



Michigan Department of Natural Resources  
Wildlife Division Report No. 3594  
October 2014

## 2013 MICHIGAN BLACK BEAR HUNTER SURVEY

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### ABSTRACT

*A random sample of bear hunters was contacted after the 2013 hunting season to determine hunter participation, hunting methods, bear harvest, and hunter satisfaction. In 2013, an estimated 5,627 hunters spent nearly 39,701 days afield and harvested about 1,603 bears. The number of hunters, hunting effort, and harvest were not significantly different between 2012 and 2013. Statewide, 28% of hunters harvested a bear in 2013, versus 30% success in 2012. The average number of days required to harvest a bear statewide was 24.9 days in 2013, compared to 23.6 days in 2012. 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 2013 (versus 55% in 2012).*

### 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 were 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, but no more than 2% of the licenses were issued to nonresidents.



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

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In 2013, 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 13-28 in Benzie, Leelanau, and Grand Traverse counties and during September 20-28 for remaining counties in the Northern Lower Peninsula (LP) units. The first day of hunt periods in the LP (September 20) was restricted to hunting with bait only, and the last two days of the hunt periods in the LP (September 27-28) were restricted to hunters using dogs. In addition, the first day of the Baldwin North Area season (Sept. 13) was for bait-only hunting. The Red Oak Management Unit in the LP also had an archery-only hunt during October 4-10 (firearms and crossbows prohibited).

The number of bear hunting licenses available in 2013 (license quota) was reduced 1 percent statewide from 2012. Although statewide quota was changed little between the last two years, the quota for the Red Oak Unit was reduced to 750 from 835 licenses between 2012 and 2013 (10% reduction).

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 a firearm, crossbow, or archery equipment, except for the special archery-only hunt in the Red Oak Management Unit. Youth 10 to 13 years old could hunt with a firearm on private land only. Youth 14 years old and older could hunt with a firearm on private or 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, the first day of the Red Oak, Baldwin, and Gladwin units [September 20], the first day of the Baldwin North Area [September 13], and during the archery-only season [October 4-10] 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 bear season until their bear harvest tag was filled.

The DNR and Natural Resources Commission 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 2013 bear hunting season, a questionnaire (Appendix A) was mailed to 3,448 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 12 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 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 (stratum 12). 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 2013, and up to two follow-up questionnaires were mailed to nonrespondents. Although 3,448 people were sent the questionnaire, 39 surveys were undeliverable, resulting in an adjusted sample size of 3,409. Questionnaires were returned by 2,452 people, yielding a 72% adjusted response rate. In

addition, 288 people voluntarily reported information about their hunting activity via the internet before the random sample was selected.

## RESULTS

In 2013, 6,217 bear hunting licenses were purchased (Table 1), which was nearly unchanged from 2012 (6,226). Most of the people buying a license in 2013 were men (90%), and the average age of the license buyers was 49 years (Figure 2). About 4% of the license buyers (252) were younger than 17 years old.

Compared to 10 years ago, the number of people buying a bear hunting license in 2013 decreased 33% (9,214 people purchased a license in 2003). Although the overall number of license buyers decreased, there were increased hunter numbers among the youngest and oldest age classes in 2013 (Figure 3). 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 2013, 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 2003.

Nearly  $91 \pm 1\%$  of the license buyers hunted bear (Table 2). These hunters spent 39,701 days afield ( $\bar{x} = 7.1$  days/hunter) and harvested 1,603 bears. The number of hunters, hunting effort, and harvest were not significantly different between 2012 and 2013 (Figure 4). Marquette, Baraga, and Ontonagon counties had the highest number of bear hunters, and Ontonagon, Gogebic, and Marquette counties had the highest number of bears harvested during 2013 (Table 3).

The average number of days required to harvest a bear statewide was 24.9 days in 2013 (Table 2, Figure 5), which was not significantly different from 2012 (23.6 days). Mean effort per harvested bear did not change significantly in the UP between 2012 and 2013; however, mean effort per bear declined significantly in the LP (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, Gwinn, and Newberry management units, while Amasa, Baldwin Drummond Island, and Red Oak management units have had the lowest effort per harvested bear (Figure 7).

About 38% of the bear hunters hunted on private lands only in 2013, 45% hunted on public lands only, and 16% hunted on both private and public lands (Table 4). Bear hunters spent 15,250 days afield on private land, 16,225 days hunting on public land only, and 7,980 days hunting on both private and public lands (Table 5). Of the estimated 1,603 bear harvested in

2013,  $39 \pm 3\%$  of these bears ( $633 \pm 55$ ) were taken on private land. About  $60 \pm 3\%$  of the bears ( $968 \pm 68$ ) were taken on public land.

For bears that the harvest date was reported, about 19% of these bears were taken during the first five days and 36% during the first ten days of the hunting season (Figure 8). Of the bears harvested and their sex known,  $59 \pm 3\%$  were males ( $951 \pm 68$ ) and  $40 \pm 3\%$  were females ( $647 \pm 56$ ; Table 6). Statewide, 28% of hunters harvested a bear in 2013, compared to 30% success in 2012 (Table 2). Hunter success ranged from 12-100% among the bear management units (Table 2).

Most hunters (85%) used firearms while hunting bear, although 13% of the hunters used archery equipment (compound, recurve, or long bows), and 7% used a crossbow (Tables 7 and 8). Most hunters (87%) used a firearm to harvest their bear, while 6% used archery equipment, and 6% used a crossbow (Tables 9 and 10). 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  $64 \pm 6\%$  of the bear hunters using a crossbow in 2013 had obtained the crossbow stamp in 2013, and about  $81 \pm 5\%$  of the bear hunters using a crossbow in 2013 had obtained the crossbow stamp during 2009-2013.

Most hunters ( $85 \pm 1\%$ ) relied primarily on baiting only as a means of locating and attracting bears (Table 11). About 12% ( $\pm 1\%$ ) of hunters relied primarily on dogs alone or a combination of baiting and dogs to locate bears. About 1% of hunters relied on a hunting method not involving dogs or bait.

About  $80 \pm 2\%$  of the harvested bears were taken with the aid of bait only (Table 12). Hunting success for hunters using bait only was  $27 \pm 2\%$ , while hunting success for hunters using dogs was  $42 \pm 4\%$  in 2013. Success among hunters using dogs has usually been higher than among hunters using baits only (Figure 9).

About 33% of bear hunters statewide rated the number of bear seen during the 2013 hunting season as very good or good, and 42% rated bear seen as poor or very poor (Table 13). Similarly, about 27% of hunters statewide rated the number of chances they had to take a bear during the 2013 hunting season as very good or good, and 42% rated their chances as poor or very poor (Table 14).

Statewide, about 53% of hunters rated their hunting experiences as very good or good (versus 55% in 2012), and 24% rated their hunting experiences as poor or very poor (Table 15). Hunter satisfaction is affected by many factors such as hunting success and whether hunting activities were completed without interference (Figure 10). In 2013, 21% of the hunters were interfered with by other hunters (Table 16). Most of this interference was caused by another bear hunter; 15% 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 16, Figure 11).

Only 13% of the hunters (704 hunters) hired a hunting guide in 2013 (Table 17). Furthermore, most hunting guides ( $83 \pm 3\%$ ) relied on baiting only to locate bears for their clients in 2013 (Table 18).

## **ACKNOWLEDGEMENTS**

I thank all the bear hunters that provided information. Theresa Riebow completed data entry. Chris Larson and Fukang Wang developed the internet harvest reporting application. The figure of bear management units and the area open to hunting was prepared by Marshall Strong. Jillian Farkas, Russ Mason, and Doug Reeves reviewed a previous version of this report.

## **LITERATURE CITED**

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Figure 1. Bear management units open to hunting in Michigan, 2013.

