

***Testimony of Elizabeth Gray, Ph. D., Chief Executive Officer, National Audubon Society, before the Committee on Environment and Public Works, United States Senate  
June 15, 2022***

My name is Dr. Elizabeth Gray, and I am the Chief Executive Officer of the National Audubon Society. Audubon represents 1.8 million members nationwide and works to protect birds and the places they need through our 23 state programs, 41 centers, and 450 chapters. I appreciate the opportunity to testify today on behalf of the National Audubon Society regarding coastal habitats and the need to protect and restore these vital areas.

Coastal resources, such as wetlands, beaches, and barrier islands, provide critical services. They serve as recreational spaces, enhance our resilience to climate threats like floods and hurricanes, and provide habitat for birds and other wildlife. Yet climate change and development have severely diminished bird habitats. The U.S. has lost 3 billion birds since the 1970s, with a 70 percent decline in sea- and shorebird populations over the last 50 years.

Increasing storms and hurricanes also threaten coastal communities. Hurricanes have killed nearly 6,700 people and caused more than \$1.1 trillion in damages from 1980 to 2021. However, the burdens associated with climate change do not affect all communities equally. Those on the frontlines of climate change—primarily lower-income communities, communities of color, and Tribal Nations and Indigenous communities—are being hit first and worst by its impacts.

The U.S. Fish and Wildlife Service plays a crucial role in coastal resiliency and adaptation through its administration of programs throughout the United States that focus on habitat conservation and protection. Audubon supports these four bills, which would codify, reauthorize, and expand critical U.S. Fish and Wildlife Service programs in vulnerable coastal areas. Each of these bills would increase coastal resiliency and safeguard important habitat:

- S. 2194, the Coastal Habitat Conservation Act of 2021, which would improve coastal community protection through grant programs that provide technical assistance targeted to habitat conservation.
- S. 3069, the Great Lakes Fish and Wildlife Restoration Reauthorization Act, which authorizes the U.S. Fish and Wildlife Service (FWS) to continue to work with states and other agencies to develop and execute proposals to conserve, restore, and manage fish and wildlife populations and their habitats.
- S. 3767, the Delaware River Basin Conservation Reauthorization Act, which would reauthorize critical conservation programs throughout the Delaware River Watershed and improve the equitability of federal funding provided through the Act.
- Strengthening Coastal Communities Act of 2022, which would expand the bipartisan Coastal Barrier Resources Act and its system of protected areas, protecting vital coastal ecosystems while saving federal tax dollars.

The National Audubon Society supports these imperative bills, as their enactment would benefit coastal communities, support wildlife, and help our coasts better adapt to climate change impacts.

**S. 2194, the Coastal Habitat Conservation Act of 2021**

Audubon supports S. 2194, *the Coastal Habitat Conservation Act of 2021*, which would improve coastal community protection through grant programs targeted to habitat conservation by codifying the U.S. Fish and Wildlife Service’s Coastal Program that provides technical assistance. Much of the focus of the program would be on building, restoring or enhancing coastal wetlands and coastal upland habitats, along with freshwater ecosystem restoration. Congress should increase support for coastal wetlands restoration through this vital program. As noted above, coastal wetlands provide \$23 billion in storm protection services each year, while providing habitat that wildlife depends on.

Because of their many benefits, Audubon and partners are conducting on-the-ground wetlands restoration projects. Some of our projects that have benefitted from U.S. Fish and Wildlife Service funding of particular relevance to Committee members include:

- Blackwater National Wildlife Refuge in Maryland, where Audubon and partners are working to increase the elevation of the marsh to protect it from sea level rise impacts funded in part by a coastal grant through the U.S. Fish and Wildlife Service.
- Cat Island, where Audubon has conducted research on Snowy Plovers in coastal Mississippi after all discovered nests failed in 2019 due to unknown causes. Through the grant program, Audubon has been able to conduct predator abatement and additional protective measures to improve Snowy Plover nesting success on the island.
- Gulfport, Mississippi, where Audubon received grant funding for habitat restoration projects at Least Tern Important Bird Areas. This will provide needed shade from native plants and dune stabilization for one of the largest Least Tern breeding colonies in the northern Gulf Coast.

The grants program in S. 2194 would encourage projects that result in carbon sequestration. Wetlands capture and store carbon pollution, with tidal wetlands playing a critical role. More than half of the global carbon load is captured by marine ecosystems and coastal vegetation, and the top three “blue carbon” sinks are mangroves, seagrass and tidal wetlands.<sup>1</sup> These habitats “not only remove more carbon than all other ocean habitat types but they remove it at rates up to 100 times faster than terrestrial forests.”<sup>2</sup> Although they cover a relatively small area, “carbon burial by salt marshes accounts for an estimated 21 percent of the total carbon sink of all ecosystems in the United States.”<sup>3</sup>

The grants program would require that projects include measurable outcomes and have a science-based focus. Community engagement is also stressed, along with using innovative nature-based practices that are scalable and replicable. These project criteria will help ensure that projects maximize the financial investment, while showcasing new ways to work with nature to restore habitats.

