



MICHIGAN DEPARTMENT OF NATURAL RESOURCES
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2013 MICHIGAN FURBEARER HARVEST SURVEY

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ABSTRACT

A sample of furtakers was contacted after the 2013 hunting and trapping seasons to estimate the number of participants, days afield (effort), and furbearer harvests. In 2013, 31,707 people purchased a fur harvester license, which was 12% greater than in 2012. In 2013, about 16,962 license buyers either hunted or trapped furbearers. About 34% of the license buyers trapped (10,712 trappers), 34% hunted (10,785 hunters), and 14% (4,535) both trapped and hunted. Trapper and hunter numbers were not significantly different between 2012 and 2013. Significantly more trappers pursued fisher in 2013; however, significantly fewer trappers pursued red fox, coyote, and otter. Changes for hunting and trapping effort between 2012 and 2013 generally followed changes in the number of furtakers. Harvest usually was not significantly different between 2012 and 2013, except significantly fewer otter and bobcat were taken in 2013. Hunters most commonly sought coyotes, raccoons, and red fox, while trappers most frequently sought raccoons, muskrats, and coyotes. Trends in harvest can be affected by both changes in furtaker and furbearer numbers; thus, harvest per furtaker was examined for trends. The mean number of raccoon and opossum taken per furtaker has increased since the 1980s. The mean harvest of red fox by both hunters and trappers has declined since the mid-1980s. These trends suggest raccoon and opossum may have been increasing in abundance during the last 20 years, while red fox numbers may have been declining. An estimated 149 trappers caught and released 283 bobcats that were caught in traps set for another species in 2013. Hunters and trappers combined spent an average of \$451 per year pursuing furbearers. Collectively, furtakers spent about \$7,652,436 hunting and trapping furbearers.



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INTRODUCTION

The Natural Resources Commission and the 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 by the DNR to accomplish this statutory responsibility. Estimating harvests and hunter participation are primary objectives of these surveys. Information from harvest surveys, mandatory registration, and other indices are used to monitor furbearer populations and help establish harvest regulations.

The primary furbearing animals harvested for their pelts in Michigan during recent years have been badger (*Taxidea taxus*), beaver (*Castor canadensis*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), fisher (*Martes pennanti*), gray fox (*Urocyon cinereoargenteus*), marten (*Martes americana*), mink (*Mustela vison*), muskrat (*Ondatra zibethica*), opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*), river otter (*Lontra canadensis*), striped skunk (*Mephitis mephitis*), and weasels (*Mustela* spp.) (Frawley 2013a). Opossum, weasels, and skunks could be taken year-round with any hunting or fur harvester license. The remaining furbearers could be harvested in 2013 during late fall through winter by a person possessing a fur harvester license (included Fur Harvester, Junior Fur Harvester, Senior Fur Harvester, Non-resident Fur Harvester, Military Fur Harvester, Resident Fur [trap only], and Junior Fur [trap only]) (Table 1).

Landowners or their designees could take raccoons and coyotes throughout the year on their property without a license if these animals were doing or about to do damage. Coyotes could also be taken by hunters possessing a small game hunting license. In addition, a mentored hunting program was started in 2012. Under this program, a mentored youth hunting license was created and could be purchased by youth hunters aged 9 and younger. The youth hunter had to participate with a mentor who was at least 21 years old. The mentored youth hunting license allowed the youth hunter to hunt small game, turkey, deer, trap furbearers, and fish for all species. Hunters taking furbearers on their own land without a license, or taking furbearers with either a small game hunting license or a mentored youth hunting license were not included in our sample. Thus, harvest estimates from this survey do not represent all possible forms of harvest, but only those taken by people with a fur harvester license.

METHODS

Following the 2013 hunting and trapping seasons, a questionnaire was sent to a random sample of people (4,200) who had purchased a fur harvester license (Table 2). All licensees had an equal chance of being included in the random sample. After the sample was selected, licensees were grouped into one of four strata on the basis of their residence. These strata included residents of the Upper Peninsula (UP), Northern Lower Peninsula (NLP), Southern Lower Peninsula (SLP), and nonresidents (Figure 1). People receiving the questionnaire were asked to report whether they pursued furbearers, number of days spent afield, and whether they harvested any furbearing animals.

Estimates were calculated using a stratified random sampling design (Cochran 1977). Using stratification, furtakers were placed into similar groups (strata) based on their county of residence. Residents of the UP, NLP, SLP, and nonresidents and licensees with unknown residency were grouped into separate strata (Figure 1). The overall sample consisted of 587 people from the UP stratum (N= 4,362), 802 people from the NLP stratum (N= 6,075), 2,781 from the SLP stratum (N= 20,609), and 30 people from the nonresident and unknown residency stratum (N=661). Estimates were derived for each group separately. The statewide estimate was then derived by combining group estimates so the influence of each group matched the proportion its members represented in the statewide population of furtakers. The primary reason for using a stratified sampling design was to produce more precise estimates. Improved precision means similar estimates should be obtained if this survey was repeated.

Estimates were subject to both sampling and nonsampling error. When a sample rather than the entire population has been surveyed, there is a chance that the sample estimates may differ from the true population values they represent. The difference, or sampling error, varies depending on the particular sample selected, and this variability was measured by the 95% confidence limit (CL). In theory, this CL can be added and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval was 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 also were affected by nonsampling error. Nonsampling error could occur for many reasons, including the failure to include a segment of the survey population, the inability to obtain data from all units in the sample, the inability or unwillingness of respondents to provide data, mistakes made by respondents, and errors made in the collection or processing of the data. It is very difficult to measure this error. Thus, estimates were not adjusted for nonsampling error. Furthermore, harvest estimates did not include animals taken legally outside the open season (e.g., nuisance animals).

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).

Estimates of events that occur infrequently are difficult to estimate precisely using common sampling designs (Cochran 1977). Relatively few furtakers harvest river otter, bobcat, badger, fisher, and marten; thus, some estimates associated with these species should be viewed cautiously. More precise harvest estimates were obtained for these species through tallying registration reports. All furtakers harvesting a river otter, bobcat, fisher, or marten were required to present these animals at a DNR office for registration. Prior to 2003, furtakers were also required to register badger; however, this requirement was eliminated in 2003. In this report, marten harvest was determined only by registration.

During recent years, all licensed furtakers attempting to harvest bobcat, fisher, marten, and otter in Michigan were required to obtain a free harvest tag from the DNR. The list of furtakers obtaining these harvest tags formed a complete list of statewide trappers pursuing these species. Using these lists, the DNR was able to design separate harvest surveys that provided more precise estimates (i.e., narrower confidence intervals) than previous surveys of all furtakers. Separate surveys were conducted to estimate furtaker participation, harvest, and effort for bobcat (Frawley 2014b), fisher and marten (Frawley 2014c), and otter (Frawley 2014d) seasons during recent years.

Although furtakers that purchased a small game hunting license could harvest coyotes without a fur harvester license; these license buyers were not included in this survey. Rather, a separate survey was conducted to estimate the harvest of coyotes taken by small game hunting license buyers (e.g., Frawley 2012).

While the primary objectives of the fur harvesters' survey were estimating harvest, number of participants, and trapping and hunting effort, this survey also provided an opportunity to collect information about management issues. Questions were added to the questionnaire to determine furtakers satisfaction with furbearer numbers, animals harvested, and overall hunting or trapping experience. In addition, furtakers were asked to report how much they spent on things related to hunting and trapping furbearers (e.g., fuel, food, lodging, equipment, and ammunition) during 2013 seasons. Trappers also were asked whether they caught any bobcats incidentally in traps set for another species.

Questionnaires were mailed initially in early May 2014. Up to two follow-up questionnaires were sent to non-respondents. Questionnaires were undeliverable to 81 people, primarily because of changes in residence. Questionnaires were returned by 2,317 people, yielding a 56% adjusted response rate.

RESULTS AND DISCUSSION

In 2013, 31,839 fur harvester licenses were purchased by 31,707 people (Figure 2, Table 2). The number of license buyers in 2013 was 12% greater than in 2012. Most license buyers were men (97%), with an average age of 46 years (Figure 3). About 8% of the license buyers (2,419) were younger than 17 years of age. (Furtakers less than 10 years of age using a mentored youth license were not included in analyses.)

Compared to 10 years ago, the number of people buying a fur harvester license in 2013 increased by about 58% (20,206 people purchased a license in 2003). Although the overall number of license buyers increased, there were fewer license buyers for most age classes between 33 and 41 years of age in 2013, compared to 2003 (Figure 4). However, there were increased furtakers among the youngest and oldest age classes in 2013. The increased furtakers in the oldest age classes likely represented the rising share of older people in the population as the baby-boom generation aged and life expectancies have increased.

Mail Harvest Survey

Overall, approximately 53% of license buyers either hunted or trapped furbearers during 2013 (Table 3). The number of active furtakers in 2013 was not significantly different from the number of furtakers in 2012. About 34% of the license buyers trapped and 34% hunted furbearers during 2013. Trappers most often pursued raccoons, coyote, and muskrat (Table 4). Hunters most commonly sought coyotes, raccoon, and red fox. Coyotes and raccoons ranked as the most frequently sought furbearers when trappers and hunters were combined.

The number of trappers has increased gradually during recent years (Figure 5). This increase has paralleled increased fur prices (Dhuey 2013, 2014; Beringer and Blair 2014). Historically, the peaks in furtaker numbers corresponded closely to periods when pelt values peaked for many species such as muskrat, raccoon, and red fox (Iowa Department of Natural Resources 2002, Beringer and Blair 2014). Between 1999 and 2012, the number of people hunting furbearers was greater than the number of people trapping; however, the number of trappers and hunters was nearly equal in 2013 (Figure 5).

Compared to 2012, significantly more trappers pursued fisher in 2013; however, significantly fewer trappers pursued red fox, coyote, and otter. Changes for hunting and trapping effort between 2012 and 2013 generally followed changes in the number of furtakers. Harvest usually was not significantly different between 2012 and 2013, except significantly fewer otter and bobcat were taken in 2013 (Table 4).

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 furtaker opportunities and indices of animal abundance derived from furtaker activity.

Harvest of red fox, bobcat, beaver, and fisher in 2013 were near the low end of their historical ranges (Figures 6-8). In contrast, harvest of coyote was near the high end of their historical ranges. Many factors influence harvest trends such as furtaker numbers, wildlife population size, harvest regulations, weather, habitat conditions, and fur prices; thus, any interpretations of trends should be viewed cautiously. Trends in harvest per furtaker (Figures 9 and 10) were examined because this measure may eliminate some of the effects of changing furtaker and furbearer numbers over time, although many other factors may still complicate interpretations of these trends (Poole and Mowat 2001).

The mean number of raccoon and opossum taken per trapper has generally increased since the early 1980s (Figures 9 and 10). The mean harvest of red fox by both hunters and trappers has declined since the mid-1980s. These trends suggest raccoon and opossum may have been increasing in abundance during the last 20 years, while red fox numbers may have been declining.

These trends in furbearer numbers are not unique to Michigan. Increasing raccoon numbers have also been reported in Illinois since the 1980s (Gehrt et al. 2002). Furthermore, declining red fox numbers have been reported in portions of the northern Great Plains since the 1980s (Sovada et al. 1995). The decline in red fox numbers in the northern Great Plains during recent years has been attributed largely to competition from increased coyote numbers (Sovada et al. 1995).

The mean harvest of fisher per trapper has declined during the last ten years (Figure 9). Frawley (2014c) reported increasing effort expended by trappers for each fisher registered during the last ten years. Both the declining mean harvest of fisher per trapper and the increasing effort per registered fisher suggest fisher numbers may have declined over the last ten years. Using fisher trapper effort data with harvest at age information, researchers demonstrated a 70% decline in fisher abundance in the Upper Peninsula (unpublished data; J.R. Skalski, School of Aquatic & Fishery Sciences, University of Washington, Seattle). The seasonal harvest limit for fisher was lowered from three to one fisher in 2012, and this reduction likely contributed to the decline in fisher taken per trapper in 2013 (Frawley 2013c).

The mean number of bobcats taken per trapper declined from 2003 to 2013 (Figure 9). The seasonal harvest limit for bobcats was lowered from three to two bobcats in 2004, and the UP hunting and trapping season lengths were reduced in 2009 likely contributing to the decline of bobcats taken per trapper since 2003 (Frawley 2013b).

