2021 Nebraska Turkey Survey Report

Luke Meduna | Big Game Program Manager
Nebraska Game and Parks Commission | Wildlife Division
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This report includes information from both the Nebraska Turkey Brood Survey and the Rural Mail Carrier Survey (RMCS). The RMCS functions as an index for turkey populations while the Brood survey describes turkey production within Nebraska. Both are useful in describing turkey populations within the state and making management decisions.

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 ≥25% of turkeys are marked as unidentified will be censored.
- Observations of ≥8 hens with no poults will be censored.
- Observations of poults with no hens will be censored.
- Observations of ≥1 hen and ≥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 2021, 369 observers (public and agency staff) reported 851 observations of turkeys during the survey period, observing 5,806 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 W/O	HENS W	POULTS	TOTAL	% HENS W/BROOD	POULTS PER HEN	POULTS PER BROOD	TOMS/100 HENS
2019	424	352	357	1306	2439	50%	1.84	3.66	60
2020	942	563	860	3220	5585	60%	2.80	4.30	66
2021	954	428	1070	3354	5806	72%	2.93	4.03	64

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

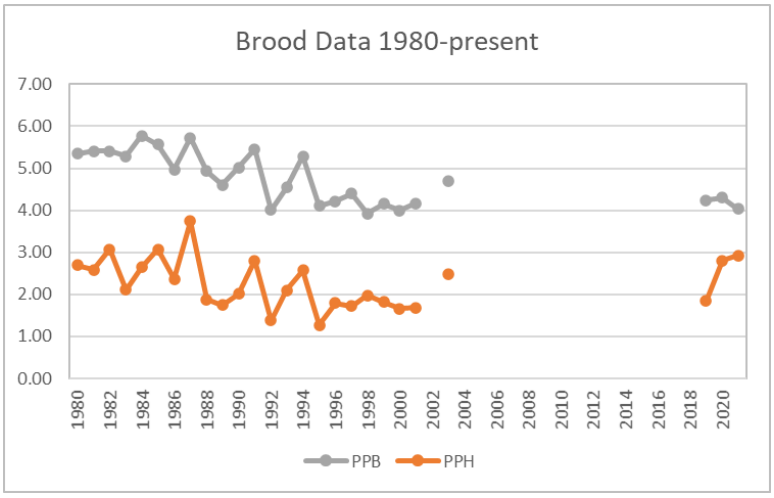


Figure 2. Toms per 100 hens and Percent of Hens with Broods.

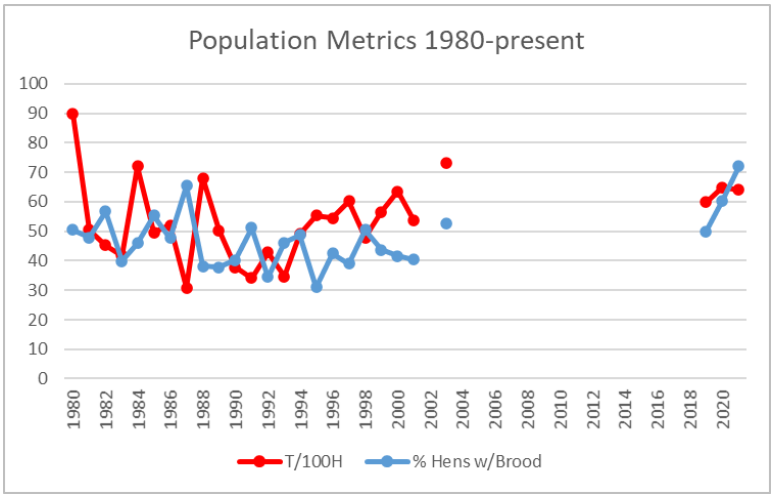
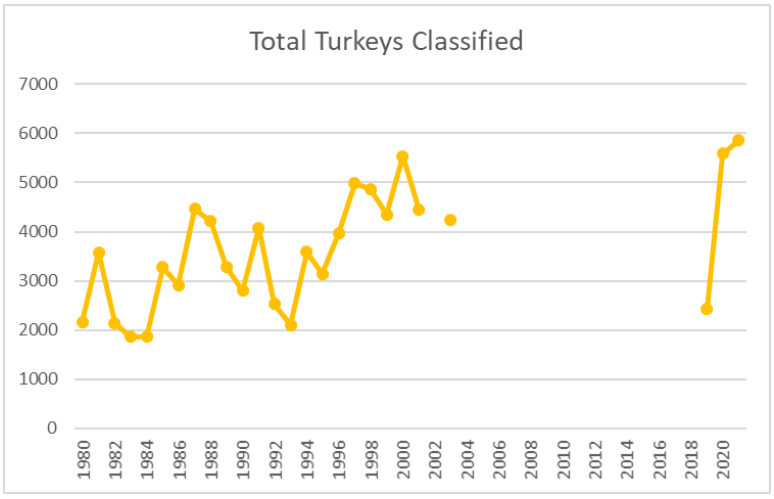


Figure 3. Total Turkeys Classified.



