

KENTUCKY WILD TURKEY POPULATION STATUS REPORT – 2022

48th Southeast Wild Turkey Working Group Meeting – August 15-18, 2022

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POPULATION STATUS

Wild turkeys were restored to Kentucky during the 1970s to 2000 and now occur and are hunted in all 120 counties. A crude statewide population estimate is 250,000–400,000 turkeys. The population appears stable based on reported spring harvest and reproductive data. Spring harvest has been stable over the past decade (10-year mean = 30,822/year, $cv = 0.06$) but 15–20% below the record high harvest in 2010. That peak of abundance likely resulted from a 17-year cicada emergence in 2008. Since then, annual productivity has been variable ($cv = 0.18$) and at about half the level observed during the 1990s. Long-term reproductive decline raises concerns about the sustainability of turkey harvest, even under the state's relatively conservative regulations. Anecdotal reports suggest that an increasing number of hunters are perceiving a declining turkey population.

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 the ESRI 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 2021 survey cooperators reported a statewide total of 517 turkey observations (Table 1). Most of the observations were reported using the survey phone app and website (91%) and were of turkeys not previously seen by cooperators (77%). Most observations were reported from the Central Region (46%), followed by the Western Region (23%) and the Eastern Region (22%; Figure 1). The total number of observations and of turkeys seen in those observations declined by 35% and 27%, respectively, compared to 2020. Those totals depend on levels of public participation and turkey program outreach efforts, which have varied among years. However, the proportion of observations with poults increased by 29%.

Estimated PPH was 3.2 statewide (Table 2). This was a substantial increase compared to recent years: 45% higher than 2020, 33% higher than 2019, 60% higher than 2018, and 146% higher than 2017. Similarly, PPH for each survey region increased: Western Kentucky's PPH of 3.1 was 24%, 19%, 72%, and 107% higher than in 2020, 2019, 2018, and 2017, respectively; Central Kentucky's PPH of 3.6 was 74%, 57%, 71%, and 177% higher; and Eastern Kentucky's PPH of 2.6 was 23%, 4%, 24%, and 117% higher. Comparisons going back to 2017 are insightful considering that the turkey program has received an increasing number of anecdotal reports from hunters of lower turkey populations. Lower reproductive success in 2017 and 2018 has probably influenced turkey numbers and hunter harvest, but better reproduction in 2021 should help maintain strong spring turkey harvest in coming years.

Among the other survey statistics tabulated, estimated PPB was 4.2 statewide, which was 4% above 2020. Regionally, PPB was 11% and 4% above 2020 for Central and Western Kentucky, respectively, but was 18% below 2020 in Eastern Kentucky. PPB is less variable year to year than PPH. The proportion of hens observed in association with a brood increased statewide (18%, 8%, 9%, and 52%), in Central Kentucky (40%, 28%, 24%, 99%), and in Eastern Kentucky (16%, 96%, -6%, and 33%), but dipped slightly in Western Kentucky except compared to 2018 and 2017 (-8%, -11%, +8%, and +17%). The male-to-female ratio was 0.40 statewide, which was considerably lower than the previous 4 years (-43%, -43%, -50%, -60%), and regional changes in male-to-female ratios were very similar. The male-to-female ratio has been interpreted as an indicator of potential over-harvest of male turkeys, but if interpreted as an indicator of the population's sex ratio, it reflects the increasingly improved reproductive success over the past few years.

The trend in PPH continues to vary considerably from year to year. Statewide, 2021's PPH was the second highest recorded over the past 17 years (Figure 2). The increase was apparent in 2 of 3 regions. Leading up to spring, we received several questions about the emergence of Brood X periodical cicadas, which was expected to influence parts of Kentucky along the Ohio River west of Cincinnati and along the Tennessee state line (<https://entomology.ca.uky.edu/ef446>). The emergence was localized, so any benefits to turkeys likewise would have been local. In contrast, Brood XIV cicadas are scheduled to emerge in 2025 and could benefit turkeys as in 2008. In conclusion, wild turkey reproductive success appears to have improved in summer 2021.

HARVEST

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 2-day youth-only season precedes the regular season, occurring 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 Sportsman's, and Disabled license types include the spring permit. Youths 12–15 years old must purchase a Youth Turkey Permit or Youth Sportsman's if a resident. Bag limits are 2 turkeys with visible beards per season and 1 per day. Harvest reporting by phone or internet is mandatory.

