

2018 WILD TURKEY PRODUCTIVITY SURVEY

Overview

Since 2010, the Delaware Division of Fish and Wildlife has used a volunteer-based survey to record observations of Wild Turkeys, *Meleagris gallopavo*, across the state during the months of July and August. The primary purpose of this survey is to generate an index of annual turkey productivity and recruitment, expressed as the ratio of observed poults (young) per hen (adult female). 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.

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 (adult male), 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 instruct observers to avoid documenting multiple encounters with the same flock or brood of birds during the survey period. Participants were also asked to record the Turkey Management Zone (TMZ) in which each encounter occurred; Delaware is divided into 18 TMZs (Figure 2).

Remarks

A total of 8 participants submitted 36 observations during the two-month survey period (Table 1). The number of observations recorded for each zone varied considerably, ranging from no observations (TMZs 2, 8 – 17) to 16 observations (TMZ 7; Table 1). The number of observed birds (relative change from 2016) were 244 (-61.0%) total Wild Turkeys, of which 58 (-76.6%) were poults and 105 (-33.1%) were hens.

To generate a turkey productivity index, the average number of poults per hen were calculated for each TMZ (Table 2). Two estimates were generated for each TMZ, the first 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. Conveying both estimates accounts for possible observer bias because they failed to detect poults that were present with a hen (e.g., long grass, dense vegetation, age of poults). 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 estimate (poults/hen), productivity index values were not reported from TMZs 2, 5, 9, 11, 12, 14 and 8 – 17 (Figure 3). Productivity indices ranged from 0.0 (TMZ 1A) – 5.0 (TMZ 4) poults/hen and poults/brood hen. The mean statewide estimate of poults/hen was 1.49 (Standard Error [SE] = 0.705). Conversely using the other productivity index, the mean statewide estimate of 2.13 (SE = 0.748) poults/brood hen. Small sample size, attributed to voluntary survey submission, may help explain differences in TMZ range and mean values (Table 2). Small sample size could influence the data by inflating our estimates of zone level production and masking actual recruitment.

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). Both statewide estimates of productivity were below 3.0 in 2018. Therefore, production appears to have

been 'poor to fair' in most parts of the state for the 2018 nesting season. Both productivity indices visually appear to be fairly consistent and possibly cyclic, since initiation of surveys in 2010 (Figure 4). Mean productivity was lower than the previous year, but did not differ significantly. As suggested previously, it may be important to note that small sample size and uneven distribution of observations may limit the accuracy of these estimates.

In its eighth year, volunteer effort and participation was down ~ 73.3% from 2017, with 82 fewer observations submitted in 2017. Due to small sample size we have not attempted to estimate differences in productivity among turkey management regions. We plan to continue this survey in 2019. We also hope to increase awareness and participation in this survey in successive years. As a result of increased participation, our data will provide better estimated trends to inform decision-making and management for the Wild Turkey in Delaware.

