

# **KENTUCKY WILD TURKEY POPULATION STATUS REPORT – 2024**

**50<sup>th</sup> Southeast Wild Turkey Working Group Meeting – June 17-20, 2024**  
**The Inn at Virginia Tech, Blacksburg, VA**

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## **POPULATION STATUS**

Kentucky’s wild turkey population was restored through annual restockings from 1978 to 1997. Spring and fall hunting seasons have been open in all 120 counties since 1996 and 2001, respectively. Over the past decade (2014–2023), spring harvest has been relatively stable (mean = 30,466, coefficient of variation = 0.10) compared to reproductive success, which has been twice as variable (mean poults per hen = 1.98, coefficient of variation = 0.23). Despite this variability, notably better reproductive success in 2021 preceded the second- and third-highest statewide spring harvest totals in 2023 and 2024, respectively. Nevertheless, hunters continue to perceive a declining turkey population. A current statewide population estimate is approximately 400,000 turkeys (prior to the 2024 spring hunting season based on reported harvest, estimated harvest rates, and estimated sex ratio from the summer brood survey).

## **REPRODUCTION**

The Kentucky Department of Fish and Wildlife Resources (KDFWR) has conducted a wild turkey brood survey since 1984. Survey participants include agency staff and the public. Participants report turkeys (hens with and without poults, males, and turkeys of unknown sex or age) seen during routine travels in July and August via a website, mobile phone app, or paper form. We calculate a poults-per-hen ratio (PPH) to indicate overall productivity, a poults-per-brood ratio (PPB) to indicate poult survival, the percentage of hens with poults to indicate nesting success, and a male-to-female ratio (MF) to indicate a summer sex ratio after the hunting season.

Historically, we calculated PPH as a single ratio value across all observations (total poults divided by total hens). Beginning in 2017, we adjusted how hens without poults were recorded on the survey reporting form, which allowed us to begin calculating a PPH value for each observation of  $\geq 1$  hen. We average individual PPH values to calculate a mean PPH for the state as a whole and for 3 survey regions, along with confidence intervals calculated by bootstrapping, following a standardized protocol for turkey brood surveys adopted by several states. Figure 1 shows PPH calculated with both methods since 2017.

In 2023, brood survey participants reported a total of 8,311 turkeys across 1,988 individual observations, which encompassed. Most (44%) observations were reported from Central Kentucky where survey participation was highest among the 3 survey regions (Figure 2). Most

(72%) observations were of turkeys not previously seen and reported by participants, and most (67%) participants reported observations using the survey website or phone app. We estimated a statewide PPH index of 2.3 (Table 1), which was unchanged from 2022 (Figures 3). Since 2019, the statewide PPH has remained relatively stable except for the higher production in 2021 (Figure 3). Regionally compared to last year, PPH was up in Central Kentucky (+14%), stable in Western Kentucky (-4%), and lower in Eastern Kentucky (-14%; Figure 3). Trends in PPB (poult survival) and HWB (nesting success) have been stable (Figures 3 and 4), while the MF ratio has declined slightly (Figure 4).

PPH has been highly correlated with PPB and HWB, suggesting the 3 indicators provide similar information about turkey reproductive success. PPH was positively correlated with spring turkey harvest two years later. The lack of precision in the relationship (wide confidence intervals; Figure 5) is not surprising considering that the true relationship between PPH and reproductive success is unknown, and that other factors that affect harvest and abundance. In contrast to PPH, the MF sex ratio was negatively correlated with harvest two years later, suggesting that sex ratios skewed toward females may indicate improved recruitment more than gobbler carryover after hunting. Both relationships underscore the importance of, and need to enhance, reproductive success for Kentucky's turkey population.

## **HARVEST**

Kentucky's statewide spring regular season runs for 23 consecutive days beginning the Saturday closest to 15 April (i.e., 12–18 April). A youth-only season runs for 2 consecutive days beginning on the first Saturday in April. Spring bag limits are 2 bearded birds per season, 1 per day, and 1 per Wildlife Management Area (both birds may be taken on different WMAs).

The fall bag limit is 2 turkeys total, only 1 of which may have a beard  $\geq 3$  inches (gobbler or older jake), and only 1 of which may have no beard or a beard  $< 3$  inches (hen or young jake). Fall hunting seasons include 14 days shotgun hunting (1 week in October and 1 week in December), 1.5 months of crossbow hunting (October through December), and 4.5 months of vertical bow hunting (September through mid-January, concurrent with deer archery season).

Except for license-exempt landowners and farm tenants, a Turkey Permit is required of resident and nonresident hunters over age 15 in addition to a hunting license. Resident combination license types (e.g., Sportsman's, Senior, Disabled) include the spring permit. Youths 12–15 years old must purchase a Youth Turkey Permit or Youth Sportsman's License. Hunters are required to report turkey harvests online ([fw.ky.gov](http://fw.ky.gov)) or by phone (Telecheck).

### **2024 Spring Turkey Season**

Hunters harvested 33,460 turkeys during Kentucky's 2024 spring turkey season (Figure 6), which was 9% above the 5-year (2019-2023) average. Harvests on youth weekend and opening weekend of the general season were up 36% and 18%, respectively. Geographically, harvest increased in all regions of the state (Western, 11%; Central, 8%; Eastern, 10%; Figure 7). Harvest was  $\geq 5\%$  above the 5-year average in 72 of 120 counties (60%), within 5% of average in 32 counties (26%), and  $\geq 5\%$  below average in just 16 counties (13%; Figure 8). Harvests by

residents (27,238) and nonresidents (5,121) increased 8% and 32%, respectively (excluding 2020, when nonresidents were mostly ineligible due to COVID-19 travel restrictions). Harvest on public lands generally (2,131) and on Wildlife Management Areas specifically (986) increased 24% and 13%, respectively. Harvest on public land by nonresidents (746) increased 50%, making up 35% of the total public land harvest. The percentage of jakes in the harvest (10%) decreased 23%, reflecting carryover effects from average to good reproductive success since 2019 (Figures 1 and 3). The percentage of hunters that harvested the statewide bag limit of 2 turkeys (26%) was unchanged.

