

# Horseshoe crab harvest change could severely impact red knots in Delaware Bay | Opinion

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Special to the USA TODAY Network

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Delaware Bay hosts one of nature's great marvels — the springtime spawning of millions of horseshoe crabs and the shorebirds that migrate thousands of miles to feed on the crabs' nutritious eggs on their way to the Arctic.

But that marvel is slipping away, as a depleted horseshoe crab population no longer can supply the abundance of eggs that shorebirds need to fuel their epic migratory journeys. One of those shorebird species, the red knot, has been designated a threatened species under the Endangered Species Act, largely due to a major population crash from the overharvesting of horseshoe crabs. In recent years, the number of red knots stopping in Delaware Bay on their spring migration has reached an all-time low.



Now a regional fisheries commission has a plan that would make this situation even worse. While bait harvest of female horseshoe crabs has been prohibited in Delaware Bay since 2012 in recognition of the crab population's depleted numbers and its important relationship to red knots, the Atlantic States Marine Fisheries Commission is proposing to change the harvest rules in a way that would allow resumption of a female harvest. The commission is pushing this controversial proposal forward despite mounting public opposition and plans a critical vote in November.

The commission claims sophisticated computer modeling supports the counterintuitive conclusion that harvesting more crabs, including females, would not harm the horseshoe crab population or the red knots that depend on the crabs' eggs.

However, new independent scientific assessments show just how wrong-headed and risky this proposal is. The scientists who evaluated the

commission's methods and conclusions determined that the modeling ignored red flags indicating that the horseshoe crab population remains precarious, and they caution against increasing the harvest, particularly of females. Among other red flags, the scientists found that, despite a decade without female bait harvest, recruitment of young females into the population has not rebounded, the female proportion of the total population has not increased, and the mean size of mature females has declined, reaching its lowest level in the last three years of survey data. These outcomes are the opposite of what a female harvest prohibition would be expected to achieve, and suggest that female crab mortality remains stubbornly high. They are strong warnings that it would be risky to reopen a female bait harvest and add further mortality to the population.

The new scientific reviews also uncovered serious flaws in how the commission's proposal predicts the impacts of a harvest increase. Despite the well-established correlation between the overharvest of horseshoe crabs and the crash of the red knot population in the 1990s, the commission's model assumes that there is little to no relationship between the fates of these two species. In fact, the commission's computer model predicts that, even if horseshoe crabs vanished entirely today, red knot abundance would remain stable or even increase over the next 50 years. The model also inappropriately inflates its projections of the crab population size: it fills in gaps in survey data with nonsensical estimates that are vastly higher than the maximum level ever supported by direct measurements. In addition, the model's population estimates do not line up with actual trawl survey data for the horseshoe crab population. In fact, the model shows no correlation at all with the most reliable survey, the annual trawl conducted by Virginia Tech that measures horseshoe crab numbers around Delaware Bay.

Based on these findings, the independent scientists who reviewed the available information about the commission's proposal concluded that it was not justified by the best available science. But the complete computer model

underlying the new harvest proposal has never been released to the public, despite repeated requests. The scientists' analyses revealed severe concerns with the model based on the information available, demonstrating that public vetting of the full model is critical.

It is not consistent with sound science or good government for the commission to approve a major expansion of the horseshoe crab bait harvest using a model that has been shown to contain key flaws and omissions—and has never been fully disclosed to the public. Instead, with the red knot population at its lowest ebb and the crab population well short of recovery from past overharvest, the commission should reject the harvest expansion proposal.

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