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2018 MICHIGAN ELK HUNTER SURVEY

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ABSTRACT

Elk hunters were contacted after the 2018 hunting season to estimate hunter participation, hunter satisfaction, and elk seen and harvested. In 2018, an estimated 198 hunters spent about 1,007 days afield hunting elk. Hunters reported 5,312 elk observations (\bar{x} = 26.8 elk seen /hunter), and they harvested 154 elk. About 78% of hunters harvested an elk in 2018. The average number of days required to harvest an elk was 6.5 days. About 81% of hunters rated their overall hunting experience as very good or good. About 76% of elk hunters (150) had a hunting guide assist with their hunt, and most of these hunters (92%) indicated guides increased the quality of their elk hunt. The average elk hunter devoted 3.2 hunting trips to hunt elk in 2018. Elk hunters took an estimated 591 hunting trips. Hunters spent an average of \$948 per year on hunting trips. Collectively, elk hunters spent about \$187,691 on hunting trips to hunt elk.

INTRODUCTION

Elk (*Cervus canadensis*) were extirpated from Michigan in about 1875 (Murie 1951). The current elk herd was the result of a release of seven animals in various city parks and public institutions in 1918 about three miles southeast of Wolverine (Stephenson 1942). The herd grew steadily with estimates of 300 to 400 in 1939 (Shapton 1940) and 900 to 1,000 in 1958 (Moran 1973). During 1964-1965, 477 elk were harvested during limited elk hunting seasons to reduce crop damage; however, annual hunting seasons were not initiated until 1984. The objectives of the annual elk hunts were to balance elk numbers and distribution with ecological, economic, and social concerns. The Natural Resources Commission (NRC) and the Department of Natural Resources (DNR) annually set license quotas for hunts with a goal of maintaining an elk population between 500 and 900 animals during the winter in the NLP (Michigan DNR 2012).



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A limited number of hunters have been allowed to hunt elk in Michigan each year since 1984. Between 1984 and 2004, applicants for hunts each year had the same probability of being selected for a license (i.e., simple random selection among eligible applicants). In 2005, a random weighted lottery system was adopted. This gave people applying for many years a higher probability of being selected than people applying fewer years, although licensees were selected by region of residence in the same proportion as applications were received. This system was designed to provide some advantage to multi-year applicants while continuing to provide an opportunity for new applicants. This system assigned applicants a chance (opportunity to be selected) each year they had applied. Thus, a person applying in 2016, 2017, and 2018 would have three chances to be selected in the 2018 drawing, while someone only applying in 2018 would have just one chance. Applicants also had the option to purchase a chance rather than applying for a license, thus increasing the probability of being selected in future drawings.

Two types of elk hunting licenses (Any Elk and Antlerless Only) were allocated among applicants using two separate drawings (one drawing for each license type) in 2018. Only Michigan residents that were at least 10 years of age or youth (<10 years old) that were licensed under the Mentored Youth Hunting Program could apply for licenses. When individuals applied for an elk license, they indicated whether they were willing to harvest only an antlered bull elk (male elk) or whether they were willing to harvest either an antlered bull or antlerless elk (female elk or calf). The first drawing (drawing for an Any Elk license) included all applicants. Applicants successful in the Any Elk license drawing could purchase a license entitling them to take either an antlered bull or antlerless elk. The second drawing (Antlerless Only license drawing) allocated antlerless-only elk licenses among applicants that had indicated they were willing to take an antlerless elk. Those successful in the Antlerless Only license drawing could only harvest an antlerless elk. A person issued an antlerless-only elk license was ineligible for an elk license for 10 years, while a person issued an any-elk license was ineligible for any type of elk hunting license during the remainder of their life.

The Pure Michigan Hunt (PMH) is a special multi-species hunting opportunity that was offered in Michigan 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 elk hunting licenses were valid for all areas open for hunting elk and during all elk hunting periods. Furthermore, the PMH license holder could hunt during any season until their elk harvest tag was filled.

After the drawings for Any Elk and Antlerless Only licenses were conducted, the DNR assigned successful applicants to a hunt period and elk management unit, except elk hunters assigned to hunt in elk management units F or G could also hunt in Elk Management Unit X (Figure 1). All successful applicants were required to attend a half-day orientation session hosted by the DNR prior to their hunt. Upon completion of this training, each successful applicant was issued their elk license along with other pertinent hunt information. In 2018, seven different types of elk licenses were available, corresponding to the different

combinations of type of elk, elk management units, and hunt periods for which applicants could be drawn (Table 1).

In 2018, the DNR allocated 200 licenses among 35,190 eligible applicants, excluding the PMH drawing (Table 1). Licenses were valid on all land ownership types. Hunters could only harvest one elk, and hunters with an antlerless-only license could not take an elk with antlers. Elk could be harvested with a firearm, crossbow, or archery equipment. Hunters could not use bait (e.g., grain, fruit, vegetables) to attract elk. Successful hunters were required to take their elk to an official DNR checking station within 24 hours of taking an elk.

The DNR has the authority and responsibility to protect and manage elk in Michigan while the NRC has the authority to regulate the taking of elk (Natural Resources and Environmental Protection Act, Public Act 451 of 1994). Harvest surveys are one of the management tools used to accomplish the DNR's statutory responsibility. Estimating harvest, hunting effort, and hunter satisfaction are among the primary objectives of these surveys. Estimates derived from harvest surveys, as well as harvest reported by hunters at mandatory checking stations, and other indices, are used to monitor elk populations and establish harvest regulations.

METHODS

Following the 2018 elk hunting season, a questionnaire (Appendix A) was sent to everyone who obtained an elk hunting license for the 2018 hunting season (198 licensees). License buyers receiving the questionnaire were asked to report whether they hunted, number of days spent afield, hunt location, the number of elk seen, whether they harvested an elk, and the type of hunting equipment used. Hunters also reported whether other hunters caused interference during their hunt. Successful hunters were asked to report harvest location, sex of the elk taken, and type of hunting equipment used. Hunters also were asked to report how satisfied they were with the number of elk seen, number of opportunities they had to take an elk, and their overall elk hunting experience.

Although estimating harvest, hunter numbers, and hunting effort were the primary objectives of the harvest survey, it also provided an opportunity to collect information about management issues. Questions were added to determine how much money was spent hunting elk, how frequently hunters were assisted by hunting guides, and what services were provided by these guides. Additionally, hunters were asked about satisfaction with the DNR hunter orientation session and hunting guides.

Estimates were calculated using a stratified random sampling design that included seven strata (Cochran 1977). Hunters were stratified based on their license type and the hunt period and unit for which their license was valid (Table 1). The estimate of the mean number of days required to harvest an elk was calculated using a different ratio for each stratum (i.e., separate ratio estimator). The number of elk registered from each stratum was used as an auxiliary variate to improve the precision of the ratio estimates.

