



# FOX AND COYOTE TRAPPING SURVEY

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## ABSTRACT

*This survey was done to estimate the number of trappers that used foothold traps and snares to catch fox or coyotes and determine their trapping effort and harvest of fox and coyotes. In addition, trappers were asked to report the types and number of animals besides coyote and fox that were captured in foothold traps and snares. An estimated 2,906 trappers attempted to capture fox or coyotes with foothold traps or snares during the 2003-2004 season. Most trappers used foothold traps (92%), while 50% of the trappers used snares. An estimated 2,665 trappers caught an estimated 7,763 coyotes and 8,049 fox in foothold traps. About 70% of these trappers caught an animal besides fox and coyote in their foothold traps that were set for fox or coyote. The most common animals other than fox and coyote caught in foothold traps were opossums (10,546), raccoons (7,618), and skunks (4,506). About 1,447 trappers used snares and caught 3,028 coyotes and 1,298 fox. About 17% of these trappers caught an animal besides fox and coyote in their snares that were set for fox or coyote. The most common animals besides fox and coyote caught in snares were raccoons (248) and domestic dogs (107).*

## INTRODUCTION

In Michigan, trappers could use foothold traps or snares to trap fox and coyote. Many fox and coyote trappers in Michigan relied on foothold traps because snares were not legal to use in Michigan prior to 2001. Thus, many trappers in Michigan have limited experience with snares. Beginning in 2001, trappers were permitted to use snares during the winter to capture fox and coyote in Michigan. During the 2003-2004 trapping season, fox and coyote could be trapped using foothold traps in Michigan from October 15 through March 1. Snares could be used from January 1 through March 1.



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Snares were intended to be used as a non-lethal restraining device for fox and coyote. Snares could only be used on private land, excluding commercial forest land. The snare had to be composed of a steel cable that was at least 1/16 inch diameter, and the loop of the snare could not exceed 15 inches diameter. Snares were required to have either a relaxing lock and stop to prevent the loop from closing less than 2.5 inches or a breakaway locking system with a breaking point not greater than 350 pounds. Snares were also required to have an anchor swivel, and they had to be anchored solidly to hold a fox or coyote (i.e., snares could not be attached to a drag). Spring poles, counter-balanced weights, springs or other similar devices could not be used to close the snare. The top of set snares was not to exceed 24 inches above the ground or compacted snow.

The primary goal of this study was to estimate the number of trappers that used foothold traps and snares to catch fox or coyotes and determine their trapping effort and harvest of fox and coyotes. In addition, trappers were asked to report the types and number of animals besides fox and coyote that were captured in foothold traps and snares. Trappers that used snares were also asked to report what sources of information they had used to learn how to set snares for fox and coyote.

## **METHODS**

Following the 2003-2004 furbearer trapping seasons, a questionnaire was sent to 8,000 randomly selected individuals that had purchased a fur harvester license (Frawley 2004). All licensees had an equal chance of being included in the random sample. Trappers receiving the questionnaire were asked to report whether they attempted to trap fox or coyote. These trappers also were asked to report whether they had used snares. From this initial survey, 1,033 trappers reported they had attempted to trap fox or coyote in 2003-2004, and 424 of these trappers reported they had used snares.

In June 2004, a follow-up questionnaire was sent to the 1,033 trappers that had reported attempting to trap fox and coyote. Up to two follow-up questionnaires were mailed to nonrespondents. Only 6 of the questionnaires were undeliverable. Of the questionnaires that were delivered, 859 questionnaires (84%) were completed and returned.

Estimates from the sample were extrapolated to all fox and coyote trappers in 2003-2004, as estimated during the initial fur harvesters survey (Frawley 2004). Because these estimates were based on information collected from random samples of hunting license buyers, they were subject to sampling errors (Cochran 1977). Estimates were calculated using a simple random sampling design and were presented along with their 95% confidence limit (CL). In theory, this confidence limit can be added and subtracted from the estimate to calculate the 95% confidence interval. The confidence interval is a measure of the precision associated with the estimate and implies that the true value would be within this interval 95 times out of 100. Unfortunately, there are several other possible sources of error in surveys not evident in calculations of sampling error. They include failure of participants to provide answers (nonresponse bias), question wording, and question order. It is very difficult to measure these biases; thus, estimates were not adjusted for these possible biases.

## RESULTS

Although all trappers receiving the questionnaire had previously indicated they had attempted to trap fox or coyotes,  $11 \pm 2\%$  of the trappers reported they had not attempted to trap fox or coyotes. Thus, an estimated  $2,906 \pm 60$  trappers had attempted to capture fox or coyotes with traps or snares in 2003-2004. Most trappers used foothold traps (92%), while 50% of the trappers used snares (Table 1). Most trappers preferred to use foothold traps (59%), while 21% preferred to use snares (Table 1). Relatively few trappers used conibears or box traps, but a few trappers preferred to use these trap types. An estimated 19% of trappers did not have a preferred trap type.

