



## 2011 SMALL GAME HARVEST SURVEY

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### Abstract

*A survey was completed to estimate the number of people hunting small game, their days afield, and harvest during the 2011 hunting seasons. The survey also was used to investigate hunter satisfaction, compliance with the Harvest Information Program (HIP), estimate the number of people hunting on Hunting Access Program (HAP) lands (private land leased for hunting), and estimate the number of hunters using the internet application Mi-Hunt to locate hunting areas. In 2011, 256,184 people purchased small game hunting licenses, a decrease of about 2% from 2010. An estimated 153,890 people actually hunted small game species in 2011, which declined significantly by 5% from 2010. Small game hunters most often sought ruffed grouse, squirrels, and cottontail rabbits. The number of hunters pursuing quail, woodcock, cottontail rabbit, squirrel, crow, and coyote did not change significantly between 2011 and 2010; however, fewer hunters sought pheasant (-15%), grouse (-9%), and snowshoe hare (-20%). Hunting effort did not change significantly for any species between 2010 and 2011, except for squirrel which increased 23%. Furthermore, harvest did not change significantly for any species between 2010 and 2011. Compared to 2010, a greater proportion of small game hunters in 2011 were satisfied with their overall small game hunting experience (63% in 2011 versus 58% satisfied in 2010). In addition, a greater proportion of small game hunters were satisfied with the amount of small game harvested (33% in 2011 versus 28% in 2010); however, a similar proportion of hunters were satisfied with the amount of small game seen. In 2011, 92% of migratory bird hunters had registered with HIP. In 2011, an estimated 2,698 hunters spent 9,663 days afield hunting small game on HAP lands. In 2011, an estimated 8,100 small game hunters used the internet application Mi-Hunt to assist with their small game hunting. Most of these hunters were satisfied with how easy the application was to use (73%), the quality of maps (74%), and the accuracy of information (71%) from Mi-Hunt.*



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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. This responsibility is shared with the U.S. Fish and Wildlife Service (USFWS) for the management of migratory species such as woodcock (*Scolopax minor*), ducks (Anatinae), and geese (*Branta* and *Anser* spp.). Harvest surveys are one of the management tools used by the DNR to accomplish its statutory responsibility. Estimates derived from harvest surveys, as well as breeding bird counts, are used to monitor game populations and help establish harvest regulations.

Since the 1950s, the primary small game species harvested in Michigan have been ring-necked pheasant (*Phasianus colchicus*), ruffed grouse (*Bonasa umbellus*), American woodcock, cottontail rabbit (*Sylvilagus floridanus*), snowshoe hare (*Lepus americanus*), squirrels (*Sciurus* spp. and *Tamiasciurus hudsonicus*), and American crow (*Corvus brachyrhynchos*) (Frawley 2012). Most of these animals could be harvested during fall and early winter (Table 1) by a person possessing a small game hunting license (includes resident, nonresident, 3-day nonresident, resident junior, and senior small game hunting licenses). Coyotes (*Canis latrans*) could be harvested in Michigan by hunters possessing either a small game hunting (residents) or a fur harvesters license (residents and nonresidents). Woodcock and waterfowl hunters were required to register with the National Migratory Bird Harvest Information Program (HIP). Landowners and their families that hunted small game on their property where they resided could hunt without a hunting license, although they still needed to register with HIP if they hunted migratory game birds.

Waterfowl could be harvested by a person possessing both a waterfowl and a small game hunting license. Waterfowl hunters also had to obtain a federal waterfowl stamp and register with the HIP. Hunters younger than 16 years of age could hunt waterfowl without a waterfowl hunting license or a federal waterfowl stamp; however, they still were required to purchase a small game license and register with the HIP.

The HIP is a cooperative effort between state wildlife agencies and the USFWS. It was implemented to improve knowledge about harvest of migratory game birds. Beginning in 1995, any person who hunted migratory game birds in Michigan was required to register with HIP and answer several questions about their hunting experience during the previous year. The HIP provided the USFWS with a national registry of migratory bird hunters from which they can select participants for harvest surveys.

Estimating harvest, hunter numbers, and hunting effort were the primary objectives of the small game harvest survey. This survey also provided an opportunity to collect information about management issues. Questions were added to the questionnaire to investigate hunter satisfaction with the 2011 hunting season and small game numbers, to estimate the number of people hunting on Hunting Access Program (HAP) lands (private land leased for hunting), and to estimate the number of hunters using the internet application Mi-Hunt to locate hunting areas.

## METHODS

Following the 2011 small game hunting seasons, a questionnaire (Appendix A) was sent to 9,989 randomly selected people that were eligible to hunt small game. Hunters reported species hunted, county hunted, type of land on which hunt occurred (public or private lands), number of days spent afield, and number of animals harvested. In addition, hunters were asked whether they had hunted waterfowl and to rate their overall hunting experience and indicate their satisfaction with the amount of game seen and amount harvested, and number of days in the hunting season.

Estimates were calculated using a stratified random sampling design (Cochran 1977). Using stratification, hunters were placed into similar groups (strata) based on their county of residence. Residents of the Upper Peninsula (UP), northern Lower Peninsula (NLP), southern Lower Peninsula (SLP), and nonresidents and licensees with unknown residency were grouped into separate strata (Figure 1). The overall sample consisted of 1,185 people from the UP stratum (N= 30,796), 2,272 people from the NLP stratum (N= 59,908), 6,093 from the SLP stratum (N= 154,256), and 439 people from the nonresident and unknown residency stratum (N=11,224). 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 contributed to the statewide population of hunters. 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 were to be repeated.

Coyotes could be harvested in Michigan by hunters possessing either a small game hunting (residents) or a fur harvesters license (residents and nonresidents). The DNR sells hunting licenses using a statewide automated license sales system. This system allowed the DNR to maintain a central database containing license sales information (e.g., sales transactions) for each license buyer. Using the license sales database, small game hunting license buyers that also purchased a fur harvesters license were identified, and then coyote harvest was estimated separately for small game licensees with and without a fur harvesters license. The license sales database also was used to identify whether small game hunting licensees had registered with HIP. Using this information, estimates of compliance with HIP among small game hunting license buyers hunting migratory species (woodcock) was estimated.

Estimates were derived separately for the UP, NLP, and SLP (Figure 1). Hunting effort and animals harvested from unknown locations were allocated among areas in proportion to the known effort and harvest.

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 can occur for many reasons, including the failure to include a segment of the 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) and by unlicensed landowners and their family that legally hunted on their own land.

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).

Questionnaires were mailed initially in mid-April. Up to two follow-up questionnaires were sent to non-respondents. Questionnaires were undeliverable to 228 people, primarily because of changes in residence. Questionnaires were returned by 5,219 people, yielding a 53% adjusted response rate.

## **RESULTS AND DISCUSSION**

### **License sales and hunter participation**

In 2011, 256,184 people purchased small game hunting licenses, a decrease of about 2% from 2010 (Table 2). About  $60 \pm 1\%$  of the licensees actually hunted in 2011 (Tables 2 and 3), which was a smaller proportion than was reported in 2010 (60 versus 62%). An estimated 153,890 people actually hunted small game species in 2011 (excluded people hunting waterfowl only), which declined significantly by 5% from 2010 (Table 3). About 96% of the active small game hunters were males (Table 3). Hunters most often sought ruffed grouse, squirrels, and cottontail rabbits (Table 4). In 2011, the average age of small game license buyers was 43 years (Figure 2). Nearly 11% (29,255) of the license buyers were younger than 17 years old.

### **Harvest and hunting trends**

The number of people buying a small game hunting license in 2011 was about 40% less than the number of people who purchased a license ten years ago in 2001 (347,429 people purchased a license in 2001). There were fewer license buyers for most age classes between 12 and 54 years of age in 2011, compared to 2001 (Figure 3). However, there were increased hunter numbers among the youngest and oldest age classes in 2011. The increased hunter numbers 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. The increased participation among the youngest hunters likely reflected the lowering of the minimum age requirements. In 2011, it was legal for 10 and 11 year olds to hunt small game; while the hunters had to be at least 12 years old to participate in 2001.

The number of hunters pursuing quail, woodcock, cottontail rabbit, squirrel, crow, and coyote did not change significantly between 2011 and 2010; however, fewer hunters sought pheasant (-15%), grouse (-9%), and snowshoe hare (-20%, Table 4). Hunting effort did not change significantly for any species between 2010 and 2011, except for squirrel which increased 23% (Table 5). Furthermore, harvest did not change significantly for any species between 2010 and 2011 (Table 6).

Coyotes could be harvested in Michigan by hunters possessing either a small game hunting (residents) or a fur harvesters license (residents and nonresidents). In 2011, an estimated 34,547 small game hunters pursued coyotes (Tables 4 and 7). About 74% of these hunters possessed only a small game hunting license (Table 7), and they were responsible for 62% of the coyotes taken by all small game license holders.

The number of small game hunters in Michigan has declined about 77% since the mid-1950s and is currently at a record low (Figure 4). This trend has been previously reported in Michigan and nationally (Brown et al. 2000, Enck et al. 2000, Frawley 2006, U.S. Department of the Interior 2008). Hawn (1979) speculated declining ring-necked pheasant populations was the primary reason for declining small game hunter numbers in Michigan. The number of people hunting pheasants has declined by about 95% between the mid-1950s and recent years (Figure 5). Many other factors have contributed to the decline of small game hunting, including increased urbanization of the human population, increased competition between hunting and other leisure activities, and loss of wildlife habitat (Brown et al. 2000).

Declining small game hunting participation since the mid-1950s also has been noted among hunters pursuing cottontail rabbits (-85%), snowshoe hare (-84%), and squirrels (-66%, Figure 5). Changes in hunter participation and harvest were generally similar.

Hunter numbers in the 1970s through the early 1980s were likely affected by the initiation and subsequent elimination of the put-take pheasant program (Figure 6). This program was created for the purpose of providing additional pheasant hunting opportunities. Each year while the program existed, pen-raised pheasants were released on several state properties in southern Michigan (Janson 1975, Janson and Anderson 1976).