A 95% confidence limit (CL) was calculated for each estimate. The CL 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 that 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 the 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 that the difference between the means was larger than would be expected 95 out of 100 times if the study had been repeated (Payton et al. 2003).

Questionnaires were mailed initially during early January 2019, and up to two follow-up questionnaires were mailed to nonrespondents. One hundred sixty-five of the 198 people sent a questionnaire returned it, yielding an 83% response rate.

RESULTS

In 2018, 203 licenses (including the Pure Michigan Hunt) were available for purchase, which was the same number of licenses available in 2017. In 2018, 198 elk hunting licenses were purchased (Table 1), compared to 199 licenses sold in 2017 (Figure 3). Most of the people buying a license in 2018 were men (92%), and the average age of the license buyers was 53 years (Figure 2). About 4% of the license buyers (8) were younger than 17 years old. Among the license buyers that hunted elk in 2018, the average number of years they had hunted in Michigan was 38 ± 1 years. In addition, $31 \pm 3\%$ of these hunters had hunted elk (including outside of Michigan) prior to 2018.

All license buyers hunted elk in 2018 (198 hunters, Table 2). These hunters spent 1,007 days afield ($\bar{x} = 5.1$ days/hunter). The total number of days spent hunting in 2018 was not significantly different from the 2017 estimate (Figure 3). In addition, the number of days hunted per elk hunter in 2018 was not significantly different from 2017 (5.1 versus 5.0 days hunted per hunter in 2017).

In 2018, hunters reported 5,312 elk observations ($\bar{x} = 26.8$ elk seen/hunter), and they harvested an estimated 154 elk. Elk seen does not represent different animals seen because elk could be double counted and reported by multiple hunters. The number of elk seen and the number of elk harvested in 2018 was not significantly different from the 2017 estimates.

Montmorency, Otsego, and Cheboygan counties had the highest number of elk hunters and elk harvested during 2018 (Table 3). The average number of days hunted per harvested elk for all hunts was 6.5 days in 2018 (Table 2, Figure 4), which was not significantly different from the estimate reported in 2017 (6.2 days).

About 28% of the elk hunters hunted on private lands only in 2018, 23% hunted on public lands only, and 46% hunted on both private and public lands (Table 4). Elk hunters spent 248 days afield on private land only, 331 days hunting on public land only, and 425 days hunting on both private and public lands (Table 5). Of the estimated 154 elk harvested in 2018,

61% of these elk (95) were taken on private land (Table 6). About 37% of harvested elk (57) were taken on public land.

Of the elk harvested, 40% were antlered bulls (62) and 60% were antlerless cows or calves (92, Table 7). Overall, 78% of hunters harvested an elk in 2018 (Table 2). Hunter success ranged from 60-100% among the hunt periods (Table 2). Hunter success in 2018 was not significantly different from 2017 (78% versus 82% in 2017, Figure 3).

An estimated $99 \pm 1\%$ of hunters used a firearm while hunting elk, and about $2 \pm 1\%$ of hunters used a bow (crossbow, recurve, compound or long bow). About $46 \pm 3\%$ of successful hunters helped move their elk from the kill site to a vehicle. While $53 \pm 4\%$ of the hunters received assistance from a hunting companion; $73 \pm 3\%$ of the hunters had assistance from a hunting guide; $20 \pm 3\%$ of the hunters had assistance from a landowner, and $15 \pm 2\%$ of the hunters received assistance from a DNR employee.

About 68% of elk hunters rated the number of elk seen during the 2018 hunting season as very good or good, and 22% rated elk seen as poor or very poor (Table 8). The proportion of hunters with a favorable opinion about the number of elk seen in 2018 was not significantly different from 2017 (68% versus 67% in 2017). About 52% of hunters rated the number of chances they had to take an elk during the 2018 hunting season as very good or good, and 27% rated their chances as poor or very poor (Table 9). The proportion of hunters with a favorable opinion about their chances to take an elk was significantly lower in 2018 than in 2017 (52% versus 60% in 2017).

About 81% of hunters rated their hunting experiences as very good or good, and 10% rated their hunting experiences as poor or very poor (Table 10). The proportion of hunters with a favorable opinion about their hunting experiences in 2018 was not significantly different from 2017 (81% in both years, Figure 3).

Hunter satisfaction was affected by many factors such as hunting success and whether hunting activities were completed without interference (Figure 5). In 2018, 12% of the hunters reported that interference was a major problem; 29% experienced minor levels of interference, and 59% reported no interference (Table 11). The proportion of hunters that reported that interference was a major problem in 2018 was not significantly different than in 2017 (12% versus 11% in 2017). Among hunters reporting interference (major and minor interference combined) in 2018, the most common source of interference was another elk hunter ($76 \pm 4\%$); while $15 \pm 4\%$ of interfered hunters reported interference from other types of hunters.

About 76% of elk hunters (150) had a hunting guide assist with their hunt (Table 12). Most hunters using a guide ($62 \pm 3\%$) reported their guide was always with them when they were hunting elk. Another $20 \pm 3\%$ of hunters with guides indicated their guide was present 75-99% of the time while hunting, and $4 \pm 1\%$ of hunters reported their guide accompanied them 50-74% of the time. In contrast, about $13 \pm 2\%$ of hunters using guides reported their guide was with them in the field less than 50% of the time.

Among the hunters using a hunting guide, 79% of hunters (118) paid for the services provided

by a guide (Table 12). Hunters using guides most frequently (52%) paid between \$101 and \$1,000 for the guide services. Hunting guides most frequently selected the hunt area (89%), provided hunting advice (88%), and helped remove elk from the field (71%, Table 13).

The ability to provide a hunt area having elk (94%) and providing an area with a good chance of taking an elk (92%) were among the most important services wanted by hunters that had used a guide (Table 14). In addition, hunters using guides wanted their guide to use ethical hunting methods (96%). Having a guide with access to private lands was also important to most hunters (70%). Guide services such as providing hunting equipment (e.g., off-road vehicles), lodging, and food were generally not important factors for most hunters using a guide.

Overall, most hunters using a guide indicated that their guide had either greatly increased ($67 \pm 3\%$) or had increased ($24 \pm 3\%$) the quality of their elk hunt. In contrast, $4 \pm 1\%$ were neutral with their guide's service, and $3 \pm 1\%$ of hunters indicated that their guide had decreased or greatly decreased the quality of their hunt.

Most hunters using a guide were satisfied by their guides' ability to provide a hunting area having elk (94%) and to provide an area where they had a chance to harvest an elk (91%, Table 15). In addition, most hunters (91%) indicated that their hunting guide had used ethical hunting methods.

