EARTHJUSTICE

January 18, 2022

Atlantic States Marine Fisheries Commission
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comments@asmfc.org

VIA ELECTRONIC MAIL

Re: Proposed "Revision to the Framework for Adaptive Management of Horseshoe Crab Harvest in the Delaware Bay Inclusive of Red Knot Conservation"

Dear Commissioners:

I write on behalf of New Jersey Audubon and Defenders of Wildlife regarding the Atlantic States Marine Fisheries Commission's ("ASMFC" or "Commission") upcoming decision on a proposal to revise the Adaptive Resource Management ("ARM") Framework governing the bait harvest of horseshoe crabs. Specifically, as set forth in detail below, the parties to this letter strongly urge the Commission not to approve the proposed Framework Revision[1] that is scheduled for consideration at the Commission's meeting on January 26, 2022.[2] The proposed Framework Revision would dangerously jeopardize a critical food source for the *rufa* red knot, a shorebird listed as threatened under the Endangered Species Act ("ESA"). If the Commission were to approve the proposed revision, the resulting management changes would threaten to further imperil the red knot and would set ASMFC on a course to violate the ESA. Accordingly, the Commission should not approve the proposed Framework Revision.

I. Introduction

Each year, a population of red knots[3] completes one of the most epic migrations in the animal kingdom. Starting from Tierra del Fuego at the southern tip of South America, the red knots fly more than 9,000 miles to their breeding grounds in the Arctic Circle. For most red knots, the final staging area before the Arctic Circle is the Delaware Bayshore, where their stopover coincides with another ecological marvel: the spawning of millions of horseshoe crabs that emerge from the water and lay clusters of around 4,000 eggs, with the potential for an individual

[1] ASMFC, Adaptive Resource Management Subcommittee, Draft "Revision to the Framework for Adaptive Management of Horseshoe Crab Harvest in the Delaware Bay Inclusive of Red Knot Conservation" (2021) ("Framework Revision") (beginning at page 28 of PDF), http://www.asmfc.org/files/Meetings/2022WinterMeeting/HorseshoeCrabBoard_Jan2022.pdf.
[2] ASFMC, ASMFC 2022 Winter Meeting Webinar, January 25-27: Preliminary Agenda, http://www.asmfc.org/home/2022-winter-meeting.
[3] In this document, "red knot" refers to the *rufa* subspecies.

to lay more than 100,000 eggs over the course of several nights.[4] For red knots that have already flown thousands of miles at enormous physiological expense, the eggs provide essential replenishment, enabling a doubling of body mass in just 10 to 14 days, versus 21 to 28 days at comparable stopovers where clams and mussels are eaten.[5] This unique resource fuels the duration of their journey.

In recent decades, this migratory system has been severely strained. The harvest of horseshoe crabs for the bait and biomedical industries increased sharply in the late twentieth century, depleting the supply of eggs awaiting red knots. By the first decade of this century, the peak count of red knots stopping at Delaware Bay had dropped roughly 70 percent from two decades earlier. In 2015, the U.S. Fish and Wildlife Service ("FWS" or "Service") formally listed the *rufa* red knot as threatened under the Endangered Species Act.

ASMFC adopted a fishery management plan for the horseshoe crab harvest in 1998.[6] Since the 2013 fishing season, the Commission has set harvest quotas using an ARM Framework that links the allowable harvest to the red knot stopover population. The Commission has largely prohibited the bait harvesting of female horseshoe crabs in Delaware Bay since 2006, and the ARM process has selected for zero female harvesting every year since it was introduced.

Nevertheless, the red knot ESA listing and existing horseshoe crab harvest strategy have not proven sufficient to reverse population declines in either species. In 2021, the peak count of red knots at Delaware Bay reached a record low, while the estimated Delaware Bay horseshoe crab population has remained at historically low levels. All signs point to the need for additional measures to protect red knots and ensure an adequate food supply.