Changes in the harvest of game species and hunter participation usually track changes in game populations. The number of hunters that pursued pheasants, rabbits, snowshoe hares, and squirrels was at record low levels during recent years (Figure 5). Game population surveys have indicated pheasant, quail, and woodcock populations are currently among their lowest recorded levels since the 1960s (Frawley and Stewart 2008, Cooper and Rau 2013, Vander Wagen et al. 2013). The abundance of rabbit, hare, and squirrels was not monitored annually; thus, it was not possible to determine whether harvest and population trends were similar. Michigan's grouse population generally follows a cyclic pattern lasting about 10 years, and the grouse population in 2011 appeared to be approaching a peak after reaching the low in the present cycle during 2004-2005 (Vander Wagen et al. 2013).

Although many small game species are not as abundant today as during previous decades (e.g., pheasant, quail, woodcock), the mean number of animals taken per hunting effort has not paralleled changes in the population (Figure 7). For example, hunting efficiency has been high among hunters despite declining numbers of quail and woodcock.

About 31% of the small game hunters in Michigan hunted on private lands only, 24% hunted on public lands only, and 40% hunted on both private and public lands (Table 8). Private lands served as the primary area for hunters pursuing pheasants, quail, cottontail rabbits, squirrels, crows, and coyotes (Tables 8 and 9), while public lands were most popular among hunters pursuing grouse, woodcock, and snowshoe hares.

### **Hunter satisfaction**

Compared to 2010 (Frawley 2012), a greater proportion of small game hunters in 2011 were satisfied with their overall small game hunting experience (63% in 2011 versus 58% satisfied in 2010, Table 10). In addition, a greater proportion of small game hunters were satisfied with the amount of small game harvested (33% in 2011 versus 28% in 2010); however, a similar proportion of hunters were satisfied with the amount of small game seen.

### **Migratory bird hunters and Harvest Information Program (HIP) compliance**

An estimated  $74,736 \pm 3,099$  small game hunters hunted migratory birds (waterfowl and woodcock combined) in Michigan during 2011, compared to  $76,869 \pm 3,168$  in 2010. An estimated  $51,464 \pm 2,742$  hunters pursued waterfowl, and  $32,254 \pm 2,257$  hunters pursued woodcock in 2011. The number of waterfowl and woodcock hunters in 2011 was not statistically significant from 2010.

In 2011,  $92 \pm 1\%$  of migratory bird hunters had registered with HIP. About  $96 \pm 1\%$  of the waterfowl hunters and  $88 \pm 2\%$  of the woodcock hunters had registered with HIP. Compliance among hunters was unchanged from the rate of compliance in 2010 (Frawley 2012). Hunters registered with HIP were responsible for about 92% of the woodcock taken and 86% of the woodcock hunting trips done in 2011 (Table 11). Waterfowl hunters were not asked to report their harvest and hunting effort; thus, it was not possible to estimate harvest and effort for waterfowl among HIP registrants.

Cooper and Parker (2012) reported estimates of harvest, hunter numbers, and hunting effort of Michigan woodcock hunters in 2011 from an independent survey done by the USFWS. These estimates were based on responses received from a random sample of HIP registrants. Cooper and Parker estimated  $28,400 \pm 4,260$  hunters went afield  $144,000 \pm 25,920$  days and harvested  $106,900 \pm 29,932$  woodcock. Estimates of hunting effort were less than estimates from the present survey (Tables 4-6). Because nearly 15% of Michigan woodcock hunters failed to register with HIP, the estimates derived from the USFWS survey would be expected to be lower than estimates from the present survey. Estimates derived from a subset of Michigan hunters that had registered with HIP (Table 11) were not significantly different from estimates from the USFWS survey.

Frawley (2013) estimated  $45,786 \pm 1,029$  waterfowl hunters in Michigan during 2011 from the waterfowl harvest survey. In contrast, this current survey estimated  $51,464 \pm 2,742$  people hunted waterfowl. The previous estimate was obtained from a separate survey sent to a random sample of waterfowl license buyers and HIP registrants younger than 17 years old. The estimate from this small game harvest survey included a larger population of hunters, including many hunters that were not licensed to hunt waterfowl.

An estimated  $3,237 \pm 768$  youth hunters (10-15 years old) participated during the 2-day youth waterfowl hunting season (September 17-18), which was not significantly different from the number of participants in 2010 ( $2,902 \pm 728$ ). About  $16 \pm 4\%$  of the youth hunters eligible to hunt during the youth season actually participated.

### **Hunting access program**

The Michigan Hunting Access Program (HAP) was created in 1977 to lease private lands to provide access for hunting (Oliver 2005). About 10,000 acres on 75 farms were enrolled in HAP in 2011. An estimated 2,698 hunters spent 9,663 days afield hunting small game on HAP land (Table 12).

### **Mi-Hunt internet application**

The Michigan DNR developed an internet-based application called Mi-Hunt that could be used to locate hunting sites. In 2011, an estimated  $8,100 \pm 1,204$  small game hunters used Mi-Hunt to assist with their small game hunting. Most of these hunters were satisfied (combined very satisfied and somewhat satisfied responses) with how easy the application was to use ( $73 \pm 7\%$ ), the quality of maps ( $74 \pm 7\%$ ), and the accuracy of information ( $71 \pm 7\%$ ) from Mi-Hunt (Tables 13 and 14). Although most hunters that used Mi-Hunt were satisfied with it, most ( $62 \pm 7\%$ ) of these hunters also were uncertain whether Mi-Hunt had affected the quality of their small game hunting experience. In contrast,  $33 \pm 7\%$  of the hunters using Mi-Hunt reported it had improved the quality of their hunt and  $3 \pm 3\%$  reported it had decreased the quality of their hunt. In addition, about 1% of hunters did not provide an answer.

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### **LITERATURE CITED**

- Brown, T. L., D. J. Decker, W. F. Siemer, and J. W. Enck. 2000. Trends in hunting participation and implications for management of game species. Pages 145-154 in W. C. Gartner and D. W. Lime, editors. Trends in outdoor recreation, leisure, CAB International, New York, New York, USA.
- Cochran, W. G. 1977. Sampling techniques. John Wiley & Sons, New York, New York, USA.
- Cooper, T.R., and R.D. Rau. 2012. American woodcock population status, 2012. U.S. Fish and Wildlife Service, Laurel, Maryland, USA.
- Cooper, T.R., and R.D. Rau. 2013. American woodcock population status, 2013. U.S. Fish and Wildlife Service, Laurel, Maryland, USA.

- Enck, J. W., D. J. Decker, and T. L. Brown. 2000. Status of hunter recruitment and retention in the United States. *Wildlife Society Bulletin* 28:817-824.
- Frawley, B. J. 2006. Demographics, recruitment, and retention of Michigan hunters: 2005 update. *Wildlife Division Report* 3462. Michigan Department of Natural Resources, Lansing, Michigan, USA.
- Frawley, B. J. 2013. 2010 waterfowl harvest survey. *Wildlife Division Report*. Michigan Department of Natural Resources, Lansing, Michigan, USA.
- Frawley, B. J. 2012. 2010 small game harvest survey. *Wildlife Division Report* 3542. Michigan Department of Natural Resources, Lansing, Michigan, USA.
- Frawley, V. R. and C. A. Stewart. 2008. Pheasant and northern bobwhite quail status in Michigan, 2007. *Wildlife Division Report* (in review). Michigan Department of Natural Resources, Lansing, Michigan, USA.
- Hawn, L. J. 1979. Hunting results, Michigan small game seasons, 1978. *Surveys and Statistical Services Report* 189. Michigan Department of Natural Resources, Lansing, Michigan, USA.
- Janson, V. S. 1975. The 1974-75 pheasant put-take season. *Wildlife Division Report* 2736. Michigan Department of Natural Resources, Lansing, Michigan, USA.
- Janson, V. S. and R. Anderson. 1976. The 1975 put-take pheasant season. *Wildlife Division Report* 2770. Michigan Department of Natural Resources, Lansing, Michigan, USA.
- Oliver, T. E. 2005. Program history and evaluation of landowner incentives for Michigan's hunting access program. *Wildlife Division Report* 3446. Michigan Department of Natural Resources, Lansing, Michigan, USA.
- Payton, M. E., M. H. Greenstone, and N. Schenker. 2003. Overlapping confidence intervals or standard error intervals: what do they mean in terms of statistical significance? *Journal of Insect Science* 3:34.
- U.S. Department of the Interior. 2008. 2006 National survey of fishing, hunting, and wildlife-associated recreation. U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, Bureau of the Census, Washington, D.C., USA.
- Vander Wagen, R., C. A. Stewart, and L. Sargent. 2013. Ruffed grouse and American woodcock status in Michigan, 2013. *Wildlife Division Report* 3573. Michigan Department of Natural Resources, Lansing, Michigan, USA.

Table 1. Small game hunting seasons in Michigan, 2011-2012.

| Species, season, and area <sup>a</sup> | Season dates                               |
|--|--|
| Ring-necked pheasant                   |  |
| Upper Peninsula (Zone 1)               | Oct. 10 – 31                               |
| Lower Peninsula (Zone 2)               | Oct. 20 – Nov. 14                          |
| Lower Peninsula (Zone 3)               | Oct. 20 – Nov. 14 and<br>Dec. 1 – Jan. 1   |
| Northern bobwhite quail                |  |
| Southern Lower Peninsula               | Oct. 20 – Nov. 14                          |
| Ruffed grouse                          |  |
| Statewide                              | Sept. 15 – Nov. 14 and<br>Dec. 1 – Jan. 1  |
| American woodcock                      |  |
| Statewide                              | Sept. 24 – Nov. 7                          |
| Cottontail rabbit                      |  |
| Statewide                              | Sept. 15 – March 31                        |
| Snowshoe hare                          |  |
| Statewide                              | Sept. 15 – March 31                        |
| Squirrels                              |  |
| Statewide                              | Sept. 15 – March 1                         |
| American crow                          |  |
| Statewide                              | Aug. 1 – Sept. 30 and<br>Feb. 1 – March 31 |
| Coyote                                 |  |
| Statewide                              | July 15 – April 15                         |

<sup>a</sup>See Figure 1 for boundaries of hunt areas.

Table 2. Number of small game hunting licenses sold in Michigan, 2007-2011.

| Item  | Year    |         |         |         |         | 2010-2011<br>% Change |
|---|---------|---------|---------|---------|---------|-----------------------|
|   | 2007    | 2008    | 2009    | 2010    | 2011    |                       |
| Number of licenses sold <sup>a</sup>                      | 298,685 | 277,215 | 270,594 | 265,060 | 260,544 | -2                    |
| Number of people buying a<br>hunting license <sup>b</sup> | 293,662 | 273,243 | 266,549 | 261,050 | 256,184 | -2                    |

<sup>a</sup>The number of licenses sold is higher than the number of people buying licenses because some people purchased multiple licenses.

