



MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Wildlife Division Report No. 3576
October 2013

Printed by Authority of: P.A. 451 of 1994
Total Number of Copies Printed:30
Cost per Copy:\$2.66
Total Cost: \$79.80
Michigan Department of Natural Resources

2012 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 2012, 5,191 people obtained a bobcat harvest tag valid for the hunting and trapping seasons (15% greater than in 2011). About 53% (2,727) of these tag-holders attempted to hunt or trap bobcats, and 23% of these furtakers registered at least one bobcat. An estimated 1,823 people attempted to hunt bobcats and spent 16,271 days hunting and registered 351 bobcats. Nearly 1,191 people attempted to trap bobcats and spent nearly 18,436 days trapping and registered 377 bobcats. The number of hunters and trappers combined increased significantly by 9% statewide between 2011 and 2012; however, hunting and trapping effort and the number of bobcat taken between 2011 and 2012 was not significantly different. Between 1997 and 2007, the days of effort required by furtakers to harvest a bobcat in both the UP and LP increased significantly. During the last four years, however, the effort per registered bobcat has been stable. The measure of effort per bobcat registered is an indirect measure of the abundance of bobcats. Changes in the effort per registered bobcats are inferred to signify changes in bobcat numbers. Stable effort per catch implies stable bobcat numbers during the last four years.



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

Equal Rights for Natural Resource Users

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

If you believe that you have been discriminated against in any program, activity, or facility, or if you desire additional information, please write:
Human Resources, Michigan Department of Natural Resources, PO Box 30473, Lansing MI 48909-7973, or
Michigan Department of Civil Rights, Cadillac Place, 3054 West Grand Blvd, Suite 3-600, Detroit, MI 48202, or
Division of Federal Assistance, U.S. Fish & Wildlife Service, 4401 North Fairfax Drive, Mail Stop MBSP-4020, Arlington, VA 22203.

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

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 2012, bobcats could be harvested during both hunting and trapping seasons (Tables 1 and 2). The length of the hunting and trapping seasons were the same as in 2011. 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 C or D combined (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.

Prior to 2004, only hunters were allowed to harvest a bobcat in the LP, as bobcat trapping was limited to the UP (Tables 1 and 2). During 2004-2005 and 2008-2012, an 11-day bobcat trapping season (December 10-20) was held on private lands in portions of the LP.

In 2012, 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. Bobcat trapping was permitted on both public and private lands. Most hunters traditionally used calls or dogs to take bobcats (Frawley 2013).

METHODS

A questionnaire was sent to everyone who obtained a bobcat harvest tag in 2012 (5,191 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 5,191 people were sent the questionnaire, 87 surveys were undeliverable, resulting in an adjusted sample size of 5,104. Questionnaires were returned by 3,004 people, yielding a 59% 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 2012, 5,191 people obtained a bobcat harvest tag valid for the bobcat hunting and trapping seasons, which was 15% greater than in 2011 (4,524 people obtained a tag in 2011). About $53 \pm 1\%$ (2,727) of these tag holders attempted to hunt or trap bobcats (Table 3). Furthermore, about $6 \pm 1\%$ (287 ± 28) of the tag holders attempted both hunting and trapping bobcats.

Furtakers spent 34,707 days afield ($\bar{x} = 12.7 \pm 0.5$ days/furtaker) and registered 728 bobcats ($\bar{x} = 0.27 \pm 0.02$ bobcats/furtaker). Furtakers spent about 20,588 days afield pursuing bobcats in the UP and 13,489 days in the LP (Table 3). About 23% of the furtakers registered at least one bobcat (Table 4). Nearly $19 \pm 1\%$ of the furtakers registered only one bobcat and $4 \pm 1\%$ registered two bobcats. About 30% of the furtakers in the UP registered at least one bobcat (Table 4). Nearly $22 \pm 2\%$ of the UP furtakers registered only one bobcat and $8 \pm 1\%$ registered two bobcats. An estimated 18% of furtakers in the LP registered a bobcat.

The number of furtakers increased significantly by 9% statewide between 2011 and 2012; however, their effort and the number of bobcat taken in 2011 and 2012 were not significantly different statewide (Tables 3-4, Figure 2). The number of furtakers and their effort increased significantly between 2011 and 2012 in the LP, but these estimates did not differ significantly between years in the UP.

Counties with 140 or more furtakers that pursued bobcats included Alcona, Presque Isle, and Oscoda (Table 5). Counties with 40 or more registered bobcats taken within that county included Ontonagon, Delta, Gogebic, and Iron.

About $29 \pm 1\%$ of furtakers reported the bobcat population was stable in the county they preferred to hunt or trap bobcats, which was similar to the 2011 estimate (Figures 3-5). About $14 \pm 1\%$ reported bobcat numbers were improving and $11 \pm 1\%$ reported fewer bobcats. Nearly $39 \pm 1\%$ of the furtakers were uncertain of the status of bobcats.

Hunting

About $35 \pm 1\%$ (1,823 hunters) of the tag-holders attempted to hunt bobcats during the 2012 seasons (Table 6). About 543 furtakers hunted in the UP and 1,275 hunted in the LP. These hunters had hunted bobcats an average of 8.3 years (± 0.4 year). Bobcat hunters most frequently hunted on public land ($64 \pm 2\%$). About $40 \pm 2\%$ of the hunters hunted on private land not owned by themselves or their family, while $36 \pm 2\%$ hunted bobcats on their own land or land owned by their family. Nearly $32 \pm 2\%$ of the hunters hunted on public land only, $35 \pm 2\%$ hunted on private land only, and $32 \pm 2\%$ hunted on both public and private lands.

Hunters spent about 16,271 days afield hunting bobcats ($\bar{x} = 8.9 \pm 0.4$ days/hunter) and registered an estimated 351 bobcats ($\bar{x} = 0.19 \pm 0.02$ bobcats/hunter, Table 7). Hunters spent about 5,545 days afield hunting bobcats in the UP and 10,346 days hunting bobcats in the LP. The estimated number of days of effort per bobcat registered by hunters statewide was 46.4 days in 2012.

Hunters registered about 48% of the bobcats registered by furtakers (Figure 6). About 18% of bobcat hunters harvested at least one bobcat (Table 7). Nearly $16 \pm 1\%$ of hunters registered only one bobcat and $2 \pm 0.5\%$ registered two bobcats. An estimated 21% of the hunters in the UP registered at least one bobcat; $17 \pm 3\%$ of UP hunters registered one bobcat and $4 \pm 1\%$ registered two bobcats. An estimated 15% of hunters in the LP registered a bobcat.

Counties with 100 or more hunters pursuing bobcats included Alcona, Presque Isle, Oscoda, Montmorency, and Roscommon (Table 8). Counties with more than 20 hunter-registered bobcats originating from that county included Alcona, Gogebic, and Delta.

The number of hunters statewide and their hunting effort did not change significantly between 2011 and 2012 (Table 6). The number of bobcats passed by hunters and bobcats registered by hunters also did not change significantly statewide between 2011 and 2012 (Table 7). However, the number of hunters in the LP and the number of bobcats passed by hunters increased significantly in the UP. The number of days of effort per bobcat registered by hunters statewide (49.5) was not statistically different from estimates for 2011, but hunting effort per bobcat was significantly less in the Unit D (Table 9, Figure 7).

Hunters most frequently used calls ($62 \pm 2\%$) or dogs ($35 \pm 2\%$) to hunt bobcats (Table 10). The estimated number of people hunting bobcats with dogs statewide was not significantly different between 2011 and 2012 (Table 11). Furthermore, hunting effort, hunter success and the number of bobcats registered by hunters using dogs statewide was not significantly different between 2011 and 2012 (Tables 11 and 12). In contrast, the number of bobcats

passed by hunters increased significantly statewide, and the change was greatest in the LP. The estimated number of people hunting bobcats with calls statewide did not differ significantly between 2011 and 2012 (Table 13). Among hunters using calls, the number of bobcats registered and the proportion of hunters registering a bobcat also did not change significantly statewide between 2011 and 2012 (Table 14).

Bobcat hunters using dogs participated in an estimated $2,927 \pm 317$ chases of bobcats statewide during the open season, which was similar to the estimate for 2011 (Figure 8). About $27 \pm 2\%$ of the bobcat hunters had an opportunity to harvest a bobcat but chose not to harvest the bobcat. Thus, an estimated 496 ± 35 hunters chose not to harvest bobcats on $1,519 \pm 194$ occasions (Figure 8). Among those hunters that passed up an opportunity to take a bobcat, $41 \pm 4\%$ passed one bobcat, $22 \pm 3\%$ passed two bobcats, $15 \pm 3\%$ passed three bobcats, $6 \pm 2\%$ passed four bobcats, and $16 \pm 3\%$ 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 ($14 \pm 2\%$) that hunted with dogs hired a guide service to assist with their hunting (86 ± 15 hunters).

About $33 \pm 2\%$ of bobcat hunters reported the bobcat population was stable in the county they preferred to hunt bobcats, which was similar to the 2011 estimate (Figures 3-5). About $13 \pm 1\%$ reported bobcat numbers were increasing and $15 \pm 1\%$ reported fewer bobcats. Nearly $31 \pm 2\%$ of bobcat hunters were uncertain of the status of bobcats.

The mean value of bobcat pelts was usually 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 negatively correlated with the number of bobcats registered in the UP and uncorrelated with registrations totals in the NLP.

Trapping

An estimated $23 \pm 1\%$ (1,191 trappers) of the tag-holders trapped bobcats during the 2012 season (Table 16), and these trappers had trapped bobcats an average of 8.7 years (± 0.6 year). Most trappers trapped bobcats on private land owned by themselves or their family ($50 \pm 3\%$). About $45 \pm 2\%$ of trappers trapped on private lands not owned by themselves or their family and about $32 \pm 2\%$ trapped on public land. About $68 \pm 2\%$ trapped on private land only, $13 \pm 2\%$ of the trappers trapped on public land only, and $19 \pm 2\%$ trapped on both public and private lands.

