

KENTUCKY WILD TURKEY POPULATION STATUS REPORT – 2020

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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 (mean = 31,119 per year, 2011–2020; cv = 6%), but has been 15–20% below the record high harvest in 2010. That peak of abundance likely resulted from a 17-year cicada emergence in 2008. The correlation between harvest and turkey productivity 2 years prior has been fairly strong over this timeframe ($r = 0.73$). However, annual productivity has been highly variable (cv = 20%) and 50% of that 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

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 a website) or by paper form. From these turkey observations we calculate 4 metrics: a poult per hen (PPH) ratio to indicate overall productivity, the percentage of hens with poults to indicate nesting success, a poults per brood (PPB) ratio to indicate poult survival, and a male to female ratio to indicate summer sex ratio and gobbler carryover after the hunting season. Prior to analysis, turkey observation data are filtered according to a standardized protocol adopted by the National Wild Turkey Federation Technical Committee.

In 2019 we received 850 observations of turkeys from across the state (Figure 1). Most (67%) observations were collected by participants using the mobile phone app or website and most (70%) were of turkeys that participants indicated they had not seen previously during the survey period. The number of raw number of observations (i.e., distinct events) was 8% greater than in 2018 (850 vs. 789) but 22% fewer total turkeys were reported in those observations.

After filtering, 557 turkey observations were analyzed. Statewide, the PPH ratio averaged 2.2 (Table 1), which was 10% higher than in 2018 (2.01) and 25% higher than the 5-year average (1.8; Figure 2). The statewide PPB was 4.1, which also was 10% higher than in 2018 (3.7). The percentage of hens with a brood (66%, $n = 463$) was just 4% less than in 2018 (69%, $n = 563$) and the male to female ratio (0.40, $n = 557$) was unchanged from 2018 (0.45, $n = 624$). Regional

PPH averages were above the 2.0 “break-even” benchmark in all 3 survey regions, although confidence intervals overlapped 2.0 (Table 1). The most notable change was in the Western Region, where means for PPH (2.5 vs. 1.8), PPB (4.3 vs. 3.8), and percentage of hens with a brood (74% vs. 61%) were higher than in 2018. Survey metrics for the Central and Eastern Regions were essentially unchanged from 2018.

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. The PPH index has differed by $\geq 10\%$ from the previous year in 8 of the past 10 years, ranging from -42% between 2010 and 2011 to +54% between 2017 and 2018 (Figure 2). Every year we must cross our fingers that turkey nests hatch before hay is cut, that the number of nest predators will be lower, and that we won’t get excessively cold, rainy stretches in May and June that could flood nests or drench poults.

HARVEST

2020 Spring Turkey Season

Kentucky’s statewide regular season is 23 consecutive days beginning the Saturday closest to 15 April (i.e., 12–18 April). A youth 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.

A total of 31,722 turkeys were reported by spring turkey hunters during the 2020 youth and regular seasons combined (Figure 3). This was 8% higher than 2019, 6% higher than the 3-year average, but only 0.5% different from the 10-year average. Compared to 2019, harvest on opening weekend increased by 15% while harvest on all 4 weekends combined increased 8%. Harvest increased in 4 of 5 Wildlife Division Regions, ranging from +14% in the Bluegrass to -2% in the Purchase. The top 5 harvest counties were Logan (624), Hart (572), Hardin (559), Muhlenberg (557), and Pulaski (538) (Figure 4). The percentage of jakes in the harvest (13.5%) was no different than 2019 (13.1%) or the 5-year average (13.2%). The percentage of hunters that harvested the statewide bag limit of 2 turkeys (25.6%) was no different than 2019 (25.9%) or the 5-year average (25.5%).

Harvest on public lands (1,531) decreased 3% from 2019 and was 9% and 14% below 5- and 10-year averages, respectively. This may reflect greater hunting pressure with corresponding lower success rates over time, but hunter effort data are not available and WMA users are not tracked. Conversely, turkey hunting effort on public lands could be declining to some degree. Although direct evidence for turkey hunting is lacking, KDFWR has seen a decline in applications for our quota hunts for gun deer hunting weekends on WMAs where harvest is otherwise bow only.

License sales (139,409) changed just 2% from last spring (this only includes sales from December 2019 through May 15 after spring turkey season closed). However, sales to residents and youth were up considerably (Figure 5). Sales of youth licenses (turkey permits and sportsman's) increased 22% with a corresponding 44% increase in the youth season harvest. Sales of resident sportsman's licenses and spring turkey permits increased by 21% and 28%, respectively.