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.

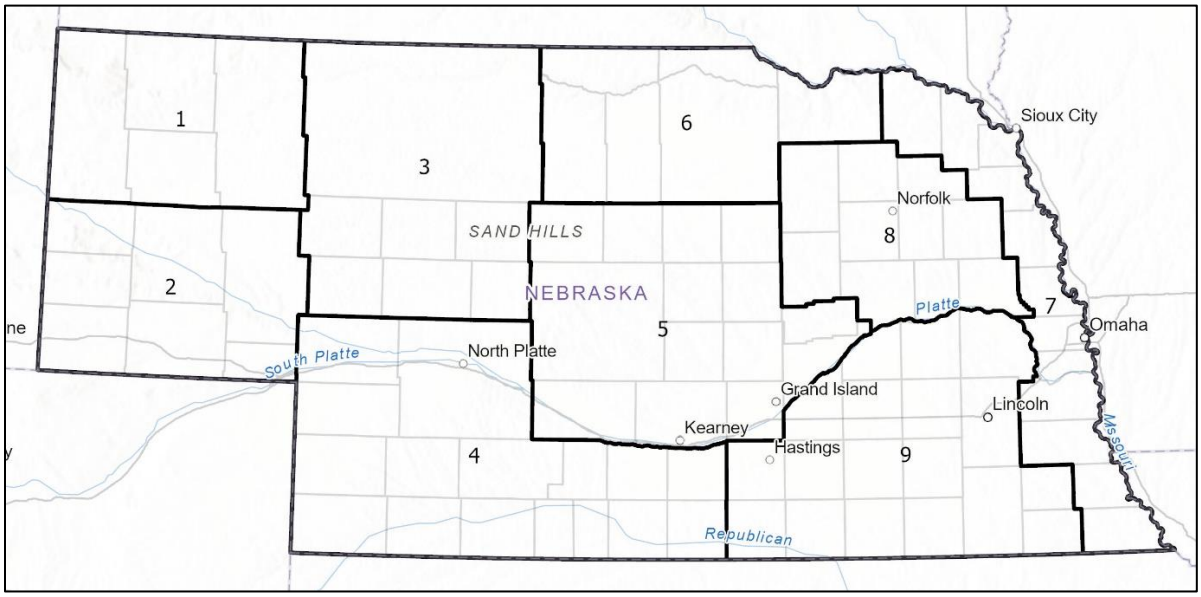
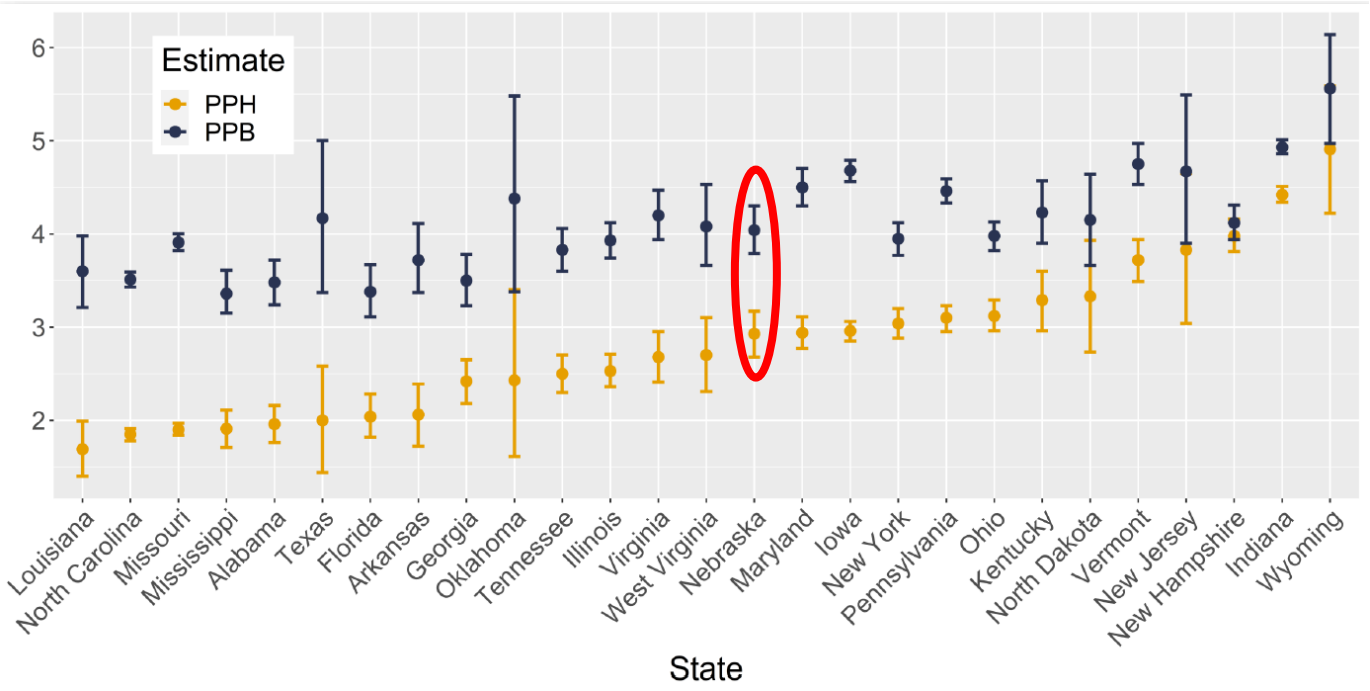


