

State of the Gobble

The Wild Turkey Gobbling Chronology identified when gobbling peaks in North Carolina, offering insight for safeguarding the species and satisfying hunters

written by Josh Leventhal

The sound of a turkey gobble is at once unmistakable and difficult to describe. It evokes strong feelings of excitement in hunters who pursue turkeys, signaling the start of the spring hunting season. Yet, the gobble can also be maddeningly frustrating, seemingly here one day then gone the next. How could that be so?

For all who pursue turkeys, study turkeys or simply enjoy their presence, figuring out when turkeys gobble can be a mystery. Consider the hunter scouting an area before the season opens only to hear a chorus of gobbling activity and wonder, “Why isn’t the season open now?” Or another hunter, wrapping up the season with one more hunt, frustrated with no gobbling to be heard and complains, “The turkeys are gobbled out. It’s too late.” Or even a resident, awakened again by a chorus of turkey gobbles, wondering aloud, “Why do they always gobble so much this time of year?”

Determining when turkey gobbling peaks has long been a consideration of the N.C. Wildlife Resources Commission. The timing of gobbling activity, the timing of the spring turkey season, hunter success and hunter satisfaction are all intertwined. This makes an understanding of gobbling chronology paramount to successful turkey management. However, the information to do so has been lacking in North Carolina.

With this in mind, the Commission launched a wild turkey gobbling chronology study in the spring of 2016 by using autonomous recording units (ARUs) to collect thousands of hours of audio files from which to study wild turkey gobbling chronology across the state. From 2016 to 2019, the ARUs recorded 53,943 hours of audio files. Commission biologists



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and technicians used a computer software program to review the files and identify 113,737 gobbles.

The results of the gobbling chronology study are both insightful and surprising. They challenge some long-held beliefs about turkey behavior while also confirming that the statewide framework of North Carolina's hunting season appears to be fundamentally sound. The study also created confidence in ARUs themselves, which can be used for future research projects.

"Turkey hunters love to hear gobbling. So yes, that is an important part of hunter satisfaction," said Chris Kreh, the Commission's assistant chief of the Game and Furbearer Program who previously served as the upland game bird biologist while helping lead the gobbling chronology study. "But we also have to recognize the underlying biology. How do you achieve both? They are a little exclusive. If the season opens too early, it might harm the population. If it opens too late, the risk is missing opportunity and having unsatisfied turkey hunters. The real crux of this project was to let the turkeys tell us where the sweet spot is, the balance between the two. That's why we used the ARUs on un-hunted properties."

Understanding Gobbling

Before diving into *when* a turkey gobbles, it is important to understand *why* it gobbles. The simplest explanation is that a male turkey gobbles during breeding season either to attract females or alert other males to his presence. It is a turkey's way of puffing out his chest, letting others know that he is here. It is his mating song.

Unlike most birds that have identified territories, turkeys live together in the same area and create a social pecking order. Much like teenage boys in a locker room, male

turkeys create their own order of who is the boss and who isn't. Their gobbles reflect that message.

"He is trying to share the fact that he thinks he is the king of the woods," Kreh said of a gobbling turkey. "He is communicating that message to females that he wants to breed with and also the other males he wants to be the boss of."

Wild turkeys are native to North Carolina, however, by the turn of the 20th century their populations had been decimated by year-round, unregulated hunting and habitat destruction. The Commission began restoring turkey populations in the 1920s, first by releasing pen-reared birds, then by creating refuges and reducing hunting seasons and bag limits. Despite these efforts, the population remained low into the 1970s, down to roughly 2,000 turkeys, prompting the Commission to eliminate the fall season and set a statewide spring season. This marked

the beginning of the return of wild turkeys in North Carolina.