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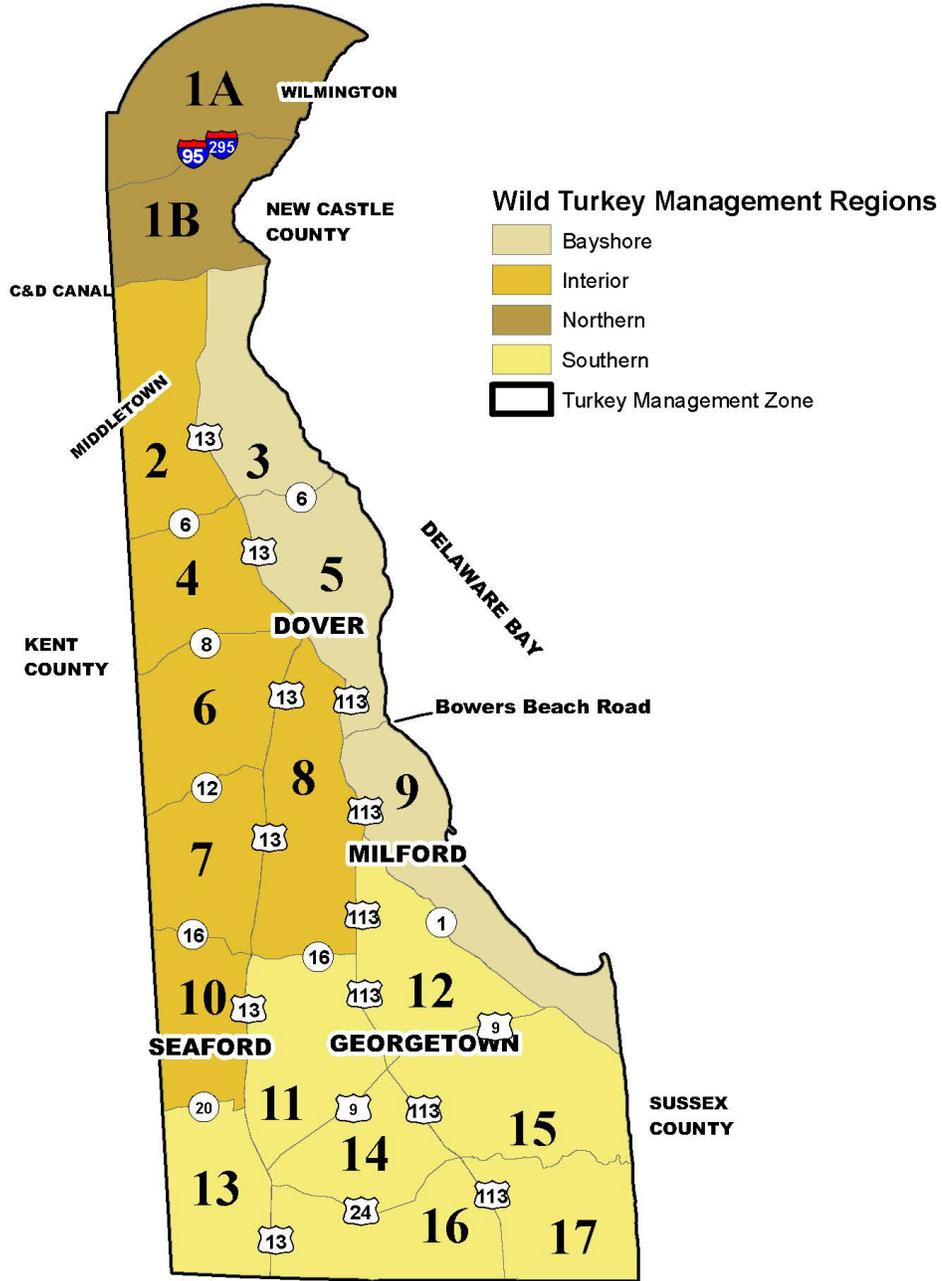


Figure 2. Wild Turkey, *Meleagris gallopavo*, management regions (Bayshore [tan], Interior [amber], Northern [light brown], and Southern [yellow]) and associated management zones (1A, 1B, and 2 – 17) in Delaware.

Table 1. Summary of reported Wild Turkey, *Meleagris gallopavo*, observations for each Turkey Management Zone (1A, 1B, 2 – 17) collected in Delaware from 1 July – 31 August 2018.

Turkey Management Zone	# of observations	# of poults	# of hens	# of gobblers	# of unknowns	Total # of birds
1A	1	0	0	0	0	1
1B	1	3	1	0	0	4
2	0	- ^a	-	-	-	-
3	11	13	17	3	0	33
4	2	10	2	1	0	13
5	2	0	0	8	0	8
6	3	4	3	4	0	11
7	16	28	81	60	5	174
8	0	- ^a	-	-	-	-
9	0	- ^a	-	-	-	-
10	0	- ^a	-	-	-	-
11	0	- ^a	-	-	-	-
12	0	- ^a	-	-	-	-
13	0	- ^a	-	-	-	-
14	0	- ^a	-	-	-	-
15	0	- ^a	-	-	-	-
16	0	- ^a	-	-	-	-
17	0	- ^a	-	-	-	-
Grand Total	36	58	105	76	5	244

^a denotes no reports submitted to the Division of Fish & Wildlife on turkey productivity

Table 2. Observations of Wild Turkey (*Meleagris gallopavo*) mean (\bar{x}) poults per hen and poults per brood hen (hen with brood) for each Turkey Management Zone (1A, 1B, 2 – 17) collected in Delaware from 1 July – 31 August 2017.