Most hunters indicated they were satisfied by the content of the DNR orientation session (93%, Table 16). Furthermore, most hunters ($\geq 91\%$) were satisfied by the facilities where the session occurred, the session length, and the handouts provided at the session.

The average elk hunter devoted 3.2 ± 0.2 hunting trips to hunt elk in 2018. The trips included hunts that took place during a single day and hunts that required an overnight stay away from home. Elk hunters took an estimated 591 ± 45 hunting trips. Among hunters that reported their expenditures, active hunters spent an average of $\$948 \pm \62 per year on hunting trips. Expenditures on long trips included the costs of food, travel, and lodging, while short trips may have only included the cost of fuel. Collectively, elk hunters spent about $\$187,691 (\pm \$12,180)$ on elk hunting trips during fall 2018.

ACKNOWLEDGEMENTS

I thank all the elk hunters that provided information. Theresa Riebow completed data entry. The figure of elk management units and the area open to hunting was prepared by Marshall Strong. Mike Donovan and Chad Stewart reviewed a previous version of this report.

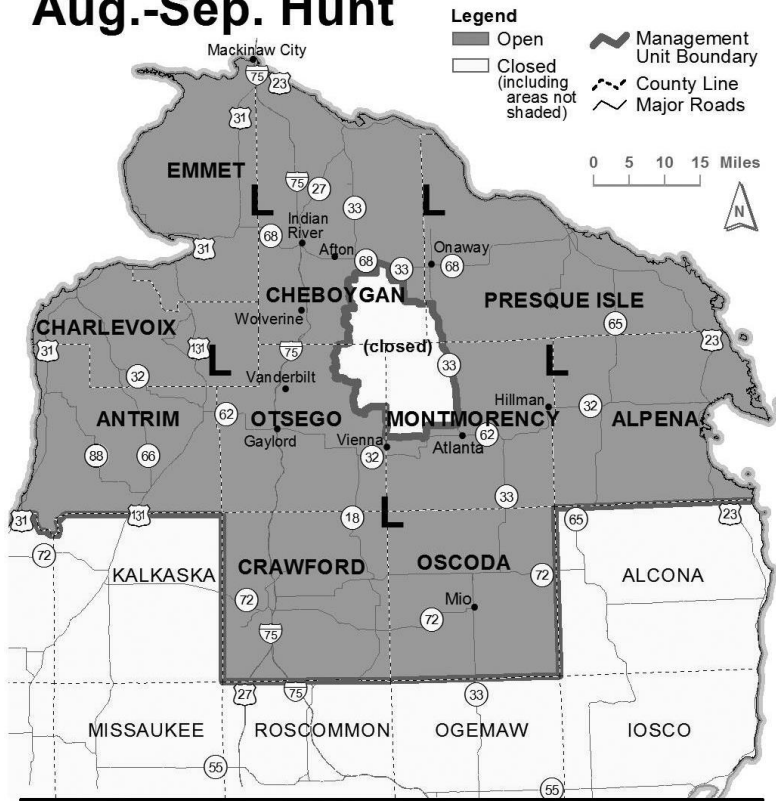
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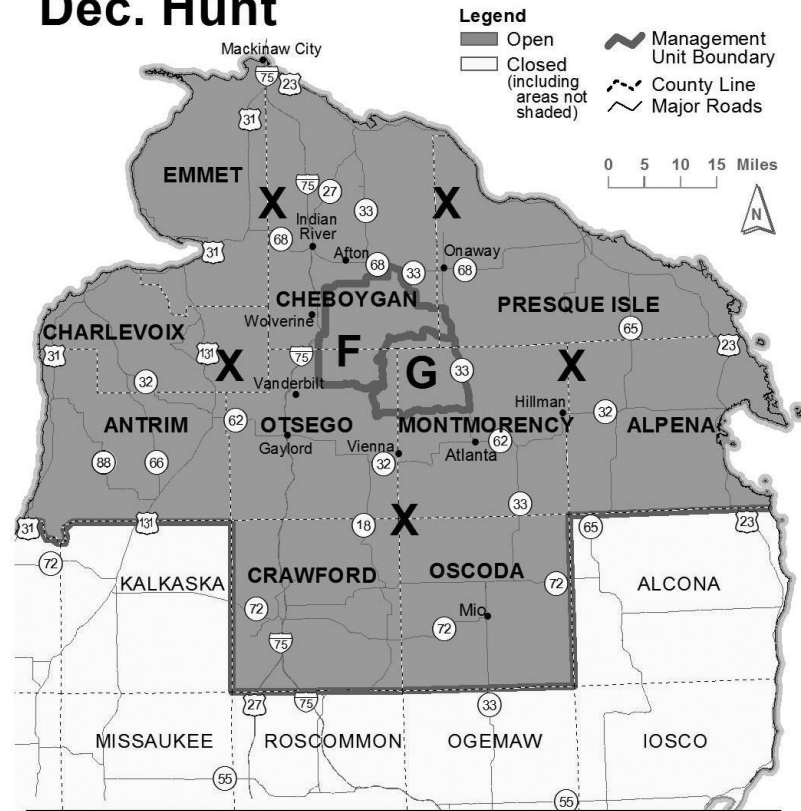
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Elk Management Units Aug.-Sep. Hunt



The remainder of Michigan is closed to all elk hunting.

Elk Management Units Dec. Hunt



The remainder of Michigan is closed to all elk hunting.

Figure 1. Elk management units open to hunting in Michigan, 2018.

