What's smaller than a python but just as bad for South Florida? Invasive fish

April 4 2017, by Jenny Staletovich, Miami Herald

Out in the Big Cypress swamp, across the street from the country's smallest post office in a wilderness the size of Rhode Island, a canal is teeming with something unexpected: aquarium fish usually found in a pet shop.

Orange-striped Mayan cichlids dart among boldly spotted tilapia and ruby-colored African jewelfish.

The exotic fish, originally dumped by pet owners or escaped from fish farms, are now as likely to be found in remote sloughs and canals crisscrossing the Everglades as weed-choked urban canals. The fish have not grabbed headlines, or the public imagination, like pythons as they stake out more and more territory. But they are no less insidious: They gobble up food, tolerate more extreme conditions, and reproduce at a faster and younger rate than native freshwater fish. Some even hunt in packs, devouring the small crayfish that form the base of the local food chain.

"They are biological pollution for sure," said Pam Schofield, a U.S. Geological Survey fishery biologist who has been supervising yearly surveys across the state since 2013. "Every one of those fish is eating something or taking up space."

And they don't appear to be losing steam. In a check of the Big Cypress done last week, scientists discovered two new invaders for the first time: the prehistoric-looking armored catfish and the Nile tilapia. At least 200

exotic fish have been found statewide, Schofield said. About three dozen have taken up residence.

And while the invasion has been documented for decades, efforts to stop it appear hampered by the same problems plaguing the spread of other exotic species: lack of money and lack of manpower. The last time the Big Cypress was surveyed for invasive fish was in 2003, by William Loftus, a retired USGS biologist based at Everglades National Park.

"There are a whole gamut of questions and the pot of money never seems to get any larger," he said.

Loftus was back out last week with Schofield and eight teams of biologists who volunteered to conduct a 'bio blitz' - a quick, but intense assessment scientists conduct when they lack the money needed for a full scientific review. Schofield's blitzes, called Fish Slams, have helped build an extensive data base that allows other researchers and the public to track, and report, the spread of fish.

But while tracking efforts have gained momentum, understanding the impacts from the fish still lags, Loftus said.

"To think they don't have an effect is ridiculous," he said. "To find that effect is more difficult."

When Loftus began looking at invasive fish in the 1970s, there were only about a half-dozen documented in South Florida and three in Everglades National Park. Still, he and other scientists recognized their spread could be fast and furious. With so many canals carving up the landscape, the fish had easy access to what the scientists called superhighways.

Canals, unlike other water bodies, tend to stay warmer, he said. So the canals served as a thermal refuge against the fish's only natural barrier:

cold snaps.

Sure enough, after the jewelfish, which hails from the waters of the African savannah, first appeared in canals in Miami and Hialeah in the 1960s, it headed north to Palm Beach County. It's now been found in Hardee, Hendry and Indian River counties.

The canals also carried the fish farther and farther into the wild. In 1983, Loftus documented the first appearance of the now ubiquitous Mayan cichlid in Everglades National Park. It can now be found as far north as Merritt Island on the east coast and Tampa Bay on the west.

The fish also spread across remote marshes during the wet season, then continue to survive in disconnected ponds during the dry season. Last week, Schofield and Loftus found spotted tilapia and catfish in a Big Cypress pond, far from any canal.

Over the years, Loftus said he argued to have canals dredged to build roads, and serving no other purpose, filled. But little has been done. The South Florida Water Management District has filled some canals as part of restoration efforts in the Picayune Strand, but Big Cypress still has miles and miles of canals, carrying the fish pollution to the Sweetwater Strand, Dayhoff Slough and some of the preserves most pristine areas.

Scientists assume the invasive fish are likely pushing out natives by competing for food, and sometimes eating natives, and taking up valuable spawning space. While it appears they help feed wading birds, Schofield and Loftus say it's not clear if they provide the same nutritional value. And in some cases, like catfish, it takes birds far longer to consume the fish.

"So the question is: are they good substitutes," Loftus said.

Also, to understand how to control them scientists still need to know where they are, which can be tricky since many of the places they now inhabit can be reached only by helicopter or airboat. The teams that fanned out across Big Cypress last week also had to dodge a 15,000-acre wildfire. At least two of the teams were ordered out, led back to the check-in by a police escort.

Different methods also detect different species, and with different results. In Big Cypress, biologists used nets, fish traps and backpack shockers - which send a small current to a wand dipped in water to stun fish - to collect fish for the purposes of the survey. They focused on variety not quantity.

Further east, on the Miccosukee Reservation, tribe biologists Shara Marconi and Julian Douglas teamed up with the U.S. Fish and Wildlife Service biologist John Galvez for more straightforward work: kill as many as possible. Using two boats outfitted with generators attached to shocking booms, the teams scoured the L-28 Interceptor, a wide canal that carries water from pastures and farm fields to the north.

In one short stretch measuring just over half a mile, the teams collected 94 Mayan cichlids, one walking catfish and one black akara in less than a half-hour. By morning's end, they had more than 130 cichlids.

After they tallied the fish, Marconi asked Galvez if repeating the effort daily would work to get rid of the fish. His answer was simple: no.

"The species, they don't know fences," he said. The fish just keep coming.

To combat the problem, agencies say they need to lean heavily on the public. Both state and federal agencies have created ways to report sightings, including the Florida's IveGot1 app and website and USGS's

website.

They also need pet owners to realize the full damage caused when animals, including little fish, are released into the wild, where populations of tropical exotics can quickly mushroom and spread. As silly as it may sound, Loftus said, fish owners should take advantage of the same pet amnesty day offered to python and tegu owners to get rid of unwanted animals.

More effort also needs to be made on control efforts, scientists say. Electro-shocking canals is more effective at looking for new species than driving down numbers. And there has been public resistance to using toxins that kill invasive fish.

"Our toolbox for dealing with these nonnative fish is pretty empty," Loftus said. "We really need a lot of research in to ways we can eradicate and more safely control these animals once they're out there."