



Coastal Breeding Bird Progress Report for Boston Harbor Islands.



The Boston Harbor Islands include 34 islands and peninsulas situated within the Greater Boston shoreline, and provide critical near-shore coastal bird nesting habitat. The National Park Service, with aid from Mass Audubon, other partners, and community volunteers, has been conducting long-term monitoring of coastal breeding birds there since 2007. Monitoring bird species of high conservation status is crucial to understanding their nesting and foraging behavior in the harbor. Long-term monitoring also seeks to improve understanding coastal bird conservation efforts by the effects that habitat changes and management actions (such as control of invasive plants or predators) have on their nesting and abundance. Continued monitoring is essential given that rare and endangered species are now re-colonizing the harbor, and to help keep track of how land use and climate change are affecting coastal bird populations. For the first time, a published study of long-term data (2007 to 2019) analyzed trends for gulls, Double-crested Cormorants, Common Eiders, and 4 species of wading birds. Below is a brief summary of results. For a much more in depth analyses, please see the [Northeastern Naturalist Special Issue](#) highlighting the Boston Harbor coastal bird monitoring program.



Double-crested Cormorants

From 2007-2019, Double-crested Cormorants were the most frequently observed species in the outer islands, averaging 1091 nests per year. While the most numerous, they are also the most detectable as cormorants primarily nest on exposed rock easily visible to boat-based observers. Monitoring has observed no change in Double-crested Cormorant nesting in the Islands since 2007, even though

nesting fluctuated among islands. Cormorants are very flexible in habitat selection, and movements away from areas with greater storm exposure could be contributing to observed nesting changes in the harbor, including an increase in tree and ground-nesting cormorants on Sheep and Sarah Islands in the inner harbor where they compete for space with wading birds.

Gulls

On average, 340 Herring Gull and 88 Great Black-backed Gull nesting birds were observed per year from 2007-2019 in the outer islands. Monitoring data indicates both species are stable. This stands in contrast to reports of decline in northern portions of their ranges, though those trends were examined over longer time-frames.