Trappers spent about 18,436 days afield trapping bobcats ($\bar{x} = 15.5 \pm 0.8$ days/trapper), caught 575 bobcats, registered 377 bobcats ($\bar{x} = 0.32 \pm 0.03$ bobcats/trapper), and released 194 bobcats from their traps during the 2012 season (Table 16, Figure 9).

The number of trappers increased significantly by 14% statewide between 2011 and 2012; 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 catching and registering a bobcat also did not change significantly between 2011 and 2012 (Table 18). The estimated number of days of effort per bobcat registered by trappers

statewide was 48.9 days in 2012 and did not change significantly from 2011 (Table 19, Figure 7). Within the LP, however, the number of days of effort per bobcat registered by trappers increased significantly by 40%.

Trappers registered about 53% of the bobcats registered by furtakers (Figure 6). About 30% of bobcat trappers captured at least one bobcat and 26% registered at least one bobcat (Table 18). Nearly $21 \pm 2\%$ of the trappers registered only one bobcat and $5 \pm 1\%$ registered two bobcats. Nearly $9 \pm 1\%$ of the bobcat trappers caught bobcats that they released. They released 199 bobcats from their traps, which was similar to the number released in 2011. About $8 \pm 1\%$ 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 Ontonagon, Chippewa, and Iron (Table 20). Counties with more than 30 registered bobcats originating from that county included Ontonagon and Delta.

Most trappers used foothold traps (79%), while 36% of the trappers used body gripping traps (i.e., conibears) (Table 21). Most trappers preferred to use foothold traps (53%), while 24% preferred to use conibears (Table 22). An estimated 17% of trappers did not have a preferred trap type.

About $40 \pm 2\%$ of bobcat trappers reported the bobcat population was stable in the county they preferred to trap bobcats (Figures 3-5). About $21 \pm 2\%$ reported bobcat numbers were increasing and $11 \pm 2\%$ reported fewer bobcats. Nearly $24 \pm 2\%$ 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 1997-2012 (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.

Beginning in 2009, hunting seasons in the UP were shortened by 31 days, and trapping seasons in the UP were shortened by 65 days (Tables 1 and 2). Despite the shorter seasons in the UP, the number of bobcat harvested in the UP has not changed markedly.

Between 1997 and 2007, the days of effort required by furtakers to harvest a bobcat in both the UP and LP increased significantly (Figure 7). During the last four years, however, the effort per registered bobcat has been relatively unchanged in both the UP and LP. The measure of effort per bobcat registered is an indirect measure of the abundance of bobcats. Changes in the effort per registered bobcats are inferred to signify changes in bobcat numbers. Stable estimates of effort per catch in the both the UP and LP during the last four years suggests stable bobcat numbers.

About 23% of bobcat hunters and trappers combined registered at least one bobcat in Michigan during the 2012 seasons, while 23-26% ($\bar{x} = 24\%$) of bobcat hunters and trappers harvested at least one bobcat in Michigan during the last four years (Frawley 2013). Success rates in Michigan during the last four years have been lower than success rates of hunters and trappers in Wisconsin (60-73% [$\bar{x} = 69\%$] during 2009-2012; e.g., Dhuey et al. 2013) and in Pennsylvania (34-40% [$\bar{x} = 38\%$] during 2007-2009, Lovallo 2011). Differences between states may reflect differences in bobcat numbers, hunting practices, and harvest regulations.

Although greater number of furtakers (hunters and trappers combined) pursued bobcats in the LP than in the UP, furtakers in the UP expended about 1.8 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 (30% versus 18%). 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 2012 (Table 6), although the season is shorter in the LP (Tables 1 and 2). Hunters in the LP spent nearly twice 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 greater in the UP than in the LP (21% versus 15%).

Although there were nearly 1.5 times as many bobcat hunters than trappers in Michigan during the 2012 seasons, trappers registered about 1.1 times as many bobcats as hunters. Bobcat hunters devoted an average of 46 days of effort per bobcat registered, while trappers spent about 49 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 (24% of hunters using dogs registered a bobcat versus 13% of hunters using calls, Table 10). Hunters using dogs have normally had significantly higher success than hunters using calls (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.

Temperatures and snowfall during 2012 season was more typical than experienced last year. During the 2011 season, Michigan experienced unseasonably warm temperatures and below normal snowfall during December-February 2012 (Midwestern Regional Climate Center 2012). Average temperatures were at least 4°F above normal across Michigan during this period. Hunters using dogs prefer to have snow cover while hunting because it helps them locate and track bobcats. Thus, the lack of snow cover during the 2011 season probably reduced hunting opportunities and harvest by hunters using dogs.

About 9% of the bobcat trappers in Michigan released a bobcat from their traps set during the 2012 season, which was similar to the 2011 estimate (Frawley 2013). In comparison, 6-12% (\bar{x} = 9%) of Wisconsin bobcat trappers released a bobcat from their traps during 2006-2012 in Wisconsin (e.g., Dhuey et al. 2013).

ACKNOWLEDGEMENTS

We thank all the hunters and trappers that provided information. Becky Chamberlain, Tenley Henderson, Sheree Kershaw, and Theresa Riebow completed data entry. Marshall Strong prepared the figure of bobcat management units. Sarah Cummins, Dwayne Etter, Russ Mason, Cheryl Nelson, and Doug Reeves reviewed a draft version of this report.

LITERATURE CITED

- Abraham, J, and M.H. Dexter. 2012. Minnesota fur buyers survey for the 2011-2012 hunting and trapping season. Unpublished report, Division of Fish and Wildlife, Minnesota Department of Natural Resources, St. Paul, USA.
- Bureau of Labor Statistics. 2013. Consumer Price Index-All Urban Consumers, United States Department of Labor. <http://www.bls.gov>. Accessed 4 October 2013.
- Cochran, W. G. 1977. Sampling techniques. John Wiley & Sons, New York, USA.
- Dhuey, B. 2013. Wisconsin fur buyers report 2012-2013. Wisconsin Wildlife Surveys, Wisconsin Department of Natural Resources, Madison, Wisconsin, USA.
- Dhuey, B. and J. Olson. 2008. Bobcat hunter/trapper survey, 2007. Wisconsin Wildlife Surveys, Wisconsin Department of Natural Resources, Madison, Wisconsin, USA.

- Dhuey, B. and J. Olson. 2009. Bobcat hunter/trapper survey, 2008. Wisconsin Wildlife Surveys, Wisconsin Department of Natural Resources, Madison, Wisconsin, USA.
- Dhuey, B., J. Rees, and J. Olson. 2013. Bobcat hunter/trapper survey, 2012. Wisconsin Wildlife Surveys, Wisconsin Department of Natural Resources, Madison, Wisconsin, USA.
- Frawley, B. J. 2001. 1997-2000 Michigan furbearer harvest surveys. Wildlife Division Report 3355. Michigan Department of Natural Resources, Lansing, USA.
- Frawley, B. J. 2011. 2009 bobcat hunter and trapper harvest in Michigan. Wildlife Division Report 3525. Michigan Department of Natural Resources, Lansing, USA.
- Frawley, B. J. 2013. 2011 bobcat hunter and trapper harvest in Michigan. Wildlife Division Report 3560. Michigan Department of Natural Resources, Lansing, USA.
- Kitchell, J. and J. Olson. 2005. Bobcat hunter/trapper survey, 2004. Wisconsin Wildlife Surveys, Volume 15, Issue 5, Wisconsin Department of Natural Resources, Madison, Wisconsin, USA.
- Kitchell, J. and J. Olson. 2006. Bobcat hunter/trapper survey, 2005. Wisconsin Wildlife Surveys, Wisconsin Department of Natural Resources, Madison, Wisconsin, USA.
- Kitchell, J. and J. Olson. 2007. Bobcat hunter/trapper survey, 2006. Wisconsin Wildlife Surveys, Wisconsin Department of Natural Resources, Madison, Wisconsin, USA.
- Lovallo, M. J. 2011. Bobcat harvest management. Federal Aid Project Annual Job Report, Project Number 06630, Pennsylvania Game Commission, Harrisburg, Pennsylvania, USA.
- Midwestern Regional Climate Center. 2012. Midwest Overview - February 2012. <<http://mrcc.sws.uiuc.edu>>. Accessed 4 October 2012.
- Payton, M. E., M. H. Greenstone, and N. Schenker. 2003. Overlapping confidence intervals or standard error intervals: what do they mean in terms of statistical significance? *Journal of Insect Science* 3:34.