For fall turkey hunting, except for license-exempt landowners and farm tenants, a Fall Turkey Permit is required of residents and nonresidents in addition to a standard hunting license (included with Sportsman's licenses). The fall season bag limit is 4 turkeys in total, only 2 of which may be taken during either or both of the two 1-week-long shotgun seasons in October and December (regardless of weapon used), and only 1 of which may be a male bird with a beard length ≥ 3 inches. Currently, hen harvest is permitted but pending regulation changes for fall 2023-24 seasons will eliminate fall hen harvest (bearded hens will still be legal to harvest).

2022 Spring Turkey Season

A total of 26,836 turkeys were harvested during 2022 statewide youth and regular seasons combined (Figure 3). This was 8% below 2021 and 11% below the 3- and 10-year averages. Harvest on opening weekend of the regular season (31% of the season total) dropped 16% below last season and 9% below the 5-year average. Otherwise, harvest throughout the course of the season was similar to recent years (Figure 4). Notably, the percentage of jakes in the harvest (18.7%) increased 80.9% compared to 2021 (10.4%) and the previous 5-year average (11.7%). The percentage of hunters that harvested the statewide bag limit of 2 turkeys (23.4%) was similar to last season and the 5-year average (both 25.8%).

Geographically, the top 5 counties for total spring turkey harvest were Logan County (537), Muhlenberg County (524), Graves County (505), Ohio County (476), and Hart County (459; Figure 5). Harvest decreased in all 5 Wildlife Division Regions by 8% on average. Turkeys harvested on private land (25,278) accounted for 94% of the season total. Public land harvest (1,558) decreased 11% compared to last year and 6% compared to the 5-year average.

Overall, license sales through the end of spring turkey season (140,905) were 6.6% below last spring (Figure 6). Youth licenses dropped 7% from last season and the 5-year average. Resident Sportsman's licenses and Senior licenses make up the bulk of potential turkey hunters. Sportsman's licenses dropped 8.4% from last season but increased 3% from the 5-year average. Senior licenses dropped 6.1% from 2021 and 1.3% from the 5-year average. Resident Spring Turkey Permits changed dropped 3.5% from last season and 35% 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 2021 and 2022 spring seasons. Non-resident license sales (8,345) increased 5% over 2021 and 25% over the 2015-2019 pre-pandemic average. Non-resident spring turkey harvest (3,768) was 9.6% higher than the 3,438 harvested in 2021 and 10.8% higher than the 5-year 2015-2019 average. Additionally, the percentage of statewide public lands spring turkey harvest by non-resident hunters (26.7%) increased 8.1% and 17.9% over 2021 and the 2015-2019 average, respectively.

In summary, the lower spring turkey harvest in 2022 likely reflects less hunter participation due to holidays. Lower turkey reproductive success in the summer of 2020 may have played a role also. Interesting though, hunting effort (measured as average days of hunting per turkey harvested by successful hunter) changed +2% compared to last year, possibly indicating relatively stable turkey abundance.

2021 Fall Turkey Season

The reported harvest during Kentucky's 2020 fall season (1,577) decreased 25% from 2020 (2,102). 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-four percent of fall-harvested turkeys were hens, similar to the 68% in 2020. Most of the fall harvest occurs during the 7-day October shotgun season.

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

The number and distribution of complaints about turkey population decline continue to increase. In response, during 2021 the Kentucky Fish and Wildlife Commission recommended and approved changes to some regulations. Bag limit on Wildlife Management Areas (WMAs): this reg change will restrict take during spring turkey season to 1 legal turkey/hunter/WMA, although a hunter may still harvest both birds of her/his 2-bird season limit on different WMAs. Fall hen harvest: Currently, hen turkeys (no visible beard) are legal for take during fall seasons, but this reg change will render hen harvest illegal except for bearded hens, which will remain legal for take. Baiting/feeding: Currently, feeding wildlife outside the curtilage of the home between 1 March and 31 May is illegal, but this reg change will extend this window to 31 July. These changes are currently under legislative review and are expected to be in place by the 2023 spring season and 2023-24 fall season.

RESEARCH

In winter 2021-22, we began the first field season of a statewide gobbler banding project. The research project, "A Multi-State Banding Project to Investigate Factors Affecting Gobbler

Harvest Rates and Population Health”, involves a partnership with Tennessee Tech University and the Tennessee Wildlife Resources Agency. 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.

