



Michigan Department of Natural Resources
Wildlife Division Report No. 3682
December 2019

2019 MICHIGAN SPRING TURKEY HUNTER SURVEY

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ABSTRACT

A survey of turkey hunters was conducted following the 2019 spring hunting season to determine turkey harvest and hunter participation. In 2019, about 68,110 hunters harvested about 30,362 turkeys. Statewide, 45% of hunters harvested a turkey. Nearly 74% of the hunters rated their hunting experience as excellent, very good, or good in 2019. About 93% of the hunters reported they experienced no or only minor interference from other hunters. Compared to 2018, estimates of hunter numbers, hunting effort, and harvest were not significantly different in 2019. Estimates of hunter success and hunter satisfaction also were not significantly different between 2018 and 2019. In addition, the proportions of hunters that indicated they experienced no or only minor interference with another hunter were similar in both 2018 and 2019. Most regional estimates were also similar between 2018 and 2019, except estimates of harvest and hunter success increased significantly in the Upper Peninsula in 2019.

INTRODUCTION

Michigan's spring turkey (*Meleagris gallopavo*) hunting season was based originally on an area and quota system. This system was set up primarily to distribute hunters widely across geographic areas (management units) and time (hunt periods). As the turkey population has expanded statewide, license types were created that allowed hunters to hunt in multiple management units. The goal of the current system has been to provide hunting opportunities while maintaining acceptable levels of hunter satisfaction (Luukkonen 1998).

In 2019, nearly the entire state was open for wild turkey hunting from April 22 through May 31 (Figure 1). The area open for turkey hunting (58,114 square miles) was the same as last year. The statewide hunting area was divided into 13 management units



A contribution of Federal Aid in Wildlife Restoration, Michigan Project W-147-R

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(Figure 1). Hunting licenses were available on these management units for three types of hunts: (1) quota [limited licenses available] hunts on both public and private lands in a specific management unit, (2) quota hunt on private lands in southern Michigan [Hunt 301 in Unit ZZ], and (3) a guaranteed hunt (no quota) that included all units [Hunt 234], but excluded public lands in the Southern Lower Peninsula (SLP).

People interested in obtaining a turkey hunting license could enter into a random drawing (lottery) conducted by the Department of Natural Resources (DNR) or purchase a license not allocated through the lottery (i.e., left-over licenses and licenses for Hunt 234). Each applicant in the lottery could select up to two hunt choices (any combination of quota and unlimited quota hunts). The lottery consisted of two drawings. The first drawing was used to select applicants based on their preferred hunt choice. The second drawing was among applicants who were not successful in the first drawing and was based on the hunter's second choice for a hunt. Any licenses available after the drawing was completed were made available on a first-come, first-served basis to applicants that were unsuccessful in the drawing. Unsuccessful applicants could purchase one leftover license or a license for Hunt 234. Beginning one week after licenses were available to unsuccessful applicants, all remaining licenses were made available to non-applicants. Hunters were allowed to purchase one license and take one bearded turkey with the harvest tag issued with their license. Hunters could use a bow and arrow, crossbow, or shotgun with number 4 or smaller shot (including a muzzleloading shotgun) to hunt turkeys.

A limited number of licenses were available for quota hunts, and they were valid only in a certain management unit and only during a limited time period (7-40 days). Most quota hunts began before May 6 and lasted for seven days. A private land management unit (Unit ZZ) was created in 2002 that included all private lands in southern Michigan (Figure 1). Hunters who selected Hunt 301 could hunt the first two weeks of the season (April 22-May 5) anywhere on private lands in Unit ZZ. This unit and hunt period was created to provide additional hunting opportunity and increased flexibility for hunters who had difficulty finding time to hunt during shorter quota hunts.

Licenses for Hunt 234 could be used in any management unit. They were valid on public and private lands, except in Unit ZZ, where they were only valid on private lands or on Fort Custer military lands. Hunt 234 started later than most quota hunts but lasted for 26 days (May 6-31). Licenses for Hunt 234 were sold as a leftover license with no quota and could be purchased throughout the entire spring turkey hunting season.

The Pure Michigan Hunt (PMH) was a unique multi-species hunting opportunity offered for the first time in 2012. Individuals could purchase an unlimited number of applications for the PMH. Three individuals were randomly chosen from all applications, and winners received elk, bear, spring turkey, fall turkey, and antlerless deer hunting licenses and could participate in a reserved waterfowl hunt on a managed waterfowl area. The turkey hunting licenses were valid for all areas open for hunting turkey and during all turkey hunting periods. Furthermore, the PMH license holder could hunt any season until their turkey harvest tag was filled.

A mentored youth hunting program started in 2012. Under this program, a mentored youth hunting license was created and could be purchased by youth hunters aged 9 and younger. The youth hunter had to participate with a mentor who was at least 21 years old. The mentored youth hunting license allowed the youth hunter to hunt small game, turkey, deer, trap furbearers, and fish for all species. A turkey kill tag issued under the mentored youth hunting license was valid for one turkey during any hunting period, in any open hunt unit, on private or public land. No application was required to purchase the mentored youth license.

The DNR and the Natural Resources Commission have the authority and responsibility to protect and manage the wildlife resources of the state of Michigan. Harvest surveys are a management tool used by the Wildlife Division to accomplish its statutory responsibility. Estimating harvest, hunting effort, and hunter satisfaction are the primary objectives of this survey.

METHODS

The Wildlife Division provided all hunters the option to report voluntarily information about their turkey hunting activity via the internet. This option was advertised in the hunting regulation booklet. Hunters could report information anytime during the hunting season. Hunters reported whether they hunted, the days spent afield, whether they harvested a turkey, type of device used while hunting (i.e., firearm, crossbow, or bow and arrow), and whether other hunters caused interference during their hunt (none, minor, some irritation, or major problem). Successful hunters were also asked to report where their turkeys were taken (public or private land), date of harvest, and beard length of the harvested bird. Birds with a beard less than six inches were classified as juveniles (one-year-old), while birds with longer beards were adults (two years old or greater; Kelly, 1975). Finally, hunters were asked to rate their overall hunting experience (excellent, very good, good, fair, or poor), and indicate the status of the turkey population in their hunting area (increasing, decreasing, stable, or unknown).

Following the 2019 spring turkey hunting season, a questionnaire (Appendix A) was sent to 13,526 randomly selected people that had purchased a turkey hunting license (resident turkey, senior resident turkey, nonresident turkey, mentored youth, and Pure Michigan hunting licenses) and had not already voluntarily reported harvest information via the internet. Hunters receiving the questionnaire were asked to report the same information that was collected from hunters that reported voluntarily on the internet.

Estimates were calculated using a stratified random sampling design that included 18 strata (Cochran 1977). Hunters were stratified based on the management unit where their license was valid (13 management units). Hunters who purchased a license that could be used in multiple management units (mentored youth hunters, PMH license holders, and licenses for hunts 234 and 301) were treated as separate strata (strata 14-17). Moreover, people that had voluntarily reported information about their hunting activity via the internet were treated as a separate stratum (eighteenth stratum).

A 95% confidence limit (CL) was calculated for each estimate. This CL could be added to and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval was a measure of the precision associated with the estimate and implies the true value would be within this interval 95 times out of 100. Estimates were based on information collected from random samples of hunting license buyers. Thus, these estimates were subject to sampling errors (Cochran 1977). Estimates were not adjusted for possible response or nonresponse biases.

Statistical tests are used routinely to determine the likelihood that differences among estimates are larger than expected by chance alone. The overlap of 95% confidence intervals was used to determine whether estimates differed. Non-overlapping 95% confidence intervals were equivalent to stating the difference between the means was larger than would be expected 95 out of 100 times ($P < 0.05$), if the study had been repeated (Payton et al. 2003).

Questionnaires were mailed initially during late June 2019, and nonrespondents were mailed up to two follow-up questionnaires. Although 13,526 people were sent the questionnaire, 277 surveys were undeliverable resulting in an adjusted sample size of 13,249. Questionnaires were returned by 6,786 people, yielding a 51% adjusted response rate. In addition, 3,627 people voluntarily reported information about their hunting activity via the internet before the random sample was selected.

RESULTS AND DISCUSSION

In 2019, licenses were purchased by 83,072 people, a decrease of about 1.5% from 2018 (Table 1). Nearly equal proportions of the three main license types (i.e., quota hunts, Hunt 234, and Hunt 301) were sold in 2019 (Figure 2). About 36% of the licenses were valid for in a single unit (i.e., quota hunts), 34% were valid for Hunt 234, and 28% were valid for Hunt 301. Among the hunters buying a license for a quota hunt ($N=29,522$), 43% purchased a license that was awarded in the drawing ($N=12,746$) and 54% purchased a left-over license ($N=16,776$) (Figure 3). More quota licenses were purchased as a left-over license than purchased by people that were awarded a quota license in the drawing. Overall, 15% of the licenses sold were awarded through the drawing process (i.e., 12,746 of 83,072 licenses).

Most of the people buying a license were males (92%), and the average age of the license buyers was 45 years (Figure 4). Nearly 10% (7,989) of the license buyers were younger than 17 years old. Mentored youth hunting licenses were purchased by 2,249 youths in 2019, versus 2,094 licenses purchased in 2018 (7% increase).

The number of people buying a turkey hunting license in 2019 decreased by about 31% in ten years from 2009 (120,773 people purchased a license in 2009). There were fewer license buyers for age classes between 10 and 62 years of age in 2019, compared to 2009 (Figure 5). However, there were increased hunter numbers among the youngest and oldest age classes in 2019. The increased hunter numbers in the oldest age classes likely represented the rising share of older people in the population as the baby-boom generation aged and life expectancies have increased. The increased

participation among the youngest hunters reflected the lowering of the minimum age requirements. In 2019, there was no minimum age limit to hunt turkeys; while hunters had to be at least 10 years old to participate in 2009.

About 82% ($\pm 1\%$) of license buyers hunted turkeys (68,110 hunters). Most of these hunters were males (62,918 \pm 843), although nearly 8% ($\pm 1\%$) of the hunters were females (5,192 \pm 474). The estimated number of active hunters in 2019 was not significantly different from 2018 (68,110 in 2019 versus 68,740 in 2018). Counties listed in descending order with more than 1,800 hunters afield included Allegan, Jackson, and Kent (Table 3).

Hunters spent an estimated 263,531 days afield pursuing turkeys (3.9 \pm 0.1 days/hunter) and harvested approximately 30,362 birds (Figure 6). Counties listed in descending order with hunters taking more than 800 turkeys included Allegan, Jackson, Kent, Lapeer, and Tuscola (Table 3).

About 17% ($\pm 1\%$) of the harvested birds were juvenile males (5,040 \pm 463); 82% ($\pm 2\%$) were adult males (24,874 \pm 876), and about 1% were bearded females (214 \pm 96). Additionally, the age of a small number of harvested birds ($< 1\%$) was unknown (234 \pm 110) because hunters failed to report a beard length.

Hunting effort and the number of turkeys harvested were generally highest during the earliest hunting periods (Figures 7-9). For turkeys that the harvest date was known, 45% of these birds were taken during the first seven days (April 22-28). Daily hunter success generally was more than 10% from April 22 through May 11. Daily hunter success was generally below 10% during May 12-31. Hunting effort and harvest generally were greater on the weekends than on the weekdays.

About 81% of turkey hunters hunted solely on private land; 14% hunted on public land only, and 4% hunted on both private and public lands (Table 4). Of the 30,362 turkeys harvested in 2019, 89% \pm 1% were taken on private land (27,065 \pm 881 birds). About 11% \pm 1% of the harvest (3,297 \pm 399 birds) was taken on public land.