Although post-season survey data on hunter effort are not yet available, a subset of successful turkey hunters provide effort data at the time of harvest reporting. Since 2017, hunters reporting a turkey harvest online have been prompted to report the number of days it took them to harvest the turkey being reported. In 2024, the mean number of days per turkey harvested (2.90, 95% C.I. 2.82–2.98) decreased by 15% from the 5-year average (Figure 9), suggesting improved catch per unit effort. This effort question has been instituted only for online-reported turkeys only because the online check-in system is maintained by the KDFWR rather than a vendor, so the change was easy and inexpensive to implement. Despite bias from the unaccounted for effort of unsuccessful hunters and successful hunters reporting a harvest by phone, the large sample size and ease of data capture (no separate mail or internet survey) make this measure appealing as a real-time index of hunter effort trends. In this regard, its utility may be improving through time, as the percentage of turkeys checked-in online has increased from 16% (n = 5,430) in 2017 to 50% in 2024 (n = 16,640).

Sales of turkey-hunting-eligible licenses through the end of the 2024 spring turkey season (144,450) were unchanged (+1%) from the 5-year average (142,991). Sales of resident Sportsman's and Senior licenses, the two license categories with the greatest number of potential turkey hunters, both changed by <3%. Resident Spring Turkey Permits (4,167) decreased 12%. In contrast, youth license sales (5,335) increased 13% and Nonresident Spring Turkey Permits (10,026) increased 29%. These comparisons exclude 2020, when nonresidents were mostly ineligible to spring turkey hunt due to COVID-19 travel restrictions.

### **2023-24 Fall Turkey Season**

The reported statewide harvest during Kentucky's 2023 fall turkey seasons (shotgun, archery, crossbow combined) was 1,012, a 51% decrease from 2022 (2,073) and 49% decrease from the 5-year average (1,970). Harvest was down across weapon types and month of season (Figure 10). The decrease was most pronounced in Eastern Kentucky where the 220 birds harvested was 64% fewer than the 5-year average of 615 (Figure 11). Western (279) and Central (513) regions were down 30% and 46%, respectively. Most (24%) of the fall harvested occurred during the 7-day December shotgun season segment. Most (95%) successful hunters harvested only 1 turkey, 5% harvested 2, and <1% harvested 3. The percentage of hens in the 2023 fall harvest (55%) was similar to 2022 (54%) and down from the 5-year average (60%). The ongoing decline in fall turkey harvest likely reflects lower hunter participation (due to concern for the population, conflicts with deer season [when baiting is allowed for deer but not turkey], or recent bag limit reductions) and good hard mast production (oak and beech mast crops were above average to bumper across most of the state in fall 2023, based on KDFWR survey data).

## EMERGING OR EVOLVING ISSUES

The number and distribution of complaints about turkey population decline continue to increase. In response, the Kentucky Fish and Wildlife Commission recommended and approved multiple regulation changes, all of which were in effect as of the 2023-2024 hunting seasons.

- Bag limits on Wildlife Management Areas (WMAs): this change restricted take during spring turkey season to 1 legal turkey per hunter per WMA, although a hunter may still harvest both birds of her/his 2-bird spring season limit on different WMAs.
- Fall bag limit: Reduced from 4 turkeys total with only 1 having a beard longer than 3 inches, to 2 turkeys total with only 1 having no beard or a beard under 3 inches.
- Baiting/feeding: Extended the timeframe during which it is illegal to place feed for wildlife outside the curtilage of the home from 1 March – 31 May to 1 March – 31 July.

## RESEARCH

In 2022, we joined an ongoing statewide gobbler banding project being conducted by Tennessee Tech University and the Tennessee Wildlife Resources Agency. The research project, “A Multi-State Banding Project to Investigate Factors Affecting Gobbler Harvest Rates and Population Health,” is led by Dr. Bradley Cohen and masters student Abigail Riggs, with capture and banding efforts being conducted by TWRA and KDFWR staff across both states. After 4 field seasons in TN and 3 field seasons in KY, a total of 1,719 male turkeys have been banded (>800 in each state). Objectives are to estimate age-specific harvest and survival rates of male wild turkeys across KY and TN and potential effects of landscape and regulatory covariates. In addition, KDFWR’s wildlife veterinarian Dr. Christine Casey is coordinating the collection of biological samples (blood, oropharyngeal swabs) from banded birds for a baseline health analysis to be conducted by the Southeastern Cooperative Wildlife Disease Study.

In 2023, Dr. Cohen and PhD student Sara Watkins began a second research project focused on the reproductive ecology of wild turkeys in western 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. This research will build upon the gobbler banding study to provide a foundation for recommendations for turkey management in Kentucky.