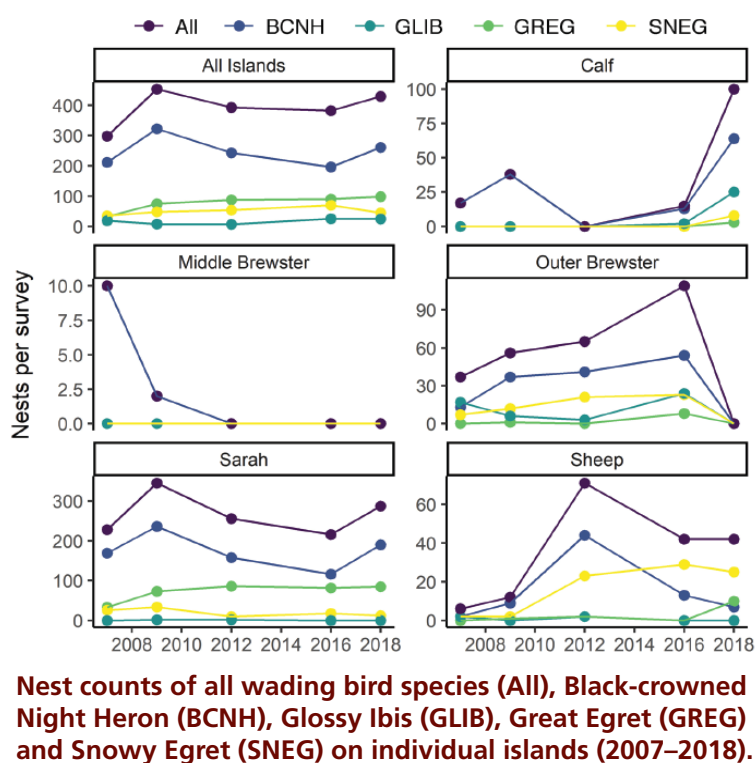
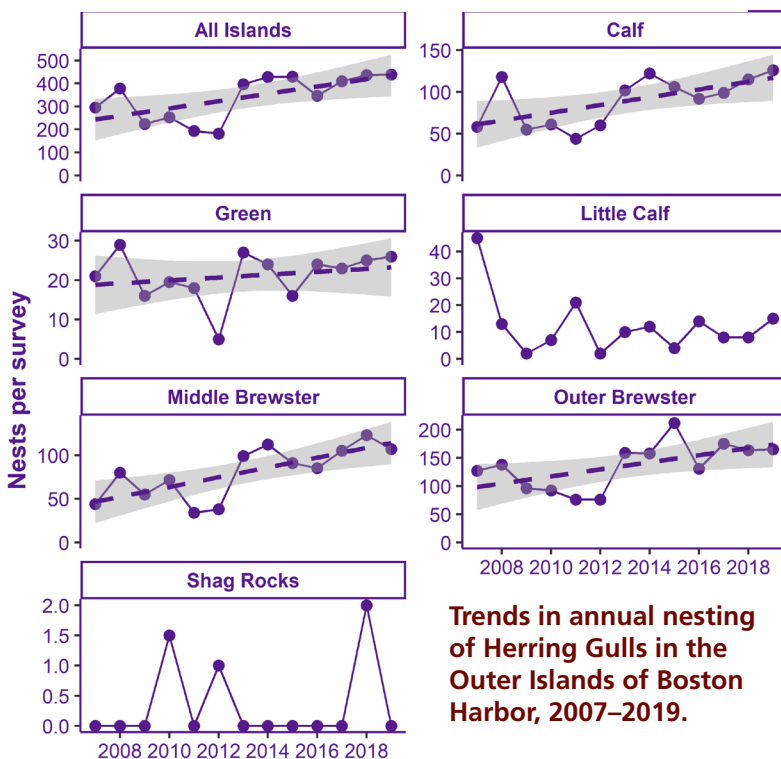
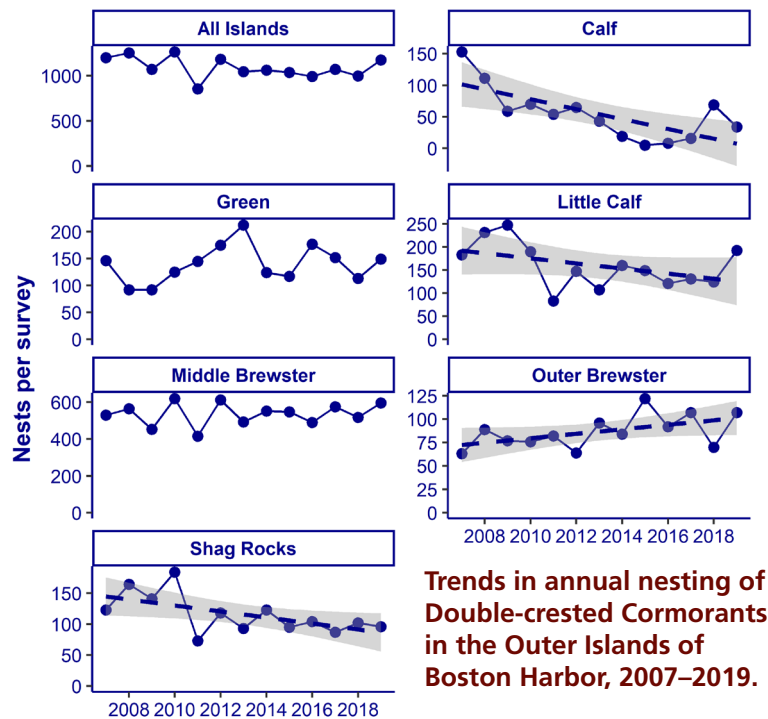
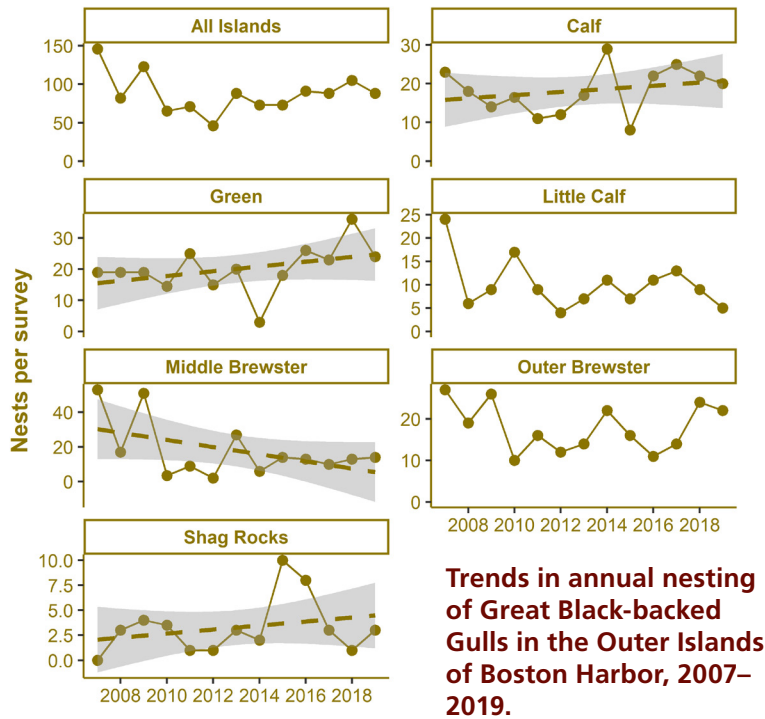
Wading Birds