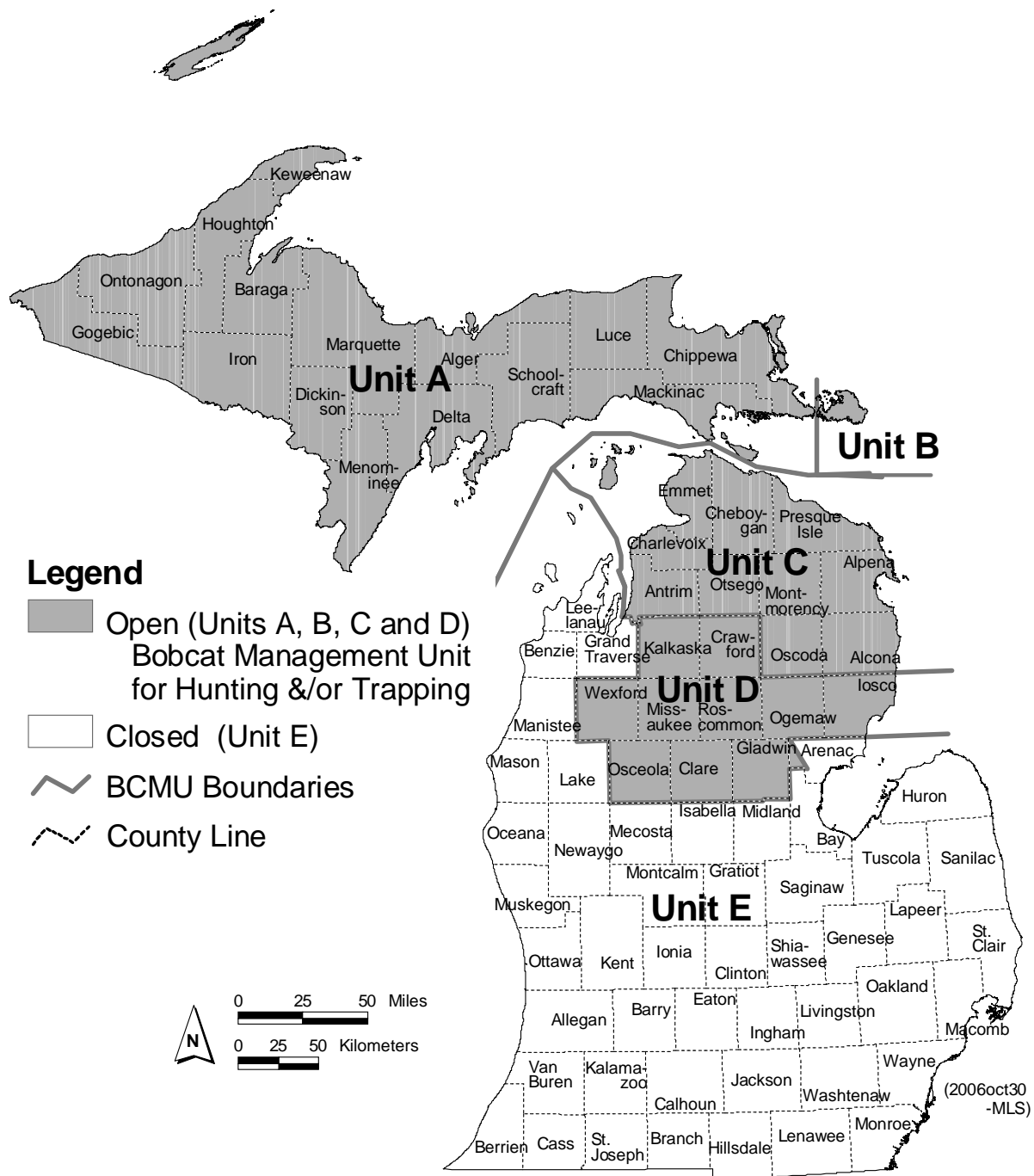
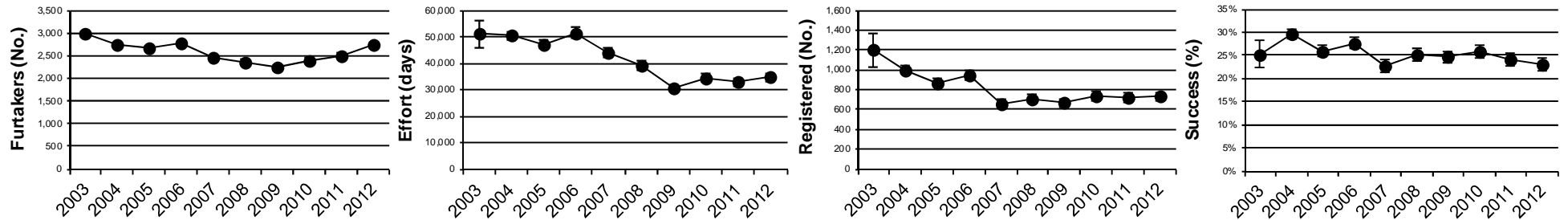
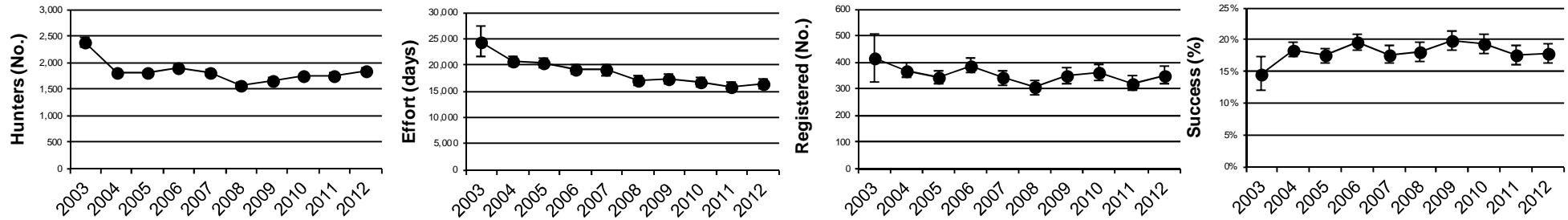


Figure 1. Bobcat Management Units in Michigan for the 2012 hunting and trapping seasons.

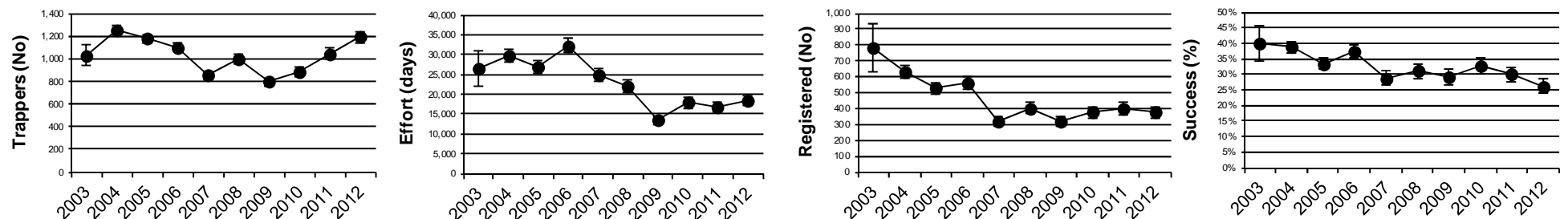
Hunting and trapping combined



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 2003-2012, 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.

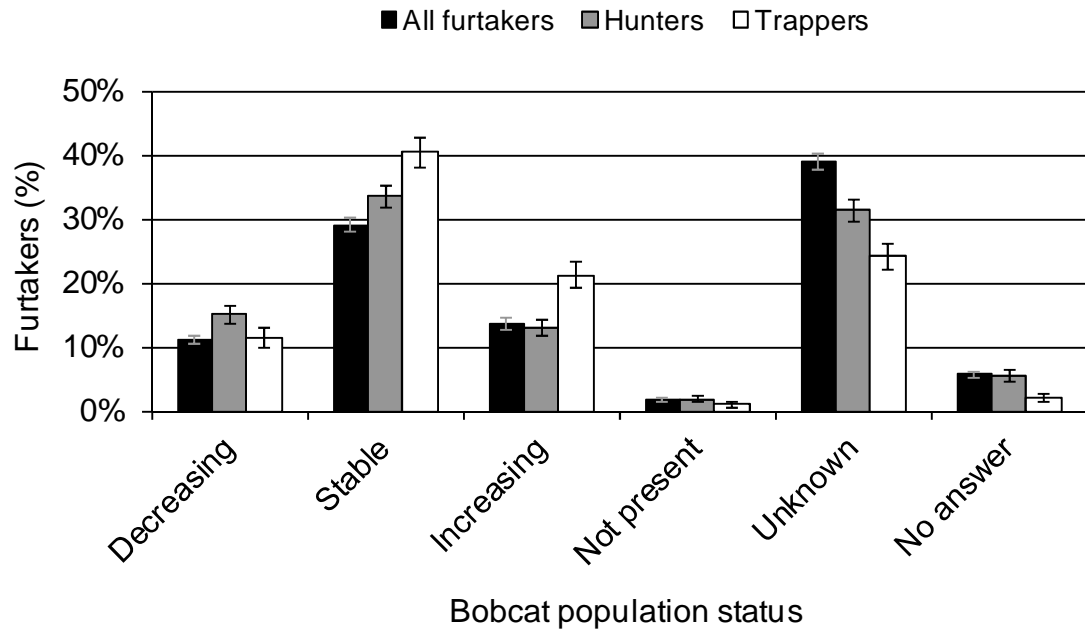


Figure 3. Status of bobcats in Michigan during 2012 as described by bobcat hunters and trappers. Vertical bars represent the 95% CL.

