

## 2020 Nebraska Turkey Survey Report



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## **Turkey Brood Survey Introduction**

Turkey brood surveys provide useful estimates of annual production by wild turkey hens and the survival of poults through the summer brood rearing period. Nest success and summer brood survival is generally the primary factor influencing wild turkey population trends. Information on summer brood information is essential for sound turkey management.

The Nebraska Game and Parks Commission historically collected turkey brood data through survey routes and incidental observations through 2003. From 2004 to 2018, no brood data was collected. The National Wild Turkey Federation Technical Committee adopted a standardized turkey brood survey design that cooperating states agreed to use. The standardized protocol was developed by the Southeast Wild Turkey Working Group based on BMPs suggested by Byrne et al. (2014) Nebraska restarted brood data collection in 2019 using the standardized protocol.

### **Methods**

Timing - Turkey observations would be obtained opportunistically from 1 July – 31 August annually. Brood survey data collected along standardized roadside routes during only a portion of the survey period would not be included in the standardized brood survey database. Based on data obtained by states in the Southeastern U.S., a two-month survey period should allow for sufficient sample sizes at the statewide scale for most states.

Survey Participants – It is up to the discretion of participating state wildlife agencies to determine who can serve as a brood survey participant (e.g., other state and federal agency personnel, NGOs, interested members of the public, etc.) Nebraska opted to invite the public to participate via paper datasheets or an online web survey located at <http://outdoornebraska.gov/turkeybroodsurvey/>.

Observation Protocol – Observers should record each sighting of a turkey or group of turkeys as a separate event. States may choose to have survey participants record all turkeys observed during the survey period or only those observations that participants feel are unique. However, states that instruct participants to record all turkeys they observe should include a box on the survey form next to each observation where participants should indicate if they believe their observation is of a turkey(s) they have recorded before (Appendix 2).

Survey participants should record the following information for each turkey observation:

- Date of observation
- County of observation
- The number of hens observed
- The number of poults observed
- The total number of males observed (jakes and adult males combined)
- The number of turkeys that they could not identify to sex or age
- Whether they believe they have recorded the turkey(s) before (for states that instruct participants to record all turkeys they observe;

Data Filtering – The protocol recommended filtering data based on recommendations from the SETSG and Byrne et al 2015. Nebraska followed the filtering protocol which is as follows:

- 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 (Byrne et al. 2015).
- Observations of turkeys believed to have been recorded before will be censored.

## Results

In 2020, 138 observers (about half NGPC staff or partners) reported 753 observations of turkeys during the survey period, observing 5,560 total turkeys. Filtered results are in Table 1. Data was analyzed statewide as well as broken down into Data Analysis Units based on historic turkey units and topography based on the county reported for observations.

### Statewide Analysis

Table 1. Statewide survey Results.

YEAR	TOMS	HENS WO	HENS W	POULTS	TOTAL	% HENS W/BROOD	POULTS PER HEN	POULTS PER BROOD	TOMS/100 HENS
2019	424	352	357	1306	2439	50.0	1.84	3.66	59.8
2020	942	563	860	3220	5585	60.4	2.26	3.74	66.2

Figure 1. Historic Average Brood Size and Poults per Hen.

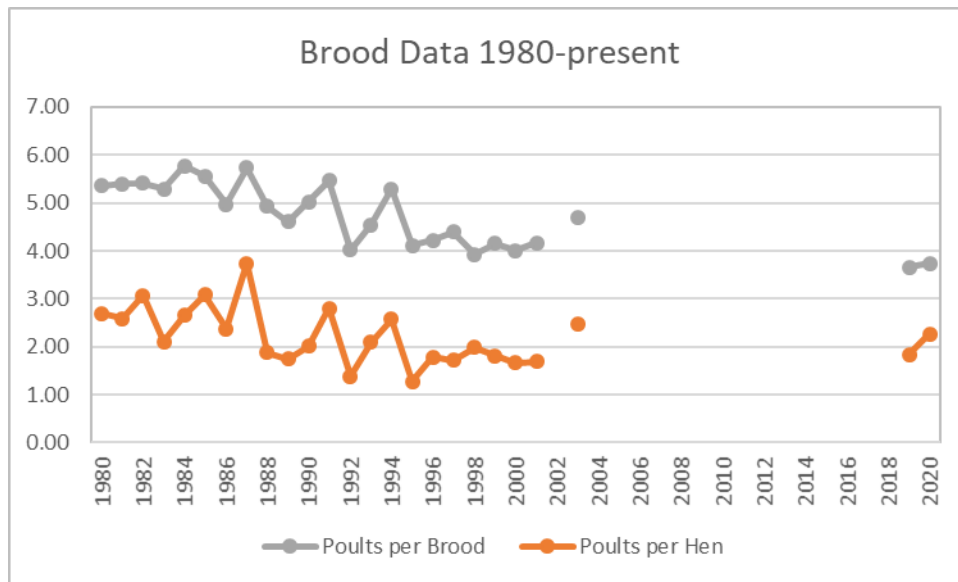


Figure 2. Toms per 100 hens and Percent of Hens with Broods. Both metrics for 2019 and 2020 were near or above prior data points.

