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2015 MICHIGAN FURBEARER HARVEST SURVEY

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ABSTRACT

A sample of furtakers was contacted after the 2015 hunting and trapping seasons to estimate the number of participants, days afield (effort), and furbearer harvests. In 2015, 26,865 people purchased a fur harvester license, which was 4% fewer than in 2014. In 2015, about 14,792 license buyers either hunted or trapped furbearers. About 34% of the license buyers trapped (9,077 trappers), 35% hunted (9,392 hunters), and 14% (3,676) both trapped and hunted. The number of active furtakers in 2015 was not significantly different from the number in 2014. Although the overall number of furtakers was unchanged, fewer furtakers sought raccoon and more trappers pursued fisher in 2015 than 2014. Changes for hunting and trapping effort and harvest between 2014 and 2015 generally followed changes in the number of furtakers. Hunters most commonly sought coyotes and raccoons, while trappers most frequently sought raccoons, muskrats, and coyotes. Harvest for most species was not significantly different between 2014 and 2015, except significantly fewer raccoon were taken and more fisher were taken in 2015. 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 1950s. 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 since their harvest has been monitored, while red fox numbers may have been declining. An estimated 287 trappers caught and released 319 bobcats that were caught in traps set for another species in 2015. In addition, these trappers registered an additional 85 incidental bobcats. Hunters and trappers combined spent an average of \$431 per year pursuing furbearers. Collectively, furtakers spent about \$6,380,624 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 2017d). Opossum, weasels, and skunks could be taken year-round with a fur harvester license. The remaining furbearers could be harvested in 2015 during late fall through spring by a person possessing a fur harvester license (Table 1); however, nonresidents could not trap badger, bobcat, fisher, marten, or otter.

Landowners or their designees could take raccoons, coyotes, and skunks 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 resident hunters possessing a base 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 base 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 2015 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). This level of sampling should produce estimates with a margin of error of less than 20% for the most commonly pursued species. 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 603 people from the UP stratum (N= 3,787), 830 people from the NLP stratum (N= 5,362), 2,722 from the SLP stratum (N= 17,340), and 45 people from the nonresident and unknown residency stratum (N=376). 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 2017c), fisher and marten (Frawley 2017a), and otter (Frawley 2017b) seasons during recent years.

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 2015 seasons. Trappers also were asked whether they caught any bobcats incidentally in traps set for another species.

Questionnaires were mailed initially in early May 2016. Up to two follow-up questionnaires were sent to non-respondents. Questionnaires were undeliverable to 85 people, primarily because of changes in residence. Questionnaires were returned by 2,267 people, yielding a 55% adjusted response rate.

RESULTS AND DISCUSSION

In 2015, 26,873 fur harvester licenses were purchased by 26,865 people (Figure 2, Table 2). The number of license buyers in 2015 was 4% fewer than in 2014. Most license buyers were men (97%), with an average age of 47 years (Figure 3). About 5% of the license buyers (1,319) 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 2015 increased by about 26% (21,406 people purchased a license in 2005). Although the overall number of license buyers increased, there were fewer license buyers for most age classes between 35 and 48 years of age in 2015, compared to 2005 (Figure 4). However, there were increased furtakers among the youngest and oldest age classes in 2015. 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 55% of license buyers either hunted or trapped furbearers during 2015 (Table 3). The number of active furtakers in 2015 did not change significantly from the number of furtakers in 2014. About 34% of the license buyers trapped and 35% hunted furbearers during 2015. Trappers most often pursued raccoons, muskrat, and coyote (Table 4). Hunters most commonly sought coyotes and raccoon. Coyotes and raccoons also ranked as the most frequently sought furbearers when trappers and hunters were combined.

Although the number of people purchasing a fur harvesters license declined in 2015, the estimated number of furtakers has increased gradually during the last 20 years (Figure 5). Recent annual changes in furtaker numbers have paralleled changes in fur prices (Dhuey 2014; Beringer and Grusenmeyer 2015; Rees 2015). 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 2015, Beringer and Grusenmeyer 2015). 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 the last four years (Figure 5).

The number of furtakers pursuing most species did not change significantly between 2014 and 2015, except among furtakers pursuing raccoon and fisher. In 2015, fewer hunters and trappers combined pursued raccoon but significantly more trappers pursued fisher. Changes for hunting and trapping effort and harvest between 2014 and 2015 generally followed changes in the number of furtakers (Table 4).

Harvest of beaver, bobcat, fisher, fox, mink, and opossum in 2015 were near the low end of their historical ranges (Figures 6-8). 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 taken per trapper has generally increased since the early 1950s (Figures 9 and 10). The mean harvest of fox by both hunters and trappers has declined since the mid-1980s. These trends suggest raccoon may have been increasing in abundance since harvest has been monitored, 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 and bobcat per trapper has declined during the last twenty years (Figure 9). Frawley (2017a) also 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 twenty 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 a combined bag limit of one fisher or one marten in 2011, and this reduction likely contributed to the decline in fisher taken per trapper in recent years (Frawley 2017a).

The mean number of bobcats taken per trapper declined from 2003 to 2015 (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 2017c).

Registration Data

Compared to 2014, more fisher (24% increase) and otter (3%) were registered in 2015; however, fewer bobcat (-11% decline) and marten (-3%) 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 287 trappers caught a bobcat incidentally in traps set for another species (Table 6). These trappers caught 319 incidental bobcats that were released alive from their traps. In addition, trappers caught an estimated 85 incidental bobcats that were registered. 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 2017b). 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 2,500 furtakers sought beavers (Tables 4 and 7). About 56% of these trappers possessed an otter harvest tag (Table 7), and they were responsible for an estimated 75% 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, beaver and fox seen during 2015 (Table 8). Over 50% of furtakers seeking beaver, muskrat, and raccoon 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 beaver, bobcat, coyote, fox, mink, muskrat, and raccoon were either very satisfied or somewhat satisfied with their overall hunting or trapping experiences (Table 10). Mink and fisher were the species with the lowest levels of overall satisfaction.

Expenditures by Furtakers

The average furtaker devoted 26.7 ± 1.6 days hunting or trapping furbearers and spent an average of $\$431 \pm \42 in 2015. Expenditures included the costs of fuel, food, lodging, equipment, and ammunition. Collectively, furtakers spent about $\$6,380,624 (\pm \$624,000)$ on hunting and trapping furbearers in the 2015 seasons.

ACKNOWLEDGEMENTS

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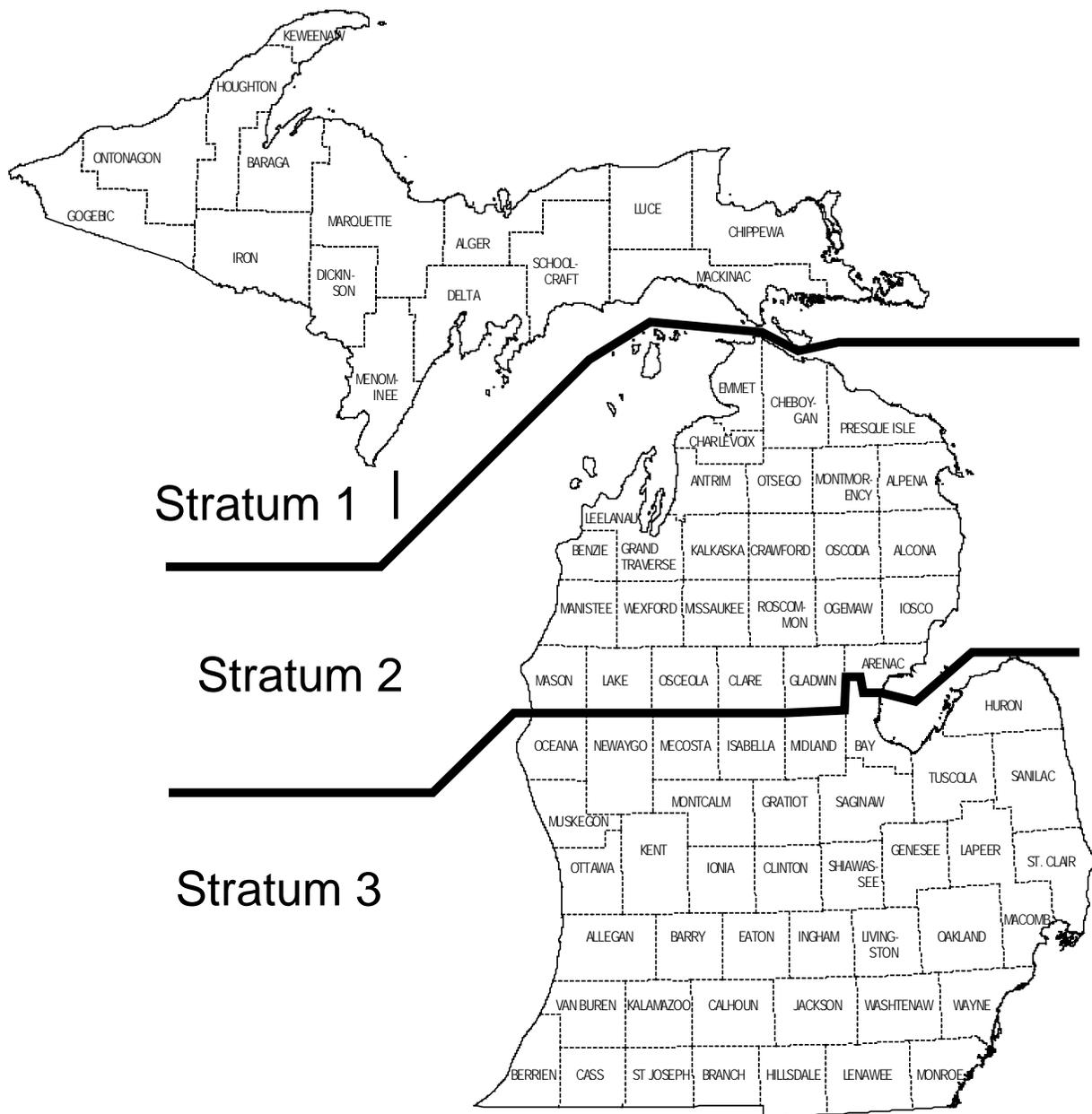


Figure 1. Stratum boundaries used for the analysis of the Michigan furbearer harvest survey.

