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2011 MICHIGAN BLACK BEAR HUNTER SURVEY

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ABSTRACT

A random sample of bear hunters was contacted after the 2011 hunting season to determine hunter participation, hunting methods, bear harvest, and hunter satisfaction. In 2011, an estimated 7,949 hunters spent nearly 55,508 days afield and harvested about 2,193 bears. The number of licenses sold was nearly unchanged from 2010; however, the number of bear harvested decreased 8%. Statewide, 28% of hunters harvested a bear in 2011, versus 30% success in 2010. The average number of days required to harvest a bear statewide was 25.3 days in 2011, compared to 22.8 days in 2010. Baiting was the most common hunting method used to harvest bears, although hunters using dogs had greater hunting success than hunters using bait only. Statewide, about 53% of hunters rated their hunting experience as very good or good in 2011 (versus 54% in 2010).

INTRODUCTION

Beginning in 1990, the Michigan Department of Natural Resources (DNR) created black bear (*Ursus americanus*) management units and limited the number of bear hunting licenses issued for each unit. Before 1990, an unlimited number of bear licenses was sold, and licenses were valid in all areas open to bear hunting. In 2000, the DNR modified the licensing system by implementing a zone and quota system based on preference points for issuing bear hunting licenses. Under this system, hunters received one preference point if they applied for a hunt but were not selected in the drawing. Hunters also could obtain a preference point by completing an application but forgoing the drawing. Applicants with the greatest number of preference points had the greatest chance of being selected for a hunt, except that no more than 2% of the licenses were issued to nonresidents.



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In 2011, ten bear management units in Michigan, totaling about 35,360 square miles, were open for bear hunting (Figure 1). Bear could be hunted September 10-October 26 in all of the Upper Peninsula (UP) units, except the Drummond Island Management Unit (September 10-October 21). Bear could be hunted September 9-24 in Benzie, Leelanau, and Grand Traverse counties and during September 16-24 for remaining counties in the Northern Lower Peninsula (LP) units. The first day of hunt periods in the LP was restricted to hunting with bait only, and the last two days of the hunt periods in the LP (September 23-24) were restricted to hunters using dogs. The Red Oak Management Unit in the LP also had an archery-only hunt during October 7-13 (firearms and crossbows prohibited).

DNR staff recommended and the Natural Resources Commission (NRC) set license quotas for each management unit and allocated 11,742 licenses among 33,819 eligible applicants using the preference-point distribution system. Hunters had to be at least 10 years old to purchase a hunting license. Licenses were valid on all land ownership types and allowed a hunter to take one bear of either sex, excluding cubs and female bears with cubs. Bear could be harvested with either a firearm, crossbow, or archery equipment, except for the special archery-only hunt in the Red Oak Management Unit. Youth 10 and 11 years old were restricted to using archery equipment or crossbows. Youth had to be at least 12 years old to hunt with a firearm on private land or 14 years old to hunt bear with a firearm on public land. Hunters using a crossbow were required to obtain a free crossbow stamp, except hunters with a disability already hunting under a DNR-issued crossbow permit did not need the stamp. Hunters could use bait or dogs to hunt bears (except dogs could not be used during September 10-14 in the UP, excluding the Drummond Island Management Unit, and during the archery-only season in the Red Oak Management Unit).

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 bear hunting licenses were valid for all areas open for hunting bear, except Drummond Island, and during all bear hunting periods. Furthermore, the PMH license holder could hunt any season until their bear harvest tag was filled.

The DNR and NRC 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 by the DNR to accomplish its 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 registration stations, and other indices, are used to monitor bear populations and establish harvest regulations.

METHODS

The DNR provided all bear hunters the option to report information about their bear hunting activity voluntarily via the internet. This option was advertised on the DNR website and an email message was sent to all license buyers that had provided an email address to the DNR. Hunters reported whether they hunted, number of days spent afield, whether they harvested a bear, date of harvest, and their hunting methods. Hunters also reported whether other hunters (including bear hunters) caused interference during their hunt. Successful hunters were asked to report harvest date, sex of the bear taken, and harvest method. Finally, hunters were asked to report how satisfied they were with the number of bear seen, number of opportunities they had to take a bear, and their overall bear hunting experience. Following the 2011 bear hunting season, a questionnaire (Appendix A) was mailed to 4,195 randomly selected people (Table 1) that had purchased a bear hunting license (resident, senior, nonresident bear licenses, comprehensive lifetime bear license, and Pure Michigan Hunt) and had not already voluntarily reported harvest information via the internet. Hunters receiving the questionnaire in the mail were asked the same questions as hunters responding on the internet.

Estimates were calculated using a stratified random sampling design that included twelve strata (Cochran 1977). Hunters were stratified based on the management unit where their license was valid (10 management units). Hunters who purchased a license that could be used in multiple management units (PMH license holders) were treated as a separate stratum (stratum 11). In addition, hunters that had voluntarily reported information about their hunting activity via the internet were treated as a separate stratum (twelfth stratum). The statewide estimate of the mean number of days required to harvest a bear was calculated using a different ratio for each stratum (i.e., separate ratio estimator). The number of bears registered in each stratum was used as an auxiliary variate to improve the precision of ratio estimates.

A 95% confidence limit (CL) was calculated for each estimate. In theory, 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 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 995 out of 1,000 times, if the study had been repeated (Payton et al. 2003).

Questionnaires were mailed initially during late November 2011, and up to two follow-up questionnaires were mailed to nonrespondents. Although 4,195 people were sent the questionnaire, 70 surveys were undeliverable, resulting in an adjusted sample size of 4,125. Questionnaires were returned by 3,146 people, yielding a 76% adjusted response rate.

In addition, 644 people voluntarily reported information about their hunting activity via the internet before the random sample was selected.

RESULTS

In 2011, 9,021 bear hunting licenses were purchased (Table 1), nearly unchanged from 2010 (8,976). Most of the people buying a license in 2011 were men (90%), and the average age of the license buyers was 48 years (Figure 2). About 4% of the license buyers (341) were younger than 17 years old.

Compared to 10 years ago, the number of people buying a bear hunting license in 2011 increased by about 9% (8,262 people purchased a license in 2001). Although the overall number of license buyers increased, there were fewer license buyers for most age classes between 22 and 43 years of age in 2011, compared to 2001 (Figure 3). However, there were increased hunter numbers among the youngest and oldest age classes in 2011. The increased hunter numbers in the oldest age classes likely represented the rising share of older people in the population as the baby-boom generation aged and life expectancies have increased. The increased participation among the youngest hunters likely reflected the lowering of the minimum age requirements. In 2011, hunters had to be at least 10 years old to participate; while the hunters had to be at least 12 years old to participate in 2001.

Nearly $88 \pm 1\%$ of the license buyers hunted bear (Table 2). These hunters spent 55,508 days afield ($\bar{x} = 7.0$ days/hunter) and harvested 2,193 bears. Harvest decreased by 8% from 2010 (Figure 4). Marquette, Baraga, Ontonagon, Luce, and Gogebic counties had the highest number of bear hunters and bears harvested during 2011 (Table 3).

The average number of days required to harvest a bear statewide was 25.3 days in 2011 (Table 2, Figure 5), which was not significantly different from 2010 (22.8 days). Mean effort per harvested bear also did not change significantly in any region between 2010 and 2011 (Figure 6). Long-term trends are difficult to interpret because hunting seasons have been lengthened and hunt periods and areas have been added since 1992; thus, these annual estimates are not directly comparable. In 1994, most early hunt periods were increased from 37 to 42 days and a third hunt period was added in the Gwinn Management Unit. In 1995, a third hunt period was added in the Baraga Management Unit. In 1996, Baldwin and Gladwin management units were created, and a third period was added to Bergland, Amasa, Carney, and Newberry management units. In 2002, the units in the LP were expanded slightly to coincide with county boundaries. In 2006, the area of the Bladwin Unit was increased slightly with the addition of Leelanau County. The units having the highest effort per harvested bear during recent years have been Carney, Gladwin, and Newberry management units, while Baldwin and Drummond Island management units have had the lowest effort per harvested bear (Figure 7).

About 37% of the bear hunters hunted on private lands only in 2011, 44% hunted on public lands only, and 18% hunted on both private and public lands (Table 4). Bear hunters spent 19,712 days afield on private land, 22,049 days hunting on public land only, and 13,198 days hunting on both private and public lands (Table 5). Of the estimated 2,193 bear harvested in

2011, $39 \pm 3\%$ of these bears (854 ± 70) were taken on private land. About $61 \pm 3\%$ of the bears ($1,332 \pm 91$) were taken on public land.

For bears that the harvest date was reported, about 23% of these bears were taken during the first five days and 52% during the first ten days of the hunting season (Figure 8). Of the bears harvested, $61 \pm 3\%$ were males ($1,331 \pm 89$) and $39 \pm 3\%$ were females (858 ± 73 ; Table 6). Statewide, 28% of hunters harvested a bear in 2011, compared to 30% success in 2010 (Table 2). Hunter success ranged from 9-100% among the bear management units (Table 2).