Notably, due to the COVID-19 pandemic, KDFWR suspended license sales to non-residents 2 weeks before the statewide regular season opened. This resulted in a 94% drop in non-resident licenses compared to 2019 (Figure 5). Accordingly, harvest by non-resident hunters (372) was down 89% from last spring and 88% from the 5-year average. Non-residents typically account for about 10% of the harvest.

Leading up to the 2020 spring turkey season and prior to any effects COVID-19 may have had on hunter effort, an increase in spring turkey harvest was expected based on a 54% uptick in productivity 2 summers ago (2018) relative to the previous year (2017). Productivity in 2019 was 20% better than 2018, so prospects for 2021's spring harvest appear favorable at this point, particularly if restricting non-resident hunters in 2020 precluded a considerably higher harvest and maintained gains in reproduction. For states like Kentucky that normally do not regulate hunter numbers, and in light of highly variable turkey productivity, monitoring hunter effort will be increasingly important, particularly given the possibility of disruptive stochastic events (Chamberlain and Collier 2020).

2019 Fall Turkey Season

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.

The reported harvest during Kentucky's 2019 fall season (1,741) declined 28% from 2018. Geographically, fall harvest mirrored spring harvest (Figure 6). Eighty-five percent of successful hunters harvested 1 turkey, 14% harvested 2, 1% harvested 3, and <1% harvested the limit of 4. Sixty-two percent of fall-harvested turkeys were hens. Fifty-three percent of the fall harvest occurred during the 14 days of shotgun hunting (October 26–November 1 and December 7–13) compared to a 10-year average of 68%. Archery season (September 7, 2019–January 20, 2020) accounted for 31% of the harvest, up from a 10-year average of 25%, while the split crossbow seasons (October 1–20 and November 9–December 31) accounted for 16% of the harvest compared to a 10-year average of 7% (Figure 7).

Last fall's decline in harvest was unexpected based on relatively better hatches in 2018 and 2019 (Figure 2), but the difference was regional. Harvest was down 46% and 57% in KDFWR's Northeast and Southeast Regions, respectively, both of which encompass predominately forested Appalachian landscapes. KDFWR's mast survey indicated good to bumper crops of beechnuts and acorns of both red and white oaks in eastern Kentucky, so although speculative, mast availability may have made turkeys harder for hunters to harvest.

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

In 2018, we collected 36 male turkeys from hunters in 2 western Kentucky counties to gather baseline health information. Necropsies conducted by the Southeastern Cooperative Wildlife Disease Study did not reveal significant or unexpected conditions or disease agents. Lymphoproliferative disease virus (LPDV) was detected in 39% of the turkeys, which is consistent with recent findings in other states, and although LPDV can cause organ tumors in wild turkeys, none were observed in our sample. A report of findings can be found on the KDFWR spring turkey webpage (link below).

In 2019, we began a post-season spring turkey hunter survey. Objectives are to obtain estimates of turkey hunter numbers, hunting effort, and harvest (independent of Telecheck), as well as hunter opinions and preferences on potential regulation changes. We used a mixed-mode survey design to contact a random sample of eligible license holders by both email and mailing addresses. Kentucky turkey hunters are not restricted to hunt in specific counties or zones, so we stratified the sample by license type (license-exempt landowners were not included in the sample). We continued the survey again in 2020 and analyses for both years are ongoing.

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 (60-61%) and the percentage of successful fall hunters who harvest more than one turkey (11-16%) have been 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 (e.g., the second 7-day shotgun season in December has accounted for 40% of the fall harvest for the past 10 years). The Wildlife Division is not recommending regulation changes at this point, so any Commission action would be out of an abundance of caution. We do plan to initiate a fall hunter survey to estimate hunting effort and participation.

