

# Asian swamp eels spread in the Everglades: 'Potentially the worst species we've had yet'

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For a crayfish in the Florida Everglades, its worst nightmare is three feet

long, dark brown and pure muscle, with a mouth like a vacuum that sucks up nearly everything it can find—tiny fish, small shellfish, turtle eggs and frogs.

It's called the Asian swamp eel. And while Floridians may be more used to seeing it grilled and doused in a sweet sticky sauce in sushi rolls, the slippery beasts have become an increasingly problematic invasive species in the delicate Everglades ecosystem.

While these eels have been a presence in certain pockets of the park for decades, a newly released paper published in the journal *Science of the Total Environment* has—for the first time—put some hard numbers on the voracious appetite of these creatures. And it isn't pretty.

In Taylor Slough alone, researchers found that populations of two native [crayfish](#) and the tiny flagfish dropped 99% since the eels invaded. Marsh killifish dropped 91% and the eastern mosquitofish, important for its pest-munching prowess, tumbled 66%.

"You can't say 100% because there were like two crayfish," said Matthew Pinar, lead author of the paper and a researcher at Florida International University at the time.

The decline of the small critters that make up the base of the food web for most life in the Everglades, including wading birds, is dramatic enough that Pinar suggests the eel should dethrone the Burmese Python as the most formidable invasive species in the Everglades.

"In Taylor Slough, they're the No. 1 species in terms of the threat they pose to the ecosystem," he said. "It's potentially the worst species we've had yet."

## **From kitchen table to backyard canal**

These invasive eels first slithered their way into South Florida in the late '90s, likely from folks dumping unwanted pets (or food) into nearby water bodies, although some of those releases can be chalked up to religious practices.

Their first official spotting was in a canal near Hard Rock Stadium in 1997. They made their way into the Everglades by 2007, just outside Taylor Slough, a shallow sheet of water that flows into Florida Bay in the southern Everglades.

Populations have also sprung up in Tampa and Sarasota bays and the Myakka and Peace rivers, as well as in other states including Georgia, Louisiana and even New York.

And once the eels have arrived, they tend to spread. Scientists first found the eels inside Taylor Slough in 2009, and by 2014 they were catching eels at every sampling site in the 95-square-mile watershed. Researchers have started finding them farther west, including in Shark River Slough, as well as in the water conservation areas to the north of Everglades National Park.

"Since 2015 their distribution just exploded," Pinter said. "We have no idea how many there are now."

While they're a native species of Asia, these swamp eels are uniquely suited to survive in the feast and famine flood and [drought conditions](#) in the Florida Everglades.

Unlike other fish or snakes, these eels have both gills for breathing underwater and lungs for breathing on land. No other predator in the Everglades can match that.

The invasive eel was particularly hard on creatures that rely on the

natural drought periods in the Glades for survival. Crayfish and the marsh killifish both hatch and rear their young right at the end of the dry season, in the few short weeks before normal predators return to the area to hunt.

But now, when the crayfish burrow out of the mud or the killifish get ready to lay their eggs, the drought-resistant swamp eel is already there waiting to snap them up. They can burrow into the drying mud and wait, sometimes as long as five months, for their next meal.

"None of the large fish can do that, native or invasive species, are able to survive like that," Pintar said. "They have all kinds of weird evolutionary traits to help them survive."

## **How to kill them**

Although predators like alligators and bigger birds, like herons, have been seen snacking on the slippery fish, Pintar said they're not making enough of a dent in the rapidly swelling population.

For now, he said, the invasive eels appear to be spreading unabated throughout the Everglades. Efforts to round up invasive species of all types (and there are many in the swamps) do catch the occasional eel, but Pintar said efforts targeted specifically at the eels dried up around 2012.

"Once they made it to the wetlands they stopped making any kind of effort," he said.

Researchers analyzing the long-term health of the Glades keep scooping up the eels in new sites, including Shark River Slough, an important nesting site for wading birds. That worries Pintar, who said there's a chance that if the [eels](#) are left unchecked, they could scarf up enough

small fish and shellfish that small [wading birds](#) have trouble finding enough to eat.

"In ten years' time if they continue to spread and have the same effects we might see more whole food web effects," Pintar said.

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