



MICHIGAN DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENT
Wildlife Division Report No. 3521
February 2011

Printed by Authority of: P.A. 451 of 1994
Total Number of Copies Printed:25
Cost per Copy:\$2.03
Total Cost:\$50.75
Michigan Department of Natural Resources &
Environment

2010 MICHIGAN SPRING TURKEY HUNTER SURVEY

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ABSTRACT

A survey of turkey hunters was conducted following the 2010 spring hunting season to determine turkey harvest and hunter participation. In 2010, nearly 92,500 hunters harvested about 37,000 turkeys. Statewide, 40% of hunters harvested a turkey. Nearly 66% of the hunters rated their hunting experience as excellent, very good, or good in 2010. About 90% of the hunters reported they experienced no or only minor interference from other hunters. The number of hunters and their harvest declined significantly (declined 6% and 7%, respectively) between 2009 and 2010; however, hunter success and hunter satisfaction were unchanged.

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 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 2010, 80% of the state (48,147 square miles) was open for wild turkey hunting from April 19 through May 31 (Figure 1). The area open for turkey hunting was the same as in 2009. The hunting area was divided into 12 management units (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



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

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IC2042-500 (02/11/2011)

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].

People interested in obtaining a turkey hunting license could enter into a random drawing (lottery) conducted by the Department of Natural Resources and Environment (DNRE) or purchase a license for Hunt 234 between January 1 and February 1 without going through the lottery. 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 except licenses for Hunt 234 were made available to nonapplicants. Hunters were allowed to purchase one license and take one bearded turkey with the harvest tag issued with their license.

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 (7-43 days). Most quota hunts began before May 4 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 19-May 2) 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 29 days (May 3-31). An unlimited number of licenses were available for Hunt 234.

The Pure Michigan Hunt (PMH) was a unique multi-species hunting opportunity offered for the first time in 2010. 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.

Hunters could use a bow and arrow, crossbow, or firearm that fired a fixed shotgun shell (including a muzzleloading shotgun) to hunt turkeys. Hunters using a crossbow were required to obtain a free crossbow stamp, except hunters with a disability already hunting under a DNRE-issued crossbow permit, did not need the stamp.

The DNRE 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 and through a statewide news release. 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 rated their overall hunting experience (excellent, very good, good, fair, or poor).

Following the 2010 spring turkey hunting season, a questionnaire was sent to 12,015 randomly selected people that had purchased a turkey hunting license (resident turkey, senior resident turkey, and nonresident turkey 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 16 strata (Cochran 1977). Hunters were stratified based on the management unit where their license was valid (12 management units). Hunters who purchased a license that could be used in multiple management units (PMH license holders and licenses for hunts 234 and 301) were treated as separate strata (strata 13-15). Moreover, people that had voluntarily reported information about their hunting activity via the internet were treated as a separate stratum (sixteenth 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 was equivalent to stating the difference between the means was

larger than would be expected 995 out of 1,000 times ($P < 0.005$), if the study had been repeated (Payton et al. 2003).

Questionnaires were mailed initially during mid-July 2010, and nonrespondents were mailed up to two follow-up questionnaires. Although 12,015 people were sent the questionnaire, 159 surveys were undeliverable resulting in an adjusted sample size of 11,856. Questionnaires were returned by 7,830 people, yielding a 66% adjusted response rate. In addition, 6,238 people voluntarily reported information about their hunting activity via the internet before the random sample was selected.

RESULTS AND DISCUSSION

In 2010, licenses were purchased by 115,117 people, a decrease of nearly 5% from 2009 (Table 1). Most of the people buying a license were men (93%), and the average age of the license buyers was 44 years (Figure 2). Nearly 9% (10,719) of the license buyers were younger than 17 years old.

About 80% ($\pm 1\%$) of license buyers hunted turkeys (92,463 hunters). Most of these hunters were men ($85,850 \pm 1,036$), although nearly 7% ($\pm 1\%$) of the hunters were women ($6,613 \pm 566$). Estimated hunter numbers (Table 2) declined about 6% between 2009 and 2010 (97,956 versus 92,463 hunters). Counties listed in descending order with more than 2,500 hunters afield included Kent, Allegan, Montcalm, and Tuscola (Table 3).

Hunters spent an estimated 418,895 days afield pursuing turkeys (4.5 ± 0.1 days/hunter), and harvested approximately 37,051 birds (Figure 3). Counties listed in descending order with hunters taking more than 1,000 turkeys included Montcalm, Kent, Allegan, Jackson, Tuscola, Saginaw, and St. Clair (Table 3). Hunter effort decreased significantly by 7% from 2009, and statewide harvest also decreased significantly by 7% from 2009. Hunter success was 40% in 2010, which was similar to the 41% hunter success experienced in 2009.

About 21% ($\pm 2\%$) of the harvested birds were juvenile males ($7,738 \pm 599$); 78% ($\pm 2\%$) were adult males ($28,750 \pm 1,028$), and about 1% were bearded females (384 ± 140). Additionally, the age of a small number of harvested birds ($< 1\%$) was unknown (171 ± 95) 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 4-7). For turkeys that the harvest date was known, 46% of these birds were taken during the first seven days (April 19-25). Daily hunter success generally was more than 8% during April 19 through May 6. Daily hunter success was generally below 8% during May 7-31. Hunting effort and harvest generally was greater on the weekends than weekdays.

About 81% of turkey hunters hunted solely on private land; 14% hunted on public land only; and 5% hunted on both private and public lands (Table 4). Of the 37,051 turkeys harvested in 2010, $91 \pm 1\%$ were taken on private land ($33,841 \pm 1,076$ birds). About $9 \pm 1\%$ of the harvest ($3,197 \pm 370$ birds) was taken on public land.

Hunter satisfaction is one measure used to assess the turkey management program in Michigan. Of the estimated 92,463 people hunting turkeys in 2010, $66 \pm 1\%$ of the hunters rated their hunting experience as either excellent ($17,152 \pm 839$ hunters), very good ($19,319 \pm 894$), or good ($24,771 \pm 991$) (Table 5). Nearly $18 \pm 1\%$ of the hunters rated their experience as fair ($16,931 \pm 848$ hunters). Only $14 \pm 1\%$ of the hunters rated their experience as poor ($13,060 \pm 743$ hunters). About 1% of the hunters ($1,229 \pm 259$ hunters) failed to rate their hunting experience.

Hunter satisfaction is affected by many factors such as hunting success and whether hunting activities were completed without interference (Luukkonen 1998). In 2010, $69 \pm 1\%$ of the hunters reported no hunter interference; $21 \pm 1\%$ reported minor interference; $8 \pm 1\%$ reported some irritation caused by hunter interference; and $2 \pm 1\%$ reported hunter interference was a major problem (Table 6).

Although interference can affect hunter satisfaction, hunter satisfaction was more closely associated with hunter success (Figures 8 and 9). Hunter success was greater than 35% in all hunt periods, and hunter success and satisfaction varied little among the hunt periods (Table 7).

Compared to 2009, hunter numbers, hunter effort, and harvest decreased significantly statewide in 2010 (Table 8). However, hunter success and satisfaction did not change significantly in 2010 (Table 9).

Most hunters ($91 \pm 1\%$) used firearms while hunting turkeys, although $8 \pm 1\%$ of the hunters used archery equipment (compound, recurve, or long bows), and $3 \pm 1\%$ used a crossbow. Most hunters ($94 \pm 1\%$) used a firearm to harvest their turkeys, while $4 \pm 1\%$ used archery equipment, and $1 \pm 1\%$ used a crossbow. Hunters using a crossbow to hunt turkeys were required to obtain a crossbow stamp, unless they were a disabled hunter that already had a DNRE-issued crossbow permit. About $20 \pm 6\%$ of the turkey hunters using a crossbow had obtained the crossbow stamp.

