KENTUCKY WILD TURKEY POPULATION STATUS REPORT – 2021

Zak Danks – Turkey Program Coordinator
Kentucky Department of Fish and Wildlife Resources
1 Sportsman's Lane
Frankfort, KY 40601
502-330-6213 / zak.danks@ky.gov

POPULATION STATUS

Kentucky's wild turkey population is roughly 250,000–400,000 based on spring harvest as an index to abundance. Turkey restoration occurred between 1978 and 1997, and by 1996 all 120 counties were open to spring hunting. After years of steady population growth, spring harvest peaked at >36,000 in 2010. Over the past decade, spring harvest has stabilized around an average 30,000 turkeys and reproductive success has averaged 2.0 poults per hen. Reproduction has been 3 times more variable than harvest (cv = 0.20/0.06), however, which may have contributed to changes in turkey abundance at local levels in some areas. Concern from hunters has prompted research focused on estimating harvest rates and population health.

REPRODUCTION

Methods

The Kentucky Department of Fish and Wildlife Resources (KDFWR) has conducted a wild turkey brood survey since 1984. Staff and volunteers record turkeys seen during routine travels in July and August either electronically via a Survey123 mobile phone app and website, or by paper form. We calculate 4 metrics from turkey observations received: a poult per hen ratio (PPH) to indicate overall productivity, the percentage of hens with poults to indicate nesting success, a poults per brood ratio (PPB) to indicate poult survival, and a male to female ratio to indicate gobbler carryover after the hunting season.

Prior to 2017, PPH ratio was calculated as total poults divided by total hens across all observations. Since 2017 we have used a standardized protocol adopted by the National Wild Turkey Federation Technical Committee, which calculates PPH as the mean of per-observation values. This protocol only uses observations that meet specific criteria that promote consistency and comparability among states (e.g., whether the turkeys being reported have been seen before). We report statistics for the current year compared to recent years using the new method, but for consistency use the traditional calculation when reporting PPH trends.

Results

In 2020 survey cooperators reported a total of 910 turkey observations. More observations were reported via the Survey123 app/website (73%) than from paper datasheets. Most observations were of turkeys not previously seen by cooperators (61%). More observations were reported from the Central Region (435; 48%) than the Eastern Region (286; 31%) and the Western Region (137; 15%; Figure 1). The raw number of turkey observations (i.e., distinct events before

any filtering) was 7% greater than in 2019 (910 vs. 850), although 11% fewer total turkeys were reported in those observations (3,264 vs. 3,651).

After filtering, we included 488 in the standardized protocol method of analysis. Statewide, apparent nesting success was similar across regions (i.e., the proportion of hen observations where a brood was also observed; Table 1). Compared to 2019, these values changed -5% statewide and -21%, +5%, and +2% in Western, Central, and Eastern Regions, respectively.

Statewide, the brood survival index (PPB) was higher in Western and Central Regions than in the Eastern Region (Table 1), and compared to 2019, changed +9%, +8%, and -28%, respectively.

Gobbler carryover was similar in Western and Central Kentucky but higher in Eastern Kentucky (male to female ratio; Table 4). Compared to 2019, this metric changed +23% statewide and +84%, 0%, and +15% in Western, Central, and Eastern Regions, respectively.

Similar to PPB, overall productivity (PPH) was much higher in Western and Central Regions than in the Eastern Regions (Table 1). Compared to 2019, statewide PPH dropped by 11%. Regionally, changes were -22%, +11%, and -50% in the Western, Central, and Eastern Regions, respectively.

The trend in PPH continues to vary considerably from year to year (Figure 2). PPH dropped in 2020 compared to the previous 2 years, landing slightly above the 2 lowest PPH years on record (2011 and 2017). However, except for the 2008 cicada emergence year, PPH has been relatively stable for over 15 years. Greater sample sizes are needed to increase confidence in brood survey estimates of turkey productivity. Nevertheless, our results track neighboring states fairly well and illustrate the fluctuations in reproductive success that appear to be the norm in the current post-restoration era of wild turkey management.

