Scientists want us to keep watch for horseshoe crabs on Florida's west coast

Laura Ruane

They look like tanks.

They hook up on the beach.

Their lineage goes back more than 445 million years.

Call them blue bloods – without the paparazzi.

They are horseshoe crabs. They really do have blue blood.

And, although they're not conventional celebrities, these critters are crucial to human health and the region's ecosystem.

That realization is propelling increased monitoring and public education efforts on many levels.

Buy Photo

A horseshoe crab scoots through the shallows on the south end of the New Pass bridge on May 1, 2018. *(Photo: Andrew West/The News-Press)*

It’s no easy task; they cover a lot of territory. Horseshoe crabs are found along the North Atlantic coast, from Mexico to Maine.

They live in shallow ocean waters, coming ashore only to reproduce. They eat fish, algae and crustaceans, and can live about 20 years.

"Crab" is a misnomer. They're more closely related to spiders or scorpions.

Modern horseshoe crabs are not listed as “threatened,” but it's believed their numbers have declined due to over-harvesting and loss of habitat.

Little is known about their numbers today, though, in the Sunshine State.

“They’re poorly understood and understudied,” said Armando Ubeda, marine biologist and Florida Sea Grant agent with UF/IFAS Extension for Sarasota County.

The shortage of Florida-specific data for trends analysis is why the Florida Fish & Wildlife Conservation Commission is leading horseshoe crab nesting surveys.

“We’re looking for animals coming up on the beach to spawn,” said Tiffany Black, FWC research associate.

She’s working with other organizations including the University of Florida/IFAS Sea Grant program and the Charlotte Harbor National Estuary Program to train volunteers in recording their observations of adult horseshoe crabs.

Black’s impressions?

More: Bonita Springs summit seeks solutions to Southwest Florida's water quality crisis

A rare sight

Compared with Delaware Bay, where tens of thousands of horseshoe crabs spawn in May and June, “our horseshoe crab populations, while present, are small and sparse.”

One reason is that Florida weather permits year-round horseshoe crab spawning, spreading out the chances of seeing them on the shore.

Perhaps you saw them on local beaches in March or April, which tend to be the busiest spawning months in our region.

Buy Photo

A horseshoe crab scoots across the south side of the New Pass bridge on May 1, 2018. *(Photo: Andrew West/The News-Press)*

The bay between Delaware and New Jersey is the epicenter for the medical harvest of horseshoe crabs – roughly 500,000 per year.

The adult crabs are taken to labs, drained of about a third of their blood, and then released alive into the same waters where they were found.

It's unclear how many crabs die in the process; estimates in recent years range from 15 to nearly 30 percent.

There are quotas for crabs taken for bait, but none for those harvested for biomedical purposes.

That's because the medical industry has argued successfully so far that the value of their product should exempt them from regulation other than voluntary observance of best management practices when crab harvesting.

That value comes from a substance in their blue blood.

When disease-causing microorganisms enter a crab's body, its blue blood cells release a chemical called limulus amoebocyte lysate (LAL) that thickens on contact with the invading substance and acts as a physical barrier against it, preventing it from spreading.

All FDA-approved vaccines, injectable drugs, and implanted medical devices are put through LAL testing.

Without crab blood, more people would die from preventable infections.

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Buy Photo

A horseshoe crab carcass washed up on the shore of Bunche Beach in south Fort Myers. *(Photo: Andrew West/The News-Press)*

Mark Thompson, research associate at the Sanibel-Captiva Conservation

Foundation, studied the species' decline in the late 1990s as part of his master's degree thesis.

He still keeps an eye out for them here, on an informal basis.

Compared with previous years, "I don't see as many this year," Thompson said.

Last week, a toxic red tide bloom that's festered off the Lee County coast for months finally seemed to be waning.

Before that, photojournalists for The News-Press looked in vain for live horseshoe crabs. One finally was found: It's in the photos you see in this report.

But it raised the question: Could red tide kill the crabs or keep them way offshore?

It's anyone's guess, according to Thompson.

"There's been no research on the effects of red tide on them," he said, adding:

"They'll survive in a lot of detrimental conditions that would affect everything else."

Since The News-Press contacted them, Thompson and SCCF scientist Rick Bartleson, have begun looking for an opportunity to make a modest start on studying red tide's impact – if any – on horseshoe crabs.

This will require at least two things: Money and another lingering bout of red tide.

More: Sick sea turtles showing up on Sanibel

Information lacking

Horseshoe crabs aren't harvested in Florida for medical use, although laws are in place to allow it.

If they were, perhaps more would be known about what helps and hurts their populations.

Ubeda noted that the same species of marine animals living in different regions can have genetic variations.