Registration Data

Compared to 2012, more fisher (18% increase) and marten (2%) were registered in 2013; however, fewer otter (-31% decline) and bobcats (-23%) were registered (Figure 11, Table 5). Registration totals excluded harvest by tribal members. Registration totals only included animals that were registered and returned to the furtaker.

Incidental capture of bobcats

An estimated 149 trappers caught a bobcat incidentally in traps set for another species (Table 6). These trappers caught 283 incidental bobcats that were released alive from their traps. In addition, 14 incidental bobcats were registered because they could not be released alive. Because incidental bobcats could be captured more than once, the estimate of incidental bobcats caught by trappers probably does not represent unique bobcats.

Beaver Trapping Activity by Otter Trappers

In order to trap otter, trappers were required to obtain a free otter harvest tag in addition to a fur harvester license. A separate survey was sent to these trappers obtaining an otter harvest tag to estimate their trapping activity (Frawley 2013d). Because otter trappers frequently sought beaver, these trappers also were asked to report information about their beaver trapping activity. However, these estimates associated with beaver trapping only represent the participation, effort, or harvest of trappers that obtained an otter harvest tag. In

order to put these estimates into a broader perspective, it is important to know what proportion of beaver trapping activity was attributed to trappers having an otter harvest tag.

An estimated 2,378 furtakers sought beavers (Tables 4 and 7). About 51% of these trappers possessed an otter harvest tag (Table 7), and they were responsible for 73% of the beaver taken.

Furtaker satisfaction

Furtakers were asked to identify the furbearer species they primarily sought, and then report how satisfied they were the number of animals seen, number of animals taken, and their overall hunting or trapping experience for this primary species. At least 50% of furtakers were either very satisfied or somewhat satisfied with the number of raccoon, coyote, mink, muskrat, and beaver seen during 2013 (Table 8). About 50% of mink trappers were satisfied with the number of animals taken; otherwise, less than 50% of furtakers were satisfied with the number of animals they harvested (Table 9). Over 50% of furtakers pursuing raccoon, coyote, mink, muskrat, and beaver were either very satisfied or somewhat satisfied with their overall hunting or trapping experiences (Table 10).

Expenditures by furtakers

The average furtaker devoted 27.5 ± 1.1 days hunting or trapping furbearers and spent an average of $\$451 \pm \46 in 2013. Expenditures included the costs of fuel, food, lodging, equipment, and ammunition. Collectively, furtakers spent about $\$7,652,436 (\pm \$774,629)$ on hunting and trapping furbearers in the 2013 seasons.

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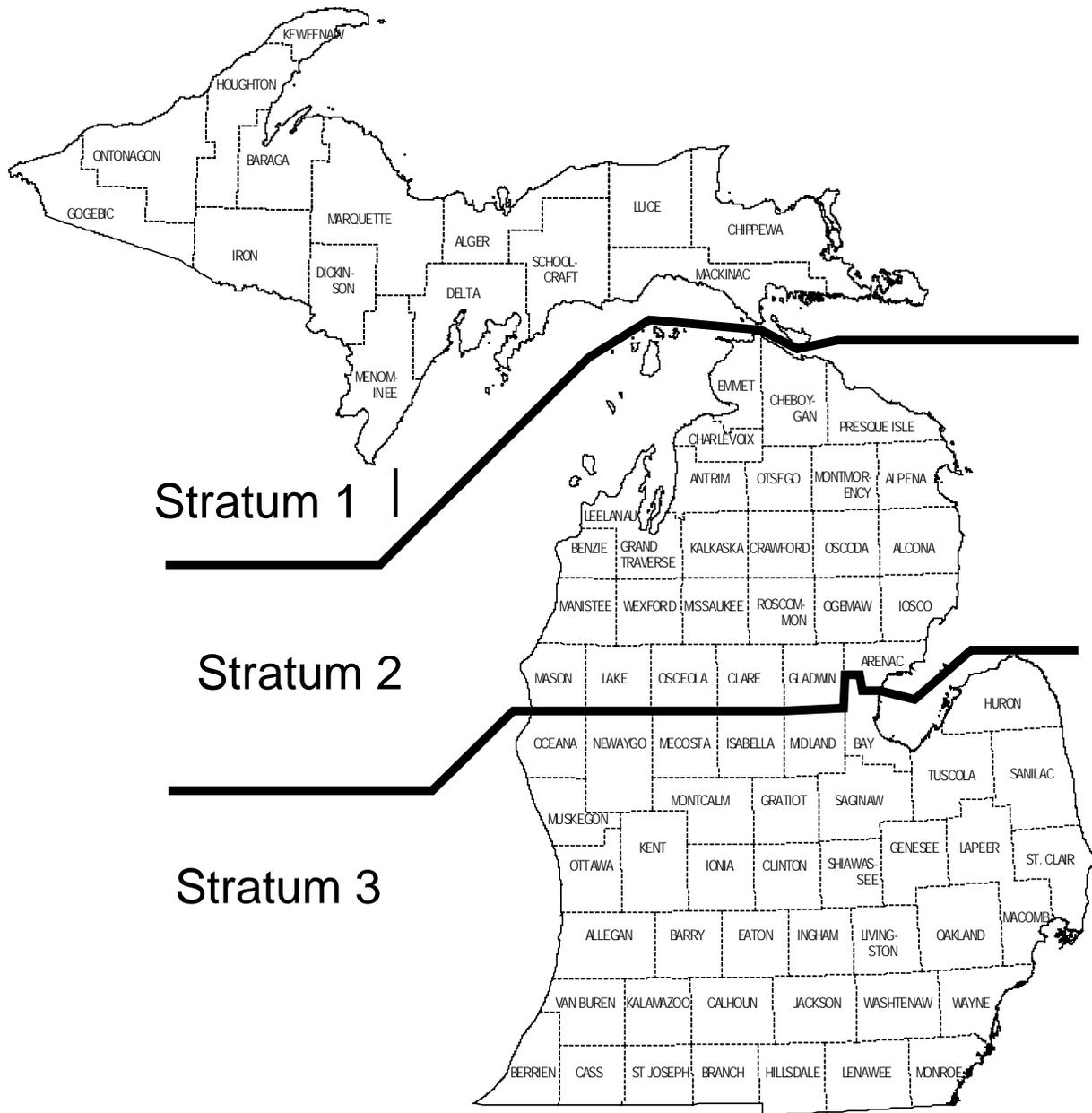


Figure 1. Stratum boundaries used for the analysis of the Michigan furbearer harvest survey. Nonresidents were included as a fourth stratum.

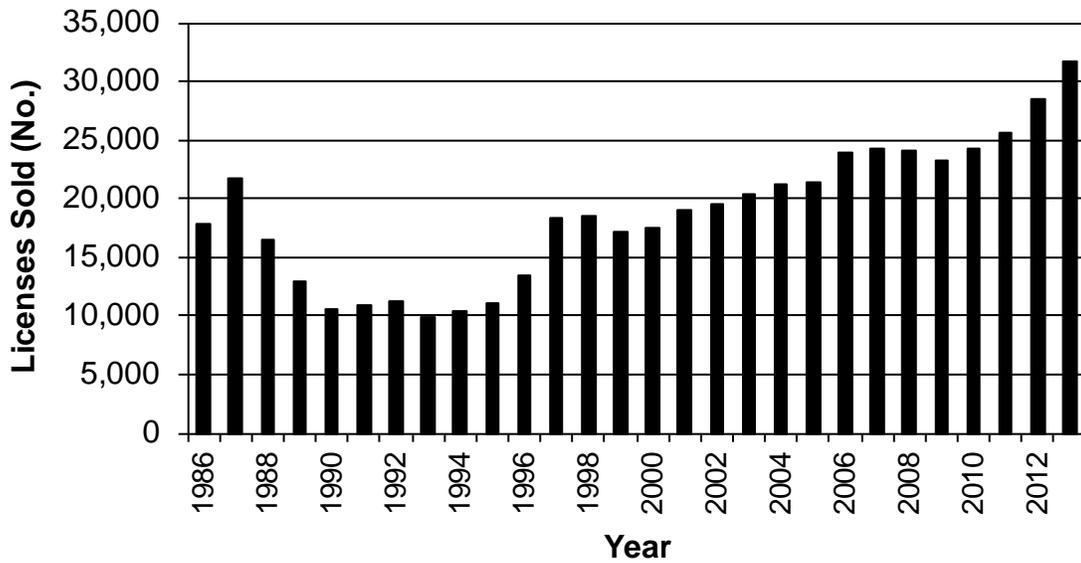


Figure 2. Number of fur harvester licenses sold in Michigan, 1986-2013. Fur harvester licenses included Resident Fur Harvester, Senior Fur Harvester, Junior Fur Harvester, Military Fur Harvester, and Nonresident Fur Harvester licenses. During 1996-2013, totals also included Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses.

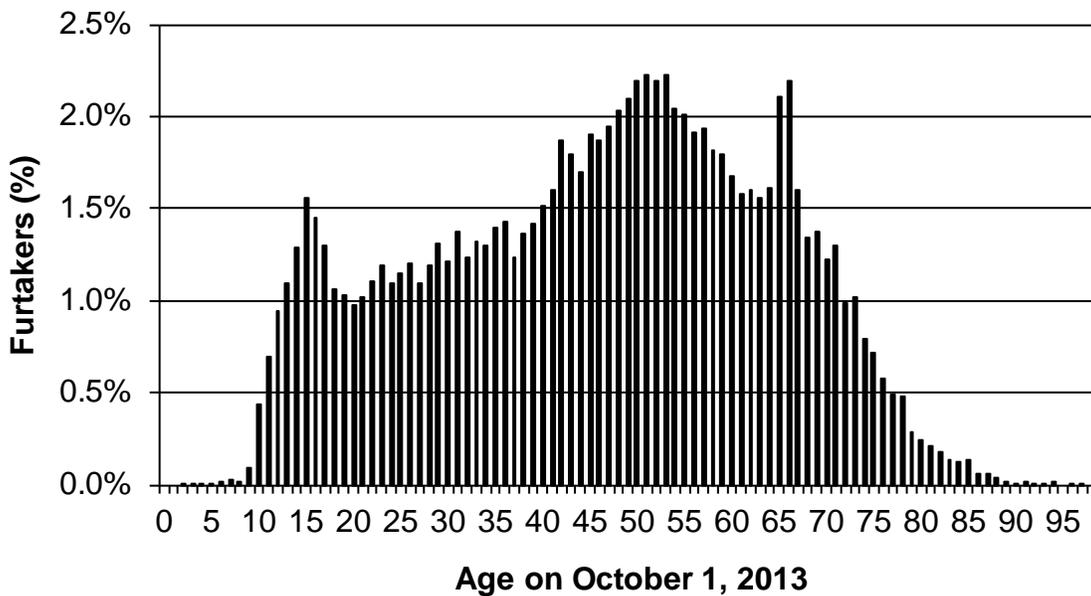


Figure 3. Ages of people that purchased a license to hunt or trap furbearers in Michigan for the 2013 hunting and trapping seasons (\bar{x} = 46 years).

