

Spring Turkey Harvest Survey Report 2020



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2020 Spring Turkey Harvest Survey Report



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Abstract

Following the 2020 spring turkey hunting season, a stratified random sample of statewide big game hunting license holders (both resident and non-resident) was contacted by a combination of email and mail surveys to estimate the turkey hunting participation, hunting effort, and harvest in Tennessee. Of 17,045 total license-holders contacted, 5,384 responses were received. During the spring 2020 turkey season, an estimated 90,015 hunters (65,429 adult and 24,586 youth) statewide participated in turkey hunting and spent 728,558 days afield. Adult and youth hunters statewide harvested an estimated 57,633 turkeys (49,083 adult gobblers, 7,946 jakes, and 604 bearded hens). An estimated 7,499 birds were shot but not killed or recovered during the 2020 spring turkey season. Overall, 58% of the statewide respondents were somewhat or very satisfied with their turkey hunting experience in the 2020 spring turkey season. About half (51%) of the respondents perceived the turkey population in areas they hunt to have decreased over the years. The three most frequently mentioned reasons behind a perceived decline in turkey populations included predation of nests, predation of poults and/or adult turkeys, and hunting pressure.

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Introduction

The Tennessee Wildlife Resources Agency (TWRA) is a state agency in Tennessee responsible for the management of game species including turkey, deer, etc. For better monitoring of the turkey population and harvest trends over time, the agency benefits from understanding annual hunting participation, hunting effort, and harvest estimates for all game species including wild turkey. Estimating participation, effort, and harvest by types of land (e.g., private and public) and by TWRA administrative regions (R1, R2, R3, R4) as shown in Figure 1 allows for comparing effort and success and devising programs to enhance the hunting experience. In addition to participation and harvest, it is also important to continue monitoring hunters' satisfaction and perception of population trends. Estimating harvest often involves designing a systematic survey of randomly selected hunters to collect data on seasonal hunting participation and harvests.

In order to meet the above-mentioned needs, the primary objective of this turkey hunters survey was to estimate hunter numbers, hunting effort, and harvest at the statewide level as well as by TWRA administrative region. The other objective was to assess satisfaction and perception of population in the areas hunted and perceived reasons for changes in population.

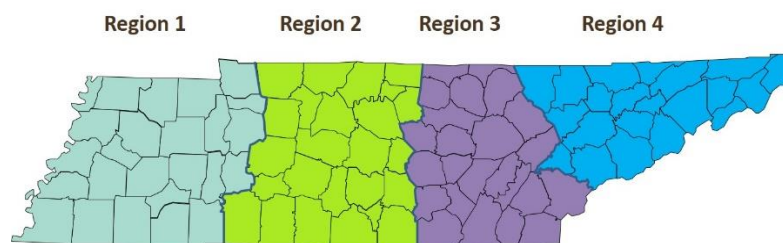


Figure 1: Map of TWRA administrative regions (Source: Tennessee Wildlife Resources Agency)

Methods

This study utilized a mixed-mode survey of resident and non-resident hunters in Tennessee for the 2020 spring turkey hunting season. The sampling frame used for this survey was the population of individuals aged 18 years and older who had a valid license to hunt turkeys, or who reported harvesting a turkey, in Tennessee during the 2020 spring turkey

season. Because of the wide variety of license types that include turkey hunting privileges in Tennessee, a stratified random sampling approach was adopted to ensure representation of all license categories in the survey sample. Based on expected differences in response rate and a general similarity in license types, license holders and hunters who reported to have harvested a turkey during the 2020 spring season were assigned to one of six sampling strata (Annual, Disability, Lifetime, Non-resident, Permanent Senior, and Harvest). Youth hunting license types were not considered in the sampling because only hunters who were at least 18 years of age were surveyed. The first stratum (Annual) included licenses that are annually renewable (types: 04, 09, 10, 11, 164, 167). The second stratum (Disability) included licenses that are available to individuals with physical or intellectual disabilities (types: 169, 189, 198). The third stratum (Lifetime) included all lifetime licenses that did not require annual renewal (types: 401, 402, 403, 404, 405, 406). Those under 18 years of age in lifetime license categories were excluded from the study.

A separate question was asked of adult respondents in the sample to collect data on turkeys harvested by youth guided or mentored during the turkey season. The fourth stratum (Non-resident) included non-junior, non-resident licenses (types: 73, 74). The fifth stratum (Permanent Senior) included the permanent senior citizen hunting license only available to those 65 years and older (type: 166). The final stratum (Harvest) included the individuals who reported to have harvested a turkey in Tennessee during the 2020 spring season.