Table 2. Data Analysis Units

YEAR	DAU	OBSERVATIONS	TOTAL TURKEYS	% HENS W/BROOD	POULTS PER HEN	POULTS PER BROOD	TOMS/ 100 HENS
2020	1	49	666	96%	4.92	5.03	30
2021	1	76	1,010	88%	3.35	3.76	48
2020	2	13	112	74%	3.28	4.72	61
2021	2	18	276	90%	4.25	4.79	62
2020	3	70	737	65%	3.18	4.38	62
2021	3	22	296	57%	2.64	3.87	134
2020	4	142	1,070	48%	2.36	4.16	43
2021	4	111	1,030	67%	2.72	3.81	35
2020	5	66	623	56%	2.14	4.13	92
2021	5	77	724	58%	2.49	4.19	87
2020	6	43	428	66%	3.35	4.67	102
2021	6	37	362	72%	3.06	4.41	63
2020	7	70	616	54%	2.29	3.66	89
2021	7	92	1,061	77%	3.04	3.97	69
2020	8	21	220	54%	3.81	5.66	76
2021	8	24	178	43%	2.66	4.9	47
2020	9	105	781	61%	2.42	3.83	65
2021	9	109	991	71%	2.91	4.08	76

Nationwide Turkey Brood Analysis

Figure 4. Results of 2021 turkey brood surveys in 27 states participating in the NWTF technical committee brood survey data analysis for comparison. Nebraska data is circled in red.

