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2013 BOBCAT HUNTER AND TRAPPER HARVEST IN MICHIGAN

Brian J. Frawley

ABSTRACT

A survey was completed to determine the number of people hunting and trapping bobcats in Michigan, the number of days spent afield (effort), and the number of bobcats registered. In 2013, 6,112 people obtained a bobcat harvest tag valid for the hunting and trapping seasons (18% greater than in 2012). About 47% (2,857) of these tag-holders attempted to hunt or trap bobcats, and 18% of these furtakers registered at least one bobcat. An estimated 1,720 people attempted to hunt bobcats and spent 14,163 days hunting and registered 249 bobcats. Nearly 1,389 people attempted to trap bobcats and spent 20,024 days trapping and registered 343 bobcats. The number of hunters and trappers combined increased significantly by 5% statewide between 2012 and 2013; however, the number of bobcat taken between 2012 and 2013 declined significantly by 19%. In 2013, the number of furtakers (hunters and trappers combined) participating in hunting and trapping seasons reached the highest level recorded during 2003 and 2013. Although the number of furtakers peaked in 2013, the estimated number of bobcats registered by both hunters and trappers in 2013 was near the lowest numbers recorded during 2003 and 2013. In addition, the proportion of hunters and trappers registering a bobcat was the lowest recorded since 2003. In 2013, the effort per registered bobcat increased significantly among hunters in the UP and among trappers in the LP. The measure of effort per bobcat registered is an indirect measure of the abundance of bobcats. Increasing estimates of effort per catch suggests fewer bobcats in 2013 than 2012. Changes in estimates between 2012 and 2013 should be viewed cautiously because Michigan experienced unseasonably cold temperatures and above normal snowfall during December 2013 through February 2014. These conditions probably affected hunting and trapping opportunities and indices of bobcat abundance derived from furtakers.



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INTRODUCTION

The Natural Resources Commission (NRC) and Michigan Department of Natural Resources (DNR) have the authority and responsibility to protect and manage the wildlife resources of the state of Michigan. Harvest surveys are one of the management tools used to accomplish this statutory responsibility. Estimating hunter and trapper participation, harvest, and days afield (effort) are the primary objectives of these surveys. Estimates derived from harvest surveys, as well as information from mandatory registration reports, field surveys, and population modeling are used to monitor bobcat (*Lynx rufus*) populations and establish harvest regulations.

During 2013, bobcats could be harvested during both hunting and trapping seasons in six management units (Tables 1 and 2). The NRC approved opening bobcat hunting and trapping in two new bobcat management units during 2013 in the northern Lower Peninsula: units E and F (Figure 1). Unit E included Leelanau, Benzie, Grand Traverse, Manistee, Mason, and Lake counties. Unit F included the counties of Oceana, Newaygo, Mecosta, Isabella, Midland, and portions of Bay and Arenac. Season lengths for both units ran 11 days, from December 10-20 for trappers using foothold traps on public or private land and from January 1-11 for hunting on public or private lands. The seasons coincided with bobcat hunting and trapping seasons already open on private land elsewhere in the northern Lower Peninsula.

In order to hunt or trap bobcats, furtakers were required to obtain a free bobcat harvest tag, in addition to a fur harvester license. In the Upper Peninsula (UP), except Drummond Island, furtakers could legally take and register two bobcats in the hunting and trapping seasons combined. Only one bobcat could be taken from Drummond Island (Unit B), and only one bobcat could be legally taken and registered in units in the Lower Peninsula (LP) (Figure 1). Successful furtakers were required to immediately attach the harvest tag to the bobcat and were required to register bobcats within 10 days of the end of the season for the unit in which the bobcat was taken. Furtakers were not allowed to keep bobcats that were beyond the legal limit of bobcats per person and bobcats taken outside the area open for harvest (incidental catches). Furtakers were required to bring incidental catches to a registration station if they could not be released alive. Although all furtakers harvesting a bobcat were required to present their animals at a DNR office for registration, this survey does not present information collected from registered bobcats.

In 2013, hunting was allowed on both public and private lands in all open management units. In addition, trapping was allowed on both public and private lands in units A, B, E and F; however, trapping was allowed only on private land in units C and D. In 2013, trappers could use foothold and body-gripping traps (i.e., conibears) to capture bobcats in the UP and foothold traps only in the LP. Live traps were also legal if set within 150 yards of a residence or farm building.

METHODS

A questionnaire (Appendix A) was sent to everyone who obtained a bobcat harvest tag in 2013 (6,112 tag holders). Furtakers receiving the questionnaire reported whether they attempted to hunt or trap a bobcat, number of days spent afield, and number of bobcats they registered. Hunters were also asked to report their hunting method (e.g., dogs, calls) and the number of

bobcats that were within range to take but they chose not to harvest. Hunters that used dogs were asked to report who owned the dogs, number of occasions their dogs chased a bobcat, and whether they hired a guide. Trappers were asked to report the number of bobcats caught in traps and the number of bobcats released alive. Trappers also were asked to report the types of traps used, their preferred trap type, and whether they caught any bobcats in a trap set for another animal. All furtakers were asked the ownership of lands where they pursued bobcats and their opinion of the status of the bobcat population in the county where they preferred to hunt or trap.

Questionnaires were mailed initially during mid-March 2013, and nonrespondents were mailed up to two follow-up questionnaires. Although 6,112 people were sent the questionnaire, 191 surveys were undeliverable, resulting in an adjusted sample size of 5,921. Questionnaires were returned by 3,436 people, yielding a 58% adjusted response rate.

Although all harvest tag holders had an opportunity to report information about their hunting and trapping activity, not everybody reported. To extrapolate from the tag holders that completed their questionnaire to all people obtaining harvest tags, estimates were calculated using a simple random sampling design (Cochran 1977). The number of animals registered was used as an auxiliary variate to improve the estimates of mean days of effort required per registered bobcat (i.e., ratio estimates). The 95% confidence limit (CL) was also calculated for all estimates. This 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 the true value would be within this interval 95 times out of 100. Estimates were not adjusted for possible response or nonresponse bias.

Statistical tests are used routinely to determine the likelihood the differences among estimates are larger than expected by chance alone. The overlap of 95% confidence intervals was used to determine whether estimates differed. Non-overlapping 95% confidence intervals was equivalent to stating the difference between the means was larger than would be expected 995 out of 1,000 times ($P < 0.005$), if the study had been repeated (Payton et al. 2003).

RESULTS

Hunting and Trapping Combined

In 2013, 6,112 people obtained a bobcat harvest tag valid for the bobcat hunting and trapping seasons, which was 18% greater than in 2012 (5,191 people obtained a tag in 2012). About $47 \pm 1\%$ (2,857) of these tag holders attempted to hunt or trap bobcats (Table 3). Furthermore, about $4 \pm 1\%$ (253 ± 27) of the tag holders attempted both hunting and trapping bobcats.

Furtakers spent 34,187 days afield ($\bar{x} = 12.0 \pm 0.5$ days/furtaker) and registered 592 bobcats ($\bar{x} = 0.21 \pm 0.02$ bobcats/furtaker). Furtakers spent about 20,298 days afield pursuing bobcats in the UP and 13,496 days in the LP (Table 3). About 18% of the furtakers registered at least one bobcat (Table 4). Nearly $16 \pm 1\%$ of the furtakers registered only one bobcat and $2 \pm 1\%$ registered two bobcats. About 26% of the furtakers in the UP registered at least one bobcat (Table 4). Nearly $20 \pm 2\%$ of the UP furtakers registered only one bobcat and $6 \pm 1\%$ registered two bobcats. An estimated 15% of furtakers in the LP registered a bobcat.

The number of furtakers seeking bobcats increased significantly by 5% statewide between 2012 and 2013; however, their effort in 2012 and 2013 were not significantly different statewide (Table 3, Figure 2). The number of furtakers decreased significantly by 10% between 2012 and 2013 in the UP but increased significantly by 12% in the LP. Although the number of furtakers seeking bobcats increased statewide, the number of bobcats registered declined significantly by 19% between 2012 and 2013 (Table 4). In addition, a smaller proportion of furtakers registered a bobcat in 2013 than in 2012 (18% versus 23%).

Counties with 120 or more furtakers that pursued bobcats included Menominee, Marquette, Delta, Newaygo, and Dickinson (Table 5). Counties with 35 or more registered bobcats taken within that county included Delta, Ontonagon, and Dickinson.

About $27 \pm 1\%$ of furtakers reported the bobcat population was stable in the county they preferred to hunt or trap bobcats, which was similar to the 2012 estimate (Figures 3-5). About $15 \pm 1\%$ reported bobcat numbers were improving and $10 \pm 1\%$ reported fewer bobcats. Nearly $39 \pm 1\%$ of the furtakers were uncertain of the status of bobcats.

Hunting

About $28 \pm 1\%$ (1,720 hunters) of the tag-holders attempted to hunt bobcats during the 2013 seasons (Table 6). About 430 people hunted in the UP and 1,258 hunted in the LP. The hunters statewide had hunted bobcats an average of 7.5 years (± 0.5 year). Bobcat hunters most frequently hunted on public land ($61 \pm 2\%$). About $44 \pm 2\%$ of the hunters hunted on private land not owned by themselves or their family, while $41 \pm 2\%$ hunted bobcats on their own land or land owned by their family. Nearly $27 \pm 2\%$ of the hunters hunted on public land only, $38 \pm 2\%$ hunted on private land only, and $34 \pm 2\%$ hunted on both public and private lands.

Hunters spent about 14,163 days afield hunting bobcats ($\bar{x} = 8.2 \pm 0.5$ days/hunter) and registered an estimated 249 bobcats ($\bar{x} = 0.14 \pm 0.02$ bobcats/hunter, Table 7). Hunters spent about 5,128 days afield hunting bobcats in the UP and 8,684 days hunting bobcats in the LP. The estimated number of days of effort per bobcat registered by hunters statewide was 56.9 days in 2013.

Hunters registered about 47% of the bobcats registered by furtakers (Figure 6). About 14% of bobcat hunters statewide harvested at least one bobcat (Table 7). Nearly $13 \pm 1\%$ of hunters registered only one bobcat and $1 \pm 0.4\%$ registered two bobcats. An estimated 14% of the hunters in the UP registered at least one bobcat; $13 \pm 3\%$ of UP hunters registered one bobcat and $2 \pm 1\%$ registered two bobcats. An estimated 14% of hunters in the LP registered a bobcat.

Counties with 80 or more hunters pursuing bobcats included Presque Isle, Menominee, and Roscommon (Table 8). Counties with at least 12 hunter-registered bobcats originating from that county included Ogemaw, Marquette, Menominee, Missaukee, and Roscommon.

The number of hunters statewide did not change significantly between 2012 and 2013 (Table 6); however, their hunting effort declined significantly by 13%. The number of times

hunters passed up an opportunity to take a bobcat and the number of bobcats registered by hunters declined significantly statewide between 2012 and 201 (declined 31% and 29%, respectively, Table 7).

The number of hunters in the UP declined significantly by 21%. Additionally, UP hunters passed fewer bobcats, registered fewer bobcats, and experienced lower hunting success in 2013 than in 2012. In contrast, the number of hunters in the LP was nearly unchanged between 2012 and 2013, and the number of bobcats passed, bobcats registered, and the proportion of hunters registering a bobcat was not significantly different. The number of days of effort per bobcat registered by hunters statewide (56.9) was not statistically different from estimates for 2012, but hunting effort per bobcat was significantly greater in the UP and in Unit C (Table 9, Figure 7).

Hunters most frequently used calls ($56 \pm 2\%$) or dogs ($39 \pm 2\%$) to hunt bobcats (Table 10). The estimated number of people hunting bobcats with dogs statewide and their hunting effort were not significantly different between 2012 and 2013 (Table 11). In contrast, hunter success, the number of bobcats passed, and the number of bobcats registered by hunters using dogs statewide declined significantly between 2012 and 2013 (Tables 11 and 12). The estimated number of people hunting bobcats with calls statewide and their hunting effort declined significantly between 2012 and 2013; declining 15% and 29%, respectively (Table 13). Among hunters using calls, the number of bobcats registered declined significantly statewide by 40% between 2012 and 2013 (Table 14).