A total of 17,045 contacts were selected for the mixed-mode survey that was administered in May-June of 2020. Following a modified Tailored Design Method for mail and internet surveys (Dillman et al. 2009), individuals who had an email address on file were first invited to complete the online survey at Qualtrics.com, a secure online survey program housed at University of Tennessee's website. A two-page survey questionnaire (Appendix A) was developed in collaboration with TWRA staff and then approved by the University of Tennessee's Institutional Review Board for human subjects research (Approval #: UTK IRB-20-05821-XM). Those who did not respond to the initial email survey invitation were sent three follow-up reminder emails during a period of two weeks. After the email survey concluded, non-respondents, or those who did not have an email address on file, were contacted by mail. The

initial mail survey packet included a personalized cover letter, survey questionnaire, and a business reply envelope. A week later, a final reminder packet including a copy of the survey questionnaire and a business reply envelope was mailed to encourage participation.

Nineteen out of 17,045 hunters contacted for the survey were undeliverable. At the end of survey administration, 5,384 responses (3,164 from email and 2,220 from mail) were received. After adjusting for the undeliverable mails, the adjusted response rate for the survey was 32%. Although less than ideal, this response rate is attributable to the nature of the sampling frame used. In Tennessee, many sportsmen license types include turkey hunting rights and, consequently, possessors of these licenses are considered as potential hunters in the sampling design. However, many in the sample do not use the turkey hunting privilege included in their license, and therefore, may not respond to a turkey harvest survey request. Nevertheless, this response rate is higher than the range reported in several recent hunter surveys in the southeastern U.S. (Watkins et al. 2018; Mingie et al. 2019; Poudyal et al. 2020).

Statewide number of hunters, days afield, and harvest were calculated separately for adult and youth. In addition, estimates for these metrics were also calculated for the types of land hunted (private, public, both) and the TWRA administrative region (e.g., R1, R2, R3, R4). Any harvest reported without the location of the hunt was recorded in the “Unknown” category. Estimates of harvest were also calculated separately by type of turkey harvested (adult gobblers, jakes, bearded hens). Estimates for relevant variables of hunting effort and harvest metrics were calculated following a stratified random sampling design (Chochran 1977).

As in any survey research, the estimates are subject to sampling error. Where applicable, 95% confidence limits (CL) around the estimates were also reported. Theoretically, the 95% confidence interval can be estimated by adding and subtracting the CL from the estimate. It should be noted that many sources of errors that are beyond researchers’ control can influence results in survey studies. Those could include participants failing to provide complete or accurate answers, measurement error due to misinterpretation of question by respondents, etc. However, we do not expect those issues to have substantial effect on the results.

Results

Respondent characteristics

Of 5,384 survey recipients who responded, 91% were male and 96% were white. The average age of the respondents was 52 years. It should be noted that only adults (18 or older) were surveyed. These statistics are very similar to the key demographics of the original sampling frame sample of 17,045 (male: 90%, white: 93%, average age: 50 years).

Statewide estimation of hunters, hunting days and harvest

An estimated 65,429 ($\pm 2,950$) adult hunters participated in turkey hunting in Tennessee during the 2020 spring turkey season (Table 1). In addition, based on the number of adult respondents who indicated they guided or mentored youth during the spring season, 24,586 ($\pm 2,709$) mentored youth hunters (hereafter referred to as simply youth hunters) also participated in turkey hunting. Taken together, the total number of adult and youth turkey hunters in Tennessee in the 2020 spring turkey season was estimated to be 90,015 ($\pm 5,659$). Of note, it is possible there are likely additional youth hunters not accounted for because some under 18 years may hunt without adult supervision.

In terms of hunting effort, average days afield per hunter was 10.24 (± 0.55) for adult hunters and 5.23 (± 0.53) for youth hunters. During the entire 2020 spring turkey season, adult and youth turkey hunters respectively spent 638,456 ($\pm 34,866$) and 90,102 ($\pm 12,871$) in total days afield. On average, adult and youth hunters spent 4.49 hours and 4.12 hours hunting, respectively, on the days they hunted.

Table 1: Estimated number of hunters, average hunting hours, and total days spent hunting during the 2020 spring turkey hunting season in Tennessee

	Adult		Youth		Adult and Youth Combined
	Estimate	95% CL	Estimate	95% CL	Estimates
Hunters	65,429	2,950	24,586	2,709	90,015
Total days	638,456	34,866	90,102	12,871	728,558
Average days/hunter	10.24	0.55	5.23	0.53	8.09
Average hours/day	4.49	0.10	4.12	0.16	4.31

With regard to harvest, adult hunters statewide harvested an estimated 41,060 ($\pm 3,018$) adult gobblers, 5,749 ($\pm 1,004$) jakes, and 364 (± 210) bearded hens in the 2020 spring turkey season (Table 2). Similarly, harvest by youth hunters was estimated at 8,023 ($\pm 1,707$) adult gobblers, 2,197 (± 592) jakes, and 240 (± 190) bearded hens. Taken together, adult and youth hunters in Tennessee took 49,083 adult gobblers, 7,946 jakes, and 604 bearded hens during the 2020 spring turkey season. Overall, 65% of adult hunters and 48% of youth hunters harvested at least one turkey during the 2020 spring turkey season. Among the successful adult hunters, 60% reported harvesting only one bird, 25% reported exactly two birds, 9% reported exactly three birds and the remaining 6% reported four or more birds. Among the successful youth hunters, 64% reported harvesting only one bird, 24% reported exactly two birds, 7% reported exactly three birds and the remaining 5% reported four or more birds.