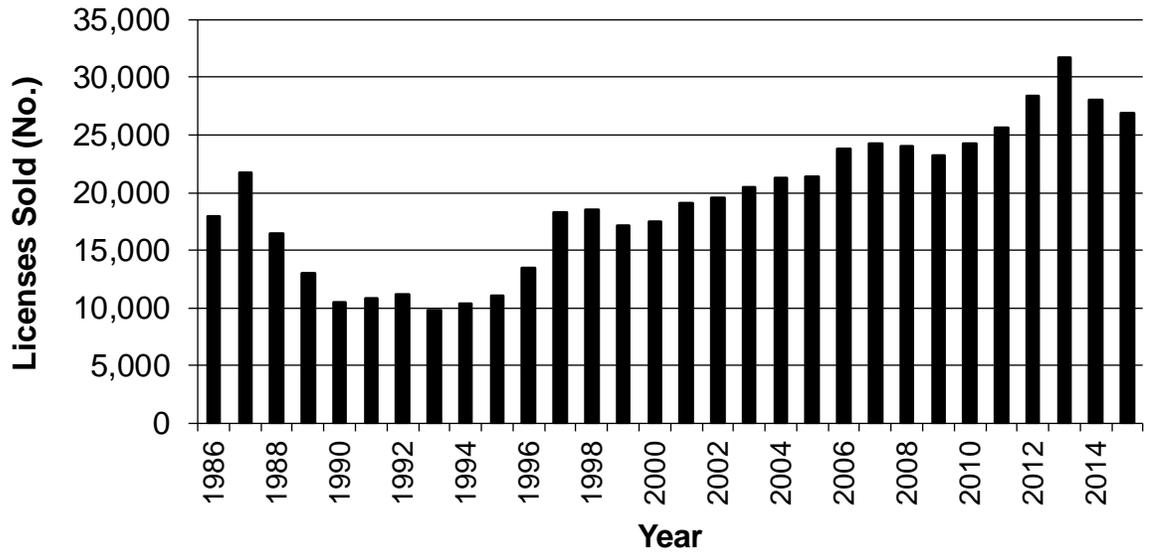


Figure 2. Number of fur harvester licenses sold in Michigan, 1986-2015.

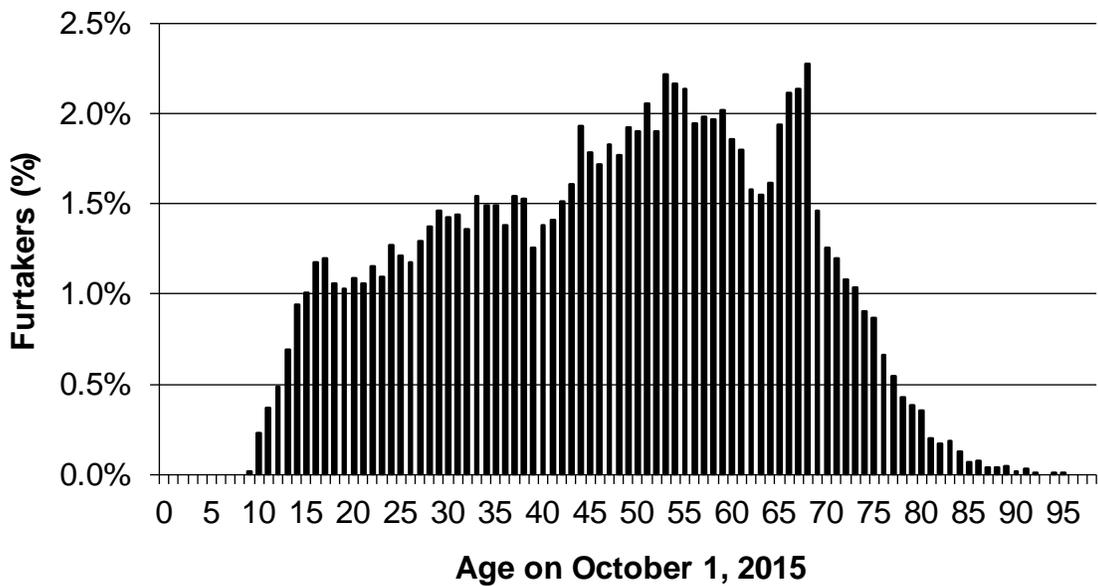


Figure 3. Ages of people that purchased a license to hunt or trap furbearers in Michigan for the 2015 hunting and trapping seasons (mean = 47 years).

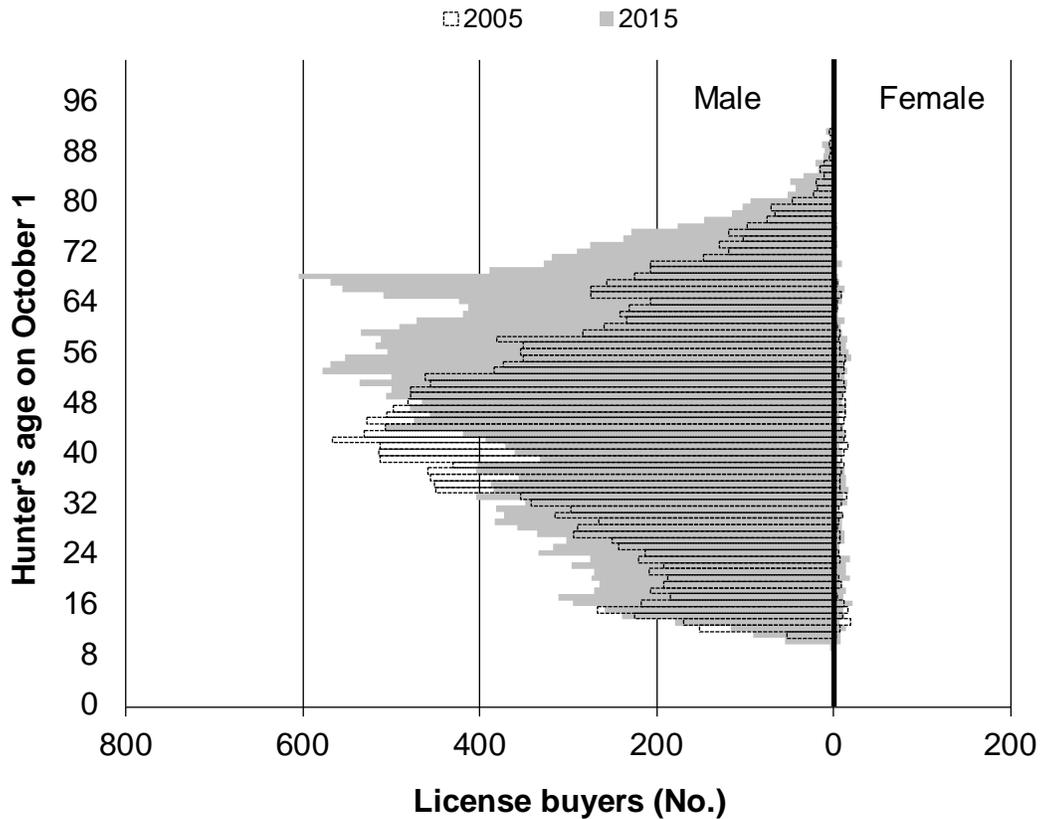


Figure 4. Number of fur harvester license buyers in Michigan by age and sex during 2005 and 2015 hunting seasons. The number of people buying a license was 21,228 in 2005 and 28,035 in 2015.

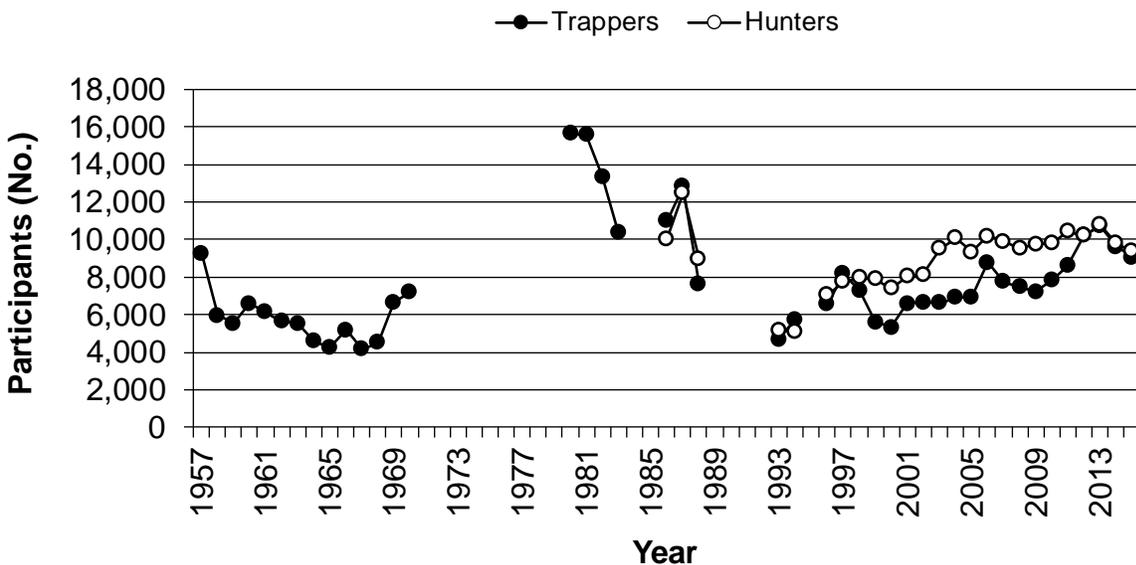


Figure 5. Estimated number of furtakers (trappers and hunters) in Michigan, 1957-2015. Estimates included only license buyers that actually trapped or hunted furbearers (any species). Data were not available for all years.

