



MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Wildlife Division Report No. 3487
July 2008

Printed by Authority of: P.A. 451 of 1994
Total Number of Copies Printed:15
Cost per Copy:.....\$1.12
Total Cost:\$16.80
Michigan Department of Natural Resources

2007 MICHIGAN FALL TURKEY HUNTER SURVEY

Brian J. Frawley

ABSTRACT

A survey of turkey hunters was conducted following the 2007 fall hunting season to determine turkey harvest and hunter participation. During the 2007 fall hunt, an estimated 16,500 hunters harvested about 5,300 turkeys. The number of people pursuing turkeys in 2007 decreased significantly by 5%, and hunting effort declined significantly by 14% from 2006. Hunter success was 32% in 2007, a significant increase from 28% in 2006. Although success improved, harvest in 2007 did not change significantly from 2006. Hunter satisfaction in 2007 improved significantly from 2006; about 64% of the hunters in 2007 rated their hunting experience as excellent, very good, or good (versus 60% satisfaction in 2006).

INTRODUCTION

Fall wild turkey (*Meleagris gallopavo*) hunting seasons were implemented in Michigan to help maintain turkey populations at levels matching biological and social carrying capacities. In 2007, 12 management units totaling about 34,976 square miles were open for fall turkey hunting during October 8-November 14 (Figure 1). The area and units open for hunting turkey in the Lower Peninsula (LP) were the same as in 2006. However, units in the Upper Peninsula (UP) were combined in 2007, and the area open to turkey hunting was expanded by about 3,000 square miles.

A person may purchase only one license for the fall turkey hunting season. People interested in obtaining a hunting license for the fall season could enter into a random license drawing conducted by the Department of Natural Resources (DNR). Applicants could choose one hunt area. Any licenses available after the drawing was completed were made available on a first-come, first-served basis to applicants unsuccessful in the



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

Equal Rights for Natural Resource Users

The Michigan Department of Natural Resources provides equal opportunities for employment and access to Michigan's natural resources. Both State and Federal laws prohibit discrimination on the basis of race, color, national origin, religion, disability, age, sex, height, weight or marital status under the U.S. Civil Rights Acts of 1964 as amended, 1976 MI PA 453, 1976 MI PA 220, Title V of the Rehabilitation Act of 1973 as amended, and the 1990 Americans with Disabilities Act, as amended.

If you believe that you have been discriminated against in any program, activity, or facility, or if you desire additional information, please write:
Human Resources, Michigan Department of Natural Resources, PO Box 30028, Lansing MI 48909-7528, or
Michigan Department of Civil Rights, Cadillac Place, 3054 West Grand Blvd, Suite 3-600, Detroit, MI 48202, or
Division of Federal Assistance, U.S. Fish & Wildlife Service, 4401 North Fairfax Drive, Mail Stop MBSP-4020, Arlington, VA 22203.

For information or assistance on this publication, contact Michigan Department of Natural Resources, Wildlife Division, P.O. Box 30444, MI 48909.
This publication is available in alternative formats upon request.

drawing. Beginning one week after licenses were available to unsuccessful applicants, all remaining licenses were made available to nonapplicants. Leftover licenses were available for 12 management units (Table 1). Licenses for units HA, HB, Q, T, and WA were valid on private lands only, while licenses for units G, GB, GC, J, L, M, and W were valid on either land ownership types (i.e., public or private land). Hunters were allowed to take one turkey of either sex with the harvest tag issued with their license.

The Natural Resources Commission and DNR have the authority and responsibility to protect and manage the wildlife resources of the state of Michigan. Harvest surveys are one of the management tools used to meet their statutory responsibility. Estimating harvest, hunting effort, and hunter satisfaction are among the primary objectives of these surveys.