ACKNOWLEDGEMENTS

I thank all the turkey hunters that provided information. Autumn Feldpausch, Anna Hamilton, Sheree Kershaw, and Theresa Riebow completed data entry. Greg Bird and Kraig Korroch developed the internet harvest reporting application. Marshall Strong prepared the figure of the turkey management units (Figure 1). Pat Lederle, Russ Mason, Cheryl Nelson, and Al Stewart reviewed a draft version of this report.

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Table 1. Number of hunting licenses available and people applying for licenses during the 2010 Michigan spring turkey hunting season.

Management unit or hunt period	Licenses available (quota)	Number of eligible applicants ^a	Number of applicants successful in drawing ^b	Number of licenses remaining after drawing	Number of licenses purchased by successful applicants ^c	Number of leftover licenses purchased by unsuccessful applicants ^c	Number of licenses purchased by people not in the drawing ^c	Number of licensees ^c
A	5,500	3,161	3,219	2,281	2,367	20	1,012	3,399
E	1,700	2,294	1,701	0	1,252	0	0	1,252
F	5,000	4,496	4,296	704	3,133	35	555	3,723
J	4,000	2,084	2,116	1,884	1,551	21	864	2,436
K	8,500	11,325	8,496	0	6,503	0	0	6,503
M	8,000	1,571	1,578	6,422	1,212	7	3,164	4,383
ZA	4,800	3,233	3,088	1,712	2,224	45	1,431	3,700
ZB	1,750	1,597	1,286	464	919	49	328	1,296
ZC	2,000	2,167	1,569	431	1,049	109	254	1,412
ZD	40	120	40	0	21	0	0	21
ZE	2,000	2,566	1,689	311	1,210	118	157	1,485
ZF	5,600	3,474	3,395	2,205	2,609	23	1,894	4,526
Hunt 301	65,000	18,588	18,944	46,056	15,617	634	25,094	41,345
Hunt 234	NA	981	1,478	NA	1,254	1,151	37,228	39,633
Pure MI Hunt	NA	NA	NA	NA	NA	NA	NA	3
Statewide	113,890	57,657	52,895	62,470	40,921	2,212	71,981	115,117

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

^bNumber of successful applicants was sometimes larger than quota because of system processing errors.

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

^dLicenses sold between January 1 and February 1.

Table 2. Number of hunters, hunting efforts, harvest, hunter success, hunter satisfaction, and hunter interference during the spring 2010 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	2,777	153	11,696	1,146	601	145	22	5	37	6	90	4
E	812	68	3,224	548	254	55	31	6	56	7	92	4
F	3,207	139	12,507	1,055	756	158	24	5	49	6	87	4
J	2,148	91	8,595	815	589	118	27	5	53	6	91	4
K	5,932	199	20,234	1,432	2,353	327	40	5	67	5	93	3
M	3,579	198	22,265	2,876	1,382	233	39	6	58	6	91	4
ZA	3,051	170	11,989	1,285	1,166	202	38	6	68	6	83	5
ZB	1,038	60	3,725	404	374	66	36	6	73	6	92	3
ZC	1,193	61	4,693	451	372	71	31	6	69	6	88	4
ZD	18	2	87	17	3	2	17	13	75	15	92	9
ZE	1,273	60	5,095	539	360	69	28	5	63	6	86	4
ZF	3,634	217	16,920	2,237	1,362	244	37	6	67	6	86	5
Pure MI Hunt	3	0	48	0	3	0	100	0	100	0	100	0
Subtotal	28,664	471	121,077	4,585	9,576	582	33	2	60	2	89	1
Hunt period 301 with quota (Private lands in Management Unit ZZ; April 19-May 2, 2010)												
ZA	9,350	627	36,353	3,213	4,742	475	51	4	75	3	90	2
ZB	3,825	437	15,303	2,204	1,662	294	43	6	78	5	90	4
ZC	4,845	480	19,493	2,470	2,261	338	47	5	75	5	84	4
ZD	289	124	1,144	652	123	80	43	21	67	21	88	14
ZE	9,148	622	35,392	3,193	4,575	466	50	4	76	3	90	2
ZF	7,534	580	31,096	3,292	3,640	424	48	4	76	4	89	3
Unknown	774	207	2,649	979	82	67	11	8	52	13	77	11
Subtotal	35,178	543	141,431	4,842	17,086	739	49	2	75	2	89	1

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one unit for hunts 234 and 301. 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). Number of hunters, hunting efforts, harvest, hunter success, hunter satisfaction, and hunter interference during the spring 2010 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 3-31, 2010)												
A	738	180	4,146	1,323	106	68	14	9	30	11	90	7
E	1,508	257	7,464	1,837	478	147	32	8	57	9	97	3
F	2,032	294	9,982	1,927	240	103	12	5	37	7	94	3
J	1,384	245	7,597	1,885	356	125	26	8	47	9	89	6
K	7,219	516	40,317	4,380	2,311	311	32	4	51	4	89	3
M	238	99	936	467	77	57	32	20	79	17	94	10
ZA	5,317	459	25,808	2,997	2,142	301	40	5	70	4	90	3
ZB	1,667	270	9,323	1,921	498	149	30	8	69	8	94	4
ZC	2,501	326	13,029	2,275	964	206	39	7	76	6	91	4
ZD	132	77	663	498	44	45	33	28	57	29	99	0
ZE	3,454	374	17,488	2,625	1,501	251	43	6	75	5	96	2
ZF	3,689	389	17,994	2,841	1,612	262	44	5	72	5	91	3
Unknown	321	117	1,641	749	60	51	14	13	50	18	86	13
Subtotal	28,621	609	156,387	6,705	10,388	587	36	2	62	2	92	1
Statewide	92,463	943	418,895	9,456	37,051	1,109	40	1	66	1	90	1

^aNumber of hunters does not add up to statewide total because hunters can hunt in more than one unit for hunts 234 and 301. 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 2010 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	1,260	220	4,939	981	235	97	19	7	37	9	94	4
Alger	108	77	631	652	3	0	3	2	51	36	100	0
Allegan	2,998	386	13,190	2,399	1,115	242	37	7	68	6	88	4
Alpena	881	180	3,993	1,020	232	98	26	10	34	11	90	7
Antrim	970	173	4,390	1,226	274	96	28	9	53	10	92	5
Arenac	462	128	2,621	1,049	181	79	39	14	52	14	92	7
Baraga	0	0	0	0	0	0	0	0	0	0	0	0
Barry	2,058	321	9,431	2,280	690	186	34	8	71	8	88	6
Bay	670	183	2,877	1,029	263	114	39	13	57	14	89	9
Benzie	439	160	1,625	703	128	91	29	17	61	18	94	9
Berrien	973	225	4,854	1,464	404	145	42	11	69	11	89	7
Branch	952	220	4,528	1,335	555	169	58	11	82	9	88	8
Calhoun	1,921	310	6,466	1,491	869	209	45	8	75	7	91	5
Cass	1,311	265	5,472	1,435	670	187	51	10	76	9	88	7
Charlevoix	566	135	1,912	504	235	91	42	12	68	12	90	7
Cheboygan	583	141	2,794	926	87	54	15	9	42	12	87	9
Chippewa ^d	0	0	0	0	0	0	0	0	0	0	0	0
Clare	843	167	3,274	860	288	104	34	10	58	10	97	3
Clinton	1,795	301	7,769	1,655	748	195	42	8	74	8	88	5
Crawford	986	194	3,968	951	172	83	17	8	44	10	82	8
Delta	953	207	5,338	1,732	273	119	29	11	55	12	95	6

^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.