Beginning in winter 2022-23, we will begin the first field season of a research project focused on reproductive ecology of wild turkeys in western Kentucky. This research will build upon the gobbler banding study to provide a comprehensive assessment of the reproductive ecology of male and female wild turkeys, serving as a foundation for recommendations for turkey management in Kentucky. The study will assess nesting chronology, behavior, space use, movements, habitat selection, and survival of female turkeys during pre-nesting, laying, incubating, and brood-rearing periods; habitat characteristics and landscape factors associated with nest sites and areas used by brooding females and their influence on brood survival, including agricultural and forest management practices; and spatial and temporal patterns in gobbling activity and relationship of gobbling activity to nesting chronology of females.

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

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, 2021.

Region	Observations	Hens	Poults	Males	Unknown	Total Turkeys
Western	121	201	488	32	2	723
Central	240	291	966	72	6	1,335
Eastern	113	141	328	47	4	520
Unknown	43	54	144	6	0	204
Statewide	517	687	1,926	157	12	2,782

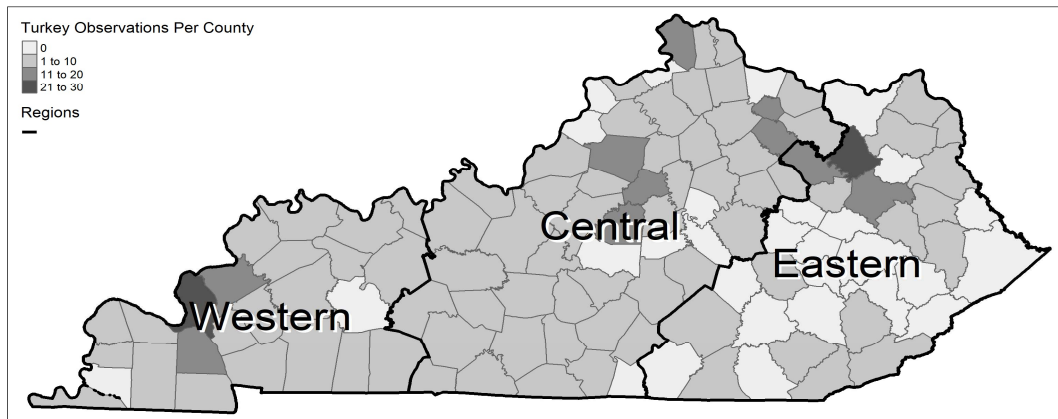


Figure 1. Wild turkey observations ($n = 517$) reported during the Kentucky wild turkey brood survey, 2021. Shading indicates number of observations per county. Heavy black outlines denote survey regions consisting of counties grouped by similar land cover and use (Western, Central, Eastern, respectively).

Table 2. Summary statistics for the Kentucky wild turkey brood survey, 2021. Poults per hen = PPH, poults per brood = PPB. Calculations based on NWTf Technical Committee standardized protocol.

Region	PPH (95% CIs, n) ^a	PPB (95% CIs, n) ^a	% Hens With Brood (n) ^b	Male:Female (n) ^c
Western	3.1 (2.5-3.7, 82)	4.5 (4-5.1, 56)	67.7 (82)	0.16 (90)
Central	3.6 (3.2-4.1, 150)	4.3 (3.9-4.8, 127)	88.0 (150)	0.25 (164)
Eastern	2.6 (2.1-3.2, 74)	3.4 (2.9-4, 57)	77.3 (74)	0.33 (89)
Unknown	3.3 (2.2-4.6, 25)	5.1 (4-6.3, 16)	63.0 (25)	0.11 (25)
Statewide	3.2 (3-3.5, 331)	4.2 (3.9-4.5, 256)	77.9 (331)	0.23 (368)

^a 95% confidence intervals calculated by bootstrapping; n = number of observations used in calculation