Unfortunately, instead of considering new measures to increase and restore Delaware Bay's horseshoe crab population, ASMFC is poised to consider adopting measures that would yield the opposite outcome. Indeed, ASMFC is considering the most dramatic weakening of protections in the history of its management of the horseshoe crab harvest. The proposed changes would result in lifting the prohibition on harvesting female horseshoe crabs, further imperiling the food supply for the remaining red knots. Were the Commission to approve these ill-advised changes, it would risk running afoul of the Endangered Species Act.

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[4] *See* U.S Fish & Wildlife Service, The Horseshoe Crab 1 (Aug. 2006), https://www.fws.gov/northeast/pdf/horseshoe.fs.pdf.

[5] *See* Lawrence Niles et al., *Effects of Horseshoe Crab Harvest in Delaware Bay on Red Knots: Are Harvest Restrictions Working?*, 59 BioScience 153, 154 (2009). Compared to other food sources, horseshoe crab eggs are superabundant, energy-rich, and easy to digest.

[6] *See generally* ASMFC, Interstate Fishery Management Plan for Horseshoe Crab (Fishery Management Report No. 32) (Dec. 1998) ("Horseshoe Crab FMP").

II. Since the 2015 ESA listing, the condition of the red knot has grown more dire.

At the outset, it is critical to recognize that 2022 marks the worst possible time since the listing of the red knot under the ESA for ASMFC to consider liberalizing rules for bait harvest of a species that provides a key red knot food source. When listing the *rufa* red knot as "threatened" under the ESA, FWS cited several studies indicating that red knot abundance had declined, "probably sharply," since the 1980s.[7] At Delaware Bay, peak spring population for 2005-2014 was, on average, 70 percent lower than when aerial surveys began in the early 1980s.[8] Over the past decade, the population had shown some signs of stabilizing at this low level. But aerial surveys in 2021 recorded a peak count of only 6,880 individuals—by far the lowest count since surveys began.[9] These figures are ominous for the entire subspecies, as "Delaware Bay provides the final Atlantic coast stopover for a significant majority (50 to 80 percent) of the red knot population making its way to the arctic breeding grounds each spring."[10] Despite eight years of ASMFC horseshoe crab harvest management under an adaptive framework that was supposed to ensure a sufficient food supply for migrating red knots, the most recent count reflects a new low for the affected red knot population and a dire warning about the subspecies' future viability.

Strong scientific evidence links red knot survival and demography to horseshoe crab egg availability at Delaware Bay. In its 2014 assessment for the ESA listing, FWS found that "[r]educed food availability in Delaware Bay due to commercial harvest of the horseshoe crab . . . is considered a primary causal factor in red knot population declines in the 2000s."[11] Reduced food availability is a particular threat for the Southern wintering population of red knots, which is disproportionately reliant on the Delaware Bay staging area.[12] Indeed, while the number of red knots at Delaware Bay indicates subspecies-wide declines over the past several decades, the declines have been especially profound at Southern wintering areas. The average red knot count at Tierra del Fuego for 2018-2020 declined more than 75 percent from average counts in the 1980s and 2000, and since 2011 has flattened at a relatively low level.[13] According to FWS, "[R]educed food availability at just one key migration stopover area (Delaware Bay) is considered the driving factor behind the sharp decline in the Southern wintering population in the

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[7] FWS, Rufa Red Knot Background Information and Threats Assessment (Supplement to Endangered and Threatened Wildlife and Plants; Final Threatened Status for the Rufa Red Knot) 85 (Nov. 2014) ("FWS Listing Supplement"). While FWS primarily analyzed red knot population trends within specific regions, it "note[d] a temporal correlation between declines at Tierra del Fuego and Delaware Bay." *Id.* at 84.

[8] *Id.* at 99. The Service explained that these figures reflected overall population declines, not merely a redistribution of red knots to alternate migration routes. *See id.* 99-100.

[9] Minority Opinion of Wendy Walsh, ARM Subcommittee Member and FWS Species Lead for the *rufa* red knot, *in* Framework Revision, at 115 ("FWS Species Lead Opinion").

[10] FWS Listing Supplement 12.