An estimated  $2,665 \pm 74$  trappers set an average of  $11 \pm 1$  foothold traps per day. These trappers most frequently set traps during November ( $77 \pm 3\%$ ), December ( $58 \pm 3\%$ ), and October ( $47 \pm 3\%$ ) (Figure 1). Trappers caught an estimated  $7,763 \pm 1,196$  coyotes and  $8,049 \pm 1,195$  fox in foothold traps. About  $70 \pm 3\%$  of these trappers caught an animal besides fox and coyote in their traps that were set for fox or coyote. The most common animals besides fox and coyote caught in foothold traps were opossums (10,546), raccoons (7,618), and skunks (4,506) (Table 2). Nearly 45% of trappers using foothold traps caught either a raccoon or opossum (Table 2), while 35% of these trappers caught a skunk. About 9% of trappers using foothold traps caught a domestic cat, and 7% caught a domestic dog. Most of the cats ( $68 \pm 26\%$ ) and dogs ( $51 \pm 25\%$ ) were caught in the Southern Lower Peninsula (south of a line from Muskegon County to Saginaw Bay).

About  $1,447 \pm 94$  trappers used snares, and these trappers set an average of  $12 \pm 2$  snares per day. These trappers caught  $3,028 \pm 662$  coyotes and  $1,298 \pm 265$  fox in their snares. About  $17 \pm 3\%$  of these trappers caught other animals in their snares that were set for fox or coyote. The most common animals besides fox and coyote caught in snares were raccoons (248) and domestic dogs (107) (Table 3). Nearly 8% of trappers using snares caught a raccoon, while 4% of these trappers caught a domestic dog, and 1% caught a domestic cat. Most of the dogs ( $68 \pm 36\%$ ) and cats (100%) were caught in the Southern Lower Peninsula.

The primary sources of information that trappers used for learning how to set snares were magazines ( $63 \pm 4\%$ ), books ( $53 \pm 4\%$ ), friends ( $41 \pm 4\%$ ), trapping conventions ( $30 \pm 4\%$ ), and videos ( $28 \pm 4\%$ ). Relatively few trappers reported obtaining information from Department of Natural Resources (DNR) publications ( $18 \pm 3\%$ ) or other family members ( $13 \pm 3\%$ ).

## DISCUSSION

Trapping using foothold traps declined in January and February compared to November and December (Figure 1). Several factors may explain this decline in trapper participation. Throughout the state, snow depth increases in January and February limiting access to trap sites and making it more difficult to place and maintain foothold traps. Additionally, snaring season for fox and coyote extends from January through March. Fifty percent of respondents reported using snares for fox and coyote, and these individuals may switch from using foothold sets (which are more difficult to maintain in snow) to using snares when the snaring season is open.

Trappers using foothold traps accounted for over twice the number of coyotes caught as trappers using snares (7,800 versus 3,000). Proportionately, however, coyotes accounted for 70% of canids harvested by snare users, while foothold users took nearly equal numbers of fox and coyotes. There may be many reasons for the differences in the fox and coyote capture rates between trap types. Coyotes may be more susceptible than fox to snares during the winter, or snares may target coyote better than fox because of the loop restrictions. Furthermore, trappers using snares may be pursuing coyotes more than fox.

The types of animals besides fox and coyotes captured varied depending on the trap type (Tables 2 and 3). With the exception of turkey, no bird species were captured in snares. Turkeys frequently walk on game trails; thus, they are susceptible to capture in snares. Beginning with the 2004-2005 season, all snares must be equipped with a stop that will prevent the snare's loop from closing less than 2.5 inches in diameter. This change should allow turkeys to escape from snares. Several bird species were captured in foothold traps. Crows were the most frequently captured bird and were caught by 5% of trappers. Additionally, skunk and opossum were frequently caught by trappers using footholds sets, however; these species were infrequently caught in snares. Many factors likely contribute to these differences. Skunk and opossum are less active during January through March when snaring is permitted. Furthermore, snares set for fox and coyote may be placed too high off the ground to capture smaller animals. Capture of birds (particularly crows) was likely the result of bait being used in many foothold trap sets; whereas, generally snares were set without bait. Our survey did not gather information on the percentage of incidental captures that were released unharmed, injured, or killed.

Although trappers may set traps and snares primarily for fox and coyotes, many other furbearers were caught. Many of these furbearers, such as badger, bobcat, fisher, marten, mink, opossum, otter, raccoon, and skunk were also welcome catches by many trappers. Thus, many of these furbearers should not be considered undesirable or accidental catches.