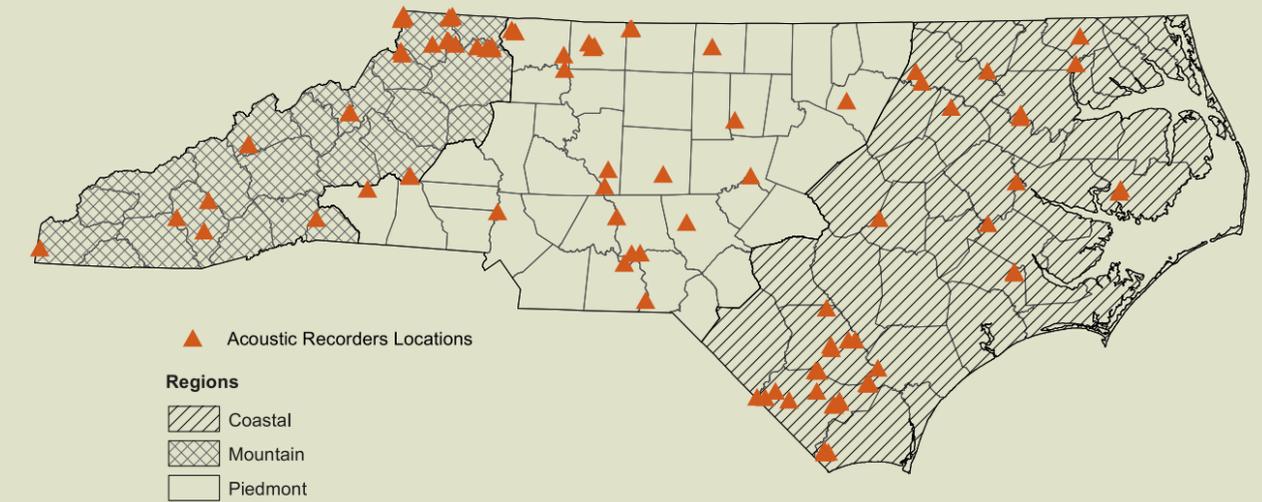
With a spring season established, turkey populations increased in the 1970s and 1980s due to trapping and relocating birds to areas of good habitat and the importation of turkeys from other states through initiatives like the National Wild Turkey Federation's Super Fund. By the end of the 1980s, the population had soared to roughly 28,000 birds. Those efforts continued and grew in the 1990s, and by the turn of the 21st century North Carolina's wild turkey population ballooned to an estimated 130,000—a remarkable comeback for a species that was all-but-gone from the landscape half a century earlier.

Gobbling Data

Restoration efforts were completed in 2005. The turkey gobbling chronology study launched in 2016 provided an opportunity

GOBBLING ACROSS NORTH CAROLINA

To learn more about wild turkey gobbling patterns, the N.C. Wildlife Resources Commission deployed autonomous recording units (ARUs) at 94 locations on 60 properties in 41 counties across the state. The properties selected had largely received little-to-no hunting pressure. The map below details where each ARU was deployed.



to gather a wealth of data to better understand turkey gobbling patterns.

The goals of the 2016–19 gobbling chronology study were:

- Learn how to use ARUs for gathering turkey gobbling chronology
- Use ARUs to collect gobbling chronology data to evaluate current timing of spring hunting seasons

With financial assistance from the National Wild Turkey Federation, the Commission purchased 51 ARUs and

deployed them across the state. Over the course of the four-year project, they were deployed at 94 locations on 60 properties in 41 counties.

To the greatest extent possible, the properties selected were large, had robust turkey populations and received little-to-no turkey hunting pressure. It was important to focus on this type of property to learn about gobbling patterns that had not been influenced by hunters harvesting or pressuring turkeys.

This study would not have been possible without the gracious help of many private landowners and public agencies that allowed ARUs to be used on their lands. Sixty-three locations were on privately owned properties; the remaining 31 were publicly owned. Also, researchers from N.C. State University lent their expertise in analyzing data and interpreting results.

Commission biologists had several questions they hoped to answer through the study. These included whether peak gobbling varied across the state, much like the seasonal, east-to-west progression of the deer rut. A popular belief has been that gobbling begins earlier on the coast as the weather warms and steadily increases across the state. Another area of interest for Commission biologists related to the long-held belief that turkey gobbling activity has two peaks during the spring season, also known as a bimodal



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Opposite: With the help of the National Wild Turkey Federation, the Commission imported and relocated wild turkeys to replenish depleted stocks. Above: Commission biologist Chris Kreh checks an autonomous recording unit used to record turkey gobbling.

pattern. Several previous studies in other states identified one gobbling peak occurring just after winter flocks break up and a second peak after females begin incubating nests. These studies, however, were on much smaller scales, not a statewide scale like the gobbling chronology study.