^dNot open for turkey hunting.

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2010 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	653	179	3,525	1,276	265	119	41	14	64	14	87	10
Eaton	1,529	275	6,786	1,584	680	186	44	9	70	8	92	5
Emmet	550	135	2,762	1,003	126	65	23	11	48	13	93	6
Genesee	1,628	275	6,957	1,466	752	189	46	9	78	7	88	6
Gladwin	843	174	4,113	1,377	230	88	27	9	57	10	96	4
Gogebic	1	0	6	0	0	0	0	0	100	0	100	0
Gd. Traverse	849	211	3,966	1,177	278	121	33	12	61	12	92	7
Gratiot	1,419	264	5,571	1,265	603	172	43	9	69	9	86	7
Hillsdale	1,559	275	5,806	1,335	767	192	49	9	70	8	93	5
Houghton	1	0	3	0	1	0	100	0	100	0	0	0
Huron	1,714	276	7,447	1,473	635	174	37	8	74	7	88	5
Ingham	1,529	266	5,893	1,312	786	195	51	9	87	6	94	4
Ionia	1,710	289	6,823	1,427	894	212	52	9	78	7	83	7
Iosco	822	179	3,251	952	175	83	21	9	38	11	89	7
Iron	644	179	3,251	1,188	234	112	36	14	64	14	95	7
Isabella	1,472	269	5,444	1,237	497	154	34	9	65	9	87	6
Jackson	2,449	334	10,362	1,776	1,081	228	44	7	70	6	89	4
Kalamazoo	1,379	268	5,173	1,201	636	182	46	10	88	6	93	5
Kalkaska	890	225	3,756	1,195	297	137	33	12	52	13	89	8
Kent	3,149	392	12,974	2,086	1,176	242	37	6	74	6	92	3
Keweenaw ^d	0	0	0	0	0	0	0	0	0	0	0	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.

^dNot open for turkey hunting.

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2010 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	1,321	264	5,940	1,543	303	130	23	9	56	10	91	6
Lapeer	2,392	331	10,229	1,915	945	210	39	7	74	6	90	4
Leelanau	361	145	1,903	1,022	146	91	41	20	75	18	71	19
Lenawee	1,081	227	4,259	1,104	498	157	46	11	79	9	92	6
Livingston	1,637	265	6,880	1,460	627	167	38	8	73	7	89	5
Luce ^d	0	0	0	0	0	0	0	0	0	0	0	0
Mackinac	0	0	0	0	0	0	0	0	0	0	0	0
Macomb	870	203	3,625	1,151	327	127	38	11	78	10	87	8
Manistee	936	220	5,868	2,009	284	123	30	11	37	12	89	7
Marquette	399	146	2,239	1,211	121	83	30	18	52	19	91	11
Mason	947	228	4,691	1,677	357	146	38	12	55	12	83	10
Mecosta	1,469	277	5,241	1,211	603	180	41	10	61	10	92	5
Menominee	1,139	223	6,399	1,668	491	158	43	11	62	11	91	7
Midland	1,304	253	5,744	1,467	571	169	44	10	69	9	89	6
Missaukee	614	174	2,879	1,053	131	82	21	12	37	14	97	4
Monroe	336	128	1,424	686	152	86	45	19	63	19	89	12
Montcalm	2,741	366	10,297	1,738	1,407	266	51	7	75	6	89	4
Montmorency	825	178	3,925	1,102	102	61	12	7	37	11	86	8
Muskegon	1,687	295	7,136	1,583	719	196	43	9	69	8	88	6
Newaygo	2,448	353	9,012	1,691	939	224	38	7	68	7	91	4
Oakland	1,447	236	5,062	973	556	155	38	8	72	8	83	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.

^dNot open for turkey hunting.

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunter interference during the 2010 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	1,447	282	6,016	1,411	552	179	38	10	61	10	92	5
Ogemaw	1,169	210	4,432	1,174	243	101	21	8	54	10	94	5
Ontonagon	1	0	3	0	0	0	0	0	0	0	100	0
Osceola	1,141	248	4,047	1,030	409	156	36	11	58	11	95	5
Oscoda	860	187	4,021	1,088	96	65	11	7	38	11	90	7
Otsego	861	175	3,581	948	190	84	22	9	41	10	85	8
Ottawa	2,330	346	9,232	1,767	995	227	43	7	75	7	88	5
Presque Isle	748	167	3,489	1,101	188	89	25	11	43	12	90	7
Roscommon	919	188	4,077	1,079	193	87	21	9	37	10	86	7
Saginaw	2,166	325	8,786	1,737	1,053	229	49	8	76	7	87	5
St. Clair	2,322	328	10,221	1,853	1,013	222	44	7	79	6	86	5
St. Joseph	746	196	2,804	1,006	417	147	56	13	72	12	88	9
Sanilac	2,059	307	8,197	1,573	834	195	40	7	78	6	91	4
Schoolcraft	143	87	747	520	37	45	26	27	39	30	88	21
Shiawassee	1,367	262	5,486	1,310	696	188	51	10	74	9	90	6
Tuscola	2,688	345	11,967	2,019	1,053	219	39	6	74	6	92	4
Van Buren	1,865	313	7,493	1,622	911	220	49	9	79	7	92	5
Washtenaw	1,434	246	5,433	1,218	543	157	38	9	71	8	90	5
Wayne	82	66	370	440	18	30	22	33	62	39	100	0
Wexford	897	221	4,440	1,310	236	115	26	11	53	13	86	8
Unknown	4,154	445	17,356	2,359	558	163	12	4	47	5	83	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.

^dNot open for turkey hunting.

Table 4. Estimated number and proportion of hunters hunting on private and public lands during the spring 2010 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	2,037	191	73	6	534	141	19	5	193	91	7	3	13	25	0	1
E	508	68	63	7	272	58	34	6	31	21	4	3	0	0	0	0
F	1,315	189	41	6	1,593	196	50	6	260	101	8	3	38	42	1	1
J	1,296	138	60	6	598	118	28	5	234	83	11	4	19	26	1	1
K	3,477	342	59	5	1,817	307	31	5	573	192	10	3	64	71	1	1
M	2,208	253	62	6	779	193	22	5	524	164	15	5	67	63	2	2
ZA	1,623	218	53	6	1,161	202	38	6	237	106	8	3	31	41	1	1
ZB	474	72	46	6	503	72	48	6	61	31	6	3	0	0	0	0
ZC	540	81	45	6	532	79	45	6	96	42	8	3	26	23	2	2
ZD	11	3	58	17	3	2	17	13	5	3	25	15	0	0	0	0
ZE	452	77	35	6	757	83	59	6	58	31	5	2	6	11	0	1
ZF	1,913	266	53	7	1,371	244	38	6	294	132	8	4	55	61	2	2
PMH	3	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	15,856	642	55	2	9,921	570	35	2	2,567	349	9	1	321	134	1	0
Hunt 301 with quota (Private lands in Management Unit ZZ; April 19-May 2, 2010)																
ZA	9,350	627	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZB	3,825	437	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZC	4,845	480	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZD	289	124	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZE	9,148	622	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZF	7,534	580	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	774	207	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	35,178	543	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 2010 Michigan turkey hunting season.^a

