



Ruffed Grouse Drumming Survey 2018

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Overview

Ruffed grouse are identified as a Species of Greatest Conservation Need in North Carolina's 2015 Wildlife Action Plan. They are one of only three resident game species with this designation. As such, information about grouse in North Carolina is vitally important and North Carolina Wildlife Resource Commission (NCWRC) staff strive to make the most of our time and resources.

This year, NCWRC biologists and technicians took steps to gain better information about ruffed grouse in western North Carolina. Our goals were to 1) continue to monitor grouse on United States Forest Service property in western North Carolina and 2) increase the scope of our survey work by beginning to monitor grouse populations on state-owned Game Lands in western North Carolina.

Since 2002, we have surveyed drumming grouse across all Ranger Districts of the Nantahala and Pisgah National Forests. This survey was initiated in 2002, with the goal to provide precise annual estimates of grouse abundance for each of the six Ranger Districts across the Nantahala-Pisgah Forest. We thoroughly evaluated all drumming grouse survey data collected from 2002 through 2017 to see how our survey efforts might be improved. The existing survey involved more than 700 listening stations each year, which provided very detailed information, but was limited by the fact that all stations were located on National Forest lands in the southern mountains. We saw a need to reallocate some survey effort to other areas and regions. Analysis of the number of stations, confidence intervals, and the survey's ability to identify population trends revealed that we could reduce the number of stations and routes on National Forest lands by approximately one-half and still have precise estimates of grouse abundance for the Nantahala-Pisgah National Forest as a whole. We expect this will allow us to correctly identify grouse population trends across the Nantahala-Pisgah National Forest. At the scale of Ranger Districts, we expect less precision in our estimates, but we do expect that survey results will provide reasonable insight into grouse populations at that scale. Reducing our survey effort on National Forests will allow our biologists and technicians to establish new survey routes and efforts on state-owned Game Lands and in other parts of the region. Therefore, we dropped 29 routes (348 stations) from the grouse drumming survey on Nantahala-Pisgah National Forest. The remaining 22 routes (391 stations) are representative of the National Forests and can be accomplished with better logistics and efficiency. We were very deliberate in choosing to continue routes that would offer reliable and representative data. We did not simply choose routes based on how many grouse had been heard on those routes in the past.

Since we were reducing our survey efforts on Nantahala-Pisgah National Forests this year, NCWRC biologists and technicians were able to establish grouse survey routes on Cold Mountain (21 stations), Needmore (12 stations), Sandy Mush (10 stations), and Silver (18 stations) Game Lands. This represents the maximum number of stations possible given the size of the areas, road configuration, and spacing requirements. At this time, we are unsure as to what level of precision

these routes will provide in understanding grouse population trends on state-owned Game Lands. It may be necessary to increase survey effort in the future by surveying these routes multiple times each year or changing survey methodology in other ways. However, at a minimum, we feel including these survey routes will add to a better overall understanding of regional trends in grouse populations. Also, we took steps to survey grouse on Pond Mountain Game Land, which is more than 75 miles from other state-owned Game Lands and its road system is not conducive to using normal driving routes and procedures. Thus, instead of using the established procedures of driving to specific listening stations, on Pond Mountain Game Land we walked a survey route and mapped all grouse we encountered.

METHODS

Driving Routes

Driving routes are situated along roads that receive little to no vehicle traffic. Listening stations are established (marked with GPS units and yellow paint) every 0.5 miles. Surveys begin 30 minutes before sunrise and continue for up to 3 hours. Observers listen for drumming grouse at each station for four minutes. In addition to the number of drumming grouse heard, observers also make note of turkey gobbles heard and the number of grouse and turkeys sighted while traveling along the route. Basic weather parameters are collected at the beginning and end of the survey.