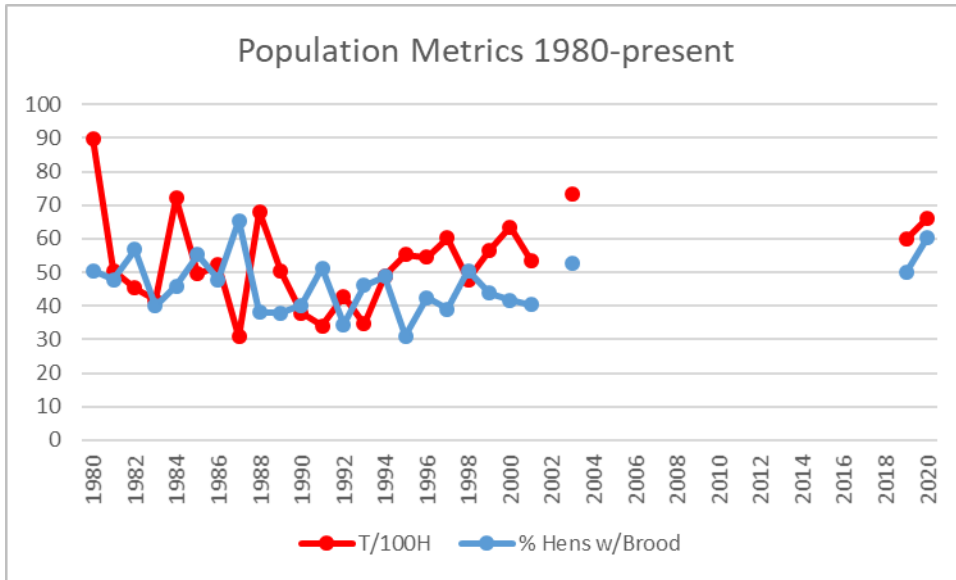
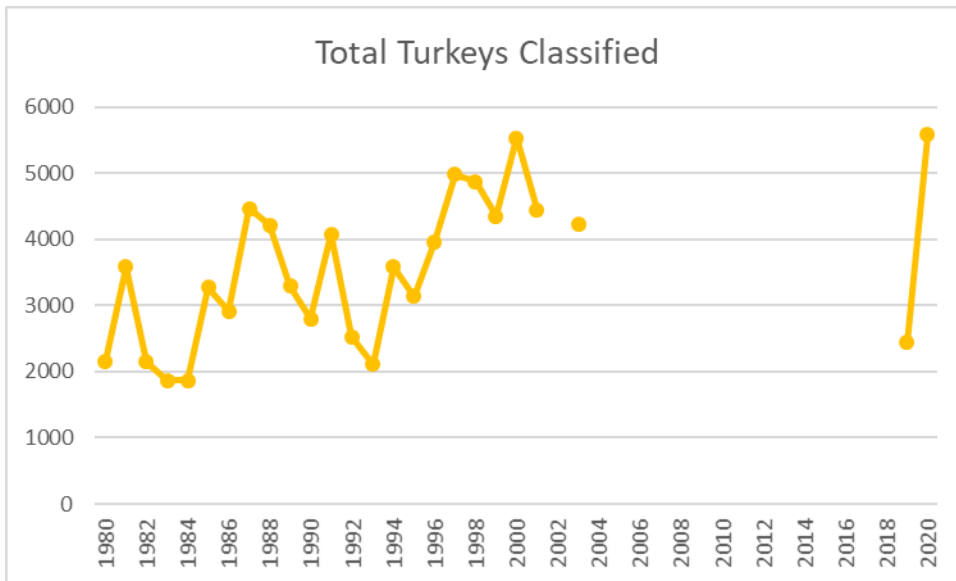
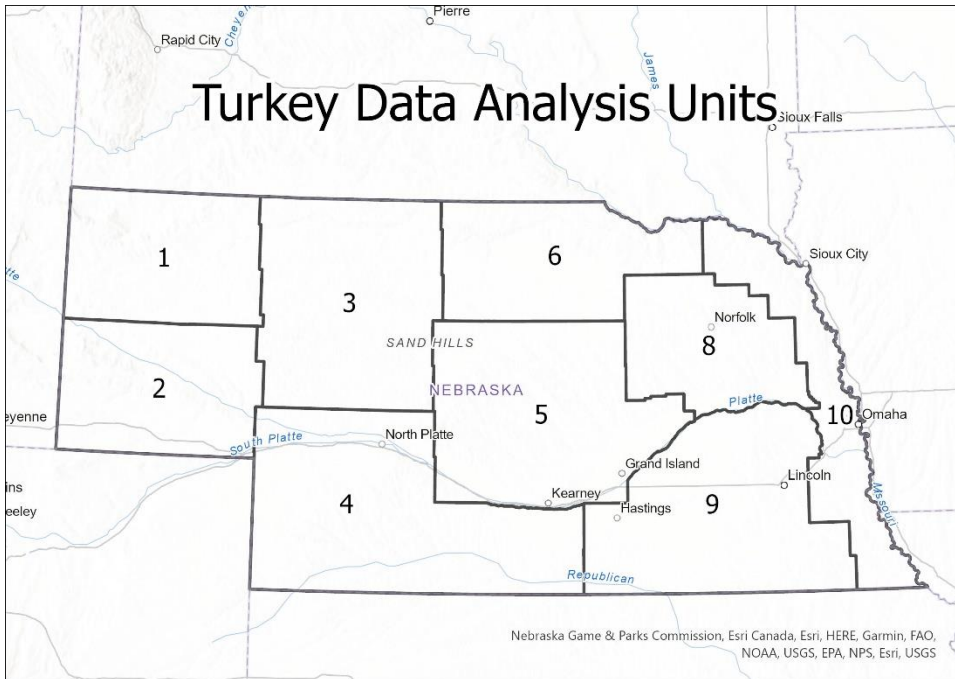