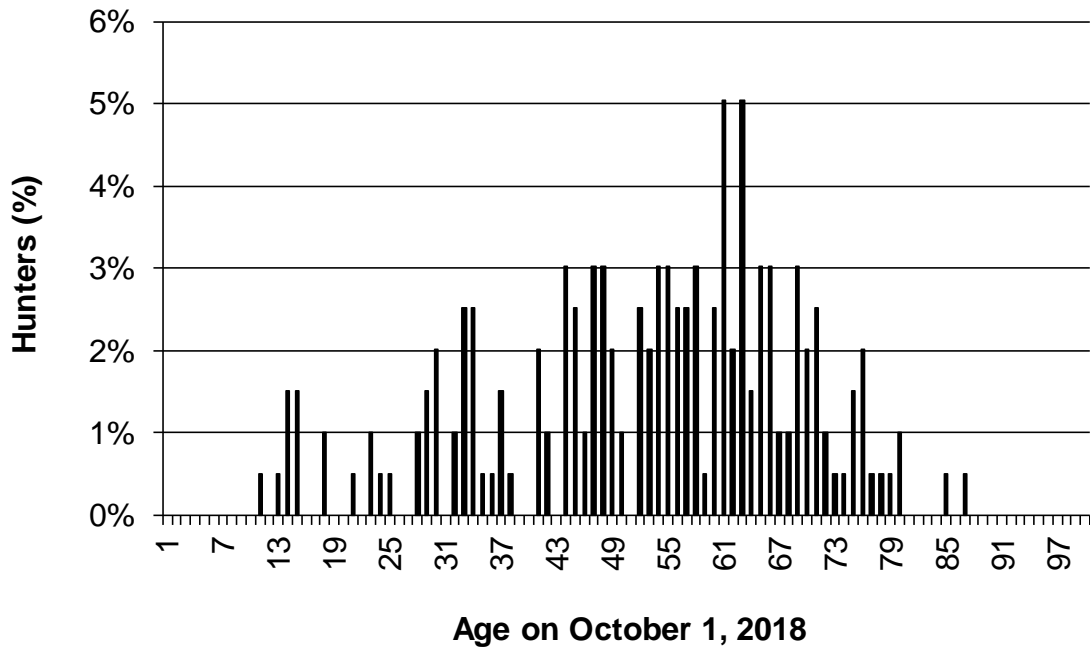


Figure 2. Age of people that purchased an elk hunting license in Michigan for the 2018 hunting season (\bar{x} = 53 years). Licenses were purchased by 198 people.

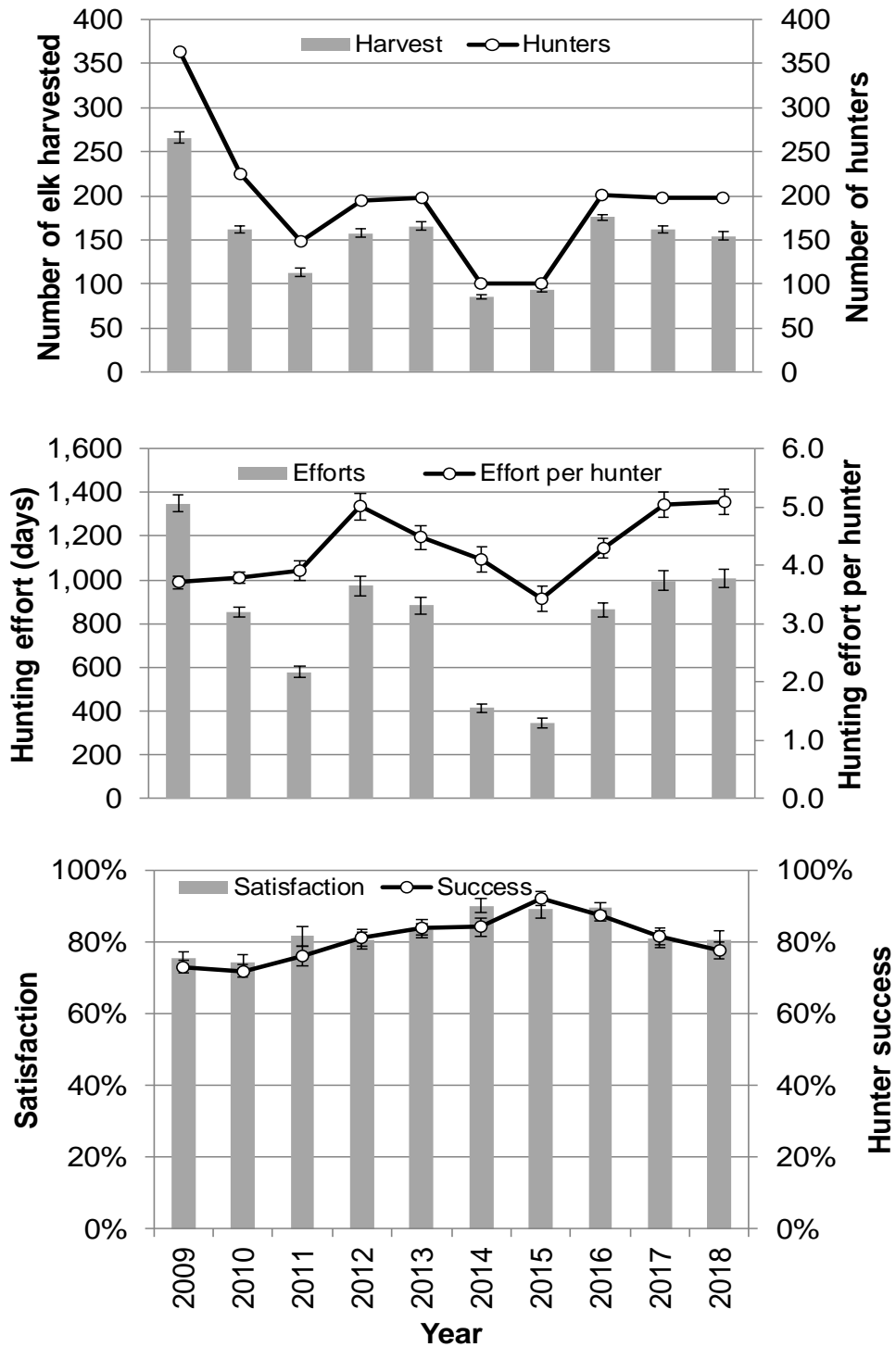


Figure 3. Estimated number of hunters, harvest, hunting efforts, effort per hunter, hunter satisfaction, and hunter success during the Michigan elk hunting season, 2009-2018.

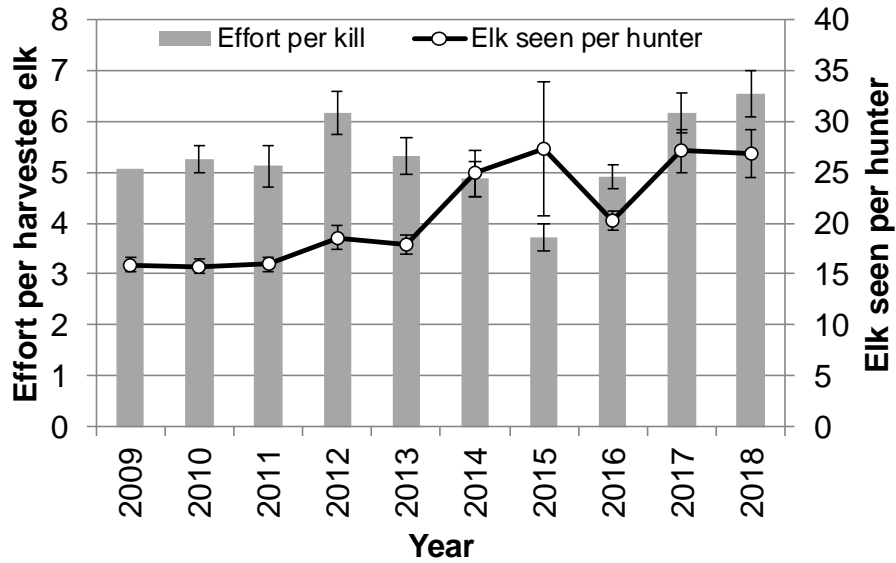


Figure 4. Estimated number of days hunted per elk harvested and elk seen per hunter during the Michigan elk hunting season, 2009-2018.