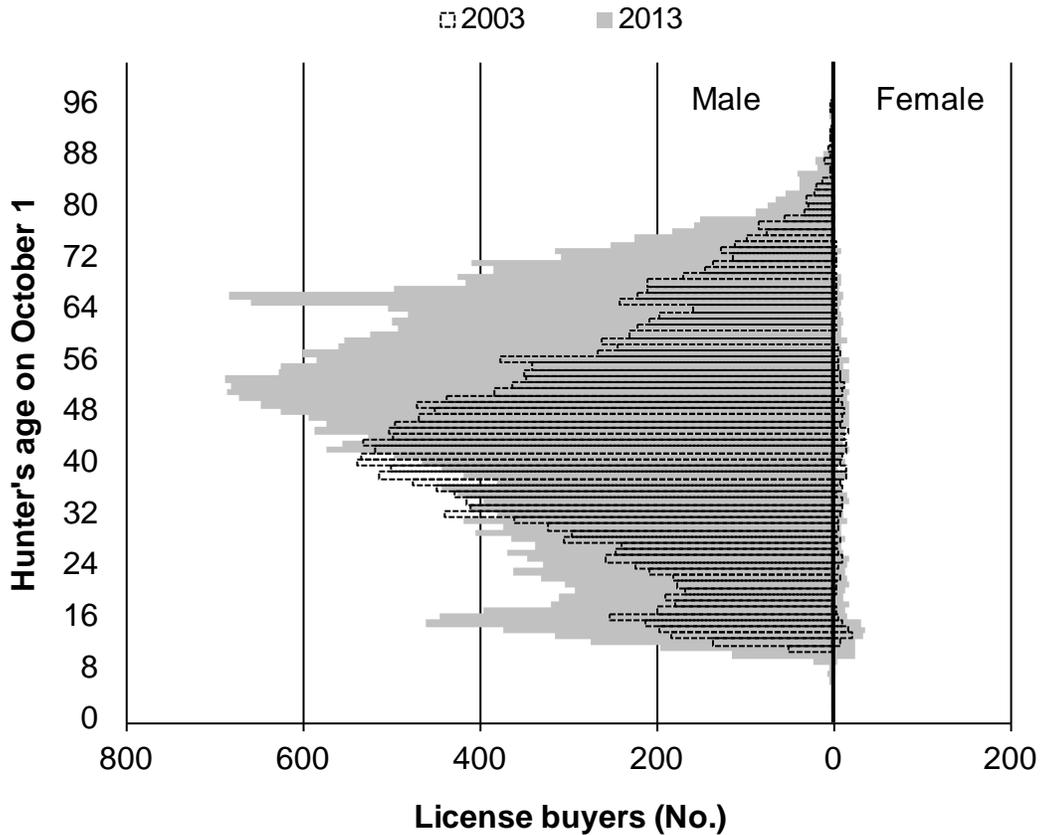


Figure 4. Number of fur harvester license buyers in Michigan by age and sex during 2003 and 2013 hunting seasons. The number of people buying a license was 19,386 in 2003 and 28,425 in 2013.

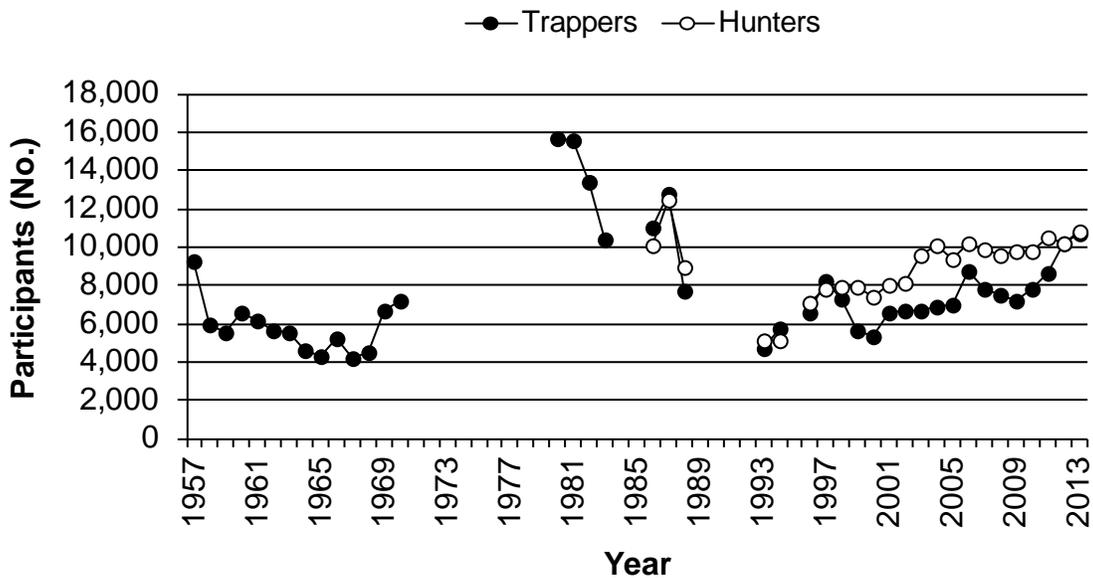


Figure 5. Estimated number of furtakers (trappers and hunters) in Michigan, 1957-2013. Estimates included only license buyers that actually trapped or hunted furbearers (any species). Data were not available for all years.

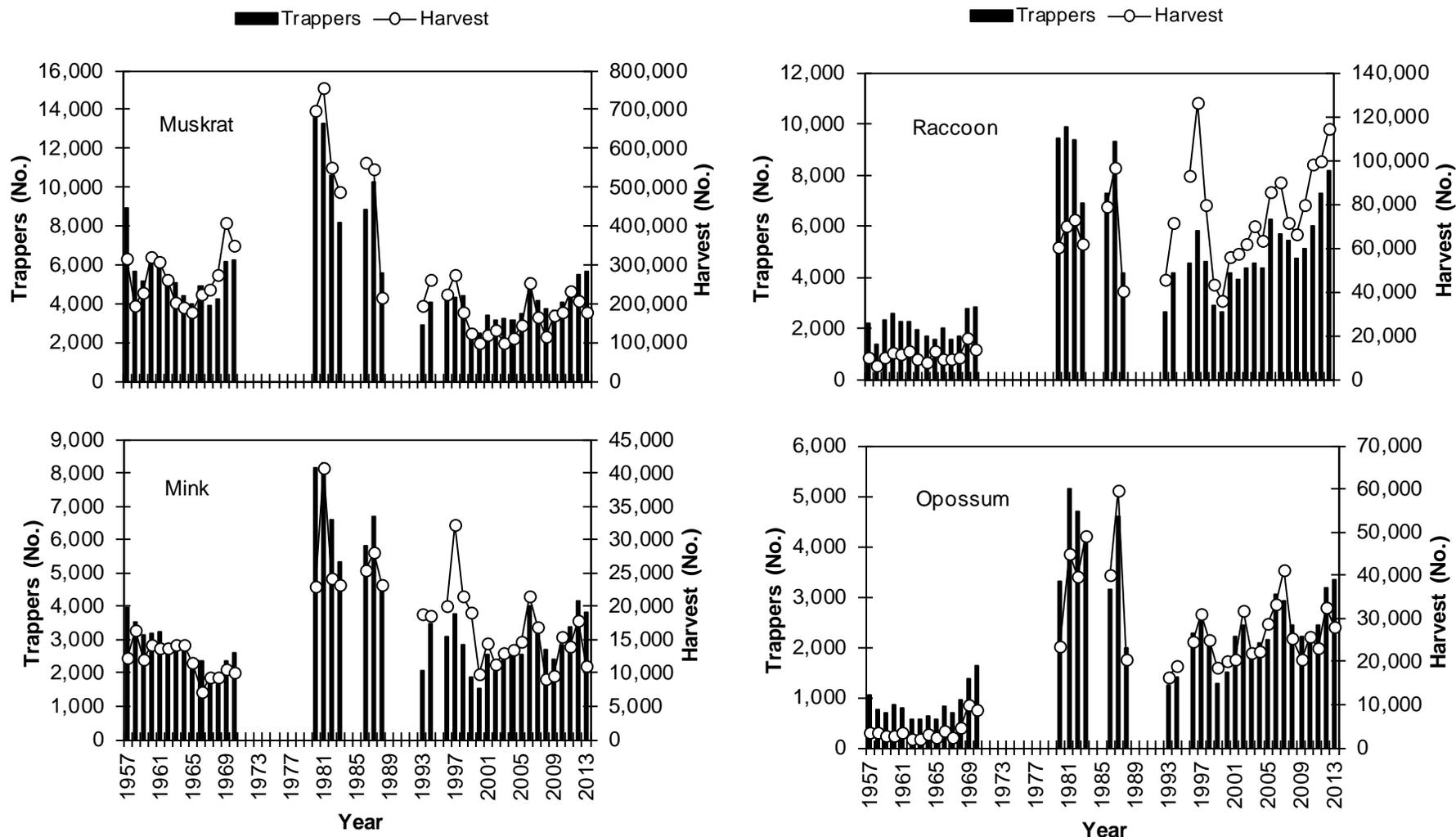


Figure 6. Estimated furbearer harvest by trappers and the number of trappers in Michigan estimated from mail harvest surveys, 1957-2013. Mail survey questionnaires were sent to a random sample of Trapping license buyers during 1957-1969. The sample also included Sportsman's license buyers in 1970-1972. During 1980-1983, the sample included Trapping and Senior Hunting license buyers. During 1986-2013, the sample was selected from people buying either Resident Fur Harvester, Senior Fur Harvester, Junior Fur Harvester, Military Fur Harvester, or Nonresident Fur Harvester licenses. The sample also included Senior Hunting license buyers during 1986-1988. Starting in 1996, samples also included people buying Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses. Data were not available for all years.

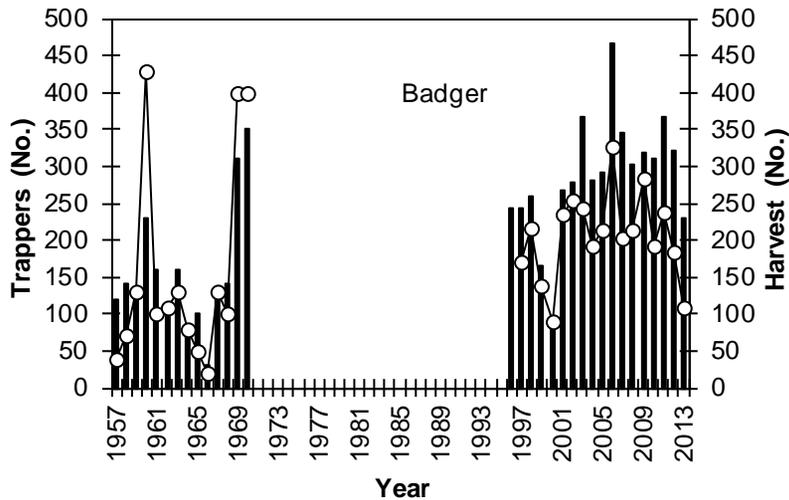
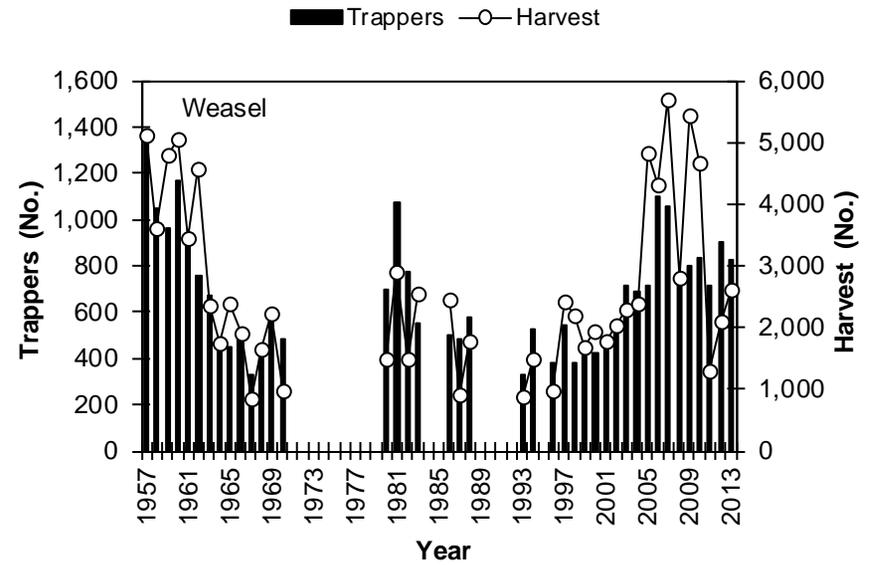
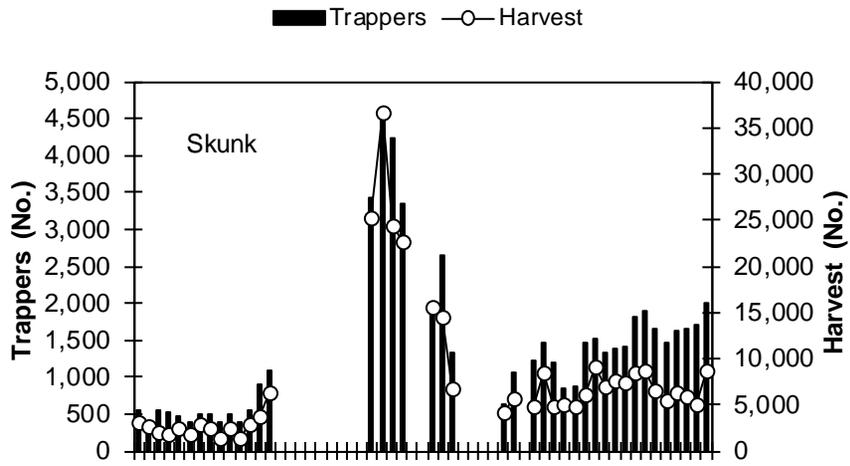


Figure 6 (Continued). Estimated furbearer harvest by trappers and the number of trappers in Michigan estimated from mail harvest surveys, 1957-2013. Mail survey questionnaires were sent to a random sample of Trapping license buyers during 1957-1969. The sample also included Sportsman's license buyers in 1970-1972. During 1980-1983, the sample included Trapping and Senior Hunting license buyers. During 1986-2013, the sample was selected from people buying either Resident Fur Harvester, Senior Fur Harvester, Junior Fur Harvester, Military Fur Harvester, or Nonresident Fur Harvester licenses. The sample also included Senior Hunting License buyers during 1986-1988. Starting in 1996, samples also included people buying Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses. Data were not available for all years.