Five surveys between 2007-2018 monitored nesting by Great Egret, Snowy Egret, Black-crowned Night Heron, and Glossy Ibis. The majority of nesting by all wading bird species occurred on Sarah Island, followed by Outer Brewster, Sheep, and Calf islands. On Sarah, nests were in clumps of trees and shrubs. On tiny Sheep, the colony site was in a tangled thicket of primarily invasive shrubs and vines in the very center of the island. On both Calf and Outer Brewster, the colony sites were in depressions with sheltering topography and particularly dense vegetation. On Middle Brewster, the few Black-crowned Night Heron

nests observed in early years were in a Siberian Elm grove. Unlike the other wading birds, Glossy Ibis nested primarily on Outer Brewster until colony abandonment in 2018, but activity increased on Calf the same year. Glossy Ibis nests have been detected on

Black-crowned Night Heron





Sarah and Sheep, but not in every survey. In a separate 1994 study, 550 Black-crowned Night Heron nests and 148 Snowy Egret nests were counted on Sarah Island, compared to 190 and 12 nests, respectively, in 2018. Though they are declining range-wide over a broader time period, both appear to have maintained fairly stable nesting populations in the park in recent years. Monitoring data show an increase in the population of Great Egrets nesting in the park, mirroring a region-wide trend. While the overall total number of wading birds nesting in the park appears fairly stable, movement between colonies was evident, driving home the

