

SPRUCING UP THE ADIRONDACKS

Managing the spruce grouse, one of New York's rarest resident birds

By Glenn Johnson and Angelena M. Ross

It was June 2, 2002. My co-workers and I were bug-bitten like never before. Our necks and arms were so itchy that we didn't even bother to scratch them anymore. My feet looked like prunes from slogging through wet ground and had begun to peel between the toes. We walked through shrubs and fought through spruce boughs that were woven together. The sound of the female spruce grouse calls had been broadcasting from our portable tape decks for so many hours that we didn't even notice the silence when the tape ended. We were crestfallen, beginning to believe the spruce grouse no longer existed in the Adirondacks, even though we had captured a male one month earlier at the height of the display season. His left leg now sported a blue band with a bold black "I" stamped on both sides. Could he be the only one? Was he even still out there?

*Suddenly, I heard a measured voice say, "Guys. We got one." The three of us converged and looked at the bird—a male—from behind a spruce bough. He was facing us, standing on top of the crusty ground in a little open spot among blueberry shrubs. His feathers were drawn in close to his body, and his head was cocked to the side as he seemed to consider us. For a moment, neither party knew what to make of the other. As he came into focus from behind the spruce, I remember looking at his chest. It was round and tight; the black **breast feathers were edged with***

pure white, like they had been dipped in paint. No white edging existed on the feathers in the center of his chest, which gave it the appearance of a perfect black circle the size of a silver dollar.

We backed off as he stood there frozen. We had all the equipment we needed: a 30-year-old fiberglass noose pole, a toolbox with calipers, a wing ruler, radio transmitters and data sheets. But what now? We had seen a bird being captured with a noose pole once before, but had never done it ourselves. I begrudgingly agreed to be the first to try and approached him slowly, the noose extended. When the tip of the pole fitted with the noose was about four feet away, he alighted on a broken branch in a black spruce about eight feet up and sat there motionless. Perhaps he thought he was hidden. I extended the noose a bit farther, and very carefully eased it over his head. I stood there motionless, not knowing what exactly to do next. Did I wait for him to move, or did I try to move him? Then he attempted to jerk his head to remove the noose from his neck. My heart was pounding. Half a second later he tried to fly and began to whip around the end of the pole. I was able to ease him very carefully, yet swiftly, to the ground, where my colleagues were waiting to receive him. They had him off the pole and in a bag before my next breath. —Angelena M. Ross

Jeff Nadler





This male spruce grouse (#122) has been outfitted with a radio transmitter.

Fast forward 11 years. In mid-July 2013, two DEC vehicles crossed the border into Canada on their way to Cochrane, Ontario. It's a 12-hour drive from the north-central Adirondacks, the last stronghold of the state-endangered spruce grouse in New York. The trip was part of DEC's recovery plan for the species. The goal: to capture spruce grouse in areas where they were abundant and translocate (transport and release) them in the Adirondacks, where the population was dwindling.

Angelena M. Ross

Early accounts of birdlife in the Adirondacks, such as those of Theodore Roosevelt, described spruce grouse as common and easily seen in most low-lying areas across the region, extending into Tug Hill. However, by the early 1900s, several naturalists and sportsmen noted an overall drop in numbers, which roughly coincided with a shift in logging operations towards softwoods. Damming of several rivers to float softwood logs downstream to mills created large impoundments, which in turn, flooded large

Angelena M. Ross



Male spruce grouse displaying in spring on snow-covered ground.



Typical spruce grouse display habitat.



Radio telemetry allows biologists to track collared birds. Here, biologists fly over an area trying to pick up the radio signals emitted by the transmitters in the birds' collars.

tracts of black spruce swamps and bogs, the ancestral home of the spruce grouse. As the remaining spruce grouse populations declined and spread farther apart, entire groups sometimes disappeared due to storms, fires, or their failure to find each other during mating season.

Our research—from the time we captured our first male, until 2004—taught us a lot about New York spruce grouse. We were able to identify primary contributors to the species decline, including: the aging of forest stands past ideal stages for the bird's persistence; a lack of dispersal between habitat patches; small numbers of grouse in remaining habitat patches; and reduced genetic diversity in New York's population as compared to neighboring populations. Low genetic diversity and a small population size can lead to several problems that increase the risk of extinction. The most serious of these problems is when harmful genes become fixed in a population, and when a population's ability to adapt to changes in the environment is reduced. We had done enough studying—it was time to act.