Turkey Management Zone	# of observations	# of hens	# of brood hens	# of poults	\bar{x} poults/hen	\bar{x} poults/brood hen
1A	1	0	0	0	0	0
1B	1	1	1	3	3	3
2	0	- ^a	-	-	-	-
3	11	17	6	13	0.76	2.17
4	2	2	2	10	5	5
5	2	^b 0	0	0	0	0
6	3	3	1	4	1.33	4
7	16	81	38	28	0.35	0.74
8	0	- ^a	-	-	-	-
9	0	- ^a	-	-	-	-
10	0	- ^a	-	-	-	-
11	0	- ^a	-	-	-	-
12	0	- ^a	-	-	-	-
13	0	- ^a	-	-	-	-
14	0	- ^a	-	-	-	-
15	0	- ^a	-	-	-	-
16	0	- ^a	-	-	-	-
17	0	- ^a	-	-	-	-
Grand Total	36	105	48	58	10.44	14.90

^a denotes no reports submitted to the Division of Fish & Wildlife on turkey productivity

^b sightings with only gobblers (males) or unknown birds observed are not included

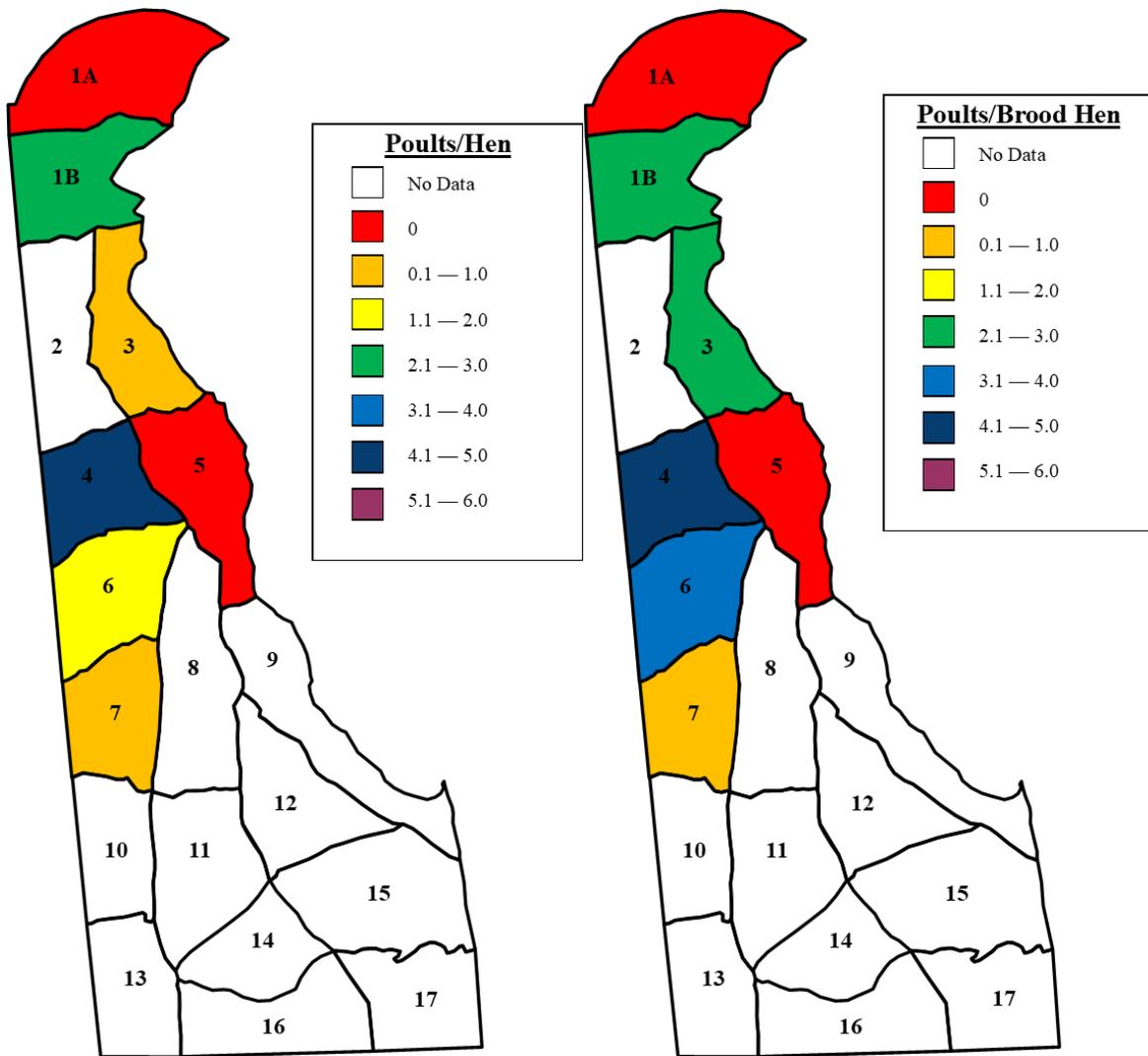


Figure 3. Wild Turkey (*Meleagris gallopavo*) productivity by turkey management zone in Delaware calculated using two (i.e., poults/hen and poults/brood hen) productivity metrics, 1 July – 31 August 2018.