<sup>b</sup>A person was counted only once, regardless of how many licenses they purchased.

Table 3. Estimated sex and age of active small game hunters in Michigan, 2007-2011.<sup>a</sup>

| Variable                 | 2007    | 2008    | 2009    | 2010    | 2011     |        |
|--------------------------|---------|---------|---------|---------|----------|--------|
|                          |         |         |         |         | Estimate | 95% CL |
| Hunters <sup>b</sup>     | 188,297 | 184,474 | 166,068 | 161,800 | 153,890* | 3,343  |
| Males (%)                | 95.9    | 96.4    | 96.6    | 96.9    | 96.6     | 0.6    |
| Females (%)              | 3.7     | 3.6     | 3.4     | 3.1     | 3.4      | 0.6    |
| Age (Years) <sup>c</sup> | 43.8    | 44.7    | 44.9    | 46.1    | 46.2     | 0.6    |

<sup>a</sup>Analyses included only those people that hunted.

<sup>b</sup>People that hunted American crow, American woodcock, cottontail rabbit, coyote, northern bobwhite quail, ring-necked pheasant, ruffed grouse, snowshoe hare, or squirrels.

<sup>c</sup>Mean age of active hunters on October 1.

\*Non-overlapping 95% confidence intervals indicated estimates differed significantly between the last two years (P<0.005).

Table 4. Estimated number of small game hunters by species and region in Michigan, 2008-2011.<sup>a</sup>

| Species and region                | 2008   | 2009   | 2010   | 2011   |        | 2010-11<br>% Change |
|-----------------------------------|--------|--------|--------|--------|--------|---------------------|
|                                   |        |        |        | No.    | 95% CL |                     |
| Ring-necked pheasant <sup>b</sup> |        |        |        |        |        |                     |
| UP                                | 2,378  | 2,226  | 1,670  | 1,229  | 463    | -26                 |
| NLP                               | 15,290 | 11,762 | 9,975  | 7,907  | 1,155  | -21                 |
| SLP                               | 27,795 | 22,057 | 17,483 | 15,294 | 1,581  | -13                 |
| Statewide                         | 43,144 | 34,014 | 27,450 | 23,351 | 1,973  | -15*                |
| Northern bobwhite quail           |        |        |        |        |        |                     |
| NLP                               | 4      | 166    | 0      | 49     | 95     |                     |
| SLP                               | 1,052  | 1,352  | 838    | 393    | 269    | -53                 |
| Statewide                         | 1,056  | 1,373  | 838    | 442    | 285    | -47                 |
| Ruffed grouse                     |        |        |        |        |        |                     |
| UP                                | 39,356 | 36,518 | 39,291 | 36,041 | 1,847  | -8                  |
| NLP                               | 46,730 | 43,561 | 43,536 | 39,714 | 2,382  | -9                  |
| SLP                               | 11,200 | 9,578  | 9,137  | 6,680  | 1,069  | -27*                |
| Statewide                         | 91,417 | 82,818 | 85,327 | 77,283 | 2,908  | -9*                 |
| American woodcock                 |        |        |        |        |        |                     |
| UP                                | 11,068 | 11,371 | 9,980  | 9,410  | 1,244  | -6                  |
| NLP                               | 26,154 | 23,969 | 23,559 | 21,100 | 1,839  | -10                 |
| SLP                               | 7,271  | 5,748  | 6,110  | 3,952  | 832    | -35*                |
| Statewide                         | 41,052 | 37,693 | 36,451 | 32,254 | 2,257  | -12                 |
| Cottontail rabbit                 |        |        |        |        |        |                     |
| UP                                | 3,976  | 3,875  | 3,477  | 2,860  | 698    | -18                 |
| NLP                               | 23,309 | 19,187 | 18,876 | 17,452 | 1,633  | -8                  |
| SLP                               | 52,642 | 49,098 | 41,328 | 38,303 | 2,301  | -7                  |
| Statewide                         | 75,455 | 67,883 | 60,031 | 56,065 | 2,803  | -7                  |
| Snowshoe hare                     |        |        |        |        |        |                     |
| UP                                | 7,726  | 8,780  | 7,972  | 6,090  | 997    | -24                 |
| NLP                               | 7,678  | 7,172  | 6,093  | 5,688  | 989    | -7                  |
| SLP                               | 1,599  | 1,198  | 1,445  | 757    | 368    | -48                 |
| Statewide                         | 16,507 | 16,387 | 15,214 | 12,143 | 1,437  | -20*                |
| Squirrels                         |        |        |        |        |        |                     |
| UP                                | 5,596  | 4,563  | 4,782  | 4,219  | 825    | -12                 |
| NLP                               | 33,009 | 29,341 | 29,602 | 27,448 | 1,968  | -7                  |
| SLP                               | 47,771 | 43,698 | 40,336 | 44,065 | 2,406  | 9                   |
| Statewide                         | 81,736 | 73,016 | 69,784 | 72,102 | 3,047  | 3                   |
| American crows                    |        |        |        |        |        |                     |
| UP                                | 1,177  | 1,653  | 1,099  | 917    | 403    | -17                 |
| NLP                               | 4,336  | 4,334  | 4,500  | 4,489  | 875    | 0                   |
| SLP                               | 6,746  | 7,486  | 7,348  | 7,640  | 1,143  | 4                   |
| Statewide                         | 11,812 | 12,944 | 12,453 | 12,506 | 1,479  | 0                   |
| Coyote                            |        |        |        |        |        |                     |
| UP                                | 3,875  | 4,310  | 5,689  | 4,987  | 907    | -12                 |
| NLP                               | 12,783 | 13,930 | 14,857 | 13,264 | 1,458  | -11                 |
| SLP                               | 16,718 | 18,164 | 16,260 | 18,355 | 1,714  | 13                  |
| Statewide                         | 31,289 | 34,656 | 34,732 | 34,547 | 2,344  | -1                  |

<sup>a</sup>The number of hunters does not add up to the statewide total because hunters can hunt in more than one region.

<sup>b</sup>Included both regular and late pheasant hunting seasons.

\*Non-overlapping 95% confidence intervals indicated estimates differed significantly ( $P < 0.005$ ).

Table 5. Estimated amount of small game hunter effort (days afield) by species and region, 2008-2011.

| Species and region                | 2008    | 2009    | 2010    | 2011    |        | 2010-11<br>% Change |
|-----------------------------------|---------|---------|---------|---------|--------|---------------------|
|                                   |         |         |         | No.     | 95% CL |                     |
| Ring-necked pheasant <sup>a</sup> |         |         |         |         |        |                     |
| UP                                | 13,411  | 10,658  | 9,699   | 6,370   | 3,561  | -34                 |
| NLP                               | 58,064  | 45,250  | 33,238  | 31,093  | 8,328  | -6                  |
| SLP                               | 108,718 | 92,285  | 63,892  | 63,159  | 10,760 | -1                  |
| Statewide                         | 180,193 | 148,194 | 106,829 | 100,622 | 14,613 | -6                  |
| Northern bobwhite quail           |         |         |         |         |        |                     |
| NLP                               | 7       | 698     | 0       | 245     | 476    |                     |
| SLP                               | 3,422   | 5,084   | 3,034   | 589     | 555    | -81                 |
| Statewide                         | 3,428   | 5,781   | 3,034   | 835     | 731    | -72                 |
| Ruffed grouse                     |         |         |         |         |        |                     |
| UP                                | 325,116 | 299,237 | 311,693 | 305,132 | 30,815 | -2                  |
| NLP                               | 244,730 | 238,137 | 255,379 | 237,091 | 27,270 | -7                  |
| SLP                               | 54,329  | 45,508  | 48,557  | 36,949  | 9,829  | -24                 |
| Statewide                         | 624,175 | 582,881 | 615,628 | 579,171 | 42,876 | -6                  |
| American woodcock                 |         |         |         |         |        |                     |
| UP                                | 58,633  | 76,358  | 49,045  | 59,664  | 14,098 | 22                  |
| NLP                               | 144,577 | 125,296 | 136,178 | 128,445 | 19,028 | -6                  |
| SLP                               | 36,142  | 26,085  | 27,601  | 19,187  | 6,723  | -30                 |
| Statewide                         | 239,352 | 227,738 | 212,824 | 207,295 | 25,474 | -3                  |
| Cottontail rabbit                 |         |         |         |         |        |                     |
| UP                                | 22,994  | 22,782  | 19,718  | 18,923  | 11,435 | -4                  |
| NLP                               | 122,123 | 107,926 | 112,693 | 102,822 | 22,443 | -9                  |
| SLP                               | 306,463 | 283,916 | 232,450 | 240,626 | 35,510 | 4                   |
| Statewide                         | 451,580 | 414,624 | 364,861 | 362,371 | 43,877 | -1                  |
| Snowshoe hare                     |         |         |         |         |        |                     |
| UP                                | 49,280  | 55,671  | 50,493  | 48,331  | 17,529 | -4                  |
| NLP                               | 41,400  | 41,325  | 47,881  | 42,628  | 16,825 | -11                 |
| SLP                               | 9,881   | 6,847   | 4,316   | 1,981   | 2,041  | -54                 |
| Statewide                         | 100,561 | 103,843 | 102,690 | 92,940  | 24,421 | -9                  |
| Squirrels                         |         |         |         |         |        |                     |
| UP                                | 39,009  | 36,782  | 36,539  | 49,522  | 18,562 | 36                  |
| NLP                               | 168,707 | 158,726 | 151,028 | 164,935 | 33,048 | 9                   |
| SLP                               | 297,621 | 236,550 | 207,814 | 271,127 | 34,045 | 30*                 |
| Statewide                         | 505,337 | 432,058 | 395,380 | 485,583 | 51,671 | 23*                 |
| American crow                     |         |         |         |         |        |                     |
| UP                                | 5,938   | 7,506   | 2,379   | 6,321   | 5,896  | 166                 |
| NLP                               | 20,098  | 16,187  | 14,605  | 15,734  | 5,040  | 8                   |
| SLP                               | 32,444  | 27,893  | 25,582  | 30,705  | 8,252  | 20                  |
| Statewide                         | 58,480  | 51,586  | 42,566  | 52,760  | 11,575 | 24                  |
| Coyote                            |         |         |         |         |        |                     |
| UP                                | 19,053  | 32,567  | 37,743  | 42,408  | 23,229 | 12                  |
| NLP                               | 90,332  | 96,224  | 88,133  | 89,784  | 30,434 | 2                   |
| SLP                               | 112,024 | 99,300  | 91,344  | 124,502 | 41,435 | 36                  |
| Statewide                         | 221,409 | 228,092 | 217,220 | 256,694 | 56,540 | 18                  |

<sup>a</sup>Included both regular and late pheasant hunting seasons.