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

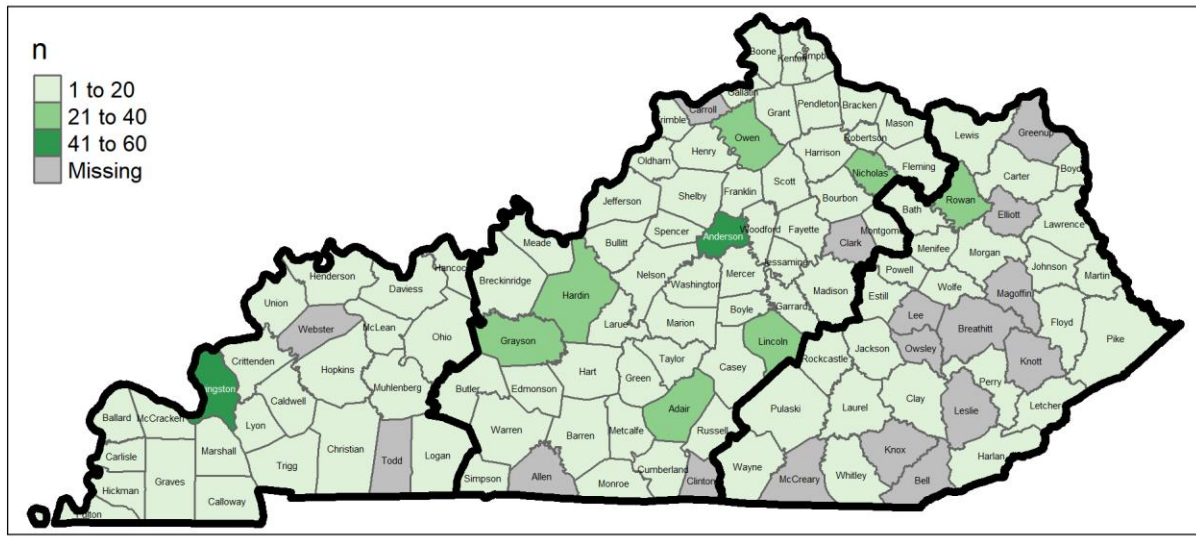


Figure 1. Wild turkey observations ($n = 850$) reported during the Kentucky wild turkey brood survey, 2019. Colors indicate number of observations (n) per county. Heavy black outlines denote survey regions (Western, Central, Eastern) consisting of counties grouped by similar land cover.

Table 1. Results of the Kentucky wild turkey brood survey summarized by survey region and statewide, 2019. Regions consist of counties grouped by similar land cover.

Region	Total Turkeys	PPH (95% CIs) ^a	PPB (95% CIs) ^b	% Hens w/ Brood (n) ^c	Male:Female Ratio (n) ^d
Western	971	2.5 (1.9-3.2)	4.3 (3.9-4.8)	73.6 (110)	0.26 (122)
Central	1,891	2.1 (1.8-2.4)	3.9 (3.5-4.3)	62.9 (259)	0.45 (318)
Eastern	420	2.2 (1.4-3.0)	4.2 (3.4-5.0)	66.7 (51)	0.48 (68)
Statewide^e	3,651	2.2 (2.0-2.5)	4.1 (3.8-4.3)	66.1 (463)	0.40 (557)

^a Poults-per-hen; calculated by bootstrapping sample observations

^b Poults-per-brood; calculated by bootstrapping sample observations

^c Percentage of hens with ≥ 1 poult; n = number of observations where ≥ 1 hen was observed

^d Total number of males observed divided by total number of hens observed; n = number of observations where ≥ 1 hen or ≥ 1 male was observed during the survey

