

# North Carolina Coastal Reserve & National Estuarine Research Reserve



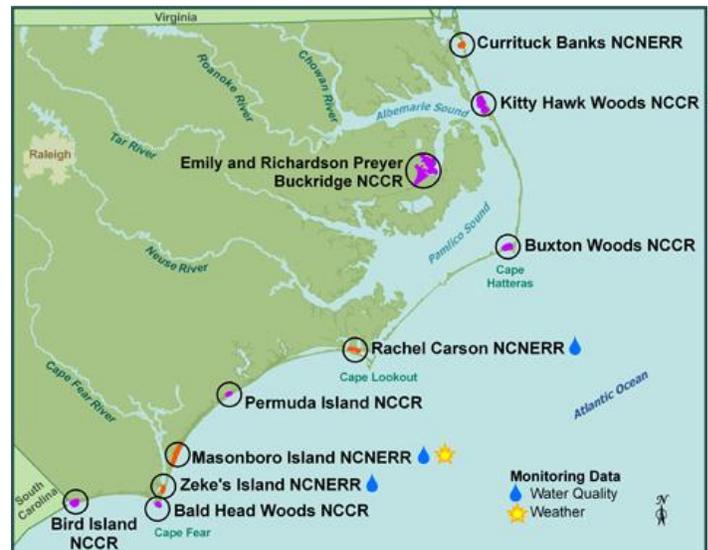
## Reserve Research Needs

**Purpose:** This document highlights current research needs for the ten properties that make up the North Carolina Coastal Reserve and National Estuarine Research Reserve. The list groups research needs by region: Northern Sites, Buckridge Coastal Reserve, Central Sites, and Southern Sites. While not exhaustive, this list highlights Reserve Site Managers' priority areas for research and monitoring. Questions regarding this list or inquiries about conducting research on these topics can be directed to Reserve Research Coordinator Dr. John Fear ([john.fear@ncdenr.gov](mailto:john.fear@ncdenr.gov)) or to the respective Site Manager listed below.

### *Northern Sites: Currituck Banks (CB), Kitty Hawk Woods (KHW), Buxton Woods (BW)*

Site Manager: Scott Crocker  
([scott.crocker@ncdenr.gov](mailto:scott.crocker@ncdenr.gov))

- Species richness survey of dune ponds and sedges (CB, KHW, BW)
- Groundwater table study focusing on level and salinity (CB, KHW, BW)
- Water quality monitoring (CB)
- Impact of non-native species on Reserve flora and fauna (CB, KHW, BW)
- Contaminant background study of sediments and surface water (KHW and BW)
- Survey of threatened and endangered species in Reserves (CB, KHW, BW)
- Analyze barrier island maritime forest spatial coverage through time (CB, KHW, BW)
- Habitat connectivity study between maritime forest and marsh (CB)
- Land-use and cover change analysis for Reserve watershed (CB, KHW, BW)
- Fire plan development (CB, KHW, BW)
- Benthic habitat mapping and species inventory (CB)
- Importance of Reserve habitats for bird nesting, foraging, and migration stopovers (CB, KHW, BW)
- Comparison of species and genetic diversity between maritime forests in Currituck Banks, Kitty Hawk Woods, and Buxton
- Phragmites monitoring (CB, KHW, BW)
- Barrier island habitat migration in response to storm events (CB)
- Marsh vegetation surveys focusing on species richness, elevation, and productivity (CB, KHW, BW)



North Carolina Coastal Reserve and National Estuarine Research Reserve locations

## ***Emily and Richardson Preyer Buckridge Coastal Reserve***

Site Manager: Woody Webster (woody.webster@ncdenr.gov)

- Competition analysis for Atlantic White Cedar hardwood
- Studies contributing to site hydrology restoration
- Conduct a new inventory of Atlantic White Cedar for comparison to previous studies
- Assess fish utilization of the canals in Buckridge
- Fauna inventories focusing on amphibians
- Phragmites monitoring
- Privet monitoring and species identification
- Assessment of the effectiveness/efficiency of Alligator Weed treatment in canals
- Compare success of Atlantic White Cedar across its spatial distribution
- Assessment of sea level rise and shoreline erosion and associated habitat impacts
- Species inventories using trail cameras at high-use animal trails
- Installation SETS to quantify subsidence

## ***Central Sites: Rachel Carson (RC) and Permuda Island (PI)***

Site Manager: Paula Gillikin (paula.gillikin@ncdenr.gov)

- Benthic habitat change mapping (RC, PI)
- Sea level rise impacts on Reserve marshes (RC)
- Oyster restoration and ecological studies (RC and PI)
- Investigation of the habitat value of the invasive French Tamarisk tree compared to natives (RC)
- Fecal source tracking from point and non-point sources along Taylor's Creek to assess impacts to Reserve (RC)
- Study visitor use impacts and perceptions, with a special emphasis on bird nesting (RC)
- Marine debris studies: sources, fates, impacts, and composition (RC)
- Factors affecting nesting success of American Oystercatchers (RC)
- Dung study of feral horses focusing on nutrient content, location, speed of decomposition, etc. (RC)
- Land change assessment due to erosion, accretion, and migration. Focus on potential effects on rare and protected species, particularly overwintering Piping plovers, nesting Wilson's plovers, and the significantly rare Crystal skipper butterfly (RC)
- Analyze shoreline erosion at Permuda Island and assess the feasibility of shoreline restoration and protection measures (PI)
- Flora and fauna inventories (RC and PI)
- Analyze influence of feral horses on speed of island habitat change (RC)
- Diamondback terrapin ecological studies (RC)

## ***Southern Sites: Masonboro Island (MI), Zeke's Island (ZI), Bald Head Island (BHI), Bird Island (BI)***

Site Manager: Hope Sutton (suttonh@uncw.edu)

- Factors impacting maritime forest regeneration, and changes to forest coverage through time (BHW)
- Marsh surveys (spatial coverage through time; responses to water quality, precipitation and water level; elevation; productivity; potential for restoration) (MI, ZI, BI)
- Oyster restoration and ecological studies (MI and ZI)

- Comprehensive floral and faunal inventory (BHW and BI)
- Hydrologic study for Zeke's Basin, focusing on the potential effects of breaching the rock wall (ZI)
- Dye study of tidal creek influence on Masonboro Island
- Phragmites monitoring (MI and ZI)
- Impact of Red Fox removal on native fauna presence and reproductive success (MI)
- Impacts of beach driving on vegetation community composition (ZI)
- Ecology of community secession on dredge spoil islands (MI)
- Evaluation of the impacts of recreational use on natural habitats and species (MI)
- Diamondback terrapin ecological studies and feasibility assessment of using citizen scientists to conduct population surveys (MI, ZI, BI)
- Barrier island habitat change and response to disturbance/storms (MI, BI)
- Complete benthic mapping for comparison to previous efforts (MI and ZI)
- Submerged aquatic vegetation restoration projects (MI)
- Groundwater studies of changes in salinity and extent of freshwater lens (MI and BHW)
- Contaminant baseline study focusing on heavy metals and industrial pollutants (ZI)
- Analyze sea turtle nesting success relative to beach renourishment (MI)
- Analyze impact of non-native species on Reserve flora and fauna, and determine success of abatement efforts (MI, ZI, BI)



The North Carolina National Estuarine Research Reserve is part of the North Carolina Coastal Reserve program, a cooperative collaboration between the North Carolina Division of Coastal Management and the National Oceanic and Atmospheric Administration



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