\*Non-overlapping 95% confidence intervals indicated estimates differed significantly ( $P < 0.005$ ).

Table 6. Estimated small game harvest by species and region in Michigan, 2008-2011.

| Species and region                | 2008    | 2009    | 2010    | 2011    |        | 2010-11  |
|-----------------------------------|---------|---------|---------|---------|--------|----------|
|                                   |         |         |         | No.     | 95% CL | % Change |
| Ring-necked pheasant <sup>a</sup> |         |         |         |         |        |          |
| UP                                | 4,796   | 2,991   | 2,059   | 2,047   | 1,398  | -1       |
| NLP                               | 25,528  | 12,602  | 10,268  | 7,539   | 2,671  | -27      |
| SLP                               | 32,598  | 20,492  | 14,898  | 13,034  | 3,209  | -13      |
| Statewide                         | 62,922  | 36,085  | 27,224  | 22,620  | 4,567  | -17      |
| Northern bobwhite quail           |         |         |         |         |        |          |
| NLP                               | 2       | 357     | 0       | 0       | 0      |          |
| SLP                               | 853     | 1,116   | 1,435   | 441     | 547    | -69      |
| Statewide                         | 854     | 1,473   | 1,435   | 441     | 547    | -69      |
| Ruffed grouse                     |         |         |         |         |        |          |
| UP                                | 183,804 | 144,682 | 161,171 | 159,427 | 18,549 | -1       |
| NLP                               | 106,329 | 88,936  | 89,884  | 95,095  | 15,371 | 6        |
| SLP                               | 10,858  | 7,157   | 9,151   | 6,218   | 2,401  | -32      |
| Statewide                         | 300,990 | 240,775 | 260,207 | 260,741 | 24,790 | 0        |
| American woodcock                 |         |         |         |         |        |          |
| UP                                | 28,699  | 27,059  | 18,447  | 22,290  | 6,460  | 21       |
| NLP                               | 79,190  | 53,098  | 68,920  | 66,936  | 12,550 | -3       |
| SLP                               | 13,801  | 11,087  | 9,526   | 5,431   | 2,022  | -43      |
| Statewide                         | 121,690 | 91,244  | 96,892  | 94,657  | 14,709 | -2       |
| Cottontail rabbit                 |         |         |         |         |        |          |
| UP                                | 7,818   | 9,935   | 4,210   | 4,048   | 1,620  | -4       |
| NLP                               | 79,068  | 52,058  | 56,606  | 38,757  | 7,570  | -32      |
| SLP                               | 269,207 | 214,118 | 169,783 | 151,105 | 21,621 | -11      |
| Statewide                         | 356,093 | 276,112 | 230,598 | 193,910 | 23,481 | -16      |
| Snowshoe hare                     |         |         |         |         |        |          |
| UP                                | 30,892  | 25,820  | 22,001  | 13,884  | 962    | -37*     |
| NLP                               | 10,419  | 9,890   | 11,766  | 10,157  | 746    | -14      |
| SLP                               | 4,491   | 2,171   | 1,506   | 602     | 16,922 | -60      |
| Statewide                         | 45,802  | 37,881  | 35,273  | 24,643  | 6,800  | -30      |
| Squirrels                         |         |         |         |         |        |          |
| UP                                | 39,965  | 34,840  | 24,505  | 39,500  | 16,922 | 61       |
| NLP                               | 196,157 | 172,735 | 150,067 | 142,573 | 18,028 | -5       |
| SLP                               | 304,433 | 232,756 | 195,734 | 254,845 | 30,242 | 30*      |
| Statewide                         | 540,555 | 440,330 | 370,306 | 436,918 | 40,905 | 18       |
| American crow                     |         |         |         |         |        |          |
| UP                                | 9,178   | 20,615  | 3,978   | 3,132   | 1,930  | -21      |
| NLP                               | 30,032  | 23,606  | 15,987  | 17,137  | 6,442  | 7        |
| SLP                               | 22,471  | 28,219  | 32,248  | 40,072  | 14,563 | 24       |
| Statewide                         | 61,681  | 72,440  | 52,213  | 60,341  | 17,272 | 16       |
| Coyote                            |         |         |         |         |        |          |
| UP                                | 2,888   | 4,386   | 6,001   | 7,096   | 3,794  | 18       |
| NLP                               | 19,531  | 16,278  | 24,209  | 10,372  | 3,994  | -57*     |
| SLP                               | 17,035  | 18,692  | 18,002  | 18,532  | 5,911  | 3        |
| Statewide                         | 39,454  | 39,356  | 48,212  | 36,001  | 8,116  | -25      |

<sup>a</sup>Included both regular and late pheasant hunting seasons.

\*Non-overlapping 95% confidence intervals indicated estimates differed significantly ( $P < 0.005$ ).

Table 7. Estimated number of coyote hunters, coyotes harvested, and hunting effort (days afield) by small game hunters with and without a fur harvesters license in Michigan, 2011.<sup>a</sup>

| Small game hunter group        | Hunters |        | Days afield |        | Harvest |        |
|--------------------------------|---------|--------|-------------|--------|---------|--------|
|                                | No.     | 95% CL | No.         | 95% CL | No.     | 95% CL |
| Without fur harvesters license | 25,616  | 2,060  | 156,898     | 41,546 | 22,344  | 6,040  |
| With fur harvesters license    | 8,932   | 1,260  | 99,796      | 38,646 | 13,657  | 5,465  |
| Combined                       | 34,547  | 2,344  | 256,694     | 56,540 | 36,001  | 8,116  |

<sup>a</sup>Coyotes can also be taken by hunters possessing either a small game hunting or a fur harvesters license. These estimates do not include people with only a fur harvesters license that hunted coyotes.

Table 8. Estimated number and proportion of hunters hunting on private and public lands during the 2011 small game hunting season, summarized by species.

| Species                 | Land type         |        |    |        |                  |        |    |        |                               |        |    |        |              |        |    |        |
|-------------------------|-------------------|--------|----|--------|------------------|--------|----|--------|-------------------------------|--------|----|--------|--------------|--------|----|--------|
|                         | Private land only |        |    |        | Public land only |        |    |        | Both private and public lands |        |    |        | Unknown land |        |    |        |
|                         | Total             | 95% CL | %  | 95% CL | Total            | 95% CL | %  | 95% CL | Total                         | 95% CL | %  | 95% CL | Total        | 95% CL | %  | 95% CL |
| Ring-necked pheasant    | 13,345            | 1,525  | 57 | 4      | 4,659            | 918    | 20 | 4      | 4,071                         | 860    | 17 | 3      | 1,275        | 484    | 5  | 2      |
| Northern bobwhite quail | 196               | 191    | 44 | 32     | 147              | 165    | 33 | 30     | 49                            | 95     | 11 | 20     | 49           | 95     | 11 | 20     |
| Ruffed grouse           | 12,677            | 1,483  | 16 | 2      | 31,833           | 2,230  | 41 | 2      | 30,710                        | 2,102  | 40 | 2      | 2,063        | 615    | 3  | 1      |
| American woodcock       | 4,366             | 890    | 14 | 3      | 14,869           | 1,593  | 46 | 4      | 10,762                        | 1,374  | 33 | 4      | 2,257        | 642    | 7  | 2      |
| Cottontail rabbit       | 29,331            | 2,169  | 52 | 3      | 10,153           | 1,339  | 18 | 2      | 14,765                        | 1,601  | 26 | 3      | 1,816        | 577    | 3  | 1      |
| Snowshoe hare           | 2,363             | 654    | 19 | 5      | 4,615            | 913    | 38 | 6      | 4,477                         | 893    | 37 | 6      | 688          | 356    | 6  | 3      |
| Squirrels               | 32,280            | 2,269  | 45 | 3      | 18,044           | 1,750  | 25 | 2      | 18,198                        | 1,763  | 25 | 2      | 3,580        | 807    | 5  | 1      |
| American crow           | 7,112             | 1,129  | 57 | 6      | 1,912            | 592    | 15 | 4      | 2,354                         | 656    | 19 | 5      | 1,128        | 455    | 9  | 3      |
| Coyote                  | 21,786            | 1,913  | 63 | 4      | 3,878            | 840    | 11 | 2      | 8,100                         | 1,199  | 23 | 3      | 784          | 380    | 2  | 1      |
| Combined                | 47,992            | 2,667  | 31 | 2      | 37,277           | 2,406  | 24 | 1      | 61,308                        | 2,887  | 40 | 2      | 7,314        | 1,145  | 5  | 1      |

Table 9. Estimated number of days of hunting effort on private and public lands during the 2011 small game hunting season in Michigan, summarized by species.<sup>a</sup>

| Species                 | Land type     |        |              |        |                               |        |         |        |
|-------------------------|---------------|--------|--------------|--------|-------------------------------|--------|---------|--------|
|                         | Private lands |        | Public lands |        | Both private and public lands |        | Unknown |        |
|                         | Total         | 95% CL | Total        | 95% CL | Total                         | 95% CL | Total   | 95% CL |
| Ring-necked pheasant    | 46,515        | 8,151  | 27,121       | 9,066  | 21,150                        | 6,310  | 5,836   | 3,665  |
| Northern bobwhite quail | 687           | 700    | 49           | 95     | 0                             | 0      | 98      | 190    |
| Ruffed grouse           | 76,646        | 12,591 | 249,208      | 30,790 | 236,418                       | 27,661 | 16,899  | 6,961  |
| American woodcock       | 21,733        | 5,974  | 94,897       | 16,733 | 73,450                        | 16,222 | 17,215  | 6,777  |
| Cottontail rabbit       | 156,436       | 21,557 | 88,515       | 27,659 | 105,942                       | 24,715 | 11,477  | 6,908  |
| Snowshoe hare           | 13,323        | 9,243  | 25,732       | 9,785  | 48,533                        | 19,933 | 5,352   | 3,677  |
| Squirrels               | 179,078       | 22,316 | 141,573      | 25,861 | 145,055                       | 37,952 | 19,877  | 7,272  |
| American crow           | 26,839        | 7,369  | 12,677       | 6,891  | 9,564                         | 4,649  | 3,679   | 2,625  |
| Coyote                  | 157,477       | 47,152 | 27,430       | 9,994  | 65,366                        | 29,284 | 6,420   | 4,446  |

<sup>a</sup>People that hunted small game on both private and public lands were not asked to record the amount of effort separately for each land type; thus, it was not possible to estimate the total amount or proportion of effort devoted to either private or public lands separately.