Most hunters (86%) used firearms while hunting bear, although 18% of the hunters used archery equipment (compound, recurve, or long bows), and 6% used a crossbow (Tables 8 and 9). Most hunters (86%) used a firearm to harvest their bear, while 11% used archery equipment, and 3% used a crossbow (Tables 10 and 11). Hunters using a crossbow to hunt bear were required to obtain a crossbow stamp, unless they were a disabled hunter that already had a DNR-issued crossbow permit. About $57 \pm 6\%$ of the bear hunters using a crossbow in 2011 had obtained the crossbow stamp in 2011, and about $73 \pm 5\%$ of the bear hunters using a crossbow in 2011 had obtained the crossbow stamp in 2009, 2010, or 2011.

Most hunters ($86 \pm 1\%$) relied primarily on baiting as a means of locating and attracting bears (Table 12). About 10% ($\pm 1\%$) of hunters relied primarily on dogs alone or a combination of baiting and dogs to locate bears. About 2% of hunters relied on a hunting method not involving dogs or bait.

About $83 \pm 2\%$ of the harvested bears were taken with the aid of bait only (Table 13). Hunting success for hunters using bait only was $27 \pm 1\%$, while hunting success for hunters using dogs was $38 \pm 7\%$ in 2011. Success among hunters using dogs has usually been higher than among hunters using bait only (Figure 9).

About 31% of bear hunters statewide rated the number of bear seen during the 2011 hunting season as very good or good, and 40% rated bear seen as poor or very poor (Table 14). Similarly, about 28% of hunters statewide rated the number of chances they had to take a bear during the 2011 hunting season as very good or good, and 40% rated their chances as poor or very poor (Table 15).

Statewide, about 53% of hunters rated their hunting experiences as very good or good (versus 54% in 2010), and 25% rated their hunting experiences as poor or very poor (Table 16). Hunter satisfaction is affected by many factors such as hunting success and whether hunting activities were completed without interference (Figure 10). In 2011, 20% of the hunters were interfered with by other hunters (Table 17). Most of this interference was caused by another bear hunter; 16% of the hunters reported that other bear hunters interfered with their hunt. Generally, hunters in the UP were less likely to be interfered with by other hunters than hunters in the LP (Table 17, Figure 11).

ACKNOWLEDGEMENTS

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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. Bear management units open to hunting in Michigan, 2011.

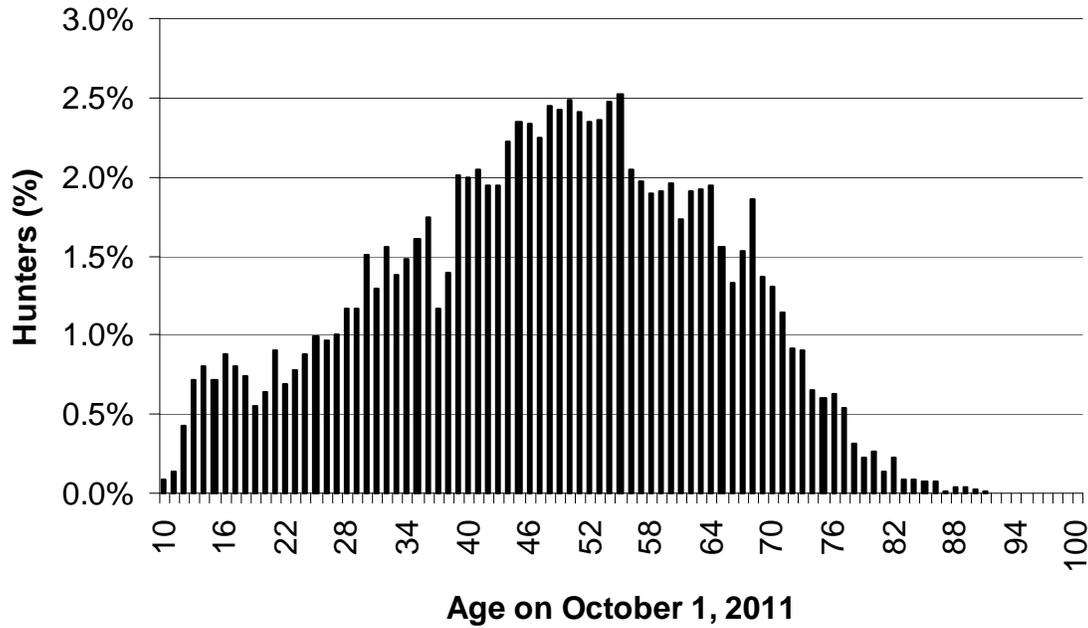


Figure 2. Age of people that purchased a bear hunting license in Michigan for the 2011 hunting season ($\bar{x} = 48$ years). Licenses were purchased by 9,021 people.

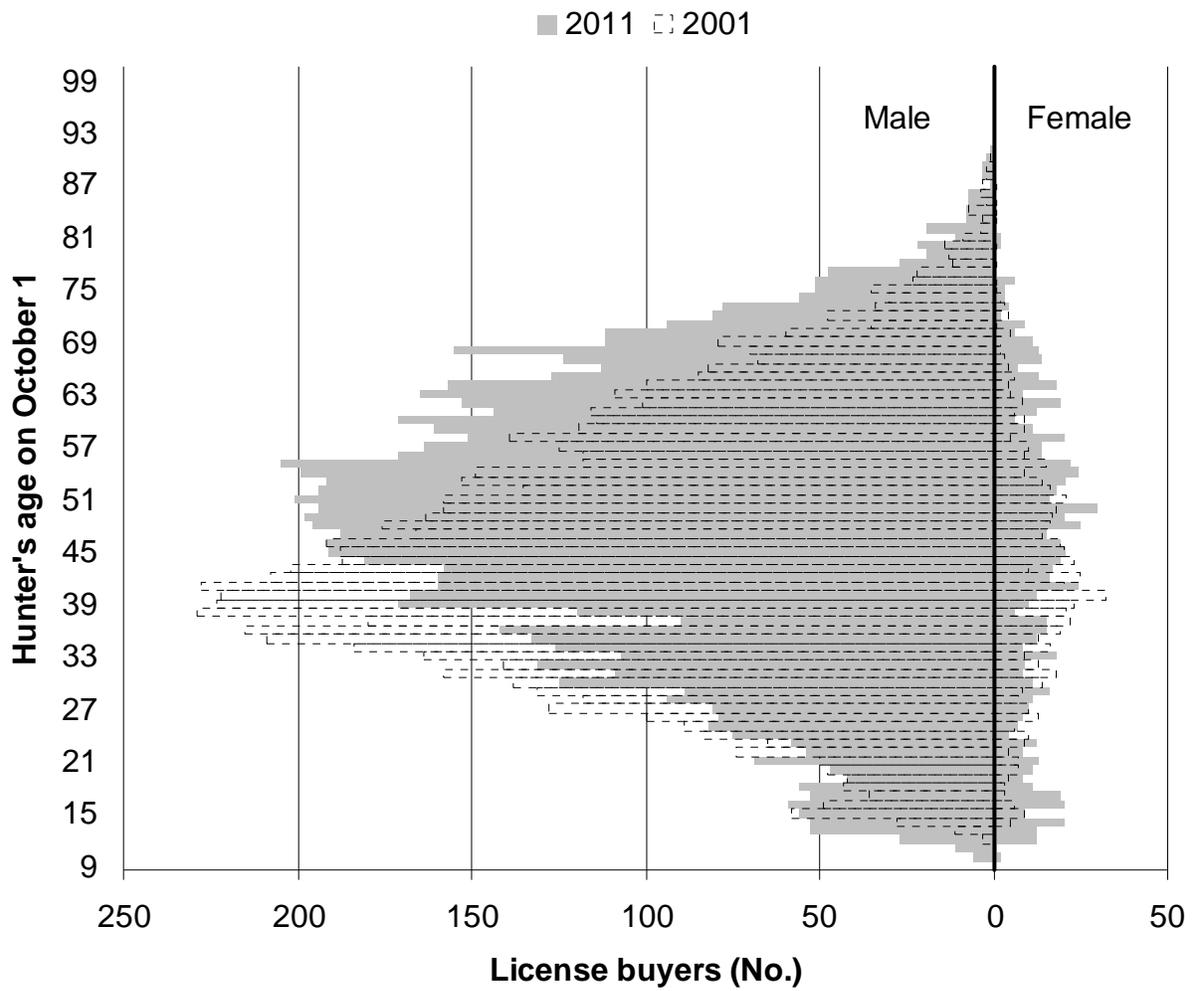


Figure 3. Number of bear hunting license buyers in Michigan by age and sex during 2001 and 2011 hunting seasons. The number of people buying a license was 8,262 in 2001 and 9,021 in 2011.

