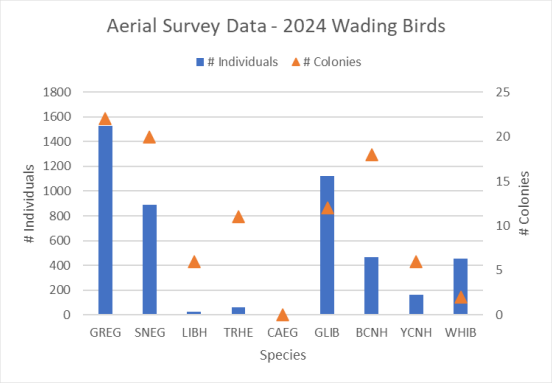
***2024 Colonial Waterbird Aerial Survey Summary Report***
***Prepared by**: Christina Davis, Principal Zoologist*

Background

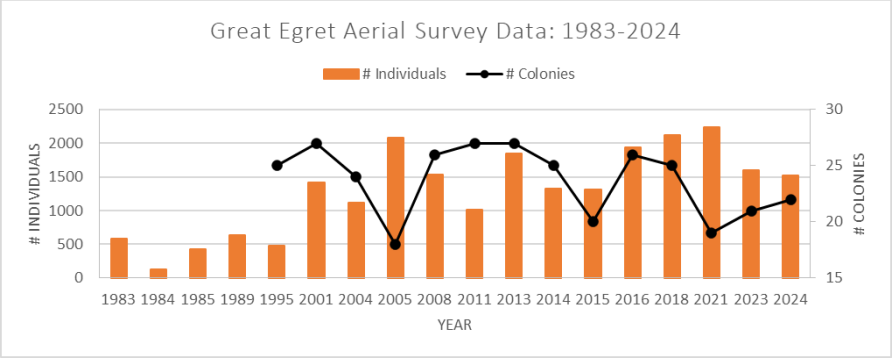
- An aerial survey of the marsh islands from Mantoloking to Cape May was conducted in 2024. Surveys of this nature data back to 1983 (with limited data back to 1976) and provide a long-term dataset for these species. A ground survey of Yellow-crowned Night-herons was also initiated. Ground surveys are important to augment aerial data and capture nesting areas that are not in the survey area of the aerials.

Key Findings:

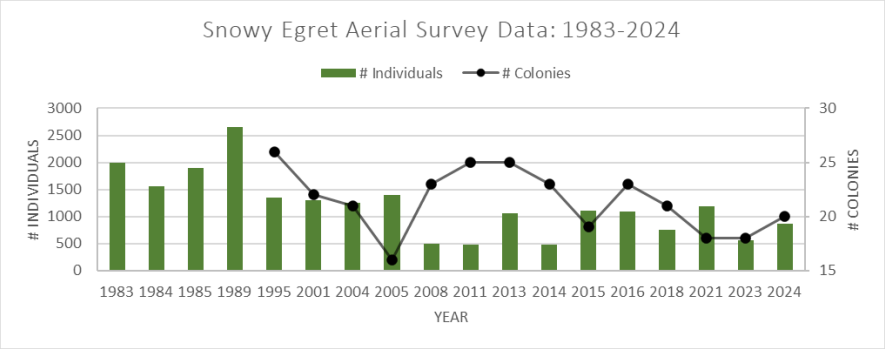
- 4,885 individual wading birds were counted on the 2024 aerial survey, located in 27 colonies. Of the 4,885, 1,526 (31.2%) were Great Egrets, 868 (17.8%) were Snowy Egrets, 1122 (23%) were Glossy Ibis, 468 (9.6%) were Black-crowned Night-herons, 161 (3.3%) Yellow-crowned Night-herons, 29 (0.6%) Little Blue Herons, 61 (1.2%) Tricolored Herons, 0 (0%) Cattle Egrets, and 455 (9.3%) White Ibis.