^b Percentage of hens observed with at least 1 poult

^c Total number of males observed divided by total number of hens observed

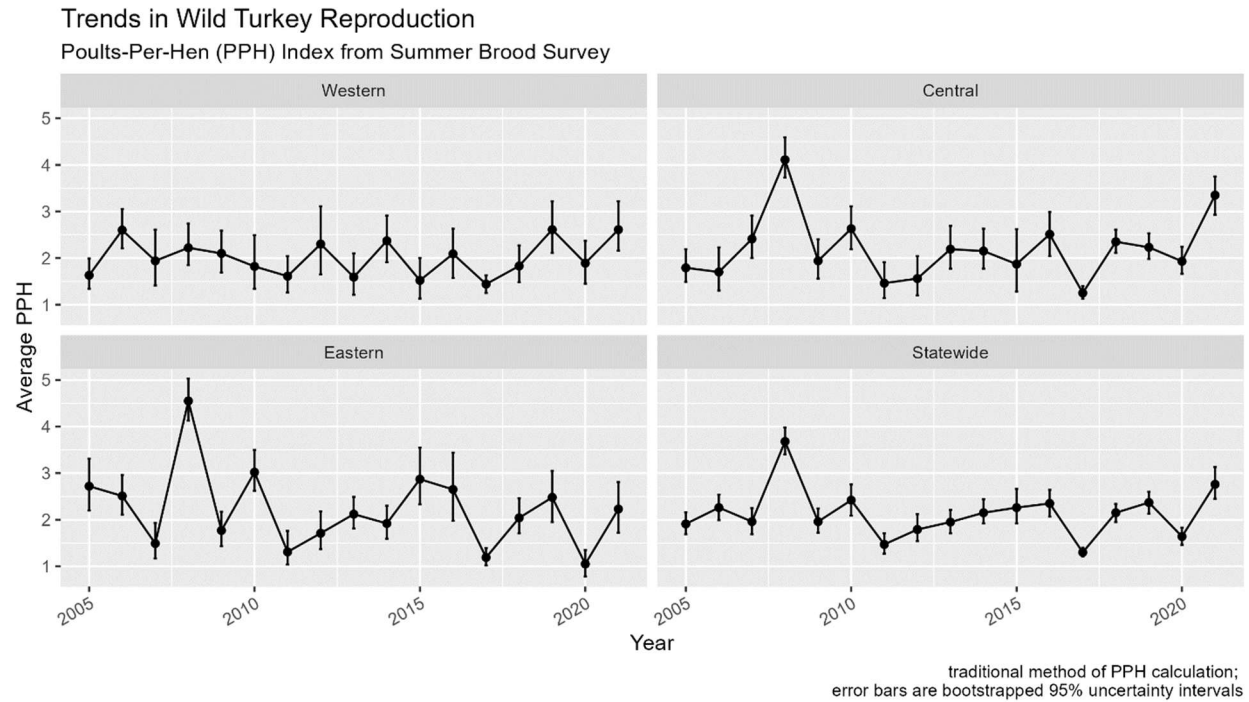


Figure 2. Trends in poults per hen (PPH) from Kentucky’s Wild Turkey Brood Survey since 2005. For consistency, PPH was calculated by the traditional method (total poults divided by total hens overall) rather than the method used since 2018 (total poults divided by total hens per observation). Error bars are bootstrapped 95% confidence intervals for the overall annual PPH ratio.