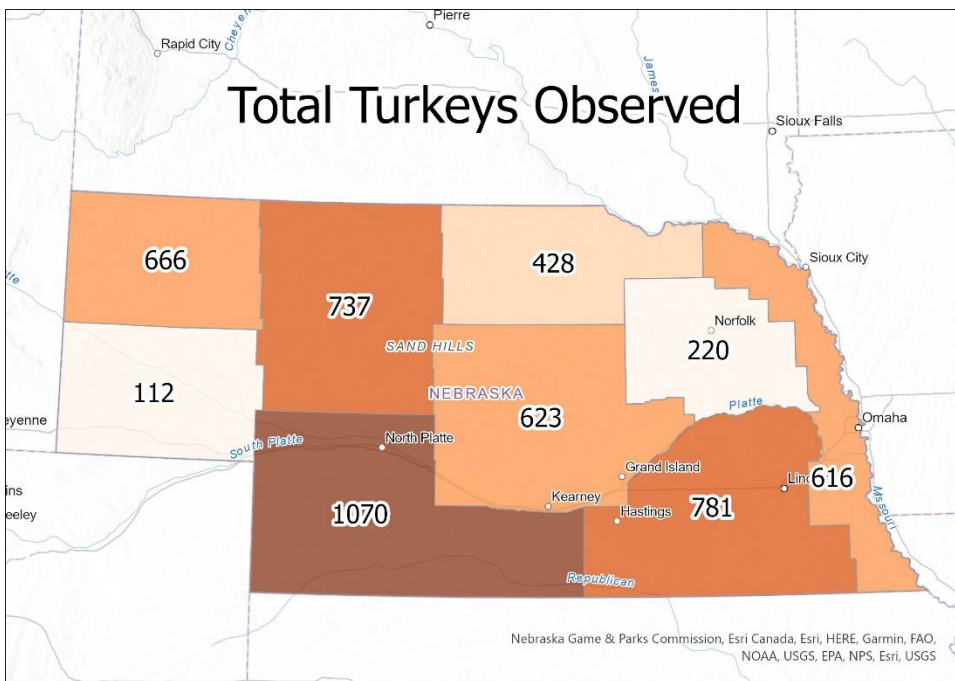
Figure 3. Total Turkeys Classified.



