2020 WILD TURKEY SUMMER OBSERVATION SURVEY REPORT

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Survey Overview

Each summer, the North Carolina Wildlife Resources Commission (NCWRC) coordinates an observation survey to gain insight into wild turkey productivity and carryover of gobblers from the previous spring turkey hunting season. This year survey cards were mailed to 5,333 people. The mailing list included a mix of NCWRC employees, National Wild Turkey Federation members, and other individuals that had participated in the survey previously. Several news releases and social media posts were used to recruit new participants this year. An unknown number of new participants were able to access the online survey using their existing WRC ID number. Additionally, our support staff helped approximately 19 new participants establish their WRC ID number to begin reporting sightings of turkeys.

As in previous years, participants reported wild turkeys they observed during the course of routine daily activities from July 1st through August 31st. Participants recorded observations in all of North Carolina's 100 counties. There were only 10 counties that had fewer than 10 participants and only 12 counties that had fewer than 25 observations (Figures 1 and 2). A total of 1,539 individuals participated in the survey in 2020. They recorded a total of 8,061 separate observations and saw a combined total of 42,118 wild turkeys (Table 1). This is a substantial decrease from last year's survey when 2,671 participants reported 10,075 observations. Participants this year reported 1,845 observations via the on-line application and 6,216 observations via the traditional survey cards. This was the third year that participants could report turkey sightings on smart phones or other small-screen devices. At current participation levels, the summer observation provides meaningful insight into our wild turkey population and offers a way to gauge hunting pressure and population trends across the state.

Data Analysis

As in previous years, the data were compiled, checked for errors, and analyzed to determine a productivity index from poult per hen ratios and to evaluate carryover of gobblers from gobblers per hen ratios. Estimates of productivity were derived from the ratios of poults and hens in each reported observation, rather than from the total number of hens and poults observed. This approach recognizes the fact that the reported turkey observations are just a sample of the entire population and that a measurement of error is part of the estimation process. Specifically, this approach provides a way to

compute a 95% confidence interval for each estimate. The large number of participants and observations in this survey allows for precise estimates at regional scales, hence the relatively small confidence intervals in Table 2 and Figures 3, 4, and 5. Gobblers per hen ratios were calculated based on the sum of all observations.

