



Current Status: In Pennsylvania, the northern goshawk is endangered and protected under the Game and Wildlife Code. Nationally, they are protected under the federal Migratory Bird Treaty Act of 1918. NatureServe designates northern goshawk as critically imperiled or vulnerable in neighboring states with enough data to evaluate their population (NatureServe 2021).

Population Trend: The Pennsylvania population of nesting northern goshawks (*Accipiter gentilis*) has dramatically decreased, and their range has contracted over the past two decades. A stable PA population of 150-200 territories in the 1980s dropped to approximately 10-13 annually occupied territories during surveys (2017-2019). In 2021, only 2 active territories were found.

Identifying Characteristics: The northern goshawk is a large, sexually dimorphic accipiter of the forest. Females are larger than males. It has the typical shape of a forest raptor with short, round wings and a long tail. The northern goshawk is Pennsylvania's largest and bulkiest accipiter. Adults are slate grey above, finely barred gray and white below and have a distinctive white supercilium or eyebrow. Juveniles are brown overall with a mottled back and buffy underneath with dense streaking. From a nest site, the northern goshawk will loudly cackle *kye, kye, kye...* (Sibley 2003). With a well-earned reputation for being one of the most aggressive raptors in the forest.

Biology-Natural history: The northern goshawk is the most widely distributed accipiter with 10 subspecies across North America, Europe, and Asia, each with physical and behavioral variability (Wilson and Rensel 2010; Squires et al. 2020). The predominate North American subspecies and the one found in Pennsylvania is *A. g. atricapillus*.



The northern goshawk is an opportunistic bird of prey, feeding on primarily medium-sized mammals and birds with the occasional reptile and insect. Main food items include squirrels, lagomorphs, large passerines, woodpeckers, corvids, and other similar sized birds (Squires et al. 2020). Goshawks primarily ambush hunt, waiting quietly while prey approach then attacking in a burst of speed. However, they are documented to occasionally capture prey in flight (Kenward 1982), fly rapidly along forest edges or through dense cover to surprise prey (Johnsgard 1990), stalk prey on foot (Bergstrom 1985; Backstrom 1991), as well as capture prey through persistent pursuit (Westcott 1964; Brace 1983).

In Pennsylvania goshawks begin courting in February and repairing and building nests by March (Brinker, *personal communication*). Most birds delay breeding until they are adults (>3 yrs. old), although in some populations, females may attempt nesting as sub-adults (Squires et al. 2020). Nesting usually occurs in April and May but may be somewhat delayed under cooler and wetter conditions or at higher elevations. Goshawks usually produce one clutch of 2–4 eggs each year (Squires et al. 2020). Eggs are laid every 2-3 days

with incubation (mostly by female) beginning shortly after the second egg is laid. Hatching is asynchronous after an incubation period of 28-38 days (Squires et al. 2020). Siblicide of the smallest chick often occurs when food is scarce (Boal and Bacorn 1994).

Preferred habitat: Preferring mature, mixed forests for nesting, the northern goshawk is found in the northern tier and high elevations across Pennsylvania and has experienced both range contraction and breeding population decline over the past two decades. Northern goshawks no longer breed in Maryland or West Virginia, and Pennsylvania now lies at the southern limits of the range of the Northeastern population.

Reason for Being endangered: The current issues appear to be some combination of habitat loss and degradation, disturbance near nests, diseases, predation and prey availability and climate change. With the population so fragile any additional pressure, even if very small, may well bring about the complete loss of goshawk as a nesting species in Pennsylvania.

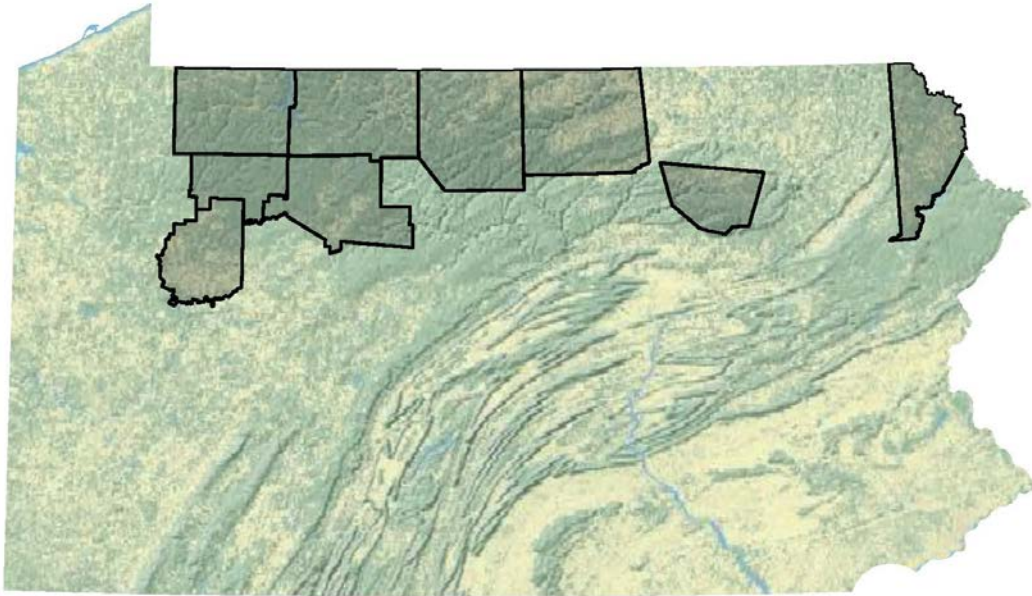
The problems for northern goshawk may have started much earlier than the current population decline and be emblematic of species declines across North America that started with European settlement and continue today with urbanization and sprawl. With colonization large-scale forest clearing and the demise of the passenger pigeon, the northern goshawk lost much of its supporting habitat and a reliable, widespread prey species. All of the current issues are challenges that have been placed on a population that was likely already reduced.

Management Programs: Regular monitoring occurs on the Allegheny National Forest (ANF) since 2000. Recent graduate research increased monitoring efforts, especially outside the ANF, and developed an occupancy model and survey techniques for Pennsylvania (DeMarco 2020). PGC has begun acoustic monitoring of historic and novel territories and appropriate habitat to identify current territories and provide protections during the nesting season. Since listing in 2021, the PGC will support and advance new research and monitoring to better understand the state's population and the threats driving recent declines.



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