Management unit	Private land only				Public land only				Both private and public lands				Unknown land			
	Total	95% CL	95% %	95% CL	Total	95% CL	95% %	95% CL	Total	95% CL	95% %	95% CL	Total	95% CL	95% %	95% CL
Unlimited quota hunt period (Guaranteed Hunt 234; May 3-31, 2010)																
A	527	153	71	11	139	77	19	9	72	57	10	7	0	0	0	0
E	1,162	227	77	7	274	112	18	7	59	51	4	3	14	26	1	2
F	1,008	212	50	7	818	187	40	7	192	93	9	4	14	26	1	1
J	817	191	59	9	338	120	24	8	215	99	16	7	14	26	1	2
K	4,983	444	69	4	1,387	243	19	3	794	189	11	2	41	45	1	1
M	132	73	56	21	62	51	26	19	44	45	18	17	0	0	0	0
ZA ^b	5,317	459	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZB ^b	1,667	270	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZC ^b	2,501	326	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZD ^b	132	77	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZE ^b	3,454	374	100	0	0	0	0	0	0	0	0	0	0	0	0	0
ZF ^b	3,689	389	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	199	93	62	18	40	36	13	11	0	0	0	0	82	63	25	17
Subtotal	24,154	659	84	1	2,571	327	9	1	1,732	272	6	1	164	89	1	0
Statewide ^c	75,175	1,069	81	1	12,492	657	14	1	4,299	443	5	0	498	163	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. How hunters rated their hunting experience during the spring 2010 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	7	10	21	23	39	1
E	16	18	23	23	20	1
F	11	13	25	19	30	2
J	7	17	28	26	21	1
K	16	18	33	15	16	2
M	14	19	25	22	20	0
ZA	18	23	27	18	11	3
ZB	19	28	26	15	12	0
ZC	23	18	27	21	9	1
ZD	8	25	42	8	17	0
ZE	21	19	23	23	12	2
ZF	14	22	31	21	12	1
Pure MI Hunt	0	0	100	0	0	0
Mean	14	18	27	20	19	1
Hunt 301 with quota (Private lands in Management Unit ZZ; April 19-May 2, 2010)						
ZA	24	24	26	16	7	1
ZB	21	24	32	13	7	2
ZC	25	26	24	15	8	2
ZD	20	24	23	22	11	0
ZE	26	25	24	16	7	2
ZF	25	27	25	15	6	2
Unknown	8	15	29	19	21	8
Mean	24	25	26	16	7	2

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

Table 5 (continued). How hunters rated their hunting experience during the spring 2010 Michigan turkey hunting season.

Management unit	Satisfaction level (% of hunters) ^a					No answer
	Excellent	Very good	Good	Fair	Poor	
Unlimited quota hunt period (Guaranteed Hunt 234; May 3-31, 2010)						
A	2	8	20	21	49	0
E	16	19	22	23	19	1
F	5	9	23	30	33	0
J	10	13	24	18	34	1
K	11	17	24	25	24	0
M	8	26	44	14	7	0
ZA	19	22	29	18	11	1
ZB	13	21	35	21	9	2
ZC	19	18	39	16	6	1
ZD	12	33	13	32	11	0
ZE	27	21	26	16	9	0
ZF	20	24	28	16	11	1
Unknown	1	18	31	15	31	4
Mean	16	19	27	20	17	1
Statewide ^b	19	21	27	18	14	1

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

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

Table 6. Estimated amount of hunter interference experienced by turkey hunters during the spring 2010 Michigan turkey hunting season.

Manage-ment unit	Interference level (% of hunters) ^a				
	None	Minor	Some irritation	Major problem	No answer
Hunt periods with quotas (General limited quota hunt periods)					
A	70	19	7	2	1
E	76	16	5	2	1
F	66	21	9	3	1
J	68	23	7	2	0
K	67	26	7	1	0
M	75	17	7	2	0
ZA	60	23	12	3	2
ZB	67	25	5	2	1
ZC	63	25	10	0	2
ZD	67	25	8	0	0
ZE	58	28	10	3	1
ZF	65	22	12	0	1
Pure MI Hunt	100	0	0	0	0
Mean	67	22	8	2	1
Hunt 301 with quota (Private lands in Management Unit ZZ; April 19-May 2, 2010)					
ZA	69	20	8	2	1
ZB	68	22	8	2	1
ZC	69	15	13	1	2
ZD	70	18	12	0	0
ZE	72	18	8	1	1
ZF	66	23	7	2	2
Unknown	63	15	16	2	4
Mean	69	20	8	2	1

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

Table 6 (continued). Estimated amount of hunter interference experienced by turkey hunters during the spring 2010 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 3-31, 2010)					
A	76	14	8	2	0
E	73	24	1	2	0
F	78	16	5	1	0
J	65	24	9	1	1
K	66	22	8	2	1
M	87	7	6	0	0
ZA	70	19	8	1	1
ZB	75	19	4	2	0
ZC	74	17	7	1	1
ZD	36	63	1	0	0
ZE	77	19	4	0	0
ZF	70	21	6	2	1
Unknown	64	23	9	0	4
Mean	72	20	6	1	1
Statewide ^b	69	20	8	2	1

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

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

Table 7. Estimated number of hunting efforts, hunters, hunting success, noninterfered hunters, and hunter rating of the 2010 spring turkey hunting season, by hunt periods.

Variable	Hunt periods beginning								All periods ^a	
	April 19		April 26		May 3		May 10			
	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL
Hunting efforts (days)	191,909	5,527	51,247	3,656	161,547	6,776	14,191	2,348	418,895	9,456
Number of hunters	47,758	726	11,652	520	30,105	645	2,948	289	92,463	943
Successful hunters (n)	20,828	833	4,342	427	10,788	597	1,093	219	37,051	1,109
Successful hunters (%)	44	2	37	3	36	2	37	6	40	1
Noninterfered hunters (n) ^b	42,220	818	10,566	520	27,518	672	2,604	285	82,908	1,072
Noninterfered hunters (%) ^b	88	1	91	2	91	1	88	4	90	1
Favorable rating (n) ^c	33,270	866	7,343	506	18,617	690	2,013	268	61,243	1,175
Favorable rating (%) ^c	70	1	63	3	62	2	68	6	66	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 8. Comparison of the estimated number of hunters, hunting effort, and harvest between 2009 and 2010 Michigan spring turkey hunting seasons, summarized by regions.

Region ^a	Hunters (No.) ^b					Hunting efforts (days)					Harvest (No.)				
	2009		2010		Change (%)	2009		2010		Change (%)	2009		2010		Change (%)
	Total	95% CL	Total	95% CL		Total	95% CL	Total	95% CL		Total	95% CL	Total	95% CL	
UP	4,504	323	3,682	232	-18*	23,214	3,006	22,142	2,860	-5	1,857	315	1,425	239	-23
NLP	29,077	760	26,249	710	-10*	132,358	6,298	120,926	5,866	-9	8,900	625	7,910	556	-11
SLP	62,529	1,003	59,386	944	-5*	280,180	8,469	258,470	7,664	-8*	28,639	1,038	27,158	952	-5
Unknown	3,035	413	4,154	445		14,411	2,732	17,356	2,359		337	136	558	163	
Total	97,956	1,019	92,463	943	-6*	450,163	10,367	418,895	9,456	-7*	39,733	1,227	37,051	1,109	-7*

^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 hunters can hunt in more than one unit for the unlimited quota hunt.

*P<0.005.

Table 9. Comparison of estimated hunter success, hunter satisfaction, and hunt interference between 2009 and 2010 Michigan spring turkey hunting season, summarized by regions.

Region ^a	Hunter success					Hunter satisfaction ^b					Noninterfered hunters ^c				
	2009		2010		Difference (%)	2009		2010		Difference (%)	2009		2010		Difference (%)
	%	95% CL	%	95% CL		%	95% CL	%	95% CL		%	95% CL	%	95% CL	
UP	41	6	39	6	-3	65	6	60	6	-5	96	3	92	3	-4
NLP	31	2	30	2	<1	51	2	53	2	2	90	1	91	1	1
SLP	46	1	46	1	<1	71	1	74	1	3*	89	1	89	1	1
Total	41	1	40	1	<1	64	1	66	1	2	89	1	90	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<0.005.