To calculate a harvest rate, the number of birds harvested was divided by total number of days spent hunting. This metric was computed at the individual respondent level and the mean value was estimated for the statewide sample. For the 2020 spring turkey season, 0.12 birds were harvested per day by adult hunters statewide and 0.18 birds per day by youth hunters.

Table 2: Estimated number of turkeys harvested by adult and youth hunters during the 2020 spring turkey hunting season in Tennessee

	Adult		Youth		Adult and Youth Combined
	Estimate	95% CL	Estimate	95% CL	Estimates
Adult Gobblers	41,060	3,018	8,023	1,707	49,083
Jakes	5,749	1,004	2,197	592	7,946
Bearded Hens	364	210	240	190	604
Total	47,173		10,460		57,633
Harvest rate	0.12	0.01	0.18	0.03	0.15

Estimates of hunting effort and harvest by land type

Statewide estimates of hunters, days afield, and harvest by land type are presented in table 3. About 70% of adult and 76% of youth hunters exclusively hunt on private land. Only 8% of adults and 7% of youth hunt exclusively on public land. Consequently, in terms of the land

types where hunting took place, respondents reported hunting more days on private lands. Comparison of total hunting days by adult hunters between land types showed about two-thirds (68%) of total hunting days were by those hunting on private lands only, 6% for those hunting on public land only, and the remaining 26% of total days for those who hunted on both land types. In terms of harvest, those hunting on only private land accounted for an estimated 75% of total birds harvested, 4% of total harvest was by those hunting on public land only and 20% of the total harvest was by those who hunted on both land types. The remaining 1% of total birds harvested was represented by harvest on an unreported (i.e., unknown) land type. Jakes accounted for 12% of the total gobblers harvested by adult hunters who hunted private land only. This metric was slightly higher (16%) among adult hunters who hunted public land only and 12% for those who hunted both lands.

Comparison of total hunting days and total bird harvest by youth hunters between land types showed about 71% of total hunting days were estimated for those hunting on private lands only, 7% for those hunting on public land only and the remaining 22% of total days for those who hunted on both land types. In terms of harvest, 77% of total birds harvested was estimated to have been taken by those hunting on private land only, 6% by those hunting on public land only and 16% for those who hunted on both land types. The remaining 1% of total birds harvest was estimated for unreported (i.e., unknown) land types.

Percentage of adult hunters that harvested at least one bird was 68% for those hunting on private lands only, 42% for those hunting on public land only, and 66% for those hunting on both land types. Among successful adult hunters that hunted on private land only, 62% reported harvesting only one bird, 25% reported exactly two birds, 8% reported exactly three birds and the remaining 5% reported four or more birds. Similarly, among the successful adult hunters that hunted on public land only, 57% reported bagging only one bird, 25% reported two birds, 7% reported three birds and the remaining 11% reported four or more birds. For those who hunted both types of lands and successfully harvested, 55% reported bagging only one bird, 23% reported two birds, 14% reported three birds and the remaining 7% reported four or more birds.

Among youth hunters, percentage harvesting at least one bird was 47% for those hunting on private land only, 26% for those hunting on public land only, and 39% for those hunting both types of lands. Among the successful youth hunters that hunted on private land only, 61% reported harvesting only one bird, 26% reported exactly two birds, 7% reported exactly three birds, and the remaining 6% reported four or more birds. For the successful youth hunters who hunted on public land only, 50% percentage reported bagging only one bird and the remaining 50% reported exactly two. Finally, for those youth hunters who hunted both types of lands and killed at least one bird, 57% reported harvesting only one bird, 31% reported two birds, 3% reported three birds and the remaining 9% reported four or more birds.

Jakes accounted for 21% of the total gobblers harvested by youth hunters who hunted private land only. This metric (i.e., percent jakes) was 31% for those youth hunters who hunted public land only and 22% for those who hunted both lands.

