

KENTUCKY WILD TURKEY POPULATION STATUS REPORT – 2018

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POPULATION STATUS

The wild turkey population in Kentucky is approximately 330,000 to 440,000. The lower end of this range assumes hunters harvest 10% of the population during the spring season, while the upper end incorporates an estimate of under-reporting by hunters. Based on spring harvest as an index to abundance, turkey populations have stabilized or are increasing in most counties (Figure 1). However, noticeable pockets of decline are a cause for concern, particularly in light of population declines in several other states in the southeastern and midwestern regions of the country.

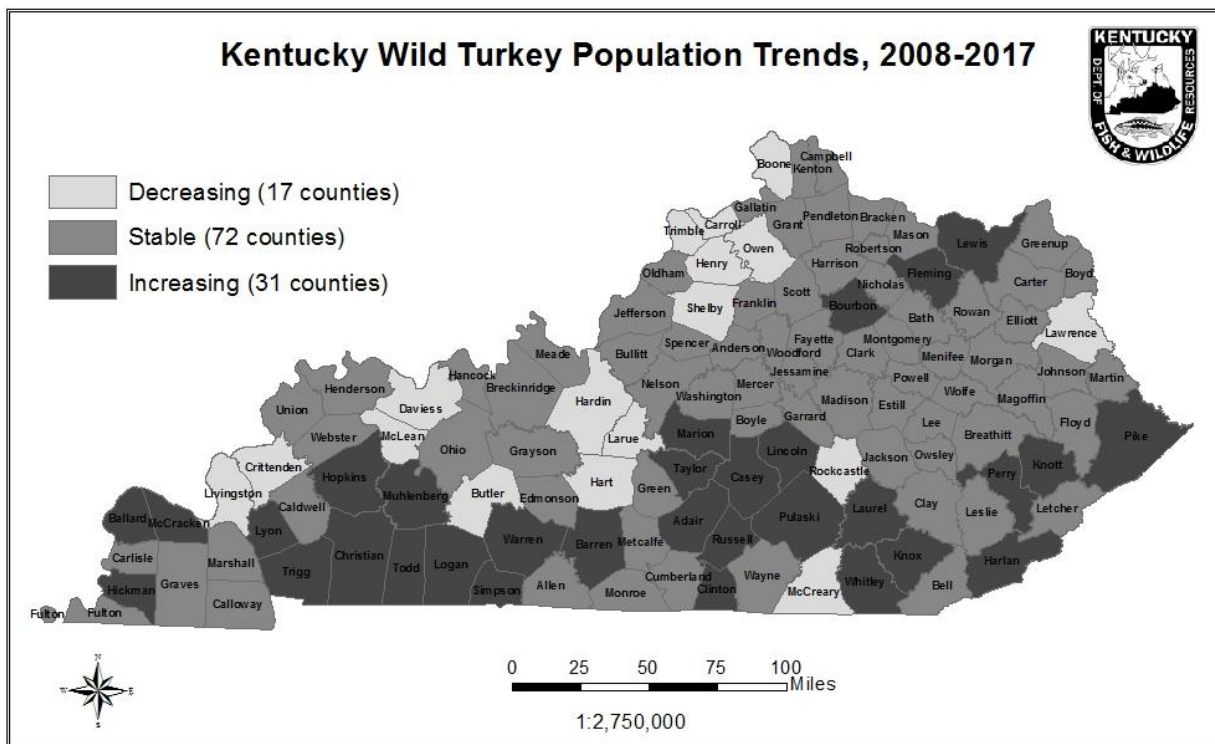


Figure 1. Wild turkey population trends by county, 2008-2017.

REPRODUCTION

The Kentucky Department of Fish and Wildlife Resources (KDFWR) has conducted summer brood surveys since 1984. Survey participants traditionally included KDFWR personnel and volunteers, most of whom are members of the National Wild Turkey Federation. Participants record turkeys seen incidentally during their travels in July and August. The survey provides indices for tracking trends in turkey reproduction and hunting pressure, including a poults-per-hen (PPH) ratio that indicates overall productivity; a percentage of hens with poults that indicates nesting success; a poults-per-brood (PPB) ratio that indicates poult survival; and a gobbler-to-hen ratio that indicates gobbler carry-over after spring hunting.

Brood survey participation had declined over the past decade until last season, when we initiated outreach efforts to engage the public for more turkey observations (Figure 2). Outreach included press releases, emails to hunters and department staff outside the Wildlife Division, and advertisements on KDFWR radio and television programs and social media platforms.

