

To: Katie Hill
From: Erin Nalley
Re: Diamondback Terrapin White Paper/Memo
Date: July 30, 2024

Regulating Blue Crab Trap Bycatch to Reduce Diamondback Terrapin Mortality: The Potential Role of the Atlantic States Marine Fisheries Commission

Background

The diamondback terrapin, *Malaclemys terrapin*, is North America's only estuarine turtle species and is located along the Atlantic coast where it lives in salt marsh and mangrove habitats.¹ These turtles are an ecologically important species, consuming snails that can overgraze on and damage salt marsh grasses.² They are also culturally and historically significant. The shells and bones of the diamondback terrapin have been found in Native American burial sites, indicating that it may be sacred to many Native American and Indigenous cultures.³ It was also historically significant during the Revolutionary War and early days of the United States, serving as an important source of protein for both the Continental Army and tidewater plantation slaves.⁴ Although the diamondback terrapin is not federally listed as endangered or threatened, some Atlantic states, such as Virginia, consider the species in need of conservation.⁵ Virginia lists the diamondback terrapin as "Near Threatened" and in "Very High Conservation Need" with a high risk of extinction.⁵

The blue crab, *Callinectes sapidus*, is also located along the Atlantic coast and is an important commercial shellfish species. The blue crab brings in over \$200 million in revenue from U.S. commercial fisheries with almost half of that coming from the Chesapeake Bay.⁶ Fishermen who target blue crabs use a wire cage trap, also called a crab pot, to capture and hold the crabs until they are harvested. Many of these crab traps are often lost or abandoned, becoming derelict, or "ghost" traps.⁶ Derelict traps can continue to catch blue crabs and other species even though fishermen are not actively using them.⁷ Because blue crab and diamondback

¹ *Diamondback Terrapins*, Center for Biological Diversity,
<https://www.biologicaldiversity.org/species/reptiles/diamondback-terrapins/index.html>

² *Id.*

³ Sam Bland, CoastalReview.org, *Sam's Field Notes; Diamondback Terrapin*, June 15, 2018,
<https://coastalreview.org/2018/06/sams-field-notes-diamondback-terrapin/>

⁴ Hart and Lee, *The Diamondback Terrapin: The Biology, Ecology, Cultural History, and Conservation Status of an Obligate Estuarine Turtle*, Studies in Avian Biology No. 32:206-213.

⁵ Virginia Department of Game and Inland Fisheries, *Virginia's 2015 Wildlife Action Plan*, Sept. 1, 2015, [Wildlife-Action-Plan-2015-Virginia-Wildlife-Action-Plan.pdf](https://www.dgif.virginia.gov/wildlife-action-plan-2015-virginia-wildlife-action-plan.pdf)

⁶ James DeBene, William & Mary, *Investigating Economic Coasts Of Derelict Blue Crab Callinectes Sapidus Pots And Preferred Mitigation Solutions In The Chesapeake Bay*, Jan 2020,
[https://scholarworks.wm.edu/cgi/viewcontent.cgi?article=6941&context=etd#:~:text=Blue%20crab%20fishery%20and%20management,-U.S.%20commercial%20and&text=depending%20on%20the%20state.,%24219%20million%20\(NMFS%202018\)](https://scholarworks.wm.edu/cgi/viewcontent.cgi?article=6941&context=etd#:~:text=Blue%20crab%20fishery%20and%20management,-U.S.%20commercial%20and&text=depending%20on%20the%20state.,%24219%20million%20(NMFS%202018))

⁷ *Id.*

terrapin habitats often overlap, derelict traps frequently catch terrapin.⁸ If the terrapin are unable to escape the trap, they drown.⁹

Bycatch mortality of the diamondback terrapin is one of the many threats to the species.¹⁰ The exact number of terrapins killed as bycatch in crab traps is not widely reported or known, but bycatch mortality is a significant issue recognized by various Atlantic coastal states. Indeed, coastal resource agencies in both Virginia and Georgia report that terrapin populations are significantly less in areas containing crab pots.¹¹

Currently, terrapin bycatch reduction measures for blue crab fisheries are not uniform across Atlantic coastal states. Such measures could do much to help reduce bycatch mortality of diamondback terrapins in derelict crab traps. On the Atlantic Seaboard, one organization exists that could potentially have the authority to enact uniform blue crab bycatch regulations. This is the Atlantic State Marine Fisheries Commission (ASMFC), an organization that can regulate interstate fisheries and species on the Atlantic coast.¹² In this memo, I will describe whether it is likely that the ASMFC would regulate the bycatch of diamondback terrapin from blue crab fisheries. I conclude that this is unlikely because blue crab populations exist primarily within individual states, making the blue crab an improbable target for ASMFC regulation.