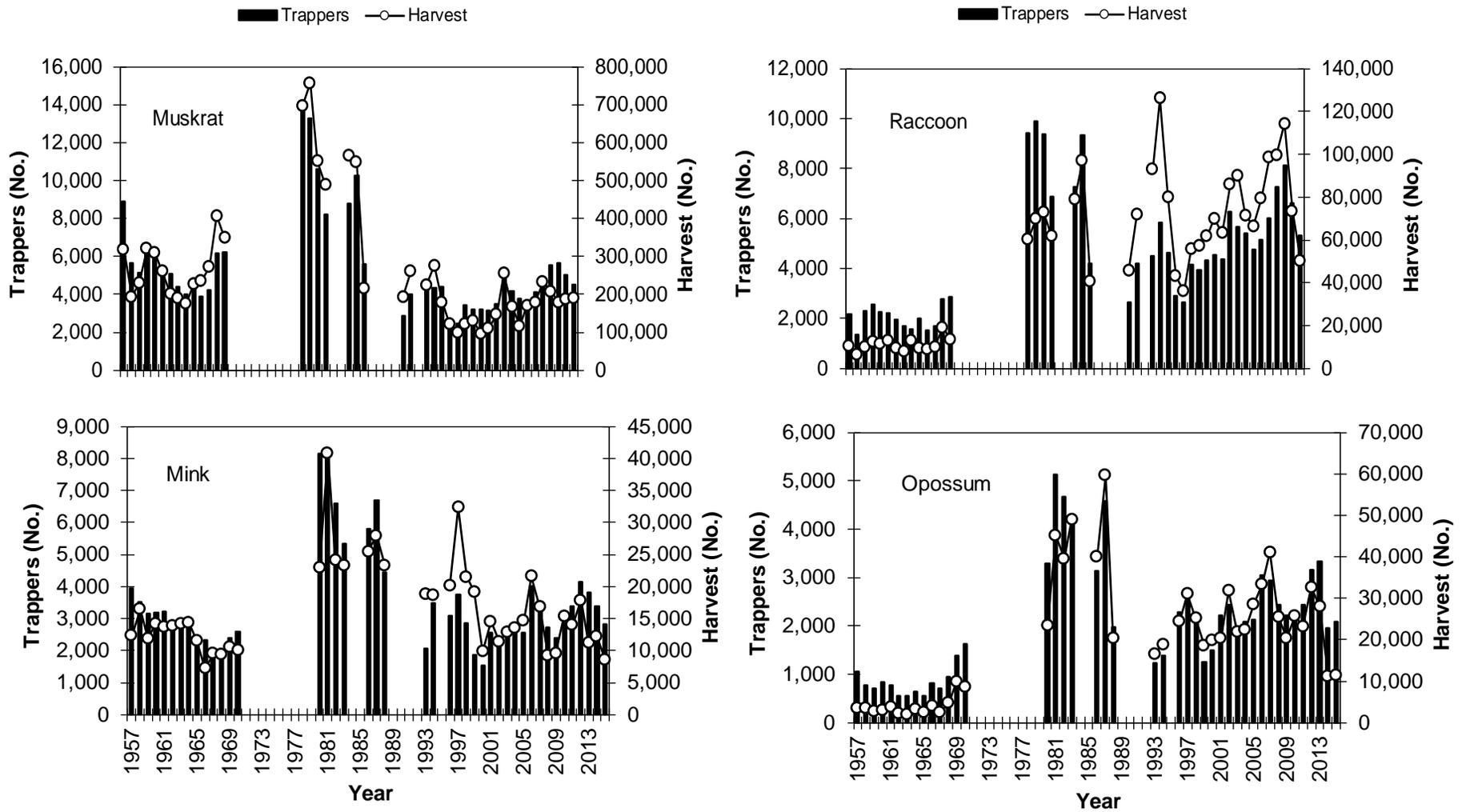


Figure 6. Estimated furbearer harvest by trappers and the number of trappers in Michigan estimated from mail harvest surveys, 1957-2015. Mail survey questionnaires were sent to a random sample of Trapping license buyers during 1957-1969. The sample also included Sportsman's license buyers in 1970-1972. 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. During 1996-2013, samples also included people buying Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses. Starting in 2014, license types were consolidated into a fur harvesters license type. Data were not available for all years.

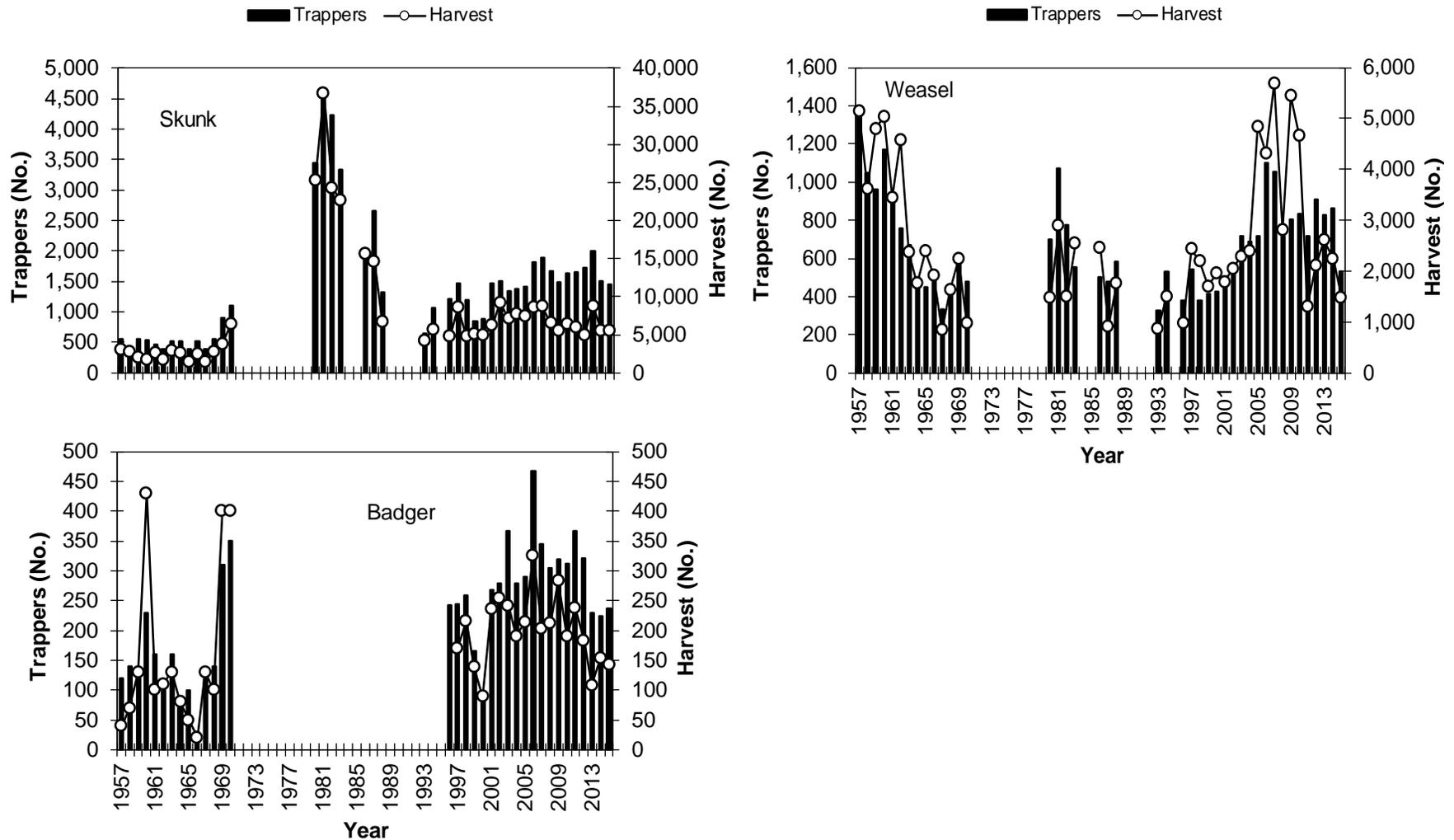


Figure 6 (Continued). Estimated furbearer harvest by trappers and the number of trappers in Michigan estimated from mail harvest surveys, 1957-2015. Mail survey questionnaires were sent to a random sample of Trapping license buyers during 1957-1969. The sample also included Sportsman's license buyers 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. During 1996-2013, samples also included people buying Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses. Starting in 2014, license types were consolidated into a fur harvesters license type. Data were not available for all years.