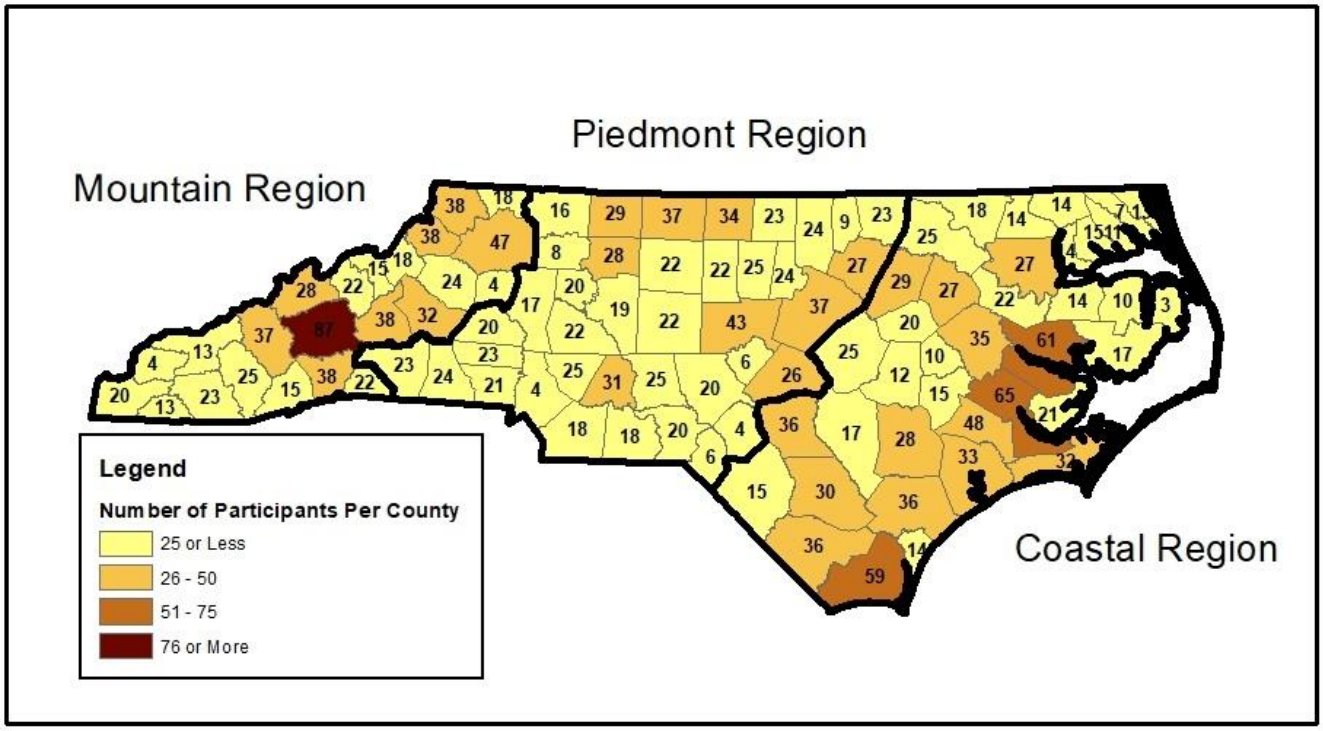

Figure 1. Number of participants reporting turkeys in each county in the 2020 Wild Turkey Summer Observation Survey. Some participants reported turkeys from more than one county.

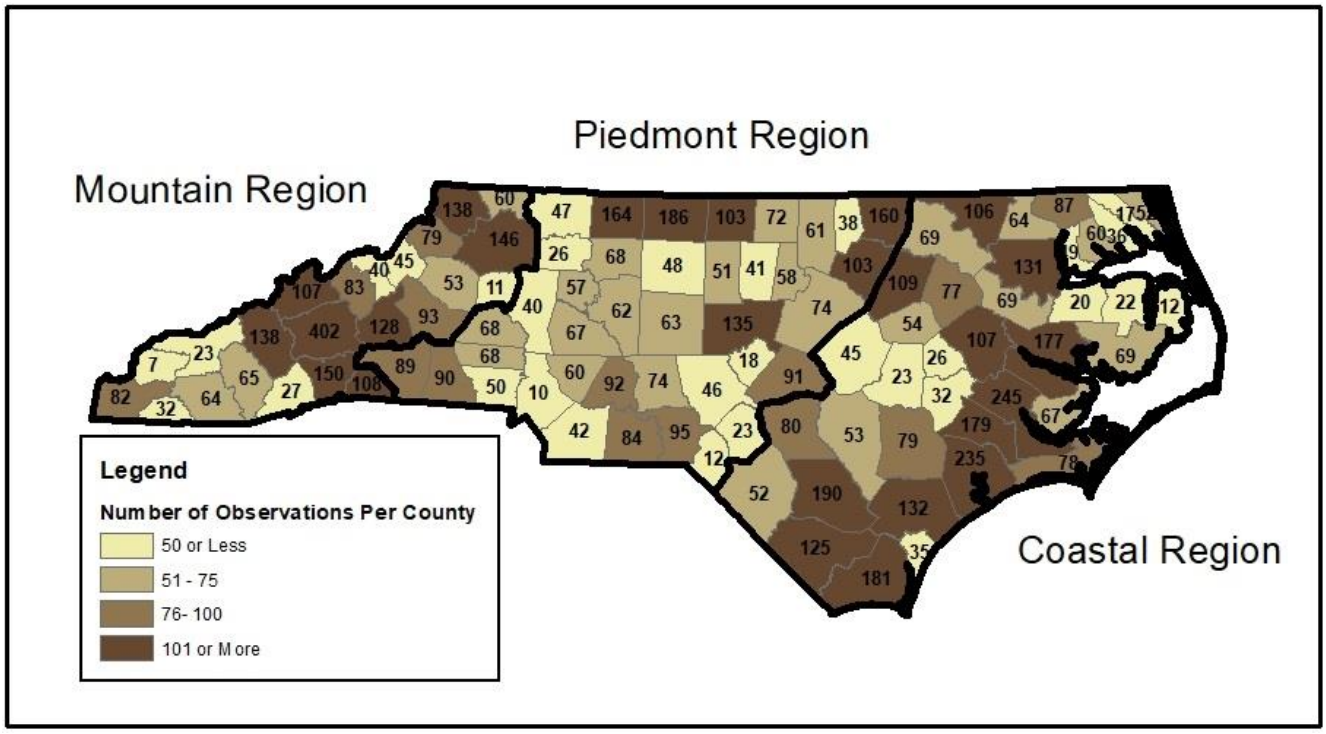

Figure 2. Number of observations reported in each county in the 2020 Wild Turkey Summer Observation Survey.

