South Carolina Department of Natural Resources

Robert H. Boyles, Jr.
Director

Lorianne Riggin, Director
Office of Environmental Programs

June 5, 2023

The Honorable Thomas R. Carper
513 Hart Senate Office Building
Washington, DC 20510

The Honorable Shelley Moore Capito
172 Russell Senate Office Building
Washington, DC 20510

Electronic submittal

Re: Senate Committee on Environment and Public Works
Water Resources Development Act Ecosystem Restoration Projects

Dear Senator Carper and Senator Capito,

The South Carolina Department of Natural Resources (SCDNR) appreciates the opportunity to share how the U.S. Army Corps of Engineers (USACE) Charleston District helped support the Crab Bank Ecosystem Restoration project to restore shorebird habitat. Please find enclosed written testimony that will be shared at the Committee hearing on Wednesday, June 7, 2023, at 10:00 AM.

As the South Carolina state agency charged by state law with the management, protection and enhancement of wildlife, fisheries and marine resources in South Carolina, the SCDNR is fully supportive of innovative opportunities through the Water Resources Development Act to implement ecosystem restoration projects with the USACE.

Following the hearing, should you have any additional questions, please feel free to contact me at 803-734-4199 or via email at RigginL@dnr.sc.gov. You may also contact the USACE Charleston District Project Lead, Jeff Livasy at 843-329-8062 or via email at Jeff.J.Livasy@usace.army.mil.

Thank you for the opportunity to share the success of Crab Bank.

Sincerely,

Lorianne Riggin

Lorianne Riggin
803-734-4199
rigginl@dnr.sc.gov

Chairman Carper, Ranking Member Capito, and members of the Committee, thank you for the opportunity to address you today and share the success of the Crab Bank Ecosystem Restoration project in South Carolina.

For the record, my name is Lorianne Riggin, and I am the Director of the Office of Environmental Programs for the South Carolina Department of Natural Resources. I have been with the agency for 17 years and had the pleasure of working with many interested conservation partners, the surrounding Mount Pleasant community and the U.S. Army Corps of Engineers' Charleston District to help oversee the Crab Bank Ecosystem Restoration project.

Crab Bank is a dedicated Heritage Trust property and a seabird sanctuary managed and owned by the South Carolina DNR. It is located in the Charleston Harbor, near the mouth of Shem Creek and the Mount Pleasant community.

Crab Bank was originally formed with the placement of dredged material in the 1950s; however, over time, due to wave action, tropical storms and hurricanes, the important seabird sanctuary eroded away. In the early 2000s, Crab Bank was approximately 23 acres, but by 2017, Hurricane Irma washed away the remaining 0.5 acre of high ground in the early fall, removing any opportunity for nesting birds the following summer.

Prior to Hurricane Irma, the island served as an important predator-free refuge for a variety of State Wildlife Action Plan conservation priority species. Although all species may not nest on the island each year, examples of species that have nested on the island include: brown pelican, royal tern, sandwich tern, gull-billed tern, black skimmer, laughing gull, American oystercatcher, willet, snowy egret and tricolored heron. Besides providing nesting habitat, the sanctuary provides winter loafing and feeding habitat for numerous species, including large flocks of shorebirds that roost on the island at night.

Of the 65 seabird, shorebird, and wading bird species, collectively known as waterbirds, that utilize South Carolina's coastal habitats throughout the year, 47 are listed in the State's Wildlife Action Plan as high conservation concern, three are federally listed and five are state listed. These waterbirds nest in colonies with thousands of other birds, laying their eggs on the ground. Crab Bank is one of the few places on the coast where these species can come nest undisturbed from human presence. This is increasingly important as lack of nesting habitat may be limiting shorebird population stability and growth. Research shows that shorebird and seabird populations have shrunk overall by 70% in the last 50 to 70 years with an accelerated decline during the last three generations for most shorebird species[1].

