

CHANGES IN SHOREBIRD BIODIVERSITY & ANTHROPOGENIC DISTURBANCE AT NORTH BRIGANTINE NATURAL AREA

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ABSTRACT

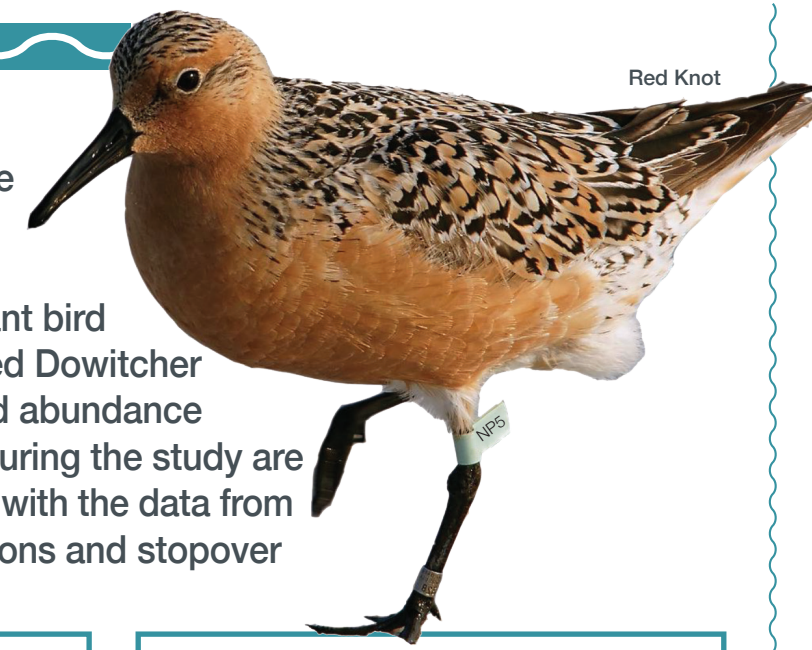
Across the region and throughout the world shorebird populations are in decline. In North America southbound migration begins in mid July and continues into December. While spring migration in the northeast brings focus to one critical stopover site - the Delaware Bayshores, during the summer and fall, shorebirds can be found stopping over at coastal sites all along the eastern seaboard. Time spent at these locations is needed for rest and feeding as the remaining part of their annual journey can take them as far as Tierra del Fuego in South America. In New Jersey there are a few important sites and among them is North Brigantine Natural Area in Atlantic County. With several shorebird species in decline, the Red Knot (*Calidris canutus rufa*) is a major conservation focus. Scientists require data from stopover sites like North Brigantine to help fill in the details of their population status.

Additionally, conservation biologists have concerns regarding the birds' food sources and the quality of habitat. As such, data is needed on human use and the potential disturbance that may occur as a result of human activity. Within an ecosystem, each organism is interdependent and relies on other species for resources. The hemispheric migration of these birds has them connected to ecosystems across the Americas. The dramatic declines in populations in recent decades presents the very real possibility that some species may be lost if measures are not taken to protect them. The conservation efforts of trained community scientists in providing data to biologists and conservation scientists are an increasingly important part of the strategy to secure the future of shorebirds.