The Atlantic States Marine Fisheries Commission

The ASMFC was created to allow Atlantic coastal states to collectively manage shared migratory fishery resources.¹³ Atlantic coastal states have long recognized the importance of promoting and protecting Atlantic coastal fishery resources and the ASMFC helps these states to work together on fisheries issues and show their commitment to protecting their coastal resources.¹⁴ The ASMFC was approved by Congress in 1942 and currently includes all Atlantic coastal states from Maine to Florida, the District of Columbia, and the Potomac River Fisheries Commission.¹⁵

⁸ Sea Grant North Carolina Coastwatch, *MAPPING THE OVERLAP: Terrapins & Crab Pots in the Lower Cape Fear Region*, <https://nseagrant.ncsu.edu/coastwatch/previous-issues/2009-2/summer-2009/mapping-the-overlap-terrapins-crab-pots-in-the-lower-cape-fear-region/>

⁹ *Supra*, note 6.

¹⁰ Other threats include climate change, cars, and habitat loss. Bridget Macdonald, U.S. Fish & Wildlife Service, *Turtle, interrupted*, Aug. 29, 2019, <https://www.fws.gov/story/2019-08/turtle-interrupted>

¹¹ Isdell et al., 2015 *Effects of terrestrial-aquatic connectivity on an estuarine turtle*, *Diversity Distrib.*, 21: 643-653. <https://doi.org/10.1111/ddi.12289>; Andrew Michael Grosse, The University of Georgia, *Assessment of the Effects of Roads and Crabbing Pressures on Diamondback Terrapin Populations*, 2009, [grosse_andrew_m_200905_ms.pdf](https://www.uga.edu/~grosse/grosse_andrew_m_200905_ms.pdf) ([uga.edu](https://www.uga.edu))

¹² Atlantic States Marine Fisheries Commission, *Interstate Fisheries Management Program Charter*, Aug. 2019, https://www.asmfmc.org/files/pub/ISFMPCharter_Aug2019.pdf

¹³ 16 U.S.C.A. § 5101 (a).

¹⁴ *Id.*

¹⁵ Public Law 539, 77th Congress Chapter 283, 2nd Session, 56 Stat. 267 (1942).; North Carolina Department of Environmental Quality, *Interstate Fisheries Management: Authority, Process, and Representation*, <https://www.deq.nc.gov/about/divisions/marine-fisheries/news-media/insight-newsletter/may-2019/interstate-fisheries-management-authority-process-and-representation#:~:text=The%20ASMFC%20includes%20all%20the,also%20serve%20as%20voting%20members.>

The ASMFC has the authority to adopt binding fisheries regulations for its member states, and it does so through fishery management plans (FMPs).¹⁶ The ASMFC currently has FMPs for 10 different species,¹⁷ and the regulations contained in these plans cover such topics as bycatch reduction devices,¹⁸ gear restrictions,¹⁹ and bycatch allowances.²⁰ Some FMP regulations deal with bycatch of non-targeted species (i.e., species the fisherman was not trying to catch). For example, under the *Interstate Fishery Management Plan for Atlantic Coastal Sharks*, fishing vessels using shortlines to fish must use corrodible circle hooks, as hooks oftentimes catch non-targeted species and corrodible hooks are made to dissolve and help reduce bycatch of those species.²¹ It is, therefore, possible that blue crab bycatch reduction measures to protect diamondback terrapin could be adopted by the ASMFC and apply to all of its member states. For this to happen, however, the blue crab would have to be a species that qualifies for an FMP.

FMPs are only developed for “priority species.”²² A species is determined to be a priority species if it meets three criteria.²³ The first is that “the species constitutes a “coastal fishery resource.” The next criterion is “the degree to which the species is of importance along the Atlantic coast...”²⁴

The final criterion is “the probability that the species and associated fisheries will benefit from cooperative inter-jurisdictional management.”²⁵ The ASFMC was founded with the idea of facilitating cooperation between states for shared coastal resources. A species must be considered “inter-jurisdictional” to warrant an FMP from the ASMFC.