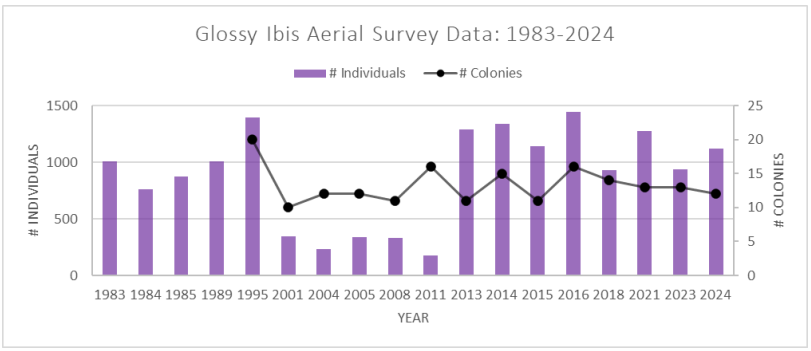

- There were 1,526 individual Great Egrets observed in 22 colonies. Due to changes in methodology, please note that colony data is not available prior to 1995.



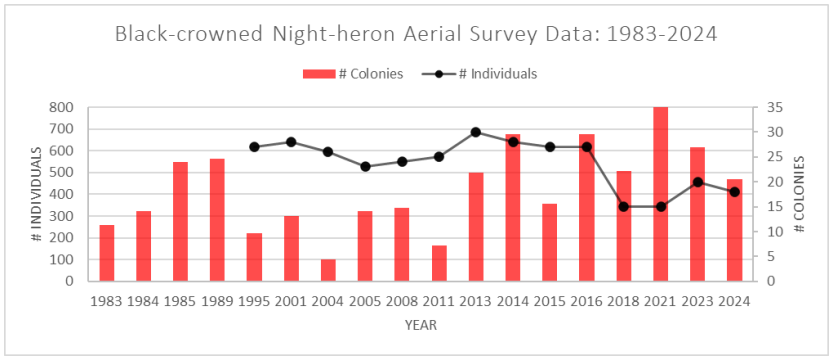

- There were 868 individual Snowy Egrets observed in 20 colonies. Due to changes in methodology, please note that colony data is not available prior to 1995.



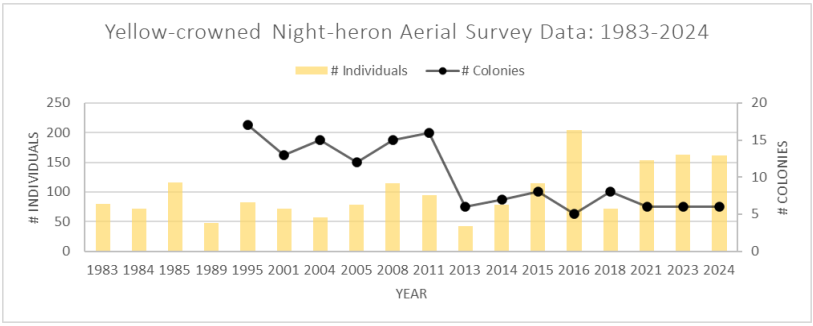

- There were 1122 individual Glossy Ibis observed in 12 colonies. Due to changes in methodology, please note that colony data is not available prior to 1995.



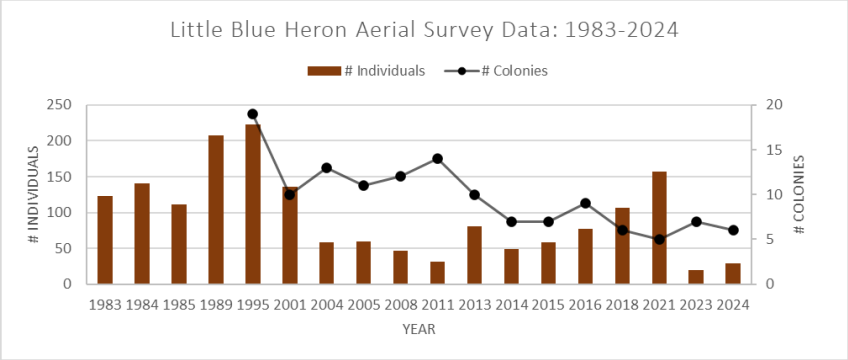

- There were 468 individual Black-crowned Night-herons observed in 18 colonies. Due to changes in methodology, please note that colony data is not available prior to 1995.