Evidently, the turkeys didn't subscribe to the theories above, as the ARU-derived data disproved them. Examining the timing of the 113,737 gobblers recorded revealed quite a bit of year-to-year variation, but surprisingly little variation across regions. Gobbling activity did not occur earlier in the Coastal region than in other regions of the state. The ARUs recorded gobbling during the study's primary period of interest in March, April and May of 2016



through 2019. When combining all data across all three regions and all four years, the greatest number of gobblers detected occurred in Week 6 (April 5–11) of the 13-week period.

“One of the most important questions was: Is the timing of gobbling different

around the state? And the fact that it wasn't, well, that is a monumental finding,” Kreh said. “If we had found that gobbling varied regionally, then that would suggest that different opening and closing dates of the hunting season are needed to do the best for turkeys and turkey hunters in various parts of the state. But the fact that we only found minor regional differences, that's really interesting. But when you look from one year to the next, the variation was quite high. That tells us to be aware that some years the season structure is going to hit it just right for gobbling. In other years, it might be off a little bit.”

Examination of the timing of gobbles also revealed no evidence to suggest that gobbling activity follows a clear bimodal pattern. Rather, the study found that gobbling chronology follows a more complicated pattern with multiple peaks. It is not clear what might be driving these peaks, but given the extensive scale of the study, there are likely numerous (and complicated) factors involved. Weather is likely a driver of gobbling activity, as well as local turkey population density or population dynamics.

The study determined that identifying peaks in gobbling activity may not be the ideal way to inform regulatory decisions. A better way may be to examine how

much gobbling activity occurs before, during and after hunting seasons. The gobbling chronology study found that 25%, 60% and 15% of gobbling activity occurs before, during and after the time at which North Carolina's spring turkey hunting seasons can occur, respectively. Thus, the study concluded that the current spring turkey hunting seasons likely increase hunter satisfaction by offering the chance to pursue turkeys at a time when substantial (60%) gobbling occurs. And, remember that these ARUs were deployed on properties where there was very little, if any, turkey hunting pressure. Gobbling activity on hunted properties may vary considerably from this, simply because hunting pressure and harvest of turkeys is occurring.

“The good thing about [not finding a bimodal pattern] is that the foundation for the spring season is still the same,” Kreh said. “Whether there are two peaks in gobbling or a long, extended period of gobbling, which is kind of what we saw, the concept is the same: Delaying hunting pressure can help ensure good reproductive output. Whether it is shifting to a second peak, or just later in the gobbling cycle, you are achieving the same thing. So even though we didn't confirm what we thought we knew about a bimodal

pattern, we may well still have the same safeguard for the spring hunting season. We still want to ensure that the hunting seasons don't interfere too much with breeding and nesting activity.”

More to Learn

The Commission is learning more about turkey nesting through another ongoing study. In collaboration with N.C. State University, the Commission is collecting data by capturing turkeys and attaching radio-transmitter devices to learn about nesting chronology in each of the state's three regions, determine nesting success in the three regions and determine seasonal survival rates in the regions.

Based on the results of the gobbling chronology study, the Commission plans to maintain a statewide framework for turkey hunting seasons, with uniform opening and closing dates for all parts of the state. The Commission also plans to maintain current turkey hunting season dates through at least 2024 when the nesting ecology study is scheduled to be finished.

A better understanding of gobbling patterns helps shed light on the three scenarios presented at the beginning of this article. The turkey hunter questioning why the season does not open in March can be comforted in knowing that the delay is to

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allow ample time for breeding and that peak gobbling times are still to come. The reason for the late-season hunter's failure to hear gobbling would likely be due to hunting pressure; turkeys gobble throughout the season in areas without hunting pressure. And lastly, the lucky soul who gets awakened by turkeys throughout the spring can celebrate the state's successful restoration program, even if it does cost them a little bit of sleep.

To read the Wild Turkey Gobbling Chronology final report, visit ncwildlife.org/Learning/Species/Birds/Wild-Turkey and click on the “Surveys & Research” tab. The study was funded by the National Wild Turkey Federation and by the Wildlife Restoration Act, commonly referred to as the Pittman-Robertson Act, with funds derived from manufacturers' excise taxes on sporting arms, ammunition, archery equipment and handguns. ♦

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GOBBLING PEAKS

One objective of the gobbling chronology study was to determine when gobbling peaks to help ensure turkey hunting season is timed correctly. This graph shows the number of gobblers recorded per week during the four years of the study.