¹⁶ *Supra*, note 13

¹⁷ <https://asmfc.org/search/bycatch/-/species/-/1>

¹⁸ Atlantic States Marine Fisheries Commission, *Addendum I to Amendment 3 of the Interstate Fishery Management Plan for Weakfish*, at ix, 6, Oct. 18, 2000, <https://asmfc.org/uploads/file/weakfishAddendumI.PDF>; Atlantic States Marine Fisheries Commission, *Fishery Management Report No. 39, Amendment 4 to the Interstate Fishery Management Plan for Weakfish*, at 32, Nov. 2002, <https://asmfc.org/uploads/file/weakfishAmendment4.pdf> (Including bycatch reduction devices such as escape panels on pound nets).

¹⁹ Atlantic States Marine Fisheries Commission, *Fishery Management Report No. 46, Interstate Fishery Management Plan for Atlantic Coastal Sharks*, at 112, Aug. 2008, <https://asmfc.org/uploads/file/interstateFMPforAtlanticCoastalSharks.pdf>; Atlantic States Marine Fisheries Commission, *Special Report No. 77 of the Atlantic Marine Fisheries Commission, Circle Hook Definition and Research Issues*, at 1, July 2003, [sr77CircleHookDefinition.pdf \(asmfc.org\)](https://asmfc.org/uploads/file/sr77CircleHookDefinition.pdf) (restricting gear that reduces the probability of being swallowed by non-targeted species in comparison to the traditionally used “J-hook.” Circle hooks instead reduce the chance of non-targeted species swallowing hooks and damaging internal organs or other areas that can lead to mortality).

²⁰ Atlantic States Marine Fisheries Commission, *Addendum I to the Interstate Fishery Management Plan for Jonah Crab*, at 1-2, May 2016, https://asmfc.org/uploads/file/57336932JonahCrabAddendumI_May2016.pdf. (establishing bycatch allowances for Jonah Crab, particularly within lobster fisheries).

²¹ *Supra*, note 19, at 112

²² Atlantic States Marine Fisheries Commission, Section Six(c)(1), Interstate Fisheries Management Program Charter, Aug. 2019, https://www.asmfc.org/files/pub/ISFMPCharter_Aug2019.pdf

²³ *Id.* Section Three(d)(2).

²⁴ *Id.* Section Three(d)(2)(ii).

²⁵ *Id.* Section Three(d)(2)(iii).

Blue Crab FMP Potential

For the ASMFC to create regulations for terrapin bycatch reduction in blue crab traps, an FMP for the blue crab fishery is needed. As noted above, FMPs are only created for priority species, and it seems unlikely that the blue crab meets the priority species criteria.

The blue crab likely meets the first criterion of being a “coastal fishery resource.”²⁶ A “coastal fishery resource” is defined as “any fishery, any species of fish, or any stock of fish that moves among, or is broadly distributed across, waters under the jurisdiction of two or more States or waters under the jurisdiction of one or more States and the exclusive economic zone.”²⁷ “Fish” is defined as “finfish, mollusks, crustaceans, and all other forms of marine animal life other than marine mammals and birds.”²⁸ Because the blue crab is a crustacean that is widely dispersed across many Atlantic coastal states, it would likely qualify as a “coastal fishery resource.”²⁹

The blue crab may also meet the second criterion for creation of an FMP, which focuses on how important the species or fishery is along the Atlantic coast.³⁰ The blue crab is a large Atlantic coastal fishery valued at over \$200 million annually.³¹ In Maryland, the state reports that blue crab fisheries bring in around \$30 million of dockside value each year whereas Virginia reports a commercial harvest value range of \$22 million to \$38 million annually.³² The blue crab appears to meet the second criterion of being an important species along the Atlantic coast.³³

The final criterion relates to whether the species or fishery will benefit from cooperative inter-jurisdictional management. Blue crab populations are mainly found in intrastate estuaries, except for the Chesapeake Bay which has shoreline in both Virginia and Maryland.³⁴ Populations rarely migrate from one estuary to another, so they largely remain in one state.³⁵ Because of this, one state’s use or management of the blue crab fishery may not affect the blue crab fishery of

²⁶ *Id.* Section Three(d)(2)(i).