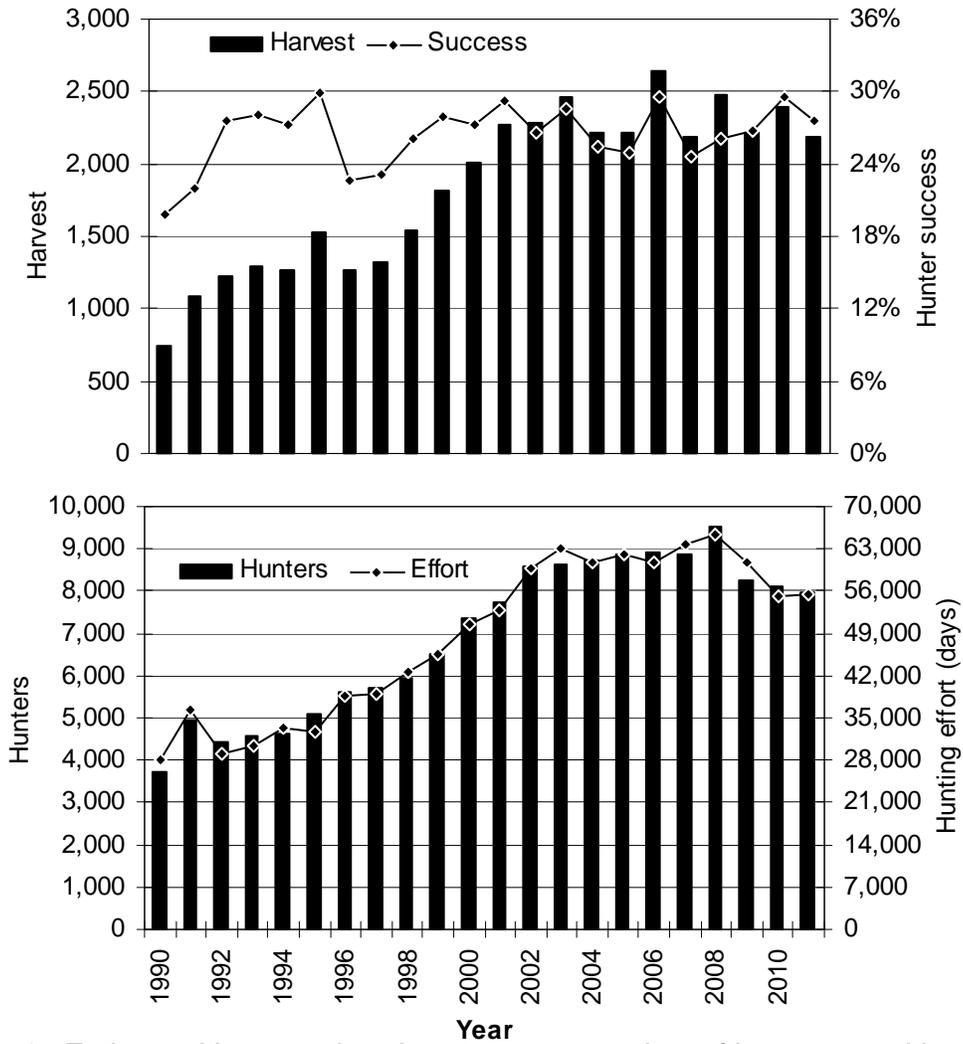


Figure 4. Estimated harvest, hunting success, number of hunters, and hunting effort during bear hunting seasons, 1990-2011.

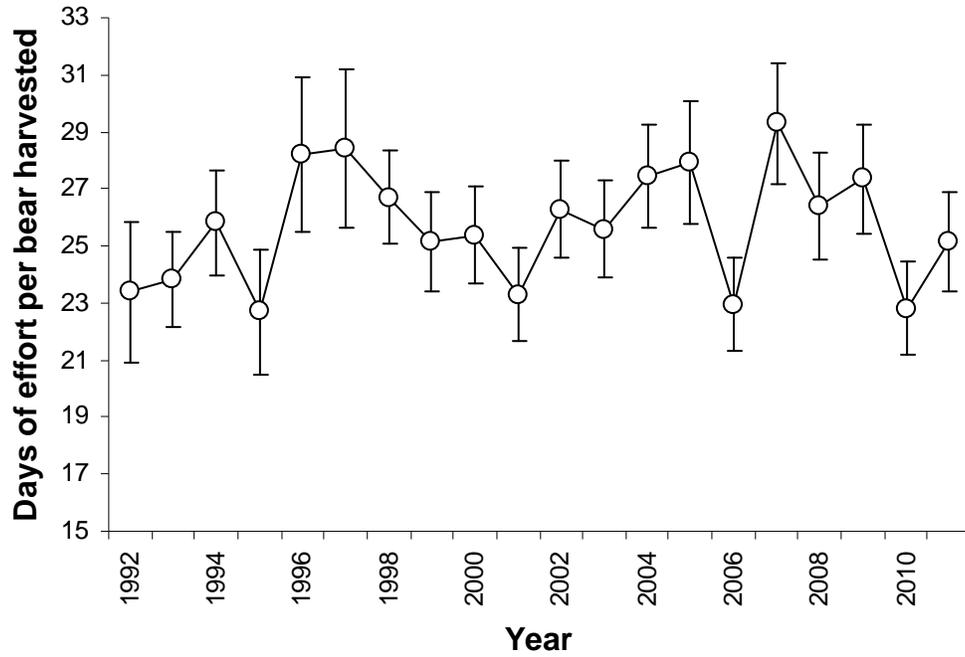


Figure 5. Estimated mean number of days required to harvest a bear statewide in Michigan during 1992-2011. Vertical bars represent the 95% confidence interval.

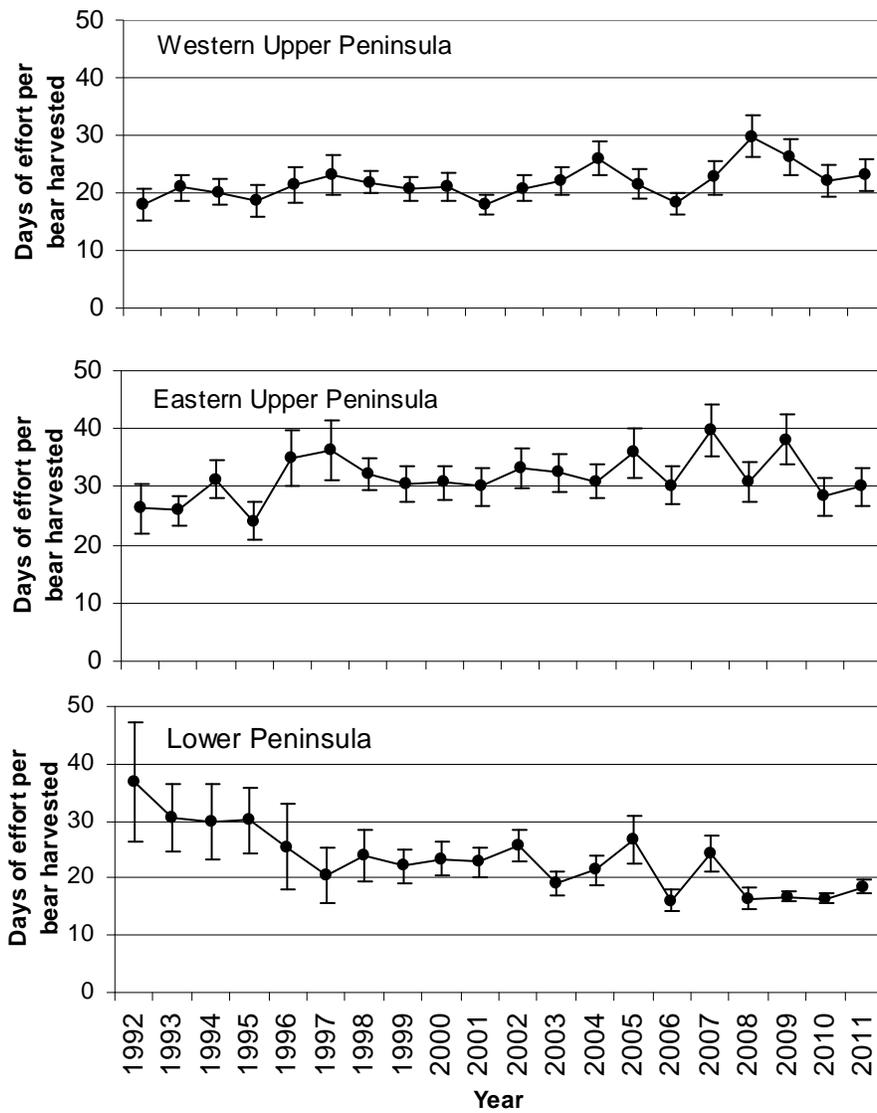


Figure 6. Estimated mean number of days required to harvest a bear in Michigan during 1992-2011, summarized by ecological region. Western UP consisted of Amasa, Baraga, and Bergland units, and Eastern UP consisted of Carney, Gwinn, and Newberry units (Drummond Island Management Unit excluded). Lower Peninsula consisted of Baldwin, Gladwin, and Red Oak management units. Vertical bars represent the 95% confidence interval.

