

Horseshoe crabs counted along Greenwich shoreline

Conservation department takes stock of horseshoe crab population as part of East Coast census

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GREENWICH - A long-term study is being conducted on a "primitive" crab that existed tens of millions of years before the first dinosaurs roamed the earth, and yet plays a vitally important role in medical research.

Volunteers up and down Long Island Sound, including in Greenwich, are counting horseshoe crabs as part of "Project Limulus." Limulus -- "odd" in Latin -- is the first half of the sea creature's scientific designation.

The hard-shelled crabs, which can grow up to 2 feet in length including the tail, don't appear to be a threatened species, but their numbers seem to be dropping as habitats come under pressure from human activity, said Denise Savageau, the town's conservation director.

"Right now the trends seem to be that we are seeing less horseshoe crabs, but is that cyclical? That's one of the things we are just trying to get a handle on," she said.

The Conservation Department began counting the crabs at Greenwich Point in mid-May and will continue through July, Savageau said.

Crabs are counted on days when there is a new moon or full moon because high tides bring the crabs ashore to spawn, she said.

The crabs are believed to be little changed from when they first evolved about 300 million years ago during the Triassic Period, said a fisheries biologist with the state Department of Environmental Protection. That lack of evolutionary sophistication has helped modern science develop vaccines to fight disease.

"They are such a primitive animal and they are extremely sensitive to bacteria," Penny Howell said.

It's that sensitivity that is a boon to pharmaceutical research, she said. When drug companies want to test if the vaccines they produce are free from contamination, the vaccine will be mixed with some blood extracted from the crabs, she said.

The blood will react if a vaccine is contaminated, she said, telling researchers the vaccines are no good.

Another reason the crabs are important, according to Jennifer Mattei, chairwoman and associate biology professor at Sacred Heart University in Fairfield -- the eggs they lay are essential for two birds in particular as they migrate along the Atlantic coast.

"They lay millions of eggs and the red knot and ruddy turnstone depend on that for food -- the eggs are filled with fat and protein," Mattei said. "They just gorge themselves on these

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eggs and they can double their body weight in about two weeks."

Mattei, who is leading the Project Limulus study, said each crab can lay up to 60,000 eggs per year.

The crabs reach maturity at about 10 years, Savageau said, and can live as long as 20 years.

The crabs come ashore in the spring and early summer from their winter homes in deeper waters so the females can spawn, Savageau said.

The crabs also are used as bait in eel and conch fisheries, Mattei said. A conch is a hard-shelled saltwater snail harvested for its meat.

The Long Island Sound project is part of a larger horseshoe crab study that spans the Eastern Seaboard.

In 1999, the Atlantic States Marine Fisheries Commission, a group composed of states running from Maine to Florida that share coastal concerns, launched a study on the horseshoe crab, Howell said.

At the same time, Sacred Heart University had its own small-scale study, which gradually became larger under Mattei's leadership. Howell said the two studies combined resources two years ago to avoid duplication.

Howell said one concern for the crab is ensuring its beach environment is disturbed as little as possible by humans while the crabs are spawning.

Bathers flock to clean beaches, but raking them to get them into pristine condition often brings catastrophe for the crabs' eggs, Howell said.

The crabs lay their eggs about eight inches into the sand, deep enough to protect them, but not too deep where their oxygen supply is cut, Howell said.

Raking can often wreak havoc on that environment, she said.

"The eggs can be completely bulldozed and now they are so far down they don't see the light of day," Howell said. Raking can also uncover the eggs, which are quickly gobbled by predators or washed out to sea where they will die, she said.

She said a rough estimate of the horseshoe crabs along the state's coast is about 100,000 to 200,000 crabs, but cautioned those numbers are only a rough estimate.

But once they grow into crabs, they are extremely tough, Howell said.

"This animal is extremely hardy, they are hard to kill and they will eat almost anything," she said.

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