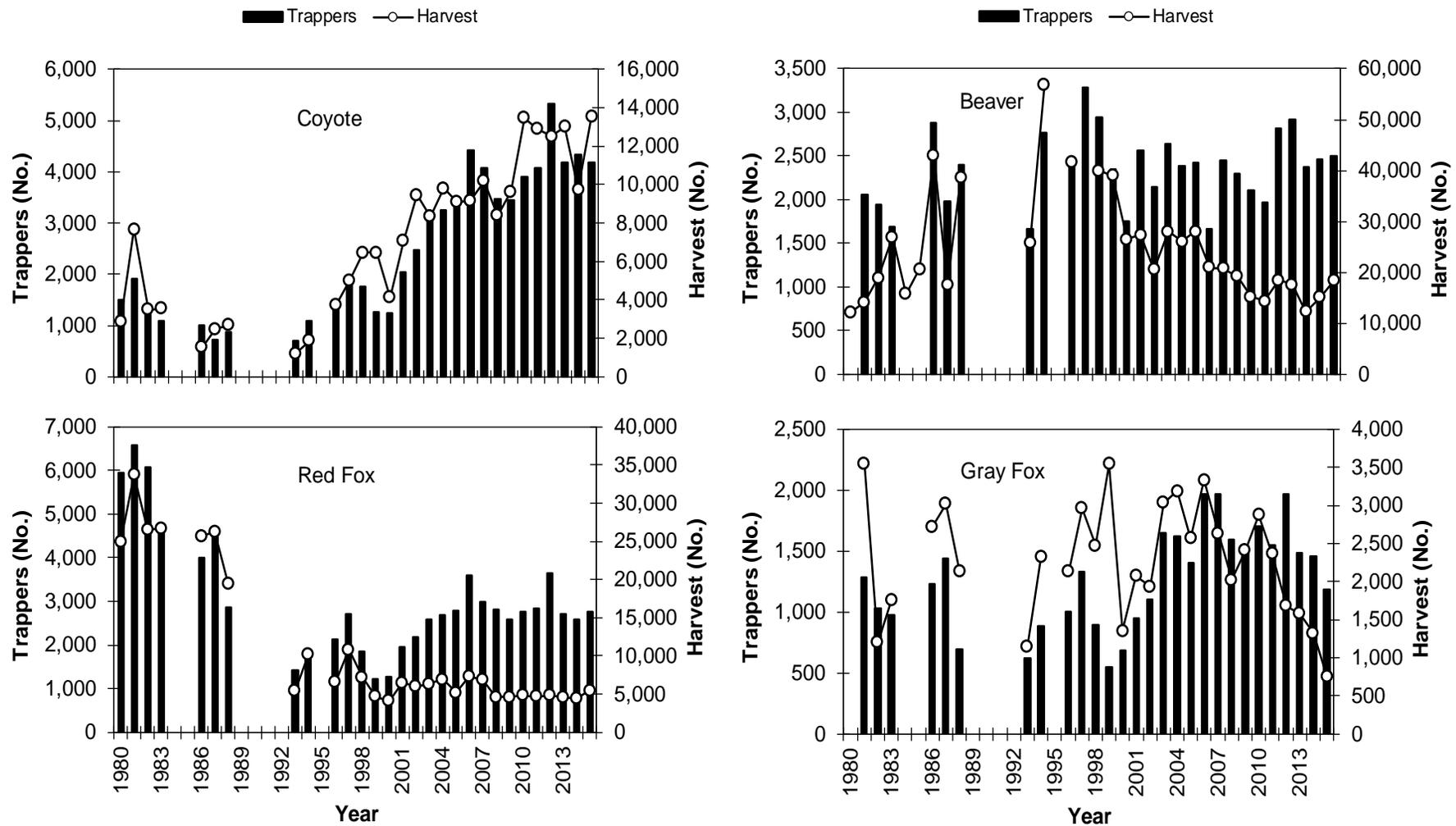


Figure 7. Estimated furbearer harvest by trappers and the number of trappers in Michigan estimated from mail harvest surveys, 1980-2015. The mail survey was sent to a random sample of Trapping and Senior Hunting license buyers during 1980-1983. During 1986-2013, the sample was selected from people buying 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. During 1996-2013, samples also included people buying Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses. Starting in 2014, license types were consolidated into a fur harvesters license type. Data were not available for all years.

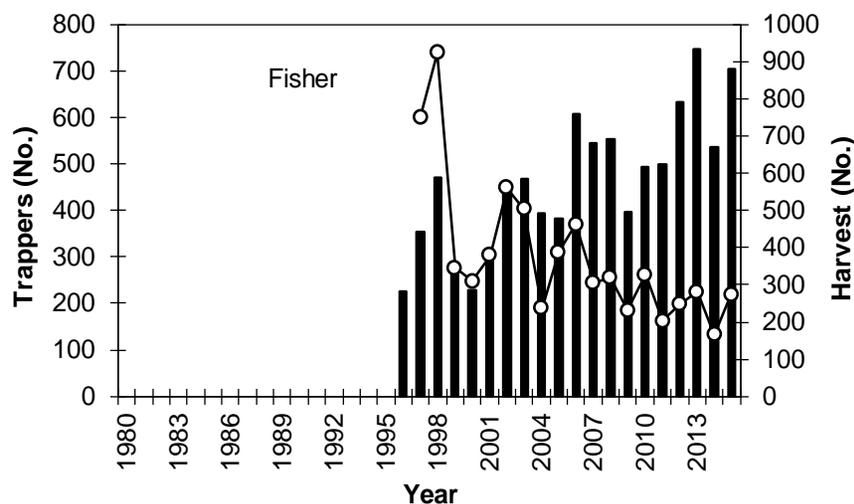
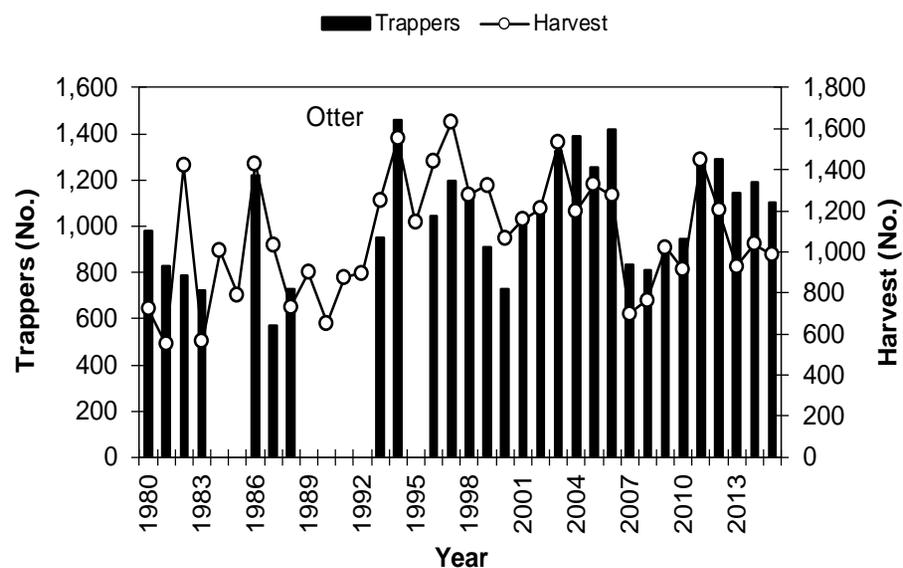
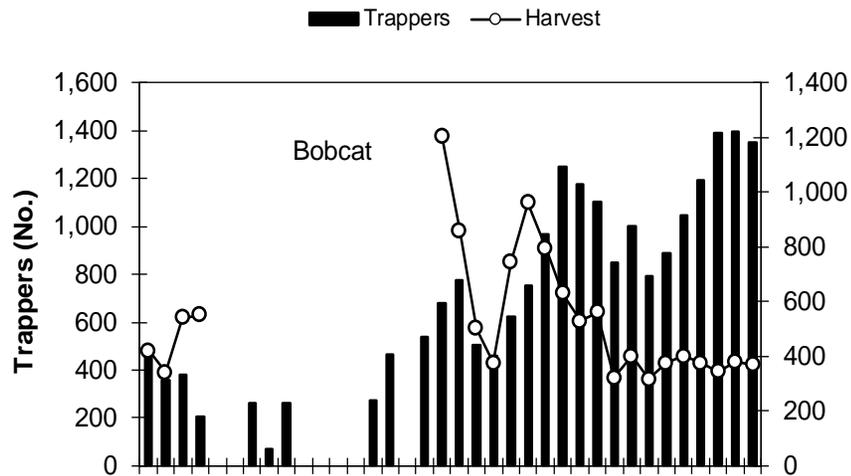


Figure 7 (Continued). Estimated furbearer harvest by trappers and the number of trappers in Michigan estimated from mail harvest surveys, 1980-2015. The mail survey was sent to a random sample of Trapping and Senior Hunting license buyers during 1980-1983. During 1986-2013, the sample was selected from 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. During 1996-2013, samples also included people buying Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses. Starting in 2014, license types were consolidated into a fur harvesters license type. Data were not available for all years.

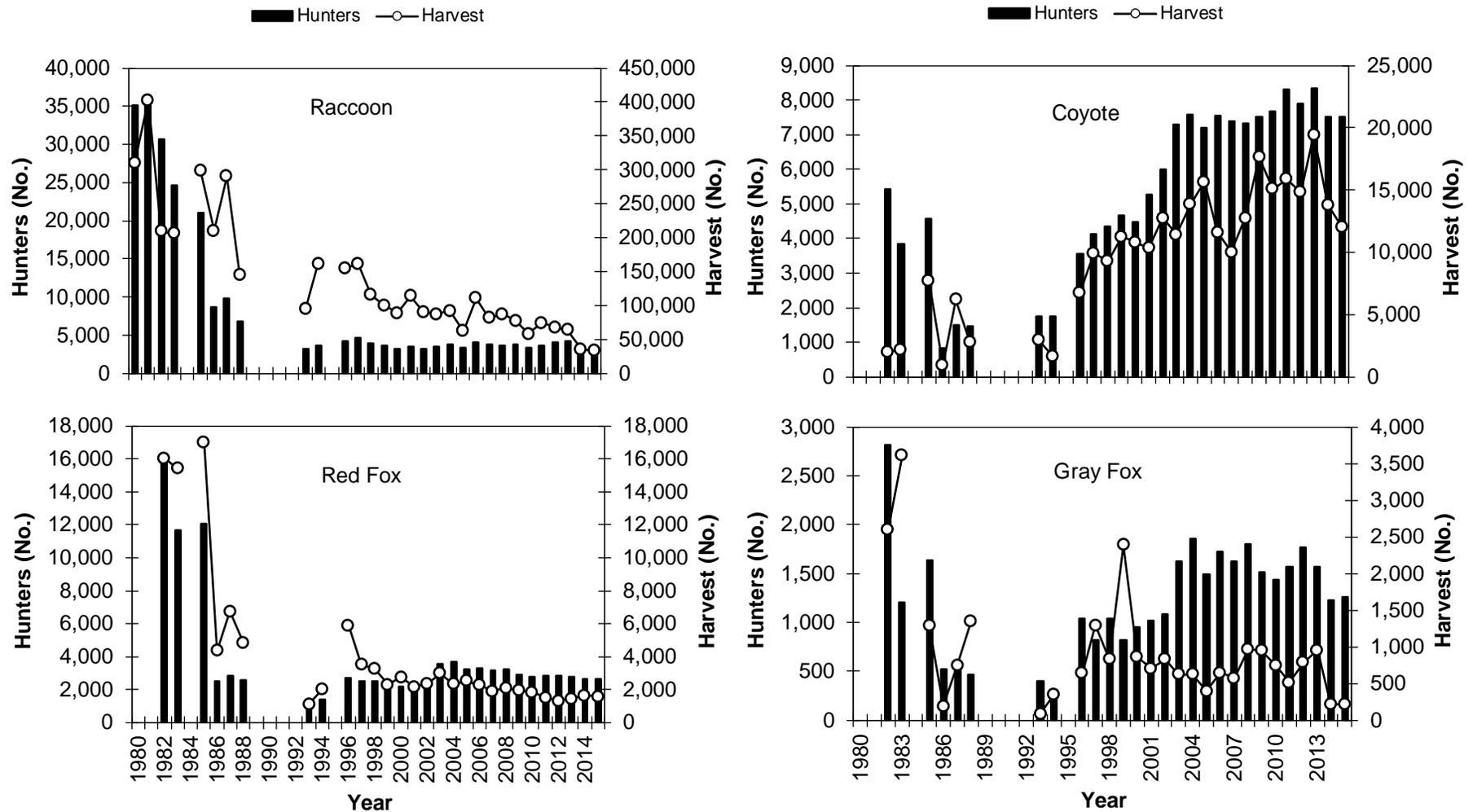


Figure 8. Estimated furbearer harvest by hunters and the number of hunters in Michigan estimated from mail harvest surveys, 1980-2015. The mail survey was sent to a random sample of people buying either small game licenses, Senior Hunting licenses, or Sportsman's licenses during 1980-1985. During 1986-2013, 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. During 1996-2013, samples also included people buying Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses. Starting in 2014, license types were consolidated into a fur harvesters license type. Data were not available for all years.