Table 3: Estimated number of hunters, days afield and turkeys harvested by land type during the 2020 spring turkey hunting season in Tennessee

		Hunters	Days Afield	Adult Gobblers	Jakes	Bearded Hens
Adult Hunters						
Private only	Estimate	46,172	432,347	30,790	4,248	258
	95% CL	2,726	40,743	3,365	964	174
Public only	Estimate	5,301	38,617	1,738	331	3
	95% CL	798	7,613	635	221	6
Both	Estimate	10,736	167,492	8,071	1,142	103
	95% CL	1,339	24,159	1,445	400	118
Youth Hunters						
Private only	Estimate	18,757	64,386	6,258	1,641	121
	95% CL	2,434	11,000	1,546	486	133
Public only	Estimate	1,718	5,882	360	162	79
	95% CL	592	2,958	349	218	108
Both	Estimate	3,922	19,834	1,295	371	40
	95% CL	1,147	6,348	633	257	76

Notes: Number of hunters do not add up to the state total because some respondents report hunting in multiple regions or did not disclose their hunting location.

Compared to those who hunted turkeys on public land only, average days of hunting was higher for those who hunted on private land only (Table 4), but average days of hunting

was highest among those who hunted both land types. In terms of hunting hours by land type, the average hours spent per day by adult hunter was very similar between those who hunted on private land only, on public land only, or both. A similar difference was observed with the average days and hours spent by youth hunters.

Table 4: Estimated average number of days afield and hunting hours per day for adult and youth hunters during the 2020 spring turkey hunting season in Tennessee

	Adult Hunters				Youth Hunters			
	Days		Hours		Days		Hours	
	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL
Private only	9.36	0.64	4.28	0.10	4.83	0.58	4.01	0.20
Public only	7.28	0.86	5.18	0.25	4.48	1.68	4.50	0.45
Both	15.60	1.41	5.11	0.29	7.75	1.48	4.62	0.37

Compared to those who hunted on public lands only, the harvest rate was much higher among hunters who hunted on private lands only. For example, adult hunters who hunted on only private lands harvested 0.14 birds per day of hunting, whereas those hunting on only public land bagged 0.07 birds.

Table 5: Estimated harvest rates for adult and youth hunters by land types during the 2020 spring turkey hunting season in Tennessee

	Adult Hunters		Youth Hunters	
	Estimate	95% CL	Estimate	95% CL
Private only	0.14	0.02	0.20	0.04
Public only	0.07	0.02	0.02	0.02
Both	0.09	0.01	0.12	0.04

Regional estimates of hunting effort and harvest

The estimated number of adult hunters, hunting effort, and harvest at the TWRA administrative region level was determined based on survey respondents' indication they participated in at least one day of hunting in a given region during the 2020 spring turkey season (Table 6). The estimated number of adult hunters was largest in Region 2 (23,245) and

smallest in region 3 (13,979). Average days afield per hunter was higher on private land compared to public land. Similarly, the region with the highest days per hunter was Region 1.

In terms of harvest, the highest number of bids harvested by adult hunters was in Region 2. Compared to Regions 3 and 4, Regions 1 and 2 had comparatively higher adult gobblers-jakes ratio (Table 6). Jakes accounted for 8.61% of the total gobblers harvested by adult hunters who hunted in Region 1. This metric was highest (17.84%) among those who hunted in Region 4.

Table 6: Estimated number of adult hunters, average days afield by land types, and birds harvested by TWRA administrative region during the 2020 spring turkey hunting season in Tennessee

		Total Adult Hunters	Average Days (Private)	Average Days (Public)	Average Days (Both)	Total Birds Harvested	Percent Jakes
Region 1	Estimate	14,036	10.65	7.81	15.53	9,517	8.61
	95% CL	1,593	1.33	2.84	2.86	1,211	
Region 2	Estimate	23,245	8.93	7.55	17.00	19,310	10.89
	95% CL	1,935	0.73	1.76	3.23	1,703	
Region 3	Estimate	13,979	9.59	6.92	15.63	8,460	13.53
	95% CL	1,617	1.61	1.20	2.90	1,158	
Region 4	Estimate	15,181	9.99	7.17	15.20	9,631	17.84
	95% CL	1,709	2.02	1.51	1.92	1,737	

Note: Number of hunters do not add up to the state total because some respondents report hunting in multiple regions or did not disclose their hunting location.

Estimated number of hunters, average days, and birds harvested were also calculated for youth hunters (Table 7). It should be noted that since the survey did not collect data on location of youth hunting, regional breakdown of these metrics relied on the assumption the youth hunted in the same region where their supervising adult hunted. However, interpretation of these estimates is cautioned since not all adult hunters guide their youth hunters in the same region in which they themselves hunt. Moreover, many adult respondents who provided data for their youth in the survey did not hunt themselves, and therefore no location information was available to place them in a region. Nevertheless, the regional breakdown of youth hunting participation and harvest metrics shown in Table 7 is similar to that of adult hunters (Table 6). Region 2 had the highest number of youth hunters and birds harvested. Region 1 had higher

average days per hunter on public land than on private land whereas the opposite was true in Regions 3 and 4. Jakes accounted for 24.22% of the total gobblers harvested by youth hunters who hunted in Region 2. This metric was smallest (17.81%) in Region 3.