S. 2194 highlights and supports the restoration of aquatic habitats to maximize their habitat, resiliency, and climate change benefits. Audubon urges the Committee to enact S. 2194.

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<sup>1</sup> U.S. Fish and Wildlife Service, “Status and Trends of Wetlands in the Long Island Sound Area: 130 Year Assessment.” 2015. P. 6. <https://www.fws.gov/wetlands/documents/Status-and-Trends-of-Wetlands-in-the-Long-Island-Sound-Area-130-Year-Assessment.pdf>

<sup>2</sup> Ibid.

<sup>3</sup> Ibid.

### **S. 3069, Great Lakes Fish and Wildlife Restoration Reauthorization Act**

Audubon supports S. 3069, the *Great Lakes Fish and Wildlife Restoration Reauthorization Act*. This bipartisan bill authorizes the U.S. Fish and Wildlife Service to continue to work with states and other agencies to develop and execute proposals to conserve, restore, and manage fish and wildlife populations and their habitats. The program supports research and restoration projects throughout the Great Lakes region, including restoring wetlands and supporting healthy fisheries. Reauthorizing this important act would help support the implementation of the larger Great Lakes Restoration Initiative (GLRI), a program long-championed by Audubon and our conservation partners. Since it launched over a decade ago, the GLRI has guided billions of dollars to fund more than 6,000 critically important science-based restoration projects, which are improving water quality and habitat to protect the region's wildlife, local communities, and economies.

Audubon supports S. 3069 because millions of migratory birds depend on coastal habitats along the Great Lakes for shelter, rest, and nourishment. Thousands of raptors, waterfowl, and wetland birds rely on the Great Lakes for safe nesting grounds. As the largest freshwater ecosystem on the planet, the Great Lakes provide drinking water to 40 million people. This globally important ecosystem faces significant threats, including coastal development, invasive species, and climate change. Given this urgent need, Audubon is proud to be investing in cutting-edge science to prioritize coastal wetlands for conservation action, studying the impact of climate change on birds, and developing a range of conservation management tools. Investing in coastal watersheds and wetlands will help sustain bird populations into the future, build community resilience, and protect the water quality throughout the region.

With each year, climate change poses a more serious threat to communities and the safety of the Great Lakes region. The federal government must do all that it can to protect the world's largest freshwater ecosystem, and that includes swiftly passing S. 3069.

### **S. 3767, Delaware River Basin Conservation Reauthorization Act**

Audubon supports S. 3767, the *Delaware River Basin Conservation Reauthorization Act of 2022*. This bill will reauthorize critical conservation programs throughout the Delaware River Watershed and improve the equitability of federal funding provided through the Act. The Delaware River Basin Restoration Program (DRBRP), which is the main U.S. Fish and Wildlife Service collaborative program administered as part of the Act, champions investments in critical on-the-ground projects. Throughout the Delaware River Watershed, these projects restore important habitat for birds and other wildlife and ensure clean drinking water for over 13.3 million people.

The Delaware River Watershed is a system where resilient communities thrive alongside priority bird species. From warblers to shorebirds, the Delaware River Watershed provides critical habitat for birds from the upland forests of the Kittatinny Ridge and Appalachian Highlands to tributaries that wind their way through Philadelphia and down to the Delaware Bay's coastal plains and marshes. The region is home to over 400 bird species and includes more than 126,000 acres of internationally important wetlands; crucial breeding habitat in the forested headwaters; a globally important site for shorebird migration; and a critical stopover site along the Atlantic Flyway for the second largest population of migrating songbirds and raptors in North America.

As a recipient of funding through the DRBRP, Audubon supports habitat for wildlife across the Delaware River Watershed. For example, we are actively working to improve hundreds of acres of forested habitat in the headwaters through our Harvests for Habitat program. This partnership program helps private landowners and foresters implement bird-friendly forest management practices birds like the Wood Thrush and Cerulean Warbler. Audubon and our partners are grateful that the DRBRP continues to receive federal funding and attention. We support the proposed changes to the authorization act that are included in S. 3767. By reducing the match requirement to 10 percent for small, rural, or disadvantaged communities, this will help ensure more equitable access to these federal dollars. We urge this committee to swiftly pass S. 3767.