The coast of South Carolina is the most rapidly developing area of the state and much of this is occurring along shorelines, which has the potential to decrease abundance and distribution of coastal waterbirds throughout their life cycle. In addition, increased recreational use along our

[1] Smith, Paul A., A.C. Smith, B. Andrew, C.M. Francis, B. Harrington, C. Friis, R.I.G. Morrison, J. Paquet, B. Winn, and S.Brown. 2023. Accelerating declines of North America's shorebirds signal the need for urgent conservation action. *Ornithological Applications*, 2023, 125, 1–14.
Munro, Margaret. "What's Killing the World's Shorebirds?" *Nature* , January 4, 2017. https://www.scientificamerican.com/article/what-rsquo-s-killing-the-world-rsquo-s-shorebirds/
State of the Birds 2022. https://www.stateofthebirds.org/2022/wp-content/uploads/2022/10/state-of-the-birds-2022-spreads.pdf

shorelines further limits available nesting habitat. Thus, restoration of Crab Bank was an extremely high priority for the survival of many coastal waterbirds.

The South Carolina DNR had an incredible, once in a lifetime opportunity with the deepening of the Charleston Harbor to partner as the non-federal sponsor with the U.S. Army Corps of Engineers Charleston District under Section 204 of the Continuing Authorities Program to restore Crab Bank and support shorebird populations.

Construction on Crab Bank was completed in seven weeks in 2021. Approximately 660,000 cubic yards of dredged material was placed with varying elevations to diversify habitat. This increased Crab Bank in size from less than 0.5 acre to 80 acres total, with 32 acres of available shorebird and seabird habitat above mean high water. As of June 5, 2023, the overall project expenditures cost-shared 65/35% between the federal government and South Carolina DNR total $695,939.

The purpose of the project included: restoration and enhancement of an important Seabird Sanctuary; protection of the salt marsh located near Crab Bank; development of wildlife viewing and shorebird educational opportunities for Shem Creek ecotourism and the greater Charleston area.

Through the Water Resources Development Act, the South Carolina DNR and the U.S. Army Corps of Engineers were able to successfully meet all the goals of this project. In 2022, Crab Bank provided nesting habitat for 107 pairs of least tern, 192 pairs of gull-billed tern, 283 pairs of black skimmer and eight American oystercatcher pairs. I'm happy to share today that nesting activity is in full swing for 2023 and there have been two nesting pairs observed of the state threatened Wilson's plover.

The South Carolina DNR is thrilled with the benefit that the Water Resources Development Act authority provided to restore Crab Bank. This project was of great benefit to the public by supporting shorebird conservation and the beneficial use of the material dredged from the Charleston Harbor. The South Carolina Department of Natural Resources would like to encourage the Committee to continue to provide authorization for important ecosystem restoration projects like Crab Bank. In closing, thank you for the opportunity to share the success of Crab Bank.

Supplemental Information – Crab Bank Ecosystem Restoration Project

South Carolina Department of Natural Resources

Project Name & Location

Crab Bank Seabird Sanctuary

Crab Bank is a dedicated Heritage Trust Property and a Seabird Sanctuary managed and owned by the South Carolina Department of Natural Resources (SCDNR) located in the Charleston Harbor, near the mouth of Shem Creek (Appendix 1).

Purpose of the Proposed Project

The purpose of the renourishment of Crab Bank would be to provide:

- restoration and enhancement to an important Seabird Sanctuary supporting seabird nesting, foraging and loafing;
- protection for the salt marsh located across the Shem Creek channel from additional waves and wake in the Charleston Harbor; and
- a wildlife viewing and educational opportunity for Shem Creek ecotourism and the greater Charleston area.

Crab Bank was originally formed with the placement of dredged material in the 1950s that eroded significantly over time due to wave action, tropical storms and hurricanes (Appendix 2). In the early 2000s, Crab Bank was approximately 23 acres; in 2017, Hurricane Irma washed away most of the remaining high ground, removing any opportunity for nesting birds at this Seabird Sanctuary in 2018.

