

## 2019 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 Wildlife Management Zone (WMZ) in which each encounter occurred; Delaware is divided into 18 WMZs (Figure 5).

### Remarks

A total of 21 participants submitted 126 observations during the two-month survey period (Table 2). The number of observations recorded for each zone varied considerably.

Data were compiled and submitted to Reina M. Tyl – Missouri Department of Conservation to run in SAS. The SAS program used to analyze these data was developed by Sherry Gao (Missouri Department of Conservation).

Table 1 provides results from the 2019 Wild Turkey Brood Survey based on the approach described in *A Standardized Protocol for Conducting Wild Turkey Brood Surveys, 2019*. This protocol was developed to make comparisons of brood survey data among National Wild Turkey Federation Technical Committee member states more meaningful, and described filtering, analysis, and reporting methods.

As described in the brood survey protocol, the analysis assumes:

- Data were collected from 1 July – 31 August
- Each turkey observation was recorded as a separate event

Prior to analysis, the following data filtering occurred:

- Observations in which  $\geq 25\%$  of turkeys are marked as unidentified will be censored
- Observations of  $\geq 8$  hens with no poults will be censored
- Observations of poults with no hens will be censored
- Observations of  $\geq 1$  hen and  $\geq 1$  poult in which the ratio of hens to poults is  $< 0.0625$  will be censored (i.e., observations will be censored when there are more than 16 poults per hen)
- Observations of turkeys believed to have been recorded before will be censored

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  $\geq 3.0$  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 ninth year, volunteer effort and participation was up 350% from 2018 with 80 more observations submitted than in 2018. We plan to continue this survey in 2020. 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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**DELAWARE DIVISION OF FISH AND WILDLIFE  
 WILD TURKEY OBSERVATION SURVEY FORM  
 SURVEY PERIOD: JULY 1 – AUGUST 31**

OBSERVER INFORMATION		INSTRUCTIONS				
<b>Name:</b>		<ul style="list-style-type: none"> <li>Each time you see turkeys, record the date, county, and number of adult hens, poults (young of the year), &amp; adult gobblers. Record ALL turkeys seen, not just broods. Use additional sheets if necessary.</li> <li>Please record the turkey management zone in which your observation was made. REFER TO INCLUDED MAP.</li> <li>AVOID REPORTING DUPLICATE SIGHTINGS (e.g. if you see the same number of hens and poults in the same location several days in a row, only record once).</li> <li>If you cannot determine sex or age, record them in "UNKNOWN" column – that information is still important.</li> <li>Either mail, fax, or email the survey by September 10 to:                Matt DiBona,                Delaware Division of Fish and Wildlife                6180 Hay Point Landing Road                Smyrna, DE 19977                Fax: 302-653-6755    Email: Matthew.DiBona@state.de.us</li> </ul>				
<b>Address:</b>						
<b>Phone:</b>						
<b>Email:</b>						
DATE (month/day)	COUNTY	TURKEY MGMT ZONE <i>(refer to map)</i>	NUMBER OF TURKEYS OBSERVED <i>(Record ALL turkeys seen, not just broods)</i>			
			HENS	POULTS	GOBBLERS	UNKNOWN

Figure 5. Wild Turkey, *Meleagris gallopavo*, observation survey form during survey period of 1 July – 31 August 2019.

Table 2. Data obtained during Delaware's 2019 Wild Turkey Brood Survey conducted from 1 July – 31 August.

Region	Hens	Poults	Males	Unidentified	Total Turkeys	PPH <sup>a</sup> (95% CIs)	PPB <sup>b</sup> (95% CIs)	% Hens w/ Brood <sup>c</sup> (n <sup>d</sup> )	Male:Female Ratio <sup>e</sup> (n <sup>f</sup> )
<i>1B</i>	22	43	16	0	81	1.99 (0.5-4.14)	5.36 (3.25-7)	36.4 (13)	0.73 (14)
2	2	5	0	0	7	2.50 (2.5-2.5)	2.50 (2.5-2.5)	100.0 (1)	0.00 (1)
3	42	38	28	0	108	0.89 (0.22-1.72)	3.45 (2-4.86)	28.6 (22)	0.67 (26)
4	2	15	0	0	17	7.50 (7.5-7.5)	7.50 (7.5-7.5)	100.0 (1)	0.00 (1)
5	14	7	4	1	26	0.58 (0-1.55)	2.33 (2-3)	21.4 (9)	0.29 (12)
6	14	6	0	0	20	0.49 (0-2)	6.00 (6-6)	7.1 (7)	0.00 (7)
7	109	318	19	2	448	2.94 (1.87-4.2)	4.30 (2.9-5.87)	83.5 (26)	0.17 (28)
8	5	24	0	0	29	4.66 (0-8)	6.66 (5.33-8)	80.0 (3)	0.00 (3)
9	1	4	0	0	5	4.00 (4-4)	4.00 (4-4)	100.0 (1)	0.00 (1)
11	22	52	8	0	82	2.52 (0.86-4.89)	3.77 (2.02-5.27)	72.7 (10)	0.36 (10)
12	6	18	2	0	26	3.26 (0-10)	7.01 (4-10)	50.0 (4)	0.33 (5)
14	1	0	2	0	3	0.00 (0-0)	0.00 (0-0)	0.0 (1)	2.00 (2)
15	4	11	0	0	15	2.75 (2.75-2.75)	2.75 (2.75-2.75)	100 (1)	0.00 (1)
17	7	0	0	0	7	0.00 (0-0)	0.00 (0-0)	0.0 (3)	0.00 (3)
<b>Statewide<sup>g</sup></b>	<b>255</b>	<b>551</b>	<b>79</b>	<b>3</b>	<b>888</b>	<b>2.15 (1.55-2.78)</b>	<b>4.33 (3.6-5.07)</b>	<b>58.8 (105)</b>	<b>0.31 (117)</b>

<sup>a</sup>Poults-per-hen (calculated by bootstrapping the sample).

<sup>b</sup>Poults-per-brood (calculated by bootstrapping the sample).

<sup>c</sup>Percentage of hens that were observed with  $\geq 1$  poult during survey.

<sup>d</sup>Number of observations where  $\geq 1$  hen was observed.

<sup>e</sup>Total number of males observed during survey divided by total number of females observed during survey.

<sup>f</sup>Number of observations where  $\geq 1$  hen or  $\geq 1$  male was observed during survey.

<sup>g</sup>May include observations in which region was not indicated in data file.