



IUCN SSC
HORSESHOE CRAB
Specialist Group

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Main Interior
1849 C Street NW, Room 3331
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Re: Proposed Listing of the Red Knot as a Threatened Species under the Endangered Species Act (FWS-R5-ES-2013-0097)

We are writing as representatives of the International Union for the Conservation of Nature (IUCN) Species Specialist Group (SSG) for Horseshoe Crabs. Horseshoe crabs face multiple threats which vary across ranges, including loss of habitat through coastline development, overharvesting for use as food, bait and biomedical purposes, and lack of species and habitat protections. Our SSG's mission is to raise public awareness of the economic and ecological importance of horseshoe crabs, assess population status, levels of exploitation and conservation needs of all four species of horseshoe crabs, and to advocate for programs to ensure habitat protection, restoration and stock enhancement.

Overall, we agree and support the Service's determination that Red Knot viability is sufficiently low to warrant protection as Threatened under the Endangered Species Act.

The reasoning that global climate change and sea level rise significantly threatens the already imperiled Red Knot and the species and habitats, which Red Knots rely upon, is sound.

Hypotheses regarding causal pathways for the effects of climate change through alteration of habitat (migratory, wintering, or nesting) are supported by recent science. Numerous scientific publications (cited in USFWS's listing) support the causal relationship between the supply of horseshoe crab eggs and the foraging success and mass gains of Red Knots during their Spring stopover in Delaware Bay. **While we agree and support the determination, we have concerns regarding unintended consequences of application of ESA protection of the Red Knot on the conservation of horseshoe crabs, which is our primary interest.**

Whereas Delaware Bay is the focus of potential adverse effects of horseshoe crab harvest on the Red Knot, populations of horseshoe crabs are distributed from Maine to the Yucatan. While the Delaware Bay population of horseshoe crabs has proven to be resilient, this does not appear to be the case for populations restricted to smaller embayments (Widner and Barlow 1999, James-Pirri et al. 2005). **If demand for horseshoe crabs as bait or production of *Limulus* ameobocyte lysate (LAL) remains at present level, restrictions on the allowable take from the Delaware Bay region may displace fishing effort to New England and/or South Atlantic regions, where populations are smaller and less resilient to fishing pressure.** Recent horseshoe crab stock assessments show increasing harvest and declining stocks in New England coinciding with

declining harvest in Delaware Bay. In a recent stock assessment, the Atlantic States Marine Fisheries Commission states that:

“Decreased harvest of the Delaware Bay population has redirected harvest to other regions, particularly New York and New England. While the recent evidence from the Delaware Bay population suggests population rebuilding or at least stabilization, the evidence from New York and New England suggest that current harvest within those regions is not sustainable.” (ASMFC 2013).

The potential for redirected harvest pressure is a threat to some horseshoe crab populations.

The constriction of harvest for bait in Delaware Bay has also coincided with an increased demand for imports of Asian horseshoe crabs as a substitute for *Limulus*. The practice of importing Asian horseshoe crabs for bait is associated with elevated risks of invasive species and pathogen introductions that threatens native horseshoe crabs and species that rely on them, such as Red Knot. We have detailed these concerns in an earlier letter from the Horseshoe Crab SSG to USFWS (24 January 2013), and in its response to us, it was clear that USFWS shares these concerns. However, importation of Asian horseshoe crabs to the US is not currently prevented by the Lacey Act because chelicerates (including horseshoe crabs) are not among the taxonomic groups that are codified as “injurious species” in the statute.