[11] FWS, Endangered and Threatened Wildlife and Plants; Final Threatened Status for the Rufa Red Knot, 79 Fed. Reg. 73,706, 73,707 (Dec. 11, 2014). The listing became effective on January 12, 2015. *See id.* at 73,706.

[12] *See* FWS, Species Status Assessment Report for the Rufa Red Knot (Version 1.1), at 9 (Sept. 2020) ("FWS 2020 Assessment").

[13] FWS, Draft Recovery Plan for the Rufa Red Knot 8 (May 2021) ("Draft Recovery Plan").

2000s."[14] FWS views the Southern wintering population as "a bellwether for the subspecies as a whole,"[15] which makes this population decline especially concerning.

As FWS has stated, "Studies have shown red knot survival rates are influenced by the condition (weight) of birds leaving the Delaware Bay staging area in spring."[16] In years when horseshoe crab spawning was delayed due to weather conditions, a very low percentage of red knots was able to reach a weight of 180 grams—a threshold that has frequently been used to assess whether red knots were able to achieve sufficient weight gain to complete their migratory journey and subsequent reproduction.[17] Research has also shown that, while red knots arriving relatively late to Delaware Bay were able to compensate by gaining weight at a higher rate, that was not the case in years with low horseshoe crab egg availability.[18] There is simply no question that horseshoe crab management in Delaware Bay impacts the fate of the red knot.

III. ASMFC has long prohibited the harvest of female horseshoe crabs in the Delaware Bay region.

For the past eight years, ASMFC has adopted an approach to horseshoe crab management that at least recognized the fundamental need to promote red knot recovery by restoring horseshoe crab numbers—and in particular female crab numbers—before any expansion of the horseshoe crab bait harvest could be considered. ASMFC issued its first fishery management plan ("FMP") for horseshoe crabs in December 1998, with the first mandatory restrictions implemented in 2000.[19] The plan was prompted by the Commission's October 1997 vote to create an FMP for horseshoe crabs and responded to "[c]oncern over increased exploitation of horseshoe crabs, particularly in the mid-Atlantic States . . . expressed by state and federal fishery resource agencies, conservation organizations, and fisheries interests."[20] The FMP described horseshoe crabs as "play[ing] an important ecological role in the food web" for several species, including red knots.[21]

In 2012, ASMFC approved Addendum VII to the Horseshoe Crab FMP, in which it acknowledged that "the red knot (*rufa* subspecies), one of many shorebird species that feed on horseshoe crab eggs, is at low population levels. Red knots have shown no sign of recovery . . . despite a nearly four-fold reduction in horseshoe crab landings since 1998."[22] Addendum VII implemented the ARM Framework, which was "designed to assist managers with future horseshoe crab harvest regulations by accounting for multiple species effects, focusing on red

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[14] *Id.* at 14.
[15] *Id.* at 13.
[16] FWS 2020 Assessment 25.
[17] *See* FWS Listing Supplement 254.
[18] *See id.* at 253.
[19] Horseshoe Crab FMP iv.
[20] *Id.* at 1.
[21] *Id.* at 12-13.
[22] ASMFC, Addendum VII to the Interstate Fishery Management Plan for Horseshoe Crabs for Public Comment (Adaptive Resource Management Framework) at 1 (Feb. 2012).

knot rebuilding in the Delaware Bay Region."[23] As such, Addendum VII applied only to states in the Delaware Bay region: New Jersey, Delaware, and applicable waters of Maryland and Virginia.[24]

Each year, the ARM model has utilized estimates of the abundance of horseshoe crabs and red knots in the Delaware Bay region to select one of five possible "harvest packages" for horseshoe crabs harvested for use in the bait industry. And each year, the ARM model has selected the same package: 500,000 males and 0 females.[25] These limits apply to the entire Delaware Bay region, and the Commission allocates the male harvest quota among the four states. The model was designed not to select for female harvest until either the female horseshoe crab or the red knot population recovered to a specified threshold, which neither species has done.[26]