## RELEVANT LINKS

KDFWR: <https://fw.ky.gov/Pages/default.aspx>

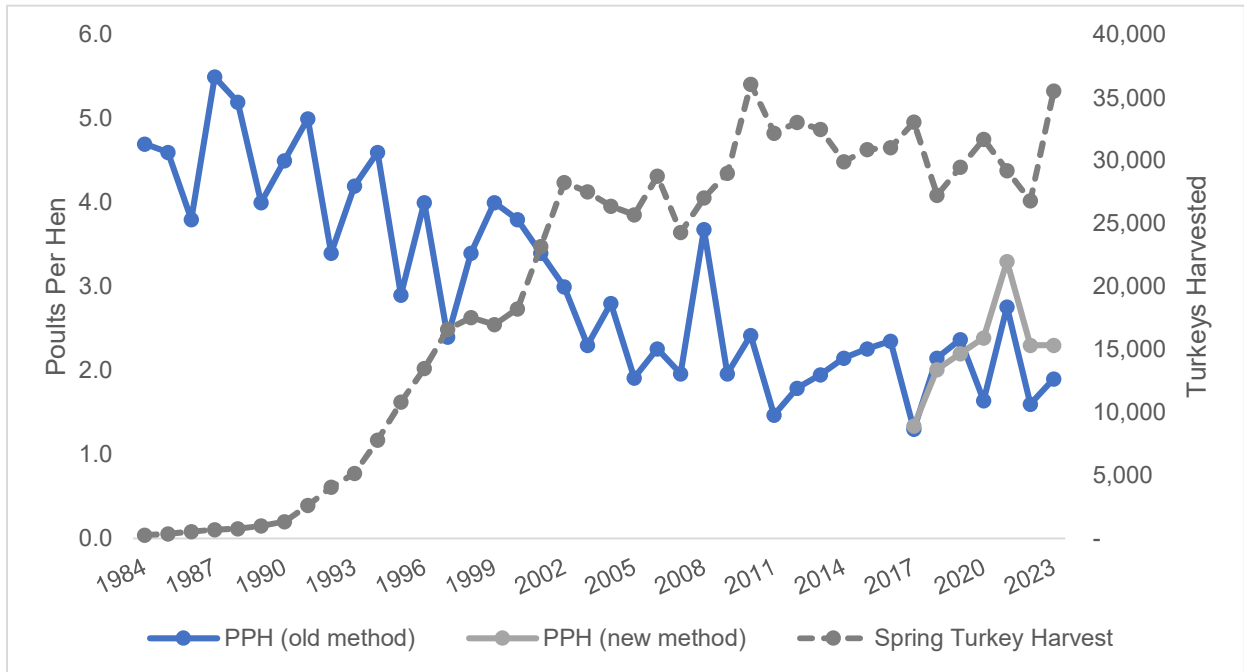
Spring turkey hunting: <https://fw.ky.gov/Hunt/Pages/Spring-Turkey-Hunting.aspx>

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.** Long-term statewide trends in turkey poults per hen (PPH; solid blue and gray lines) from Kentucky’s Wild Turkey Brood Survey and reported spring turkey harvest (dashed gray line), 1984–2023. Since 2017, PPH has been calculated in two ways: old method = single ratio across all observations (total poults / total hens; solid blue line); new method = mean poult-per-hen ratio across observations including  $\geq 1$  hen (solid gray line).

**Table 1.** Summary statistics for Kentucky’s Wild Turkey Brood Survey, 2023. PPH = Poults per hen, PPB = poults per brood. Calculations based on NWTF Technical Committee Standardized Protocol.

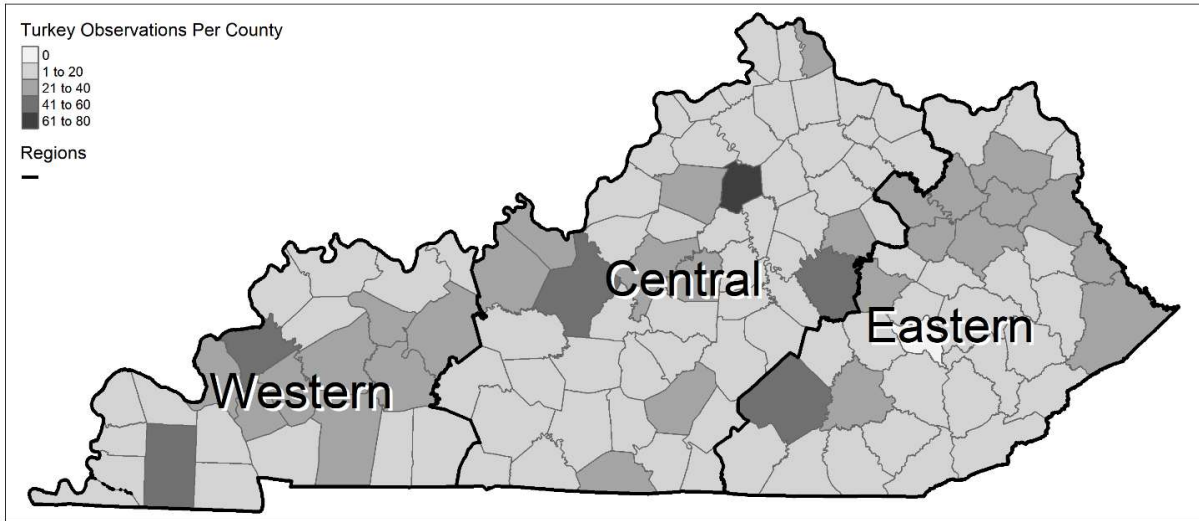
Region <sup>a</sup>	PPH (95% CIs, n) <sup>b</sup>	PPB (95% CIs, n)	% Hens With Brood (n) <sup>c</sup>	Male:Female (n) <sup>d</sup>
Western	2.5 (2.2-2.8, 292)	3.9 (3.5-4.2, 189)	63.7 (292)	0.28 (329)
Central	2.5 (2.2-2.7, 410)	3.8 (3.5-4, 271)	62.2 (410)	0.38 (479)
Eastern	1.8 (1.6-2.1, 283)	3.1 (2.8-3.5, 167)	61 (283)	0.55 (355)
Unknown	2.9 (1.8-3.9, 24)	4.3 (3.6-5.3, 16)	53.3 (24)	0.27 (26)
Statewide	2.3 (2.2-2.5, 1009)	3.6 (3.5-3.8, 643)	62.1 (1009)	0.4 (1189)

<sup>a</sup> "Unknown" indicates observations for which a location could not be determined

<sup>b</sup> 95% bootstrap confidence intervals; n = number of observations used in calculation