In 2017, we changed procedures for recording and analyzing turkey observations to a standardized protocol developed by the Southeast Wild Turkey Working Group (a consortium of turkey program coordinators from member states in the Southeastern Association of Fish and Wildlife Agencies). We instructed participants to record (1) each observation of a turkey or turkeys as a distinct, individual event, regardless of sex or age of the turkey(s) seen; and (2) all turkey observations, even if the observer suspected she/he might have seen the turkey(s) before. Prior to data analysis, we censored observations with (1) $\geq 25\%$ of turkeys of unknown age and sex, (2) ≥ 8 hens but no poults, and (3) ≥ 1 hen and ≥ 1 poult in which the ratio of hens to poults was < 0.0625 . For observations of poults with no hens, we inserted a value of 1 to reduce bias from brood hens not seen but likely nearby.

Compared to 10-year averages, in 2017 the number of survey participants increased 212% (from 78 to 159), observations of ≥ 1 turkey increased 370% (from 386 to 1,812), and total turkeys observed increased 183% (from 5,326 to 9,481; Figure 2). Observations were collected from 109 of 120 counties and ranged from 1 to 195 per county (Figure 3). We hope to maintain this high level of public participation each year.

The mean PPH index was 1.3 and did not vary markedly across western, central, and eastern regions of the state (Table 1). This was down from 1.6 in 2016 and 41% below the 10-year average (2008-2017) of 2.0, with 2.0 generally considered “break even” production. Just over half of all hens were observed with broods, varying regionally from 42% to 58%. Poults-per-brood was 3.4 overall, varying regionally from 2.5 to 3.8.

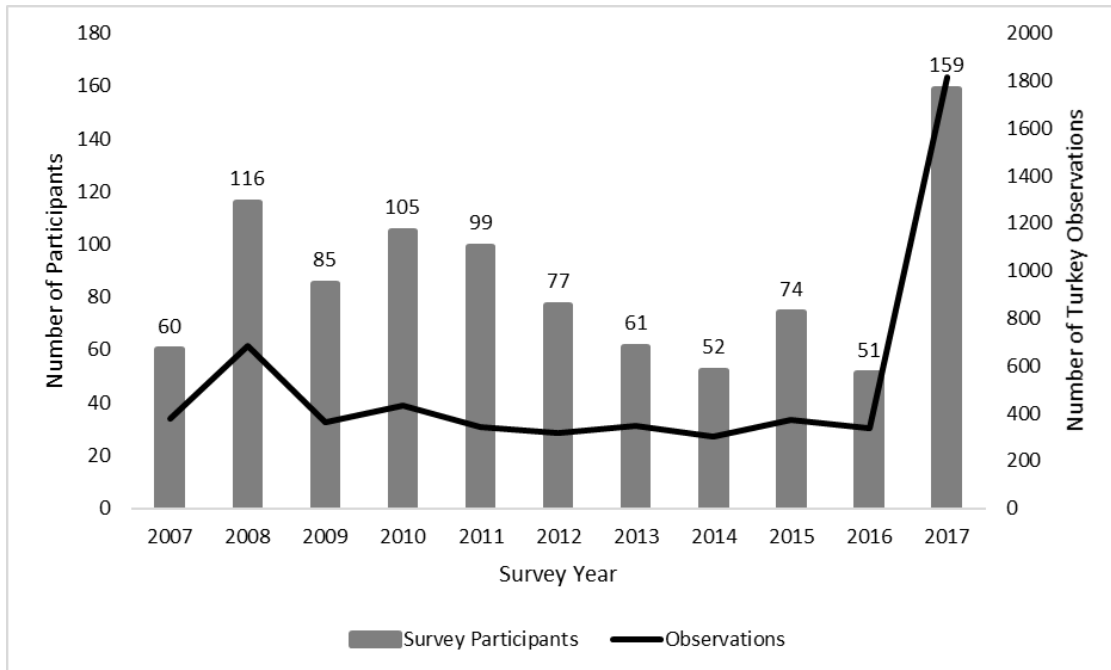


Figure 2. Number of participants (bars; left y-axis) and individual observations of ≥ 1 turkey (line; right y-axis) from KDFWR brood surveys conducted July and August, 2008-2017. Not shown are total turkeys observed across all observations, which increased 183% from (9,481) the 10-year average (5,326).