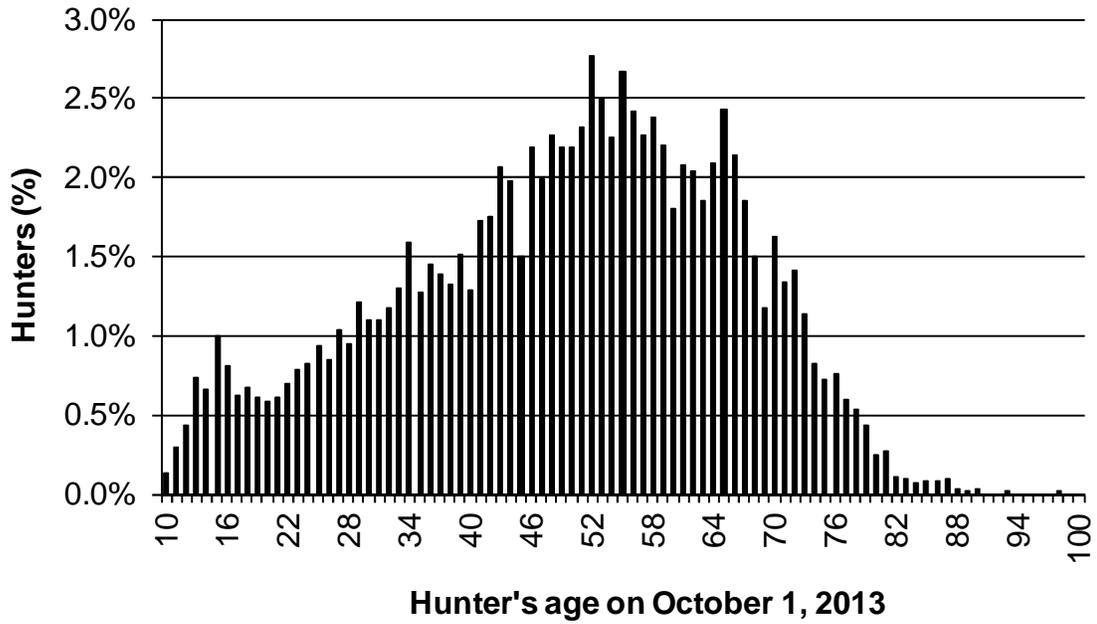


Figure 2. Age of people that purchased a bear hunting license in Michigan for the 2013 hunting season ( $\bar{x} = 48$  years). Licenses were purchased by 6,226 people.

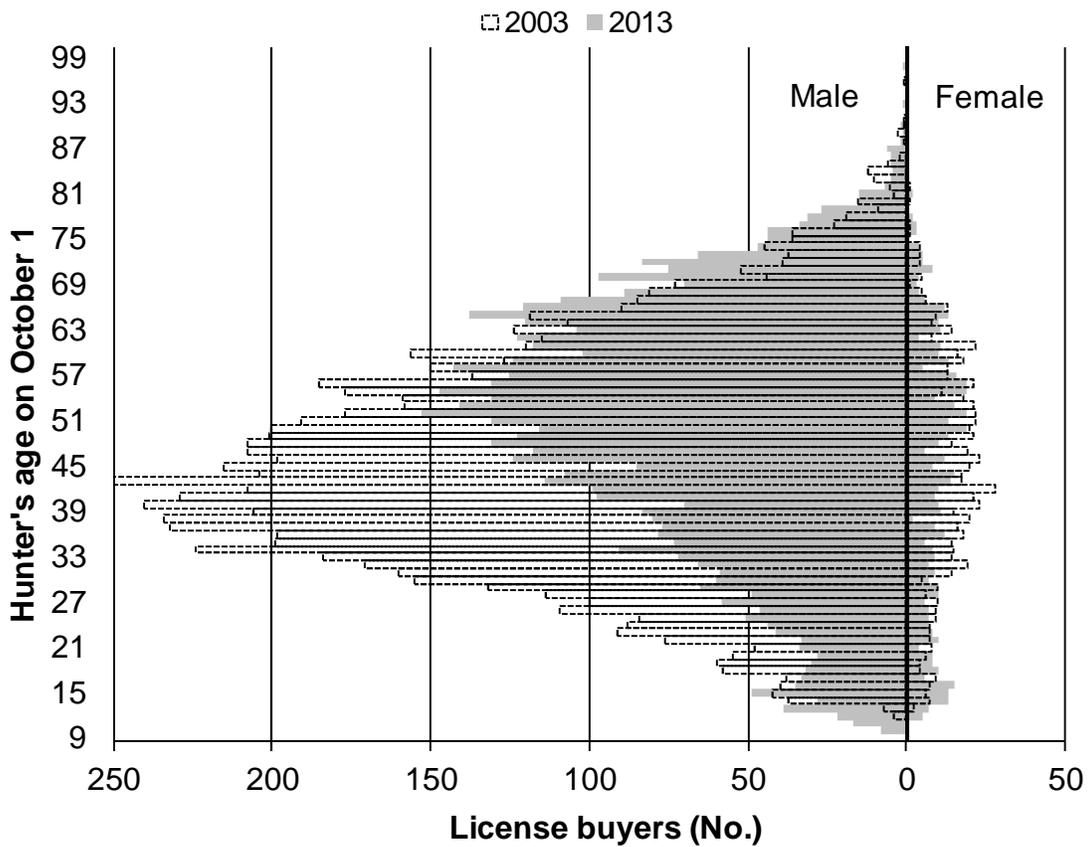


Figure 3. Number of bear hunting license buyers in Michigan by age and sex during 2003 and 2013 hunting seasons. The number of people buying a license was 9,214 in 2003 and 6,226 in 2013.

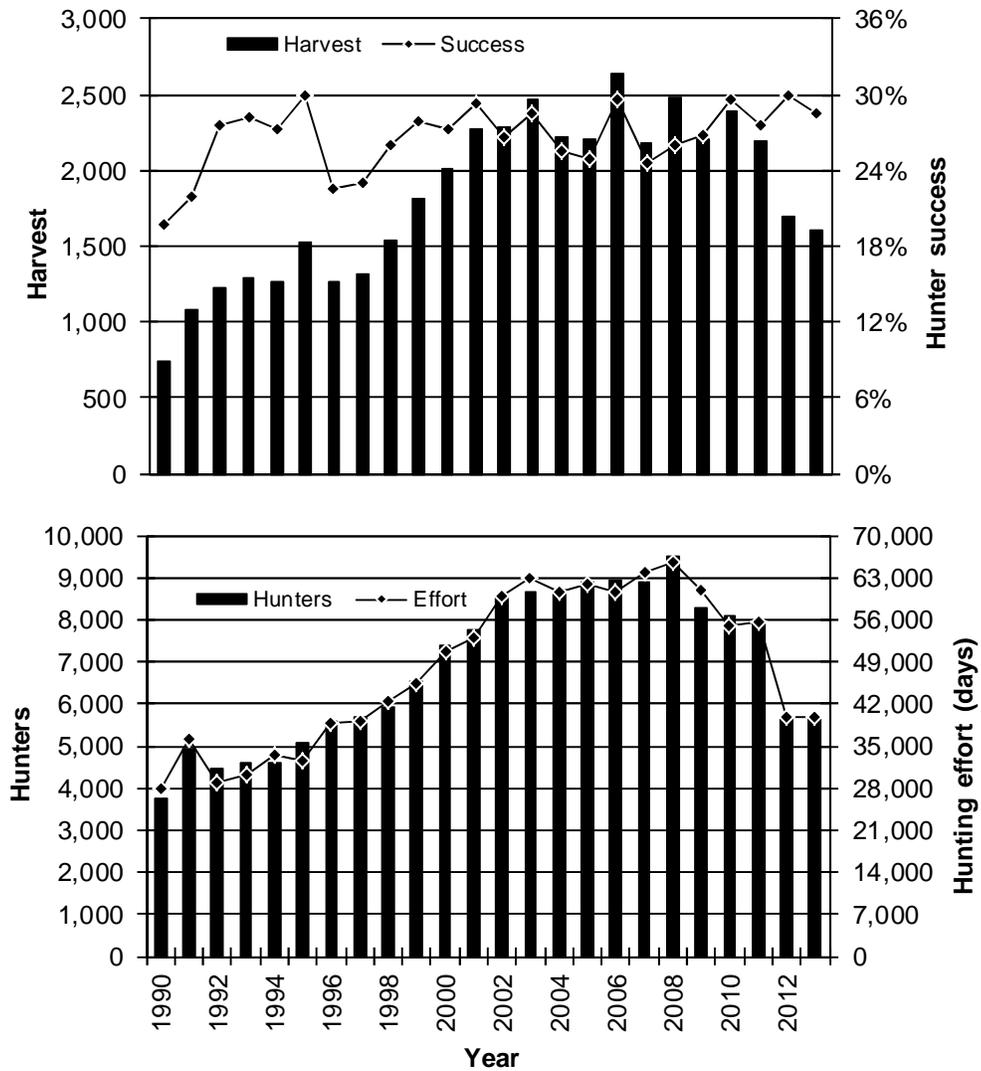


Figure 4. Estimated harvest, hunting success, number of hunters, and hunting effort during bear hunting seasons, 1990-2013.