Trapper education regarding the proper use of foothold traps and snares is important for minimizing the potential for taking animals besides fox and coyote. Less than 20% of the trappers that used snares reported obtaining information about their use from DNR publications. DNR publications were designed to assist trappers to use snares legally as non-lethal restraining devices. It is unknown whether the other educational sources exclusively teach non-lethal techniques. To ensure that trappers are learning proper techniques, the DNR needs to stress that snares are to be used as non-lethal restraining devices and make their educational material more widely accessible.

## **ACKNOWLEDGEMENTS**

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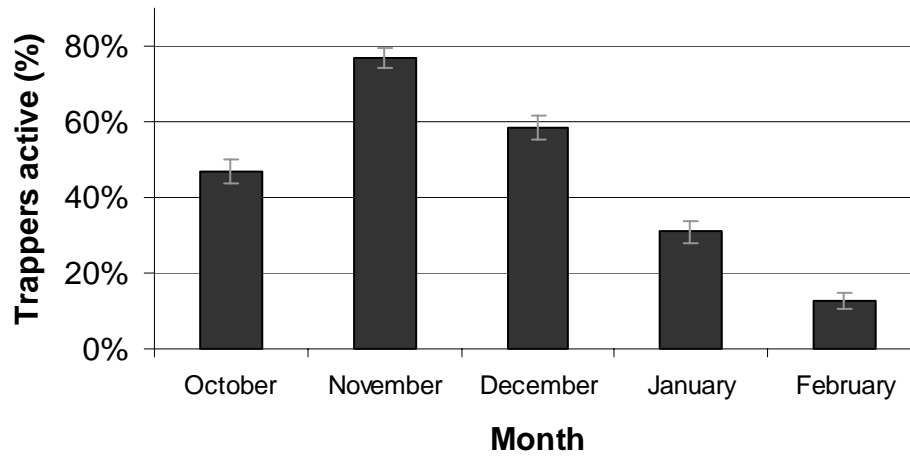


Figure 1. Proportion of Michigan trappers using foothold traps that were active during each month, 2003-2004.

Table 1. Trap types used by fox and coyote trappers, and the trappers' preferred type of trap.

Trap type	Trappers using specified equipment				Traps preferred			
	%	95% CL	No.	95% CL	%	95% CL	No.	95% CL
Footholds	92	2	2,665	74	59	3	1,703	94
Snares	50	3	1,447	94	21	3	619	74
Conibears	6	1	187	44	1	1	31	18
Box traps	1	1	38	20	0	0	4	6
No preference					19	2	542	70

Table 2. The estimated proportion of trappers using foothold traps for fox and coyote that caught animals besides fox and coyote and the estimated number of these other animals caught in the 2003-2004 season.

Species	Trappers that caught animals besides fox and coyotes (%)	95% CL	Estimated number of animals caught	95% CL
Badger	3	1	126	54
Birds, miscellaneous	1	1	34	31
Bobcat	4	1	302	152
Cat, domestic	9	2	920	328
Crow	5	1	237	82
Dog, domestic	7	2	328	110
Fisher	2	1	351	273
Hawk, owl, or vulture	2	1	111	95
Marten	<1	<1	8	13
Mink	1	1	50	39
Opossum	44	3	10,546	1,536
Otter	<1	<1	4	6
Pheasant and grouse	<1	<1	19	23
Porcupine	2	1	153	80
Rabbit and hares	7	2	367	117
Raccoon	45	3	7,618	1,095
Skunk	35	3	4,506	855
Squirrels, ground	<1	<1	8	9
Squirrels, tree	3	1	202	110
Turkey	1	1	42	28
Wolf	1	<1	23	20
Woodchuck	<1	<1	11	14

Table 3. The estimated proportion of trappers using snares for fox and coyote that caught animals besides fox and coyote, and the estimated number of these animals caught in the 2003-2004 season.

Species	Trappers that caught animals besides fox and coyotes (%)	95% CL	Estimated number of animals caught	95% CL
Bobcat	<1	<1	4	6
Cat, domestic	1	1	19	17
Deer	2	1	27	17
Dog, domestic	4	2	107	49
Fisher	1	1	8	9
Opossum	2	1	31	22
Porcupine	1	1	23	20
Rabbit and hares	1	1	27	23
Raccoon	8	2	248	103
Turkey	<1	<1	4	6
Wolf	<1	<1	4	6
Woodchuck	<1	<1	4	6



Appendix A. The questionnaire sent to a sample of fox and coyote trappers in this study.



# 2004 FUR HARVESTER OPINION 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 any coyote or fox during the most recent trapping seasons. If you did not attempt to trap fox or coyote last year, please answer "No" to Question 1 and return this questionnaire.
- Only the person this questionnaire was addressed to should answer these questions.

## PART A: General Questions

1. Did you attempt to catch coyote or fox with traps or snares in the 2003-04 season?

- 1  YES                      2  NO (Please mail this survey back now.)

