



2025 BARN OWL NEST BOX MONITORING PROGRAM REPORT



Prepared by: Autumn Heil and Jordan Brown

BACKGROUND

Barn Owls are a widespread species of owl, found on all continents besides Antarctica. To better represent their genetic variation and geographic distribution, this species was reclassified in 2024 into three distinct subspecies. Barn Owls in North and South America are now American Barn Owls (*Tyto furcata*), whereas Europe, Africa, and West Asia have Western Barn Owls (*Tyto alba*), and South and Southeast Asia and Australasia have Eastern Barn Owls (*Tyto javanica*).



Barn Owl in Flight Photo by: Steve Licata

American Barn Owls (hereafter, Barn Owls) are a nocturnal, medium-sized, whitish owl with a cinnamon-colored head, back, and upper-wings. They have a distinct heart-shaped face featuring dark eyes and are lacking ear tufts. These owls utilize a variety of semi-open habitats to hunt such as farmland, fields, meadows, and marshes, often with margins of trees and hedgerows to perch. Barn Owls use their incredible sense of hearing, low-light vision, and silent flight to hunt small



Chicks in nestbox Photo by: Autumn Heil

rodents such as voles, shrews, mice, and rats. They may also occasionally hunt bats, small birds, and frogs. In one nesting season, a breeding pair can catch more than 3,000 rodents, making the Barn Owl an excellent source of pest control. This is especially useful to farmers by reducing crop damage and increasing yield, thus limiting the need for harmful, chemical rodenticides.

As their name suggests, Barn Owls often nest in man-made structures like barn lofts, silos, deer-stands, and abandoned buildings, as well as natural cavities in trees and cliffs. Unlike other birds who create nests with gathered material, Barn Owls use their regurgitated pellets as a soft carpet to lay their eggs. They are also unique in that they can nest multiple times a year. An average clutch size for a Barn Owl consists of three to eight eggs and takes approximately 32 days to hatch. Chicks fledge (take their first flight) from the nest at 10 to 13 weeks old to begin hunting on their own.

POPULATION STATUS

While American Barn Owls are listed globally at a G5 “secure” ranking, their Subnational Conservation Status Rank (“S-rank”) is “S2” or “imperiled”. In Delaware, Barn Owls are currently designated a Tier 2 Species of Greatest Conservation Need (SGCN) in the 2025-2035 Delaware

¹To read more about Delaware’s State Wildlife Action Plan, please visit our website: <https://dnrec.alpha.delaware.gov/fish-wildlife/conservation/wildlife-action-plan/>



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Wildlife Action Plan¹, meaning they are of moderate conservation concern. Threats to Barn Owl populations include, but are not limited to, the intensification of agricultural practices, the conversion of agricultural land to urban or suburban land use, secondary poisoning from rodenticide use, vehicle collisions, and severe weather conditions that affect prey availability.

Since 1996, the DNREC Division of Fish & Wildlife (DFW) has installed and monitored Barn Owl nest boxes annually, collecting valuable insight into the breeding success, life span, dispersal, and physical characteristics of both adult and young owls through processing, banding, and recapturing. This data continues to contribute to a long-term dataset and has become part of regional research of this species. The 2025 season results can be found on the next page.

MONITORING PROTOCOL

DFW biologists visit nest boxes in March through July to survey for spring nesting and September through December for fall nesting. During these visits, biologists check the boxes for adult owls who may be roosting or incubating, for eggs and chicks, and for other indicators an owl may be utilizing the box such as the presence of pellets or stashed food. Nest boxes that are deemed active, with adult owls, eggs, or chicks, were scheduled for a second visit to band adults with a USGS band, check for egg hatching, or to band chicks at the appropriate age. At the second visit, adult Barn Owls are opportunistically captured to be weighed, measured, and banded, as well as chicks who are over three weeks old. Chicks and new, unbanded adults are fitted with a uniquely numbered, federal USGS aluminum band; a critically important method of identifying individual birds when recaptured. Measurements recorded include the bird's weight, flattened wing length (curve of the wing to the end of the longest primary feather), the length of the culmen (exposed upper part of the beak), hallux (the first toe on a bird's foot that faces backward), and tarsus (the lower bone of a bird's leg). Since adult Barn Owl plumage can vary significantly, we also record color variation from light white to rufous brown. Long-term records of measurements and observations can provide critical insight into Barn Owl fitness, nesting success, population trends, and biology. These records contribute not only to DFW's Barn Owl research, but potentially to a global database for other biologists to reference in research and conservation efforts.