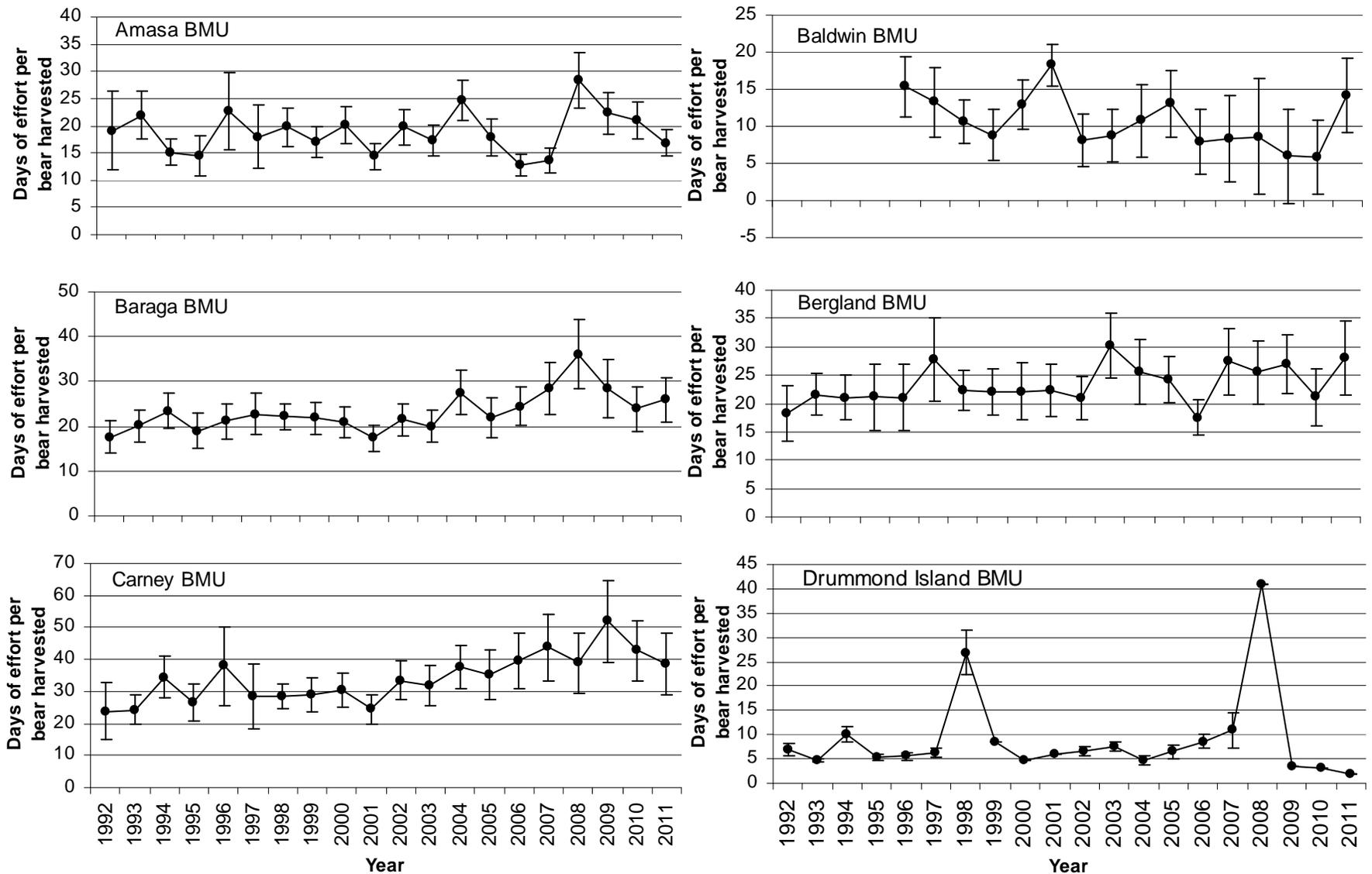


Figure 7. Estimated mean number of days required to harvest a bear in Michigan during 1992-2011, summarized by management unit. Baldwin and Gladwin management units were created in 1996. Vertical bars represent the 95% confidence interval.

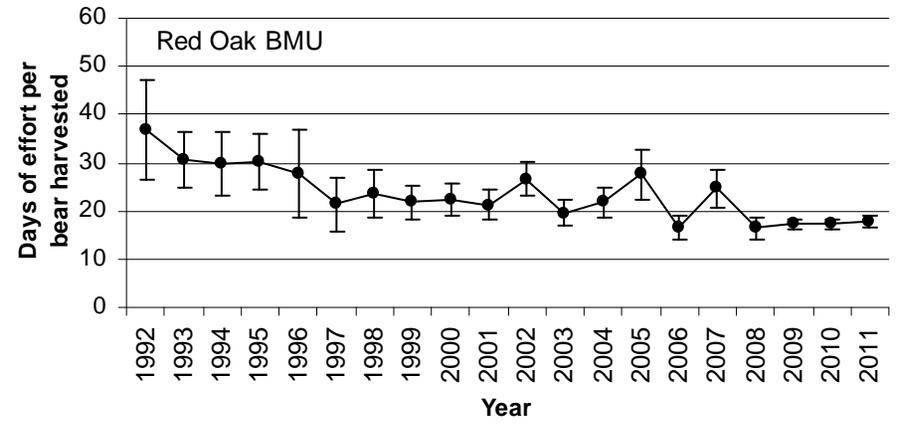
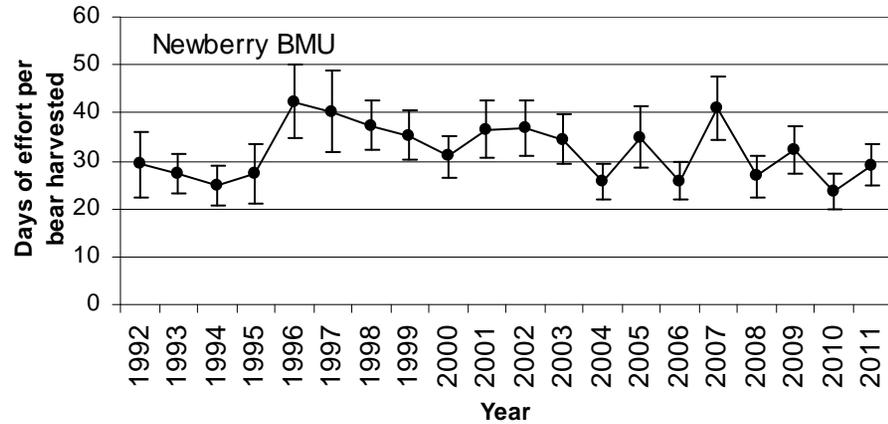
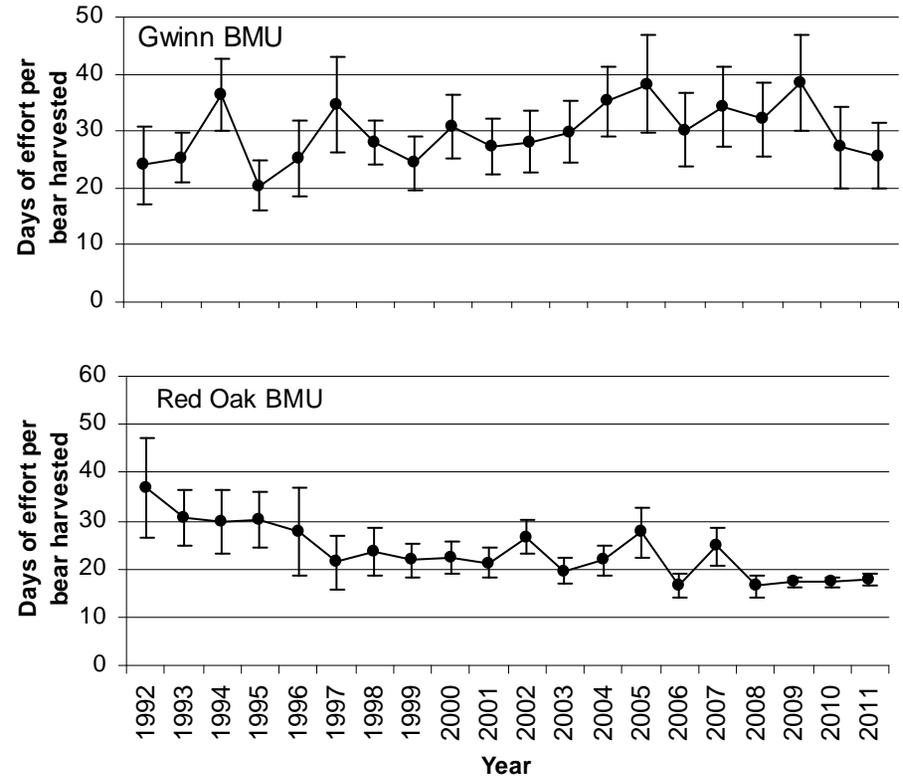
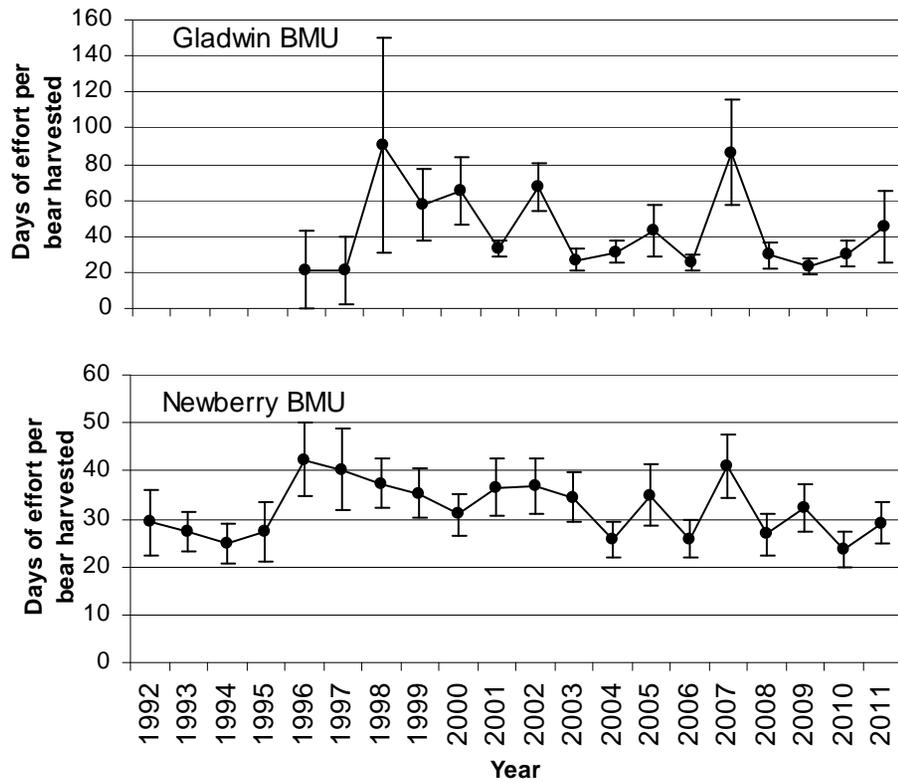