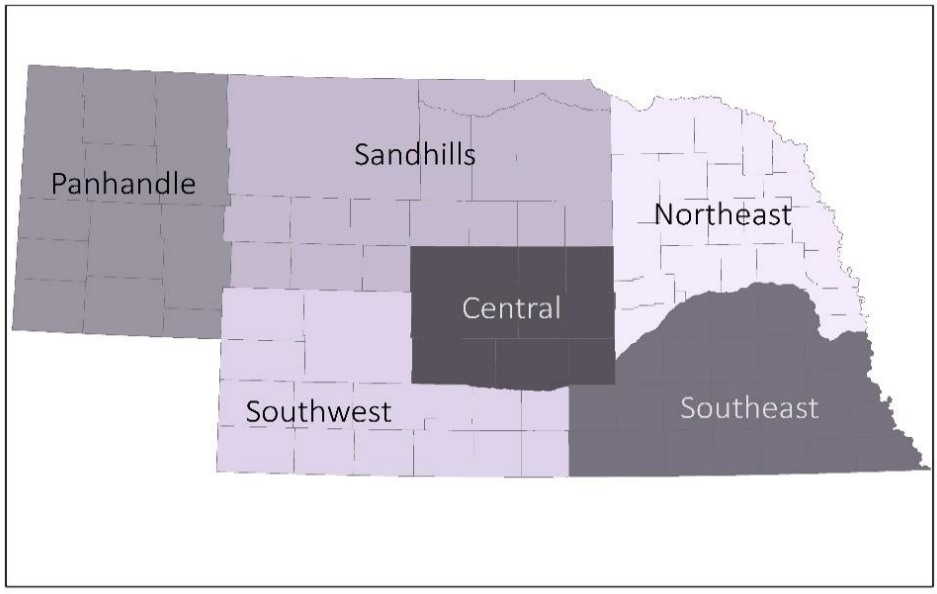


Rural Mail Carrier Survey

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/wildlifesurveys/

Survey Area

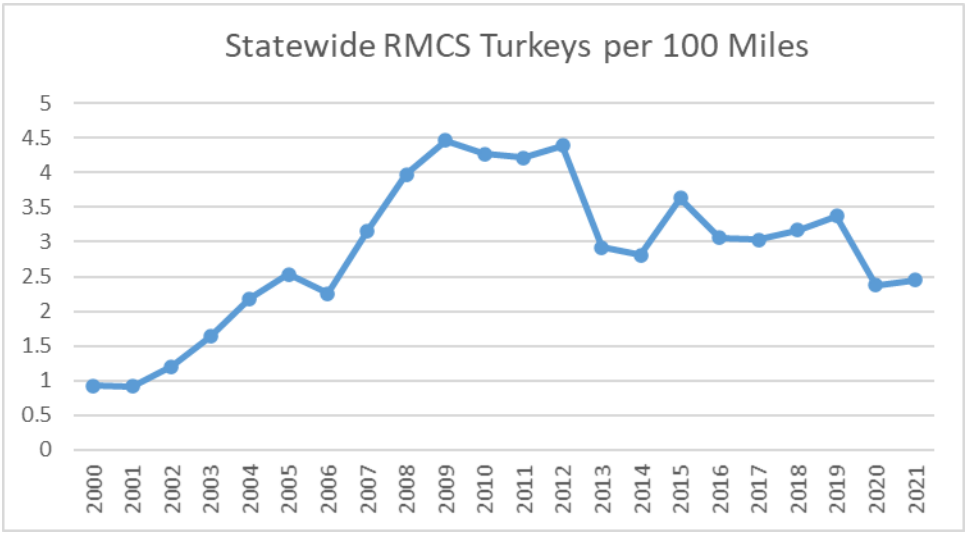
For the RMCS, Nebraska is broken into 6 regions which have some similarities to the Turkey Brood DAU shown above. Please see Map 7 for the RMCS survey regions.



Map 7. RMCS regions.

Results

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 is omitted.

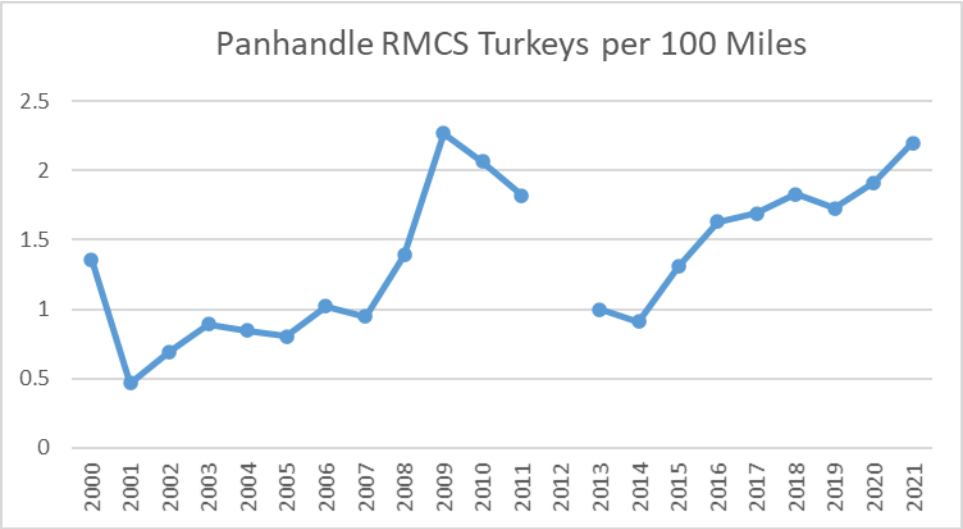


Figure 7. Southwest average, RMCS turkeys per 100 miles.