METHODS

The DNR provided hunters the option to voluntarily report information about their turkey hunting activity via the Internet. This option was advertised in the hunting regulations booklet, on the DNR website, and in an email message that was sent to licensees that had provided an email address to the DNR (5,213 people). Hunters could report information anytime during the hunting season. Hunters reported whether they hunted, number of days spent afield, and whether they harvested a turkey. Successful hunters also were asked to report where their turkeys were taken (public or private land) and beard length of the harvested bird. Birds with a beard <4 inches long were classified as juveniles (<1 year old), while birds with longer beards were adults (≥ 1 year old) (Kelly 1975). Finally, hunters rated their overall hunting experience (excellent, very good, good, fair, or poor).

Following the 2007 fall turkey hunting season, a questionnaire was sent to 5,064 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 13 strata (Cochran 1977). Hunters were stratified based on the management unit where their license was valid (12 management units). Hunters that had voluntarily reported information about their hunting activity via the Internet before the mail survey sample was selected were treated as a thirteenth stratum.

Because estimates were based on information collected from random samples of hunting license buyers, these estimates were subject to sampling errors (Cochran 1977). Thus, a 95% confidence limit (CL) was calculated for each estimate. In theory, this confidence limit can be added and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval is a measure of the precision associated with the estimate and implies the true value would be within this interval 95 times out of 100. Unfortunately, there are several other possible sources of error in

surveys that are probably more serious than theoretical calculations of sampling error. They include failure of participants to provide answers (nonresponse bias), question wording, and question order. It is very difficult to measure these biases; thus, estimates were not adjusted for these possible biases.

Statistical tests are used routinely to determine the likelihood that the 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, if the study had been repeated (Payton et al. 2003).

Questionnaires were mailed initially during late November 2007, and up to two follow-up questionnaires were mailed to nonrespondents. Although 5,064 people were sent the questionnaire, 42 surveys were undeliverable resulting in an adjusted sample size of 5,022. Questionnaires were returned by 4,012 people, yielding an 80% adjusted response rate. In addition, 1,163 people voluntarily reported information about their hunting activity via the Internet.

RESULTS

In 2007, the DNR offered 59,050 licenses for sale, and hunters purchased 20,877 licenses for the fall turkey hunting season (Table 1). Licensees included 11,677 people that were successful in the drawing for a license and 274 applicants that were unsuccessful in the drawing. In addition to the applicants, 8,926 people that had not entered into the drawing purchased a license.

The number of licenses sold in 2007 decreased 5% from 2006. In 2007, about 16,533 hunters spent 90,231 days afield pursuing turkeys (\bar{x} = 5.5 days/hunter) and harvested 5,346 birds (Table 2). The number of people pursuing turkeys in 2007 decreased significantly by 5%, and hunting effort declined significantly by 14% from 2006. About 95% of the hunters that went afield were men ($15,705 \pm 279$), and 5% of the hunters were women (829 ± 123). The average age of the license buyers was 48 years (Figure 2). About 6% of the license buyers were younger than 17 years old (1,271).

Hunter success was 32% in 2007, a significant increase from 28% in 2006. Although success improved, harvest in 2007 did not change significantly from 2006 (Figure 3). Counties with hunters taking 200 or more turkeys in 2007 included Allegan, Delta, and Shiawassee (Table 3).

About 92% of turkey hunters hunted solely on private land, 6% hunted on public land only, and 2% hunted on both private and public lands (Table 4). Of the 5,346 turkeys harvested in 2007, 95% of these birds were taken on private land (5,075), while about 5% of the harvest (249) was taken on public land (Tables 5 and 6). Additionally, 21 birds were harvested from land of unknown ownership. About 59% of the harvested

birds had a beard ($3,150 \pm 279$). Most of these bearded birds (80%) were adults ($2,519 \pm 206$); 18% were juvenile birds (578 ± 97).

Of the 16,533 turkey hunters in 2007, nearly $64 \pm 2\%$ rated their hunting experience as either excellent ($2,763 \pm 211$), very good ($3,178 \pm 223$), or good ($4,608 \pm 265$) (Table 7). About $20 \pm 1\%$ of the hunters rated their experience as fair ($3,356 \pm 230$ hunters), while $13 \pm 1\%$ of the hunters rated their experience as poor ($2,181 \pm 189$ hunters). Additionally, about 2% of the hunters (367 ± 88 hunters) failed to rate their hunting experience. Changes in hunter satisfaction generally parallel changes in hunter success (Figure 4). Between 2006 and 2007, both hunter success (32% versus 28%) and satisfaction (64% versus 60%) improved significantly.