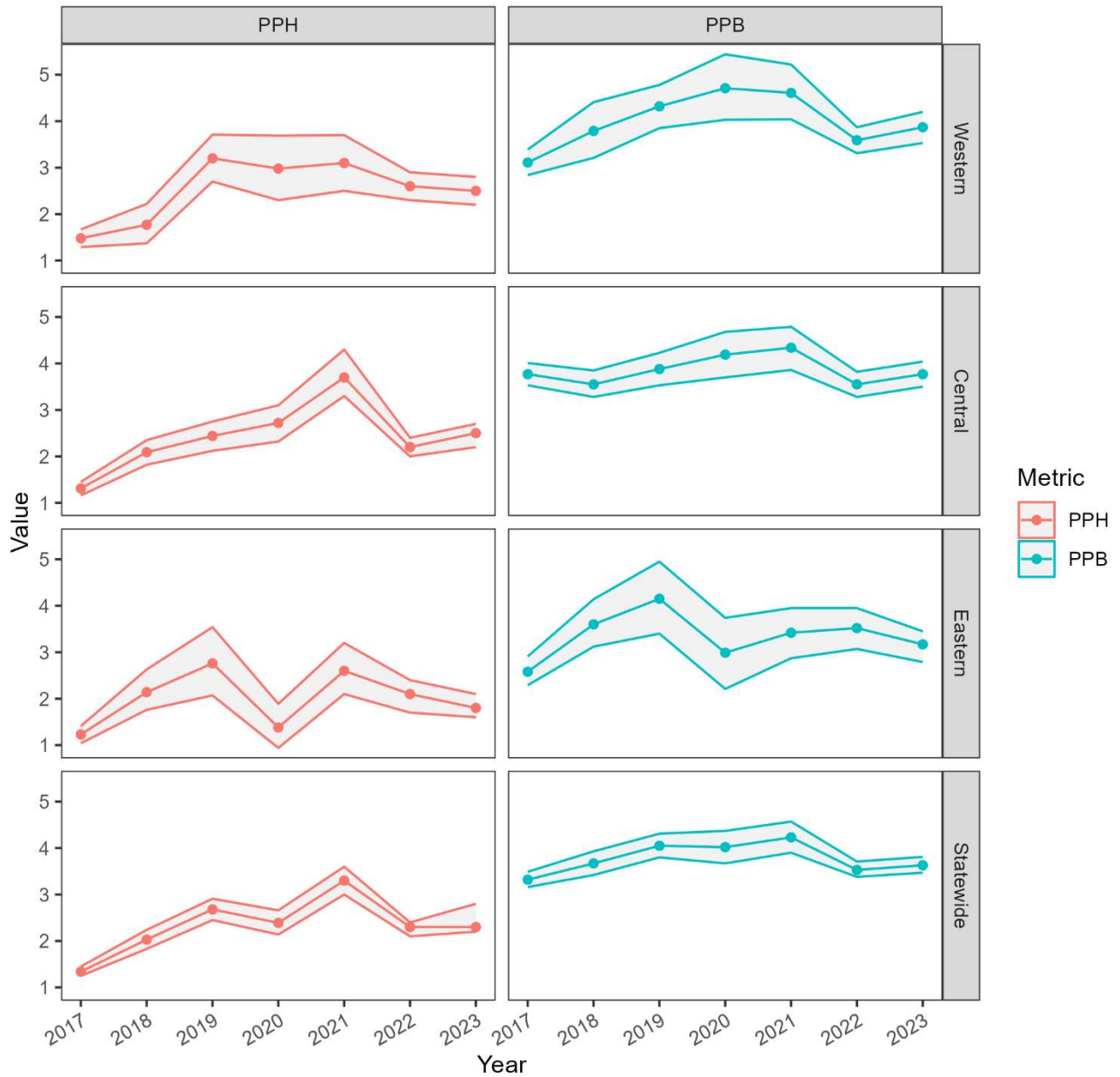
<sup>c</sup> Percentage of hens observed with at least 1 poult

<sup>d</sup> Total number of males observed divided by total number of hens observed



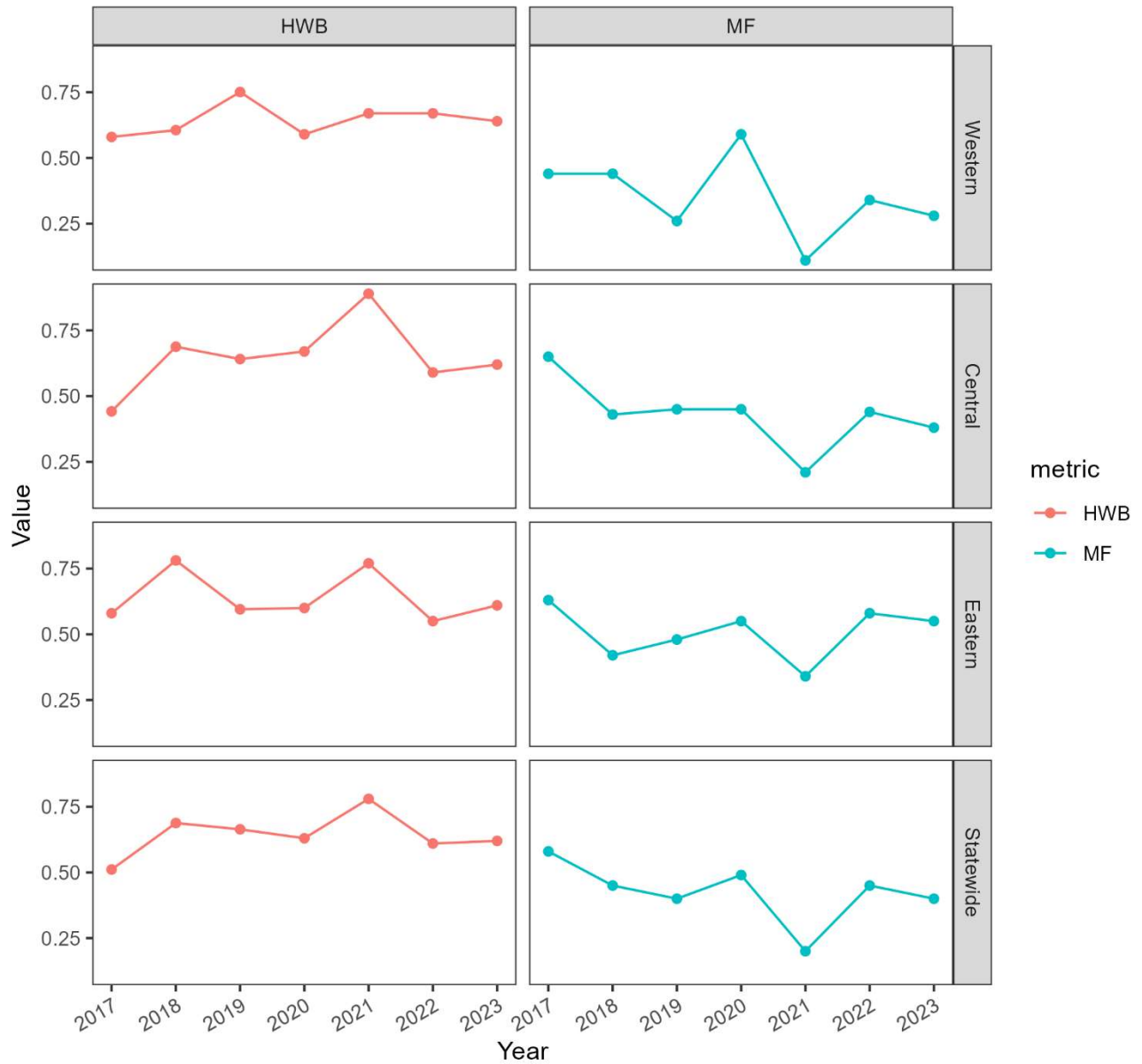
**Figure 2.** Sample size (number of observations of  $\geq 1$  turkey) per county from Kentucky’s Wild Turkey Brood Survey, 2023. Counties grouped into regions based on general gradients in land cover, land use, and climate.