Bobcat hunters using dogs participated in an estimated $2,289 \pm 261$ chases of bobcats statewide in 2013, which was 22% fewer chases than in 2012 (Figure 8). About $26 \pm 2\%$ of the bobcat hunters had an opportunity to harvest a bobcat but chose not to harvest the bobcat, which was not significantly different from 2012. An estimated 443 ± 35 hunters chose not to harvest bobcats on $1,049 \pm 106$ occasions in 2013 (Figure 8). Among those hunters that passed up an opportunity to take a bobcat, $44 \pm 4\%$ passed one bobcat, $21 \pm 3\%$ passed two bobcats, $16 \pm 3\%$ passed three bobcats, $6 \pm 2\%$ passed four bobcats, and $13 \pm 3\%$ passed five or more bobcats. The estimate of the number of bobcats passed by hunters should be viewed cautiously because hunting partners may have reported passing the same bobcat; thus, the estimate will be inflated by an unknown amount. Few bobcat hunters ($10 \pm 2\%$) that hunted with dogs hired a guide service to assist with their hunting (68 ± 14 hunters).

About $31 \pm 2\%$ of bobcat hunters reported the bobcat population was stable in the county they preferred to hunt bobcats, which was similar to the 2012 estimate (Figures 3-5). About $19 \pm 1\%$ reported bobcat numbers were increasing and $15 \pm 1\%$ reported fewer bobcats. Nearly $28 \pm 2\%$ of bobcat hunters were uncertain of the status of bobcats.

The mean value of bobcat pelts was marginally positively correlated with the number of hunters, their days spent afield, and days of effort per registered bobcat during 1997-2012 (Table 15). In contrast, the mean value of bobcat pelts was marginally negatively correlated with the number of bobcats registered in the UP and uncorrelated with registration totals in the LP.

Trapping

An estimated $23 \pm 1\%$ (1,389 trappers) of the tag-holders trapped bobcats during the 2013 season (Table 16), and these trappers had trapped bobcats an average of 8.5 years (± 0.6 year). Most trappers trapped bobcats on private land owned by themselves or their family ($55 \pm 2\%$). About $44 \pm 2\%$ of trappers trapped on private lands not owned by themselves or their family and about $31 \pm 2\%$ trapped on public land. About $68 \pm 2\%$ trapped on private land only, $14 \pm 2\%$ of the trappers trapped on public land only, and $17 \pm 2\%$ trapped on both public and private lands.

Trappers spent about 20,024 days afield trapping bobcats ($\bar{x} = 14.4 \pm 0.8$ days/trapper), caught 587 bobcats, registered 343 bobcats ($\bar{x} = 0.24 \pm 0.02$ bobcats/trapper), and released 244 bobcats from their traps during the 2013 season (Table 16, Figure 9).

The number of trappers increased significantly by 17% statewide between 2012 and 2013; however, trapping effort, the number of bobcats captured, and the number of bobcats registered by trappers did not change significantly (Table 16 and 17). The proportion of trappers registering a bobcat declined significantly between 2012 and 2013 (26 versus 21%, Table 18). The estimated number of days of effort per bobcat registered by trappers statewide was 48.9 days in 2013 and did not change significantly from 2012 (Table 19, Figure 7). Within the LP, however, the number of days of effort per bobcat registered by trappers increased significantly by 55%.

Trappers registered about 53% of the bobcats registered by furtakers (Figure 6). About 27% of bobcat trappers captured at least one bobcat and 21% registered at least one bobcat (Table 18). Nearly $17 \pm 2\%$ of the trappers registered only one bobcat and $4 \pm 1\%$ registered two bobcats. Nearly $9 \pm 1\%$ of the bobcat trappers released bobcats that they caught. They released 244 bobcats from their traps, which was not significantly different from the number released in 2012. About $10 \pm 1\%$ of the bobcat trappers caught a bobcat in a trap set for another furbearer (Figure 9).

Counties with 70 or more trappers pursuing bobcats included Dickinson, Marquette, and Iron (Table 20). Counties with more than 30 registered bobcats originating from that county included Delta, Dickinson, and Ontonagon.

Most trappers used foothold traps (84%), while 32% of the trappers used body gripping traps (i.e., conibears) (Table 21). Most trappers preferred to use foothold traps (57%), while 22% preferred to use conibears (Table 22). An estimated 18% of trappers did not have a preferred trap type.

About $38 \pm 2\%$ of bobcat trappers reported the bobcat population was stable in the county they preferred to trap bobcats (Figures 3-5). About $26 \pm 2\%$ reported bobcat numbers were increasing and $10 \pm 2\%$ reported fewer bobcats. Nearly $22 \pm 2\%$ of bobcat trappers were uncertain of the status of bobcats.

The mean value of bobcat pelts was usually positively correlated with the number of trappers, their days spent afield, and days of effort per registered bobcat during 1997-2013 (Table 23).

In contrast, the mean value of bobcat pelts was not significantly correlated with the number of bobcats registered.

DISCUSSION

Many factors influence bobcat harvest trends including furtaker numbers, bobcat numbers, harvest regulations, habitat conditions, weather, and fur prices; thus, any interpretations of trends should be viewed cautiously. Moreover, estimates of events that occur infrequently (e.g., harvesting a bobcat) are difficult to estimate precisely using common sampling designs (Cochran 1977). Relatively few furtakers harvest bobcat; thus, estimates from the statewide fur harvesters survey from previous years often have been imprecise (Frawley 2001). Beginning with the 2004-2005 bobcat season, however, all licensed furtakers attempting to harvest a bobcat in Michigan were required to obtain a free bobcat harvest tag from the DNR. Beginning with the 2004 season, the DNR has used these lists of tag holders to design surveys that result in more precise estimates.

Using indices to monitor wildlife populations is standard practice in wildlife management, and most states use a variety of indices for evaluating furbearer populations. The DNR considers the logistics of data collection, data reliability, ability of the index to detect population change, and cost when selecting an index. Historical, long-term data sets are also valuable for evaluating changes in harvest regulations over time. The DNR uses several indices to monitor the bobcat populations and to recommend to the NRC changes in bobcat harvest regulations. Each of these indices measures an attribute of the bobcat population and independently can be used to monitor changes in population status. Use of multiple indices strengthens the assessment of population status.

Changes in estimates between 2012 and 2013 should be viewed cautiously because Michigan experienced unseasonably cold temperatures and above normal snowfall during December 2013 through February 2014 (Midwestern Regional Climate Center 2014). Average temperatures were at least 3°F below normal across Michigan during this period. These conditions probably affected hunting and trapping opportunities and indices of bobcat abundance derived from furtaker activity.

In 2013, the number of furtakers (hunters and trappers combined) participating in hunting and trapping seasons reached the highest level recorded during 2003 and 2013 (Figure 2). This increase was primarily driven by increased number of trappers. Although the number of furtakers peaked in 2013, the days spent hunting and trapping has lagged the increases in furtaker numbers because bobcat hunting seasons in the UP were shortened by 31 days (34% reduction) and trapping seasons in the UP were shortened by 65 days (51% reduction) in 2009 (Tables 1 and 2).

In 2013, the estimated number of bobcats registered by both hunters and trappers was near the lowest numbers recorded during 2003 and 2013 (Figure 2). In addition, the proportion of hunters and trappers registering a bobcat was the lowest recorded since 2003. About 18% of bobcat hunters and trappers combined registered at least one bobcat in Michigan during the 2013 seasons, while 23-26% ($\bar{x} = 24\%$) of bobcat hunters and trappers harvested at least one bobcat in Michigan during the previous four years.

In 2013, the effort per registered bobcat increased significantly among hunters in the UP and among trappers in the LP (Figure 7). The measure of effort per bobcat registered is an indirect measure of the abundance of bobcats. Changes in the effort per registered bobcat are inferred to signify changes in bobcat numbers. Increasing estimates of effort per catch suggests lower bobcat numbers.

Although a greater number of furtakers (hunters and trappers combined) pursued bobcats in the LP than in the UP, furtakers in the UP expended about 1.5 times more effort than their counterparts in the LP (Table 3). The proportion of furtakers registering a bobcat also was higher in the UP than the LP (26% versus 15%). These differences between regions partly reflect differences in regulations as furtakers could legally harvest only one bobcat from the LP, while two bobcats could be taken from the UP. Moreover, seasons were longer in the UP than in the LP (Tables 1 and 2).

About 2.3 times more people attempted to hunt bobcats in the LP than in the UP in 2013 (Table 6), although the season is shorter in the LP (Tables 1 and 2). Hunters in the LP spent 1.7 times as many days hunting bobcats than their counterparts in the UP. Hunters in the LP had more occasions where they chose not to harvest a bobcat than hunters in the UP; however, the proportion of hunters registering at least one bobcat was the same (14%) in the both the UP and LP.

Although there were nearly 1.2 times as many bobcat hunters as trappers in Michigan during the 2013 seasons, trappers registered about 1.4 times as many bobcats as hunters. Bobcat hunters devoted an average of 57 days of effort per bobcat registered, while trappers spent about 58 days of effort per bobcat registered. These estimates of effort per catch for hunters and trappers were not significantly different.

A higher proportion of hunters that used dogs were successful than hunters using calls, and the difference was significant (16% of hunters using dogs registered a bobcat versus 10% of hunters using calls, Table 10). Hunters using dogs have normally had significantly higher success than hunters using calls in Michigan (Frawley 2013). Lovallo (2011) reported a mean success rate of 39% for hunters using dogs in Pennsylvania during 2000-2008, while the mean success rate for hunters using calls in Pennsylvania was 14%. Kitchell and Olson (2005, 2006, 2007) and Dhuey and Olson (2008, 2009) reported 42-79% (\bar{x} = 59%) of hunters using dogs registered a bobcat in Wisconsin during 2004-2008, while 18-48% (\bar{x} = 28%) of hunters not using dogs registered a bobcat.

About 9% of the bobcat trappers in Michigan released a bobcat from their traps set during the 2013 season, which was similar to the 2012 estimate (Frawley 2013). In comparison, 6-12% (\bar{x} = 9%) of Wisconsin bobcat trappers released a bobcat from their traps during 2006-2013 in Wisconsin (e.g., Dhuey et al. 2013).