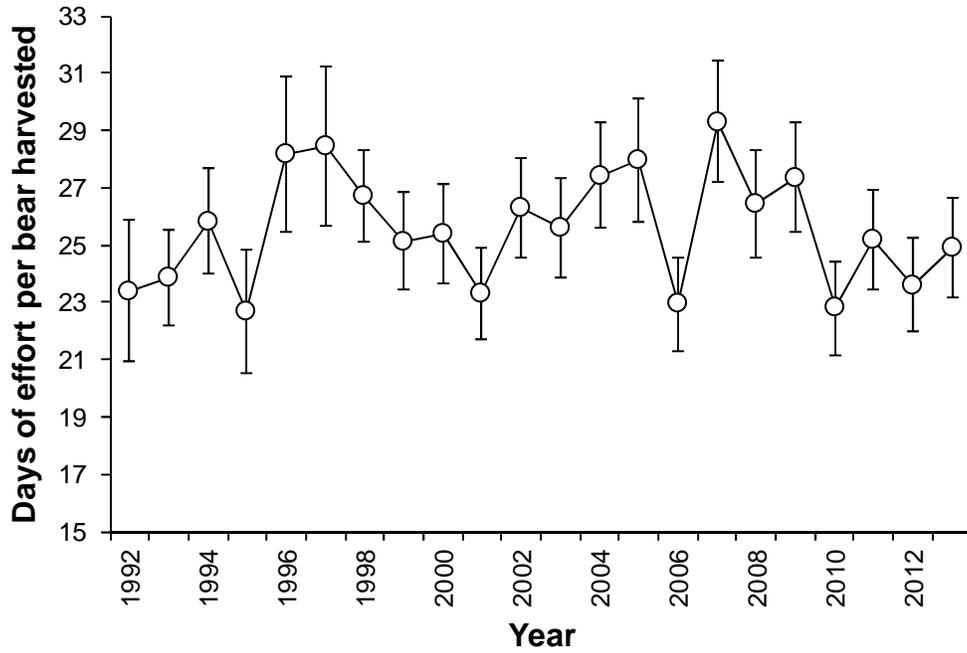


Figure 5. Estimated mean number of days required to harvest a bear statewide in Michigan during 1992-2013. Vertical bars represent the 95% confidence interval.

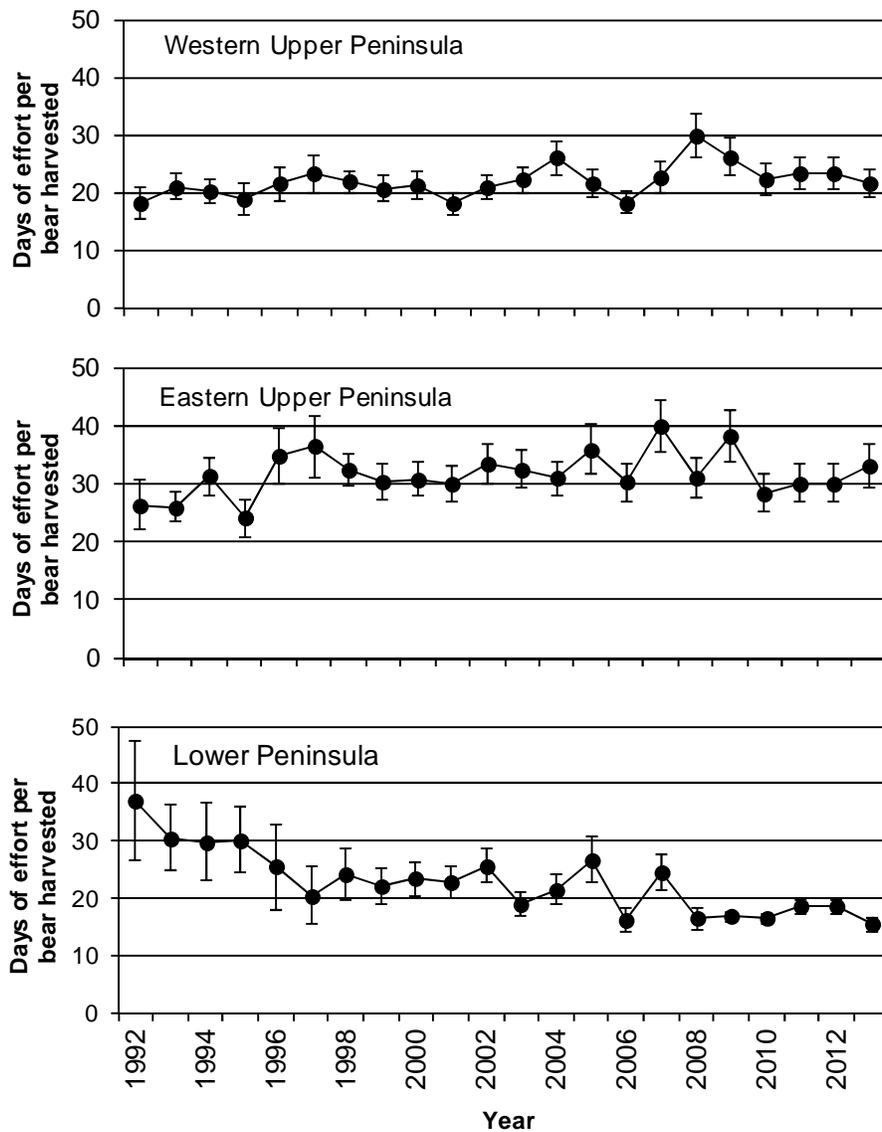


Figure 6. Estimated mean number of days required to harvest a bear in Michigan during 1992-2013, summarized by ecological region. Western UP consisted of Amasa, Baraga, and Bergland units, and Eastern UP consisted of Carney, Gwinn, and Newberry units (Drummond Island Management Unit excluded). Lower Peninsula consisted of Baldwin, Gladwin, and Red Oak management units. Vertical bars represent the 95% confidence interval.

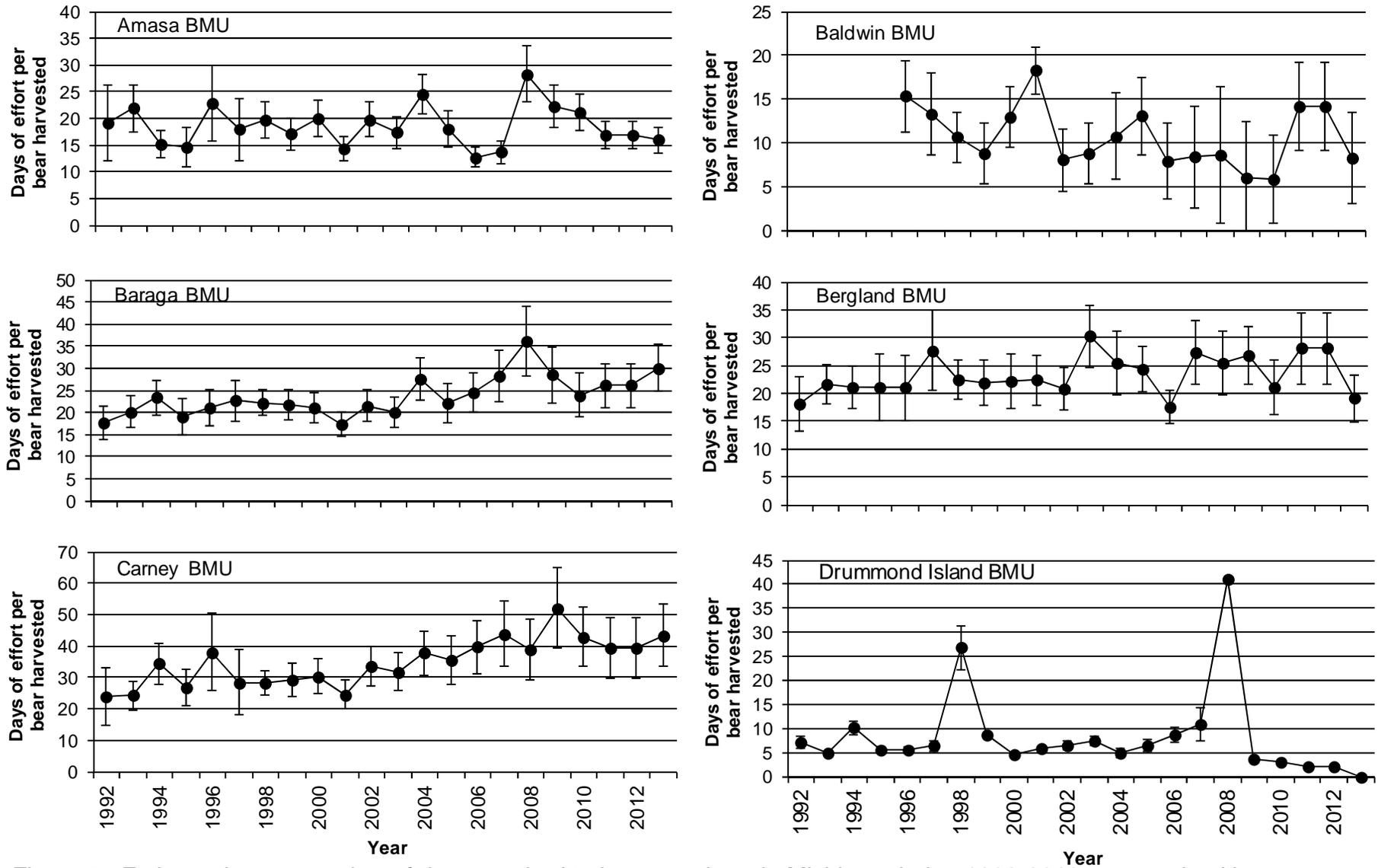


Figure 7. Estimated mean number of days required to harvest a bear in Michigan during 1992-2013, summarized by management unit. Baldwin and Gladwin management units were created in 1996. Vertical bars represent the 95% confidence interval.