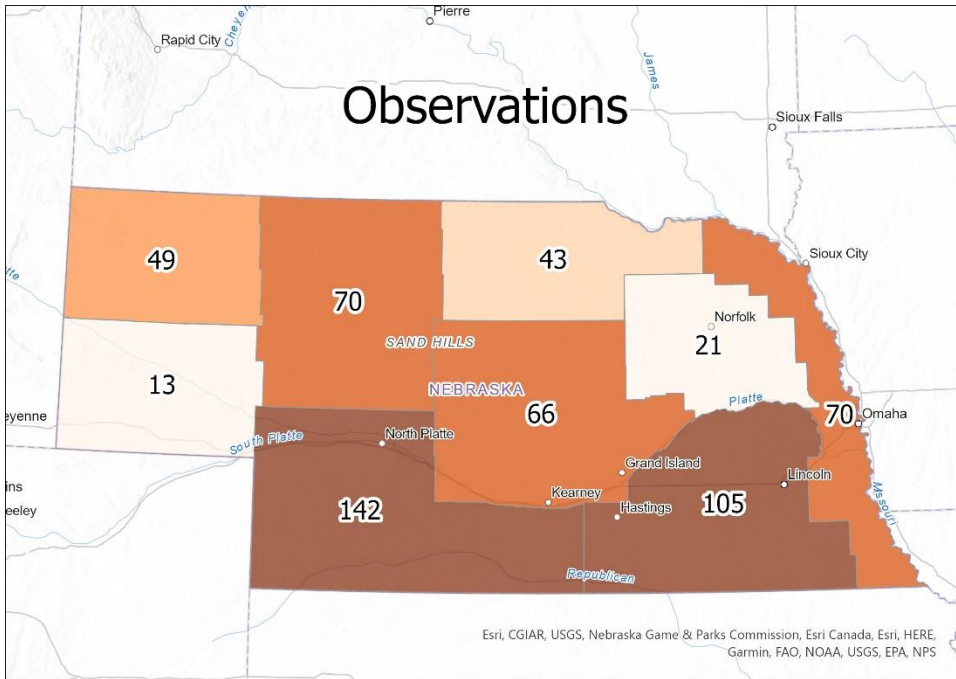
## Regional Analysis



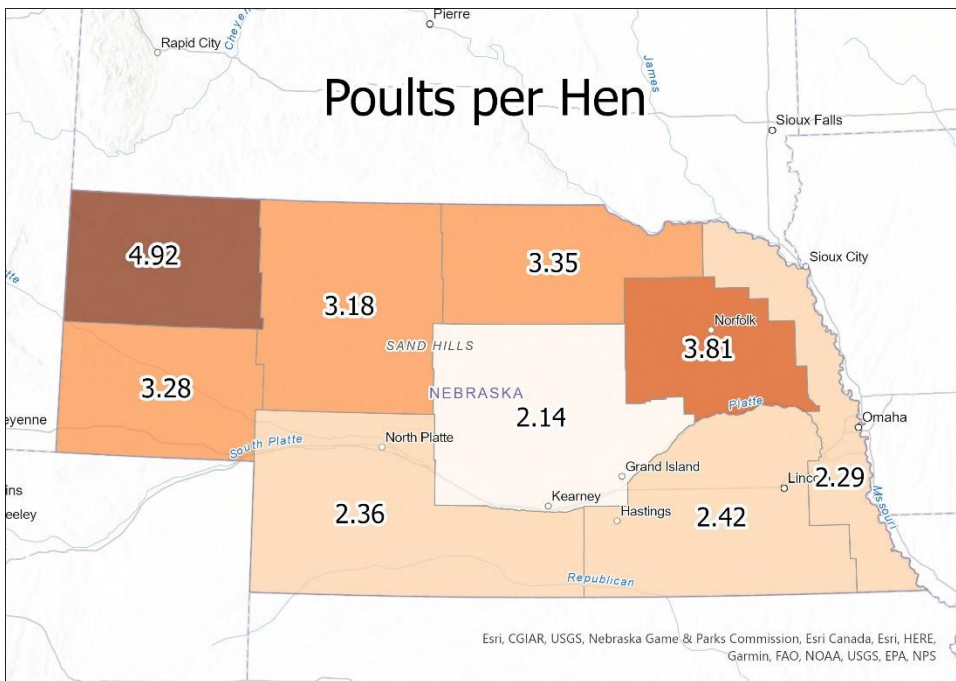
Map 1. Data Analysis Units (DAU) in Nebraska. DAU were based on county and derived from old turkey management units. Some adjustments were made to account for habitat and logical breaks between areas.



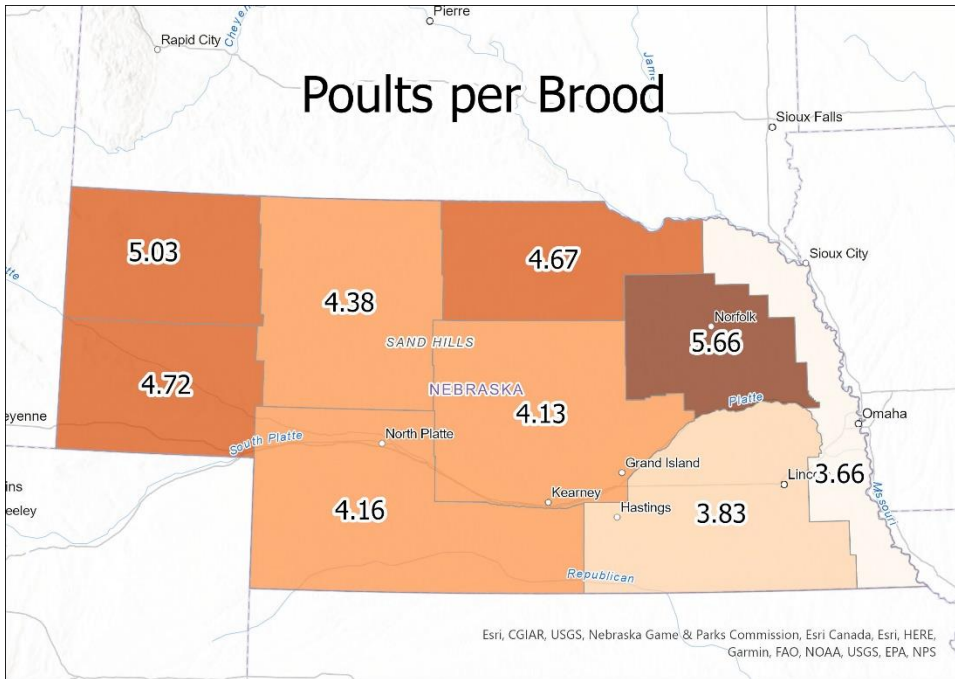
Map 2. Total turkey observations per unit. This total includes toms, hens, poults and unknown turkeys.



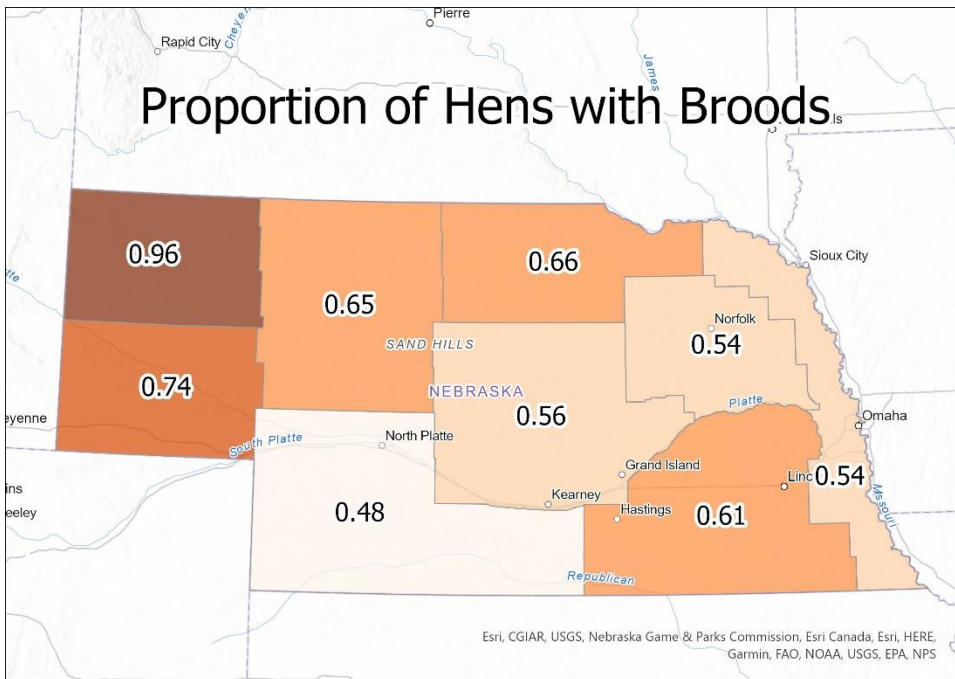
Map 3. Brood observations by DAU. Goal to detect year to year changes is 200-500.