Eighteen percent of turkey hunters believed turkey numbers were increasing in their hunting area (Table 5); while, 46% thought turkey numbers were stable, 19% thought turkey were decreasing; 16% of turkey hunters were uncertain about the status of turkeys, and 1% did not comment on the status of turkeys.

Hunter's satisfaction is one measure used to assess the turkey management program in Michigan. Of the estimated 68,110 people hunting turkeys in 2019, 74% \pm 1% of the hunters rated their hunting experience as either excellent (16,227 \pm 754 hunters), very good (15,692 \pm 761), or good (18,205 \pm 813) (Table 6). Nearly 17% \pm 1% of the hunters rated their experience as fair (11,230 \pm 681 hunters). Only 9% \pm 1% of the hunters rated their experience as poor (6,022 \pm 499 hunters). About 1% of the hunters (733 \pm 188 hunters) failed to rate their hunting experience.

Hunter's satisfaction is affected by many factors such as hunting success and whether hunting activities were completed without interference (Luukkonen 1998). In 2019,

77% \pm 1% of the hunters reported no hunter interference; 16% \pm 1% reported minor interference; 5% \pm 1% reported some irritation caused by hunter interference, and 1% reported that hunter interference was a major problem (Table 7).

Although interference can affect hunter satisfaction, hunter satisfaction was more closely associated with hunter success (Figures 11 and 12). Hunter success was greatest for hunts beginning April 22; however, satisfaction varied little among most of the hunt periods (Table 8).

Compared to 2018, estimates of hunter numbers, hunting effort, and harvest were not significantly different in 2019 (Table 9). Estimates of hunter success and hunter satisfaction also were not significantly different between 2018 and 2019. In addition, the proportions of hunters that indicated they experienced no or only minor interference with another hunter were similar in both 2018 and 2019 (Table 10). Most regional estimates were also similar between 2018 and 2019, except estimates of harvest and hunter success increased significantly in the Upper Peninsula in 2019.

Most hunters (90 \pm 1%) used firearms while hunting turkeys, although 5% \pm 1% of the hunters used archery equipment (compound, recurve, or longbows), and 6% \pm 1% used a crossbow. Most hunters (84% \pm 1%) used a firearm to harvest their turkeys, while 2% \pm 1% used archery equipment, and 3% \pm 1% used a crossbow. About 41% of hunters using a firearm harvested a turkey, while 19% of hunters using a crossbow took a turkey, and 24% of hunters using another type of bow (longbows, recurve, or compound bows) took a turkey (Table 11).

ACKNOWLEDGEMENTS

I thank all the turkey hunters that provided information. Theresa Riebow completed data entry. Marshall Strong prepared the figure of the turkey management units (Figure 1). Al Stewart reviewed a draft version of this report.

LITERATURE CITED

- Cochran, W. G. 1977. Sampling techniques. John Wiley & Sons, New York. USA.
- Kelly, G. 1975. Indexes for aging eastern wild turkeys. Proceedings of the National Wild Turkey Symposium. 3:205-209.
- Luukkonen, D. R. 1998. Spring wild turkey hunting regulation issues in Michigan. Wildlife Division Issue Review Paper 4. Michigan Department of Natural Resources, Lansing, USA.
- Payton, M. E., M. H. Greenstone, and N. Schenker. 2003. Overlapping confidence intervals or standard error intervals: what do they mean in terms of statistical significance? Journal of Insect Science 3:34.

Table 1. The number of hunting licenses available and people applying for licenses during the 2019 Michigan spring turkey hunting season.

Management unit or hunt period	Licenses available (quota)	Number of eligible applicants ^a	Number of applicants successful in drawing	Number of licenses remaining after drawing	Number of licenses purchased by successful applicants ^b	Number of licenses purchased by unsuccessful applicants ^b	Number of licenses purchased by people not in the drawing ^b	Number of licensees ^b
A	5,500	856	859	4,640	626	1	1,105	1,732
B	1,000	21	21	979	16	0	27	43
E	1,700	1,339	1,316	385	998	3	360	1,361
F	5,000	2,427	2,435	2,564	1,785	0	1,061	2,846
J	4,000	825	827	3,173	578	0	948	1,526
K	8,500	5,968	5,899	2,601	4,439	11	1,583	6,033
M	6,000	847	848	5,151	650	0	4,162	4,812
ZA	4,800	1,027	1,036	3,763	764	0	1,852	2,616
ZB	2,600	452	452	2,148	320	0	739	1,059
ZC	2,400	854	857	1,541	627	1	1,116	1,744
ZD	40	69	36	4	18	0	4	22
ZE	2,000	1,265	1,247	753	924	1	721	1,646
ZF	5,600	1,237	1,242	4,358	1,001	0	3,081	4,082
Hunt 234	NA	NA	NA	NA	361	17	27,627	28,005
Hunt 301	35,000	2,991	3,010	31,989	2,490	11	20,795	23,296
Pure MI Hunts	3	NA	NA	NA	NA	NA	NA	3
Mentored Hunts	NA	NA	NA	NA	NA	NA	NA	2,246
Statewide	84,143	20,178	20,085	64,049	15,597	45	65,181	83,072

^aNumber of eligible applicants selecting the management unit as their first choice to hunt.

^bIf a licensee purchased more than one license, only the latest purchase is included in the summary of licenses purchased.

Table 2. The number of hunters, hunting efforts, harvest, hunter success, hunter satisfaction, and hunter interference during the spring 2019 Michigan turkey hunting season.

Management unit	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Hunt periods with quotas (General limited quota hunt periods)												
A	1,495	77	5,543	575	535	101	36	6	64	7	92	4
B	30	8	82	29	22	8	74	21	82	18	100	0
E	1,179	58	3,872	337	455	78	39	6	68	6	96	3
F	2,415	134	8,627	811	781	163	32	7	71	6	92	4
J	1,255	78	5,099	576	466	91	37	7	66	7	94	4
K	5,208	239	16,836	1,507	2,020	318	39	6	69	6	93	3
M	3,431	281	16,546	2,555	1,693	293	49	8	73	7	94	4
ZA	2,068	153	7,324	1,105	780	168	38	8	71	7	85	6
ZB	918	53	2,794	305	374	72	41	7	72	7	88	5
ZC	1,309	114	4,969	819	427	110	33	8	68	8	92	5
ZD	22	0	64	14	1	0	5	0	31	18	100	0
ZE	1,286	96	4,987	708	312	84	24	6	69	7	88	5
ZF	3,352	208	12,268	1,659	1,335	249	40	7	72	6	90	4
Pure MI Hunt	3	0	9	3	2	2	50	57	100	0	100	0
Subtotal	23,970	511	89,018	3,934	9,201	594	38	2	70	2	92	1
Hunt period 301 with quota (Private lands in Management Unit ZZ; April 22-May 5, 2019)												
ZA	4,878	380	16,955	1,842	2,607	293	53	4	77	4	94	2
ZB	1,938	258	6,590	1,106	1,160	203	60	7	81	6	93	3
ZC	2,980	311	10,273	1,405	1,644	236	55	6	79	5	93	3
ZD	361	116	1,602	618	133	69	37	16	81	13	88	11
ZE	5,212	389	16,338	1,677	2,882	305	55	4	81	3	94	2
ZF	4,826	379	17,586	1,824	2,706	298	55	4	78	4	94	2
Unknown	337	114	1,088	464	0	0	0	0	60	17	93	9
Subtotal	20,192	323	70,431	2,705	11,134	467	55	2	79	2	94	1

^aNumber of hunters does not add up to statewide total because mentored youth and hunters with licenses for hunts 234 and 301 can hunt in more than one unit. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 2 (continued). The number of hunters, hunting efforts, harvest, hunter success, hunter satisfaction, and hunter interference during the spring 2019 Michigan turkey hunting season.

Management unit	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Unlimited quota hunt period (Guaranteed Hunt 234; May 6-31, 2019)												
A	614	166	2,884	1,001	153	84	25	12	50	14	89	9
B	2	0	9	0	1	0	50	0	100	0	100	0
E	1,130	223	4,731	1,228	384	130	34	9	73	9	91	6
F	1,398	246	5,700	1,370	330	121	24	8	58	9	92	5
J	667	169	2,969	977	265	107	40	13	68	12	94	6
K	4,888	429	20,426	2,489	1,788	274	37	5	67	5	94	2
M	121	71	673	506	20	25	17	20	63	29	88	20
ZA	4,531	418	20,224	2,622	2,054	294	45	5	73	5	95	2
ZB	1,365	245	5,447	1,279	572	160	42	9	77	8	96	4
ZC	1,859	281	7,757	1,616	852	191	46	8	76	7	96	3
ZD	145	80	259	138	87	62	60	27	90	17	99	0
ZE	3,551	375	14,700	2,241	1,487	250	42	6	77	5	94	3
ZF	2,947	349	12,331	2,077	1,472	252	49	6	80	5	94	3
Unknown	241	107	844	453	0	0	0	0	56	22	94	10
Subtotal	22,430	458	98,955	4,504	9,467	534	42	2	72	2	94	1

^aNumber of hunters does not add up to statewide total because mentored youth and hunters with licenses for hunts 234 and 301 can hunt in more than one unit. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 2 (continued). The number of hunters, hunting efforts, harvest, hunter success, hunter satisfaction, and hunter interference during the spring 2019 Michigan turkey hunting season.

Management unit	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Mentored hunts (youth hunters nine years old and younger could hunt during any open season)												
A	24	13	101	74	6	7	25	24	88	19	75	24
B	0	0	0	0	0	0	0	0	0	0	0	0
E	95	26	278	98	44	18	47	14	88	9	97	5
F	38	17	121	62	12	9	31	20	54	22	85	16
J	33	16	92	49	9	8	27	21	91	14	100	0
K	188	36	588	145	66	22	35	10	79	8	87	7
M	65	22	308	126	24	13	36	16	82	13	91	10
ZA	328	46	1,064	197	112	28	34	7	78	6	96	3
ZB	122	29	401	112	47	19	39	12	88	8	95	5
ZC	130	30	358	103	62	21	48	12	89	8	95	5
ZD	18	12	50	50	3	5	17	24	50	33	100	0
ZE	232	40	723	165	60	21	26	8	83	7	99	2
ZF	287	43	1,015	217	115	29	40	8	82	6	96	3
Unknown	9	8	27	25	0	0	0	0	67	43	67	43
Subtotal	1,518	61	5,127	360	561	56	37	3	82	3	95	2
Statewide	68,110	761	263,531	6,574	30,362	927	45	1	74	1	93	1

^aNumber of hunters does not add up to statewide total because mentored youth and hunters with licenses for hunts 234 and 301 can hunt in more than one unit. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 3. Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2019 Michigan spring turkey hunting season. Estimates combined quota and unlimited quota hunts in each county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	95%		95%		95%		95%		95%		95%	
	Total	CL	Total	CL	Total	CL	%	CL	%	CL	%	CL
Alcona	1,075	197	4,237	1,046	321	113	30	9	61	9	92	5
Alger	114	94	475	624	45	60	40	41	42	41	100	0
Allegan	2,488	329	8,573	1,719	1,332	251	54	7	79	6	95	3
Alpena	401	108	1,543	506	158	69	39	14	55	14	95	6
Antrim	558	133	2,029	635	278	93	50	12	73	11	93	7
Arenac	528	131	1,973	626	243	89	46	13	77	10	96	5
Baraga	74	73	196	258	3	0	4	4	68	47	99	1
Barry	1,766	285	5,753	1,161	724	183	41	8	65	8	87	6
Bay	526	149	1,831	620	264	105	50	14	74	12	91	8
Benzie	318	132	1,300	621	78	61	24	17	52	21	84	16
Berrien	1,009	212	3,668	904	533	153	53	11	75	9	94	5
Branch	864	184	3,028	791	384	123	44	11	79	9	88	7
Calhoun	995	195	3,525	962	482	135	48	10	77	8	97	3
Cass	859	192	3,954	1,232	394	130	46	11	78	9	92	6
Charlevoix	274	84	1,053	413	85	40	31	13	70	15	91	9
Cheboygan	322	101	1,371	566	94	57	29	15	56	16	92	8
Chippewa	242	130	991	681	87	77	36	26	81	22	85	19
Clare	818	152	3,197	897	311	94	38	9	73	9	90	7
Clinton	1,251	227	4,183	927	561	150	45	9	76	8	88	6
Crawford	696	172	2,149	580	129	74	19	10	71	12	95	5
Delta	639	208	2,351	895	241	131	38	17	69	16	97	7