HARVEST

2021 Spring Turkey Season

Regulations Overview

Kentucky's statewide spring regular season is 23 consecutive days beginning the Saturday closest to 15 April (i.e., varies among years between 12–18 April). A youth-only spring season is 2 days beginning the Saturday closest to 1 April. Except for license-exempt landowners and farm tenants, a spring turkey permit is required of resident and nonresident hunters over age 15 in addition to a hunting license. Resident Sportsman's, Senior, and Disabled license types include the spring permit. Youths 12–15 years old must purchase a youth turkey permit. Bag limits are 2 turkeys with visible beards harvested per season and 1 per day. Harvest reporting by phone or internet is mandatory.

Harvest Results

A total of 29,223 turkeys were harvested during 2021 statewide youth and regular seasons combined (Figure 3). This was 8% below 2020, <1% different than the 3-year average, and 4%

below the 10-year average. Harvest on opening weekend of the regular season (34% of the season total) changed by <1% from last season but was 10% above the 5-year average. Harvest during youth season plus during the first 7 days of the 23-day regular season accounted for 60% of the total harvest (Figure 4). Compared to 2020, harvests during all 4 regular season weekends changed <1% from 2020, but harvests on weekdays dropped 14% from 2020 and 12% from the 5-year average. The percentage of jakes in the harvest was 10.4%, compared to 13.6% in 2020 and the previous 5-year average (2016-2020) of 13.0%. The percentage of hunters that harvested the statewide bag limit of 2 turkeys was 25.8%, which did not differ from last season or the 5-year average.

Geographically, the top 5 counties for total harvest were Muhlenberg County (622), Logan County (606), Christian County (553), Pulaski County (530), and Hart County (521; Figure 5). Harvest decreased in 4 of 5 Wildlife Division Regions by 10% on average. Private land harvest (27,476) dropped by 9% compared to last year and by 5% compared to the 5-year average. In contrast, public land harvest (1,746) increased 14% compared to last year and 7% compared to the 5-year average.

Overall license sales (139,409) changed just 2% from last spring (Figure 6). Youth licenses dropped 11% from last season and 4% from the 5-year average. Resident Sportsman's licenses and Senior licenses make up the bulk of potential turkey hunters. Sportsman's licenses changed <1% from last season but increased 18% from the 5-year average. Senior licenses increased 15% over 2020 and 5% over the 5-year average. Resident Spring Turkey Permits changed dropped 37% from last season and 43% from the 5-year average, but these make up a small proportion of all sales due to the switch by most residents to either Sportsman's or Senior licenses.

In 2020, non-resident hunters harvested just 412 turkeys due to license and permit sales restrictions and travel limitations during the COVID-19 pandemic. In contrast, there were no such restrictions for the 2021 spring season, and as expected, the non-resident harvest increased far above 2020. The 2021 harvest of 3,768 birds was 9% higher than the 3,456 harvested in 2019 and 17% higher than the 5-year average of 3,235 (2015-2019).

Spring 2020's lower turkey harvest likely reflects less than ideal hunting weather (subfreezing temperatures opening weekend and nearly 3 weeks in April with colder than normal temperatures). It may also reflect less hunting effort; the average days of hunting per turkey harvested changed -25% compared to last year, indicating that although total harvest declined, hunters were more efficient this year (note, this estimate is based on responses by successful hunters only, who checked their turkey online; estimates of take-per-unit effort across all hunters are not yet available.). Holidays likely contributed to the considerable reduction in hunting effort and the slight reduction in harvest (Easter, second day of youth season; Mother's Day, last day of turkey season).

2020 Fall Turkey Season

Regulations Overview

A fall turkey permit is required of residents and nonresidents in addition to a standard hunting license, except for license-exempt landowners and farm tenants. The fall season bag limit is 4 turkeys, only 2 of which may be taken during the 2 shotgun seasons (regardless of weapon used), and only 1 of which may be a male bird with a beard length ≥3 inches.

