

Humans monitor falling horseshoe crab numbers

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THE HOUR

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People collect crabs from the water during a Maritime Aquarium horseshoe crab tagging event at Calf Pasture Beach on Wednesday June 13, 2018 in Norwalk Conn. More than a dozen volunteers, citizen scientists and [... more](#)

NORWALK — In the dark of the new moon, people gathered at Calf Pasture Beach. They were equipped with headlamps, waders, buckets and bug spray, and they were there to solve a mystery: What's happening to Long Island Sound's horseshoe crabs?

Horseshoe crabs are prehistoric creatures; they look like armored stingrays until you flip one over. Then you can see its six waving pairs of legs and pincers, which resemble boxing gloves if the crab is male and scissors if it's female.

The pincers and prong-like tail, however, are nothing to fear — horseshoe crabs are docile. In fact, they have saved countless human lives. Their milky blue blood can detect even minute traces of endotoxins, and so the Food and Drug Administration requires all intravenous drugs to be tested with horseshoe crab blood. If you've ever had an injection, you can thank the spiky arthropod for protecting you from infection.

The crab's unique ability to fight bacteria — so far, a synthetic equivalent has yet to be widely adopted — may help explain how they've managed to stick around for 450 million years, both predating and surviving the dinosaurs. But now, their numbers are falling. Jennifer Mattei, an ecology and evolution professor at Sacred Heart has observed two problems: fewer crabs are seen mating, and fewer crabs are reaching mating age.

Mattei is the founder of Project Limulus, which has been collecting data on horseshoe crabs and tagging them to track their habits since 1997. (The project takes its name from the scientific name for a horseshoe crab). The data provides a piece in the complicated puzzle of what is happening to the animals, and the volunteers assembled at 11 p.m. Wednesday night were ready to help.

Bridget Cervero, Citizen Science Coordinator at the Maritime Aquarium, demonstrated how to measure, evaluate and tag the crabs before setting teams loose to do so on their own.

Kathy Rooney of Wilton, whose family has been volunteering to tag horseshoe crabs for eight years in a row, took up a clipboard and began handing out tags. Finding the crabs, which were coming to shore to mate, was faster than logging their information, and she was soon surrounded by a ring of people, each holding an upside-down crab in their hands like a bowl.

Rooney said she was drawn back year after year to help out and witness the horseshoe crabs during their peak shore activity, which only occurs a few weeks out of every year.

"Coming out and doing this when you'd normally be asleep is an adventure," agreed her husband, Kevin Rooney.

Kelsey Farber, on the other hand, was there for her first time. An eighth-grader from Fairfield, she had heard about the chance to tag horseshoe crabs from Cervero on a cruise offered on the aquarium's research vessel — the cruise trawls the Sound and discusses the marine life it finds. Farber wants to be a marine biologist and plans to attend the Bridgeport Regional Vocational Aquaculture School next year, so she was excited to meet the crabs. She wasted no time wading into the waves to look for them. The volunteers each cast an island of light in the cloudy water with their headlamps, and the dark discs of the crabs were easy to spot.

During mating season, the male crabs join onto the females, sometimes forming chains of crabs four or five long. But finding pairs of more than two were uncommon Wednesday night, and many of the crabs were by themselves.

"We've found that females are coming up and no males are attached to them," Mattei said. "So if they're coming up single, they can't lay eggs or the eggs won't be fertilized. So we found 12 to 15 percent are coming up without a male attached to them. And there's a trend over the years for that number to increase."

The reason why is unclear, although one theory is pollution.

"They have to see each other, right?" Mattei pointed out.

Another possibility is that it takes a certain density for horseshoe crabs to easily find each other — while there were more horseshoe crabs than tags on Wednesday night, it was nothing like the seething masses that some volunteers remembered from their childhoods.

Farber grabbed a single crab and brought it to shore, where her mother was manning a clipboard. She flipped it on its back to measure its diameter with a ruler, and it waved its legs in the air. They clicked against the side of its shell with the sound of dull castanets.

After the data was collected, it was time to put on the tag. Citizen scientists use awls to pierce a hole for the tag through the crab's shell, which is made of the same material as your fingernails. Cervero had reassured volunteers that the process doesn't hurt the crab, but it does take some elbow grease.

"You really got to jam it — try twisting it," Farber was soon coaching other volunteers. "Don't worry, they're the gentlest creatures."

Stick a tag through the hole, and the job is complete. She scooped up the newly tagged crab and returned it to the sea. It took a moment to reorient itself, then glided away, merging into the darkness. The last thing visible was the white circle of the tag.

Upcoming Project Limulus talks, workshops and training sessions can be found at

<http://www.sacredheart.edu/academics/collegeofartssciences/academicdepartments/biology/projectlimulus/talksworkshopstrainingsessions/> (currently there is one tagging event left in Stratford on June 22).

Trainings for the taggings with the Maritime Aquarium are closed, but you can find other citizen science initiatives at <https://www.maritimeaquarium.org/citizen-science>. And if you spot a tagged horseshoe crab — dead or alive or as an empty exoskeleton — note the tag number, location and date and call 1-888-LIMULUS. The information helps the project track the movements of the horseshoe crabs.