Table 10. Level of satisfaction among active small game hunters (% of hunters) with the 2011 small game hunting season in Michigan.<sup>a</sup>

| Index used to measure season satisfaction | Level of satisfaction |        |                    |        |         |        |                       |        |                   |        |
|---|-----------------------|--------|--------------------|--------|---------|--------|-----------------------|--------|-------------------|--------|
|   | Very satisfied        |        | Somewhat satisfied |        | Neutral |        | Somewhat dissatisfied |        | Very dissatisfied |        |
|   | %                     | 95% CL | %                  | 95% CL | %       | 95% CL | %                     | 95% CL | %                 | 95% CL |
| Small game seen                           | 13                    | 1      | 29                 | 2      | 20      | 1      | 22                    | 1      | 16                | 1      |
| Small game harvested                      | 10                    | 1      | 23                 | 2      | 25      | 2      | 21                    | 1      | 21                | 1      |
| Length of season                          | 35                    | 2      | 26                 | 2      | 28      | 2      | 6                     | 1      | 4                 | 1      |
| Overall experience                        | 28                    | 2      | 35                 | 2      | 19      | 1      | 11                    | 1      | 6                 | 1      |

<sup>a</sup>Analyses limited to small game license buyers that actually hunted in 2011 and indicated a level of satisfaction.

Table 11. Estimated number of Michigan woodcock hunters, woodcock harvested, and hunting effort (days afield) among people that registered with the Harvest Information Program, 2011.<sup>a</sup>

| Variable             | No.     | 95% CL |
|----------------------|---------|--------|
| Hunters              | 28,323  | 2,136  |
| Days afield (effort) | 178,847 | 23,338 |
| Harvest              | 86,946  | 14,041 |

<sup>a</sup>Analyses limited to people that registered with HIP and hunted woodcock.

Table 12. Estimated number of Michigan hunters and hunting effort (days afield) among people that hunted on Habitat Access Program lands, 2011.

| Variable                    | No.   | 95% CL |
|-----------------------------|-------|--------|
| Hunters                     | 2,698 | 701    |
| Days afield (effort)        | 9,663 | 3,449  |
| Mean days afield per hunter | 3.6   | 0.9    |

Table 13. Level of satisfaction among active small game hunters (% of hunters) with the Mi-Hunt internet application.<sup>a</sup>

| Index used to measure satisfaction | Level of satisfaction |    |                    |    |         |    |                       |    |                       |    |                |    |           |    |
|------------------------------------|-----------------------|----|--------------------|----|---------|----|-----------------------|----|-----------------------|----|----------------|----|-----------|----|
|                                    | Very satisfied        |    | Somewhat satisfied |    | Neutral |    | Somewhat dissatisfied |    | Strongly dissatisfied |    | Not applicable |    | No answer |    |
|                                    | 95%                   |    | 95%                |    | 95%     |    | 95%                   |    | 95%                   |    | 95%            |    | 95%       |    |
|                                    | %                     | CL | %                  | CL | %       | CL | %                     | CL | %                     | CL | %              | CL | %         | CL |
| Ease of use                        | 31                    | 7  | 42                 | 7  | 16      | 6  | 7                     | 4  | 2                     | 2  | 1              | 2  | 1         | 1  |
| Quality of maps                    | 35                    | 7  | 39                 | 7  | 16      | 6  | 6                     | 4  | 1                     | 2  | 2              | 2  | 1         | 1  |
| Accuracy of information            | 36                    | 7  | 35                 | 7  | 21      | 6  | 4                     | 3  | 2                     | 2  | 1              | 1  | 1         | 2  |

<sup>a</sup>Analyses limited to small game license buyers that had used the Mi-Hunt internet application and had hunted in 2011 (8,100 ± 1,204 small game hunters).

Table 14. Level of satisfaction among active small game hunters (total number of hunters) with the Mi-Hunt internet application.<sup>a</sup>

| Index used to measure satisfaction | Level of satisfaction |     |                    |     |         |     |                       |     |                       |     |                |     |           |     |
|------------------------------------|-----------------------|-----|--------------------|-----|---------|-----|-----------------------|-----|-----------------------|-----|----------------|-----|-----------|-----|
|                                    | Very satisfied        |     | Somewhat satisfied |     | Neutral |     | Somewhat dissatisfied |     | Strongly dissatisfied |     | Not applicable |     | No answer |     |
|                                    | 95%                   |     | 95%                |     | 95%     |     | 95%                   |     | 95%                   |     | 95%            |     | 95%       |     |
|                                    | Total                 | CL  | Total              | CL  | Total   | CL  | Total                 | CL  | Total                 | CL  | Total          | CL  | Total     | CL  |
| Ease of use                        | 2,503                 | 677 | 3,436              | 791 | 1,277   | 485 | 589                   | 329 | 147                   | 165 | 98             | 135 | 49        | 95  |
| Quality of maps                    | 2,846                 | 721 | 3,144              | 758 | 1,325   | 493 | 490                   | 300 | 98                    | 135 | 147            | 165 | 49        | 95  |
| Accuracy of information            | 2,895                 | 727 | 2,849              | 722 | 1,718   | 561 | 343                   | 251 | 147                   | 165 | 49             | 95  | 98        | 135 |

<sup>a</sup>Analyses limited to small game license buyers that had used the Mi-Hunt internet application and had hunted in 2011 (8,100 ± 1,204 small game hunters).

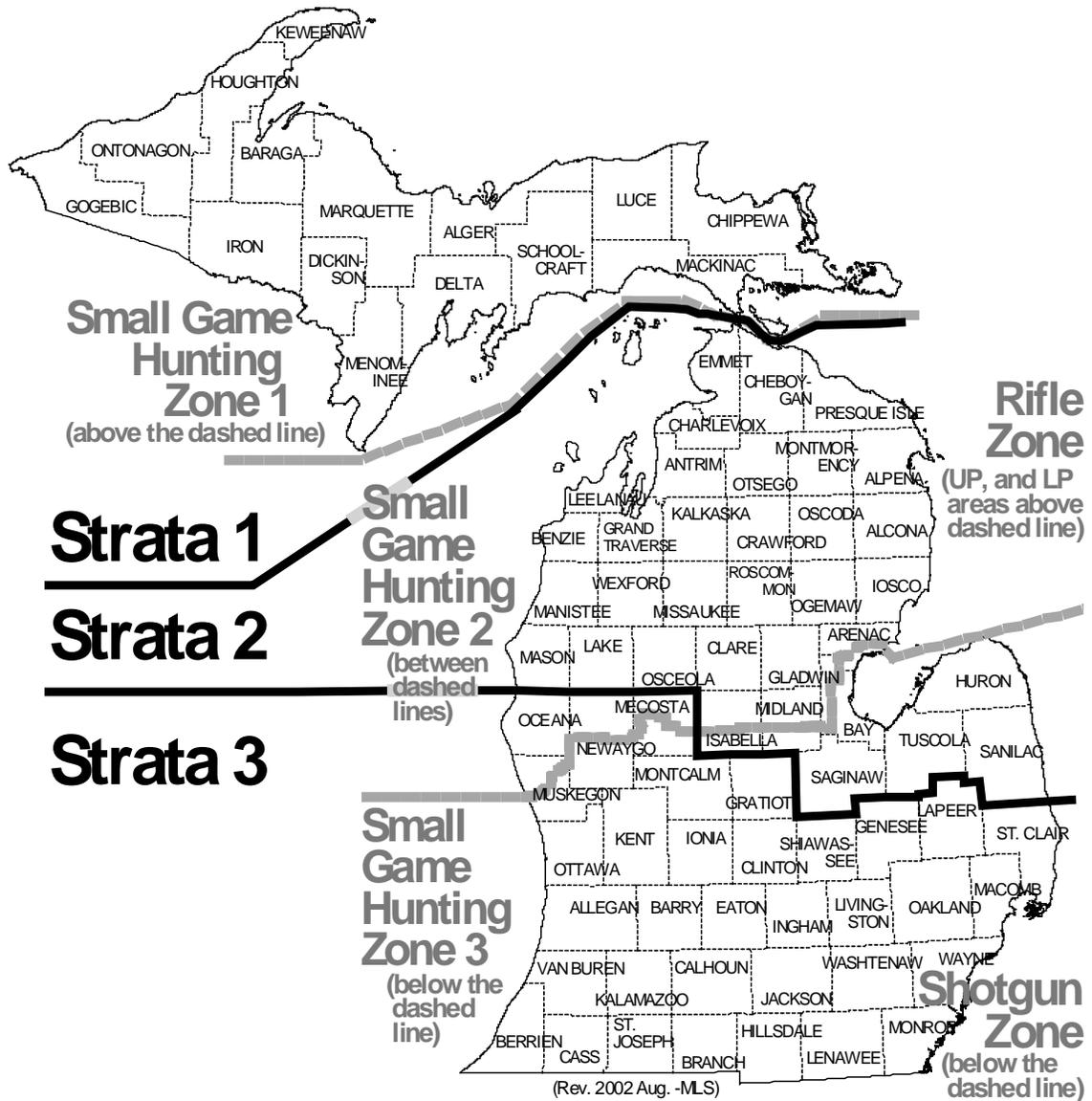


Figure 1. Areas (strata) used to summarize the survey data (top). Stratum boundaries did not match the small game management hunting zones.