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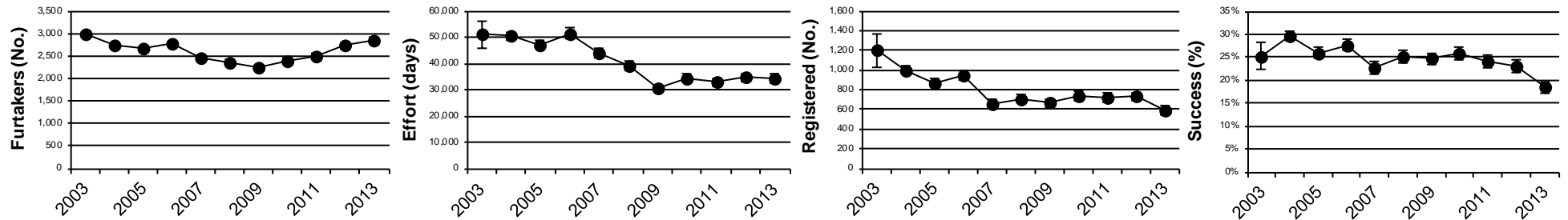
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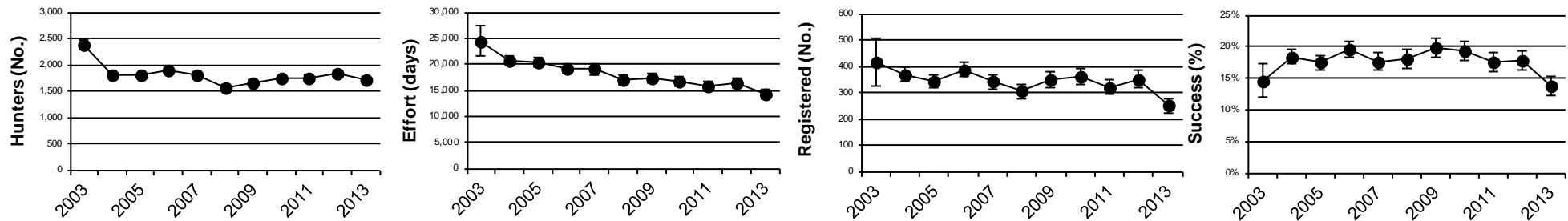
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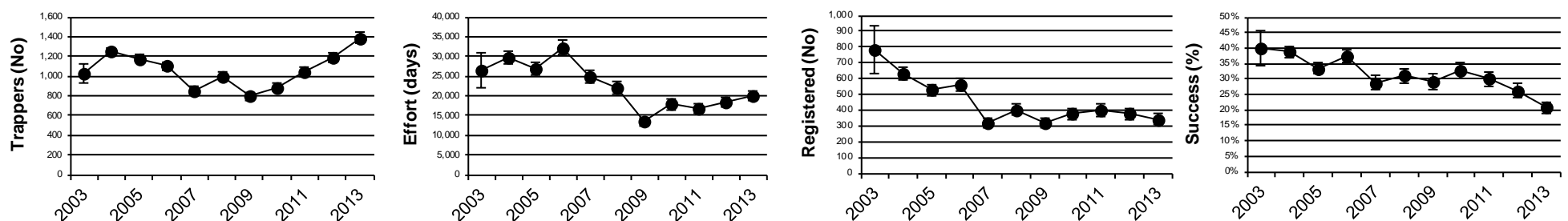
Hunting and trapping combined



Hunting



Trapping



Year

Figure 2. Number of furtakers pursuing bobcats, number of days of effort, number of bobcats registered, and proportion of furtakers registering a bobcat in Michigan during 2003-2013, summarized by method of take. Number of hunters and trappers does not add up to statewide total of hunters and trappers combined because a person could both hunt and trap bobcats. Vertical bars represent the 95% CL.

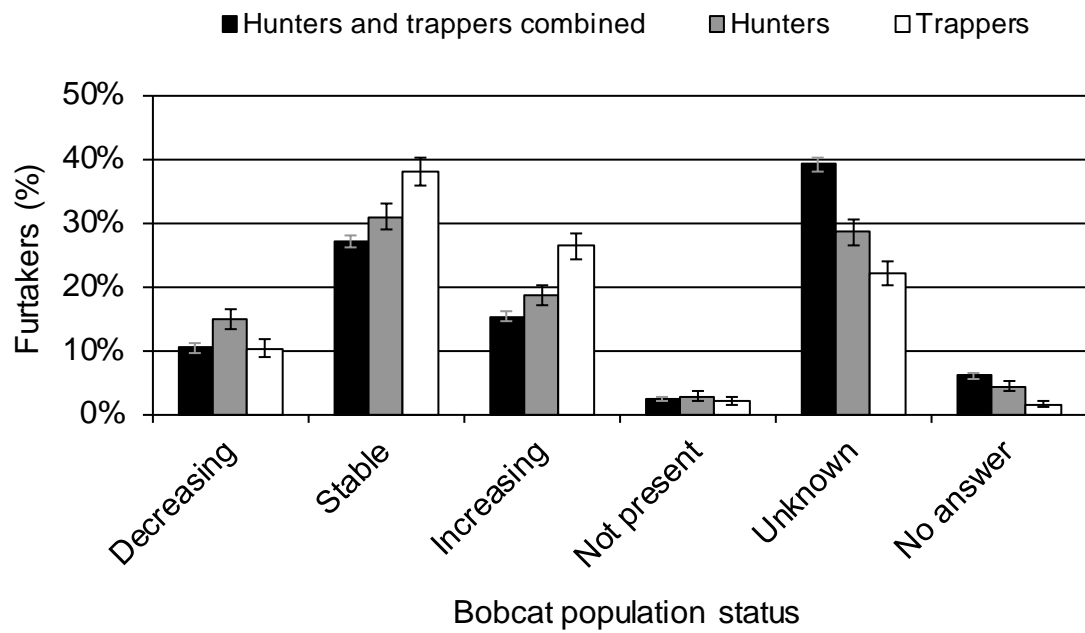


Figure 3. Status of bobcats in Michigan during 2013 as described by bobcat hunters and trappers. Vertical bars represent the 95% CL.

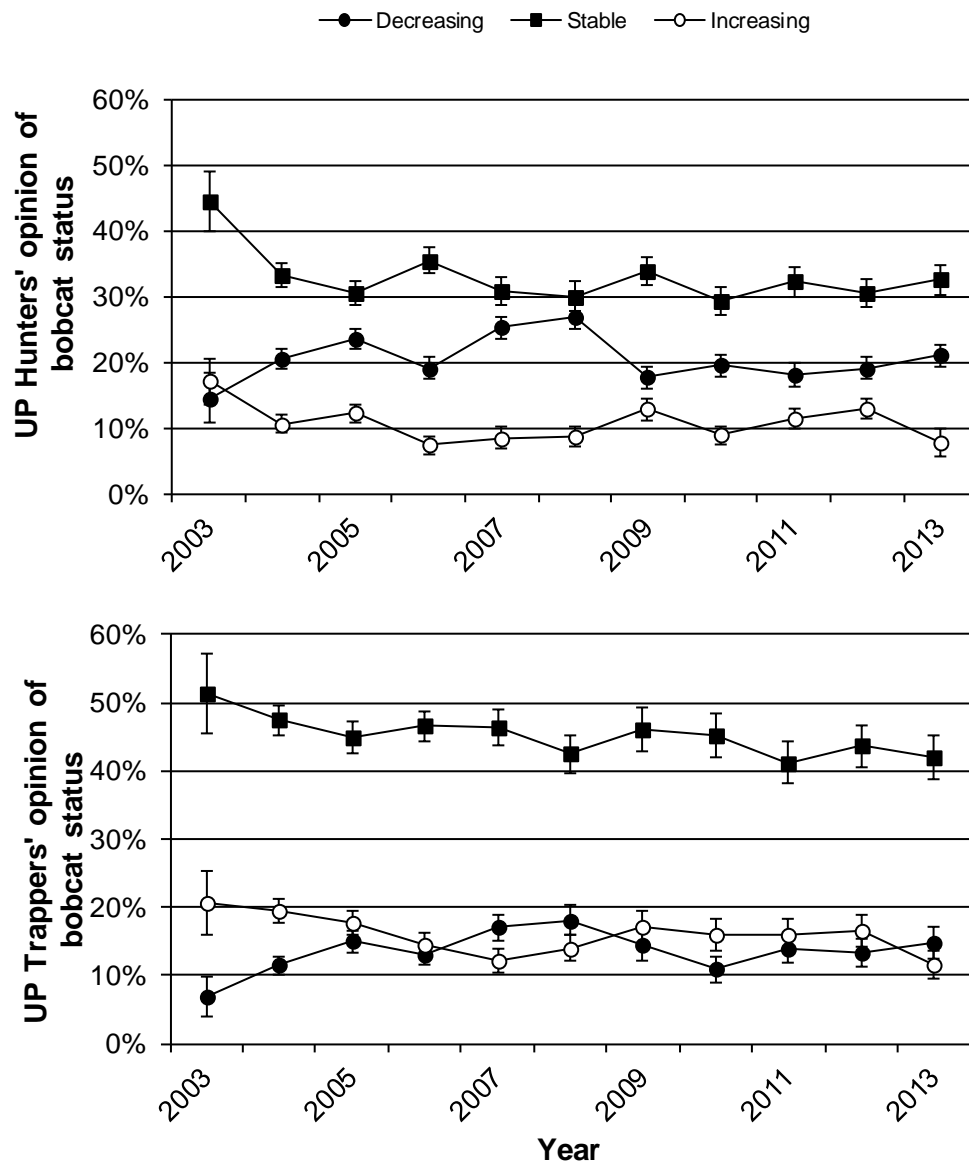


Figure 4. Status of bobcat population in Michigan as described by bobcat hunters and trappers in the Upper Peninsula, 2003-2013. Vertical bars represent the 95% CL.

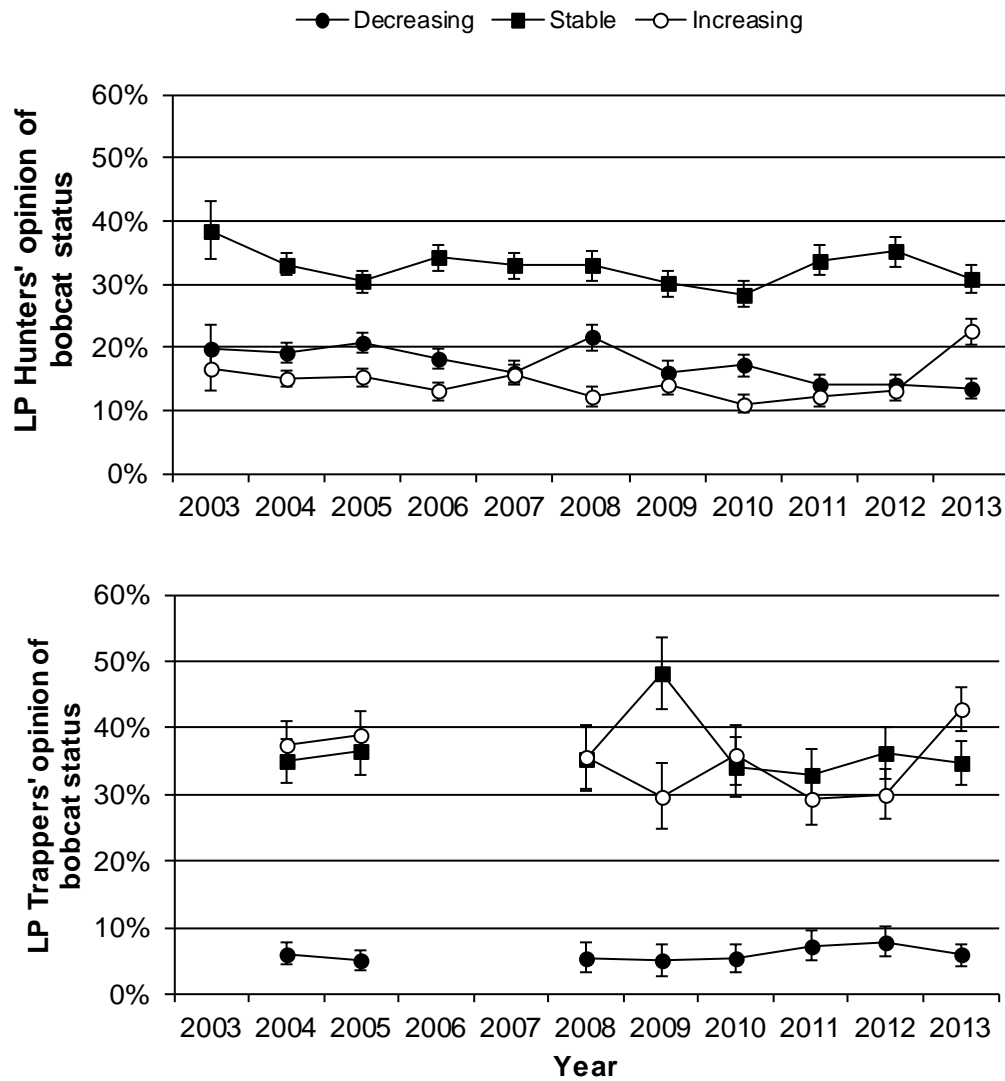


Figure 5. Status of bobcat population in Michigan as described by bobcat hunters and trappers in the Lower Peninsula, 2003-2013. Vertical bars represent the 95% CL. Bobcat could be harvested by trappers in portions of the LP during 2004-2005 and 2008-2013 only.