Table 1. Summary of observations from the 2020 Wild Turkey Summer Observation Survey.

Region	Observations	Hens W/O Poults	Hens W/ Poults	Total Hens	Total Poults	Total Gobblers	Total Unk.
Coastal	3,244	3,143	2,392	5,535	6,478	3,336	4,578
Piedmont	2,736	2,737	1,219	3,956	3,573	2,300	2,309
Mountains	2,081	2,662	1,088	3,750	2,933	1,855	1,515
State	**8,061**	**8,542**	**4,699**	**13,241**	**12,984**	**7,491**	**8,402**

Productivity

Wild turkey productivity can be evaluated by examining the observations of hens and poults in the survey. This information is best considered in a relative fashion, comparing the data among the three regions and also evaluating the trends through time. There are three primary ways to evaluate productivity:

- Poults Per Hen – this ratio gives an indication of overall productivity
- Poults Per Brood – this ratio gives an indication of poult survival
- Percentage of Hens Observed With Poults – indicates nesting success

Productivity statewide was estimated to be 1.3 poults per hen, but was higher in the coastal region than in the piedmont or mountains (Table 2 and Figure 3). Productivity was 1.5 poults per hen in the coastal region and 1.2 poults per hen in both the piedmont and mountain regions. From a biological standpoint, these differences are meaningful. Poult survival statewide was 3.1 poults per brood and was comparable across the regions. The percentage of hens observed with poults was considerably higher in the coastal region than in the piedmont and mountains.

Our estimates of turkey reproduction this year are much lower than what we have observed over the course of the last decade. Statewide estimates of productivity and poult survival are the lowest on record (Figures 4 and 5). This may very well be the result of poor weather and habitat conditions during the 2020 nesting and brood rearing season. However, it is important to note that the 2019 survey documented unusually high levels of productivity in 2019, such that there were likely many one-year old hens (and jakes) in the population during 2020. Hens rarely nest successfully in their first year, so the lower estimates of productivity seen in 2020 may be partly a result of having a greater number of these young hens in the population.

Table 2. Summary of turkey observations (hens with poults and gobblers per hen) and estimates of productivity and poult survival from the 2020 Wild Turkey Summer Observation Survey. Values in parentheses represent 95% confidence intervals.

Region*	% Hens with Poults	Poults Per Brood	Poults Per Hen	Gobblers/Hen Ratio
Coastal	43%	3.1 (3.0 – 3.2)	1.5 (1.4 – 1.6)	0.60
Piedmont	31%	3.2 (3.0 – 3.4)	1.2 (1.1 – 1.3)	0.58
Mountain	29%	3.1 (2.9 – 3.3)	1.2 (1.1 – 1.3)	0.50
State	**35%**	**3.1 (3.0 – 3.2)**	**1.3 (1.2 – 1.4)**	**0.57**