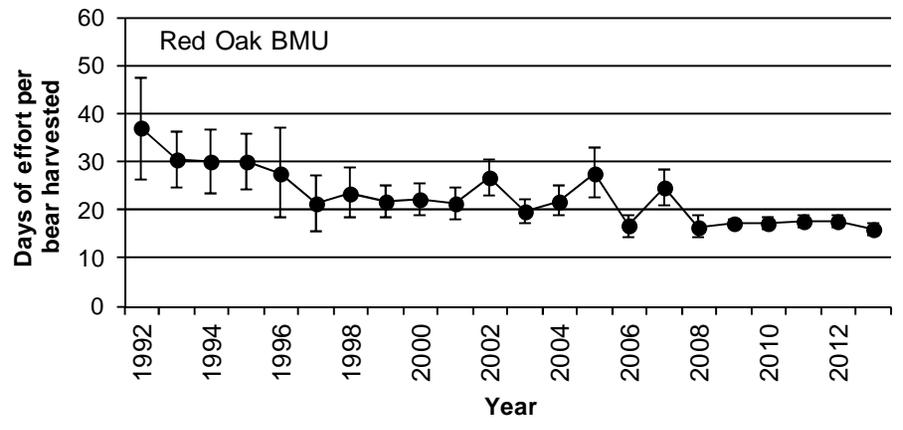
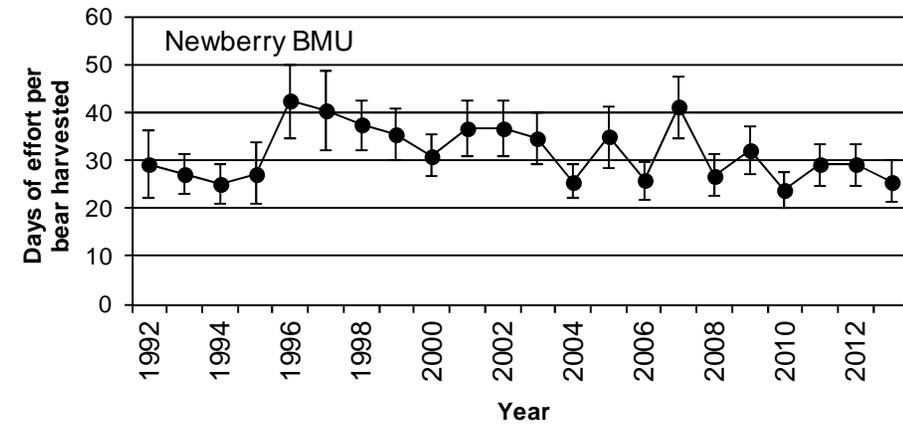
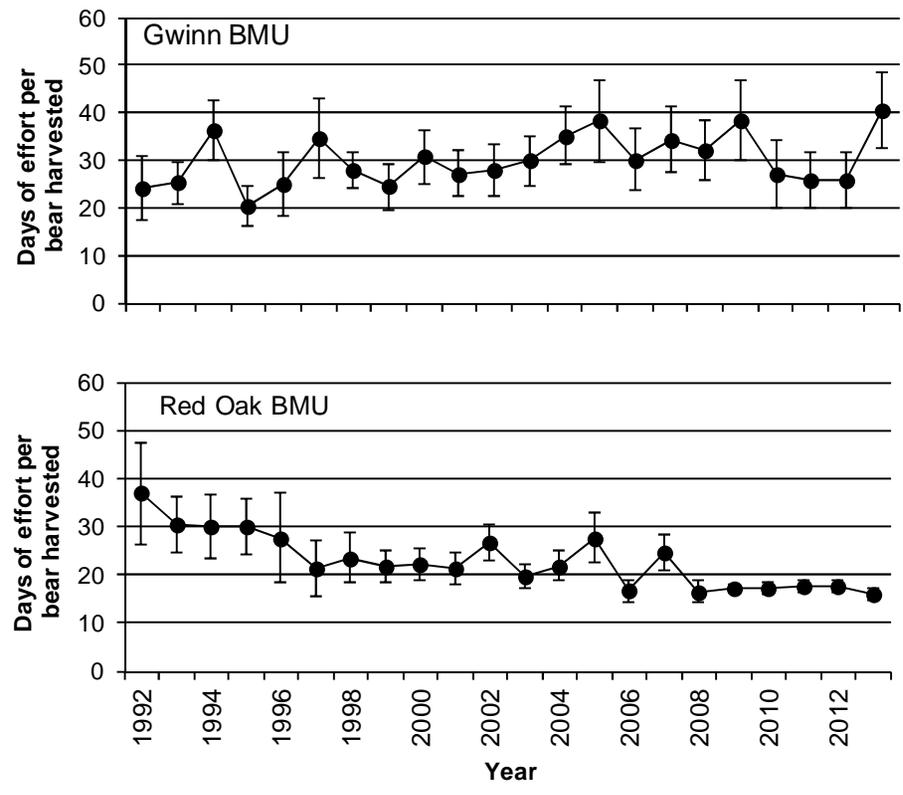
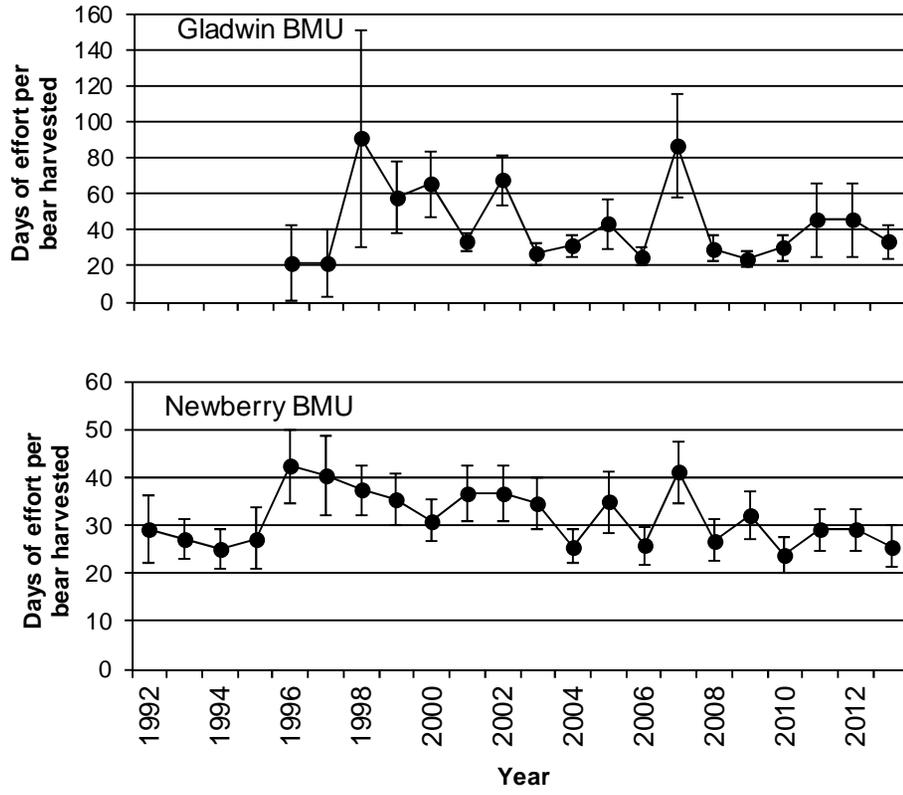


Figure 7 (continued). Estimated mean number of days required to harvest a bear in Michigan during 1992-2013, summarized by management unit. Baldwin and Gladwin management units were created in 1996. Vertical bars represent the 95% confidence interval.