2. Which capture method did you use when you attempted to catch coyote and fox? (Check all that apply.)

- 1  FOOTHOLD TRAPS   2  SNARES   3  CONIBEARS   4  BOX TRAPS

3. Which capture method do you prefer to catch coyote and fox? (Check one.)

- 1  FOOTHOLD TRAPS   2  SNARES   3  CONIBEARS   4  BOX TRAPS   5  NO PREFERENCE

## PART B: Questions about trapping with foothold traps

4. Did you attempt to catch coyote or fox with foothold traps during the 2003-04 season?

- 1  YES (go to Question 5)                      2  NO (go to Question 9)

5. During which months did you attempt to capture coyote or fox with foothold traps? (select all months that apply.)

- 1  OCTOBER                      2  NOVEMBER   3  DECEMBER   4  JANUARY   5  FEBRUARY

6. Record the number of days you had foothold traps set for coyote or fox, the average number of foothold traps you set daily, and the number of coyote and fox caught during the entire season with these foothold traps during the 2003-04 season?

Number of days you had foothold traps set for coyote or fox:  _____ DAYS	Average number of foothold traps set daily for coyote or fox:  _____ FOOTHOLD TRAPS	Number of coyote and fox captured with foothold traps:  _____ COYOTE _____ FOX
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7. Did you catch any animals or birds besides coyote and fox in your foothold traps that were set for coyote or fox during the 2003-04 season?

- 1  YES (go to Question 8)                      2  NO (go to Question 9)

8. Record the types and number of animals and birds besides coyote and fox that you caught in your foothold traps that were primarily set to capture either coyote or fox in the 2003-04 season.

List the type of animals or birds besides coyote and fox caught in foothold traps	Number caught in foothold traps

**PART C: Questions about trapping with snares**

9. Did you attempt to catch coyote or fox with snares during the 2003-04 season?

- 1  YES (go to Question 10)      2  NO (skip the remaining questions and return questionnaire)

10. Record the number of days you had snares set for coyote or fox, the average number of snares you set daily, and the number of coyote and fox caught during the entire season with these snares during the 2003-04 season?

Number of days you had snares set for coyote or fox: _____ DAYS	Average number of snares set daily for coyote or fox: _____ SNARES	Number of coyote and fox captured with snares: _____ COYOTE _____ FOX
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11. Did you catch any animals or birds besides coyote and fox in your snares that were set for coyote or fox during the 2003-04 season?

- 1  YES (go to Question 12)      2  NO (go to Question 13)

12. Record the types and number of animals and birds besides coyote and fox that you caught in your snares that were primarily set to capture either coyote or fox in the 2003-04 season.

List the type of animals or birds besides coyote and fox caught in snares	Number caught in snares

13. What were your primary sources of information you used to learn how to set snares for capturing coyote and fox? (select all choices that apply.)

- 1  MAGAZINES    2  BOOKS      3  VIDEOS      4  WORKSHOPS    5  CONVENTIONS  
 6  FAMILY      7  FRIENDS      8  MICHIGAN DNR PUBLICATIONS    9  OTHER (Please specify \_\_\_\_\_)

*Please return questionnaire in the enclosed postage-paid envelope.  
Thank you for your help.*

Fisher, Bobcat, Coyote Coyote, Badger Raccoon, Striped Skunk, Opossum Coyote Cougar Arctic Fox Coyote Coyote Coyote Beaver  
Coyote Coyote Arctic Fox Coyote, Red Fox Red Fox, Raccoon, Coyote, Opossum Red Fox, Raccoon, Coyote, Opossum Raccoon,  
Striped Skunk, Opossum. Tern and Chick. The target animals trapped during these operations to reduce habitat damage or predation on  
the rare species are either removed or relocated after capture.Â The first region-wide aerial survey to estimate nutria herbivory damage  
was conducted in 1993 because reduced trapping resulting from lower fur prices allowed nutria, and eat-outs, to increase. Snare traps  
are a kind of coyote trap that hunts and kills the animal by wrapping around their neck and killing them. Sometimes, with snare traps, you  
might miss your shot and catch the animal by a limb. In such cases, hunters can kill the animal by themselves.Â A good quality coyote  
trap will be lightweight and easy to carry. It shouldnâ€™t be too bulky to work with because half of your energy goes into setting it up.  
Easy to Use. Coyote Trapping. Coyotes are a nasty animal. They will eat your cat and kill your dog. Kill and eat livestock and devastate  
the local game population. Moreover, their range is expanding all the time. Fox trappers east of the Mississippi River are now mainly  
coyote trappers as the coyotes have scarced the previously abundant red fox population. One of the worst things to do with coyotes is  
to treat coyote trapping like you are trapping a big fox . The range of a coyote is vastly larger than a fox's. A good fox set in a great  
location may yield results within three days where a good coyot...