Map 3. Poults per Hen. Overall number of poults surveyed per hen surveyed.

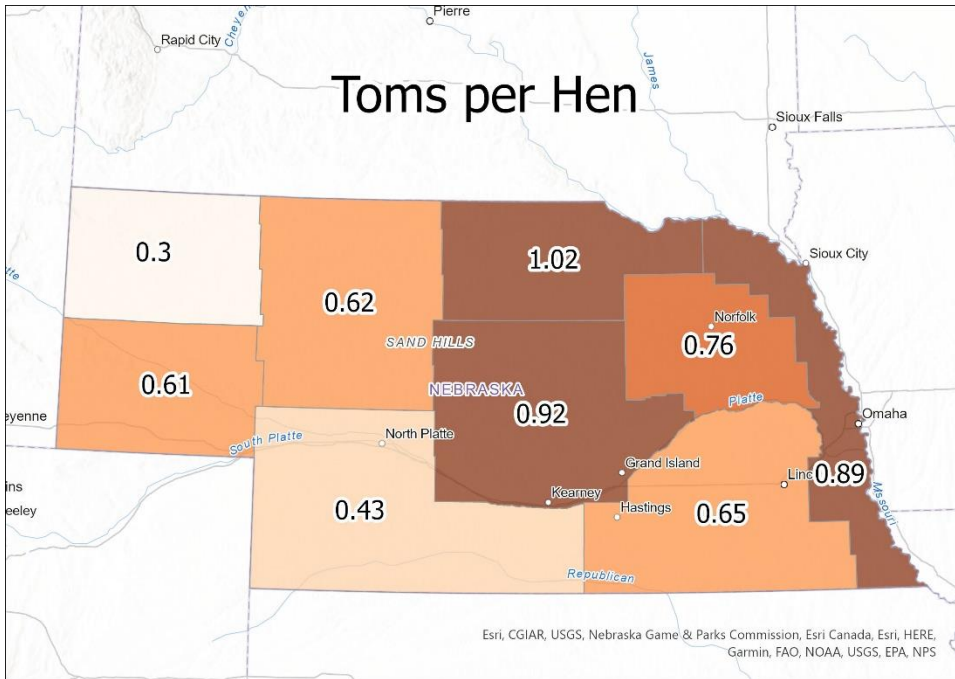


Map 4. Poults per Brood. Average size of observed broods. Poults per Hen and Poults per Brood are highly correlated, but do provide insight into overall production if nest success is variable (hens w/broods).



Map 5. Percentage of Hens with Broods. This metric can be an indicator of apparent nest success.

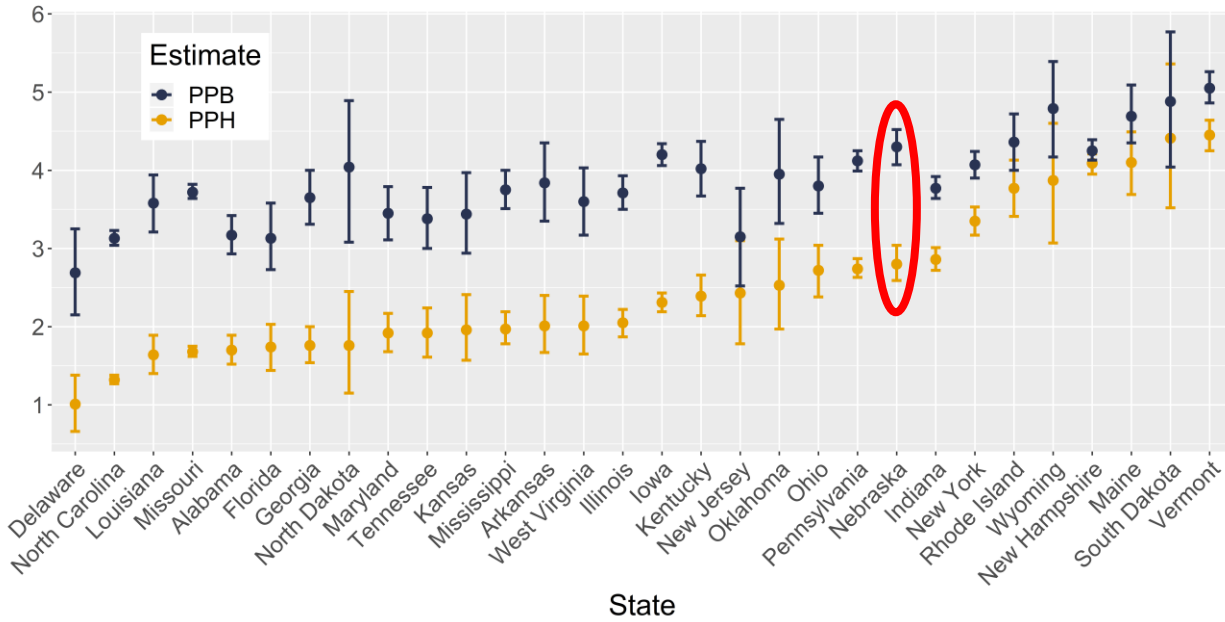




Map 6. Toms per Hen.

