

# New Jersey should invest in horseshoe crabs, biologist says

Written by

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**UPPER FREEHOLD** — It sounds like ghoulish business, but drawing blood from horseshoe crabs is worth at least \$200 million a year, with steadily growing demand — and increasing worries that the supply could diminish.

So one prominent biologist who studies the relationship between horseshoe crabs and shorebirds is proposing that New Jersey and Delaware launch a public-private partnership to produce lysate — a critical medical testing compound made from crab blood — with help from Delaware Bay commercial fishermen who used to catch crabs for bait.

“There’s a huge value being lost here. ... We really have to create wealth for the people in the area,” said Larry Niles, chief scientist for the Conserve Wildlife Foundation of New Jersey, after state advisers met Tuesday to hear reports on the status of the crabs and red knot shorebirds that feed on the crabs’ eggs.

In a proposal to state Department of Environmental Protection Commissioner Bob Martin, Niles says New Jersey should take back management control of the Delaware Bay crab population by becoming a production center for *Limulus amoebocyte lysate*, or LAL, the crab blood-derived compound used to test drugs and medical devices for bacterial contamination.

“That’s what worked in South Carolina. They don’t allow taking crabs for bait but (instead) harvest for LAL,” said Niles, who began working on the crab-shorebird connection when he was chief of the DEP’s endangered species program.

Attracting the industry to New Jersey could re-employ watermen who used to gather crabs before a moratorium on the bait business, “and

pay them a lot better for getting blood from crabs than selling them for bait,” Niles said.

In May, the shorebirds and crabs rendezvous in Delaware Bay, where the crabs spawn and lay eggs, and the birds land to rest and feed before flying on to their own Arctic breeding grounds.

Spring red knot counts on the bay are down 75 percent since 1998, to an all-time low of 12,000 in 2010, said Amanda Dey, a DEP biologist. The decline started after a big 1990s increase in the numbers of crabs harvested as fishing bait, and Dey said she thinks New Jersey’s moratorium should be expanded to the whole East Coast.

Shorebird experts say the East Coast red knot population should be at least 80,000 birds, and by October 2012 the U.S. Fish and Wildlife Service could propose listing the birds for protection under the Endangered Species Act.

That prospect is worrying for four U.S. companies that manufacture LAL.

“We feel there could be sanctions on us and limits on the numbers of crabs we can take,” said Marybeth Donovan Janke of Lonza Walkersville, a Maryland-based company that bleeds crabs to produce LAL.

In 2010, some 550,000 crabs were bled by the industry, a 24 percent increase over the previous five years, according to a report by the Atlantic States Marine Fisheries Commission.

For the last four years, the commission says the industry is exceeding its share of crabs that die during handling, and continued increases are not sustainable.

A few weeks ago, Lonza and other LAL manufacturers agreed to help pay for the annual \$200,000 Virginia tech trawl survey to count Delaware Bay crabs.

Ultimately, “what we wanted to do is get the crab out of the process,” said Alan Burgenson, regulatory affairs manager for Lonza.

Lonza obtains live crabs with a fishing trawler, keeping them cool and alive while dripping out 50 milliliters of blood (less than 2 ounces) from about 300 milliliters that each crab has in its body. The crabs are then returned and released within 24 hours to the same coordinates at sea, Burgenson said.

In its search for a 21st-century substitute, Lonza licensed and commercialized its PyroGene Recombinant Factor C test, or rFC, a genetically engineered analog developed at the National University of Singapore. But the method faces roadblocks to adoption by the industry, Burgenson said.

Meanwhile, overfishing and habitat loss are reducing Asian horseshoe crabs and could limit biomedical production in that part of the world, she said.

Next month, LAL industry members will meet with the Atlantic States Marine Fisheries Commission to share ways to minimize the number of crabs that die during handling, Burgenson said. That figures ranges from 3 percent to 5 percent reported by Lonza to a high of 30 percent estimated by some academic researchers.

The distant prospect for an rFC replacement test shows horseshoe crab blood will be needed for years to come, Niles said.

“As long as there’s a cheaper alternative, there’s no incentive,” said Niles, who says the economic and medical value of LAL should be driving horseshoe crab conservation. “You’ve got to get the incentives right, and now all the incentives are wrong.”