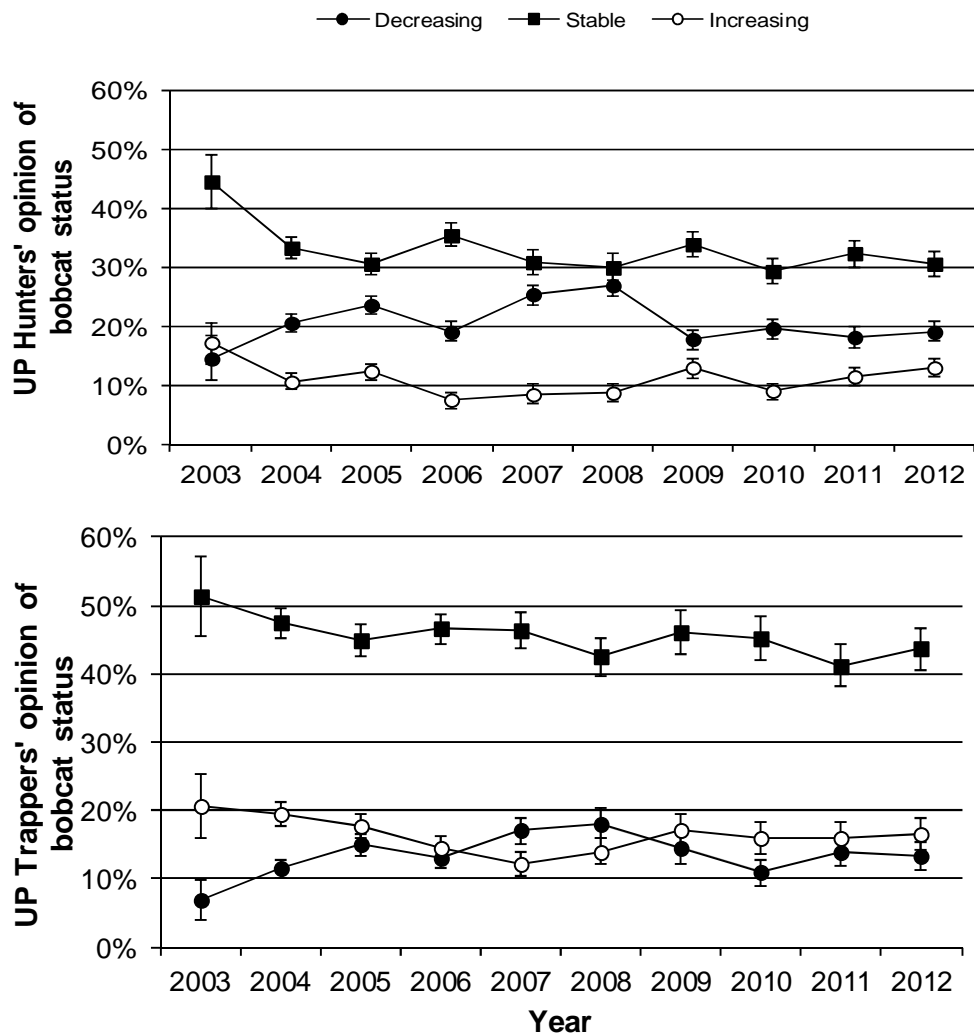


Figure 4. Status of bobcat population in Michigan as described by bobcat hunters and trappers in the Upper Peninsula, 2003-2012. Vertical bars represent the 95% CL.

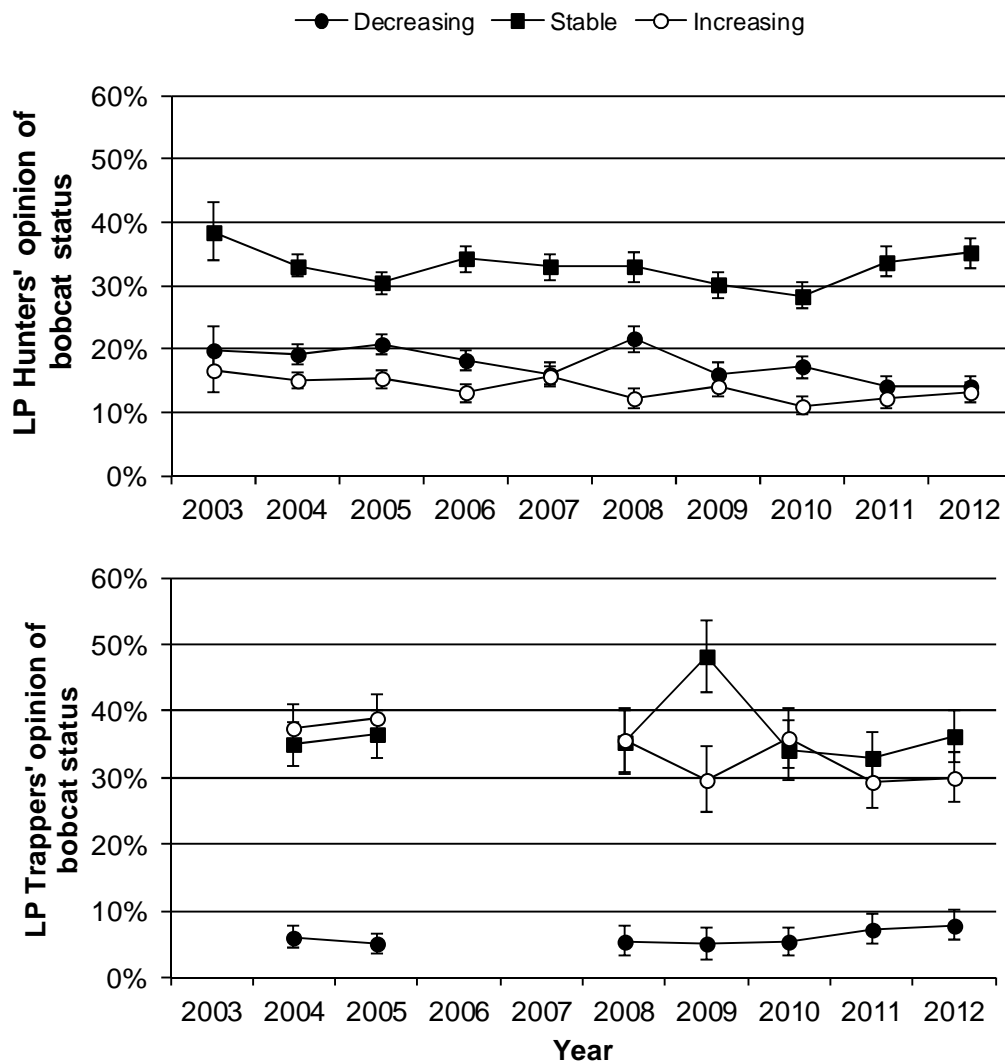


Figure 5. Status of bobcat population in Michigan as described by bobcat hunters and trappers in the Lower Peninsula, 2003-2012. Vertical bars represent the 95% CL. Bobcat could be harvested by trappers in portions of the LP during 2004-2005 and 2008-2012 only.

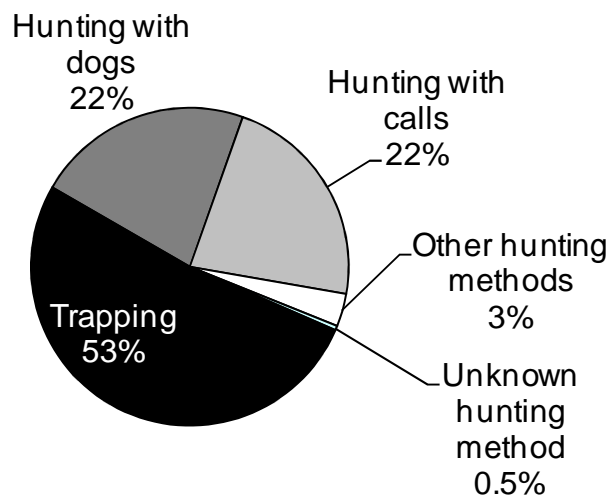


Figure 6. Proportion of bobcats registered in Michigan during 2012, summarized by method of take.

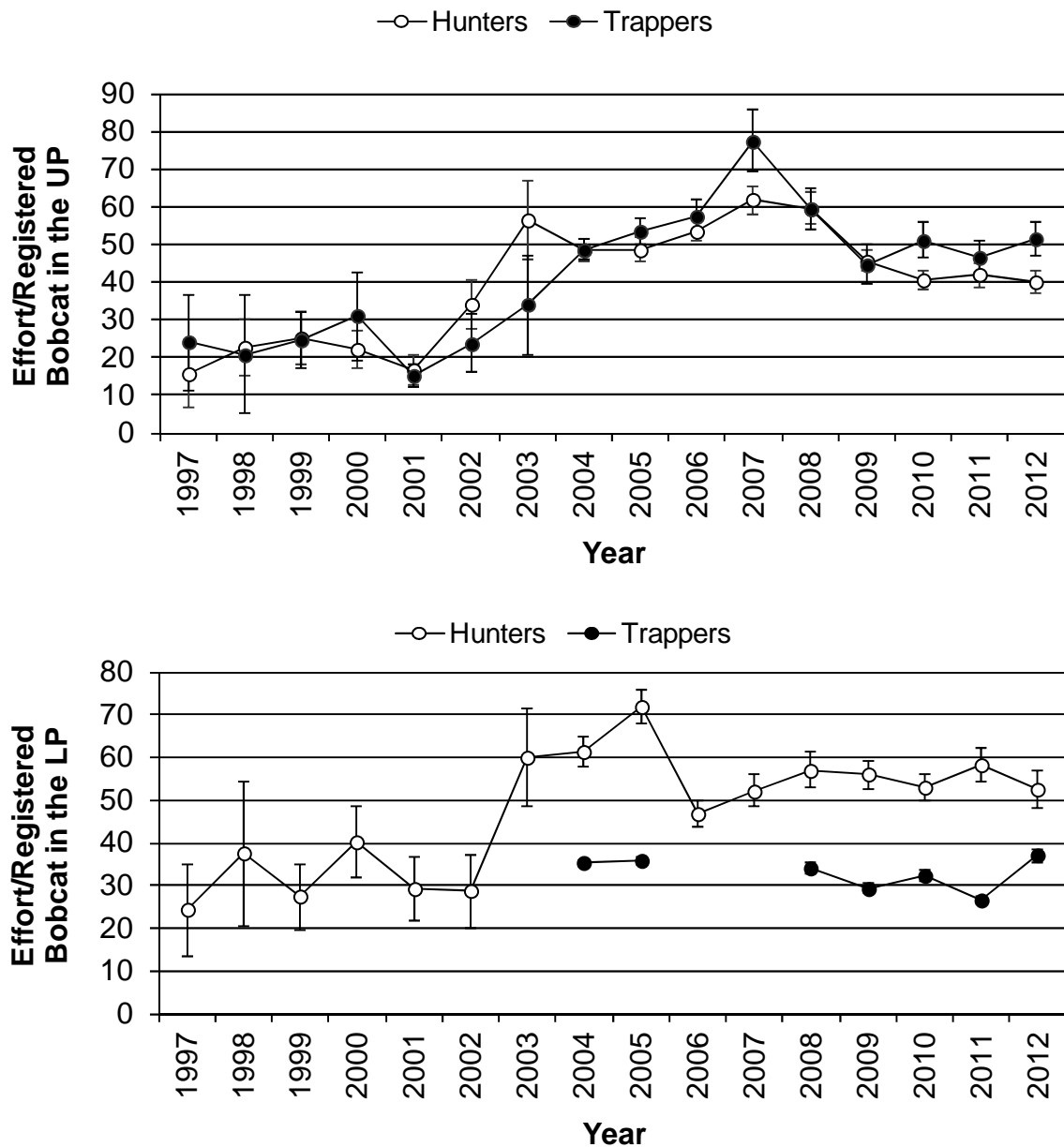


Figure 7. Estimated number of days of effort per bobcat registered in Michigan by hunters and trappers for the 1997-2012 seasons, summarized by region. Vertical error bars represent the 95% CL. Bobcat could be harvested by trappers in portions of the LP during 2004-2005 and 2008-2012 only.