Poults Per Hen (PPH) and Poults Per Brood (PPB) by Region, 2017-2023



**Figure 3.** Trends in average poults per hen (PPH, left column) and poults per brood (PPB, right column) for each of 3 regions (top 3 rows) and statewide (bottom row; gray shading shows 95% confidence intervals).

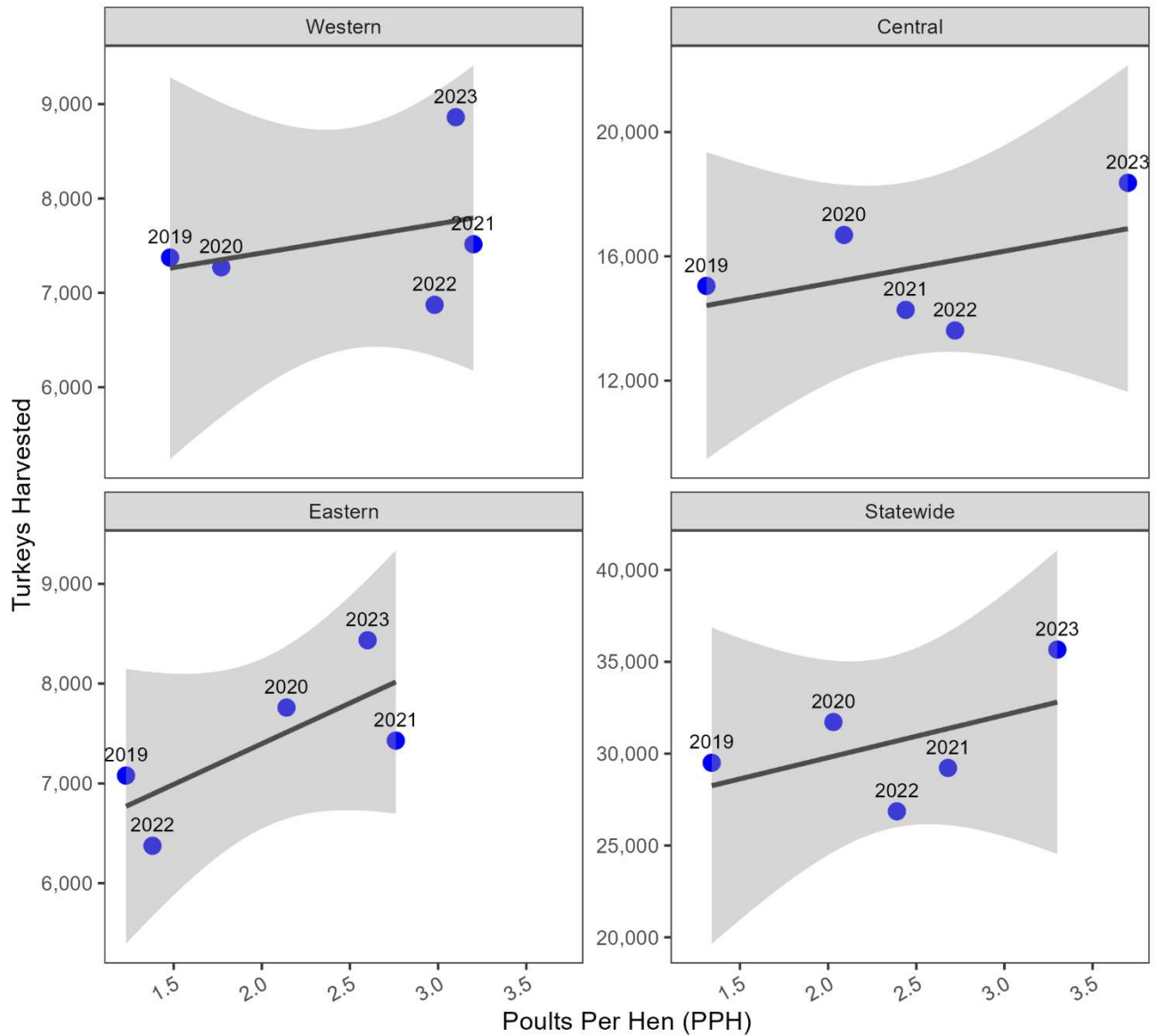
Proportion of hens with a brood (HWB) and male-to-female ratio (MF),  
Kentucky, 2017-2023