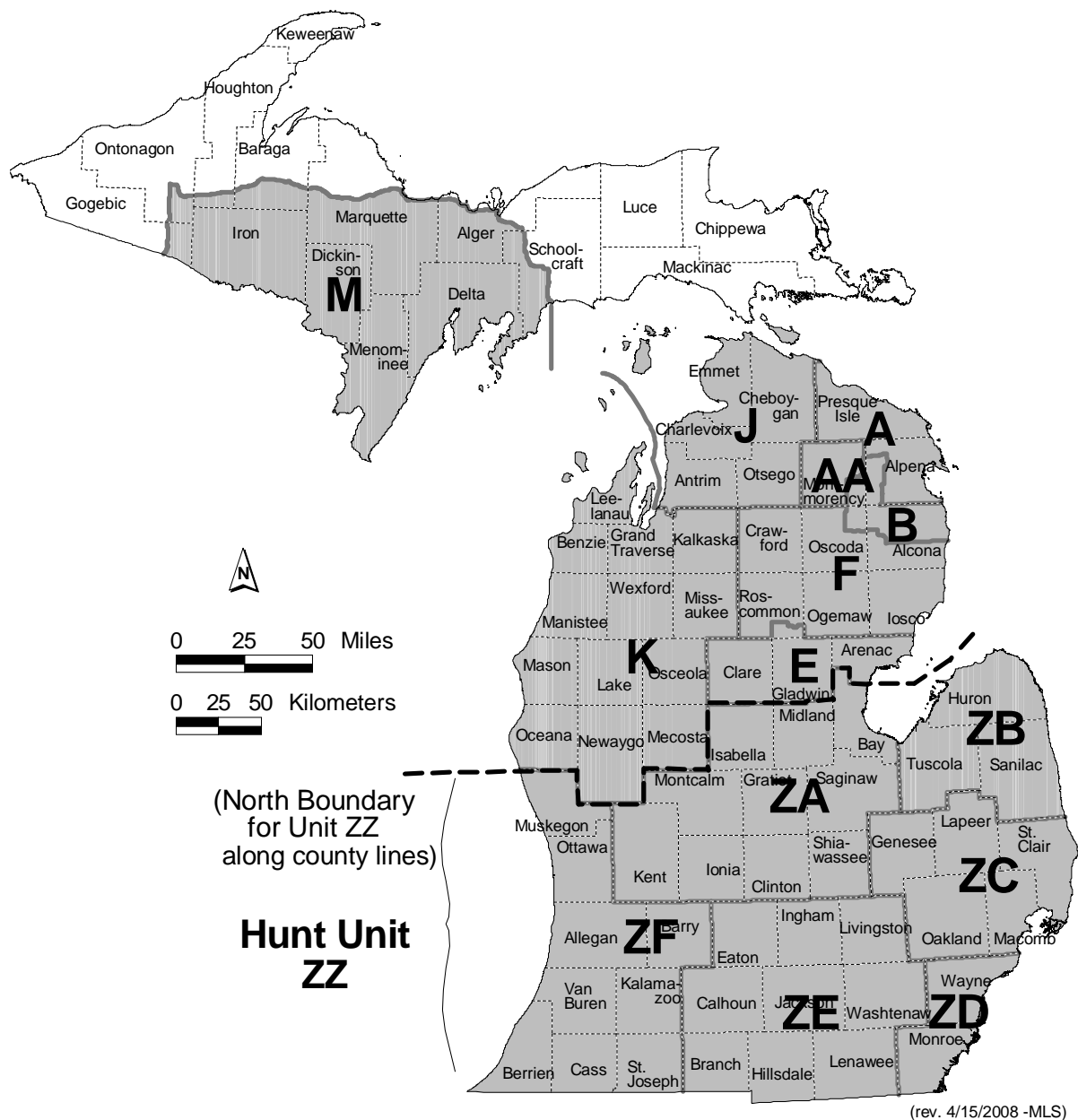


Figure 1. Management units in Michigan open to spring turkey hunting in 2010.

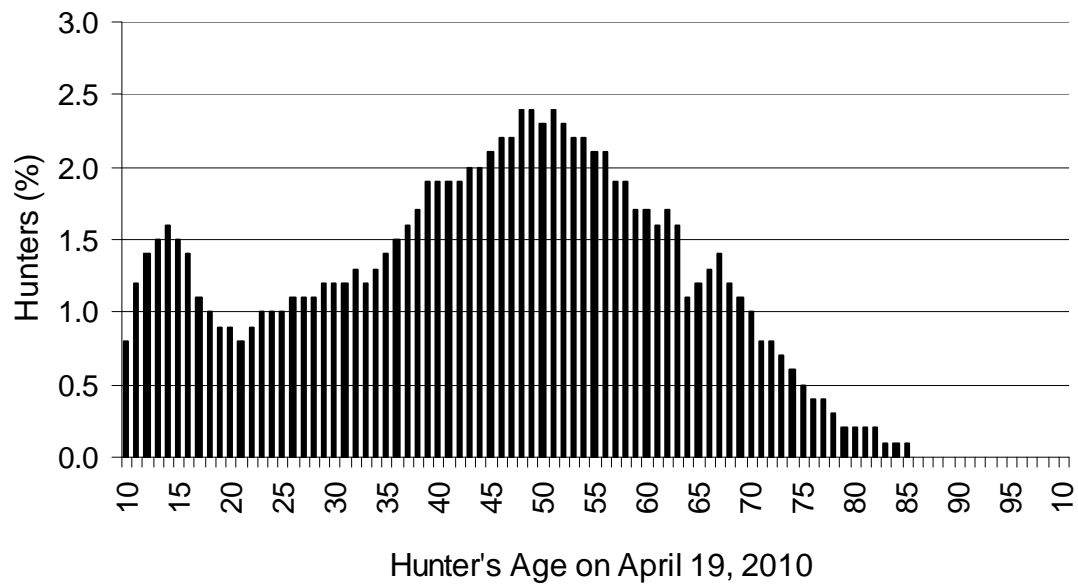


Figure 2. Age of people that purchased a turkey hunting license in Michigan for the 2010 spring hunting season ($\bar{x} = 44$ years). Licenses were purchased by 115,117 people.