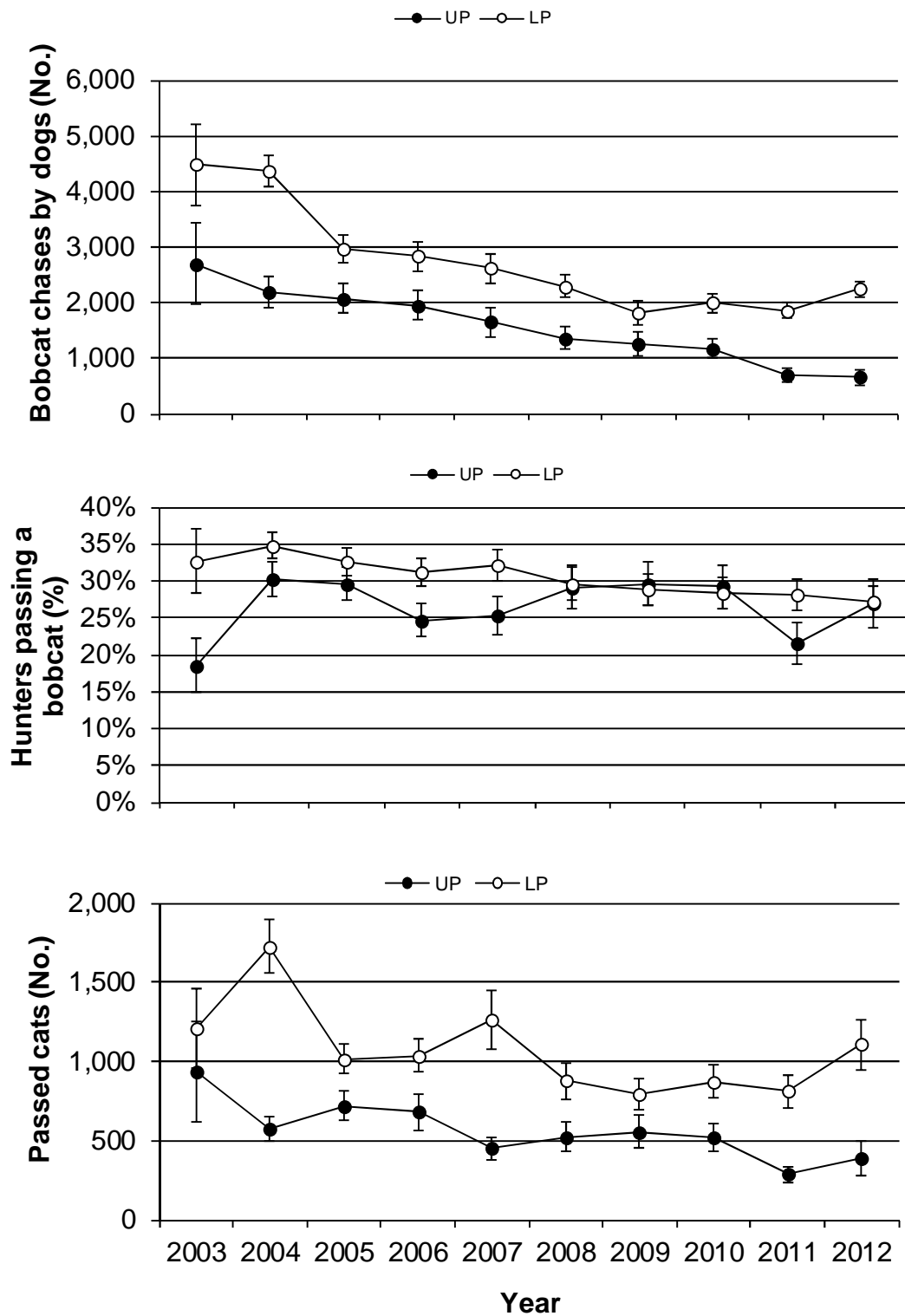


Figure 8. Number of bobcat chases by dogs, proportion of hunters passing a bobcat (bobcats within range or treed but not harvested), and number of bobcats passed by hunters (all types of hunting) in Michigan, 2003-2012. Vertical bars represent the 95% CL.

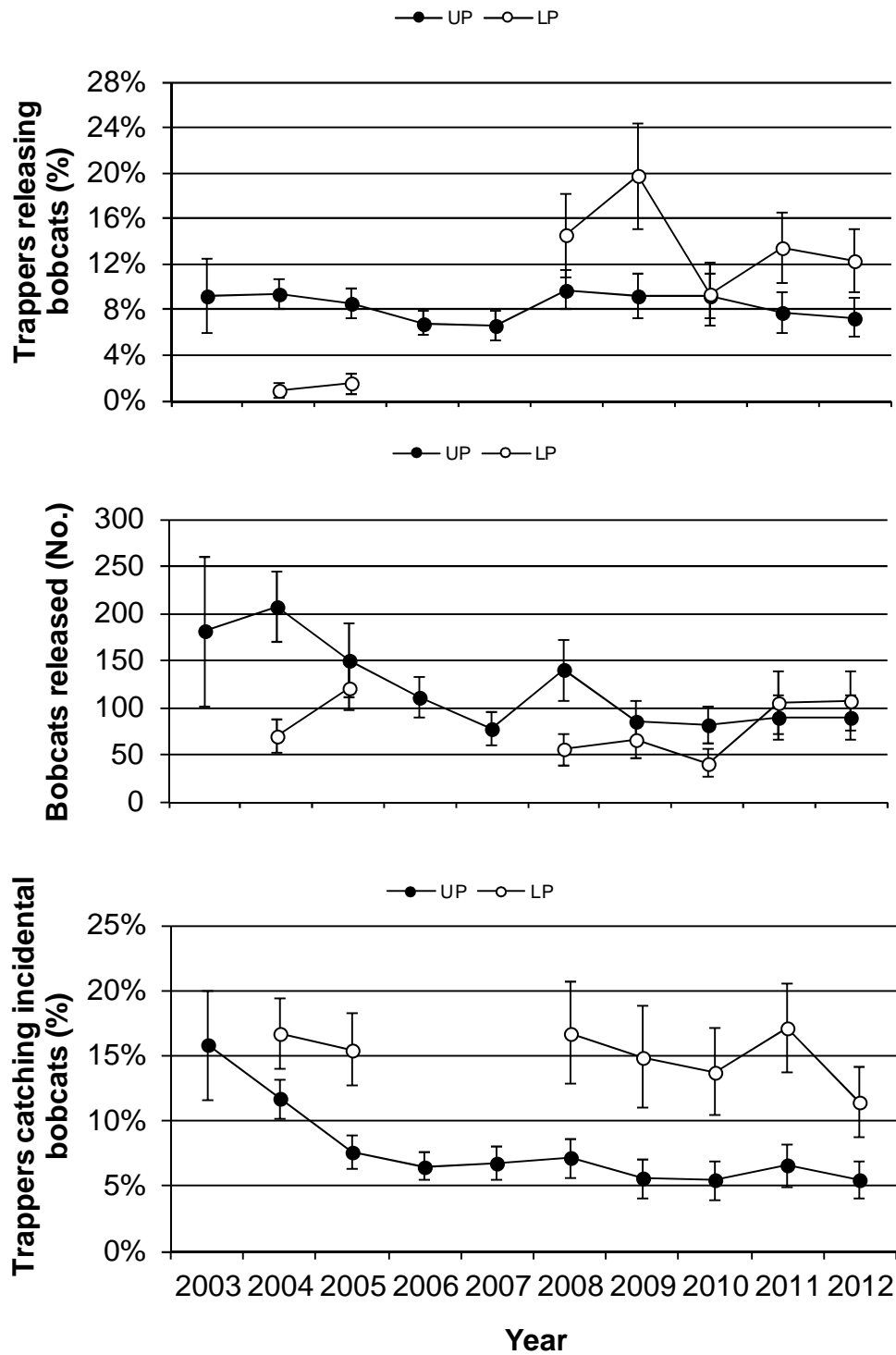


Figure 9. Number of trappers releasing bobcats from their traps, number of bobcats released from traps, and proportion of trappers that caught a bobcat in a trap set for another species (incidental catch) in Michigan, 2003-2012. Trapping of bobcat in the LP was permitted in 2004-2005 and 2008-2012 only. Vertical bars represent the 95% CL.

Table 1. Resident bobcat hunting season dates and seasonal bag limits in Michigan, 1985-2012.