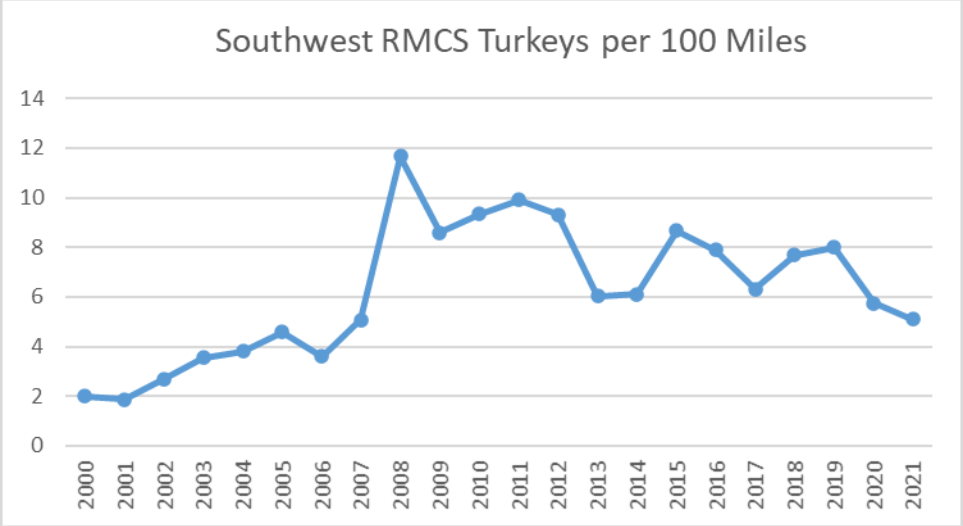


Figure 8. Sandhills average, RMCS turkeys per 100 miles.

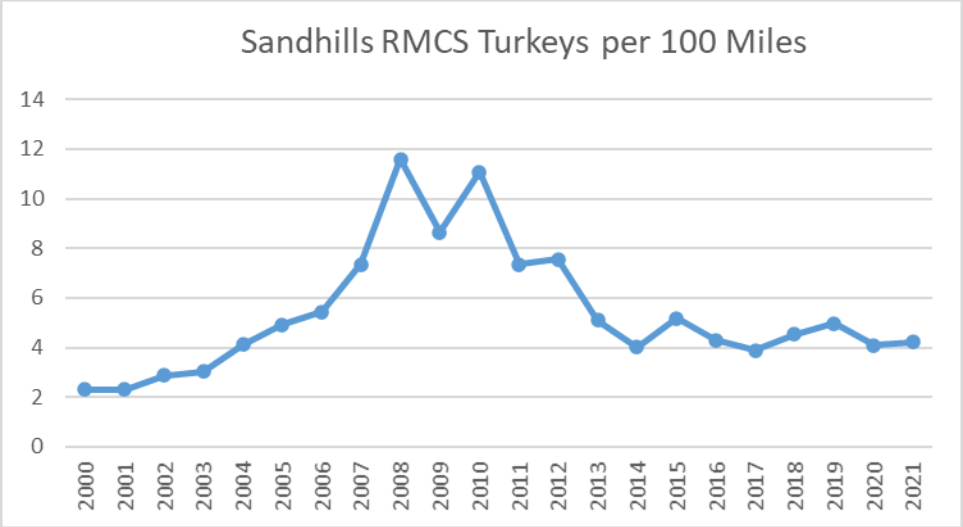


Figure 9. Central average, RMCS turkeys per 100 miles.

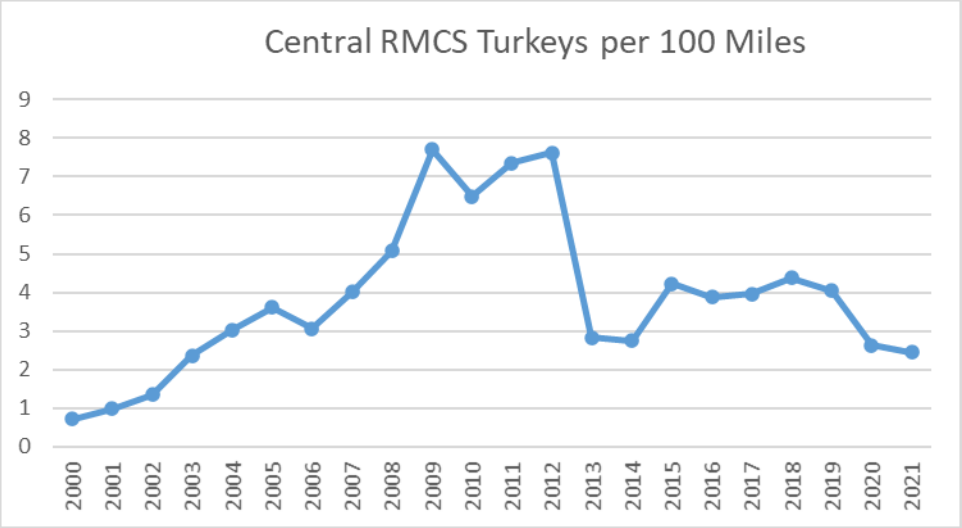


Figure 10. Northeast average, RMCS turkeys per 100 miles.