Walking Route

The walking route on Pond Mountain Game Land was surveyed by groups of observers, with each observer walking a particular section of approximately two miles each. Surveys began no earlier than 30 minutes before sunrise and continued for up to 3 hours. Observers adjusted their walking pace based on habitat conditions (i.e. walk more slowly in forests and suitable habitat than in open fields) and generally covered 1 – 2 miles per hour. Observers noted locations of drumming males on a map and also noted the time, number of drums heard, and other related information.

Survey period and weather

Our goal is to complete drumming grouse surveys each year in the two-week period immediately prior to the opening of the spring turkey hunting season. Grouse are expected to be drumming at this time and conflicts with hunters are avoided. To the extent possible, surveys are conducted on days with light winds and clear skies. Surveys are not conducted during periods of rain or snow. This year, routes (both driving and walking) were surveyed between March 26th and April 11th, 2018.

RESULTS

In total, NCWRC biologists and technicians spent 446.5 hours and drove 4,227 miles conducting grouse surveys this year. Survey locations can be seen in Figure 1 and categorized as follows:

- 1) continued with 22 driving routes (391 stations) on Nantahala - Pisgah National Forests (254 hours / 2,625 miles),
- 2) established four new driving routes (61 stations) on state-owned Game Lands in the southern mountains (103 hours / 616 miles), and
- 3) established a new 10.8-mile walking survey on Pond Mountain Game Land in the northern mountains (89.5 hours / 986 miles).

Nantahala – Pisgah National Forest

In 2018, ruffed grouse were monitored by counting drumming males at 391 listening stations distributed across 22 routes on the Nantahala - Pisgah National Forests. These National Forests are distributed throughout the southern mountains and represent a great deal of potential grouse habitat and hunting opportunity. A total of 35 drumming males were heard at the 391 stations, yielding an average of 0.09 grouse drumming/station (95% confidence interval 0.06 to 0.12 grouse/station). This is the lowest annual estimate since the survey began in 2002 and continues to suggest an overall declining trend in the grouse population. (Fig. 2).

State-owned Game Lands

NCWRC biologists and technicians surveyed routes on Cold Mountain (21 stations), Needmore (12 stations), Sandy Mush (10 stations), and Silver (18 stations) Game Lands. Two grouse were heard at stations on Needmore Game Land and 1 grouse was heard on Sandy Mush Game Land. No grouse were heard at stations on Cold Mountain or Silver Game Lands. Thus, the overall average number of grouse drumming per station on these state-owned Game Lands was 0.05 grouse/station (95% confidence interval 0 to 0.10 grouse/station). No trend information is available since this is the first year of surveys on these areas. As on the Nantahala – Pisgah National Forests, this suggests that grouse population is low.

Pond Mountain Game Land – Walking Route

NCWRC biologists and technicians laid out a 10.8-mile grouse survey route on Pond Mountain Game Land in the northern mountains (Figure 3). Assuming that drumming grouse can be heard from 1/8 of a mile, the survey route gives the opportunity to detect grouse on approximately 1,700 acres. However, it is important to note that not all that area is potential grouse habitat. For logistical reasons, the survey route follows the main ridge and in some cases passes through open fields and mature forest. Over the course of three mornings (April 3, 5, and 11), we surveyed the entire route twice. In total, we spent approximately 20 man-hours walking the route and listening for drumming grouse. We found drumming grouse at five separate locations along the survey route. At two of these locations we heard a grouse drumming both days we surveyed and so conclude that we encountered a total of five drumming grouse. We plan to continue this survey, with the same methodology, for two more years at which time we will evaluate whether this technique offers worthwhile insight to the grouse population on Pond Mountain Game Land. If results are encouraging, we may establish similar walking routes on other areas.