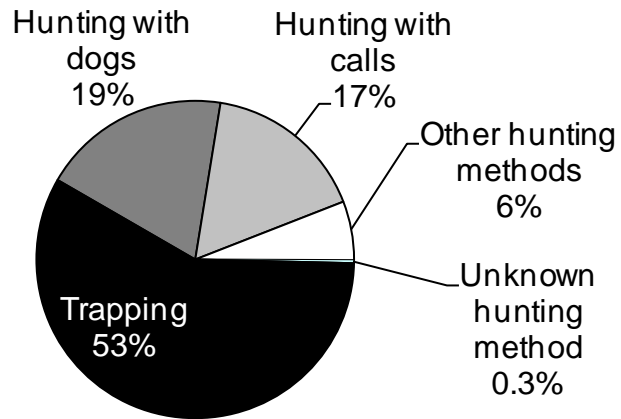


Figure 6. Proportion of bobcats registered in Michigan during 2013, summarized by method of take.

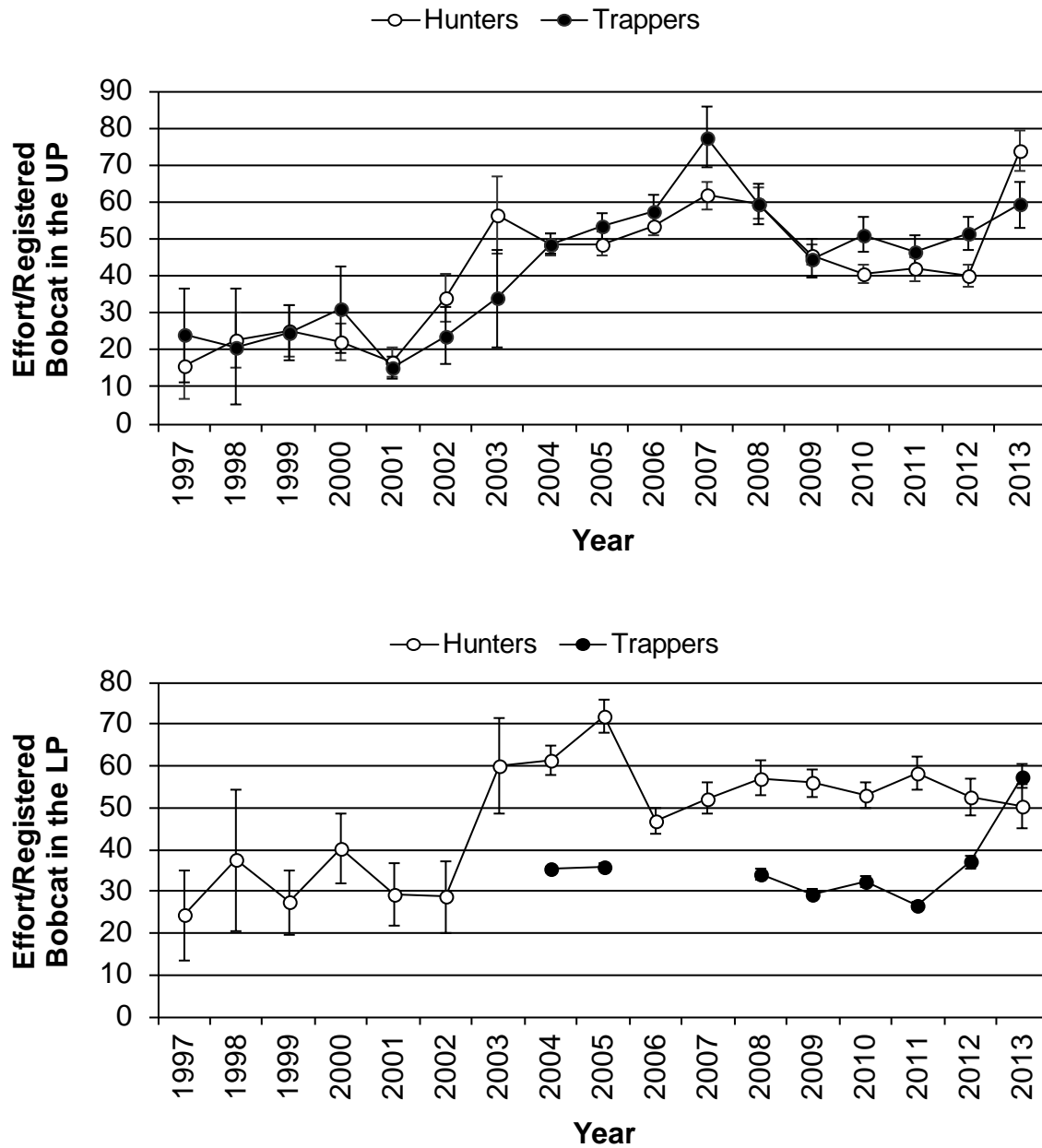


Figure 7. Estimated number of days of effort per bobcat registered in Michigan by hunters and trappers for the 1997-2013 seasons, summarized by region. Vertical error bars represent the 95% CL. Bobcat could be harvested by trappers in portions of the LP during 2004-2005 and 2008-2013 only.

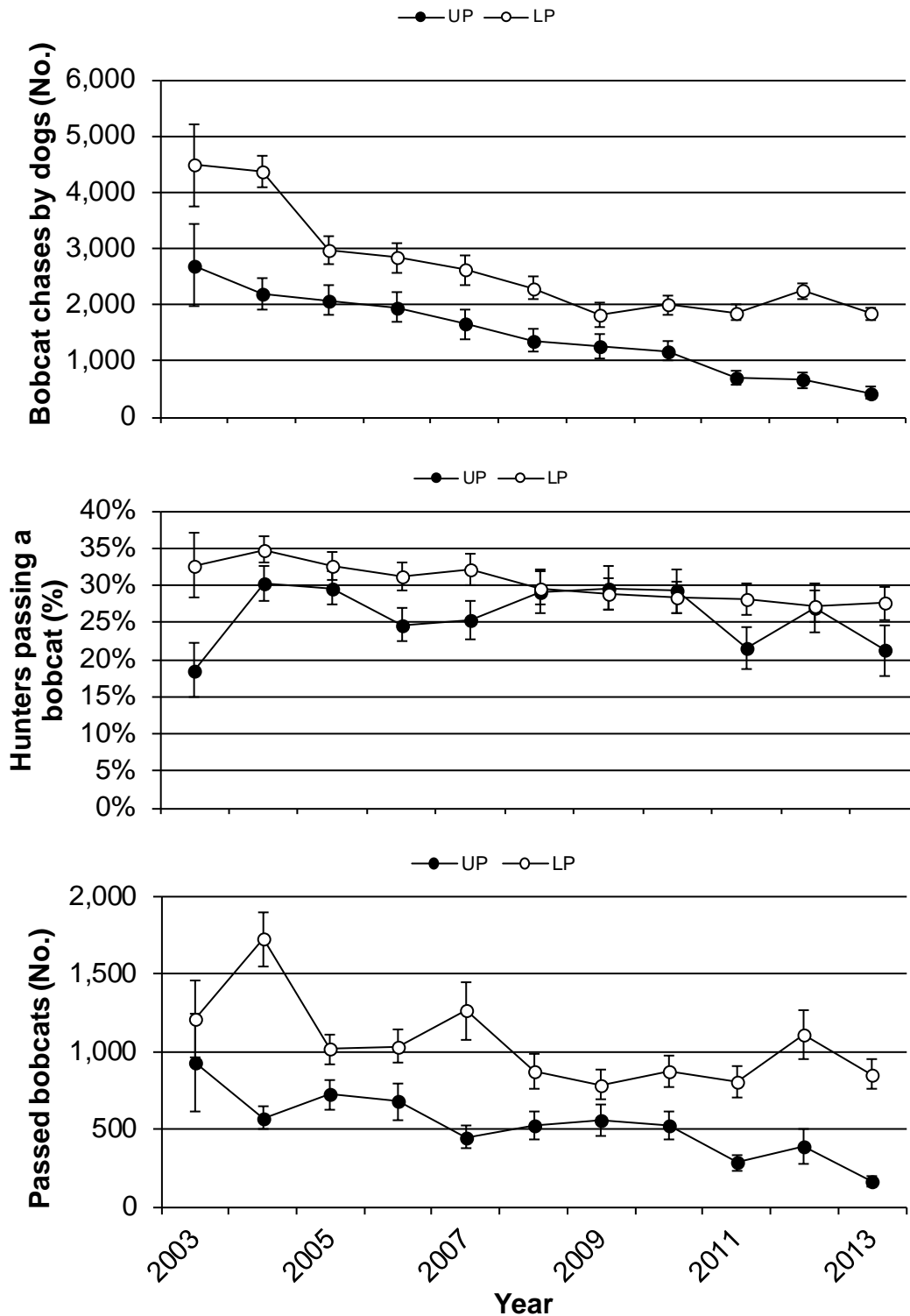


Figure 8. Number of bobcat chases by dogs, proportion of hunters passing a bobcat (bobcats within range or treed but not harvested), and number of bobcats passed by hunters (all types of hunting) in Michigan, 2003-2013. Vertical bars represent the 95% CL.

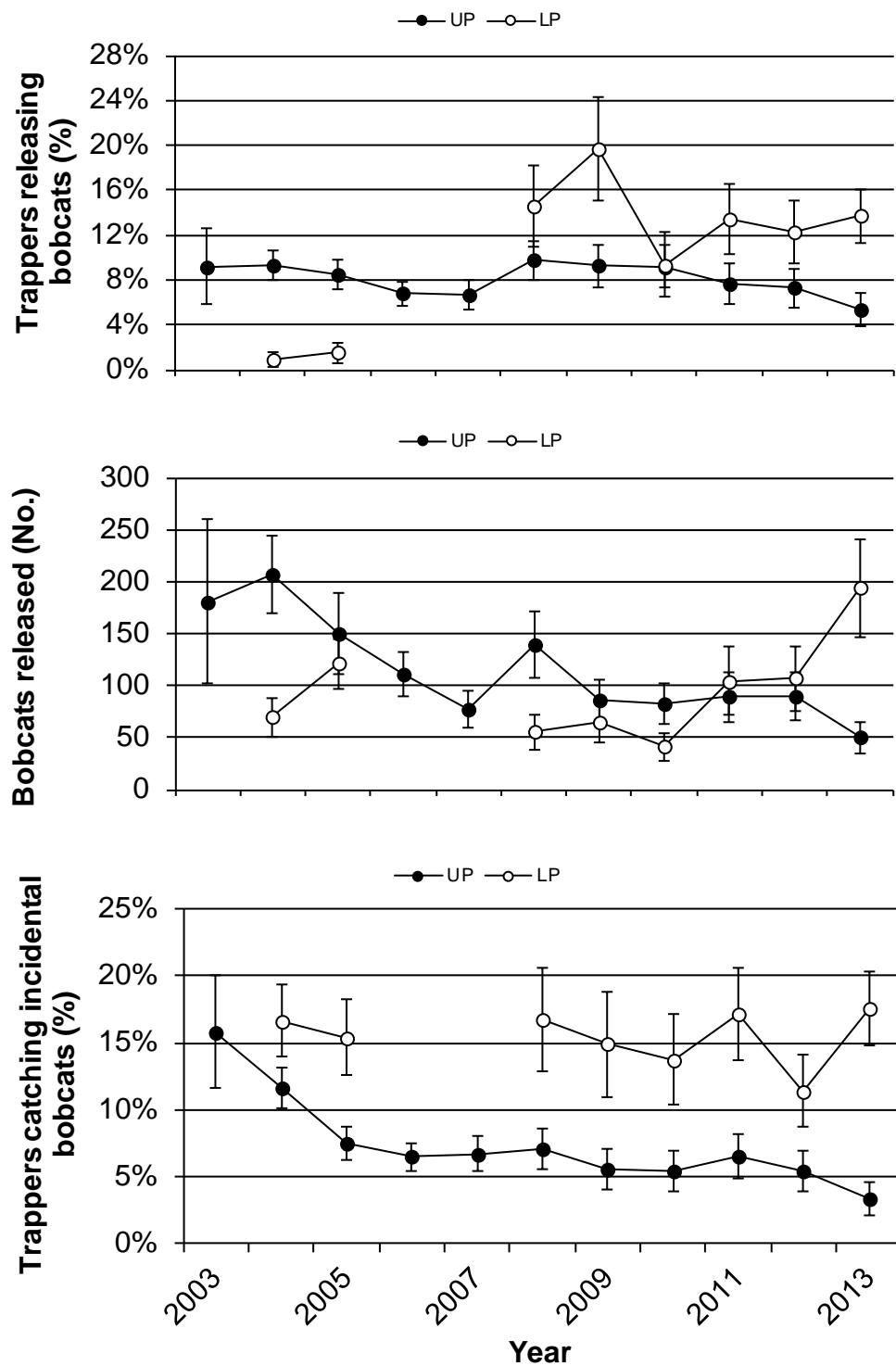


Figure 9. Number of trappers releasing bobcats from their traps, number of bobcats released from traps, and proportion of trappers that caught a bobcat in a trap set for another species (incidental catch) in Michigan, 2003-2013. Trapping of bobcat in the LP was permitted in 2004-2005 and 2008-2013 only. Vertical bars represent the 95% CL.

