Sea snail found in Florida Keys is the state's latest exotic invader

April 11 2017, by Jenny Staletovich, Miami Herald

The discovery of a new sea snail in the Florida Keys - one with strange spiderlike powers - has scientists worried that they may be seeing the beginning of the state's latest exotic species invasion.

The stationary snail, which belongs to a family of mostly overlooked mollusks that attach themselves to shells, reefs, piers and anything else hard underwater, was first discovered on a shipwreck about seven miles south of Key West in 2014. Rudiger Bieler, a Field Museum marine biologist in Chicago and one of a handful of global experts on sea snails, found just three snails.

When he returned 19 months later, the three had multiplied into a colony covering the ship's deck, a discovery he documents in a new study published in the online journal *PeerJ*.

"It was amazing," he said. "Just looking at the rail on this sunken vessel, you could see hundreds."

The appearance of a snail, likely another Pacific export, also highlighted what has become an increasingly important porthole into the spread of underwater exotic species: large ships scuttled for use as artificial reefs.

Unlike living reefs, where spotting new species lurking among the anemones or tucked into the coral can be tricky, the ships - which must be cleaned before they are sunk - offer vast new swaths of uninhabited real estate. They provide familiar habitat to the many exotic species that

arrive by ship, either in ballast water or attached to hulls. And with no predators or competition, even the puniest clam can find a home.

Since 2002, Bieler and colleagues at Mote Marine Laboratory working to restore reefs, have been keeping a watch on wrecks like the USS Gen. Hoyt S. Vandenberg, where the snail was found, for signs of stowaways. Florida has the second-most active artificial reef program in the country and the world's third-largest barrier reef. With a string of wrecks in the busy region so close to living reefs already imperiled by warming oceans, pollution and boat traffic, they worry any newcomers could have serious implications.

"We're trying to figure out what really belongs here," said Bieler, comparing their efforts to restoring forests on dry land.

"Are we really seeing the native butterflies returning?" he asked. "Or are we seeing feral cats? In the marine environment, it's a little tough to know who are the feral cats."

When Bieler first spotted the snail, named the "Vandy" after the ship, he knew it was no local. Well-documented Atlantic worm snails, which range from Bermuda to Brazil, are relatively small. This snail was about the size of his thumb.

The first thing he did was take a look inside. Worm snails are one of nature's freakier freaks. Unlike typical coiled snails, worm snails make a shell shaped like a tube, attach themselves to a surface shortly after birth, and never move. Some emit larvae when they reproduce, to catch on currents and spread. But if this snail did that, the fast currents around the ship would never have allowed such a big colony to form so fast. Instead, the Vandy gives birth to live babies that crawl a short distance, then cement themselves onto whatever surface they can find.

The Vandy had another secret weapon - its mucous. Using the same gland that allows garden snails to slither to and fro, it spews a web like a spider to catch prey and filter feed like a whale. It also eats its own web.

Once Bieler and his colleagues knew they were onto something new, the hard part came: figuring out where it came from. Unlike lionfish, the colorful menace from the Pacific and Indian oceans that has become Florida's poster animal for saltwater invaders, and other larger, more animated creatures of the sea, the data sets on invertebrates are relatively meager. Much of it is located in the vast, musty collections of museums.

"We have literally 10,000 records in a huge spread sheet going from the Smithsonian to other institutions," he said.

Two big clues hinted at the Vandy's origins. First, it was collected in an area where a growing number of Pacific species have colonized on wrecks, including the orange cup coral and the giant honeycomb or foam oyster. And when they searched DNA data banks, from French Polynesia to China, they found the snail's closest cousin resided in the Pacific.

A string of sunken ships, called the Key West Ghost Fleet, lies between Key West and the Dry Tortugas. The Vandenberg, at nearly 525 feet and 10 stories tall, is the second biggest, but most are large. And unlike other ships scuttled along the Florida coast, these lie close to living reefs. While local worm snails inhabit reefs, scientists know the non-native kind inhibit the growth of coral and may even harbor a parasite dangerous to loggerhead turtles.

"Local species seem to be in balance with local coral," Bieler said. "But we're worried new ones will come in to buck the system out of whack. The corals are already suffering. So we're worried about a new agent of destruction."

They also worry that these new invaders, some garishly obvious but others easily camouflaged, may have already made their way undetected onto the reefs or the wrecks.

"I think these are probably just the tips of the icebergs because we haven't looked at the smallest clams and snails," Bieler said. "So it's a wake-up call for future research on wrecks. If we monitor their arrival at this point, we might be able to step in and eradicate them. Or at least watch what's coming in."