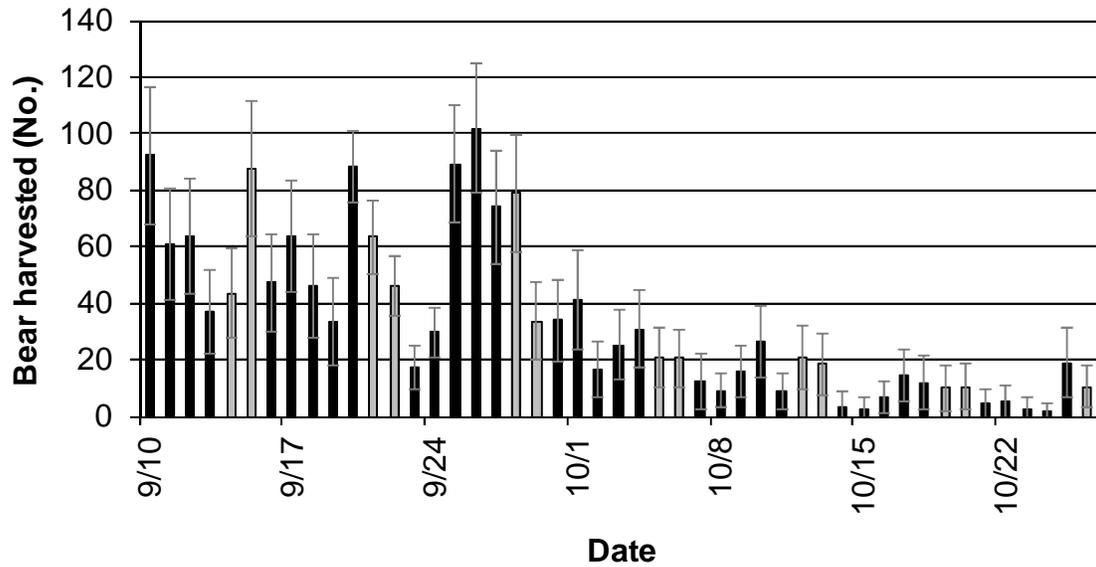


Figure 8. Estimated number of bear harvested by date during the 2013 bear hunting season (includes all hunt periods). Gray-shaded bars indicate weekends. Vertical bars represent the 95% confidence interval. The opening of the bear hunting season was September 10 in the UP and September 21 in the LP. Hunting with dogs in the UP started on September 15.

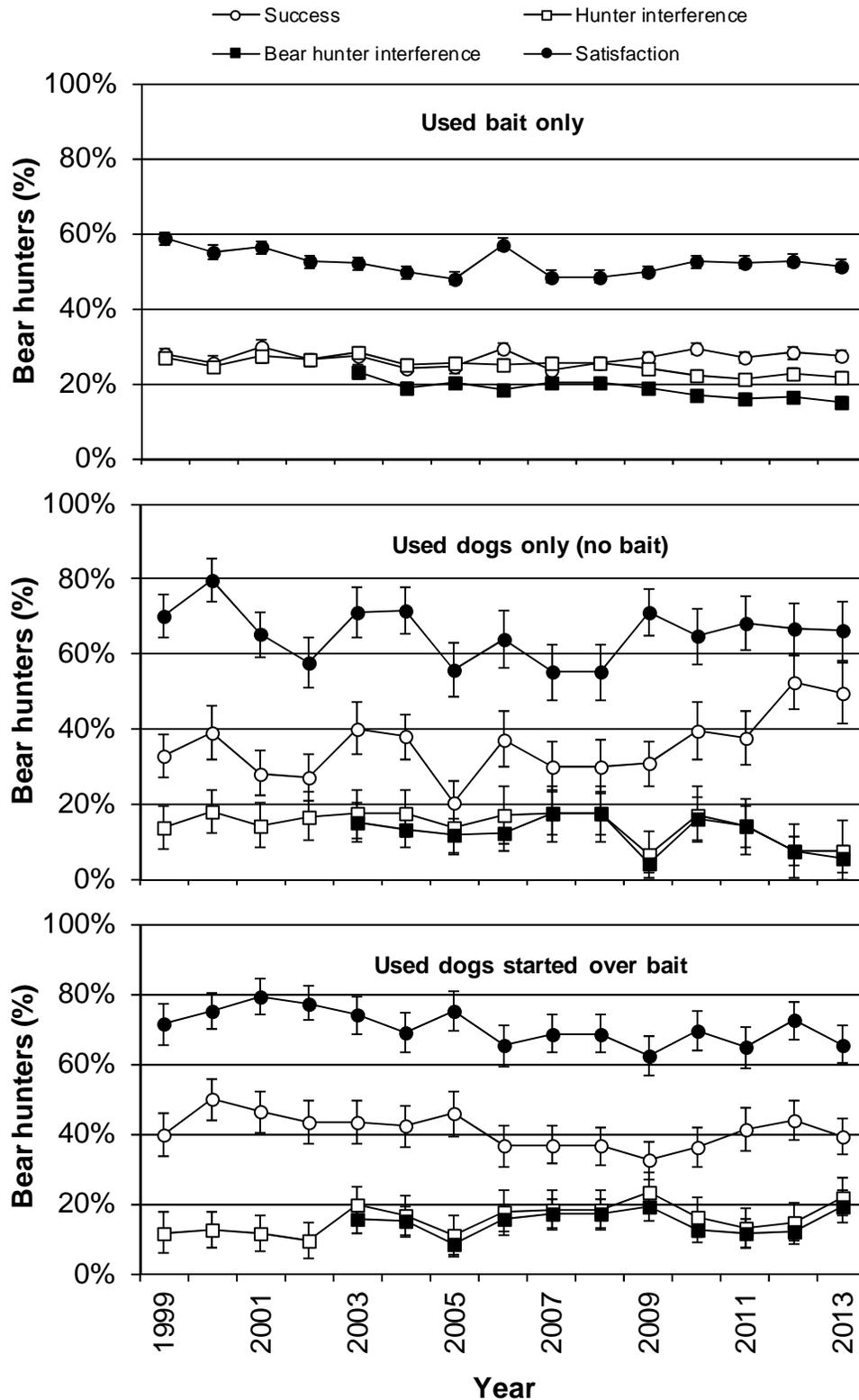


Figure 9. Estimated hunter success, interference, and satisfaction of bear hunters with their hunting experience in Michigan during 1999-2013, summarized by primary method of hunt. Vertical bars represent the 95% confidence interval. Interference was the proportion of hunters indicating they experienced interference from other hunters. Satisfaction was the proportion of hunters rating their hunting experience as very good or good.

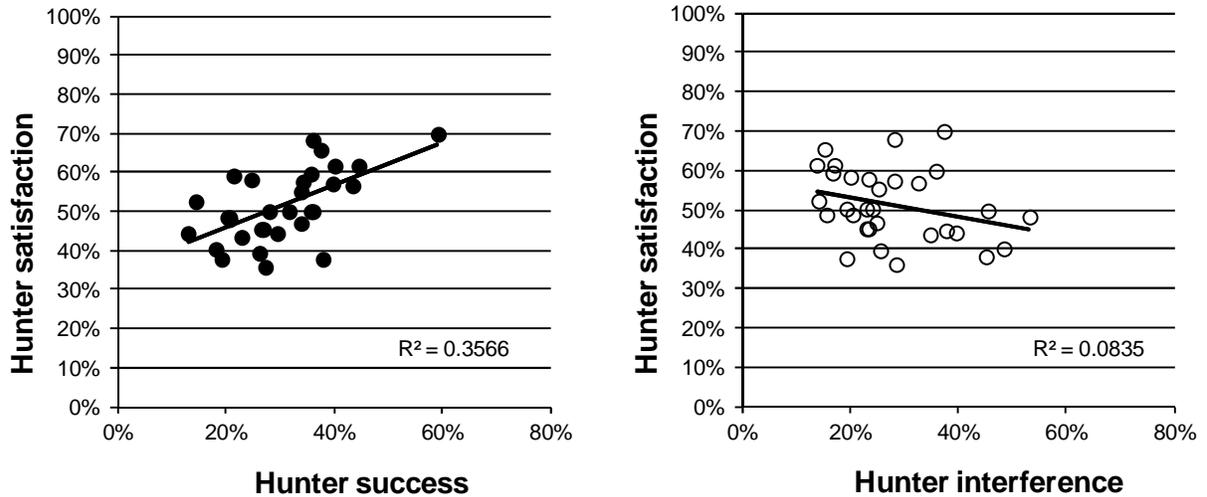


Figure 10. Hunter satisfaction (hunters rating their hunting experience as very good or good) relative to hunter success and hunter interference for 31 counties in Michigan during the 2013 bear hunting season (included only counties with at least 20 hunters). Interference was the proportion of hunters that reported interference from other hunters (all types of hunters).