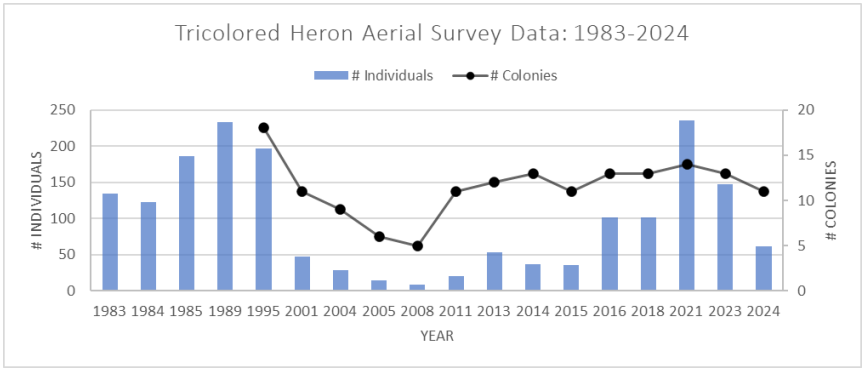

- There were 161 individual Yellow-crowned Night-herons observed in 6 colonies. Due to changes in methodology, please note that colony data is not available prior to 1995.



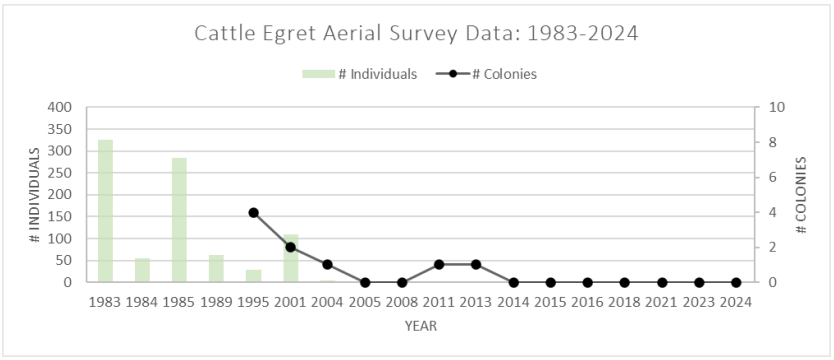
- There were 29 individual Little Blue Herons observed in 6 colonies. Due to changes in methodology, please note that colony data is not available prior to 1995.



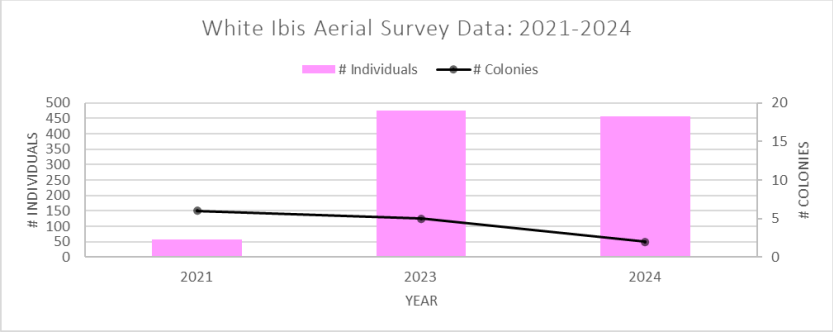

- There were 61 individual Tricolored Herons observed in 11 colonies. Due to changes in methodology, please note that colony data is not available prior to 1995.



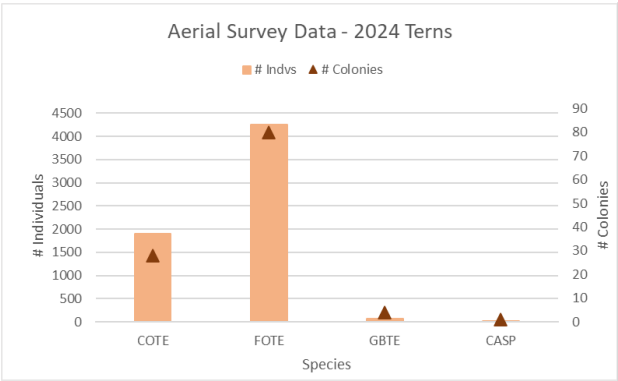

- There were zero Cattle Egrets observed in zero colonies. Due to changes in methodology, please note that colony data is not available prior to 1995.