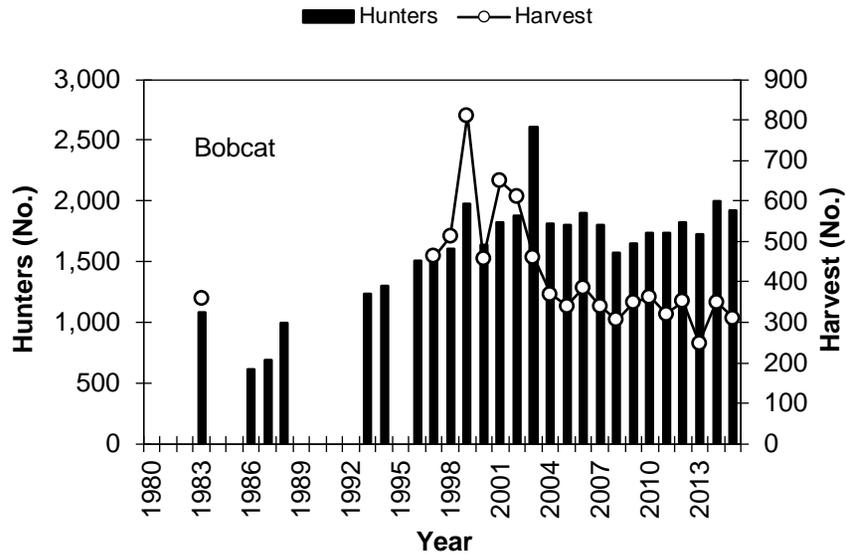


Figure 8 (Continued). Estimated furbearer harvest by hunters and the number of hunters in Michigan estimated from mail harvest surveys, 1980-2015. The mail survey was sent to a random sample of people buying either small game licenses, Senior Hunting licenses, or Sportsman’s licenses during 1980-1985. 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. During 1996-2013, samples also included people buying Resident Fur Harvester (trap only) and Junior Fur Harvester (trap only) licenses. Starting in 2014, license types were consolidated into a fur harvesters license type. Data were not available for all years.

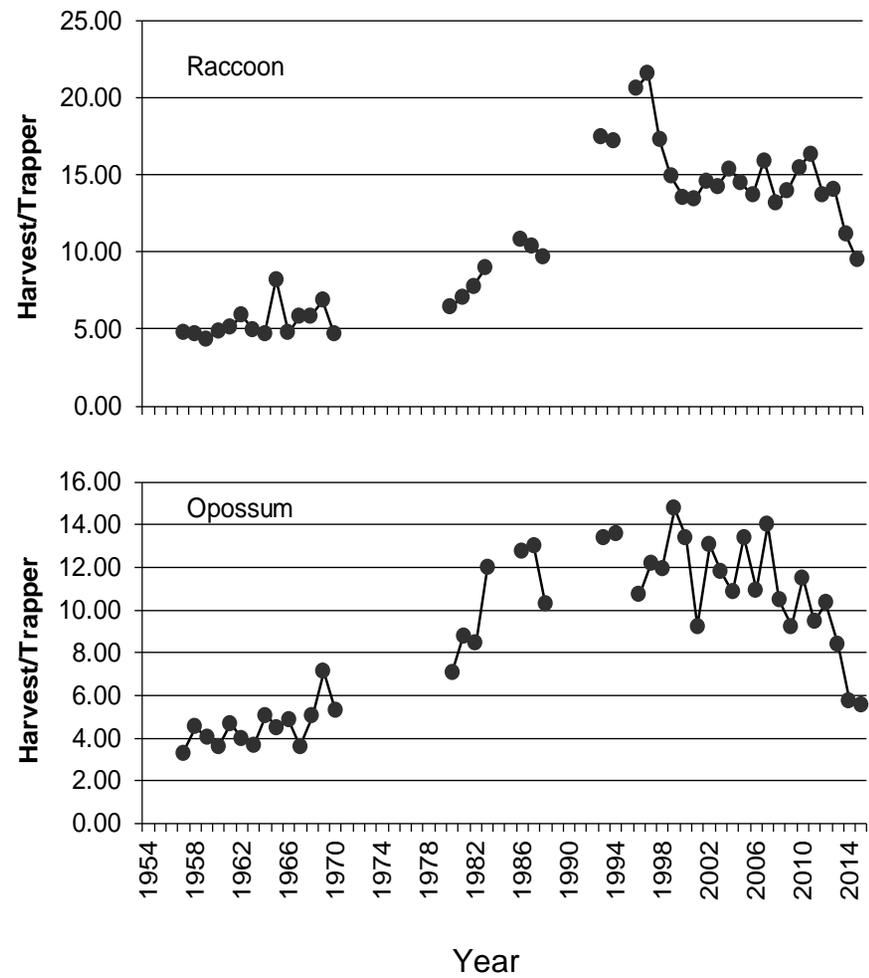
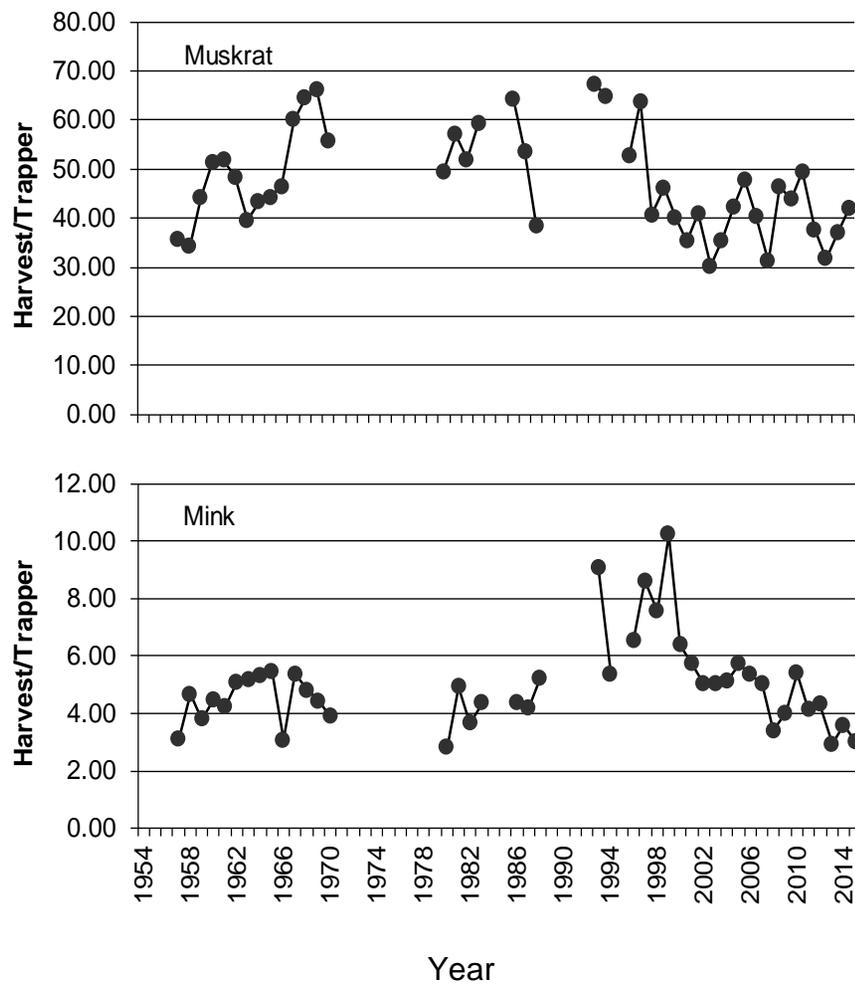


Figure 9. Mean number of furbearers harvested annually per trapper in Michigan estimated from mail harvest surveys, 1954-2015. Data were not available for all years.