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2019 Michigan spring turkey hunting season. Estimates combined quota and unlimited quota hunts in each county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Dickinson	552	194	2,523	1,163	239	132	43	18	65	18	88	12
Eaton	894	187	3,429	1,006	416	129	47	11	78	9	99	2
Emmet	208	73	800	315	83	45	40	18	66	18	86	15
Genesee	1,284	222	4,991	1,170	602	152	47	9	78	7	94	4
Gladwin	916	157	3,202	726	326	94	36	9	70	9	95	4
Gogebic	143	103	1,140	962	93	84	65	34	83	27	68	34
Gd. Traverse	662	187	3,110	1,156	248	114	37	14	59	14	90	9
Gratiot	847	188	2,835	848	416	132	49	11	67	11	86	9
Hillsdale	1,173	213	3,455	816	512	140	44	9	78	8	99	2
Houghton	301	145	1,493	990	118	94	39	24	76	21	100	0
Huron	1,175	202	4,317	1,042	573	143	49	9	74	8	93	4
Ingham	1,218	214	4,749	1,121	455	132	37	9	76	8	94	4
Ionia	1,450	244	5,951	1,320	517	144	36	8	73	8	96	3
Iosco	671	167	2,299	656	278	109	41	13	66	12	96	5
Iron	432	173	2,156	1,152	176	111	41	20	73	19	95	10
Isabella	983	200	3,388	958	398	122	40	10	68	10	97	3
Jackson	1,846	259	6,310	1,261	913	185	49	7	73	6	93	4
Kalamazoo	875	198	3,303	1,024	395	129	45	11	86	8	93	6
Kalkaska	478	159	1,908	846	118	75	25	14	59	16	89	11
Kent	1,839	269	6,776	1,373	859	185	47	7	77	6	94	4
Keweenaw	158	111	721	569	90	84	57	35	71	32	99	0

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2019 Michigan spring turkey hunting season. Estimates combined quota and unlimited quota hunts in each county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Lake	1,231	264	3,702	924	416	161	34	11	71	10	89	7
Lapeer	1,658	249	5,788	1,250	855	179	52	8	72	7	94	4
Leelanau	327	142	1,382	875	112	82	34	21	50	22	88	14
Lenawee	827	179	3,386	1,152	369	119	45	11	70	10	91	6
Livingston	1,423	219	4,222	859	698	158	49	8	86	6	91	4
Luce	22	42	22	42	0	0	0	0	100	0	100	0
Mackinac	27	43	62	85	1	0	4	6	100	0	100	0
Macomb	501	138	1,739	617	236	94	47	14	70	13	93	7
Manistee	653	201	2,489	924	239	127	37	15	58	16	95	6
Marquette	363	161	1,289	756	204	125	56	23	57	23	88	15
Mason	932	237	2,613	782	419	167	45	13	71	12	95	5
Mecosta	1,004	236	3,094	866	427	158	43	12	78	10	100	0
Menominee	732	217	2,927	1,046	344	154	47	16	74	14	91	10
Midland	1,083	212	3,808	1,087	549	152	51	10	77	8	96	4
Missaukee	689	207	2,061	713	351	146	51	15	79	13	94	7
Monroe	450	128	1,665	594	186	83	41	14	78	12	92	8
Montcalm	1,588	256	6,874	1,653	676	169	43	8	71	8	95	4
Montmorency	598	125	2,120	548	189	74	32	11	67	11	90	7
Muskegon	1,077	219	3,849	990	556	157	52	10	82	8	98	2
Newaygo	1,531	284	5,349	1,219	577	176	38	9	82	7	95	4
Oakland	1,245	203	4,179	848	568	143	46	9	82	7	94	4

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2019 Michigan spring turkey hunting season. Estimates combined quota and unlimited quota hunts in each county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b		Noninterfered hunters ^c	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
Oceana	887	220	2,504	798	332	128	37	12	68	12	94	7
Ogemaw	614	160	2,145	680	176	86	29	12	69	13	95	6
Ontonagon	97	84	560	563	68	73	71	38	75	38	97	5
Osceola	1,115	253	4,309	1,285	357	142	32	11	67	11	98	3
Oscoda	661	165	2,600	803	204	96	31	12	77	11	87	9
Otsego	717	136	2,836	743	215	82	30	10	62	10	96	4
Ottawa	1,484	248	5,131	1,101	658	158	44	8	70	8	91	6
Presque Isle	466	115	2,175	787	175	72	38	13	63	13	86	10
Roscommon	814	180	3,140	956	154	82	19	9	56	12	91	7
Saginaw	1,426	239	5,643	1,271	768	174	54	8	79	7	96	3
St. Clair	1,577	245	5,894	1,240	677	159	43	8	76	7	95	3
St. Joseph	791	196	3,377	1,074	397	137	50	13	92	6	94	6
Sanilac	1,582	241	4,962	1,006	716	161	45	8	81	6	93	4
Schoolcraft	57	60	243	249	28	43	49	53	93	11	95	10
Shiawassee	928	194	2,958	808	430	133	46	11	80	8	88	7
Tuscola	1,551	221	5,519	987	843	170	54	7	78	6	93	4
Van Buren	1,098	225	4,225	1,159	489	143	45	10	77	9	95	4
Washtenaw	1,350	221	4,317	938	513	135	38	8	82	6	90	5
Wayne	62	47	154	122	39	41	63	34	86	14	100	0
Wexford	839	218	3,085	915	178	97	21	10	61	13	95	6
Unknown	2,405	336	8,900	1,494	402	139	15	5	57	7	91	4

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one county. Column totals for hunting effort and harvest may not equal statewide totals because of rounding errors.

^bProportion of hunters that rated their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

Table 4. Estimated number and proportion of hunters hunting on private and public lands during the spring 2019 Michigan turkey hunting season.^a

Management unit	Private land only				Public land only				Both private and public lands				Unknown land			
	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL
Hunt periods with quotas (General limited quota hunt periods)																
A	1,141	104	76	6	236	74	16	5	110	53	7	4	9	16	1	1
B	18	8	62	22	6	6	21	18	5	6	18	18	0	0	0	0
E	797	82	68	6	289	68	25	6	92	42	8	4	0	0	0	0
F	1,107	180	46	7	1,025	176	42	7	282	111	12	5	0	0	0	0
J	719	100	57	7	404	88	32	7	132	57	11	4	0	0	0	0
K	3,511	336	67	6	1,198	268	23	5	432	176	8	3	67	74	1	1
M	2,158	306	63	7	834	232	24	6	373	164	11	5	66	73	2	2
ZA	1,238	186	60	8	709	163	34	7	105	70	5	3	15	29	1	1
ZB	468	76	51	8	346	70	38	7	97	44	11	5	7	13	1	1
ZC	614	125	47	9	623	123	48	8	60	48	5	4	12	22	1	2
ZD	13	4	61	20	5	3	22	16	4	3	17	16	0	0	0	0
ZE	398	97	31	7	837	113	65	7	51	36	4	3	0	0	0	0
ZF	1,865	266	56	7	1,277	246	38	7	209	118	6	4	0	0	0	0
PMH	3	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	14,051	635	59	2	7,790	543	33	2	1,953	320	8	1	176	112	1	0
Hunt 301 with quota (Private lands in Management Unit ZZ; April 22-May 5, 2019)																
ZA	4,878	380	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZB	1,938	258	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZC	2,980	311	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZD	361	116	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZE	5,212	389	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZF	4,826	379	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	337	114	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	20,192	323	100	0	0	0	0	0	0	0	0	0	0	0	0	0

^aRow totals may not equal 100 because of rounding errors.

Table 4 (continued). Estimated number and proportion of hunters hunting on private and public lands during the spring 2019 Michigan turkey hunting season.^a

Management unit	Private land only				Public land only				Both private and public lands				Unknown land			
	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL
Unlimited quota hunt period (Guaranteed Hunt 234; May 6-31, 2019)																
A	439	142	72	12	143	80	23	11	32	36	5	6	0	0	0	0
B	2	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0
E	960	206	85	7	115	71	10	6	41	44	4	4	13	25	1	2
F	638	169	46	9	584	160	42	9	137	80	10	5	27	36	2	3
J	498	148	75	11	135	76	20	10	34	36	5	5	0	0	0	0
K	3,467	373	71	4	948	203	19	4	392	133	8	3	80	62	2	1
M	60	51	49	29	61	51	50	29	1	0	1	0	0	0	0	0
ZA ^b	4,531	418	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZB ^b	1,365	245	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZC ^b	1,859	281	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZD ^b	145	80	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZE ^b	3,551	375	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZF ^b	2,947	349	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	228	104	94	10	13	25	6	10	0	0	0	0	0	0	0	0
Subtotal	19,744	519	88	1	1,686	266	8	1	880	196	4	1	121	76	1	0

^aRow totals may not equal 100 because of rounding errors.

^bLicenses for the unlimited quota hunt were valid only on private lands in Management Unit ZZ in southern Michigan (Figure 1).

^cNumber of hunters does not add up to statewide total because hunters can hunt in more than one unit for the unlimited quota hunts.

Table 4 (continued). Estimated number and proportion of hunters hunting on private and public lands during the spring 2019 Michigan turkey hunting season.^a

Management unit	Private land only				Public land only				Both private and public lands				Unknown land			
	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL
Mentored hunts (youth hunters nine years old and younger could hunt during any open season)																
A	21	12	88	19	3	5	13	19	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E	80	24	84	10	15	11	16	10	0	0	0	0	0	0	0	0
F	21	12	54	22	9	8	23	19	3	5	8	12	6	7	15	16
J	21	12	64	23	9	8	27	21	3	5	9	14	0	0	0	0
K	131	30	70	9	30	15	16	7	18	12	9	6	9	8	5	4
M	53	20	82	13	6	7	9	10	6	7	9	10	0	0	0	0
ZA	301	44	92	4	9	8	3	2	18	12	5	3	0	0	0	0
ZB	116	29	95	5	6	7	5	5	0	0	0	0	0	0	0	0
ZC	121	29	93	6	6	7	5	5	3	5	2	4	0	0	0	0
ZD	18	12	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZE	217	38	94	4	6	7	3	3	6	7	3	3	0	0	0	0
ZF	258	41	90	5	18	12	6	4	12	9	4	3	0	0	0	0
Unknown	6	7	67	43	3	5	33	43	0	0	0	0	0	0	0	0
Subtotal	1,316	64	87	2	107	28	7	2	80	24	5	2	15	11	1	1
Statewide ^c	55,301	884	81	1	9,582	605	14	1	2,912	376	4	1	342	140	1	0

^aRow totals may not equal 100 because of rounding errors.

^bLicenses for the unlimited quota hunt were valid only on private lands in Management Unit ZZ in southern Michigan (Figure 1).

^cNumber of hunters does not add up to statewide total because hunters can hunt in more than one unit for the unlimited quota hunts.

Table 5. Status of turkey population reported by turkey hunters during the spring 2019 Michigan turkey hunting season.