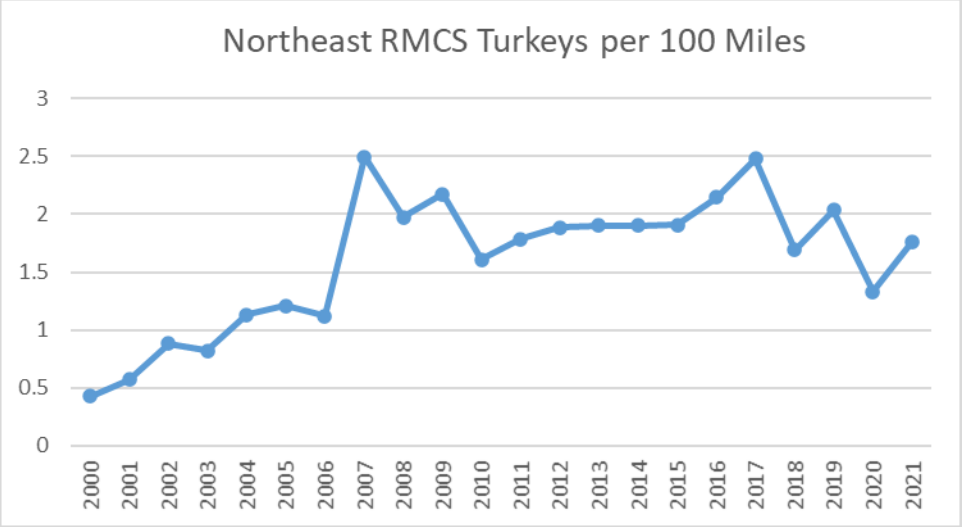
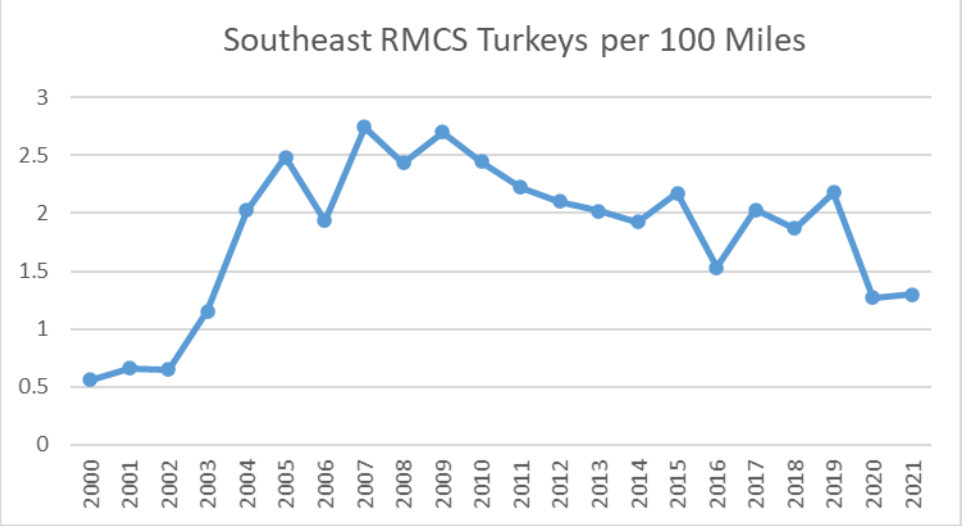


Figure 11. Southeast average, RMCS turkeys per 100 miles.



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 and increased from 2020 totals. 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 2021.

Compared to estimates from other participating states, in 2021, Nebraska ranks in right in the middle of both poults per hen and brood size. Hens with broods and toms per hen were very similar to other states as well.

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.

Overall, turkey indices (RMCS) have declined about 50% statewide since the peak of the late 2000's. Brood data indicate that turkey production the last 2 years has been comparable to historic production numbers and that nest success (% of hens with broods) has remained comparable to historic numbers as well. While we don't have brood data from the peak years to know if it was better at that point, we do know that our current production is not worse than during the period leading into the peak years.