²⁷ 16 U.S.C.A. § 5102(2).

²⁸ 16 U.S.C.S. § 5102(7).

²⁹ National Wildlife Federation, *Blue Crab*, <https://www.nwf.org/Educational-Resources/Wildlife-Guide/Invertebrates/Blue-Crab>

³⁰ *Supra*, note 24.

³¹ *Supra*, note 6.

³² Maryland Manual On-Line, *Maryland at a Glance, Seafood, Production*, <https://msa.maryland.gov/msa/mdmanual/01glance/html/seafoodp.html>; Chesapeake Bay Foundation, *Blue Crabs, Supporting One of the Bay’s Most Valuable Fisheries*, June 20, 2024, <https://www.cbf.org/about-the-bay/chesapeake-wildlife/blue-crabs/index.html#:~:text=In%20Maryland%20alone%2C%20commercial%20landings.million%20to%20%2438%20million%20annually>

³³ The blue crab has long stood as an important Atlantic coastal species going as far back as being a culturally important species to Native American tribes.

³⁴ National Wildlife Federation, *Blue Crab*, <https://www.nwf.org/Educational-Resources/Wildlife-Guide/Invertebrates/Blue-Crab>; NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, *Blue Crab*, Nov. 2, 2023, <https://www.fisheries.noaa.gov/species/blue-crab>

³⁵ Georgia Department of Natural Resources, Coastal Resources Division, *Management Plan: Blue Crab*, June 2008, https://coastalgadnr.org/sites/default/files/crd/RecFish/State_FMPs/BlueCrabFMP08%206_19_08.pdf

another state. Except in the case of the Chesapeake Bay, cooperative inter-jurisdictional management may not be necessary nor warranted.³⁶ It seems, therefore, that the blue crab fails to meet the third criterion to qualify as a priority species for which the ASMFC would develop an FMP. As diamondback terrapin bycatch reduction measures within blue crab fisheries can only be regulated by the ASMFC through an FMP, this organization appears to be an unlikely source for uniform rules across Atlantic states.

Although the ASMFC may not regulate terrapin bycatch through a blue crab FMP, it could be involved in management of both species in other ways. The ASMFC has conducted research into the blue crab through at least one written report on the status of the species³⁷ and has been involved in outreach programs during annual ASMFC meetings that discuss the blue crab.³⁸ The ASMFC typically meets four times a year with the agenda depending on what species issues are brought up and are also open to the public and for public comment.³⁹ It is, therefore, plausible that the ASMFC could still be used for research and coordination purposes concerning issues such as bycatch within the blue crab fishery, even if that is not through an official FMP. This could help states take coordinated action on the issue of terrapin bycatch in derelict crab traps.

Conclusion

For the ASMFC to regulate the bycatch mortality of diamondback terrapin from blue crab fisheries, they must first have a blue crab FMP. For there to be a blue crab FMP, it must be considered a “priority species,” meeting three criterion: the species and fisheries must be considered a “coastal fishery resource,” an important Atlantic coastal fishery or resource, and would benefit from inter-jurisdictional management. Though the blue crab likely meets the first two criterion of being a priority species, it is unlikely that it meets the third criterion of benefitting from inter-jurisdictional management, as blue crab populations are mainly found in estuaries which are located wholly within states and do not migrate to other estuaries. As it is unlikely that the blue crab meets the third and final criterion, it does not seem likely that the ASMFC will develop a blue crab FMP that could be a vehicle for terrapin bycatch rules. Although the ASMFC could play a role in research or coordination of terrapin bycatch reduction efforts, actual rules for blue crab fisheries would likely have to proceed through individual Atlantic coastal states.

³⁶ Virginia, Maryland, and the Potomac River Fisheries Commission work together to manage the blue crab populations of the Chesapeake Bay.

³⁷ Atlantic States Marine Fisheries Commission, Special Report No. 80, Status of the Blue Crab (*Callinectes sapidus*) on the Atlantic Coast, Oct. 2004, <https://www.asmfc.org/uploads/file/SR80FinalBlueCrabStatus.pdf>

³⁸ Atlantic States Marine Fisheries Commission, 74th ASMFC & 66th GSMFC 2015 Annual Meeting, <https://asmfc.org/home/2015-Annual-Meeting>

³⁹ <https://asmfc.org/calendar/>