^e May include observations in which region was not indicated in data file

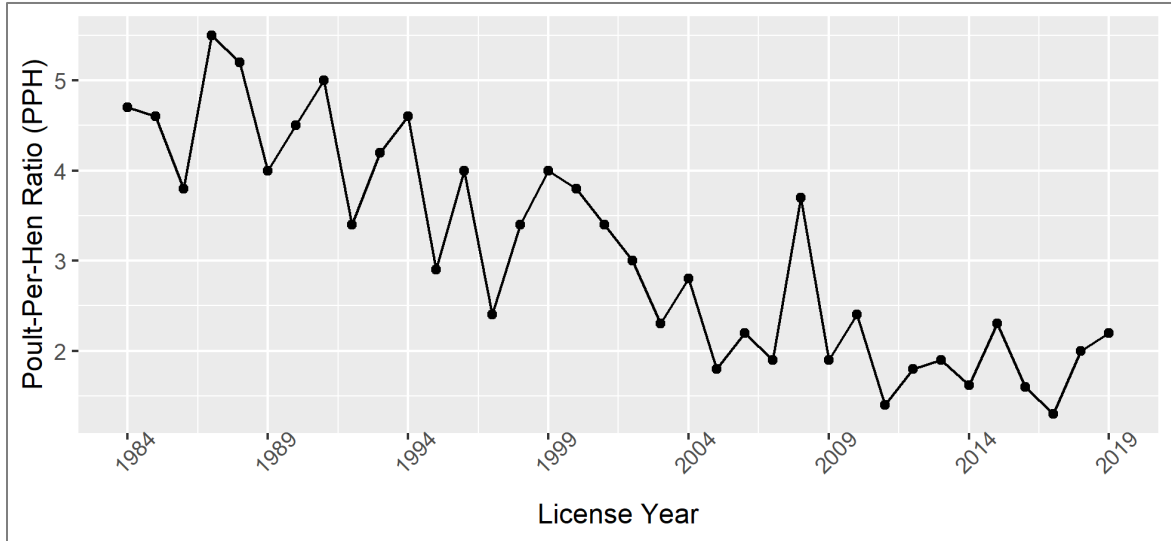


Figure 2. Trend in statewide poult-per-hen (PPH) index of turkey productivity from the Kentucky wild turkey brood survey conducted in July and August, 1984-2019.

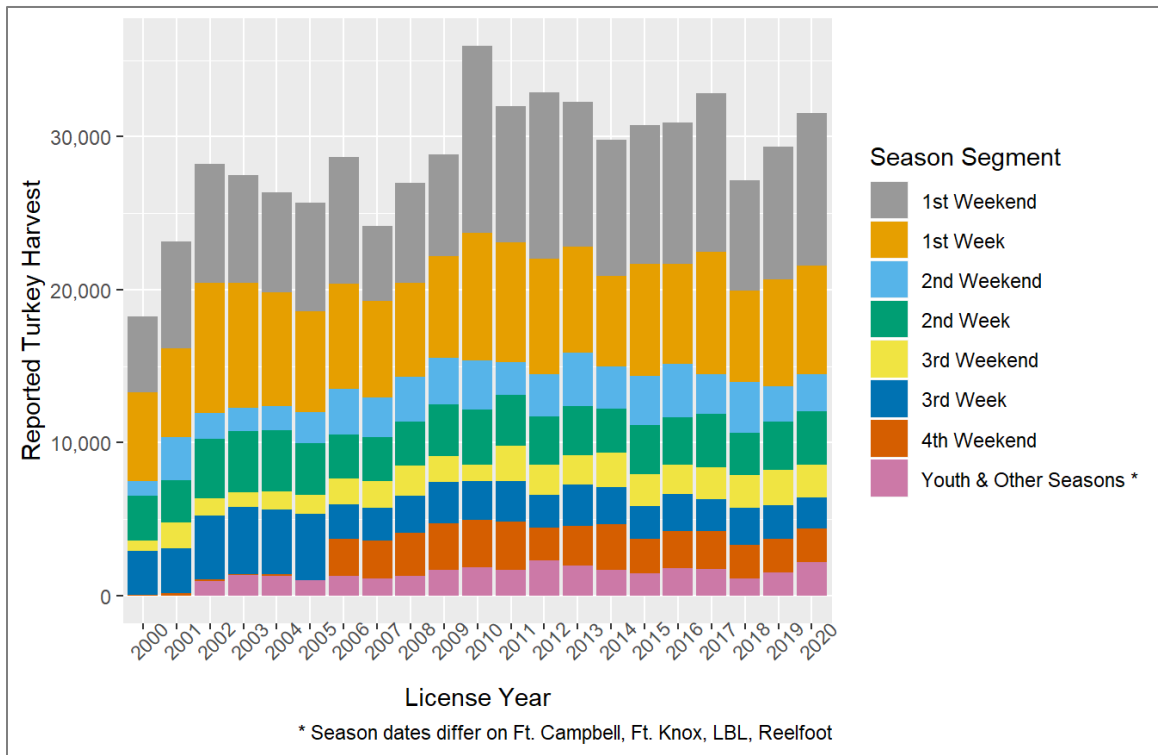


Figure 3. Number of wild turkeys harvested during the spring season in Kentucky, 2000–2020. Total statewide harvest is indicated by overall height of bars. Bars are segmented by harvest during various season segments.