Walking and Driving Grouse Survey Routes

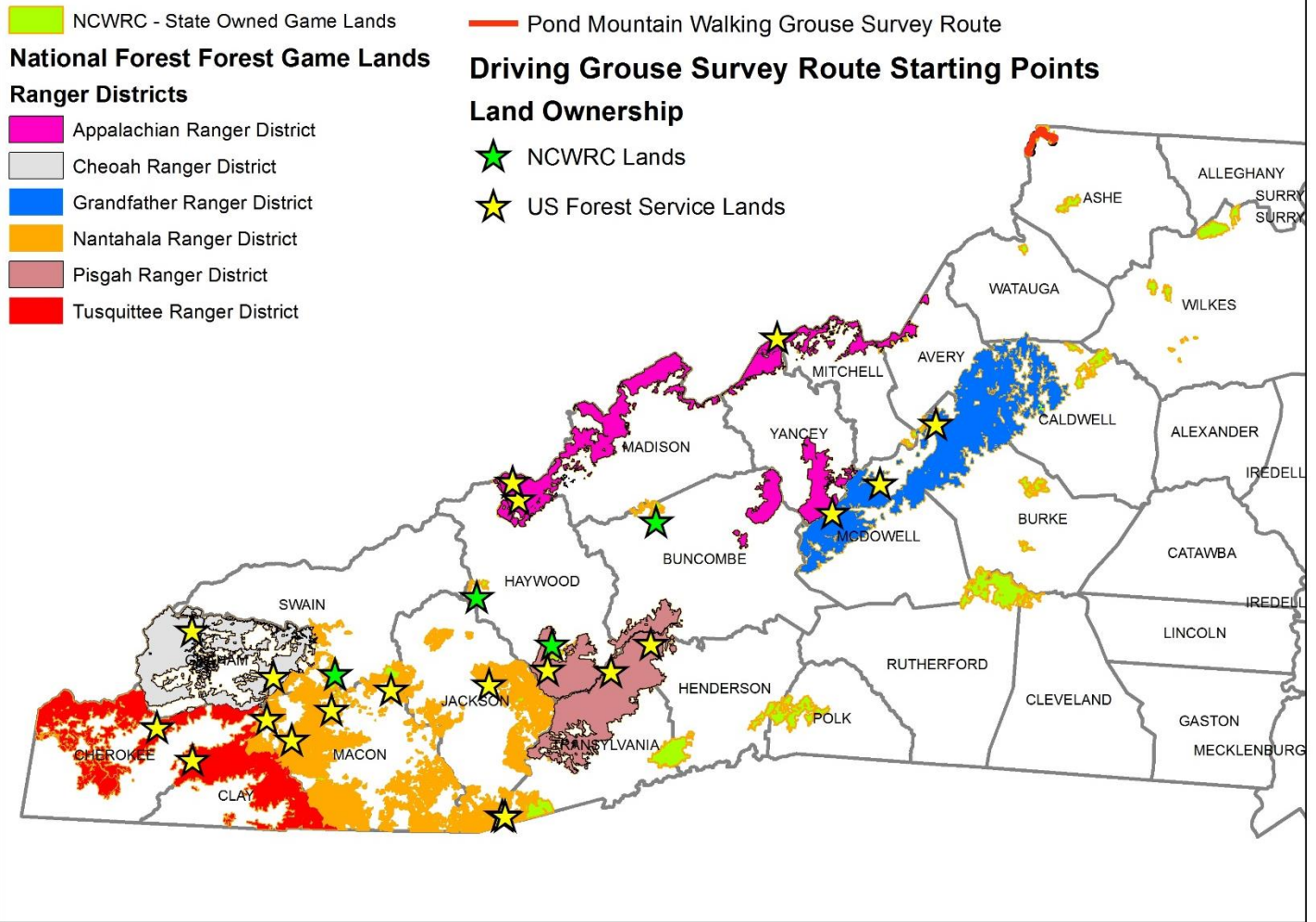


Figure 1. Locations of NCWRC grouse surveys on NCWRC Game Lands and Nantahala – Pisgah National Forests, March 26 – April 11, 2018.