### **Strengthening Coastal Communities Act of 2022**

Audubon supports the *Strengthening Coastal Communities Act of 2022* would expand and strengthen the Coastal Barrier Resources Act (CBRA). CBRA protects 3.5 million acres of undeveloped beaches, islands, and wetlands along the Gulf of Mexico, Atlantic, Great Lakes, U.S. Virgin Islands, and Puerto Rico. CBRA does not prohibit development, it simply removes the taxpayer from funding it in important designated areas. In so doing, CBRA:

- Supports coastal resiliency by protecting undeveloped areas that act as nature’s speed bumps, buffering nearby communities from storms and floods.
- Saves the federal taxpayer billions of dollars.
- Protects wetlands, which provide important habitat, and support the nation’s \$255 billion annual recreational and commercial fishing industries.<sup>4</sup>
- Embraces bipartisan cooperation, with Presidents Reagan, Bush, Clinton, and Trump signing legislation that created and expanded CBRA.

Audubon strongly supports the Coastal Barrier Resources Act and urges Congress to enact legislation that would expand and strengthen it by taking these three steps:

- First, add nearly 278,000 acres to the CBRA System along the coasts of nine states impacted by Hurricane Sandy, from New Hampshire to Virginia. The U.S. Fish and Wildlife Service (USFWS) transmitted the Hurricane Sandy maps to Congress in April 2022, and Audubon urges their enactment.
- Second, expand the definition of an undeveloped coastal barrier to include bluffs, spits and related lands, and coastal hazard areas.
- Third, direct the USFWS to carry out a coastal hazard pilot project to identify areas that are and will be vulnerable to coastal hazards.

#### **1. The Coastal Barrier Resources Act has a long track record of bipartisan support.**

The Coastal Barrier Resources Act is a bipartisan, common-sense approach to protecting the environment, saving federal tax dollars, and promoting public safety. The CBRA was signed into law by President Ronald Reagan in 1982, who noted that it, “will enhance both wise natural resource

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<sup>4</sup> National Oceanic and Atmospheric Administration, “Fisheries Economics of the United States.” <https://www.fisheries.noaa.gov/national/sustainable-fisheries/fisheries-economics-united-states>

conservation and fiscal responsibility.”<sup>5</sup> President Reagan called CBRA “imaginative environmental legislation . . . that solves real problems in the stewardship of our natural resources.”<sup>6</sup>

Bipartisan support for the CBRA continued in 1990, when legislation making major additions to the Coastal Barrier Resources System (CBRS) was approved by voice vote in both the House and Senate, and signed into law by President George H.W. Bush.<sup>7</sup> Senator John Chafee (R-RI), a sponsor of the original CBRA legislation and the 1990 expansion bill, noted that “CBRA gets the Federal government out of the business of subsidizing high-risk development,” adding, “Nothing in CBRA prevents property owners from doing what they want on their own land; it only provides that they do so at their own financial risk.”<sup>8</sup> President Bill Clinton later echoed this sentiment by observing that,

[The CBRA] has successfully minimized the loss of human life by discouraging development in high-risk areas. It also has reduced the wasteful expenditures of Federal resources and protected the natural resources associated with coastal barriers.<sup>9</sup>

The CBRA has continued to earn bipartisan praise, including from Senator James Inhofe (R-OK) who called it, “a free-market approach to conservation” that helps protect “biologically rich coastal barriers by restricting Federal expenditures that encourage development.”<sup>10</sup> In December 2018, legislation to add more than 18,000 acres to the System passed the House with one dissenting vote, and the Senate by unanimous consent, and was signed into law by President Trump.<sup>11</sup>

The CBRA’s long track record of support also includes endorsements by organizations that represent taxpayer advocates, conservationists, state agency officials, sportsmen, insurance industry interests, and conservative think tanks. The diverse interests that tout the benefits of the CBRA, and its continuing appeal to politicians on both sides of the political aisle, position CBRA as a tool of continuing importance for protecting natural, taxpayer and public safety resources.

<sup>5</sup> Reagan, President Ronald, “Statement on Signing the Coastal Barrier Resources Act.” October 18, 1982. [www.presidency.ucsb.edu](http://www.presidency.ucsb.edu)

<sup>6</sup> Ibid.

<sup>7</sup> Public Law 101-591. See <https://www.congress.gov/bill/101st-congress/house-bill/2840/actions?q=%7B%22search%22%3A%5B%22Coastal+Barrier+Improvement+Act+of+1990%22%5D%7D&r=1&s=2>

<sup>8</sup> Chafee, Senator John H., “Statement by Senator John H. Chafee, Committee of Environment and Public Works, Hearing on S. 2470, a bill relating to Unit FL-35 of the Coastal Barrier Resources System.” September 22, 1998. [https://www.epw.senate.gov/105th/cha\\_9-22.htm](https://www.epw.senate.gov/105th/cha_9-22.htm)

<sup>9</sup> Clinton, President William J., “Statement on Signing the John H. Chafee Coastal Barrier Resources System Act.” December 9, 1999. <https://www.presidency.ucsb.edu/documents/statement-signing-the-john-h-chafee-coastal-barrier-resources-system-act>