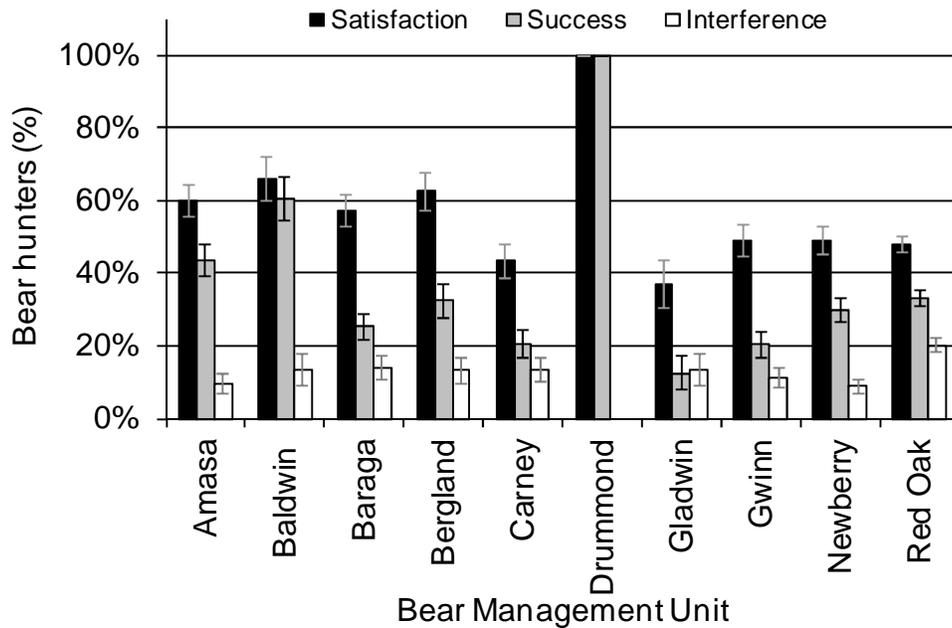


Figure 11. Estimated hunter satisfaction, hunting success, and level of hunter interference in Michigan's bear management units during the 2013 bear hunting season. Satisfaction measures the proportion of hunters rating their hunting experiences as very good or good. Error bars represent the 95% confidence 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 2013 Michigan bear hunting seasons and number of people selected for survey sample.

Management unit	Licenses available (quota)	Number of eligible applicants <sup>a</sup>	Licenses sold <sup>b</sup>	Number of people included in mail survey sample <sup>c</sup>
Amasa	505	2,164	446	301
Baldwin	70	2,288	70	68
Baraga	1,620	3,467	1,191	484
Bergland	1,265	1,921	986	445
Carney	815	1,919	618	364
Drummond Island	1	127	1	0
Gladwin	110	927	83	76
Gwinn	1,250	2,772	940	442
Newberry	1,520	6,406	1,226	666
Red Oak	750	9,954	653	602
Pure Michigan Hunt	3	NA	3	0
Statewide	7,909	31,945	6,217	3,448
Applicants opting for Preference Point <sup>d</sup>		19,770		

<sup>a</sup>Number of eligible applicants selecting the management unit as their first choice to hunt.

<sup>b</sup>Fewer licenses were sold than the number available because some successful applicants failed to purchase a license.

<sup>c</sup>An additional 288 hunters responded on the internet before the mail sample was selected; these internet responders were used in the calculating survey estimates.

<sup>d</sup>Applicants 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 2013 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 <sup>a</sup>	No.	95% CL <sup>a</sup>	%	95% CL <sup>a</sup>	Days	95% CL <sup>a</sup>	Days	95% CL <sup>a</sup>	Days	95% CL <sup>a</sup>
Amasa	405	11	177	18	44	4	2,769	230	6.8	0.5	15.7	2.2
Baldwin	67	2	41	4	60	6	339	27	5.0	0.4	8.3	1.1
Baraga	1,107	26	279	42	25	4	8,174	573	7.4	0.5	29.3	4.9
Bergland	827	35	268	41	32	5	4,969	469	6.0	0.5	18.5	3.9
Carney	537	18	110	20	21	4	4,600	389	8.6	0.7	41.7	9.0
Drummond Is.	1	0	1	0	100	0	3	0	3.0	0.0	0.0	0.0
Gladwin	77	3	10	4	12	5	351	27	4.5	0.3	30.9	9.0
Gwinn	860	22	174	30	20	3	6,822	514	7.9	0.6	39.2	7.4
Newberry	1,135	23	340	38	30	3	8,509	588	7.5	0.5	25.0	3.9
Red Oak	609	8	202	13	33	2	3,161	113	5.2	0.2	15.7	1.2
Pure MI Hunt	1	0	1	0	100	0	2	0	2.0	0.0	0.0	0.0
Statewide <sup>b</sup>	5,627	58	1,603	82	28	1	39,701	1,174	7.1	0.2	24.9	1.7

<sup>a</sup>95% confidence limits.

<sup>b</sup>Column 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 2013 Michigan bear hunting season.

County	Hunters <sup>a</sup>		Harvest <sup>a</sup>		Hunter success		Hunting effort (days) <sup>a</sup>		Hunter satisfaction <sup>b</sup>		Interfered hunters <sup>c</sup>	
	Total	95%	Total	95%	%	95%	Total	95%	%	95%	%	95%
		CL		CL		CL		CL		CL		CL
Alcona	89	10	24	5	27	5	417	58	45	6	23	5
Alger	202	33	64	20	32	8	1,455	312	50	9	24	8
Alpena	56	8	20	5	36	7	259	45	50	7	19	6
Antrim	6	3	1	0	15	7	33	17	58	22	15	7
Arenac	3	2	0	0	0	0	4	3	0	0	50	37
Baraga	555	50	120	29	22	5	3,688	468	59	6	17	5
Bay	3	2	1	1	50	37	8	7	100	0	0	0
Benzie	7	3	5	2	69	15	43	16	83	14	48	18
Charlevoix	4	2	0	0	0	0	36	21	0	0	0	0
Cheboygan	46	8	14	4	30	8	253	49	44	9	38	8
Chippewa	263	35	92	22	34	7	2,187	397	47	7	25	6
Clare	21	5	3	2	13	9	94	24	44	12	40	12
Crawford	30	6	8	3	28	8	131	33	50	10	46	10
Delta	330	40	69	19	21	5	2,742	464	49	7	16	5
Dickinson	234	32	58	16	25	6	1,661	314	58	7	20	6
Emmet	28	6	12	4	43	11	99	27	57	11	32	10
Gladwin	18	4	1	1	8	8	83	23	15	10	23	12

<sup>a</sup>Number 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.

<sup>b</sup>Proportion of hunters that rated their hunting experience as very good or good.

<sup>c</sup>Proportion 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 2013 Michigan bear hunting season.

County	Hunters <sup>a</sup>		Harvest <sup>a</sup>		Hunter success		Hunting effort (days) <sup>a</sup>		Hunter satisfaction <sup>b</sup>		Interfered hunters <sup>c</sup>	
	Total	95%	Total	95%	%	95%	Total	95%	%	95%	%	95%
		CL		CL		CL		CL		CL		CL
Gogebic	364	45	146	31	40	7	2,310	396	61	7	14	5
Gd. Traverse	3	1	1	0	30	11	27	11	70	11	30	11
Houghton	166	34	60	21	36	10	1,386	347	68	10	28	10
Iosco	18	5	5	3	31	13	75	25	46	14	15	10
Iron	272	19	121	17	45	5	1,812	212	62	5	17	4
Isabella	0	0	0	0	0	0	0	0	0	0	0	0
Kalkaska	27	6	7	3	28	9	151	41	36	10	29	9
Keweenaw	90	26	13	10	14	11	869	303	52	15	14	11
Lake	19	4	10	3	53	12	95	22	60	12	60	12
Leelanau	0	0	0	0	0	0	0	0	0	0	0	0
Luce	326	37	110	24	34	6	2,238	375	55	7	25	6
Mackinac	146	27	40	15	27	9	1,047	266	45	10	23	8
Manistee	6	3	4	2	60	20	28	13	80	17	0	0
Marquette	645	55	131	27	20	4	5,029	568	49	5	20	4
Mason	0	0	0	0	0	0	0	0	0	0	0	0
Mecosta	0	0	0	0	0	0	0	0	0	0	0	0
Menominee	318	27	61	16	19	5	2,935	377	38	6	19	5

<sup>a</sup>Number 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.

