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If you can't beat them, eat them: dangerous invasive species on the menu

WHY WE WROTE THIS

Can appealing to our stomachs – and our sense of fun – help preserve an ecosystem? Off the Florida coast, the lionfish, an aquarium pet gone destructive, is promoted as food and in spearfishing contests.

Nate Parsons/The Morning Journal/AP/File

A saltwater volitan lionfish on display shows its huge number of venomous spines – one reason they have no natural predators. Lionfish have become persistent pests in the Caribbean, where they are considered highly invasive.

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KEY LARGO, FLA.

The heavy scuba tank on her back doesn't seem to weigh Emily Pepperman down as she clambers out of the turquoise water and onto the boat. She beams. "I got a monster!" she exclaims. "I got a big one!"

The other divers gather around Ms. Pepperman as she opens the plastic tube she had been carrying, tipping it over a cooler. Thunk. Thunk. Thunk. Small reddish-brown and white striped fish with long feathery fins come tumbling out. Then, they stop. With a gloved hand, Ms. Pepperman reaches into the container, jiggling it to ease out one specimen that barely fits. Holding the fish aloft by its mouth, she is careful not to touch the long, needle-like, venom-filled spines protruding from its back.

This monster is a lionfish. Native to the Indo-Pacific, lionfish are prized worldwide as aquarium pets. But they're also voracious eaters. And after some made their way into Florida waters, they quickly began devastating the reef ecosystems around the state and beyond.

So the lionfish hunt is on.

Events like the March 30 Winter Lionfish Derby in Key Largo are part of a broader effort to keep the lionfish population at bay. Conservation organizations and state agencies alike are incentivizing fishing for lionfish, and encouraging Floridians to eat the invaders. This approach could become a model for tackling other invasive species.

"I can't think about a better example for invasives, talking about eating them," says Joe Roman, a conservation biologist and "editor 'n' chef" of Eat

the Invaders. “They taste good, they’re pretty easy to sell, and now most people have heard of it” through derbies and other outreach efforts.

‘The perfect invader’

Eva Botkin-Kowacki/The Christian Science Monitor

Emily Pepperman of Fort Lauderdale, Florida, speared one of the largest lionfish during the Winter Lionfish Derby in Key Largo, Florida, March 30. The invasive species is devastating reef ecosystems off the coast of Florida and beyond.

Lionfish were first spotted in South Florida waters in 1985. By the early 2000s, the invader was established and spreading throughout the Caribbean and up the East Coast.

“Lionfish are the perfect invader,” says Alex Fogg, marine resource coordinator for Florida’s Okaloosa County. They reproduce rapidly, and are indiscriminate, opportunistic eaters. Scientists have found nearly 100 different native fish and crustacean species in lionfish stomachs. One study in the Bahamas found that lionfish can cause a 65 percent decline in native reef fish prey over just two years.

Humans are the only predators equipped to control the invasive species. Larger fish and eels have been spotted trying to eat lionfish, but they’re not adapted to chomp down on the newcomer’s venomous spines.

Even for humans, capturing lionfish is tricky. They’re not enticed by bait on a line, so divers have to track them down with pole spears.

It's rare that lionfish sit out in the open, says Ms. Pepperman, who has been hunting the invaders for nearly eight years. They like to hang out under coral heads, ledges, or in other nooks and crannies. "It's like an Easter egg hunt," she says.

Spearfishing is labor intensive, but it seems to be effective, at least locally. A study on reefs in the Cayman Islands found that targeted culling reduced the abundance and average size of lionfish.

But divers can only go so deep. As the fish begin to infiltrate deeper waters, scientists and engineers are scrambling to develop lionfish-specific traps. One team is working on building a robot that could identify and capture lionfish alive.

"In the whole scheme of things, this is not going to get rid of lionfish" entirely, says Mr. Fogg, an ardent diver himself. But reducing their populations could

help save the native fish that lure divers and sustain commercial fishermen.

Eating the enemy

By encouraging people to eat lionfish, conservationists aim to reduce the invader population while creating a new source of income for fishermen.

At first consumers were skeptical about eating these iconic aquarium pets with venomous spines. But the idea has caught on as marine conservation organizations and the Florida Fish and Wildlife Conservation Commission have worked to dispel misconceptions and teach people how to safely remove those venomous spines and eat the tasty white flesh.

“There’s definitely more of a demand than supply at this point,” says Allie McCarthy, a sales representative for Halperns’, a distributor that sells lionfish to restaurants, hotels, and grocers, like Whole Foods.

Conservationists have contemplated eating other invasive species to reduce their numbers, too. But things like the bony Asian carp that ravage the Mississippi River have been a harder sell. As the lionfish story becomes more widely known, says Dr. Roman, it might help open the door to building similar programs around other invaders – the tasty ones, at least.

Eva Botkin-Kowacki/The Christian Science Monitor

A live lionfish is on display at an educational booth at the Winter Lionfish Derby in Key Largo, Florida on Saturday, March 30. At another booth, visitors could learn how to fillet a lionfish or taste lionfish ceviche.

The goal behind this approach might be counterintuitive for fisheries managers, says Dr. Roman. “If you’re telling someone who is starting a new commercial fishery that the goal is to deplete their resource, that’s a bit mind-testing at the beginning,” he says.

In the case of lionfish, that atypical goal of unsustainability has been embraced by fishermen, environmentalists, regulators, and scientists alike. “It’s a group effort,” says Alli Candelmo, the invasive species program coordinator for REEF, the marine conservation organization behind the March 30 derby. “I think that’s the best thing about the lionfish invasion.”

Lionfish hunters

Most derby teams compete independently, but there are three teams aboard the Tropical Serenity on this bright Saturday. That boat is run by local dive company Rainbow Reef as a donation for participants who don't have a boat or didn't want to transport theirs to Key Largo.

The teams hail from across the state, and have come with varying experience levels. There's Ms. Pepperman's team of four, ProWeb ZooKeeper, who are flush with past derby stories. Then there's Defenders of the Reef, a team of three that includes Ekaterina Grebenkina, who had never killed a fish before. And two engineers working on the lionfish hunting robot make up team RSE Guardian ROV, although they're diving without the robot this time.

They're all there to protect the native ecosystem they love. As Ms. Grebenkina says, "I consider it our duty" as divers to keep the reef pristine.

Derby teams can win prize money for capturing the most, the smallest, and the largest lionfish. All the divers on the boat agree that Ms. Pepperman's "monster" could be a contender for largest, but on subsequent dives, her teammates haul in others that rival hers. Back on shore, the largest fish from team ProWeb ZooKeeper measures 16.4 inches long, edging out a 16-inch fish for first place.

"Who doesn't like to win," says Ms. Pepperman. "I love the competition. But at the same time, we're all winners if we get lionfish diminished on the reef."

It's not all guts and glory for lionfish hunters like Ms. Pepperman, though. "I feel bad for the lionfish," she says. "It's not their fault. But they're doing so much damage to the fish that belong here."

An earlier version of this story mischaracterized the tank worn by divers. A scuba tank contains oxygen but also includes a mix of gases.

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