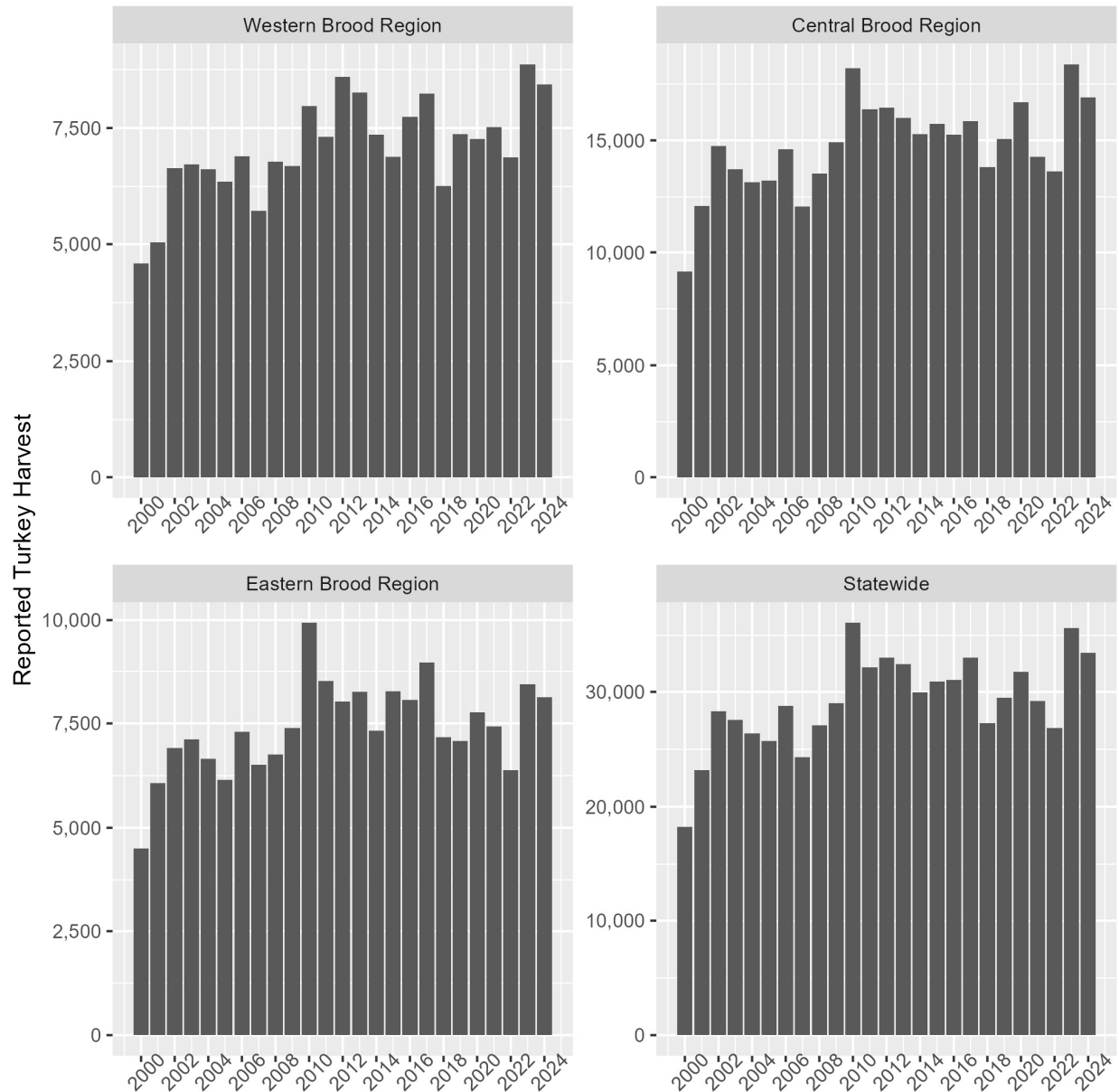
**Figure 4.** Trends in the proportion of hens observed with a brood (HWB, left column) and the male-to-female ratio across all observations (MF, right column) for each of 3 regions (top 3 rows) and statewide (bottom row).

### Relationship between reproductive success (Poults Per Hen) and spring turkey harvest 2 years later, Kentucky, 2017-2023

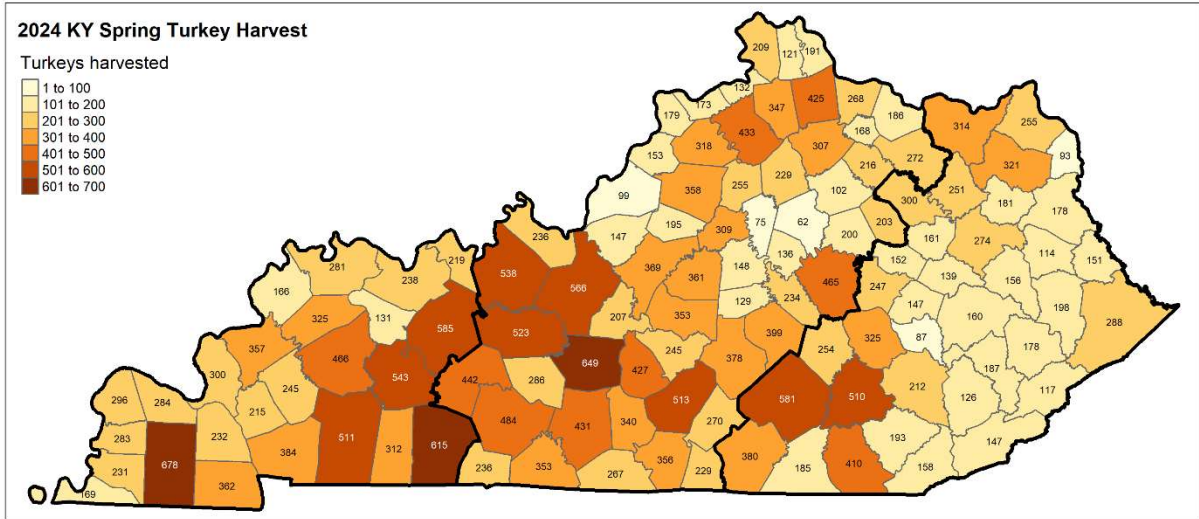
Points are labeled with the year of harvest