Harvest Results

The reported harvest during Kentucky's 2020 fall season (2,102) increased 20% from 2019 (1,757). Geographically, fall harvest mirrors spring harvest. Eighty-five percent of successful hunters harvested 1 turkey, 14% harvested 2, 1% harvested 3, and <1% harvested the limit of 4. Sixty-eight percent of fall-harvested turkeys were hens, a 26% increase over 2019. Most of the fall harvest occurs during the 7-day October shotgun season (Figure 7).

The novelty of fall turkey hunting appears to have faded. We lack estimates of fall turkey hunting effort, but between 2009 and 2017 sales of fall turkey permits declined by 66% among residents and 22% among nonresidents (although some of the loss was offset by a 25% increase in sales of the resident Sportsman's license, which confers fall hunting privileges).

EMERGING OR EVOLVING ISSUES

Currently, the Kentucky Fish and Wildlife Commission is considering changes to fall turkey hunting regulations. Despite the declining trend in statewide fall harvest, we have no evidence suggesting fall harvest pressure has increased. For the past decade both the percentage of hens in the fall harvest (60-68%) and the percentage of successful fall hunters who harvest more than one turkey (11-16%) have been relatively stable. Crossbow harvest has increased but remains <300 statewide. Some hunters are proposing bag limit reductions but since so few hunters harvest >1 turkey in the fall, a season length reduction may be more effective.

RESEARCH

Beginning in the winter of 2021-22 we will begin the first field season of a statewide banding project. The research project, "A Multi-State Banding Project to Investigate Factors Affecting Gobbler Harvest Rates and Population Health", will involve a partnership with Dr. Brad Cohen at Tennessee Tech University and the Tennessee Wildlife Resources Agency, who began their first field season in winter 2020-21. Our objectives are to: estimate age-specific harvest rates of male wild turkeys across KY; assess variables that influence harvest rates (biological, landscape, and regulatory framework); develop predictive models of various regulatory changes that could influence harvest; compare harvest rates with summer brood survey data to investigate of abundance; and perform pathogen screening to describe baseline health for wild turkeys in Kentucky.

RELEVANT LINKS

KDFWR: https://fw.ky.gov/Pages/default.aspx
Spring turkey hunting: https://fw.ky.gov/Hunt/Pages/Spring-Turkey-Hunting.aspx
Fall turkey hunting: https://fw.ky.gov/Hunt/Pages/Fall-Turkey-Regs.aspx
Brood survey webpage: https://fw.ky.gov/Hunt/Pages/TurkeyBroodSurvey.aspx
Mast survey report: https://fw.ky.gov/Hunt/Documents/2019MastSurveyReport.pdf