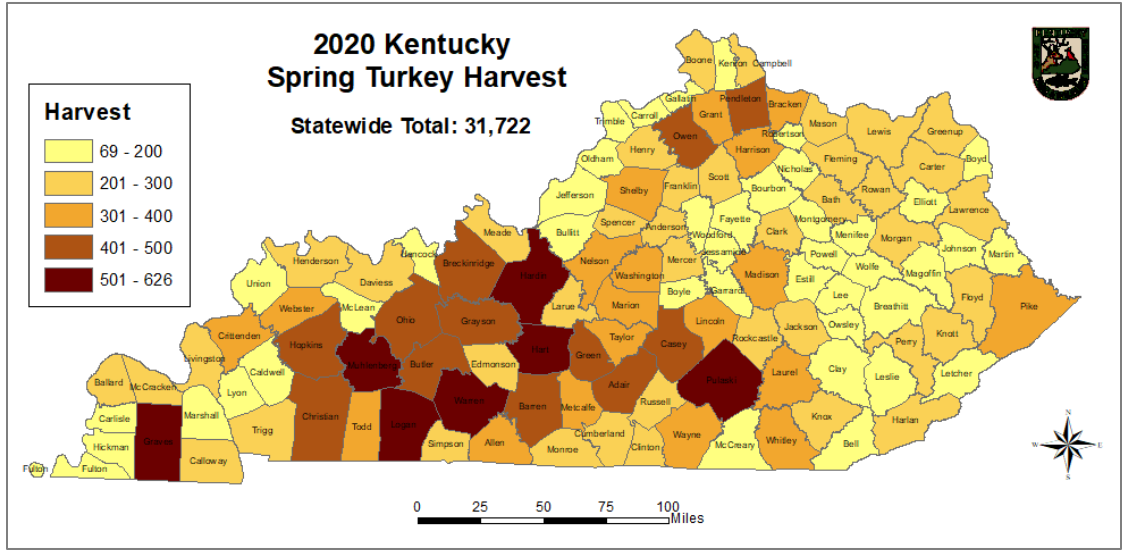


Figure 4. Spring wild turkey harvest by county in Kentucky, 2020.

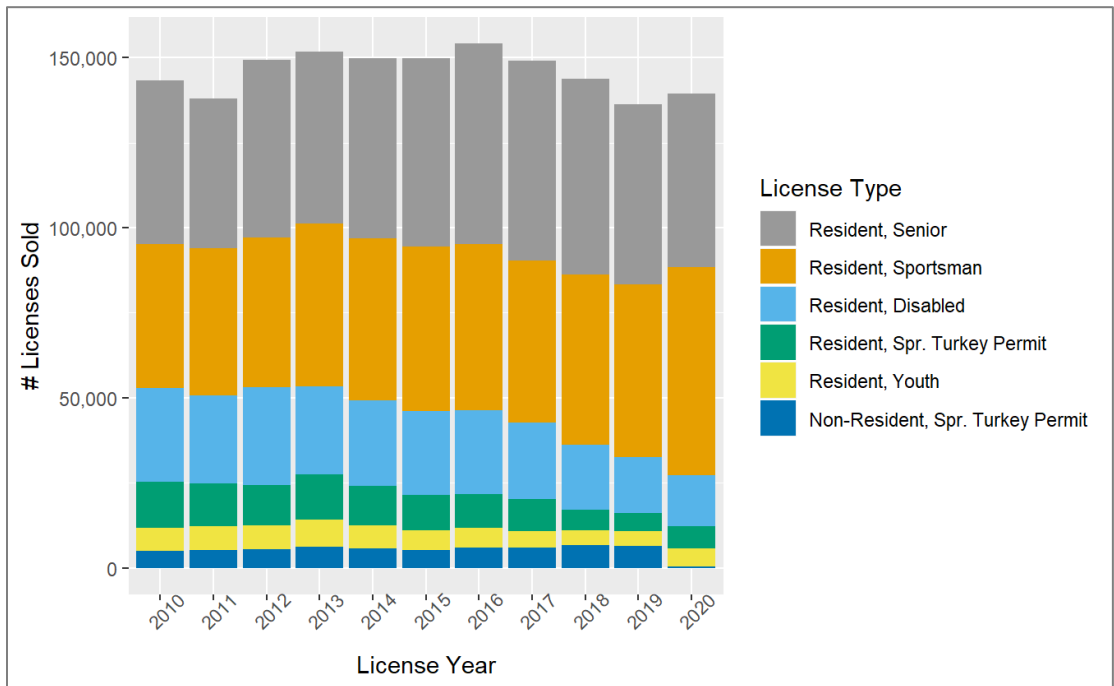


Figure 5. Number of license holders eligible to spring turkey hunt in Kentucky, 2020. This includes licenses sold from December 1, 2019 through the spring 2020 turkey season. Bars are segmented by sales of each license type (landowners and farm tenants are license-exempt). The actual number of license holders who turkey hunt is unknown.