Prior to Hurricane Irma, the island served as a predator-free refuge for nesting, resting and foraging for a variety of State Wildlife Action Plan (SWAP)[2] conservation priority species. Although all species may not nest on the island each year, examples of species that have nested on the island include: brown pelican, royal tern, sandwich tern, gull-billed tern, black skimmer, laughing gull, American oystercatcher, willet, snowy egret and tricolored heron (Appendix 3). Besides providing nesting habitat, the sanctuary provides winter loafing and feeding habitat for numerous species, including large flocks of shorebirds that roost on the island at night.

Although Crab Bank is a small island, it has large potential to provide needed habitat for birds that are in decline. Of the 65 seabird, shorebird, and wading bird species, collectively known as waterbirds, that utilize South Carolina's coastal habitats throughout the year, 47 are listed in the SWAP as highest or high conservation concern, three are federally listed and five are state listed. Shorebirds are of highest conservation concern due to small and highly threatened global populations. Shorebird populations have shrunk by 70% across North America since the 1970s[3]. The coast of South Carolina is the most rapidly developing area of the state and much of this is occurring along shorelines, which has the potential to decrease abundance and

[2] https://dnr.sc.gov/swap/

[3] Munro, Margaret. "What's Killing the World's Shorebirds?" *Nature* , January 4, 2017. https://www.scientificamerican.com/article/what-rsquo-s-killing-the-world-rsquo-s-shorebirds/
State of the Birds 2022. https://www.stateofthebirds.org/2022/wp-content/uploads/2022/10/state-of-the-birds-2022-spreads.pdf

distribution of coastal waterbirds throughout their life cycle. In addition, increased recreational use along our shorelines further limits available nesting habitat.

South Carolina provides important habitat for large numbers of seabirds, shorebirds and wading birds. Efforts to conserve birds in South Carolina will help region-wide populations rebound. Seabirds, such as pelicans, terns, skimmers and gulls gather in large groups to nest together in colonies during the breeding season. South Carolina has approximately 25% of all brown pelicans nesting on the Atlantic coast and some of the largest colonies of skimmers and terns in the Southeast. Shorebirds are some of the world's most amazing migrants. Many species nest in the arctic and sub-arctic zones of the globe and spend the winter in the Southern Hemisphere. During their travels, they stop in large groups to rest and fuel themselves to sustain their migration. South Carolina provides both migration stop-over sites for flocks of thousands of these birds and wintering grounds for birds that do not travel as far south. For example, South Carolina winters, over a third, of all American oystercatchers on the Atlantic and Gulf coasts of the United States and is the most important wintering site for this species.

As one of five seabird sanctuaries on South Carolina's Coast and as a National Audubon Society Globally Important Bird Area, Crab Bank serves as an instrumental area for seabirds and shorebirds, especially brown pelicans, skimmers and terns (Table 1). Additionally, Crab Bank serves to dissipate wave energy, thus protecting the salt marsh (Essential Fish Habitat) to its east, on the edge of the Town of Mount Pleasant. Nestled near the mouth of Shem Creek, Crab Bank is a popular wildlife viewing area, especially during nesting season, for the ecotourism outfitters, from the local Shem Creek area and the greater Charleston area, that provide paddling, paddle-boarding and recreational fishing trips (Appendix 4). One of these outfitters, Coastal Expeditions, provides educational tours via paddle trips for school groups within the Charleston area. Since 2013, 9,000 middle schoolers have paddled around Crab Bank for free, thanks to grant funding for science education. The opportunity to benefit the USACE Charleston Harbor Post-45 Deepening Project and shorebirds by renourishment of Crab Bank with dredged material is a positive arrangement for all.