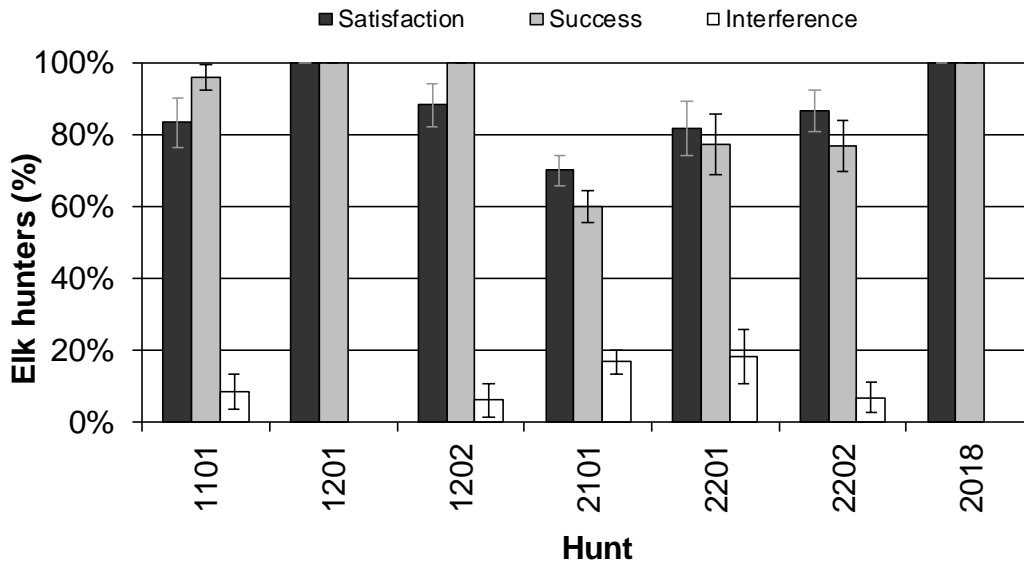


Figure 5. Estimated hunter satisfaction, hunting success, and level of hunter interference in Michigan’s management units during the 2018 elk hunting season. Satisfaction measures the proportion of hunters rating their hunting experiences as very good or good. Interference was the proportion of hunters that reported major interference. Error bars represent the 95% confidence limit.

Table 1. The number of people purchasing hunting licenses for the 2018 Michigan elk hunting seasons, summarized by license.

License	Elk type ^a	Management unit ^b	Hunt dates	License quota	Licenses sold ^c
1101	Any elk	L	Aug. 28-31, Sep. 14-17, & Sep. 28-Oct. 1	30	30
1201	Any elk	F, X	Dec. 15-23	10	10
1202	Any elk	G, X	Dec. 15-23	20	20
2101	Antlerless elk	L	Aug. 28-31, Sep. 14-17, & Sep. 28-Oct. 1	70	69
2201	Antlerless elk	F, X	Dec. 15-23	30	28
2202	Antlerless elk	G, X	Dec. 15-23	40	39
2018	Pure Michigan Hunt ^d	All	All dates	3	3

^aHunters selected for an Any Elk license or Pure Michigan Hunt could harvest either an antlered bull elk or an antlerless elk. Hunters selected for an Antlerless Elk license could harvest an antlerless elk only.

^bSee Figure 1 for the location of management units.

^cFewer licenses were sold than the number available because some successful applicants failed to purchase a license.

^dPure Michigan Hunt licenses were valid in all seasons and areas open for hunting elk.

Table 2. Estimated number of hunters, harvest, hunter success, hunting effort, and mean days hunted during the 2018 Michigan elk hunting season, summarized by license type and unit.

License – Unit ^a	Hunters		Harvest		Hunter success		Hunting effort		Days hunted per hunter (\bar{x})		Days hunted per harvested elk (\bar{x})	
	No.	95% CL ^b	No.	95% CL ^b	%	95% CL ^b	Days	95% CL ^b	Days	95% CL ^a	Days	95% CL ^b
1101 – L	30	0	29	1	96	4	165	19	5.5	0.6	5.7	0.7
1201 – F	10	0	10	0	100	0	26	5	2.6	0.5	2.6	0.5
1202 – G	20	0	20	0	100	0	41	5	2.1	0.3	2.1	0.3
2101 – L	69	0	41	3	60	5	523	30	7.6	0.4	12.6	1.4
2201 – F	28	0	22	2	77	8	107	18	3.8	0.6	4.9	1.1
2202 – G	38	0	29	3	77	7	136	16	3.6	0.4	4.7	0.8
2018 – All	3	0	3	0	100	0	10	0	3.3	0.0	3.3	0.0
All hunts ^c	198	0	154	5	78	2	1,007	43	5.1	0.2	6.5	0.5

^aEither an antlered bull elk or an antlerless elk could be taken in hunts 1101-1202 and 2018, while only antlerless elk could be taken in hunts 2101-2202.

^b95% confidence limits.

^cColumn totals may not equal totals for all hunts because of rounding error.

Table 2 (continued). Estimated number of elk seen, average number of elk seen per hunter, hunter satisfaction, and proportion of hunters reporting interference while hunting during the 2018 Michigan elk hunting season, summarized by license type and unit.

License – Unit	Elk seen ^a		Elk seen per hunter (\bar{x})		Hunter satisfaction ^b		Interfered hunters ^c	
	No.	95% CL ^d	No.	95% CL ^d	%	95% CL ^d	%	95% CL ^d
1101 – L	355	62	11.8	2.1	83	7	8	5
1201 – F	279	61	27.9	6.1	100	0	0	0
1202 – G	306	55	15.3	2.8	88	6	6	4
2101 – L	1,030	107	14.9	1.6	70	4	17	3
2201 – F	1,457	331	52.0	11.8	82	8	18	8
2202 – G	1,816	300	47.8	7.9	87	6	7	4
2018 – All	68	0	22.7	0.0	100	0	0	0
All hunts ^e	5,312	471	26.8	2.4	81	2	12	2

^aElk seen does not represent different animals seen because elk could be double counted and reported by multiple hunters.

^bSatisfaction measures the proportion of hunters rating their hunting experiences as very good or good.

^cInterference was the proportion of hunters that reported major interference.

^d95% confidence limits.