FIGURES AND TABLES

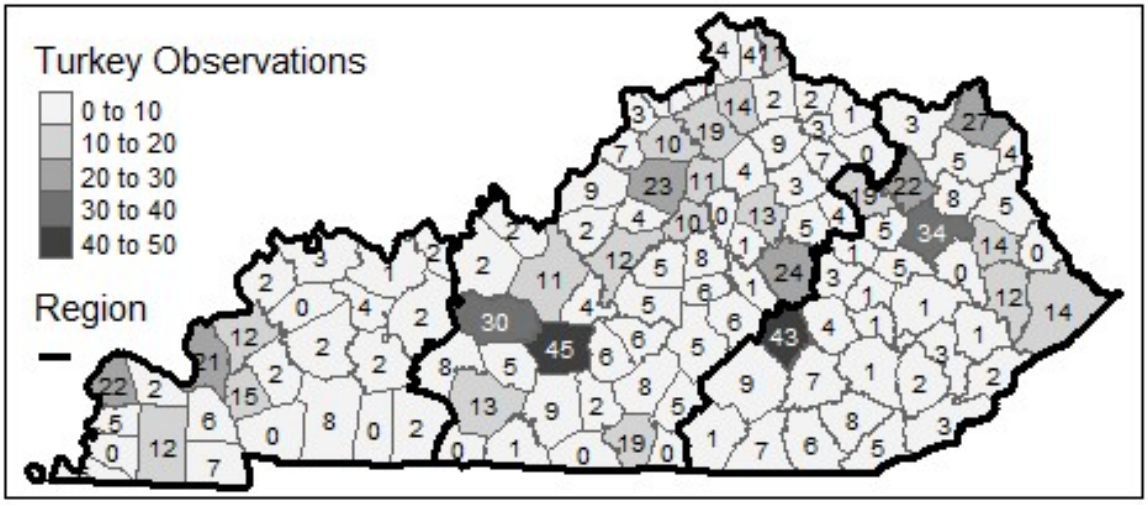

Figure 1. Wild turkey observations (n = 910) reported during the Kentucky wild turkey brood survey, 2020. Shading indicates number of observations per county. Heavy black outlines denote survey regions consisting of counties grouped by similar land cover and use (Western, Central, Eastern, respectively).

Table 1. Estimated poult-per-hen ratios (PPH), poult-per-brood ratio (PPB), percentage of hens with a brood, and male-female ratio for the Kentucky wild turkey brood survey, 2020.

Region	PPH (95% CIs, n)[a]	PPB (95% CIs, n)[b]	% Hens With Brood (n)[c]	Male:Female (n)[d]
Western	2.9 (2.3-3.6, 71)	4.7 (4-5.5, 45)	59.3 (71)	0.5 (83)
Central	2.7 (2.3-3.1, 196)	4.2 (3.7-4.7, 127)	66.9 (196)	0.4 (240)
Eastern	1.4 (1-1.9, 93)	3 (2.3-3.8, 43)	60.2 (93)	0.6 (131)
Unknown	2.1 (1.2-3.1, 25)	3.4 (2.5-4.6, 15)	48.2 (25)	0.6 (34)
Statewide	2.4 (2.1-2.7, 385)	4 (3.7-4.4, 230)	62.9 (385)	0.5 (488)

[a] 95% confidence intervals calculated by bootstrapping; n = number of observations used in calculation; [b] 95% confidence intervals calculated by bootstrapping; n = number of observations used in calculation; [c] Percentage of hens observed with at least 1 poult; [d] Total number of males observed divided by total number of hens observed