<sup>10</sup> S. Rept. 109-179 – Coastal Barrier Resources Reauthorization Act of 2005, Committee Report. <https://www.congress.gov/congressional-report/109th-congress/senate-report/179/1?overview=closed>

<sup>11</sup> See for the House vote: U.S. House of Representatives, “Final Vote Results for Roll Call 419.” <http://clerk.house.gov/evs/2018/roll419.xml>. See for the Senate vote: <https://www.congress.gov/bill/115th-congress/house-bill/5787/all-actions?q=%7B%22search%22%3A%5B%22HR+5787%22%5D%7D&r=1&overview=closed#tabs>. See for presidential signing: Public Law 115-358. <https://www.congress.gov/bill/115th-congress/house-bill/5787/all-actions?q=%7B%22search%22%3A%5B%22HR+5787%22%5D%7D&r=1&overview=closed#tabs>

## 2. The Coastal Barrier Resources Act's three goals: save lives, conserve the coastal environment, and reduce Federal expenditures.

- *CBRA saves billions of tax dollars by discouraging hurricane- and hazard-prone development.*

The CBRA discourages development along hurricane-prone coasts, where storms can take lives and destroy billions-of-dollars' worth of property. The chart below shows insured losses in dollars for the top 10 costliest hurricanes in the United States at the time they occurred, and in 2021 dollars adjusted for inflation. According to Aon, a multinational insurance company, Hurricane Katrina was the costliest hurricane on record, causing \$65 billion in insured losses when it occurred in 2005, which equals \$89.7 billion in inflation-adjusted 2021 dollars.

### Top 10 Costliest Hurricanes in the United States

Rank	Year	Hurricane	Estimated insured loss (\$ in millions)	
			Dollars when occurred	In 2021 dollars (2)
1	2005	Hurricane Katrina	\$65,000	\$89,680
2	2021	Hurricane Ida	36,000	36,000
3	2012	Hurricane Sandy	30,000	35,140
4	2017	Hurricane Harvey	30,000	33,110
5	2017	Hurricane Irma	30,100	33,000
6	2017	Hurricane Maria	29,500	32,400
7	1992	Hurricane Andrew	16,000	30,770
8	2008	Hurricane Ike	18,200	22,540
9	2005	Hurricane Wilma	10,670	14,510
10	2018	Hurricane Michael	13,250	14,200

Includes Puerto Rico and the U.S. Virgin Islands and losses sustained by private insurers and government-sponsored programs such as the National Flood Insurance Program. Includes hurricanes that occurred through 2021. Adjusted for inflation by using the U.S. Consumer Price Index. *Source: Insurance Information Institute, "Facts + Statistics: Hurricanes."* <https://www.iii.org/fact-statistic/facts-statistics-hurricanes>

The CBRA prohibits the dozens of federal programs that underwrite and support coastal development along the hurricane-prone coasts, resulting in significant savings to the Federal Treasury. A 2019 study in the peer-reviewed *Journal of Coastal Research* documented billions of dollars saved by the Act. According to the analysis of a subset of federal expenditures, the CBRA reduced federal coastal disaster-related expenditures by \$9.5 billion (in 2016 dollars) between 1989 and 2013.<sup>12</sup> This assessment is based on evaluating coastal storm related expenditures from just four federal agencies. This did not include expenditures by the National Flood Insurance Program (NFIP), which is currently

<sup>12</sup> Coburn, Andrew S., and Whitehead, John C, "An Analysis of Federal Expenditures Related to the Coastal Barrier Resources Act of 1982," in *Journal of Coastal Research*. March 15, 2019. <https://www.jronline.org/doi/abs/10.2112/JCOASTRES-D-18-00114.1>

more than \$20 billion in debt.<sup>13</sup> It is likely that the savings from CBRA would be even greater if programs like the NFIP and others had been included in the calculations.

In addition to past savings, the CBRA is projected to continue saving billions of federal dollars over the next 50 years. Using estimated savings scenarios based on land development rates and storm damages, projected savings from CBRA are between \$11 billion (in 2016 dollars) for a low development/low damage scenario, to \$108 billion (in 2016 dollars) for a high development/high damage scenario.<sup>14</sup> It is clear that CBRA meets its goal of saving federal tax dollars.