USFWS recognizes that human disturbance can adversely affect foraging Red Knots during their stopover in Delaware Bay. **Our SSG is concerned that efforts to minimize human disturbances could have unintended negative consequences.** The stranding of adult horseshoe crabs during the spawning season is regarded as the single greatest source of adult mortality to the Delaware Bay population. Botton and Loveland (1988) estimated an accumulation of over 10,000 dead stranded crabs per km of “optimal” beach in lower Delaware Bay, NJ during one spawning season. Efforts to minimize human disturbances to foraging Red Knots on Delaware Bay beaches could have adversely impact several initiatives that promote awareness and conservation-directed actions on behalf of the horseshoe crab-shorebird connection. Should the listing prohibit people from accessing Delaware Bay beaches where horseshoe crabs spawn during the time that shorebirds are present (~ May 1 to June 7), this could substantially undermine long-term programs that have enlisted thousands of citizen volunteers, school children, and bay beach community residents in stewarding, monitoring and valuing the very resources the plan is meant to protect. A prime example of this is the “Just Flip ‘Em” program (www.horseshoecrab.org/act/flipem.html), which, for some two decades, has encouraged and engaged a growing number of residents and visitors to Delaware Bay in rescuing stranded horseshoe crabs and returning them to the water. One Prime Hook Beach homeowner has reported rescuing > 50,000 stranded horseshoe crabs over the last two years as part of her morning walking routine.

This level of stewardship and appreciation for the vital role horseshoe crabs play in the ecology of Delaware Bay has also been at the heart of ERDG’s Community Sanctuary program (www.horseshoecrab.org/act/sanctuary.html), resulting in citizens along numerous Delaware Bay beach communities developing a closer connection and commitment to conserving the horseshoe crabs, shorebirds and other living things that visit their shorelines. Similarly, as a result of this

enhanced awareness and appreciation, many of these beach communities have also welcomed an influx of school groups, birders and other visitors to their bayshore backyards. For many of these visitors, this is their first opportunity to witness the wonder that this globally significant spectacle provides, and the impacts on their sense of valuing those resources are substantial. Many of these individuals and groups go on to apply that experience in volunteering on horseshoe crab spawning surveys, contributing tagging and banded shorebird resighting data to monitoring programs, and otherwise supporting efforts to conserve horseshoe crab and shorebird conservation. On the education side, several organizations in Delaware provide guided field trip experiences for school children during May to witness and learn about the horseshoe crab/shorebird phenomenon. One program, Green Eggs & Sand (www.tydb.org/greeneggs_sand.php) provides teachers with a variety of hands-on field experiences on Delaware Bay, which, in concert with seminars by horseshoe crab/shorebird experts, and a comprehensive award-winning take-home curriculum, equips and empowers them for translating the learning to thousands of school children in the region each year.

We offer the following recommendations to address the concerns that we have brought to your attention. Some of these actions are not directly controlled by the Service, but can be indirectly affected through implementation of the ESA activities, such as, recovery planning and Section 7 and 10 consultations.

- The ARM framework adopted by the Atlantic States Marine Fisheries Commission appears to be an effective approach to managing harvest in Delaware Bay so that conservation of Red Knot (and other shorebirds) and horseshoe crabs are balanced with societal demands. The ARM framework should receive support for continued implementation, especially for adequate monitoring programs of horseshoe crab populations so that learning can be translated into improved management as intended.
- USFWS must strongly advocate for the amendment of the Lacey Act to prohibit importation of Asian horseshoe crabs (at present, there is an ASMFC ruling in place, but ideally there should be a Federal statute).
- Should beach closure rules be enacted, there must be sufficient latitude to permit volunteers to access beaches for the purpose of rescuing stranded crabs and for purposes of public education. In our opinion, denying beach access to these activities could more than nullify any perceived gains that might be achieved through blanket protection of shorebirds from human disturbances. Red Knots do not forage after dark on Delaware Bay beaches. Therefore, a daytime beach closure would be sufficient to minimize disturbance to shorebirds; there would be no additional benefit to Red Knots to keep the beaches closed after dusk.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Paul K. S. Shin', with a long horizontal stroke extending to the right.

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A handwritten signature in black ink, appearing to read 'Mark L. Botton', with a long horizontal stroke extending to the right.

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