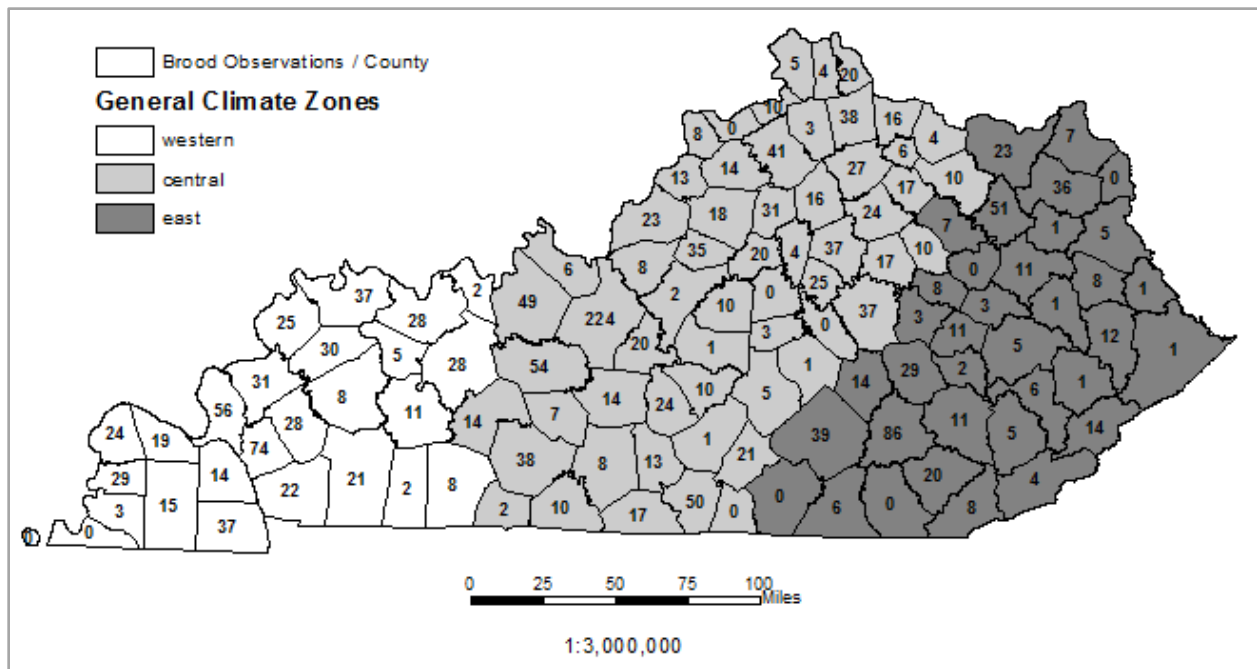


Figure 3. Wild turkey observations (i.e., ≥ 1 bird per sighting) by county from the KDFWR summer brood survey conducted by staff and volunteers in July and August, 2017. Regions reflect general differences in climate and land form, cover, and use.

Table 1. Data from Kentucky’s wild turkey brood survey, 1 July – 31 August, 2017. Observers included KDFWR staff and members of the public.

Region	Hens	Poults	Males	Unknown	Total Turkeys	PPH^a (95% CIs)	PPB^b (95% CIs)	% Hens w/ Brood^c (n^d)	Male:Female Ratio^e (n^f)
Central	1,653	2,153	1,072	8	4,886	1.31 (1.16-1.45)	3.77 (3.53-4.01)	44.2 (691)	0.65 (941)
East	586	720	370	5	1,681	1.23 (1.04-1.41)	2.58 (2.29-2.91)	58.0 (258)	0.63 (363)
West	876	1,293	385	4	2,558	1.48 (1.29-1.67)	3.11 (2.84-3.39)	58.0 (333)	0.44 (431)
Statewide^g	3,141	4,216	1,837	28	9,222	1.34 (1.25-1.45)	3.32 (3.16-3.49)	51.1 (1,287)	0.58 (1,741)

^aPoults-per-hen (calculated by bootstrapping the sample).

^bPoults-per-brood (calculated by bootstrapping the sample).

^cPercentage of hens that were observed with ≥ 1 poult during survey.

^dNumber of observations where ≥ 1 hen was observed.

^eTotal number of males observed during survey divided by total number of females observed during survey.

^fNumber of observations where ≥ 1 hen or ≥ 1 male was observed during survey.

^gMay include observations in which region was not indicated in data file.