Table 7: Estimated number of youth hunters, average days afield by land types, and birds harvested by TWRA administrative region during the 2020 spring turkey hunting season in Tennessee

		Youth Hunters	Average Days (Private)	Average Days (Public)	Average Days (Both)	Total Birds Harvested	Percent Jakes
Region 1	Estimate	4,961	4.70	5.88	9.94	2,032	19.13
	95% CL	1,182	1.22	6.21	4.12	878	
Region 2	Estimate	8,063	4.26	4.26	7.59	3,375	24.22
	95% CL	1,543	0.61	2.67	1.98	927	
Region 3	Estimate	4,619	5.06	2.71	8.22	2,071	17.81
	95% CL	1,343	1.55	1.33	3.06	1,072	
Region 4	Estimate	4,274	5.45	4.92	9.20	2,080	22.37
	95% CL	1,305	2.14	2.25	3.76	1,211	

Note: Number of hunters do not add up to the state total because some respondents report hunting in multiple regions or did not disclose their hunting location.

In terms of hours spent hunting per day afield, adult hunters consistently reported having spent a slightly higher number of hours hunting than their youth counterparts, regardless of region (Table 8). The average number of hours was highest in Region 1 for both the adults and youth hunters.

Table 8: Estimated average number of hunting hours per day by TWRA administrative region for adult and youth hunters during the 2020 spring turkey hunting season in Tennessee

Region	Adult Hunters		Youth Hunters	
	Estimate	95% CL	Estimate	95% CL
Region 1	4.69	0.22	4.28	0.53
Region 2	4.45	0.16	3.98	0.20
Region 3	4.62	0.22	4.06	0.37
Region 4	4.57	0.20	4.08	0.43

Harvest rate was tabulated for hunters across the different administrative regions (Table 9). This metric was consistently higher among youth hunters than adult hunters, and the

highest rate was estimated for Region 2 for adult hunters and Regions 1 and 2 for youth hunters.

Table 9: Estimated harvest rates for adult and youth hunters by TWRA administrative region during the 2020 spring turkey hunting season in Tennessee

Region	Adult Hunters		Youth Hunters	
	Estimate	95% CL	Estimate	95% CL
Region 1	0.11	0.02	0.19	0.06
Region 2	0.15	0.02	0.18	0.04
Region 3	0.11	0.02	0.15	0.04
Region 4	0.10	0.02	0.16	0.06

Turkeys shot but not killed or recovered by hunters

Respondents were also asked to report the number of turkeys that were shot but not killed or recovered. Based on the data provided, an estimated 7,499 ($\pm 1,519$) turkeys were shot but not killed or recovered by hunters during the 2020 spring turkey hunting season. About 13% of those who answered this question reported to have shot at least one bird they did not recover.

Satisfaction with turkey hunting experience

When asked how they would rate their turkey hunting experience in the 2020 spring turkey season, 58% of respondents from the statewide sample indicated they were somewhat or very satisfied, and another 14% indicated being neither dissatisfied nor satisfied (Figure 2). When compared across land types, the highest percentage (62%) of respondents who indicated being somewhat or very satisfied were those who hunted on private lands only, and the lowest percentage (47%) were those hunting on public lands only. It should be noted that compared to other lands, the highest percentage of respondents (21%) who indicated neutrality on this satisfaction question hunted only on public land.