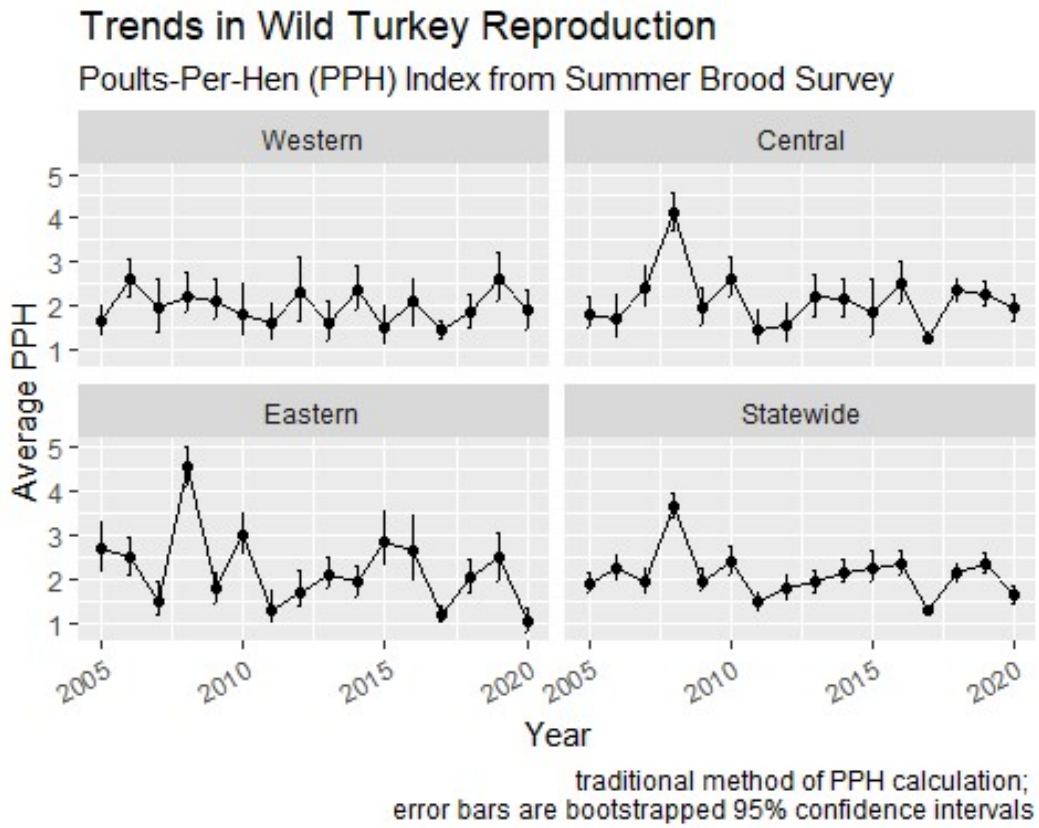

Figure 2. Trends in the poult-per-hen ratio (PPH), an index of turkey productivity from the Kentucky wild turkey brood survey conducted in July and August, 1984-2020. PPH was calculated by the traditional method of dividing the total number of poults by the total number of hens over all observations. Thus, for 2017-2020 values reported in Table 1 and mentioned in-text will not match those shown above.

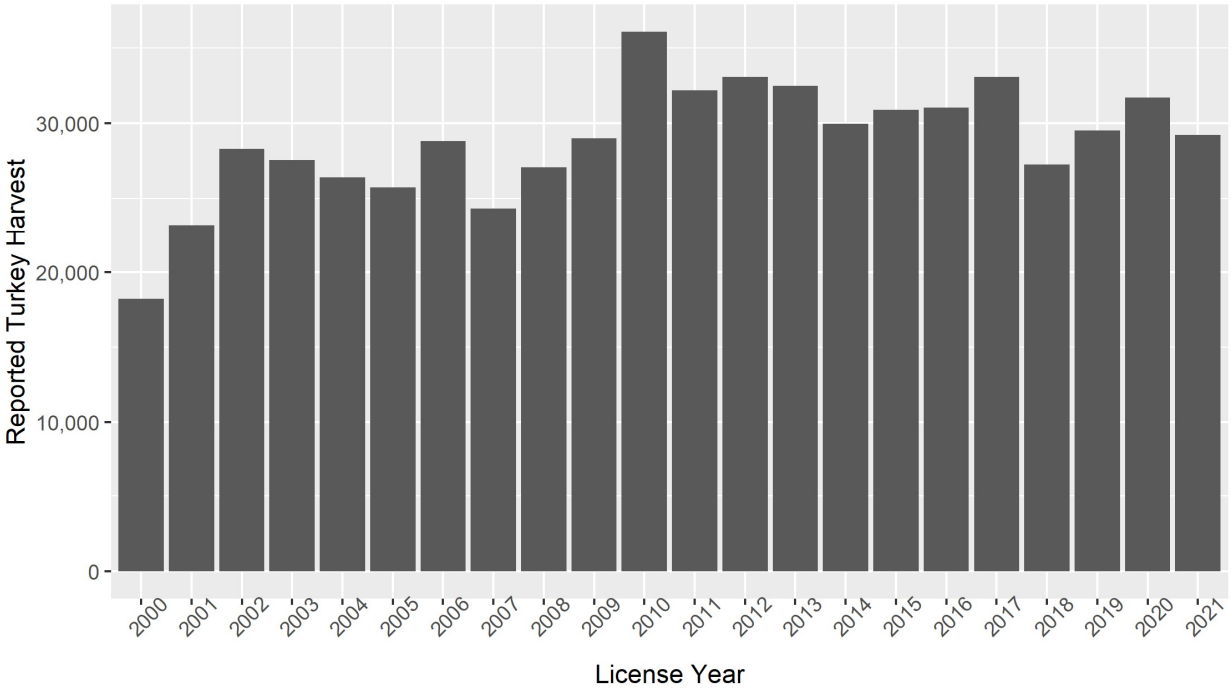

Figure 3. Number of wild turkeys harvested during the spring season in Kentucky, 2000–2021.