**Geographical regions, not NCWRC regions.*

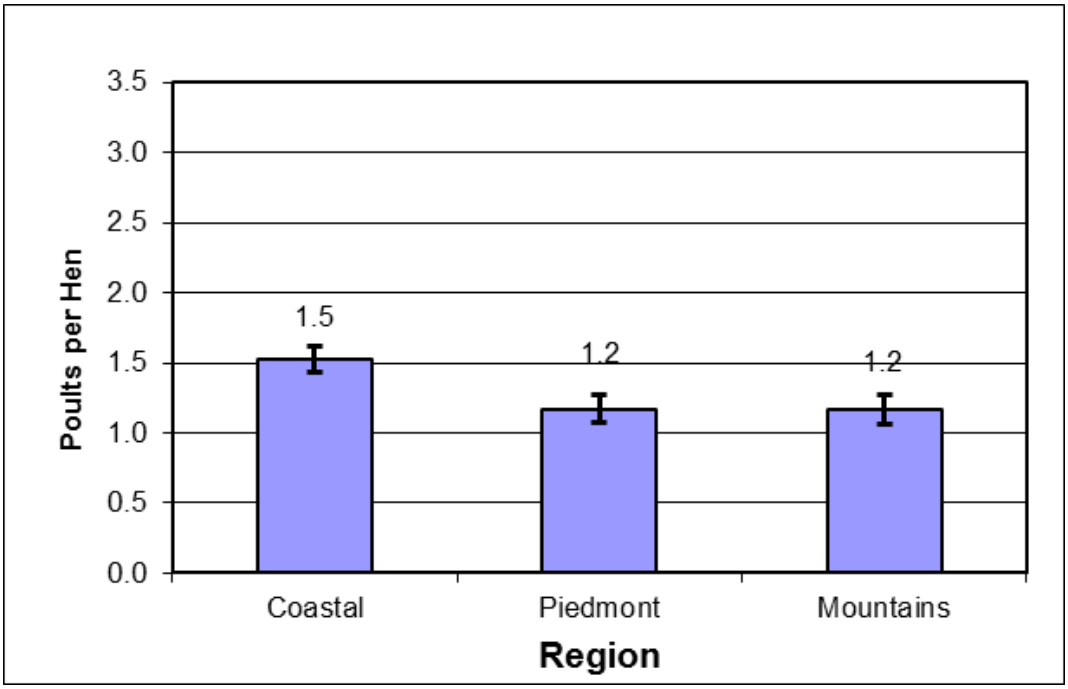

Figure 3. Regional productivity estimates from the 2020 Wild Turkey Summer Observation Survey. Error bars represent 95% confidence intervals.

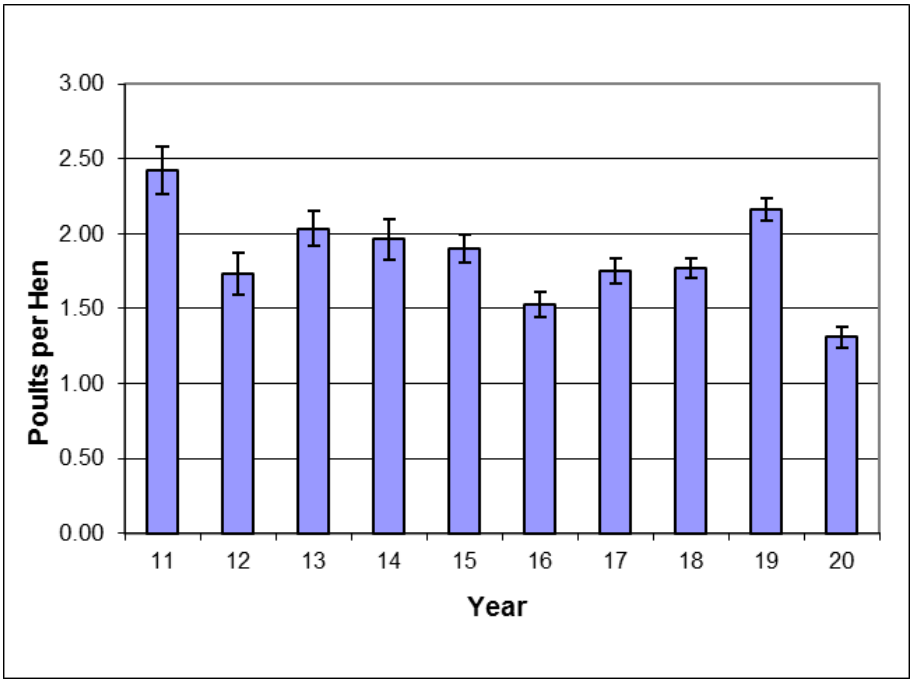

Figure 4. Statewide productivity estimates from Wild Turkey Summer Observation Surveys, 2011-2020. Error bars represent 95% confidence intervals.