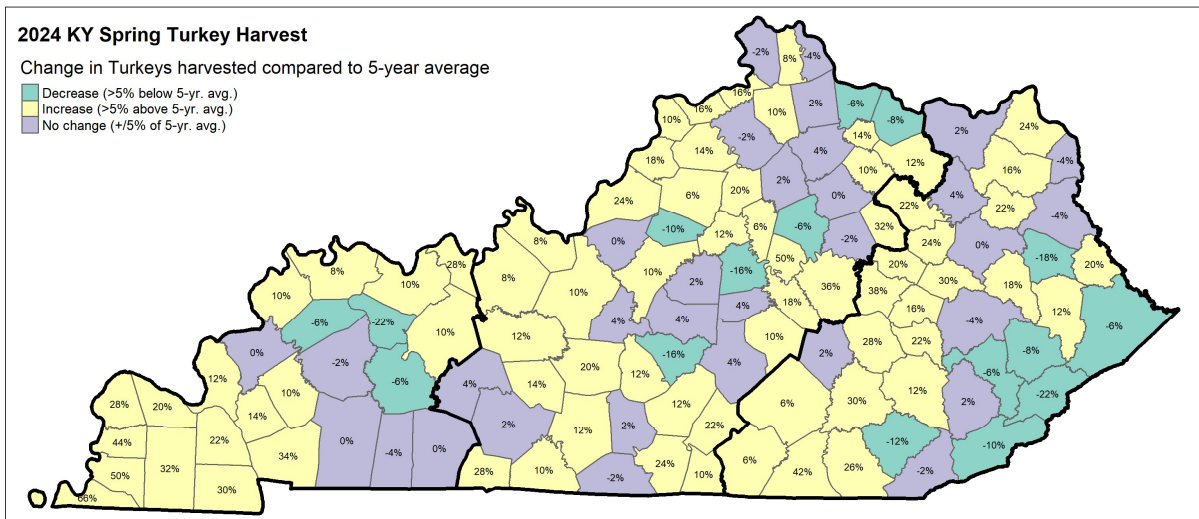
**Figure 5.** Relationship between poults per hen (PPH, horizontal axis) and statewide spring turkey harvest 2 years later (vertical axis). Increases in PPH correspond with increases in turkey harvest, although there is uncertainty about the relationship (gray shading shows 95% confidence intervals).



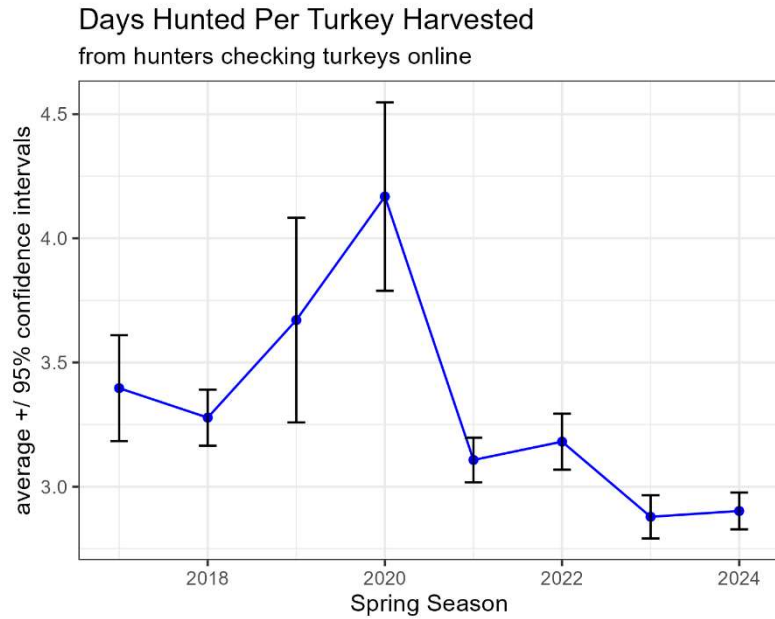
**Figure 6.** Reported spring wild turkey harvest per brood survey region, 2000–2024. Spring harvest is shown statewide and grouped by brood survey regions for continuity with the presentation of brood survey results (Table 1, Figures 1-5).



