

## ABOUT THE COVER: NORTHERN GOSHAWK

The largest North American representative of the genus *Accipiter*, the Northern Goshawk (*A. gentilis*) is a fearsome predator. No one who has wandered near the nest of this species will forget the *ca-ca-ca-ca* scream as the female streaks menacingly toward your head, red eyes glistening. Highly aggressive in defense of their territory, goshawks have attacked and injured humans on many occasions. Adult birds are unmistakable, large and blue-gray above with broad rounded wings and a wedge-shaped tail tip. The black cap and white eye stripe are distinctive, and white fluffy undertail coverts are prominent. Immature birds, like the one featured on this issue's cover, are brown above with brown streaking or spotting below. A large female Cooper's Hawk and a small male goshawk are similar enough in size that they may be confused. A wavy barring pattern in the tail feathers and a more pronounced white eye stripe help identify the immature goshawk. In flight the goshawk's wings are proportionally longer and more pointed and the tail shorter than a Cooper's Hawk. As in other accipiters, males are smaller than females. Northern Goshawks are circumpolar in distribution, with up to nine subspecies recognized worldwide, including two (and possibly three) in North America.

Northern Goshawks breed in stands of mature forest from Alaska across Canada to the maritime provinces, and south to Pennsylvania in the east and in the mountains to Mexico in the west. They are permanent residents throughout most of their range when their food supply is adequate, but become nomadic or migratory when the food supply fails. Some winter in the Midwest, and in Massachusetts migrants typically begin to arrive in late October. The eight to eleven year population cycle of the snowshoe hare affects northern populations. One study reported that when hares were most abundant, goshawks fledged an average of 2.8 young per nest, but after the hare population crashed, goshawks raised no young. When the winter food supply fails over wide areas of the north, goshawks may become irruptive into our area. In Massachusetts they are considered an uncommon migrant and resident, with nesting pairs more common in the western part of the state. At least thirty-three nests were recorded during the 1974-1979 breeding bird atlas project, but they are undoubtedly more common today. Goshawks migrate late in the season and hence are frequently overlooked at many hawk migration observation points.

Northern Goshawks are monogamous, and many mate for life. They produce a single brood and may nest at age one year, although most do not breed until their third year. They prefer mature stands of mixed conifer and deciduous trees with a closed canopy, and construct a large nest platform of sticks 20-75 feet from the ground, often where major branches join the trunk. They usually build their own nest, although they may use the nest of another hawk species as a platform, but rarely use the same nest in consecutive years.

Nests are often located near water, frequently in remote areas far from human habitations and roads. The female is the dominant bird of the pair, and she usually chooses the nesting site. Their nests are lined with bark strips and decorated with evergreen sprigs. In Massachusetts they nest in April or early May, and the usual clutch is 3-4 pale blue or off-white eggs.

Goshawks remain solitary for most of the year, but in spring the female calls *kee-a-ah* and assorted high pitch screams to call her mate back into their territory. Females are active in courtship, and one or both birds perform aerial displays involving slow flapping or undulating flight, often with tails fanned and with white undertail coverts conspicuously displayed. The female does most of the incubation and brooding, feeding the chicks prey brought in by the male who does most of the hunting. Incubation lasts for five to six weeks, and another five to six weeks is required for the chicks to reach independence.

The Northern Goshawk is an efficient predator, described as "bold and intrepid," and its attack as "swift, furious, and deadly." It is certainly a ferocious predator flying low along a forest edge, killing prey by grasping with its talons. Goshawks are enormously persistent in their pursuit of prey—one followed a hen into a farmer's kitchen! They often will pursue rabbits on foot through brambles too thick to fly through. Goshawks use their long tail as a rudder when negotiating a branch-filled forest. They eat chipmunks, rabbits, hares, squirrels, and birds up to the size of grouse, crows, and ducks. In the higher latitudes their main staple may be lemmings or ptarmigan.

Because of their fondness for poultry and game birds, they have been historically persecuted by farmers and sportsmen. For example, at one time there was a \$5 bounty on goshawks in Pennsylvania. Some populations showed eggshell thinning in the early 1970s but have recovered following the banning of DDT in the United States. Forest fragmentation and loss of old-growth forest may have a negative effect locally, and recent evidence suggests a decline in goshawk numbers, especially in western states. However, they have been increasing in numbers in Massachusetts since the mid-1950s, and their range has been expanding to the south and east. In the last three years the U.S. Fish and Wildlife Service has been twice petitioned to list the Northern Goshawk as threatened or endangered under the Endangered Species Act, and an analogy between this species and the Spotted Owl has been made due to the goshawk's preference of mature forest. A recent symposium volume published by the Cooper Ornithological Society has focused attention on this magnificent predator, and we can hope that enlightened forest management practices will reverse the population declines in many of our western states.

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