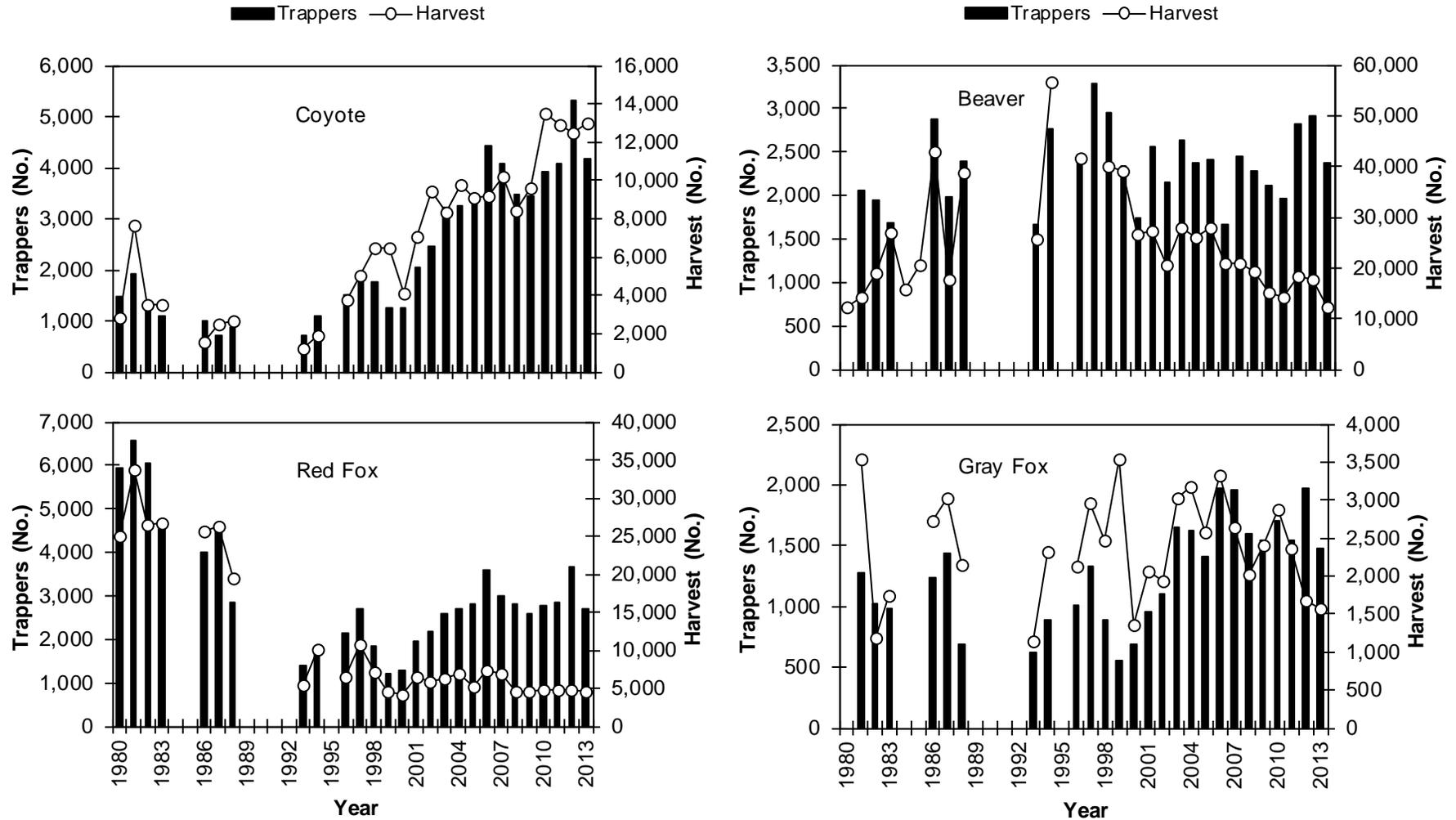


Figure 7. Estimated furbearer harvest by trappers and the number of trappers in Michigan estimated from mail harvest surveys, 1980-2013. The mail survey was sent to a random sample of Trapping and Senior Hunting license buyers during 1980-1983. During 1986-2013, the sample was selected from people buying either Resident Fur Harvester, Senior Fur Harvester, Junior Fur Harvester, Military Fur Harvester, or Nonresident Fur Harvester licenses. The sample also included Senior Hunting license buyers during 1986-1988. Starting in 1996, samples also included people buying Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses. Data were not available for all years.

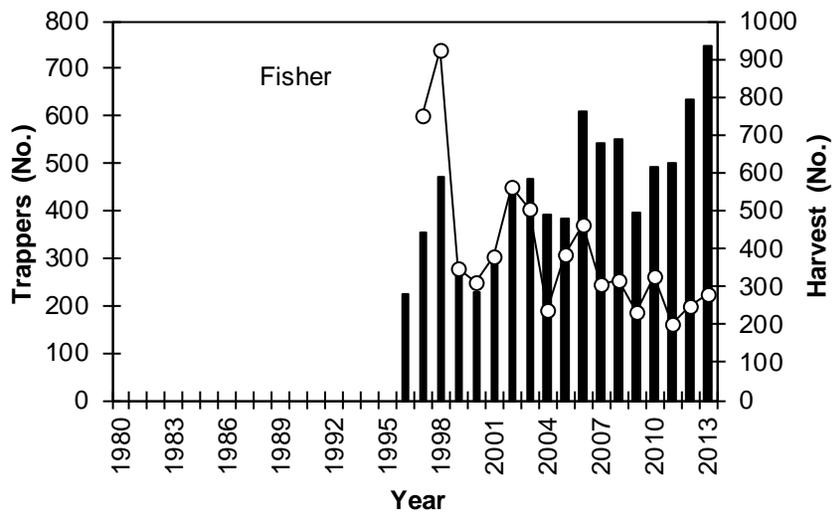
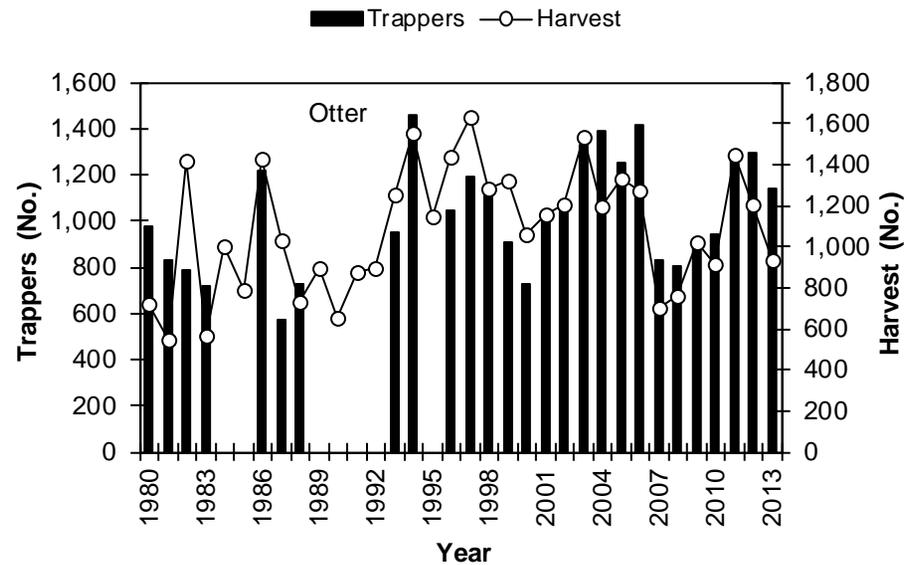
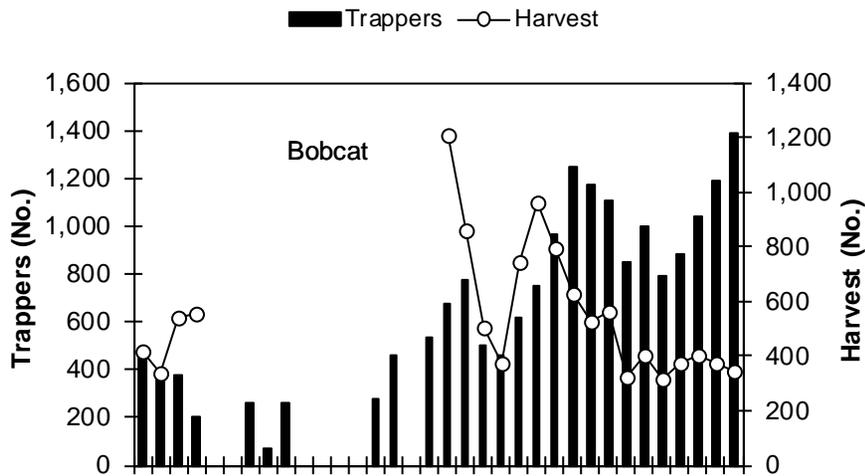


Figure 7 (Continued). Estimated furbearer harvest by trappers and the number of trappers in Michigan estimated from mail harvest surveys, 1980-2013. The mail survey was sent to a random sample of Trapping and Senior Hunting license buyers during 1980-1983. During 1986-2013, the sample was selected from people buying either Resident Fur Harvester, Senior Fur Harvester, Junior Fur Harvester, Military Fur Harvester, or Nonresident Fur Harvester licenses. The sample also included Senior Hunting license buyers during 1986-1988. Starting in 1996, samples also included people buying Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses. Data were not available for all years.