Table 1. Resident bobcat hunting season dates and seasonal bag limits in Michigan, 1989-2013.

Year	State-wide bag limit ^a	Bobcat management unit								
		Upper Peninsula				Lower Peninsula				
		Unit A ^b		Unit B ^c		Unit C ^d	Unit D ^e	Unit E ^f	Unit F ^g	Bag limit ^a
		Season dates	Bag limit ^a	Season dates	Bag limit ^a	Season dates	Season dates	Season dates	Season dates	
1989	1	10/25-3/1	1	Closed	0	1/1-3/1	1/1-2/1	Closed	Closed	1
1990	1	10/25-3/1	1	Closed	0	1/1-3/1	1/1-2/1	Closed	Closed	1
1991	1	10/25-3/1	1	Closed	0	1/1-3/1	1/15-2/16	Closed	Closed	1
1992	1	10/25-3/1	1	Closed	0	1/1-3/1	1/15-2/16	Closed	Closed	1
1993	1	10/25-3/1	1	Closed	0	1/1-3/1	1/15-2/16	Closed	Closed	1
1994	2	10/25-3/1	2	Closed	0	1/1-3/1	1/15-2/16	Closed	Closed	1
1995	2	10/25-3/1	2	10/25-3/1	1	1/1-3/1	1/15-2/16	Closed	Closed	1
1996	3	10/25-3/1	3	10/25-3/1	1	1/1-3/1	1/15-2/16	Closed	Closed	1
1997	3	10/25-3/1	3	10/25-3/1	1	1/1-3/1	1/15-2/16	Closed	Closed	1
1998	3	12/1-3/1	3	12/1-3/1	1	1/1-3/1	1/15-2/16	Closed	Closed	1
1999	3	12/1-3/1	3	12/1-3/1	1	1/1-3/1	1/15-2/16	Closed	Closed	1
2000	3	12/1-3/1	3	12/1-3/1	1	1/1-3/1	1/15-2/16	Closed	Closed	1
2001	3	12/1-3/1	3	12/1-3/1	1	1/1-3/1	1/15-2/16	Closed	Closed	1
2002	3	12/1-3/1	3	12/1-3/1	1	1/1-3/1	1/15-2/16	Closed	Closed	1
2003	3	12/1-3/1	3	12/1-3/1	1	1/1-3/1	1/15-2/16	Closed	Closed	1
2004	2	12/1-3/1	2	12/1-3/1	1	1/1-3/1	1/1-2/1	Closed	Closed	1
2005	2	12/1-3/1	2	12/1-3/1	1	1/1-3/1	1/1-2/1	Closed	Closed	1
2006	2	12/1-3/1	2	12/1-3/1	1	1/1-3/1	1/1-2/1	Closed	Closed	1
2007	2	12/1-3/1	2	12/1-3/1	1	1/1-3/1	1/1-2/1	Closed	Closed	1
2008	2	12/1-3/1	2	12/1-3/1	1	1/1-3/1	1/1-2/1	Closed	Closed	1
2009	2	1/1-3/1	2	1/1-3/1	1	1/1-3/1	1/1-2/1	Closed	Closed	1
2010	2	1/1-3/1	2	1/1-3/1	1	1/1-3/1	1/1-2/1	Closed	Closed	1
2011	2	1/1-3/1	2	1/1-3/1	1	1/1-3/1	1/1-2/1	Closed	Closed	1
2012	2	1/1-3/1	2	1/1-3/1	1	1/1-3/1	1/1-2/1	Closed	Closed	1
2013	2	1/1-3/1	2	1/1-3/1	1	1/1-3/1	1/1-2/1	1/1-11	1/1-11	1

^aThe statewide bag limit was the maximum number of bobcats that could be taken per person from all zones (hunting and trapping combined), and the bag limit for each zone was the maximum number that could be taken within a zone (hunting and trapping combined).

^bExcluded Drummond Island in the Upper Peninsula.

^cDrummond Island only.

^dDuring 1989-2013, Unit C included Alpena, Antrim, Charlevoix, Cheboygan, Emmet, Montmorency, Otsego, and Presque Isle. Alcona and Oscoda counties were added during 1991-2013.

^eDuring 1989-2013, Unit D included Clare, Crawford, Gladwin, Iosco, Kalkaska, Missaukee, Ogemaw, Osceola, Roscommon, and Wexford counties, and Arenac County west of Highway I-75 and north of Highway M-61. Unit D also included Alcona and Oscoda counties during 1989-1990.

^fUnit E included Leelanau, Benzie, Grand Traverse, Manistee, Mason, and Lake counties.

^gUnit F included the counties of Oceana, Newaygo, Mecosta, Isabella, Midland, and portions of Bay and Arenac.

Table 2. Resident bobcat trapping season dates and seasonal bag limits in Michigan, 1989-2013.

Year	State-wide bag limit ^a	Bobcat management unit								
		Upper Peninsula				Lower Peninsula				
		Unit A ^b		Unit B ^c		Unit C ^d	Unit D ^e	Unit E ^f	Unit F ^g	Bag limit ^a
		Season dates	Bag limit ^a	Season dates	Bag limit ^a	Season dates	Season dates	Season dates	Season dates	
1989	1	10/25-3/1	1	Closed	0	Closed	Closed	Closed	Closed	1
1990	1	10/25-3/1	1	Closed	0	Closed	Closed	Closed	Closed	1
1991	1	10/25-3/1	1	Closed	0	Closed	Closed	Closed	Closed	1
1992	1	10/25-3/1	1	Closed	0	Closed	Closed	Closed	Closed	1
1993	1	10/25-3/1	1	Closed	0	Closed	Closed	Closed	Closed	1
1994	2	10/25-3/1	2	Closed	0	Closed	Closed	Closed	Closed	1
1995	2	10/25-3/1	2	10/25-3/1	1	Closed	Closed	Closed	Closed	1
1996	3	10/25-3/1	3	10/25-3/1	1	Closed	Closed	Closed	Closed	1
1997	3	10/25-3/1	3	10/25-3/1	1	Closed	Closed	Closed	Closed	1
1998	3	10/25-3/1	3	10/25-3/1	1	Closed	Closed	Closed	Closed	1
1999	3	10/25-3/1	3	10/25-3/1	1	Closed	Closed	Closed	Closed	1
2000	3	10/25-3/1	3	10/25-3/1	1	Closed	Closed	Closed	Closed	1
2001	3	10/25-3/1	3	10/25-3/1	1	Closed	Closed	Closed	Closed	1
2002	3	10/25-3/1	3	10/25-3/1	1	Closed	Closed	Closed	Closed	1
2003	3	10/25-3/1	3	10/25-3/1	1	Closed	Closed	Closed	Closed	1
2004	2	10/25-3/1	2	10/25-3/1	1	12/10-20	12/10-20	Closed	Closed	1
2005	2	10/25-3/1	2	10/25-3/1	1	12/10-20	12/10-20	Closed	Closed	1
2006	2	10/25-3/1	2	10/25-3/1	1	Closed	Closed	Closed	Closed	1
2007	2	10/25-3/1	2	10/25-3/1	1	Closed	Closed	Closed	Closed	1
2008	2	10/25-3/1	2	10/25-3/1	1	12/10-20	12/10-20	Closed	Closed	1
2009	2	12/1-2/1	2	12/1-2/1	1	12/10-20	12/10-20	Closed	Closed	1
2010	2	12/1-2/1	2	12/1-2/1	1	12/10-20	12/10-20	Closed	Closed	1
2011	2	12/1-2/1	2	12/1-2/1	1	12/10-20	12/10-20	Closed	Closed	1
2012	2	12/1-2/1	2	12/1-2/1	1	12/10-20	12/10-20	Closed	Closed	1
2013	2	12/1-2/1	2	12/1-2/1	1	12/10-20	12/10-20	12/10-20	12/10-20	1

^aThe statewide bag limit was the maximum number of bobcats that could be taken per person from all zones (hunting and trapping combined), and the bag limit for each zone was the maximum number that could be taken within a zone (hunting and trapping combined).

^bExcluded Drummond Island in the Upper Peninsula.

^cDrummond Island only.

^dDuring 1989-2013, Unit C included Alpena, Antrim, Charlevoix, Cheboygan, Emmet, Montmorency, Otsego, and Presque Isle. Alcona and Oscoda counties were added during 1991-2013.

^eDuring 1989-2013, Unit D included Clare, Crawford, Gladwin, Iosco, Kalkaska, Missaukee, Ogemaw, Osceola, Roscommon, and Wexford counties, and Arenac County west of Highway I-75 and north of Highway M-61. Unit D also included Alcona and Oscoda counties during 1989-1990.

^fUnit E included Leelanau, Benzie, Grand Traverse, Manistee, Mason, and Lake counties.

^gUnit F included the counties of Oceana, Newaygo, Mecosta, Isabella, Midland, and portions of Bay and Arenac.

Table 3. Estimated number of furtakers (hunters and trappers combined) pursuing bobcat and their hunting and trapping effort (days combined) in Michigan for 2012 and 2013, summarized by area.

Area	Furtakers ^a					Hunting and trapping effort				
	Year					Year				
	2012		2013		Change (%)	2012		2013		Change (%)
	No.	95 CL	No.	95 CL		Days	95 CL	Days	95 CL	
Upper Peninsula	1,146	50	1,026	51	-10*	20,588	1,345	20,298	1,515	-1
Lower Peninsula	1,538	55	1,722	61	12*	13,489	827	13,496	788	0
Unit C	816	44	543	38	-33*	7,655	672	4,911	547	-36*
Unit D	823	44	690	43	-16*	5,834	453	4,805	441	-18*
Unit E			281	28				1,681	219	
Unit F			372	32				2,099	242	
Unspecified	123	18	144	21	17	631	247	393	133	-38
Statewide	2,727	60	2,857	67	5*	34,707	1,511	34,187	1,637	-1

^aNumber of furtakers does not add up to statewide total because furtakers could hunt in more than one area.

*P<0.005.

Table 4. Estimated number of bobcats registered by furtakers (hunters and trappers combined) and proportion of furtakers registering at least one bobcat in Michigan during 2012 and 2013, summarized by area.

Area	Bobcats registered ^a					Furtakers registering a bobcat				
	Year					Year				
	2012		2013		Change (%)	2012		2013		Difference (%)
	No.	95 CL	No.	95 CL		%	95 CL	%	95 CL	
Upper Peninsula	430	40	326	36	-24*	30	2	26	2	-4
Lower Peninsula	282	28	256	27	-9	18	2	15	1	-3*
Unit C	142	21	71	15	-50*	17	2	13	3	-4
Unit D	140	20	92	17	-34*	17	2	13	2	-4
Unit E			48	12				17	4	
Unit F			44	11				12	3	
Unspecified	16	7	11	7	-31	11	5	6	3	-5
Statewide	728	48	592	45	-19*	23	1	18	1	-5*

^aAlthough all furtakers harvesting a bobcat were required to present their animals at a DNR office for registration, this survey does not present information collected from registered bobcats.

*P<0.005.

Table 5. Estimated number of furtakers (hunters and trappers combined) attempting to capture a bobcat, days spent afield (effort), bobcats registered, and proportion of furtakers that registered a bobcat during 2013 in Michigan, summarized by county.