Table 1. Seabird Nesting Numbers for Crab Bank (2009-2017)

Species	2009	2010	2011	2012	2013	2014	2015	2016	2017
Black Skimmer	51	112	53	79	8	10	50	33	0
Brown Pelican	907	74	722	463	304	517	647	360	93
Gull-Billed Tern	13	89	42	0	62	0	9	0	0
Royal Tern	1466	1032	2661	1581	1140	1337	1677	1630	1955
Sandwich Tern	6	0	320	475	347	240	603	297	20

Table 2. Seabird Nesting Numbers for Crab Bank First Nesting Season Post-Restoration (2022)

Species	2022
American Oystercatcher	8
Black Skimmer	283
Gull-Billed Tern	192
Least Tern	107

Project Description

Construction on Crab Bank began the week of September 13th 2021 and was completed November 4th, 2021. It took 7 weeks to complete with 53 workers working 24/7. Approximately 660,000 cubic yards (equivalent to 660,000 washing machines or 66,000 dump trucks) of compatible material was placed, with areas of various elevations, for diversity of habitat. This increased Crab Bank in size from less than 0.5 acre to 80 acres total, with 32 acres of available nesting and loafing habitat above mean high water (Appendix 5). Dredged material excavated from the Charleston Harbor navigation channel was transported via pipeline and discharged. Once established, shore-based mechanical equipment was utilized to build temporary containment berms and spread the placed material.

The total project expenditures* to date are as follows:

	Federal (65%)	Non-federal (35%)	Total Costs
Feasibility Phase	$259,941		$249,941
Design & Implementation Phase	$286,864	$149,134	$435,998
Total Project Expenditures*	$546,805	$149,134	$695,939

*As of June 5, 2023. Project requires final cost share balancing and financial closeout.

SCDNR will continue to manage Crab Bank for birds as a Heritage Preserve and Seabird Sanctuary.

Project Development

Over the last few years, SCDNR has worked closely with the USACE during the environmental review process on the Charleston Harbor Post-45 Deepening Project. As a part of that process, SCDNR requested that Crab Bank be considered as an option for the beneficial use of dredged material. However, following analysis, the renourishment of Crab Bank was not the least cost alternative for the dredged material. Due to interest expressed by SCDNR, local ecotourism outfitters from Shem Creek and various conservation organizations, the USACE Charleston District pursued, with SCDNR agreeing to be the non-Federal Sponsor, an opportunity to cost share the renourishment of Crab Bank under the Water Resources Development Act Section 204 of the Continuing Authorities Program. A detailed project report can be found at: https://www.sac.usace.army.mil/Portals/43/docs/civilworks/post45/Cap%20204/Charleston%20Harbor%20CAP%20204%20Feasibility%20Report.pdf?ver=2018-05-09-150058-073

Project Benefits

The coast of South Carolina is the most rapidly developing area of the state and much of this is occurring along shorelines, which has the potential to decrease abundance and distribution of coastal water birds throughout their life cycle. In addition, increased recreational use along our shorelines further limits available nesting habitat. The use of dredged material to renourish Crab Bank would enhance and prolong the existence of this important refuge for coastal birds to loaf and forage, as well as nesting habitat for brown pelicans, several species of terns, and other wading birds.

Additionally, Crab Bank serves to dissipate wave energy, thus protecting the salt marsh (Essential Fish Habitat) to its east, on the edge of the Town of Mount Pleasant.

Due to its prominent location in the Charleston Harbor and its proximity to Shem Creek, Crab Bank plays a vital role in the ecotourism economy. In a recent study on "The Economic Contribution of Natural Resources to South Carolina's Economy[4]" published by Clemson University, coastal tourism brought in $9 billion per year to South Carolina.

Although going ashore Crab Bank is prohibited to protect the birds, it provides an opportunity for seabirds to be observed from the water without disturbance to nesting activities and behaviors. The island's proximity to the mouth of Shem Creek and its sheltered location in Charleston Harbor make it a safe destination for kayakers launching on nearby Shem Creek. This accessibility provides a unique opportunity for scientific study of seabird ecology. Many graduate projects have focused on understanding seabird ecology by viewing nesting activity via kayaks at Crab Bank. This type of research is essential for conservation of seabirds, yet can be difficult, costly, and disruptive to bird behavior at more remote sites.