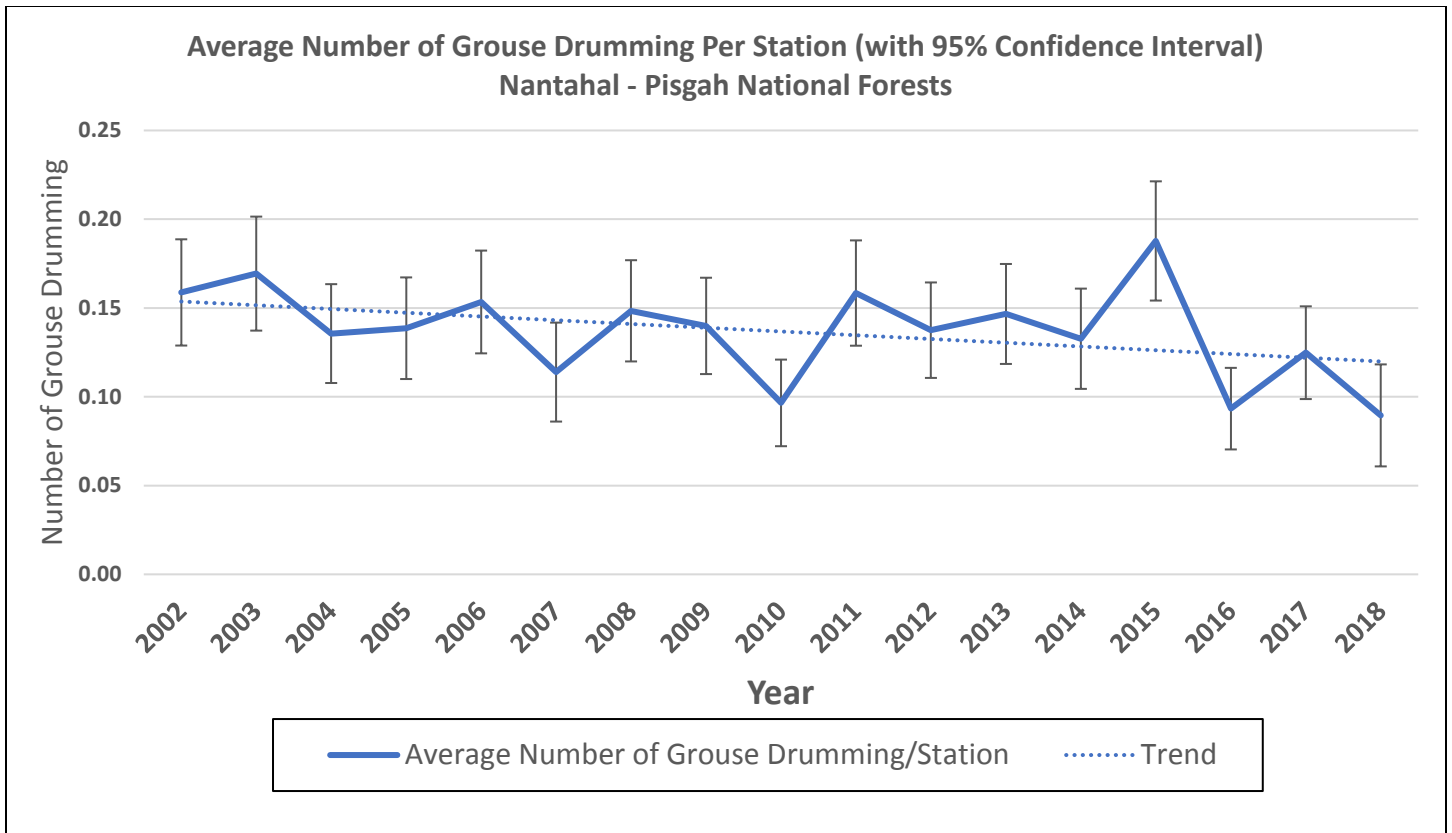


Figure 2. Average Number of Grouse Heard Drumming Per Station on Nantahala – Pisgah National Forests, North Carolina Grouse Drumming Survey, 2002-2018.