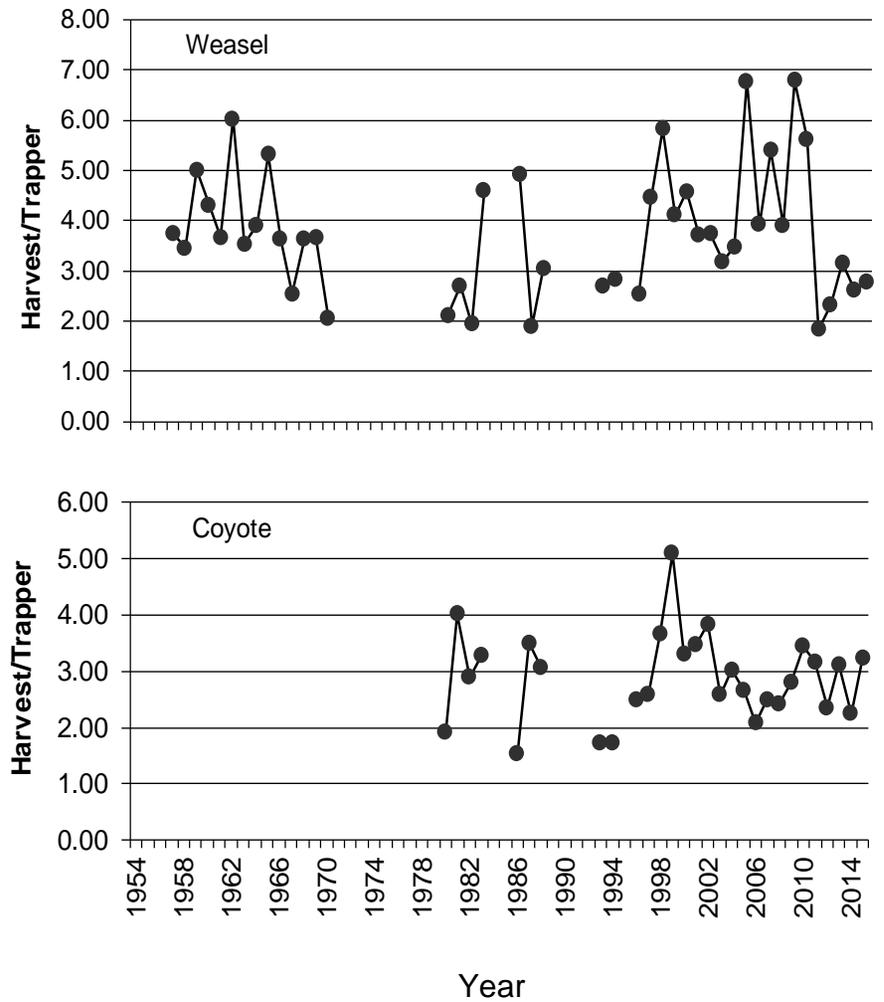
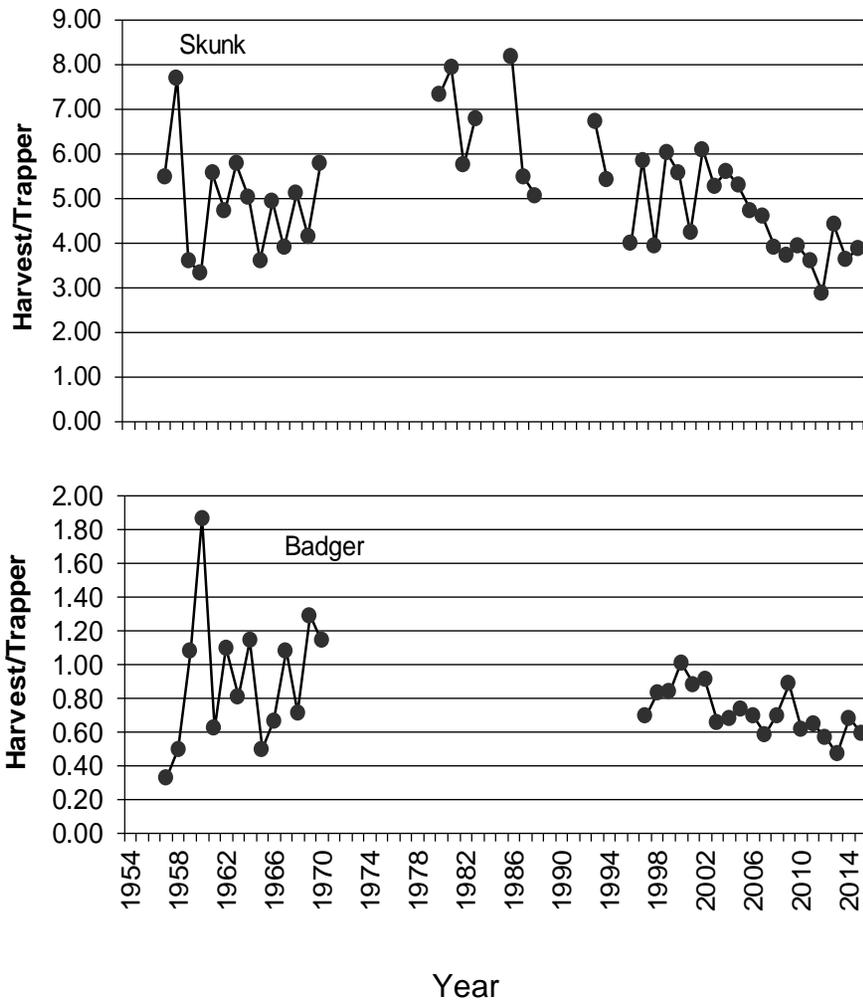
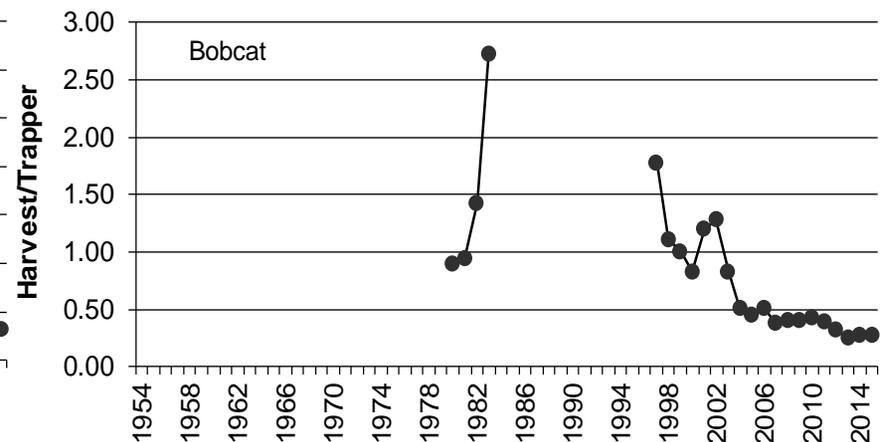
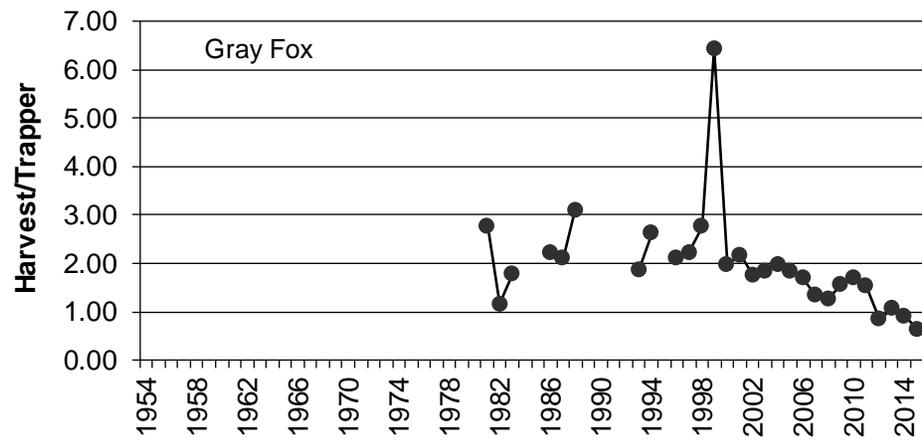
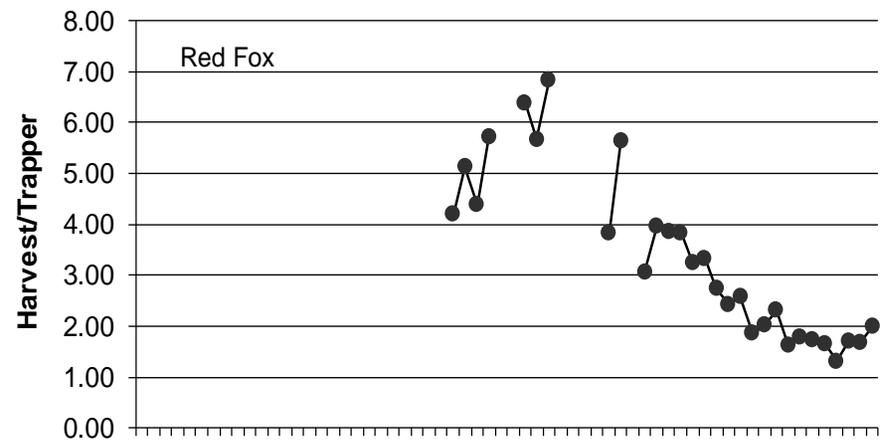
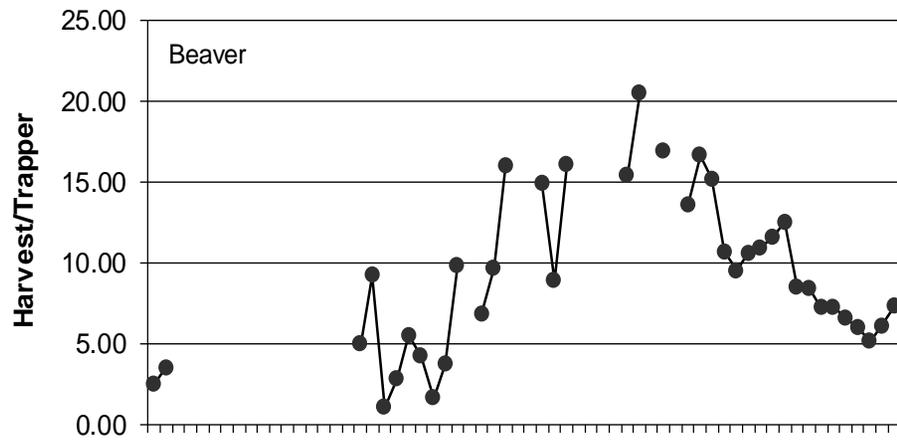


Figure 9 (continued). Mean number of furbearers harvested annually per trapper in Michigan estimated from mail harvest surveys, 1954-2015. Data were not available for all years.



Year

Year

Figure 9 (continued). Mean number of furbearers harvested annually per trapper in Michigan estimated from mail harvest surveys, 1954-2015. Data were not available for all years.