Crab Bank is a popular wildlife viewing area, especially during nesting season, for the Shem Creek ecotourism outfitters that provide paddling, paddle-boarding and recreational fishing trips. One of these outfitters, Coastal Expeditions, provides educational tours via paddle trips for school groups in the Charleston area. Since 2013, 9,000 middle schoolers have paddled around Crab Bank for free, thanks to grant funding for science education.

The visibility and access to view wildlife at Crab Bank provides an opportunity for the connectivity between man and the environment, fostering stewardship and a desire to protect these coastal resources.

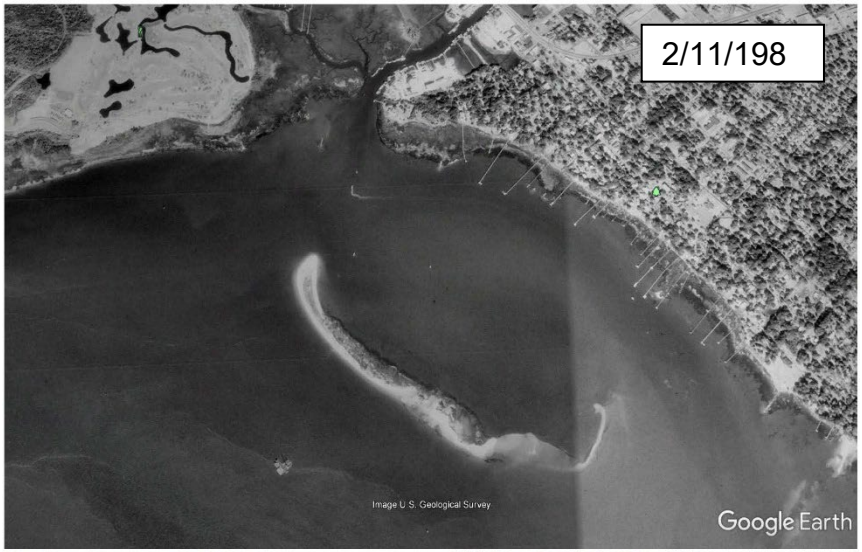
Crab Bank Seabird Sanctuary Nesting Season 2022 Highlights may be viewed here: https://www.youtube.com/watch?v=JIQWXo63eeA.