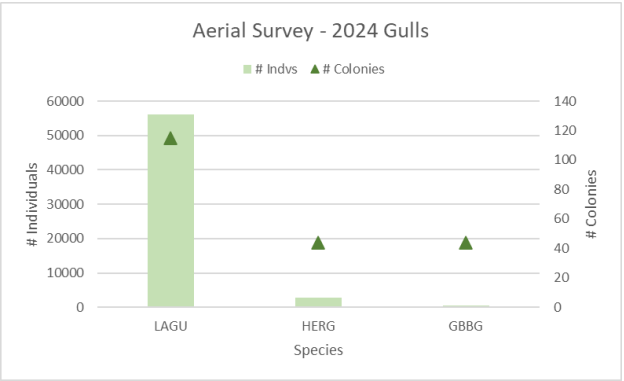



- There were 455 White Ibis observed in five colonies. This species was first documented nesting in New Jersey in 2020 (in single digits), but there was not an aerial survey to capture them that year.




- Although the focus of this objective is long-legged colonial waterbirds, surveyors also took the opportunity to census coastal marsh-nesting tern and gull species during the aerial survey. Surveyors counted 1,895 Common Terns in 28 colonies, 4,247 Forster's Terns in 80 colonies, 77 Gull-billed Terns in 4 colonies and 6 Caspian Terns in 1 colony. 56,644 Laughing Gulls in 116 colonies, 2,706 Herring Gulls in 44 colonies and 599 Great Black-backed Gulls in 44 colonies were also tallied.




- The continuation of the active colony of Double-crested Cormorants (which both compete with wading birds for nesting space and destroy habitat substrate with their caustic droppings) at one of the longest active colonies in the state, Gull Island (near Stone Harbor) continued to be a source of concern for state biologists. There are three sub-colonies on this site and many wading birds have shifted to using the northernmost colony, where the influence of the cormorants on the nesting substrate has been the least severe.
- The 2024 ground count for Yellow-crowned Night-herons was conducted as resources allowed; it was not a comprehensive survey of all known inland night-heron nesting areas but there was enough data collected to supplement data from the aerial surveys and add to the understanding and distribution of night-herons statewide. Twenty-seven (27) sites were surveyed and 19 of those were active with at least one nesting pair present. A total of 47 adults were observed and at least 84 chicks fledged. This fledge rate appears to be at least partially attributable to the relatively calm weather experienced during 2024 (strong storms and gusty winds often blow chicks out of nests and it is difficult for adults to continue to tend to them as the nests are too high for the chicks to climb back in).

Survey Discussion and Conclusion:

- The aerial survey of the Atlantic coastal marshes by helicopter continued to be the most efficient way to survey the large area in a short period of time. Downsides include that it generally represents a snapshot of the season and can only be considered an inventory count and that dark-plumaged bird numbers are likely underestimated since they blend into the surrounding vegetation so well (Kushlan 2011).
- The 2024 survey was held in conjunction with a larger Atlantic coast endeavor to census wading birds and other coastal nesting species. Biologists collected data that will be submitted to the effort being led by the Atlantic Flyway Council's Nongame Migratory Technical Section – Waterbirds Committee.
- A number of species populations appeared higher than in 2023, although it is difficult to parse out true declines versus the challenges that come with data from snapshot surveys. Some of this "increase" may also be contributed to a relatively calm spring season, with fewer flood events and storms than in recent years. This may have led to more birds actively nesting during the surveys, and not between nesting attempts or

deserting nesting for the season. It might also be that birds were more willing to flush this year than in the past few years, that there is immigration from nearby sites, and/or that there are some increases due to birds that hatched in NJ coming back to breed. It is not possible to know at this time, but it was encouraging to not observe further "declines" for many species, including for gulls and terns.

