Controlling invasive lionfish may best be done in targeted areas, research shows

October 30 2012, by Mickie Anderson

Invasive lionfish may never be eradicated from Florida's coastal waters, but it's possible to keep them under control—in specific, targeted areas and using plenty of manpower, a new University of Florida study shows.

Native to the Indo-Pacific, the spiny, ornate fish began to turn up in small numbers in the mid-1980s along the Atlantic seaboard. Their numbers exploded in the last decade, and the fish can now be found in South American and Caribbean waters as well as the Gulf of Mexico.

They pose a significant threat to valuable native species such as grouper, snapper and shrimp because lionfish are voracious predators.

Efforts have been made in some areas to control the fish by holding derbies, where divers and snorkelers spear or net as many fish as possible in a given time period. The UF study, led by Tom Frazer, a professor and interim director of the School of Natural Resources and Environment, attempted to determine how intense and consistent such efforts would need to be to effectively curb a lionfish population.

"How far do we have to knock them down in order to prevent a potential problem? This was really the first time that researchers have gone out and said we're going to quantify and characterize how many fish we can pull off these reefs, how much effort that requires and ultimately, then, how much money it might cost to continue that effort," said Frazer, a faculty member with UF's Institute of Food and Agricultural Sciences.

The team's work is outlined in the current issue of *Reviews in* Fisheries Science.

The UF team spent much of 2011 working with the Central Caribbean Marine Institute, local dive masters and scuba volunteers who removed lionfish weekly from several sites off Little Cayman Island, in the Caribbean Sea. The team asked the divers not to remove lionfish from an area called Rock Bottom Wall, so it could be used as a control site.

At the lionfish removal sites, lionfish density decreased over time, and the size of the fish that remained were smaller on average. In comparison, lionfish numbers increased markedly at the control site.

When the study began, it wasn't unusual to capture lionfish that measured about 400 millimeters long. But by June 2011, at one dive site called Blacktip Boulevard, the removed fish ranged from 140 to 295 millimeters in length, with 83 percent of the fish smaller than 220 millimeters.

The size of the fish has food chain implications, as the larger lionfish are more likely to consume bigger prey, such as grouper or snapper, while smaller lionfish prefer to nibble on shrimp, he said.

The appearance of lionfish recently near the Big Bend area of Florida has scientists concerned, he said, because that area's large seagrass beds provide critical nursery-ground area for gag grouper, an important sport and food fish.

The research team included UF graduate students Morgan Edwards and Savanna Barry, Charles Jacoby, who holds a courtesy faculty appointment in UF's soil and water science department, and Carrie Manfrino of the Central Caribbean Marine Institute. Their findings have laid the groundwork for future studies into ecological impacts of lionfish

on native fish populations and the cost-effectiveness of removal efforts, Frazer said.

"That's our goal," he said. "You're not going to be able to determine how many resources you can use for that problem until you have an idea how much time and effort is involved in removing the fish."

Provided by University of Florida

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