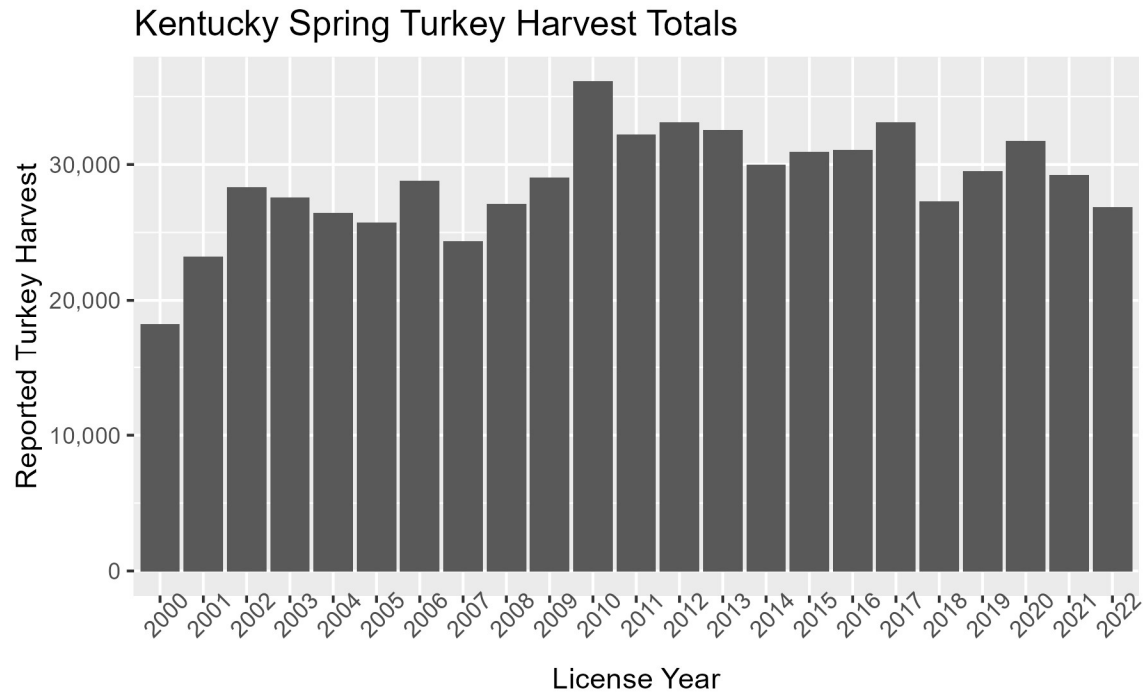


Figure 3. Number of wild turkeys harvested during the spring season in Kentucky, 2000–2022.

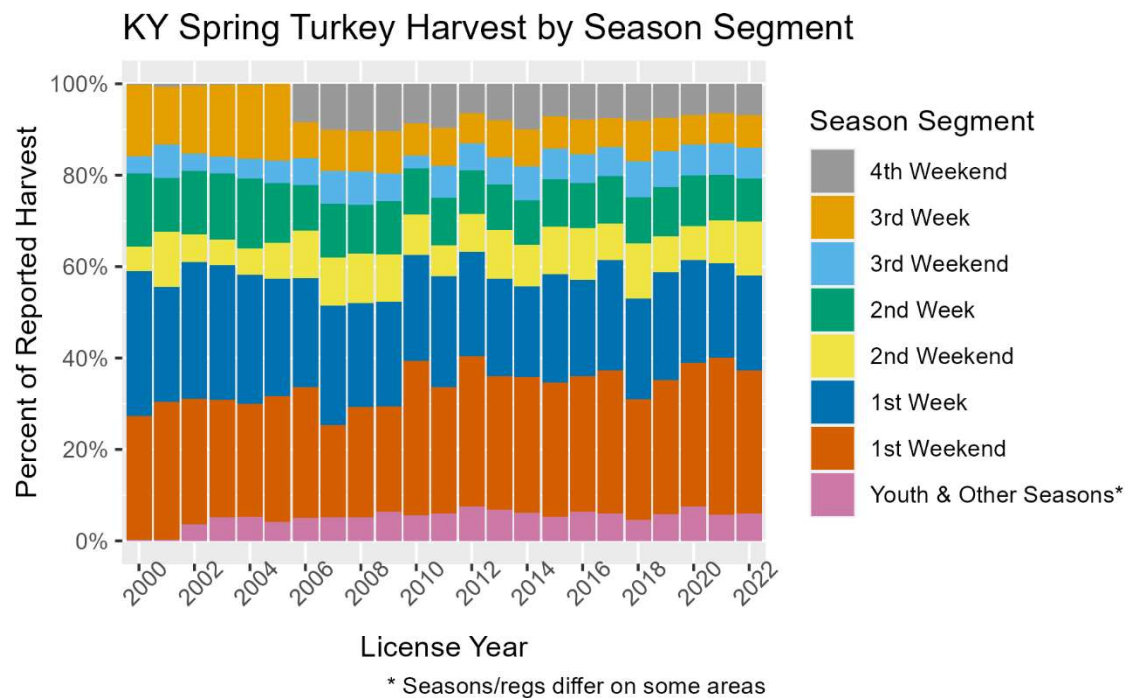


Figure 4. Spring wild turkey harvest by season segment in Kentucky, 2022.