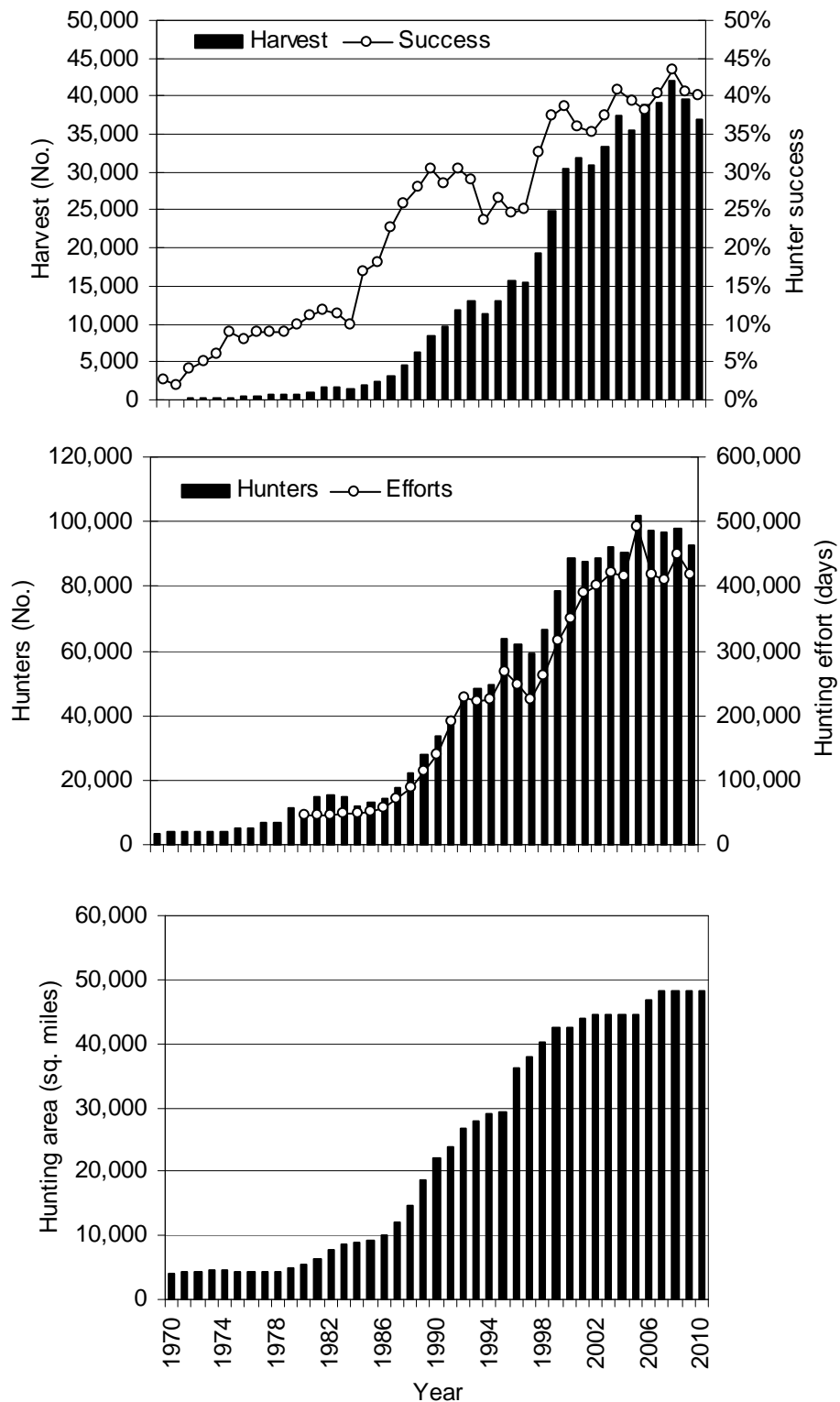


Figure 3. Estimated number of hunters, harvest, hunting efforts, hunter success, and area open to hunting during the Michigan spring turkey hunting season, 1970-2010. Estimates of hunting effort generally were not available before 1981.

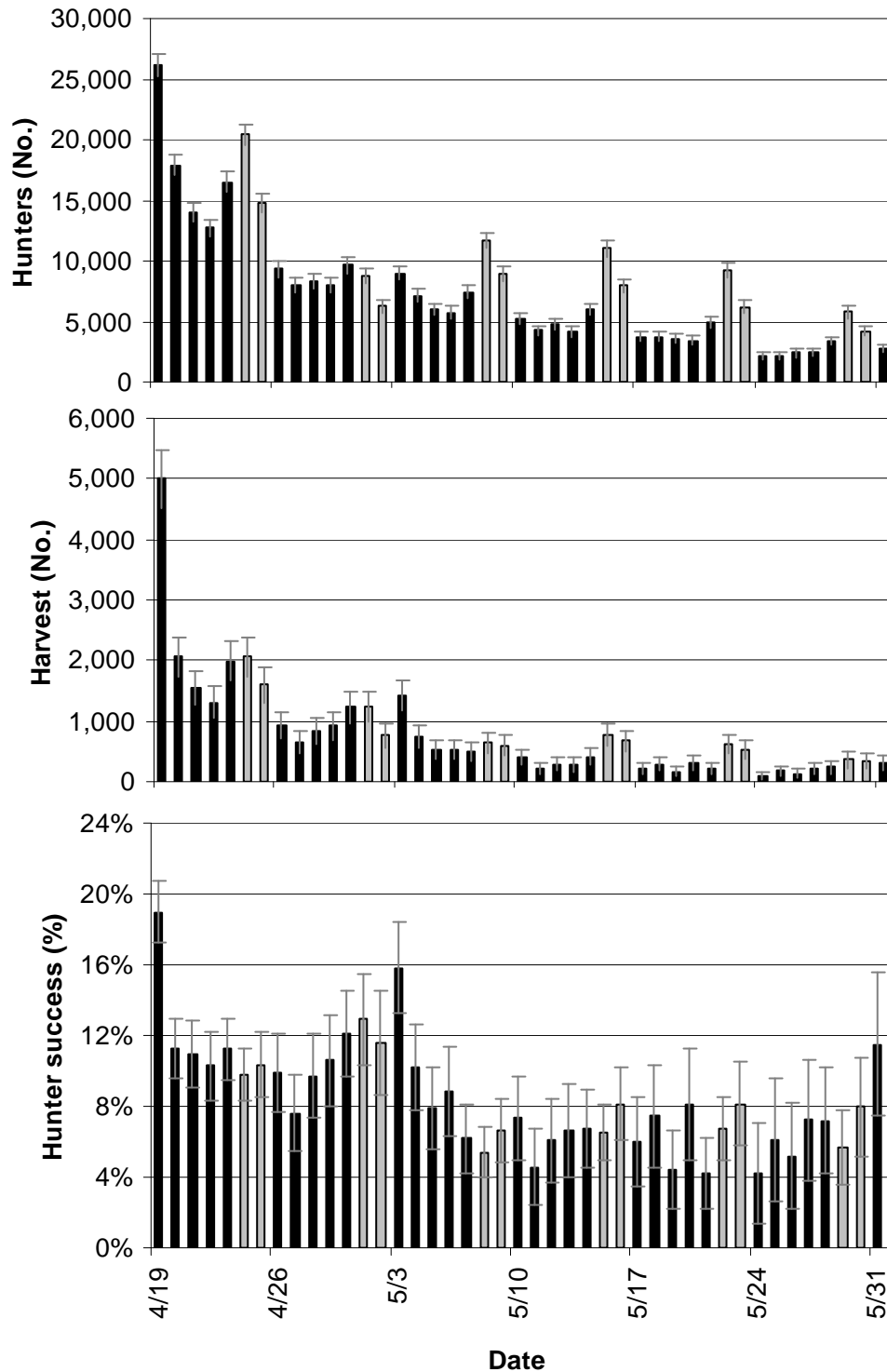


Figure 4. Estimated number of hunters, harvest, and hunter success by date during the 2010 Michigan spring turkey hunting season (includes all hunts). An additional $2,736 \pm 382$ birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