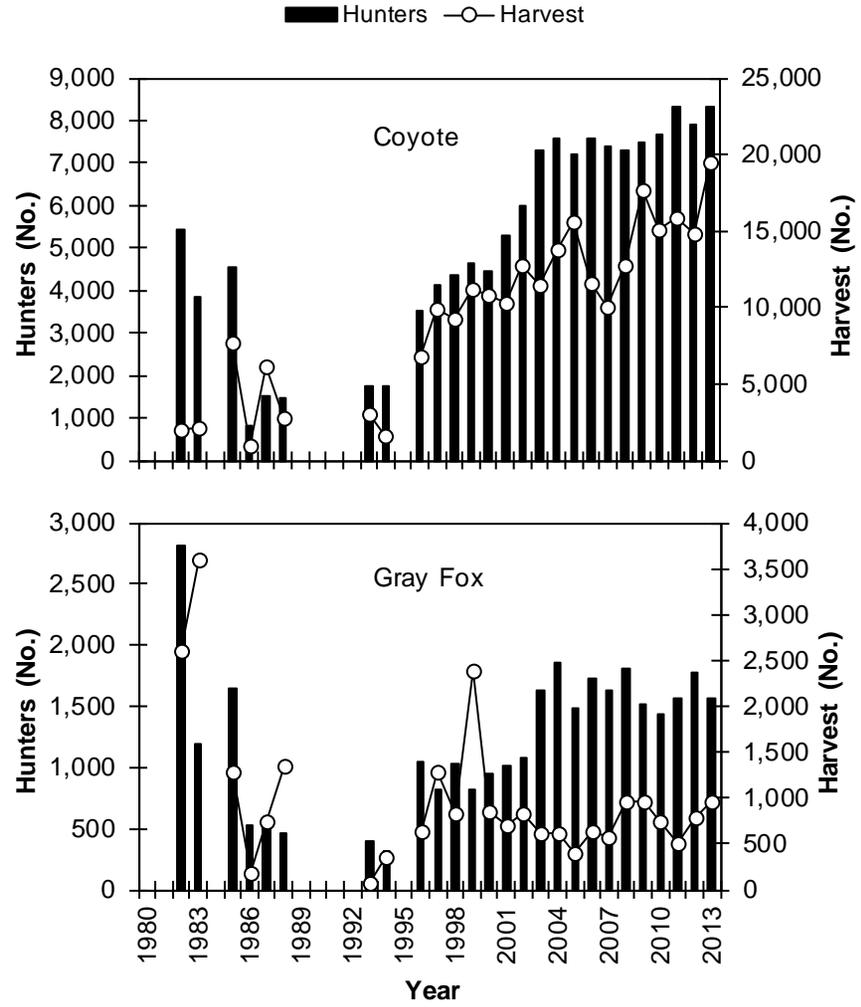
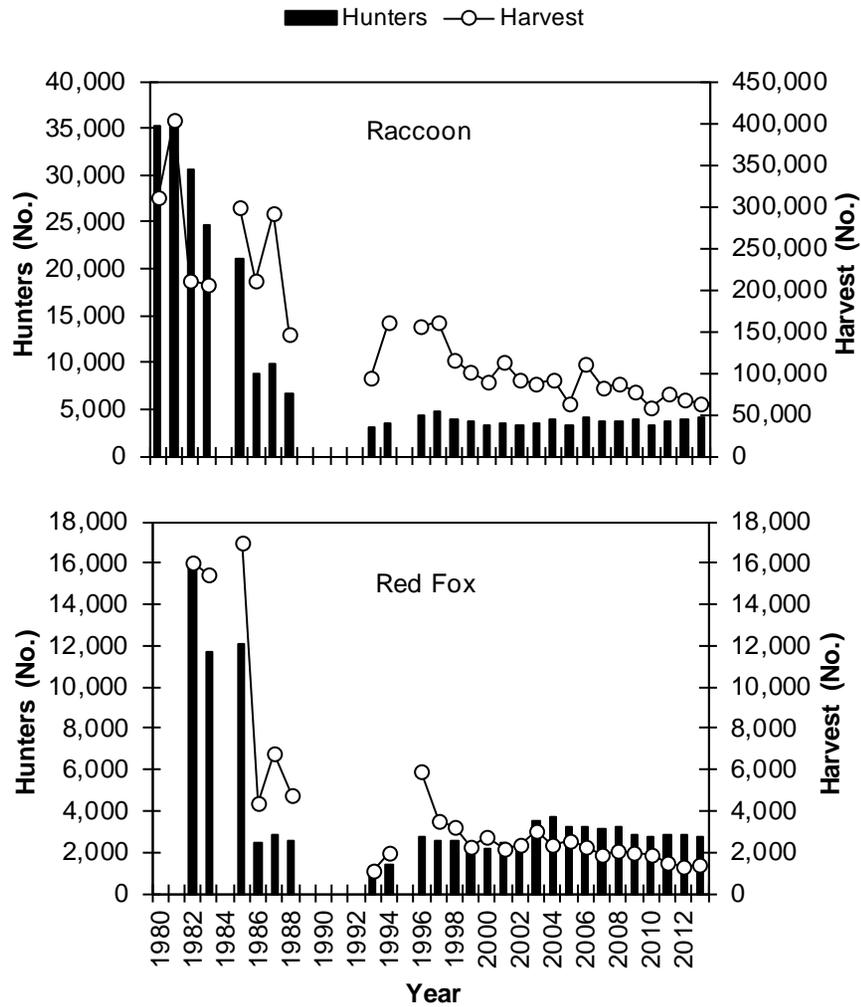


Figure 8. Estimated furbearer harvest by hunters and the number of hunters in Michigan estimated from mail harvest surveys, 1980-2013. The mail survey was sent to a random sample of people buying either small game licenses, Senior Hunting licenses, or Sportsman's licenses during 1980-1985. During 1986-2013, the sample was selected from people buying either Resident Fur Harvester, Senior Fur Harvester, Junior Fur Harvester, Military Fur Harvester, or Nonresident Fur Harvester licenses. The sample also included Senior Hunting license buyers during 1986-1988. Starting in 1996, samples also included people buying Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses. Data were not available for all years.

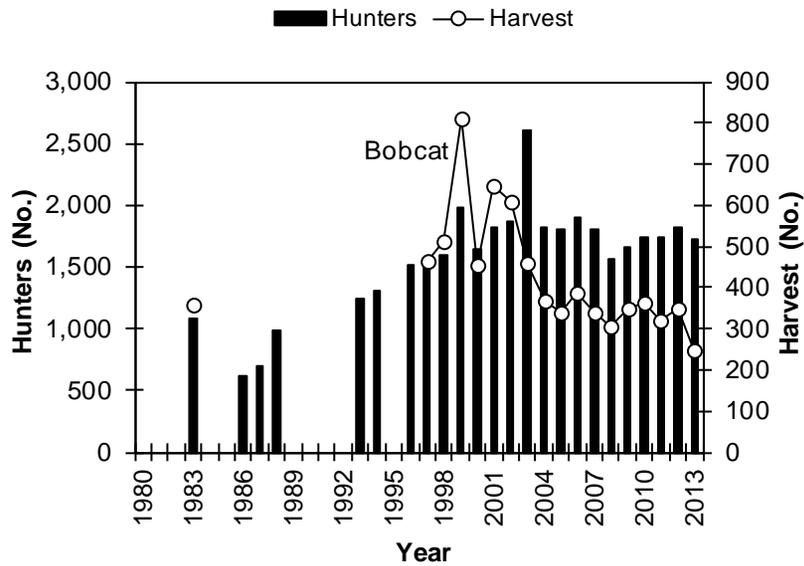


Figure 8 (Continued). Estimated furbearer harvest by hunters and the number of hunters in Michigan estimated from mail harvest surveys, 1980-2013. The mail survey was sent to a random sample of people buying either small game licenses, Senior Hunting licenses, or Sportsman's licenses during 1980-1985. During 1986-2013, the sample was selected from people buying either Resident Fur Harvester, Senior Fur Harvester, Junior Fur Harvester, Military Fur Harvester, or Nonresident Fur Harvester licenses. The sample also included Senior Hunting license buyers during 1986-1988. Starting in 1996, samples also included people buying Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses. Data were not available for all years.

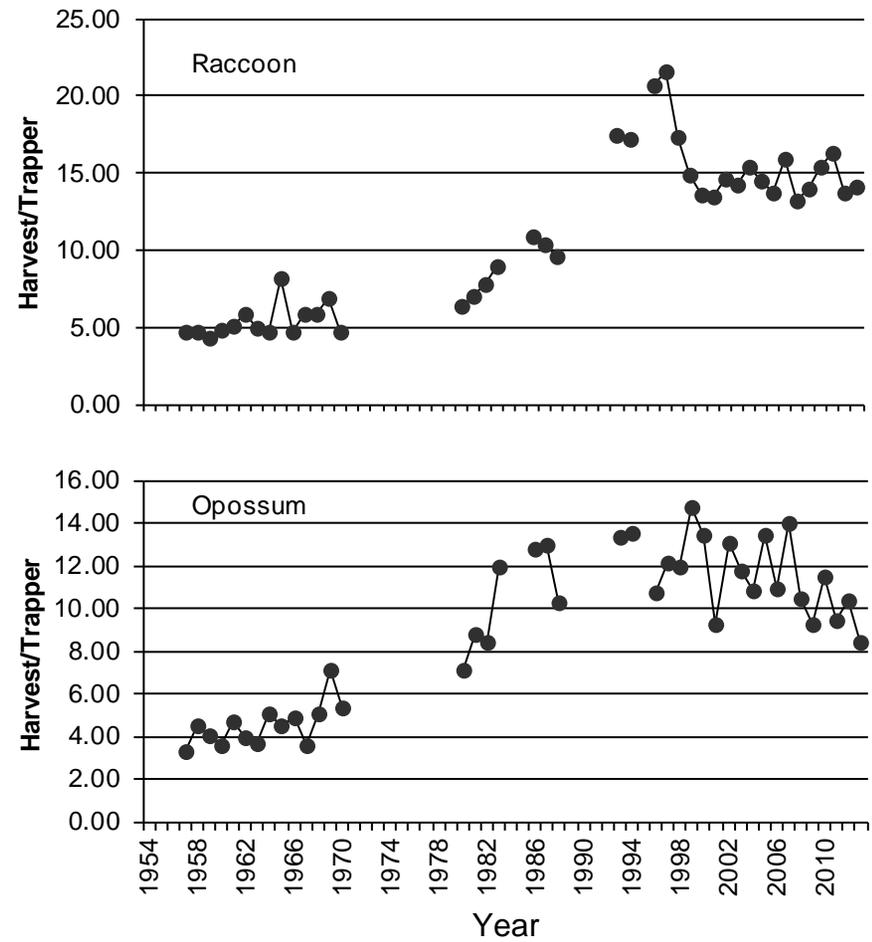
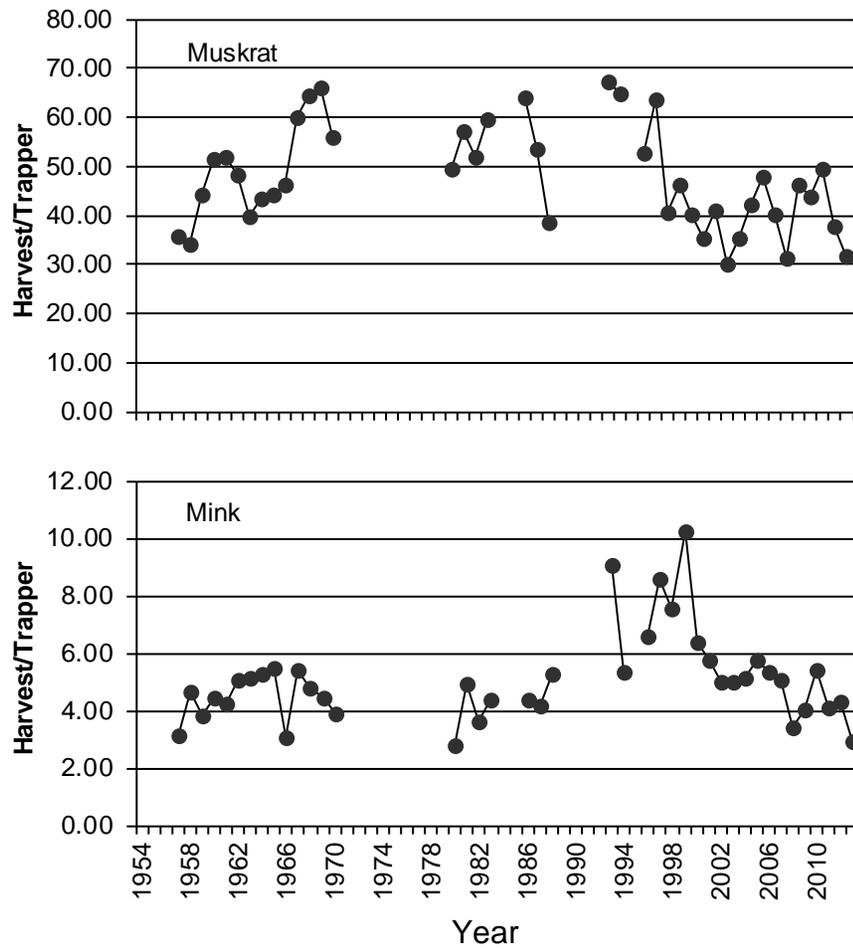


Figure 9. Mean number of furbearers harvested annually per trapper in Michigan estimated from mail harvest surveys, 1954-2013. Data were not available for all years.