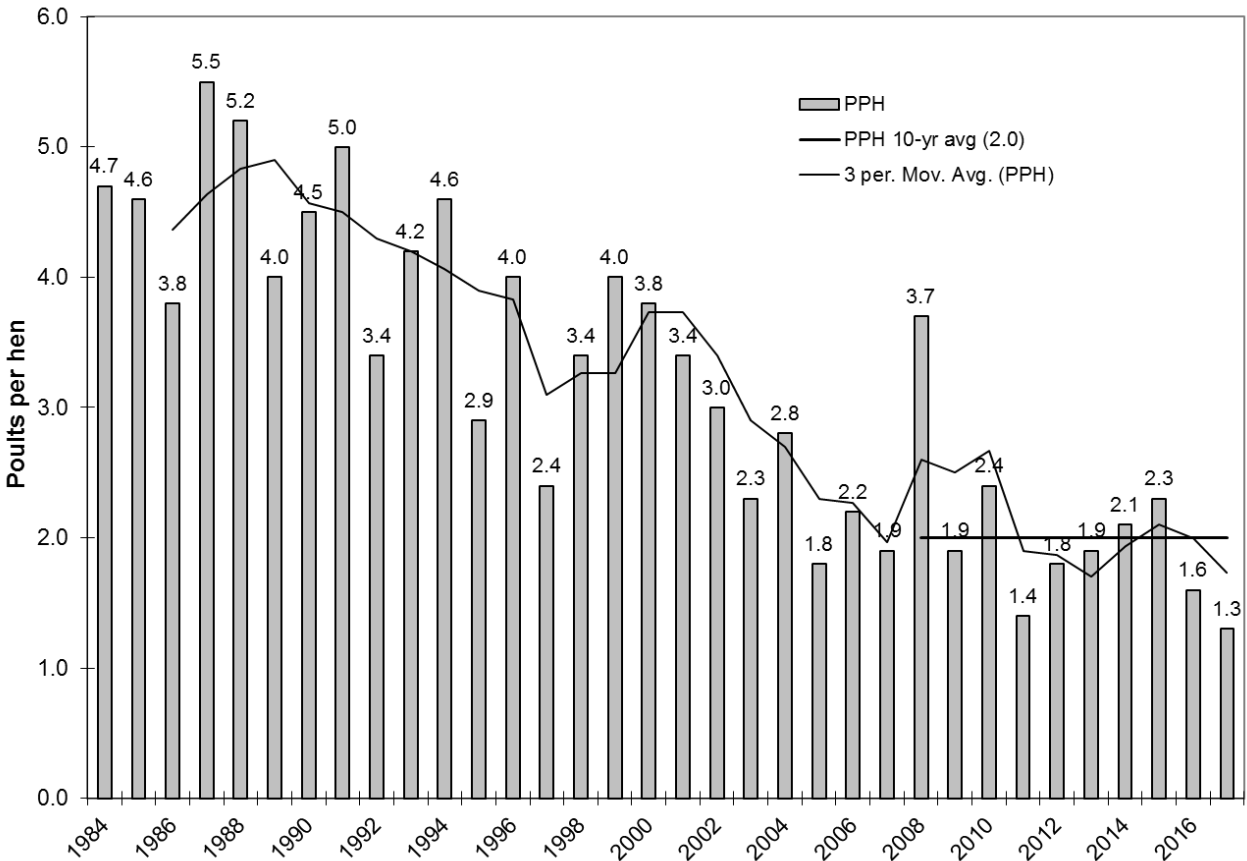


Figure 4. Poult-per-hen (PPH) ratios from brood surveys in Kentucky conducted July and August, 1984-2017. Three-year moving average (black line) and 10-year average (horizontal line) shown. PPH for 2017 may not be directly comparable to past years due to differences in survey participation and analysis methods (explained above).

Figure 5 below shows how turkey productivity compares with spring harvest, statewide, over the past 20 years. Notably, harvest has trended upward concurrent with production trending downward. This situation has been observed in several other states, leading some researchers to consider this evidence for a theory known as density dependence. Density dependence predicts a slowing of growth as a turkey population approaches or exceeds its habitat’s carrying capacity, due to fewer resources being available to individual turkeys (e.g., fewer quality nesting sites for an increasing number of hens; i.e., lower per-capita productivity). Populations may overshoot carrying capacity, decline to appropriate levels the habitat can support, then eventually stabilize as the population fluctuates above and below some unknown carrying capacity over time.

Beyond the seemingly conflicting long-term trend, note that the last time turkey production declined in consecutive years was from 1999 to 2003 (Figure 5). Spring turkey harvest also declined over this period (2000 to 2003), so we may expect declines this spring or next. In 2004, productivity began to fluctuate despite being on a general downward trend. Harvest increased to a peak in 2010, and since has fluctuated at a slightly lower level. (The 2008 spike in PPH was

due to excellent poult survival fueled by abundant food provided by a periodic cicada hatch in the eastern two-thirds of Kentucky that summer, followed by a subsequent surplus of 2-year-old birds available for harvest two years later.)