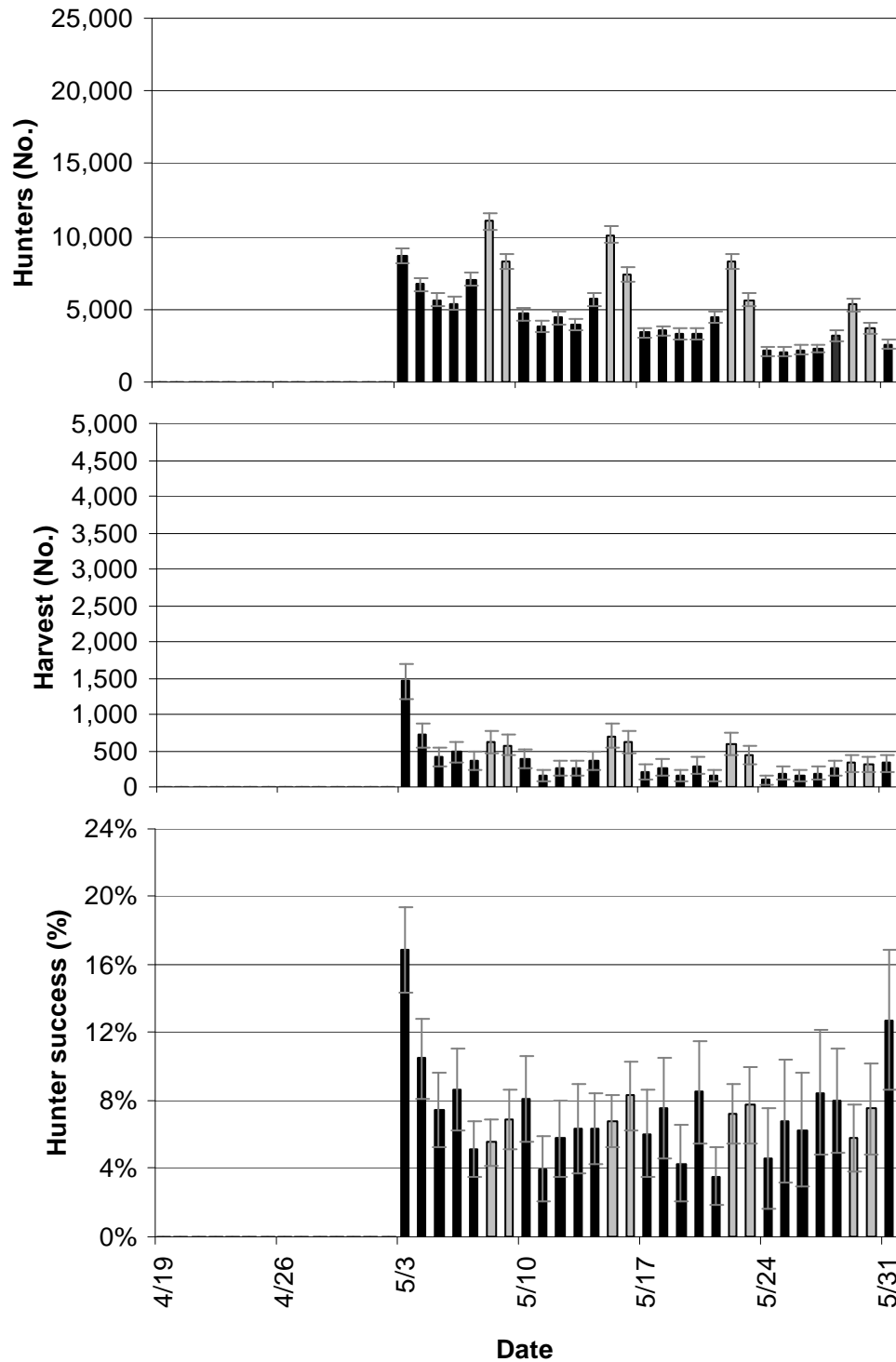


Figure 5. Estimated number of hunters, harvest, and hunter success by date during Hunt 234 of the 2010 Michigan spring turkey hunting season (May 3-31). An additional 625 ± 171 birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

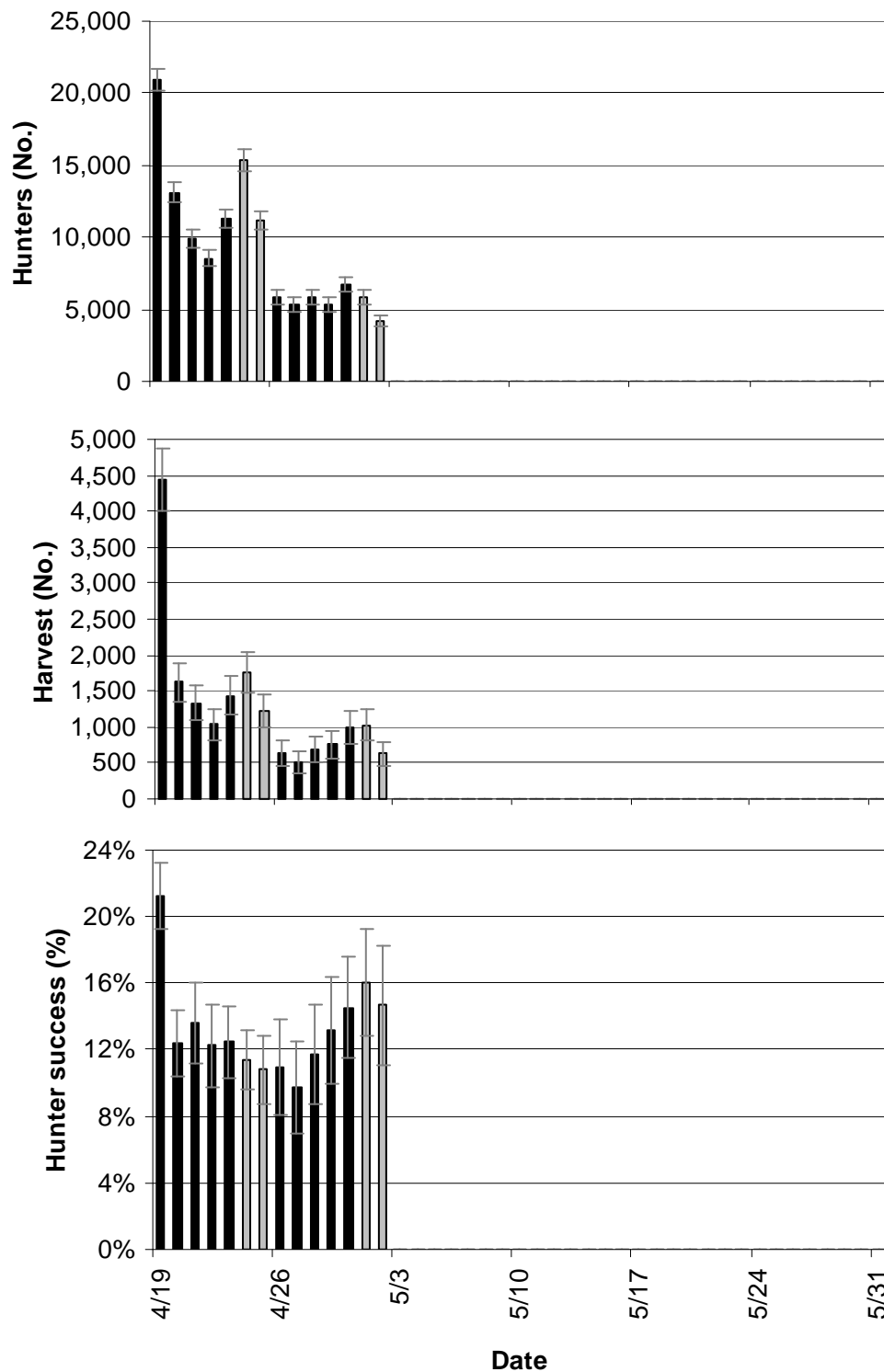


Figure 6. Estimated number of hunters, harvest, and hunter success by date during Hunt 301 of the 2010 Michigan spring turkey hunting season (April 19-May 2). An additional $1,657 \pm 295$ birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