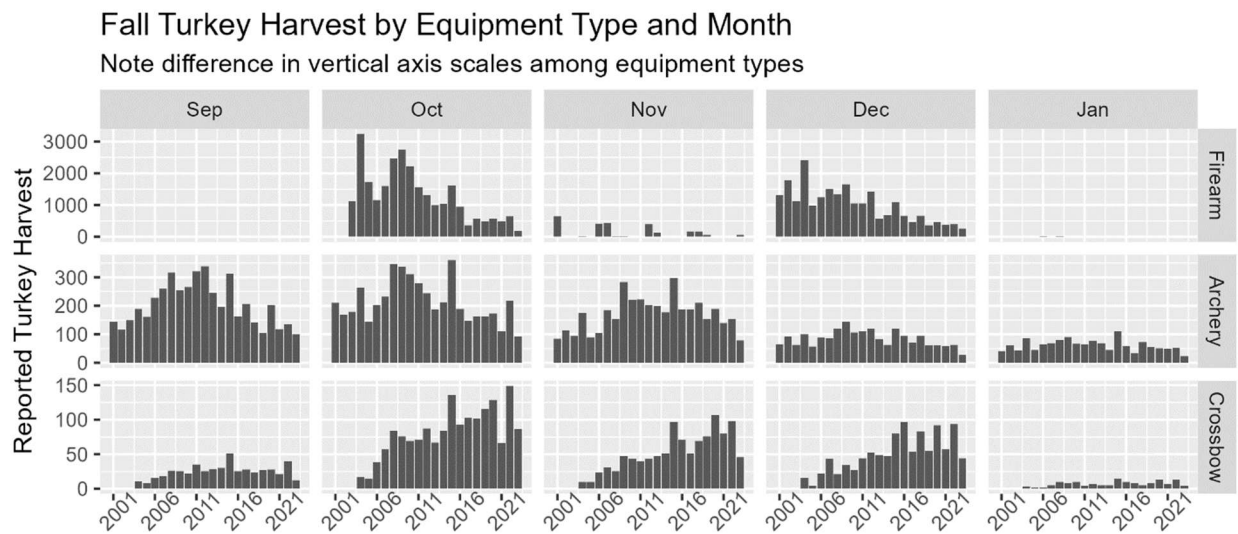
**Figure 7.** Reported spring wild turkey harvest per county, 2024. Counties are outlined in black by brood survey regions for continuity with the presentation of brood survey results (Table 1, Figures 1-5).



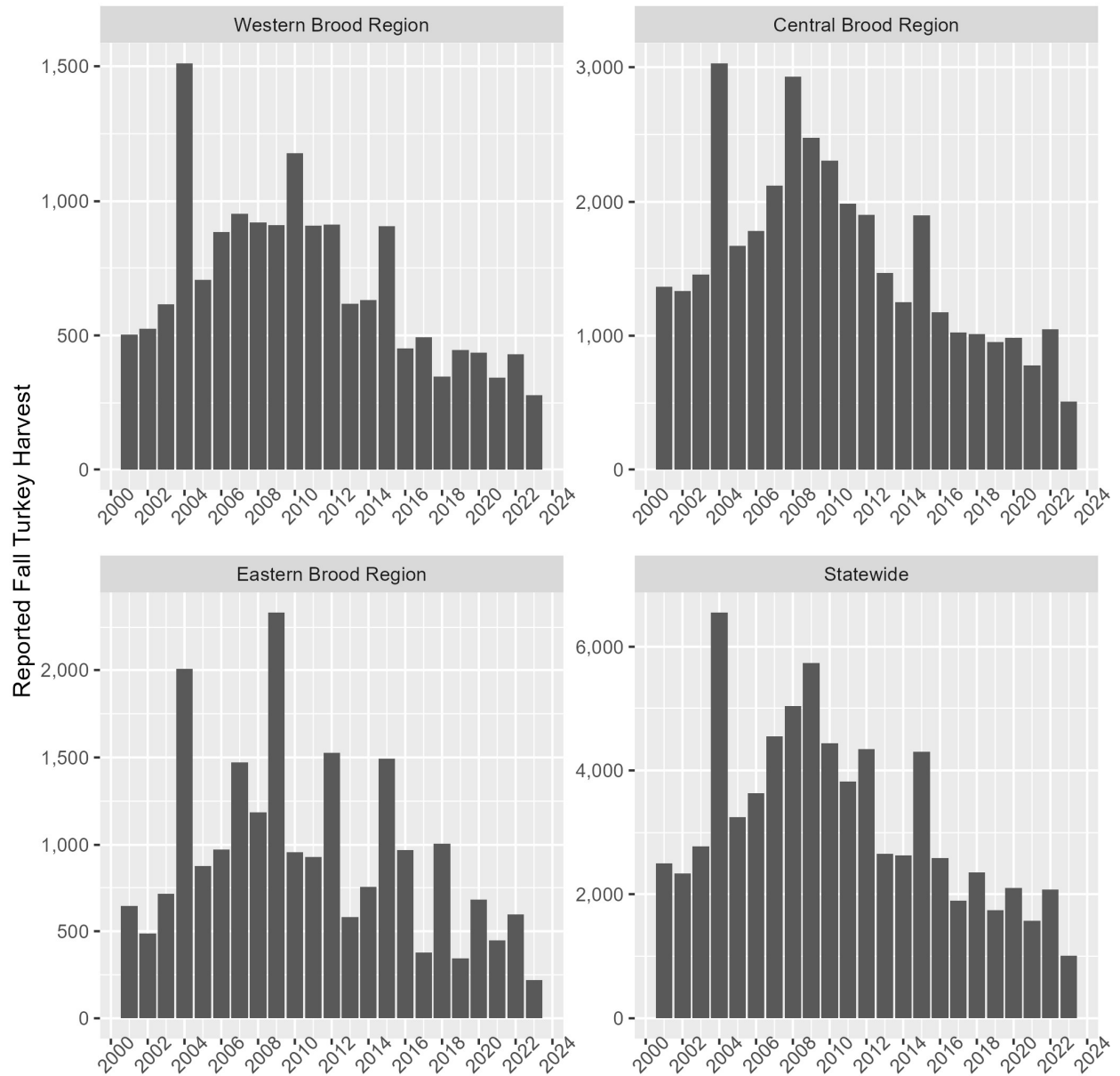
**Figure 8.** Percentage change in 2024 spring wild turkey harvest per county compared to previous 5-year average (2019-2023). Counties are outlined in black by brood survey regions for continuity with the presentation of brood survey results (Table 1, Figures 1-5).



**Figure 9.** Mean number of days hunted per turkey harvested among successful hunters who reported their harvest online during Kentucky’s Spring turkey season, 2024.



**Figure 10.** Reported fall wild turkey harvest per equipment type and month, 2001–2023. Days of hunting opportunity increased in 2003-2006.



**Figure 11.** Reported fall wild turkey harvest per brood survey region, 2000–2023. Fall harvest is shown statewide and grouped by brood survey regions for continuity with the presentation of brood survey results (Table 1, Figures 1-5).