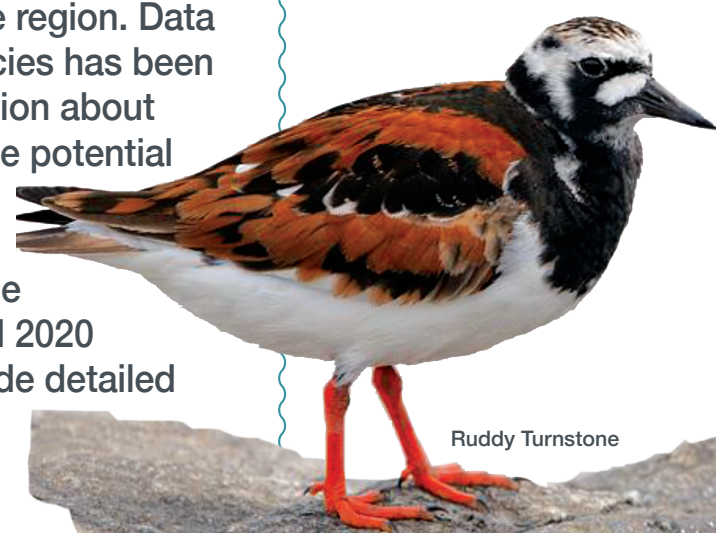
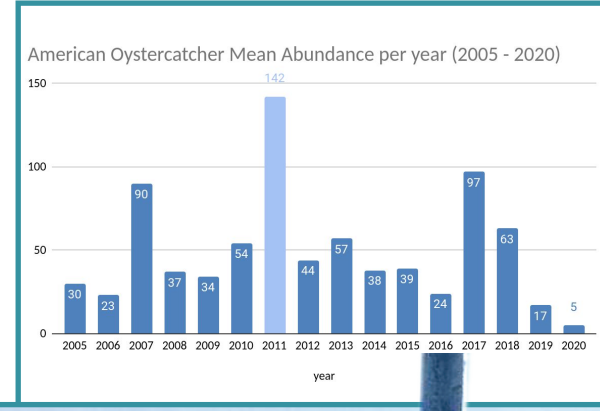
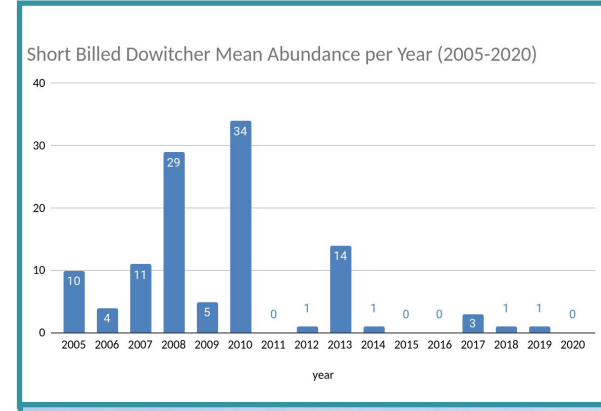
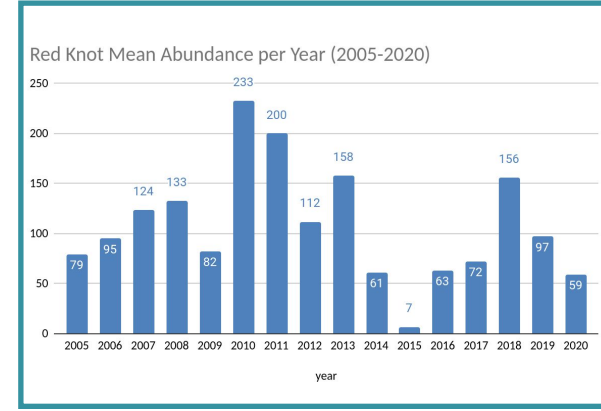
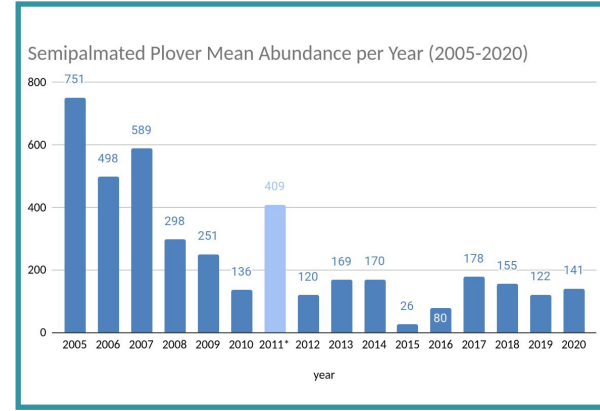
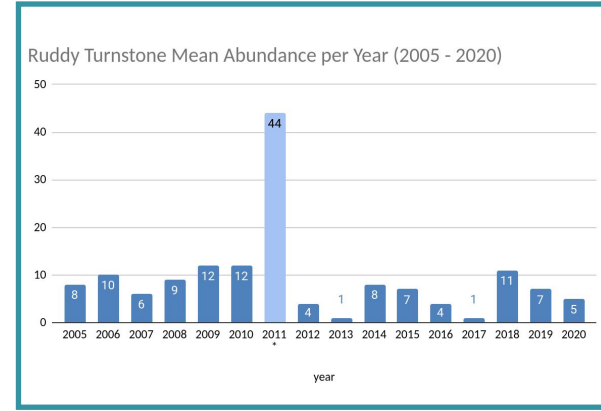
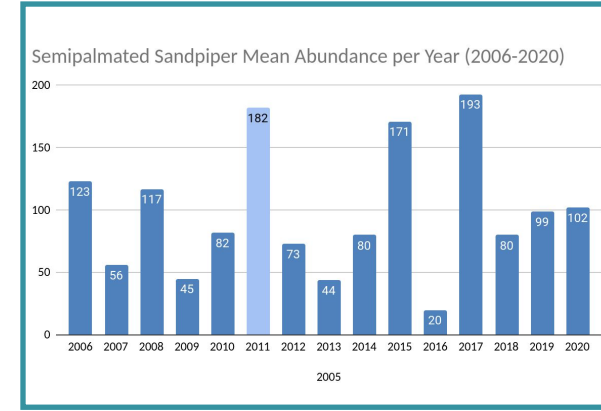
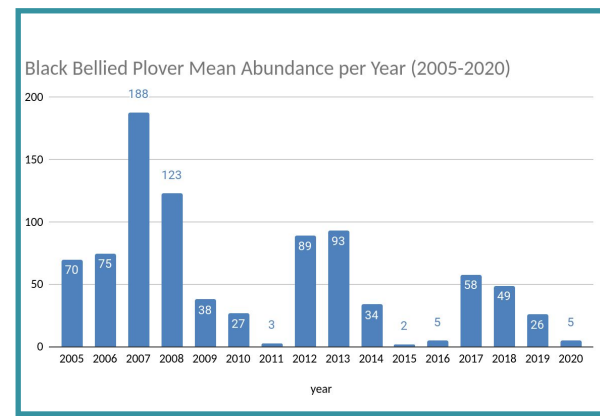
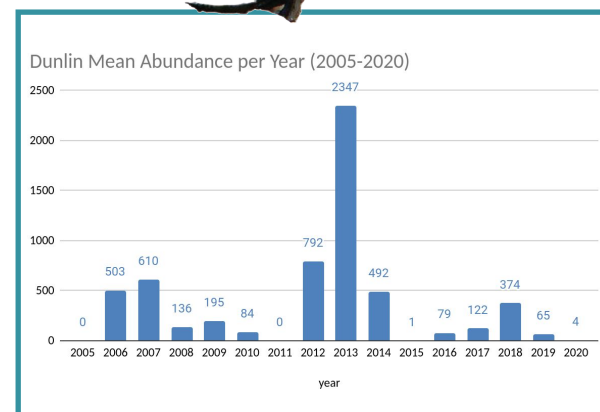
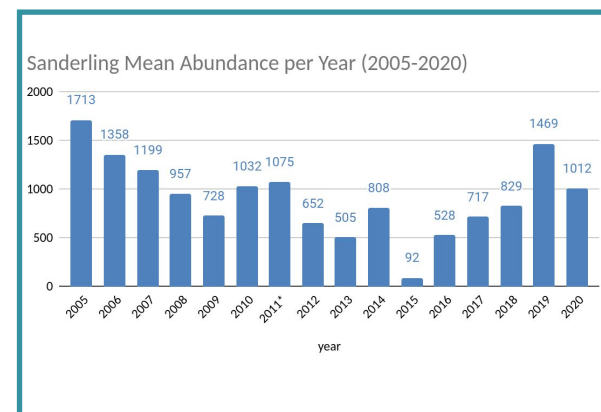
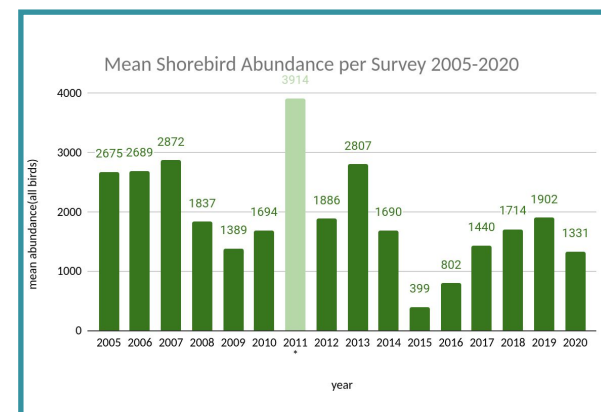
For the past 16 years students of the environmental science program at Haddonfield Memorial High School have collected shorebird data at North Brigantine Natural Area. With the established importance of North Brigantine beach as a stopover site, data collected on species richness, abundance and human disturbance has been valuable to the scientific community and represents one of the most extensive efforts to document shorebirds on fall migration throughout the region. Data on more several shorebird species has been collected and detailed information about various human activities and the potential impact on birds established. Our team has been directly involved in collecting data at the study sites during the 2019 and 2020 season and our efforts to provide detailed display and analysis from the sixteen years of the study are provided in this presentation.