Figure 7 (continued). Estimated mean number of days required to harvest a bear in Michigan during 1992-2011, summarized by management unit. Baldwin and Gladwin management units were created in 1996. Vertical bars represent the 95% confidence interval.

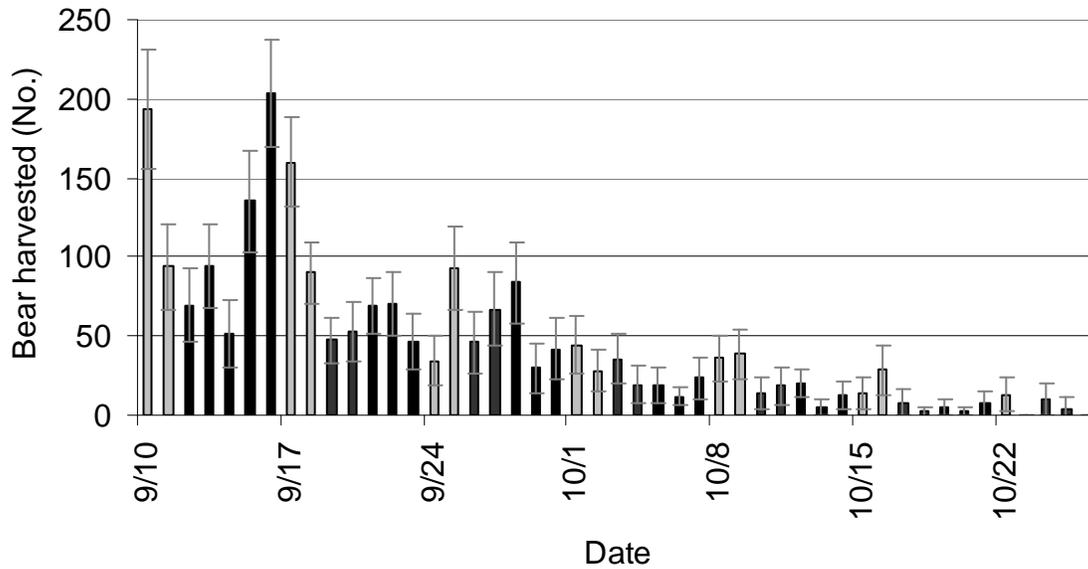


Figure 8. Estimated number of bear harvested by date during the 2011 bear hunting season (includes all hunt periods). Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval. The opening of the bear hunting season was September 10 in the UP and September 16 in the LP. Hunting with dogs in the UP started on September 15.

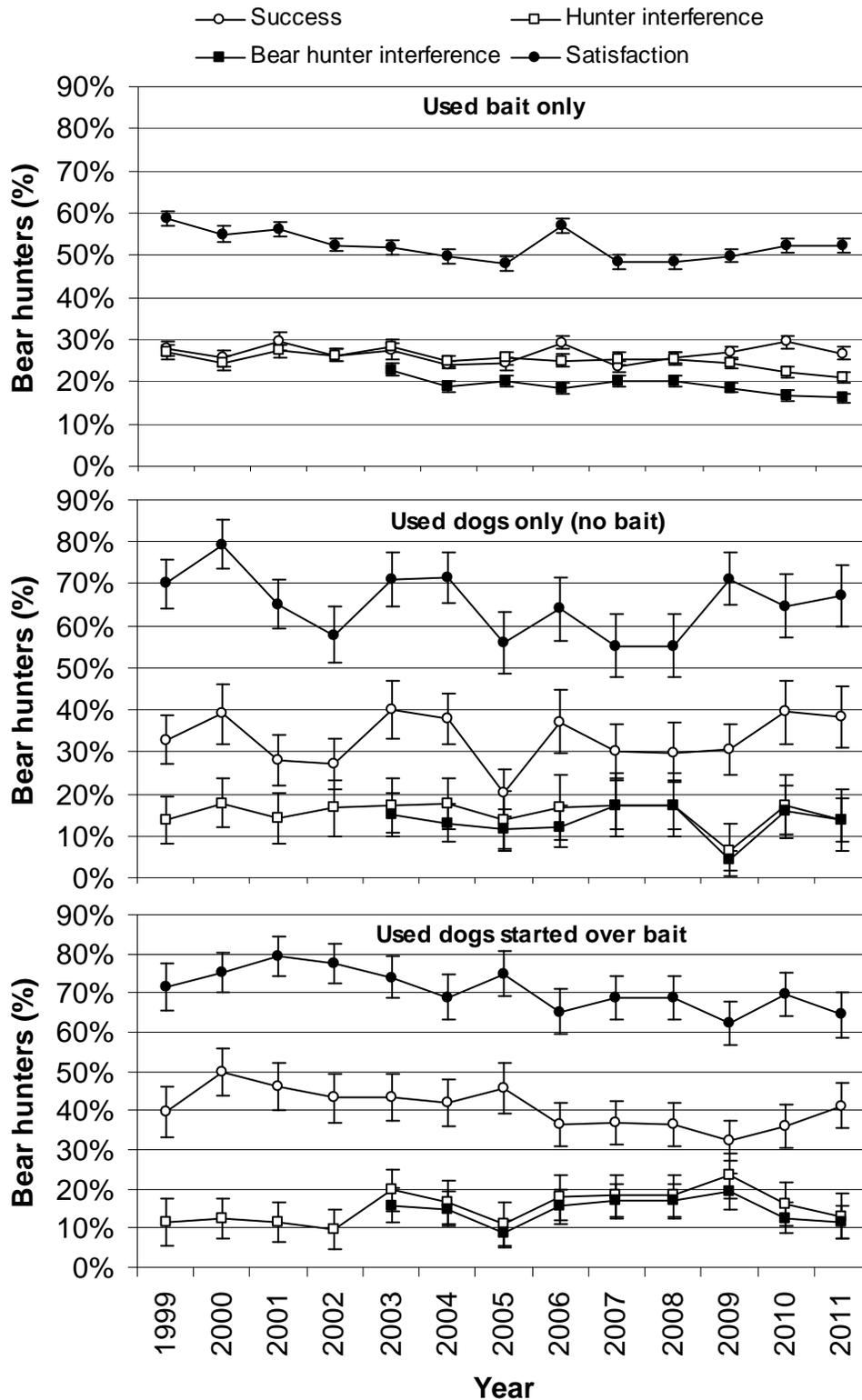


Figure 9. Estimated hunter success, interference, and satisfaction of bear hunters with their hunting experience in Michigan during 1999-2011, summarized by primary method of hunt. Vertical bars represent the 95% confidence interval. Interference was the proportion of hunters indicating they experienced interference from other hunters. Satisfaction was the proportion of hunters rating their hunting experience as very good or good.