ACKNOWLEDGEMENTS

I thank all the turkey hunters that provided information. Autumn Feldpausch, Theresa Riebow, and Becky Walker completed data entry. Kraig Korroch and Chris Larson developed the internet harvest reporting application. Marshall Strong prepared the figure showing turkey management unit boundaries. Mike Bailey, Doug Reeves, Sara Schaefer, and Al Stewart reviewed a previous 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.
- 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.



Figure 1. Management units open for fall turkey hunting in Michigan, 2007.

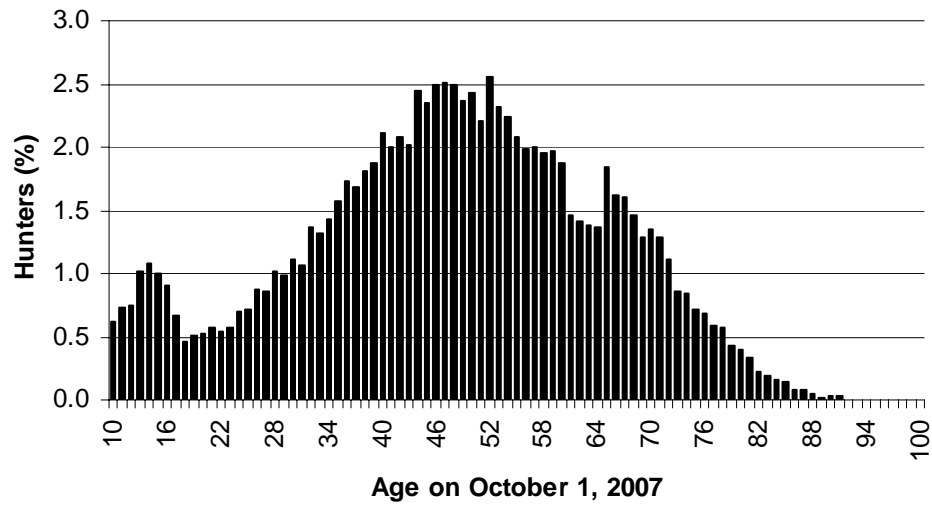


Figure 2. Age of people that purchased a turkey hunting license in Michigan for the 2007 fall hunting season ($\bar{x} = 48$ years). Licenses were purchased by 20,877 people.