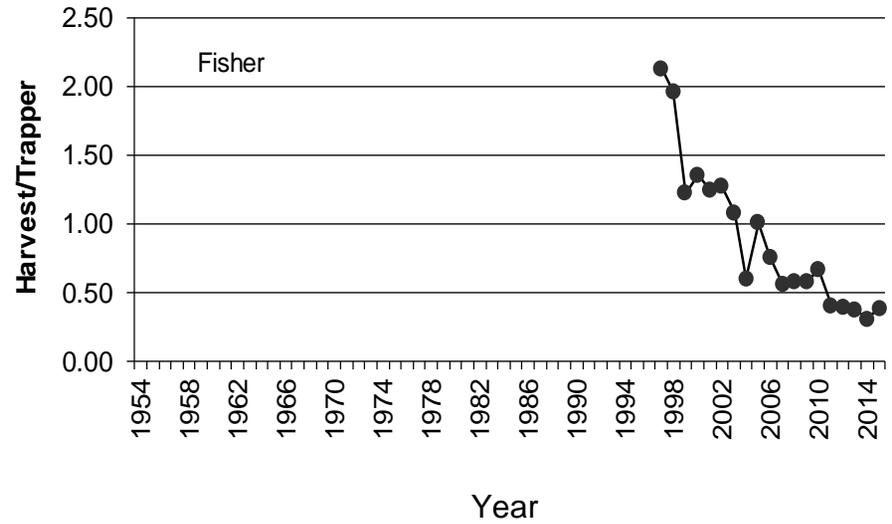
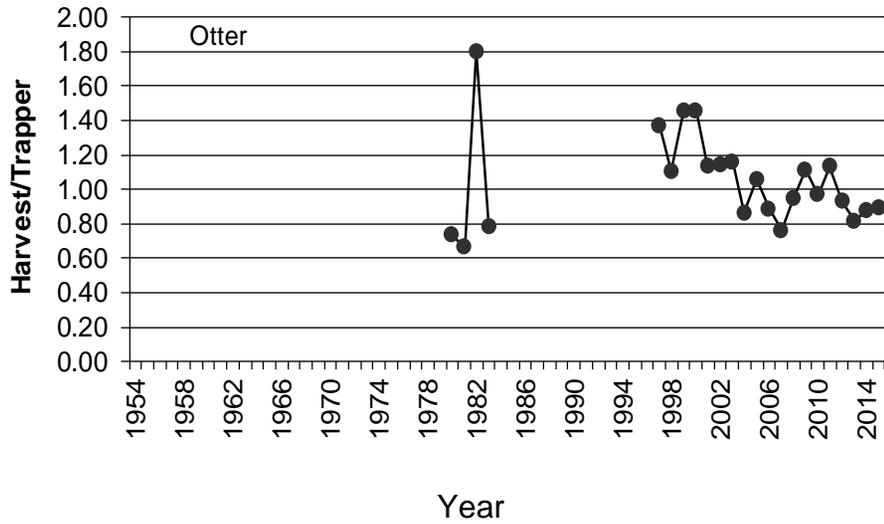


Figure 9 (continued). Mean number of furbearers harvested annually per trapper in Michigan estimated from mail harvest surveys, 1954-2015. Data were not available for all years.

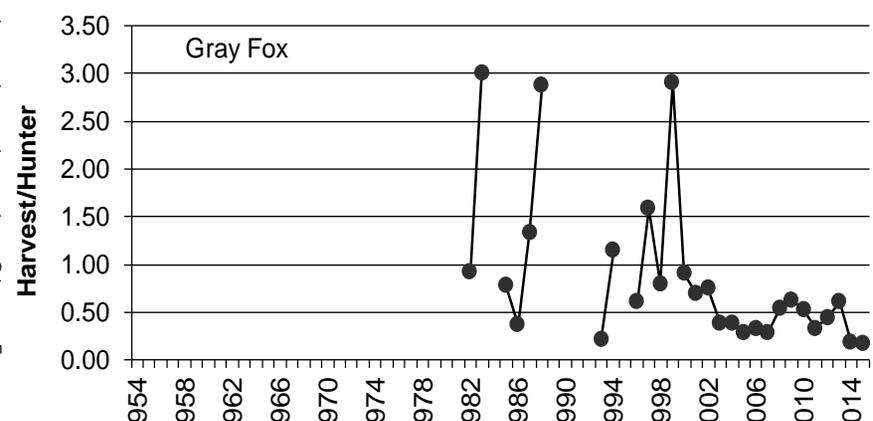
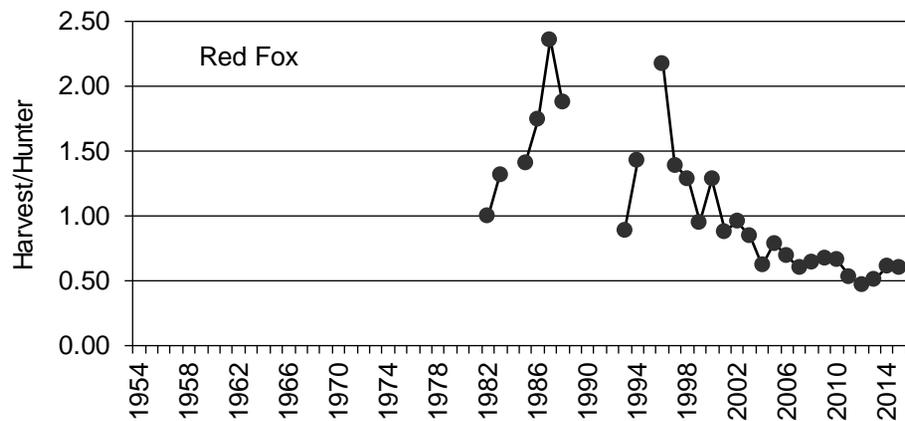
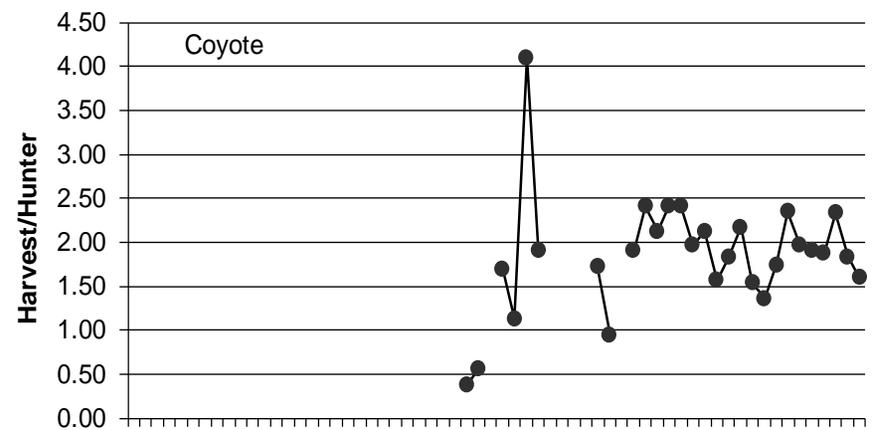
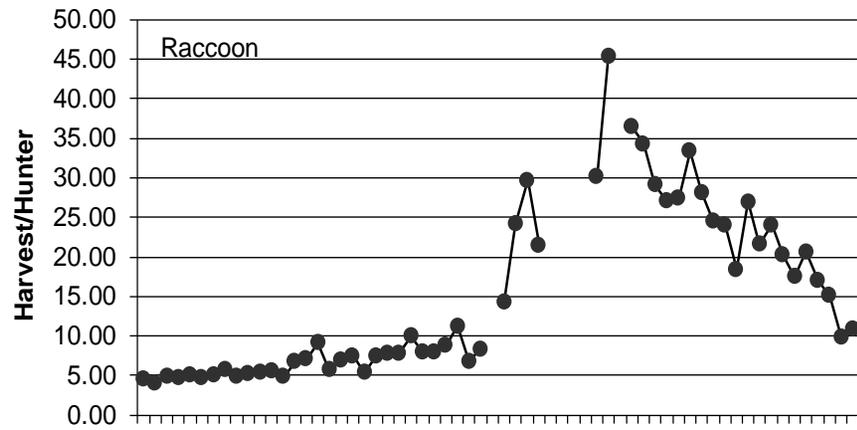


Figure 10. Mean number of furbearers harvested annually per hunter in Michigan estimated from mail harvest surveys, 1954-2015. Data were not available for all years.

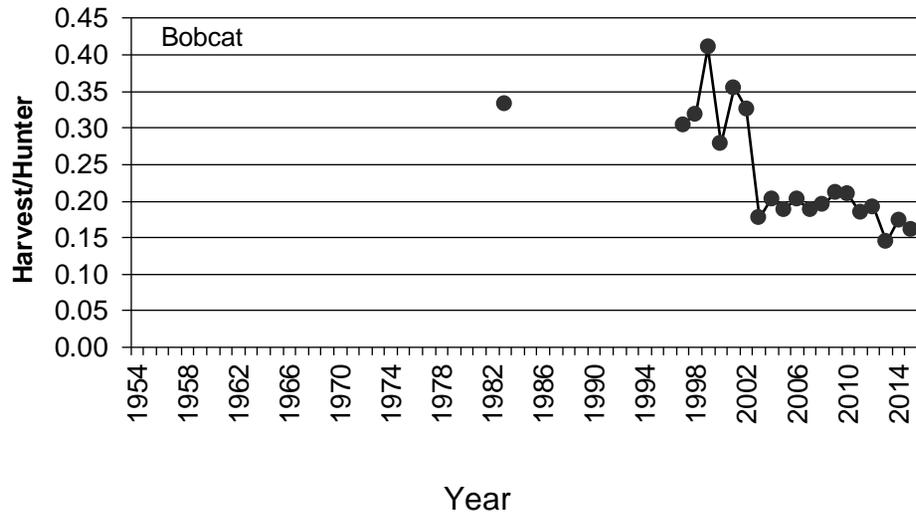


Figure 10 (continued). Mean number of furbearers harvested annually per hunter in Michigan estimated from mail harvest surveys, 1954-2015. Data were not available for all years.