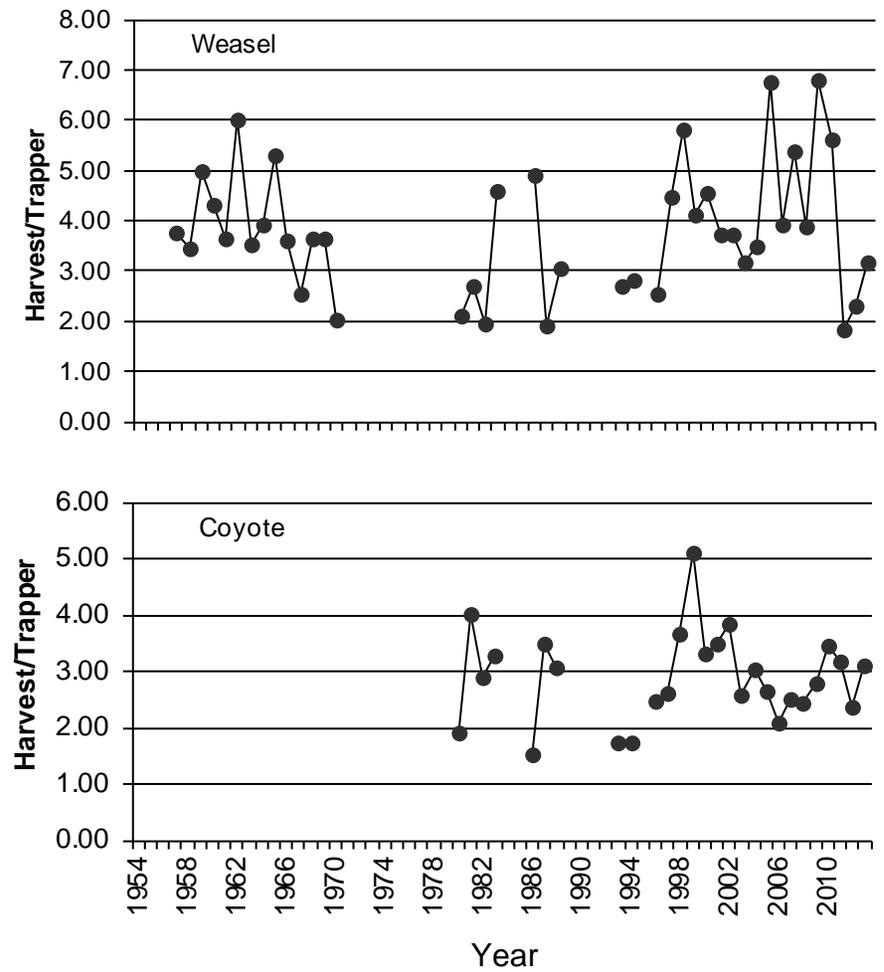
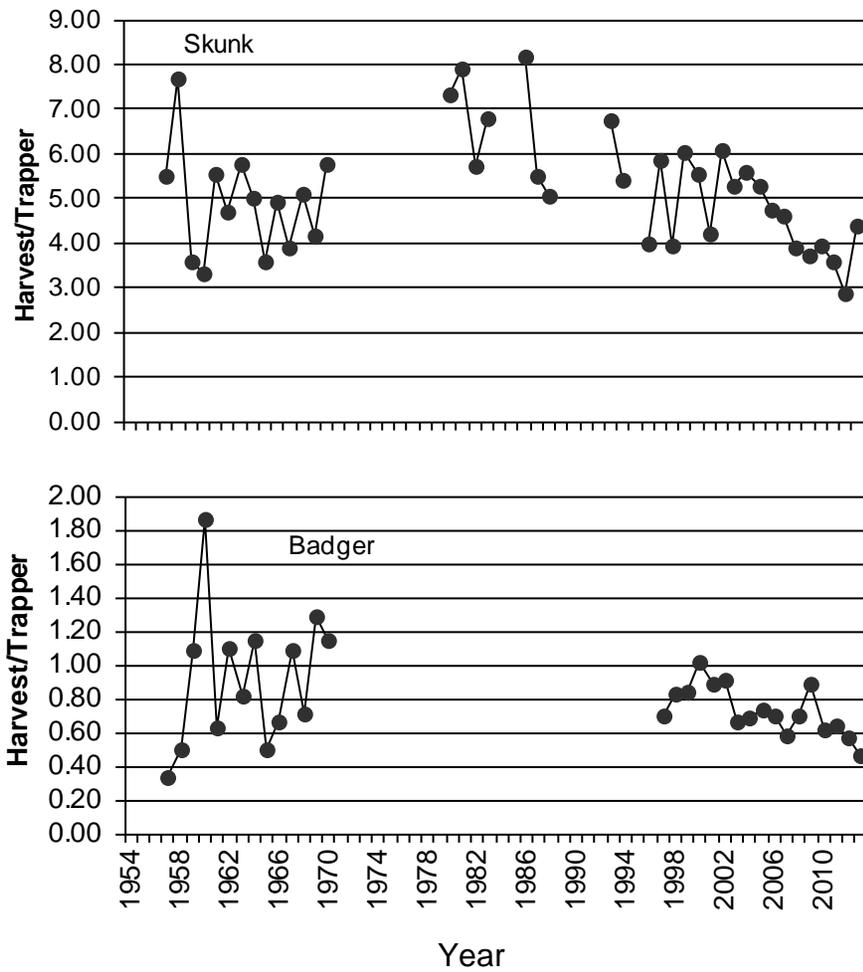


Figure 9 (continued). Mean number of furbearers harvested annually per trapper in Michigan estimated from mail harvest surveys, 1954-2013. Data were not available for all years.

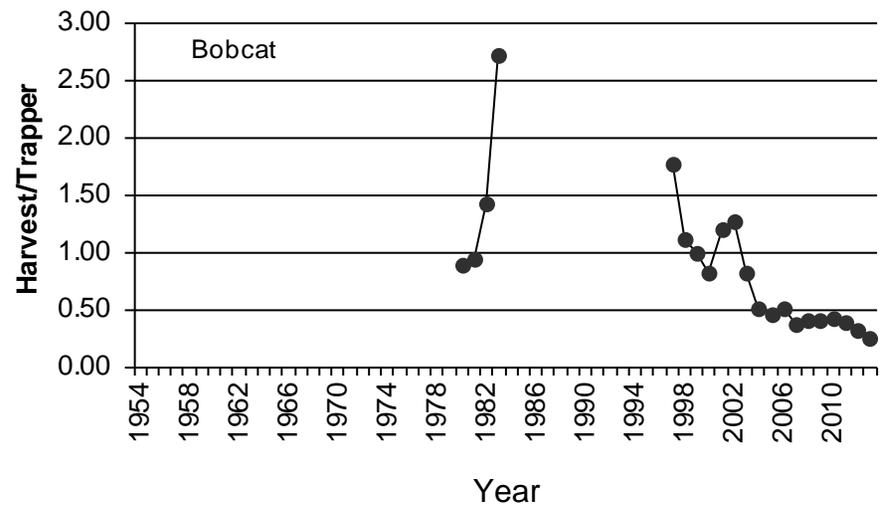
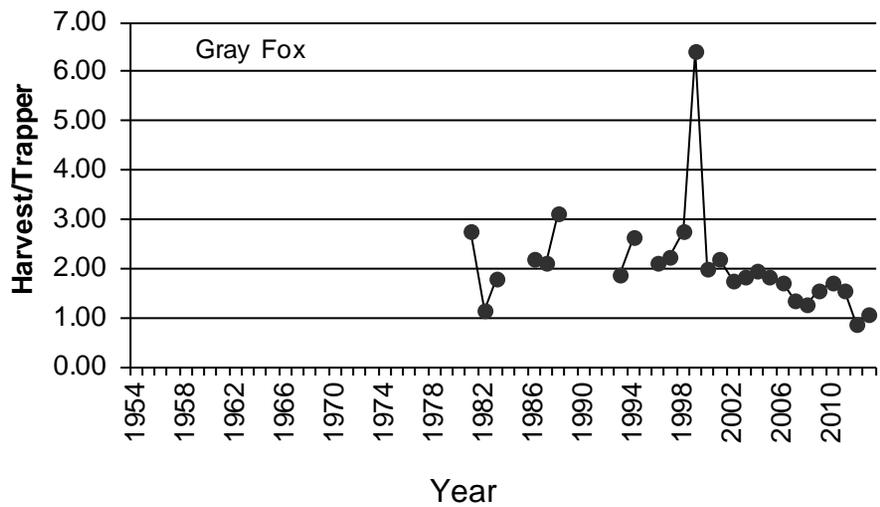
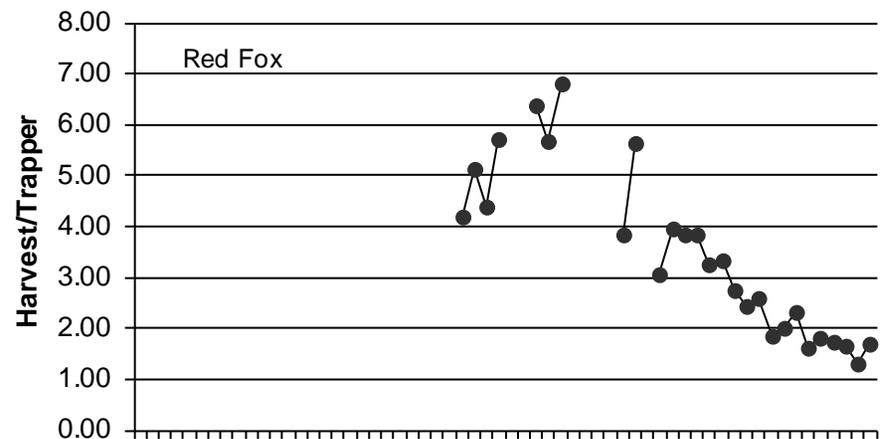
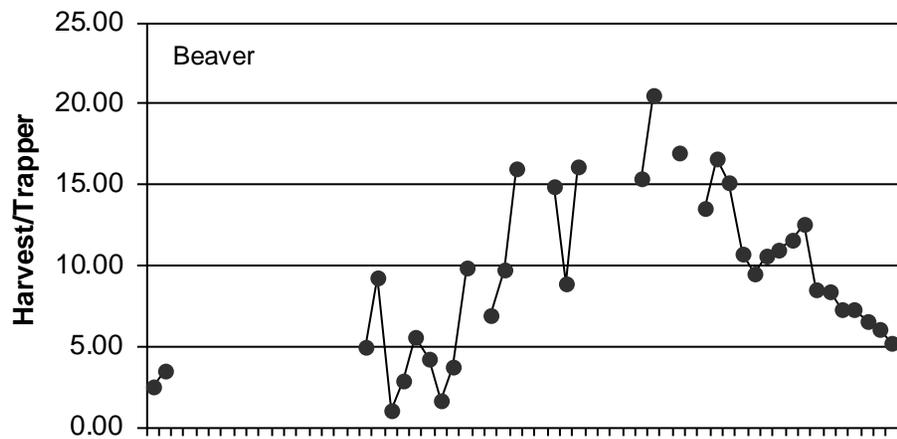


Figure 9 (continued). Mean number of furbearers harvested annually per trapper in Michigan estimated from mail harvest surveys, 1954-2013. Data were not available for all years.