Year	State-wide bag limit ^a	Hunting season zone						
		Upper Peninsula ^b		Drummond Island		Lower Peninsula		
		Season dates	Bag limit ^a	Season dates	Bag limit ^a	North ^c	South ^d	Bag limit ^a
1985	None	10/25-3/1	None	Closed	0	1/1-3/1	NA	None
1986	None	10/25-3/1	None	Closed	0	1/1-3/1	NA	None
1987	None	10/25-3/1	None	Closed	0	1/1-3/1	NA	None
1988	None	10/25-3/1	None	Closed	0	1/1-3/1	NA	None
1989	1	10/25-3/1	1	Closed	0	1/1-3/1	1/1-2/1	1
1990	1	10/25-3/1	1	Closed	0	1/1-3/1	1/1-2/1	1
1991	1	10/25-3/1	1	Closed	0	1/1-3/1	1/15-2/16	1
1992	1	10/25-3/1	1	Closed	0	1/1-3/1	1/15-2/16	1
1993	1	10/25-3/1	1	Closed	0	1/1-3/1	1/15-2/16	1
1994	2	10/25-3/1	2	Closed	0	1/1-3/1	1/15-2/16	1
1995	2	10/25-3/1	2	10/25-3/1	1	1/1-3/1	1/15-2/16	1
1996	3	10/25-3/1	3	10/25-3/1	1	1/1-3/1	1/15-2/16	1
1997	3	10/25-3/1	3	10/25-3/1	1	1/1-3/1	1/15-2/16	1
1998	3	12/1-3/1	3	12/1-3/1	1	1/1-3/1	1/15-2/16	1
1999	3	12/1-3/1	3	12/1-3/1	1	1/1-3/1	1/15-2/16	1
2000	3	12/1-3/1	3	12/1-3/1	1	1/1-3/1	1/15-2/16	1
2001	3	12/1-3/1	3	12/1-3/1	1	1/1-3/1	1/15-2/16	1
2002	3	12/1-3/1	3	12/1-3/1	1	1/1-3/1	1/15-2/16	1
2003	3	12/1-3/1	3	12/1-3/1	1	1/1-3/1	1/15-2/16	1
2004	2	12/1-3/1	2	12/1-3/1	1	1/1-3/1	1/1-2/1	1
2005	2	12/1-3/1	2	12/1-3/1	1	1/1-3/1	1/1-2/1	1
2006	2	12/1-3/1	2	12/1-3/1	1	1/1-3/1	1/1-2/1	1
2007	2	12/1-3/1	2	12/1-3/1	1	1/1-3/1	1/1-2/1	1
2008	2	12/1-3/1	2	12/1-3/1	1	1/1-3/1	1/1-2/1	1
2009	2	1/1-3/1	2	1/1-3/1	1	1/1-3/1	1/1-2/1	1
2010	2	1/1-3/1	2	1/1-3/1	1	1/1-3/1	1/1-2/1	1
2011	2	1/1-3/1	2	1/1-3/1	1	1/1-3/1	1/1-2/1	1
2012	2	1/1-3/1	2	1/1-3/1	1	1/1-3/1	1/1-2/1	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 Bois Blanc Island during 1985-1988 and Drummond Island in the Upper Peninsula.

^cDuring 1985-1988, the North Zone included Alcona, Alpena, Antrim, Charlevoix, Cheboygan, Clare, Emmet, Montmorency, Oscoda, Otsego, and Presque Isle counties. Roscommon county was added during 1985-1986, and Arenac, Crawford, Gladwin, Iosco, Kalkaska, Missaukee, Ogemaw, Osceola, and Roscommon counties were added in 1988. During 1989-2012, the North Zone included Alpena, Antrim, Charlevoix, Cheboygan, Emmet, Montmorency, Otsego, and Presque Isle. Alcona and Oscoda counties were added during 1991-2012.

^dThe South Zone did not exist before 1989. During 1989-2012, the South Zone 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. The South Zone also included Alcona and Oscoda counties during 1989-1990.

Table 2. Resident bobcat trapping season dates and seasonal bag limits in Michigan, 1985-2012.

Year	State-wide bag limit ^a	Trapping season zone						
		Upper Peninsula ^b		Drummond Island		Lower Peninsula		
		Season dates	Bag limit ^a	Season dates	Bag limit ^a	North ^c	South ^d	Bag limit ^a
1985	None	10/25-3/1	None	Closed	0	Closed	Closed	0
1986	None	10/25-3/1	None	Closed	0	Closed	Closed	0
1987	None	10/25-3/1	None	Closed	0	Closed	Closed	0
1988	None	10/25-3/1	None	Closed	0	Closed	Closed	0
1989	1	10/25-3/1	1	Closed	0	Closed	Closed	0
1990	1	10/25-3/1	1	Closed	0	Closed	Closed	0
1991	1	10/25-3/1	1	Closed	0	Closed	Closed	0
1992	1	10/25-3/1	1	Closed	0	Closed	Closed	0
1993	1	10/25-3/1	1	Closed	0	Closed	Closed	0
1994	2	10/25-3/1	2	Closed	0	Closed	Closed	0
1995	2	10/25-3/1	2	10/25-3/1	1	Closed	Closed	0
1996	3	10/25-3/1	3	10/25-3/1	1	Closed	Closed	0
1997	3	10/25-3/1	3	10/25-3/1	1	Closed	Closed	0
1998	3	10/25-3/1	3	10/25-3/1	1	Closed	Closed	0
1999	3	10/25-3/1	3	10/25-3/1	1	Closed	Closed	0
2000	3	10/25-3/1	3	10/25-3/1	1	Closed	Closed	0
2001	3	10/25-3/1	3	10/25-3/1	1	Closed	Closed	0
2002	3	10/25-3/1	3	10/25-3/1	1	Closed	Closed	0
2003	3	10/25-3/1	3	10/25-3/1	1	Closed	Closed	0
2004	2	10/25-3/1	2	10/25-3/1	1	12/10-20	12/10-20	1
2005	2	10/25-3/1	2	10/25-3/1	1	12/10-20	12/10-20	1
2006	2	10/25-3/1	2	10/25-3/1	1	Closed	Closed	0
2007	2	10/25-3/1	2	10/25-3/1	1	Closed	Closed	0
2008	2	10/25-3/1	2	10/25-3/1	1	12/10-20	12/10-20	1
2009	2	12/1-2/1	2	12/1-2/1	1	12/10-20	12/10-20	1
2010	2	12/1-2/1	2	12/1-2/1	1	12/10-20	12/10-20	1
2011	2	12/1-2/1	2	12/1-2/1	1	12/10-20	12/10-20	1
2012	2	12/1-2/1	2	12/1-2/1	1	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 Bois Blanc Island during 1985-1988 and Drummond Island in the Upper Peninsula.

^cDuring 1985-1988, the North Zone included Alcona, Alpena, Antrim, Charlevoix, Cheboygan, Clare, Emmet, Montmorency, Oscoda, Otsego, and Presque Isle counties. Roscommon county was added during 1985-1986, and Arenac, Crawford, Gladwin, Iosco, Kalkaska, Missaukee, Ogemaw, Osceola, and Roscommon counties were added in 1988. During 1989-2012, the North Zone included Alpena, Antrim, Charlevoix, Cheboygan, Emmet, Montmorency, Otsego, and Presque Isle. Alcona and Oscoda counties were added during 1991-2012.

^dThe South Zone did not exist before 1989. During 1989-2012, the South Zone 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. The South Zone also included Alcona and Oscoda counties during 1989-1990.

Table 3. Estimated number of furtakers (hunters and trappers combined) pursuing bobcat and their hunting and trapping effort (days combined) in Michigan for 2011 and 2012, summarized by area.

Area	Furtakers ^a					Hunting and trapping effort				
	Year				Change (%)	Year				Change (%)
	2011		2012			2011		2012		
	No.	95 CL	No.	95 CL		Days	95 CL	Days	95 CL	
Upper Peninsula	1,099	47	1,146	50	4	20,646	1,379	20,588	1,345	0
Lower Peninsula	1,345	50	1,538	55	14*	11,553	754	13,489	827	17*
Unit C	721	40	816	44	13*	6,617	657	7,655	672	16
Unit D	701	40	823	44	17*	4,935	389	5,834	453	18*
Unspecified	123	18	123	18	0	593	194	631	247	6
Statewide	2,501	54	2,727	60	9*	32,792	1,496	34,707	1,511	6

^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 2011 and 2012, summarized by area.

Area	Bobcats registered ^a					Furtakers registering a bobcat				
	Year				Change (%)	Year				Difference (%)
	2011		2012			2011		2012		
	No.	95 CL	No.	95 CL		%	95 CL	%	95 CL	
Upper Peninsula	458	41	430	40	-6	31	2	30	2	-2
Lower Peninsula	248	25	282	28	14	18	2	18	2	-1
Unit C	123	18	142	21	15	17	2	17	2	0
Unit D	125	18	140	20	12	18	2	17	2	-1
Unspecified	15	8	16	7	3	10	4	11	5	2
Statewide	721	47	728	48	1	24	1	23	1	-1

^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 2012 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	166	21	1,116	201	38	10	23	5
Alger	38	10	508	184	7	4	18	10
Alpena	114	18	909	199	19	7	17	6
Antrim	38	10	349	125	2	2	5	6
Arenac	9	5	35	27	0	0	0	0
Baraga	74	14	1,037	273	9	6	9	6
Charlevoix	21	8	98	43	0	0	0	0
Cheboygan	102	17	1,054	248	12	6	12	5
Chippewa	114	18	1,514	339	33	12	21	6
Clare	104	17	629	125	22	8	22	7
Crawford	73	14	558	138	5	4	7	5
Delta	112	18	1,659	364	57	15	38	8
Dickinson	114	18	1,941	421	33	11	26	7
Emmet	36	10	221	78	9	5	24	12
Gladwin	78	15	422	98	7	4	9	5
Gogebic	95	16	1,649	387	54	15	42	8
Houghton	52	12	850	262	9	5	17	9
Iosco	88	16	683	161	10	5	12	6
Iron	135	19	2,105	424	45	13	27	6
Kalkaska	71	14	619	167	16	7	22	8
Keweenaw	3	3	60	59	0	0	0	0
Luce	52	12	498	207	5	5	7	6
Mackinac	97	16	1,313	329	28	9	29	8
Marquette	131	19	2,039	393	36	12	22	6
Menominee	128	19	2,585	494	31	10	22	6
Missaukee	81	15	520	122	12	6	15	7
Montmorency	137	19	1,147	230	14	7	9	4
Ogemaw	76	14	448	102	9	5	11	6
Ontonagon	123	18	1,875	390	62	17	34	7
Osceola	121	18	670	124	21	8	17	6
Oscoda	143	20	1,063	211	24	9	16	5
Otsego	50	12	501	174	3	3	7	6
Presque Isle	149	20	1,196	256	21	8	14	5
Roscommon	133	19	771	144	17	7	13	5
Schoolcraft	69	14	956	270	22	9	28	9
Wexford	88	16	480	111	21	8	24	8
Unspecified	123	18	631	247	16	7	11	5

^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 2011 and 2012, summarized by area.