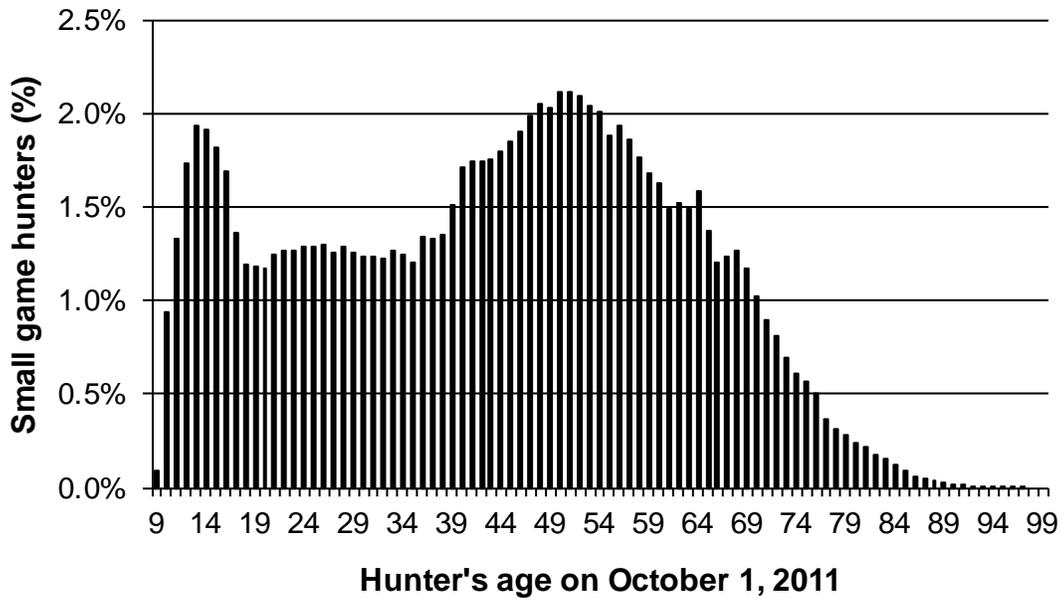


Figure 2. Age of people that purchased a small game hunting license in Michigan for the 2011 hunting seasons ( $\bar{x}$  = 43 years).

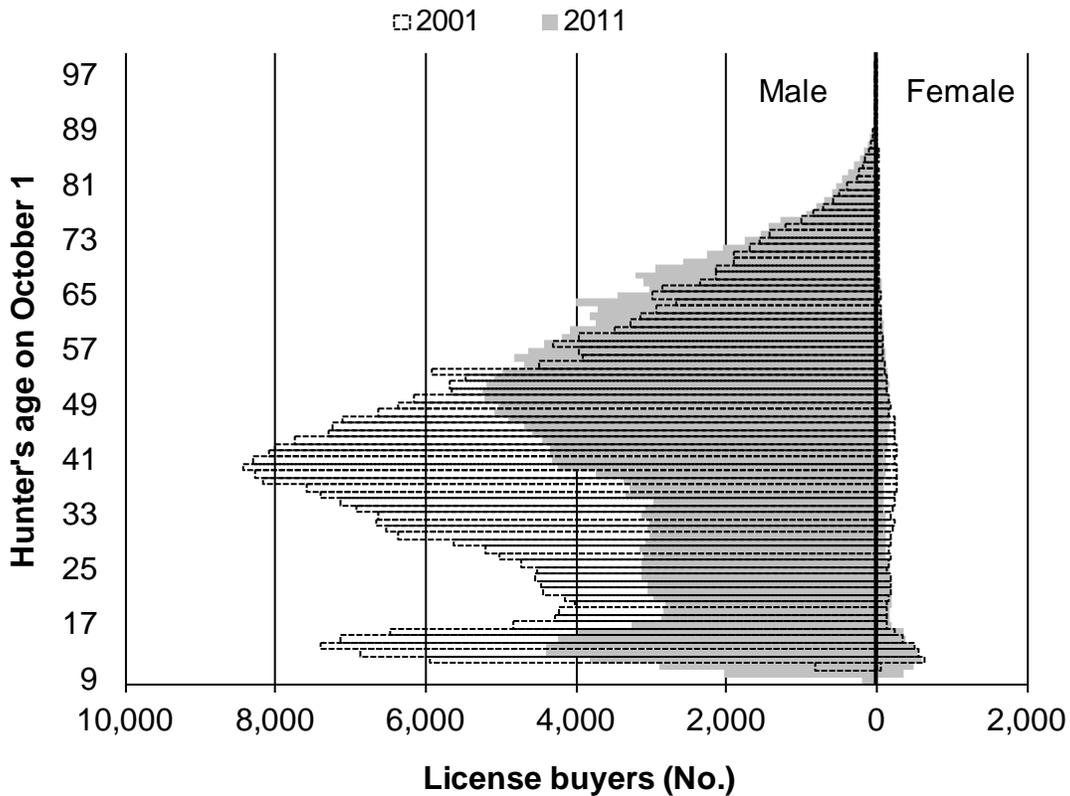


Figure 3. Number of small game hunting license buyers in Michigan by age and sex during 2001 and 2011 hunting seasons. The number of people buying a license was 347,429 in 2001 and 256,184 in 2011.

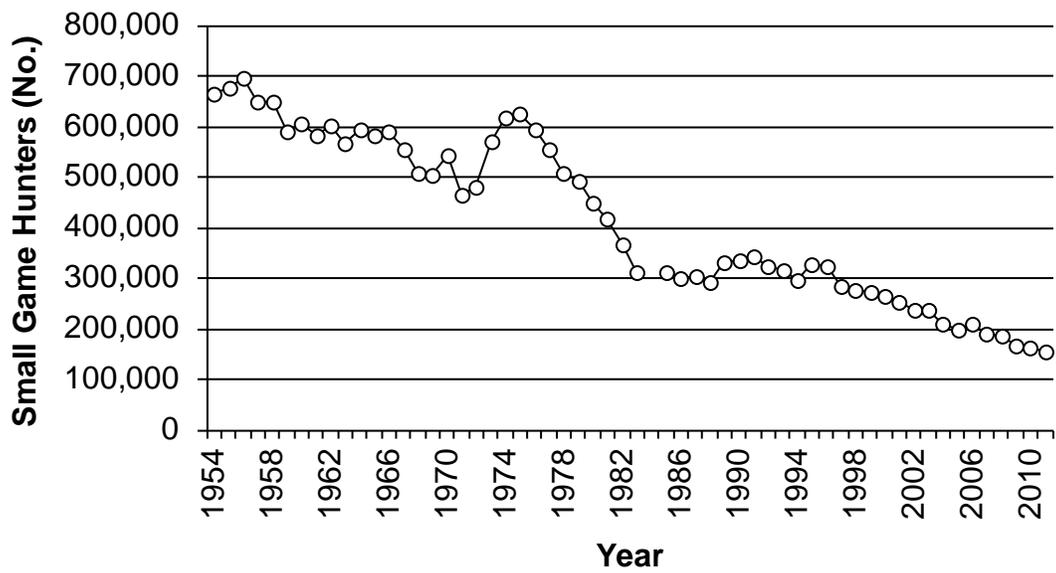


Figure 4. Estimated number of small game hunters in Michigan, 1954-2011 (estimate of the number of people that went afield). No estimate was available for 1984.

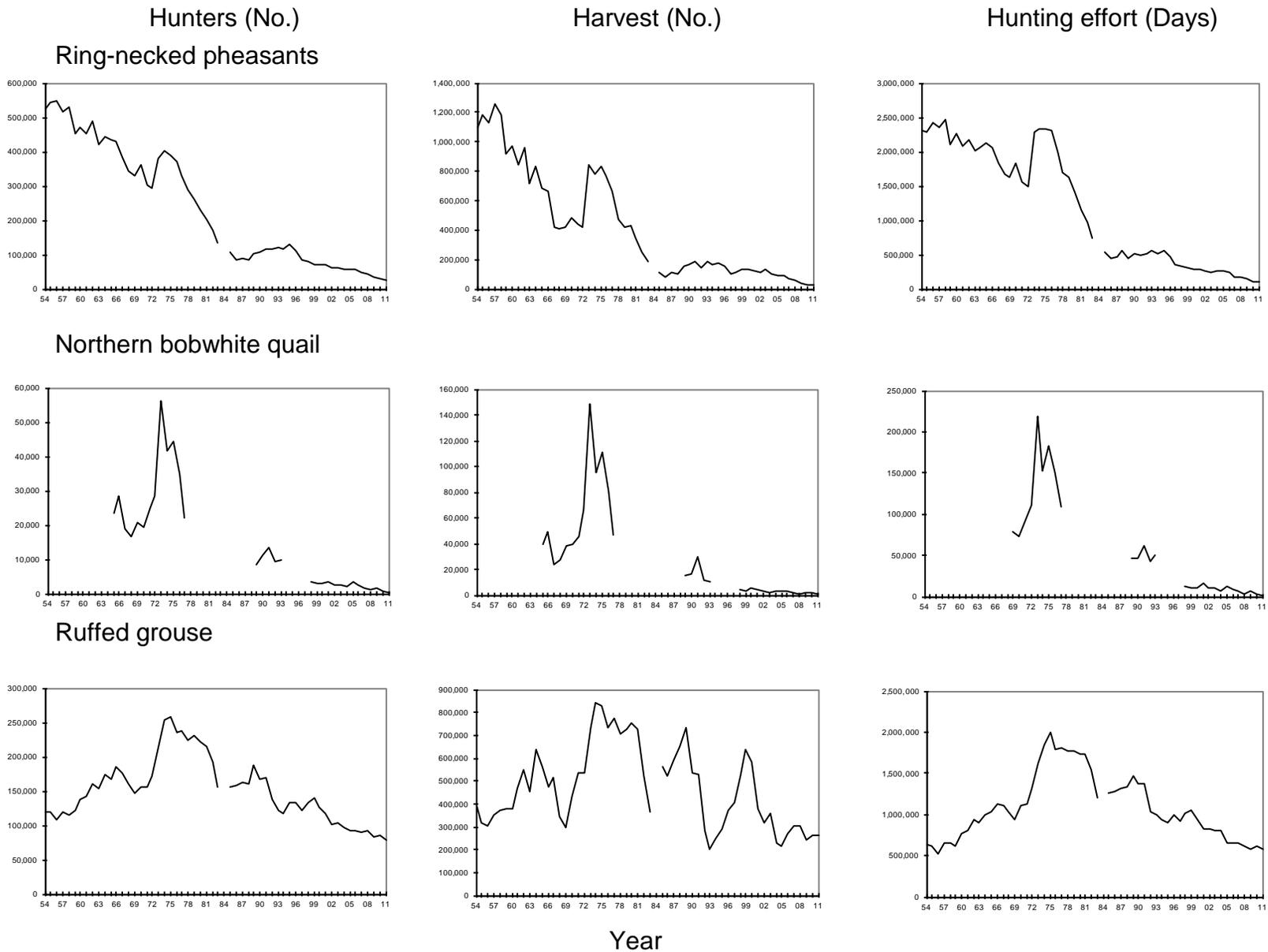


Figure 5. Estimated number of hunters, harvest, and hunting effort in Michigan during the small game hunting seasons, 1954-2011. No estimates were available or no seasons existed during years when no data are plotted.