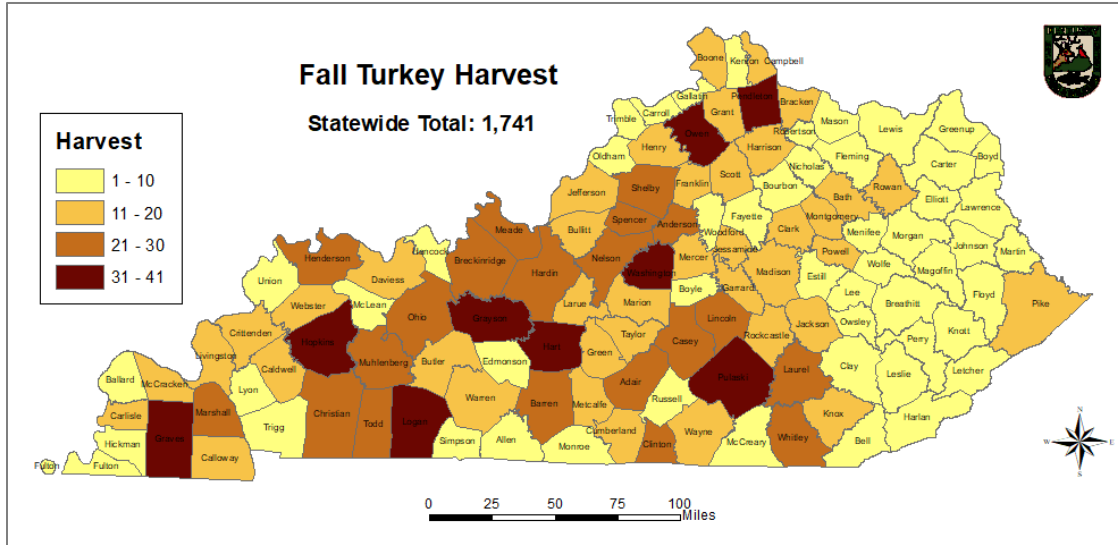


Figure 6. Fall wild turkey harvest by county in Kentucky, 2019.

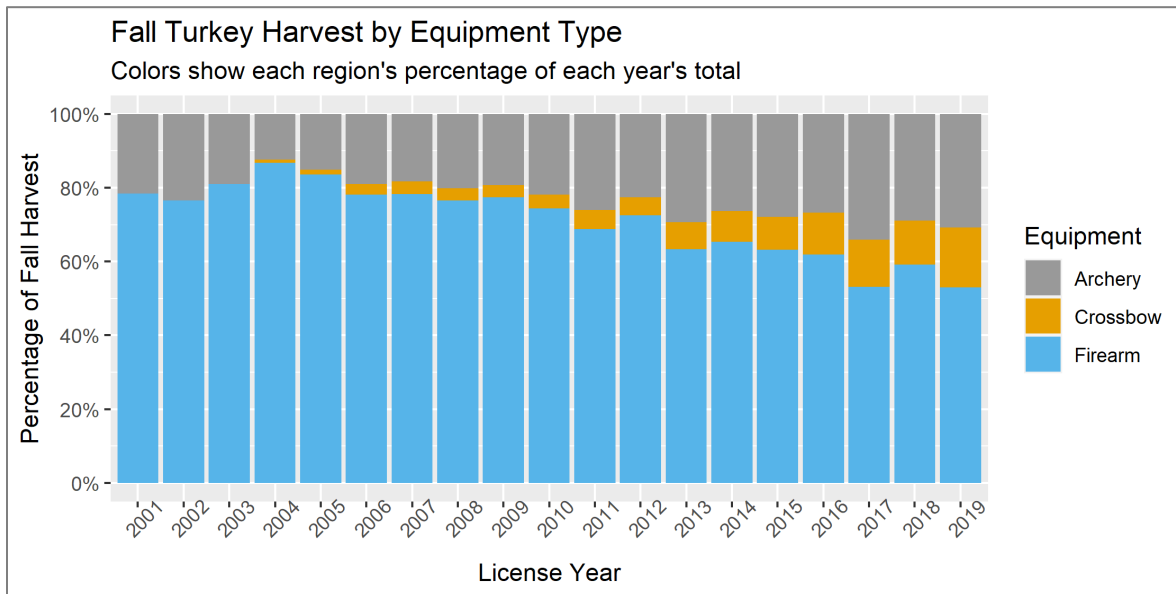


Figure 7. Percentage of wild turkeys harvested during fall seasons by equipment type annually in Kentucky, 2000–2019.