^eColumn totals may not equal totals for all hunts because of rounding error.

Table 3. Estimated number of hunters, harvest, hunter success, and hunting effort during the 2018 Michigan elk hunting season, summarized by county.

County	Hunters		Harvest		Hunter success		Hunting effort	
	No. ^a	95% CL ^b	No. ^c	95% CL ^b	%	95% CL ^b	Days ^c	95% CL ^b
Alpena	3	1	1	1	33	19	12	5
Antrim	0	0	0	0	0	0	0	0
Charlevoix	1	1	1	1	100	0	1	1
Cheboygan	49	5	23	4	47	6	186	26
Crawford	1	1	0	0	0	0	6	4
Emmet	0	0	0	0	0	0	0	0
Montmorency	95	6	57	5	60	4	352	35
Oscoda	1	1	0	0	0	0	1	1
Otsego	89	6	52	5	59	4	326	30
Presque Isle	15	3	6	2	38	10	63	17
Unknown	16	3	13	3	61	11	60	17

^aColumn totals may not equal totals for all hunts because hunters could hunt in multiple counties.

^b95% confidence limits.

^cColumn totals may not equal totals for all hunts because of rounding error.

Table 3 (continued). Estimated hunter satisfaction, hunt interference, elk seen, and average number of elk seen per hunter during the 2018 Michigan elk hunting season, summarized by county.

County	Hunter satisfaction ^{a,b}		Interfered Hunters ^{a,c}		Elk seen ^{a,d}		Elk seen per hunter (\bar{X})	
	%	95% CL ^e	%	95% CL ^e	No.	95% CL ^e	No.	95% CL ^e
Alpena ^f	67	19	33	19	23	12	6.7	2.4
Antrim ^f	0	0	0	0	0	0	0.0	0.0
Charlevoix ^f	100	0	0	0	38	35	30.0	0.0
Cheboygan	86	4	15	5	758	171	15.3	2.9
Crawford	100	0	0	0	5	3	4.0	0.0
Emmet	0	0	0	0	0	0	0.0	0.0
Montmorency	81	3	13	3	1,973	260	20.8	2.4
Oscoda	100	0	0	0	4	3	4.0	0.0
Otsego	79	4	15	3	2,211	337	24.7	3.3
Presque Isle	70	9	7	5	119	37	7.8	2.0
Unknown	61	11	23	9	181	71	11.4	3.6

^aColumn totals may not equal totals for all hunts because of rounding error.

^bSatisfaction measures the proportion of hunters rating their hunting experiences as very good or good.

^cInterference was the proportion of hunters that reported major interference.

^dElk seen does not represent different animals seen because elk could be double counted and reported by multiple hunters.

^e95% confidence limits.

^fNo hunters reported hunting elk in this county.

Table 4. Estimated number and proportion of hunters hunting on private and public lands during the 2018 elk hunting season, summarized by license type and unit.

License – Unit	Land type															
	Private land only				Public land only				Both private and public lands				Unknown land			
	Total	95% CL ^a	%	95% CL ^a	Total	95% CL ^a	%	95% CL ^a	Total	95% CL ^a	%	95% CL ^a	Total	95% CL ^a	%	95% CL ^a
1101 – L	8	2	25	8	5	2	17	7	16	3	54	9	1	1	4	4
1201 – F	2	1	22	9	2	1	22	9	6	1	56	11	0	0	0	0
1202 – G	12	2	59	9	4	1	18	7	5	2	24	8	0	0	0	0
2101 – L	17	3	25	4	21	3	30	4	30	3	43	5	1	1	2	1
2201 – F	3	2	9	6	6	2	23	8	19	3	68	9	0	0	0	0
2202 – G	14	3	37	8	8	3	20	7	15	3	40	8	1	1	3	3
2018 – All	1	0	33	0	1	0	33	0	1	0	33	0	0	0	0	0
All hunts	56	5	28	3	46	5	23	3	56	6	46	3	4	2	2	1

^a95% confidence limits.

Table 5. Estimated number of days of hunting effort on private and public lands during the 2018 Michigan elk hunting season, summarized by license type and unit.

License – Unit	Land type							
	Private lands		Public lands		Both private and public lands		Unknown	
	Days	95% CL ^a	Days	95% CL ^a	Days	95% CL ^a	Days	95% CL ^a
1101 – L	41	10	29	11	91	21	4	3
1201 – F	2	1	3	1	20	5	0	0
1202 – G	20	4	12	4	9	4	0	0
2101 – L	129	22	190	27	205	28	0	0
2201 – F	13	5	42	15	52	15	0	0
2202 – G	42	11	51	17	43	12	0	0
2018 – All	1	0	5	0	4	0	0	0
All hunts	248	28	331	37	425	41	4	3

^a95% confidence limits.

Table 6. Land type when elk were harvested during the 2018 elk hunting season in Michigan, summarized by license type and unit.

License – Unit	Land type											
	Private land				Public land				Unknown			
	%	95% CL ^a	Elk taken	95% CL ^a	%	95% CL ^a	Elk taken	95% CL ^a	%	95% CL ^a	Elk taken	95% CL ^a
1101 – L	61	9	18	3	39	9	11	3	0	0	0	0
1201 – F	67	10	7	1	33	10	3	1	0	0	0	0
1202 – G	76	8	15	2	24	8	5	2	0	0	0	0
2101 – L	64	6	26	3	33	6	14	3	3	2	1	0
2201 – F	41	11	9	3	59	11	13	3	0	0	0	0
2202 – G	61	9	18	3	35	9	10	3	4	4	1	0
2018 – All	67	0	2	0	33	0	1	0	0	0	0	0
All hunts	61	4	95	6	37	3	57	6	2	1	2	1

^a95% confidence limits.

Table 7. Proportion and number of elk harvested by type of animal during the 2018 elk hunting season in Michigan, summarized by license type and unit.

License – Unit ^a	Type of elk harvested							
	Antlered bull elk				Antlerless elk			
	%	95% CL ^b	No.	95% CL ^b	%	95% CL ^b	No.	95% CL ^b
1101 – L	100	0	29	1	0	0	0	0
1201 – F	100	0	10	0	0	0	0	0
1202 – G	100	0	20	0	0	0	0	0
2101 – L	0	0	0	0	100	0	41	3
2201 – F	0	0	0	0	100	0	22	2
2202 – G	0	0	0	0	100	0	29	3
2018 – All	100	0	3	0	0	0	0	0
All hunts	40	1	62	1	60	1	92	5

^aEither an antlered bull elk or an antlerless elk could be taken in hunts 1101-1202 and 2018, while only antlerless elk could be taken in hunts 2101-2202.

^b95% confidence limits.

Table 8. Hunters' level of satisfaction with the number of elk seen during the 2018 elk hunting season in Michigan, summarized by license type and unit.