**Nationwide Turkey Brood Analysis**

Figure 4. Results of turkey brood surveys in 30 states participating in the NWTf technical committee brood survey data analysis. Nebraska data is circled in red.



## **Discussion**

The restart of the turkey brood survey was successful in collecting turkey brood data and including the general public in data collection nearly doubled the observations from 2019. While brood metrics varied across the state, the statewide results were similar to historic data points and indicate a healthy turkey population with good production in 2020.

Compared to estimates from other participating states, in 2020, Nebraska ranks in the upper half for poult per hen and is towards the top overall in average brood size. Hens with broods and toms per hen were very similar to other states as well.

Low proportions of hens without broods and low tom:hen ratios in the panhandle could indicate that observers need to be reminded to count all turkey observations and not just hens with broods.

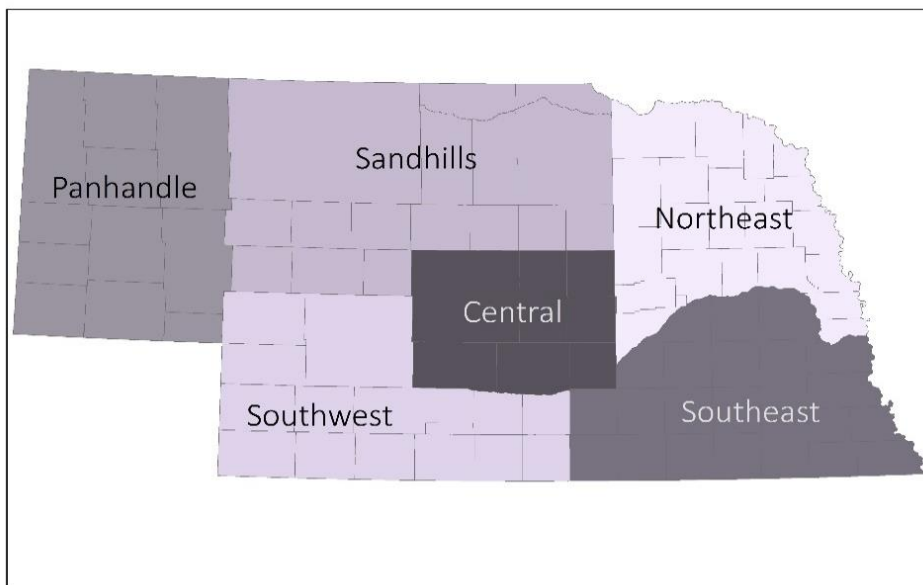
We plan to complete this survey in the future and will increase our effort to involve the general public with emails to hunters and more social media involvement.

## **Rural Mail Carrier Survey**

The RMCS survey is performed three times each year, in April, July and October. The following data is a yearly average of those 3 survey periods. Details about the survey and data from each survey period can be found in the RMCS reports section on <http://outdoornebraska.gov/upland/>

### **Survey Area**

For the RMCS, Nebraska is broken into 6 regions which have some similarities to the Turkey Brood DAU shown above. Please see Map 7 for the RMCS survey regions.