County	Furtakers ^a		Hunting and trapping effort (days)		Bobcats registered		Furtakers that registered a bobcat	
	No.	95% CL	No.	95% CL	No.	95% CL	%	95% CL
Alcona	94	17	582	132	7	5	8	5
Alger	48	12	441	138	14	8	22	10
Alpena	71	15	591	168	11	6	15	7
Antrim	27	9	331	166	5	4	20	13
Arenac	28	9	180	68	2	2	6	8
Baraga	50	12	952	297	14	7	29	11
Bay	4	3	28	27	0	0	0	0
Benzie	30	9	173	62	9	5	29	14
Charlevoix	21	8	197	93	5	4	25	16
Cheboygan	53	13	511	175	4	3	7	6
Chippewa	85	16	1,202	316	20	8	21	8
Clare	85	16	676	179	9	5	10	6
Crawford	52	12	238	68	5	4	10	7
Delta	123	19	1,919	399	46	14	30	7
Dickinson	121	19	2,946	585	37	12	25	7
Emmet	28	9	267	111	4	3	13	11
Gladwin	66	14	430	123	11	6	16	8
Gogebic	62	14	1,144	363	25	11	29	10
Gd. Traverse	32	10	155	55	2	2	6	7
Houghton	57	13	961	322	5	4	9	7
Iosco	68	14	381	113	4	3	5	5
Iron	114	18	2,266	483	32	11	25	7
Isabella	60	13	352	96	4	3	6	5
Kalkaska	55	13	438	140	5	4	10	7
Keweenaw	9	5	158	145	0	0	0	0

^aNumber of furtakers does not add up to statewide total because furtakers could hunt and trap in more than one county.

Table 5 (Continued). Estimated number of furtakers (hunters and trappers combined) attempting to capture a bobcat, days spent afield (effort), bobcats registered, and proportion of furtakers that registered a bobcat during 2013 in Michigan, summarized by county.

County	Furtakers ^a		Hunting and trapping effort (days)		Bobcats registered		Furtakers that registered a bobcat	
	No.	95% CL	No.	95% CL	No.	95% CL	%	95% CL
Lake	59	13	279	93	7	5	12	7
Leelanau	25	9	128	56	4	3	14	12
Luce	36	10	477	169	7	7	10	9
Mackinac	59	13	519	147	9	5	15	8
Manistee	75	15	482	117	16	7	21	8
Marquette	130	20	2,368	473	34	12	22	6
Mason	78	15	464	115	11	6	14	7
Mecosta	71	15	365	89	9	5	13	7
Menominee	133	20	2,430	502	30	10	21	6
Midland	25	9	105	44	4	3	14	12
Missaukee	60	13	390	168	16	7	26	10
Montmorency	87	16	591	167	9	5	10	6
Newaygo	123	19	649	127	12	6	10	5
Oceana	112	18	599	124	16	7	14	6
Ogemaw	80	15	511	144	16	7	20	8
Ontonagon	87	16	1,532	370	41	14	31	9
Osceola	100	17	614	140	5	4	5	4
Oscoda	100	17	647	157	11	6	11	5
Otsego	43	11	375	143	2	2	4	5
Presque Isle	100	17	820	228	14	7	14	6
Roscommon	103	17	567	130	14	7	14	6
Schoolcraft	69	14	984	308	11	6	15	7
Wexford	68	14	381	99	5	4	8	6
Unspecified	144	21	393	133	11	7	6	3

^aNumber of furtakers does not add up to statewide total because furtakers could hunt and trap in more than one county.

Table 6. Estimated number of bobcat hunters and hunting effort (days) in Michigan for 2012 and 2013, summarized by area.

Area	Hunters ^a					Hunting effort				
	Year					Year				
	2012		2013		Change (%)	2012		2013		Change (%)
	No.	95% CL	No.	95% CL		Days	95% CL	Days	95% CL	
Upper Peninsula	543	37	430	35	-21*	5,545	575	5,128	675	-8
Lower Peninsula	1,275	52	1,258	55	-1	10,346	765	8,684	688	-16*
Unit C	696	41	429	35	-38*	6,185	626	3,718	493	-40*
Unit D	658	40	527	38	-20*	4,161	386	3,278	375	-21*
Unit E			196	24				765	123	
Unit F			222	25				923	165	
Unspecified	71	14	69	14	-2	380	129	350	127	-8
Statewide	1,823	58	1,720	61	-6	16,271	953	14,163	955	-13*

^aNumber of hunters does not add up to statewide total because hunters could hunt in more than one area.

*P<0.005.

Table 7. Estimated number of bobcats passed, bobcats registered by hunters, and proportion of hunters that registered at least one bobcat in Michigan for 2012 and 2013, summarized by area.

Area	Bobcats passed ^a					Bobcats registered					Hunters that registered a bobcat				
	Year					Year					Year				
	2012		2013		Change (%)	2012		2013		Change (%)	2012		2013		Difference (%)
	No.	95% CL	No.	95% CL		No.	95% CL	No.	95% CL		%	95% CL	%	95% CL	
Upper Peninsula	389	108	164	38	-58*	138	22	69	16	-50*	21	3	14	3	-7*
Lower Peninsula	1,106	159	856	97	-23	197	23	173	22	-12	15	2	14	2	-2
Unit C	693	140	285	57	-59*	107	17	53	13	-50*	15	2	12	3	-3
Unit D	413	66	306	52	-26	90	16	75	15	-17	14	2	14	3	1
Unit E			109	28				23	8				12	4	
Unit F			157	42				21	8				10	3	
Unspecified	24	13	30	16	25	16	7	7	6	-54	20	8	8	6	-12
Statewide	1,519	194	1,049	106	-31*	351	33	249	28	-29*	18	1	14	1	-4*

^aAn estimated 12 ± 8 bobcats were passed by hunters in areas not open for hunting during 2013; these passed bobcats were not included in statewide estimate.

*P<0.005.

Table 8. Estimated number of hunters, hunting effort (days), bobcats passed, bobcats registered, and proportion of hunters that registered a bobcat in Michigan during 2013, summarized by county.

County	Hunters ^a		Hunting effort (days)		Bobcats passed by hunters ^b		Bobcats registered by hunters		Hunters that registered at least one bobcat	
	No.	95% CL	No.	95% CL	No.	95% CL	No.	95% CL	%	95% CL
Alcona	71	15	377	101	14	9	4	3	5	4
Alger	23	8	164	85	16	11	2	2	8	10
Alpena	57	13	427	152	25	11	9	5	16	8
Antrim	21	8	281	163	11	9	4	3	17	14
Arenac	25	9	117	47	18	12	2	2	7	9
Baraga	9	5	103	68	0	0	0	0	0	0
Bay	2	2	11	14	0	0	0	0	0	0
Benzie	18	7	75	37	14	9	4	3	20	16
Charlevoix	18	7	171	89	11	8	5	4	30	19
Cheboygan	43	11	397	153	36	16	4	3	8	7
Chippewa	37	11	226	88	12	8	4	3	10	8
Clare	62	14	438	153	32	16	7	5	11	7
Crawford	50	12	221	64	16	11	5	4	11	8
Delta	66	14	770	232	37	20	9	5	14	7
Dickinson	43	11	503	208	12	10	4	3	8	7
Emmet	21	8	201	92	18	12	4	3	17	14
Gladwin	41	11	192	86	18	11	7	5	17	10
Gogebic	25	9	139	63	5	5	7	6	21	14
Gd. Traverse	28	9	105	44	16	10	2	2	6	8
Houghton	14	7	123	79	4	3	0	0	0	0
Iosco	55	13	301	101	11	7	2	2	3	4
Iron	46	12	473	164	18	9	5	4	12	8
Isabella	41	11	196	65	39	22	2	2	4	6
Kalkaska	41	11	306	119	32	18	5	4	13	9
Keweenaw	7	5	78	72	0	0	0	0	0	0

^aNumber of hunters does not add up to statewide total because hunters could hunt in more than one area.

^bBobcats that hunter could have harvested but chose not to take.

Table 8. (Continued) Estimated number of hunters, hunting effort (days), bobcats passed, bobcats registered, and proportion of hunters that registered a bobcat in Michigan during 2013, summarized by county.

County	Hunters ^a		Hunting effort (days)		Bobcats passed by hunters ^b		Bobcats registered by hunters		Hunters that registered at least one bobcat	
	No.	95% CL	No.	95% CL	No.	95% CL	No.	95% CL	%	95% CL
Lake	37	11	119	57	16	10	5	4	14	10
Leelanau	21	8	84	38	18	11	4	3	17	14
Luce	16	7	206	110	7	6	0	0	0	0
Mackinac	36	10	244	85	2	2	4	3	10	9
Manistee	39	11	158	52	23	16	4	3	9	8
Marquette	60	13	667	205	9	6	12	8	15	8
Mason	66	14	224	55	21	11	5	4	8	6
Mecosta	36	10	101	39	12	10	4	3	10	9
Menominee	82	16	708	178	14	11	12	6	15	7
Midland	9	5	23	14	2	2	0	0	0	0
Missaukee	44	11	281	151	25	15	12	6	28	12
Montmorency	78	15	489	147	50	24	9	5	11	6
Newaygo	76	15	308	83	52	22	5	4	7	5
Oceana	73	15	285	79	52	24	11	6	15	7
Ogemaw	69	14	425	134	60	24	14	7	21	8
Ontonagon	32	10	308	126	18	17	9	6	22	13
Osceola	64	14	331	108	25	11	4	3	6	5
Oscoda	78	15	443	135	57	24	7	5	9	6
Otsego	30	9	235	112	12	8	0	0	0	0
Presque Isle	84	16	697	217	52	24	9	5	11	6
Roscommon	82	16	411	113	36	18	12	6	15	7
Schoolcraft	37	11	416	164	9	6	2	2	5	6
Wexford	52	12	256	80	34	20	4	3	7	6
Unspecified	69	14	350	127	30	16	7	6	8	6

^aNumber of hunters does not add up to statewide total because hunters could hunt in more than one area.

^bBobcats that hunter could have harvested but chose not to harvest.

Table 9. Estimated number of days of effort per bobcat registered by hunters in Michigan during 2011-2013, summarized by year and area.

Area	Year						Change between 2012 and 2013 (%)
	2011		2012		2013		
	Effort per registered bobcat	95% CL	Effort per registered bobcat	95% CL	Effort per registered bobcat	95% CL	
Upper Peninsula	41.8	3.0	40.1	3.0	73.9	5.4	84*
Lower Peninsula	58.3	4.1	52.5	4.3	50.3	5.4	-4
Unit C	59.7	3.4	57.7	3.5	69.7	4.1	21*
Unit D	56.3	2.4	46.3	2.4	43.9	3.0	-5
Unit E					33.1	1.3	
Unit F					43.3	1.7	
Unspecified	33.7	0.8	24.4	0.6	49.3	1.4	
Statewide	49.5	5.5	46.4	5.4	56.9	7.6	23

*P<0.005. Comparison between 2012 and 2013.

Table 10. Estimated number of hunters, hunting effort (days), bobcats passed, bobcats registered, and proportion of hunters that registered a bobcat in Michigan during 2013, summarized by hunting method and area.

Variable and area	Hunting method							
	Dogs		Calls		Other		Unknown	
	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL
Hunters (No.) ^a								
UP	135	20	258	27	69	14	5	4
LP	516	38	688	43	105	18	4	3
Unit C	183	23	226	26	37	11	2	2
Unit D	249	27	258	27	34	10	0	0
Unit E	73	15	119	19	16	7	0	0
Unit F	80	15	126	19	21	8	2	2
Unspecified	39	11	20	8	5	4	5	4
Statewide	663	42	959	49	180	23	14	7
Hunting effort (Days)								
UP	1,843	500	2,513	358	726	190	46	47
LP	4,324	550	3,600	370	703	188	57	69
Unit C	1,966	385	1,436	273	263	116	53	69
Unit D	1,683	295	1,339	199	256	119	0	0
Unit E	301	79	384	74	80	45	0	0
Unit F	375	105	441	93	103	46	4	5
Unspecified	201	110	123	57	27	29	0	0
Statewide	6,368	751	6,237	515	1,455	268	103	84
Bobcats passed by hunters (No.)								
UP	62	23	82	25	20	10	0	0
LP	473	76	315	55	68	26	0	0
Unit C	171	46	96	32	18	10	0	0
Unit D	197	44	92	26	16	11	0	0
Unit E	41	17	46	17	21	12	0	0
Unit F	64	27	80	30	12	12	0	0
Unspecified	28	16	2	2	0	0	0	0
Statewide ^b	564	82	398	60	87	28	0	0

^aNumber of hunters does not add up to statewide total because hunters could hunt in more than one area.