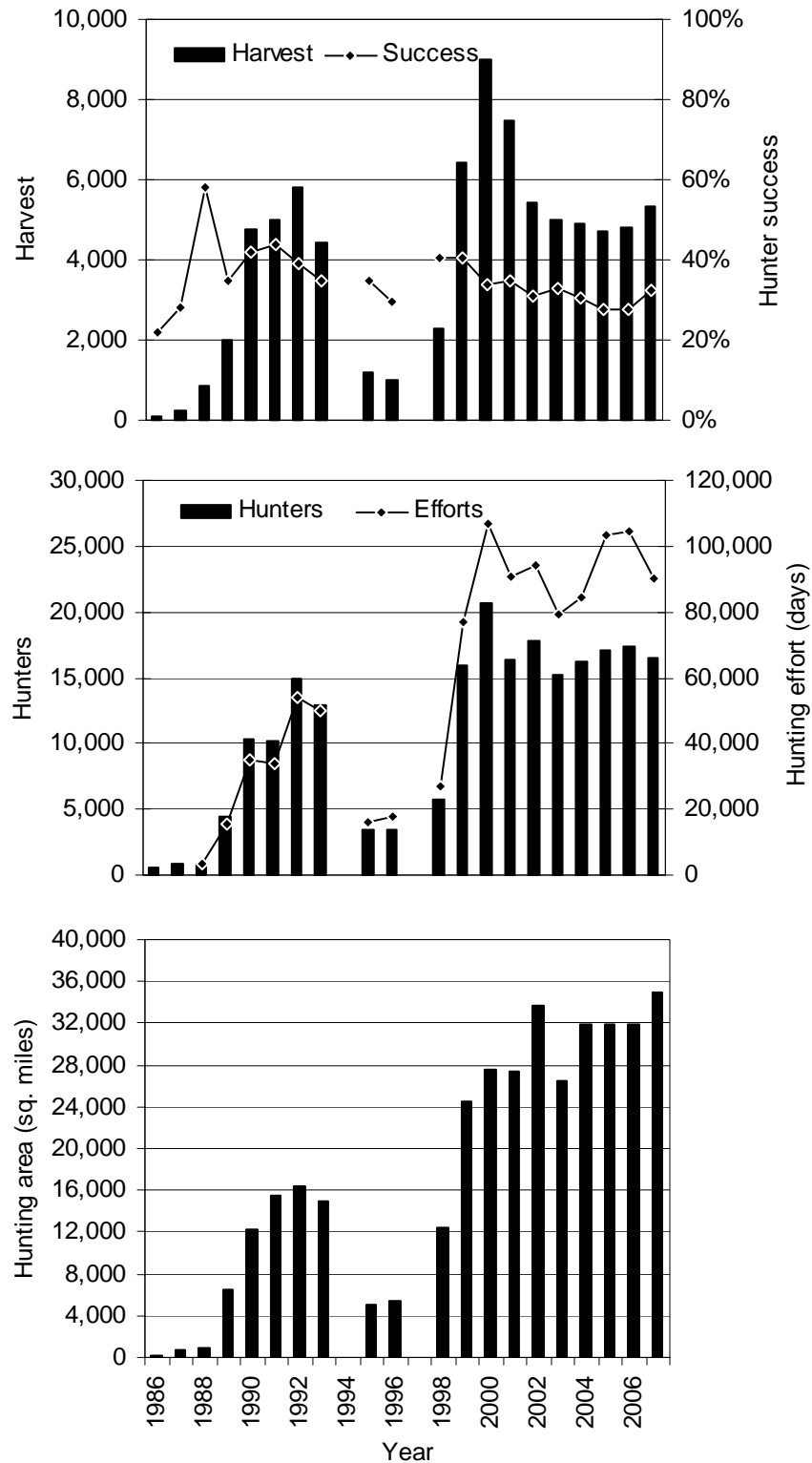


Figure 3. Number of hunters, harvest, hunting efforts, hunting success, and hunting area during the fall turkey hunting season, 1986-2007. Turkeys were not hunted during the fall in 1994 and 1997.