<sup>b</sup>Proportion of hunters that rated their hunting experience as very good or good.

<sup>c</sup>Proportion 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 2013 Michigan bear hunting season.

County	Hunters <sup>a</sup>		Harvest <sup>a</sup>		Hunter success		Hunting effort (days) <sup>a</sup>		Hunter satisfaction <sup>b</sup>		Interfered hunters <sup>c</sup>	
	Total	95%	Total	95%	%	95%	Total	95%	%	95%	%	95%
		CL		CL		CL		CL		CL		CL
Midland	1	1	0	0	0	0	3	3	100	0	100	0
Missaukee	39	7	15	4	38	9	214	44	38	9	45	9
Montmorency	87	10	31	6	36	6	446	63	50	6	23	5
Muskegon	0	0	0	0	0	0	0	0	0	0	0	0
Newaygo	9	3	3	2	29	16	35	15	29	16	71	16
Oceana	0	0	0	0	0	0	0	0	0	0	0	0
Ogemaw	46	8	11	4	23	7	172	38	44	9	35	8
Ontonagon	534	56	202	39	38	6	3,144	464	66	6	15	4
Osceola	25	5	5	2	21	9	108	25	48	11	53	11
Oscoda	35	7	12	4	34	9	154	33	58	10	24	8
Otsego	23	5	8	3	36	12	111	35	60	12	36	12
Presque Isle	60	8	24	5	40	7	311	57	57	7	28	7
Roscommon	49	8	9	3	18	6	275	53	40	8	49	8
Schoolcraft	237	33	62	18	26	7	1,564	316	39	8	26	7
Wexford	30	5	18	4	59	9	142	27	70	9	38	9
Unreported	348	46	3	4	1	1	1,827	345	44	7	20	6

<sup>a</sup>Number 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.

<sup>b</sup>Proportion of hunters that rated their hunting experience as very good or good.

<sup>c</sup>Proportion 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 2013 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	144	18	36	4	169	18	42	4	86	15	21	4	6	4	1	1
Baldwin	19	4	29	6	28	4	41	6	21	4	30	6	0	0	0	0
Baraga	374	46	34	4	533	49	48	4	197	37	18	3	3	5	0	0
Bergland	214	38	26	5	444	46	54	5	145	33	18	4	24	15	3	2
Carney	312	27	58	5	136	22	25	4	89	19	17	3	0	0	0	0
Drummond Is.	0	0	0	0	0	0	0	0	1	0	100	0	0	0	0	0
Gladwin	32	5	41	7	34	5	44	7	11	4	14	5	0	0	0	0
Gwinn	332	37	39	4	411	38	48	4	104	24	12	3	14	9	2	1
Newberry	371	39	33	3	545	42	48	4	208	32	18	3	10	8	1	1
Red Oak	318	15	52	2	210	14	34	2	59	8	10	1	23	6	4	1
Pure MI Hunt	1	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Statewide	2,116	88	38	2	2,509	94	45	2	921	69	16	1	80	21	1	0

Table 5. Estimated number of days of hunting effort on private and public lands during the 2013 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	1,088	197	1,007	168	650	146	24	20
Baldwin	78	21	123	22	137	31	0	0
Baraga	2,650	414	3,764	513	1,760	432	0	0
Bergland	1,441	355	2,398	355	1,032	300	98	100
Carney	2,794	371	946	204	860	242	0	0
Drummond Is.	0	0	0	0	3	0	0	0
Gladwin	122	26	164	29	65	23	0	0
Gwinn	2,794	450	2,911	380	1,052	321	65	86
Newberry	2,633	395	3,763	444	2,074	462	39	60
Red Oak	1,649	103	1,148	92	347	65	18	10
Pure MI Hunt	2	0	0	0	0	0	0	0
Statewide <sup>a</sup>	15,250	919	16,225	900	7,980	824	245	146

<sup>a</sup>Column 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, 2006-2013.

Region	Year						
	2007	2008	2009	2010	2011	2012	2013
<b>Upper Peninsula</b>							
Applicants	24,712	23,206	23,086	22,370	20,175	18,880	18,776
Licenses sold	7,774	8,195	7,260	7,786	7,813	5,323	5,408
Hunters	7,221	7,625	6,664	6,975	6,808	4,782	4,871
Harvest	1,817	1,948	1,759	2,046	1,873	1,376	1,350
Males (%)	62	59	62	57	61	59	60
Females (%)	36	40	38	42	39	41	40
Unknown (%)	2	1	1	0	0	0	0
Hunter-days	55,025	56,531	53,197	49,329	49,627	35,348	35,847
Hunter success (%)	25	26	26	29	28	29	28
<b>Lower Peninsula</b>							
Applicants	14,370	15,386	16,020	14,855	13,644	13,224	13,169
Licenses sold	1,740	1,983	1,693	1,187	1,204	900	806
Hunters	1,653	1,888	1,592	1,122	1,141	860	754
Harvest	365	528	451	347	313	314	252
Males (%)	56	58	54	54	59	49	55
Females (%)	43	40	46	46	40	51	45
Unknown (%)	1	1	0	0	0	0	0
Hunter-days	8,838	8,984	7,697	5,791	5,862	4,385	3,851
Hunter success (%)	22	28	28	31	27	37	33
<b>Statewide</b>							
Applicants <sup>a</sup>	54,014	55,458	56,772	54,937	51,621	51,152	51,715
Licenses sold <sup>b</sup>	9,514	10,178	8,953	8,976	9,020	6,226	6,217
Hunters	8,874	9,512	8,256	8,097	7,949	5,643	5,626
Harvest	2,181	2,476	2,210	2,393	2,187	1,690	1,602
Males (%)	61	59	60	57	61	57	59
Females (%)	37	40	40	43	39	43	41
Unknown (%)	2	1	0	0	0	0	0
Hunter-days	63,862	65,516	60,894	55,120	55,489	39,733	39,699
Hunter success (%)	25	26	27	30	28	30	28

<sup>a</sup>Number of applicants statewide included people that applied for a preference point.

<sup>b</sup>Number of license sold statewide included people that received Pure Michigan Hunt licenses, which were valid in both the UP and LP.

Table 7. Estimated proportion of hunters that used firearms, crossbows, and archery equipment while hunting bears in Michigan, 2013.

Management unit	Hunting equipment							
	Firearms		Compound, recurve, or long bows		Crossbows		Unknown	
	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Amasa	87	3	10	3	6	2	0	0
Baldwin	89	4	13	4	4	2	0	0
Baraga	84	3	14	3	9	2	0	0
Bergland	82	4	13	3	9	3	0	1
Carney	82	4	13	3	7	2	1	1
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	78	5	13	4	9	4	0	0
Gwinn	86	3	11	3	7	2	0	0
Newberry	89	2	9	2	6	2	1	1
Red Oak	86	2	20	2	4	1	0	0
Pure MI Hunt	100	0	0	0	0	0	0	0
Statewide <sup>a</sup>	85	1	13	1	7	1	0	0

<sup>a</sup>Row totals equal more than 100% because hunters could use more than one type of equipment during season.

Table 8. Estimated number of hunters that used firearms, crossbows, and archery equipment while hunting bears in Michigan, 2013.

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	351	16	39	10	24	9	0	0
Baldwin	60	3	9	3	3	2	0	0
Baraga	929	41	155	34	98	27	3	5
Bergland	680	43	110	29	77	25	3	6
Carney	441	24	72	17	40	13	5	5
Drummond Is.	1	0	0	0	0	0	0	0
Gladwin	60	5	10	3	7	3	0	0
Gwinn	742	32	95	23	59	19	0	0
Newberry	1,008	33	100	23	63	19	8	7
Red Oak	524	12	122	11	24	5	0	0
Pure MI Hunt	1	0	0	0	0	0	0	0
Statewide <sup>a</sup>	4,796	82	711	60	394	48	19	11

<sup>a</sup>Row 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 9. Estimated proportion of bears harvested by firearms, crossbows, and archery equipment during the 2013 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	89	4	4	2	6	3	0	0
Baldwin	87	5	13	5	0	0	0	0
Baraga	85	6	8	4	7	4	0	0
Bergland	88	6	2	2	9	5	1	2
Carney	85	7	10	6	5	4	0	0
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	86	14	0	0	14	14	0	0
Gwinn	95	4	5	4	0	0	0	0
Newberry	85	5	8	4	8	4	0	0
Red Oak	87	3	8	2	5	2	0	0
Pure MI Hunt	100	0	0	0	0	0	0	0
Statewide	87	2	6	1	6	1	0	0

Table 10. Estimated number of bears harvested during the 2013 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	158	18	8	4	11	6	0	0
Baldwin	36	4	5	2	0	0	0	0
Baraga	238	39	21	13	20	13	0	0
Bergland	234	39	5	6	25	15	3	6
Carney	94	19	11	7	6	5	0	0
Drummond Is.	1	0	0	0	0	0	0	0
Gladwin	8	3	0	0	1	1	0	0
Gwinn	165	29	9	7	0	0	0	0
Newberry	288	36	26	13	26	13	0	0
Red Oak	176	13	16	5	10	4	0	0
Pure MI Hunt	1	0	0	0	0	0	0	0
Statewide	1,399	78	102	22	99	25	3	6

Table 11. Primary hunting methods used to hunt bear in Michigan, 2013.