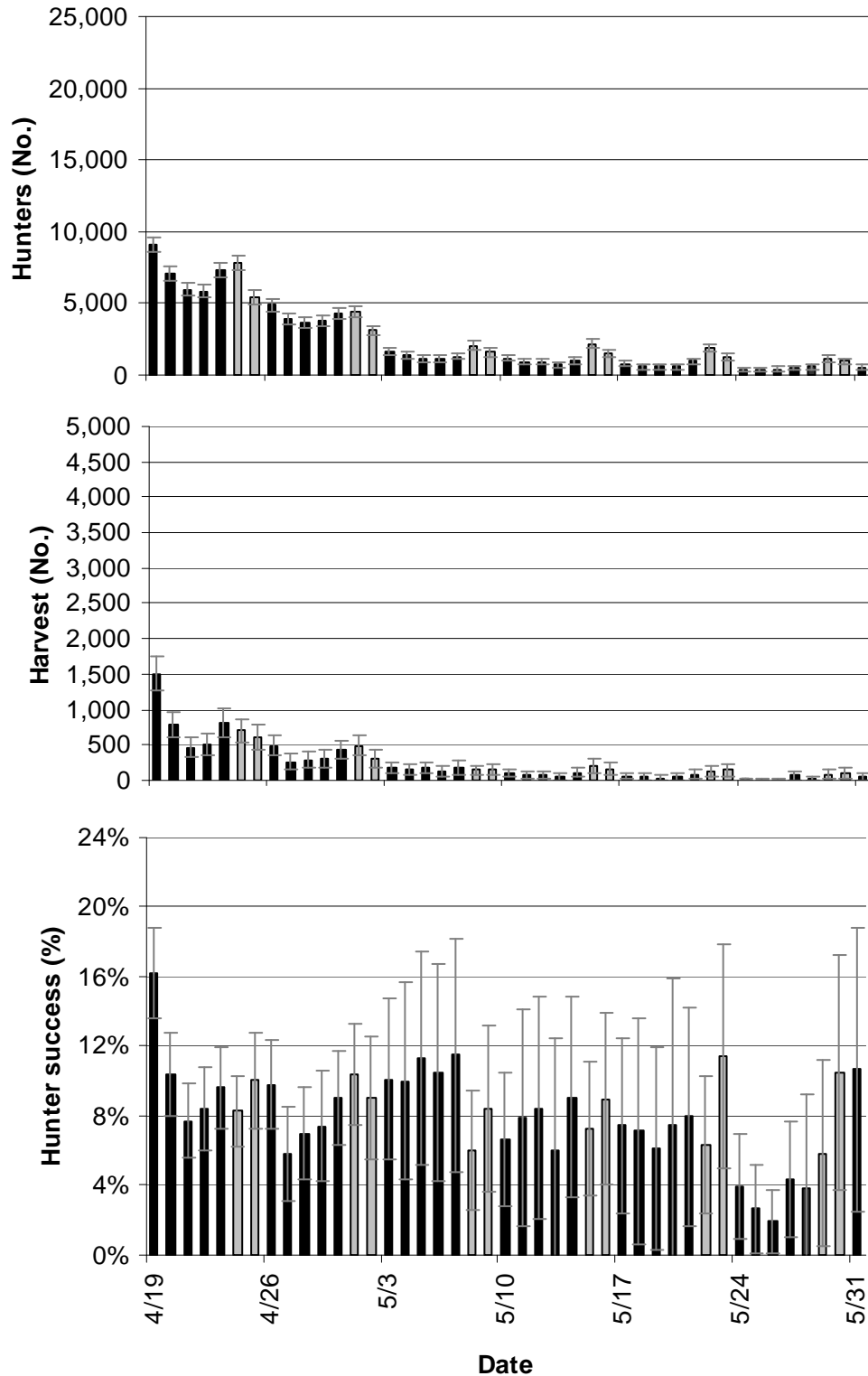


Figure 7. Estimated number of hunters, harvest, and hunter success by date during all hunts, except hunts 234 and 301 of the 2010 Michigan spring turkey hunting season. An additional 522 ± 174 birds were taken on unknown dates. Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval.

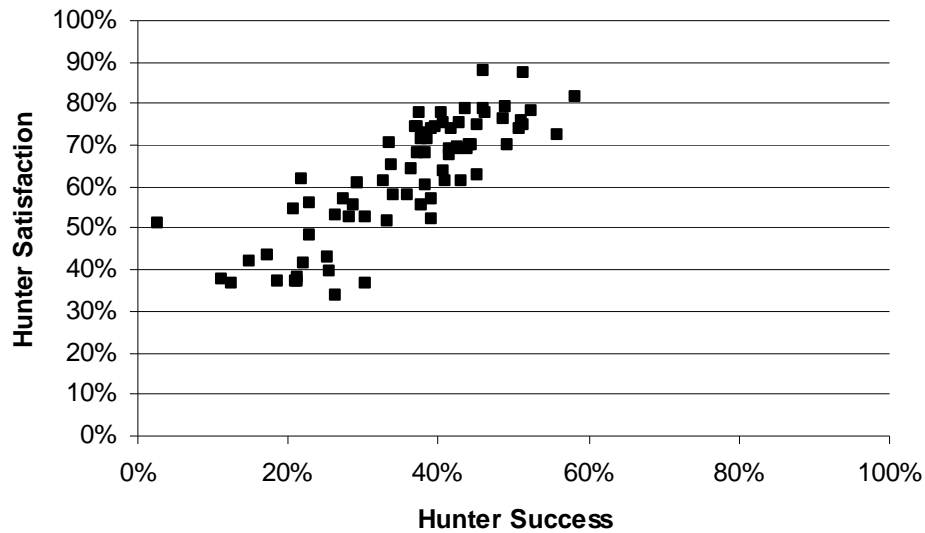


Figure 8. Relationship between hunter satisfaction (expressed as the percentage of hunters rating their hunting experience as excellent, very good, or good) and hunter success for each of 75 counties in Michigan during the 2010 spring turkey hunting season (included only counties with at least 30 hunters).

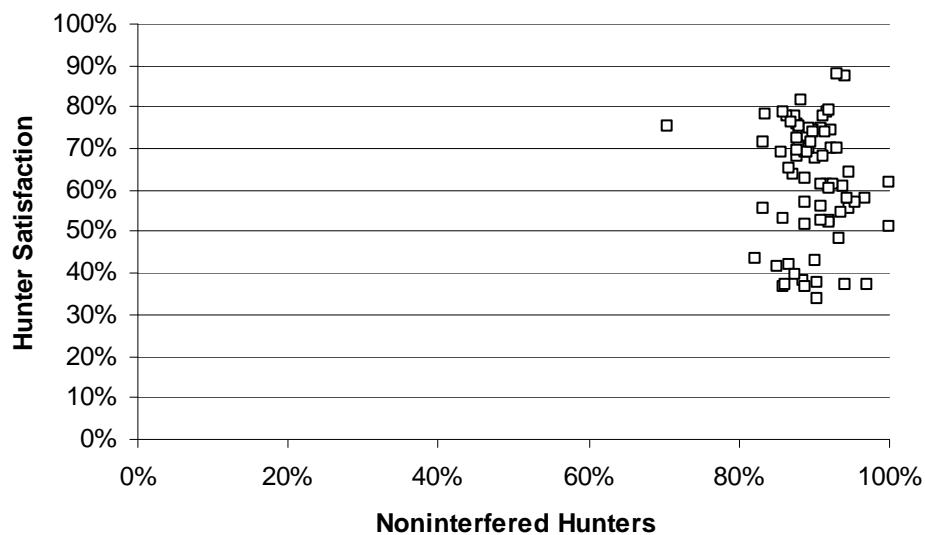


Figure 9. Relationship between hunter satisfaction (expressed as the percentage of hunters rating their hunting experience as excellent, very good, or good) and hunter interference for each of 75 counties in Michigan during the 2010 spring turkey hunting season (included only counties with at least 30 hunters). Noninterfered hunters were the proportion of hunters that indicated that they experienced no or only minor interference from other hunters.