"We might have five or six distinct populations in Florida."

In Florida, horseshoe crab harvesting is regulated, with licenses required. Adults are harvested for bait; juveniles for aquariums.

Black at the FWC said there have been attempts in the past to bring medical harvesting of horseshoe crabs to Florida, but they failed.

To date, no one's been able to replicate the horseshoe crab harvesting and laboratories in the Delaware Bay region. Creating the sterile lab environment and LAL processing facilities is no small feat.

"It's not like you can bleed horseshoe crab blood into a Mason jar and sell that," Black said.

Buy Photo

A horseshoe crab scoots along the south side of the New Pass bridge on May 1, 2018. *(Photo: Andrew West/The News-Preee)*

But even without the medical connection, the survival of the creatures matters.

For one, they're major players in ecosystems in more than one continent.

Horseshoe crab eggs are a major source for migrating shorebirds such as laughing gulls and red knots.

The red knot makes one of the longest migratory trips of any bird – 9,300 miles from its winter digs in southern South America to its breeding grounds in the Arctic.

The arduous journey requires two to three stopovers. The horseshoe crab eggs they consume along Delaware Bay are critical to their survival: They'll spend about two weeks there to put on weight before resuming their northward migration.

In Southwest Florida, fish and birds eat their eggs. Adult horseshoes are prey for sea turtles, alligators, horse conchs, sharks and raccoons.

“They’re an important source of food for our estuaries,” said Ubeda.

Awareness about horseshoe crabs is growing here.

From January through early April, the J.N. "Ding" Darling National Wildlife Refuge offered a new family-friendly program on horseshoe crabs at its Visitor & Education Center.

The 30-minute program covered basic horseshoe crab biology and the creature’s importance to migrating shorebirds and the medical field.

On a recent Saturday in late April, Charlotte Harbor National Estuary Program volunteers watched a presentation on horseshoe crab basics before going on a scouting mission in the shallow waters of Lemon Bay.

There, they observed two juvenile horseshoe crabs, and collected some molts – the exoskeletons horseshoe crabs shed as they grow into adulthood.

The estuary program is working with FWC staff to pursue establishing future routine monitoring in this region, said Jennifer Hecker, program director.

The Florida Horseshoe Crab Watch is a citizen science program that began in 2015.

It has since expanded to 31 Florida beaches. However, there currently is no monitoring program on Florida’s west coast south of Tampa’s Fort DeSoto.

“By fall, we’re hoping to have many more (Horseshoe Crab Watch) areas in place, all the way down to the Keys,” Black of the FWC said.

In the watch program, trained volunteers go to pre-chosen areas where spawning and nesting horseshoe crabs are known to frequent.

They count the crabs, weigh and measure them, determine their gender, estimate their age – and place a U.S. Fish & Wildlife Service tag on them.

With more data, "you can run analyses and do scientific reports" on the health of horseshoe crab populations, whether their numbers are declining or increasing and how their habitats are faring, Black said.

This kind of information can influence policy on their harvesting and efforts to keep their populations sustainable.

Horseshoe crabs might be hard to spot this spring in Southwest Florida, but they're worth watching – and not just for their many uses.

Said Black: "There's nothing like them on the planet."

Report your horseshoe crab sightings to FWC

Horseshoe crabs reproduce year-round in Florida.

The Florida Fish and Wildlife Conservation Commission encourages the public to report these sightings.

Over time, that's helped the FWC identify areas where closer monitoring might be fruitful.

You have several options for reporting the adult horseshoe crabs you see spawning on our shores. They include:

•Web: Go to MyFWC.com/Contact and go to "Horseshoe Crab Nesting Activity" for the "Florida Horseshoe Crab Spawning Beach Survey Link."

•App: Download the FWC Reporter. It's free, and available for Apple or Android smartphones and tablets from the App Store or Google Play.

•You also can report sightings via email at horseshoe@MYFWC.com or by phone at 866-252-9326.

Beachgoers typically have the best luck spotting horseshoe crabs around high tide, within three days of a full or new moon.

If you see a horseshoe crab on its back, gently pick it up (holding both sides of the shell) and release it back into the water.

Some other tips on finding horseshoe crabs in Lee County:

To see juveniles, Mark Thompson at the Sanibel-Captiva Conservation Foundation suggests going out on the Sanibel toll booth flats at low tide and looking for their trails.

For adult horseshoes, the waters along Wildlife Drive at J.N. "Ding" Darling National Wildlife Refuge are usually good, Thompson said.

Eve Haverfield of Turtle Time reports that volunteers from the sea turtle-monitoring group have seen horseshoe crabs spawning on the Big Hickory Island and Bonita beaches.