Application of this ARM Framework has been deemed by federal wildlife officials to be central to ESA compliance for ASMFC's management of the horseshoe crab bait harvest. In listing the red knot, FWS stated, "We do not consider the [horseshoe crab] harvest a threat under the science-based management framework that has been developed and adopted to explicitly link harvest quotas to red knot population growth."[27] However, the Service has repeatedly qualified that statement to acknowledge the uncertainties about the adequacy of the red knot food supply. For example, at the time of the initial listing, the Service stated, "[B]ecause of the uncertain trajectory of horseshoe crab population growth, it is not yet known if the HSC egg resource will continue to adequately support red knot population growth over the next decade."[28] In 2020, the Service observed, "[T]he continued sufficiency of future crab egg supplies remains uncertain and the management of this fishery remains controversial."[29] And in its Draft Rufa Red Knot Recovery Plan of 2021, the Service noted that "the sufficiency of future crab egg resources is still uncertain."[30] Thus, the Service itself has repeatedly raised concerns about the adequacy of the existing ARM Framework—even before the changes to that framework that are now being considered. And more fundamentally, regardless of the Service's statements, the persistent inability of either red knots or horseshoe crabs to recover from population declines after eight years of the ARM Framework calls into question the adequacy of existing management to ensure that horseshoe crab harvest does not harm and further imperil the red knot population. The record in no way supports weakening protections at this time.

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[23] *Id.* at 2.
[24] *See id.* at 1.
[25] *See* Framework Revision 22.
[26] *See id.*
[27] 79 Fed. Reg. at 73,707.
[28] *Id.* at 73,708.
[29] FWS 2020 Assessment 20.
[30] Draft Recovery Plan 10.

IV. The proposed Framework Revision would imperil red knots by further reducing their food supply.

Despite the precarious condition of the red knots and the absence of progress toward recovery under existing management, ASMFC is now considering changes that would open the door for even more intensive bait harvest of horseshoe crabs in Delaware Bay. The proposed Framework Revision would make a number of significant changes to the ARM model. These include deeply problematic changes that would pave the way for allowing a female horseshoe crab harvest, despite the continued low population counts of both horseshoe crabs and red knots.

A key aspect of the proposed Framework Revision is the method for estimating the horseshoe crab population. Since the ARM model was first utilized, it has exclusively used horseshoe crab population figures from the Virginia Tech Horseshoe Crab Trawl Survey ("VT survey") whenever they are available. The VT survey is designed specifically to count horseshoe crabs in Delaware Bay, and FWS has called it "the best benthic trawl survey to support the ARM."[31] Citing a conclusion of the Commission's Horseshoe Crab Technical Committee, FWS further stated that "efforts have not identified a method by which . . . alternate data sets can be appropriately used for the full and proper functioning of the ARM models."[32]

The Framework Revision would drastically downgrade the model's reliance on the VT survey in favor of two other surveys that only incidentally count horseshoe crabs: the New Jersey Ocean Trawl Survey and the Delaware Fish and Wildlife Adult Trawl Survey.[33] Rather than specifically target the horseshoe crab population, these are general surveys of marine species, and horseshoe crabs are counted only to the extent that they are collected as part of these broader surveys.[34] Yet the Framework Revision would give all three models equal weight.[35]

In a review of the proposed Framework Revision that opposed this approach, FWS Species Lead on the *rufa* red knot and ASMFC ARM Subcommittee member Wendy Walsh described the foreseeable impact of the new approach. Namely, it will generate significantly higher horseshoe crab population estimates based predominantly on surveys that are not purpose-designed to count horseshoe crabs.[36] The review therefore urged the Subcommittee, at the very least, to accord greater weight to the VT survey based on its "technical rigor and deliberate design" and "the high level of confidence that stakeholders have expressed in" it, among other reasons.[37] As the review pointed out, even under the existing model, inflated population estimates from the three equally weighted surveys would have selected for the harvest of female horseshoe crabs in two