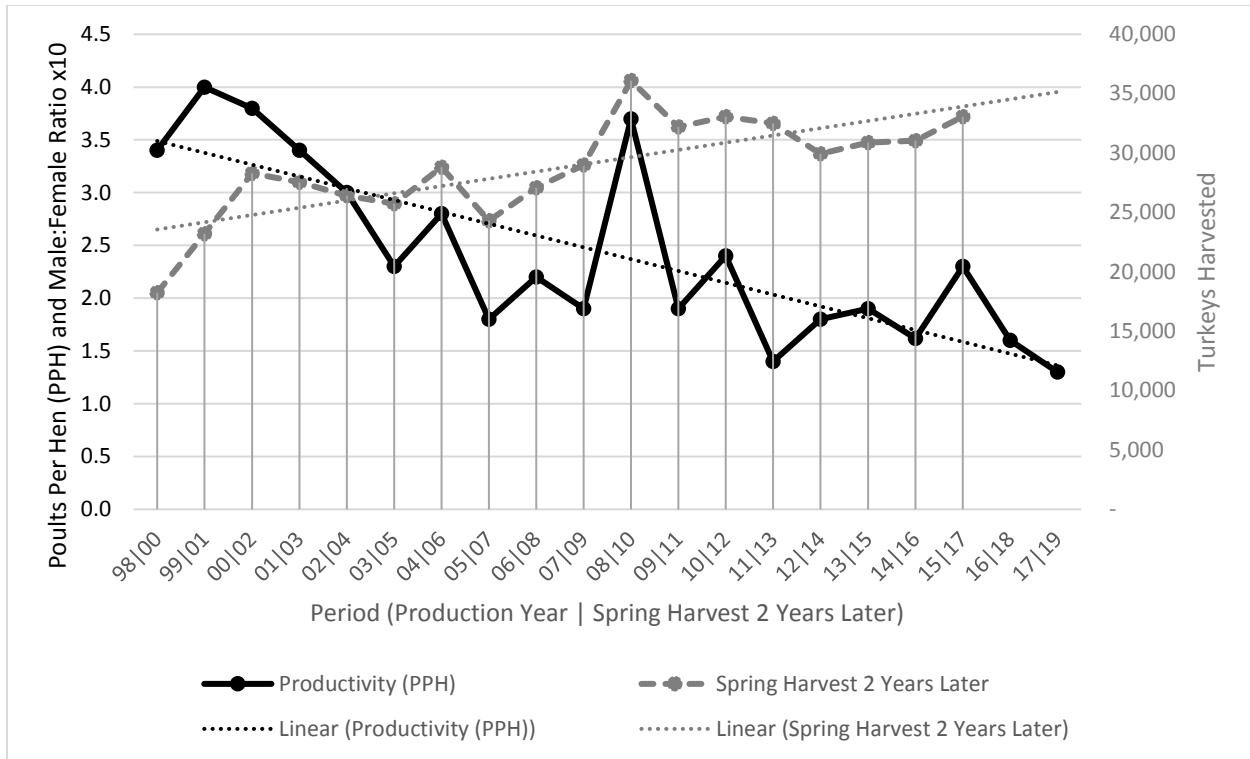


Figure 5. Relationship of turkey productivity (indexed by poult-per-hen ratio [PPH] from brood surveys) to spring turkey harvest, statewide, 2008-2017.

Last summer’s male:female ratio averaged 0.6 statewide (Table 1) based on brood survey observations. Values of this index below 0.5 may indicate overly high hunting pressure. Gobbler carry-over to 2018 may have been enough to compensate for two consecutive years of poor production, at least in central and eastern regions that were above the 0.5 male:female threshold (0.7 and 0.6, respectively). In western counties gobbler carry-over was lower (male:female ratio 0.4), which when combined with two years of poor production, may result in lower harvest in 2018.

HARVEST

Turkey hunting in Kentucky includes spring and fall seasons. Shooting hours are one-half hour before sunrise to one-half hour after sunset. Harvest reporting is mandatory for all Kentucky turkey hunters via phone or internet through the Telecheck Harvest Reporting System.

Spring Turkey Season

The 2017 spring turkey season in Kentucky included a youth-only weekend season (April 2–3) and a 23-day general season (April 15–May 7). A spring turkey permit is required of residents and nonresidents in addition to a standard hunting license, except for landowners. The spring season bag limit is 2 male turkeys or turkeys with visible beards, the daily bag limit is 1 bearded bird, and legal weapons include shotgun, bow, and crossbow. Statewide sales of spring hunting permits and spring harvest have been relatively stable since the record harvest of over 36,000 turkeys in 2010 (Figure 6).

The total reported spring turkey harvest in 2017 was the 3rd highest total ever (Figure 6, Table 2).