Method	Number of hunters	95% CL	Method used (%)
Bait only	4,774	82	
Dogs only	187	30	
Dogs and bait	492	53	
Other	131	28	
Unknown	42	17	

Table 12. Hunting methods used to harvest bear in Michigan, 2013.

Method	Number of hunters	95% CL	Method used (%)
Bait only	1,284	76	
Dogs only	130	25	
Dogs and bait	169	29	
Other	11	8	
Unknown	9	8	

Table 13. Hunters' level of satisfaction with the number of bear seen during the 2013 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	40	4	20	4	32	4	8	3
Baldwin	47	6	15	5	30	6	8	3
Baraga	33	4	17	3	37	4	13	3
Bergland	36	5	18	4	38	5	7	3
Carney	26	4	15	3	47	5	12	3
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	27	6	5	3	52	7	16	5
Gwinn	31	4	14	3	47	4	8	2
Newberry	30	3	13	2	46	4	11	2
Red Oak	35	2	11	1	45	2	9	1
Pure MI Hunt	100	0	0	0	0	0	0	0
Statewide	33	2	15	1	42	2	10	1

Table 14. Hunters' level of satisfaction with the number of opportunities to take a bear during the 2013 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	37	4	15	3	35	4	13	3
Baldwin	40	6	15	5	32	6	13	4
Baraga	29	4	16	3	39	4	16	3
Bergland	30	5	19	4	37	5	14	4
Carney	18	3	14	3	49	5	19	4
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	14	5	2	2	58	7	26	6
Gwinn	24	4	14	3	49	4	13	3
Newberry	25	3	14	3	43	4	17	3
Red Oak	29	2	11	1	47	2	14	2
Pure MI Hunt	100	0	0	0	0	0	0	0
Statewide	27	1	15	1	43	2	16	1

Table 15. Hunters' level of satisfaction with overall bear hunting experience during the 2013 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	60	4	15	3	20	4	6	2
Baldwin	66	6	11	4	15	5	8	3
Baraga	57	4	18	3	19	3	5	2
Bergland	62	5	12	3	20	4	5	2
Carney	43	5	18	4	35	4	4	2
Drummond Is.	100	0	0	0	0	0	0	0
Gladwin	37	6	14	4	42	7	7	4
Gwinn	49	4	22	4	24	4	5	2
Newberry	49	4	21	3	25	3	5	2
Red Oak	48	2	18	2	31	2	4	1
Pure MI Hunt	100	0	0	0	0	0	0	0
Statewide	53	2	18	1	24	1	5	1

Table 16. Number and proportion of hunters that experienced interference with another hunter during the 2013 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	16	3	63	13	9	3	36
Baldwin	43	6	29	4	21	5	14	4
Baraga	18	3	196	37	14	3	154	34
Bergland	16	4	136	32	12	3	97	28
Carney	19	4	104	20	13	3	68	17
Drummond Is.	0	0	0	0	0	0	0	0
Gladwin	37	6	29	5	17	5	13	4
Gwinn	19	3	166	30	14	3	117	26
Newberry	24	3	274	36	21	3	238	34
Red Oak	29	2	179	13	20	2	120	11
Pure MI Hunt	0	0	0	0	0	0	0	0
Statewide	21	1	1,177	73	15	1	858	65

Table 17. Number and proportion of hunters that used a hunting guide during the 2013 bear hunting season.

Management unit	%	95% CL	No.	95% CL
Amasa	18	3	71	14
Baldwin	17	5	12	3
Baraga	13	3	141	31
Bergland	21	4	172	35
Carney	6	2	30	11
Drummond Island	0	0	0	0
Gladwin	7	3	5	2
Gwinn	8	2	72	20
Newberry	15	3	165	29
Red Oak	6	1	35	6
Pure MI Hunt	100	0	1	0
Statewide	13	1	704	61

Table 18. Hunting methods used by guides to hunt bear in Michigan, 2013.

Management unit	Hunted over bait only		Used dogs only (no bait)		Used dogs started over bait		Used other method		Unknown method	
	No.	95% CL	No.	95% CL	No.	95% CL	No.	95% CL	No.	95% CL
Amasa	56	13	2	3	12	6	0	0	1	0
Baldwin	10	3	0	0	1	1	0	0	0	0
Baraga	130	31	0	0	3	5	0	0	8	0
Bergland	152	34	0	0	8	8	0	0	12	8
Carney	15	8	1	0	11	7	0	0	3	3
Drummond Island	0	0	0	0	0	0	0	0	0	0
Gladwin	4	2	0	0	0	0	0	0	1	0
Gwinn	57	18	5	4	5	6	0	0	5	4
Newberry	138	27	10	8	13	9	0	0	4	0
Red Oak	21	5	5	3	3	2	0	0	6	2
Pure MI Hunt	1	0	0	0	0	0	0	0	0	0
Statewide	584	58	24	10	57	17	0	0	39	10

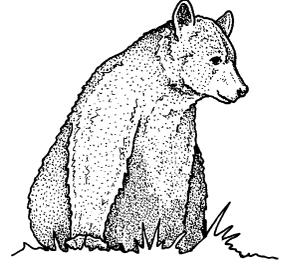
Appendix A

2013 Michigan Bear Harvest Questionnaire



# 2013 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 2013 season?**

- <sup>1</sup>  Yes      <sup>2</sup>  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
		<sup>1</sup> <input type="checkbox"/> Private <sup>2</sup> <input type="checkbox"/> Public <sup>3</sup> <input type="checkbox"/> Both
		<sup>1</sup> <input type="checkbox"/> Private <sup>2</sup> <input type="checkbox"/> Public <sup>3</sup> <input type="checkbox"/> Both
		<sup>1</sup> <input type="checkbox"/> Private <sup>2</sup> <input type="checkbox"/> Public <sup>3</sup> <input type="checkbox"/> Both
		<sup>1</sup> <input type="checkbox"/> Private <sup>2</sup> <input type="checkbox"/> Public <sup>3</sup> <input type="checkbox"/> Both
		<sup>1</sup> <input type="checkbox"/> Private <sup>2</sup> <input type="checkbox"/> Public <sup>3</sup> <input type="checkbox"/> Both

**3. Did you hunt with a firearm, crossbow, or bow during the 2013 bear season?  
*(select all that apply)***

- <sup>1</sup>  Firearm      <sup>2</sup>  Crossbow      <sup>3</sup>  Bow (recurve, compound, or long bow)

**4. What hunting method did you use most often when hunting bear in Michigan during the 2013 bear season? *(Please select only one item.)***

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

**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. At any time during the 2013 season, did you hire a guide's service to hunt bear in Michigan?**

- <sup>1</sup>  Yes      <sup>2</sup>  No *(If no, please skip to question 8.)*

**7. If yes, what hunting techniques were used most often by the guide? *(Please select only one item.)***

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

***Please continue on back***

**8. Did you kill a bear and place your harvest tag on it?**

<sup>1</sup>  Yes      <sup>2</sup>  No (If no, please skip to question 10.)

**9. 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 2013						
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 2013						
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?**

<sup>1</sup>  Male      <sup>2</sup>  Female      <sup>3</sup>  Not sure

**c. In what county was it harvested?**

\_\_\_\_\_ please write in county name

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

<sup>1</sup>  Private      <sup>2</sup>  Public

**e. What weapon was used to harvest bear?**

<sup>1</sup>  Firearm      <sup>2</sup>  Crossbow      <sup>3</sup>  Bow (recurve, compound, or long bow)

**f. What was the method of harvest?**

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

**10. Did other hunters interfere with your bear hunting?**

<sup>1</sup>  Yes      <sup>2</sup>  No (Skip to question 12.)

**11. If you answered "yes" to the previous question, was the interference caused by other bear hunters?**

<sup>1</sup>  Yes      <sup>2</sup>  No

**12. How would you rate the following for your 2013 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.