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[31] FWS Listing Supplement 247.
[32] *Id.* (citing ASMFC, News Release, "ASMFC Horseshoe Crab Board Sets 2015 Specifications for Horseshoe Crabs of Delaware Bay Origin" (Oct. 30, 2014)).
[33] Framework Revision 55.
[34] *See id.* at 43.
[35] *See id.* at 55.
[36] FWS Species Lead Opinion 111.
[37] *Id.*

of the four years for which data are available.[38] The New Jersey and Delaware surveys diverge from the purpose-designed VT survey in finding that the horseshoe crab population has modestly increased in recent years, which only heightens concerns about an abrupt and disproportionate reliance upon those surveys.[39]

Another troubling aspect of the proposed Framework Revision is the elimination of thresholds below which the ARM model will not select for female horseshoe crab harvest. The model's current utility function will not select for any female horseshoe crab harvest until the Delaware Bay region hosts at least 81,900 red knots or 11.2 million female horseshoe crabs.[40] The proposed revision abandons these constraints and would allow female horseshoe crab harvest even when neither species has reached its designated threshold.[41] The review by FWS's Species Lead for red knots explained that this revision "does not reflect the values and risk attitudes that were clearly expressed by the original group of stakeholders during initial setup of the existing ARM framework," and "[a] precautionary, risk-averse approach to female crab harvest is a central tenet of the existing framework as expressed by the stakeholders during the initial development and adoption of the ARM. Such a major reinterpretation of this tenet as is represented by the proposed new utility function should not be pursued under the mantle of technical updates."[42]

Fundamentally, it is deeply concerning that ASMFC would allow the "immediate resumption of female crab harvest" based on a new and untested model and despite the absence of any indication of red knot recovery under existing management.[43] The Framework Revision proposal suggested that the model will adapt based on new data, with the aim of reducing inaccuracies over time.[44] But the red knot is a threatened species that recently had a record-low population count and whose survival depends upon the annual availability of horseshoe crab eggs. It cannot afford a management tradeoff that allows for near-term harm based on optimistic data and an untested model in exchange for the mere possibility of fixing inaccuracies in the future.

When listing red knots as threatened, FWS stated, "As long as the ARM is in place and functioning as intended, ongoing horseshoe crab bait harvests should not be a threat to the red knot."[45] Now, however, in response to the proposed Framework Revision, the FWS Species Lead for red knots has warned that "[i]mmediate resumption of female harvest by the means described in the draft report may prompt the USFWS to reconsider if the ARM is functioning as

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[38] *See id.* at 111-12.
[39] *See* Framework Revision figs. 21 & 22.
[40] *See id.* at 21.
[41] *See id.* at 83-84.
[42] FWS Species Lead Opinion 113.
[43] *Id.* at 112.
[44] *See* Framework Revision 21.
[45] FWS Listing Supplement 247.

intended."[46] Yet, despite this admonition, ASMFC now appears poised to adopt the Framework Revision.

V. The proposed Framework Revision puts ASMFC on track to violate the Endangered Species Act.

ASMFC is scheduled to decide whether to adopt the proposed Framework Revision to govern the bait harvest of horseshoe crabs at its 2022 Winter Meeting. This decision is critical to the future of the horseshoe crab and red knot populations. Importantly, it also is critical to ASMFC's compliance with the mandates of the Endangered Species Act. Adopting the Revised Framework and reintroducing the harvest of female horseshoe crabs in Delaware Bay even as the red knot population reaches a new nadir would put ASMFC on track to violate the ESA.

The ESA prohibits any person from "tak[ing] any [endangered] species within the United States or the territorial sea of the United States."[47] Such prohibited "taking" includes actions that "harm" listed species, including "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."[48] The ESA's "taking" prohibition extends to governmental authorization to take protected species that facilitates such harm by "solicit[ing]" or "caus[ing]" an offense.[49] By regulation, that prohibition extends to the taking of most threatened species, including the red knot.[50]

Like any other association or governmental entity, ASMFC is subject to this ESA taking prohibition.[51] Moreover, ASMFC's fishery management decisions have a direct causal connection to the ultimate bait-harvesting actions that impact horseshoe crabs and red knots.[52] Under the Atlantic Coast Fisheries Cooperative Management Act of 1993, ASMFC's fishery