- The snapshot technique is useful to show occupancy and distribution, which will become increasingly important as sea level rise and subsidence continue to change the coastal landscape. In 2013, there were 43 occupied colonies (defined as one or more pairs nesting) and in 2024 there were 27. There has been a gradual decline in the number of colonies (with some variability) and it appears from visual examination of the habitat that this is at least partially due to erosion/increase of flooding at and in nesting areas. A long-term trend of eroding and disappearing islands is noticeable, especially in Barnegat Bay and around Atlantic City. However, there was continued evidence of new colonies being utilized, as well as non-traditional locations being utilized, so perhaps these are signs of adaptation as traditional colonies become less suitable. For example, the complex of islands that makes up the nesting colonies in the Great Egg Harbor Bay just south of Route 52 were once dominated by the marsh shrub-shrub on Cowpens Island. As that became less suitable, many birds shifted to the trees/shrubs of the Ocean City Welcome Center colony. As that site has filled, we are now seeing more use of the trees on Cowpens Island by multiple species, where previously this area was utilized primarily by night-herons.
- White Ibis, for the first time, seemed to stabilize in numbers. They were first confirmed as a breeding wading bird in NJ in 2020 with three pairs in one colony; in 2021 there were 56 individuals in six colonies; in 2023 (no aerial survey in 2022) there were 475 individuals in 5 colonies; in 2024 there were 455 individuals detected in two colonies. It is not yet clear if this species is reaching an equilibrium in New Jersey or if it is a lull between when the large number of juveniles produced in 2023 mature into breeding adults (for many, this will be 2025).
- The cormorants at wading bird colonies are an issue because the caustic defecation causes the nesting trees and shrubs to die, rendering them unusable by all species in a matter of years. Somewhat alarmingly, in 2024 a significant number of cormorants were observed nesting at a second important wading bird colony (South Channel – South, in addition to Gull Island – Stone Harbor).
- While the ground counts were not comprehensive to all known non-marsh colonies in the state, the number of birds tracked for it underlines the importance of these birds, both to the overall population numbers as well as to understanding where the birds will transition to if/when the marsh colonies get too flooded to support them.
- Determining the best method to survey this species continues to present a challenge. Although aerial surveys are the most efficient method to survey the colonies, as well producing a dataset with the least amount of disturbance/destruction (ground perimeter counts are not as reliable and walk-through counts impossible due to disturbance to nests and nesting substrate) necessary to collect it, the dataset still does not produce data that can be converted into population estimates. Aerial surveys are also expensive, but the Robinson 44 aircraft (first used in 2021) does provide a more financially feasible survey option (versus the Bell Jet Ranger previously utilized).

Recommendations:

- Continue the aerial survey effort until such time that a superior method is devised.
- Consider experimenting with taking photographs of the colonies during the aerial surveys to determine if can detect more birds when analyzing a static image post-flight.
- Continue to investigate alternative survey methods to the aerial survey, including the practicality of using drones. At this point, nebulous regulations for flying aircraft and concerns for the safety of the birds are leading ENSP to proceed cautiously but as protocols are developed, this may become a viable option.
- Examine the variables that may be impacting the future status of wading birds including 1) investigating the role eroded/flooded marshes are having in site selection and function and 2) better understanding the role that abandoned dredge sites have had/are having on site selection (and managing them in a way that benefits the habitat if they are found to play a key role in what is left for nesting birds).
- Continue to conduct ground surveys, as possible, and continue to investigate data analysis and habitat modification opportunities. Ground surveys should continue to include non-marsh island sites to track

whether any species (particularly the night-herons) are moving off the marsh islands as a response to sea-level rise and fewer nesting opportunities in the bays.

- Support research into the burgeoning White Ibis population to: 1. understand why they were able to colonize NJ and increase in numbers while other wading bird populations appear to be declining (especially compared to historic highs) and 2. study natal fidelity to understand where chicks that fledge in NJ breed at as adults.
- Attend regional waterbird meetings to create partnerships with other states to find solutions to declining populations. These meetings are critical to establishing and maintaining cooperative efforts and to the continued exchange of information.
- Continue to incorporate breeding data into the Landscape Project and NJ DEP's Biotics database.

Kushlan J. A. 2011. Heron count protocols: inventory, census, and monitoring of herons. Heron Conservation. www.HeronConservation.org Accessed 2 October 2018..