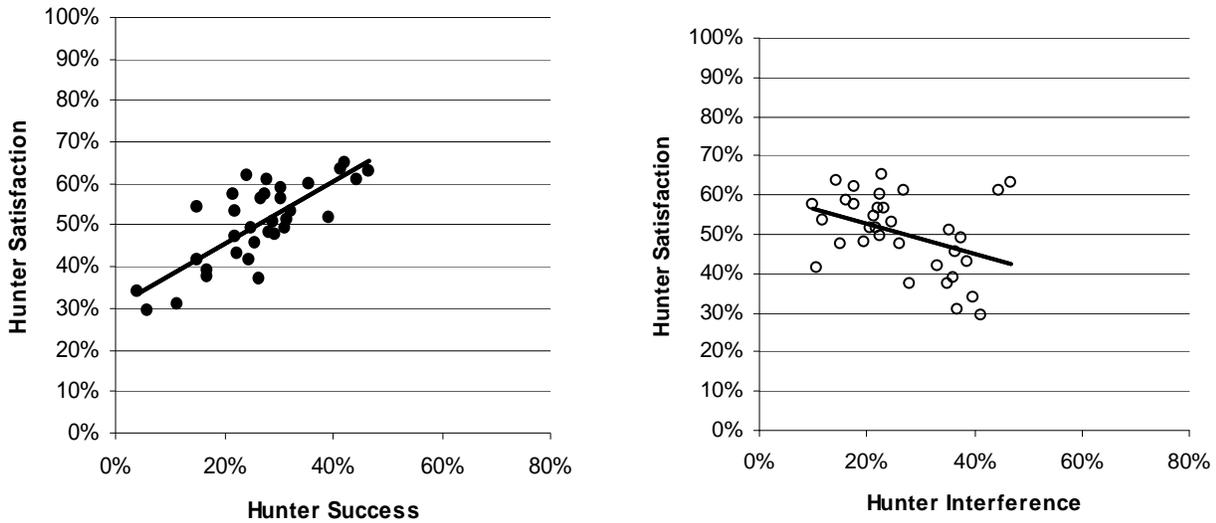


Figure 10. Hunter satisfaction (hunters rating their hunting experience as very good or good) relative to hunter success and hunter interference for 33 counties in Michigan during the 2011 bear hunting season (included only counties with at least 20 hunters). Interference was the proportion of hunters that reported interference from other hunters (all types of hunters).

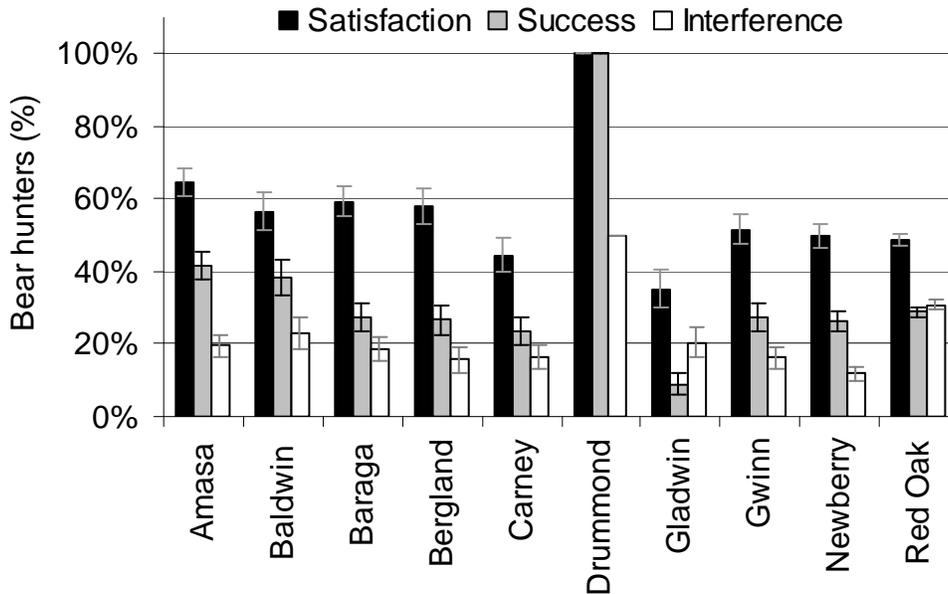


Figure 11. Estimated hunter satisfaction, hunting success, and level of hunter interference in Michigan's management units during the 2011 bear hunting season. Satisfaction measures the proportion of hunters rating their hunting experiences as very good or good. Error bars represent the 95% confidence limit. Interference was the proportion of hunters that reported interference from other hunters (all types of hunters).

Table 1. Number of people purchasing hunting licenses for the 2011 Michigan bear hunting seasons and number of people selected for survey sample.

Management unit	Licenses available (quota)	Number of eligible applicants ^a	Licenses sold ^b	Number of people included in mail survey sample ^c
Amasa	640	2,191	541	331
Baldwin	50	2,298	50	39
Baraga	2,295	3,655	1,700	536
Bergland	1,865	2,170	1,431	511
Carney	1,200	2,033	906	431
Drummond Island	2	158	2	1
Gladwin	140	857	109	94
Gwinn	1,735	2,959	1,235	486
Newberry	2,620	7,009	1,998	815
Red Oak	1,195	10,489	1,045	948
Pure Michigan Hunt	3	NA	3	3
Statewide	11,745	33,819	9,020	4,195
Applicants opting for Preference Point ^d		17,802		

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

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

^cAn additional 644 hunters responded on the internet before the mail sample was selected; these internet responders were used in the calculating survey estimates.

^dApplicants that chose to receive a preference point rather than enter into the drawing for a hunting license.

Table 2. Estimated number of hunters, harvest, hunter success, hunting effort, mean days hunted, and mean effort per harvested bear during the 2011 Michigan bear hunting season.

Management Unit	Hunters		Harvest		Hunter success		Hunting effort		Days hunted per hunter (\bar{x})		Days hunted per harvested bear (\bar{x})	
	No.	95% CL ^a	No.	95% CL ^a	%	95% CL ^a	Days	95% CL ^a	Days	95% CL ^a	Days	95% CL ^a
Amasa	501	11	207	20	41	4	3,352	242	6.7	0.5	16.2	2.2
Baldwin	50	0	19	3	38	5	263	21	5.3	0.4	13.7	2.3
Baraga	1,530	41	418	58	27	4	10,640	870	7.0	0.5	25.4	4.5
Bergland	1,159	49	309	50	27	4	8,283	781	7.1	0.6	26.8	5.7
Carney	750	29	175	29	23	4	6,568	587	8.8	0.7	37.5	8.5
Drummond Is.	2	0	2	0	100	0	5	0	2.5	0.0	2.5	0.0
Gladwin	105	2	9	3	9	3	503	30	4.8	0.3	53.5	20.2
Gwinn	1,079	33	296	42	27	4	7,599	647	7.0	0.6	25.7	5.5
Newberry	1,784	38	470	51	26	3	13,175	853	7.4	0.5	28.0	3.9
Red Oak	986	7	284	14	29	1	5,100	121	5.2	0.1	18.0	1.1
Pure MI Hunt	3	0	3	0	100	0	20	19	6.5	6.2	6.5	6.2
Statewide ^b	7,949	87	2,193	108	28	1	55,508	1,713	7.0	0.2	25.3	1.8

^a95% confidence limits.

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

Table 3. Estimated number of hunters, harvest, hunter success, hunting effort, hunter satisfaction, and hunt interference during the 2011 Michigan bear hunting season.

County	Hunters ^a		Harvest ^a		Hunter success		Hunting effort (days) ^a		Hunter satisfaction ^b		Interfered hunters ^c	
	Total	95%	Total	95%	%	95%	Total	95%	%	95%	%	95%
		CL		CL		CL		CL		CL		CL
Alcona	154	11	50	7	32	4	719	63	53	4	12	2
Alger	255	41	78	24	30	8	1,649	346	56	8	22	7
Alpena	95	9	37	6	39	5	518	64	52	5	21	4
Antrim	22	5	1	1	6	5	158	38	29	10	41	11
Arenac	0	0	0	0	0	0	0	0	0	0	0	0
Baraga	724	67	220	44	30	5	4,644	600	59	6	16	4
Bay	0	0	0	0	0	0	0	0	0	0	0	0
Benzie	8	2	1	1	15	11	52	12	45	13	0	0
Charlevoix	15	4	2	1	15	8	59	18	41	12	25	11
Cheboygan	67	8	18	4	26	5	335	50	37	6	35	6
Chippewa	429	49	107	26	25	5	3,252	549	49	6	23	5
Clare	34	5	1	1	4	4	165	27	34	8	40	8
Crawford	29	5	6	3	22	8	130	30	53	9	25	7
Delta	381	48	84	24	22	6	3,001	535	47	7	15	5
Dickinson	293	40	83	22	28	7	2,160	435	48	7	20	6
Emmet	35	6	10	3	29	8	146	31	51	8	35	8
Gladwin	48	6	5	3	11	5	224	33	31	8	37	8

^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 very good or good.

^cProportion of hunters that indicated that they experienced interference from other hunters (all types of hunters).

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunt interference during the 2011 Michigan bear hunting season.