Management unit	Turkey population status (of hunters) ^a				
	Increasing	Decreasing	Stable	Unknown	No answer
Hunt periods with quotas (General limited quota hunt periods)					
A	11	34	37	18	1
B	44	9	38	9	0
E	20	22	41	17	1
F	18	20	40	21	2
J	13	26	38	21	1
K	10	25	48	17	0
M	22	21	40	17	0
ZA	14	20	42	22	2
ZB	22	14	48	15	1
ZC	19	10	45	24	2
ZD	26	9	35	31	0
ZE	19	20	39	22	0
ZF	15	17	51	17	0
Pure MI Hunt	0	0	100	0	0
Mean	16	21	44	19	1
Hunt 301 with quota (Private lands in Management Unit ZZ; April 22-May 5, 2019)					
ZA	16	22	48	12	1
ZB	23	11	57	7	2
ZC	17	15	53	14	0
ZD	29	19	39	10	3
ZE	23	15	48	13	1
ZF	20	17	51	11	1
Unknown	10	13	60	13	3
Mean	20	17	51	12	1

^aRow totals may not equal 100 because of rounding errors.

Table 5 (continued). Status of turkey population reported by turkey hunters during the spring 2019 Michigan turkey hunting season.

Manage- ment unit	Turkey population status (of hunters) ^a				
	Increasing	Decreasing	Stable	Unknown	No answer
Unlimited quota hunt period (Guaranteed Hunt 234; May 6-31, 2019)					
A	18	32	31	19	0
B	0	0	50	50	0
E	20	17	45	17	1
F	15	22	42	21	0
J	19	27	37	17	0
K	14	25	44	16	1
M	36	25	26	14	0
ZA	19	22	43	14	2
ZB	20	10	51	18	0
ZC	18	11	51	20	0
ZD	19	12	49	20	0
ZE	20	15	47	17	1
ZF	18	15	45	22	0
Unknown	22	22	44	11	0
Mean	18	19	45	17	1
Mentored hunts (youth hunters nine years old and younger could hunt during any open season)					
A	25	13	38	13	13
B	0	0	0	0	0
E	16	19	44	22	0
F	0	31	31	38	0
J	0	9	36	36	18
K	15	22	38	22	3
M	14	14	41	27	5
ZA	10	15	47	26	2
ZB	31	5	42	19	2
ZC	16	14	50	20	0
ZD	17	17	17	50	0
ZE	24	13	41	22	0
ZF	23	14	43	19	1
Unknown	0	0	67	33	0
Mean	18	15	43	23	2
Statewide ^b	18	19	46	16	1

^aRow totals may not equal 100 because of rounding errors.

^bStatewide mean interference levels (all hunts and periods).

Table 6. How hunters rated their hunting experience during the spring 2019 Michigan turkey hunting season.

Management unit	Satisfaction level (of hunters) ^a					
	Excellent	Very good	Good	Fair	Poor	No answer
Hunt periods with quotas (General limited quota hunt periods)						
A	18	21	25	16	19	1
B	35	38	9	9	9	0
E	16	22	30	22	10	0
F	17	26	29	11	16	2
J	15	25	25	20	13	1
K	20	23	26	23	7	1
M	23	24	26	19	8	1
ZA	21	18	33	17	9	3
ZB	21	27	25	17	7	3
ZC	28	17	22	19	13	1
ZD	5	0	26	43	26	0
ZE	22	19	28	20	11	0
ZF	18	23	31	21	6	1
Pure MI Hunt	0	50	50	0	0	0
Mean	20	22	28	19	10	1
Hunt 301 with quota (Private lands in Management Unit ZZ; April 22-May 5, 2019)						
ZA	25	26	27	14	9	1
ZB	32	27	22	13	5	1
ZC	33	24	22	15	4	2
ZD	24	25	32	10	9	0
ZE	34	25	22	13	5	1
ZF	29	23	26	15	6	1
Unknown	3	10	47	23	17	0
Mean	30	24	25	13	6	1

^aRow totals may not equal 100 because of rounding errors.

Table 6 (continued). How hunters rated their hunting experience during the spring 2019 Michigan turkey hunting season.

Manage- ment unit	Satisfaction level (of hunters) ^a					
	Excellent	Very good	Good	Fair	Poor	No answer
Unlimited quota hunt period (Guaranteed Hunt 234; May 6-31, 2019)						
A	7	18	25	27	23	0
B	50	50	0	0	0	0
E	16	17	41	17	9	1
F	10	20	28	28	12	2
J	30	20	18	15	17	0
K	15	21	31	17	15	1
M	36	3	23	26	11	0
ZA	25	22	26	17	10	1
ZB	19	31	27	17	5	1
ZC	31	25	20	13	11	1
ZD	38	12	40	9	1	0
ZE	27	24	26	15	7	1
ZF	26	23	31	11	8	1
Unknown	11	11	33	28	17	0
Mean	22	22	28	17	11	1
Mentored hunts (youth hunters nine years old and younger could hunt during any open season)						
A	38	25	25	13	0	0
B	0	0	0	0	0	0
E	28	28	31	6	3	3
F	23	0	31	38	8	0
J	36	9	45	0	9	0
K	32	19	28	9	8	3
M	14	45	23	9	5	5
ZA	31	31	17	14	6	2
ZB	32	31	24	12	0	0
ZC	43	20	25	11	0	0
ZD	0	33	17	33	17	0
ZE	32	21	31	11	1	4
ZF	29	25	29	15	1	1
Unknown	33	0	33	33	0	0
Mean	31	25	26	12	4	2
Statewide ^b	24	23	27	16	9	1

^aRow totals may not equal 100 because of rounding errors.

^bStatewide mean satisfaction levels (all hunts and periods).

Table 7. Estimated amount of hunter interference experienced by turkey hunters during the spring 2019 Michigan turkey hunting season.

Management unit	Interference level (of hunters) ^a				
	None	Minor	Some irritation	Major problem	No answer
Hunt periods with quotas (General limited quota hunt periods)					
A	82	11	5	2	0
B	82	18	0	0	0
E	81	15	4	1	0
F	65	28	3	2	2
J	72	21	5	0	1
K	77	16	6	1	0
M	79	15	5	1	0
ZA	67	18	10	2	2
ZB	63	25	8	2	2
ZC	69	23	6	1	1
ZD	65	35	0	0	0
ZE	64	24	7	5	1
ZF	65	25	8	0	1
Pure MI Hunt	100	0	0	0	0
Mean	72	20	6	1	1
Hunt 301 with quota (Private lands in Management Unit ZZ; April 22-May 5, 2019)					
ZA	83	11	5	1	1
ZB	77	16	5	1	0
ZC	80	14	4	2	0
ZD	75	13	6	6	0
ZE	79	15	4	2	0
ZF	77	18	4	1	1
Unknown	80	13	0	3	3
Mean	80	14	4	1	0

^aRow totals may not equal 100 because of rounding errors.

Table 7 (continued). Estimated amount of hunter interference experienced by turkey hunters during the spring 2019 Michigan turkey hunting season.

Management unit	Interference level (of hunters) ^a				
	None	Minor	Some irritation	Major problem	No answer
Unlimited quota hunt period (Guaranteed Hunt 234; May 6-31, 2019)					
A	75	14	9	2	0
B	100	0	0	0	0
E	83	9	6	0	2
F	74	18	6	2	0
J	70	24	6	0	0
K	79	16	4	1	1
M	63	25	12	0	0
ZA	83	13	3	1	1
ZB	82	14	4	0	0
ZC	86	11	3	0	1
ZD	80	19	1	0	0
ZE	83	11	5	0	1
ZF	76	19	5	1	0
Unknown	78	17	6	0	0
Mean	80	14	4	1	1
Mentored hunts (youth hunters nine years old and younger could hunt during any open season)					
A	63	13	0	13	13
B	0	0	0	0	0
E	78	19	3	0	0
F	77	8	15	0	0
J	82	18	0	0	0
K	72	16	9	2	2
M	64	27	5	0	5
ZA	81	15	3	1	0
ZB	73	22	5	0	0
ZC	80	16	5	0	0
ZD	83	17	0	0	0
ZE	82	17	1	0	0
ZF	73	23	3	0	1
Unknown	67	0	33	0	0
Mean	77	18	4	1	1
Statewide ^b	77	16	5	1	1

^aRow totals may not equal 100 because of rounding errors.

^bStatewide mean interference levels (all hunts and periods).

Table 8. Estimated number of hunting efforts, hunters, hunting success, noninterfered hunters, and hunter rating of the 2019 spring turkey hunting season, by hunt periods.

Variable	Hunt periods beginning									
	April 22		April 29		May 6		May 13		All periods ^a	
	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL
Hunting efforts (days)	129,564	4,360	16,888	1,875	109,406	4,861	7,673	1,459	263,531	6,574
Number of hunters	36,373	681	4,898	438	25,150	554	1,689	226	68,110	761
Successful hunters (n)	18,157	705	1,298	251	10,339	575	567	143	30,362	927
Successful hunters (%)	50	2	27	5	41	2	34	7	45	1
Noninterfered hunters (n) ^b	33,927	703	4,508	426	23,694	580	1,487	216	63,617	836
Noninterfered hunters (%) ^b	93	1	92	3	94	1	88	5	93	1
Favorable rating (n) ^c	27,944	742	3,169	383	17,901	628	1,111	191	50,125	958
Favorable rating (%) ^c	77	1	65	5	71	2	66	7	74	1

^aRow totals may not equal totals for all periods because of rounding errors.

^bProportion of hunters that indicated they experienced no or only minor interference from other hunters.

^cHunters rating their hunting experience as excellent, very good, or good.

Table 9. Comparison of the estimated number of hunters, hunting effort, and harvest between 2018 and 2019 Michigan spring turkey hunting seasons, summarized by regions.

Region ^a	Hunters (No.) ^b					Hunting efforts (days)					Harvest (No.)				
	2018		2019		Change (%)	2018		2019		Change (%)	2018		2019		Change (%)
	Total	95% CL	Total	95% CL		Total	95% CL	Total	95% CL		Total	95% CL	Total	95% CL	
UP	3,101	295	3,537	294	14	17,494	3,074	17,148	2,603	-2	1,037	245	1,737	294	67*
NLP	20,752	635	19,819	614	-4	79,916	3,890	75,775	3,800	-5	7,321	560	7,271	519	-1
SLP	43,006	744	42,860	746	0	163,353	5,171	161,707	5,371	-1	20,909	747	20,952	746	0
Unknown	2,407	342	2,405	336		9,570	1,839	8,900	1,494		296	117	402	139	
Total	68,740	786	68,110	761	-1	270,333	6,733	263,531	6,574	-3	29,563	937	30,362	927	3

^aRegions included the Upper Peninsula (UP), the Northern Lower Peninsula north of Management Unit ZZ (NLP), and Management Unit ZZ in the Southern Lower Peninsula (SLP).

^bNumber of hunters did not add up to statewide total because mentored youth and hunters with a license for the unlimited quota hunt can hunt in more than one unit.

*P<0.05.

Table 10. Comparison of estimated hunter success, hunter satisfaction, and hunt interference between 2018 and 2019 Michigan spring turkey hunting season, summarized by regions.

Region ^a	Hunter success					Hunter satisfaction ^b					Noninterfered hunters ^c				
	2018		2019		Difference (%)	2018		2019		Difference (%)	2018		2019		Difference (%)
	%	95% CL	%	95% CL		%	95% CL	%	95% CL		%	95% CL	%	95% CL	
UP	33	7	49	7	16*	69	7	74	6	5	95	4	94	4	-1
NLP	35	2	37	2	1	66	2	68	2	2	94	1	93	1	-1
SLP	49	2	49	2	0	78	1	77	1	-1	93	1	93	1	0
Total	43	1	45	1	2	73	1	74	1	1	93	1	93	1	0

^aRegions included the Upper Peninsula (UP), the Northern Lower Peninsula north of Management Unit ZZ (NLP), and Management Unit ZZ in the Southern Lower Peninsula (SLP).