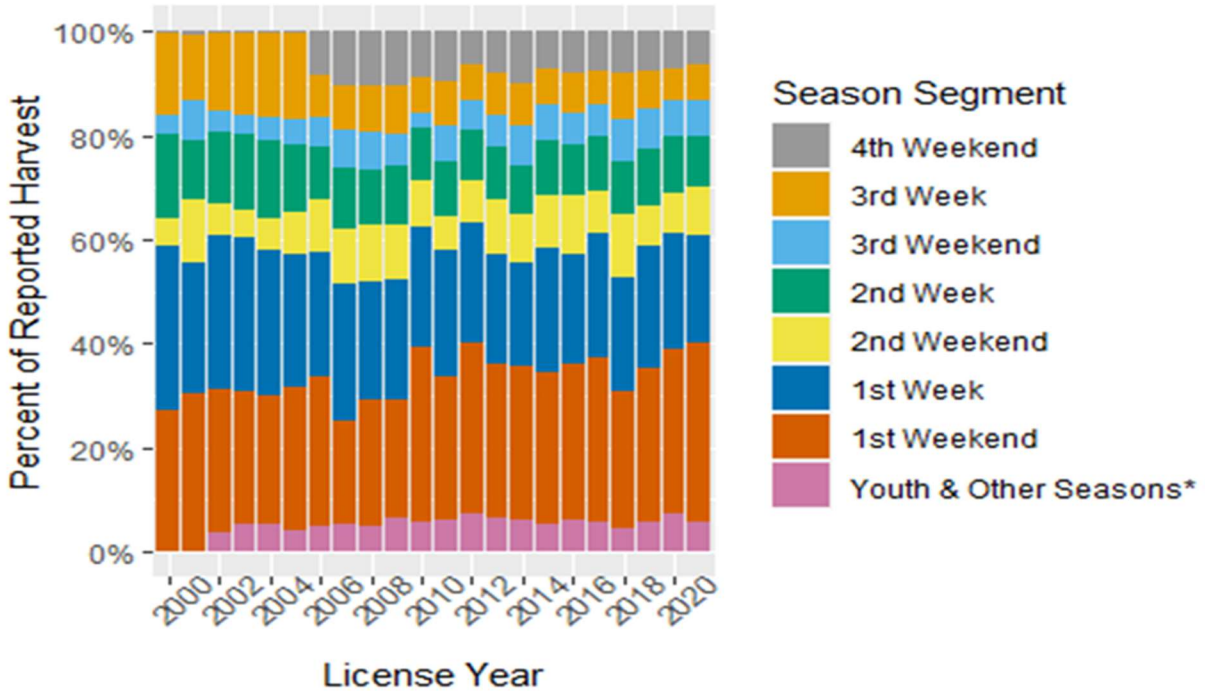

Figure 4. Spring wild turkey harvest by season segment in Kentucky, 2021.