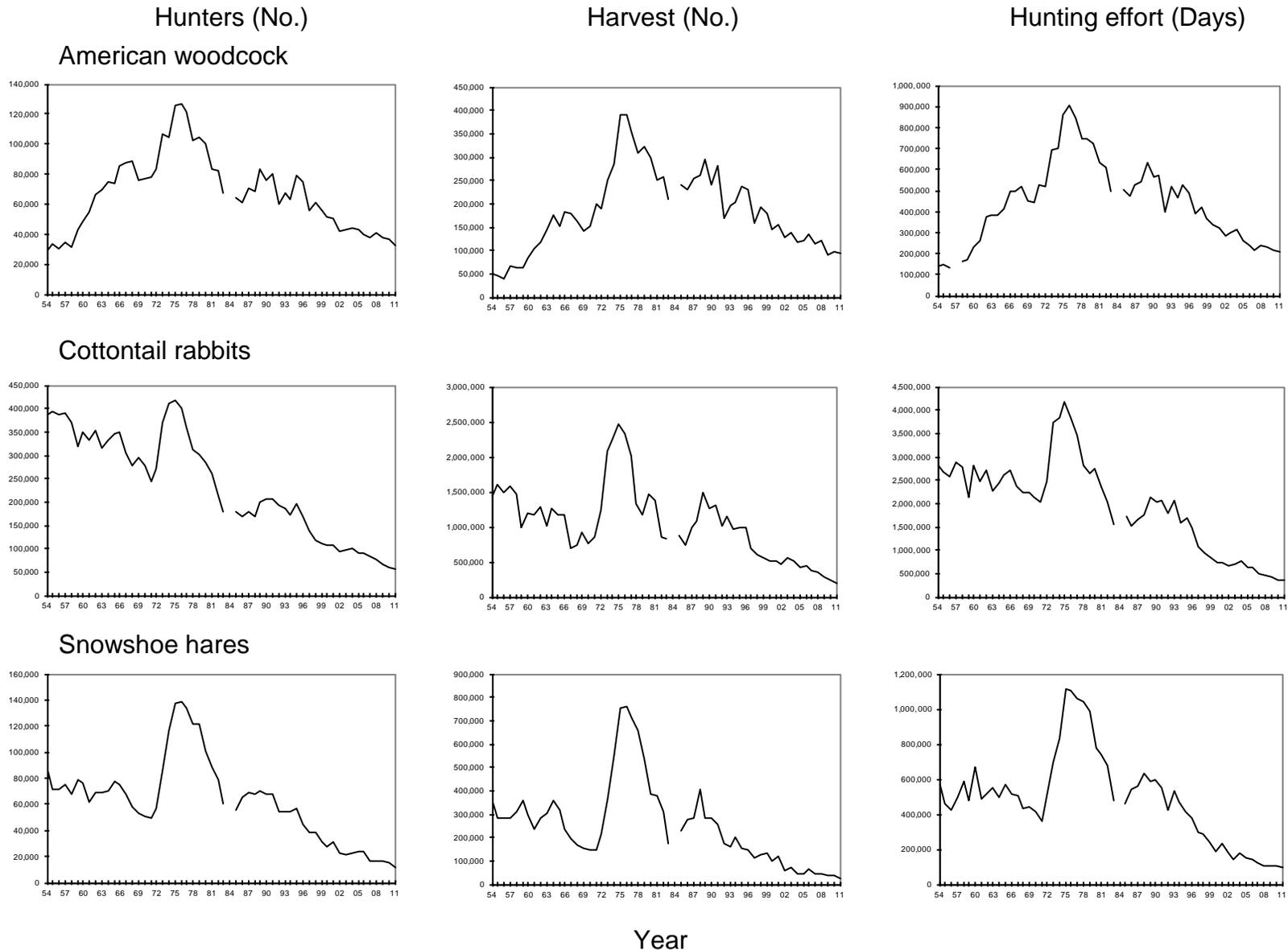


Figure 5 (continued). Estimated number of hunters, harvest, and hunting effort in Michigan during the small game hunting seasons, 1954-2011. No estimates were available or no seasons existed during years when no data are plotted.

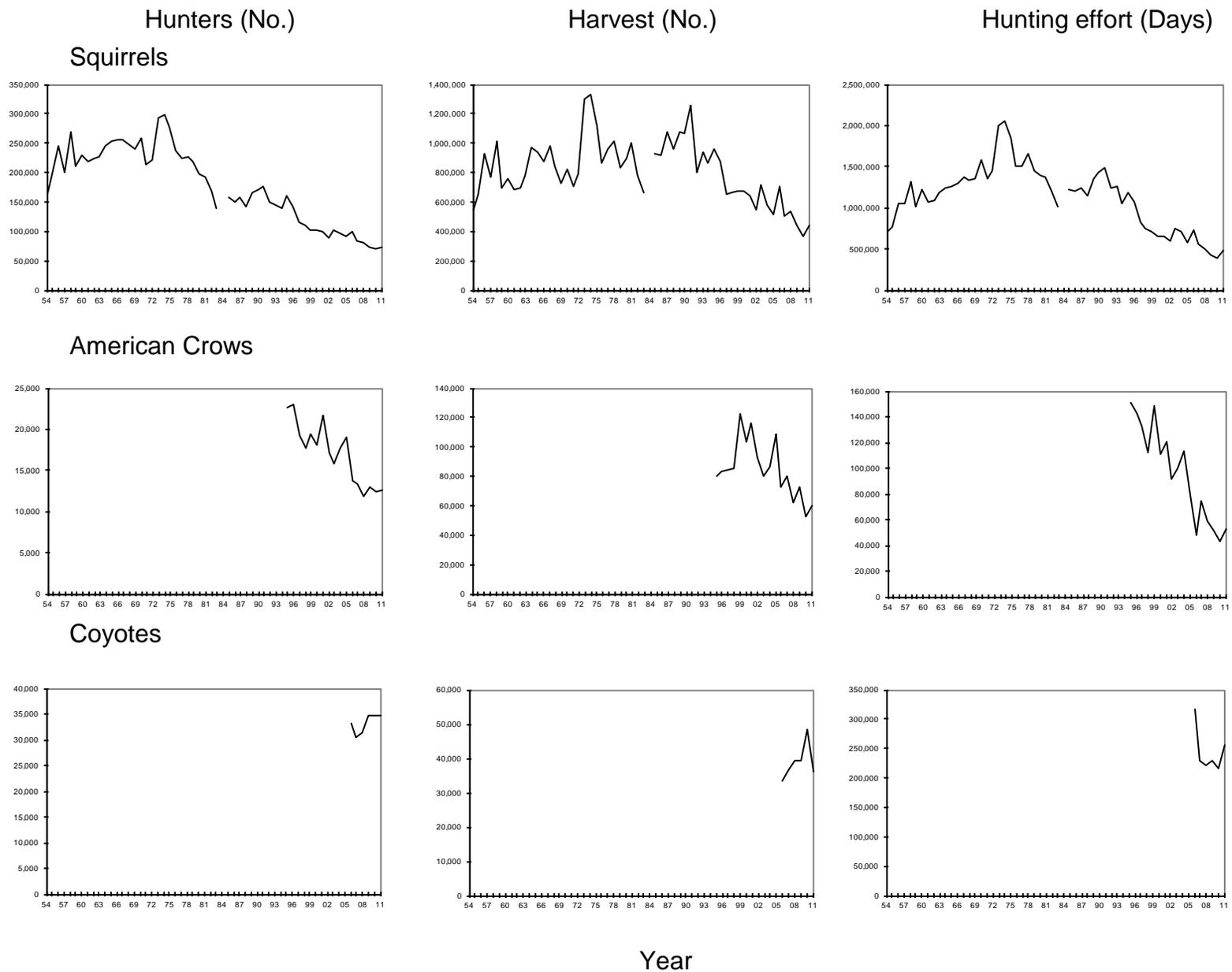


Figure 5. (continued) Estimated number of hunters, harvest, and hunting effort in Michigan during the small game hunting seasons, 1954-2011. No estimates were available or no seasons existed during years when no data are plotted.

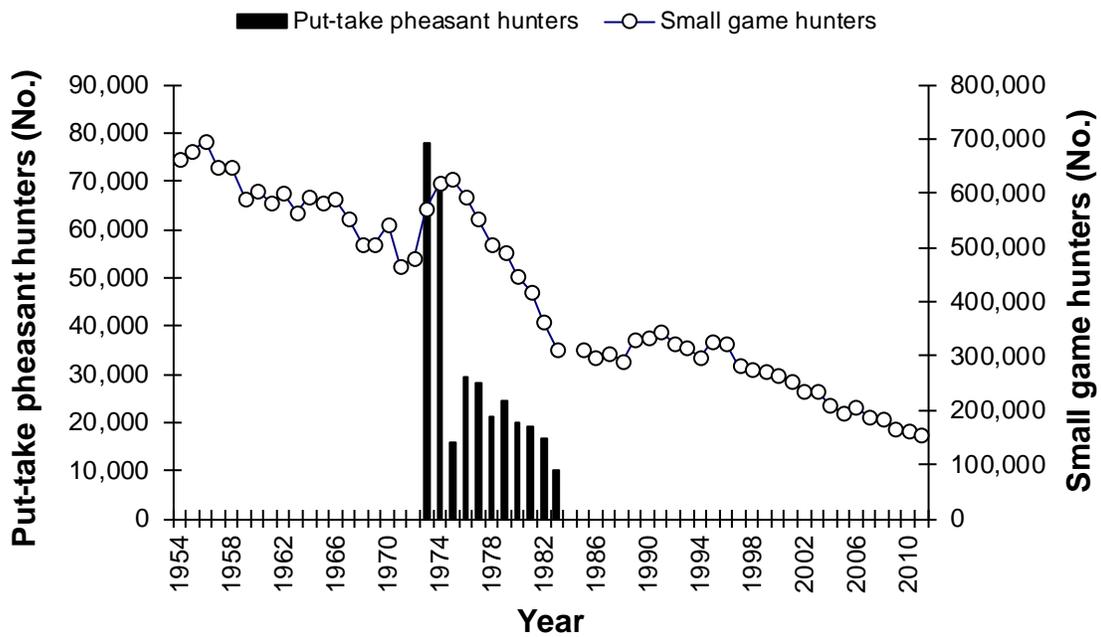


Figure 6. Estimated number of small game hunters in Michigan, 1954-2011 (estimate of the number of people that went afield) and number of people participating in put-take pheasant hunts (1973-1983). The numbers of put-take pheasant hunters were estimated for 1973-1974 (Janson 1975, Janson and Anderson 1976), while numbers of hunters during 1975-1983 were tallies of annual put-take permits sold (DNR, unpublished data). Thus, the estimates of put-take hunters during 1973-1975 and 1976-1983 periods are not directly comparable. No estimates of small game hunters or put-take pheasant hunters were available for 1984.