Table 10 (Continued). Estimated number of hunters, hunting effort (days), bobcats passed, bobcats registered, and proportion of hunters that registered a bobcat in Michigan during 2013, summarized by hunting method and area.

Variable and area	Hunting method							
	Dogs		Calls		Other		Unknown	
	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL
Bobcats registered by hunters (No.)								
UP	25	9	32	10	12	7	0	0
LP	82	16	66	14	23	8	2	2
Unit C	28	9	18	7	7	5	0	0
Unit D	41	11	23	8	11	6	0	0
Unit E	5	4	14	7	4	3	0	0
Unit F	7	5	11	6	2	2	2	2
Unspecified	7	6	0	0	0	0	0	0
Statewide	114	19	98	18	36	11	2	2
Hunters that registered at least one bobcat (%)								
UP	17	6	12	3	15	7	0	0
LP	16	3	10	2	22	7	50	46
Unit C	16	5	8	3	19	11	0	0
Unit D	16	4	9	3	32	14	0	0
Unit E	7	5	12	5	22	18	0	0
Unit F	9	6	8	4	8	10	100	0
Unspecified	14	9	0	0	0	0	0	0
Statewide	16	2	10	2	19	5	13	15

^aNumber of hunters does not add up to statewide total because hunters could hunt in more than one area.

Table 11. Estimated number of bobcat hunters using dogs and their hunting effort (days) in Michigan for 2012 and 2013, summarized by area.

Summarized by area:

Area	Hunters using dogs ^a					Hunting effort				
	Year				Change (%)	Year				Change (%)
	2012		2013			2012		2013		
	No.	95% CL	No.	95% CL		Days	95% CL	Days	95% CL	
Upper Peninsula	169	21	135	20	-20	1,543	309	1,843	500	19
Lower Peninsula	456	34	516	38	13	4,308	580	4,324	550	0
Unit C	256	26	183	23	-28*	2,680	473	1,966	385	-27
Unit D	237	25	249	27	5	1,628	262	1,683	295	3
Unit E			73	15				301	79	
Unit F			80	15				375	105	
Unspecified	43	11	39	11	-9	214	102	201	110	-6
Statewide	636	40	663	42	4	6,065	684	6,368	751	5

^aNumber of hunters does not add up to statewide total because hunters could hunt in more than one area.

*P<0.005.

Table 12. Estimated number of bobcats passed, bobcats registered by hunters using dogs, and proportion of these hunters that registered at least one bobcat in Michigan for 2012 and 2013, summarized by area.

Area	Bobcats passed ^a					Bobcats registered					Hunters that registered a bobcat				
	Year					Year					Year				
	2012		2013		Change (%)	2012		2013		Change (%)	2012		2013		Difference (%)
	No.	95% CL	No.	95% CL		No.	95% CL	No.	95% CL		%	95% CL	%	95% CL	
Upper Peninsula	221	101	62	23	-72*	73	16	25	9	-66*	38	6	17	6	-21*
Lower Peninsula	722	138	473	76	-34*	74	14	82	16	10	16	3	16	3	0
Unit C	468	120	171	46	-64*	45	11	28	9	-37	18	4	16	5	-2
Unit D	254	56	197	44	-22	29	9	41	11	39	12	4	16	4	4
Unit E			41	17				5	4				7	5	7
Unit F			64	27				7	5				9	6	9
Unspecified	16	11	28	16	83	14	7	7	6	-49	28	11	14	9	-14
Statewide	959	173	564	82	-41*	161	22	114	19	-29*	24	3	16	2	-7*

^aAn estimated 3 ± 4 bobcats were passed by hunters in areas not open for hunting during 2013; these passed bobcats were not included in statewide estimate.

*P<0.005.

Table 13. Estimated number of bobcat hunters using calls and their hunting effort (days) in Michigan for 2012 and 2013, summarized by area.

Area	Hunters using calls ^a					Hunting effort				
	Year				Change	Year				Change
	2012		2013			2012		2013		
	No.	95% CL	No.	95% CL		Days	95% CL	Days	95% CL	
Upper Peninsula	354	30	258	27	-27*	3,295	402	2,513	358	-24*
Lower Peninsula	779	43	688	43	-12*	5,443	482	3,600	370	-34*
Unit C	413	33	226	26	-45*	3,147	379	1,436	273	-54*
Unit D	408	32	258	27	-37*	2,297	274	1,339	199	-42*
Unit E			119	19				384	74	
Unit F			126	19				441	93	
Unspecified	17	7	20	8	13	100	58	123	57	22
Statewide	1,123	50	959	49	-15*	8,839	619	6,237	515	-29*

^aNumber of hunters does not add up to statewide total because hunters could hunt in more than one area.

*P<0.005.

Table 14. Estimated number of bobcats passed, bobcats registered by hunters using calls, and proportion of these hunters that registered at least one bobcat in Michigan for 2012 and 2013, summarized by area.

Area	Bobcats passed ^a					Bobcats registered					Hunters that registered a bobcat				
	Year				Change	Year				Change	Year				Differ- ence
	2012		2013			2012		2013			2012		2013		
	No.	95% CL	No.	95% CL		No.	95% CL	No.	95% CL		%	95% CL	%	95% CL	
Upper Peninsula	152	34	82	25	-46*	60	15	32	10	-47*	14	3	12	3	-2
Lower Peninsula	349	59	315	55	-10	102	17	66	14	-35*	13	2	10	2	-3
Unit C	209	49	96	32	-54*	47	12	18	7	-62*	11	3	8	3	-3
Unit D	140	33	92	26	-34	55	12	23	8	-58*	14	3	9	3	-5
Unit E			46	17				14	7				12	5	
Unit F			80	30				11	6				8	4	
Unspecified	3	3	2	2	-49	0	0	0	0		0	0	0	0	0
Statewide	505	68	398	60	-21	162	23	98	18	-40*	13	2	10	2	-3

^aAn estimated 7 ± 6 bobcats were passed by hunters in areas not open for hunting during 2013; these passed bobcats were not included in statewide estimate.

*P<0.005.

Table 15. Correlation between average bobcat pelt prices and number of hunters, days of effort, bobcats registered, and effort per registered bobcat in Michigan during 1997-2013, summarized by region.^a

Estimate and region	Correlation ^b	Significance (P-value) ^c
Number of hunters		
UP	0.34	0.19
LP	0.47	0.05
Days of effort		
UP	0.38	0.13
LP	0.44	0.08
Bobcats registered ^d		
UP	-0.46	0.06
LP	0.08	0.75
Effort per bobcats registered		
UP	0.56	0.02
LP	0.61	0.01

^aMean pelt prices were the average paid in Minnesota and Wisconsin (e.g., Abraham and Dexter 2012, Dhuey 2013). Pelt prices were reported in 2013 dollars by adjusting for inflation using the Consumer Price Index (Bureau of Labor Statistics 2014).

^bPearson product moment correlation coefficient.

^cP-value is the probability of obtaining this correlation result (2-sided test).

^dThe tally of bobcats registered by furtakers at DNR registration stations, rather than estimate from survey.

Table 16. Estimated number of bobcat trappers and their trapping effort (days) in Michigan for 2012 and 2013, summarized by area.

Area	Trappers ^a					Trapping effort				
	Year				Change (%) ^b	Year				Change (%) ^b
	2012		2013			2012		2013		
	No.	95% CL	No.	95% CL		Days	95% CL	Days	95% CL	
Upper Peninsula	728	42	687	43	-6	15,042	1,195	15,170	1,308	1
Lower Peninsula	415	33	635	41	53*	3,143	285	4,812	366	53*
Unit C	183	22	151	21	-17	1,471	197	1,194	189	-19
Unit D	233	25	196	24	-16	1,673	210	1,526	217	-9
Unit E			126	19				916	156	
Unit F			180	23				1,176	168	
Unspecified	57	13	78	15	37	251	175	43	40	-83
Statewide	1,191	51	1,389	57	17*	18,436	1,219	20,024	1,337	9

^aNumber of trappers does not add up to statewide total because trappers could trap in more than one area.

*P<0.005.

Table 17. Estimated number of bobcats captured, bobcats released alive, and bobcats registered by trappers in Michigan for 2012 and 2013, summarized by area.

Area	Bobcats captured					Bobcats released alive					Bobcats registered				
	Year				Change (%) ^a	Year				Change (%) ^a	Year				Change (%) ^a
	2012		2013			2012		2013			2012		2013		
	No.	95% CL	No.	95% CL		No.	95% CL	No.	95% CL		No.	95% CL	No.	95% CL	
Upper Peninsula	382	46	306	38	-20	90	23	50	15	-45*	292	33	256	32	-12
Lower Peninsula	192	39	277	52	45	107	31	194	47	81*	85	16	84	16	-1
Unit C	73	21	52	17	-29	38	16	34	15	-11	35	10	18	7	-49
Unit D	119	33	92	31	-22	69	27	75	30	8	50	12	18	7	-65*
Unit E			80	33				55	30				25	9	
Unit F			53	16				30	13				23	8	
Unspecified	2	2	4	3	106	2	2	0	0		0	0	4	3	
Statewide ^a	575	60	587	64	2	199	39	244	49	23	377	37	343	36	-9

^aAn estimated 8 ± 11 bobcats were captured and released alive by trappers in areas not open to bobcat hunting (Unit E) in 2013. This estimate was not included in 2013 statewide estimates of bobcats captured and released by trappers.

*P<0.005.

Table 18. Estimated proportion of bobcat trappers that captured at least one bobcat and proportion that registered at least one bobcat in Michigan for 2012 and 2013, summarized by area.

Area	Trappers that captured a bobcat					Trappers that registered a bobcat				
	Year				Difference (%)	Year				Difference (%) ^a
	2012 ^a		2013			2012 ^a		2013		
	%	95% CL	%	95% CL		%	95% CL	%	95% CL	
Upper Peninsula	35	3	32	3	-2	32	3	30	3	-2
Lower Peninsula	27	4	25	3	-2	20	3	13	2	-7*
Unit C	25	5	24	6	-2	18	5	12	5	-6
Unit D	28	5	23	5	-5	21	4	9	4	-12
Unit E			32	7				20	6	
Unit F			22	5				13	4	
Unspecified	3	4	5	4	2	0	0	5	4	5*
Statewide	30	2	27	2	-3	26	2	21	2	-6*

^aP<0.005.

Table 19. Estimated number of days of effort per bobcat registered in Michigan by trappers for the 2008-2013, summarized by year and area.

Area	Year						Change between 2012 and 2013 (%) ^a
	2011		2012		2013		
	Effort per registered bobcat	95% CL	Effort per registered bobcat	95% CL	Effort per registered bobcat	95% CL	
Upper Peninsula	46.6	4.3	51.5	4.6	59.2	6.0	15
Lower Peninsula	26.6	1.0	37.1	1.6	57.6	2.9	55*
Unit C	37.0	0.9	42.6	1.2	67.1	1.5	58*
Unit D	20.9	0.6	33.4	1.1	85.8	2.0	157*
Unit E					36.8	1.0	
Unit F					50.8	1.4	
Unspecified	0.0	0.2	0.0	0.5	12.0	0.0	
Statewide	42.2	4.3	48.9	4.9	58.3	6.7	19

^aP<0.005. Comparison between 2012 and 2013.

Table 20. Estimated number of trappers, trapping effort (days), bobcats captured, bobcats released, bobcats registered, and proportion of trappers that captured and registered a bobcat in Michigan during 2013, summarized by county.

