

2010 Delaware Wild Turkey Observation Survey Summary

Introduction

In 2010, the Delaware Division of Fish and Wildlife initiated a volunteer-based survey to record observations of wild turkeys across the state during the months of July and August. The primary purpose of this survey is to generate (over time) an index of annual turkey productivity and recruitment, expressed as the ratio of observed poults per hen. In addition, data will be used to track the health and distribution of the turkey population, as well as, evaluate potential regional differences in reproductive success within Delaware.

Methods

Participants were asked to record observations of turkeys in the months of July and August during the course of their daily activities. Using a Division-provided data sheet, participants recorded the date and number of gobblers, hens, and poults seen during each observation (Figure 1). If the participant was unable to distinguish age/sex of the birds, they were recorded as 'unknown'. Effort was made to avoid documenting multiple encounters with the same flock or brood of birds. Participants were also asked to record the Turkey Management Zone (TMZ) in which each encounter occurred; Delaware is divided into 17 TMZs (Figure 2).

Results

A total of 27 participants submitted 77 observations during the two-month survey period (Table 1). The number of observations recorded for each zone varied considerably, ranging from no observations (TMZs 1A, 1B, and 10) to a high of 18 observations (TMZ 7; Table 1). A total of 615 turkeys were counted, including 358 poults and 127 hens.

To generate a turkey productivity index, the average number of poults per hen was calculated for each TMZ (Table 2). Two ratio estimates were generated for each TMZ, one that calculated poults:hen based on all hens observed in each TMZ and a second ratio of poults:brood hen which incorporated only observations of hens with broods. The poults:hen ratio provides a more conservative estimate of productivity because it incorporates observations of hens without broods, and it is possible an observer failed to detect poults that were present with a hen. Conversely, the poults:brood hen ratio may inflate productivity values by excluding observations of hens without poults. Taken together, these two productivity estimates provide a range of values for each TMZ.

Using the more conservative poults:hen estimate, productivity index values ranged from a low of 0.0 (Zones 5, 8, 15) to a high of 7.0 (Zone 12), with a statewide estimate of 2.7. Using the poults:brood hen ratio, estimates ranged from a low of 2.0 (Zone 17) to a high of 7.0 (Zone 12), but with a statewide estimate of 4.4 poults per hen. The difference in the range of values using those two estimating methods illustrates the variability in the number and percentage of brood hens observed in each zone (Table 2). In cases where the percentage of brood hens was 0% (Zones 5, 8, 15) or 100% (Zones 12, 13, 16), the estimate was likely an artifact of having a small sample size of observations for a given zone, rather than some zones having exceptionally high or low recruitment.

At a larger scale, the 17 TMZs can be represented by four regions (Northern, Southern, Bayshore, and Interior) based on physical geography, land use, and habitat type (Figure 2). Using the TMZ-level data, productivity index estimates were calculated for each region (Table 3). Poults:hen estimates ranged from 1.6 (Southern) to 3.3 (Interior) and poults:brood hen estimates ranged from 3.6 (Southern) to 6.3 (Interior).

While the use of brood counts is considered a valuable, cost-effective method to measure productivity and recruitment into the fall population, little formal research has been done to quantify/qualify the relationship between an index value and annual production and recruitment. However, it is generally considered that a productivity index value of ≥ 3.0 represents a 'fair to good' production/recruitment season (B. Eriksen, National Wild Turkey Federation, personal communication). Given the range of values calculated using either productivity estimate, production appears to have been 'Poor to Fair' for the Southern and Bayshore regions and 'Good' for the Interior region. The observed values for this past reproductive season were likely influenced by weather conditions from the winter and spring. While spring weather conditions were favorable for nesting hens, with below average precipitation and above average daily temperatures, Delaware experienced severe winter conditions and snowfall which likely reduced hen body condition and may have negatively influenced nest success.

Conclusion

The first year of this volunteer effort was considered a success by the Division and we thank all of the volunteers that submitted observations this past season. We plan to continue this survey on an annual basis and hope to increase awareness and participation in successive years. It would be especially beneficial to collect observations from the Northern region, which is unique in Delaware, being situated in the Piedmont Region and containing the highest percentage of urban/suburban areas. Over time it is hoped this data will provide trend estimates to inform decision-making and management for the wild turkey in Delaware.

