sites known for ciguatera. Ciguatera is a naturally occurring toxin found in Caribbean waters that can accumulate in coral, algae and seaweed, contaminating fish stocks and leading to food-borne illness.

Page, an expert in geo-spatial analysis, will combine the information from the surveys of the fishermen with previous data gathered by scientists to create maps of the safest and best places to harvest lionfish. The local fishermen will be given books of these maps, as well as a kit with tools to assist fishing for lionfish, at the end of the project.

The findings of the study will be shared in local meetings and added to the online lionfish portal of the Gulf and Caribbean Research Institute, so that the public may benefit.

"At the end of the project, we will figure out if there can be a viable market for the lionfish, and if so, we will provide guidance for how the market could be developed," Yandle says.

Provided by Emory University

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