



Northeast Coastal and Barrier Network

Marsh Bird Resource Brief



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NPS Photo, Robin Baranowski

Colonial National Historical Park 2013 Status and Trends

In the spring of 2013, NCBN began implementing a long-term Marsh Bird Monitoring Program at Colonial National Historical Park. Because this was the first year of data collection, it is not yet possible to comment on population trends of marsh birds at the park. Park staff and volunteers from the local community monitored 12 points within the park. Each point was visited once a month in April, May, June, and July. A total of 66 species of birds were observed. The primary guild of birds targeted included rails and bitterns which are obligates of the tidal marsh, and are sensitive to changes within their breeding and foraging habitat. In addition, all other species of birds utilizing the marsh and the adjacent upland terrestrial border were identified.

The technique used for monitoring marsh birds consists of a point count survey followed by a call back sequence. This has proven to be a reliable method for surveying marsh bird species that are particularly secretive and difficult to detect. Monitoring begins at dawn. The first 5 minutes is a 'passive' count (silent) where the observer identifies any bird that they hear or see within three distance bands (0-50 meters, 50-100 meters, and ≥ 100 meters) around the survey point. The following 6 minutes is the 'broadcast sequence' (Black Rail, Least Bittern, Sora, Virginia Rail, Clapper Rail, American Bittern, and Common Gallinule) consisting of a 30 second call followed by a 30 second period of silence. The calls broadcast during this sequence are park specific, and are determined based on the species likely to be present in the park, species breeding ranges, and habitat availability.

Objectives

1. Determine the presence, distribution, and species composition of birds using tidal marsh habitats during the breeding season.
2. Estimate density and relative abundance of breeding tidal marsh birds.
3. Track trends in occupancy and relative abundance of breeding tidal marsh birds over time on a local and regional scale.
4. Generate tidal marsh bird data that provide valid inference for network and park-specific goals, while also being compatible with regional and national monitoring frameworks.
5. Document habitat type, vegetation, and wetland condition that influence the abundance or occupancy of marsh birds.

Importance

The National Parks located along the Northeast Region's coastline contain some of the last remaining tidal marsh habitat in the world. Not only are tidal marshes considered globally rare, but these habitats are home to a large number of vertebrate species, some of which occur only in tidal marshes, making them a priority for conservation and protection.

There are numerous threats to the overall health and stability of tidal marsh ecosystems including land development, nutrient loading, and tidal restrictions. In addition, scientists expect that climate change will have a significant negative impact on bird assemblages utilizing tidal marshes. Over the last century sea level has risen ~ 2 mm/year, and although effects vary locally, this change has altered marsh vegetation and caused marsh loss along the Atlantic Coast. Increased frequency and intensity of storm surges and tidal flooding is a well-documented determinant of successful reproduction in tidal marsh birds. This information suggests that small sea-level increases could push tidal marsh bird populations beyond their ecological tolerances, causing rapid declines in population.

Management Applications

- *Seek to improve our understanding of the relationship between tidal marsh breeding birds and the condition of the habitats on which they rely*
- *Correlate marsh bird data with concurrently gathered data on salt marsh condition (elevation, vegetation, nekton), landscape change, climate change, and park management activities*
- *Provide a measure of tidal marsh vitality*

Long-term Monitoring

The Network generated a Generalized Random Tessellation Stratified (GRTS) design for each individual park unit. The sampling frame for each park consists of all tidal marsh habitat as delineated in that park's most recent vegetation mapping report conducted by the NPS Vegetation Inventory Project. Once the potential sampling locations were generated, a minimum buffer of 400 meters around each point was imposed using GIS. Within each hexagon, all points with overlapping buffers were identified, and

the point falling lower in the sampling order assigned in the GRTS design was deleted. If two points from adjacent hexagons fell within 400 meters of each other, the point to be deleted was randomly selected. These points were ground-truthed to insure that they met the required criteria. Any points that were not in at least 50% marsh or were inaccessible were discarded. Monitoring will continue on an annual basis once a month during the months of April, May, June, and July, during the peak of the breeding season.

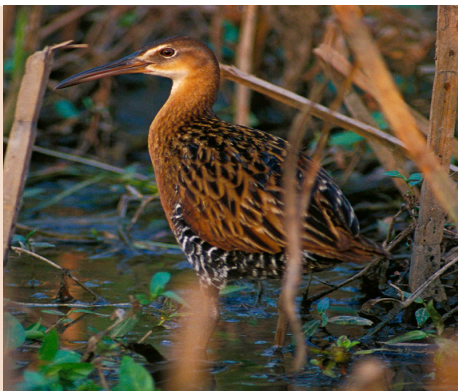
Species Observed in 2013

Acadian Flycatcher	Downy Woodpecker	Marsh Wren	Summer Tanager
American Crow	Eastern Kingbird	Mourning Dove	Swamp Sparrow
American Goldfinch	Eastern Phoebe	Mute Swan	Tufted Titmouse
American Redstart	Eastern Towhee	Northern Cardinal	Turkey Vulture
American Robin	Eastern Wood Pewee	Osprey	Veery
Bald Eagle	Fish Crow	Ovenbird	Virginia Rail
Barn Swallow	Forster's Tern	Pileated Woodpecker	White-breasted Nuthatch
Black Vulture	Great Blue Heron	Pine Warbler	White-eyed Vireo
Blue Jay	Great Egret	Purple Martin	White-throated Sparrow
Blue-grey Gnatcatcher	Great-crested Flycatcher	Red-bellied Woodpecker	Wood Duck
Brown-headed Nuthatch	Greater Yellow-legs	Red-eyed Vireo	Yellow Warbler
Canada Goose	Hairy Woodpecker	Red-headed Woodpecker	Yellow-bellied Sapsucker
Carolina Chickadee	Herring Gull	Red-winged Blackbird	Yellow-crowned Night Heron
Carolina Wren	House Finch	Ring-necked Duck	Yellow-shafted Flicker
Clapper Rail	King Rail	Royal Tern	Yellow-throated Warbler
Common Tern	Laughing Gull	Saltmarsh Sharp-tailed Sparrow	
Common Yellowthroat	Lesser Yellow-legs	Song Sparrow	

A Final Note

It is important to note that the information presented here is preliminary. It will be several years before we are able to report on trends in marsh bird communities in our parks.

We would like to thank the staff at COLO for their generous use of kayaks and the park staff and volunteers who were up at dawn conducting surveys.



More Information

Northeast Coastal and Barrier Network
<http://science.nature.nps.gov/im/units/ncbn/>

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Parks to be monitored:

Cape Cod
NS-Assateague Island NS-Fire Island NS-
Colonial NHP-Gateway NRA