ABUNDANCE AND RICHNESS OF NINE SHOREBIRD SPECIES

Data on nine species are included in this presentation. The abundance and timing of their presence on North Brigantine Beach is highly variable among the species. The Sanderling (*Calidris alba*), has been documented on almost every survey and represents the most abundant bird counted during the entirety of the study. Other species, the Short Billed Dowitcher (*Limnodromus griseus*) for example, have only been present in limited abundance during our surveys. The changes in abundance and overall diversity during the study are presented here. A useful set of data, this information when combined with the data from other stopover sites, provides a critical window into shorebird populations and stopover site selection during migration.



Red Knot

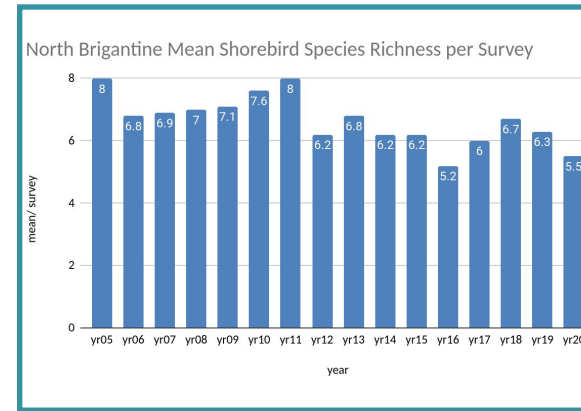
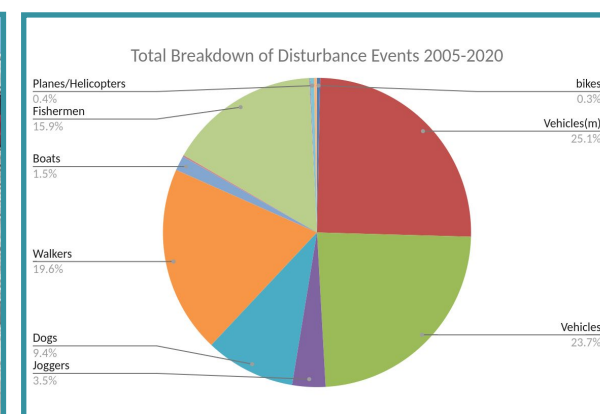
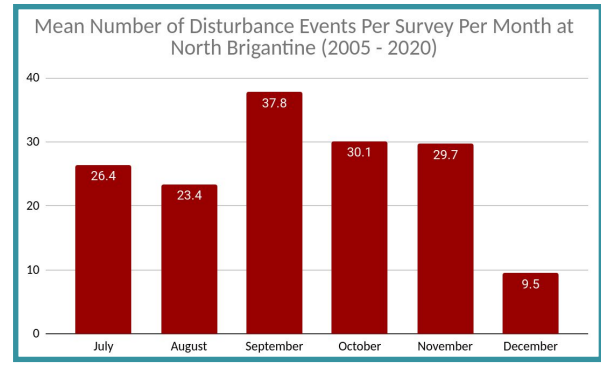


Ruddy Turnstone



ANTHROPOGENIC DISTURBANCE AT NORTH BRIGANTINE

As time spent at a migratory stopover site is often relatively brief, it is essential that shorebirds successfully secure food sources and have the opportunity to rest with minimal disturbance. Permitted human uses vary considerably from site to site. While the northern half of North Brigantine Natural Area is closed to vehicles from April through mid September, throughout much of the fall vehicles represent the most problematic disturbance to feeding or roosting shorebirds. Potential disturbance events are diverse - including driving, fishing, walking (with and without dogs), biking and, in recent years, recreational drone use. Potential disturbance events and observable impact from these activities were documented during the study. Impact from disturbance can include reduced access to prime feeding locations, flushing of birds while feeding or roosting and, in some cases, leaving the site entirely. The frequency and variability of potential disturbance events are displayed to reveal which activities are most problematic and during which months.



CONSERVATION PRIORITIES AT NORTH BRIGANTINE

North Brigantine Natural Area is among the most important stopover sites in the Northeast. Documenting both bird abundance and species richness, along with disturbance data, provides a detailed view of the trends in shorebird presence and stressors that can limit the activity and success of birds at this site. The presence of certain species, and assemblages of species, varies from July to December. Of the species present,

there is also varied conservation status. Access to both shorebird species richness and abundance data, in combination with data on human use of the beach, will allow for identifying the most critical concerns at North Brigantine during fall migration. Additionally, recommendations for conservation measures can offer actions that may alleviate stressors to shorebirds and improve the quality of habitat for species using North Brigantine.

KEY CONSERVATION STRATEGIES

- Increased Education Efforts via Signage and Docents on the Beach
- Extended Closure of Sections of North Brigantine to Vehicles during Fall Migration
- Controlled Disturbance Studies to Determine the Impacts of Various Disturbance Events
- Coordinated Regional Studies of Shorebird Diversity at North Brigantine and Other Stopover Sites
- Increased Enforcement of Existing Conservation Laws at North Brigantine