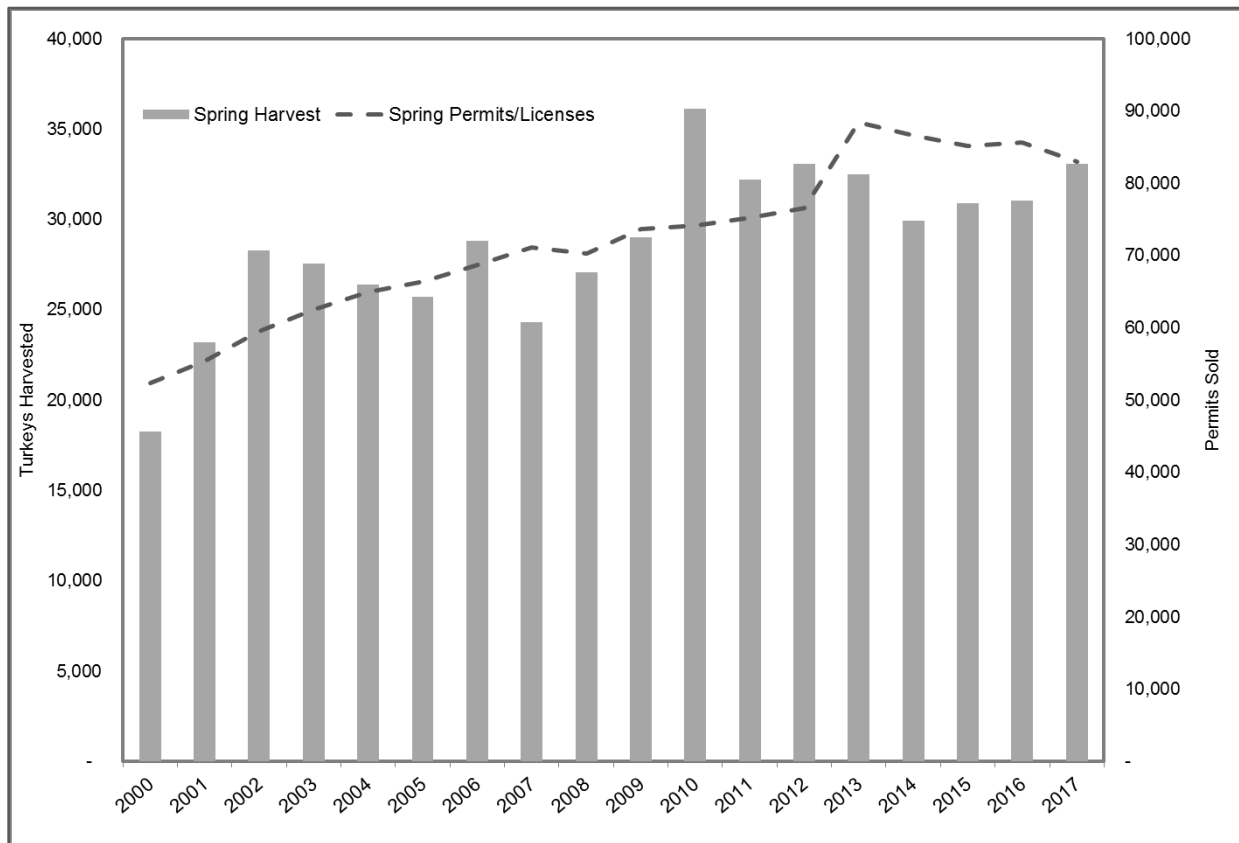


Figure 6. Reported spring turkey harvest and permits sold in Kentucky, 2000–2017. Harvest includes youth-only and general statewide seasons. Permits/licenses include spring resident and nonresident turkey permits, youth resident and nonresident turkey permits, and Sportsman’s License (including spring and turkey hunting privileges).

Table 2. Comparison of spring turkey harvest in Kentucky, 2016 and 2017.

Period	Year		% change
	2016	2017	
Youth Season (2 Days)	1,856	1,693	-8.8%
Statewide Opening Weekend	9,205	10,388	+12.9%
Remaining 21 Days of season	19,986	20,975	+4.9%
Total	31,047	33,061	+6.5%

Harvest exceeded 200 birds in 82 of 120 counties, ranging from 84 to 663 (Figure 7). Harvest per square mile ranged from 0.2 to 1.8. Jakes made up 9% of the harvest compared to 17% in 2016. Harvest on public land (1,918) was just 6% of the statewide total. Harvest exceeded 50 birds on 6 areas (Table 3).