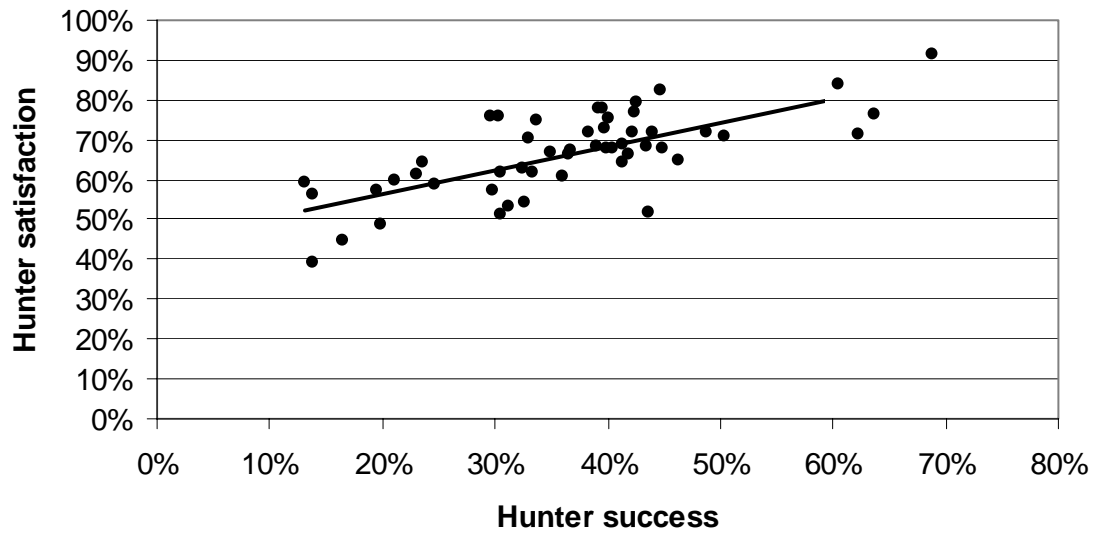


Figure 4. Hunter satisfaction (expressed as the percentage of hunters rating their hunting experience as excellent, very good, or good) associated with hunter success for each of 52 counties in Michigan during the 2007 fall turkey hunting season (included only counties with at least 20 hunters).

Table 1. Number of hunting licenses available and people applying for licenses during the 2007 Michigan fall turkey hunting season.

Management unit	Licenses available (quota) ^a	Number of eligible applicants	Number of applicants successful in drawing	Number of licenses remaining after drawing	Number of licenses purchased by successful applicants	Number of leftover licenses purchased by unsuccessful applicants	Number of leftover licenses purchased by people not in the drawing	Licenses sold
G	7,200	1,681	1,427	5,773	970	65	1,060	2095
GB	4,250	1,273	1,195	3,055	796	21	714	1531
GC	6,200	3,094	2,534	3,666	1,684	155	1,667	3506
HA ^b	1,100	1,073	1,073	27	688	2	18	708
HB ^b	600	401	401	199	271	1	159	431
J	2,000	1,554	1,554	446	971	10	366	1347
L	21,000	2,987	2,987	18,013	2,056	8	2,464	4528
M	8,500	1,025	1,025	7,475	688	0	991	1679
Q ^b	3,000	2,475	2,475	525	1,538	4	450	1992
T ^b	2,000	1,541	1,541	459	1,071	4	390	1465
W	2,200	816	816	1,384	539	2	374	915
WA ^b	1,000	639	639	361	405	2	273	680
Statewide	59,050	18,559	17,667	41,383	11,677	274	8,926	20,877

^aQuotas were assigned by hunts within each management unit.

^bLicenses were valid on private lands only.

Table 2. Number of hunters, harvest, hunting success, and hunting efforts during the 2007 Michigan fall turkey hunting season.

Manage- ment unit	Hunters		Harvest		Hunting success		Hunting efforts (days)		Days per hunter (\bar{x})	
	Total	95% CL	Total	95% CL	%	95% CL	Total	95% CL	Mean	95% CL
G	1,693	72	520	78	31	4	9,456	900	5.6	0.5
GB	1,256	51	420	58	33	4	6,485	623	5.2	0.5
GC	2,714	130	810	129	30	5	14,598	1,485	5.4	0.5
HA ^a	606	20	196	26	32	4	3,169	283	5.2	0.4
HB ^a	337	16	101	16	30	5	1,919	232	5.7	0.6
J	1,003	53	291	49	29	5	4,993	692	5.0	0.6
L	3,442	174	1,019	167	30	5	20,571	2,292	6.0	0.6
M	1,317	62	589	71	45	5	6,607	745	5.0	0.5
Q ^a	1,629	65	540	74	33	4	9,307	863	5.7	0.5
T ^a	1,239	44	415	54	34	4	6,509	529	5.3	0.4
W	723	32	240	34	33	4	3,496	324	4.8	0.4
WA ^a	574	20	204	26	36	4	3,121	272	5.4	0.4
Statewide ^b	16,533	264	5,346	269	32	2	90,231	3,321	5.5	0.2

^aLicenses were valid on private lands only.

^bColumn totals may not equal statewide totals because of rounding errors.