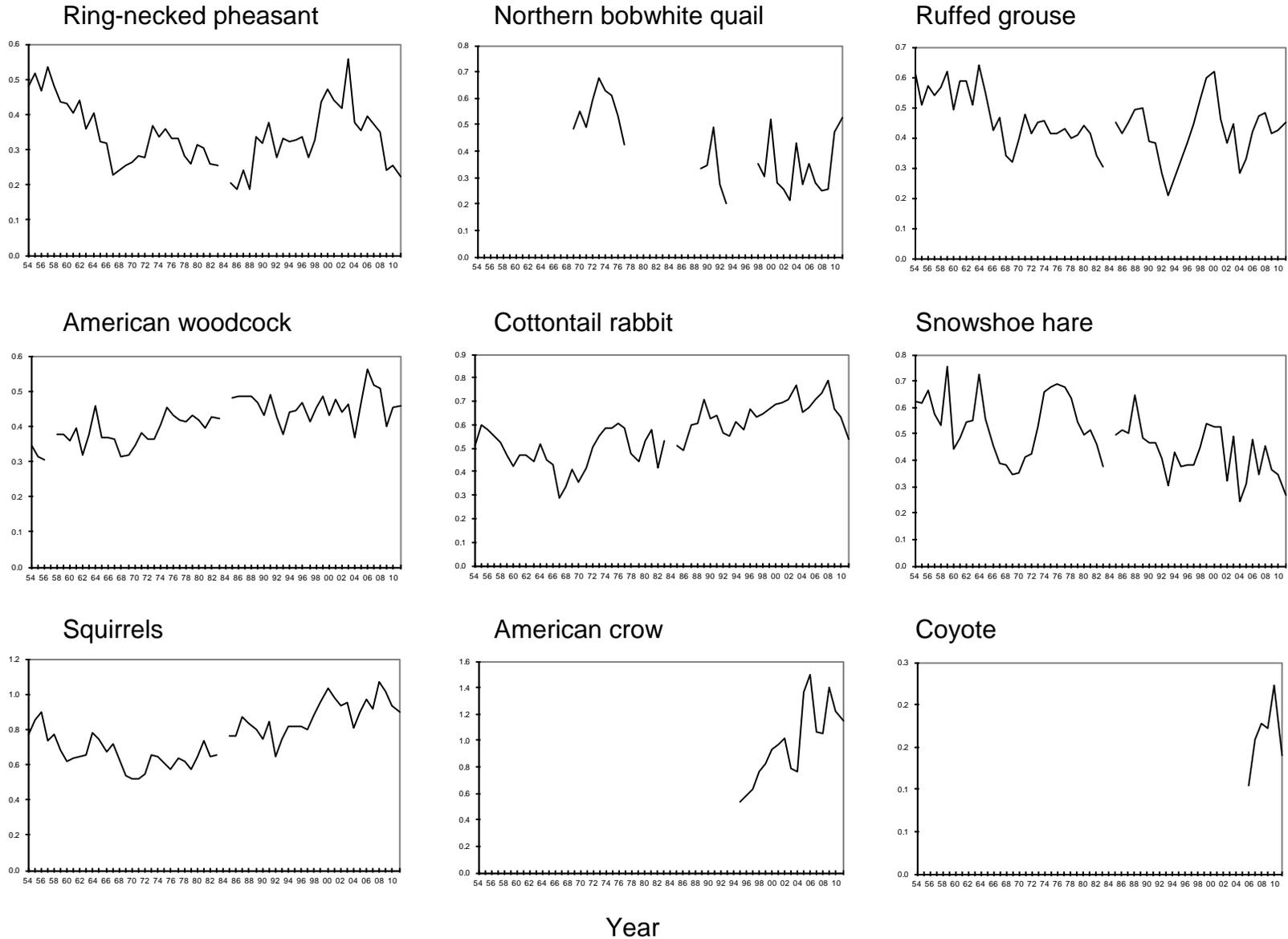


Figure 7. Estimated harvest per effort in Michigan during the small game hunting seasons, 1954-2011. No estimates were available or no seasons existed during years when no data are plotted.

Appendix A

2011-2012 Small Game Harvest Questionnaire



**2011-2012 UPLAND GAME HARVEST REPORT**

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 hunt or harvest any animals. Report only your hunting activities and the animals that you harvested. Do not report any game taken on a licensed shooting preserve.*

**1. Did you attempt to hunt upland small game species in Michigan during 2011-12?**

- <sup>1</sup>  Yes. Please complete the table below.  
<sup>2</sup>  No. Skip to Question #3.

| SPECIES<br><i>(Check box if you hunted during the season.)</i>   | COUNTY HUNTED<br><i>(List the counties hunted on separate lines.)</i> | NUMBER OF DAYS HUNTED<br><i>(Include all days hunted, even if you did not harvest anything.)</i> | TYPE OF LAND   |  |  | NUMBER OF ANIMALS TAKEN |
|--|---|--|--|--|--|-------------------------|
|  |   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
| <sup>0</sup> <input checked="" type="checkbox"/> <b>Example</b>  | 1 Jackson   | 5  | <sup>1</sup> <input checked="" type="checkbox"/> Private | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both | 12                      |
| <sup>1</sup> <input type="checkbox"/> <b>Pheasant</b><br><i>(Do not count birds taken on a licensed shooting preserve)</i> | 1   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 2   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 3   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 4   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
| <sup>2</sup> <input type="checkbox"/> <b>Ruffed Grouse</b>   | 1   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 2   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 3   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 4   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
| <sup>3</sup> <input type="checkbox"/> <b>Woodcock</b>  | 1   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 2   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 3   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 4   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
| <sup>4</sup> <input type="checkbox"/> <b>Cottontail Rabbit</b>   | 1   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 2   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 3   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 4   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
| <sup>5</sup> <input type="checkbox"/> <b>Snowshoe Hare</b>   | 1   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 2   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 3   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 4   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
| <sup>6</sup> <input type="checkbox"/> <b>Squirrel</b>  | 1   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 2   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 3   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 4   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
| <sup>7</sup> <input type="checkbox"/> <b>Crow</b>  | 1   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 2   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 3   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 4   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
| <sup>8</sup> <input type="checkbox"/> <b>Quail</b><br><i>(Portions of the Southern Lower Peninsula)</i>                    | 1   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 2   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 3   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 4   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
| <sup>9</sup> <input type="checkbox"/> <b>Coyote</b>  | 1   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 2   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 3   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |
|  | 4   |  | <sup>1</sup> <input type="checkbox"/> Private            | <sup>2</sup> <input type="checkbox"/> Public | <sup>3</sup> <input type="checkbox"/> Both |                         |

Questions continued on back

| 2. During the last upland small game hunting season, how satisfied or dissatisfied were you with: | Very Satisfied             | Somewhat Satisfied         | Neutral                    | Somewhat Dissatisfied      | Very Dissatisfied          |
|---|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| a. The amount of small game seen.   | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| b. Number of small game harvested.  | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| c. Number of days in the hunting season.  | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |
| d. Your overall hunting experience.   | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |

3. Did you attempt to hunt ducks or geese in Michigan during 2011-12?

1  Yes                      2  No

4. If you are a youth (*adults skip to question 5*), did you hunt during Michigan's Youth Waterfowl Hunting weekend (September 17-18, 2011)? Eligible youth were 10-15 years old during the youth season.

1  Yes                      2  No

5. The Michigan Department of Natural Resources leases private lands throughout southern Michigan for public hunting through the Hunting Access Program (HAP). In 2011, the DNR leased about 50 properties totaling about 7,800 acres. Did you hunt small game on any HAP property in 2011-12?

1  Yes                      2  No. Skip to Question #6.

5a. If you hunted small game on a HAP property in 2011-12, how many days did you hunt on HAP properties? \_\_\_\_\_ DAYS HUNTED

5b. If you hunted small game on a HAP property in 2011-12, which county was each HAP property located? \_\_\_\_\_ COUNTIES HUNTED

6. The Michigan Department of Natural Resources developed an internet-based application called Mi-HUNT that can be used to locate hunting, trapping, boating or camping sites. Did you use Mi-HUNT to help locate a hunting area in 2011-12?

1  Yes                      2  No. Skip the remaining questions.

7. If you used Mi-HUNT to select an area for your 2011-12 small game hunts, please indicate how satisfied or dissatisfied you were with the following features of Mi-HUNT:

(Select one choice per item.)

|                             | Very Satisfied             | Somewhat Satisfied         | Neutral                    | Somewhat Dissatisfied      | Strongly Dissatisfied      | Not Applicable             |
|-----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| a. Ease of use.             | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> | 6 <input type="checkbox"/> |
| b. Quality of maps.         | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> | 6 <input type="checkbox"/> |
| c. Accuracy of information. | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> | 6 <input type="checkbox"/> |

8. How did Mi-HUNT affect the quality of your small game hunting experience in 2011-12?

1  Greatly improved quality of hunt      2  Improved quality of hunt      3  Not Sure      4  Decreased quality of hunt      5  Greatly decreased quality of hunt

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

[www.michigan.gov/dnr](http://www.michigan.gov/dnr)