- ***CBRA promotes public safety in the face of hurricane, storm and sea level rise threats.***

The Coastal Barrier Resources Act works to reduce the exposure of people and property to deadly storms, sea level rise, and hurricanes by removing the federal program expenditures that support and subsidize coastal development. According to a 2007 study by the Government Accountability Office, an estimated 84 percent of all CBRS units remain undeveloped, while another 13 percent have minimal development.<sup>15</sup> A 2020 analysis of development in the coastal zone of eight U.S. coastal states (TX to NC) found that less than 5 percent of the land in CBRA units was developed, as compared to more than 25 percent of the land outside of CBRA.<sup>16</sup>

CBRA-protected areas remain largely undeveloped, which reduces the number of people exposed to deadly acts of nature. According to the National Oceanic and Atmospheric Administration (NOAA), the 2020 hurricane season was a record-breaking year that produced 30 named storms, while the 2021 hurricane season produced 21 named storms. These storms can have tragic consequences; Hurricane Ida in 2021 killed 107 people, with additional fatalities occurring from other 2021 storms.<sup>17</sup> Discouraging development in hurricane- and storm-prone areas helps save lives. This is particularly clear in coastal areas subject to storm surges, where more than 7 million American homes are at risk from a Category 5 hurricane.<sup>18</sup>

Undeveloped coastal areas also provide important resiliency benefits for upland communities. Nationwide, coastal wetlands provide more than \$23 billion in storm protection services.<sup>19</sup> CBRA areas, like protected inlets, islands, and wetlands, help buffer mainland communities from hurricane damage and storm impacts. In fact, coastal wetlands prevented more than \$625 million in property damages during Hurricane Sandy.<sup>20</sup>

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<sup>13</sup> Congressional Research Service, “Introduction to the National Flood Insurance Program (NFIP.)” November 19, 2021. <https://sgp.fas.org/crs/homesec/R44593.pdf>

<sup>14</sup> Coburn and Whitehead, op cit.

<sup>15</sup> United States Government Accountability Office, “Coastal Barrier Resources System: Status of Development That Has Occurred and Financial Assistance Provided by Federal Agencies.” GAO-07-356. March 2007. <https://www.gao.gov/assets/260/257815.pdf>

<sup>16</sup> BenDor, Todd, et al, University of North Carolina at Chapel Hill, Department of City and Regional Planning, “Evaluating the Impact of the U.S. Coastal Barrier Resources Act.” January 19, 2022.

<sup>17</sup> Beven, John L.; Hagen, Andrew; Berg, Robbie, *Tropical Cyclone Report: Hurricane Ida*. National Hurricane Center, 2022.

<sup>18</sup> Insurance Information Institute, “Facts + Statistics: Hurricanes.” <https://www.iii.org/fact-statistic/facts-statistics-hurricanes>

<sup>19</sup> National Oceanic and Atmospheric Administration, Office for Coastal Management, “Fun Facts: Natural Infrastructure.” <https://coast.noaa.gov/states/fast-facts/natural-infrastructure.html>

<sup>20</sup> Narayan, Siddharth, et al, “The Value of Coastal Wetlands for Flood Damage Reduction in the Northeastern USA,” in *Scientific Reports*. August 31, 2017. <https://www.nature.com/articles/s41598-017-09269-z>



- ***CBRA protects critically important coastal habitat that supports economically vital fisheries and shellfisheries, birds, and other wildlife.***

Coastal wetlands and estuaries protected by CBRA support a wide variety of wildlife and are essential habitat for fish and shellfish, which support the nation’s economically vital commercial and recreational fishing industries. Roughly \$255 billion in sales were generated by the sport and commercial fishing industries in 2019, which also supported nearly 2 million jobs.<sup>21</sup>

Coastal wetlands, beaches and islands are also extremely important habitat for birds, sea turtles, and other wildlife. Imperiled shorebirds like Least Terns, American Oystercatchers, and Piping Plovers depend on undeveloped coastal areas. Nationwide, bird watching is a \$107 billion a year industry that positively impacts 47 million people per year.<sup>22</sup>

Given CBRA’s many benefits, the National Audubon Society strongly supports expanding the CBRA’s system of protected areas in three key ways:

#### **A. Enact the “Hurricane Sandy” maps.**

The National Audubon Society commends the USFWS for carefully developing proposed additions and necessary deletions to the CBRA System along the coasts of nine states impacted by Hurricane Sandy: NH, MA, RI, CT, NY, NJ, DE, MD and VA. Hurricane Sandy made landfall along the Northeast coast of the United States in October 2012 and caused nearly \$75 billion in damages.<sup>23</sup> Hurricane Sandy damaged or destroyed at least 650,000 homes, affected 300,000 business properties, and caused 147 direct deaths in the Atlantic Basin, including 72 in the United States.<sup>24</sup> Following the hurricane, Congress appropriated \$5 million to the USFWS to update the CBRA maps along the nine most impacted states, and propose additions and necessary removals to address prior map inaccuracies.<sup>25</sup> After public comment periods on draft maps, the USFWS released its final report to Congress on the remapping project in April 2022, and recommended that Congress enact CBRA System maps that would add 277,950 acres to the CBRA System, and remove 1,361 acres and 910 structures that were inaccurately included in prior maps.<sup>26</sup> Audubon strongly supports the USFWS’s recommendations.