License – Unit	Satisfaction level							
	Very good or good		Neutral		Poor or very poor		No answer or not applicable	
	%	95% CL ^a	%	95% CL ^a	%	95% CL ^a	%	95% CL ^a
1101 – L	63	9	4	4	33	9	0	0
1201 – F	100	0	0	0	0	0	0	0
1202 – G	94	4	6	4	0	0	0	0
2101 – L	40	5	18	4	42	5	0	0
2201 – F	82	8	5	4	14	7	0	0
2202 – G	87	6	10	5	3	3	0	0
2018 – All	100	0	0	0	0	0	0	0
All hunts	68	3	10	2	22	2	0	0

^a95% confidence limits.

Table 9. Hunters' level of satisfaction with their opportunities to harvest an elk during the 2018 elk hunting season in Michigan, summarized by license type and unit.

License – Unit	Satisfaction level							
	Very good or good		Neutral		Poor or very poor		No answer or not applicable	
	%	95% CL ^a	%	95% CL ^a	%	95% CL ^a	%	95% CL ^a
1101 – L	63	9	8	5	29	8	0	0
1201 – F	89	7	11	7	0	0	0	0
1202 – G	94	4	6	4	0	0	0	0
2101 – L	25	4	17	3	50	5	8	3
2201 – F	59	10	18	8	18	8	5	4
2202 – G	53	8	27	7	13	6	7	4
2018 – All	100	0	0	0	0	0	0	0
All hunts	52	2	16	2	27	3	5	1

^a95% confidence limits.

Table 10. Hunters' level of satisfaction with their overall hunting experience during the 2018 elk hunting season in Michigan, summarized by license type and unit.

License – Unit	Satisfaction level							
	Very good or good		Neutral		Poor or very poor		No answer or not applicable	
	%	95% CL ^a	%	95% CL ^a	%	95% CL ^a	%	95% CL ^a
1101 – L	83	7	4	4	8	5	4	4
1201 – F	100	0	0	0	0	0	0	0
1202 – G	88	6	0	0	12	6	0	0
2101 – L	70	4	13	3	13	3	3	2
2201 – F	82	8	0	0	14	7	5	4
2202 – G	87	6	3	3	3	3	7	4
2018 – All	100	0	0	0	0	0	0	0
All hunts	81	2	6	1	10	2	4	1

^a95% confidence limits.

Table 11. The proportion of hunters reporting interference from other people during the 2018 elk hunting season in Michigan, summarized by license type and unit.

License – Unit	Level of interference							
	Major problem		Minor problem		No problem		No answer	
	%	95% CL ^a	%	95% CL ^a	%	95% CL ^a	%	95% CL ^a
1101 – L	8	5	29	8	63	9	0	0
1201 – F	0	0	33	10	67	10	0	0
1202 – G	6	4	6	4	88	6	0	0
2101 – L	17	3	28	4	53	5	2	1
2201 – F	18	8	32	9	50	10	0	0
2202 – G	7	4	40	8	53	8	0	0
2018 – All	0	0	33	0	67	0	0	0
All hunts ^b	12	2	29	3	59	3	1	0

^a95% confidence limits.

^bRow totals may equal more than 100% because of rounding error.

Table 12. Proportion and number of hunters using guides and amount paid for guide services during the 2018 elk hunting season in Michigan.

Item	Elk hunters			
	%	95% CL ^a	Number	95% CL ^a
Used a guide	76	3	150	5
Paid for guide ^b	79	3	118	6
Amount paid for guide ^b				
\$1-100	4	2	5	2
\$101-500	16	3	19	4
\$501-1,000	36	4	43	5
\$1,001-2,000	42	4	50	5
\$2,001-3,000	0	0	0	0
More than \$3,000	1	1	1	1
Unknown	0	0	0	0

^a95% confidence limits.

^bEstimates for hunters that reported using a hunting guide.

Table 13. Proportion and number of hunters reporting various services from hunting guides during the 2018 elk hunting season in Michigan.

Service provided by the guide	Elk hunters ^a			
	%	95% CL ^b	Number	95% CL ^b
Hunting advice	88	2	132	6
Food	20	3	29	4
Lodging	20	3	30	4
Equipment	21	3	31	5
Selected hunt area	89	2	133	6
Removed elk from field	71	3	106	6
Delivered elk to a meat processor	28	3	42	5
Processed meat	1	1	1	1

^aEstimates for hunters that reported using a hunting guide.

^b95% confidence limits.

Table 14. The proportion of elk hunters indicating various services were important when selecting an elk hunting guide in Michigan, 2018.

Service provided by the guide	Level of importance									
	Very important		Somewhat important		Not important		Not sure		No answer	
	%	95% CL ^a	%	95% CL ^a	%	95% CL ^a	%	95% CL ^a	%	95% CL ^a
Access to area with elk	94	2	4	1	0	0	0	0	2	1
Area with good chance of taking elk	92	2	6	2	0	0	0	0	2	1
Access to private lands	70	3	18	3	7	2	3	1	2	1
Food during hunt	6	2	10	2	78	3	1	1	5	2
Lodging	7	2	14	3	72	3	2	1	6	2
Equipment	23	3	27	3	45	4	2	1	3	1
Process elk	18	3	22	3	54	4	1	1	5	2
Ethical hunter	96	1	1	1	2	1	0	0	2	1

^a95% confidence limits.

Table 15. The proportion of elk hunters satisfied with their hunting guide's ability to provide various services during their 2018 elk hunt in Michigan.

Service provided by the guide	Satisfaction level									
	Satisfied		Neutral		Dissatisfied		Not applicable		No answer	
	%	95% CL ^a	%	95% CL ^a	%	95% CL ^a	%	95% CL ^a	%	95% CL ^a
Area with good chance to see an elk	94	2	4	1	2	1	0	0	0	0
Area with good chance to take an elk	91	2	5	1	3	1	0	0	1	1
Food	24	3	17	3	3	1	52	4	3	1
Lodging	24	3	16	3	1	1	54	4	5	2
Equipment (e.g., horses, ORV, etc.)	50	4	12	2	0	0	36	3	2	1
Process elk	35	3	17	3	1	1	42	4	5	2
Ethical hunting methods	91	2	2	1	4	2	2	1	1	1

^a95% confidence limits.

Table 16. Hunters' level of satisfaction with the hunter orientation session held before the 2018 elk hunting season in Michigan.

Session item	Satisfaction level ^a							
	Satisfied		Neutral		Dissatisfied		No answer	
	%	95% CL ^b	%	95% CL ^b	%	95% CL ^b	%	95% CL ^b
Session content	93	2	4	1	4	1	0	0
Facilities	92	2	5	1	2	1	0	0
Session length	91	2	8	2	1	1	0	0
Usefulness of handouts	95	1	3	1	2	1	0	0

^aRow totals may equal more than 100% because of rounding error.