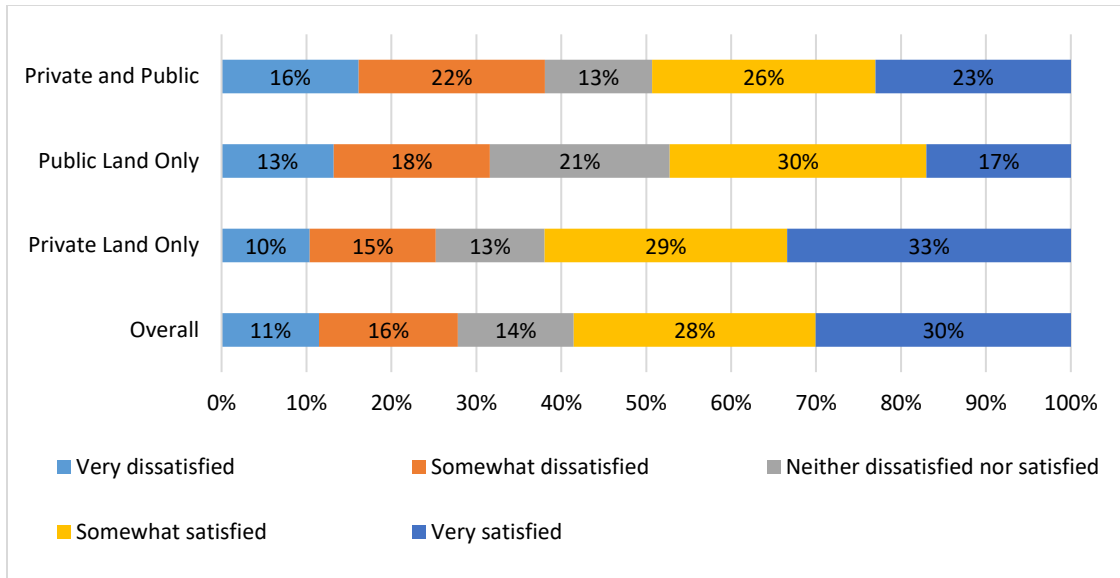


Figure 2: Survey respondents' reported satisfaction with the 2020 spring turkey hunting experience by type of land hunted (From top: n1 = 365, n2 = 288, n3 = 2,051, n4 = 2,742)

A comparison of satisfaction with the 2020 spring turkey hunting experience among the respondents across the different administrative regions showed notable similarity (Figure 3). Compared to Regions 1 and 4, a higher proportion in Regions 2 and 3 indicated being very satisfied.

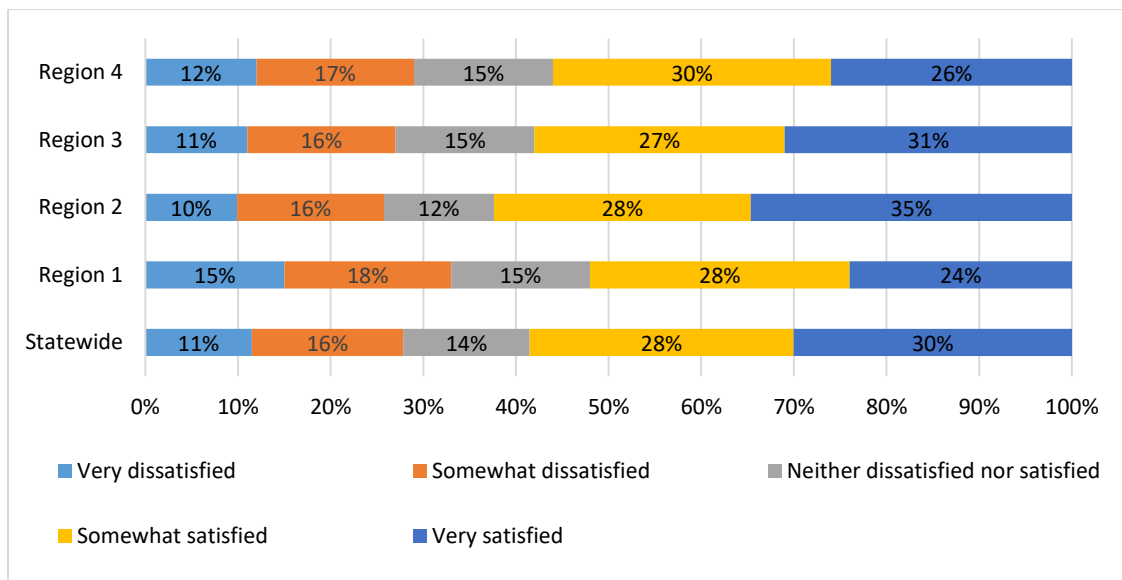


Figure 3: Survey respondents' reported satisfaction with the 2020 spring turkey hunting experience by TWRA region (From top: n1 = 534, n2 = 528, n3 = 1,128, n4 = 668)

Perceived change in turkey populations

Respondents were asked to indicate (based on their experience over the years) how they perceive the change in turkey populations in areas they hunted. About half (51%) of the respondents statewide indicated to have perceived a decline in turkey populations, whereas another 21% indicated seeing an increase (Figure 4). A relatively higher proportion of those hunting in Regions 1 and 2 indicated witnessing declining populations of turkey in the areas they hunt.

