

FADING DRUMS

Does hunting play a role in the decline of ruffed grouse in New York?

By Megan Skrip

On this bright October afternoon, the woods are ablaze with autumn color; the crisp air fragrant with the smell of fallen leaves. Also on the breeze—the deep rhythmic beating of a grouse drumming on his stage. For ruffed grouse in New York, dispersal season has reached its peak.

Grouse drum primarily in spring, to attract females to their territory and intimidate competing males. However, they may also be heard in autumn—dissuading wandering juveniles from usurping an already occupied patch of forest. The dispersers that this particular male may be warding from his territory represent the surviving young from the nesting and brooding season, and next year's potential breeders. But lingering on the air, in the drumming male's echo, is a question: How many will survive until spring?

On this particular day, my field crew is out to find some answers. By trapping, banding, and radio-marking dozens of ruffed grouse in New York, and tracking their survival through the hunting season, we aimed to address an even broader question: Could hunting be contributing to the statewide decrease in ruffed grouse abundance?

According to the Breeding Bird Survey (an international effort coordinated by the federal government's Office of Migratory Bird Management), ruffed grouse numbers in New York fell by an average

of 5% per year between 1966 and 2007, with a particularly steep decline of 16% per year since 1980. Forest maturation is the widely accepted explanation for the decline, because ruffed grouse rely on very young forests for their food and cover. While species like wild turkey, bear and pileated woodpeckers benefit from aging forests, grouse may suffer. But how does forest maturation reduce grouse abundance? Are grouse in older forests simply more vulnerable to hunting because low-quality cover leaves them more visible?

Ruffed grouse have the widest range of any native non-migratory game bird in North America, but they require very specific habitat: early successional (or young) forest. In fact, grouse reach their highest densities in forest stands that are about 5 to 30 years old. Areas covered by small tree stems and shrubby undergrowth are particularly important as they provide protective cover from predators.

Over the years, changes in New York's landscape have likely played a large role in the availability of young forest. In the early twentieth century, for example, the state experienced widespread abandonment of farmland. As trees reclaimed these uncultivated lands, young forests emerged. This extensive regeneration of forest created a boom in the number of grouse. Since the late twentieth century,



Dave Larnerd



however, grouse have become scarcer in the state's woods, as the forests themselves have grown older.

Despite declining numbers over the past several decades, ruffed grouse remain a highly popular game bird in New York, second only to wild turkey. DEC wildlife managers wondered if hunter harvest could be contributing to the population decline, and they wanted an answer to the question: Are grouse more susceptible to harvest as forests grow older?

To find out, DEC began a cooperative research project in 2007 with the State University of New York College of Environmental Science and Forestry (SUNY-ESF) in Syracuse. It was the first study of ruffed grouse harvest mortality in New York in more than 50 years. I served as the project's graduate student, conducting fieldwork and analyzing data. Our goal was to determine the survival



Jennifer Burton

The author removes a grouse from a trap.

that hunter harvest was a large component of winter mortality, and survival was lower in older forests, biologists would consider new management strategies.

We chose two sites to conduct the study—Fort Drum Military Installation

are different. Fort Drum is dominated by early successional forest (aspen, birch, cherry) of varying ages; Partridge Run exhibits older, later successional forest (elm, ash, maple) with some thick coverts and overgrown apple orchards.

Our goal was to determine the survival rate of ruffed grouse during the hunting season under different forest conditions, and to assess the importance of mortality caused by hunting.

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in Jefferson County and Partridge Run Wildlife Management Area in Albany County. Both have high hunting pressure, but their forest compositions

In the fall of 2007 and 2008, we trapped grouse at both areas and fit each bird with a leg band and radio-transmitter. Catching ruffed grouse is thrilling work. After locating “grousy” patches of young woods or ferny edges, we set traps—50-foot lengths of chicken wire fence with lily-pad-shaped enclosures at each end. Interestingly, when grouse encounter the 18-inch-high barrier while walking on the forest floor, they will not fly over the fence, but rather follow it to the funneled entrance of the trap. Like a lobster trap, the trap's door is narrower on the inside, and so, once inside, the grouse is reluctant to attempt an exit.