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[46] FWS Species Lead Opinion 117.
[47] 16 U.S.C. § 1538(a)(1)(B).
[48] 50 C.F.R. § 17.3.
[49] *Strahan v. Coxe*, 127 F.3d 155, 163 (1st Cir. 1997); 16 U.S.C. § 1538(g).
[50] *See* 50 C.F.R. § 17.31(a) (applying the provisions of § 17.21 (addressing endangered species) to threatened species); *id.* § 17.21(a), (c) ("[I]t is unlawful . . . to solicit another to commit or to cause to be committed" the taking of an endangered species.").
[51] The ESA applies to any "person," which is broadly defined. *See* 16 U.S.C. § 1532(13) ("The term 'person' means an individual, corporation, partnership, trust, association, or any other private entity; or any officer, employee, agent, department, or instrumentality of the Federal Government, of any State, municipality, or political subdivision of a State, or of any foreign government; any State, municipality, or political subdivision of a State; or any other entity subject to the jurisdiction of the United States.").
[52] *See, e.g.*, *Sierra Club v. Yeutter*, 926 F.2d 429, 438-39 (5th Cir. 1991) (holding that government agency violated ESA taking prohibition by authorizing logging that destroyed habitat and thereby impaired essential behavioral patterns of listed woodpecker species); *Loggerhead Turtle v. County Council of Volusia County*, 896 F. Supp. 1170, 1181-82 (M.D. Fla. 1995) (holding that county that regulates vehicular access to beaches is liable under ESA for taking of sea turtles caused by nighttime beach driving).

management plans are legally binding upon affected states.[53] Once the Commission issues a plan, states "shall implement and enforce the measures of such plan within the timeframe established in the plan."[54] States are therefore prohibited from authorizing female horseshoe crab harvest in Delaware Bay under the existing framework.[55] The Revised Framework charts a course to lift that critical prohibition. As the FWS Species Lead has noted, lifting that prohibition and applying the Revised Framework would likely yield an immediate authorization for female horseshoe crab harvest in the range of 175,000 to 190,000 individuals per year.[56] Such harvesting of the critical component of the horseshoe crab population on which egg abundance depends threatens significant degradation and modification of red knot habitat at Delaware Bay that would kill or injure red knots by significantly impairing breeding and feeding activities that are essential to the continued existence of the species, as discussed above.[57]

In the Endangered Species Act, Congress adopted a precautionary approach. As the Supreme Court has stated, in the ESA, "Congress has spoken in the plainest of words, making it abundantly clear that the balance has been struck in favor of affording endangered species the highest of priorities, thereby adopting a policy which it described as 'institutionalized caution.'"[58] By setting ASMFC on a path to harm a threatened species whose population shows no sign of recovery, the proposed Framework Revision would fall far short of what the ESA requires.

VI. Conclusion

The Endangered Species Act provides strict protections for the *rufa* red knot, which is listed as threatened under the statute. The red knot's peak stopover population at Delaware Bay is at historically low numbers. Horseshoe crabs, whose eggs nourish the red knot at a critical point in its migration, have not recovered from decades of overharvest. Now is not the time for ASMFC to revise its horseshoe crab management framework in a manner that would allow even greater harvest, including resumption of harvest of the critical female component of the population. Doing so would compound the threats facing the red knot and further jeopardize its recovery, in violation of the ESA. For these reasons, the parties to this letter urge ASMFC not to approve the proposed Framework Revision.

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[53] *See* Atlantic Coastal Fisheries Cooperative Management Act of 1993, Pub. L. 103-206, 107 Stat. 2419, Tit. VIII (codified at 16 U.S.C. § 5101 *et seq.*).
[54] *Id.* § 5104(b)(1).
[55] *Cf. Defenders of Wildlife v. EPA*, 882 F.2d 1294, 1301 (8th Cir. 1989) (EPA's registration of pesticide effected a taking because the pesticide could not be used without such registration).
[56] FWS Species Lead Opinion 113.
[57] *See* 50 C.F.R. § 17.3.
[58] *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 194 (1978).

Respectfully submitted,

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