Barn Owl chick being banded Photo by: Autumn Heil

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SPRING 2025 RESULTS

During the spring season, DFW visited 22 Barn Owl boxes and one natural nest on a deer stand. A total of 15 artificial nest boxes (68%) were active, meaning that the box had eggs and/or chicks present at some point throughout the spring breeding season. Overall, at least 82 eggs were laid this season between the 15 boxes. Of these boxes, nine had chicks, with a total of 41 chicks hatched overall. The natural nest on a deer stand had seven eggs and successfully hatched five chicks, which were all banded. As visits to assess hatching and chick progression continued into May and June, it was found that seven boxes, 47% of active boxes, failed. This is twice as many unsuccessful boxes as 2024. Some failed boxes showed signs of abandonment or predation,



Light vs dark plumage Photo by: Autumn Heil

others simply never hatched for unknown reasons. In total, 42 chicks were measured and banded. The remaining 33 eggs either did not hatch and were removed from the nest, the chicks died between hatching and banding, or the chicks fledged before biologists could return for banding. This information is crucial to our understanding of Barn Owl reproduction in Delaware and as we continue to note these trends, we may be able to rule out or identify causes of decline in this population.

A total of 21 adult Barn Owls were captured during the spring. Of these birds, 12 were recaptured (previously banded) birds. Two of these recap birds had a “foreign” band (a band that we did not deploy). One of these adults was banded in New Jersey in 2018 and has been recaptured by DFW in 2023 and 2025 nesting in the same nest box at Bombay Hook National Wildlife Refuge (BHNWR). Based on this recapture data, we know this adult is at least 7 years old and potentially flew over the Delaware River to reach their current nesting grounds. The other recaptured Barn Owl was originally banded in 2022 in Maryland as a chick and was recaptured by DFW in a nest box on Delaware Wild Lands (DWL) property, traveling over 100 miles from where it fledged to reach coastal Delaware. The other 11 recapture birds were previously banded in Delaware as adults or fledglings. One of the recaptured birds, originally banded in 2016 in Woodland Beach Wildlife Area, returned to a BHNWR nestbox for the 4th year in a row and successfully hatched four chicks. An adult banded in 2018 at BHNWR returned for the second year to nest in a DNREC nestbox but failed to hatch chicks after two clutches. Additionally, two recaptured adults were birds banded in

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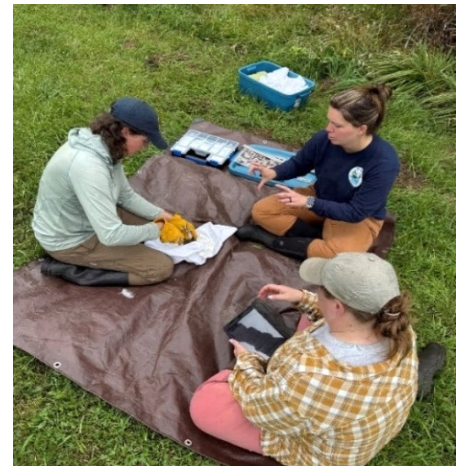
the previous breeding season, two were banded in 2023, and one was banded in 2022 and has been caught every year since at the same box near Little Creek.

2025 FALL SUMMARY

Due to unforeseen circumstances with staffing and weather, some boxes were not visited between September and December, potentially excluding nesting data from our records. Despite this, DFW observed six active boxes, 27% of total boxes, during the fall season. These boxes produced at least 31 eggs and 16 chicks. Two adult Barn Owls, one new and one recapture, were also captured. The recaptured adult was originally banded as a chick in 2022 in a DNREC box and is nesting in a box approximately nine miles from where it fledged from a DWL box. This adult successfully raised three chicks during the fall. It is common for the fall season to be less productive than the spring due to fewer available resources, greater disturbances, and inclement weather. However, all active boxes were successful in having at least one chick this season.

LOOKING FORWARD

DFW continues to coordinate with landowners to maintain, replace, add, or close nest boxes based on information collected throughout the current and previous breeding seasons. Increased efforts to prevent predators, such as snakes and raccoons, from accessing boxes are also being implemented. DFW is aware that some nestboxes are in need of repair and replacement. We have partnered with multiple volunteer carpenters to make new nestboxes that are safer and more efficient to access. With the help of volunteers, we are excited to share we have six new Barn Owl boxes ready to be installed. As noted above, Barn Owls can breed multiple times a year so if you suspect a nest box is in use, or you have a Barn Owl utilizing a structure on your property, please do not hesitate to reach out and let us know.



Jordan, Rachel, and Autumn band and process an adult Barn Owl at a DWL nestbox. Photo courtesy of Hannah Small.

Contact us:

Jordan Brown
Raptor, Grassland, and Forest Bird Biologist
4200 Hay Point Landing Rd.
Smyrna, DE 19977
Email: Jordan.Brown@delaware.gov
Office: (302)255-1960

Rachel Yurchisin
Biological Aide IV
Rachel.Yurchisin@delaware.gov

Autumn Heil
Biological Aide III
Autumn.Heil@delaware.gov

Charlotte Rose
Biological Aide III
Charlotte.Rose@delaware.gov

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