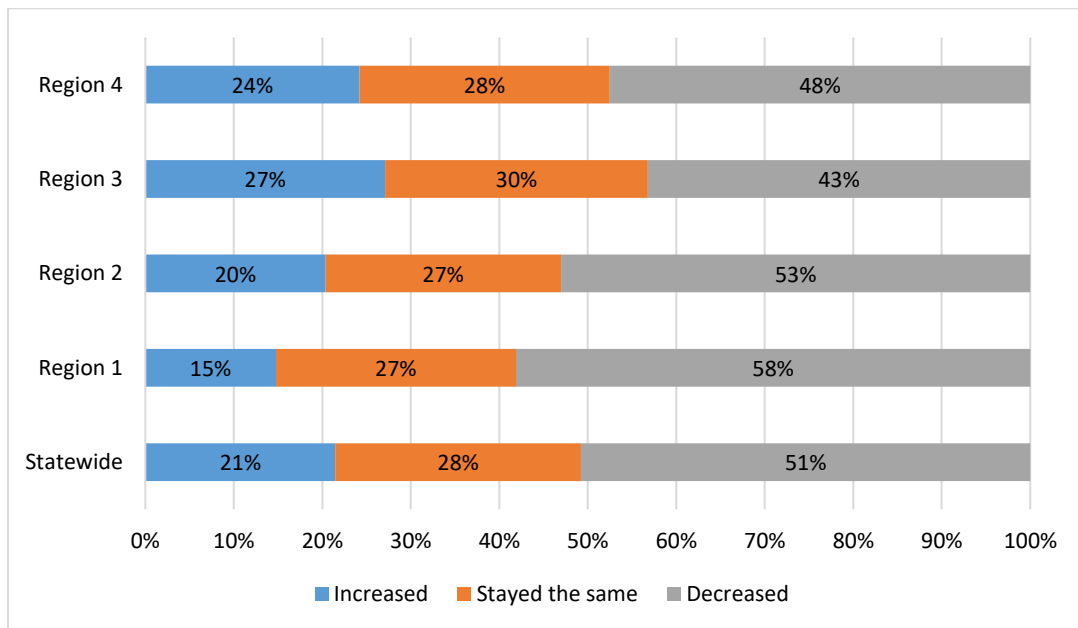


Figure 4: Survey respondents' perception of how turkey populations in the areas they hunt have changed over the years (From top: n1 = 467, n2 = 465, n3 = 992, n4 = 590, n5 = 2,399)

Those who indicated noticing a decline in turkey populations in the area they hunt were asked about the perceived reasons behind the decline. The two most commonly reported reasons for population declines were predation on nests (reported by 61% of respondents) and predation on poults and/or adult turkeys (reported by 58% of respondents; Figure 5). The next three most frequently mentioned reasons were hunting pressure (33%), bad weather during nesting (27%), and loss of habitat (25%).

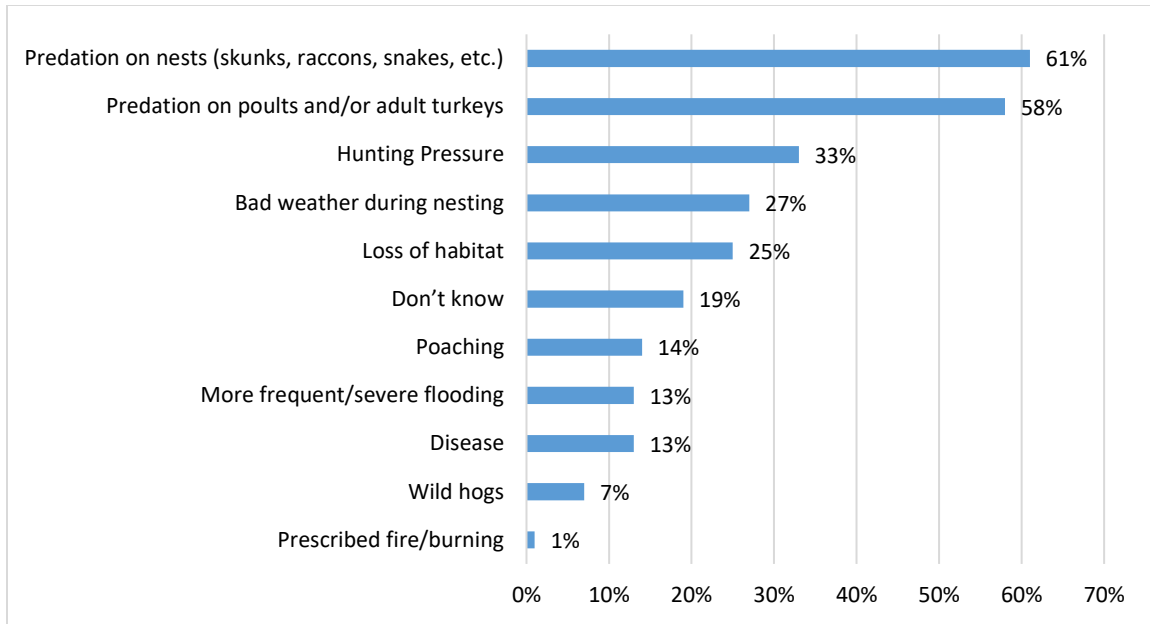


Figure 5: Percentage of survey respondents indicating the reasons behind perceived decline in turkey populations in the areas they hunt (n = 1,214)