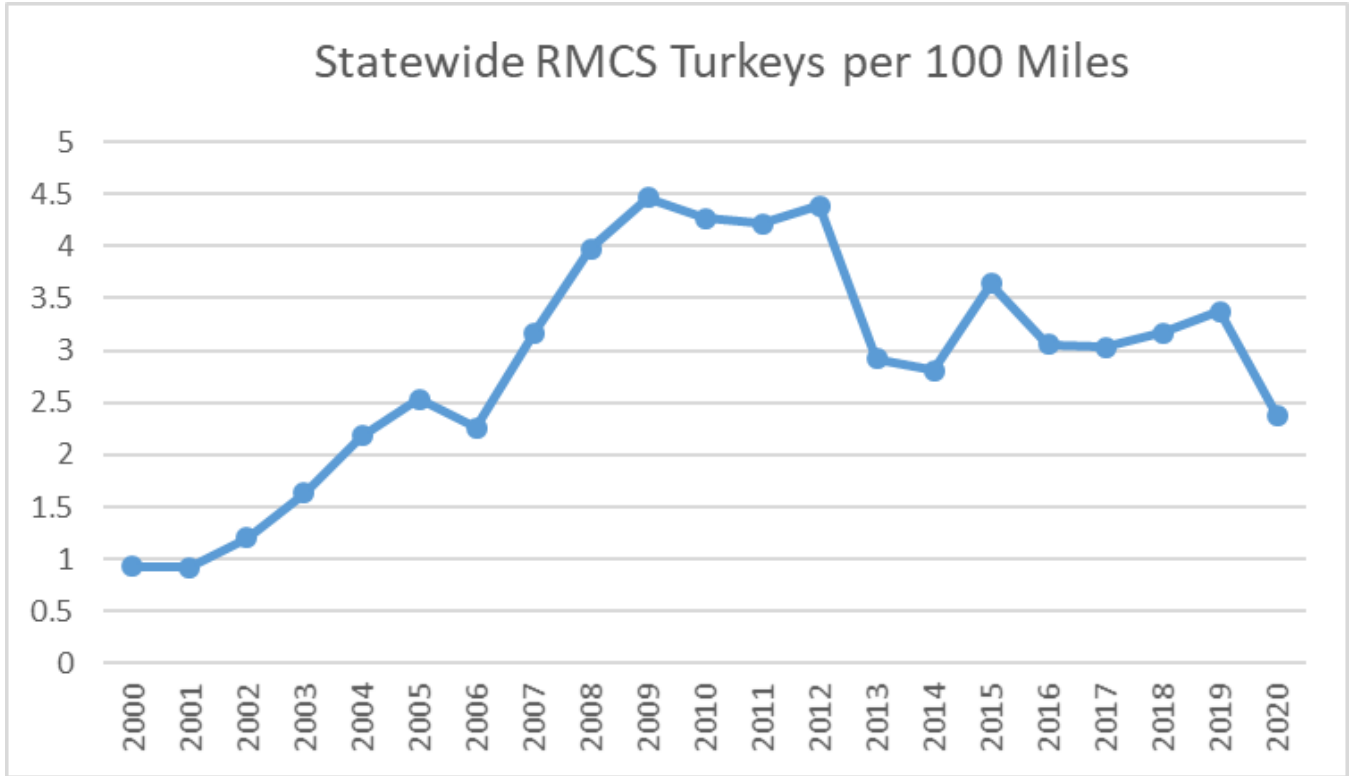


Map 7. RMCS regions.

**Results**

For the following graphs, all data is depicted in turkeys observed per 100 miles surveyed.

Figure 5. Statewide average, RMCS turkeys per 100 miles.



**Regional Results**

Figure 6. Panhandle average, RMCS turkeys per 100 miles. Extreme drought of 2012 made data an anomaly (2x the 2009 high) and was omitted.

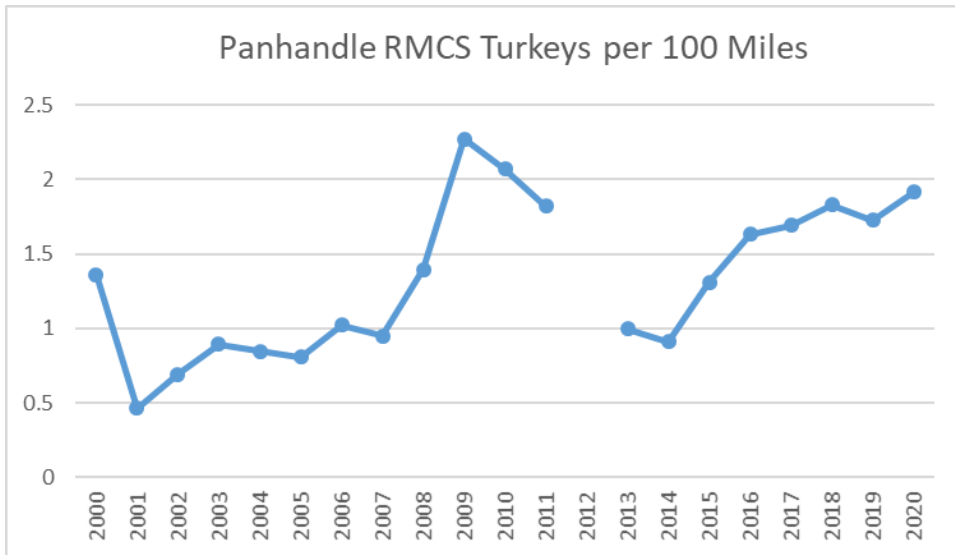


Figure 7. Southwest average, RMCS turkeys per 100 miles.

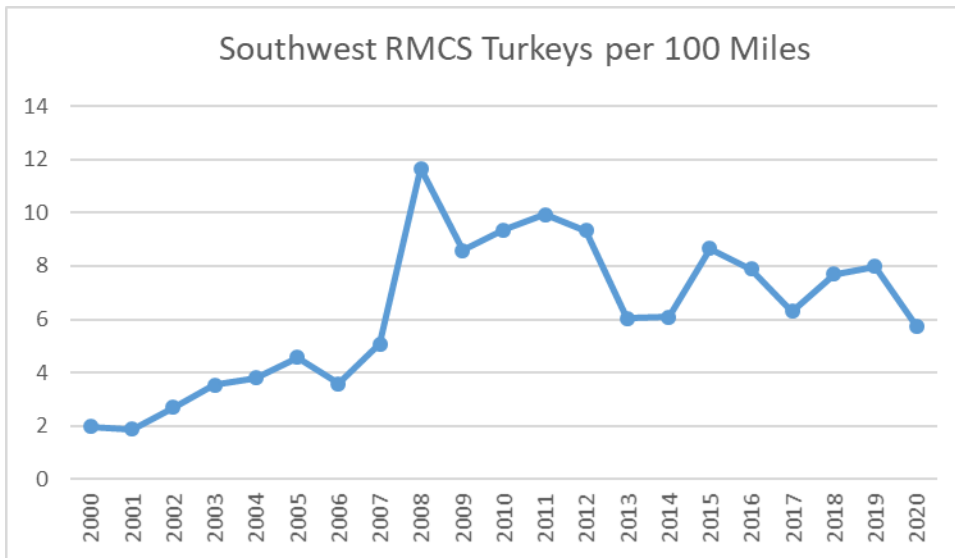


Figure 8. Sandhills average, RMCS turkeys per 100 miles.