Enacting the Hurricane Sandy maps would benefit the taxpayer, environment and coastal communities along the Atlantic Coast:

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<sup>21</sup> National Oceanic and Atmospheric Administration, “Fisheries Economics of the United States.”

<https://www.fisheries.noaa.gov/national/sustainable-fisheries/fisheries-economics-united-states>

<sup>22</sup> North American Bird Conservation Initiative, “Clean Air and Water, Human Health, and Economic Benefits Go Hand-In-Hand With Bird Conservation.” July 2018. <https://nabci-us.org/wp-content/uploads/2020/01/NABCI-linking-bird-conservation-to-human-benefits-3.pdf>

<sup>23</sup> U.S. Fish and Wildlife Service. *Report to Congress: John H. Chafee Coastal Barrier Resources System Hurricane Sandy Remapping Project*. April 2022. P. xi. (Hereafter referred to as the “FWS Hurricane Sandy Report.”)

<https://www.fws.gov/media/report-congress-john-h-chafee-coastal-barrier-resources-system-hurricane-sandy-remapping>

<sup>24</sup> AON Benfield Reinsurance, “Hurricane Sandy Event Recap Report.”

[http://thoughtleadership.aonbenfield.com/Documents/20130514\\_if\\_hurricane\\_sandy\\_event\\_recap.pdf](http://thoughtleadership.aonbenfield.com/Documents/20130514_if_hurricane_sandy_event_recap.pdf)

<sup>25</sup> Ibid.

<sup>26</sup> Ibid, p. xii.



- **New Hampshire** would gain 681 acres in the CBRA System, which would benefit the many species of birds that depend on New Hampshire’s Great Bay and Atlantic Coast areas, including 20 species of waterfowl, 27 species of shorebirds, and 13 species of waterbirds.<sup>27</sup> Bay and coast dependent fish and shellfish would also benefit from protecting undeveloped coastal areas. Commercial fishing operations in the state’s bay and marine waters are valued at nearly \$30 million, while recreational fishing nets 1.5 million pounds of fish and shellfish.<sup>28</sup>
- **Massachusetts** would gain 32,746 acres in the CBRA System, while roughly 300 acres and 168 structures that were incorrectly included in prior maps would be removed. Adding more areas to the CBRA System would support birds like Piping Plovers, Terns, and American Oystercatchers, while new wetlands protections would help ensure that the Commonwealth’s \$557 million commercial fish and shellfishing industry remains strong, as well as its recreational fishing industry which catches more than 10 million pounds of fish and shellfish.<sup>29</sup>
- **Rhode Island** would gain 1,544 acres in the CBRA System, while 98 acres of land and 98 structures would be removed that were incorrectly included in prior maps. Expanding the CBRA System along Rhode Island would benefit the many species of birds that depend on Narragansett Bay and ocean waters, including Spotted Sandpipers, Piping Plovers, and Great Egrets.<sup>30</sup> Protecting undeveloped coastal lands and wetlands would also help support the state’s \$78 million commercial fishing and shellfishing industry, and the recreational fishing industry that catches more than 5 million pounds of fish and shellfish each year.<sup>31</sup>
- **Connecticut** would gain 3,783 acres in the CBRA System, while 32 acres and 52 structures would be removed that were incorrectly included in prior maps. Expanding the CBRA System along Connecticut and Long Island Sound would help ensure that birds like American Oystercatchers and Piping Plovers have habitat, while supporting the state’s \$20 million annual commercial fishing and shellfishing operations, and its recreational fishing industry, which pulls in more than 7 million pounds of fish and shellfish each year.<sup>32</sup>
- **New York** would gain 19,799 acres in the CBRA System, while 329 acres and 277 structures would be removed that were incorrectly included in prior maps. Expanding the CBRA System along Long Island and New York’s coast would help provide habitat to Piping Plovers, American Oystercatchers, Common Terns and Ospreys, while supporting the state’s \$34 million a year commercial fishing and shellfishing industry, as well as its recreational fishing industry, which catches 26 million pounds of fish and shellfish annually.<sup>33</sup>
- **New Jersey** would gain 71,492 acres in the CBRA System, while 156 acres and 62 structures would be removed that were incorrectly included in prior maps. Expanding the CBRA System along New Jersey would benefit dozens of species of birds that use the New Jersey coastline,

<sup>27</sup> National Audubon Society, “Important Bird Areas: Great Bah, New Hampshire.” <https://www.audubon.org/important-bird-areas/great-bay> and State of New Hampshire, “New Hampshire Wildlife Action Plan, Appendix A, Birds-81.” <https://www.wildlife.state.nh.us/wildlife/profiles/wap/birds-semipalmatedsandpiper.pdf>

<sup>28</sup> National Oceanic and Atmospheric Administration, U.S. Fisheries. (Hereafter referred to as “NOAA Fisheries data.”) <https://www.fisheries.noaa.gov/foss/f?p=215:200:5577815272788:Mail:NO>

<sup>29</sup> Massachusetts Audubon “Coastal Waterbird Program” <https://www.massaudubon.org/our-conservation-work/wildlife-research-conservation/coastal-waterbird-program> and NOAA Fisheries Data, op cit.