Table 3. Number of hunters, hunting effort, harvest, hunter success, and hunter satisfaction during the 2007 Michigan fall turkey hunting season, summarized by county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL
Alger	109	37	475	210	33	21	31	16	62	17
Allegan	623	137	3,282	1,070	273	94	44	12	72	11
Antrim	244	45	1,058	273	109	33	45	10	68	10
Baraga	0	0	0	0	0	0	0	0	0	0
Barry	495	123	2,845	1,005	97	53	20	10	57	13
Bay	98	20	471	133	43	14	44	11	52	11
Berrien	195	82	1,775	996	26	29	13	14	59	21
Branch	168	75	622	345	102	60	61	22	84	16
Calhoun	368	110	1,942	911	124	66	34	15	75	13
Cass	203	84	1,467	770	34	35	17	16	45	21
Charlevoix	138	36	537	176	50	22	36	13	66	13
Cheboygan	210	43	1,085	335	64	25	31	10	51	11
Clinton	255	59	1,354	424	85	35	33	12	62	12
Delta	340	59	1,365	324	212	49	62	9	71	9
Dickinson	212	50	863	292	107	37	50	13	71	11
Eaton	218	54	1,200	474	91	36	42	13	66	12
Emmet	103	31	613	352	24	15	23	13	62	15
Genesee	254	56	1,132	375	99	36	39	11	68	11
Gogebic	0	0	0	0	0	0	0	0	0	0
Gratiot	262	60	1,283	397	108	40	41	12	69	11
Hillsdale	297	85	1,248	498	74	44	25	13	59	15

^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.

Table 3 (continued). Number of hunters, hunting effort, harvest, hunter success, and hunter satisfaction during the 2007 Michigan fall turkey hunting season, summarized by county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL
Houghton	0	0	0	0	0	0	0	0	0	0
Huron	271	47	1,389	353	100	30	37	9	67	9
Ingham	334	89	1,799	646	131	57	39	14	78	12
Ionia	222	55	1,595	524	47	26	21	11	60	13
Iron	189	48	1,159	484	82	32	43	13	68	13
Isabella	262	35	1,285	248	85	23	32	7	63	7
Jackson	412	98	1,999	628	122	55	30	11	76	11
Kalamazoo	359	108	1,441	629	161	75	45	16	82	12
Kent	421	58	2,065	412	178	42	42	8	72	7
Lapeer	452	69	2,692	593	183	47	40	8	68	8
Lenawee	187	68	755	349	44	35	24	16	64	18
Livingston	424	99	2,483	806	140	59	33	12	70	11
Macomb	85	34	460	210	12	12	14	13	56	20
Marquette	98	35	368	164	31	19	31	17	53	18
Mecosta	337	16	1,919	232	101	16	30	5	57	5
Menominee	241	52	1,388	417	79	31	33	11	55	12
Midland	312	36	1,476	251	152	29	49	7	72	6
Montcalm	437	73	2,261	533	167	49	38	9	72	8
Muskegon	272	50	1,488	400	109	33	40	10	75	9
Newaygo	306	29	1,410	200	111	21	36	6	61	6
Oakland	211	50	1,096	389	84	33	40	12	78	10

^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.

Table 3 (continued). Number of hunters, hunting effort, harvest, hunter success, and hunter satisfaction during the 2007 Michigan fall turkey hunting season, summarized by county.

County	Hunters ^a		Hunting efforts (days) ^a		Harvest ^a		Hunter success		Hunter satisfaction ^b	
	Total	95% CL	Total	95% CL	Total	95% CL	%	95% CL	%	95% CL
Oceana	169	24	898	182	67	17	40	8	73	7
Ontonagon	0	0	0	0	0	0	0	0	0	0
Otsego	179	40	1,000	315	36	19	20	10	49	12
Ottawa	304	52	1,516	364	130	36	43	9	79	8
Saginaw	316	28	1,697	235	146	23	46	6	65	6
St. Clair	384	66	2,080	490	153	44	40	9	68	9
St. Joseph	180	79	1,118	796	25	29	14	15	39	22
Sanilac	376	52	1,974	392	155	37	41	8	65	8
Schoolcraft	43	24	249	189	28	19	64	26	76	23
Shiawassee	293	85	1,237	457	202	72	69	14	91	9
Tuscola	356	51	2,028	353	151	36	42	8	77	7
Van Buren	439	120	2,704	1,069	133	69	30	13	76	12
Washtenaw	232	75	1,402	592	81	46	35	16	67	16
Unknown	3,188	229	17,185	1,794	169	57	5	2	49	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.