^bHunters rating their hunting experience as excellent, very good, or good.

^cProportion of hunters that indicated they experienced no or only minor interference from other hunters.

*P<0.05.

Table 11. The number of turkeys harvested and hunter success, summarized by hunting device, during the spring turkey hunting season in Michigan, 2010-2019.

Year	Number of turkey harvested by device								Hunter success by device ^a					
	Firearm		Crossbows		Other bows ^b		Unknown		Firearm		Crossbows		Other bows ^b	
	Total	95% CL	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL	%	95% CL
2010	34,984	1,093	525	161	1,519	279	22	32	41	1	20	6	20	3
2011	28,831	1,017	590	170	1,143	228	23	34	37	1	17	5	17	3
2012	29,611	984	650	172	1,055	214	62	57	39	1	17	4	18	3
2013	30,152	1,038	921	210	1,090	231	80	76	39	1	22	5	18	4
2014	27,746	919	516	143	838	195	9	13	41	1	17	4	21	4
2015	28,272	908	751	188	935	196	81	63	43	1	20	5	21	4
2016	28,422	959	860	200	963	221	142	87	42	1	21	4	21	4
2017	29,389	964	869	194	748	183	2,427	171	43	1	22	4	17	4
2018	24,923	909	905	203	780	206	2,956	244	40	1	21	4	20	5
2019	25,616	906	848	187	741	182	3,156	236	41	1	19	4	24	5

^aHunters harvesting a turkey.

^bIncluded longbows, recurve, and compound bows.

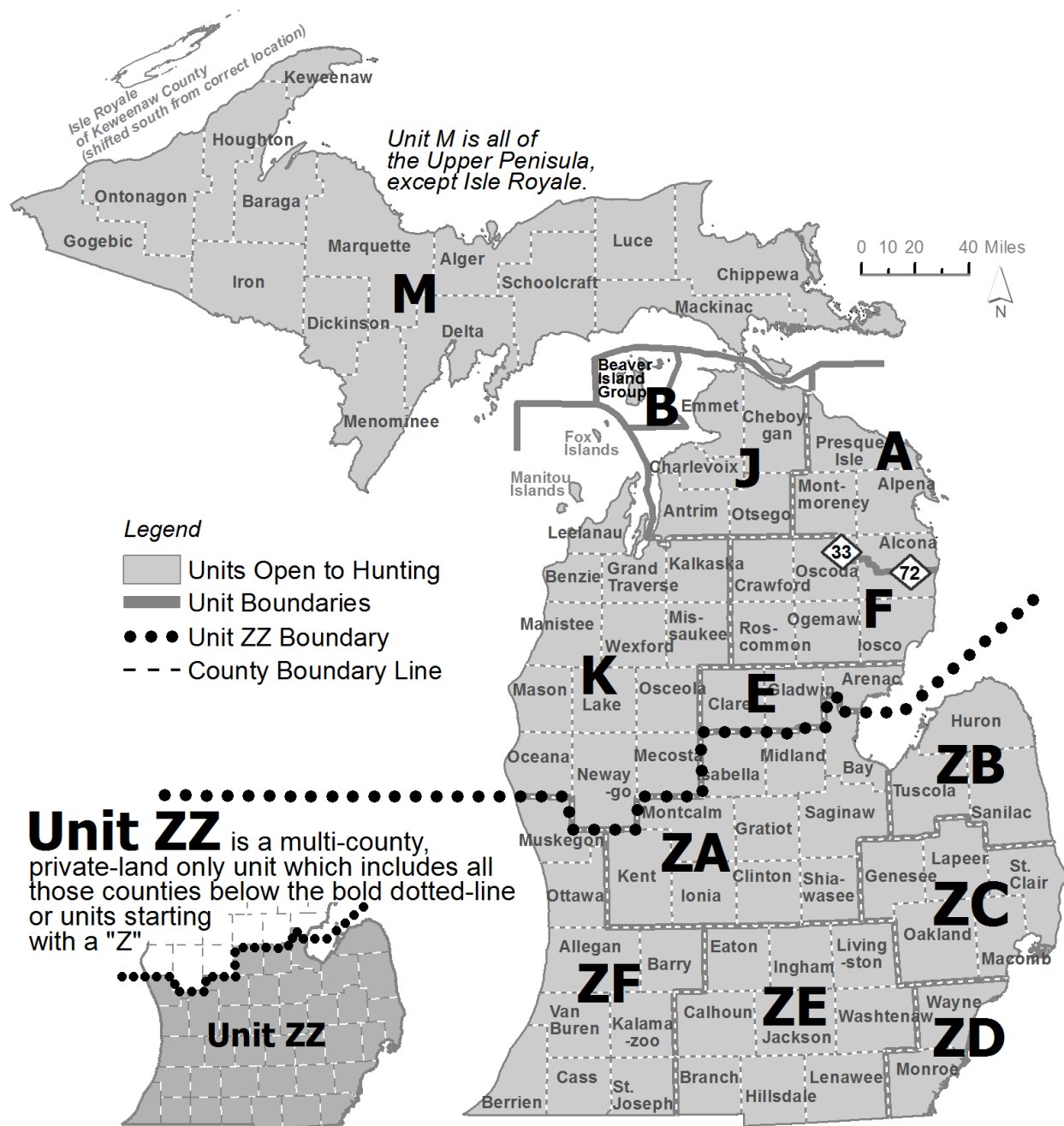


Figure 1. Management units in Michigan open to spring turkey hunting in 2019.

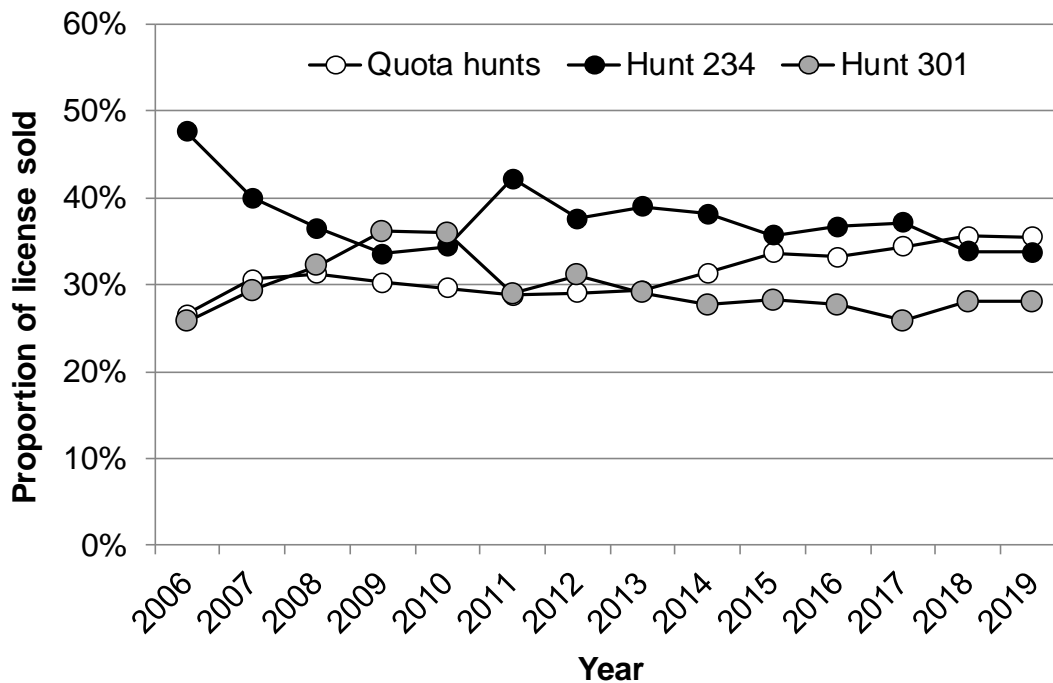


Figure 2. The proportion of spring turkey hunting licenses sold during 2006-2019, summarized separately for license type (quota hunts, Hunt 234, and Hunt 301).

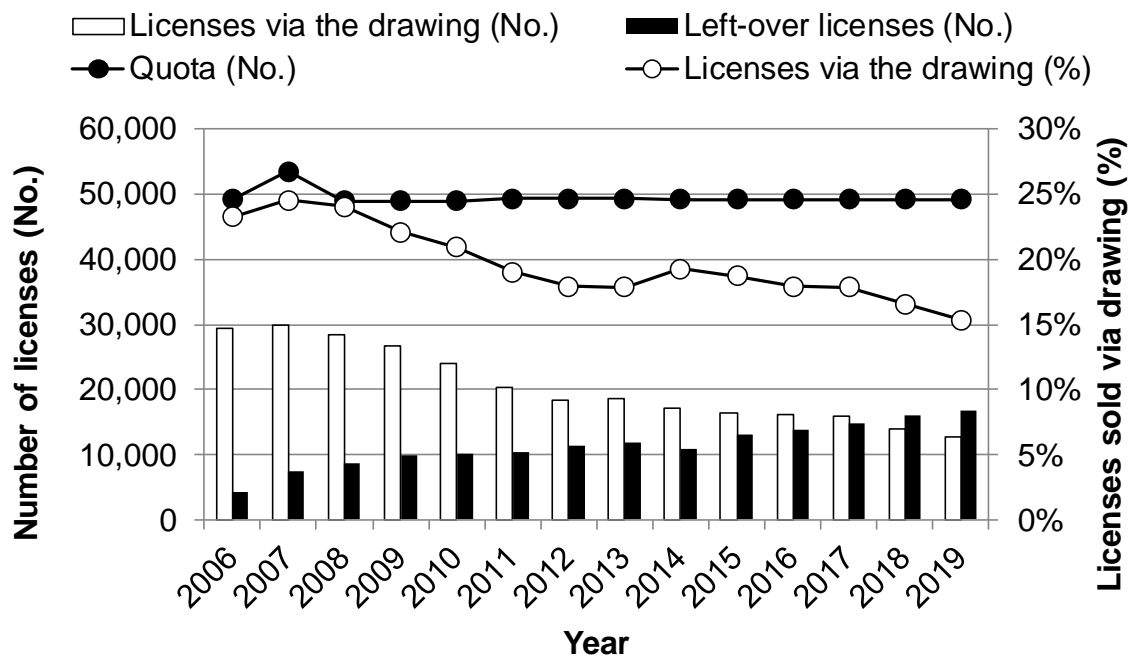


Figure 3. The number of spring turkey hunting licenses available for quota hunts (excluded licenses for hunts 234 and 301, mentored youth licenses and Pure Michigan hunts), the number of quota hunt licenses sold via the drawing, the number of quota hunt licenses sold as left-over licenses, and the proportion of all licenses sold through the drawing during 2006-2019.