County	Hunters ^a		Harvest ^a		Hunter success		Hunting effort (days) ^a		Hunter satisfaction ^b		Interfered hunters ^c	
	Total	95%	Total	95%	%	95%	Total	95%	%	95%	%	95%
		CL		CL		CL		CL		CL		CL
Gogebic	518	59	184	40	35	7	3,950	671	60	7	23	6
Gd. Traverse	3	1	0	0	0	0	34	14	100	0	0	0
Houghton	309	52	86	29	28	8	2,036	488	61	9	27	8
Iosco	23	5	10	3	44	11	113	27	61	10	44	11
Iron	365	19	151	18	41	5	2,502	246	64	4	15	3
Isabella	1	0	0	0	0	0	5	0	0	0	100	0
Kalkaska	51	7	9	3	17	5	244	37	39	7	36	7
Keweenaw	120	35	26	17	22	12	851	334	57	15	10	9
Lake	19	3	5	2	23	7	55	9	46	8	35	8
Leelanau	0	0	0	0	0	0	0	0	0	0	0	0
Luce	598	56	161	33	27	5	3,911	563	57	6	23	5
Mackinac	215	37	36	15	17	7	1,516	379	38	9	28	8
Manistee	1	1	0	0	0	0	6	5	100	0	0	0
Marquette	840	71	232	42	28	4	5,791	780	58	5	18	4
Mason	2	1	0	0	0	0	7	4	0	0	50	28
Mecosta	3	2	0	0	0	0	4	3	0	0	100	0
Menominee	487	37	119	25	25	5	4,252	516	41	5	11	3

^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 very good or good.

^cProportion of hunters that indicated that they experienced interference from other hunters (all types of hunters).

Table 3 (continued). Estimated number of hunters, hunting effort, harvest, hunter success, hunter satisfaction, and hunt interference during the 2011 Michigan bear hunting season.

County	Hunters ^a		Harvest ^a		Hunter success		Hunting effort (days) ^a		Hunter satisfaction ^b		Interfered hunters ^c	
	Total	95%	Total	95%	%	95%	Total	95%	%	95%	%	95%
		CL		CL		CL		CL		CL		CL
Midland	0	0	0	0	0	0	0	0	0	0	0	0
Missaukee	67	8	10	3	15	4	342	50	55	6	21	5
Montmorency	130	10	41	6	31	4	603	59	49	4	37	4
Muskegon	0	0	0	0	0	0	0	0	0	0	0	0
Newaygo	6	2	1	1	20	14	27	9	40	17	40	17
Oceana	1	0	1	0	100	0	1	0	100	0	0	0
Ogemaw	32	6	15	4	47	9	105	21	63	8	47	9
Ontonagon	712	71	174	40	24	5	4,723	667	62	6	18	5
Osceola	15	4	1	1	9	9	73	24	55	15	64	14
Oscoda	71	8	18	4	26	5	338	44	46	6	37	6
Otsego	41	6	6	2	15	5	179	32	42	7	33	7
Presque Isle	96	9	28	5	29	4	473	56	48	5	26	4
Roscommon	110	9	24	5	22	4	564	58	43	4	39	4
Schoolcraft	430	50	135	30	32	6	2,845	463	52	7	22	5
Wexford	27	3	11	2	42	7	93	18	65	7	23	7
Unreported	466	59	4	7	1	1	2,653	492	44	7	19	5

^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 very good or good.

^cProportion of hunters that indicated that they experienced interference from other hunters (all types of hunters).

Table 4. Estimated number and proportion of hunters hunting on private and public lands during the 2011 bear hunting season.

Management unit	Land type															
	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
Amasa	213	20	43	4	193	19	39	4	91	16	18	3	4	4	1	1
Baldwin	11	2	23	4	22	3	45	5	16	3	33	5	0	0	0	0
Baraga	497	61	33	4	697	67	46	4	316	53	21	3	20	15	1	1
Bergland	253	47	22	4	645	61	56	5	245	47	21	4	16	13	1	1
Carney	463	37	62	4	152	27	20	3	129	26	17	3	5	6	1	1
Drummond Is.	1	0	50	0	1	0	50	0	0	0	0	0	0	0	0	0
Gladwin	41	5	39	5	49	6	47	5	15	4	15	4	0	0	0	0
Gwinn	433	47	40	4	458	47	42	4	175	35	16	3	13	10	1	1
Newberry	549	54	31	3	907	60	51	3	304	43	17	2	24	14	1	1
Red Oak	487	16	49	2	339	15	34	1	126	10	13	1	34	6	3	1
Pure MI Hunt	0	0	0	0	2	2	50	57	2	2	50	57	0	0	0	0
Statewide	2,948	114	37	1	3,465	124	44	1	1,419	96	18	1	116	28	1	0

Table 5. Estimated number of days of hunting effort on private and public lands during the 2011 Michigan bear hunting season.

Management unit	Land type							
	Private lands		Public lands		Both private and public lands		Unknown	
	Total	95% CL	Total	95% CL	Total	95% CL	Total	95% CL
Amasa	1,325	188	1,278	201	730	154	19	25
Baldwin	65	19	132	15	66	16	0	0
Baraga	3,313	583	4,239	617	3,000	707	88	90
Bergland	1,824	489	4,423	592	1,961	561	75	87
Carney	3,839	508	1,021	222	1,655	420	54	59
Drummond Is.	2	0	3	0	0	0	0	0
Gladwin	187	31	220	30	96	28	0	0
Gwinn	2,859	445	2,720	425	1,983	523	38	49
Newberry	3,690	521	6,167	675	3,063	605	255	190
Red Oak	2,608	111	1,846	102	626	68	20	11
Pure MI Hunt	0	0	2	2	18	20	0	0
Statewide ^a	19,712	1,164	22,049	1,212	13,198	1,289	549	241

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

Table 6. Number of applicants, licenses sold, estimated number of hunters, harvest, hunting effort (days), and hunting success during Michigan bear hunting seasons, 2005-2011.

Region	Year						
	2005	2006	2007	2008	2009	2010	2011
Upper Peninsula							
Applicants	28,600	26,554	24,712	23,206	23,086	22,370	20,175
Licenses sold	7,808	7,786	7,774	8,195	7,260	7,786	7,813
Hunters	7,305	7,310	7,221	7,625	6,664	6,975	6,805
Harvest	1,908	2,176	1,817	1,948	1,759	2,046	1,878
Males (%)	63	63	62	59	62	57	61
Females (%)	36	36	36	40	38	42	39
Unknown (%)	1	1	2	1	1	0	0
Hunter-days	53,729	53,113	55,025	56,531	53,197	49,329	49,622
Hunter success (%)	26	30	25	26	26	29	28
Lower Peninsula							
Applicants	15,625	14,634	14,370	15,386	16,020	14,855	13,644
Licenses sold	1,654	1,670	1,740	1,983	1,693	1,187	1,204
Hunters	1,567	1,608	1,653	1,888	1,592	1,122	1,141
Harvest	303	463	365	528	451	347	312
Males (%)	58	60	56	58	54	54	59
Females (%)	39	38	43	40	46	46	40
Unknown (%)	3	2	1	1	0	0	0
Hunter-days	8,250	7,589	8,838	8,984	7,697	5,791	5,866
Hunter success (%)	19	29	22	28	28	31	27
Statewide^a							
Applicants ^b	57,040	55,050	54,014	55,458	56,772	54,937	51,621
Licenses sold	9,462	9,456	9,514	10,178	8,953	8,976	9,020
Hunters	8,872	8,918	8,874	9,512	8,256	8,097	7,949
Harvest	2,210	2,639	2,181	2,476	2,210	2,393	2,193
Males (%)	63	63	61	59	60	57	61
Females (%)	36	36	37	40	40	43	39
Unknown (%)	1	1	2	1	0	0	0
Hunter-days	61,979	60,702	63,862	65,516	60,894	55,120	55,508
Hunter success (%)	25	30	25	26	27	30	28

^aStatewide estimates included people that received Pure Michigan Hunt licenses, which were valid in both the UP and LP.

^bNumber of applicants statewide included people that applied for a preference point.

Table 8. Estimated proportion of hunters that used firearms, crossbows, and archery equipment while hunting bears in Michigan, 2011.

Management unit	Hunting equipment							
	Firearms		Compound, recurve, or long bows		Crossbows		Unknown	
	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Amasa	80	3	20	3	6	2	0	0
Baldwin	89	3	23	5	2	2	0	0
Baraga	83	3	18	3	7	2	0	0
Bergland	86	3	16	3	7	2	0	1
Carney	86	3	17	3	5	2	0	0
Drummond Is.	50	0	50	0	0	0	0	0
Gladwin	81	4	20	4	6	3	0	0
Gwinn	85	3	16	3	6	2	0	0
Newberry	90	2	12	2	5	1	1	0
Red Oak	86	1	31	1	7	1	0	0
Pure MI Hunt	100	0	50	57	0	0	0	0
Statewide ^a	86	1	18	1	6	1	0	0

^aRow totals equal more than 100% because hunters could use more than one type of equipment during season.

Table 9. Estimated number of hunters that used firearms, crossbows, and archery equipment while hunting bears in Michigan, 2011.