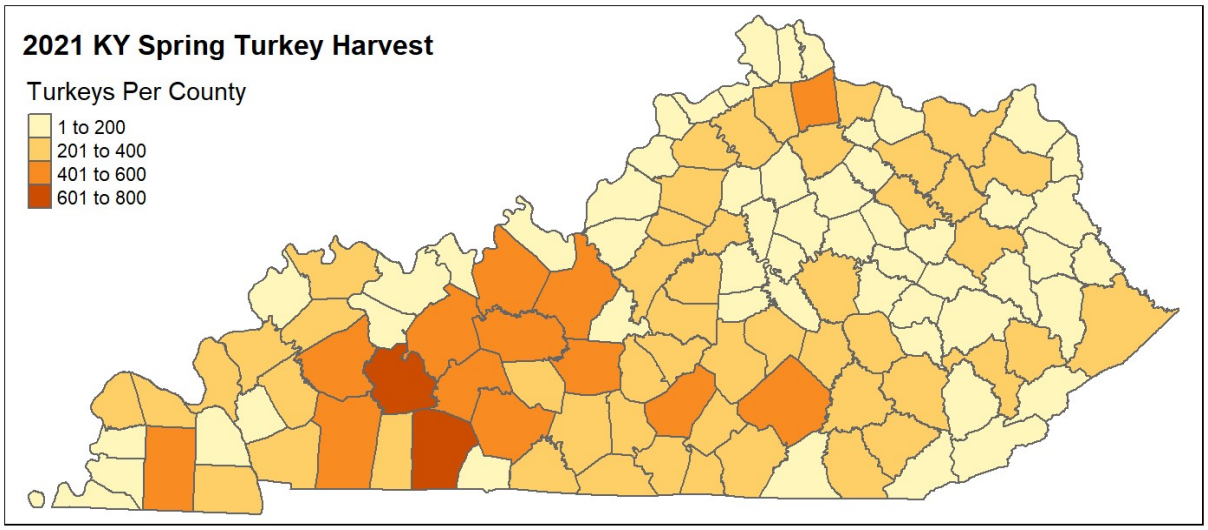

Figure 5. Spring wild turkey harvest by county in Kentucky, 2021.