Table 4. Number and proportion of hunters hunting on private and public lands during the fall 2007 Michigan turkey hunting season.

Management unit	Private lands only				Public lands only				Both private and public lands				Unknown ownership			
	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL	Total	95% CL	%	95% CL
G	1,630	76	96	2	52	28	3	2	11	13	1	1	0	0	0	0
GB	1,198	55	95	2	30	18	2	1	29	18	2	1	0	0	0	0
GC	2,666	132	98	1	31	27	1	1	17	22	1	1	0	0	0	0
HA ^a	606	20	100	0	0	0	0	0	0	0	0	0	0	0	0	0
HB ^a	337	16	100	0	0	0	0	0	0	0	0	0	0	0	0	0
J	634	60	63	5	217	43	22	4	148	38	15	4	4	7	0	1
L	3,169	186	92	3	235	86	7	2	39	35	1	1	0	0	0	0
M	799	75	61	5	359	61	27	4	146	42	11	3	14	14	1	1
Q ^a	1,629	65	100	0	0	0	0	0	0	0	0	0	0	0	0	0
T ^a	1,238	44	100	0	0	0	0	0	0	0	0	0	1	0	0	0
W	684	34	95	2	34	14	5	2	5	4	1	1	0	0	0	0
WA ^a	573	20	100	0	0	0	0	0	0	0	0	0	1	0	0	0
Statewide ^b	15,163	280	92	1	958	123	6	1	393	74	2	0	20	15	0	0

^aLicenses were valid on private lands only.

^bNumber of hunters may not equal statewide totals because of rounding errors.

Table 5. Statewide turkey harvest during the 2007 Michigan fall turkey hunting season, summarized by land ownership type and turkey sex and age.

Land ownership Turkey sex and age	Harvest	
	Total	95% CL
Private lands		
Males	3,082	223
Juveniles	564	96
Adults	2,465	205
Unknown	52	34
Females	1,992	175
Unknown sex	2	3
Subtotal – Private lands ^a	5,075	266
Public lands		
Males	64	27
Juveniles	14	14
Adults	50	23
Unknown	0	0
Females	185	52
Unknown sex	0	0
Subtotal – Public lands ^a	250	57
Unknown lands	21	16
Grand total ^a	5,346	269

^aColumn totals may not equal subtotals and grand total because of rounding errors.

Table 6. Number of turkeys harvested on private and public lands during the 2007 Michigan fall turkey hunting season.

Management unit	Private lands		Public lands		Unknown ownership	
	Total	95% CL	Total	95% CL	Total	95% CL
G	514	77	5	9	0	0
GB	416	58	4	7	0	0
GC	808	129	2	0	0	0
HA ^a	196	26	0	0	0	0
HB ^a	101	16	0	0	0	0
J	255	47	24	13	12	12
L	991	166	29	29	0	0
M	404	64	176	46	9	11
Q ^a	540	74	0	0	0	0
T ^a	415	54	1	0	0	0
W	231	34	9	8	0	0
WA ^a	204	26	0	0	0	0
Statewide ^b	5,075	266	250	57	21	16

^aLicenses were valid on private lands only.

^bColumn totals may not equal statewide total because of rounding errors.

Table 7. How hunters rated their hunting experience during the 2007 Michigan fall turkey hunting season.

Management unit	Satisfaction level (% of hunters)					
	Excellent	Very good	Good	Fair	Poor	No answer
G	19	20	26	20	14	2
GB	21	22	29	17	9	2
GC	18	18	32	19	11	2
HA ^a	16	22	25	22	14	2
HB ^a	14	17	27	22	20	1
J	14	14	28	23	20	1
L	16	18	29	20	13	3
M	13	22	30	23	10	2
Q ^a	18	21	25	20	14	2
T ^a	18	20	27	23	11	2
W	13	19	31	19	16	1
WA ^a	12	19	26	22	17	5
Statewide	17	19	28	20	13	2

^aLicenses were valid on private lands only.