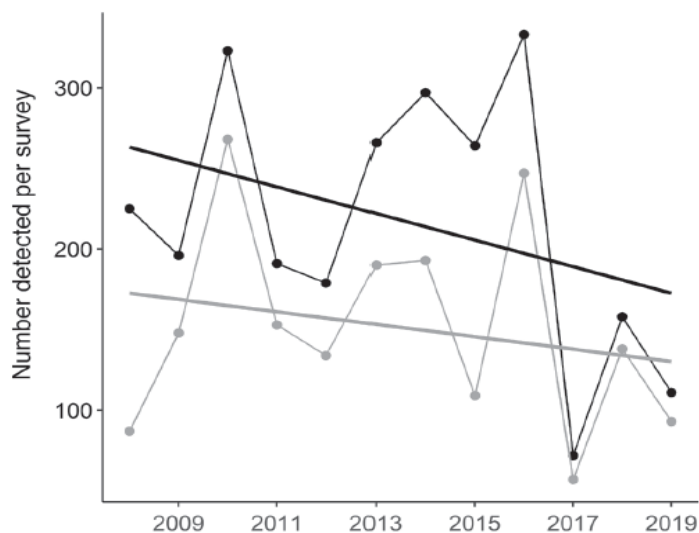
importance of managing multiple colony sites even in years when they are not used. For example, Middle Brewster Island hosted a significant wading bird colony in 1994 (425 nests), and still has seemingly appropriate habitat available, though it was little used for nesting during this monitoring period. Predation, disturbance, and changes in vegetation can all impact the suitability of nesting habitat. As noted earlier, Double-crested Cormorant nesting on Sarah and Sheep islands has increased over time. This may impact the habitat suitability for wading birds in the future as Cormorants' negative impact on vegetation can be substantial.

Habitat availability on Sheep Island is very limited, elevation is minimal, and the island is already subject to storm inundation, leaving the future of this location as a viable colony site in question. The cause of colony abandonment on Outer Brewster is unknown, but predation seems likely. The island has limited human traffic, and habitat was largely unchanged throughout the study. Anecdotally, NETN observers did see some waders nesting on Calf in 2020, and on Calf and Outer Brewster in 2021, but nest count numbers were not available as island access was not possible.

Common Eider

Nesting Common Eiders were highest on Calf (avg. of 99 nests per year) followed by Outer Brewster (75), and Middle Brewster (42). They also nested on Gallops Island in 2012, 2015 and 2018. Since boat-based crèche (floating groups of duckling and adult Eiders) surveys began in 2008, observers have detected on average a maximum of 151 tending females and 218 ducklings. As expected, fluctuations in maximum count of females tending ducklings closely mirrored the maximum number of ducklings each season. It is concerning that counts of females and ducklings have declined since creche monitoring began in 2008.

Though sample sizes were limited, nest-count trends indicate the breeding Eider population in the islands is increasing slightly. Counts of females during June and the first half of July have been stable over time. Common Eider numbers are



Fluctuations in adult female Common Eider tending ducklings in the Outer Islands of Boston Harbor closely mirrored the maximum number of ducklings each season (2007–2019).



Small group of Common Eider. NPS photo.

believed to be declining in the southern portion of their North American range, and Boston Harbor birds comprised a substantial 41% of the total Eider nesting in Massachusetts in 2018 ([Heusmann and Trocki 2020](#)), making it an important area of their southern range.

A number of factors, including annual harvest (Rothe et al. 2015), are at play in determining the stability and future of the North Atlantic population of Common Eider. During the monitoring period, a unique viral pathogen (Wellfleet Bay virus) was discovered, and the epicenter of exposure appears to be Massachusetts. Irregular outbreaks of avian cholera can also occur with devastating consequences, though it has yet to be detected in Boston Harbor.

Low rates of duckling survival also greatly limits Common Eider populations, a trend that would appear to be supported by NETN's crèche-survey data to date. Common Eider ducklings are at great risk from gull predation and the availability of food during rearing. Changes in the park's coastal ecosystem via effects from climate change, sea-level rise, and invasive species are likely to impact all these important resources.

Conclusions

A sustainable breeding community of coastal birds needs adequate nesting and nearby foraging habitat. Even though the Boston Harbor colonies are surrounded by a highly urbanized metro area, the Islands continue to provide critical near-shore coastal bird nesting habitat. With support from partners and volunteers, the National Park Service has learned about nesting patterns that are useful for informing future management of coastal bird nesting in the park. Long-term monitoring will allow for continued assessment of nesting population trends and improve a harbor-wide conservation. With these tools in hand, the effects of climate change, land use, and management actions on coastal breeding birds can be better evaluated.