NATIONAL *fish, wildlife & plants*
CLIMATE ADAPTATION STRATEGY

Project Title: Taking Action at Cape Romain National Wildlife Refuge

Headline Title (2-5 words): Action Adaptation Cape Romain NWR

Brief Summary (Abstract): Cape Romain NWR in South Carolina is implementing a comprehensive Climate Change Action Plan to address the loss of coastal habitat due to sea level rise, accelerated erosion, and storm impacts. The plan includes management actions to aid in Loggerhead sea turtle recovery, projects to increase resilience for managed wetlands on Bulls Island, active land acquisition strategies to create a migration corridor from the sea islands to the mainland, partnerships with Government agencies and NGOs, focused research projects, and public engagement on climate change impacts.

Project Location: South Carolina

Partners: SC Department of Natural Resources, Francis Marion National Forest, US Geological Survey, Congaree National Park, Coastal Conservation League, The Nature Conservancy, Conservation Fund, Clemson University, Boston University, community conservation groups, and approximately 100 volunteers

Background: For low-lying coastal refuges like Cape Romain NWR, erosion, inundation and shoreline retreat are expected to be the dominant response to sea-level rise and storms over this century and beyond. Long-term sea level trends suggest the local sea level is rising about 3.1 millimeters per year (approximately double the global average rate of 1-2mm/yr.) For Cape Romain's barrier islands and salt marsh, higher sea-level rise scenarios will cause significant and irreversible changes including rapid landward migration and segmentation of some barrier islands as well as disintegration and drowning of tidal marsh. Specific current issues of urgent concern at Cape Romain NWR include the following:

1. Imminent threat of breaching the perimeter dike on the seaward side of the 485-acre Jacks Creek impoundment on Bulls Island due to ongoing rapid shoreline erosion. Breaching of the dike would convert Jacks Creek from an actively managed brackish water wetland to passively managed intertidal habitat and eliminate nearly two-thirds of the refuge's managed wetland acres. Fresh and brackish water is in short supply on sea islands due to insufficient rainfall during drought years and the absence of freshwater streams on the islands. More frequent droughts in future years are predicted.

2. Rapid erosion of barrier islands due to sea-level rise and possible intensification of storm magnitude and/or frequency is reducing and threatens to eliminate nesting, foraging, and resting habitat for Federal Trust species including threatened loggerhead sea turtles (*Caretta caretta*), threatened piping plover (*Charadrius melodus*), red knot (*Calidris canutus*) (currently proposed for listing with proposed critical habitat on the refuge), other species of shorebirds whose populations are in significant decline, seabirds, and habitat for endangered seabeach amaranth (*Amaranthus pumilus*), particularly on Cape and Lighthouse Islands.

- Cape Romain NWR supports habitat that is critical to the northern nesting aggregation of Loggerhead sea turtles. In 2013 refuge beaches supported 37% of all nests laid in SC

and 22% of all the nests laid in the northern nesting aggregation of GA, SC, NC. Ongoing species recovery actions require three staff members and approximately 80 volunteers 7 days a week, six months of the year. Recovery activities include nest relocation out of areas of groundwater intrusion or overwash, protection from predators, temporary protective hatcheries during the hatching season, and research and monitoring. In 2013 Cape Romain produced approximately 166,747 hatchlings.

- Cape Romain NWR beaches are designated critical habitat for wintering Piping plover and Red knot (listing nearly complete). The refuge has been designated a Western Hemisphere Shorebird Reserve Network site of International Importance.

3. Cape Romain's salt marsh in the 29,000-acre Class I Wilderness Area is undergoing fragmentation due to rapidly advancing tidal creeks, inundation, and salinity changes associated with relative sea-level rise. The marsh is vital nursery habitat for juvenile fish, crabs, and shrimp that take refuge among the vegetation for protection from predators. These species are the foundation of the food chain upon which coastal species are dependent.

4. Armoring and continued development of adjacent and nearby properties on the mainland will limit the capacity for habitat shifts to occur in response to sea-level rise and constrain future management options. Unless land acquisition occurs soon, mainland coastal landscapes will be lost to urbanization, interfering with the protection of lands and waters for coastal-dependent species.

Project Goals: Increase reproductive success for Endangered Loggerhead sea turtles, protect and conserve rare fresh and brackish water habitat on Bulls Island, obtain relevant science to inform management decisions, use land acquisition as a tool to create wildlife migration corridors from the sea islands to the mainland; engage partners for support.

Strategy Goals Implemented:

Climate Impacts Addressed: Impacts on Endangered sea turtles, shorebirds, and seabirds, and the habitats upon which they depend

Status of Project Implementation (Timeline, Milestones, Next Steps): Cape Romain NWR's Climate Change Action plan is ongoing

Project Outcomes: Refuge goals include increased hatchling success for Loggerhead sea turtles; protection and conservation of coastal habitats for shorebirds, sea birds, sea turtles and other dependent species whose current habitats are under threat due to sea level rise and erosion; research to inform management decisions; funding to acquire land along migration corridors from the sea islands to the mainland, support from partners for all of the above

Funding Sources: ARRA Funding (~$1.5M), Cape Romain NWR budget allocations, NWRS Inventory and Monitoring funding, Land and Water Conservation Funding, US Geological Survey research funding, Boston University research funding, donations from South Carolina Coastal Friends (Refuge Friends Group)

Photos/Attachments:

Photo/Figure Credits (do we have permission to print): Photo by Steve Hillebrand, permission granted

Suggested Photo Caption: Local volunteers step up to help refuge staff with sea turtle recovery

Photo/Figure Credits (do we have permission to print): FWS Photo

Suggested Photo Caption: Low and vulnerable, sea turtle nesting beaches are eroding rapidly at Cape Romain NWR. Sea turtle nest (right) with predator protection and marked with yellow PVC pipe

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