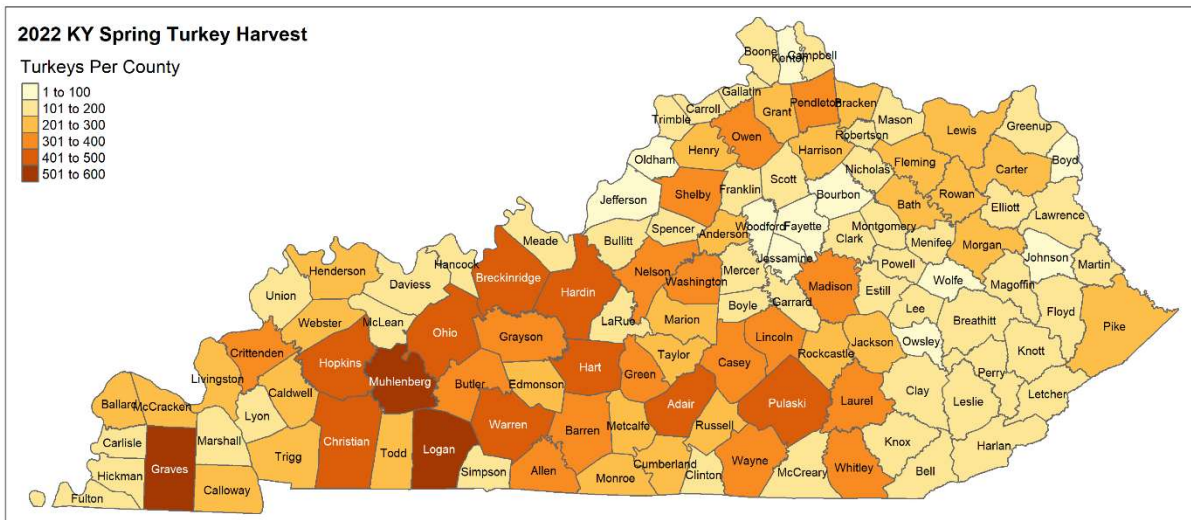


Figure 5. Spring wild turkey harvest by county in Kentucky, 2022.

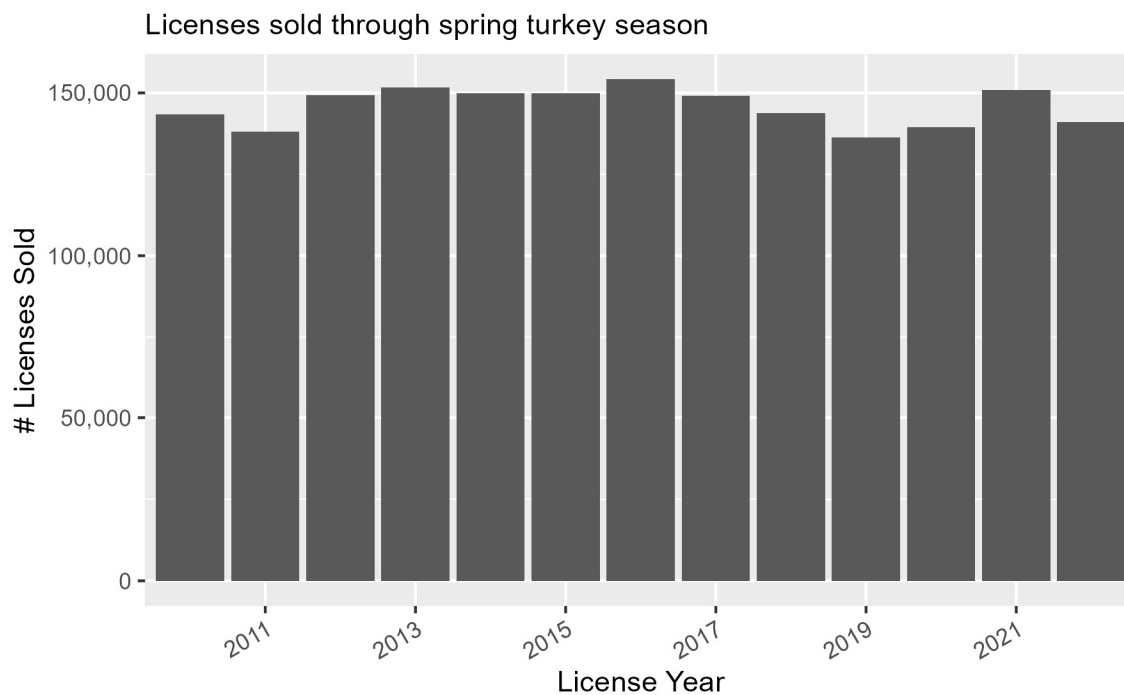


Figure 6. License sales through the end of spring turkey season in Kentucky, 2022. Totals represent the number of sportspersons eligible to spring turkey hunt, except for license-exempt landowners. License types represented include resident senior/disabled, resident sportsman's, resident youth, resident turkey permit, and nonresident turkey permit.