Area	Hunters ^a					Hunting effort				
	Year					Year				
	2011		2012		Change (%)	2011		2012		Change (%)
	No.	95% CL	No.	95% CL		Days	95% CL	Days	95% CL	
Upper Peninsula	585	37	543	37	-7	6,198	589	5,545	575	-11
Lower Peninsula	1,128	47	1,275	52	13*	9,136	703	10,346	765	13
Unit C	629	38	696	41	11	5,433	615	6,185	626	14
Unit D	570	36	658	40	16*	3,703	341	4,161	386	12
Unspecified	78	14	71	14	-9	511	174	380	129	-26
Statewide	1,739	53	1,823	58	5	15,844	900	16,271	953	3

^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 2011 and 2012, summarized by area.

Area	Bobcats passed ^a					Bobcats registered					Hunters that registered a bobcat				
	Year					Year					Year				
	2011		2012		Change (%)	2011		2012		Change (%)	2011		2012		Difference (%)
	No.	95% CL	No.	95% CL		No.	95% CL	No.	95% CL		%	95% CL	%	95% CL	
Upper Peninsula	285	53	389	108	36	148	21	138	22	-7	24	3	21	3	-3
Lower Peninsula	809	101	1,106	159	37*	157	20	197	23	26	14	2	15	2	1
Unit C	442	75	693	140	57*	91	15	107	17	18	14	2	15	2	1
Unit D	367	65	413	66	12	66	13	90	16	37	12	2	14	2	2
Unspecified	115	51	24	13	-79*	15	8	16	7	3	15	7	20	8	4
Statewide	1,209	128	1,519	194	26	320	29	351	33	10	18	1	18	1	0

^aAn estimated 12 ± 8 bobcats were passed by hunters in areas not open for hunting during 2012; 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 2012, 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	149	20	861	177	97	34	31	9	21	6
Alger	16	7	171	114	14	14	0	0	0	0
Alpena	98	16	745	184	52	29	16	7	16	6
Antrim	28	9	218	92	16	11	2	2	6	8
Arenac	5	4	7	5	0	0	0	0	0	0
Baraga	31	9	168	62	2	2	0	0	0	0
Charlevoix	16	7	67	35	3	4	0	0	0	0
Cheboygan	90	16	866	230	111	50	9	5	10	5
Chippewa	45	11	273	91	24	13	7	5	12	8
Clare	85	15	415	90	52	22	16	7	18	7
Crawford	71	14	550	138	41	17	5	4	7	5
Delta	67	14	601	159	45	19	21	8	28	9
Dickinson	62	13	641	188	78	38	5	4	8	6
Emmet	26	8	137	64	31	24	3	3	13	11
Gladwin	52	12	197	56	17	9	5	4	10	7
Gogebic	47	11	356	116	59	27	24	11	33	12
Houghton	17	7	76	35	3	4	5	4	30	18
Iosco	78	15	527	131	28	16	9	5	11	6
Iron	66	13	517	157	50	31	16	7	21	8

^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 2012, 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
Kalkaska	59	13	487	151	43	21	9	5	15	8
Keweenaw	2	2	17	22	0	0	0	0	0	0
Luce	28	9	219	101	3	4	0	0	0	0
Mackinac	52	12	366	162	21	13	14	6	27	10
Marquette	76	14	804	200	47	23	16	8	16	7
Menominee	81	15	847	197	22	12	12	6	15	7
Missaukee	73	14	408	104	52	22	10	5	14	7
Montmorency	119	18	893	196	97	39	7	4	6	4
Ogemaw	64	13	309	75	33	13	5	4	8	6
Ontonagon	48	12	289	99	12	7	12	7	21	10
Osceola	79	15	344	82	31	16	14	6	17	7
Oscoda	126	19	885	193	147	61	19	7	15	5
Otsego	43	11	442	169	14	9	3	3	8	7
Presque Isle	135	19	1,071	240	126	45	17	7	13	5
Roscommon	112	18	584	115	83	31	9	5	8	4
Schoolcraft	29	9	200	88	9	9	7	4	24	13
Wexford	66	13	334	94	33	15	9	5	13	7
Unspecified	71	14	380	129	24	13	16	7	20	8

^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 2010-2012, summarized by year and area.

Area	Year						Change between 2011 and 2012 (%)
	2010		2011		2012		
	Effort per registered bobcat	95% CL	Effort per registered bobcat	95% CL	Effort per registered bobcat	95% CL	
Upper Peninsula	40.7	2.5	41.8	3.0	40.1	3.0	-4
Lower Peninsula	53.1	3.2	58.3	4.1	52.5	4.3	-10
Unit C	51.5	2.4	59.7	3.4	57.7	3.5	-3
Unit D	55.4	2.0	56.3	2.4	46.3	2.4	-18*
Unspecified	11.6	0.2	33.7	0.8	24.4	0.6	
Statewide	45.7	4.0	49.5	5.5	46.4	5.4	-6

*P<0.005. Comparison between 2011 and 2012.

Table 10. Estimated number of hunters, hunting effort (days), bobcats passed, bobcats registered, and proportion of hunters that registered a bobcat in Michigan during 2012, 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	169	21	354	30	62	13	2	2
LP	456	34	779	43	86	15	12	6
Unit C	256	26	413	33	54	12	9	5
Unit D	237	25	408	32	33	10	3	3
Unspecified	43	11	17	7	14	6	2	2
Statewide	636	40	1,123	50	162	21	16	7
Hunting effort (Days)								
UP	1,543	309	3,295	402	702	224	5	7
LP	4,308	580	5,443	482	555	147	40	20
Unit C	2,680	473	3,147	379	328	118	29	18
Unit D	1,628	262	2,297	274	226	89	10	10
Unspecified	214	102	100	58	60	48	5	7
Statewide	6,065	684	8,839	619	1,317	271	50	23
Bobcats passed by hunters (No.)								
UP	221	101	152	34	16	12	0	0
LP	722	138	349	59	26	14	9	9
Unit C	468	120	209	49	7	4	9	9
Unit D	254	56	140	33	19	13	0	0
Unspecified	16	11	3	3	5	5	0	0
Statewide ^b	959	173	505	68	47	19	9	9
Bobcats registered by hunters (No.)								
UP	73	16	60	15	5	4	0	0
LP	74	14	102	17	17	7	3	3
Unit C	45	11	47	12	12	6	3	3
Unit D	29	9	55	12	5	4	0	0
Unspecified	14	7	0	0	2	2	0	0
Statewide	161	22	162	23	24	8	3	3
Hunters that registered at least one bobcat (%)								
UP	38	6	14	3	8	6	0	0
LP	16	3	13	2	20	7	29	22
Unit C	18	4	11	3	23	10	40	28
Unit D	12	4	14	3	16	11	0	0
Unspecified	28	11	0	0	13	15	0	0
Statewide	24	3	13	2	15	5	22	18

^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 2011 and 2012, summarized by area.

Summarized by area:										
Area	Hunters using dogs ^a					Hunting effort				
	Year				Change (%)	Year				Change (%)
	2011		2012			2011		2012		
	No.	95% CL	No.	95% CL		Days	95% CL	Days	95% CL	
Upper Peninsula	167	21	169	21	1	1,680	363	1,543	309	-8
Lower Peninsula	399	31	456	34	14	3,562	548	4,308	580	21
Unit C	222	24	256	26	15	2,154	495	2,680	473	24
Unit D	204	23	237	25	16	1,407	229	1,628	262	16
Unspecified	42	10	43	11	3	295	131	214	102	-27
Statewide	575	36	636	40	11	5,537	672	6,065	684	10

^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 2011 and 2012, summarized by area.

Area	Bobcats passed ^a					Bobcats registered					Hunters that registered a bobcat				
	Year					Year					Year				
	2011		2012		Change	2011		2012		Change	2011		2012		Differ- ence (%)
	No.	95% CL	No.	95% CL		No.	95% CL	No.	95% CL		%	95% CL	%	95% CL	
Upper Peninsula	115	33	221	101	93	57	12	73	16	27	34	6	38	6	3
Lower Peninsula	423	77	722	138	71*	44	11	74	14	70*	11	3	16	3	5
Unit C	244	59	468	120	92*	29	9	45	11	57	13	4	18	4	5
Unit D	179	45	254	56	42	15	6	29	9	94	7	3	12	4	5
Unspecified	79	46	16	11	-80*	13	7	14	7	3	24	11	28	11	4
Statewide	617	102	959	173	55*	115	18	161	22	40	19	3	24	3	4

^aAn estimated 3 ± 4 bobcats were passed by hunters in areas not open for hunting during 2012; 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 2011 and 2012, summarized by area.

Area	Hunters using calls ^a					Hunting effort				
	Year				Change	Year				Change
	2011		2012			2011		2012		
	No.	95% CL	No.	95% CL		Days	95% CL	Days	95% CL	
Upper Peninsula	376	30	354	30	-6	3,521	384	3,295	402	-6
Lower Peninsula	700	39	779	43	11	4,888	419	5,443	482	11
Unit C	386	30	413	33	7	2,865	339	3,147	379	10
Unit D	352	29	408	32	16	2,023	227	2,297	274	14
Unspecified	34	9	17	7	-49*	207	112	100	58	-52
Statewide	1,094	47	1,123	50	3	8,617	563	8,839	619	3

^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 2011 and 2012, summarized by area.