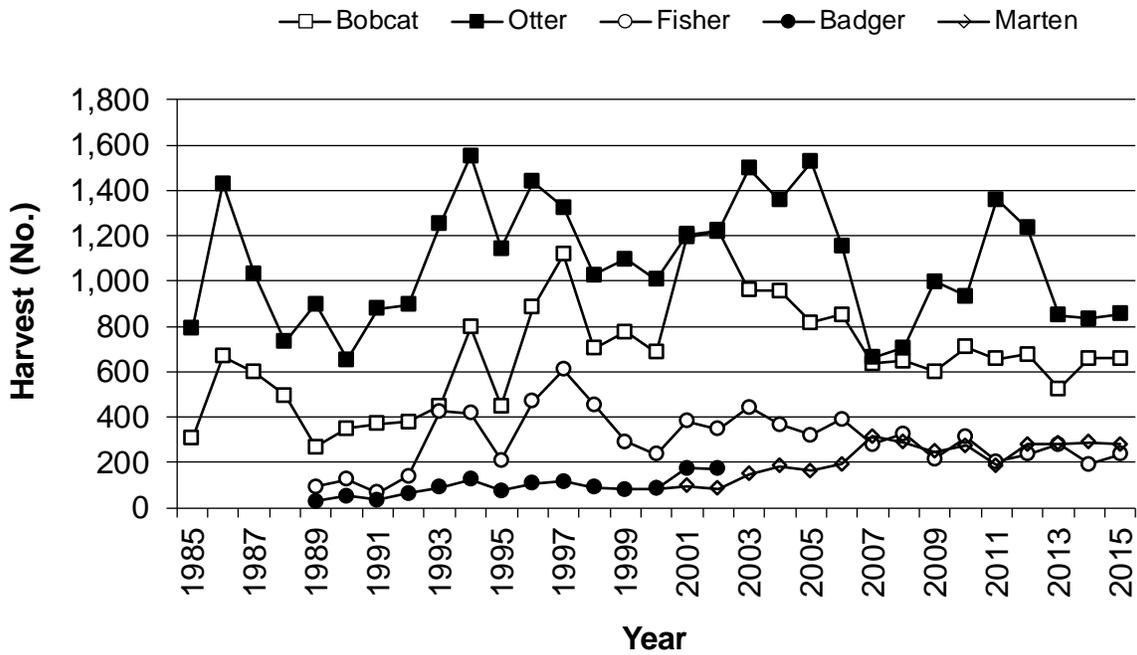


Figure 11. Number of bobcat, otter, fisher, badger, and marten registered by furtakers in Michigan, 1985-2015. Badger and fisher seasons were established in 1989, and marten season started in 2000. Totals for 2013 were preliminary. Beginning in 2003, badger were no longer registered. Registration totals 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 2015 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 ^c	
UP (units A and B)	December 1 – February 1
NLP (units C, D, E, and F)	December 10 – 20
Badger ^c	
UP and NLP	October 15 – November 14
SLP	November 1 – March 1
Fisher and Marten ^c	
UP	December 1 – 15
Beaver and Otter ^{c,d}	
UP	October 25 – April 17
NLP	November 1 – April 17
SLP	November 10 – March 31
Hunting seasons	
Bobcat ^c	
UP (units A and B)	January 1 – March 1
NLP (Unit C)	January 1 – March 1
NLP (Unit D)	January 1 – February 1
NLP (units E and F)	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 nonresidents could not trap badger, bobcat, fisher, marten, or otter. In addition, the opening date for nonresident beaver trapping varied by area.

^cNo nonresident season existed for badger, bobcat, fisher, marten, and otter.

^dResident seasons only. Nonresident beaver season occurred during November 15-April 17 (UP), November 24-April 17 (NLP), and December 15 – March 31 (SLP).

Table 2. Number of fur harvester licenses sold and people receiving and returning harvest questionnaire, 2012-2015.

Item	Year			
	2012	2013	2014	2015
Licenses sold ^a	28,776	31,839	28,035	26,873
Individuals buying licenses ^{a,b}	28,425	31,707	28,029	26,865
Mentored youth license buyers ^c	10,406	12,433	12,915	11,929
Questionnaires mailed	4,200	4,200	4,200	4,200
Non-deliverable questionnaires	69	81	69	85
Questionnaires returned	2,499	2,317	2,329	2,267
Questionnaires returned (%) ^d	60	56	56	55

^aLicense types included Fur Harvester, Senior Fur Harvester, and Lifetime Fur Harvester.

^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, 2012-2015.

Activity	2013		2014		2015		Change between 2014 and 2015 (%)
	Estimate	95% CL	Estimate	95% CL	Estimate	95% CL	
Trapped							
Number	10,712	593	9,636	518	9,077	500	-6
%	34	2	34	2	34	2	-1
Hunted							
Number	10,785	598	9,817	521	9,392	505	-4
%	34	2	35	2	35	2	0
Trapped or hunted ^a							
Number	16,962	627	15,574	543	14,792	528	-5
%	53	2	56	2	55	2	-1
Trapped only							
Number	6,177	501	5,757	442	5,400	424	-6
%	19	2	21	2	20	2	0
Hunted only							
Number	6,250	506	5,939	447	5,715	434	-4
%	20	2	21	2	21	2	0
Trapped and hunted							
Number	4,535	431	3,878	375	3,676	364	-5
%	14	1	14	1	14	1	0

^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 2014 and 2015 (P<0.005).

Table 4. Estimated number of participants, harvest, and days afield during Michigan furbearer seasons, 2014 and 2015.

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 (%)
	2014	2015			2014	2015			2014	2015		
Trapping												
Mink	3,393	2,819	324	-17	12,202	8,563	2,404	-30	90,525	64,853	10,629	-28*
Raccoon	6,595	5,302	420	-20*	73,465	50,197	7,584	-32*	150,994	118,322	14,000	-22*
Opossum	1,952	2,077	281	6	11,244	11,492	3,388	2	49,889	52,270	9,962	5
Skunk	1,510	1,442	238	-5	5,496	5,570	1,670	1	43,467	37,614	9,479	-13
Weasel	861	531	146	-38	2,240	1,477	1,025	-34	21,289	12,582	4,590	-41
Red fox	2,584	2,751	321	6	4,363	5,473	1,279	25	67,283	71,355	12,254	6
Gray fox	1,454	1,181	217	-19	1,321	759	259	-43	45,440	33,396	8,294	-27
Coyote	4,341	4,178	382	-4	9,743	13,548	3,325	39	118,005	109,516	14,890	-7
Bobcat ^b	1,398	1,350	60	-3	381	369	39	-3	19,268	18,494	1,320	-4
Beaver ^c	2,460	2,500	306	2	15,089	18,330	4,898	21	48,388	49,133	9,414	2
Muskrat	5,028	4,504	395	-10	185,677	188,904	40,096	2	129,656	106,493	13,694	-18
Otter ^c	1,187	1,100	59	-7	1,037	985	84	-5	19,890	20,403	1,804	3
Fisher ^d	537	705	41	31*	165	274	28	66*	4,709	5,734	429	22*
Badger	224	237	99	6	153	142	83	-7	6,013	2,638	1,423	-56
Hunting												
Raccoon	3,572	3,070	334	-14	35,317	33,466	8,282	-5	52,962	49,908	9,431	-6
Red fox	2,664	2,615	314	-2	1,626	1,586	501	-2	33,888	33,799	7,718	0
Gray fox	1,228	1,262	223	3	223	214	131	-4	15,894	17,490	5,357	10
Coyote	7,511	7,517	476	0	13,821	12,039	2,883	-13	100,853	95,862	11,682	-5
Bobcat ^b	2,002	1,926	67	-4	349	311	33	-11	17,539	16,278	1,080	-7
Trapping and hunting combined												
Raccoon	8,579	7,108	464	-17*	108,783	83,662	11,681	-23	203,956	168,230	17,794	-18
Red fox	4,595	4,731	403	3	5,989	7,059	1,405	18	101,171	105,154	15,713	4
Gray fox	2,385	2,197	289	-8	1,544	972	290	-37	61,335	50,887	10,233	-17
Coyote	9,929	9,918	512	0	23,564	25,587	4,503	9	218,857	205,378	20,044	-6
Bobcat ^b	3,108	2,969	73	-4	730	681	51	-7	36,807	34,772	1,722	-6

^a95% CL for the 2015 estimate.

^bBobcat estimates from separate mail harvest survey (Frawley 2017c). See Table 5 for registration totals.

^cOtter estimates from separate mail harvest survey (Frawley 2017b). See Table 5 for registration totals.

^dFisher estimates from separate mail harvest survey (Frawley 2017a). See Table 5 for registration totals.

*Non-overlapping 95% confidence intervals indicated estimates differed significantly between 2014 and 2015 (P<0.005).

Table 5. Number of bobcat, otter, fisher, badger and marten registered by furtakers in Michigan, 1985-2015.^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	265	85	0	350	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	449	1,143	210	75	
1996	463	420	0	883	1,438	471	109	
1997	347	771	0	1118	1,324	609	117	
1998	331	373	0	704	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	635	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	1,234	237		279
2013	217	308	0	525	849	280		284
2014	333	325	0	658	834	191		289
2015 ^e	286	298	0	584	856	237		280

^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 (i.e., excluded accidental take).

^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, 2015.

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	105	65	128	104	36	39
Northern Lower Peninsula	112	69	87	61	50	74
Southern Lower Peninsula	58	49	93	87	0	0
Unknown	12	22	12	22	0	0
Statewide	287	109	319	150	85	83

^aSee Figure 1 for region boundaries.

^bIncidental bobcats caught in counties.

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, 2015.

Beaver trapper group	Trappers		Days afield		Harvest	
	No.	95% CL	No.	95% CL	No.	95% CL
Without an otter harvest tag	1,102	210	19,259	5,996	4,578	1,891
With an otter harvest tag	1,399	233	13,753	4,537	13,753	4,537
Combined	2,500	306	49,133	9,414	18,330	4,898

Table 8. Furtakers' level of satisfaction with the number of animal or animal sign seen during the 2015 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	73	6	18	6	7	4	2	2
Fox	56	16	23	14	15	11	6	8
Coyote	63	5	23	4	11	3	3	2
Bobcat	43	15	30	14	24	13	3	5
Fisher	20	24	39	29	30	27	10	18
Mink	33	29	56	31	11	19	0	0
Muskrat	73	7	15	5	11	5	1	1
Beaver	81	11	15	10	4	5	0	0

^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 2015 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	60	7	18	6	16	5	6	3
Fox	32	15	32	15	29	15	6	8
Coyote	25	4	36	5	33	5	6	2
Bobcat	22	13	35	15	40	15	3	5
Fisher	20	23	20	24	50	30	10	18
Mink	33	29	45	31	22	26	0	0
Muskrat	70	7	15	5	14	5	1	2
Beaver	64	13	22	11	14	9	0	0

^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 2015, 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	71	7	18	6	6	3	5	3
Fox	56	16	21	13	18	12	6	8
Coyote	60	5	27	4	9	3	3	2
Bobcat	54	15	27	14	16	11	3	5
Fisher	30	27	39	29	30	27	0	0
Mink	33	29	67	29	0	0	0	0
Muskrat	79	6	15	5	6	3	1	2
Beaver	76	11	18	10	4	5	2	4

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