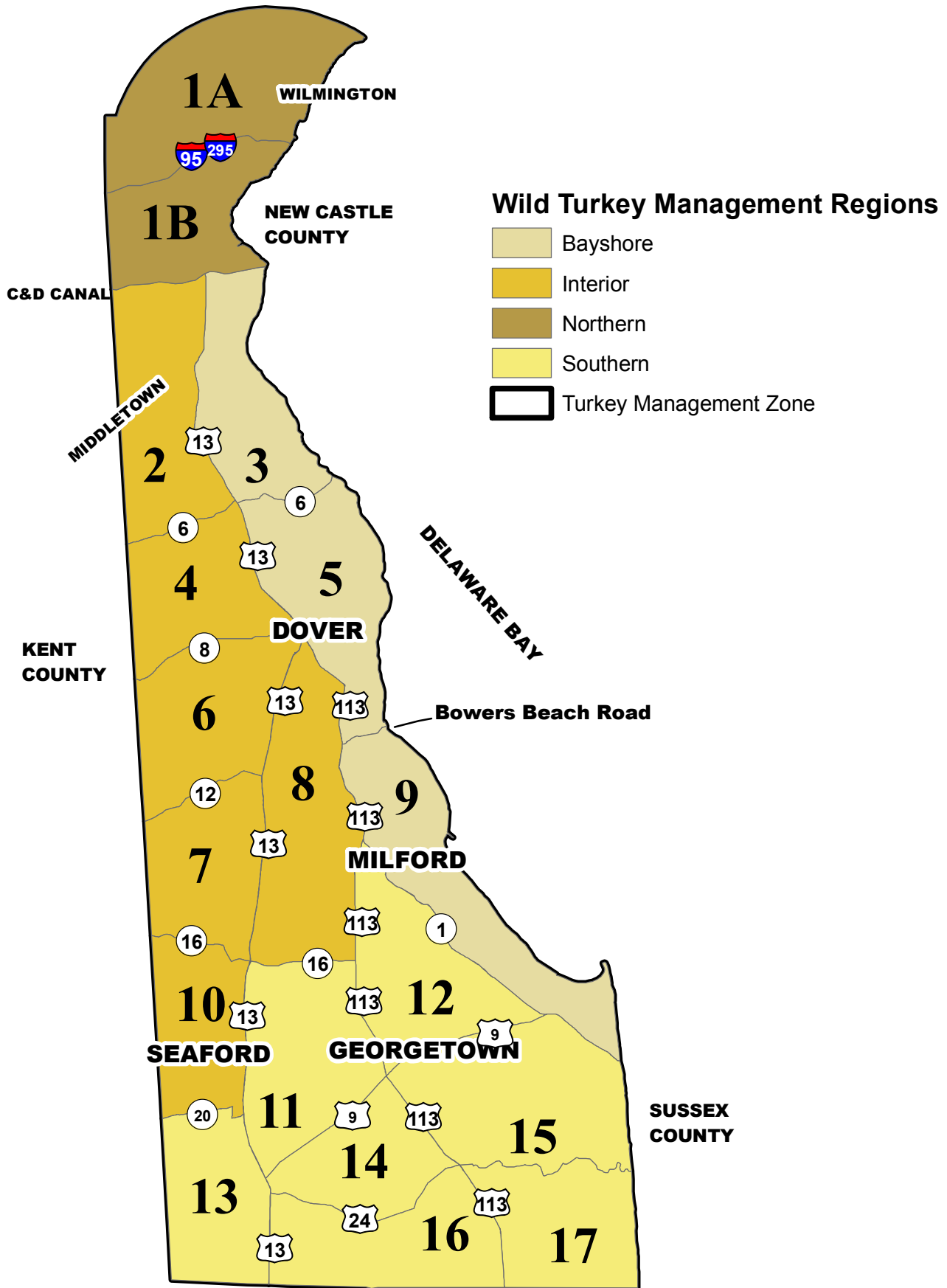


Figure 2. Wild turkey management regions in Delaware

Table 1. Summary of reported turkey observations for each Turkey Management Zone (TMZ) collected from 1 July to 31 August 2010 in Delaware. No observations were reported in zones 1A, 1B, or 10.

TMZ	# of obs.	# of hens	# of poults	# of gobblers	# of unk.	Total # of birds
1A	0	-	-	-	-	-
1B	0	-	-	-	0	0
2	4	5	26	1	0	32
3	5	9	32	0	0	41
4	7	10	23	0	14	47
5	6	8	2	5	18	33
6	11	24	79	0	25	128
7	18	36	136	44	0	216
8	2	1	0	0	3	4
9	3	7	11	0	0	18
10	0	-	-	-	-	-
11	1	2	0	1	0	3
12	4	1	7	4	5	17
13	2	2	6	0	0	8
14	1	0	5	0	2	7
15	5	6	0	2	3	11
16	2	2	9	2	0	13
17	6	14	22	1	0	37
All	77	127	358	60	70	615

Table 2. Average number of poults per hen and poults per brood hen (hen with brood) for each Turkey Management Zone (TMZ) collected from 1 July to 31 August 2010 in Delaware. No observations of hens with poults were reported in Zones 1A, 1B, 5, 8, 10, 11, 14, and 15. Observations of poults without hens were not included.

TMZ	# of obs. ^a	Total # of hens	Total # brood hens	Total # of poults	% Brood Hens ^b	Poults/hen	Poults/brood hen
1A	0	-	-	-	-	-	-
1B	0	-	-	-	-	-	-
2	2	5	4	25	80	5.0	6.3
3	5	9	8	32	88.8	3.5	4.8
4	6	10	8	23	80	2.3	2.9
5	1	8	0	0	0	0.0	-
6	8	24	21	68	87.5	2.8	3.5
7	13	36	29	136	80.5	3.8	5.7
8	1	1	0	0	0	0.0	-
9	3	7	2	11	28.6	1.6	5.5
10	0	-	-	-	-	-	-
11	1	2	-	-	-	-	-
12	1	1	1	7	100	7.0	7.0
13	2	2	2	6	100	3.0	3.0
14	0	-	-	-	-	-	-
15	3	6	0	0	0	0.0	-
16	2	2	2	9	100	4.5	4.5
17	6	14	11	22	78.6	1.6	2.8

^a sightings with only gobblers observed are not included

^b is the percentage of hens observed with broods out of the total number of hens observed

Table 3. Average number of poults per hen and poults per brood hen (hen with brood) for each Turkey Management Region collected from 1 July to 31 August 2010 in Delaware. No observations of hens with poults were reported in the Northern Region. Observations of poults without hens were not included.

Region	# of obs. ^a	Total # hens	Total # of brood hens	Total # of poults	% Brood Hens ^b	Poults/hen	Poults/brood hen
Northern	0	-	-	-	-	-	-
Southern	9	27	16	44	59.2	1.6	3.6
Interior	30	76	62	252	81.6	3.3	6.3
Bayshore	15	24	10	43	41.7	1.8	5.0

^a sightings with only gobblers observed are not included

^b is the percentage of hens observed with broods out of the total number of hens observed