The grouse recovery plan called for habitat management and population augmentation. We had already begun experimenting with habitat management on private lands with willing landowners, and now we were going to try population augmentation for the first time. We had all our permits. We had screen tents to house birds in the field, and we had a plan to capture birds and test out how it would work, starting with just a few grouse. This trip to Canada would provide those birds.

As we drove north across the border and the hours passed, houses gave way to uniform spruce stands. It was still light out when we arrived in Cochrane at 10:00 PM. We poured over maps to develop a field plan, and in the morning set up camp to begin captures. We had only two days to capture grouse; our



Biologists attach radio transmitters and numbered leg bands to captured birds before releasing them.

remaining time would be swabbing birds for disease, veterinarian appointments, awaiting test results, and more veterinarian appointments, before heading home. We captured three females: two without broods and one with a brood of three. The program would grow from there.



Spruce grouse hens lay four to seven eggs.

Five years later, we have released 81 adult spruce grouse—some captured in Ontario and others from northern Maine—and monitored most of them with radio telemetry. The results are encouraging. Analysis of the data from 2013-2016 shows that 72% of spruce grouse survive long enough after release so we can estimate their home range pattern, and that released birds behave similarly to resident birds. Home range size is the same for releases and residents, and productivity of the groups is not statistically different—each nest has about five eggs on average.

In addition, every spruce grouse female released in New York has attempted to nest during their first breeding season here, and most nests survive to hatching. While survival of released adults



This hen is being released into its new home in N.Y.

is slightly lower than resident grouse, translocated bird annual mortality rates are comparable to populations in other areas of their range. In the future, this may be offset by releasing more individuals at a time until populations become established.

So, what is the ultimate fate of spruce grouse in New York? Though they will continue to face challenges, such as a changing climate, we hope that through our efforts they will be present far into the future. In the meantime, we'll continue to watch them closely.

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NATURAL HISTORY OF SPRUCE GROUSE

Found within the boreal forest, spruce grouse (*Falcipennis canadensis*) are selective about which habitats they use. They prefer sites in the middle of the successional sequence, when trees are between 30 – 50 years old and still have some boughs that reach the ground. In addition, the site needs to have a patchy mix of smaller trees and shrubs which they use for cover. Males like it a bit more open during the spring display season, while females with broods prefer denser cover to conceal their young.

Spruce grouse live in short-leaved conifer trees, subsisting almost entirely on the tree's needles. In spring and early summer, they feed on red and black spruce, then switch to tamarack (their favorite) in late summer and fall. Come winter, after tamarack drop their needles, they move on to balsam fir. Grouse supplement this tough fibrous diet with blueberries, wild raisins, and juicy insects.

Spruce grouse are sometimes referred to as fool hens because they appear rather unwary or at least fairly approachable around people. While this is generally true, they react quite differently in the presence of their more usual predators, such as goshawks, great horned owls, coyotes, bobcats and fishers.

In the Adirondacks, grouse mate in the spring, from mid-April to late May. At this time, males become territorial, chasing off other would-be suitors. Highly polygynous, males will mate with any willing female that enters his domain. When a hen appears, the

male will relentlessly perform a stereo-typical set of mating displays to entice her to mate with him. This includes repeatedly fluttering from the ground to low branches, swishing his fanned-out tail from side to side, and ending the sequence by jerking his head upward while simultaneously flicking his brightly tipped tail feathers. The female watches and ultimately decides if he is worthy.

Hens build the nests, incubate the eggs, and raise the young. Nests are paltry and are constructed in a concealed site at the base of a tree. Hens lay four to seven eggs, which hatch in approximately 23 days. The young are very precocious and immediately leave the nest to follow their mother. Hens will periodically brood (cover) the babies until they develop enough feathers to regulate their own temperature, and will also try to ward off potential predators by luring them away. The young are instinctively able to find food and determine what to eat on their own. As the summer progresses, the average distance between a mother and her young steadily increases, and by mid-fall, the young are totally on their own. If they make it through the winter, the offspring can start breeding even before their first birthday.

To learn more about spruce grouse in New York State, visit www.dec.ny.gov/docs/wildlife_pdf/sprucegrouserrecplan2013.pdf.