References

- Chochran, W. G. 1977. *Sampling techniques*. John Wiley & Sons, Inc. Canada.
- Dillman, D. A., J. D. Smyth, and L. M. Cristian. 2009. *Internet, mail, and mixed-mode surveys: The tailored design method (3rd edi.)*. John Wiley & Sons Inc.
- Mingie, J. C., N.C. Poudyal, J. M. Bowker, M. T. Mengak, and J. P. Siry. 2019. Comparing the net benefit of forestland access for big-game hunting across landownership types in Georgia, USA. *Forest Science* 65(2): 189-200.
- Poudyal, N. C., C. Watkins, and O. Joshi. 2020. Economic contribution of wildlife management areas to local and state economies. *Human Dimensions of Wildlife* 25(3): 291-295.
- Watkins, C., N. C. Poudyal, C. Caplenor, D. Buehler, and R. D. Applegate. 2018. Motivations and support for regulations: A typology of eastern wild turkey hunters. *Human Dimensions of Wildlife* 23(5): 433-445.

Appendix A: Survey questionnaire

2020 Tennessee Spring Turkey Harvest Survey



You are one of a few randomly selected sportsmen and sportswomen in Tennessee to be invited to participate in this survey. Your response will help the Tennessee Wildlife Resources Agency (TWRA) and other stakeholders understand hunters' effort and success in turkey hunting, and your opinion and attitude regarding various aspects of turkey hunting will help them make informed decisions. *Even if you did not hunt in the 2020 spring turkey season, please complete the first few questions and return the survey.*

This is a University of Tennessee study with the support of the Tennessee Wildlife Resources Agency

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1. Did you yourself hunt or did you take a youth (under 18 years of age) hunting in Tennessee during the 2020 spring turkey season (which includes the 2-day Young Sportsman hunt)?
 - No, please answer **Q2**
 - Yes, I hunted, go to **Q3**
 - I did not personally hunt but I took a youth hunting, go to **Q10**
2. If you did not turkey hunt in Tennessee during any of the 2020 spring season, which best describes your reason for not hunting?
 - ___ I typically hunt turkeys during the spring season but 2020 was an exception
 - ___ I typically do not turkey hunt during the spring
 - ___ I am not a hunter

3. In the table below, please report only **your own** (*do not include information for others in your party or those you may have guided*) turkey hunting activities for the 2020 spring turkey season. Report harvest and days hunted in different counties on separate rows, even if you did not harvest any turkeys in that county. For each turkey harvested, indicate the type of turkey (bearded hen, jake, or adult gobbler).

County Hunted	Number of days hunted on private land	Number of days hunted on public land	Number of turkeys harvested		
			Bearded Hens	Jakes	Adult Gobblers
<i>Example: Knox</i>	<i>16</i>	<i>5</i>	<i>1</i>	<i>1</i>	<i>2</i>

4. How many turkeys did you shoot but not kill or recover during the 2020 spring turkey season? _____

5. On days you hunted, how many hours did you typically hunt? _____

6. Overall, how would you rate your 2020 spring turkey hunting experience?

- Very dissatisfied
 Somewhat dissatisfied
 Neither dissatisfied nor satisfied
 Somewhat satisfied
 Very satisfied

7. Based on your experience over the years, how have turkey populations changed in areas you hunt?

- Decreased
 Stayed the same
 Increased
 Don't know

8. If you have noticed a decrease in turkey numbers, what do you believe are the reasons? (Mark all that apply)

- | | |
|---|--|
| <input type="checkbox"/> Hunting pressure | <input type="checkbox"/> Loss of habitat |
| <input type="checkbox"/> Poaching | <input type="checkbox"/> Disease |
| <input type="checkbox"/> Wild hogs | <input type="checkbox"/> More frequent/severe flooding |
| <input type="checkbox"/> Predation on poults and/or adult turkeys | <input type="checkbox"/> Bad weather during nesting |
| <input type="checkbox"/> Predation on nests (skunks, raccoons, snakes etc.) | <input type="checkbox"/> Don't know |
| <input type="checkbox"/> Prescribed fire/burning | <input type="checkbox"/> Others: _____ |

9. Did you take a youth (under 18 years of age) hunting during the 2020 spring turkey hunting season?

- Yes, go to Q10
 No, stop here and return the survey

10. Please report only turkey hunting activities for **youth you mentored** during the 2020 spring turkey season. Report days and hours hunted, even if they did not harvest any turkeys.

Number of youth mentored	Number of days hunted on private land	Number of days hunted on public land	Average number of hours hunted in a day with youth

11. How many turkeys were harvested by youth hunters that you mentored in the 2020 season?

Bearded Hens: _____ Jakes: _____ Adult Gobblers: _____

Thank you for taking the time to complete this important survey.