Hours, or even days may pass before the trap catches one of our quarry, but when it does, the occupant is unmistakable. Flapping about to free itself, a ruffed grouse will hop and mew as we approach. Unclipping the soft fabric mesh at the top of the trap, we gently press the bird's wings tight to its body, lift it out, and place it in a handling bag.



Megan Skrip

Captured grouse were outfitted with a necklace-style radio-transmitter.



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Radio-transmitters enable biologists to track grouse movements.

Safe in the bag, a grouse is surprisingly docile, allowing us to outfit it with a uniquely numbered leg band and necklace-style radio-transmitter. We weigh each bird, examine the feathers to determine age and gender, and after the customary brief photo-op, release the grouse at the trap site. Kneeling on the ground, we loosen our grip around the sturdy warm body and open the handling bag. Like a feathered rocket, the grouse takes to the air in a flurry of wings, clucking in reproach as it makes its escape deep into the forest. Although the grouse may no longer be visible, we will find it again and again throughout the winter thanks to the transmitter it now wears.

Over two autumns, we captured and followed 169 ruffed grouse this way. We monitored their survival to the end of the hunting season, using telemetry receivers to listen for the unique signals emitted by the radio-transmitters. When the signal from a transmitter doubled its pulse rate, we knew that the bird with that particular frequency had been stationary for

several hours—a sure sign that mortality had occurred.

When we detect a mortality signal, we hike into the woods to recover the transmitter and any remains. Holding an antenna aloft in the cold winter air, we listen to the steady “beep...beep...beep” of the radio-transmitter, made audible by our receiver unit—weak in one direction, strong in another—and walk in the direction of the strong signal. Over a snow-covered ridge and into a pine-shaded covert, the signal grows stronger, until it comes from all directions. There on the ground are the remains of our radio-marked grouse. We examine the remains to determine the cause of death, paying careful attention to any clues left behind by the predator—“Avian CSI” we call it. Here, on crusted snow, lie grouse feathers—lots of them—in a neat little heap. Nearby, the transmitter itself lies unscathed beside some crusted streaks of frozen white, dull against the snow—raptor whitewash. This grouse, like so many others, was killed by a hawk or owl.

To account for grouse taken by hunters, we enlisted the help of the hunters themselves, asking them to notify us if they harvested any radio-marked birds. The project was publicized at the study areas, and each radio-transmitter and leg band was inscribed with a phone number and message encouraging the finder to report the kill.

Most of the grouse that died at our study areas were taken by predators, predominantly birds of prey. Each year, about half of our monitored birds did not survive to the end of the hunting season in February. Such a mortality rate—about 50%—is typical across the grouse’s range and, notably, was similar at both of our study areas despite differences in forest age and composition. Overwinter survival was no different in the older forest of Partridge Run than in the younger forest of Fort Drum. We found harvest to be a surprisingly small component of overwinter mortality—accounting for up to just 11% of the total birds monitored.



male ruffed grouse

Warren Greene

So despite earlier concerns that hunting might limit grouse populations in New York, our research didn't show hunting to be a driving factor of overwinter deaths. Therefore, reduced season lengths or bag limits don't appear to be necessary. In addition, our research showed that the proportion of grouse taken by hunters was similar to that reported in New York during the 1930s, and less than the proportion of harvested grouse in stable grouse populations in other parts of the country, indicating that restricting grouse hunting would probably not affect winter survival.

But if fall/winter mortality, and more specifically hunting, do not limit New York's grouse population, then what does? We now think the answer lies in nest and brood survival.

While fall/winter survival rates may not differ across the state, areas with more successful spring production appear to be able to sustain higher grouse numbers. And

those are the areas most likely to continue to have grouse in the future. As grouse disappear from New York forests, they likely do so in a far subtler way than experiencing high fall/winter mortality—they may simply fail to produce enough chicks in the spring to maintain a stable population. Management efforts to restore early successional habitats that grouse need for nesting and brood rearing may help sustain populations of this popular game bird.

In the end, for the autumn drummer on his stage, beating his wings in filtered sunlight, more juveniles may mean more intruders to fend off. Yet for the New York population as a whole, higher productivity means more juvenile grouse on the landscape, hopefully finding forest of their own in which to rear young come spring.



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