[4] https://www.dnr.sc.gov/economic/EconomicContributionsSC.pdf

Appendix 1. Location of Crab Bank

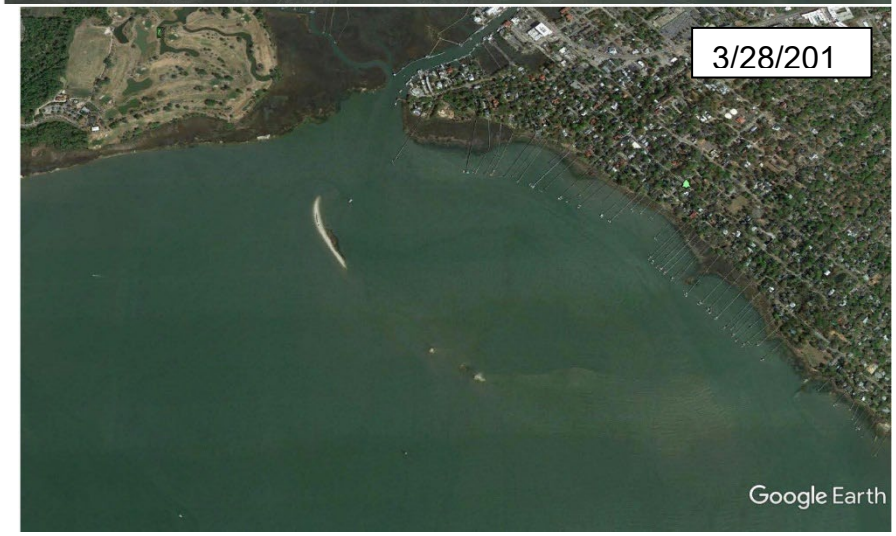


Appendix 2. Erosion of Crab Bank





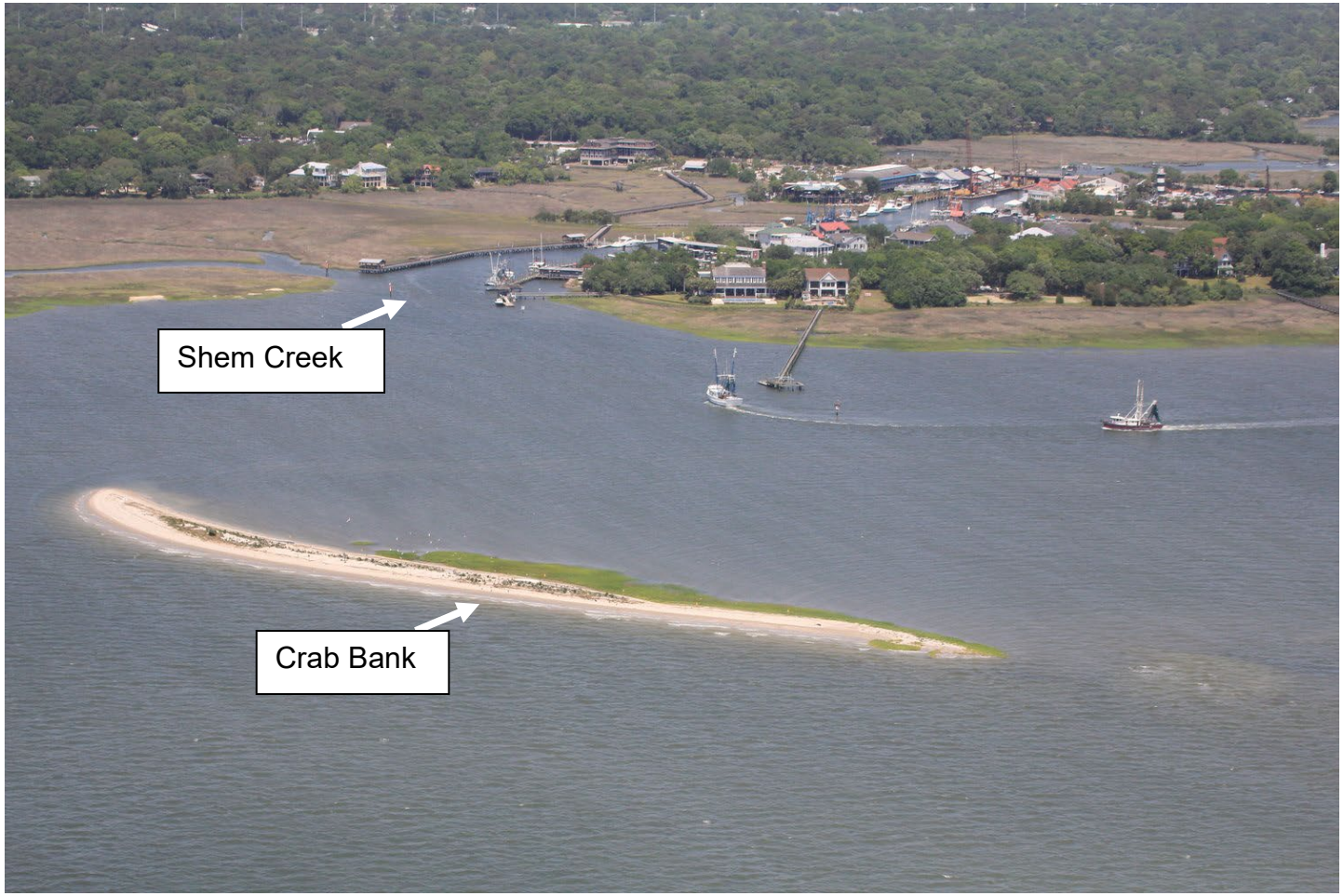




Appendix 3. Nesting Terns & Brown Pelicans 2015



Appendix 4. Historic Image of Crab Bank View with Shem Creek



Appendix 5. Image of Crab Bank Post-Construction




Shem Creek
Crab Bank