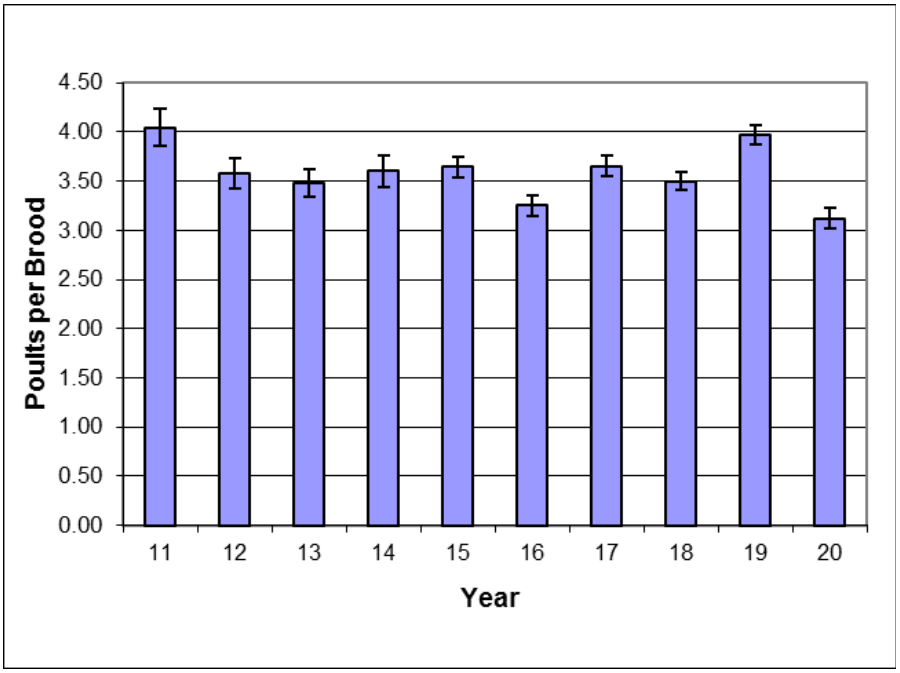

Figure 5. Statewide poult survival estimates from Wild Turkey Summer Observation Surveys, 2011-2020. Error bars represent 95% confidence intervals.

Gobbler Carryover

The observed ratio of gobblers per hen indicates the level of carryover of gobblers from the previous spring turkey hunting season. Higher levels of gobbler harvest by hunters will typically result in lower gobblers per hen ratios. A ratio of less than 0.50 gobblers per hen may be an indication of over-harvest of the male segment of the turkey population if quality spring gobbler hunting is the management goal.

Over the past 10 years, gobblers per hen ratios in the summer observation survey have been between 0.50 and 0.62 gobblers per hen (Figure 6). The ratio for the 2020 summer observation survey was 0.57 gobblers per hen. These data indicate that, if quality spring gobbler hunting is to be maintained, additional pressure should not be placed on the male segment of the wild turkey population by increasing the season length, opening the spring season earlier, or increasing the bag limit.

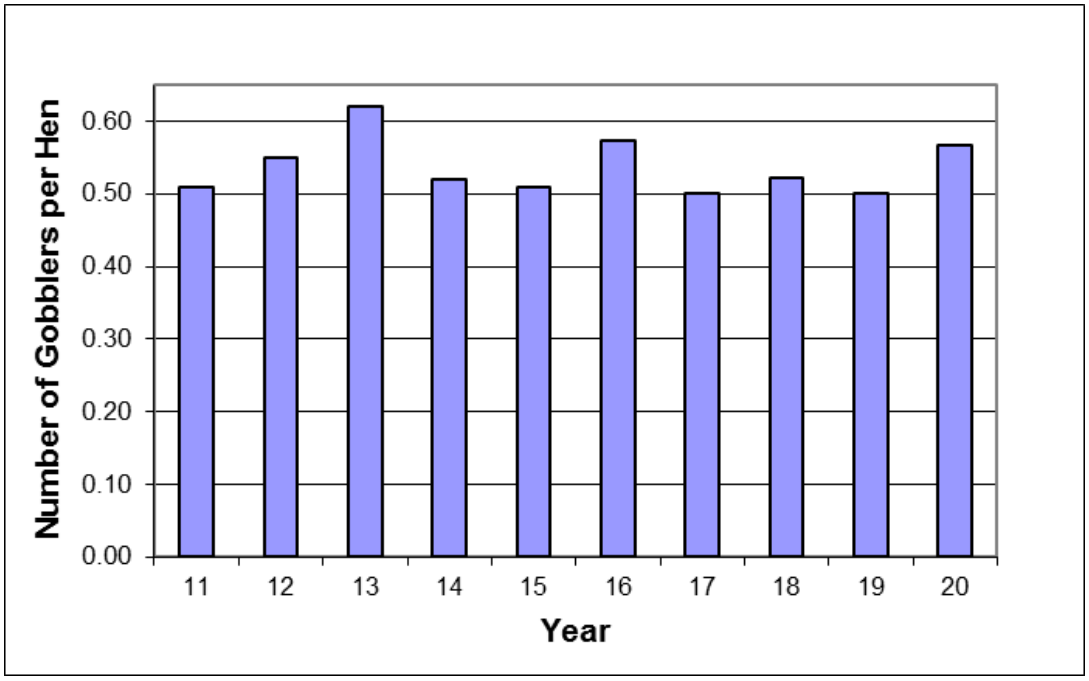

Figure 6. Ratio of gobblers per hen observed in Wild Turkey Summer Observation Surveys, 2011-2020.