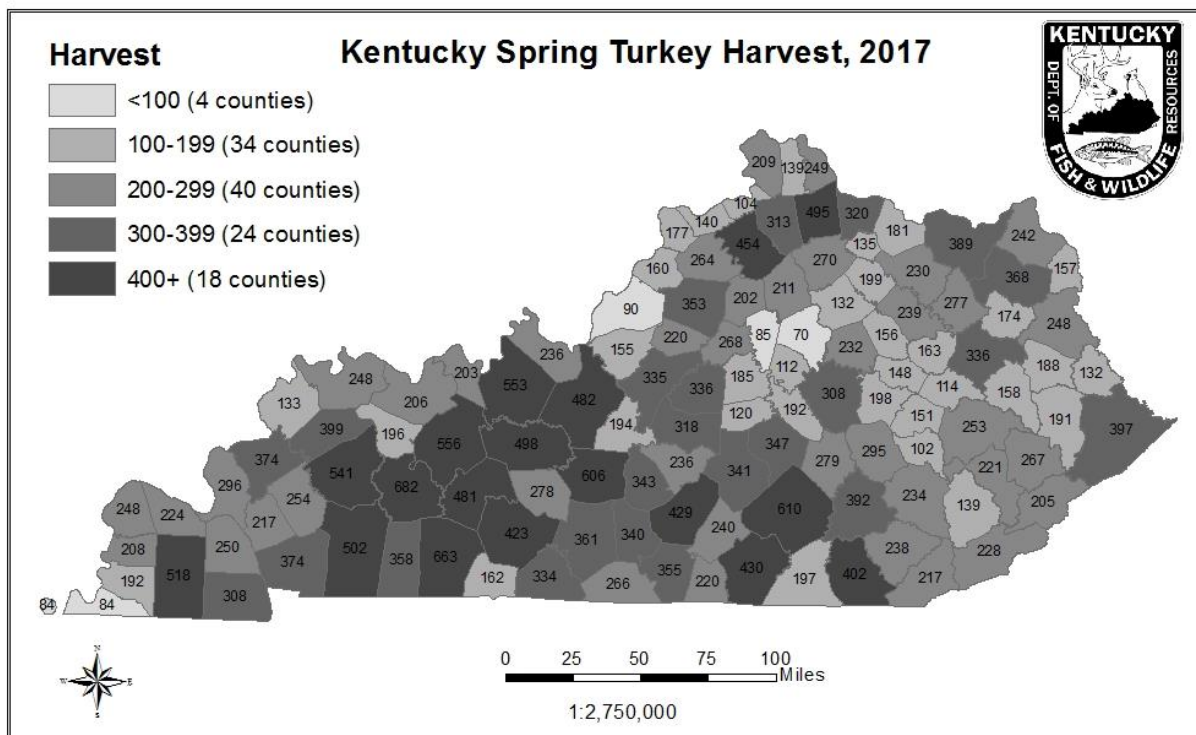


Figure 7. Spring turkey harvest by county in Kentucky, 2017.

Table 3. Top ten public hunting areas in Kentucky by spring turkey harvest, 2017.

Public Hunting Area	WMA Acreage	Turkeys Harvested	Acres Per Harvested Turkey
Daniel Boone National Forest	638,529	508	1257
Peabody WMA	45,679	181	252
Land Between The Lakes NRA	107,594	140	769
Wendell H. Ford RTC	11,261	68	166
Green River Lake WMA	21,037	61	345
Clay WMA	8,953	53	169
Taylorsville Lake WMA	9,417	47	200
Lake Cumberland WMA	41,948	38	1,104
Yellowbank WMA	6,761	37	183
Big Rivers WMA & State Forest	7,574	33	230

Fall Turkey Season

Fall turkey hunting in Kentucky included an archery season concurrent with archery deer season (September 3–January 16), 2 one-week-long shotgun seasons (October 22–28 and December 3–11), and 2 crossbow seasons (October 1–16 and November 12–December 31). A fall turkey permit is required of residents and nonresidents in addition to a standard hunting license and spring turkey permit, except for landowners. Fall season bag limit is 4 turkeys, only 2 of which may be taken during shotgun seasons, regardless of weapon used, and only 1 male bird having a beard length of ≥ 3 inches may be harvested.

The reported 2017-18 fall season harvest (1,861) was down 28% from fall 2016-17 and was the lowest since 2000 (Figure 9). Shotgun, archery, and crossbow harvests were 1,004, 619, and 236, respectively. The lower harvest reflects last summer's lower production coupled with an above-average crop of red oak acorns and beechnuts that concentrated turkeys on these food sources.

