

# Common Nighthawk Habitat Management Recommendations



*Common Nighthawk female and eggs at a nest in the Ossipee Pine Barrens. Photos by Pam Hunt.*

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Produced by NH Audubon's Project Nighthawk from the results of a partnership with the NH Chapter of The Nature Conservancy and the Field Naturalist Program at the University of Vermont.

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## Introduction

For much of the 20<sup>th</sup> century, Common Nighthawks (*Chordeiles minor*) were widespread throughout the continental United States. They were known to gather by the hundreds as they hunted insects in mid-flight over New England's cities and farm fields. However, beginning in the 1980s, precipitous declines across the Northeast United States have restricted breeding populations to a fraction of their historic range, prompting the State of New Hampshire to shift the species from threatened to endangered in 2008. Ongoing monitoring by New Hampshire Audubon has tracked the last remaining nighthawk nesting sites within the state.

In 2018 NH Audubon and the NH Chapter of The Nature Conservancy partnered with the Field Naturalist Program at the University of Vermont to utilize a graduate student to conduct bird and vegetation surveys in the Ossipee Pine Barrens of New Hampshire. Jason Mazurowski conducted research on nighthawk nesting habitat during the 2018 breeding season, locating nighthawk nests and measuring habitat variables at each site. He compared the nest habitat with other non-nesting sites in the pine barrens and identified which characteristics were preferred by nighthawks, and how that related to management history. The results of this study provided information on management actions to improve nighthawk nesting habitat in the pine barrens and other areas where management may create similar habitat structure.

## General Nesting Profile

Nighthawks nest on the ground and are typically found on well-drained sandy soils, gravel or bare rock. Well-drained soils reduce the risk of nests flooding during storms, while exposed sand, gravel, or rock retains heat that may be beneficial for incubating eggs or attracting flying insects during cool evening and morning hours when nighthawks forage.

Early-successional communities are essential for nighthawk nest selection, and Pitch pine-scrub oak woodlands i.e. "Pine Barrens" seem to be the ideal natural community type. While the majority of nests in New Hampshire are located in or around pine barrens, several have been observed on burnt granite ridges or low-elevation summits. Each of these communities exhibit some, or all, of the common features listed below. Airports and gravel pits often exhibit the combination of habitat features preferred by nighthawks, and are still known to support small breeding populations.



*Common Nighthawk chick by Mark Suomala.*

## Specific Habitat Characteristics

The study identified the following features preferred by nighthawks for nesting.

*Few to No Trees* – Nighthawks nested in areas with very few trees and little to no canopy cover when compared to non-nesting sites. Both basal area (a measure of tree density) and percent canopy cover were significantly less at nest sites. Nighthawks generally feed over open areas which also provide space for males to perform their characteristic "diving" displays.

*Understory Shrubs* – Typically, nighthawk nests were located on a small patch of sand, gravel, or leaf litter surrounded by a dense understory of blueberry and scrub oak. Both oaks and blueberries are known to support the larvae of a variety of moth species – including large saturniids – which comprise a significant portion of a nighthawk’s diet.

*Snags* – Standing dead trees, or “snags”, were found near nighthawk nesting locations. Snags are sometimes left behind intentionally by loggers to provide habitat for birds and other wildlife, and they may also be left behind following natural or prescribed burns. High intensity burns tend to kill more trees – often unintentionally – but ultimately end up creating more snags. Nearby snags provide a daytime roost for males, and they may also support beetles, ants, and other flying insects that nighthawks are known to prefer.

### Management Recommendations

The study examined the treatments that had been conducted previously on nighthawk nesting sites. The following recommendations are based on those which were most successful in establishing and maintaining nighthawk habitat. A combination of burning, harvesting, and mowing has been employed to maintain early successional communities in the pine barrens. The study found that nighthawks do not immediately occupy an area once a treatment is applied, but it often takes several years for an understory to develop and for a breeding pair to move in. Conversely, if the understory is left too long without treatment, it will become overgrown and the site will be inhospitable. It appears that the ideal timeframe for nighthawks to occupy a site is 3-7 years after a treatment is applied.

*Burning*—Prescribed burns, particularly high heat and intensity, seem to be most effective in restoring natural conditions preferred by nighthawks. Areas where unintentional “crown” fires had occurred were most effective at creating nighthawk



*Common Nighthawk nest site in the Ossipee Pine Barrens showing the low understory and snag tree. Photo by Jason Mazukrowski.*



*Common Nighthawk nest site in a prescribed burn area in the Ossipee Pine Barrens. Photo by Jason Mazurowski.*

nesting habitat. In these burns, the understory was cleared out, the canopy nearly eliminated, and plenty of snags left standing.

*Harvesting*—Logging often mimics natural disturbance events such as fire or windthrow that would typically create ideal conditions for nighthawk breeding. Several nest sites have been observed in recent years within clearcuts and shelterwoods where the canopy has been nearly eliminated, and the understory has had some time to establish. Leaving behind dead wood, slash, and snags promotes the production of ants, wasps, beetles, and other flying insects to be foraged by the breeding pair. Seed trees or reserve trees can also provide daytime roosts for males.



*Common Nighthawk nest site in a logged area in Tamworth, NH. Photo by Jason Mazurowski.*

*Mowing*—In areas where burning is not a feasible option, periodic mowing can keep the site in an early-successional state. Mowing is recommended every 5-7 years to keep the shrub layer under control and prevent an overstory from establishing.

***Important Note***

Habitat management actions may be most successful in the general area where nighthawks already occur, and especially in pine barrens habitat. Because Common Nighthawks are declining, there may not be enough individuals to colonize new areas far from existing populations. It is also unclear the roll of food availability in nighthawk habitat selection. Pine barrens may provide a food resource critical to successful breeding in which case management efforts may be most successful in this habitat. Incidental observations indicate that nighthawks often feed over lakes and rivers so their proximity may also influence nest habitat selection.

Please contact NH Audubon if you find a Common Nighthawk nest in New Hampshire. If you see a nighthawks in June or July, please report it to eBird or NH Audubon.