County	Trappers ^a		Trapping effort (days)		Bobcats captured by trappers		Bobcats released alive by trappers		Bobcats registered by trappers		Trappers that captured at least one bobcat		Trappers that registered at least one bobcat	
	No.	95%	No.	95%	No.	95%	No.	95%	No.	95%	%	95%	%	95%
		CL		CL		CL		CL		CL		CL		CL
Alcona	27	9	205	76	5	4	2	2	4	3	20	13	13	11
Alger	25	9	277	109	12	8	0	0	12	8	36	17	36	17
Alpena	18	7	164	68	7	6	5	5	2	2	30	19	10	12
Antrim	7	5	50	35	2	2	0	0	2	2	25	28	25	28
Arenac	7	5	62	42	7	9	7	9	0	0	25	28	0	0
Baraga	43	11	848	286	16	7	2	2	14	7	38	13	33	12
Bay	2	2	18	23	0	0	0	0	0	0	0	0	0	0
Benzie	14	7	98	49	9	6	4	3	5	4	50	23	38	22
Charlevoix	4	3	27	26	0	0	0	0	0	0	0	0	0	0
Cheboygan	14	7	114	57	0	0	0	0	0	0	0	0	0	0
Chippewa	55	13	977	302	20	9	4	5	16	8	29	11	26	10
Clare	28	9	238	82	7	6	5	5	2	2	19	13	6	8
Crawford	2	2	18	23	0	0	0	0	0	0	0	0	0	0
Delta	60	13	1,149	321	43	14	5	4	37	13	53	11	47	11
Dickinson	89	16	2,442	528	39	13	5	5	34	12	34	9	30	8
Emmet	9	5	66	40	0	0	0	0	0	0	0	0	0	0
Gladwin	28	9	238	81	4	3	0	0	4	3	13	11	13	11
Gogebic	44	11	1,005	345	25	12	7	5	18	9	32	12	28	12
Gd. Traverse	9	5	50	30	0	0	0	0	0	0	0	0	0	0
Houghton	44	11	838	297	5	4	0	0	5	4	12	8	12	8
Iosco	14	7	80	45	4	5	2	2	2	2	13	15	13	15
Iron	76	15	1,793	429	32	11	5	4	27	10	37	10	30	9
Isabella	23	8	157	64	7	6	5	5	2	2	23	15	8	10
Kalkaska	20	8	132	58	4	3	4	3	0	0	18	15	0	0
Keweenaw	7	5	80	74	0	0	0	0	0	0	0	0	0	0

^aNumber of trappers does not add up to statewide total because trappers could trap in more than one county.

Table 20. (Continued) Estimated number of trappers, trapping effort (days), bobcats captured, bobcats released, bobcats registered, and proportion of trappers that captured and registered a bobcat in Michigan during 2013, summarized by county.

County	Trappers ^a		Trapping effort (days)		Bobcats captured by trappers		Bobcats released alive by trappers		Bobcats registered by trappers		Trappers that captured at least one bobcat		Trappers that registered at least one bobcat	
	No.	95% CL	No.	95% CL	No.	95% CL	No.	95% CL	No.	95% CL	%	95% CL	%	95% CL
Lake	23	8	160	63	7	6	5	5	2	2	23	15	8	10
Leelanau	5	4	44	34	0	0	0	0	0	0	0	0	0	0
Luce	23	8	270	116	11	10	4	5	7	7	15	13	15	13
Mackinac	25	9	276	120	5	4	0	0	5	4	21	14	21	14
Manistee	44	11	324	93	30	13	18	11	12	6	44	13	28	12
Marquette	85	16	1,701	397	27	12	5	5	21	9	23	8	23	8
Mason	34	10	240	85	34	29	28	27	5	4	32	14	16	11
Mecosta	39	11	263	79	11	6	5	4	5	4	27	12	14	9
Menominee	68	14	1,722	454	25	10	7	5	18	8	29	10	24	9
Midland	16	7	82	42	5	5	2	2	4	3	22	18	22	18
Missaukee	18	7	109	50	9	10	5	7	4	3	20	16	20	16
Montmorency	18	7	101	50	2	2	2	2	0	0	10	12	0	0
Newaygo	59	13	342	90	21	12	14	10	7	5	21	9	12	7
Oceana	50	12	315	85	9	6	4	5	5	4	14	9	11	8
Ogemaw	12	6	85	47	4	3	2	2	2	2	29	22	14	17
Ontonagon	62	14	1,224	337	36	14	4	5	32	13	34	10	31	10
Osceola	43	11	283	83	23	19	21	19	2	2	17	10	4	5
Oscoda	25	9	205	74	25	14	21	12	4	3	50	17	14	12
Otsego	16	7	141	63	4	3	2	2	2	2	22	18	11	14
Presque Isle	23	8	123	52	7	5	2	2	5	4	31	17	23	15
Roscommon	23	8	157	64	20	15	18	15	2	2	46	18	8	10
Schoolcraft	39	11	567	219	11	7	2	2	9	5	23	12	23	12
Wexford	16	7	125	58	12	8	11	8	2	2	44	21	11	14
Unspecified	78	15	43	40	4	3	0	0	4	3	5	4	5	4

^aNumber of trappers does not add up to statewide total because trappers could trap in more than one county.

Table 21. Trap type used by bobcat trappers in Michigan during 2013.

Trap type	Trappers (%)	95% CL	Trappers (No.)	95% CL
Foothold traps	84	2	1,169	53
Conibears	32	2	450	35
Other ^a	3	1	37	11

^aIncluded snares and live traps, although snares were not legal to use to capture bobcats.

Table 22. Preferred trap type of bobcat trappers in Michigan during 2013.

Trap type	Trappers (%)	95% CL	Trappers (No.)	95% CL
Foothold traps	57	2	786	45
Conibears	22	2	310	30
No preference	18	2	245	27
Other ^a	1	1	18	7
No answer	2	1	30	9

^aSnares were not legal to use to capture bobcats.

Table 23. Correlation between average bobcat pelt prices and number of trappers, days of effort, bobcats registered, and effort per registered bobcat in Michigan during 1997-2012, summarized by region.^a

Estimate and region	Correlation ^b	Significance (P-value) ^c
Number of trappers		
UP	0.62	0.01
LP ^d	0.95	<0.01
Days of effort		
UP	0.59	0.01
LP ^d	0.92	<0.01
Bobcats registered ^e		
UP	0.00	0.98
LP ^d	0.44	0.08
Effort per bobcats registered		
UP	0.54	0.03
LP ^d	0.53	0.18

^aMean pelt prices were the average paid in Minnesota and Wisconsin (e.g., Abraham and Dexter 2012, Dhuey 2013). Pelt prices were reported in 2013 dollars by adjusting for inflation using the Consumer Price Index (Bureau of Labor Statistics 2014).

^bPearson product moment correlation coefficient.

^cP-value is the probability of obtaining this correlation result (2-sided test).

^dBobcat could be harvested by trappers in the LP during 2004-2005 and 2008-2013 only.

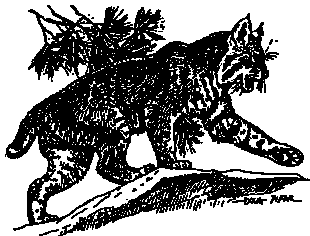
^eThe tally of bobcats registered by furtakers at DNR registration stations, rather than estimate from survey.

Appendix A. The questionnaire sent to people that obtained a bobcat harvest tag in Michigan for the 2013 bobcat hunting and trapping seasons.



BOBCAT HUNTER AND TRAPPER SURVEY

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 questionnaire even if you did not harvest a bobcat during the 2013-14 hunting and trapping seasons (December 1, 2013, through March 1, 2014).
- Only the person this questionnaire was addressed to should answer these questions. Do not report results for another person.

PART A: Hunting Questions (Questions about trapping are on reverse side)

1. Did you hunt bobcats during the 2013-14 season?

- 1 ☐ Yes 2 ☐ No (Skip to Question #9)

2. How many years have you hunted bobcats? _____ Years

3. If you hunted bobcats during the 2013-14 season, please complete the following table.

HUNTING METHOD (Select hunting method used.)	COUNTY HUNTED (For each hunting method used, list the county that you hunted on separate lines.)	NUMBER OF DAYS HUNTED (Count all days hunted even if you did not have an opportunity to take a bobcat)	NUMBER OF BOBCAT REGISTERED (Count only bobcat where a seal was attached to the pelt, and the animal was returned to you.)	NUMBER OF BOBCATS NOT TAKEN (Count the number of bobcats you called within range or treed but chose <u>not</u> to harvest.)
1 <input type="checkbox"/> Dogs 2 <input type="checkbox"/> Calls 3 <input type="checkbox"/> Other				
1 <input type="checkbox"/> Dogs 2 <input type="checkbox"/> Calls 3 <input type="checkbox"/> Other				
1 <input type="checkbox"/> Dogs 2 <input type="checkbox"/> Calls 3 <input type="checkbox"/> Other				
1 <input type="checkbox"/> Dogs 2 <input type="checkbox"/> Calls 3 <input type="checkbox"/> Other				

4. On what lands did you hunt bobcats during the 2013-14 season? (You may check more than one.)

- 1 ☐ Property owned by me or my family 2 ☐ Private land, with permission
3 ☐ Private land open to public hunting (For example, Commercial Forests, Hunter Access Program) 4 ☐ Public land (State Game Area, State or National Forest, etc.)

5. Did you hunt bobcats with dogs during the 2013-14 season?

- 1 ☐ Yes 2 ☐ No (Skip to Question #9)

6. Who owned the dogs that you used to hunt bobcats during the 2013-14 season? (Check one)

- 1 ☐ Normally use dogs that I own. 2 ☐ Normally use dogs owned by someone else.
3 ☐ Normally use a combination of my dogs and dogs owned by someone else.

7. Report the number of bobcat chases with dogs you participated in during the 2013-14 season. _____ Chases
8. Did you hire a guide to assist with hunting bobcats at any time during the 2013-14 season? ¹ ☐ Yes ² ☐ No

PART B: Trapping Questions

9. Did you attempt to harvest a bobcat while trapping in the 2013-14 season?
- 1 ☐ Yes 2 ☐ No (*Skip to Question #16*)
10. How many years have you trapped bobcats? _____ Years
11. If you trapped bobcats during the 2013-14 season, please complete the following table.

COUNTY TRAPPED (List each county that you trapped for bobcat.)	NUMBER OF DAYS TRAPPED	NUMBER OF BOBCAT CAUGHT AND RELEASED (Count only bobcats you released alive from your traps.)	NUMBER OF BOBCAT REGISTERED (Count only bobcat where a seal was attached to the pelt, and the animal was returned to you.)

- 12. On what lands did you trap bobcats during the 2013-14 season?** *(You may check more than one.)*
- | | |
|--|--|
| ¹ <input type="checkbox"/> Property owned by me or my family | ² <input type="checkbox"/> Private land, with permission |
| ³ <input type="checkbox"/> Private land open to public hunting
(For example, Commercial Forests,
Hunter Access Program) | ⁴ <input type="checkbox"/> Public land (State Game Area, State or
National Forest, etc.) |

- 13. How many of the following traps did you set for bobcat in the 2013-14 season?**
(For each type, record the average number used per day.)

_____ Foothold traps
 _____ Conibears
 _____ Other (Please specify_____)

- 14. Which capture method do you prefer to catch bobcats?** (Check one.)
- ¹ ☐ Foothold traps ² ☐ Conibears ³ ☐ No preference ⁴ ☐ Other (please specify _____)

15. Did you catch any bobcats in traps that were set for another species in the 2013-14 season?
- 1 ☐ Yes 2 ☐ No

PART C: General Questions

- 16. Compared to the previous three years, what is the status of bobcats in the county that you prefer to hunt or trap bobcats in the 2013-14 season?**

1 ☐ Increasing 2 ☐ Decreasing 3 ☐ Stable 4 ☐ Not present 5 ☐ Unknown

- 17. Do you have any comments or suggestions about bobcat management in Michigan? Also describe any other incidental bobcats you may have captured but have not reported on this report.**