Management unit	Hunting equipment							
	Firearms		Compound, recurve, or long bows		Crossbows		Unknown	
	No.	95% CL	No.	95% CL	No.	95% CL	No.	95% CL
Amasa	401	18	98	15	32	10	0	0
Baldwin	44	2	11	2	1	1	0	0
Baraga	1,267	59	282	50	102	32	4	7
Bergland	992	57	181	41	81	28	4	7
Carney	643	34	124	25	38	15	0	0
Drummond Is.	1	0	1	0	0	0	0	0
Gladwin	85	5	21	4	7	3	0	0
Gwinn	913	44	176	34	62	22	0	0
Newberry	1,607	48	210	37	82	24	9	8
Red Oak	844	12	304	14	70	8	1	1
Pure MI Hunt	3	0	2	2	0	0	0	0
Statewide ^a	6,800	112	1,410	88	475	57	18	13

^aRow totals equal more than the estimated number of hunters in the unit because hunters could use more than one type of equipment during season.

Table 10. Estimated proportion of bears harvested by firearms, crossbows, and archery equipment during the 2011 bear hunting season in Michigan.

Management unit	Hunting equipment							
	Firearms		Compound, recurve, or long bows		Crossbows		Unknown	
	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Amasa	87	4	10	3	3	2	0	0
Baldwin	89	5	5	1	6	5	0	0
Baraga	81	6	12	5	6	4	1	2
Bergland	89	5	8	5	2	2	0	0
Carney	93	5	6	4	2	2	0	0
Drummond Is.	50	0	50	0	0	0	0	0
Gladwin	100	0	0	0	0	0	0	0
Gwinn	82	6	13	6	2	2	2	2
Newberry	90	4	8	3	1	1	1	1
Red Oak	80	2	18	2	3	1	0	0
Pure MI Hunt	100	0	0	0	0	0	0	0
Statewide ^a	86	2	11	2	3	1	1	1

Table 11. Estimated number of bears harvested during the 2011 bear hunting season in Michigan, summarized by hunting equipment used to take the bear.

Management unit	Hunting equipment							
	Firearms		Compound, recurve, or long bows		Crossbows		Unknown	
	No.	95% CL	No.	95% CL	No.	95% CL	No.	95% CL
Amasa	180	19	21	7	7	4	0	0
Baldwin	17	3	1	0	1	1	0	0
Baraga	339	54	48	22	27	17	4	7
Bergland	277	48	26	16	7	7	0	0
Carney	162	28	10	7	3	4	0	0
Drummond Is.	1	0	1	0	0	0	0	0
Gladwin	9	3	0	0	0	0	0	0
Gwinn	244	39	40	18	6	7	6	7
Newberry	422	49	38	16	6	7	3	5
Red Oak	226	13	50	7	8	2	0	0
Pure MI Hunt	3	0	0	0	0	0	0	0
Statewide ^a	1,880	102	235	38	65	21	13	11

Table 12. Primary hunting methods used to hunt bear in Michigan, 2011.

Method	Number of hunters	95% CL	Method used (%)
Bait only	6,829	113	
Dogs only	273	41	
Dogs and bait	521	61	
Other	174	37	
Unknown	152	35	

Table 13. Hunting methods used to harvest bear in Michigan, 2011.

Method	Number of hunters	95% CL	Method used (%)
Bait only	1,817	100	
Dogs only	119	25	
Dogs and bait	223	40	
Other	18	12	
Unknown	17	12	

Table 14. Hunters' level of satisfaction with the number of bear seen during the 2011 bear hunting season.

Management unit	Satisfaction level							
	Very good or good		Neutral		Poor or very poor		No answer or not applicable	
	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Amasa	39	4	19	3	32	4	9	2
Baldwin	31	5	11	3	51	5	7	3
Baraga	35	4	17	3	37	4	11	3
Bergland	34	5	17	3	36	5	13	3
Carney	29	4	15	3	42	4	13	3
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	23	5	9	3	47	5	21	4
Gwinn	30	4	19	3	42	4	8	2
Newberry	26	3	17	2	42	3	15	2
Red Oak	31	1	12	1	45	2	12	1
Pure MI Hunt	50	57	0	0	50	57	0	0
Statewide	31	1	16	1	40	1	12	1

Table 15. Hunters' level of satisfaction with the number of opportunities to take a bear during the 2011 bear hunting season.

Management unit	Satisfaction level							
	Very good or good		Neutral		Poor or very poor		No answer or not applicable	
	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Amasa	39	4	17	3	32	4	12	3
Baldwin	29	5	16	4	43	5	12	4
Baraga	31	4	13	3	38	4	17	3
Bergland	33	4	13	3	35	5	19	4
Carney	23	4	13	3	44	4	20	4
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	10	3	12	4	45	5	34	5
Gwinn	26	4	16	3	42	4	16	3
Newberry	25	3	14	2	41	3	20	3
Red Oak	27	1	9	1	46	2	18	1
Pure MI Hunt	50	57	50	57	0	0	0	0
Statewide	28	1	13	1	40	1	18	1

Table 16. Hunters' level of satisfaction with overall bear hunting experience during the 2011 bear hunting season.

Management unit	Satisfaction level							
	Very good or good		Neutral		Poor or very poor		No answer or not applicable	
	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Amasa	65	4	16	3	18	3	2	1
Baldwin	57	5	7	3	34	5	2	2
Baraga	59	4	17	3	19	3	5	2
Bergland	58	5	13	3	24	4	5	2
Carney	45	4	21	4	28	4	7	2
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	35	5	17	4	42	5	6	3
Gwinn	52	4	18	3	25	4	6	2
Newberry	50	3	17	2	26	3	7	2
Red Oak	49	2	15	1	30	1	6	1
Pure MI Hunt	50	57	50	57	0	0	0	0
Statewide	53	1	16	1	25	1	6	1

Table 17. Number and proportion of hunters that experienced interference with another hunter during the 2011 bear hunting season.

Management unit	Hunters interfered by other hunters (all types of hunters)				Hunters interfered by other bear hunters			
	%	95% CL	No.	95% CL	%	95% CL	No.	95% CL
	Amasa	13	3	65	13	8	2	39
Baldwin	25	5	13	2	14	4	7	2
Baraga	19	3	288	51	16	3	243	48
Bergland	20	4	228	45	16	4	188	42
Carney	14	3	103	24	11	3	82	21
Drummond Is.	50	0	1	0	0	0	0	0
Gladwin	41	5	43	5	28	5	29	5
Gwinn	17	3	182	35	13	3	143	32
Newberry	22	3	399	49	18	2	318	44
Red Oak	28	1	277	14	20	1	195	12
Pure MI Hunt	0	0	0	0	0	0	0	0
Statewide	20	1	1,600	96	16	1	1,244	88

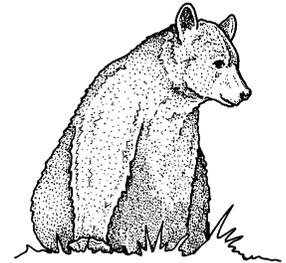
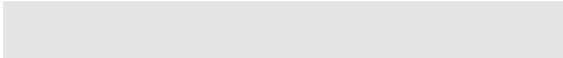
Appendix A

2011 Michigan Bear Harvest Questionnaire



2011 MICHIGAN BEAR HARVEST REPORT

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



It is important that you complete and return this report even if you did not hunt or harvest a bear. If you want to provide your answers via the internet, visit our website at <https://secure1.state.mi.us/wildlifesurveys/bear.aspx>.

1. Did you hunt bear in Michigan during the 2011 season?

- ¹ Yes ² No; (If you select “No”, you are finished. Please return the survey.)

2. Please report the number of days for each county that you hunted bear in the following table.

COUNTY HUNTED <i>(List each county that you hunted for bear; for example, Marquette County)</i>	NUMBER OF DAYS HUNTED	TYPE OF LAND
		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

3. Did you hunt with a firearm, crossbow, or bow during the 2011 bear season?
(select all that apply)

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

4. What hunting method did you use most often when hunting bear in Michigan during the 2011 bear season? *(Please select only one item.)*

- ¹ Hunted over bait only ² Used dogs only (bait not used)
³ Used dogs started over bait ⁴ Used other methods not involving dogs or bait

Please continue on back

5. If you used bait to attract bears, what was the total number of gallons you used during the legal baiting and hunting periods?

_____ Please write in gallons used.

6. Did you kill a bear and place your harvest tag on it? (If no, please skip to question 8.)

¹ Yes ² No

7. If your harvest tag was put on a bear, please fill in the information below

a. What date was the bear harvested?

(please check [X] the box for the date of harvest)

September 2011						
S	M	T	W	T	F	S
						10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

October 2011						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26			

b. What was the sex of the bear?

¹ Male ² Female ³ Not sure

c. In what county was it harvested?

_____ please write in county name

d. On what type of land was the bear harvested?

¹ Private ² Public

e. What weapon was used to harvest bear?

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

f. What was the method of harvest?

¹ Taken over bait ² Used dogs only (bait not used)
³ Used dogs started over bait ⁴ Used other methods not involving dogs or bait

8. Did other hunters interfere with your bear hunting? ¹ Yes ² No (Skip to question 10.)

9. If you answered "yes" to the previous question, was the interference caused by other bear hunters? ¹ Yes ² No

10. How would you rate the following for your 2011 bear hunting season:

(Select one choice per item.)

Very Good Good Neutral Poor Very Poor Not Applicable

a. Number of bear 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 a bear.	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 bear 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"/>

Return the completed report in the enclosed postage-paid envelope. Thanks for your help.