Area	Bobcats passed ^a					Bobcats registered					Hunters that registered a bobcat				
	Year					Year					Year				
	2011		2012		Change	2011		2012		Change	2011		2012		Differ- ence (%)
	No.	95% CL	No.	95% CL		No.	95% CL	No.	95% CL		%	95% CL	%	95% CL	
Upper Peninsula	130	31	152	34	17	74	15	60	15	-18	17	3	14	3	-4
Lower Peninsula	339	57	349	59	3	89	15	102	17	14	13	2	13	2	0
Unit C	167	42	209	49	25	44	11	47	12	6	11	3	11	3	0
Unit D	172	39	140	33	-19	46	11	55	12	22	13	3	14	3	1
Unspecified	30	19	3	3	-89*	0	0	0	0		0	0	0	0	0
Statewide	499	68	505	68	1	163	22	162	23	-1	14	2	13	2	-1

^aAn estimated 7 ± 6 bobcats were passed by hunters in areas not open for hunting during 2012; 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 1997-2012, summarized by region.^a

Estimate and region	Correlation ^b	Significance (P-value) ^c
Number of hunters		
UP	0.61	0.01
NLP	0.46	0.07
Days of effort		
UP	0.61	0.01
NLP	0.53	0.03
Bobcats registered ^d		
UP	-0.60	0.02
NLP	-0.05	0.86
Effort per bobcats registered		
UP	0.67	<0.01
NLP	0.67	<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 2012 dollars by adjusting for inflation using the Consumer Price Index (Bureau of Labor Statistics 2013).

^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 2011 and 2012, summarized by area.

Area	Trappers ^a					Trapping effort				
	Year				Change (%) ^b	Year				Change (%) ^b
	2011		2012			2011		2012		
	No.	95% CL	No.	95% CL		Days	95% CL	Days	95% CL	
Upper Peninsula	662	39	728	42	10	14,448	1,195	15,042	1,195	4
Lower Peninsula	349	29	415	33	19*	2,417	238	3,143	285	30*
Unit C	165	20	183	22	11	1,185	177	1,471	197	24
Unit D	185	22	233	25	26*	1,232	165	1,673	210	36*
Unspecified	47	11	57	13	21	83	85	251	175	203
Statewide	1,043	46	1,191	51	14*	16,948	1,209	18,436	1,219	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 2011 and 2012, summarized by area.

Area	Bobcats captured					Bobcats released alive					Bobcats registered				
	Year					Year					Year				
	2011		2012		Change (%) ^a	2011		2012		Change (%) ^a	2011		2012		Change (%) ^a
	No.	95% CL	No.	95% CL		No.	95% CL	No.	95% CL		No.	95% CL	No.	95% CL	
Upper Peninsula	399	48	382	46	-4	89	24	90	23	1	310	35	292	33	-6
Lower Peninsula	196	39	192	39	-2	105	33	107	31	3	91	15	85	16	-7
Unit C	72	22	73	21	0	40	18	38	16	-6	32	9	35	10	8
Unit D	123	33	119	33	-3	64	27	69	27	8	59	12	50	12	-15
Unspecified	0	0	2	2		0	0	2	2		0	0	0	0	
Statewide ^a	595	62	575	60	-3	194	40	199	39	3	401	38	377	37	-6

^aAn estimated 8 ± 11 bobcats were captured and released alive by trappers in areas not open to bobcat hunting (Unit E) in 2012. This estimate was not included in 2012 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 2011 and 2012, summarized by area.

Area	Trappers that captured a bobcat					Trappers that registered a bobcat				
	Year				Difference	Year				Difference
	2011 ^a		2012			2011 ^a		2012		
	%	95% CL	%	95% CL		%	95% CL	%	95% CL	
Upper Peninsula	36	3	35	3	-1	34	3	32	3	-2
Lower Peninsula	35	4	27	4	-9*	26	4	20	3	-6
Unit C	28	6	25	5	-2	19	5	18	5	-1
Unit D	42	6	28	5	-14*	32	6	21	4	-10*
Unspecified	0	0	3	4	3	0	0	0	0	0
Statewide	34	2	30	2	-4	30	2	26	2	-4

*P<0.005.

Table 19. Estimated number of days of effort per bobcat registered in Michigan by trappers for the 2008-2012, summarized by year and area.^a

Area	Year						Change between 2011 and 2012 (%) ^a
	2010 ^a		2011 ^a		2012		
	Effort per registered bobcat	95% CL	Effort per registered bobcat	95% CL	Effort per registered bobcat	95% CL	
Upper Peninsula	51.1	4.8	46.6	4.3	51.5	4.6	11
Lower Peninsula	32.2	1.2	26.6	1.0	37.1	1.6	40*
Unit C	30.8	0.7	37.0	0.9	42.6	1.2	15*
Unit D	33.2	1.0	20.9	0.6	33.4	1.1	60*
Unspecified	0.0	0.0	0.0	0.2	0.0	0.5	
Statewide	47.6	4.9	42.2	4.3	48.9	4.9	16

*P<0.005. Comparison between 2011 and 2012.

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 2012, 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	33	10	256	80	7	4	0	0	7	4	21	12	21	12
Alger	22	8	337	145	7	4	0	0	7	4	31	16	31	16
Alpena	22	8	164	63	9	7	5	7	3	3	23	15	15	13
Antrim	14	6	131	60	2	2	2	2	0	0	13	15	0	0
Arenac	3	3	28	27	0	0	0	0	0	0	0	0	0	0
Baraga	48	12	869	264	9	6	0	0	9	6	14	8	14	8
Charlevoix	5	4	31	24	0	0	0	0	0	0	0	0	0	0
Cheboygan	21	8	188	71	3	3	0	0	3	3	17	14	17	14
Chippewa	83	15	1,241	321	36	14	10	6	26	10	27	8	25	8
Clare	28	9	214	74	9	6	2	2	7	4	25	14	25	14
Crawford	2	2	9	11	0	0	0	0	0	0	0	0	0	0
Delta	52	12	1,058	316	47	18	10	8	36	13	50	12	47	12
Dickinson	66	13	1,299	367	35	15	7	7	28	10	37	10	37	10
Emmet	12	6	85	44	5	4	0	0	5	4	43	24	43	24
Gladwin	31	9	225	76	5	5	3	3	2	2	11	9	6	7
Gogebic	59	13	1,293	357	41	16	12	10	29	11	44	11	41	11
Houghton	41	11	774	257	3	3	0	0	3	3	8	7	8	7
Iosco	24	8	156	57	2	2	0	0	2	2	7	9	7	9
Iron	76	14	1,588	388	45	16	16	10	29	11	39	9	32	9

^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 2012, 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
Kalkaska	17	7	131	55	22	13	16	9	7	4	70	18	40	20
Keweenaw	2	2	43	55	0	0	0	0	0	0	0	0	0	0
Luce	31	9	278	132	5	5	0	0	5	5	11	9	11	9
Mackinac	48	12	947	287	22	10	9	7	14	6	36	12	29	11
Marquette	67	14	1,236	318	24	10	3	3	21	8	31	9	28	9
Menominee	67	14	1,738	425	31	16	12	10	19	9	28	9	23	9
Missaukee	12	6	112	55	3	4	2	2	2	2	14	17	14	17
Montmorency	31	9	254	81	16	11	9	6	7	5	22	12	17	11
Ogemaw	21	8	138	55	3	3	0	0	3	3	17	14	17	14
Ontonagon	85	15	1,586	372	57	18	7	5	50	15	41	9	39	9
Osceola	55	12	327	82	33	22	26	21	7	4	25	10	13	7
Oscoda	24	8	178	66	22	14	17	12	5	4	36	16	21	14
Otsego	7	4	59	38	3	3	3	3	0	0	50	32	0	0
Presque Isle	19	7	124	53	5	4	2	2	3	3	27	17	18	15
Roscommon	28	9	187	68	10	6	2	2	9	5	31	15	31	15
Schoolcraft	47	11	755	233	19	9	3	4	16	8	30	11	26	11
Wexford	26	8	147	56	31	17	19	13	12	6	53	16	47	16
Unspecified	57	13	251	175	2	2	2	2	0	0	3	4	0	0

^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 2012.

Trap type	Trappers (%)	95% CL	Trappers (No.)	95% CL
Foothold traps	79	2	942	46
Conibears	36	2	432	33
Other ^a	2	1	26	8

^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 2012.

Trap type	Trappers (%)	95% CL	Trappers (No.)	95% CL
Foothold traps	53	2	636	40
Conibears	24	2	285	27
No preference	17	2	200	23
Other ^a	1	0	10	5
No answer	5	1	59	13

^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 1997-2011, summarized by region.^a

Estimate and region	Correlation ^b	Significance (P-value) ^c
Number of trappers		
UP	0.74	<0.01
NLP ^d	0.92	<0.01
Days of effort		
UP	0.81	<0.01
NLP ^d	0.89	0.01
Bobcats registered ^e		
UP	0.14	0.60
NLP ^d	0.35	0.18
Effort per bobcats registered		
UP	0.55	0.03
NLP ^d	0.32	0.48

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

^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 NLP during 2004-2005 and 2008-2012 only.

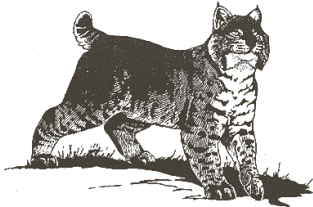
^eThe tally of bobcats registered by furtakers at DNR registration stations, rather than estimate from survey.

Appendix A. The questionnaire sent to people that obtained a bobcat harvest tag in Michigan for the 2012 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 2012-13 hunting and trapping seasons (December 1, 2012, through March 1, 2013).
- 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 2012-13 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 2012-13 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 not 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 2012-13 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 2012-13 season?

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

6. Who owned the dogs that you used to hunt bobcats during the 2012-13 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 2012-13 season.

_____ Chases
8. Did you hire a guide to assist with hunting bobcats at any time during the 2012-13 season?

1

☐

Yes

2

☐

No

PART B: Trapping Questions

9. Did you attempt to harvest a bobcat while trapping in the 2012-13 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 2012-13 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 2012-13 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.)

13. How many of the following traps did you set for bobcat in the 2012-13 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 2012-13 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 2012-13 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.