<sup>30</sup> State of Rhode Island, Department of Environmental Management, “Draft Rhode Island Wildlife Action Plan Species Profiles: Species of Greatest Conservation Need.” <http://www.dem.ri.gov/programs/bnatres/fishwild/swap/birdprof.pdf>

<sup>31</sup> NOAA Fisheries Data, op cit.

<sup>32</sup> National Audubon Society, “Long Island Sound.” <https://www.audubon.org/conservation/project/Long-Island-Sound> and NOAA Fisheries Data, op cit.

<sup>33</sup> National Audubon Society, “Important Bird Areas: Peconic Bays and Flanders Bays, NY.” <http://www.audubon.org/important-bird-areas/peconic-bays-and-flanders-bay> and NOAA Fisheries Data, op cit.

including the *Rufa* Red Knot.<sup>34</sup> Ensuring that coastal areas remain ecologically healthy would also support the state’s commercial fishing and shellfishing industry, which pumps \$185 million into the state’s economy each year, as well as the recreational fishing industry, which nets nearly 30 million pounds of fish and shellfish annually.<sup>35</sup>

- **Delaware** would gain 31,216 acres in the CBRA System, while 118 acres and 43 structures that were incorrectly included in the System would be removed. Extending CBRA’s protections to additional lands and wetlands in Delaware would help provide habitat for the 30 species of shorebirds that visit Delaware Bay during spring migrations, including the *Rufa* Red Knot.<sup>36</sup> Ensuring healthy coastal lands and waters will also support Delaware’s commercial fishing and shellfishing industry, which contributes more than \$10 million to the state’s economy annually, along with the recreational fishing industry, which catches more than 1 million pounds of fish and shellfish each year.<sup>37</sup>
- **Maryland** would gain 19,008 acres in the CBRA System, while 118 acres and 81 structures that were incorrectly included in prior maps would be removed. Expanding the protective CBRA along the Chesapeake Bay and Atlantic Coast would help provide habitat for birds like the American Coot, American Oystercatcher, Brown Pelican, and Willet, which forage, nest, or migrate through Bay and coastal areas.<sup>38</sup> Maryland’s commercial fishing and shellfishing industry would also benefit from additional habitat protections, helping to sustain the nearly \$69 million a year industry, along with the recreational fishing industry, which annually nets more than 14 million pounds of fish and shellfish.<sup>39</sup>
- **Virginia** would gain 96,435 acres in the protective CBRA System, while 201 acres and 45 structures would be removed that were inaccurately included in prior maps. Expanding CBRA along the Commonwealth’s Chesapeake Bay and Atlantic Coastal areas would benefit many species of birds, including Sandpipers, Sanderlings, Black Skimmers, Ospreys, and Gannets.<sup>40</sup> Ensuring that coastal habitat is protected would also support Virginia’s commercial fishing and shellfishing industry, which pumps more than \$214 million in to the Commonwealth’s economy, and the recreational fishing industry, which catches more than 25 million pounds of fish and shellfish each year.<sup>41</sup>

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<sup>34</sup> U.S. Fish and Wildlife Service, Macdonald, Bridget, “Conserving the Nature of the Northeast - A new reality for plovers on the Jersey Shore,” October 30, 2018, <https://medium.com/usfishandwildlifeservicenortheast/a-new-reality-for-plovers-on-the-jersey-shore-c5a739b61745> and FWS, North Atlantic-Appalachian Region, “Draft recovery plan for the rufa red knot (*Calidris canutus rufa*),” May 2021. [https://fws.gov/northeast/red-knot/pdf/20210510\\_draft%20red%20knot%20recovery%20plan\\_final%20version%20for%20FRN.pdf](https://fws.gov/northeast/red-knot/pdf/20210510_draft%20red%20knot%20recovery%20plan_final%20version%20for%20FRN.pdf) and Bird Watcher’s Digest, “Birding at Cape May.” <https://www.birdwatchersdigest.com/bwdsite/explore/regions/northeast/new-jersey/birding-at-cape-may.php>

<sup>35</sup> NOAA Fisheries Data, op cit.