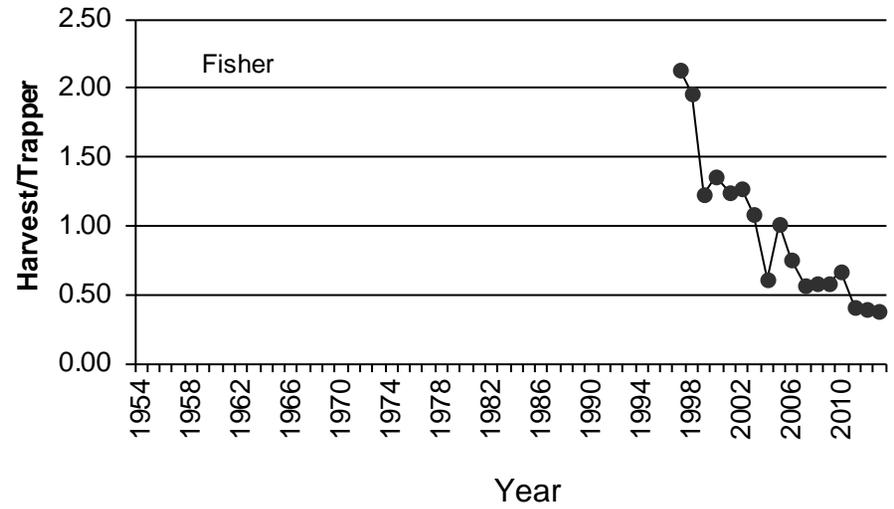
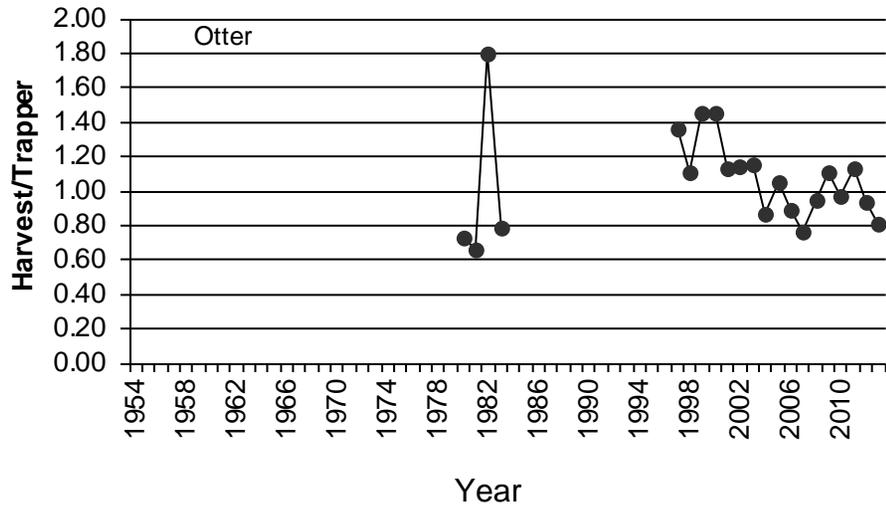


Figure 9 (continued). Mean number of furbearers harvested annually per trapper in Michigan estimated from mail harvest surveys, 1954-2013. Data were not available for all years.

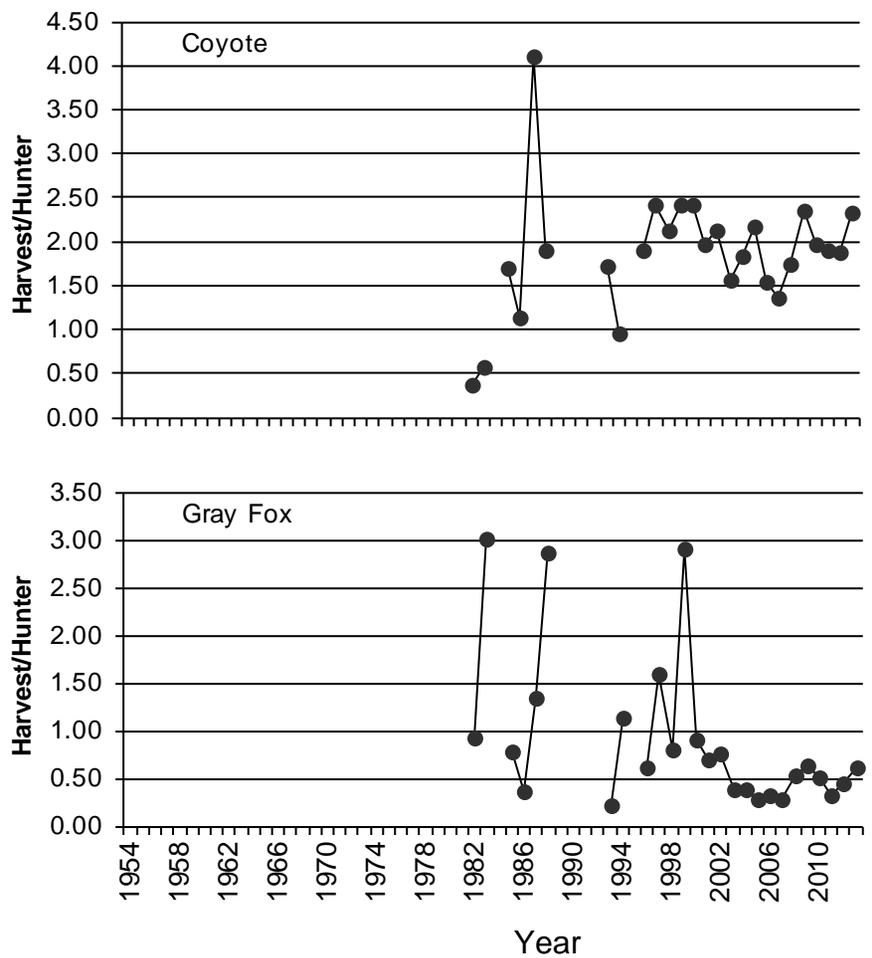
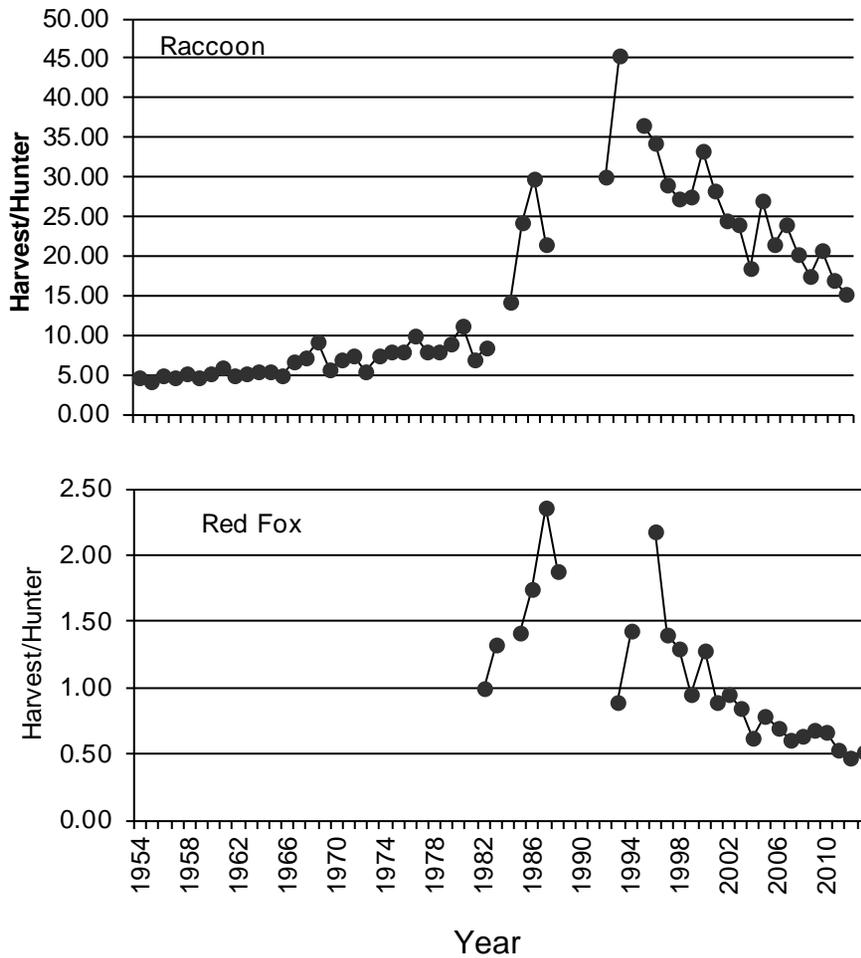


Figure 10. Mean number of furbearers harvested annually per hunter in Michigan estimated from mail harvest surveys, 1954-2013. Data were not available for all years.

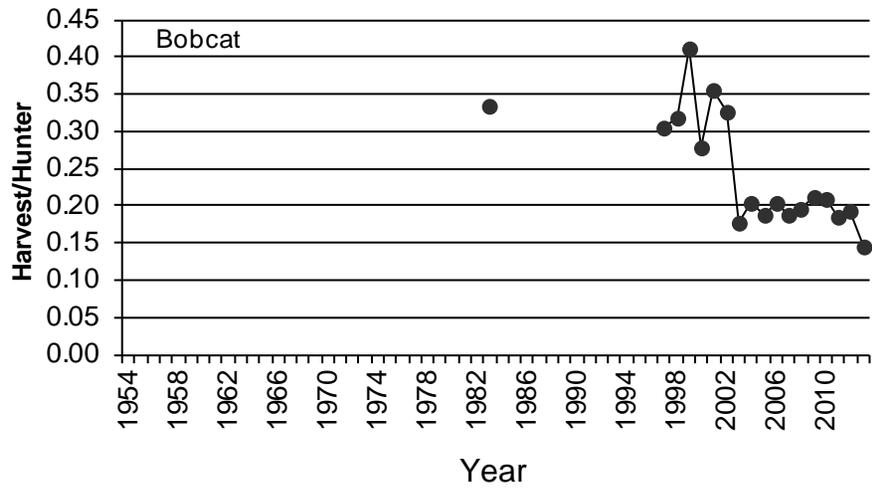


Figure 10 (continued). Mean number of furbearers harvested annually per hunter in Michigan estimated from mail harvest surveys, 1954-2013. Data were not available for all years.

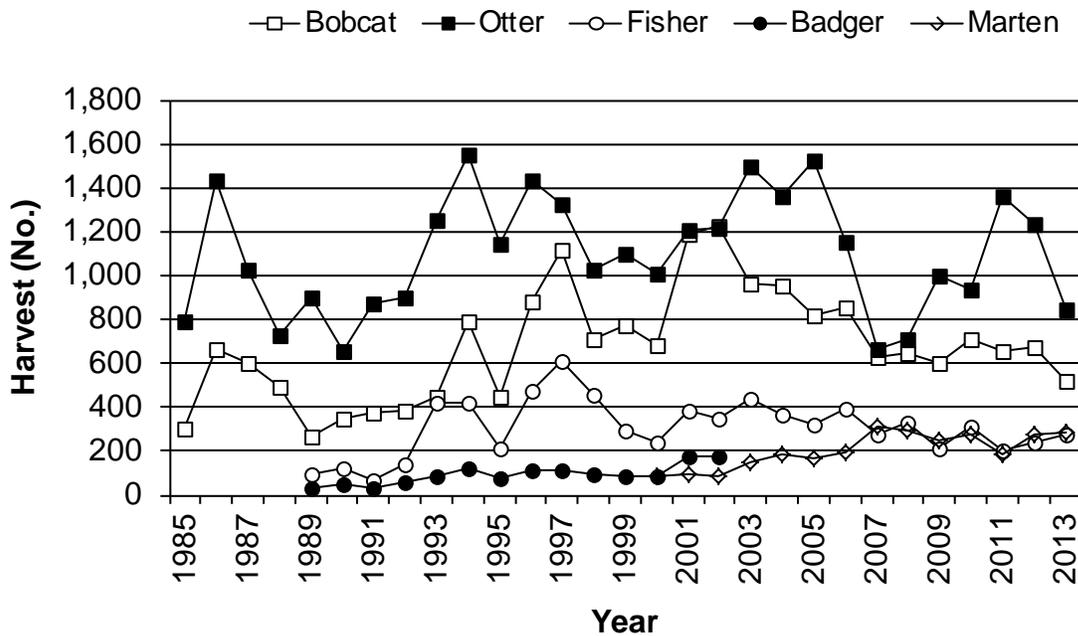


Figure 11. Number of bobcat, otter, fisher, badger, and marten registered by furtakers in Michigan, 1985-2013. Badger and fisher seasons were established in 1989, and marten season started in 2000. Totals for 2013 were preliminary. Beginning in 2003, badger were no longer registered. Registration totals only included animals that were registered and returned to the furtaker and excluded harvest by tribal members.

Table 1. Trapping and hunting seasons when furbearing animals could be harvested in Michigan during 2013 seasons.^a

Season, species, and area	Season dates
Trapping seasons ^b	
Muskrat and Mink	
UP	October 25 – March 1
NLP	November 1 – March 1
SLP	November 10 – March 1
Raccoon	
UP and NLP	October 15 – January 31
SLP	November 1 – January 31
Fox and Coyote	
Statewide	October 15 – March 1
Bobcat	
UP	December 1 – February 1
NLP	December 10 – 20
Badger	
UP and NLP	October 15 – November 14
SLP	November 1 – March 1
Fisher and Marten	
UP	December 1 – 15
Beaver and Otter ^c	
UP	October 25 – April 13
NLP	November 1 – April 13
SLP	November 10 – March 31
Hunting seasons	
Bobcat	
UP	January 1 – March 1
NLP (northern portion)	January 1 – February 1
NLP (southern portion)	January 1 – 11
Fox	
Statewide	October 15 – March 1
Raccoon	
Statewide	October 1 – January 31
Coyote	
Statewide	July 15 – April 15

^aNo closed season for opossum, weasel, and skunk.