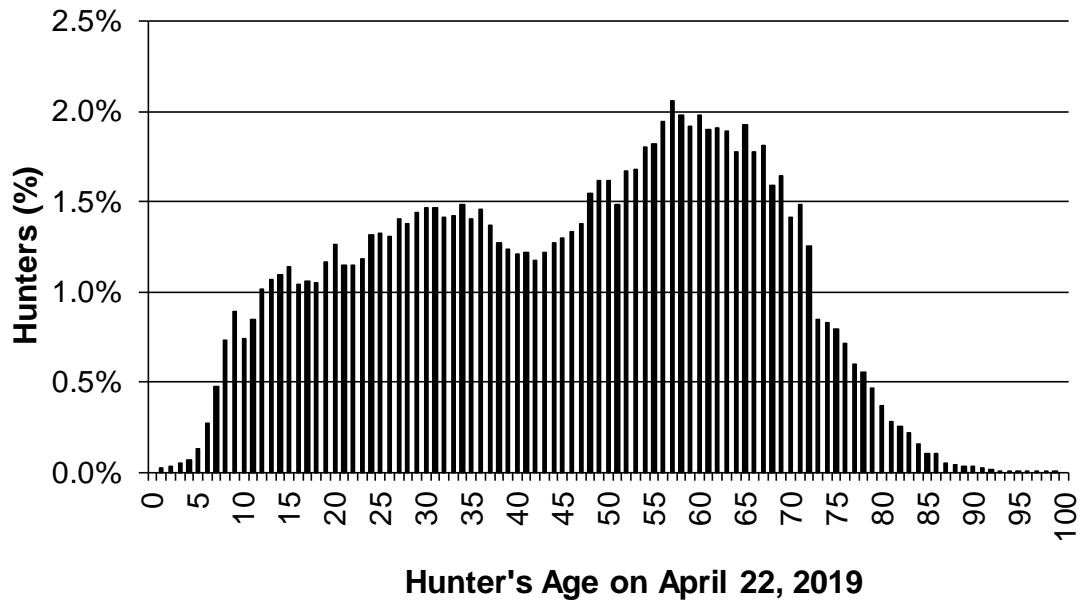


Figure 4. Age of people that purchased a turkey hunting license in Michigan for the 2019 spring hunting season (mean = 45 years). Licenses were purchased by 83,072 people.

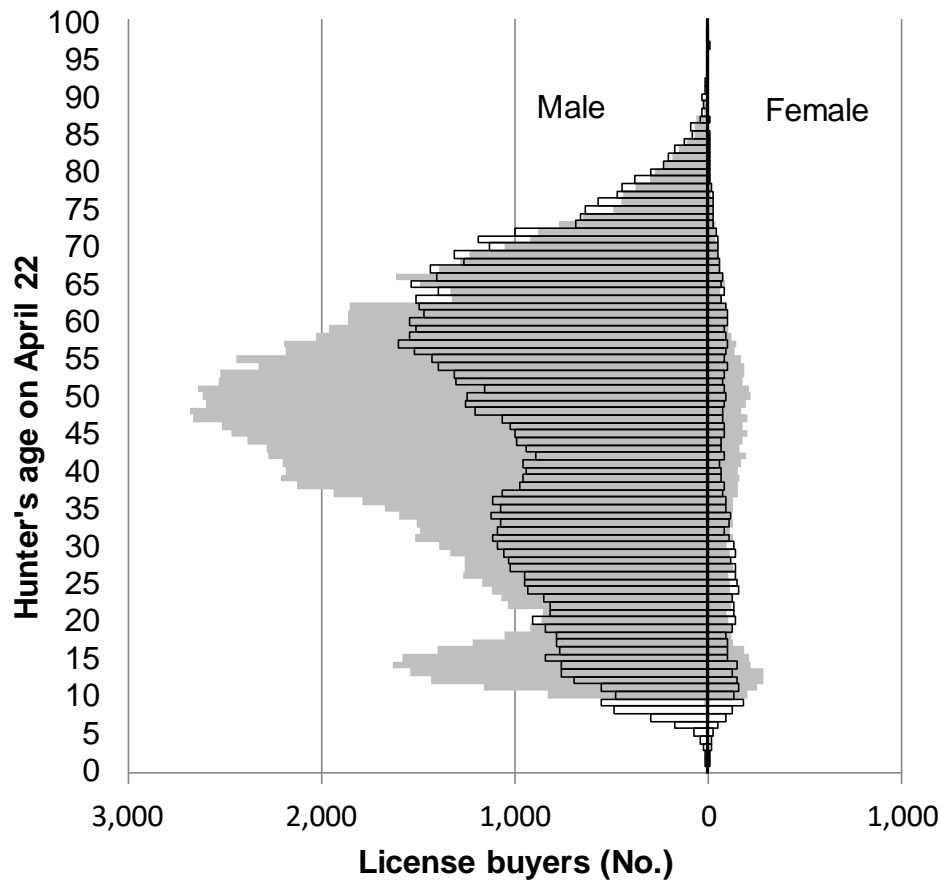


Figure 5. The number of spring turkey hunting license buyers in Michigan by age and sex during 2009 and 2019 hunting seasons. The number of people buying a license was 120,773 in 2009 and 83,072 in 2019.

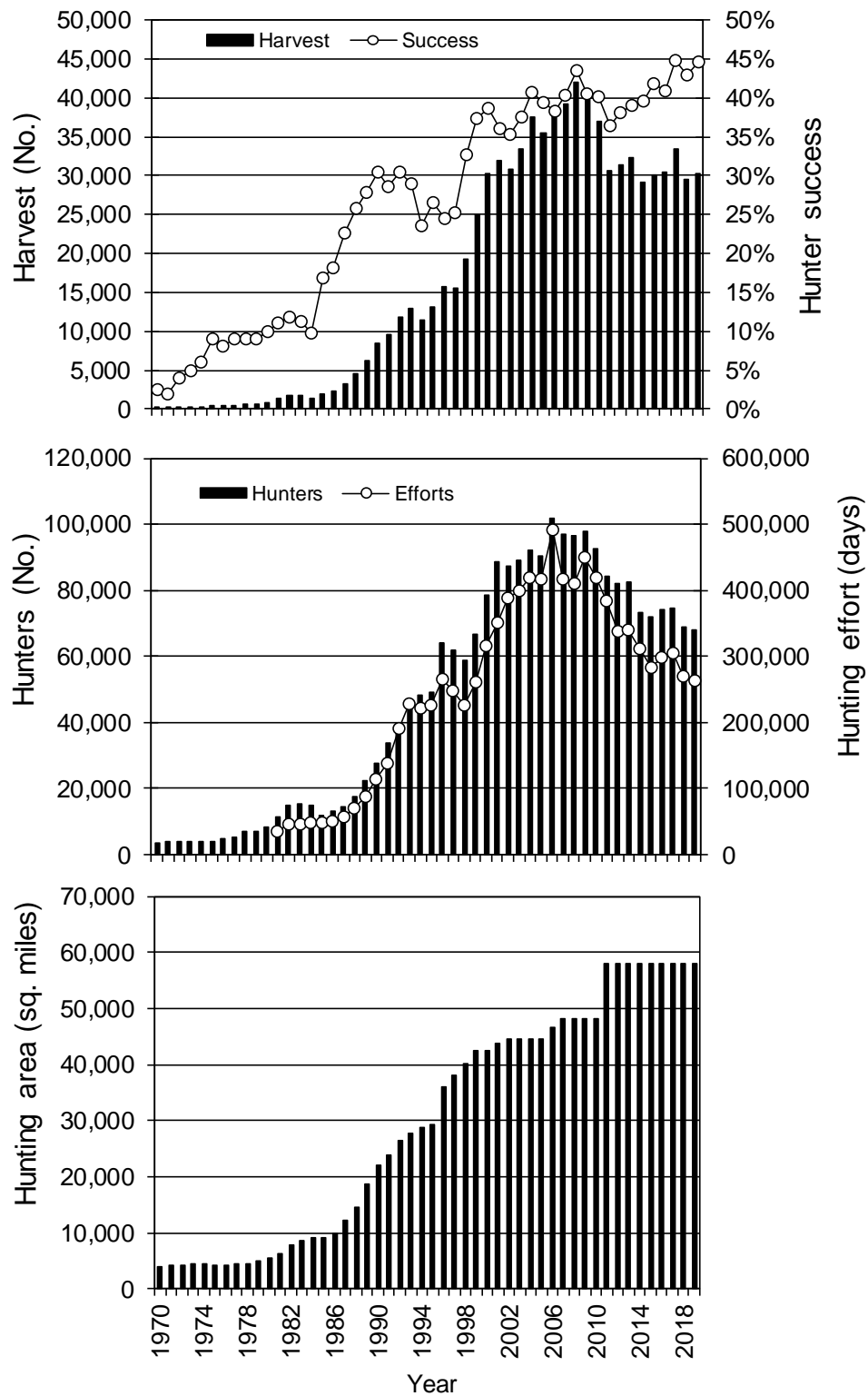


Figure 6. Estimated number of hunters, harvest, hunting efforts, hunter success, and area open to hunting during the Michigan spring turkey hunting season, 1970-2019. Estimates of hunting effort generally were not available before 1981.

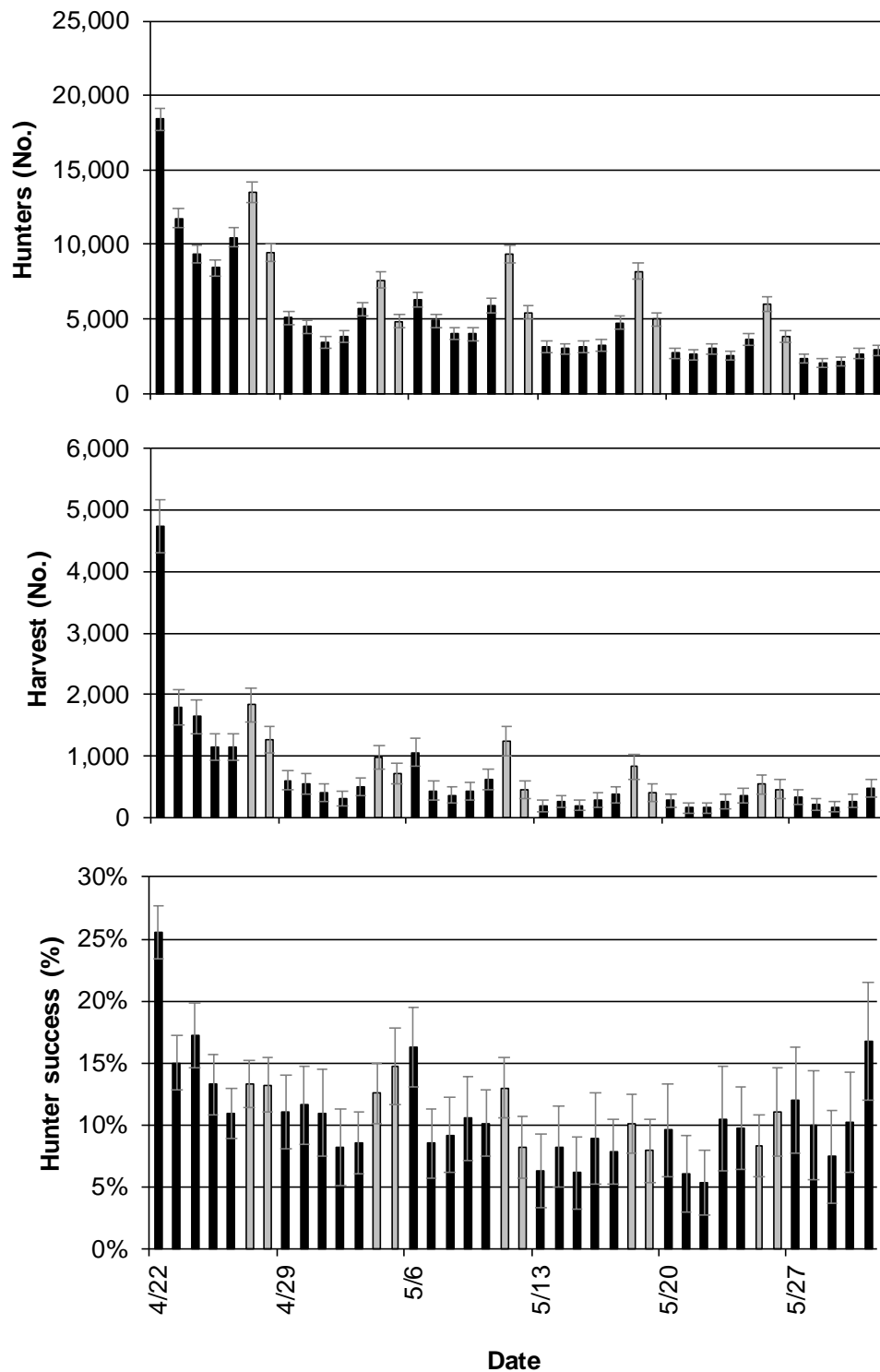


Figure 7. Estimated number of hunters, harvest, and hunter success by date during the 2019 Michigan spring turkey hunting season (includes all hunts). An additional $1,907 \pm 292$ birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