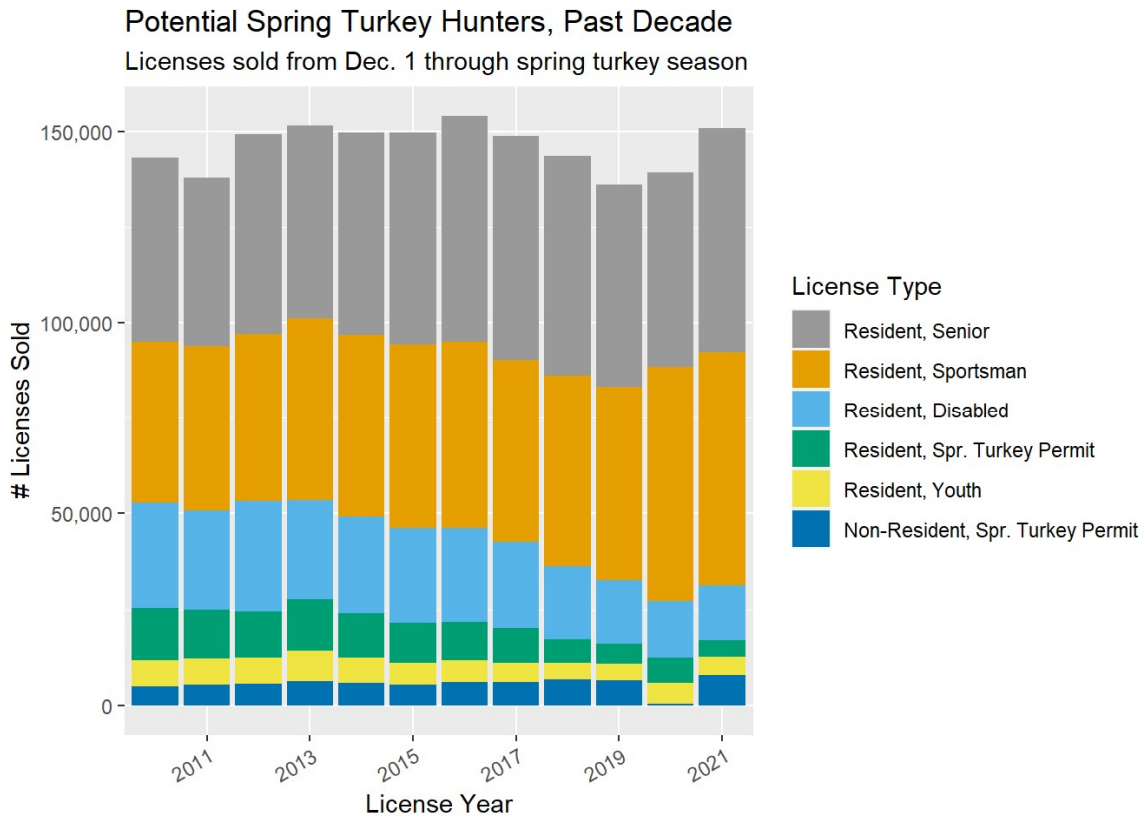

Figure 6. License sales through the end of spring turkey season in Kentucky, 2021. Totals represent the number of sportspersons eligible to spring turkey hunt, except for license-exempt landowners. Bars are segmented by sales of each license type.

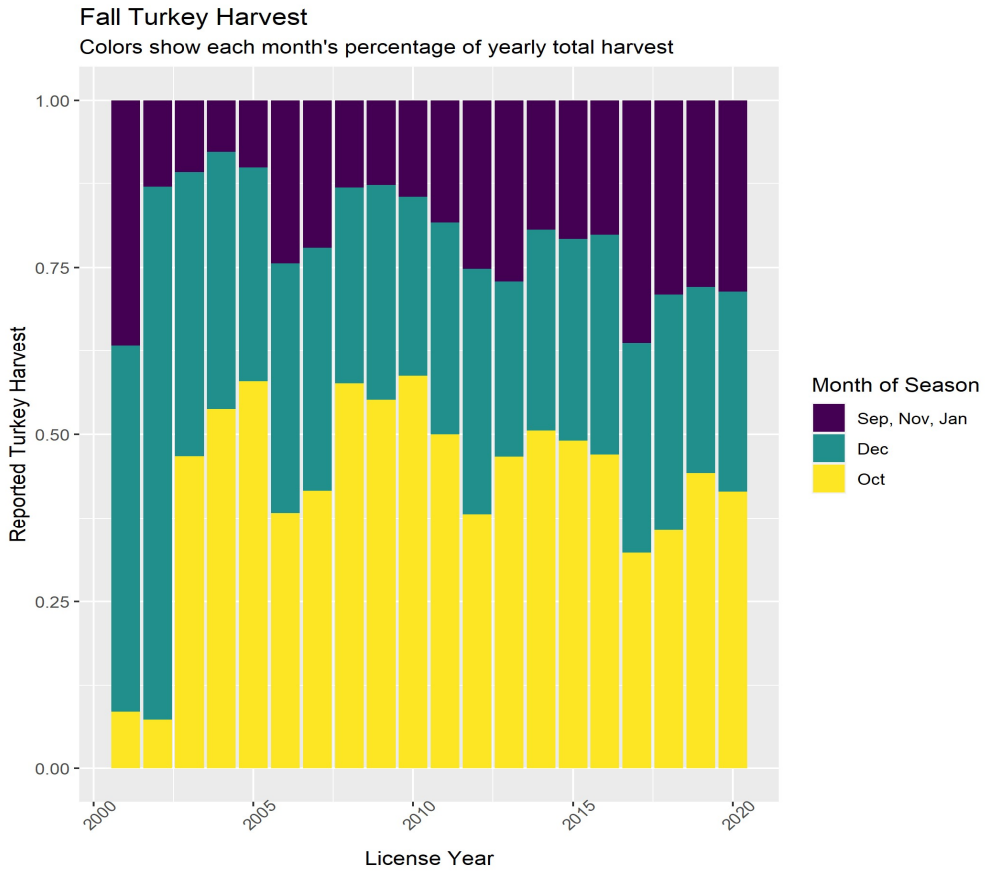

Figure 7. Fall wild turkey harvest by month of season in Kentucky, 2019.