^b95% confidence limits.

Appendix A

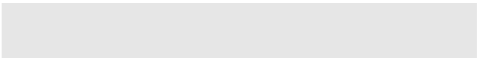
2018 Michigan Elk Harvest Questionnaire



Michigan Department of Natural Resources – Wildlife Division
PO Box 30030 Lansing MI 48909-7530

2018 MICHIGAN ELK HUNTING SURVEY

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



Our survey provides you with a unique opportunity to directly affect the management of elk in Michigan. It is important that you complete this questionnaire even if you did not hunt or harvest an elk in Michigan this past year.

General Hunting Questions

1. About how many years have you hunted in Michigan? _____ Years
2. About how many years have you hunted elk prior to 2018 (including outside of Michigan)? _____ Years

Elk Hunter Orientation Program Questions

How satisfied were you with the elk hunter orientation session? (Select one answer for each item listed below.)	Very Satisfied	Somewhat satisfied	Neutral	Somewhat Dissatisfied	Very Dissatisfied	Not Applicable
a. Session Content.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
b. Facilities.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
c. Length of session.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
d. Usefulness of handouts (informational flyers, maps, etc.).	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>

Elk Hunting Questions

4. Did you hunt elk in Michigan during the 2018 season?
 1 Yes 2 No, you are done with the survey.

5. Please report the number of days for each county that you hunted elk and the number of elk seen during your hunt period in the following table.

COUNTY HUNTED	NUMBER OF DAYS HUNTED IN SEASON	TYPE OF LAND (Record land ownership type where hunting occurred)	NUMBER OF ELK SEEN
		1 <input type="checkbox"/> Private 2 <input type="checkbox"/> Public 3 <input type="checkbox"/> Both	
		1 <input type="checkbox"/> Private 2 <input type="checkbox"/> Public 3 <input type="checkbox"/> Both	
		1 <input type="checkbox"/> Private 2 <input type="checkbox"/> Public 3 <input type="checkbox"/> Both	
		1 <input type="checkbox"/> Private 2 <input type="checkbox"/> Public 3 <input type="checkbox"/> Both	
		1 <input type="checkbox"/> Private 2 <input type="checkbox"/> Public 3 <input type="checkbox"/> Both	

6. Did you hunt with a firearm, crossbow, or bow during the 2018 elk season?
(select all that apply)

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

7. Did you take an elk and put your kill tag on the elk? (If no, please skip to question 9)

1 Yes 2 No, skip to #9

8. If your harvest tag was put on a elk, please answer the following:

- a. What was the type of elk taken?

1 Antlered bull 2 Antlerless elk (e.g., cow or calf)

- b. In what county was it harvested? (Please write in the county name)

- _____
- c. On what type of land was the elk harvested?

1 Private 2 Public 3 Not sure

- d. What device was used to harvest your elk?

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

- e. Who helped move your elk from the kill site to a vehicle? (Select all that apply)

1 Myself 2 Hunting companions 3 Guide 4 DNR employee 5 Landowner

9. While you were elk hunting, how much did interference from other people affect your hunt?

1 Major problem 2 Minor problem 3 Not a problem, skip to #11

10. If you experienced interference, what was the source of the interference?

(Select all that apply)

- 1 Other elk hunters 2 Other hunters, not including elk hunters 3 DNR employees
- 4 Other (Please specify _____)

11. How would you rate the following for your 2018 elk hunting season:

(Select one choice per item.)

	Very Good	Good	Neutral	Poor	Very Poor	Not Applicable
a. Number of elk you saw.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
b. Number of opportunities you had to take an elk.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
c. Your overall elk hunting experience.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>

In the next two questions, you will be asked about all your hunting trips to hunt elk in 2018. A hunting trip includes trips that take place during a single day, as well as, trips that require an overnight stay away from home. Consequently, the cost of these hunting trips can vary greatly. On a long trip you may spend money for food, travel, and lodging, while on a short trip you may only spend money for gas.

12. How many trips did you take primarily to hunt elk during 2018?

_____ Trips

13. How much did an average trip cost you during 2018 when you went primarily to hunt elk (for example, fuel, food, lodging, ammunition)?

\$_____ per trip

Elk Hunting Guide Questions

14. Did you have a guide help you during a portion or your entire elk hunt? 1 Yes 2 No, you are done with the survey.
15. Did you pay the guide for their help? 1 Yes 2 No, skip to #17
16. What did you pay your hunting guide for their help?
- 1 \$1-100 2 \$101-500 3 \$501-1,000 4 \$1,001-2,000
- 5 \$2,001-3,000 6 More than \$3,000 7 Other (please specify: _____)

17. If you used a hunting guide, please indicate what services were provided by the guide? (Select all that apply)

- 1 Hunting advice 2 Food 3 Lodging 4 Equipment
 5 Selected hunt area 6 Removed the killed elk from field 7 Delivered elk to meat processor 8 Processed meat

18. What percentage of your time did the guide accompany you while elk hunting?

- 1 0% 2 1-24% 3 25-49% 4 50-74% 5 75-99% 6 100%

19. How important to you are each of the following when selecting a hunting guide for elk in Michigan?

(Select one answer for each item listed below.)

	Very Important	Somewhat Important	Not at all Important	Not sure
a. Guide has access to hunt area with good chance of seeing elk.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
b. Guide has access to hunt area with good chance of taking an elk.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
c. Guide provided access to private land.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
d. Guide provides food during hunt.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
e. Guide provides lodging during hunt.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
f. Guide provides equipment for hunt (horses, off-road vehicles).	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
g. Guide helps process the harvested animal.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
h. Guide uses legal and ethical hunting methods.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

20. How satisfied were you with your guide's ability to provide the following services during your elk hunt in Michigan?

(Select one answer for each item listed below.)

	Very Satisfied	Somewhat satisfied	Neutral	Somewhat Dissatisfied	Very Dissatisfied	Not Applicable
a. Guide provided a hunt area with good chance of seeing elk.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
b. Guide provided a hunt area with good chance of taking an elk.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
c. Guide provided food during hunt.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
d. Guide provided lodging during hunt.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
e. Guide provided equipment for hunt (horses, off-road vehicles).	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
f. Guide helped process the harvested animal.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
g. Guide used legal and ethical hunting methods.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>

21. Overall, did the guide increase or decrease the quality of your elk hunt? (Select one.)

- 1 Greatly increased 2 Increased 3 Neutral 4 Decreased 5 Greatly decreased

**Please return questionnaire in the enclosed postage-paid envelope.
Thank you for your help!**