<sup>36</sup> Delaware Department of Natural Resources and Environmental Control, “The Delaware Shorebird Project,” <https://dnrec.alpha.delaware.gov/fish-wildlife/conservation/shorebirds/> and “Delaware Bay Ecology,” <https://dnrec.alpha.delaware.gov/fish-wildlife/conservation/shorebirds/bay-ecology/> and FWS, North Atlantic-Appalachian Region, “Draft recovery plan for the rufa red knot (*Calidris canutus rufa*),” May 2021. [https://fws.gov/northeast/red-knot/pdf/20210510\\_draft%20red%20knot%20recovery%20plan\\_final%20version%20for%20FRN.pdf](https://fws.gov/northeast/red-knot/pdf/20210510_draft%20red%20knot%20recovery%20plan_final%20version%20for%20FRN.pdf)

<sup>37</sup> NOAA Fisheries Data, op cit.

<sup>38</sup> Chesapeake Bay Program website. <https://www.chesapeakebay.net/discover/field-guide/all/birds/shorebirds>

<sup>39</sup> NOAA Fisheries Data, op cit.

<sup>40</sup> “Birds of Virginia Beach,” <https://www.visitvirginiabeach.com/blog/post/birds-of-virginia-beach/> and “Birdwatcher’s Digest,” <https://www.birdwatchersdigest.com/bwdsite/explore/regions/southeast/virginia/ecoregions-of-virginia.php>

<sup>41</sup> NOAA Fisheries Data, op cit.

## **B. Expand the definition of a coastal barrier.**

Modernizing CBRA to reflect the full array of coastal barriers that exist would yield taxpayer, environmental, and public safety benefits. Many areas function as coastal barriers along the nation's coasts. Barrier islands absorb the first impacts from storms, while sheltering back bays and wetlands that provide an additional line of defense against storm impacts. Indeed, undeveloped coastal barriers act as nature's speed bumps, slowing and absorbing the drubbing that storms and hurricanes bring to the coast. Expanding the definition of an undeveloped coastal barrier to include bluffs, spits and related lands, as well as coastal hazard areas, would reflect the myriad public safety and ecological benefits provided by these areas. The USFWS should update its definition of a coastal barrier to fully reflect the variety of landforms and associated aquatic habitat that help shelter and sustain the nation's coasts.

## **C. Direct the Fish and Wildlife Service to carry out a coastal hazard pilot project to identify areas that are and will be vulnerable to coastal hazards, including marsh migration corridors.**

Sea level rise is already affecting the nation's coasts. Vital habitat, like coastal wetlands, are being lost to saltwater intrusion and other sea level rise stressors. As waters rise, areas that are currently upland could eventually become shoreline. It is critical that these upland areas are identified and protected so that coastal habitat continues to exist for wildlife and commercially vital fisheries and shellfisheries.

The USFWS should carry out a coastal hazard pilot project to propose definitions and criteria for areas that are and will be vulnerable to coastal hazards, including flooding, storm surge, wind, erosion and sea level rise, and areas where barriers and associated habitat are likely to migrate with sea level rise. CBRA could play a critical role in protecting emergent and upland wetlands that will become increasingly important in the future. It would be economically and environmentally prudent to extend the CBRS's protections to these areas by prohibiting federal development expenditures in them. This would also help discourage development in areas that are likely to become the front line for storms and hurricanes in the future, which would help protect lives and reduce property damages.

NOAA has enumerated steps that should be taken to identify and protect areas that could provide important habitat in the future. NOAA developed wetland migration models that "visualize where inundation might occur when sea level rises and how wetland habitat might shift, taking into account sea level rise inundation, accretion, tide, and other important factors."<sup>42</sup> NOAA stresses that it is important to establish buffer areas around current wetlands to lessen stressors on these systems and increase their resilience to an additional disturbance, such as rising seas. For example, "a buffer may decrease impacts from encroaching development and increased pollutant loads," allowing current wetlands to continue to provide habitat while also "protecting nearby developed areas from rising seas."<sup>43</sup> In the long term, buffer areas may have potential to become inland migration areas for wetlands as sea levels continue to rise.<sup>44</sup>

To facilitate wetland migration in response to sea level rise, NOAA notes that:

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<sup>42</sup> National Oceanic and Atmospheric Administration, Coastal Services Center, "Shifting Shorelines, Shifting Conservation Strategies: Assessing Wetland Conservation Priorities in Maryland." Pp. 1-2.

<https://coast.noaa.gov/data/digitalcoast/pdf/shifting-shorelines-maryland.pdf>

<sup>43</sup> Ibid.

<sup>44</sup> Ibid.

Protected areas must be connected from the shoreline inland. Identifying and protecting corridors to connect these areas (such as forests, freshwater wetlands, or agricultural or other undeveloped lands with restoration potential), will enable wetland migration to occur.<sup>45</sup>

The CBRA could provide both buffers for current wetlands as well as connectivity corridors that would enhance and allow wetland migration if the CBRA's focus were expanded to include these considerations. CBRA's mission of saving tax dollars, conserving coastal resources, and promoting public safety uniquely positions it as a tool for wiser coastal protection not only in the present, but in the future as well.

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<sup>45</sup> Ibid.