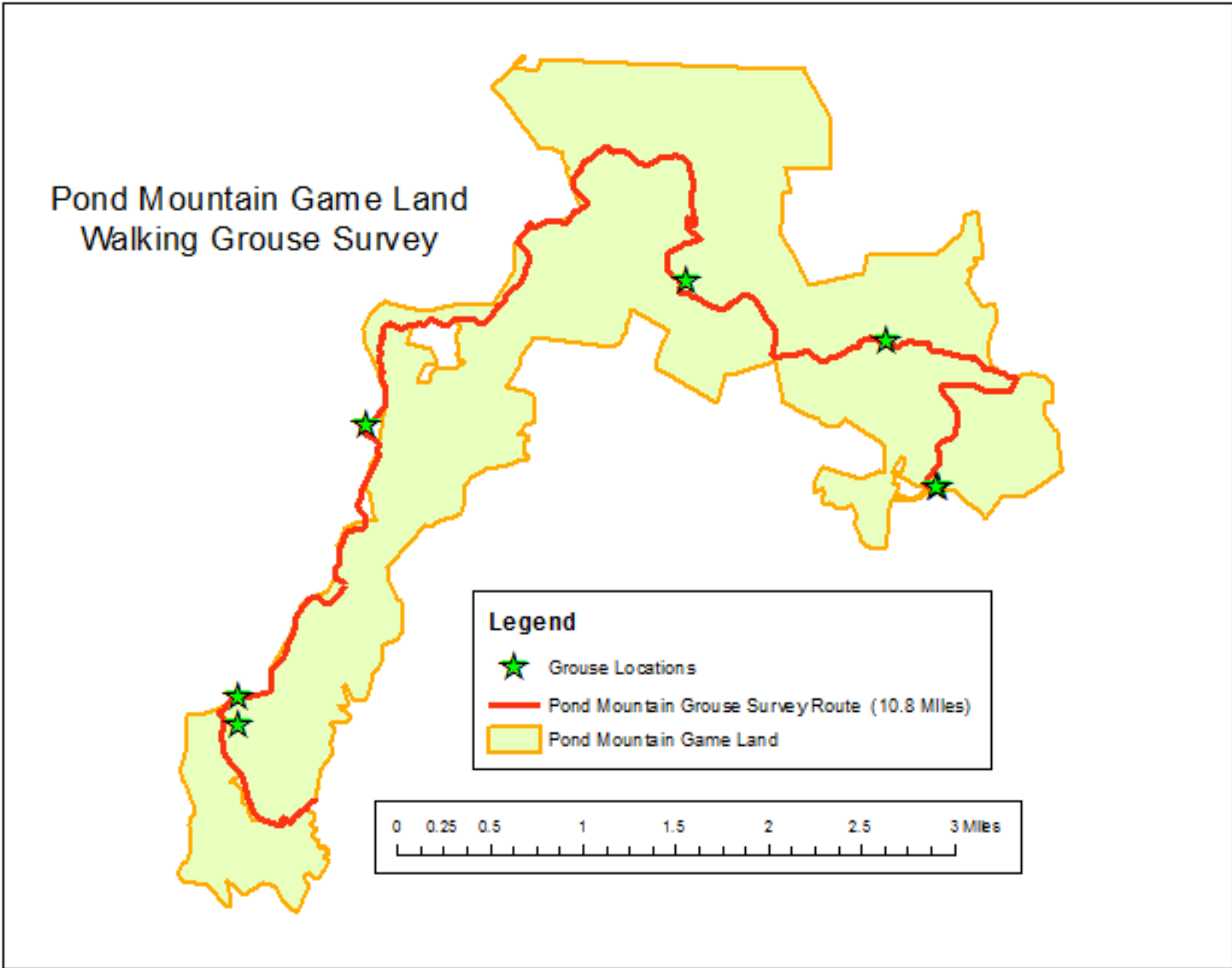


Figure 3. Pond Mountain Game Land grouse survey route and grouse locations, 2018.