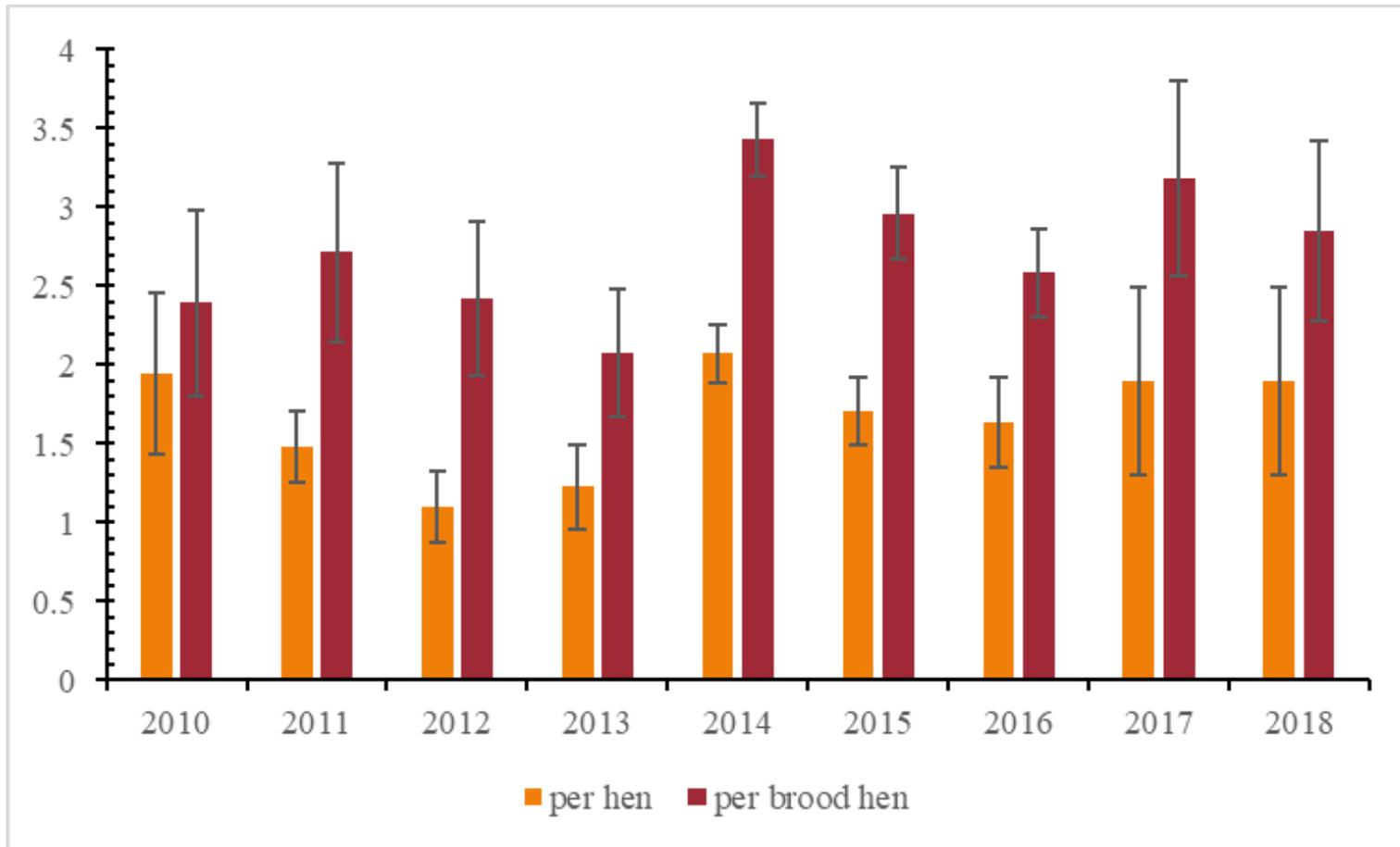


Figure 4. Statewide mean and standard error estimates of Wild Turkey, *Meleagris gallopavo*, poults measured against only hens (i.e., without a brood) and brood hens (i.e., hens observed with broods) in Delaware, USA from 1 July – 31 August in 2010 – 2018.