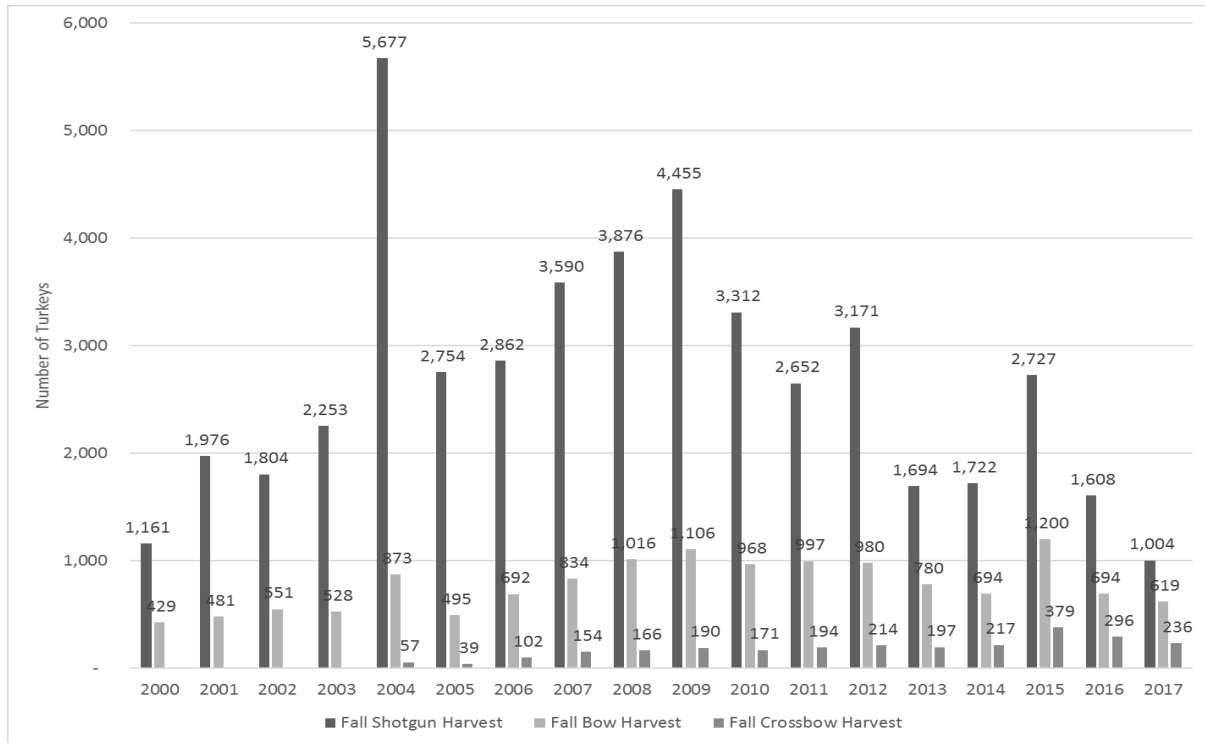


Figure 9. Fall turkey harvest by weapon type in Kentucky, 2000–2016.

EMERGING OR EVOLVING ISSUES

Despite stable populations in most counties, we receive reports of declining turkey abundance in some areas. Indeed, harvest in some counties has declined to levels observed in 10 to 15 years ago. Anecdotal speculation about turkey declines is common, with disease and predation commonly cited. However, we also receive requests for earlier spring season opening dates to maximize exposure to gobbling activity. Many suggest a zone system as with deer hunting.

We recommend maintaining our current spring season framework, which attempts to balance hunter opportunity to experience gobbling activity with the dual objectives of ensuring breeding occurs before gobblers are subjected to harvest and minimizing illegal hen kill. We accomplish these objectives with a mid-April opening date concurrent with peak egg laying, which reduces potential disturbance to turkeys leading up to critical breeding and nesting / brood-rearing seasons. Our 2-bird per season bag limit provides excellent opportunity while our 1-bird per day limit spreads this opportunity through the season; both of these reduce the likelihood of overharvest. Furthermore, we have observed local population declines in some counties and we want to avoid the widespread, severe declines seen in some southern states. Given uncertainty about the trajectory of Kentucky’s turkey population, unknown effect levels of habitat, predators, poaching, and disease, and the potential for density dependence at local and statewide levels, our current regulations are most prudent until specific data indicate otherwise.

To better assess population trends, we will begin a gobbler hunter survey and a voluntary postseason hunter survey this spring 2018. The primary objective is to gather data on hunter

effort so we can standardize our harvest data (e.g., turkeys harvested per 1,000 trips). Expressing harvest relative to effort avoids the assumption that effort is constant through time, and it should provide a better assessment of population trends.

PARTING SHOT

Kentucky's 2018 spring turkey season begins with the youth-only season on April 7-8, followed by the general statewide season April 14 through May 6. For questions or comments, contact the Turkey Program at 1-800-858-1549.

Keep in mind, Kentucky's turkey flock is your turkey flock. You support turkey conservation each time you purchase a hunting license. Good luck, please report your harvest, and help a youth experience the excitement of turkey hunting!

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