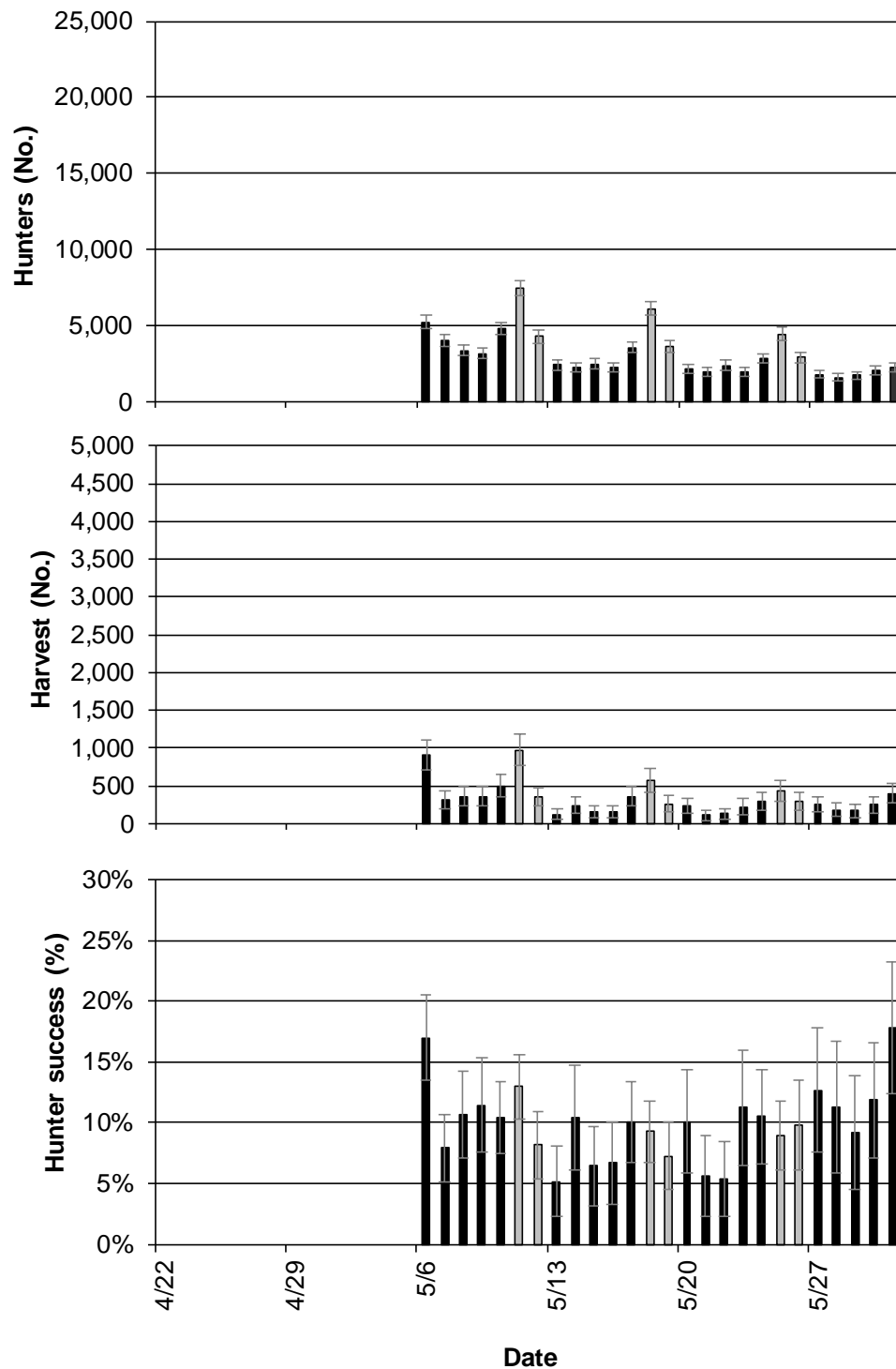


Figure 8. Estimated number of hunters, harvest, and hunter success by date during Hunt 234 of the 2019 Michigan spring turkey hunting season (May 6-31). An additional 871 ± 200 birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

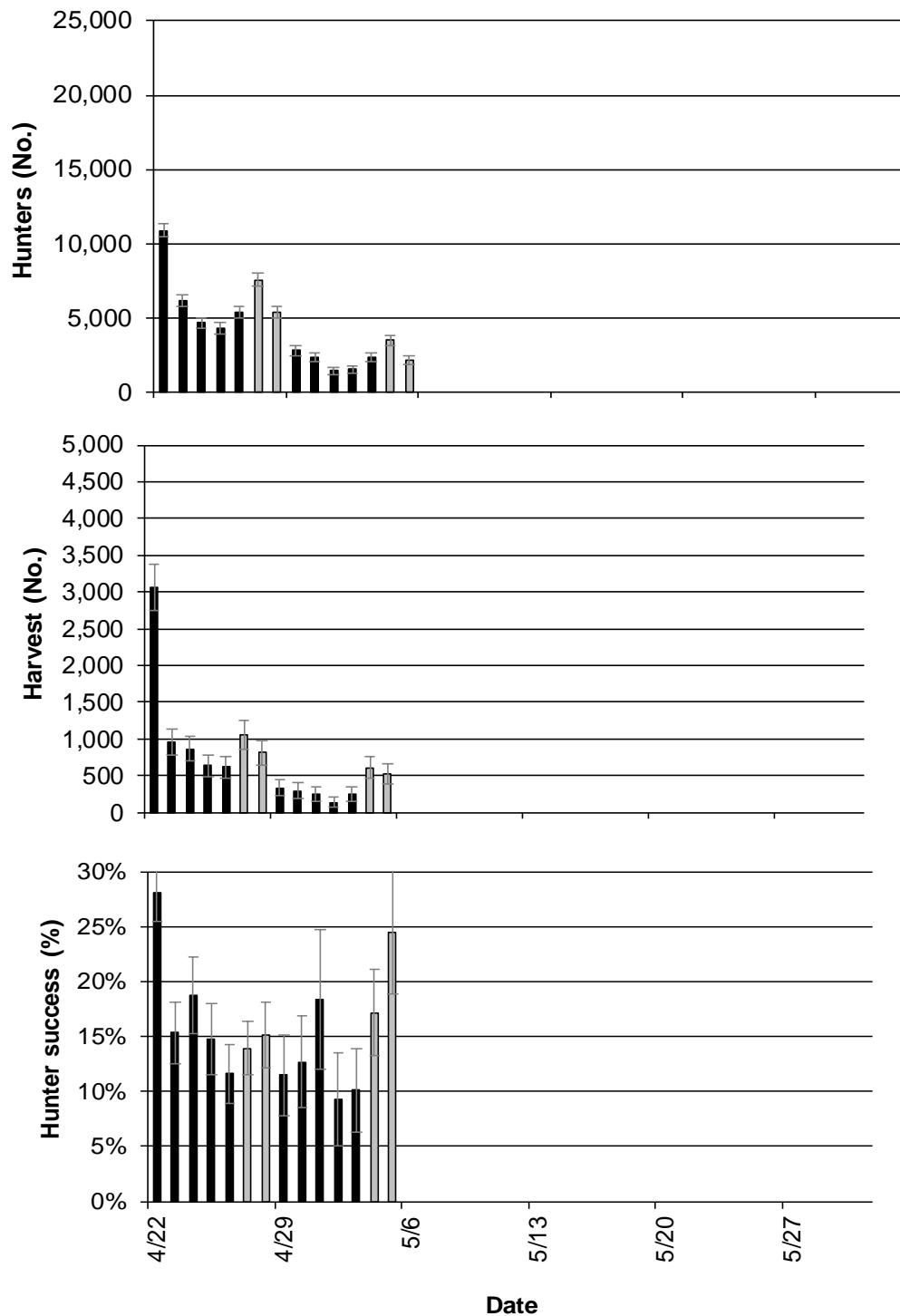


Figure 9. Estimated number of hunters, harvest, and hunter success by date during Hunt 301 of the 2019 Michigan spring turkey hunting season (April 22-May 5). An additional 707 ± 164 birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

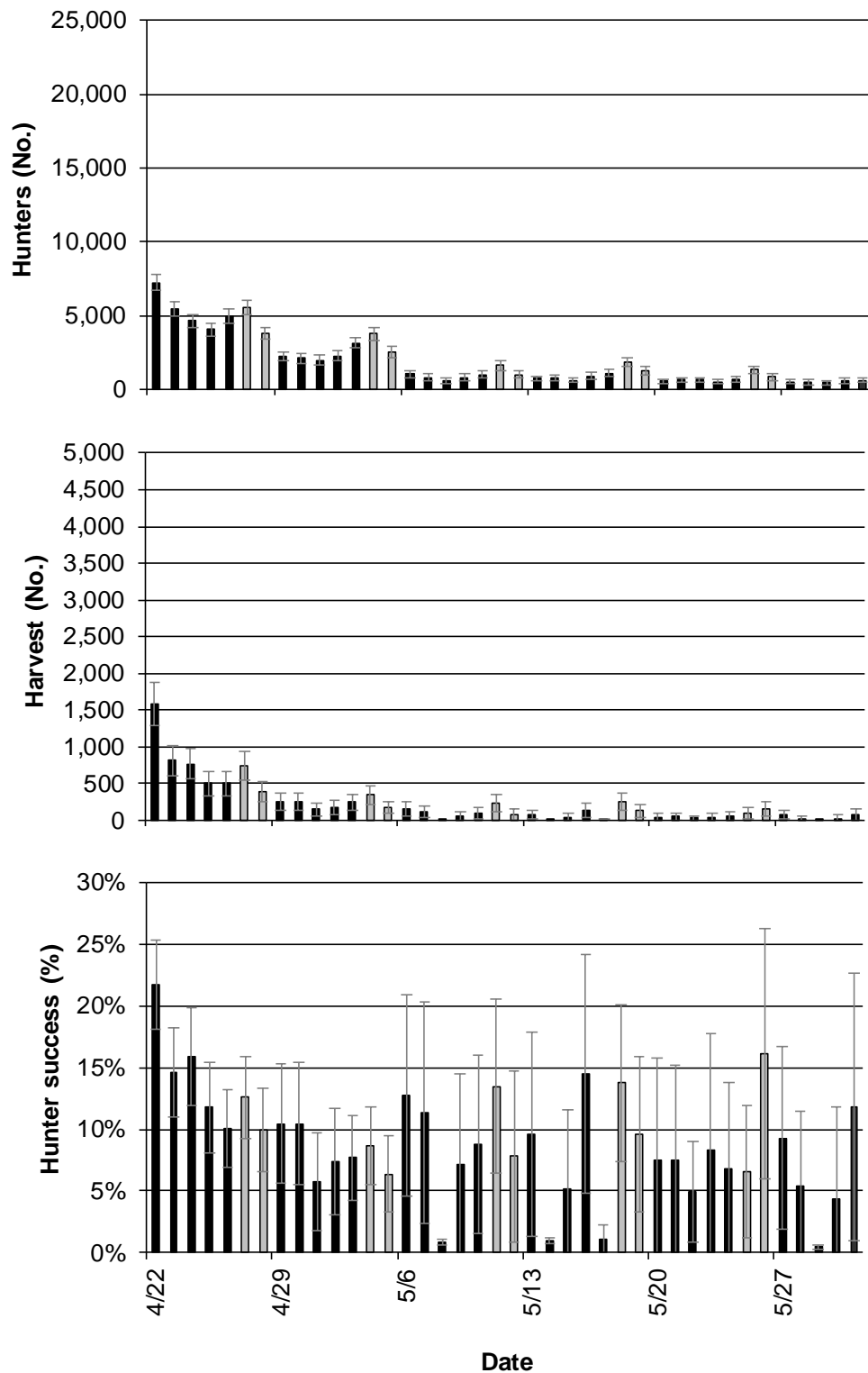


Figure 10. Estimated number of hunters, harvest, and hunter success by date during all hunts, except for mentored youth hunts and hunts 234 and 301 of the 2019 Michigan spring turkey hunting season. An additional 312 ± 134 birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