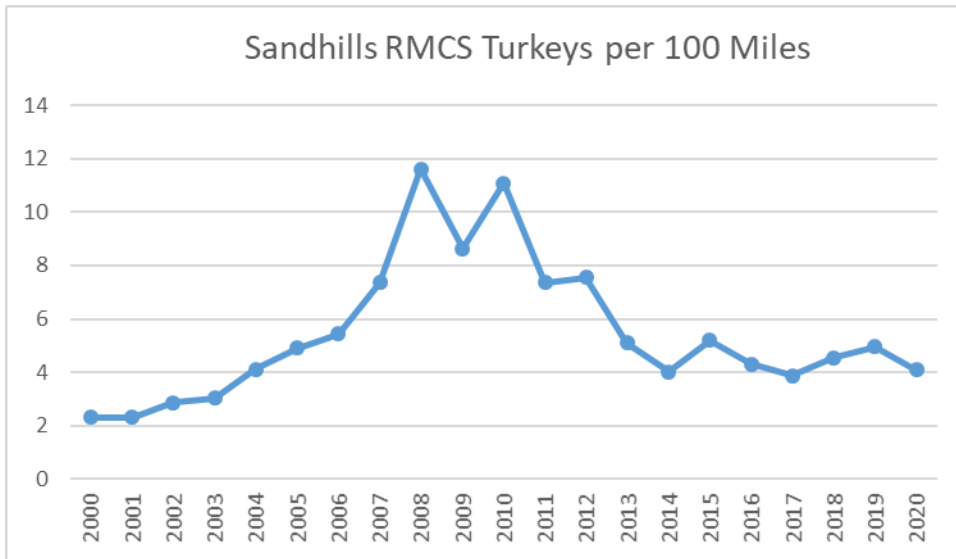


Figure 9. Central average, RMCS turkeys per 100 miles.

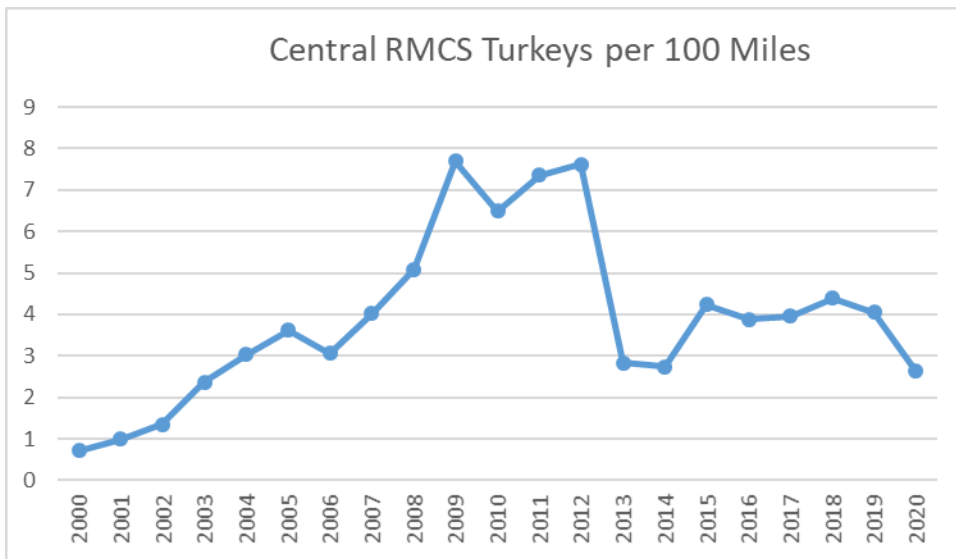


Figure 10. Northeast average, RMCS turkeys per 100 miles.

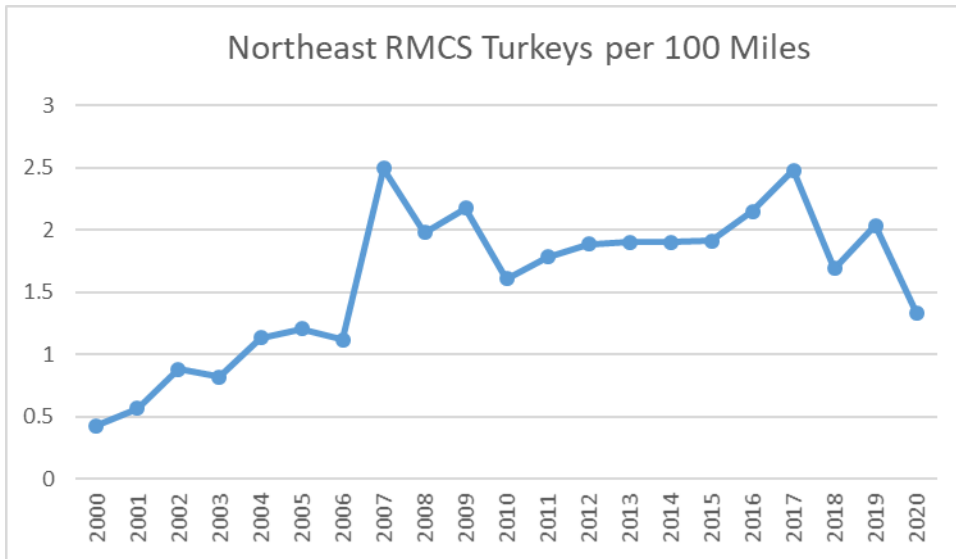


Figure 11. Southeast average, RMCS turkeys per 100 miles.