^bNonresidents may trap from November 15 through the regular season closing date, except for beaver. The opening date for nonresident beaver trapping varied by area.

^cResident seasons only. Nonresident season occurred during November 15-April 13 (UP), November 24-April 13 (NLP), and December 15 – March 31 (SLP).

Table 2. Number of fur harvester licenses sold and people receiving and returning harvest questionnaire, 2010-2013.

Item	Year			
	2010	2011	2012	2013
Licenses sold ^a	24,582	26,034	28,776	31,839
Individuals buying licenses ^{a,b}	24,288	25,675	28,425	31,707
Mentored youth license buyers ^c	NA	NA	10,406	12,433
Questionnaires mailed	4,200	4,198	4,200	4,200
Non-deliverable questionnaires	57	63	69	81
Questionnaires returned	2,661	2,609	2,499	2,317
Questionnaires returned (%) ^d	64	63	60	56

^aLicense types included Fur Harvester, Junior Fur Harvester, Senior Fur Harvester, Non-resident Fur Harvester, Military Fur Harvester, Resident Fur (trap only), and Junior Fur (trap only).

^bA person was counted only once, regardless of how many licenses they purchased.

^cThe mentored youth hunting license was created in 2012 and was valid for hunting small game, waterfowl, turkey, and deer. These youth could also trap furbearers and fish all species. Although these license buyers were eligible to take furbearers, they were not included in survey sample.

^dResponse rate adjusted to exclude non-deliverable questionnaires.

Table 3. Estimated number of fur harvester license buyers who trapped or hunted furbearers in Michigan, 2011-2013.

Activity	2011		2012		2013		Change between 2012 and 2013 (%)
	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL	
Trapped							
Number	8,597	442	10,241	510	10,712	593	5
%	33	2	36	2	34	2	-2
Hunted							
Number	10,450	458	10,239	511	10,785	598	5
%	41	2	36	2	34	2	-2
Trapped or hunted ^a							
Number	15,226	459	16,214	527	16,962	627	5
%	59	2	57	2	53	2	-4
Trapped only							
Number	4,776	364	5,975	433	6,177	501	3
%	19	1	21	2	19	2	-2
Hunted only							
Number	6,629	408	5,974	434	6,250	506	5
%	26	2	21	2	20	2	-1
Trapped and hunted							
Number	3,821	333	4,266	379	4,535	431	6
%	15	1	15	1	14	1	-1

^aA person was counted only once, although they may have both trapped and hunted furbearers.

*Non-overlapping 95% confidence intervals indicated estimates differed significantly between 2012 and 2013 (P<0.005).

Table 4. Estimated number of participants, harvest, and days afield during Michigan furbearer seasons, 2012 and 2013.

Species and season	Participants (No.)				Harvest (No.)				Days afield (No.)			
	Year		95% CL ^a	Change (%)	Year		95% CL ^a	Change (%)	Year		95% CL ^a	Change (%)
	2012	2013			2012	2013			2012	2013		
Trapping												
Mink	4,154	3,820	401	-8	17,909	11,167	2,673	-38	131,493	97,510	15,423	-26*
Raccoon	7,273	8,131	550	12	99,718	114,270	17,916	15	199,466	194,849	19,973	-2
Opossum	3,166	3,341	386	6	32,731	28,025	5,852	-14	99,423	79,991	13,656	-20
Skunk	1,718	1,996	306	16	4,951	8,801	3,692	78	49,690	47,306	10,263	-5
Weasel	907	825	195	-9	2,106	2,606	1,637	24	24,317	17,476	6,090	-28
Red fox	3,649	2,711	351	-26*	4,809	4,604	1,235	-4	102,920	72,397	12,887	-30*
Gray fox	1,969	1,483	268	-25	1,678	1,579	604	-6	62,060	41,469	9,855	-33
Coyote	5,324	4,181	429	-21*	12,519	13,019	3,126	4	146,275	104,080	14,855	-29*
Bobcat ^b	1,191	1,389	57	17*	377	343	36	-9	18,436	20,024	1,337	9
Beaver ^c	2,911	2,378	323	-18	17,606	12,260	3,119	-30	66,496	53,784	25,172	-19
Muskrat	5,516	5,664	483	3	208,070	179,582	37,661	-14	161,587	134,089	17,435	-17
Otter ^c	1,291	1,141	55	-12*	1,203	930	73	-23*	27,200	19,504	1,506	-28*
Fisher ^d	633	748	40	18*	247	282	28	14	5,107	6,679	441	31*
Badger	320	229	104	-28	183	108	72	-41	5,870	3,438	2,281	-41
Hunting												
Raccoon	4,008	4,218	429	5	68,142	63,802	16,476	-6	72,435	67,355	12,455	-7
Red fox	2,823	2,791	354	-1	1,326	1,430	514	8	30,904	31,616	6,647	2
Gray fox	1,768	1,564	274	-12	785	957	1,155	22	22,461	21,660	6,389	-4
Coyote	7,903	8,337	552	5	14,801	19,439	12,986	31	104,834	108,365	26,054	3
Bobcat ^b	1,823	1,720	61	-6	351	249	28	-29*	16,271	14,163	955	-13*
Trapping and hunting combined												
Raccoon	9,595	10,298	590	7	167,860	178,072	25,069	6	271,902	262,204	25,037	-4
Red fox	5,665	4,909	454	-13	6,135	6,034	1,366	-2	133,824	104,013	15,441	-22
Gray fox	3,306	2,723	356	-18	2,462	2,536	1,417	3	84,521	63,129	12,668	-25
Coyote	11,145	10,707	597	-4	27,319	32,458	14,144	19	251,109	212,445	31,207	-15
Bobcat ^b	2,727	2,857	67	5*	728	592	45	-19*	34,707	34,187	1,637	-1

^a95% CL for the 2013 estimate.

^bBobcat estimates from separate mail harvest survey (Frawley 2014c). See Table 5 for registration totals.

^cOtter estimates from separate mail harvest survey (Frawley 2014b). See Table 5 for registration totals.

^dFisher estimates from separate mail harvest survey (Frawley 2014a). See Table 5 for registration totals.

*Non-overlapping 95% confidence intervals indicated estimates differed significantly between 2012 and 2013 (P<0.005).

Table 5. Number of bobcat, otter, fisher, badger and marten registered by furtakers in Michigan, 1985-2013.^a

Year	Species							
	Bobcat (by method of capture)				Otter	Fisher ^a	Badger ^{b,c}	Marten ^d
	Hunting	Trapping	Unknown	Total				
1985	193	100	14	307	791			
1986	268	390	11	669	1,431			
1987	315	277	5	597	1,030			
1988	327	170	0	497	731			
1989	178	91	0	269	900	94	28	
1990	266	85	0	351	654	125	52	
1991	292	79	0	371	877	68	35	
1992	276	104	0	380	896	139	63	
1993	285	163	0	448	1,252	425	90	
1994	373	422	0	795	1,552	417	124	
1995	311	137	1	450	1,143	210	75	
1996	463	420	0	883	1,438	471	109	
1997	347	771	0	1,118	1,324	609	117	
1998	331	375	0	706	1,026	455	91	
1999	434	343	0	777	1,097	291	82	
2000	379	307	0	686	1,006	236	85	85
2001	465	727	0	1,192	1,204	381	174	97
2002	482	741	0	1,223	1,221	348	173	85
2003	340	621	0	961	1,496	442		149
2004	321	637	0	958	1,358	368		184
2005	309	508	0	817	1,526	322		164
2006	336	515	0	851	1,154	390		192
2007	336	299	0	632	663	280		316
2008	284	364	0	648	707	326		290
2009	331	270	0	601	997	216		247
2010	365	344	0	709	935	312		274
2011	290	367	0	657	1,360	205		187
2012	311	367	0	678	1,233	237		279
2013 ^e	216	308	0	524	846	280		284

^aRegistration totals included only animals legally harvested by furtakers during hunting and trapping seasons; excluded harvest by tribal members. Also, totals only included animals that were registered and returned to the furtaker.

^bBadger and fisher seasons were established in 1989.

^cFurtakers no longer were required to register badgers beginning in 2003.

^dMarten season was established in 2000.

^ePreliminary totals.

Table 6. Estimated number of trappers that caught an incidental bobcat and number of incidental bobcats caught and registered in Michigan, 2013.

Region ^a	Trappers		Incidental bobcats captured and released alive ^b		Incidental bobcats captured and registered ^b	
	No.	95% CL	No.	95% CL	No.	95% CL
Upper Peninsula	27	36	14	26	14	26
Northern Lower Peninsula	67	57	95	98	0	0
Southern Lower Peninsula	54	51	175	174	0	0
Unknown	0	0	0	0	0	0
Statewide	149	84	283	202	14	26

^aSee Figure 1 for region boundaries.

^bIncidental bobcats caught in Alcona, Clare, Mecosta, Menominee, Newaygo, Osceola, and Roscommon.

Table 7. Estimated number of beaver trappers, beaver harvested, and trapping effort (days afield), summarized by trappers with and without an otter harvest tag in Michigan, 2013.

Beaver trapper group	Trappers		Days afield		Harvest	
	No.	95% CL	No.	95% CL	No.	95% CL
Without an otter harvest tag	1,161	232	28,462	23,732	3,346	1,187
With an otter harvest tag	1,217	235	8,914	2,898	8,914	2,898
Combined	2,378	323	53,784	25,172	12,260	3,119

Table 8. Furtakers' level of satisfaction with the number of animal or animal sign seen during the 2013 hunting and trapping seasons, summarized by the primary species the furtaker targeted.^a

Species	Satisfaction level							
	Very satisfied or somewhat satisfied		Neutral		Very dissatisfied or somewhat dissatisfied		No answer	
	%	95%	%	95%	%	95%	%	95%
		CL		CL		CL		CL
Raccoon	63	5	22	5	12	4	2	2
Fox	44	18	37	18	15	13	4	7
Coyote	52	6	33	6	13	4	3	2
Bobcat	19	14	33	17	44	18	4	7
Fisher	42	27	33	26	25	24	0	0
Mink	63	32	25	29	13	22	0	0
Muskrat	58	8	20	6	22	7	0	0
Beaver	58	19	33	18	4	8	4	8

^aFurtakers were grouped in subgroups based on the primary species they targeted, and then satisfaction was summarized for each subgroup separately.

Table 9. Furtakers' level of satisfaction with the number of animal harvested during the 2013 hunting and trapping seasons, summarized by the primary species the furtaker targeted.^a

Species	Satisfaction level							
	Very satisfied or somewhat satisfied		Neutral		Very dissatisfied or somewhat dissatisfied		No answer	
	%	95%	%	95%	%	95%	%	95%
		CL		CL		CL		CL
Raccoon	43	5	28	5	25	5	4	3
Fox	22	15	30	17	44	18	4	7
Coyote	26	5	33	6	37	6	4	2
Bobcat	15	13	19	14	59	18	7	10
Fisher	25	24	42	27	17	20	17	20
Mink	50	33	25	29	13	22	12	22
Muskrat	44	8	22	7	32	8	2	2
Beaver	42	19	29	18	25	17	4	8

^aFurtakers were grouped in subgroups based on the primary species they targeted, and then satisfaction was summarized for each subgroup separately.

Table 10. Furtakers' level of satisfaction with their overall hunting or trapping experience during 2013, summarized by the primary species the furtaker targeted.^a

Species	Satisfaction level							
	Very satisfied or somewhat satisfied		Neutral		Very dissatisfied or somewhat dissatisfied		No answer	
	%	95% CL	%	95% CL	%	95% CL	%	95% CL
Raccoon	65	5	20	4	10	3	4	3
Fox	48	18	33	17	15	13	4	7
Coyote	59	6	29	5	9	3	3	2
Bobcat	33	17	26	16	30	17	11	11
Fisher	42	27	25	24	25	24	8	15
Mink	75	29	12	22	13	22	0	0
Muskrat	61	8	22	7	13	5	3	3
Beaver	58	19	25	17	12	13	4	8

^aFurtakers were grouped in subgroups based on the primary species they targeted, and then satisfaction was summarized for each subgroup separately.