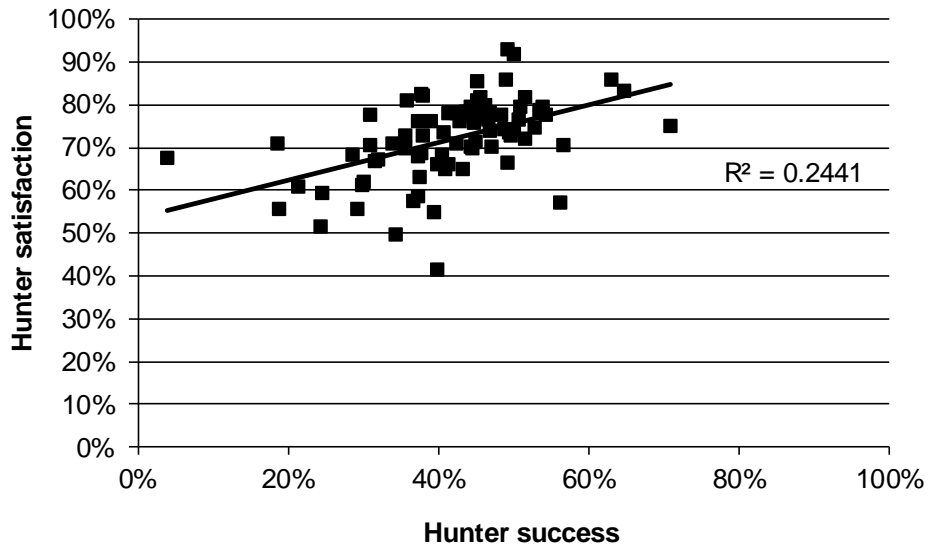


Figure 11. Relationship between hunter satisfaction (expressed as the percentage of hunters rating their hunting experience as excellent, very good, or good) and hunter success for each of 81 counties in Michigan during the 2019 spring turkey hunting season (included only counties with at least 30 hunters).

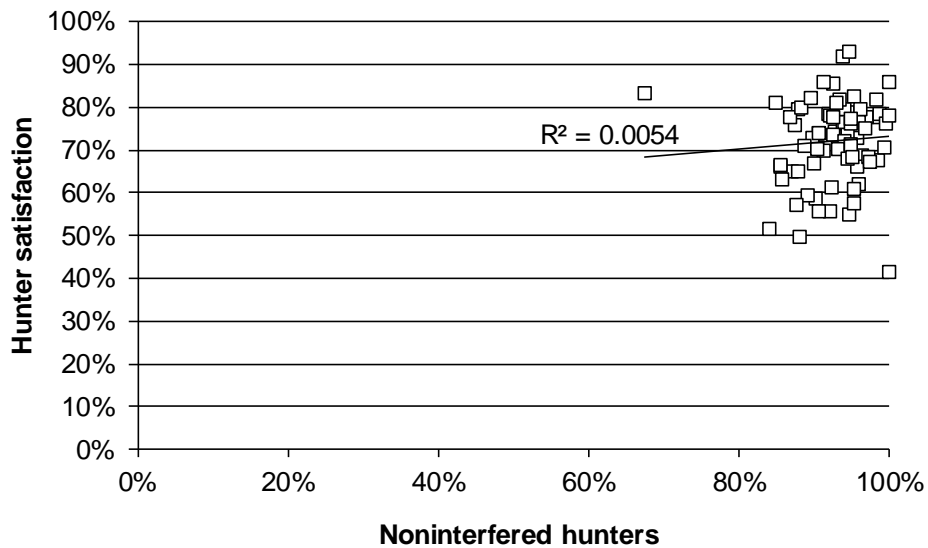


Figure 12. Relationship between hunter satisfaction (expressed as the percentage of hunters rating their hunting experience as excellent, very good, or good) and hunter interference for each of 81 counties in Michigan during the 2019 spring turkey hunting season (included only counties with at least 30 hunters). Noninterfered hunters were the proportion of hunters that indicated that they experienced no or only minor interference from other hunters.

APPENDIX A

The questionnaire used for the 2019 Spring Turkey Harvest Survey.



MICHIGAN DEPARTMENT OF NATURAL RESOURCES, WILDLIFE DIVISION
PO BOX 30030 LANSING MI 48909-7530

2019 MICHIGAN SPRING TURKEY HUNTER REPORT

This information is requested under authority of Part 435, 1994 PA 451, M.C.L. 324.43539.



It is important that you complete and return this questionnaire even if you did not hunt or harvest a turkey.
If you did not hunt, please answer "No" to question 1 and return this report.

1. Did you hunt turkeys during the 2019 spring season? ¹ ☐ Yes ² ☐ No; skip remaining questions.

2. Did you hunt with a firearm, crossbow, or bow? (select all that apply)

¹ ☐ Firearm ² ☐ Crossbow ³ ☐ Bow (recurve, compound, or long bow)

3. If you hunted, please complete the adjacent table: (If you hunted on both public and private lands in the same county or unit, report your activity on separate lines. If you hunted in Unit ZZ, please report the subunit you hunted.)

County hunted (e.g., Kent County)	Unit hunted (see map on back)	Land ownership (please check one)	Number of days hunted
		¹ <input type="checkbox"/> Private ² <input type="checkbox"/> Public	
		¹ <input type="checkbox"/> Private ² <input type="checkbox"/> Public	
		¹ <input type="checkbox"/> Private ² <input type="checkbox"/> Public	

4. Using the adjacent calendar, please circle [O] the days that you hunted. Circle only the days you actually went afield to hunt turkeys.

April 2019							May 2019						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
										1	2	3	4
							5	6	7	8	9	10	11
							12	13	14	15	16	17	18
		22	23	24	25	26	19	20	21	22	23	24	25
28	29	30					26	27	28	29	30	31	

5. Did you harvest a turkey during the 2019 spring season? Only count turkeys tagged with your kill tag. ¹ ☐ Yes ² ☐ No; skip to question 7.

April 2019							May 2019						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
										1	2	3	4
							5	6	7	8	9	10	11
							12	13	14	15	16	17	18
		22	23	24	25	26	19	20	21	22	23	24	25
28	29	30					26	27	28	29	30	31	

6. If you placed your harvest tag on a turkey, please mark [X] the date that the turkey was harvested.

A. In what county and unit was the turkey taken (refer to map on backside)?

Please write in county name

Please write in hunting unit

B. Which option best describes the bird that you tagged?

¹ ☐ Male with a beard less than 6 inches

² ☐ Male with a beard 6 or more inches

³ ☐ Female with a beard

C. What type of land was the turkey harvested?

¹ ☐ Private

² ☐ Public

D. What type of device was used to harvest your turkey?

¹ ☐ Firearm

² ☐ Crossbow

³ ☐ Bow (recurve, compound, or long bow)

7. Overall, how would you rate your 2019 spring turkey hunting experience?

¹ ☐ Excellent

² ☐ Very Good

³ ☐ Good

⁴ ☐ Fair

⁵ ☐ Poor

8. How would you describe interference by other hunters during your 2019 spring turkey hunt?

¹ ☐ None

² ☐ Minor

³ ☐ Some irritation

⁴ ☐ Major problem

9. Compared to last year, what is the status of turkeys in the county you preferred to hunt in 2019?

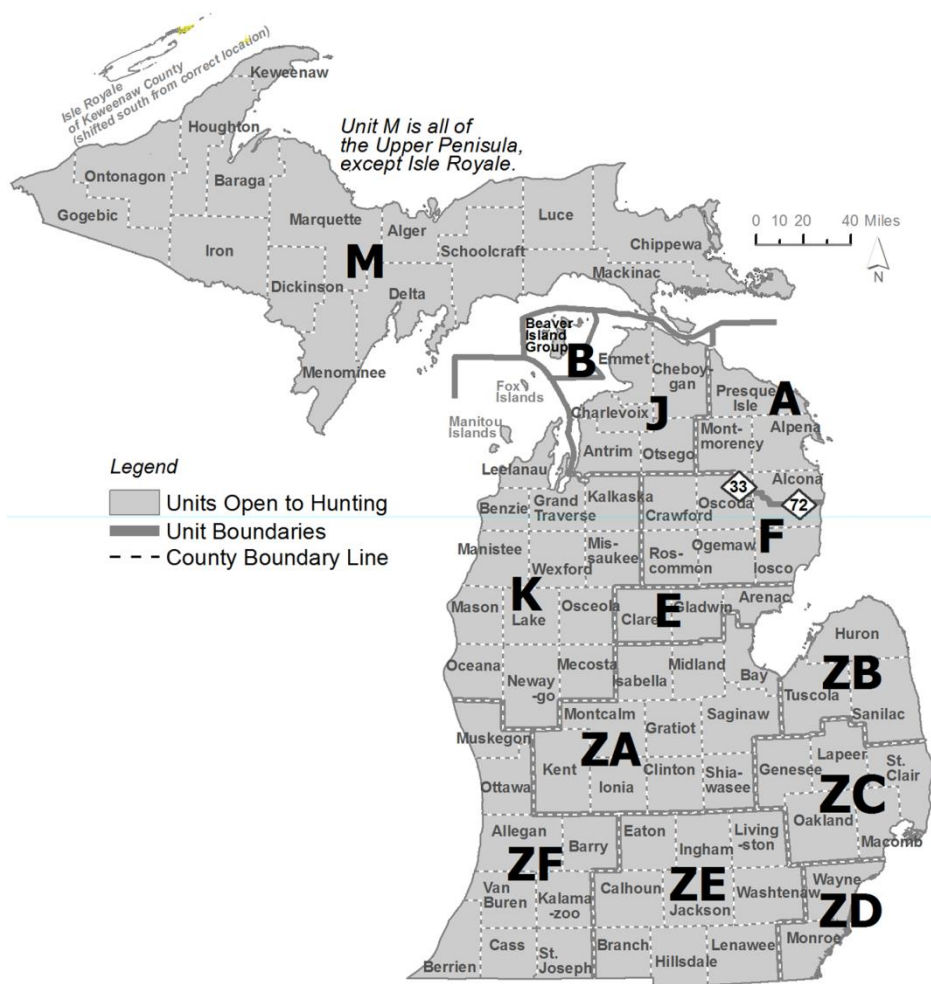
¹ ☐ Increasing

² ☐ Decreasing

³ ☐ Stable

⁴ ☐ Unknown

2019 Spring Turkey Hunting Units



Please note if you hunted Turkey Management Unit ZZ. Turkey Management Unit ZZ consisted of 6 smaller management units (subunits) in southern Michigan. If you hunted in Unit ZZ, please report which of these smaller subunits you hunted (i.e., units ZA, ZB, ZC, ZD, ZE, ZF).